Product catalogue

Y000376880

Your partner in welding and cutting

Close to a hundred years of experience

ESAB's foundations were laid on the invention of the covered electrode. The inventor was Oscar Kjellberg and, every day, hundreds of thousands of welders encounter his initials in the form of an OK on the welding consumables they use.
The techniques and the industrial conditions have changed dramatically since Oscar Kjellberg repaired and built boilers and ships in Göteborg at the beginning of the 20th century. Even so, the basis of the company he founded and the basis of the present-day ESAB is the same; namely, the power, will and resources to find solutions to the practical problems which occur when metals have to be cut and joined together.

We comply with new requirements

Technical developments have resulted in new requirements when it comes to quality, productivity, economy and the environment.
Requirements which ESAB has greater potential to fulfil than perhaps any other company. Firstly, because of our many years of close contact with welders and welding engineers in every business sector and, secondly, because of the skills, know-how and resources at our research and development departments.

What is best for our customers is also best for us

In order to enhance the quality and profitability of our customers' companies, we offer comprehensive training and information programmes. And in order to improve operational reliability and reduce the running costs of their production processes, we have created an effective service and after-sales organisation.

Quality calls for quality

ESAB is continuously working with quality-improvement programmes in accordance with the requirements set in ISO 9000 standard. ESAB has today almost all manufacturing ISO 9000 certified.
In order to give our customers the fast service and response they expect, we have built up an organisation which makes us available wherever our customers need us. In virtually every corner of the globe.
ESAB has subsidiary companies in more than 25 countries, with a well-developed network of sales offices, distributors and service workshops.
This product catalogue has been developed in close collaboration with our distributors and end-users and is aimed to help you find the right product and solution for your specific need.

We are committed to environmental leadership in everything we do

Caring for the environment is a question of survival for human beings, companies and society as a whole. In the long term, we cannot exceed the limits of resource extraction and pollution which nature imposes. So environmetal concern must characterise both our operations and our daily work. In all our operations and products, we must adopt an eco cycle approach. Only by showing respect for the environment can we comply with our customers' needs without jeopardising the potential of future generations.
We will take our responsibility for the environment in all our operations by

- Continuously improving our environmental performance by conserving natural resources and preventing pollution.
- Ensuring that our facilities and products, at a minimum, comply with applicable governmental requirements and ESAB standards.
- Using a lifecycle approach in our efforts to minimize the environmental impact of our products and services, from the extraction of raw materials to product end of life.
- Educating and motivating our employees to contribute to our environmental commitment and to comply with this policy.
- Participating in industrial, community and governmental environmental initiatives and openly communicate our environmental performance to our stakeholders.

All these efforts are based on the implemented Environmental Management System (EMS) corresponding to the standard ISO 14001. Today we have several ISO 14001 certified units and more will be.

Your partner in welding and cutting

Product catalogue

Contents

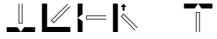
OK 43.32 SMAW

Type Rutile

OK 43.32 is a very user friendly electrode which gives excellent bead appearance. Particularly suitable for welding sheet steel. Can be used with smaller transformers. OK 43.32 is a heavily coated universal electrode.

Welding current

DC(+-), AC OCV 50 V



Classification: SFA/AWS A5.1 E6013; EN 499 E 42 0 RR 12; ISO 2560 E 51 3 RR 21

Approvals: ABS 1; BV 1; CL; DB 80.039.02; DNV 1; DS-EN 499 E 42 0 RR 12; GL 2Y; LR 1; SFS-EN 499 E 42 0 RR 12; SS-EN 499 E 42 0 RR 12; UDT-EN 499 E 42 0 RR 12; VdTÜV

Typical all weld metal composition, %: C 0.07; Si 0.4; Mn 0.5

Typical properties all weld metal: Yield stress, MPa 460; Tensile strength, MPa 550; Elongation, % 24; Charpy V

Test temps, °C	Impact values, J
+20	65
0	40

Ø mm	Length mm	Welding current A	Arc voltage V
1.6	300	30-60	22
2.0	300	40-80	23
2.5	350	50-110	25
3.2	350	80-150	26
3.2	450	80-140	26
4.0	450	120-210	26
5.0	450	170-290	26
6.0	450	230-270	26

OK 46.00 SMAW

Type Rutile

OK 46.00 is the best, allround, rutile electrode and it is relatively insensitive to rust or other surface impurities. It deposits smooth weld beads in all positions including vertical-down and the slag is easy to remove. OK 46.00 is very easy to strike and restrike, making it ideal for short welds, root runs and tacking.

Welding current

DC+/-, AC OCV 50 V

Classification: SFA/AWS A5.1 E6013; EN 499 E 38 0 RC 11; ISO 2560 E 43 3 R 11

Approvals: ABS 2; BV 2; CL; DB 10.039.05/QS; DNV 2; DS-EN 499 E 38 0 RC 11; GDF; GL 2; LR 2; PRS 2; RS 2; SFS-EN 499 E 38 0 RC 11; SS-EN 499 E 38 0 RC 11; UDT-EN 499 E 38 0 RC 11; VdTÜV

Typical all weld metal composition, %: C 0.08; Si 0.3; Mn 0.4

Typical properties all weld metal: Yield stress, MPa 400; Tensile strength, MPa 510; Elongation, % 28; Charpy V

Test temps, °C	Impact values, J
0	70
-20	35

Ø mm	Length mm	Welding current A	Arc voltage V
1.6	300	30-60	20
2.0	300	50-70	21
2.5	350	60-100	22
3.2	350	80-150	22
4.0	350	100-200	22
5.0	350	150-290	24
5.0	450	170-220	24

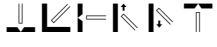
OK 46.16 SMAW

Type Rutile

OK 46.16 is an all positional, rutile electrode for welding mild steels. It gives less spatter than most other rutile electrodes, the slag is easy to remove and the weld bead is smooth and even. It is easy to strike and restrike and therefore also good for tack welding.

Welding current

DC+/-, AC OCV 50 V



Classification: SFA/AWS A5.1 E7014; ISO 2560 E43 3 RR 11; EN 499 E 38 0 RC 11

Approvals: ABS 2; BV 2; CL; DB 80.039.03; DNV 2; DS-EN 499 E 38 0 RC 11; GL 2; LR 2; PRS 2; SS-EN 499 E 38 0 RC 11; UDT-EN 499 E 38 0 RC 11; VdTÜV

Typical all weld metal composition, %: C 0.09; Si 0.4; Mn 0.5

Typical properties all weld metal: Yield stress, MPa 440; Tensile strength, MPa 505; Elongation, % 28; Charpy V

Test temps, °C	Impact values, J
+20	75
0	70
-20	40

Ø mm	Length mm	Welding current A	Arc voltage V
2.0	300	50-70	22
2.5	350	60-100	22
3.2	350	80-150	23
4.0	350	100-200	24
4.0	450	100-200	24
5.0	450	150-260	26
6.0	450	200-385	26

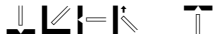
OK 48.00 SMAW

Type Basic

A reliable, general purpose, LMA electrode for mild and low-alloy steels. OK 48.00 deposits a tough, crack-resistant weld metal. High welding speed in the vertical-up position. OK 48.00 is insensitive to the composition of the base material within rather wide limits. The electrode can be used for welding structures where difficult stress conditions cannot be avoided.

Welding current

DC+(-)



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.1	ABS	3H5, 3Y	C	0.06	Yield stress, MPa	1.6	300	30-55	22
E7018	BV	3, 3YH5	Si	0.5	445	2.0	300	50-80	24
EN 499	CL		Mn	1.15		2.5	350	80-110	23
E 42 4 B 42 H5	DB	10.039.12			Tensile strength, MPa	3.2	350	110-150	22
ISO 2560	DNV	3YH5			540	3.2	450	110-150	23
E51 5B 120 20H	DS-EN 499	E 42 4 B 42 H5				4.0	350	125-210	24
CSA W48.1	GDF				Elongation, %	4.0	450	125-210	26
E48018	GL	3YH5			29	4.5	450	150-220	
	LR	3, 3YH10				5.0	450	200-260	23
	PRS	3YH10			Charpy V	6.0	450	220-340	23
	RINA	E 52 3 HH			Test temps, °C / Impact values, J	7.0	450	280-410	25
	RS	3YHH			-20 / 140				
	SFS-EN 499	E 42 4 B 42 H5			-40 / 70				
	SS-EN 499	E 42 4 B 42 H5							
	UDT-EN 499	E 42 4 B 42 H5							
	VdTÜV								

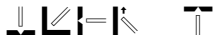
OK 48.04 SMAW

Type Basic

OK 48.04 is an AC/DC, general purpose, LMA electrode for welding mild and low-alloy steels. It has very good welding properties and deposits a high quality weld metal with very good mechanical properties. The electrode can be used for welding rigidly restrained structures where high welding stresses cannot be avoided.

Welding current

DC+(-), AC OCV 65 V



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.1	ABS	3H5 3Y	C	0.06	Yield stress, MPa	2.0	300	50-80	23
E7018	BV	3, 3YH5	Si	0.5	480	2.5	350	70-110	23
EN 499	DB	10.039.34	Mn	1.1		3.2	350	110-150	23
E 42 4 B 32 H5	DNV	3YH10			Tensile strength, MPa	3.2	400	110-150	23
ISO 2560	DS-EN 499	E 42 4 B 32 H5			560	3.2	450	110-150	23
E 51 5B 120 26H	GL	3YH10				4.0	350	150-200	26
	LR	3, 3Y H5			Elongation, %	4.0	400	150-200	26
	NKK	KMW53H10			30	4.0	450	150-200	26
	PRS	3YH10				5.0	400	190-260	26
	RS	3YHH			Charpy V	5.0	450	190-260	26
	SS-EN 499	E 42 4 B 32 H5			Test temps, °C / Impact values, J	6.0	450	220-360	26
	UDT-EN 499	E 42 4 B 32 H5			-20 / 150				
	VdTÜV				-40 / 100				

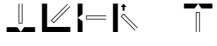
OK 48.15 SMAW

Type Basic

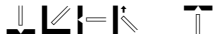
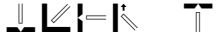
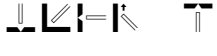
An LMA electrode for welding mild and low-alloy steels. Unusually good welding properties in the vertical-up position. OK 48.15 gives t□he same good weld metal quality as OK 48.00, which makes the electrode suitable for welding structures in which high stresses cannot be avoided. It is also suitable for welding galvanized plate.

Welding current

DC+(-), AC OCV 65 V



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.1	ABS	3H10 3Y	C	0.06	Yield stress, MPa	2.0	300	55-80	22
E7018	BV	3, 3YHH	Si	0.5	490	2.5	350	65-110	22
EN 499	DB	10.039.06	Mn	1.1		3.2	350	100-140	22
E 42 3 B 32 H5	DNV	3 YH10			Tensile strength, MPa	3.2	450	100-140	23
ISO 2560	DS-EN 499	E 42 3 B 32 H5			575	4.0	350	140-200	24
E 51 5B 120 26 H	GL	3YH10				4.0	450	140-200	24
	LR	3, 3YH10			Elongation, %	4.5	450	180-240	24
	PRS	3YH10			30	5.0	450	190-280	25
	RS	3YHH				6.0	450	220-360	26
	SFS-EN 499	E 42 3 B 32 H5			Charpy V				
	SS-EN 499	E 42 3 B 32 H5			Test temps, °C / Impact values, J				
	UDT-EN 499	E 42 3 B 32 H5			-20 / 110				
	VdTÜV				-30 / 60				
					-40 / 50				

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 48.68 **SMAW** **Type** Basic OK 48.68 is an LMA electrode with extra low moisture content and very good resistance to moisture pick-up. It deposits a weld metal with very low hydrogen content and is very suitable for welding hardenable low-alloy structural steel and carbon steel, particularly when a low hydrogen level in the weld metal is important. **Welding current** DC+(-) 	SFA/AWS A5.1 E7018-1 EN 499 E 42 5B 42 H5 ISO 2560 E 51 5 B 120 24 H	ABS 3H5, 3Y BV 3, 3YH5 CL DNV 3YH5 DS-EN 499 E 42 5B 42 H5 LR 3, 3Y H15 SS-EN 499 E 42 5B 42 H5	C 0.06 Si 0.5 Mn 1.2	Yield stress, MPa 470 Tensile strength, MPa 560 Elongation, % 28 Charpy V Test temps, °C / Impact values, J -20 / 150 -40 / 130 -50 / 90	2.0 2.5 3.2 3.2 4.0 4.0 5.0	300 350 350 450 350 450 450	55-80 75-110 105-150 105-150 150-200 150-200 180-260	22 22 22 22 22 22 23
OK 50.10 **SMAW** **Type** Rutile-acid OK 50.10 is a user-friendly electrode for welding mild steel, especially good in standing fillets. Good bead shape, good surface finish and easy slag removal. OK 50.10 is suitable for welding of general purpose mild steels and pressure vessel steels having a corresponding tensile strength. **Welding current** DC+, AC OCV 65 V 	SFA/AWS A5.1 E6013 EN 499 E 38 2 A 12 ISO 2560 E 43 4 AR 24	ABS 3 BV 3 DNV 3 DS-EN 499 E 38 2 A 12 GL 3 LR 3 SS-EN 499 E 38 2 A 12 UDT-EN 499 E 38 2 A 12	C 0.07 Si 0.2 Mn 0.5	Yield stress, MPa 430 Tensile strength, MPa 500 Elongation, % 25 Charpy V Test temps, °C / Impact values, J 0 / 70 -20 / 60 -40 / 40	2.5 3.2 4.0 5.0	350 450 450 450	75-110 90-150 140-190 170-250	24 25 26 27
OK 50.40 **SMAW** **Type** Rutile-basic OK 50.40 is an allround electrode for positional welding mild steel, also well suited for pipe welding. It is particularly good for welding in the vertical upwards position and for welding root beads. **Welding current** DC+/-, AC OCV 65 V 	SFA/AWS A5.1 E6013 EN 499 E 42 2 RB 12 ISO 2560 E51 4 RR 24	DB 10.039.14 GL 2 LR 2 UDT-EN 499 E 42 2 RB 12 VdTÜV	C 0.07 Si 0.2 Mn 0.5	Yield stress, MPa 450 Tensile strength, MPa 620 Elongation, % 24 Charpy V Test temps, °C / Impact values, J 0 / 80 -20 / 50	2.0 2.5 3.2 3.2 4.0 4.0 5.0 5.0 6.0	300 350 350 450 350 450 350 450 450	40-80 50-100 80-150 80-150 130-190 170-280 170-280 170-280 230-370	22 22 22 22 23 23 23 23 24

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 53.05 **SMAW** **Type** Basic A low-hydrogen electrode with especially good running characteristics and very good mechanical properties. Because of its double coating, it creates a deep crater which stabilises the arc and gives good protection against air in inclined positions. **Welding current** DC+(-), AC OCV 65 V 	SFA/AWS A5.1 E7016 EN 499 E 42 4 B 12 H10 ISO 2560 E 51 5 B 24 (H)	ABS 3H10, 3Y BV 3, 3YHH CL DB 10.039.32 DNV 3YH10 DS-EN 499 E 42 4 B 12 H10 GL 3YH10 LR 3, 3YH10 UDT-EN 499 E 42 4 B 12 H10 VdTÜV	C 0.07 Si 0.6 Mn 1.0	Yield stress, MPa 470 Tensile strength, MPa 540 Elongation, % 28 Charpy V Test temps, °C / Impact values, J -20 / 100 -50 / 60	2.5 3.2 3.2 4.0 4.0 5.0	350 350 450 350 450 450	50-110 80-140 80-140 110-180 125-210 200-260	24 25 25 26 26 26
OK 53.16 SPEZIAL **SMAW** **Type** Basic OK 53.16 is a double-coated electrode combining the running characteristics of a rutile electrode with the weld metal from a basic electrode. OK 53.16 welds on as well AC as DC and the spatter loss is minimal. **Welding current** DC+, AC OCV 65 V 	SFA/AWS A5.1 E7016 EN 499 E 38 2 B 32 H10 ISO 2560 E 51 4 B 21(H)	ABS 3, H10, 3Y BV 3, 3YHH CL DB 10.039.29 DNV 3YH10 DS-EN 499 E 38 2 B 32 H10 GL 3YH10 LR 3, 3YH10 UDT-EN 499 E 38 2 B 32 H10 VdTÜV	C 0.07 Si 0.6 Mn 0.9	Yield stress, MPa 450 Tensile strength, MPa 530 Elongation, % 28 Charpy V Test temps, °C / Impact values, J -20 / 120	2.5 3.2 4.0 5.0	350 350 450 450	50-90 90-150 120-190 160-230	26 25 26 26
OK 53.35 **SMAW** **Type** Basic OK 53.35 is our most efficient electrode for vertical welding, specifically designed for welding vertically downwards. Welding vertically downwards with OK 53.35 is done with a relatively large diameter electrode and a high current, thus giving a high welding speed. **Welding current** DC+, AC OCV 70 V 	SFA/AWS A5.1 E7048 EN 499 E 38 2 B 32 H10 ISO 2560 E 51 5B 56H	ABS 5, 3Y BV 3, 3YHH DB 10.039.33 DNV 3 YH10 DS-EN 499 E 38 2 B 32 H10 GL 3YH10 LR 3, 3Y H15 PRS 3YH10 RS 3YHH SFS-EN 499 E 38 2 B 32 H10 SS-EN 499 E 38 2 B 32 H10 VdTÜV	C 0.06 Si 0.5 Mn 0.9	Yield stress, MPa 460 Tensile strength, MPa 560 Elongation, % 30 Charpy V Test temps, °C / Impact values, J -20 / 140 -30 / 110 -40 / 90	2.5 3.2 3.2 4.0 4.0 4.5 5.0 5.6	350 350 450 350 450 450 450 450	80-100 80-150 80-150 110-200 110-200 150-230 170-280 220-350	 25 25 27 27 28 28

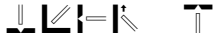
OK 53.68 SMAW

Type Basic

OK 53.68 is an extra-high quality LMA electrode, particularly suitable for on-site welding. OK 53.68 yields a homogenous high quality weld metal with extra low content of impurities. The electrode operates well on AC as well as DC positive and negative. DC negative is preferred giving a small easily controlled weld pool, minimizing the risk of burn-through or undercutting. OK 53.68 is CTOD tested.

Welding current

DC+(-), AC OCV 60 V



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.1 E7016-1 EN 499 E 42 5 B 12 H5 DIN 1913 E 51 55 B 10 ISO 2560 E 51 5 B 24 H	ABS	3H5, 3Y	C	0.06	Yield stress, MPa 460 Tensile strength, MPa 550 Elongation, % 30 Charpy V Test temps, °C / Impact values, J -20 / 180 -40 / 140 -50 / 120	2.5	350	55-85	22
	BV	3YH5	Si	0.4		3.2	450	80-130	22
	DNV	4YH5	Mn	1.2		4.0	450	110-170	22
	GL	4YH5				5.0	450	180-230	22
	LR	3, 4Y40H15							
	PRS	4YH10							
	SFS-EN 499	E 42 5 B 12 H5							
	SS-EN 499	E 42 5 B 12 H5							
	UDT-EN 499	E 42 5 B 12 H5							
	VdTÜV								

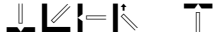
OK 53.70 SMAW

Type Basic

OK 53.70 is a low-hydrogen AC/DC electrode for the one-sided welding of pipes and general structures. The root penetration is good, leaving a flat bead with easily removable slag. The stable arc and the well-balanced slag system make the electrode easy to weld in all positions.

Welding current

DC+(-), AC OCV 60 V



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.1 E7016-1 EN 499 E 42 5 B 12 H5 GOST 9467-75 E50A ISO 2560 E 51 5 B 24 H	ABS	3H5, 3Y	C	0.06	Yield stress, MPa 440 Tensile strength, MPa 530 Elongation, % 30 Charpy V Test temps, °C / Impact values, J -20 / 150 -40 / 120 -47 / 100	2.5	350	60-85	26
	DNV	3Y H5	Si	0.45		3.2	350	80-130	27
	DS-EN 499	E 42 5 B 12 H5	Mn	1.15		3.2	450	80-130	27
	GASPROM					4.0	450	90-190	28
	LR	3, 3YH5							
	VNIIST								

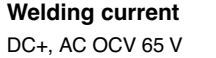
OK 55.00 SMAW

Type Basic

OK 55.00 is a reliable, high-quality, LMA electrode, particularly suitable for welding high strength low-alloy steels. The good, low temperature impact strength of the weld metal should be noted. The weld metal is also very resistant to hot cracking. The electrode is also suitable for welding high strength ship's steel A, D and E quality.

Welding current

DC+, AC OCV 65 V



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.1 E7018-1 EN 499 E 46 5 B 32 CSA W48.1 E48018-1 ISO 2560 E 51 5B 120 26H	ABS	3YH10	C	0.3	Yield stress, MPa 480 Tensile strength, MPa 590 Elongation, % 28 Charpy V Test temps, °C / Impact values, J -20 / 115 -50 / 50	2.5	350	80-110	22
	BV	3, 3YHH	Si	0.5		3.2	350	110-140	
	CL		Mn	1.35		3.2	450	110-140	24
	CWB					4.0	350	140-200	
	DB	10.039.03				4.0	450	140-200	24
	DNV	4YH10				5.0	450	200-270	24
	DS-EN 499	E 46 5 B 32				6.0	450	215-360	25
	LR	3, 3Y H15							
	RS	3YHH							
	SFS-EN 499	E 46 5 B 32							
	SS-EN 499	E 46 5 B 32							
	UDT-EN 499	E 46 5 B 32							
	VdTÜV								

OK Femax 33.60 SMAW

Type Rutile

OK Femax 33.60 is a high-recovery, rutile, iron powder electrode giving a metal recovery of about 160%. OK Femax 33.60 is particularly recommended for welding horizontal-vertical fillets. The weld metal goes well up the vertical plate and gives a good transition to the base material without undercutting even at high welding current.

Welding current

DC+(-), AC OCV 50 V

Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.1 E7024 EN 499 E 42 0 RR 53 ISO 2560 E 51 2 RR 160 31	ABS	2	C	0.07	Yield stress, MPa 450 Tensile strength, MPa 550 Elongation, % 28 Charpy V Test temps, °C / Impact values, J 0 / 55 -20 / 35	2.5	350	80-115	30
	BV	2	Si	0.4		3.2	450	130-160	32
	DB	10.039.11	Mn	0.7		3.2	450	130-170	30
	DNV	2				4.0	450	150-230	33
	DS-EN 499	E 42 0 RR 53				5.0	450	200-350	35
	GL	2				6.0	450	280-450	36
	LR	2							
	SS-EN 499	E 42 0 RR 53							
	UDT-EN 499	E 42 0 RR 53							
	VdTÜV								

OK Femax 33.80 SMAW

Type Rutile

OK Femax 33.80 is a high-speed, high-recovery, iron powder electrode giving a metal recovery of approx. 180%, particularly suitable for fillet welds. On alternating current an open circuit voltage of ≥50 V is necessary. OK Femax 33.80 is very easy to strike and restrike and the slag is easy to remove. Also available in long length for gravity welding.

Welding current

DC+(-), AC OCV 50 V

Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.1 E7024 EN 499 E 42 0 RR 73 ISO 2560 E 51 2 RR 190 31	ABS	2	C	0.09	Yield stress, MPa 480 Tensile strength, MPa 555 Elongation, % 26 Charpy V Test temps, °C / Impact values, J 0 / 60 -20 / 35	2.5	350	85-125	27
	BV	2	Si	0.4		3.2	450	130-170	28
	CL		Mn	0.7		4.0	450	180-230	30
	DB	10.039.128				4.5	450	210-190	31
	DNV	2				5.0	450	250-340	30
	DS-EN 499	E 42 0 RR 73				5.6	450	280-400	36
	GL	2Y				6.0	450	300-430	38
	LR	2, 2Y							
	PRS	2							
	RINA	E 42 2							
	RS	2							
	SFS-EN 499	E 42 0 RR 73							
	SS-EN 499	E 42 0 RR 73							
	UDT-EN 499	E 42 0 RR 73							
	VdTÜV								

OK Femax 38.48 SMAW

Type Rutile-basic

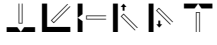
OK Femax 38.48 is a high-recovery, iron powder, LMA electrode, which gives extremely smooth fillets of equal leg length and a very low emission of fume and spatter. It is very easy to weld and is especially well fitted for horizontal fillets with a leg length of 4-6.4 mm. OK Femax 38.48 is as easy to use as a rutile electrode but the weld metal quality corresponds to that of the basic electrodes. The slag is easy to remove. Also available in Fematic length.

Welding current

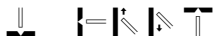
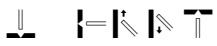
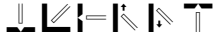
DC+, AC OCV 60 V

Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.1 E7028 EN 499 E 42 3 RB 53 H10 ISO 2560 E51 4B 150 36H	ABS	3H5, 3Y	C	0.07	Yield stress, MPa 460 Tensile strength, MPa 545 Elongation, % 27 Charpy V Test temps, °C / Impact values, J 0 / 120 -20 / 100 -30 / 80 -40 / 35	3.2	350	100-160	24
	BV	3, 3YHH	Si	0.4		3.2	450	100-160	24
	DB	10.039.27	Mn	1.1		4.0	450	150-230	28
	DNV	3 YH10				4.5	450	180-260	28
	DS-EN 499	E 42 3 RB 53 H10				4.5	700	180-250	28
	GL	3YH10				5.0	450	200-320	32
	LR	3, 3Y H15				5.0	700	200-320	32
	RINA	E 42/52 3				5.6	450	250-330	34
	RS	3YHH				5.6	700	245-320	34
	SFS-EN 499	E 42 3 RB 53 H10							
	SS-EN 499	E 42 3 RB 53 H10							
	UDT-EN 499	E 42 3 RB 53 H10							
	VdTÜV								

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Femax 38.65 **SMAW** **Type** Zirconium-basic OK Femax 38.65 is a high-recovery LMA electrode, which gives a weld metal of high quality and very low content of hydrogen. OK Femax 38.65 is designed for welding of ordinary and high strength ships plate A, D and E qualities. When using AC, an open circuit voltage of 65 V is necessary. **Welding current** DC+, AC OCV 65 V	SFA/AWS A5.1 E7028 EN 499 E 42 4 B 73 H5 ISO 2560 E51 5B 170 36H	ABS 3H5, 3Y BV 3, 3YHH CL DB 10. 039.15 DNV 3YH10 DS-EN 499 E 42 4 B 73 H5 GL 3YH10 LR 3, 3YH15 PRS 3YH10 RINA E 52 3 HH SFS-EN 499 E 42 4 B 73 H5 SS-EN 499 E 42 4 B 73 H5 UDT-EN 499 E 42 4 B 73 H5 VdTÜV	C 0.08 Si 0.4 Mn 1.1	Yield stress, MPa 430 Tensile strength, MPa 540 Elongation, % 26 Charpy V Test temps, °C / Impact values, J -20 / 110 -30 / 95 -40 / 65	3.2 4.0 5.0 6.0 7.0	450 450 450 450 450	100-170 170-240 225-355 300-430 340-490	32 36 40 40 44
OK Femax 38.85 **SMAW** **Type** Rutile-basic OK Femax 38.85 is an electrode with very high recovery (220%), designed for welding mild and low-alloy steels. OK Femax 38.85 is ESAB's best high recovery electrode for welding horizontal-vertical fillets in high tensile structural steels and ship's plate where the use of rutile electrodes is not permitted. Also available in long length for gravity welding. **Welding current** DC+, AC OCV 65 V	SFA/AWS A5.1 E7028 ISO 2560 E 51 4B 220 36H EN 499 E 42 3 RB 73 H10	ABS 3H5, 3Y BV 3, 3YHH DNV 3 YH10 PRS 3YH10 RINA E 52 B3 HH RS 3YHH SFS-EN 499 E 42 3 RB 73 H10 SS-EN 499 E 42 3 RB 73 H10	C 0.07 Si 0.6 Mn 1.1	Yield stress, MPa 480 Tensile strength, MPa 560 Elongation, % 29 Charpy V Test temps, °C / Impact values, J -20 / 100 -30 / 80	4.5 5.0 5.6 6.0	450 450 450 450	170-240 200-350 250-440 300-500	40 40 42 44
OK Femax 38.95 **SMAW** **Type** Zirconium-basic OK Femax 38.95 is a high-recovery, iron powder, AC/DC electrode giving about 240% recovery. OK Femax 38.95 gives a welding speed comparable with submerged arc welding: up to 240 g weld metal per minute with a 6 mm diameter electrode. OK Femax 38.95 is primarily intended for welding prepared butt joints and fillets in the flat position where it gives a smooth transition to the base material. **Welding current** DC+, AC OCV 65 V	SFA/AWS A5.1 E7028 ISO 2560 E 51 5B 240 46H EN 499 E 38 4 B 73 H10	ABS 3H10, 3Y BV 3, 3YHH DNV 3 YH10 DS-EN 499 E 38 4 B 73 H10 LR 3, 3Y H15 SFS-EN 499 E 38 4 B 73 H10 SS-EN 499 E 38 4 B 73 H10	C 0.07 Si 0.4 Mn 1.1	Yield stress, MPa 400 Tensile strength, MPa 500 Elongation, % 30 Charpy V Test temps, °C / Impact values, J -20 / 110 -40 / 90	4.5 5.0 5.6 6.0	450 450 450 450	220-300 330-400 370-460 400-520	40 45 50 50

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Femax 39.50 **SMAW** **Type** Acid OK Femax 39.50 is a very fast, high-recovery, acid electrode for horizontal-vertical fillets, lap and butt joints in mild steels. The electrode gives a nice profile with a very good slag cover. The slag is porous and easy to deslag. Tolerates a wide range of bead run-out lengths. **Welding current** DC(+-), AC OCV 65 V 	SFA/AWS A5.1 E7027 EN 499 E 42 2 RA 53 ISO 2560 E 51 5 AR 160 35	ABS 3 CL DB 10.039.07 DNV 3 DS-EN 499 E 42 2 RA 53 GL 3Y LR 3, 3Y PRS 3 RS 3Y SFS-EN 499 E 42 2 RA 53 SS-EN 499 E 42 2 RA 53 UDT-EN 499 E 42 2 RA 53 VdTÜV	C 0.07 Si 0.3 Mn 0.7	Yield stress, MPa 450 Tensile strength, MPa 510 Elongation, % 27 Charpy V Test temps, °C / Impact values, J +20 / 85 -20 / 70 -40 / 28	3.2 4.0 4.5 4.5 5.0 5.0 5.0 5.6 6.0 6.0	450 450 600 700 450 600 700 700 450 700	130-170 150-230 160-210 160-210 200-350 190-240 190-240 220-270 280-400 250-300	31 32 27 27 37 31 31 30 35 32
OK Rapid 23.50 **SMAW** **Type** Rutile OK Rapid 23.50 is a deep penetration rutile MMA electrode for welding square edged butt joints in the flat position and for making the sealing run on the root side of V-joints without prior chipping out. OK Rapid 23.50 is designed for the welding of mild general purpose structural steels, pressure vessel steels and A-quality ship's plate. **Welding current** DC+/-, AC OCV 60 V 	SFA/AWS A5.1 E6020 ISO 2560 E 4X 2R 45P EN 499 E 38 A RC 13	ABS 1 BV 1 DP CL DNV 1 DP LR 1 DP	C 0.10 Si 0.4 Mn 0.5	Yield stress, MPa 450 MPa Tensile strength, MPa 520 MPa Elongation, % 31% Charpy V Test temps, °C / Impact values, J +20°C / 70 J	3.2 4.0 5.0	350 450 450	130-180 170-230 230-320	40 40 50
Pipeweld 6010 **SMAW** **Type** Cellulosic Pipeweld 6010 is a cellulosic electrode designed for on-site welding of pipe and pipelines in all positions, using conventional and stove-pipe techniques, particularly for the root bead. Penetrating arc with low volume, fast-freezing easily removable slag. Suitable for use with misaligned and poor fit-up joints. **Welding current** DC+(-) 	SFA/AWS A5.1 E6010 EN 499 E 38 2 C 21 ISO 2560 E 43 3C 14	LR 3	C 0.12 Si 0.2 Mn 0.5	Yield stress, MPa 380 Tensile strength, MPa 470 Elongation, % 30 Charpy V Test temps, °C / Impact values, J 0 / 80 -20 / 70	2.0 2.5 3.2 4.0 5.0	300 300 350 350 350	30-60 40-80 60-110 90-140 110-170	24 25 25 26 26

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 21.03 **SMAW** OK 21.03 is an electrode for gouging and bevelling all types of steel, cast iron and for all metals except pure copper. OK 21.03 has a thick, specially-developed coating, which produces a strong gas jet, to blow away the melted material. **Welding current** DC-, AC OCV 70 V					2.5 3.2 4.0 5.0	350 350 350 450	100-120 130-180 170-230 230-300	43 43 48 48
OK Tubrod 14.11 **FCAW** **Type** Metal-cored OK Tubrod 14.11 is a wire that has been specially designed for robotic applications, particularly in the area of thin plate welding. The welding characteristics permit the use of lower arc voltages in the spray transfer mode which reduces arc power and thereby the risk of blow-through in situations where the fit-up is variable. It also exhibits excellent feedability and deposits weld metal of the highest quality with Ar/20%CO_2 shielding gas. **Welding current** DC+	SFA/AWS A5.18-93 E70C-6M H4 EN 758 (1997) T42 4 M M 3 H5		C 0.05 Si 0.7 Mn 1.6	Yield stress, MPa >420 Tensile strength, MPa 510-600 Elongation, % >22 Charpy V Test temps, °C / Impact values, J -40 / 47	1.4 1.6		150-350 250-450	18-33 28-38
OK Tubrod 14.12 **FCAW** **Type** Metal-cored OK Tubrod 14.12 is a tubular wire for use with both Ar/CO_2 mixtures or CO_2 shielding gases. Improved productivity and weld quality compared to solid wire under CO_2. It is especially suitable for fillet welding and has a high tolerance to primer. **Welding current** DC(+/-)	SFA/AWS A5.18-93 E70C-6M, E70C-6C EN 758:1997 T 42 2 M M 1 H10, T 42 M C 1 H10	ABS 3SA, 2YSA Ar/CO_2&CO_2 BV SA3YM Ar/CO_2&CO_2 DB 42.039.24 Ar/CO_2&CO_2 DNV IIIYMS Ar/CO_2&CO_2 GL 3YS Ar/CO_2&CO_2 LR 3S, 3YS Ar/CO_2&CO_2 RINA SG52-3 Ar/CO_2&CO_2 VdTÜV Ar/CO_2&CO_2 DS T 42 2 M M 1 H10 Ar/CO_2&CO_2 DS T 42 2 M C 1 H10 CO_2	C 0.07 Si 0.6 Mn 1.3	Yield stress, MPa >420 Tensile strength, MPa 510-640 Elongation, % >22 Charpy V Test temps, °C / Impact values, J -20 / 54 -29 / 27	1.0 1.2 1.4 1.6 2.4		80-250 100-320 120-380 140-450 350-500	14-30 16-32 16-34 18-36 30-38

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrod 14.13 **FCAW** **Type** Metal-cored OK Tubrod 14.13 is a tubular wire particularly suited to the rapid welding of fillet and butt joints in the flat and horizontal positions. The arc action is stable at all current levels which provides for an excellent weld appearence with absence of undercut and spatter. **Welding current** DC+ 	SFA/AWS A5.18-93 E70C-6M EN 758:1997 T 42 2 M M 2 H5	ABS 3SA 3YSA Ar/20 CO_2 BV SA3YM Ar/20 CO_2 DB 42.039.03 Ar/20 CO_2 DNV IIIYMS Ar/20 CO_2 GL 3YS Ar/20 CO_2 LR 3S 3YS Ar/20 CO_2	C 0.06 Si 0.5 Mn 1.4	Yield stress, MPa >420 Tensile strength, MPa 510-640 Elongation, % >22 Charpy V Test temps, °C / Impact values, J -20 / 54 -29 / 27	1.2 1.4 1.6		100-320 120-380 140-450	16-32 16-34 18-36
OK Tubrod 15.00 **FCAW** **Type** Basic OK Tubrod 15.00 is a flux-cored wire which deposits very low-hydrogen quality weld metal. Diameters 1.0 and 1.2 mm are available for positional welding. The slag cover is thin and easily remelted. Shielding gas CO_2 or Ar + 20% CO_2. OK Tubrod 15.00 is designed for general fabrication where the risk of hydrogen-induced cracking is to be avoided. **Welding current** DC- 	SFA/AWS A5.20-95 E71T-5, E71T-5M EN 758:1997 T 42 3 B M 2 H5, T 42 3 B C 2 H5	ABS 3SA, 3YSA CO_2 BV SA3MH CO_2 CL Ar/CO_2&CO_2 DB 42.039.12 Ar/CO_2&CO_2 DNV III YMS Ar/CO_2&CO_2 DS T 42 3 B M 2 H5 Ar/CO_2 DS T 42 3 B C 2 H5 CO_2 GL 3YHHS Ar/CO_2&CO_2 LR 3S, 3YS H15 Ar/CO_2&CO_2 RS 3YMSHH CO_2 VdTÜV Ar/CO_2&CO_2	C 0.06 Si 0.6 Mn 1.4	Yield stress, MPa >420 Tensile strength, MPa 530-640 Elongation, % >22 Charpy V Test temps, °C / Impact values, J -20 / 54 -30 / 47	1.0 1.2 1.4 1.6 2.0 2.4		100-230 120-300 130-350 140-400 200-450 300-500	14-30 16-32 16-32 24-34 24-34 26-36
OK Tubrod 15.02 **FCAW** **Type** Basic A fully basic, flux-cored wire for the all-position welding of mild and medium tensile steels including vertical down. It has particularly stable running characteristics at low current levels which enhances operability and minimizes spatter. **Welding current** DC- 	SFA/AWS A5.20-95 E71T-5M EN 758-1997 T 42 3 B M 2 H5	ABS 3SA 3YSA Ar/20%CO_2 DNV IIIYMS H5 Ar/20%CO_2 DS T 42 3 B M 2 H5 Ar/20%CO_2 GL 3Y H5S Ar/20%CO_2 LR 3S 3YS H5 Ar/20%CO_2	C 0.7 Si 0.6 Mn 1.4	Yield stress, MPa >420 Tensile strength, MPa 510-640 Elongation, % >22 Charpy V Test temps, °C / Impact values, J -30 / 47	1.2 1.6		120-300 140-400	16-32 24-34

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrod 15.10 **FCAW** **Type** Rutile OK Tubrod 15.10 is a flux-cored, tubular wire designed primarily for rapid fillet welding in the HV position. It is characterised by a very thin slag cover which, together with the special formulation, affords a high tolerance to shop primer which is seen as a particular benefit to shipbuilders. The rutile base provides for a flat, extremely attractive weld appearance. Shielding gas CO_2. **Welding current** DC+	SFA/AWS A5.20-95 E70T-1 EN 758:1997 T 42 0 R C 3 H10	ABS 2SA 2YSA CO_2 BV SA2YMHH CO_2 DNV IIYMS H10 CO_2 GL 2YH10S CO_2 LR 2S 2YS H10 CO_2	C 0.04 Si 0.6 Mn 1.3	Yield stress, MPa >420 Tensile strength, MPa 510-640 Elongation, % >22 Charpy V Test temps, °C / Impact values, J 0 / 54	1.2 1.4 1.6		110-300 130-320 150-360	24-34 24-34 26-38
OK Tubrod 15.12 **FCAW** **Type** Rutile OK Tubrod 15.12 is a flux-cored, tubular wire designed for heavy deposition in the flat and horizontal positions on mild and medium tensile steels. Slag removal is easy and generally self-releasing. The weld appearance is exceptional and spatter level minimal. Shielding gas CO_2. OK Tubrod 15.12 is designed for heavy deposition in steel thicknesses of 9 mm upwards. **Welding current** DC+	SFA/AWS A5.20-95 E70T-1 EN 758:1997 T 42 0 R C 3 H10	ABS 2SA CO_2 BV SA2, 2YM CO_2 CL CO_2 DB 42.039.13 $ArCO_2$&CO_2 DS T 42 0 R C 3 H10 CO_2 DNV IIYMS CO_2 GL 2YS CO_2 LR 2S, 2YS CO_2 VdTÜV CO_2	C 0.05 Si 0.6 Mn 1.5	Yield stress, MPa >420 Tensile strength, MPa 510-640 Elongation, % >22 Charpy V Test temps, °C / Impact values, J 0 / 47 -20 / 27	1.2 1.4 1.6 2.4		150-300 130-350 250-400 350-550	24-34 24-34 26-38 28-40
OK Tubrod 15.14 **FCAW** **Type** Rutile OK Tubrod 15.14 is a flux-cored tubular wire for all-positional welding using either Ar/CO_2 or CO_2. The wire is suitable for all mild and medium tensile structural steels. Running characteristics are exceptional, using the spray mode of transfer, and applies equally to both shielding gases. OK Tubrod 15.14 is also universally approved to grade 3 by all major authorities. Shielding gas Ar/20%CO_2 or CO_2. **Welding current** DC+	SFA/AWS A5.20-95 E71T-1, E71T-1M EN 758:1997 T 46 2 P M 2 H10, T 46 2 P C 2 H10	ABS 3SA 3YSA Ar/CO_2&CO_2 BV SA3YM Ar/CO_2&CO_2 CL Ar/CO_2 DB 42.039.05 Ar/CO_2&CO_2 DNV IIIYMS Ar/CO_2&CO_2 DS T 46 2 P M 2 H10 / Ar/CO_2 DS T 46 2 P C 2 H10 / CO_2 GL 3YS Ar/CO_2&CO_2 LR 3S 3YS Ar/CO_2&CO_2 RS 3S 3YS Ar/CO_2&CO_2 MoD (Navy) MS<25mm,B&BX<12mm Ar/CO_2&CO_2 RINA SG52.3 Ar/CO_2 RINA SG52.2 CO_2 VdTÜV Ar/CO_2&CO_2	C 0.05 Si 0.5 Mn 1.3	Yield stress, MPa >460 Tensile strength, MPa 530-660 Elongation, % >22 Charpy V Test temps, °C / Impact values, J -20 / >54	1.2 1.4 1.6		110-300 130-320 150-360	21-32 22-32 24-34

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrod 15.18 **FCAW** **Type** Rutile OK Tubrod 15.18 is a rutile, flux-cored wire designed for high deposition welding in the flat and HV positions. It is characterised by an exeptional weld finish with minimal spatter and self-releasing slag using either Argon rich or CO_2 shielding gases. Shielding gas Ar + 20% CO_2 or CO_2. All general fabrication of medium to heavy sections where weld appearance and high weld metal integrity is important. **Welding current** DC+	SFA/AWS A5.20-95 E70T-1, E70T-1M EN 758:1997 T 42 0 R M 3 H10, T 42 0 R C 3 H10	ABS 2SA, 2YSA Ar/CO_2&CO_2 BV SA 2YM Ar/CO_2&CO_2 DB 42.039.02 CO_2 DNV II YMS Ar/CO_2&CO_2 DS T 42 0 R M 3 H10 Ar/CO_2 DS T 42 0 R C 3 H10 CO_2 LR 2S, 2YS H15 Ar/CO_2&CO_2 VdTÜV Ar/CO_2&CO_2	C 0.06 Si 0.5 Mn 1.1	Yield stress, MPa >420 Tensile strength, MPa 510-640 Elongation, % >22 Charpy V Test temps, °C / Impact values, J 0 / 54 -20 / 27	1.2 1.4 1.6		110-300 130-320 150-360	21-32 22-32 24-34
Vertomax 2MG **FCAW** **Type** Metal-cored A flux-cored, tubular wire designed for automatic vertical-upwards welding using the electrogas process. The core formulation ensures good arc stability and excellent mechanical properties even on thin plate at heat inputs as high as 40 kJ/cm. It can also be used in conjunction with separate metal powder addition for a further improvement in mech. properties, deposition rate and reduced heat loading to the plate. Shielding gas: CO_2. **Welding current** DC+	SFA/AWS A5.26-91 EG70T-Ni1	ABS 2A 2YA BV AV 22Y DNV IIY GL 2YV LR 22Y VdTÜV	C 0.05 Si 0.4 Mn 1.3 Ni 0.9 Mo 0.2	Yield stress, MPa 430 Tensile strength, MPa 570 Elongation, % 28 Charpy V Test temps, °C / Impact values, J 0 / 50	1.6 2.4 3.2		350-450 420-560 580-670	28-35 30-36 32-38
OK Tubrod 14.00S **SAW** **Type** Metal-cored OK Tubrod 14.00S is a tubular wire designed for the submerged arc welding of mild and medium tensile steels and is suitable for fillet and multi-pass butt joints. Used in conjunction with OK Flux 10.71 exceptional productivity can be achieved at deposition rates up to 20% higher than with same size of solid wire at the same current. **Welding current** DC+	SFA/AWS A5.17-89 F7A2-EC1	ABS 3M, 3YM BV A3YM DB 52.039.13 DNV IIIYM GL 3YM LR 3M, 3YM VdTÜV	C 0.06 Si 0.5 Mn 1.5	Yield stress, MPa >420 Tensile strength, MPa 480-650 Elongation, % >22 Charpy V Test temps, °C / Impact values, J -20 / 54	2.4 3.0 4.0		250-450 400-600 500-900	28-34 28-36 28-38

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrod 15.00S **SAW** **Type** Basic OK Tubrod 15.00S is a tubular wire for submerged arc welding in conjunction with OK Flux 10.71 when high integrity welded joints are required in mild and medium tensile steels. General fabrication, structural engineering and shipbuilding are the principal areas of application. The welding of primed plate at high speeds is a particular benefit. **Welding current** DC+	SFA/AWS A5.17-89 F7A4-EC1	ABS 3M, 3YM BV A3YM DB 52.039.14 DNV IIIYM GL 3YM LR 3M, 3YM VdTÜV	C 0.07 Si 0.5 Mn 1.5	Yield stress, MPa >420 Tensile strength, MPa 510-650 Elongation, % >22 Charpy V Test temps, °C: -40 Impact values, J: 47	2.4 3.0 4.0		250-450 400-600 500-900	28-34 28-36 28-38

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 12.50 **GMAW** The non-copper-coated OK Autrod 12.50 Eco Mig is a manganese-silicon-alloyed solid wire for the GMAW of non-alloy steels, such as general structural, pressure-vessel, ship and fine-grained carbon-manganese steels for the same purpose with a min yield strength of <420 MPa. Eco Mig wires are suitable for operating at high currents with maintained disturbance-free wire feed, producing a stable arc with a small amount of spatter. OK Autrod 12.50 can be welded with Ar/20CO_2 or pure CO_2 as the shielding gas. The mechanical properties quoted here are welded with Ar/20CO_2 as the shielding gas. **Welding current** DC (+)	SFA/AWS A5.18 ER70S-6 EN 440 G 38 2 C G3Si1, G 42 3 M G3Si1	ABS 3SA, 3YSA BV SA3YM DB 42.039.16 DNV III YMS DS EN 440 GL 3YS LR 3S, 3YS PRS 3YS SFS EN 440 SS EN 440 UDT EN 440 VdTÜV	C 0.08 Si 0.9 Mn 1.5 Wire composition	Yield stress, MPa 470 Tensile strength, MPa 560 Elongation, % 26 Charpy V Test temps, °C / Impact values, J +20 / 130 -20 / 90	0.6 0.8 0.9 1.0 1.2 1.4 1.6		30-100 60-200 70-250 80-300 120-380 150-420 225-550	15-20 18-24 18-26 18-32 18-34 22-36 28-38
OK Autrod 12.51 **GMAW** Copper-coated, manganese-silicon-alloyed solid wire for the GMAW of non-alloy steels, such as general structural, pressure-vessel and ship steels, as well as fine-grained carbon-manganese steels for the same purpose, with a minimum yield strength of less than 420 MPa. OK Autrod 12.51 can be welded with Ar/20CO_2 or pure CO_2 as the shielding gas. The mechanical properties quoted here are welded with Ar/20CO_2 as the shielding gas. **Welding current** DC(+)	SFA/AWS A5.18 ER70S-6 EN 440 G 38 2 C G3Si1, G 42 3 M G3Si1	ABS 3SA, 3YSA BV SA3YM CL DB 42.039.06 DNV IIIYMS DS EN 440 GL 3YS LR 3S, 3YS PRS 3YS RINA Restricted availability RS 3, 3YMS SFS EN 440 SS EN 440 UDT DIN 8559 VdTÜV	C 0.08 Si 0.9 Mn 1.5 Wire composition	Yield stress, MPa 470 Tensile strength, MPa 560 Elongation, % 26 Charpy V Test temps, °C / Impact values, J +20 / 130 -20 / 90	0.6 0.8 0.9 1.0 1.2 1.4 1.6		30-100 60-200 70-250 80-300 120-380 150-420 225-550	15-20 18-24 18-26 18-32 18-34 22-36 28-38
OK Autrod 12.63 **GMAW** The non-copper-coated OK Autrod 12.63 Eco Mig is a MnSi-alloyed solid wire for the GMAW of non-alloy steels, such as general structural, pressure-vessel and ship steels, as well as fine-grained CMn steels for the same purpose, with a min yield strength of <460 MPa. Compared with OK Autrod 12.50, OK Autrod 12.63 has a slightly higher Si and Mn content, which increases the weld metal strength. The high Si content promotes low sensitivity to surface impurities and contributes to smooth, sound welds. Eco Mig wires are suitable for operating at high currents. OK Autrod 12.63 can be welded with Ar/20CO_2 or pure CO_2 as the shielding gas. The mechanical properties quoted here are welded with Ar/20CO_2 as the shielding gas. **Welding current** DC+	SFA/AWS A5.18 ER70S-6 EN 440 G 42 2 C G4Si1, G 46 3 M G4Si1	ABS 3SA, 3YSA BV SA3YM DB 42.039.27 DNV III YMS DS EN 440 GL 3YS LR 3 3Y SS EN 440 VdTÜV	C 0.1 Si 1.1 Mn 1.7 Wire composition	Yield stress, MPa 525 Tensile strength, MPa 595 Elongation, % 26 Charpy V Test temps, °C / Impact values, J +20 / 130 -20 / 90	0.6 0.8 0.9 1.0 1.2 1.4 1.6		50-100 60-200 70-250 80-300 120-380 150-420 225-550	16-20 18-24 18-26 18-32 18-35 22-36 28-38

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 12.64 **GMAW** Copper-coated, MnSi-alloyed solid wire for the GMAW of non-alloy steels, such as general structural, pressure-vessel and ship steels, as well as fine-grained CMn steels for the same purpose, with a min yield strength of <460 MPa. Compared with OK Autrod 12.51, OK Autrod 12.64 has a slightly higher Si and Mn content, which increases the weld metal strength. The high Si content promotes low sensitivity to surface impurities and contributes to smooth, sound welds. OK Autrod 12.64 can be welded with Ar/20CO_2 or pure CO_2 as the shielding gas. The mechanical properties quoted here are welded with Ar/20CO_2 as the shielding gas. **Welding current** DC+	SFA/AWS A5.18 ER70S-6 EN 440 G 42 2 C G4Si1, G 46 3 M G4Si1	ABS 3SA, 3YSA BV SA3YM CL DB 42.039.11 DNV IIIYMS DS EN 440 GL 3YS LR 3S, 3YS RINA Restricted availability RS 3, 3YMS SFS EN 440 SS EN 440 UDT DIN 8559 VdTÜV	C 0.1 Si 1.0 Mn 1.7 Wire composition	Yield stress, MPa 525 Tensile strength, MPa 595 Elongation, % 26 Charpy V Test temps, °C / Impact values, J +20 / 130 -20 / 90	0.6 0.8 0.9 1.0 1.2 1.4 1.6		50-100 60-185 70-250 80-300 120-380 150-420 225-550	16-20 18-24 18-26 18-32 18-35 22-36 28-38
OK Tigrod 12.60 **GTAW** A copper-coated, manganese-silicon-alloyed rod for the GTAW of non-alloy steels, such as general structural, pressure-vessel and ship steels, as well as fine-grained carbon-manganese steels for the same purpose, with a minimum yield strength of less than 380 MPa. OK Tigrod 12.60 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	SFA/AWS A5.18-93 ER70S-3 EN 1668 W2Si	Sepros UNA 485178	C 0.1 Si 0.6 Mn 1.2 Wire composition	Yield stress, MPa 420 Tensile strength, MPa 515 Elongation, % 26 Charpy V Test temps, °C / Impact values, J -30 / 90	1.6 2.0 2.4 3.2	700 700 700 700		
OK Tigrod 12.64 **GTAW** A copper-coated, manganese-silicon-alloyed rod for the GTAW of non-alloy steels, such as general structural, pressure-vessel and ship steels, as well as fine-grained carbon-manganese steels for the same purpose, with a minimum yield strength of less than 400 MPa. Compared with OK Tigrod 12.60, OK Tigrod 12.64 has a slightly higher silicon and manganese content, which increases the weld metal strength. The high silicon content promotes low sensitivity to surface impurities and contributes to smooth, sound welds. OK Tigrod 12.64 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	SFA/AWS A5.18-79 ER70S-6 EN 1668 W4Si1 Werkstoff Nr. 1.5130	ABS 3 3Y CL DNV III YM GL 3Y UDT DIN 8559 VdTÜV	C 0.1 Si 1.0 Mn 1.7 Wire composition	Yield stress, MPa 525 Tensile strength, MPa 595 Elongation, % 26 Charpy V Test temps, °C / Impact values, J -30 / 70 -40 / 47	1.6 2.0 2.4 3.2 5.0	700 700 700 700 700		

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Gasrod 98.70 **OFW** A bare rod designed for the gas welding of unalloyed steels with a minimum tensile strength of 390 MPa.	SFA/AWS A5.2 R60 EN 12536 0 II		C 0.1 Si 0.2 Mn 1.0 Wire composition	Yield stress, MPa 300 Tensile strength, MPa 390 Elongation, % 20	1.2 1.6 2.0 2.5 3.0 4.0 5.0	700 700 700 700 700 700 700		
OK Autrod 12.10 **SAW** OK Autrod 12.10 is a copper-coated mild steel wire for submerged arc welding. Can be combined with the following fluxes: OK Flux 10.40, OK Flux 10.45, OK Flux 10.61, OK Flux 10.70, OK Flux 10.71, OK Flux 10.80, OK Flux 10.81, OK Flux 10.82, OK Flux 10.83 and OK Flux 10.96.	SFA/AWS A5.17 EL12 EN 756 S1		C 0.08 Si 0.02 Mn 0.5 Wire composition		2.0 2.5 3.0 4.0 5.0 6.0			
OK Autrod 12.20 **SAW** OK Autrod 12.20 is a copper-coated, semi-killed wire for submerged arc and electroslag welding of medium and high strength structural steels. Can be combined with the following fluxes: OK Flux 10.40, OK Flux 10.45, OK Flux 10.50 (ESW), OK Flux 10.61, OK Flux 10.62, OK Flux 10.70, OK Flux 10.71, OK Flux 10.80, OK Flux 10.81, OK Flux 10.82 and OK Flux 10.83.	SFA/AWS A5.17 EM12 EN 756 S2		C 0.1 Si 0.1 Mn 1.0 Wire composition		2.0 2.5 3.0 4.0 5.0 6.0			

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 12.22 **SAW** OK Autrod 12.22 is a killed medium manganese-alloyed, copper-coated steel wire for submerged arc welding in medium and high strength structural steels. Can be combined with the following fluxes: OK Flux 10.45, OK Flux 10.61, OK Flux 10.62, OK Flux 10.71, OK Flux 10.81, OK Flux 10.82 and OK Flux 10.83.	SFA/AWS A5.17 EM12K EN 756 S2Si		C 0.1 Si 0.2 Mn 1.0 Wire composition		2.0 2.5 3.0 4.0 5.0			
OK Autrod 12.30 **SAW** OK Autrod 12.30 is a copper-coated, semi-killed, manganese-alloyed wire for the submerged arc welding of medium and high tensile strength structural steels. Can be combined with the following fluxes: OK Flux 10.40, OK Flux 10.70, OK Flux 10.71, OK Flux 10.81, OK Flux 10.82 and OK Flux 10.83.	EN 756 S3		C 0.10 Si 0.20 Mn 1.6 Wire composition		2.0 2.5 3.0 4.0 5.0			
OK Autrod 12.32 **SAW** OK Autrod 12.32 is a manganese-alloyed, copper-coated wire for submerged arc welding of medium and high-strength structural steels. OK Autrod 12.32 should preferably be used together with non-alloying or slightly alloying fluxes, such as OK Flux 10.62 or OK Flux 10.71, when high weld metal quality requirements must be fulfilled. Other combinations are with OK Flux 10.40, OK Flux 10.61 and OK Flux 10.75.	SFA/AWS A5.17 EH12K EN 756 S3Si		C 0.1 Si 0.2 Mn 1.5 Wire composition		2.0 2.5 3.0 4.0 5.0			

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 12.40 **SAW** OK Autrod 12.40 is a copper-coated, manganese-alloyed, semi-killed wire for submerged arc welding. Can be combined with OK Flux 10.62.	SFA/AWS A5.17 EH14 EN 756 S4		C 0.08 Si 0.2 Mn 1.9 Wire composition		2.0 3.0 4.0 5.0			

Product	Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
		ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	Yield stress MPa	Tensile strength MPa	Charpy V Test Temp°C	Impact Values J
OK Flux 10.30 **SAW**	OK Autrod 12.10	2YT	2YT 35	II YT							0.5	0.4	1.0	-	-	0.3	540	650	0	50

Type Basic

Basic, high-recovery, agglomerated flux designed primarily for the one-sided welding of mild and high-strength steels, in combination with mild steel and low-alloyed steel wires.
The flux has a high current capacity and is thus able to withstand very high amperages. The content of about 35% Fe powder contributes to very high productivity. Using the three-wire technique, the one-sided welding of plates with a thickness of up to 25 mm can be performed in one run.
Slightly Si- and micro-alloying.
Max. amperage for single wire: max. 1,300 A is recommended. For the three-wire technique, max. 3,100 A is recommended.
An arc voltage of 34-48 V is recommended.
Note that the flux consumption is given as kg flux/kg weld metal.

Density ≈1.1 kg/dm^3

Basicity index 1.8

Classifications

EN 760 SA Z 1 65 AC

OK Flux 10.40 SAW

Type Acid

OK Flux 10.40 is specially designed for welding in combination with a mild steel electrode of the OK Autrod 12.10 or OK Autrod 12.20 type in single- and multi-wire systems. OK Flux 10.40 is designed for use in the single- and multi-pass butt welding of mild and medium tensile steels with impact requirements down to a minimum of -20°C. OK Flux 10.40 is of the manganese silicate type which permits a high current-carrying capacity on both AC and DC.

Density ≈1.5 kg/dm^3

Basicity index 0.7

Classifications

EN 760	SF MS 1 88 AC
SFA/AWS A5.17	F6AO-EL12
	F6PO-EL12
	F7AO-EM12
	F6PO-EM12
EN 756	S 35 2 MS S1
	S 38 2 MS S2
	S 38 A MS S3

Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
	ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	Yield stress MPa	Tensile strength MPa	Charpy V Test Temp°C	Charpy V Impact Values J
OK Autrod 12.10						2TM		•	•	0.05	0.6	1.2	-	-	-	370	460	+20	90
																		0	75
																		-20	55
OK Autrod 12.20						3TM		•	•	0.05	0.6	1.5	-	-	-	405	500	+20	70
																		0	65
																		-20	50
OK Autrod 12.30								•	•	0.04	0.6	1.8	-	-	-	440	550	+20	80
																		0	60

Product	Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
		ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	Yield stress MPa	Tensile strength MPa	Charpy V Test Temp°C	Impact Values J
OK Flux 10.45 **SAW**	OK Autrod 12.10									•	0.07	0.2	1.1	-	-	-	410	480	+20	120
																			-20	70
																			-29	60
	OK Autrod 12.22										0.06	0.25	1.1	-	-	-	450	520	+20	100
																			-20	60
OK Flux 10.47 **SAW**	OK Autrod 12.20										0.04	0.4	0.09	-	-	-	380	500	0	60
	OK Autrod 12.30									•	0.04	0.4	1.2	-	-	-	480	550	-20	60
	OK Tubrod 15.00S										0.066	0.46	1.37	-	0.03	-	438	535	-40	135

OK Flux 10.45 SAW

Type Acid

OK Flux 10.45 is a fused, acid, slightly Mn-alloying flux for submerged arc welding. OK Flux 10.45 has a well-balanced silicate slag system. In combination with a specially-developed grain size, this slag system makes OK Flux 10.45 ideal for applications in which welding at high speed is of primary importance. Welding speeds of up to 5 m/minute can easily be achieved in thin sheet materials.

Density ≈1.75 kg/dm^3

Basicity index 0.85

Classifications

EN 760	SF MS 1 55 AC
SFA/AWS A5.17	F6A2-EL12
	F6P2-EL12
	F7A0-EM12K
	F6P2-EM12K
EN 756	S 35 2 MS S1
	S 38 2 MS S2Si

OK Flux 10.47 SAW

Type Basic

OK Flux 10.47 is a non-alloying, fused base flux, specially designed for the single and multi-pass butt welding of mild and medium tensile strength steels.
Typical applications are found in structural steels for shipbuilding, pressure vessel manufacture and so on with impact strength requirements down to –40°C. OK Flux 10.47 has a high current-carrying capacity on both AC and DC.

Density ≈1.1 kg/dm^3

Basicity index 1.3

Classifications

EN 760	SF AB 1 65 AC
SFA/AWS A5.17	F6A4-EM12
	F7A4-EC1
EN 756	S 35 0 AB S2
	S 42 2 AB S3

Product	Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
		ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	Yield stress MPa	Tensile strength MPa	Charpy V Test Temp°C	Charpy V Impact Values J
OK Flux 10.49 **SAW**	OK Autrod 12.20										0.04	0.4	0.9	-	-	-	380	480	0	60
	OK Autrod 12.30										0.05	0.4	1.2	-	-	-	420	520	-20	40
Type Basic																				
OK Flux 10.49 is a fused, non-hygroscopic, basic, non-alloying flux for the multi-run butt welding of mild, medium and high tensile steels with good impact toughness down to -40°C. OK Flux 10.49 is an aluminate-basic type with high current-carrying capacity on both AC and DC.																				
Density ≈1.1 kg/dm^3																				
Basicity index ≈1.2																				
Classifications																				
EN 760 SF AB 1 65 AC SFA/AWS A5.17 F6A4-EM12 EN 756 S 35 0 AB S2 S 38 2 AB S3																				
OK Flux 10.61 **SAW**	OK Autrod 12.10								•	•	0.07	0.15	0.5	-	-	-	355	445	+20	180
																			-10	130
Type High-basic																			-20	120
OK Flux 10.61 is designed for the single-wire, multi-run butt welding of mild, medium and high tensile steels with impact strength requirements down to -40°C/-60°C. Due to the non-alloying effect, OK Flux 10.61 is designed for use with a suitable alloying wire. OK Flux 10.61 can be used on DC±. DC- is used for surfacing applications.	OK Autrod 12.22										0.08	0.35	1.0	-	-	-	440	520	+20	160
																			-20	130
																			-30	80
																			-40	70
																			-62	60
	OK Autrod 12.32										0.07	0.4	1.45	-	-	-	440	550	+20	130
																			-20	110
																			-30	90
																			-40	60
Density ≈1.1 kg/dm^3																				
Basicity index 2.8	OK Tubrod 15.00S										0.059	0.36	1.21	-	0.04	-	428	520	-50	110
Classifications																				
EN 760 SA FB 1 65 DC SFA/AWS A5.17 F7A8-EM12K F7P8-EM12K F7A5-EC1 EN 756 S 38 3 FB S2Si S 42 4 FB S3Si																				

OK Flux 10.62 SAW

Type High-basic

OK Flux 10.62 is all-mineral, non-alloying and the weld metal can be fully controlled independently of the welding parameters through a suitable choice of wires. This makes it suitable for the multi-run welding of thick materials using the single-wire and multiple-wire techniques. OK Flux 10.62 is designed for the multi-pass butt welding of mild, medium and high tensile steels, as well as low-alloyed steels, with an impact strength down to -40°/-60°C. As it is a flux of the high-basic type, it permits high current-carrying capacity on both AC and DC. To increase productivity with no loss of mechanical properties, OK Flux 10.62 is best used together with iron powder addition. It is especially well-suited for narrow gap welding, due to the good slag detachability and smooth blending with the side walls. Pressure vessels for nuclear applications and offshore constructions in which good CTOD values are required, are some areas in which OK Flux 10.62 can be successfully used. OK Flux 10.62 operates better at the lower end of the voltage range. It gives the weld metal a low oxygen content (≈ 300 ppm) and gives a low hydrogen content in the deposit weld metal (<5 ml/100 g).

Density ≈1.1 kg/dm^3

Basicity index 3.4

Classifications

EN 760	SA FB 1 55 AC H5
SFA/AWS A5.17	F6A4-EM12
	F6P5-EM12
	F7A8-EM12K
	F6P8-EM12K
	F7A8-EH12K
	F7P8-EH12K
	F7A6-EH14
	F7P5-EH14
	F7A5-EC1
SFA/AWS A5.23	F8A8-EG-G
	F7P8-EG-G
EN 756	S 35 4 FB S2
	S 38 5 FB S2Si
	S 46 6 FB S3Si
	S 50 4 FB S4

Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
	ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	Yield stress MPa	Tensile strength MPa	Charpy V Test Temp°C	Impact Values J
OK Autrod 12.20										0.07	0.13	1.0	-	-	-	375	470	+20	170
																		0	150
																		-20	120
																		-40	60
OK Autrod 12.22	3M 3YM	3M 3YM	IIIYM	A3 3YM	3YM	3YM		•	•	0.07	0.3	1.0	-	-	-	410	500	+20	200
																		0	190
																		-20	160
																		-40	100
																		-50	65
OK Autrod 12.32	3M 3YM	3M 3YM	VY42M NV 4-4(M)	A3 3YM	3YM	3YM	•	•	•	0.1	0.35	1.6	-	-	-	475	580	0	165
																		-30	140
																		-40	130
																		-60	90
OK Autrod 12.40										0.08	0.2	1.9	-	-	-	540	630	0	110
																		-20	80
																		-40	50
																		-51	40
OK Tubrod 15.00S										0.066	0.36	1.23	-	0.03	-	436	524	-50	120

Product	Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
		ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	Yield stress MPa	Tensile strength MPa	Charpy V Test Temp°C	Charpy V Impact Values J

OK Flux 10.69 SAW

Type Basic

OK Flux 10.69 is a basic, agglomerated flux, specially designed as a backing flux for single-sided submerged arc welding. Normally, a copper bar is used to support the flux.

Density ≈1.4 kg/dm^3

Basicity index 1.5

OK Flux 10.70 SAW

Type Basic

OK Flux 10.70 is specially designed for welding with OK Autrod 12.10 and OK Autrod 12.20 in the butt and fillet welding of mild, medium and high tensile steels with impact requirements down to -20°C. OK Flux 10.70 is of the aluminate basic type and has very high current-carrying capacity on both AC and DC for this slag system. As it is an alloying flux with significant Si and Mn pick-up, it is most suitable for applications in which the dilution of base material is high — in other words, in fillet welding and butt welding with a small number of passes in single- or multi-wire systems.

Density ≈1.1 kg/dm^3

Basicity index 1.7

Classifications

EN 760	SA AB 1 79 AC
SFA/AWS A5.17	F7A4-EL12
	F7P4-EL12
	F7A2-EM12
	F7P2-EM12
EN 756	S 42 3 AB S1
	S 46 3 AB S2
	S 50 0 AB S3

Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
	ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	Yield stress MPa	Tensile strength MPa	Charpy V Test Temp°C	Impact Values J
OK Autrod 12.10	3TM 3YTM	3T 3YM	IIYT (IIIYM)	A3 3YM 3T	3YTM	3TM 3YM		•	•	0.07	0.5	1.6	-	-	-	430	520	+20 0 -20 -30	125 100 70 55
OK Autrod 12.20	2T3M 3YM	2T3M 3YM	IIT (IIIYM)	A3M2T 3YM	2T 3YM	3YTM		•	•	0.07	0.6	1.9	-	-	-	470	580	+20 0 -20 -30	100 90 75 60
OK Autrod 12.30										0.08	0.7	2.0	-	-	-	530	640	+20 0 -20	110 80 65

OK Flux 10.71 SAW

Type Basic

OK Flux 10.71 is a basic agglomerated, slightly Si- and Mn-alloying, flux for submerged arc welding, specially designed for fillet welding and for single and multipass butt welding of mild, medium and high tensile steels. OK Flux 10.71 is of aluminate basic type and has for this slag system very high current-carrying capacity on both AC and DC and very good operability characteristics both in single and multiwire systems. OK Flux 10.71 can be used to particular advantage for narrow gap welding due to the excellent slag detachability and smooth blending of the weld bead with the joint side walls.

Density ≈1.2 kg/dm^3

Basicity index 1.6

Classifications

EN 760	SA AB 1 67 AC H5
SFA/AWS A5.17	F6A4-EL12
	F6P5-EL12
	F7A4-EM12
	F6P4-EM12
	F7A5-EM12K
	F6P5-EM12K
	F7A5-EH12K
	F7P6-EH12K
	F7A4-EC1
	F7A2-EC1
EN 756	S 35 4 AB S1
	S 38 4 AB S2
	S 38 4 AB S2Si
	S 46 3 AB S3
	S 46 4 AB S3Si

Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
																Yield stress	Tensile strength	Charpy V Test	Impact
	ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	MPa	MPa	Temp°C	Values J
OK Autrod 12.10	3M	3M	IIIM	A3M	3M	3M		•	•	0.07	0.2	1.0	-	-	-	360	465	+20	135
																		0	125
																		-20	95
																		-40	65
OK Autrod 12.20	3M 3YM	3M 3YM	IIIYM (IIYT)	A2 3 3YM	2YT/ 3YM		•	•	•	0.08	0.3	1.35	-	-	-	410	510	+20	135
																		0	125
																		-20	80
																		-40	55
OK Autrod 12.22	3M 3YM	3M 3YM	IIIY40M	A3 3YM	3YM			•	•	0.07	0.5	1.3	-	-	-	425	520	+20	150
																		0	140
																		-20	100
																		-40	60
OK Autrod 12.30								•	•	0.09	0.4	1.65	-	-	-	480	580	+20	150
																		0	130
																		-20	105
																		-30	60
OK Autrod 12.32										0.09	0.5	1.65	-	-	-	480	580	0	130
																		-20	95
																		-40	65
OK Tubrod 14.00S								•	•	0.056	0.51	1.63	-	-	-	440	526	-20	110
OK Tubrod 15.00S								•	•	0.062	0.47	1.66	-	0.04	-	460	540	-40	130

OK Flux 10.80 SAW

Type Neutral

OK Flux 10.80 is designed for use in the single and multi-pass butt welding of mild and medium tensile steels where moderate impact strength is required. OK Flux 10.80 is of the calcium-silicate type which permits very high current-carrying capacity even at low welding speeds with both AC and DC. OK Flux 10.80 is excellent for the butt welding of materials from 10 to 40 mm and is used in the shipbuilding industry, for example. OK Flux 10.80 is especially designed for welding in combination with OK Autrod 12.10 or OK Autrod 12.20 in single- or multi-wire systems.

Density ≈1.1 kg/dm^3

Basicity index 1.1

Classifications

EN 760	SA CS 1 89 AC
SFA/AWS A5.17	F7A2-EL12
	F6P0-EL12
	F7A2-EM12
	F6P0-EM12
EN 756	S 38 0 CS S1
	S 42 0 CS S2
	S 46 0 CS S3

Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
	ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	Yield stress MPa	Tensile strength MPa	Charpy V Test Temp°C	Impact Values J
OK Autrod 12.10	2TM 2YTM	2TM 2YTM	IIYTM	A2 2YTM	2YTM	2YTM		•	•	0.08	0.6	1.35	-	-	-	430	520	+20 0 -20	110 80 60
OK Autrod 12.20	1T2M	1T 1YT	IYT (IIYM)	A1T 2M	1T2M			•	•	0.09	0.6	1.7	-	-	-	460	560	+20 0 -20	90 70 50
OK Autrod 12.30								•	•	0.09	0.7	2.0	-	-	-	510	600	+20 0	90 60
OK Autrod 12.32										0.09	0.8	2.0	-	-	-			+20 0 -10	90 60 40

OK Flux 10.81 SAW

Type Acid

OK Flux 10.81 is an acid agglomerated Si- and Mn-alloying flux for submerged arc welding, most suitable for applications where dilution of base metal is high e.g. in fillet welding and butt welding of thin and medium thick plates with a small number of passes. The excellent welding properties associated with the acid slag system of OK Flux 10.81 allow high travel speeds in butt welding i.e. spiral welding of thin walled pipes and fillet welding where good bead shape, excellent slag removal and very good surface finish are essential.

Density ≈1.25 kg/dm^3

Basicity index 0.6

Classifications

EN 760	SA AR 1 97 AC
SFA/AWS A5.17	F7AZ-EL12
	F7PZ-EL12
	F7A2-EM12
	F6P0-EM12
	F7A0-EM12K
EN 756	S 42 A AR S1
	S 46 0 AR S2
	S 46 A AR S2Si
	S 50 0 AR S3

Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
																Yield stress	Tensile strength	Charpy V Test	Charpy V Impact
	ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	MPa	MPa	Temp°C	Values J
OK Autrod 12.10	1T2M 1YT 2YM	1T2M 1YT 2YM	IYT IIYM	A1YT 2YM	1YT 2YM	2YTM		•	•	0.06	0.8	1.2	-	-	-	460	560	+20 0	70 45
OK Autrod 12.20	2TM 2YTM	2TM 2YTM	IIYTM	A2 2YTM	2YTM			•	•	0.07	0.8	1.45	-	-	-	510	610	+20 0 -20	80 60 40
OK Autrod 12.22										0.05	0.9	1.5	-	-	-	530	610	+20 -18	60 30
OK Autrod 12.30								•	•	0.08	0.9	1.75	-	-	-			+20 0	75 60

Product	Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
		ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	Yield stress MPa	Tensile strength MPa	Charpy V Test Temp°C	Impact Values J
OK Flux 10.82 **SAW**	OK Autrod 12.10	1YM		1YM	1YM	1YM				•	0.06	0.6	1.1	-	-	-	480	550	0	80
																			-20	35
Type Acid	OK Autrod 12.20	1YM		1YM	1YM	1YM				•	0.07	0.7	1.25	-	-	-	510	590	0	100
																			-20	55
Acid, agglomerated flux designed for fillet, lap and butt welding, providing excellent tolerance of rust and mill scale with horizontal fillets up to 8 mm leg size without undercut or rollover. Suitable for DC single- and twin-arc wire welding systems at currents of up to 1,000 A. It is used for welding LPG bottles, water heater tanks, rail cars, ship's plate and structural steel.																				
Density ≈1.20 kg/dm^3																				
Basicity index 0.6																				
Classifications																				
EN 760 SA AR 1 86 AC																				
EN 756 S 42 0 AR S1																				
S 46 0 AR S2																				
SFA/AWS A5.17 F7A2-EL12																				
F7P2-EL12																				
F7A0-EM12																				
OK Flux 10.83 **SAW**	OK Autrod 12.22	1YM		1YM	1YM	1YM				•	0.05	0.8	0.9	-	-	-	470	560	+20	50
																			0	30
Type Acid	OK Autrod 12.50										0.04	1.3	1.3	-	-	-	530	610	+20	25
	OK Autrod 12.51										0.04	1.3	1.3	-	-	-	530	610	+20	25
An acid, agglomerated flux for the high-speed, single-pass welding of butt, lap and fillets which are well washed and free from undercut, even at speeds in excess of 3 metres per minute. It is primarily used with DC single- and twin-arc wire systems at currents of up to 1,300 A. It is recommended for the high-speed welding of heat exchanger tubes, storage tanks, building beams and rail car panels.																				
Density ≈1.4 kg/dm^3																				
Basicity index 0.3																				
Classifications																				
EN 760 SA AR 1 85 AC																				
EN 756 S 42 Z AR S2Si																				
S 46 Z AR S0																				
SFA/AWS A5.17 F7AZ-EM12K																				
F7PZ-EM12K																				
F7AZ-EH11K																				
F7PZ-EH11K																				

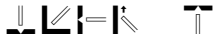
OK 48.08 SMAW

Type Basic

OK 48.08 is an LMA electrode with very good mechanical properties suitable for demanding applications, e.g. offshore. The weld metal contains approximately 1% Ni for high impact values down to -40°C. The coating is of the latest LMA type for optimum resistance to porosity and hydrogen cracking. OK 48.08 is CTOD tested.

Welding current

DC+(-), AC OCV 65 V



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.5-96 E7018-G EN 499 E 46 5 1Ni B 32 H5 ISO 2560 E 51 5 B 120 24 H	ABS	3H5, 3Y	C	0.06	Yield stress, MPa 540	2.0	300	55-80	22
	CL		Si	0.35		2.5	350	75-110	22
	CWB		Mn	1.2	Tensile strength, MPa 600	3.2	350	110-150	22
	DB	10.039.31	Ni	0.9		3.2	450	110-150	22
	DNV	4 Y40H5				4.0	350	150-200	22
	DS-EN 499	E 46 5 1Ni B 32 H5			Elongation, % 26	4.0	450	150-200	22
	GL	4YH5				5.0	450	190-275	23
	LR	3, 4Y40 H5				6.0	450	220-360	26
	RS	4YHH			Charpy V				
	SFS-EN 499	E 46 5 1Ni B 32 H5			Test temps, °C / Impact values, J				
	SS-EN 499	E 46 5 1Ni B 32 H5			-20 / 160				
	UDT-EN 499	E 46 5 1Ni B 32 H5			-40 / 130				
	VdTÜV				-50 / 100				
					-60 / 60				

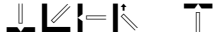
OK 73.08 SMAW

Type Basic

OK 73.08 is a NiCu-alloyed LMA electrode, which deposits a weld metal with good corrosion resistance to sea-water and flue gases, for welding of weathering steel and for ship hull construction steel. The weld metal has excellent mechanical properties. It is particularly suitable for welding the shell plating of ice breakers and other ships, which work under conditions where the protective paint-coating wears off.

Welding current

DC+, AC OCV 65 V



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.5 E8018-G EN 499 E 46 5 Z B 32 ISO 2560 E 51 5 B 120 26 H	ABS	3H5, 3Y	C	0.06	Yield stress, MPa 500	2.0	300	60-90	20
	BV	3, 3YHH	Si	0.4		2.5	350	80-115	21
	DB	10.039.20	Mn	1.1	Tensile strength, MPa 590	3.2	350	110-150	22
	DNV	3 YH10	Ni	0.7		3.2	450	100-150	22
	DS-EN 499	E 46 5 Z B 32	Cu	0.4		4.0	450	130-200	23
	GL	3YH15			Elongation, % 27	5.0	450	190-280	27
	LR	3, 3YH15				6.0	450	240-370	28
	RS	3YHH			Charpy V				
	SFS-EN 499	E 46 5 Z B 32			Test temps, °C / Impact values, J				
	SS-EN 499	E 46 5 Z B 32			-20 / 160				
	UDT-EN 499	E 46 5 Z B 32			-40 / 130				
	VdTÜV				-50 / 70				

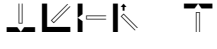
OK 73.68 SMAW

Type Basic

OK 73.68 is a 2.5% nickel-alloyed LMA electrode suitable for welding of low-alloy steels with impact requirements down to -60°C. The composition of the weld metal is such that good, low temperature impact properties are obtained, even when welding vertically-up. The weld metal of OK 73.68 is also noted for its good corrosion resistance to sea-water and sulphuric acid fumes.

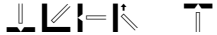
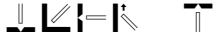
Welding current

DC+, AC OCV 65 V



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.5 E8018-C1 BS 2493 2Ni BH EN 499 E 46 6 2Ni B 32 H5	ABS	3H5, 3Y40	C	0.05	Yield stress, MPa 520	2.0	300	55-75	21
	BV	UP (KV-60°C)	Si	0.35		2.5	350	70-110	23
	CL		Mn	1.0	Tensile strength, MPa 610	3.2	450	105-150	23
	DNV	5 YH10	Ni	2.4		4.0	450	140-190	23
	GL	6Y55H10				5.0	450	190-270	27
	LR	3, 5Y40 H15			Elongation, % 26				
	PRS	4YH10							
	RS	3YHH			Charpy V				
	SFS-EN 499	E 46 6 2Ni B 32 H5			Test temps, °C / Impact values, J				
	UDT-EN 499	E 46 6 2Ni B 32 H5			-55 / 110				
	VdTÜV				-60 / 105				

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 73.79 **SMAW** **Type** Basic OK 73.79 is a nickel-alloyed, LMA electrode for welding 3.5 Ni steel with impact requirements down to -101°C, in LPG tanks for ethane and chemical plants, for example. **Welding current** DC (+-), AC OCV 65 V	SFA/AWS A5.5 E8016-C2 EN 499 E 46 6 B 3Ni 12	DNV 5 YH10 RS 5YHH	C 0.06 Si 0.3 Mn 0.6 Ni 3.3	Yield stress, MPa 520 Tensile strength, MPa 610 Elongation, % 26 Charpy V Test temps, °C / Impact values, J -60 / 160 -73 / 90 -95 / 40 -101 / 35	2.5 3.2 3.2 4.0 5.0	350 350 450 450 450	70-110 80-150 80-150 90-190 110-240	25 25 25 27 29
OK 74.46 **SMAW** **Type** Basic OK 74.46 is an LMA electrode with 0.5 % Mo for welding steels for pressure vessels. The running characteristics makes it suitable for welding joints in inclined positions. The composition of the coating is adapted to welding on low currents making OK 74.46 very suitable for welding of pipes. **Welding current** DC+, AC OCV 65 V	SFA/AWS A5.5 E7018-A1 EN 1599 E Mo B 42 Werkstoff Nr. 1.5424	CL SFS-EN 1599 E Mo B 42 VdTÜV	C 0.06 Si 0.3 Mn 0.8 Mo 0.5	Yield stress, MPa 460 Tensile strength, MPa 560 Elongation, % 27 Charpy V Test temps, °C / Impact values, J +20 / 175 -20 / 100	2.0 2.5 3.2 3.2 4.0 5.0 6.0	300 350 350 450 450 450 450	55-80 75-110 105-150 105-150 140-200 190-270 260-370	22 23 25 25 26 27 28
OK 74.70 **SMAW** **Type** Basic OK 74.70 is an LMA electrode used for welding low-alloyed steel of high strength. The electrode is designed for welding different structures including pipelines. **Welding current** DC+(-), AC OCV 65 V	SFA/AWS A5.5 E8018-G EN 499 E 46 Mn Mo B 32	VNIIST	C 0.08 Si 0.4 Mn 1.5 Mo 0.4	Yield stress, MPa 540 Tensile strength, MPa 630 Elongation, % 26 Charpy V Test temps, °C / Impact values, J -20 / 110 -40 / 80 -60 / 50	3.2 4.0 4.0 5.0	350 350 450 450	80-140 90-190 90-190 160-270	23 24 24 25

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 74.78 **SMAW** **Type** Basic OK 74.78 is an LMA electrode suitable for welding high tensile steels for structures working at low temperatures. Good notch toughness down to -40°C. Very suitable for enclosed joint welding of rail and for cladding on rail when a hardness of about 250 HV is desired. The moisture content of the coating is very low, which makes OK 74.78 suitable when preheating cannot be applied. **Welding current** DC+, AC OCV 65 V 	SFA/AWS A5.5 E9018-D1 BS 2493 MnMo.BH EN 1599 E Mo B 42	ABS 3H5, 3Y BV 3, 3YHH DB 10.039.17-20.039.02 DNV 3 YH10 LR 3, 3Y H15 SS-EN 1599 E Mo B 42 VdTÜV	C 0.06 Si 0.35 Mn 1.5 Mo 0.35	Yield stress, MPa 600 Tensile strength, MPa 650 Elongation, % 24 Charpy V Test temps, °C / Impact values, J 0 / 100 -20 / 90 -30 / 75 -40 / 60	2.0 2.5 3.2 4.0 5.0 6.0	300 350 450 450 450 450	55-80 75-100 105-140 140-190 190-260 240-340	22 22 23 23 24 24
OK 75.75 **SMAW** **Type** Basic OK 75.75 is an LMA electrode dried to a very low moisture content, therefore suitable for welding low-alloy, high-strength weldable structural steels at room temperature or with moderate preheat. **Welding current** DC(+), AC OCV 65 V 	SFA/AWS A5.5 E11018-G EN 757 E 69 5 Mn2 NiCrMoB 42 H5	ABS 11018-G DB 10.039.19 RS 4Y62HH VdTÜV	C 0.055 Si 0.35 Mn 1.75 Cr 0.45 Ni 2.25 Mo 0.45	Yield stress, MPa 755 Tensile strength, MPa 820 Elongation, % 20 Charpy V Test temps, °C / Impact values, J -20 / 85 -40 / 70 -51 / 55 -60 / 45	2.0 2.5 3.2 4.0 5.0 6.0	300 350 450 450 450 450	50-75 70-110 100-150 135-200 180-260 200-300	21 22 23 24 25 25
OK 75.78 **SMAW** **Type** Basic This electrode is tailored for steels with extremely high tensile strength. The electrode gives tensile strength over 900 MPa and impact values over 47 J at -60°C. **Welding current** DC(+), AC OCV 65 V 	EN 757 E 89 6 Mn3NiCrMo B 42 H5		C 0.05 Si 0.3 Mn 2.1 Cr 0.5 Ni 3.1 Mo 0.6	Yield stress, MPa 920 Tensile strength, MPa 965 Elongation, % 17 Charpy V Test temps, °C / Impact values, J -60 / 60	2.5 3.2 4.0 5.0	350 350 450 450	70-110 110-150 150-200 180-250	24 24 24 24

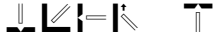
OK 76.18 SMAW

Type Basic

OK 76.18 is an LMA electrode for welding creep-resistant steels of the 1.Cr0.5Mo type. The electrode welds with a quiet, stable arc and produces a minimum of spatter loss. OK 76.18 deposits a weld metal which is resistant to cracking as well as porosity. The scaling temperature of the weld metal is about 575°C.

Welding current

DC(+-)



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.5 E8018-B2 EN 1599 E CrMo1 B 42 H5	ABS	See list of approved consumables	C	0.07	Yield stress, MPa 530	2.0	300	55-80	22
			Si	0.3		2.5	300	70-110	24
	BV	UP H.T. (+500°C)	Mn	0.7		3.2	350	95-150	25
	CL		Cr	1.3	Tensile strength, MPa 620	3.2	450	95-140	26
	DNV	-HH for NV1Cr0,5Mo	Mo	0.5		4.0	350	130-190	
	DS-EN 1599	E CrMo1 B 42 H5			Elongation, % 20	4.0	450	130-190	27
	Sepros	UNA 485154				5.0	450	150-260	28
	SFS-EN 1599	E CrMo1 B 42 H5			Charpy V	6.0	450	200-350	30
	SS-EN 1599	E CrMo1 B 42 H5			Test temps, °C / Impact values, J +20 / 120 -20 / 80 -40 / 50				
	UDT	DIN 8575							
	VdTÜV								

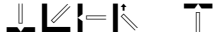
OK 76.28 SMAW

Type Basic

OK 76.28 is an LMA electrode for welding creep-resistant steels containing approx. 2.25Cr1Mo. The electrode runs with a quiet, stable arc and produces a minimum of spatter loss. OK 76.28 deposits a weld metal with good cracking resistance. The scaling temperature of the weld metal is about 625°C.

Welding current

DC(+-)



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.5 E9018-B3 EN 1599 E CrMo 2 B 42 H5	ABS	SR, see list of approved consumables	C	0.06	Yield stress, MPa 550	2.0	300	55-80	23
			Si	0.3		2.5	300	70-110	25
			Mn	0.7		3.2	350	95-150	26
	BV	UP H.T. (+550°C)	Cr	2.3	Tensile strength, MPa 650	4.0	450	130-190	28
	CL		Mo	1.1		5.0	450	150-260	29
	DNV	-H10 For NV2.25Cr1Mo			Elongation, % 18	6.0	450	200-350	30
	DS-EN 1599	E CrMo 2 B 42 H5							
	SFS-EN 1599	E CrMo 2 B 42 H5			Charpy V				
	SS-EN 1599	E CrMo 2 B 42 H5			Test temps, °C / Impact values, J +20 / 120 -20 / 80				
	VdTÜV								

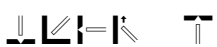
OK 76.35 SMAW

Type Basic

OK 76.35 is an LMA electrode containing 5Cr0.5Mo for welding creep-resistant steels, especially good for pipe welding. The electrode runs with a quiet, stable arc and gives a minimum amount of spatter loss. Preheat and interpass temperature 150-260°C is normally required. Mechanical data after heat treatment 850°C, 2h.

Welding current

DC(+-)



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.5 E8015-B6 EN 1599 E CrMo5 B 42 H5	SFS-EN 1599	E Cr Mo 5 B 32 H5	C	0.04	Yield stress, MPa 400	2.0	300	50-70	22
			Si	0.35		2.5	300	65-95	23
			Mn	0.8		3.2	350	90-130	24
			Cr	5.0	Tensile strength, MPa 590	4.0	450	125-165	24
			Mo	0.55		5.0	450	190-250	25
					Elongation, % 17	6.0	450	200-350	26
					Charpy V				
					Test temps, °C / Impact values, J +20 / 47				

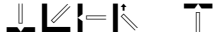
OK 76.96 SMAW

Type Basic

OK 76.96 is an LMA electrode containing 9Cr1Mo for welding of creep-resistant steels, especially good for pipe welding. The electrode runs with a quiet, stable arc and gives a minimum amount of spatter loss. Preheat and interpass temperature 150-260°C is normally required. Mechanical data after heat treatment 850°C, 2h.

Welding current

DC(+)



Classification	Approvals	Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.5 E8015-B8 EN 1599 E Cr Mo 9 B		C Si Mn Cr Mo	0.05 0.5 0.8 9.5 1.0	Tensile strength, MPa >450 Elongation, % >20 Elongation, % >20 Charpy V Test temps, °C / Impact values, J +20 / >80	2.0 2.5 3.2 4.0 5.0	300 300 350 450 450	55-75 70-100 90-135 130-200 160-270	23 25 26 21 25

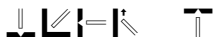
OK 76.98 SMAW

Type Basic

OK 76.98 is a low-hydrogen electrode for welding modified 9 Cr steels like T91/P91. The electrode is suitable for all-positional welding in pipes and plates. Mechanical data after heat treatment 750°C, 2h.

Welding current

DC(+)



Classification	Approvals	Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS 5.5 E9015-B9 (nearest) EN 1599 E CrMo 91 B 42 H5	VdTÜV	C Si Mn Cr Ni Mo N V Nb	0.1 0.35 0.8 9.0 0.7 1.0 0.035 0.2 0.06	Yield stress, MPa 650 Tensile strength, MPa 760 Elongation, % 18 Charpy V Test temps, °C / Impact values, J +20 / 70	2.5 3.2 4.0	350 350 450	70-100 90-135 130-200	21 22 23

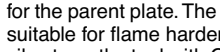
OK 78.16 SMAW

Type Basic

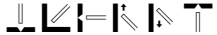
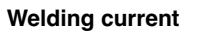
OK 78.16 is a CrMo-alloyed electrode intended for welding CrMo-alloyed steel for hardening and tempering of the type 0.25C1Cr0.2Mo. The heat treatment requirements for the weld metal are the same as those for the parent plate. The weld metal of OK 78.16 is also suitable for flame hardening. The welding of high tensile strength steel with OK 78.16 should be carried out at a temperature of minimum 200°C.

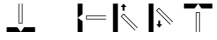
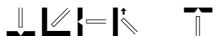
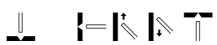
Welding current

DC(+)



Classification	Approvals	Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.5 E9018-G	DB 10.039.16 UDT DIN 8555	C Si Mn Cr Mo	0.18 0.4 0.8 1.0 0.2	Yield stress, MPa 870 Tensile strength, MPa 900 Elongation, % 18 Charpy V Test temps, °C / Impact values, J +20 / 50	2.5 3.2 4.0 5.0 6.0	350 450 450 450 450	75-100 105-140 145-195 190-260 240-330	20 21 22 23 25

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
Pipeweld 7010 **SMAW** **Type** Cellulosic Pipeweld 7010 is a cellulosic electrode, suitable for conventional as well as "stovepipe" techniques. Pipeweld 7010 is designed for welding high-strength pipelines and pipe steel. Also suitable for use in root, capping and filling runs in 5LX52 to 5LX56 grade line pipe. **Welding current** DC+(-) 	SFA/AWS A5.5 E7010-G ISO E 51 3 C 10 EN 499 E 42 2 Z C 21	LR 3	C 0.12 Si 0.1 Mn 0.7 Ni 0.2 Mo 0.2	Yield stress, MPa 460 Tensile strength, MPa 540 Elongation, % 24 Charpy V Test temps, °C / Impact values, J 0 / 80 -20 / 60	2.5 3.2 4.0 5.0	350 350 350 350	40-80 75-125 110-200 130-230	30 31 32 31
Pipeweld 8010 **SMAW** **Type** Cellulosic Pipeweld 8010 is a cellulosic electrode, suitable for both stove-pipe and conventional techniques. Pipeweld 8010 is designed for welding high-strength pipelines and pipe steel in the 570-620 MPa tensile strength range. Can also be used for root, filling and capping runs in 5LX60 to 5LX70 grade pipe. **Welding current** DC+(-) 	SFA/AWS A5.5 E8010-G ISO E 51 3 C 10 EN 499 E 46 2 Z C 21	LR 3, 3Y	C 0.12 Si 0.1 Mn 0.7 Ni 0.2 Mo 0.4	Yield stress, MPa 515 Tensile strength, MPa 595 Elongation, % 24 Charpy V Test temps, °C / Impact values, J 0 / 75 -20 / 65	3.2 4.0 5.0	350 350 350	75-125 110-200 130-230	31 32 31
OK Tubrod 14.01 **FCAW** **Type** Metal-cored OK Tubrod 14.01 is a metal-cored wire containing copper especially for the welding of Corten A & B and similar weathering steels or other high tensile structural steels with a tensile strength up to 510 MPa. Shielding gas Ar + 20% CO_2. Slag levels are comparable with solid wire often allowing multipass welding without inter-pass deslagging. It is designed for bridge and general structural steelworks, ships and chimneys. **Welding current** DC+/- 	SFA/AWS A5.18-93 E70C-GM EN 758:1997 T 42 2 Z M M 2 H10	DS T 42 2 Z M M 2 H10	C 0.07 Si 0.6 Mn 1.4 Cu 0.5	Yield stress, MPa 470 Tensile strength, MPa 550 Elongation, % 28 Charpy V Test temps, °C / Impact values, J 0 / 130 -20 / 47	1.2 1.4 1.6		100-320 120-380 140-450	16-32 16-34 18-36

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrod 14.02 **FCAW** **Type** Metal-cored OK Tubrod 14.02 is a metal-cored wire similar to OK Tubrod 14.12 with an addition of Mo for use on high tensile and quenched and tempered steels with tensile strengths up to 550 MPa. Shielding gas Ar + 20% CO_2. Slag levels are comparable with solid wire often allowing multipass welding without inter-pass deslagging. Marine structures, heavy machinery and high strength applications requiring good notch ductility. Steels will include RQT 500, 600, Hyplus29, Ducol W30 and OK602. **Welding current** DC+/- 	SFA/AWS A5.28-96 E80C-G EN 758:1997 T 50 2 Z M M 2 H10		C 0.07 Si 0.6 Mn 1.4 Cu 0.5	Yield stress, MPa 580 Tensile strength, MPa 650 Elongation, % 26 Charpy V Test temps, °C / Impact values, J -20 / 65	1.2 1.6		100-320 140-450	16-32 18-36
OK Tubrod 14.03 **FCAW** **Type** Metal-cored OK Tubrod 14.03 is a metal-cored wire alloyed with nickel and molybdenum to provide extra high strength with good notch ductility down to -40°C. Shielding gas Ar + 20% CO_2. Typical applications for OK Tubrod 14.03 are offshore jack-up structures and general fabrication of high-tensile steels. **Welding current** DC- 	SFA/AWS A5.29-80 E111T-G	DB 42.039.23 VdTÜV	C 0.07 Si 0.5 Mn 1.6 Mo 0.5	Yield stress, MPa >690 Tensile strength, MPa 760-900 Elongation, % 15 Charpy V Test temps, °C / Impact values, J -40 / >47	1.2 1.4 1.6		100-320 120-380 140-450	16-32 16-34 18-36
OK Tubrod 14.04 **FCAW** **Type** Metal-cored OK Tubrod 14.04 contains nickel for applications that require -60°C impact properties, e.g. offshore. Shielding gas Ar + 20% CO_2. The 1.2 mm and 1.4 mm diameter wires are suitable for all positional welding using the dip transfer mode. OK Tubrod 14.04 is designed for all general fabrication and structural steelwork. **Welding current** DC- 	SFA/AWS A5.28-96 E70C-G EN 758:1997 T 42 6 2Ni M M 2 H10	ABS 3SA, 3YSA Ar/20 CO_2 BV UPHH KV-60 Ar/20 CO_2 DNV 5YMS HH NV 2-4, NV 4-4 Ar/20 CO_2 DS T 42 6 2Ni M M 2 H10 Ar/20 CO_2 GL 6YH10S Ar/20 CO_2 LR 3S, 5Y40S H15 Ar/20 CO_2 RS 5YMSHH Ar/20 CO_2 VdTÜV Ar/20 CO_2	C 0.06 Si 0.4 Mn 1.0 Ni 2.3	Yield stress, MPa >420 Tensile strength, MPa 530-640 Elongation, % >22 Charpy V Test temps, °C / Impact values, J -20 / 54 -60 / 47	1.2 1.4 1.6		100-320 120-380 140-450	16-32 16-34 18-36

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrod 15.07 **FCAW** **Type** Rutile An all-positional rutile wire for welding high strength steels such as Weldox 600 and X80 for transmission pipelines. The arc is stable over a wide parameter envelope, producing spatter-free welds with excellent slag release using Ar/20% CO_2 shielding gas. Root runs in joints are easily performed using ceramic backing and a min of post-weld grinding is required. The preheating temp. is ≥80°C and the interpass temp. is ≤150°C. **Welding current** DC+	SFA/AWS A5.29-98 E101T1-K7M H4 EN 12535 : 2000 T 62 4 Mn2,5Ni P M 2 H5		C 0.5 Si 0.4 Mn 1.6 Ni 2.5	Yield stress, MPa >620 Tensile strength, MPa 700-830 Elongation, % >18 Charpy V Test temps, °C: Impact values, J -40: >47	1.2		150-350	27-35
OK Tubrod 15.09 **FCAW** **Type** Rutile An all-positional rutile wire for welding high strength steels (Weldox 700, HY100), with good CVN toughness down to –40°C. Attention must be paid to preheating (recommended 80°C to150°C, depending on plate thickness) and interpass temps (recommended 150-200°C). **Welding current** DC+	SFA/AWS A5.29-98 E111T1-GM H4 EN 12535 : 2000 T 69 4 Z P M 2 H5	ABS Approved DNV Approved LR jwV5P-7	C 0.6 Si 0.4 Mn 1.1 Ni 2.8 Mo 0.3	Yield stress, MPa >690 Tensile strength, MPa 770-900 Elongation, % >16 Charpy V Test temps, °C: Impact values, J -40: >41	1.2		150-350	27-35
OK Tubrod 15.17 **FCAW** **Type** Rutile OK Tubrod 15.17 is an all-positional, rutile, flux-cored wire for good toughness down to -40°C. The wire contains 1% nickel and has exceptional operating characteristics in all positions with high deposition rates. Shielding gas Ar + 20% CO_2 or CO_2. OK Tubrod 15.17 is designed for all positional welding of carbon manganese and low-alloy steels, e.g. offshore fabrications, vessels and structural steelwork. **Welding current** DC+	SFA/AWS A5.29-80 E81T1-Ni1 EN 758:1997 T 46 3 1Ni P C 2 H5 (H10 1,6 mm), T 46 4 1Ni P M 2 H5 (H10 1,6 mm)	ABS 3SA, 3YSA Ar/CO_2&CO_2 BV SA3YM Ar/CO_2&CO_2 BV SA3YM HH CO_2 DB 42.039.26 Ar/CO_2&CO_2 DNV IVYMS H10 Ar/CO_2 DS T 46 4 1Ni P M 2 H5 Ar/CO_2 LR 3S, 3YS, H15 CO_2 LR 3S, 4Y40S, H15 Ar/CO_2 RS 4YMSH Ar/CO_2 MoD (Navy) MS>25mm, B&BX>12mm Ar/CO_2&CO_2 VdTÜV Ar/CO_2&CO_2	C 0.06 Si 0.3 Mn 1.1 Ni 0.9	Yield stress, MPa >470 Tensile strength, MPa 560-650 Elongation, % >22 Charpy V Test temps, °C: Impact values, J -40: >75	1.2 1.4 1.6		110-300 130-320 150-360	21-32 22-32 24-34

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrod 15.24 **FCAW** **Type** Basic OK Tubrod 15.24 is a fully basic, flux-cored wire depositing an 1Ni weld metal. It combines high strength with low temperature toughness for service down to -50°C and has good CTOD-performance. This applies to both the as welded and stress relieved condition. Good operability and slag release. Shielding gas Ar+20% CO_2 or CO_2. **Welding current** DC-	SFA/AWS A5.29-80 E80T5-G EN 758:1997 T 46 5 Z B M 2 H5		C <0.08 Si 0.5 Mn 1.5 Ni 0.7	Yield stress, MPa >470 Tensile strength, MPa 550-680 Elongation, % >22 Charpy V Test temps, °C / Impact values, J -50 / 47	1.0 1.2 1.6		100-230 120-300 140-400	14-30 16-32 24-34
OK Tubrod 15.25 **FCAW** **Type** Basic OK Tubrod 15.25 is a 2.5Ni-alloyed fully basic flux-cored wire which deposits low-hydrogen weld metal, typically <5mls/100g. It is all positional in the 1.2 mm diameter and capable of toughness properties at temperatures down to -60°C. Shielding gas CO_2 or Ar + 20% CO_2. Applications for OK Tubrod 15.25 are for the multipass welding of medium to heavy fabrications. **Welding current** DC-	SFA/AWS A5.29-80 E70T5-G EN 758:1997 T 42 6 2Ni B M 2 H5	CL Ar/CO_2 DNV 5YMS (H10), NV2-4, NV 4-4 Ar/CO_2 LR 3S 5Y40S H15 Ar/CO_2 VdTÜV Ar/CO_2&CO_2	C 0.05 Si 0.5 Mn 0.8 Ni 2.2	Yield stress, MPa >420 Tensile strength, MPa 530-620 Elongation, % >22 Charpy V Test temps, °C / Impact values, J -60 / 47	1.2 1.6		120-300 140-400	16-32 24-34
OK Tubrod 15.26 **FCAW** **Type** Basic OK Tubrod 15.26 is a fully basic, flux-cored, tubular wire for welding high strength steels for service at both ambient and sub-zero temperatures down to -50°C. The weld metal has a minimum yield strength of 570 MPa and is ideal for situations involving high levels of restraint and where the deleterious effects of hydrogen must be avoided. Shielding gas Ar+20% CO_2. **Welding current** DC-	SFA/AWS A5.29-80 E90T5-K2		C 0.06 Si 0.5 Mn 1.5 Ni 1.5	Yield stress, MPa 620 Tensile strength, MPa 690 Elongation, % 24 Charpy V Test temps, °C / Impact values, J -50 / 100	1.2 1.6		120-300 140-400	16-32 24-34

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrod 15.24S **SAW** **Type** Basic A fully basic, flux-cored, tubular wire for the submerged arc welding of structural steels for service down to -50°C. The weld metal has excellent low-temperature toughness in both the as-welded and the stress-relieved conditions. Used with OK 10.62, the mechanical properties are maintained at high heat input. **Welding current** DC+	SFA/AWS A5.23-90 F8A6-EC-G (with OK Flux 10.62)		C 0.07 Si 0.2 Mn 1.7 Ni 0.7	Yield stress, MPa >470 Tensile strength, MPa 550-690 Elongation, % >20 Charpy V Test temps, °C / Impact values, J -50 / 47	2.4 3.0 4.0		250-450 400-600 500-900	28-34 28-36 28-38
OK Tubrod 15.25S **SAW** **Type** Basic OK Tubrod 15.25S is a 2.5Ni tubular wire for submerged arc welding in conjunction with OK Flux 10.62 when charpy V values down to -60°C are required. It has also high tolerance to shop primer when welding high speed fillets as well as single sided single pass butt joints. **Welding current** DC(+)	SFA/AWS A5.23-90 F7A8-EC-Ni2 (with OK Flux 10.62)		C 0.06 Si 0.3 Mn 1.3 Ni 2.2	Yield stress, MPa >400 Tensile strength, MPa 480-660 Elongation, % >22 Charpy V Test temps, °C / Impact values, J -60 / 47	3.0 4.0		400-600 500-900	28-36 28-38
OK Tubrod 15.26S **SAW** **Type** Basic OK Tubrod 15.26S is a fully basic cored wire designed for welding high strength, low-alloy steels exhibiting a min yield strength of 550 MPa. Used in conjunction with the fused flux OK 10.47, this combination offers very low hydrogen levels (< 5mi/100g) and there is virtually no moisture regain from the flux, making rebaking unnecessary unless the flux becomes wet. **Welding current** DC+			C 0.07 Si 0.3 Mn 1.6 Ni 0.8 Mo 0.5	Yield stress, MPa 600 Tensile strength, MPa 690 Elongation, % 27 Charpy V Test temps, °C / Impact values, J -50 / 90	2.4 3.0 4.0		250-450 400-600 500-900	28-34 28-36 28-38

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 13.09 **GMAW** A copper-coated, low-alloy, molybdenum (0.5% Mo), solid wire for the GMAW of creep-resistant steels of the same type, such as pipes in pressure vessels and boilers with a working temperature of up to 500°C. It can also be used for welding low-alloy high tensile strength steels. OK Autrod 13.09 is usually welded with Ar/20 CO_2 as the shielding gas. The mechanical properties are given in the stress-relieved condition. **Welding current** DC(+)	SFA/AWS A5.28 ER80S-G EN 440 G2Mo EN 12070 GMoSi	DB 42.039.09 DNV IIIYMS, DC+ (M21) DS EN 12070 UDT DIN 8575 VdTÜV	C 0.1 Si 0.7 Mn 1.1 Mo 0.5 Wire composition	Yield stress, MPa 430 Tensile strength, MPa 545 Elongation, % 26 Charpy V Test temps, °C / Impact values, J +20 / 150 0 / 130 -20 / 95 -40 / 90	0.8 1.0 1.2 1.6		40-170 80-280 120-350 225-480	16-22 18-28 20-33 26-38
OK Autrod 13.12 **GMAW** A copper-coated, low-alloy, chromium-molybdenum (1.1% Cr, 0.5% Mo), solid wire for the GMAW of creep-resistant steels of similar composition. Also for welding high tensile steels with a minimum yield strength of less than 355 MPa and a minimum tensile strength exceeding 510 MPa in the stress-relieved condition. OK Autrod 13.12 is usually welded with Ar/20CO_2 as the shielding gas. The mechanical properties are given in the stress-relieved condition. **Welding current** DC(+)	SFA/AWS A5.28 ER80S-G EN 12070 GCrMo1Si Werkstoff Nr. 1.7339	UDT DIN 8575 VdTÜV	C 0.1 Si 0.7 Mn 1.0 Cr 1.1 Mo 0.5 Wire composition	Yield stress, MPa 450 Tensile strength, MPa 580 Elongation, % 24 Charpy V Test temps, °C / Impact values, J +20 / 80 0 / 40 -20 / 30	0.8 1.0 1.2 1.6		40-170 80-280 120-350 225-480	16-22 18-28 20-33 26-38
OK Autrod 13.13 **GMAW** A copper-coated, low-alloy, chromium-nickel-molybdenum (0.5% Cr, 0.5% Ni, 0.2% Mo), solid wire for the GMAW of high tensile strength steels with a minimum yield strength (0.2% offset) of less than 610 MPa and a minimum tensile strength exceeding 710 MPa. Also suitable when welding steels where good impact strength at lower temperatures is required. OK Autrod 13.13 is usually welded with Ar/20CO_2 as the shielding gas. The mechanical properties are given in the as welded condition. After stress relieving, the mechanical properties decrease by about 30 MPa in the case of yield and tensile strength. **Welding current** DC(+)	SFA/AWS A5.28 ER100S-G EN 12534 GMn3NiCrMo		C 0.1 Si 0.7 Mn 1.4 Cr 0.6 Ni 0.6 Mo 0.2 Wire composition	Yield stress, MPa 690 Tensile strength, MPa 770 Elongation, % 20 Charpy V Test temps, °C / Impact values, J 0 / 80 -20 / 75 -40 / 60 -60 / 50	0.8 1.0 1.2 1.6		40-170 80-280 120-350 225-480	16-22 18-28 20-33 26-38

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 13.26 **GMAW** A copper-coated, low-alloy, nickel-copper (0.8% Ni, 0.3% Cu), solid wire for the GMAW of weathering steels, such as COR-TEN A, B and C. The weld metal composition and mechanical properties also make this product suitable for welding high tensile, cold, tough steels with a minimum yield strength of less than 470 Mpa. OK Autrod 13.26 can be welded with Ar/20CO_2 or CO_2 as the shielding gas. The mechanical properties given here are welded with Ar/20CO_2 as the shielding gas. **Welding current** DC(+)	SFA/AWS A5.28 ER80S-G	DB 42.039.04 DNV IIYMS DC(+) (CO_2) DNV IIIYMS DC(+) (Ar/20CO_2) UDT SFA/AWS A5.28	C 0.1 Si 0.8 Mn 1.4 Ni 0.8 Cr 0.2 Cu 0.3 Wire composition	Yield stress, MPa 540 Tensile strength, MPa 625 Elongation, % 26 Charpy V Test temps, °C / Impact values, J +20 / 140 -20 / 110 -40 / 90 -46 / 55	0.8 1.0 1.2 1.6		40-170 80-280 120-350 225-480	16-22 18-28 20-33 26-38
OK Autrod 13.28 **GMAW** A copper-coated, low-alloy, nickel (2.4% Ni), solid wire for the GMAW of low-alloy and low-temperature steels in applications such as vessels, pipes and the offshore industry with a minimum yield strength of less than 470 Mpa. Also suitable for welding steels where good impact properties at lower temperatures (-20°C) are required. OK Autrod 13.28 is usually welded with Ar/20CO_2 as the shielding gas. The minimum values for the mechanical properties are given in the post-weld, heat-treated condition. **Welding current** DC(+)	SFA/AWS A5.28 ER80S-Ni2 EN 440 G2Ni2	DNV V YMS (M21) UDT EN 440 VdTÜV	C 0.1 Si 0.6 Mn 1.1 Ni 2.4 Wire composition	Yield stress, MPa 470 Tensile strength, MPa 550 Elongation, % 24 Charpy V Test temps, °C / Impact values, J -62 / 27	0.8 1.0 1.2 1.6		40-170 80-280 120-350 225-480	16-22 18-28 26-33 26-38
OK Autrod 13.29 **GMAW** A copper-coated, low-alloy, chromium-nickel-molybdenum (0.3% Cr, 1.4% Ni, 0.25% Mo), solid wire for the GMAW of high tensile strength steels requiring a tougher weld metal for critical applications. Also suitable when fairly high impact strength at lower temperatures is required. OK Autrod 13.29 is usually welded with Ar/20CO_2 as the shielding gas. **Welding current** DC(+)	SFA/AWS A5.28 ER100S-G EN 12534 GMn3Ni1CrMo	DB 42.039.18 UDT SFA/AWS A5.28 VdTÜV	C 0.06 Si 0.6 Mn 1.6 Cr 0.3 Ni 1.4 Mo 0.25 V 0.07 Wire composition	Yield stress, MPa 750 Tensile strength, MPa 820 Elongation, % 19 Charpy V Test temps, °C / Impact values, J +20 / 70 -20 / 50 -30 / 40	0.8 1.0 1.2 1.6		40-170 80-280 120-350 225-480	16-22 18-28 20-33 26-38

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tigrod 13.09 **GTAW** A copper-coated, low-alloy, molybdenum (0.5% Mo) rod for the GTAW of creep-resistant steels of the same type, such as pipes in pressure vessels and boilers with a working temperature of up to about 500°C. The rod can also be used for welding low-alloy, high tensile strength steels. OK Tigrod 13.09 is normally welded with pure Ar as the shielding gas. The mechanical properties are given in the stress-relieved condition. **Welding current** DC(-)	SFA/AWS A5.28 ER80S-G EN 1668 W2Mo EN 12070 WMoSi	DB 42.039.08 DNV IIIYMS(Ar) UDT DIN 8575 VdTÜV	C 0.1 Si 0.7 Mn 1.1 Mo 0.5 Wire composition	Yield stress, MPa 424 Tensile strength, MPa 560 Elongation, % 31 Charpy V Test temps, °C / Impact values, J +20 / 147 -20 / 127	1.6 2.0 2.4 3.2	1000 1000 1000 1000		
OK Tigrod 13.12 **GTAW** A copper-coated, low-alloy, chromium-molybdenum (1% Cr, 0.5% Mo) rod for the GTAW of creep-resistant steels of the same type, such as pipes in pressure vessels and boilers. The rod can also be used for welding low-alloy, high strength steels with a minimum tensile strength of 550 Mpa. OK Tigrod 13.12 is normally welded with pure Ar as the shielding gas. The mechanical properties are given in the stress-relieved condition. **Welding current** DC(-)	SFA/AWS A5.28 ER80S-G EN 12070 WCrMo1Si Werkstoff Nr. 1.7339	UDT DIN 8575 VdTÜV	C 0.1 Si 0.7 Mn 1.0 Cr 1.1 Mo 0.5 Wire composition	Yield stress, MPa 560 Tensile strength, MPa 650 Elongation, % 26 Charpy V Test temps, °C / Impact values, J +20 / 180	1.6 2.0 2.4 3.2	1000 1000 1000 1000		
OK Tigrod 13.13 **GTAW** A copper-coated, low-alloy, chromium-nickel-molybdenum (0.5% Cr, 0.5% Ni, 0.2% Mo) rod for the GTAW of high strength steels with a minimum tensile strength of 690 MPa. The rod is also suitable for welding steels where good impact strength at low temperatures is required. OK Tigrod 13.13 is normally welded with pure Ar as the shielding gas. The mechanical properties are given in the as-welded condition. After stress relieving, the mechanical properties decrease by about 30 MPa in the case of yield and tensile strength. **Welding current** DC(-)	SFA/AWS A5.28 ER100S-G EN 12534 WMn3NiCrMo		C 0.1 Si 0.7 Mn 1.4 Cr 0.6 Ni 0.6 Mo 0.2 Wire composition	Yield stress, MPa 570 Tensile strength, MPa 710 Elongation, % 24 Charpy V Test temps, °C / Impact values, J 0 / 150 -40 / 85 -60 / 40	1.6 2.0 2.4 3.2	1000 1000 1000 1000		

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tigrod 13.22 **GTAW** A copper-coated, low-alloy, chromium-molybdenum (2.5% Cr, 1.0% Mo) rod for the GTAW of creep-resistant steels of the same type, such as pipes in pressure vessels and boilers. The rod can also be used for welding low-alloy, high strength steels with a minimum yield strength of less than 400 MPa. OK Tigrod 13.22 is normally welded with pure Ar as the shielding gas. The mechanical properties are given in the stress-relieved condition. **Welding current** DC(-)	SFA/AWS A5.28 ER90S-G EN 12070 WCrMo1Si Werkstoff Nr. 1.7384	VdTÜV	C 0.08 Si 0.6 Mn 1.0 Cr 2.6 Mo 1.1 Wire composition	Yield stress, MPa 510 Tensile strength, MPa 620 Elongation, % 24 Charpy V Test temps, °C / Impact values, J +20 / 200	1.6 2.0 2.4 3.2	1000 1000 1000 1000		
OK Tigrod 13.28 **GTAW** A copper-coated, low-alloy, nickel (2.8% Ni) rod for the GTAW of low-alloy and low-temperature steels in applications such as vessels, pipes and the offshore industry with a minimum yield strength of less than 470 MPa. Also suitable for welding steels where good impact properties at lower temperatures (-20°C) are required. OK Tigrod 13.28 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	SFA/AWS A5.28 ER80S-Ni2 EN 1668 W2Ni2	UDT EN 440 VdTÜV	C 0.1 Si 0.6 Mn 1.1 Ni 2.4 Wire composition	Yield stress, MPa 540 Tensile strength, MPa 630 Elongation, % 30 Charpy V Test temps, °C / Impact values, J -20 / 200 -40 / 180 -60 / 150	1.6 2.0 2.4 3.2	1000 1000 1000 1000		
OK Tigrod 13.32 **GTAW** A copper-coated, low-alloy, chromium-molybdenum (5% Cr, 0.5% Mo) rod for the GTAW of creep-resistant steels of similar composition. Also suitable for welding high tensile steels with a minimum yield strength of less than 730 MPa and a minimum tensile strength exceeding 900 MPa. OK Tigrod 13.32 is normally welded with pure Ar as the shielding gas. The mechanical property values are given in the stress-relieved condition. **Welding current** DC(-)	SFA/AWS A5.28 ER80S-B6 EN 12070 WCrMo5 Werkstoff Nr. 1.7373		C 0.07 Si 0.4 Mn 0.5 Cr 5.7 Ni 0.2 Mo 0.6 Wire composition	Yield stress, MPa 730 Tensile strength, MPa 900 Elongation, % 22 Charpy V Test temps, °C / Impact values, J +20 / 100 -20 / 80 -29 / 50	1.6 2.0 2.4 3.2	1000 1000 1000 1000		

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Gasrod 98.76 **OFW** A bare rod alloyed with 0.5%Mo designed for gas welding of unalloyed and low-alloyed high temperature resistant steels in e.g. pipes, boilers, and pressure vessels.	EN 12536 0 IV		C 0.1 Si 0.15 Mn 1.1 Mo 0.5 Wire composition	Yield stress, MPa 290 Tensile strength, MPa 460 Elongation, % 22	3.0 4.0	1000 1000		
OK Autrod 12.24 **SAW** OK Autrod 12.24 is a copper-coated, molybdenum-alloyed wire for submerged arc welding of unalloy and low-alloy steels with impact strength requirements higher than those obtainable with mild steel filler wires. Can be combined with OK Flux 10.61, OK Flux 10.62, OK Flux 10.71, OK Flux 10.73, OK Flux 10.75, OK Flux 10.81, OK Flux 10.82 and OK Flux 10.83.	SFA/AWS A5.23 EA2 EN 756 S2Mo	DB 52.039.06	C 0.1 Si 0.15 Mn 1.0 Mo 0.5 Wire composition		2.0 2.5 3.0 4.0 5.0			
OK Autrod 12.34 **SAW** OK Autrod 12.34 is a MnMo-alloyed, copper-coated wire for submerged arc welding of high tensile steel and steel for low-temperature work. Can be combined with OK Flux 10.62, OK Flux 10.71, OK Flux 10.73 and OK Flux 10.75.	SFA/AWS A5.23 EA4 EN 756 S3Mo		C 0.1 Si 0.15 Mn 1.5 Mo 0.5 Wire composition		2.5 3.0 4.0			

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 12.44 **SAW** OK Autrod 12.44 is a Mn-Mo-alloyed, copper-coated wire for the submerged arc welding of high tensile steel and steel for low temperature work. Can be combined with OK Flux 10.62.	SFA/AWS A5.23 EA3 EN 756 S4Mo		C 0.11 Si 0.2 Mn 1.9 Mo 0.5 Wire composition		3.2 4.0			
OK Autrod 13.10 **SAW** OK Autrod 13.10 is a copper-coated wire designed for submerged arc welding of creep resistant steel of the 1.25Cr0.5Mo type. Can be combined with OK Flux 10.62.	SFA/AWS A5.23 EB2 DIN 8557 UP S2 CrMo1		C 0.11 Si 0.2 Mn 0.7 Cr 1.1 Mo 0.5 Wire composition		2.0 2.5 3.0 4.0			
OK Autrod 13.20SC **SAW** OK Autrod 13.20SC is a low-alloyed, non coppered wire designed for submerged arc welding of creep-resistant steel of the 2.25Cr1Mo type. Can be combined with OK Flux 10.63.	SFA/AWS A5.23 EB3 DIN 8575 UP S1 CrMo2		C 0.10 Si 0.15 Mn 0.6 Cr 2.3 Mo 1.0 Wire composition		3.0 4.0			

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 13.21 **SAW** OK Autrod 13.21 is a nickel-alloyed (1Ni) wire designed for submerged arc welding. Can be combined with OK Flux 10.62.	SFA/AWS A5.23 ENi1 EN 756 S2Ni		C 0.08 Si 0.2 Mn 1.0 Ni 1.0 Wire composition		3.0 4.0			
OK Autrod 13.24 **SAW** OK Autrod 13.24 is a low-alloyed, copper-coated wire for submerged arc welding, to be used when the requirement imposed on the weld metal are rigorous - in the in off shore industry, for example, in combination with OK Flux 10.62, OK Flux 10.71 and OK Flux 10.75.	SFA/AWS A5.23 EG EN 756 S0		C 0.11 Si 0.2 Mn 1.4 Ni 1.0 Mo 0.2 Wire composition		3.0 4.0			
OK Autrod 13.27 **SAW** OK Autrod 13.27 is a copper-coated, low-alloyed, 2%Ni electrode for the submerged arc welding of low-alloyed and low-temperature steels for applications e.g. in the offshore industry. Can be combined with OK Flux 10.62, OK Flux 10.71 and OK Flux 10.75.	SFA/AWS A5.23 ENi2 EN 756 S2Ni2		C 0.08 Si 0.2 Mn 1.0 Ni 2.3 Wire composition		2.5 3.0 4.0			

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 13.36 **SAW** OK Autrod 13.36 is a CuNi-alloyed wire for submerged arc welding of weathering steels type USS CORTEN A, B and C. Can be combined with OK Flux 10.71, OK Flux 10.81, OK Flux 10.82 and OK Flux 10.83.	SFA/AWS A5.23 EG EN 756 S0		C 0.1 Mn 1.0 Si 0.3 Ni 0.8 Cu 0.5 Cr 0.3 Wire composition		3.0 4.0			
OK Autrod 13.39 **SAW** OK Autrod 13.39 is a nickel-molybdenum-alloyed, copper-coated wire designed for the submerged arc welding of higher tensile steels in combination with OK Flux 10.61 and OK Flux 10.62.	SFA/AWS A5.23 EG EN 756 S2Ni1Mo		C 0.12 Si 0.15 Mn 1.0 Ni 1.0 Mo 0.55 Wire composition		2.0 2.5 3.0 4.0			
OK Autrod 13.40 **SAW** OK Autrod 13.40 is a nickel-molybdenum-alloyed, copper-coated wire designed for submerged arc welding of higher tensile steel. Can be combined with OK Flux 10.62.	SFA/AWS A5.23 EG EN 756 S3Ni1Mo		C 0.10 Si 0.2 Mn 1.5 Ni 0.9 Mo 0.5 Wire composition		3.0 4.0			

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 13.43 **SAW** OK Autrod 13.43 is a CrNiMo-alloyed, copper-coated wire for submerged arc welding of extra high tensile steels, e.g. 0X 812, SSS 100. Can be combined with OK Flux 10.62.	SFA/AWS A5.23 EG DIN 8557 S3 NiCrMo2.5		C 0.11 Si 0.2 Mn 1.4 Cr 0.7 Ni 2.4 Mo 0.5 Wire composition		3.0 4.0			
OK Grain 21.85 **SAW** OK Grain 21.85 is a metal powder specially designed for the submerged arc welding of C-Mn steels.			C 0.14 Si 0.4 Mn 1.8 Powder composition					
OK Grain 21.86 **SAW** OK Grain 21.86 is a Ni-alloyed metal powder specially designed for submerged arc welding.			C 0.14 Si 0.40 Mn 1.20 Cr 0.10 Ni 2.2 Mo 0.10 Powder composition					

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Grain 21.87 **SAW** OK Grain 21.87 is a Cr-Ni-Mo-alloyed metal powder specially designed for submerged arc welding of extra high tensile steels.			C 0.12 Si 0.22 Mn 1.8 Cr 0.90 Ni 2.4 Mo 0.6 Powder composition					
OK Grain 21.89 **SAW** A low-alloyed metal powder, designed for submerged arc welding.			C 0.14 Si 0.60 Mn 1.65 Cr 0.10 Ni 2.40 Mo 0.50 Powder composition					

Product	Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
		ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	Yield stress MPa	Tensile strength MPa	Charpy V Test Temp°C	Charpy V Impact Values J
OK Flux 10.47 **SAW**	OK Autrod 12.24										0.04	0.4	0.9	-	-	0.5	450	550	0	60
	OK Autrod 13.27										0.05	0.4	0.9	-	2.3	-	450	550	-40	55
	OK Tubrod 15.24S										0.077	0.27	1.55	-	0.68	-	510	596	-40	131
OK Flux 10.49 **SAW**	OK Autrod 12.34										0.05	0.4	1.3	-	-	0.5	500	600	-40	50

Type Basic

OK Flux 10.47 is a non-alloying, fused base flux, specially designed for the single and multi-pass butt welding of mild and medium tensile strength steels.
Typical applications are found in structural steels for shipbuilding, pressure vessel manufacture and so on with impact strength requirements down to –40°C. OK Flux 10.47 has a high current-carrying capacity on both AC and DC.

Density ≈1.1 kg/dm^3

Basicity index 1.3

Classifications

EN 760	SF AB 1 65 AC
SFA/AWS A5.23	F8A4-EC-G
SFA/AWS A5.17	F7A2-EA2-A2
	F7A5-ENi2-Ni2
EN 756	S 42 0 AB S2Mo
	S 42 4 AB S2Ni2

Type Basic

OK Flux 10.49 is a fused, non-hygroscopic, basic, non-alloying flux for the multi-run butt welding of mild, medium and high tensile steels with good impact toughness down to -40°C. OK Flux 10.49 is an aluminate-basic type with high current-carrying capacity on both AC and DC.

Density ≈1.1 kg/dm^3

Basicity index ≈1.2

Classifications

EN 760	SF AB 1 65 AC

OK Flux 10.61 SAW

Type High-basic

OK Flux 10.61 is designed for the single-wire, multi-run butt welding of mild, medium and high tensile steels with impact strength requirements down to -40°C/-60°C.
Due to the non-alloying effect, OK Flux 10.61 is designed for use with a suitable alloying wire. OK Flux 10.61 can be used on DC±. DC- is used for surfacing applications.

Density ≈1.1 kg/dm^3

Basicity index 2.8

Classifications

EN 760	SA FB 1 65 DC
EN 756	S 42 2 FB S2Mo
SFA/AWS A5.23	F8A4-EA2-A2
	F7P2-EA2-A2
	F7P8-EC-G

Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
	ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	Yield stress MPa	Tensile strength MPa	Charpy V Test Temp°C	Charpy V Impact Values J
OK Autrod 12.24						3YTM			•	0.08	0.25	1.0	-	-	0.45	470	560	+20	130
																		0	120
																		-20	80
																		-40	40
OK Tubrod 15.24S										0.063	0.29	1.64	-	0.74	-	556	620	-50	123

OK Flux 10.62 SAW

Type High-basic

OK Flux 10.62 is all-mineral, non-alloying and the weld metal can be fully controlled independently of the welding parameters through a suitable choice of wires. This makes OK Flux 10.62 suitable for the multi-run welding of thick materials using the single-wire and multiple-wire techniques. OK Flux 10.62 is designed for the multi-pass butt welding of mild, medium and high tensile steels, as well as low-alloyed steels, with an impact strength down to -40°/-60°C. As it is a flux of the high-basic type, OK Flux 10.62 permits high current-carrying capacity on both AC and DC. To increase productivity with no loss of mechanical properties, OK Flux 10.62 is best used together with iron powder addition. OK Flux 10.62 is especially well-suited for narrow gap welding, due to the good slag detachability and smooth blending with the side walls. Pressure vessels for nuclear applications and offshore constructions in which good CTOD values are required are some areas in which OK Flux 10.62 can be successfully used. OK Flux 10.62 operates better at the lower end of the voltage range.
OK Flux 10.62 gives the weld metal a low oxygen content (approx. 300 ppm) and produces a low hydrogen content in the deposit weld metal (lower than 5 ml/100 g).

Density ≈1.1 kg/dm^3

Basicity index 3.4

Classifications

EN 760	SA FB 1 55 AC H5
SFA/AWS A5.23	F8A6-EA2-A2
	F7P6-EA2-A2
	F8A8-EA4-A4
	F8P6-EA4-A4
	F8A10-ENi2-Ni2
	F8P10-ENi2-Ni2
	F11A8-EG-G
	F11P4-EG-G
EN 756	S 46 4 FB S2Mo
	S 50 5 FB S3Mo
	S 46 6 FB S2Ni2

Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
																Yield stress	Tensile strength	Charpy V Test	Charpy V Impact
	ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	MPa	MPa	Temp°C	Values J
OK Autrod 12.24	3M 3YM	3YM	IIITM (IIIYM)	A3 3YM	3YM					0.07	0.2	1.0	-	-	0.5	510	585	+20	140
																		0	115
																		-20	80
																		-40	60
																		-50	45
OK Autrod 12.34	3M 3YM	3M 3YM	IIIYM	A3 3YM	3YM	3YM				0.1	0.21	1.45	-	-	0.5	575	650	+20	170
																		0	160
																		-20	140
																		-40	115
																		-50	65
OK Autrod 13.27	3YM	3M 3YM	IIIYM NV 4-4(M)	A3YM		3YM			•	0.06	0.2	1.0	-	2.1	-	490	570	+20	180
																		0	170
																		-20	160
																		-40	130
																		-60	90
OK Autrod 13.43						Q-T steel (-60 C/M)				0.08	0.25	1.35	0.6	2.2	0.5	700	795	+20	135
																		0	120
																		-20	100
																		-40	75
																		-60	55

Product	Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
		ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	Yield stress MPa	Tensile strength MPa	Charpy V Test Temp°C	Charpy V Impact Values J
OK Flux 10.63 **SAW**	OK Autrod 13.20SC										0.1	0.3	0.7	2.3	-	0.9	525	620	+20	180
																			0	150
																			-40	110
																			-62	90

Type High-basic

OK Flux 10.63 is a high-basic agglomerated all-mineral non-alloying flux designed primarly for the multi-run welding of creep-resistant steels in combination with low-alloy Cr-Mo wires. The very low impurity level of the flux helps to produce an exceptionally clean weld metal, with high impact properties, even after step cooling treatment.

Density ≈1.1 kg/dm^3

Basicity index 3.2

Classifications

EN 760 SA FB 1 55 AC H5
SFA/AWS A5.23 F8P8-EB3-B3

OK Flux 10.71 SAW

Type Basic

OK Flux 10.71 is a basic agglomerated, slightly Si- and Mn-alloying flux for submerged arc welding, specially designed for fillet welding and for single and multipass butt welding of mild, medium and high tensile steels. OK Flux 10.71 is of aluminate-basic type and has for this slag system very high current-carrying capacity on both AC and DC and with very good operability characteristics both in single and multiwire systems. OK Flux 10.71 can be used to particular advantage for narrow gap welding due to the excellent slag detachability and smooth blending of the weld bead with the joint side walls.

Density ≈1.2 kg/dm^3

Basicity index 1.6

Classifications

EN 760	SA AB 1 67 AC H5
SFA/AWS A5.23	F8A4-EA2-A2
	F7P2-EA2-A2
	F8A4-EA4-A4
	F8P2-EA4-A4
	F8A2-EG-G
	F8P2-EG-G
	F8A4-ENi2-Ni2
	F7P5-ENi2-Ni2
	F8A0-EG-G
EN 756	S 46 2 AB S2Mo
	S 50 3 AB S3Mo
	S 50 4 AB S0
	S 46 4 AB S2Ni2
	S 42 3 AB S0

Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
																Yield stress	Tensile strength	Charpy V Test	Impact
	ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	MPa	MPa	Temp°C	Values J
OK Autrod 12.24	3TM 3YTM	3TM 3YTM	IIIYTM	A3 3YTM	3YTM	3YTM	•	•	•	0.08	0.4	1.35	-	-	0.5	500	580	+20	125
																		0	100
																		-20	60
																		-40	30
OK Autrod 12.34	3TM 3YM (M -40°C)	3TM 4Y40M	IIIYTM (M -40°C)	UP (M -40°C)	3YTM	3YTM (M -40°C)				0.09	0.4	1.5	-	-	0.5	535	620	+20	120
																		0	105
																		-20	70
																		-30	60
																		-40	45
OK Autrod 13.24										0.07	0.5	1.45	0.15	0.9	0.2	560	630	+20	120
																		-20	85
																		-30	70
																		-40	60
OK Autrod 13.27									•	0.05	0.4	1.4	-	2.2	-	500	600	-20	100
																		-40	60
OK Autrod 13.36										0.08	0.5	1.3	0.3	0.7	-	480	580	+20	120
										Cu 0.5								-20	70
																		-30	55

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 61.30 **SMAW** **Type** Acid-rutile OK 61.30 is an extra-low carbon, AC/DC, LMA electrode for welding steel of the 19Cr10Ni type, also suitable for welding stabilized stainless steels of similar composition, except when the full creep resistance of the base material is to be met. OK 61.30 is very easy to strike and restrike and gives weld beads with excellent appearance and self-relieving slag. **Welding current** DC+, AC OCV 50 V	SFA/AWS A5.4 E308L-17 ISO 3581 E 19.9 L R EN 1600 E 19 9 L R 1 2 Werkstoff Nr. 1.4316	ABS Stainless CL CWB E308L-16 DB 30.039.02 DNV 308L SFS-EN 1600 E 19 9 L R SS-EN 1600 E 19 9 L R 1 2 UDT VdTÜV	C 0.03 Si 0.8 Mn 0.7 Cr 19.5 Ni 10.0	Yield stress, MPa 430 Tensile strength, MPa 560 Elongation, % 45 Charpy V Test temps, °C / Impact values, J +20 / 70	1.6 2.0 2.5 3.2 4.0 5.0 5.0	300 300 300 350 350 350 450	35-50 45-65 60-90 80-120 120-170 150-240 150-240	27 29 31 31 32 33 33
OK 61.35 **SMAW** **Type** Basic OK 61.35 is a basic, low-carbon, stainless electrode of the E308L type with very good welding properties in the vertical and overhead positions. The high impact toughness at cryogenic temperature (-196°C) makes OK 61.35 excellent in LNG applications. **Welding current** DC+	SFA/AWS A5.4 E308L-15 ISO 3581 E 19.9 L B EN 1600 E 19 9 L B 2 2 Werkstoff Nr. 1.4316	UDT VdTÜV	C 0.03 Si 0.4 Mn 1.7 Cr 19.5 Ni 10.5	Yield stress, MPa 460 Tensile strength, MPa 580 Elongation, % 45 Charpy V Test temps, °C / Impact values, J +20 / 100 -120 / 70 -196 / 45	2.5 3.2 4.0 5.0	300 350 350 350	55-85 75-110 110-155 160-210	22 25 27 26
OK 61.41 **SMAW** **Type** Acid-rutile OK 61.41 is a high recovery, extra low carbon, LMA electrode for welding steels of the 19Cr10Ni type. It is particularly suited for fillet welding in the downhand and HV positions and butt welds in the flat position. The electrode could also be used for stabilized stainless steels of similar compositions except when full creep resistance of the base material is to be met. **Welding current** DC+, AC OCV 55 V	SFA/AWS A5.4 E308L-17 ISO 3581 E 19.9 L R EN 1600 E 19 9 L R 5 3 Werkstoff Nr. 1.4316	CWB E308L-16 SS-EN 1600 E 19 9 L R 5 3 UDT VdTÜV	C 0.03 Si 0.7 Mn 0.8 Cr 19.5 Ni 10.0	Yield stress, MPa 420 Tensile strength, MPa 560 Elongation, % 45 Charpy V Test temps, °C / Impact values, J +20 / 65	2.0 2.5 3.2 4.0 5.0	300 300 350 450 450	45-65 60-100 80-130 110-170 170-230	29 29 29 32 33

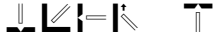
OK 61.80 SMAW

Type Acid-Rutile

OK 61.80 is a niobium-stabilized, stainless steel, LMA electrode with low carbon content for welding stainless types i e 321 and 347. Resistant to intergranular corrosion up to 400°C.

Welding current

DC+, AC OCV 50 V



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 E347-17 ISO 3581 E 19.9 Nb R EN 1600 E 19 9 Nb R 1 2 Werkstoff Nr. 1.4551	CL CWB GL UDT VdTÜV	E347L-16 4550	C 0.03 Si 0.7 Mn 0.6 Cr 20.0 Ni 10.0 Nb 0.3		Yield stress, MPa 500 Tensile strength, MPa 630 Elongation, % 40 Charpy V Test temps, °C / Impact values, J +20 / 60 -80 / 40	2.0 2.5 3.2 4.0 5.0	300 300 350 350 350	45-65 60-90 80-120 120-170 150-240	24 26 28 30 31

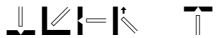
OK 61.81 SMAW

Type Rutile

OK 61.81 is a niobium-stabilized, stainless welding electrode for titanium and niobium-stabilized 18-8 steel. Particularly suitable for high-temperature applications.

Welding current

DC+, AC OCV 60 V



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 E347-16 ISO 3581 E 19.9 Nb R EN 1600 E 19 9 Nb R 3 2 Werkstoff Nr. 1.4551	DNV SFS-EN 1600 SS-EN 1600 UDT	347 E 19 9 Nb R E 19 9 Nb R 3 2	C 0.06 Si 0.6 Mn 1.6 Cr 20.0 Ni 10.0 Nb 0.7		Yield stress, MPa 560 Tensile strength, MPa 700 Elongation, % 32 Charpy V Test temps, °C / Impact values, J +20 / 60	1.6 2.0 2.5 3.2 4.0 5.0	300 300 300 350 350 350	25-40 40-60 50-80 75-115 110-160 140-210	20 21 22 23 24 25

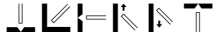
OK 63.20 SMAW

Type Acid-rutile

OK 63.20 is a rutile electrode with extra low carbon content for welding stainless steel type 316L, 18Cr12Ni3Mo. The electrode is especially designed for position welding of thin walled pipes. OK 63.20 is very easy to strike and restrike.

Welding current

DC+, AC OCV 50 V



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 E316L-16 EN 1600 E 19 12 3 L R 1 1 Werkstoff Nr 1.4430	CWB SFS-EN 1600 SS-EN 1600 UDT VdTÜV	E316L-16 E 19 12 3 L R E 19 12 3 L R 1 1	C 0.03 Si 0.7 Mn 0.8 Cr 18.5 Ni 12.0 Mo 2.8		Yield stress, MPa 480 Tensile strength, MPa 580 Elongation, % 35 Charpy V Test temps, °C / Impact values, J +20 / 65 -60 / 45 -120 / 32	1.6 2.0 2.0 2.5 3.2	265 265 300 300 350	15-40 18-60 18-60 25-80 55-110	23 25 25 25 24

OK 63.30 SMAW

Type Acid-rutile

OK 63.30 is an extra-low carbon, LMA electrode of the 18Cr12Ni2.8Mo type. Also suitable for welding stabilized steels of similar composition except when the full creep resistance of the base material has to be met. OK 63.30 is very easy to strike and restrike and produces weld beads with an excellent appearance and self-relieving slag.

Welding current

DC+, AC OCV 50 V

Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 E316L-17 ISO 3581 E 19 12 3 L R EN 1600 E 19 12 3 L R 1 2 Werkstoff Nr. 1.4430	BV	U.P.	C	0.03	Yield stress, MPa 460 Tensile strength, MPa 570 Elongation, % 40 Charpy V Test temps, °C / Impact values, J +20 / 60 -20 / 55 -125 / >32	1.6	300	35-50	28
	CL		Si	0.8		2.0	300	45-65	29
	CWB	E316L-17	Mn	0.6		2.5	300	60-90	30
	DB	30.039.06	Cr	18.0		3.2	350	80-125	31
	DNV	316L	Ni	12.0		4.0	350	120-170	32
	LR	DXVuO, BF, 316L	Mo	2.8		5.0	350	150-240	34
	GL	4571							
	SS-EN 1600	E 19 12 3 L R 1 2							
	SFS-EN 1600	E 19 12 3 L R							
	UDT								
	VdTÜV								

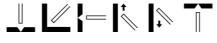
OK 63.34 SMAW

Type Acid-rutile

OK 63.34 is a stainless electrode of the 19Cr12Ni2.8Mo type, designed for welding vertical down of steels of similar composition. Vertical down welding with OK 63.34 gives beads of very good finish and a smooth transition to the joint edges. The slag volume is fairly small and is easy to manipulate and easy to remove.

Welding current

DC+, AC OCV 60 V



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 E316L-16 ISO 3581 E 19 12 3 L R 16 EN 1600 E 19 12 3 L R 1 1 Werkstoff Nr. 1.4430	CWB	E316L-16	C	0.03	Yield stress, MPa 440 Tensile strength, MPa 600 Elongation, % 40 Charpy V Test temps, °C / Impact values, J +20 / 65	2.5	300	70-90	22
	SFS-EN 1600	E 19 12 3 L R	Si	0.8		3.2	300	110-130	25
	UDT		Mn	0.8					
	VdTÜV		Cr	18.5					
			Ni	12.0					
			Mo	2.8					

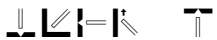
OK 63.35 SMAW

Type Basic

OK 63.35 is a low-carbon, basic, stainless electrode designed for welding steel of 18Cr12Ni3Mo type. The high impact toughness at cryogenic temperature (-196°C) makes OK 63.35 excellent in LNG applications. The weld metal is very resistant to cracking and porosity. OK 63.35 has outstanding welding properties in the vertical and overhead positions.

Welding current

DC+



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 E316L-15 ISO 3581 E 19.12.3 L B EN 1600 E 19 12 3 L B 2 2 Werkstoff Nr. 1.4430	ABS	Stainless	C	0.03	Yield stress, MPa 460 Tensile strength, MPa 600 Elongation, % 35 Charpy V Test temps, °C / Impact values, J +20 / 95 -120 / 60 -196 / 35	2.5	300	55-85	24
	CL		Si	0.5		3.2	350	75-110	24
	DNV	316L	Mn	1.7		4.0	350	110-150	24
	SFS-EN 1600	E 19 12 3 L B	Cr	18.5		5.0	350	150-200	24
	SS-EN 1600	E 19 12 3 L B 2 2	Ni	12.6					
	UDT		Mo	2.8					
	VdTÜV								

OK 63.41 SMAW

Type Acid-rutile

OK 63.41 is an extra-low carbon, acid-resistant, high-recovery LMA electrode of the 18Cr12.5Ni2.8Mo type. The electrode is intended for use in the flat position and gives smooth, shiny beads. The fillet weld has a slightly concave cross section.

Welding current

DC+, AC OCV 55 V

Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS 5.4 E316L-17 ISO 3581 E 19 12 3 L R EN 1600 E 19 12 3 L R 5 3 Werkstoff Nr. 1.4430	CL CWB E316L-16 DNV 316L LR D, BF, 316L, 316LN SFS-EN 1600 E 19 12 3 L R SS-EN 1600 E 19 12 3 L R 5 3 UDT VdTÜV	C 0.03 Si 0.8 Mn 0.7 Cr 18.0 Ni 12.0 Mo 2.8	Yield stress, MPa 430 Tensile strength, MPa 570 Elongation, % 45 Charpy V Test temps, °C / Impact values, J +20 / 60	2.0 2.5 3.2 4.0 5.0	300 300 350 450 450	45-65 60-100 80-130 110-170 170-230	32 34 36 37 42

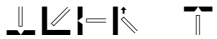
OK 63.80 SMAW

Type Acid-rutile

OK 63.80 is a stainless LMA electrode for welding Nb- or Ti-stabilized stainless steels of the 18Cr12Ni2-3Mo type. OK 63.80 is specially designed for welding Nb- and Ti-stabilized stainless steel corresponding to DIN Werkstoff Nr: 4573 and 4583.

Welding current

DC+, AC OCV 50 V



Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 E318-17 ISO 3581 E 19 12 3 Nb R EN 1600 E 19 12 3 Nb R 3 2 Werkstoff Nr. 1.4576	CL SFS-EN 1600 E 19 12 3 Nb R SS-EN 1600 E 19 12 3 Nb R 3 2 UDT VdTÜV	C 0.02 Si 0.8 Mn 0.6 Cr 18.0 Ni 12.0 Mo 2.8 Nb 0.3	Yield stress, MPa 500 Tensile strength, MPa 620 Elongation, % 35 Charpy V Test temps, °C / Impact values, J +20 / 55	1.6 2.0 2.5 3.2 4.0	300 300 300 350 350	35-50 45-65 60-90 80-120 120-170	28 29 30 32 33

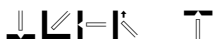
OK 64.30 SMAW

Type Acid-rutile

OK 64.30 is an acid-rutile electrode for welding 19Cr 13Ni 3,5Mo (317L) austenitic stainless steels. The high content of Mo provides better resistance to acid and pitting corrosion compared to 316L types. OK 64.30 is easy to weld in all positions and yields smooth runs both on AC and DC.

Welding current

DC+, AC OCV 55 V



Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 E317L-17 ISO 3581 E 19 13 4 L R EN 1600 E 19 13 4 L R 3 2 Werkstoff Nr. 1.4447	UDT VdTÜV	C 0.03 Si 0.7 Mn 0.7 Cr 19.0 Ni 13.0 Mo 3.7	Yield stress, MPa 480 Tensile strength, MPa 600 Elongation, % 30 Charpy V Test temps, °C / Impact values, J +20 / 45	2.5 3.2 4.0	300 350 350	50-80 70-120 100-170	28 30 32

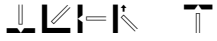
OK 67.15 SMAW

Type Basic

OK 67.15 is a stainless steel electrode for welding 25Cr20Ni steels. Also suitable for welding armour steel, austenitic manganese steel and for joining of dissimilar steels. OK 67.15 deposits a very crack-resistant weld metal.

Welding current

DC+



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 E310-15 ISO 3581 E 25 20 B EN 1600 E 25 20 B 2 2 Werkstoff Nr. 1.4842	CL DB SFS-EN 1600 SS-EN 1600 UDT VdTÜV	 30.039.01 E 25 20 B E 25 20 B 2 2	C 0.1 Si 0.3 Mn 2.0 Cr 26.0 Ni 20.0		Yield stress, MPa 410 Tensile strength, MPa 590 Elongation, % 35 Charpy V Test temps, °C / Impact values, J +20 / 100	2.0 2.5 3.2 4.0 5.0	300 300 350 350 350	35-55 55-85 70-110 110-150 150-200	24 25 25 26 26

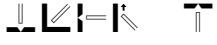
OK 67.45 SMAW

Type Basic

OK 67.45 is an 18-8-6Mn-austenitic, stainless steel electrode for welding dissimilar steels, 13Mn steels with reduced weldability and for cladding carbon steels. Can also be used as a buffer layer prior to hard surfacing.

Welding current

DC+



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 (E307-15) EN 1600 E 18 8 Mn B 4 2 ISO 3581 E 18 8 Mn B	ABS VdTÜV	Stainless	C 0.1 Si 0.5 Mn 6.3 Cr 18.8 Ni 9.0		Yield stress, MPa 470 Tensile strength, MPa 605 Elongation, % 35 Charpy V Test temps, °C / Impact values, J +20 / 70	2.0 2.5 3.2 4.0 5.0	300 300 350 350 350	35-60 50-80 70-100 100-140 150-200	23 23 24 24 25

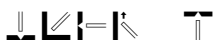
OK 67.50 SMAW

Type Acid-rutile

OK 67.50 is a rutile-coated electrode for welding ferritic austenitic stainless steels, e.g. UNS S31803. Special applications are welding of pipes with high resistance to stress corrosion up to 300°C, the so called Duplex steels. OK 67.50 is particularly suitable for welding duplex cargo tanks.

Welding current

DC+, AC OCV 60 V



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 E2209-17 EN 1600 E 22 9 3 N L R 3 2 Werkstoff Nr. 1.4462	CL CWB DNV GL RINA SFS-EN 1600 UDT VdTÜV	 E2209-17 For ferritic-austenitic (duplex) stainless 4462 E 2209 E 22 9 3 N L R	C 0.03 Si 0.8 Mn 1.0 Cr 23.0 Ni 9.0 Mo 3.0 N 0.15		Yield stress, MPa 660 Tensile strength, MPa 820 Elongation, % 25 Charpy V Test temps, °C / Impact values, J +20 / 70	2.0 2.5 3.2 4.0 5.0	300 300 350 350 350	30-65 50-90 80-120 100-160 150-220	24 27 28 29 30

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 67.52 **SMAW** **Type** Zirconium-basic OK 67.52 is a synthetic, high-recovery electrode of the 18Cr8Ni6Mn type for welding dissimilar steels, 13Mn steels, steels with reduced weldability and for cladding carbon steels. **Welding current** DC+, AC OCV 70 V	SFA/AWS A5.4 (E307-25) ISO E 18 8 Mn B EN 1600 E 18 8 Mn B 8 3 Werkstoff Nr. 1.4370		C 0.1 Si 1,0 Mn 7.0 Cr 18.0 Ni 9.0	Yield stress, MPa 420 Tensile strength, MPa 630 Elongation, % 45 Charpy V Test temps, °C / Impact values, J +20 / 70	2.5 3.2 4.0 5.0	350 450 450 450	90-115 120-165 150-240 200-340	25 34 40 48
OK 67.55 **SMAW** **Type** Basic OK 67.55 is a basic coated electrode especially designed for welding of duplex stainless steel, e.g. UNS S31803. The deposited weld metal gives very high ductility down to -50°C/-60°C. Particularly suitable for welding duplex pipes in offshore applications. **Welding current** DC+	SFA/AWS A5.4 E2209-15 EN 1600 E 22 9 3 N L B 2 2 Werkstoff Nr. 1.4462	DNV For ferritic-austenitic (duplex) stainless UDT VdTÜV	C 0.03 Si 0.7 Mn 1.0 Cr 23.0 Ni 9.0 Mo 3.0 N 0.15	Yield stress, MPa 650 Tensile strength, MPa 800 Elongation, % 28 Charpy V Test temps, °C / Impact values, J +20 / 100 -40 / 75 -60 / 65	2.5 3.2 4.0	300 350 350	50-80 60-100 100-140	21 21 21
OK 67.60 **SMAW** **Type** Acid-rutile OK 67.60 is an over-alloyed stainless electrode for welding stainless to mild steel and low-alloy steel, for surfacing of mild steel and for welding the root runs in clad steel. The electrode has excellent weldability in all positions except vertical down, on as well AC as DC. **Welding current** DC+, AC OCV 55 V	SFA/AWS A5.4 E309L-17 ISO 3581 E 23 12 L R EN 1600 E 23 12 L R 3 2 Werkstoff Nr. 1.4332	CL CWB E309L-17 GL 4332 SFS-EN 1600 E 23 12 L R VdTÜV	C 0.03 Si 0.8 Mn 0.9 Cr 24.0 Ni 12.5	Yield stress, MPa 470 Tensile strength, MPa 580 Elongation, % 32 Charpy V Test temps, °C / Impact values, J +20 / 50 -10 / 40	2.0 2.5 3.2 4.0 4.0 5.0 5.0	300 300 350 350 450 350 450	30-60 50-90 90-120 130-180 130-180 160-240 160-240	27 28 29 31 31 32 32

OK 67.62 SMAW

Type Acid-rutile

OK 67.62 is a synthetic, stainless high-recovery electrode of the 24Cr12Ni type for welding stainless steel to unalloyed steel. The composition is balanced to give good crack resistance when welding stainless steel to mild steel. The bead appearance is outstanding in both butt welds and fillet welds.

Welding current

DC+, AC OCV 55 V

Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 E309-26 EN 1600 E 23 12 R 7 3 Werkstoff Nr. 1.4332	BV DNV GL LR VdTÜV	UP KV -60°C*) 309 4332 D, BF, SS/CMn	C 0.05 Si 0.8 Mn 0.6 Cr 24.0 Ni 12.5		Yield stress, MPa 450 Tensile strength, MPa 570 Elongation, % 40 Charpy V Test temps, °C / Impact values, J +20 / 60	2.5 3.2 4.0 5.0	350 450 450 450	70-120 110-165 150-230 200-310	25 30 35 38

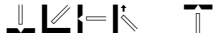
OK 67.70 SMAW

Type Acid-rutile

OK 67.70 is an over-alloyed, stainless steel electrode for use as a buffer layer in welding acid-resistant clad steels and stainless steels to other types of steel. OK 67.70 has outstanding welding properties on both AC and DC. The electrode can be used in all positions except vertical down.

Welding current

DC+, AC OCV 55 V



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 E309MoL-17 ISO 3581 E 23 12 2 R EN 1600 E 23 12 2 L R 3 2 Werkstoff Nr. 1.4459	BV CL CWB DB DNV LR RINA SFS-EN 1600 SS-EN 1600 VdTÜV	UP C&CMn to stainless E309MoL-16 30.039.05 309 Mo DXVuO, BF, SS/CMn E 309Mo E 23 12 2 L R E 23 12 2 L R 3 2	C 0.03 Si 0.8 Mn 0.6 Cr 23.0 Ni 13.0 Mo 2.7		Yield stress, MPa 510 Tensile strength, MPa 620 Elongation, % 33 Charpy V Test temps, °C / Impact values, J +20 / 50	2.0 2.5 3.2 4.0 5.0 5.0	300 300 350 350 350 450	30-60 50-90 90-120 130-180 160-240 160-240	27 28 29 30 32 32

OK 67.75 SMAW

Type Basic

OK 67.75 is a basic coated, stainless electrode for welding steels of the 24Cr13Ni type, for welding transition layers when surfacing mild steel with stainless, for joining dissimilar steels and welding root runs in the stainless side of clad steels.

Welding current

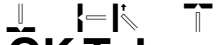
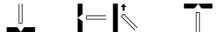
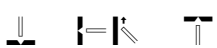
DC+

Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 E309L-15 ISO 3581 E 23 12 L B EN 1600 E 23 12 L B 4 2 Werkstoff Nr. 1.4332	ABS DNV LR SFS-EN 1600 UDT VdTÜV	Stainless 309 DXVuO, BF, SS/CMn E 23 12 L B	C 0.03 Si 0.3 Mn 0.2 Cr 24.0 Ni 13.0 Mo 0.3		Yield stress, MPa 460 Tensile strength, MPa 570 Elongation, % 35 Charpy V Test temps, °C / Impact values, J +20 / 75 -80 / 55	2.5 3.2 4.0 5.0	300 350 350 350	50-80 80-110 100-150 160-220	22 24 26 27

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 68.15 **SMAW** **Type** Basic OK 68.15 is a stainless steel electrode which deposits a ferritic 13Cr weld metal. OK 68.15 is designed for welding steels of similar composition, when CrNi-alloyed austenitic stainless steel electrodes cannot be used, e.g. when the construction will be exposed to aggressive sulphuric gases. **Welding current** DC+	SFA/AWS A5.4 E410-15 ISO 3581 E 13 B EN 1600 E 13 B 4 2 Werkstoff Nr. 1.4009		C 0.06 Si 0.5 Mn 0.5 Cr 13.0	Yield stress, MPa 390 Tensile strength, MPa 520 Elongation, % 25 Charpy V Test temps, °C / Impact values, J +20 / 55	2.5 3.2 4.0 5.0	350 450 450 450	65-115 90-160 120-220 170-270	25 25 30 30
OK 68.17 **SMAW** **Type** Basic-rutile OK 68.17 is a coated electrode designed for welding of e.g. stainless steels castings of the 13Cr4NiMo type. OK 68.17 can be welded in all positions except vertical down. **Welding current** DC+, AC OCV 55 V	SFA/AWS A5.4 E410NiMo-16 ISO 3581 E 13 4 R EN 1600 E 13 4 R 3 2 Werkstoff Nr. 1.4351		C 0.03 Si 0.4 Mn 0.6 Cr 12.0 Ni 4.6 Mo 0.6	Yield stress, MPa 650 Tensile strength, MPa 870 Elongation, % 17 Charpy V Test temps, °C / Impact values, J +20 / 45 -10 / 45 -40 / 40	2.5 3.2 4.0 5.0	350 350 450 450	55-100 65-135 90-190 150-240	21 21 24 23
OK 68.53 **SMAW** **Type** Basic-rutile OK 68.53 is a coated electrode for welding austenitic ferritic steels of Super Duplex types, e.g. SAF 2507 and Zeron 100. OK 68.53 has good welding characteristics in all positions and the slag is easily detachable. **Welding current** DC+, AC OCV 60 V	EN 1600 E 25 9 4 N L R 3 2 Werkstoff Nr. (1.4410)	VdTÜV	C 0.03 Si 0.6 Mn 0.7 Cr 25.5 Ni 10.0 Mo 4.0 N 0.25	Yield stress, MPa 700 Tensile strength, MPa 850 Elongation, % 30 Charpy V Test temps, °C / Impact values, J +20 / 50 -40 / 35	2.5 3.2 4.0	300 350 350	55-85 70-110 110-150	22 22 23

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 68.55 **SMAW** **Type** Basic OK 68.55 is a basic coated electrode for welding austenite ferrite steels of Super Duplex type, e g SAF 2507 and Zeron 100. OK 68.55 deposits a weld metal with high ductility. **Welding current** DC+	EN 1600 E 25 9 4 N L B 4 2 Werkstoff Nr. (1.4410)		C 0.03 Si 0.6 Mn 0.9 Cr 25.5 Ni 10.0 Mo 4.0 N 0.25	Yield stress, MPa 700 Tensile strength, MPa 900 Elongation, % 28 Charpy V Test temps, °C / Impact values, J +20 / 90 -40 / 55 -60 / 45	2.5 3.2 4.0	300 350 350	50-80 60-100 100-140	23 23 23
OK 68.81 **SMAW** **Type** Acid-rutile OK 68.81 is a high-alloyed electrode which deposits a ferritic-austenitic duplex weld metal with approx. 40% ferrite. Resistant to stress corrosion and highly insensitive to dilution. Good scaling resistance up to 1150°C. OK 68.81 is used for joining dissimilar steels, steels with reduced weldability and buffer layers prior to hardfacing. Applications: rolls, forging dies, hot-work tools, dies for plastics and so on. **Welding current** DC+, AC OCV 60 V	SFA/AWS A5.4 E312-17 ISO 3581 E 29.9 R EN 1600 E 29 9 R 3 2 Werkstoff Nr. 1.4337		C 0.12 Si 0.7 Mn 0.8 Cr 29.0 Ni 10.0	Yield stress, MPa 580 Tensile strength, MPa 750 Elongation, % 25 Charpy V Test temps, °C / Impact values, J +20 / 30	2.0 2.5 3.2 4.0 5.0	300 300 350 350 350	35-60 50-85 80-125 110-175 150-240	22 24 25 26 28
OK 69.33 **SMAW** **Type** Basic-rutile OK 69.33 is a stainless steel electrode which deposits a fully austenitic weld metal with increased resistance to sulphuric acid. The weld metal of OK 69.33 also has good resistance to intergranular and pitting corrosion. **Welding current** DC+, AC OCV 65 V	SFA/AWS A5.4 E385-16 EN 1600 E 20 25 5 Cu N L R 3 2 Werkstoff Nr. 1.4519	SFS-EN 1600 E 20 25 5 Cu L R UDT VdTÜV	C 0.03 Si 0.5 Mn 1.0 Cr 20.5 Ni 25.0 Mo 5.0 Cu 1.5	Yield stress, MPa 400 Tensile strength, MPa 575 Elongation, % 35 Charpy V Test temps, °C / Impact values, J +20 / 80 -140 / 45	2.0 2.5 3.2 4.0 5.0	300 300 350 350 350	40-60 60-85 85-130 120-180 160-240	23 24 27 29 31

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrod 14.20 **FCAW** **Type** Rutile OK Tubrod 14.20 is a rutile flux-cored wire, specifically designed to operate in the vertical and overhead positions when welding 304, 304L, 308 and 308L stainless steels. The stabilised 321 and 347 steels may also be welded. OK Tubrod 14.20 complements the OK Tubrod 14.30 and are used in cunjuction with each other to maximise productivity on multi-positional applications. Shielding gas Ar+20% CO_2. **Welding current** DC+	AWS/SFA A5.22-95 E308LT1-4 EN 12073-99 T 19 9 L P M 2		C <0.04 Si 0.7 Mn 1.4 Cr 19.5 Ni 9.5	Yield stress, MPa >320 Tensile strength, MPa >550 Elongation, % 35 Charpy V Test temps, °C / Impact values, J +20 / >47 -120 / >32	1.2		130-220	25-29
OK Tubrod 14.21 **FCAW** **Type** Rutile OK Tubrod 14.21 is a flux-cored wire for out-of-position welding of 316 and 316L type stainless steels where increased resistance to pitting corrosion is required. This is particularly relevant to attack by chloride solutions and sulphurous acid. The weld metal composition is such that the stabilised 321 and 347 stainless steels may also be welded. This wire complements the OK Tubrod 14.31. Shielding gas Ar+20% CO_2. **Welding current** DC(+)	SFA/AWS A5.22-95 E316LT1-4 EN 12073-99 T 19 12 3 L P M 2		C <0.04 Si 0.7 Mn 1.4 Cr 19.0 Ni 12.0 Mo 2.7	Yield stress, MPa >320 Tensile strength, MPa >550 Elongation, % >30 Charpy V Test temps, °C / Impact values, J 20 / >47 -20 / >40 -196 / >34	1.2		130-220	25-29
OK Tubrod 14.22 **FCAW** **Type** Rutile OK Tubrod 14.22 is a flux-cored tubular wire which produces weld metal of the 309 type. Whilst suitable for the 25Cr12Ni type steels the principal application is the vertical and overhead joining of dissimilar and difficult to weld steels. This will include the joining of clad steels to themselves and carbon-manganese steels. Shielding gas Ar+20% CO_2. **Welding current** DC(+)	SFA/AWS A5.22-95 E309LT1-4 EN 12073-99 T 23 12 L P C 2, T 23 12 L P M 2		C <0.04 Si 0.7 Mn 1.4 Cr 24.0 Ni 13.0	Yield stress, MPa >320 Tensile strength, MPa >550 Elongation, % >30 Charpy V Test temps, °C / Impact values, J +20 / >47 -20 / >40 -60 / >32	1.2		130-220	25-29

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrod 14.25 **FCAW** **Type** Rutile OK Tubrod 14.25 is a flux-cored wire for the welding of 317 and 317L type materials in the vertical-up, horizontal and overhead positions. Containing higher levels of Mo for increased corrosion-resistance, the principal area of application is process and chemical plant as well as chemical tankers. Used in conjunction with OK Tubrod 14.35 the two wires combine to produce exceptional weld quality with maximum versatility. Shielding gas Ar+20% CO_2. **Welding current** DC(+) 	SFA/AWS A5.22-95 E317LT1-4		C 0.03 Si 0.9 Mn 1.3 Cr 18.7 Ni 12.6 Mo 3.4	Yield stress, MPa 475 Tensile strength, MPa 630 Elongation, % 34 Charpy V Test temps, °C / Impact values, J +20 / 40	1.2		130-220	25-30
OK Tubrod 14.27 **FCAW** **Type** Rutile OK Tubrod 14.27 is an all-positional, flux-cored wire for the welding of duplex stainless steel. Designed to operate with Ar-CO_2 gas mixtures, it has a smooth stable arc producing a weld with easy slag removal and minimal spatter. For welding of W.Nr 1.4462 (UNS S31803) grade of steel. Typical branded steels include SAF 2205, FAL223, AF22, NK Cr22 and HY Resist 22/5 duplex steels. Shielding gas Ar+20% CO_2 or CO_2. **Welding current** DC(+) 	SFA/AWS A5.22-95 E2209T1-1, E2209T1-4 EN 12073-99 T 22 9 3 N L P C 2, T 22 9 3 N L P M 2		C <0.04 Si 0.8 Mn 0.9 Cr 22.0 Ni 9.0 Mo 3.0 N 0.15 P <0.03 S <0.02	Yield stress, MPa >500 Tensile strength, MPa >690 Elongation, % >20 Charpy V Test temps, °C / Impact values, J -20 / >47	1.2		150-250	26-30
OK Tubrod 14.28 **FCAW** **Type** Rutile A rutile, flux-cored, tubular wire for the all-positional welding of "Super duplex" stainless steels. The rutile based formulation ensures that the arc action is smooth and stable, leaving a weld deposit of consistent appearance with easy slag removal. The weld metal composition affords the highest resistance to pitting and crevice corrosion, as well as stress corrosion. Shielding gas Ar+20% CO_2. **Welding current** DC+ 			C <0.04 Si 0.6 Mn 0.9 Cr 25.0 Ni 9.2 Mo 3.9 N 0.2	Yield stress, MPa 650 Tensile strength, MPa 820 Elongation, % 18 Charpy V Test temps, °C / Impact values, J +20 / 55 -46 / 39	1.2		150-250	26-30

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrod 14.30 **FCAW** **Type** Rutile OK Tubrod 14.30 is a flux-cored tubular wire designed for welding stainless steels containing 18-20Cr8-12Ni. As well as the low carbon 304 and 308 varieties OK Tubrod 14.30 is also suitable for welding the stabilised 321 and 347 types. The slag detachability is effortless leaving a bright finish to a weld deposit of exceptional appearance. Shielding gas CO_2 or Ar+20%CO_2. **Welding current** DC(+)	SFA/AWS A5.22-95 E308LT0-1, E308LT0-4 EN 12073:2000 T 19 9 L R M 3		C <0.04 Si 0.6 Mn 1.4 Cr 19.0 Ni 10.0	Yield stress, MPa >320 Tensile strength, MPa >510 Elongation, % >35 Charpy V Test temps, °C / Impact values, J +20 / 44 -196 / 32	1.2 1.6		150-250 200-350	25-32 26-34
OK Tubrod 14.31 **FCAW** **Type** Rutile A flux-cored tubular wire used for the joining of the 316 low-carbon type 18-20Cr10-14Ni2-3Mo steels. The composition also ensures that the stabilised types may be welded with equal success. Capable of welding in the spray transfer mode, very high deposition rates are assured. The weld appearance is bright, fine and evenly rippled surface finish with minimal spatter. Shielding gas CO_2 or Ar+20%CO_2. **Welding current** DC(+)	SFA/AWS A5.22-95 E316LT0-1, E316LT0-4 EN 12073:2000 T 19 12 3 L R M 3		C <0.04 Si 0.6 Mn 1.4 Cr 19.0 Mo 2.7 Ni 12.0	Yield stress, MPa >320 Tensile strength, MPa >510 Elongation, % >25 Charpy V Test temps, °C / Impact values, J +20 / 40 -110 / 32	1.2 1.6		150-250 200-350	25-32 26-34
OK Tubrod 14.32 **FCAW** **Type** Rutile A flux-cored tubular wire depositing weld metal of the 309 type. Apart from joining these steels the weld metal ferrite content ensures that it is suitable for dissimilar applications as well as joining difficult-to-weld steels. Shielding gas CO_2 or Ar+20%CO_2. **Welding current** DC(+)	SFA/AWS A5.22-95 E309LT0-1, E309LT0-4 EN 12073:2000 T 23 12 L R M 3		C <0.04 Si 0.6 Mn 1.4 Cr 24.0 Ni 13.0	Yield stress, MPa >320 Tensile strength, MPa >520 Elongation, % >30 Charpy V Test temps, °C / Impact values, J +20 / 42	1.2 1.6		150-250 200-350	25-32 26-34

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrod 14.33 **FCAW** **Type** Rutile OK Tubrod 14.33 is a flux-cored, tubular wire producing weld metal of the 309+ MoL type composition. The austenitic ferritic weld deposit has an exceptionally high resistance to hot cracking when welding dissimilar steels. Such applications will include the welding of buffer layers for acid resistant clad steels and surfacing. It is also ideally suited for the welding of mild and low-alloy steels to a wide range of stainless steels. Shielding gas CO_2 or Ar+20% CO_2. **Welding current** DC(+)	SFA/AWS A5.22-95 E309MoLT0-1, E309MoLT0-4 EN 12073:2000 T 23 12 2 L R M 3		C <0.04 Si 0.6 Mn 1.6 Cr 23.0 Ni 13.0 Mo 2.3	Yield stress, MPa >350 Tensile strength, MPa >550 Elongation, % >25 Charpy V Test temps, °C: +20 Impact values, J: 44	1.2 1.6		150-250 200-350	25-32 26-34
OK Tubrod 14.34 **FCAW** **Type** Rutile OK Tubrod 14.34 is a flux-cored wire for the welding of the 19Cr10Ni type niobium and titanium stabilized stainless steels. Such steels are widely used in the chemical and process plant industries where resistance to intergranular corrosion is required. These will include the 302, 304, 321 type steels as well as the standard 347 type. Shielding gas CO_2 or Ar+20% CO_2. **Welding current** DC(+)	SFA/AWS A5.22-95 E347T0-1, E347T0-4 EN 12073:2000 T 19 9 Nb R M 3		C <0.08 Si 0.6 Mn 1.4 Cr 19.5 Ni 10.0 Nb+Ta 0.8	Yield stress, MPa >350 Tensile strength, MPa >550 Elongation, % >25 Charpy V Test temps, °C: 0 Impact values, J: 56	1.2 1.6		150-250 200-350	25-32 26-34

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 16.11 **GMAW** A continuous, solid, corrosion-resistant, chromium-nickel wire for the GMA welding of austenitic chromium-nickel alloys of the 18% Cr-8% Ni type. OK Autrod 16.11 (“347Si”) has good general corrosion resistance. The alloy is stabilised with niobium to improve the resistance to intergranular corrosion of the weld metal. The high silicon content improves the welding properties, such as wetting. Due to the niobium content, this alloy is recommended for use at higher temperatures. OK Autrod 16.11 is usually welded with Ar/(1-3%) O_2 as the shielding gas. **Welding current** DC(+)	SFA/AWS A5.9 ER347Si EN 12072 G 19 9 NbSi	DB 43.039.13 UDT DIN 8556 VdTÜV	C <0.08 Si 0.8 Mn 1.7 Cr 20.0 Ni 10.0 Nb 0.6 Wire composition	Yield stress, MPa 440 Tensile strength, MPa 640 Elongation, % 37 Charpy V Test temps, °C / Impact values, J +20 / 110 -60 / 80	0.8 1.0 1.2 1.6		50-140 80-190 180-280 230-350	16-22 16-24 20-28 24-28
OK Autrod 16.12 **GMAW** A continuous, solid, corrosion-resistant, chromium-nickel wire for the GMA welding of austenitic chromium-nickel alloys of the 18% Cr-8% Ni type. OK Autrod 16.12 (“308LSi) has good general corrosion resistance. The alloy has a low carbon content which makes it particularly suitable when there is a risk of intergranular corrosion. The high silicon content improves the welding properties, such as wetting. The alloy is widely used in the chemical and food-processing industries, as well as for pipes, tubes and boilers. OK Autrod 16.12 is usually welded with Ar/(1-3%) O_2 as the shielding gas. **Welding current** DC(+)	SFA/AWS A5.9 ER308LSi EN 12072 G 19 9 LSi	DB 43.039.01 DNV 308L MS (-60°C) UDT DIN 8556 VdTÜV	C <0.03 Si 0.8 Mn 1.7 Cr 20.0 Ni 10.0 Wire composition	Yield stress, MPa 450 Tensile strength, MPa 620 Elongation, % 36 Charpy V Test temps, °C / Impact values, J +20 / 110 -60 / 90 -196 / 60	0.6 0.8 0.9 1.0 1.2 1.6		50-140 65-165 80-190 180-280 230-350	16-22 16-24 16-24 20-28 24-28
OK Autrod 16.31 **GMAW** A continuous, solid, corrosion-resistant, chromium-nickel wire for the GMA welding of austenitic chromium-nickel alloys of the 19% Cr-12% Ni-3% Mo type. OK Autrod 16.31 (“318Si”) has good general corrosion resistance. The alloy is stabilised with niobium to improve the resistance to intergranular corrosion of the weld metal. The high silicon content improves the welding properties, such as wetting. Due to the stabilisation by niobium, this alloy is recommended for use at higher temperatures. OK Autrod 16.31 is usually welded with Ar/(1-3%) O_2 as the shielding gas. **Welding current** DC(+)	EN 12072 G 19 12 3 Nb Si	UDT DIN 8556 VdTÜV	C <0.08 Si 0.8 Mn 1.7 Cr 19.0 Ni 12.5 Mo 2.7 Nb 0.6 Wire composition	Yield stress, MPa 460 Tensile strength, MPa 615 Elongation, % 31 Charpy V Test temps, °C / Impact values, J +20 / 100 -60 / 70	0.8 1.0 1.2 1.6		50-140 80-190 180-280 230-350	16-22 16-24 20-28 24-28

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 16.32 **GMAW** A continuous, solid, corrosion-resistant, chromium-nickel-molybdenum wire for the GMA welding of austenitic chromium-nickel alloys of the 18% Cr-8% Ni and 18% Cr-8% Ni-3% Mo types. OK Autrod 16.32 ("316LSi") has particularly good resistance to corrosion in acid and chlorinated environments. It has a low carbon content which makes it particularly suitable when there is a risk of intergranular corrosion. The alloy is widely used in the chemical and food-processing industries, as well as in shipbuilding and various types of architectural structure. OK Autrod 16.32 is usually welded with Ar/(1-3%) O_2 as the shielding gas. **Welding current** DC(+)	SFA/AWS A5.9 ER316LSi EN 12072 G 19 12 3 L Si	DB 43.039.05 DNV 316L MS (-120°C) UDT DIN 8556 VdTÜV	C <0.03 Si 0.8 Mn 1.7 Cr 19.0 Ni 12.5 Mo 2.7 Wire composition	Yield stress, MPa 440 Tensile strength, MPa 620 Elongation, % 37 Charpy V Test temps, °C / Impact values, J +20 / 120 -60 / 95 -196 / 55	0.8 0.9 1.0 1.2 1.6		50-140 65-165 80-190 180-280 230-350	16-22 16-24 16-24 20-28 24-28
OK Autrod 16.51 **GMAW** A continuous, solid, corrosion-resistant, chromium-nickel wire for joining stainless steels to non-alloy or low-alloy steels and for the GMA welding of austenitic stainless alloys of the 24% Cr, 13% Ni, low C types. OK Autrod 16.51 ("309LSi") has good general corrosion resistance. The high silicon content improves the welding properties, such as wetting. When used for joining dissimilar materials, corrosion resistance is of secondary importance. OK Autrod 16.51 is usually welded with Ar/(1-3%) O_2 as the shielding gas. **Welding current** DC(+)	SFA/AWS A5.9 ER309LSi EN 12072 G 23 12 L Si	UDT DIN 8556 VdTÜV	C <0.03 Si 0.8 Mn 1.7 Cr 24.0 Ni 13.0 Wire composition	Yield stress, MPa 440 Tensile strength, MPa 600 Elongation, % 41 Charpy V Test temps, °C / Impact values, J +20 / 160 -60 / 130 -110 / 90	0.8 1.0 1.2 1.6		50-140 80-190 180-280 230-350	16-22 16-24 20-28 24-28
OK Autrod 16.54 **GMAW** A continuous, solid, corrosion-resistant, chromium-nickel-molybdenum wire for the GMA welding of stainless steel alloys of the 22% Cr, 15% Ni, 3% Mo, low C types. OK Autrod 16.54 ("309LMo") has good resistance to general corrosion. The alloy is often used for joining stainless steels to non-alloy or low-alloy steels where corrosion resistance is of less importance. OK Autrod 16.54 is usually welded with Ar/(1-3%) O_2 as the shielding gas. **Welding current** DC(+)	EN 12072 G 23 12 2 L	RINA UDT DIN 8556 VdTÜV	C <0.03 Si 0.4 Mn 1.4 Cr 21.5 Ni 15.0 Mo 2.7 Wire composition	Yield stress, MPa 415 Tensile strength, MPa 585 Elongation, % 30 Charpy V Test temps, °C / Impact values, J +20 / 110 -60 / 65	0.8 1.0 1.2 1.6		50-140 80-190 180-280 230-350	16-22 16-24 20-28 24-28

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 16.55 **GMAW** A continuous, solid, corrosion-resistant, chromium-nickel-molybdenum-copper wire for the GMA welding of austenitic stainless alloys of the 20% Cr, 25% Ni, 5% Mo, 1.5% Cu, low C types. OK Autrod 16.55 ("385") weld metal has good resistance to stress corrosion and intergranular corrosion and displays very good resistance to attacks in non-oxidising acids. The resistance to crevice corrosion is better than that of ordinary 18% Cr, 8% Ni, Mo steels. The alloy is widely used in many applications related to the process industry. OK Autrod 16.55 is usually welded with Ar/(1-3%) O_2 as the shielding gas. **Welding current** DC(+)	SFA/AWS A5.9 ER385 EN 12072 G 20 25 5 Cu L	UDT DIN 8556 VdTÜV	C <0.02 Si 0.4 Mn 1.7 Cr 20.5 Ni 25.0 Mo 4.5 Cu 1.4 Wire composition	Yield stress, MPa 340 Tensile strength, MPa 540 Elongation, % 37 Charpy V Test temps, °C / Impact values, J +20 / 120	0.8 1.0 1.2 1.6		50-140 80-190 180-280 230-350	16-22 16-24 20-28 24-28
OK Autrod 16.70 **GMAW** A continuous, solid, corrosion-resistant, chromium-nickel wire for the GMA welding of heat-resistant austenitic steels of the 25% Cr, 20% Ni types. OK Autrod 16.70 ("310") has good general oxidation resistance, especially at high temperatures, due to its high Cr content. The alloy is fully austenitic and is therefore sensitive to hot cracking. Common applications include industrial furnaces and boiler parts, as well as heat exchangers. OK Autrod 16.70 is usually welded with Ar/(1-3%) O_2 as the shielding gas. **Welding current** DC(+)	SFA/AWS A5.9 ER310 EN 12072 G 25 20		C 0.1 Si 0.5 Mn 1.7 Cr 26.0 Ni 21.0 Wire composition	Yield stress, MPa 390 Tensile strength, MPa 590 Elongation, % 43 Charpy V Test temps, °C / Impact values, J +20 / 175 -196 / 60	0.8 1.0 1.2 1.6		50-140 80-190 180-280 230-350	16-22 16-24 20-28 24-28
OK Autrod 16.75 **GMAW** A continuous, solid, corrosion-resistant, chromium-nickel wire for the GMA welding of stainless steels of the 29% Cr, 9% Ni types. OK Autrod 16.75 ("312") has good oxidation resistance at high temperatures due to its high content of Cr. The alloy is widely used for joining dissimilar steels, especially if one of the components is fully austenitic, and steels that are difficult to weld, i. e. machine components, tools and austenitic manganese steels. OK Autrod 16.75 is usually welded with Ar/(1-3%) O_2 as the shielding gas. **Welding current** DC(+)	SFA/AWS A5.9 ER312 EN 12072 G 29 9		C <0.1 Si 0.5 Mn 1.7 Cr 30.0 Ni 9.2 Wire composition	Yield stress, MPa 610 Tensile strength, MPa 770 Elongation, % 20 Charpy V Test temps, °C / Impact values, J +20 / 50	0.8 1.0 1.2 1.6		50-140 80-190 180-280 230-350	16-22 16-24 20-28 24-28

Product	Classification	Approvals		Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 16.79 **GMAW** A continuous, solid welding wire of the 13% Cr, 4.5% Ni, 0.5% Mo type. OK Autrod 16.79 ("410NiMo") is used for the GMA welding of similar martensitic and martensitic-ferritic steels in different applications such as hydro turbines. OK Autrod 16.79 is usually welded with Ar/(1-3%) O_2 as the shielding gas. **Welding current** DC(+)	EN 12072 G 13 4			C <0.05 Si 0.4 Mn 0.7 Cr 12.5 Ni 4.2 Mo 0.5 Wire composition	Yield stress, MPa 600 Tensile strength, MPa 840 Elongation, % 17	0.8 1.0 1.2 1.6		50-140 80-190 180-280 230-350	16-22 16-24 20-28 24-28
OK Autrod 16.81 **GMAW** A continuous, solid, corrosion-resistant 18% Cr, 0.5% Ti wire for the GMA welding of stainless alloys of 13-18% Cr. OK Autrod 16.81 ("430Ti") is used among other things in the automotive industry for exhaust pipe applications. The alloy is also used for cladding non-alloy and low-alloy steels. OK Autrod 16.81 is usually welded with Ar/(1-3%) O_2 as the shielding gas. **Welding current** DC(+)	EN 12072 G Z 17 Ti			C <0.1 Si 0.9 Mn 0.5 Cr 17.5 Ti 0.4 Wire composition	Yield stress, MPa 435 Tensile strength, MPa 580 Elongation, % 28	0.8 1.0 1.2 1.6		50-140 80-190 180-280 230-350	16-22 16-24 20-28 24-28
OK Autrod 16.86 **GMAW** A continuous, solid, corrosion-resistant, duplex wire for the GMA welding of austenitic-ferritic stainless alloys of the 22% Cr, 5% Ni, 3% Mo types. OK Autrod 16.86 ("Duplex") has high general corrosion resistance. In media containing chloride and hydrogen sulphide, the alloy has high resistance to intergranular, pitting and especially stress corrosion. The alloy is used in a variety of applications across all industrial segments. OK Autrod 16.86 is usually welded with Ar/(1-3%) O_2 as the shielding gas. **Welding current** DC(+)	SFA/AWS A5.9 ER2209 EN 12072 G 22 9 3 N L	DNV GL RINA UDT VdTÜV	For duplex stainless steels 4462S DIN 8556	C <0.03 Si 0.5 Mn 1.6 Cr 22.5 Ni 8.5 Mo 3.0 N 0.15 Wire composition	Yield stress, MPa 600 Tensile strength, MPa 765 Elongation, % 28 Charpy V Test temps, °C / Impact values, J +20 / 100 -20 / 85 -60 / 70	0.8 1.0 1.2 1.6		50-140 80-190 180-280 230-350	16-22 16-24 20-28 24-28

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 16.95 **GMAW** A continuous, solid, corrosion-resistant, chromium-nickel-manganese wire for the GMA welding of austenitic stainless alloys of the 18% Cr, 8% Ni, 7% Mn types. OK Autrod 16.95 (“307Si”) has general corrosion resistance similar to that of the corresponding parent metal. When used for joining dissimilar materials, corrosion resistance is of secondary importance. The alloy is used in a wide range of applications throughout industry, such as joining austenitic-manganese, work-hardenable steels, as well as armour-plating and heat-resistant steels. OK Autrod 16.95 is usually welded with Ar/(1-3%) O_2 as the shielding gas. **Welding current** DC(+)	EN 12072 G 18 8 Mn	DB 43.039.10 UDT DIN 8556 VdTÜV	C <0.2 Si 0.9 Mn 7.0 Cr 18.5 Ni 8.1 Wire composition	Yield stress, MPa 450 Tensile strength, MPa 640 Elongation, % 41 Charpy V Test temps, °C / Impact values, J +20 / 130 -60 / 56	0.8 1.0 1.2 1.6		50-140 80-190 180-280 230-350	16-22 16-24 20-28 24-28
OK Tigrod 16.10 **GTAW** Bare, corrosion-resistant, chromium-nickel wire for the GTA welding of austenitic chromium-nickel alloys of the 18% Cr-8% Ni type. OK Tigrod 16.10 (“308L”) has good general corrosion resistance. The alloy has a low carbon content which makes it particularly suitable when there is a risk of intergranular corrosion. The alloy is widely used in the chemical and food-processing industries, as well as for pipes, tubes and boilers. OK Tigrod 16.10 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	SFA/AWS A5.9 ER308L EN 12072 W 19 9 L	DNV 308L (-60°C) UDT DIN 8556 VdTÜV	C <0.03 Si 0.5 Mn 1.7 Cr 20.0 Ni 10.0 Wire composition	Yield stress, MPa 450 Tensile strength, MPa 620 Elongation, % 36 Charpy V Test temps, °C / Impact values, J +20 / 170 -80 / 135 -196 / 60	1.0 1.2 1.6 2.0 2.4 3.2 4.0	1000 1000 1000 1000 1000 1000 1000		
OK Tigrod 16.11 **GTAW** Bare, corrosion-resistant, chromium-nickel rods for the GTA welding of austenitic chromium-nickel alloys of the 18% Cr-8% Ni type. OK Tigrod 16.11 (“347Si”) has good general corrosion resistance. The alloy is stabilised with niobium to improve resistance to the intergranular corrosion of the weld metal. The high silicon content improves the welding properties, such as wetting. Due to the niobium content, this alloy is recommended for use at higher temperatures. OK Tigrod 16.11 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	SFA/AWS A5.9 ER347Si EN 12072 W 19 9 Nb Si	UDT DIN 8556 VdTÜV	C <0.08 Si 0.8 Mn 1.3 Cr 20.0 Ni 10.0 Nb 0.6 Wire composition	Yield stress, MPa 440 Tensile strength, MPa 640 Elongation, % 35 Charpy V Test temps, °C / Impact values, J +20 / 90 -60 / 75	1.0 1.2 1.6 2.0 2.4 3.2 4.0	1000 1000 1000 1000 1000 1000 1000		

Product	Classification	Approvals		Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tigrod 16.12 **GTAW** Bare, corrosion-resistant, chromium-nickel rods for the GTA welding of austenitic chromium-nickel alloys of the 18% Cr-8% Ni type. OK Tigrod 16.12 (308LSi") has good general corrosion resistance. The alloy has a low carbon content which makes it particularly suitable when there is a risk of intergranular corrosion. The higher silicon content improves the welding properties, such as wetting. This alloy is widely used in the chemical and food-processing industries, as well as for pipes, tubes and boilers. OK Tigrod 16.12 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	SFA/AWS A5.9 ER308LSi EN 12072 W 19 9 L Si	DB DNV UDT VdTÜV	43.039.11 308L M DIN 8556	C <0.03 Si 0.8 Mn 1.7 Cr 20.0 Ni 10.0 Wire composition	Yield stress, MPa 450 Tensile strength, MPa 620 Elongation, % 36 Charpy V Test temps, °C / Impact values, J +20 / 170 -60 / 150 -110 / 140 -196 / 100	1.0 1.2 1.6 2.0 2.4 3.2 4.0	1000 1000 1000 1000 1000 1000 1000		
OK Tigrod 16.30 **GTAW** Bare, corrosion-resistant, chromium-nickel-molybdenum rods for the GTA welding of austenitic chromium-nickel alloys of the 18% Cr-8% Ni and 18% Cr-8% Ni-3% Mo types. OK Tigrod 16.30 ("316L") has particularly good resistance to corrosion in acid and chlorinated environments. This alloy has a low carbon content which makes it particularly suitable when there is a risk of intergranular corrosion. It is widely used in the chemical and food-processing industries, as well as in shipbuilding and various types of architectural structure. Welding should be performed with a low heat input. It is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	SFA/AWS A5.9 ER316L EN 12072 W 19 12 3 L	DNV UDT VdTÜV	316L (-60°C) DIN 8556	C <0.03 Si 0.5 Mn 1.7 Cr 19.0 Ni 12.5 Mo 2.7 Wire composition	Yield stress, MPa 440 Tensile strength, MPa 620 Elongation, % 37 Charpy V Test temps, °C / Impact values, J +20 / 175 -60 / 150 -110 / 120 -196 / 75	1.0 1.2 1.6 2.0 2.4 3.2 4.0	1000 1000 1000 1000 1000 1000 1000		
OK Tigrod 16.31 **GTAW** Bare, corrosion-resistant, chromium-nickel rods for the GTA welding of austenitic chromium nickel alloys of the 18% Cr-8% Ni-3% Mo type. OK Tigrod 16.31 ("318Si") has good general corrosion resistance. The alloy is stabilised with niobium to improve resistance to the intergranular corrosion of the weld metal. The high silicon content improves the welding properties, such as wetting. Due to the stabilisation of niobium, this alloy is recommended for use at higher temperatures. OK Tigrod 16.31 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	EN 12072 W 19 12 3 Nb Si	UDT VdTÜV	DIN 8556	C <0.08 Si 0.8 Mn 1.7 Cr 19.0 Ni 12.5 Mo 2.7 Nb 0.6 Wire composition	Yield stress, MPa 460 Tensile strength, MPa 615 Elongation, % 31 Charpy V Test temps, °C / Impact values, J +20 / 70	1.0 1.2 1.6 2.0 2.4 3.2 4.0	1000 1000 1000 1000 1000 1000 1000		

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tigrod 16.32 **GTAW** Bare, corrosion-resistant, chromium-nickel-molybdenum rods for the GTA welding of austenitic chromium-nickel alloys of the 18% Cr-8% Ni and 18% Cr-8% Ni-3% Mo types. OK Tigrod 16.32 ("316LSi") has particularly good resistance to corrosion in acid and chlorinated environments. The alloy has a low carbon content which makes it particularly suitable when there is a risk of intergranular corrosion. The alloy is widely used in the chemical and food-processing industries, as well as in shipbuilding and various types of architectural structure. OK Tigrod 16.32 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	SFA/AWS A5.9 ER316LSi EN 12072 W 19 12 3 L Si	DB 43.039.06 DNV 316L UDT DIN 8556 VdTÜV	C <0.03 Si 0.8 Mn 1.7 Cr 19.0 Ni 12.5 Mo 2.7 Wire composition	Yield stress, MPa 450 Tensile strength, MPa 600 Elongation, % 35 Charpy V Test temps, °C / Impact values, J +20 175 -110 150 -196 110	1.0 1.2 1.6 2.0 2.4 3.2 4.0	1000 1000 1000 1000 1000 1000 1000		
OK Tigrod 16.51 **GTAW** Bare, corrosion-resistant, chromium-nickel rods for joining stainless steels to non-alloy or low-alloy steels and for the GTA welding of austenitic stainless alloys of the 24% Cr, 13% Ni, low C types. OK Tigrod 16.51 ("309LSi") has good general corrosion resistance. The high silicon content improves the welding properties, such as wetting. When used for joining dissimilar materials, corrosion resistance is of secondary importance. OK Tigrod 16.51 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	SFA/AWS A5.9 ER309LSi EN 12072 W 23 12 L Si	UDT DIN 8556 VdTÜV	C <0.03 Si 0.8 Mn 1.7 Cr 24.0 Ni 13.0 Wire composition	Yield stress, MPa 475 Tensile strength, MPa 635 Elongation, % 32 Charpy V Test temps, °C / Impact values, J +20 150 -60 150 -110 130	1.2 1.6 2.0 2.4 3.2	1000 1000 1000 1000 1000		
OK Tigrod 16.53 **GTAW** Bare, corrosion-resistant, chromium-nickel rods for joining stainless steels to non-alloy or low-alloy steels and for the GTA welding of austenitic stainless alloys of the 24% Cr, 13% Ni, low C types. OK Tigrod 16.53 ("309L") has good general corrosion resistance. The high silicon content improves the welding properties, such as wetting. When used for joining dissimilar materials, corrosion resistance is of secondary importance. OK Tigrod 16.53 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	SFA/AWS A5.9 ER309L EN 12072 W 23 12 L		C <0.03 Si 0.5 Mn 1.7 Cr 24.0 Ni 13.0 Wire composition	Yield stress, MPa 430 Tensile strength, MPa 590 Elongation, % 40 Charpy V Test temps, °C / Impact values, J +20 160 -60 130 -110 90	1.2 1.6 2.0 2.4 3.2 4.0	1000 1000 1000 1000 1000 1000		

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tigrod 16.55 **GTAW** Bare, corrosion-resistant, chromium-nickel-molybdenum-copper wire for the GTA welding of austenitic stainless alloys of the 20% Cr, 25% Ni, 5% Mo, 1.5% Cu, low C types. OK Tigrod 16.55 (“385”) weld metal has good resistance to stress corrosion and intergranular corrosion and displays very good resistance to attacks in non-oxidising acids. Its resistance to crevice corrosion is better than that of ordinary 18% Cr, 8% Ni, Mo steels. The alloy is widely used in many applications related to the process industry. OK Tigrod 16.55 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	SFA/AWS A5.9 ER385 EN 12072 W 20 25 5 Cu L	UDT DIN 8556 VdTÜV	C <0.02 Si <0.5 Mn 1.7 Cr 20.5 Ni 25.0 Mo 4.7 Cu 1.6 Wire composition	Yield stress, MPa 340 Tensile strength, MPa 540 Elongation, % 37 Charpy V Test temps, °C / Impact values, J +20 / 120	1.0 1.2 1.6 2.0 2.4 3.2	1000 1000 1000 1000 1000 1000		
OK Tigrod 16.70 **GTAW** Bare, corrosion-resistant, chromium-nickel wire for the GTA welding of heat-resistant austenitic steels of the 25% Cr, 20% Ni types. OK Tigrod 16.70 (“310”) has good general oxidation resistance, especially at high temperatures, due to its high Cr content. The alloy is fully austenitic and is therefore sensitive to hot cracking. Common applications include industrial furnaces and boiler parts, as well as heat exchangers. OK Tigrod 16.70 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	SFA/AWS A5.9 ER310 EN 12072 W 25 20		C 0.1 Si 0.5 Mn 1.7 Cr 26.0 Ni 21.0 Wire composition	Yield stress, MPa 390 Tensile strength, MPa 590 Elongation, % 43 Charpy V Test temps, °C / Impact values, J +20 / 175 -196 / 60	1.2 1.6 2.0 2.4 3.2 4.0	1000 1000 1000 1000 1000 1000		
OK Tigrod 16.75 **GTAW** Bare, corrosion-resistant, chromium-nickel wire for the GTA welding of stainless steels of the 29% Cr, 9% Ni types. OK Tigrod 16.75 (“312”) has good oxidation resistance at high temperatures due to its high content of Cr. The alloy is widely used for joining dissimilar steels, especially if one of the components is fully austenitic, and steels that are difficult to weld, i. e. machine components, tools, austenitic manganese steels. OK Tigrod 16.75 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	SFA/AWS A5.9 ER312 EN 12072 W 29 9		C <0.1 Si 0.5 Mn 1.7 Cr 30.0 Ni 9.2 Wire composition	Yield stress, MPa 610 Tensile strength, MPa 770 Elongation, % 20 Charpy V Test temps, °C / Impact values, J +20 / 50	1.0 1.2 1.6 2.0 2.4 3.2	1000 1000 1000 1000 1000 1000		

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tigrod 16.86 **GTAW** Bare, corrosion-resistant, duplex welding rods for the GTA welding of austenitic-ferritic stainless alloys of the 22% Cr, 5% Ni, 3% Mo type. OK Tigrod 16.86 (“Duplex”) has high general corrosion resistance. In media containing chloride and hydrogen sulphide, the alloy has high resistance to intergranular, pitting and especially stress corrosion. The alloy is used in a variety of applications across all industrial segments. OK Tigrod 16.86 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	SFA/AWS A5.9 ER2209 EN 12072 W 22 9 3 N L	UDT DIN 8556 VdTÜV	C <0.03 Si 0.5 Mn 1.6 Cr 22.5 Ni 8.5 Mo 3.0 N 0.15 Wire composition	Yield stress, MPa 600 Tensile strength, MPa 765 Elongation, % 28 Charpy V Test temps, °C / Impact values, J +20 / 100 -20 / 85 -60 / 60	1.2 1.6 2.0 2.4 3.2	1000 1000 1000 1000 1000		
OK Tigrod 16.88 **GTAW** Bare, corrosion-resistant "Super Duplex" wire for the GTA welding of austenitic-ferritic stainless alloys of the 25% Cr, 10% Ni, 4% Mo, low C types, such as Zeron 100 and SAF 2507. OK Tigrod 16.88 (“Super Duplex”) has high resistance to intergranular corrosion and pitting. The alloy is widely used in applications in which corrosion resistance is of the utmost importance. The pulp & paper, offshore and gas industries are areas of interest. OK Tigrod 16.88 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	EN 12072 W 25 9 4 NL	UDT DIN 8556 VdTÜV	C <0.03 Si 0.4 Mn 0.4 Cr 25.5 Ni 9.2 Mo 3.2 N 0.25 Wire composition	Yield stress. MPa 580 Tensile strength, MPa 860 Elongation, % 30 Charpy V Test temps, °C / Impact values, J +20 / 150 -40 / 115	1.2 1.6 2.0 2.4 3.2	1000 1000 1000 1000 1000		
OK Tigrod 16.95 **GTAW** Bare, corrosion-resistant, chromium-nickel-manganese rods for the GTA welding of austenitic stainless alloys of the 18% Cr, 8% Ni, 7% Mn types. OK Tigrod 16.95 (“307Si”) has general corrosion resistance similar to that of the corresponding parent metal. The high silicon content improves the welding properties, such as wetting. When used for joining dissimilar materials, corrosion resistance is of secondary importance. The alloy is used in a wide range of applications throughout industry, such as joining austenitic-manganese, work-hardenable steels, as well as armour-plating and heat-resistant steels. OK Tigrod 16.95 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	EN 12072 W 18 8 Mn	DB 43.039.12 UDT DIN 8556 VdTÜV	C <0.2 Si 0.9 Mn 7.0 Cr 18.5 Ni 8.1 Wire composition	Yield stress, MPa 450 Tensile strength, MPa 640 Elongation, % 41 Charpy V Test temps, °C / Impact values, J +20 / 130	1.2 1.6 2.0 2.4 3.2	1000 1000 1000 1000 1000		

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 16.10 **SAW** OK Autrod 16.10 is an extra-low carbon, stainless wire designed for submerged arc welding of austenitic stainless steels, such as AISI 301, 304, 304L and equivalent types of the 19Cr10Ni type. OK Autrod 16.10 can be used in combination with OK Flux 10.92 or OK Flux 10.93.	SFA/AWS A5.9 ER308L EN 12072 S 19 9 L Werkstoff Nr. 1.4316		C 0.02 Si 0.4 Mn 1.8 Cr 20.0 Ni 10.0 Wire composition		2.0 2.4 3.0 3.2 4.0			
OK Autrod 16.21 **SAW** OK Autrod 16.21 is a Nb-stabilized, stainless wire suitable for submerged arc welding of austenitic stainless steels of 18Cr8Ni type, which are stabilized with Nb or Ti. OK Autrod 16.21 can be used in combination with OK Flux 10.92 or OK Flux 10.93.	SFA/AWS A5.9 ER347 EN 12072 S 19 9 Nb DIN 8556 UPX5 CrNiNb 19 9 Werkstoff Nr. 1.4551		C 0.06 Si 0.4 Mn 1.3 Cr 19.5 Ni 9.5 Nb 0.8 Wire composition		2.0 2.5 3.0 4.0			
OK Autrod 16.30 **SAW** OK Autrod 16.30 is an extra-low carbon, stainless wire for submerged arc welding of corrosion-resistant steels of the 18Cr12Ni3Mo type, such as steels of the AISI 316 and 316L types or somewhat lower-alloyed types. OK Autrod 16.30 can be used in combination with OK Flux 10.92 or OK Flux 10.93.	SFA/AWS A5.9 ER316L EN 12072 S 19 12 3 L		C 0.02 Si 0.4 Mn 1.8 Cr 19.0 Ni 12.0 Mo 2.7 Wire composition		2.0 2.5 3.0 4.0			

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 16.53 **SAW** OK Autrod 16.53 is a stainless steel, over-alloyed wire for submerged arc welding. Suitable for joining stainless steel to mild steel and for "buffer layers". OK Autrod 16.53 can be used in combination with OK Flux 10.92 or OK Flux 10.93.	SFA/AWS A5.9 ER309L EN 12072 S 23 12 L		C 0.02 Si 0.4 Mn 1.5 Cr 24.0 Ni 13.0 Wire composition		2.4 3.0 3.2 4.0			
OK Autrod 16.86 **SAW** OK Autrod 16.86 is a submerged arc welding wire of the 22Cr9Ni3Mo type with an extra-low carbon content, for welding austenitic-ferritic duplex stainless steels. OK Autrod 16.86 can be used in combination with OK Flux 10.93.	SFA/AWS A5.9 ER2209 EN 12072 S 22 9 4 N L Werkstoff Nr. ≈1.4462		C 0.02 Si 0.4 Mn 1.5 Cr 23.0 Ni 9.0 Mo 3.0 N 0.15 Wire composition		2.4 3.0 3.2 4.0			
OK Autrod 16.88 **SAW** OK Autrod 16.88 is a submerged arc wire of the 25Cr10Ni4Mo type with extra-low carbon content for welding austenitic-ferritic, super-duplex stainless steels. OK Autrod 16.88 can be used in combination with OK Flux 10.94 or OK Flux 10.93.	EN 12072 S 25 9 4 N L		C 0.02 Si 0.4 Mn 0.4 Cr 25.0 Ni 10.0 Mo 4.0 N 0.25 Wire composition		2.5 3.0 4.0			

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Band 11.62 **SAW** OK Band 11.62 is a stainless strip for submerged arc strip surfacing and together with OK Flux 10.05 it produces a 347 type of weld deposit. The strip is normally supplied in 60x0.5 mm, but other widths are also available on request.	SFA/AWS A5.9 EQ347 EN 12072 S 19 9 Nb DIN 8556 UPX5 CrNiNb 19 9 Werkstoff Nr. 1.4551		C 0.02 Si 0.3 Mn 1.8 Cr 19.5 Ni 10.0 Nb 0.6 Strip composition					
OK Band 11.63 **SAW** OK Band 11.63 is a stainless strip for submerged arc strip surfacing and together with OK Flux 10.05 it produces a 316L type of weld deposit. The strip is normally supplied in 60x0.5 mm, but other widths are also available on request.	SFA/AWS A5.9 EQ316L EN 12072 S 19 12 3 L DIN 8556 UPX2 CrNiMo 19 12 Werkstoff Nr. 1.4430		C 0.02 Si 0.3 Mn 1.8 Cr 18.5 Ni 13.0 Mo 2.8 Strip composition					
OK Band 11.65 **SAW** OK Band 11.65 is a stainless strip for submerged arc strip surfacing and together with OK Flux 10.05 it produces a 309L-type of weld deposit. The strip is normally supplied in 60x0.5 mm, but other widths are also available on request.	SFA/AWS A5.9 EQ309L EN 12072 S 23 12 L DIN 8556 UPX2 CrNi 24 12 Werkstoff Nr. 1.4332		C 0.02 Si 0.3 Mn 1.8 Cr 24 Ni 13.0 Strip composition					

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Band 11.71 **ESW** OK Band 11.71 is a stainless strip for single layer electroslag strip surfacing. Together with OK Flux 10.10 it produces a 308L type of weld deposit. The strip is normally supplied in 60x0.5 mm, but other widths are also available on request.	SFA/AWS A5.9 (EQ309L) Werkstoff Nr. (1.4332)		C 0.015 Si 0.2 Mn 1.8 Cr 21.0 Ni 11.0 Strip composition					
OK Band 11.72 **ESW** OK Band 11.72 is a stainless strip for single layer electroslag strip surfacing. Together with OK Flux 10.10 it produces a 347 type of weld deposit. The strip is normally supplied in 60x0.5 mm, but other widths are also available on request.	SFA/AWS A5.9 (EQ309LNb) Werkstoff Nr. (1.4556)		C 0.015 Si 0.2 Mn 1.8 Cr 21.0 Ni 11.0 Nb 0.6 Strip composition					
OK Band 11.73 **ESW** OK Band 11.73 is a stainless strip for single layer electroslag strip surfacing. Together with OK Flux 10.10 it produces a 316L type of weld deposit. The strip is normally supplied in 60x0.5 mm, but other widths are also available on request.	SFA/AWS A5.9 (EQ309LMo) Werkstoff Nr. (1.4459)		C 0.015 Si 0.2 Mn 1.8 Cr 20.5 Ni 13.5 Mo 3.0 Strip composition					

Product	Wire/Strip	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
		ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	Yield stress MPa	Tensile strength MPa	Charpy V Test Temp°C	Charpy V Impact Values J
OK Flux 10.05 **SAW**	OK Band 11.62										0.02 Nb	0.7 0.35	1.1	19.2	10.3	0.1				
	OK Band 11.63									•	0.02	0.7	1.1	17.5	13.0	2.8				
	OK Band 11.65									•	0.02	0.7	1.2	22.0	13.0	0.05				
OK Flux 10.10 **ESW**	OK Band 11.71										0.02	0.5	1.2	20.0	11.0	-				
	OK Band 11.72										0.02 Nb	0.5 0.4	1.3	20.3	10.9	-				
	OK Band 11.73										0.02	0.5	1.3	19.2	13.2	3.0				

Type Basic

OK Flux 10.05 is an agglomerated flux for submerged arc strip cladding. It is recommended for cladding with Cr, CrNi and CrNiMo types of stainless strips. The slag removal and overlapping with this flux are excellent.

Density ≈0.7 kg/dm^3

Basicity index 1.1

Classifications

EN 760 SA Z 2 DC

Type Basic

OK Flux 10.10 is an agglomerated flux, designed for electroslag strip surfacing. This flux is particular suitable for strip surfacing with stainless strips of the Cr, CrNi and CrNiMo types, with or without Nb-stabilization. The weldability, bead appearance and slag removal of OK Flux 10.10 are excellent.

Density ≈1.0 kg/dm^3

Basicity index 4.0

Classifications

DIN 32522 BFB 6 63356 DC 17 B 1-16

OK Flux 10.16 SAW

Type High-basic

OK Flux 10.16 is an agglomerated, all-mineral, non-alloying flux for submerged arc welding. OK Flux 10.16 is specially designed for butt welding with nickel-based alloy wire, and cladding with nickel-based alloy strips. The well-balanced flux composition minimizes silicone transfer from the flux to the welding metal, and thus minimizes risk of hot cracking when welding with nickel-based alloys. OK Flux 10.16 can only be used on DC.

Density ≈1.2 kg/dm^3

Basicity index 2.4

Classifications

EN 760	SA AF 2 DC
SFA/AWS A5.17	ERNiCrMo3

Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
																Yield stress	Tensile strength	Charpy V Test	Charpy V Impact
	ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	MPa	MPa	Temp°C	Values J
OK Autrod 19.81										0.02	0.2	0.7	18.0	bal.	17.0	490	730	+20	80
																		-60	75
																		-196	60
OK Autrod 19.82										0.01 Nb	0.35 3.5	0.3 Fe	21.0 2.0	bal.	9.0	425	700	-140	100
																		-196	80
OK Autrod 19.85										0.01 Nb	0.3 2.3	3.2 Fe	19.0 1.0	bal.	2.0	360	600	+20	140
																		-196	100
OK Band 11.92										0.01 Nb	0.2 2.8	1.1	20.7	bal.	8.2				
OK Band 11.95									•	0.05	0.5	3.0	19.0	bal.	2.0				

Product	Wire/Strip	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
																	Yield stress	Tensile strength	Charpy V Test	Charpy V Impact
		ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	MPa	MPa	Temp°C	Values J
OK Flux 10.92 **SAW**	OK Autrod 16.10									•	0.02	0.9	1.0	20.0	10	0.5	365	580	-60	60
	OK Autrod 16.21									•	0.04 Nb	0.75 0.5	0.9	18.8	9.7	-	470	640	-60	55
																			-110	40
	OK Autrod 16.30			316 L TM						•	0.02	0.8	1.0	19.1	11.9	2.7	385	590	-70	55
	OK Autrod 16.53		SS/ CMn								0.02	0.8	1.1	24.1	12.9	-	410	575	-20	50
Type Neutral																				
OK Flux 10.92 is an agglomerated Cr alloying flux which is designed for butt welding of stainless steels. It can also be used for strip cladding with austenitic stainless welding strips. The chromium alloying effect of OK Flux 10.92 compensates for Cr losses in the arc during welding.																				
Density ≈1.0 kg/dm^3																				
Basicity index 1.0																				
Classifications																				
EN 760 SA CS 2 Cr DC																				
OK Flux 10.93 **SAW**	OK Autrod 16.10									•	0.03	0.6	1.4	20.0	10.0	0.75	400	560	+20	100
																			-40	75
																			-60	65
																			-110	55
																			-196	40
	OK Autrod 16.21									•	0.035 Nb	0.5 0.5	1.1	19.2	9.6	-	455	635	-60	85
																			-110	60
																			-196	30
	OK Autrod 16.30									•	0.03	0.6	1.4	18.5	11.5	2.5	390	565	+20	100
																			-40	95
																			-60	90
																			-110	75
																			-196	40
	OK Autrod 16.53										0.03	0.6	1.5	24.0	12.5	0.5	430	570	+20	90
																			-60	70
																			-110	60
																			-196	35
	OK Autrod 16.86							•		•	0.025 N	0.8 0.15	1.3	22.0	9.0	2.8	630	780	+20	140
																			-20	125
																			-40	110
																			-60	80
Type Basic																				
OK Flux 10.93 is a basic non-alloying agglomerated flux for submerged arc welding of stainless steels and high-alloyed CrNiMo steels like e.g. Duplex stainless steels.																				
Density ≈1.0 kg/dm^3																				
Basicity index 1.7																				
Classifications																				
EN 760 SA AF 2 DC																				

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 96.10 **SMAW** **Type** Alkali salt OK 96.10 is an electrode for welding pure aluminium and wrought aluminium alloys. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC+	SFA/AWS A5.3 E1100 DIN 1732 EL-Al99.5		Al 99.5 Si 0.30 Fe 0.4		2.5 3.2 4.0	350 350 350	50-90 70-110 90-130	24 24 24
OK 96.20 **SMAW** **Type** Alkali salt OK 96.20 is an electrode for welding rolled, weldable aluminium alloys, such as aluminium-magnesium and aluminium-manganese alloys. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC(+)	DIN 1732 EL-AlMn1		Al 97.5 Mn 1.3 Si 0.5 Fe 0.7		2.5 3.2 4.0	350 350 350	50-90 70-110 90-130	24 24 24
OK 96.50 **SMAW** **Type** Alkali salt An electrode for welding cast aluminium alloys. Also suitable for welding rolled aluminium alloys or joining them to cast items. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC+	DIN 1732 EL-AlSi12		Al 87.5 Si 12.0 Fe 0.5		2.5 3.2 4.0	350 350 350	50-90 70-110 90-130	24 24 24

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 18.01 **GMAW** OK Autrod 18.01 is highly resistant to chemical attack and weathering. It is a relatively soft alloy that is very formable and is used extensively in thin-gauge and foil products. It has good welding characteristics. One desirable characteristic of the alloy is the bright finishes obtained by anodising. Non-heat treatable. **Welding current** DC(+)	SFA/AWS A5.10 (ER1100) DIN 1732 SG Al99.5 Werkstoff Nr. 3.0259		Si <0.2 Mn <0.01 Zn <0.01 Fe <0.2 Al >99.5 Wire composition	Yield stress, MPa 35 Tensile strength, MPa 75 Elongation, % 33	0.8 1.0 1.2 1.6 2.4		60-120 90-180 120-200 150-280 250-370	20-24 22-26 22-28 24-30 26-32
OK Autrod 18.04 **GMAW** OK Autrod 18.04 is one of the oldest and most widely used welding and brazing alloys and can be classified as a general-purpose filler alloy. The silicon additions result in improved fluidity (wetting action) to make the alloy the preferred choice for welders. The alloy is less sensitive to weld cracking and produces brighter, almost smut-free welds. Non-heat treatable. **Welding current** DC(+)	SFA/AWS A5.10 ER4043 DIN 1732 SG AlSi5 Werkstoff Nr. 3.2245	DB	Si 5.0 Mn <0.01 Zn <0.02 Fe 0.2 Al bal. Wire composition	Yield stress, MPa 55 Tensile strength, MPa 165 Elongation, % 18	0.8 1.0 1.2 1.6 2.4		80-120 90-180 130-220 170-320 270-380	20-24 22-26 22-28 24-30 26-30
OK Autrod 18.05 **GMAW** OK Autrod 18.05 was originally developed as a brazing alloy to take advantage of its low melting point and narrow freezing range. In addition, it has a higher silicon content than OK Autrod 18.04, which provides for increased fluidity and reduced shrinkage. The alloy produces bright, almost smut-free welds. Hot cracking is significantly reduced when OK Autrod 18.05 is used as a filler alloy. The alloy can be used in applications with sustained elevated temperatures. Non-heat treatable. **Welding current** DC(+)	SFA/AWS A5.10 ER4047 DIN 1732 SG AlSi12 Werkstoff Nr. 3.2585		Si 11.5 Mn <0.01 Zn 0.01 Fe <0.2 Al bal. Wire composition	Yield stress, MPa 80 Tensile strength, MPa 170 Elongation, % 12	0.8 1.0 1.2 1.6		60-120 90-180 120-200 150-280	20-24 22-26 22-28 24-30

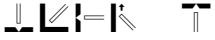
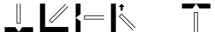
Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 18.11 **GMAW** OK Autrod 18.11 is highly resistant to chemical attack and weathering. The alloy has a small addition of titanium, which has a grain-refining effect; this reduces cracking susceptibility. It has good welding characteristics. One desirable characteristic of the alloy is the bright finishes obtained by anodising. Non-heat treatable. **Welding current** DC(+)	DIN 1732 SG Al99.5Ti Werkstoff Nr. 3.0805	VdTÜV UDT	Si 0.02 Mn <0.01 Ti 0.12 Zn 0.01 Fe 0.15 Al+Ti >99.5 Wire composition	Yield stress, MPa 40 Tensile strength, MPa 90 Elongation, % 35	0.8 1.0 1.2 1.6		60-120 90-180 120-200 150-280	20-24 22-26 22-28 24-30
OK Autrod 18.13 **GMAW** Exposure to certain corrosive chemicals requires special controls on the elements that make up the aluminium alloys that are used to contain them. OK Autrod 18.13 typically contains more than 3% magnesium and it is therefore not recommended for elevated temperature applications due to its susceptibility to stress corrosion cracking. Non-heat treatable. **Welding current** DC (+)	DIN 1732 SG AlMg3 Werkstoff Nr. 3.3536	VdTÜV UDT	Si 0.03 Mn 0.3 Mg 3.0 Fe <0.2 Al bal. Wire composition	Yield stress, MPa 110 Tensile strength, MPa 230 Elongation, % 23	0.8 1.0 1.2 1.6		80-120 90-180 130-200 170-300	20-24 22-26 22-28 24-30
OK Autrod 18.15 **GMAW** OK Autrod 18.15 is the most widely used welding alloy and can be classified as a general-purpose filler alloy. OK Autrod 18.15 is typically chosen because of its relatively high shear strength. The 5XXX alloy base material, welded with OK Autrod 18.15, with a weld pool chemistry greater than 3% Mg and service temperatures in excess of 65C, is susceptible to stress corrosion cracking. Non-Heat treatable. **Welding current** DC(+)	SFA/AWS A5.10 ER5356 DIN 1732 SG AlMg5 Werkstoff Nr. 3.3556	ABS BV DB 61.039.01 DNV GL UDT VdTÜV	Si 0.05 Mn 0.15 Cr 0.12 Al bal. Fe 0.15 Mg 5.0 Wire composition	Yield stress, MPa 120 Tensile strength, MPa 265 Elongation, % 26	0.8 1.0 1.2 1.6 2.4		80-120 90-180 130-200 170-300 270-380	20-24 22-26 22-28 24-30 26-32

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 18.16 **GMAW** OK Autrod 18.16 was developed to provide the highest strengths possible in the as-welded condition of Alloy 5083 and other similar high-magnesium alloys. The more common OK Autrod 18.15 will typically fail to meet the as-welded tensile specification requirements of Alloy 5083. The alloy is typically utilised in marine and structural applications where high strengths, high fracture toughness for impact resistance and exposure to corrosive elements are important. The alloy is not recommended for elevated temperature applications due to its susceptibility to stress corrosion cracking. Non-heat treatable. **Welding current** DC(+)	SFA/AWS A5.10 ER5183 DIN 1732 SG AlMg4.5Mn Werkstoff Nr. 3.3548	ABS BV DB 61.039.03 DNV GL UDT VdTÜV	Si 0.04 Mn 0.7 Cr 0.1 Fe 0.15 Mg 4.8 Wire composition	Yield stress, MPa 140 Tensile strength, MPa 290 Elongation, % 25 Charpy V Test temps, °C / Impact values, J +20 / 30	0.8 1.0 1.2 1.6 2.4		80-120 90-180 130-200 170-300 270-380	20-24 22-26 22-28 24-30 26-32
OK Autrod 18.20 **GMAW** OK Autrod 18.20 develops the highest as-welded strengths in fillet welds, nearly double that of OK Autrod 18.04. The 5XXX series of alloys offer an excellent combination of corrosion resistance, strength, toughness, workability and weldability. As a result, they are used in a wide variety of applications. One characteristic of this series of alloys, however, is their susceptibility to stress corrosion cracking when the weld pool chemistry is greater than 3% Mg and there is exposure to prolonged temperatures in excess of 65°C. Special alloys and tempers are often required to overcome this problem. Non-heat treatable. **Welding current** DC(+)	SFA/AWS A5.10 ER5556	VdTÜV UDT	Si 0.05 Mn 0.7 Mg 5.2 Fe 0.15 Al bal. Wire composition	Yield stress, MPa 145 Tensile strength, MPa 295 Elongation, % 25 Charpy V Test temps, °C / Impact values, J +20 / 24	0.8 1.0 1.2 1.6 2.4		80-120 90-180 130-200 170-300 270-380	20-24 22-26 22-28 24-30 26-32
OK Tigrod 18.01 **GTAW** OK Tigrod 18.01 is highly resistant to chemical attack and weathering. It is a relatively soft alloy that is very formable and is used extensively in thin-gauge and foil products. It has good welding characteristics. One desirable characteristic of the alloy is the bright finishes obtained by anodising. Non-heat treatable. **Welding current** AC	DIN 1732 SG Al99.5 Werkstoff Nr. 3.0259		Si <0.2 Mn <0.01 Zn <0.01 Fe <0.2 Al >99.5 Wire composition	Yield stress, MPa 35 Tensile strength, MPa 75 Elongation, % 33	1.6 2.0 2.4 3.2 4.0 5.0	1000 1000 1000 1000 1000 1000		

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tigrod 18.04 **GTAW** OK Tigrod 18.04 is one of the oldest and most widely used welding and brazing alloys and can be classified as a general-purpose filler alloy. The silicon additions result in improved fluidity (wetting action) to make the alloy the preferred choice for welders. The alloy is less sensitive to weld cracking and produces brighter, almost smut-free welds. Non-heat treatable. **Welding current** AC	SFA/AWS A5.10 ER4043 DIN 1732 SG AlSi5 Werkstoff Nr. 3.2245		Si 5.0 Mn <0.01 Zn <0.02 Fe 0.2 Al bal. Wire composition	Yield stress, MPa 55 Tensile strength, MPa 165 Elongation, % 18	1.6 2.0 2.4 3.2 4.0 5.0	1000 1000 1000 1000 1000 1000		
OK Tigrod 18.05 **GTAW** OK Tigrod 18.05 was originally developed as a brazing alloy to take advantage of its low melting point and narrow freezing range. In addition, it has a higher silicon content than OK Tigrod 18.04, which provides for increased fluidity and reduced shrinkage. The alloy produces bright, almost smut-free welds. Hot cracking is significantly reduced when OK Tigrod 18.05 is used as a filler alloy. The alloy can be used in applications with sustained elevated temperatures. Non-heat treatable. **Welding current** AC	SFA/AWS A5.10 ER4047 DIN 1732 SG AlSi12 Werkstoff Nr. 3.2585		Si 12.0 Mn 0.01 Zn 0.02 Fe <0.2 Al bal. Wire composition	Yield stress, MPa 80 Tensile strength, MPa 170 Elongation, % 12	1.6 2.0 2.4 3.2 4.0 5.0	1000 1000 1000 1000 1000 1000		
OK Tigrod 18.11 **GTAW** OK Tigrod 18.11 is highly resistant to chemical attack and weathering. The alloy has a small addition of titanium, which has a grain-refining effect; this reduces cracking susceptibility. It has good welding characteristics. One desirable characteristic of the alloy is the bright finishes obtained by anodising. Non-heat treatable. **Welding current** AC	DIN 1732 SG Al99.5Ti Werkstoff Nr. 3.0805	VdTÜV UDT	Si 0.02 Mn <0.01 Ti 0.12 Zn 0.01 Fe 0.15 Al+Ti >99.5 Wire composition	Yield stress, MPa 40 Tensile strength, MPa 90 Elongation, % 35	1.6 2.0 2.4 3.2 4.0	1000 1000 1000 1000 1000		

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tigrod 18.15 **GTAW** OK Tigrod 18.15 is the most widely used welding alloy and can be classified as a general-purpose filler alloy. OK Tigrod 18.15 is typically chosen because of its relatively high shear strength. The 5XXX alloy base material, welded with OK Tigrod 18.15, with a weld pool chemistry greater than 3% Mg and service temperatures in excess of 65C, is susceptible to stress corrosion cracking. Non-heat treatable. **Welding current** AC	SFA/AWS A5.10 ER5356 DIN 1732 SG AlMg5 Werkstoff Nr. 3.3556	DB DNV VdTÜV UDT	Si 0.05 Mn 0.15 Cr 0.12 Mg 5.0 Fe 0.15 Al bal. Wire composition	Yield stress, MPa 120 Tensile strength, MPa 265 Elongation, % 26	1.6 2.0 2.4 3.2 4.0 5.0	1000 1000 1000 1000 1000 1000		
OK Tigrod 18.16 **GTAW** OK Tigrod 18.16 was developed to provide the highest strengths possible in the as-welded condition of Alloy 5083 and other similar high-magnesium alloys. The more common OK Tigrod 18.15 will typically fail to meet the as-welded tensile specification requirements of Alloy 5083. The alloy is typically utilised in marine and structural applications where high strengths, high fracture toughness for impact resistance and exposure to corrosive elements are important. The alloy is not recommended for elevated temperature applications due to its susceptibility to stress corrosion cracking. Non-heat treatable. **Welding current** AC	SFA/AWS A5.10 ER5183 DIN 1732 SG AlMg4.5Mn Werkstoff Nr. 3.3548	DB DNV VdTÜV UDT	Si 0.04 Mn 0.7 Cr 0.1 Mg 4.8 Fe 0.15 Al bal. Wire composition	Yield stress, MPa 140 Tensile strength, MPa 290 Elongation, % 25 Charpy V Test temps, °C: +20 Impact values, J: 30	1.6 2.0 2.4 3.2 4.0	1000 1000 1000 1000 1000		

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 92.05 **SMAW** **Type** Basic OK 92.05 is a stick electrode for joining commercially pure nickel in wrought and cast forms. It can also be used to join dissimilar metals such as nickel to steel, nickel to copper and copper to steel. Moreover, this electrode can be used for surfacing steel. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC+	SFA/AWS A5.11 ENi-1 DIN 1736 EL-NiTi3		C 0.05 Si 1.0 Mn 0.7 Fe 0.7 Ti 3.0 Ni 92.0	Yield stress, MPa 320 Tensile strength, MPa 450 Elongation, % 25	2.5 3.2 4.0	300 350 350	70-95 90-135 120-180	22 23 24
OK 92.26 **SMAW** **Type** Basic A nickel-based electrode for welding nickel alloys such as Inconel 600 and similar Inconel alloys, cryogenic steels, martensitic to austenitic steels, dissimilar steels, heat-resistant steels, castings of limited weldability and so on. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC(+)	SFA/AWS A5.11-90 ENiCrFe-3 DIN 1736 EL-NiCr15FeMn Werkstoff Nr. 2.4620	ABS ENiCrFe-3 CVN 50J at -196°C	C <0.1 Si 0.6 Mn 6.0 Cr 16.0 Ni 70.0 Nb 2.0 Fe 6.0	Yield stress, MPa 410 Tensile strength, MPa 640 Elongation, % 40 Charpy V Test temps, °C / Impact values, J +20 / 100 -196 / 80	2.5 3.2 4.0 5.0	300 350 350 350	45-70 70-105 90-130 120-170	22 23 24 25
OK 92.35 **SMAW** **Type** Rutile-basic OK 92.35 is a nickel-based, super-alloy electrode of the NiCrMoW type. OK 92.35 deposits an extremely tough work hardening weld metal, resistant to attacks by the most used acids. The weld metal is also resistant to high temperatures. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC(+), AC OCV 70 V	SFA/AWS A5.11-90 (ENiCrMo-5) DIN 8555 E23-250 CKT		C 0.06 Si 0.7 Mn 0.7 Mo 16.5 Cr 15.5 W 3.8 Fe 5.5 Ni 57.0	Yield stress, MPa 515 Tensile strength, MPa 750 Elongation, % 17	2.5 3.2 4.0 5.0	300 350 350 350	65-110 110-150 160-200 190-250	18 18 20 20

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 92.45 **SMAW** **Type** Basic OK 92.45 is a NiCrMoNb-based electrode for welding nickel alloys of the same or similar type like Inconel 625, for example, and for welding 5Ni and 9Ni steel. OK 92.45 is also suitable for welding UNS S31254 steel. **Welding current** DC+ 	SFA/AWS A5.11 ENiCrMo-3 DIN 1736 EL-NiCr20 Mo9 Nb Werkstoff Nr. 2.4621	VdTÜV	C <0.03 Si 0.4 Mn 0.4 Cr 22.0 Ni 64.0 Mo 9.5 Nb 3.3 Fe 3.0	Yield stress, MPa 480 Tensile strength, MPa 800 Elongation, % 40 Charpy V Test temps, °C / Impact values, J +20 / 70 -196 / 50	2.5 3.2 4.0 5.0	300 350 350 350	50-80 70-110 100-140 120-170	23 25 27 27
OK 92.55 **SMAW** **Type** Basic OK 92.55 is an all-positional, basic coated electrode which deposits a NiCr-based alloy with additions of Mo, W and Nb. The electrode is specifically designed for welding of 9Ni steels for cryogenic applications down to -196°C. **Welding current** DC+, AC OCV 70 V 	SFA/AWS A5.11 ENiCrMo-6	ABS AWS A5.11-90, ENiCrMo-6	C <0.08 Si 0.5 Mn 3 Cr 13 Ni 69 Mo 6.5 W 1.5 Nb 1.5 Fe <8.0	Yield stress, MPa 460 Tensile strength, MPa 705 Elongation, % 40 Charpy V Test temps, °C / Impact values, J +20 / 95 -60 / 90 -196 / 80	2.5 3.2 4.0 5.0	300 350 350 350	50-120 70-150 120-190 120-240	23 22 22 23
OK Autrod 19.81 **GMAW** A nickel-based, 23% Cr, 16% Mo, 0.2% Al electrode for the GMAW of high-alloyed materials of the 20Cr-25-Ni type with 4-6% Mo and nickel-based alloys of similar type. OK Autrod 19.81 is usually welded with pure Ar as the shielding gas. **Welding current** DC(+)	DIN 1736 SG NiCr23Mo16 Werkstoff Nr. 2.4607	VdTÜV	C <0.01 Si <0.1 Mn <0.5 Cr 23.0 Ni bal. Mo 15.5 Al 0.2 Wire composition	Yield stress, MPa 530 Tensile strength, MPa 750 Elongation, % 40 Charpy V Test temps, °C / Impact values, J -110 / 90	0.8 1.0 1.2 1.6		70-190 100-200 160-280 200-350	20-27 21-27 24-30 25-32

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 19.82 **GMAW** A nickel-based, corrosion- and heat-resistant, 22% Cr, 9% Mo, 3.5% Nb electrode for the GMAW of high-alloyed steel, heat-resistant steel, corrosion-resistant steel, 9% Ni steels and similar steel with high notch toughness at low temperatures. Also for joining dissimilar metals of the types mentioned. OK Autrod 19.82 is usually welded with pure Ar as the shielding gas. **Welding current** DC(+)	SFA/AWS A5.14 ERNiCrMo-3 DIN 1736 SG NiCr21Mo9Nb Werkstoff Nr. 2.4831	UDT	C <0.01 Cr 22.0 Mo 9.0 Fe 0.5 Nb+Ta 3.5 Ni bal. Wire composition	Yield stress, MPa 500 Tensile strength, MPa 800 Elongation, % 38 Charpy V Test temps, °C / Impact values, J +20 / 130 -105 / 120 -196 / 110	0.8 1.0 1.2 1.6		70-190 100-200 160-280 200-350	20-27 21-27 24-30 25-32
OK Autrod 19.85 **GMAW** A nickel-based, corrosion- and heat-resistant, 20% Cr, 3% Mo, 2.5% Nb electrode for the GMAW of high-alloyed steel, heat-resistant steel, corrosion-resistant steel, 9% Ni and similar steels with high notch toughness at low temperatures. Also for joining dissimilar metals of the type mentioned. OK Autrod 19.85 is usually welded with pure Ar as the shielding gas. **Welding current** DC(+)	SFA/AWS A5.14 ERNiCr-3 DIN 1736 SG NiCr20Nb Werkstoff Nr. 2.4806	UDT	C <0.05 Mn 3.0 Cr 21.0 Nb+Ta 2.5 Ni bal. Wire composition	Yield stress, MPa 360 Tensile strength, MPa 700 Elongation, % 44 Charpy V Test temps, °C / Impact values, J +20 / 150 -196 / 145	0.8 1.0 1.2 1.6		70-190 100-200 160-280 200-350	20-27 21-27 24-30 25-32
OK Tigrod 19.81 **GTAW** A nickel-based rod alloyed with chromium and molybdenum for the GTAW of high-alloyed materials of the 20Cr-25Ni type with 4-6% Mo and nickel-based alloys of a similar type. OK Tigrod 19.81 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	DIN 1736 SG NiCr23Mo16 Werkstoff Nr. 2.4607		C <0.01 Si <0.1 Mn <0.5 Cr 23.0 Ni bal. Mo 15.5 Al 0.2 Wire composition	Yield stress, MPa 530 Tensile strength, MPa 750 Elongation, % 40 Charpy V Test temps, °C / Impact values, J -110 / 90	1.6 2.0 2.4	1000 1000 1000		

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tigrod 19.82 **GTAW** A nickel-based, corrosion- and heat-resistant, 22% Cr, 9% Mo, 3.5% Nb rod for the GTAW of high-alloyed steel, heat-resistant steel, corrosion-resistant steel, 9% Ni steels and similar steel with high notch toughness at low temperatures. Also for joining dissimilar metals of the types mentioned. OK Tigrod 19.82 is normally welded with pure Ar as the shielding gas. **Welding current** DC(-)	SFA/AWS A5.14 ERNiCrMo-3 DIN 1736 SG NiCr21Mo9Nb Werkstoff Nr. 2.4831	UDT	C <0.01 Cr 22.0 Mo 9.0 Fe 0.5 Nb+Ta 3.5 Ni bal. Wire composition	Yield stress, MPa 500 Tensile strength, MPa 800 Elongation, % 35 Charpy V Test temps, °C / Impact values, J +20 / 130 -105 / 120 -196 / 110	1.6 2.0 2.4 3.2	1000 1000 1000 1000		
OK Tigrod 19.85 **GTAW** A nickel-based, corrosion- and heat-resistant, 20% Cr, 3% Mn, 2.5% Nb rod for the GTAW of high-alloyed steel, heat-resistant steel, corrosion-resistant steel, 9% Ni steels and similar steels with high notch toughness at low temperatures. Also for joining dissimilar metals of the types mentioned. OK Tigrod 19.85 is usually welded with pure Ar as the shielding gas. **Welding current** DC(-)	SFA/AWS A5.14 ERNiCr-3 DIN 1736 SG NiCr20Nb Werkstoff Nr. 2.4806	UDT	C <0.05 Mn 3.0 Cr 21.0 Nb+Ta 2.5 Ni >67.0 Wire composition	Yield stress, MPa 425 Tensile strength, MPa 700 Elongation, % 44 Charpy V Test temps, °C / Impact values, J +20 / 150 -196 / 145	1.6 2.0 2.4 3.2	1000 1000 1000 1000		
OK Autrod 19.81 **SAW** OK Autrod 19.81 is a Nb-free, Ni-Cr-Mo wire for welding high-alloyed steels of the 20Cr25Ni4-6Mo type and nickel-based alloys of a similar type. The wire can also be used for welding these steels with dissimilar steels. The weld metal has very good corrosion resistance in both oxidizing and reducing media.	DIN 1736 UP NiCr23Mo16		C 0.01 Si 0.1 Mn 0.5 Cr 23 Mo 15 Ni bal. Wire composition		2.4			

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 19.82 **SAW** OK Autrod 19.82 is a corrosion- and heat-resistant, nickel-chromium wire for submerged arc welding of high-alloyed steel, heat-resistant steel, corrosion-resistant steel, 9Ni steels and similar steel with high notch toughness at low temperatures. OK Autrod 19.82 can be combined with OK Flux 10.16.	SFA/AWS A5.14 ERNiCrMo-3 DIN 1736 UP-NiCr21Mo9Nb		C <0.03 Si 0.2 Mn 0.5 Cr 22.0 Mo 9.0 Nb+Ta 4.0 Fe 2.0 Ni bal. Wire composition		1.6 2.0 2.4			
OK Autrod 19.85 **SAW** OK Autrod 19.85 is a corrosion- and heat-resistant, nickel-chromium wire for submerged arc welding of high-alloyed steel, heat-resistant steel, corrosion-resistant steel, 9Ni steels and similar steel with high notch toughness at low temperatures. OK Autrod 19.85 can be combined with OK Flux 10.16.	SFA/AWS A5.14 ERNiCr-3 DIN 1736 UP NiCr20Nb		C <0.05 Si 0.5 Mn 3.0 Cr 20.0 Mo 2.0 Nb+Ta 2.0 Fe 1.0 Ni bal. Wire composition		1.6 2.0 2.4			
OK Band 11.92 **SAW** OK Band 11.92 is a nickel-based strip for submerged arc strip cladding. Together with OK Flux 10.16 it produces a weld overlay with good corrosion resistance and high temperature properties.	SFA/AWS A5.14 ERNiCrMo-3 DIN 1736 UPNiCr21Mo9Nb Werkstoff Nr. 2.4831		C 0.02 Si 0.2 Mn 0.5 Cr 22 Ni bal. Mo 9 Nb 3.9 Ti 0.4 Strip composition					

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Band 11.95 **SAW** OK Band 11.95 is a nickel-based strip for submerged arc strip cladding. Together with OK Flux 10.16 it produces a weld overlay with good resistance to stress corrosion cracking at high temperatures.	SFA/AWS A5.14 ERNiCr-3 DIN 1736 UPNiCr20Nb Werkstoff Nr. 2.4806		C 0.04 Si 0.2 Mn 3 Cr 20 Ni >67 Nb 2.5 Strip composition					

OK Flux 10.16 SAW

Type High-basic

OK Flux 10.16 is an agglomerated, all-mineral, non-alloying flux for submerged arc welding. OK Flux 10.16 is specially designed for butt welding with nickel-based alloy wire, and cladding with nickel-based alloy strips. The well-balanced flux composition minimizes silicone transfer from the flux to the welding metal, and thus minimizes risk of hot cracking when welding with nickel-based alloys. OK Flux 10.16 can only be used on DC.

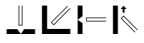
Density ≈1.2 kg/dm^3

Basicity index 2.4

Classifications

EN 760	SA AF 2 DC
SFA/AWS A5.17	ERNiCrMo3

Wire/Strip	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
																Yield stress	Tensile strength	Charpy V Test	Charpy V Impact
	ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	MPa	MPa	Temp°C	Values J
OK Autrod 19.81										0.02	0.2	0.7	18.0	bal.	17.0	490	730	+20	80
																		-60	75
																		-196	60
OK Autrod 19.82										0.01 Nb	0.35 3.5	0.3 Fe	21.0 2.0	bal.	9.0	425	700	-140	100
																		-196	80
OK Autrod 19.85										0.01 Nb	0.3 2.3	3.2 Fe	19.0 1.0	bal.	2.0	360	600	+20	140
																		-196	100
OK Band 11.92										0.01 Nb	0.2 2.8	1.1	20.7	bal.	8.2				
OK Band 11.95									•	0.05	0.5	3.0	19.0	bal.	2.0				

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 94.25 **SMAW** **Type** Basic Electrode for welding copper and bronzes, especially tin bronzes. It is also suitable for cladding steels and for smaller repair work in weldable cast irons. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC(+) 	DIN 1733 EL-CuSn7 Werkstoff Nr. 2.1025		Mn 0.5 Sn 7.0 Cu 93.0 P 0.10 Fe 0.5	Yield stress, MPa 235 Tensile strength, MPa 330-390 Elongation, % 25	2.5 3.2 4.0	350 350 350	60-90 90-125 125-170	22 24 25
OK 94.55 **SMAW** **Type** Basic OK 94.55 is an electrode for welding silicon bronzes and certain special brass types. Also for surfacing steel subjected to corrosion. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC(+) 	SFA/AWS A5.6 ECuSi-C DIN 1733 EL-CuSi3 Werkstoff Nr. 2.1461		Si 3.0 Mn 1.5 Cu 96.0 P 0.02		2.5 3.2 4.0	350 350 350	55-95 85-130 110-165	25 28 28
OK Autrod 19.12 **GMAW** A continuous, solid, copper wire for the GMA joining of oxygen-free, pure copper and low-alloyed copper. OK Autrod 19.12 is alloyed with tin and has good flow properties. OK Autrod 19.12 is normally welded with pure Ar as the shielding gas. **Welding current** DC(+)	SFA/AWS A5.7 ERCu DIN 1733 SG CuSn Werkstoff Nr. 2.1006		Si 0.2 Mn 0.2 Sn 0.8 Cu bal. Wire composition	Yield stress, MPa 100 Tensile strength, MPa 220 Elongation, % 23 Charpy U Test temps, °C / Impact values, J +20 / 75 -20 / 40	0.8 1.0 1.2 1.6			

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Autrod 19.30 **GMAW** A continuous, solid, copper wire for the GMA joining of copper-zinc alloys, low-alloyed copper and for the GMA brazing of zinc-coated steel sheets. OK Autrod 19.30 is alloyed with silicon and manganese and has good flow properties and wear resistance. The alloy is widely used in the joining of zinc-coated steel sheets in car body production, as well as for overlay welding on low- and non-alloyed steels and cast iron. Pulsed GMA is recommended. OK Autrod 19.30 is normally welded with pure Ar as the shielding gas; however, for GMA brazing, the addition of 1% O2 improves the brazing properties. **Welding current** DC(+)	SFA/AWS A5.7 ERCuSi-A DIN 1733 SG CuSi3 Werkstoff Nr. 2.1461	VdTÜV	Si 3.0 Mn 0.9 Sn 0.1 Cu bal. Wire composition	Yield stress, MPa 160 Tensile strength, MPa 300 Elongation, % 23 Charpy U Test temps, °C / Impact values, J +20 / 25	0.8 1.0 1.2 1.6			
OK Autrod 19.40 **GMAW** A continuous, solid, copper wire for the GMA joining of aluminium bronzes. OK Autrod 19.40 is alloyed with aluminium and is recognised for its high strength, good wear resistance and very good corrosion resistance, particularly in salt water. The alloy is widely used for joining corrosion-resistant pipes made of aluminium bronze or other special brass alloys. Other common applications include the overlay welding of bearings, ship's propellers and rails. OK Autrod 19.40 is normally welded with pure Ar as the shielding gas. **Welding current** DC(+)	SFA/AWS A5.7 ERCuAl-A1 DIN 1733 SG CuAl8 Werkstoff Nr. 2.0921		Si 0.05 Mn 0.1 Al 7.9 Cu bal. Wire composition	Yield stress, MPa 175 Tensile strength, MPa 430 Elongation, % 40 Charpy U Test temps, °C / Impact values, J +20 / 70 -20 / 70	0.8 1.0 1.2 1.6			

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 92.18 **SMAW** **Type** Basic A nickel-cored electrode for welding normal grades of cast iron. The weld metal is soft and easily machinable. Deposition is performed on cold or slightly preheated material. The electrode is suitable for joining cast iron for the rectification of casting and the repair of broken parts. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC+-, AC OCV 50 V	SFA/AWS A5.15 ENi-CI DIN 8573 (E Ni-BG 11)		C 1.0 Si 0.6 Mn <0.5 Ni >90.0 Fe 5.5	Yield stress, MPa 100 Tensile strength, MPa 300 Elongation, % 12	2.5 3.2 4.0 5.0	300 350 350 350	55-110 80-140 100-190 150-260	20 20 21 22
OK 92.58 **SMAW** **Type** Basic-special A nickel-iron-cored electrode for joining normal grades of cast iron, such as grey, ductile and malleable irons. It is also suitable for the rectification and repair of these grades and for joining them to steel. Deposition is performed on cold or slightly preheated cast iron. The weld metal is stronger and more resistant to impurities than the nickel-cored type. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC(+-), AC OCV 50 V	SFA/AWS A5.15 ENiFe-CI DIN 8573 E NiFe-1-BG 11		C 1.7 Si 0.7 Mn 0.6 Fe 46.0 Ni 50.0	Yield stress, MPa 300 Tensile strength, MPa 375 Elongation, % 12	2.5 3.2 4.0 5.0	300 350 350 350	55-75 75-100 85-160 130-225	21 23 24 24
OK 92.60 **SMAW** **Type** Basic An electrode of the nickel-iron type for welding normal grades of cast iron and for joining them to steel. The electrode has very good current-carrying capacity. The electrode produces a weld metal stronger and more resistant to solidification cracking than that of the nickel electrode type. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC(+), AC OCV 45 V	SFA/AWS A5.15 ENiFe-CI DIN 8573 E NiFe-1-BG 11		C 1.0 Si 0.6 Mn 0.7 Fe 44.0 Ni 52.0 Al 0.3 Nb 0.2	Yield stress, MPa 380 Tensile strength, MPa 560 Elongation, % >15	2.5 3.2 4.0 5.0	300 350 350 350	60-100 80-150 100-200 150-250	22 23 23 23

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrodur 15.66 **FCAW** **Type** Rutile OK Tubrodur 15.66 is a flux-cored, tubular wire for the welding of cast iron. The weld metal is of a nickel iron composition to maximize flexibility not only for welding cast iron itself, but also to steel and a wide range of other ferrous and non-ferrous materials. Shielding gas: Ar + 2% O_2. **Welding current** DC(+) 			C <2.0 Si <4.0 Mn <1.0 Ni 51.0 Fe bal.	Tensile strength, MPa 500 Elongation, % 12	1.6		220-250	28-30

OK 67.45 — SMAW

Type Basic

OK 67.45 is an 18-8-6Mn-austenitic, stainless steel electrode for welding dissimilar steels, 13Mn steels with reduced weldability and for cladding carbon steels. Can also be used as a buffer layer prior to hard surfacing.
Supplied in VacPac™ vacuum packed wrappers.

Welding current

DC+

Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 (E307-15) EN 1600 E 18 8 Mn B 4 2 ISO 3581 E 18 8 Mn B	ABS VdTÜV	Stainless	C Si Mn Cr Ni	0.1 0.5 6.3 18.8 9.0	Yield stress, MPa 470 Tensile strength, MPa 605 Elongation, % 35 Charpy V Test temps, °C / Impact values, J +20 / 70	2.0 2.5 3.2 4.0 5.0	300 300 350 350 350	35-60 50-80 70-100 100-140 150-200	23 23 24 24 25

OK 67.52 — SMAW

Type Zirconium-basic

OK 67.52 is a synthetic, high-recovery electrode of the 18Cr8Ni6Mn type for welding dissimilar steels, 13Mn steels, steels with reduced weldability and for cladding carbon steels.
Supplied in VacPac™ vacuum packed wrappers.

Welding current

DC+, AC OCV 70 V

Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 (E307-25) ISO E 18 8 Mn B EN 1600 E 18 8 Mn B 8 3 Werkstoff Nr. 1.4370			C Si Mn Cr Ni	0.1 1.0 7.0 18.0 9.0	Yield stress, MPa 420 Tensile strength, MPa 630 Elongation, % 45 Charpy V Test temps, °C / Impact values, J +20 / 70	2.5 3.2 4.0 5.0	350 450 450 450	90-115 120-165 150-240 200-340	25 34 40 48

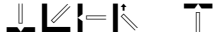
OK 67.60 — SMAW

Type Acid-rutile

OK 67.60 is an over-alloyed stainless electrode for welding stainless to mild steel and low-alloy steel, for surfacing of mild steel and for welding the root runs in clad steel. The electrode has excellent weldability in all positions except vertical down, on as well AC as DC.

Welding current

DC+, AC OCV 55 V



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 E309L-17 ISO 3581 E 23 12 L R EN 1600 E 23 12 L R 3 2 Werkstoff Nr. 1.4332	CL CWB GL SFS-EN 1600 VdTÜV	E309L-17 4332 E 23 12 L R	C Si Mn Cr Ni	0.03 0.8 0.9 24.0 12.5	Yield stress, MPa 470 Tensile strength, MPa 580 Elongation, % 32 Charpy V Test temps, °C / Impact values, J +20 / 50 -10 / 40	2.0 2.5 3.2 4.0 4.0 5.0 5.0	300 300 350 350 450 350 450	30-60 50-90 90-120 130-180 130-180 160-240 160-240	27 28 29 31 31 32 32

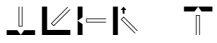
OK 67.70 SMAW

Type Acid-rutile

OK 67.70 is an over-alloyed, stainless steel electrode for use as a buffer layer in welding acid-resistant clad steels and stainless steels to other types of steel. OK 67.70 has outstanding welding properties on both AC and DC. The electrode can be used in all positions except vertical down.

Welding current

DC+, AC OCV 55 V



Classification	Approvals		Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 E309MoL-17 ISO 3581 E 23 12 2 R EN 1600 E 23 12 2 L R 3 2 Werkstoff Nr. 1.4459	BV	UP C&CMn to stainless	C	0.03	Yield stress, MPa 510	2.0	300	30-60	27
	CL		Si	0.8		2.5	300	50-90	28
	CWB	E309MoL-16	Mn	0.6	Tensile strength, MPa 620	3.2	350	90-120	29
	DB	30.039.05	Cr	23.0		4.0	350	130-180	30
	DNV	309 Mo	Ni	13.0	Elongation, %	5.0	350	160-240	32
	LR	SS/CMn, 316L, 316LN	Mo	2.7	33	5.0	450	160-240	32
	RINA	E 309Mo			Charpy V				
	SFS-EN 1600	E 23 12 2 L R			Test temps, °C / Impact values, J +20 / 50				
	SS-EN 1600	E 23 12 2 L R 3 2							
	VdTÜV								

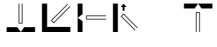
OK 68.81 SMAW

Type Acid-rutile

OK 68.81 is a high-alloyed electrode which deposits a ferritic-austenitic duplex weld metal with ≈40% ferrite. Resistant to stress corrosion and highly insensitive to dilution. Good scaling resistance up to 1150°C. It is used for joining dissimilar steels, steels with reduced weldability and buffer layers prior to hardfacing. Applications: rolls, forging dies, hot-work tools, dies for plastics and so on. Supplied in VacPac™ vacuum packed wrappers.

Welding current

DC+, AC OCV 60 V



Classification			Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 E312-17 ISO 3581 E 29.9 R EN 1600 E 29 9 R 3 2 Werkstoff Nr. 1.4337			C	0.12	Yield stress, MPa 580	2.0	300	35-60	22
			Si	0.7		2.5	300	50-85	24
			Mn	0.8	Tensile strength, MPa 750	3.2	350	80-125	25
			Cr	29.0		4.0	350	110-175	26
			Ni	10.0	Elongation, %	5.0	350	150-240	28
					25				
					Charpy V				
					Test temps, °C / Impact values, J +20 / 30				

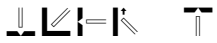
OK 68.82 SMAW

Type Acid-rutile

OK 68.82 is a high-alloyed electrode which deposits a ferritic-austenitic duplex weld metal with approx. 30-35% ferrite. Resistant to stress corrosion and highly insensitive to dilution. Good scaling resistance up to 1150°C. OK 68.82 is used for joining steels with reduced weldability and buffer layers prior to hard surfacing, dissimilar steels, rolls, alforging dies, hot-work tools, dies for plastic and so on.
Supplied in VacPac™ vacuum packed wrappers.

Welding current

DC+, AC OCV 55 V



Classification			Typical all weld metal composition, %		Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
SFA/AWS A5.4 (E312-17) ISO 3581 E 29 9 R EN 1600 E 29 9 R 1 2 Werkstoff Nr. 1.4337			C	0.12	Yield stress, MPa 500	2.0	300	30-60	26
			Si	1.0		2.5	300	60-90	25
			Mn	1.0	Tensile strength, MPa 750	3.2	350	80-120	26
			Cr	29.0		4.0	350	110-170	30
			Ni	10.0	Elongation, %	5.0	350	140-230	30
					25				
					Charpy V				
					Test temps, °C / Impact values, J +20 / 40				

Product	Classification	Approvals	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrodur 14.71 **FCAW** **Type** Rutile A stainless, 18.8.6Mn, self-shielded, tubular wire for cladding and joining of 13% Mn-steels and steels of limitied weldability. It is also useful for buffer layers prior to hardfacing. **Welding current** DC(+)			C <0.15 Si <1.0 Mn 5.5 Cr 19.0 Ni 9.0	Yield stress, MPa 400 Tensile strength, MPa 640 Elongation, % 35 Charpy V Test temps, °C / Impact values, J +20 / 70 -20 / 60 -60 / 40	1.6 2.4		250-350 350-450	27 29

Product	Classification	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 83.28 **SMAW** **Type** Basic OK 83.28 is a chromium-alloyed electrode for hardfacing and cladding tracks, shafts, rolls, rails and rail crossing sections, details in rolling mills, e.g. grooved rollers and clutches and big cog wheels of cast steel. Another application is joining of hardenable steels. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC(+), AC OCV 70 V	DIN 8555 E1-UM-300	C 0.1 Si <0.7 Mn 0.7 Cr 3.2	Weld metal hardness, a w ≈30 HRC Tempering resistance Temp°C HRC(1h) HRC(24h) 100 33 33 300 33 33 400 34 34 500 35 28 600 27 17 700 18 Machinability Good Impact resistance Very good Metal-to-metal wear resistance Very good	2.5 3.2 4.0 5.0 6.0	350 450 450 450 450	60-90 100-140 140-190 190-260 230-320	20 21 22 23 23
OK 83.29 **SMAW** **Type** Zirconium-basic OK 83.29 is a high-recovery electrode for cladding and hardfacing rolls, points, crossings, wheel conveyors etc, i.e. the same applications as OK 83.28. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC(+), AC OCV 70 V	DIN 8555 E1-UM-300	C 0.1 Si 0.5 Mn 0.7 Cr 3.2	Weld metal hardness, a w ≈30 HRC Tempering resistance Temp°C/1h HRC 100 34 300 34 500 33 600 20 700 17 Machinability Good Impact resistance Very good Metal-to-metal wear resistance Very good	3.2 4.0 4.5 5.0 5.6	450 450 450 450 450	110-180 160-240 200-290 230-330 270-380	26 30 36 42 46
OK 83.50 **SMAW** **Type** Acid-Rutile OK 83.50 is a hardfacing electrode for repair welding worn parts on agricultural equipment, forestry tools, loading machines and so on. Transformers with low open-circuit voltage can be used (> 45 volt). Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC+, AC OCV 45 V	DIN 8555 E6-UM-55-G	C 0.4 Si <0.6 Mn <1.0 Cr 6.0 Mo 0.6	Weld metal hardness, a w 50-60 HRC Tempering resistance Temp°C/1h HRC 200 56 300 54 400 53 500 52 550 51 600 44 650 41 700 34 Machinability Grinding only Abrasion resistance Very good	2.0 2.5 3.2 4.0 5.0	300 350 350 450 450	40-90 60-120 90-160 125-210 160-260	24 28 30 33 37

Product	Classification	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 83.53 **SMAW** **Type** Basic OK 83.53 is a basic hardfacing electrode designed for applications in which heavy abrasive wear or a combination of abrasive and impact wear are present. Typical applications include rock crushing machinery parts and drilling equipment. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC+, AC OCV 65 V	DIN 8555 E6-UM-60	C 0.5 Si 0.8 Mn 1.2 Cr 7.2 Mo 1.2 Nb 0.5	Weld metal hardness, a w 58 HRC Tempering resistance Temp°C/1h HRC 200 54 300 51 400 51 500 53 550 52 600 49 650 42 700 37 750 32 Machinability Grinding only Impact resistance Excellent Abrasion resistance Excellent	3.2 4.0 5.0	450 450 450	90-140 115-170 140-220	21 21 22
OK 83.65 **SMAW** **Type** Lime-Basic OK 83.65 deposits a hard, wear-resistant weld metal. Good resistance to oxidation up to about 875°C. Suitable for hardfacing machine parts exposed to wear from stone, coal, sand, soil, and so on such as dredging machines, feeder screws, crusher and tractor parts. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC+, AC OCV 70 V	DIN 8555 E2-UM-60	C 0.7 Si 4.0 Mn 0.4 Cr 2.0	Weld metal hardness, a w 58-63 HRC Tempering resistance Temp°C/1h HRC 100 61 200 60 300 59 400 56 500 58 600 55 700 41 Machinability Grinding only Abrasion resistance Very good	3.2 4.0 5.0 6.0	450 450 450 450	100-140 140-190 190-260 250-370	23 25 26 27
OK 84.42 **SMAW** **Type** Rutile-Basic OK 84.42 is a hardfacing electrode depositing a corrosion-resistant, martensitic-ferritic stainless steel. Suitable for hardfacing, shafts, wheel conveyors, racks and pinions, links and pins and valve seats of cast steel. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC+, AC OCV 70 V	DIN 8555 E5-UM-45-R	C 0.12 Si 0.5 Mn <0.5 Cr 13.0	Weld metal hardness, a w 40-46 HRC Tempering resistance Temp°C/1h HRC 100 45 200 44 300 44 400 45 500 46 600 41 700 34 Machinability By cemented carbide tools Metal-to-metal wear resistance Very good Abrasion resistance Good High temp. wear resistance Very good Corrosion resistance Very good	2.5 3.2 3.2 4.0 5.0	350 350 450 450 450	70-110 100-160 100-160 140-220 220-310	22 24 24 25 31

Product	Classification	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 84.52 **SMAW** **Type** Rutile-basic A general-purpose, hardfacing electrode depositing a corrosion-resistant fully martensitic steel. The electrode is suitable for hardfacing, shafts, racks and pinions, links and pins, valve seats of cast steel, mixer arms, feed gear, knives, loading buckets and track rollers. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC(+), AC OCV 70 V	DIN 8555 E6-UM-55-GR	C 0.25 Si 0.5 Mn 0.3 Cr 13.0	Weld metal hardness, a w 50-56 HRC Tempering resistance Temp°C/1h HRC 100 52 200 50 300 50 400 52 500 55 600 47 700 35 Machinability Grinding only Abrasion resistance Very good High temp. wear resistance Very good Corrosion resistance Very good	2.5 3.2 3.2 4.0 5.0	350 350 450 450 450	70-110 100-160 100-160 140-220 220-310	22 24 24 25 31
OK 84.58 **SMAW** **Type** Basic OK 84.58 is a hardfacing electrode depositing a semi-corrosion-resistant martensitic steel. Full hardness is obtained even in the first bead, irrespective of the cooling rate. Suitable for hardfacing parts exposed to abrasive and impact wear, such as farm equipment, forestry tools, loading machines and mixers. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC(+), AC OCV 65 V	DIN 8555 E6-UM-55-G	C 0.7 Si 0.6 Mn 0.7 Cr 10.0	Weld metal hardness, a w 53-59 HRC Tempering resistance Temp°C/1h HRC 100 55 200 55 300 52 400 50 500 54 600 46 700 31 Machinability Grinding only Abrasion resistance Very good High temp. wear resistance Good Corrosion resistance Good	2.5 3.2 3.2 4.0 5.0 6.0	350 350 450 450 450 450	75-110 110-150 110-150 145-200 190-270 250-370	23 23 23 24 26 28
OK 84.78 **SMAW** **Type** Rutile-Basic Electrode producing a weld metal with coarse chromium carbides in an austenitic matrix. Suitable for surfacing worn parts exposed to abrasion; earth-moving machines, mixers, feeder screws, dust exhausters, crushers and from wear by coal, ore and other minerals. Also in corrosive environments and/or elevated temperatures. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC+, AC OCV 50 V	DIN 8555 E10-UM-60-CZ	C 4.5 Si 0.8 Mn 1.0 Cr 33.0	Weld metal hardness, a w 59-63 HRC Tempering resistance Temp°C/1h HRC 100 58 300 59 400 57 490 59 600 57 700 58 Machinability Grinding only Abrasion resistance Excellent High temp. wear resistance Good Corrosion resistance Excellent	2.5 3.2 4.0 5.0	350 350 450 450	90-120 115-170 130-210 150-300	24 24 26 26

Product	Classification	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 84.80 **SMAW** **Type** Acid OK 84.80 is a high-recovery electrode which deposits a high density of wear-resistant carbides in an austenitic matrix, resistant to extreme abrasion up to 700°C. Typical applications include exhaust fans, ash ploughs, conveyor screws and sinter plant components. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC(+), AC OCV 65 V	DIN 8555 E10-65-GZ	C 5.0 Si 2.0 Mn 0.7 Cr 23.0 Mo 7.0 Nb 7.0 W 2.0 V 1.0	Weld metal hardness, a w 62-66 HRC Machinability Grinding only Abrasion resistance Excellent High temp. wear resistance Very good Corrosion resistance Excellent	3.2 4.0 5.0	450 450 450	90-120 110-220 190-290	20 23 23
OK 84.84 **SMAW** **Type** Basic special OK 84.84 is a hardfacing electrode depositing a weld metal with a high volume fraction of fine carbides in a martensitic matrix. It is designed for protection of component subjected to severe abrasive wear. Typical applications: earth-drilling equipment, hammers, scrapes and knives, shovel buckets and shovel teeth. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC+-, AC OCV 45 V	DIN 8555 E10-UM-60-GP	C 3.0 Si 2.0 Cr 6.3 V 5.2 Ti 5.3	Weld metal hardness, a w 60-62 HRC Machinability Grinding only Impact resistance Very good Abrasion resistance Excellent	2.5 3.2 4.0	350 350 350	70-100 100-150 115-200	17 17 17
OK 85.58 **SMAW** **Type** Basic OK 85.58 is a hardfacing electrode for the repair welding of hot-working tools, hot trimming tools, punches and so on. The weld metal hardness can be increased by hardening and tempering, or by tempering alone. The weld metal can be step-hardened. To avoid cracking, the preheat and interpass temperature should be at least 300°C and preferably 500°C. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC(+), AC OCV 70 V	DIN 8555 E3-UM-50-ST	C 0.35 Si 1.0 Mn 1.0 Cr 1.8 W 8.0 Co 2.0 Nb 0.8	Weld metal hardness, a w 42-50 HRC Tempering resistance Temp°C HRC(1h) 100 51 200 51 300 52 400 53 500 53 550 55 600 53 650 45 700 35 Machinability Grinding only Abrasion resistance Good High temp. wear resistance Very good	2.5 3.2 4.0 5.0	350 350 350 350	70-110 100-150 130-190 180-250	22 23 23 25

Product	Classification	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 85.65 **SMAW** **Type** Basic OK 85.65 deposits a molybdenum-alloyed, high-speed steel. Suitable for metal cutting tools, punching tools, drills, stamping machines. Welded cutting edges can be put into use without tempering. For shaping machine tools and large cutting tools, untempered weld metal is recommended. To avoid cracking, the working temperature should be ≤300°C and preferably 400-500°C. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC+, AC OCV 70 V	DIN 8555 E4-UM-60-S	C 0.9 Si 1.5 Mn 1.3 Cr 4.5 Mo 7.5 V 1.5 W 1.8	Weld metal hardness, a w 56-62 HRC Tempering resistance Temp°C HRC(1h) HRC(2x1h) 20 60 60 100 60 60 300 60 60 400 58 58 550 62 66 700 40 40 Machinability Grinding only Abrasion resistance Very good High temp. wear resistance Very good	2.5 3.2 4.0	350 350 350	80-110 100-150 120-190	23 23 25
OK 86.08 **SMAW** **Type** Lime-Basic OK 86.08 deposits an austenitic manganese steel alloy which work-hardens under impact and compressive stresses. The electrode is primarily used for surfacing and building up manganese steel components such as crusher, jaws and hammers. The interpass temperature should be kept as low as possible. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC+, AC OCV 70 V	DIN 8555 E7-UM-200-K	C 1.1 Si 0.8 Mn 13.0	Weld metal hardness, a w 180-200 HB Weld metal hardness, w h 44-48 HRC Machinability Grinding Impact resistance Excellent Metal-to-metal wear resistance Very good	3.2 4.0 5.0	450 450 450	95-135 130-180 170-230	23 23 25
OK 86.20 **SMAW** **Type** Rutile-basic OK 86.20 deposits a tough, crack-resistant, austenitic-manganese steel alloyed with Ni and Cr. The alloy work-hardens under impact and compressive stresses. The electrode is used for surfacing and building up manganese-steel components such as bulldozer teeth, dredger buckets and rail crossings. The interpass temperature should be kept as low as possible. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC+-, AC OCV 60 V	DIN 8555 E7-UM-200-K	C 0.8 Si 0.4 Mn 13.0 Cr 4.5 Ni 3.5	Weld metal hardness, a w 200-220 HB Weld metal hardness, w h 37-41 HRC Machinability Grinding Impact resistance Excellent	3.2 4.0 5.0 6.0	450 450 450 450	125-160 160-220 200-300 230-380	21 23 24 26

Product	Classification	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 86.28 **SMAW** **Type** Zirconium-basic OK 86.28 is a high-recovery electrode and deposits a tough, crack-resistant, austenitic-manganese steel alloy alloyed with Ni. The alloy work-hardens under impact and compressive stresses. Applications: Surfacing and building up Mn-steel components, such as bulldozer teeth, dredger buckets and rail crossings. The interpass temperature should be kept as low as possible. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC(+/-), AC OCV 70 V	SFA/AWS A5.13 EFeMn-A	C 0.8 Si 0.2 Mn 14.0 Ni 3.5	Weld metal hardness, a w 160-180 HB Weld metal hardness, w h 42-46 HRC Machinability Grinding Impact resistance Excellent	3.2 4.0 5.0	450 450 450	100-150 145-205 205-270	28 32 35
OK 92.35 **SMAW** **Type** Rutile-basic OK 92.35 is a nickel-based, super-alloy electrode of the NiCrMoW type. OK 92.35 deposits an extremely tough work hardening weld metal, resistant to attacks by the most used acids. The weld metal is also resistant to high temperatures. Supplied in VacPac™ vacuum packed wrappers. **Welding current** DC(+), AC OCV 70 V	SFA/AWS A5.11-90 (ENiCrMo-5) DIN 8555 E23-250 CKT	C 0.06 Si 0.7 Mn 0.7 Mo 16.5 Cr 15.5 W 3.8 Fe 5.5 Ni 57.0	Weld metal hardness, a w 240-260 HV Weld metal hardness, w h 40-45 HRC Machinability Fair High temp. wear resistance Excellent Corrosion resistance Very good	2.5 3.2 4.0 5.0	300 350 350 350	65-110 110-150 160-200 190-250	18 18 20 20
OK 93.01 **SMAW** **Type** Rutile-acid A high-recovery, surfacing electrode depositing a Co-Cr-W alloy high in carbon. The deposit is the hardest of the standard Co-base range. Typical applications: • hot rolls, hot rolling guides, drawing blocks. • kneadling rolls, screw presses. • hot shear blades, glass cutters, hot scrapers, pump and press casings, burner nozzles. **Welding current** DC(+), AC OCV 65 V	SFA/AWS A5.13 ECoCr-C DIN 8555 E20-UM-55-CTZ	C 2.2 Si 1.2 Mn 1.0 Cr 30.0 W 12.5 Fe 3.0 Co 48.0	Weld metal hardness, a w ≈55 HRC Hot hardness 600°C ≈44 HRC 800°C ≈34 HRC Machinability Grinding only Abrasion resistance Excellent High temp. wear resistance Excellent Corrosion resistance Excellent	3.2 4.0 5.0	350 350 350	90-130 120-170 150-200	30 30 28

Product	Classification	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK 93.06 **SMAW** **Type** Rutile-acid A high-recovery, surfacing electrode depositing a Co-Cr-w alloy with a medium-high carbon content. Typical applications: • hot shear blades, guide rolls. • kneading equipment, steam nozzles, mechanical sealings, bushings. • blanking dies, press mandrels, trimming dies, exhaust valves. **Welding current** DC(+), AC OCV 65 V	SFA/AWS A5.13 ECoCr-A DIN 8555 E20-UM-40-CTZ	C 1.0 Si 0.9 Mn 1.0 Cr 28.0 W 4.5 Fe 3.0 Co 60.0	Weld metal hardness, a w ≈42 HRC Hot hardness 300°C 600°C ≈35 HRC ≈29 HRC Machinability By cemented carbide tools Abrasion resistance Very good High temp. wear resistance Excellent Corrosion resistance Excellent	2.5 3.2 4.0 5.0	350 350 350 350	65-80 90-130 120-170 150-200	25 30 30 30
OK 93.07 **SMAW** **Type** Rutile-acid A high-recovery, surfacing electrode depositing a Co-Cr-Mo-Ni alloy with a low carbon content. Typical applications: • water hot shear blades, mandrels, ingot gripper teeth. • valves for hot steam and combusiton engines, slipping and sealing surfaces. • buffer layers when using OK 93.01, OK 93.06, OK 93.13. **Welding current** DC(+), AC OCV 65 V	DIN 8555 E20-UM-300-CTZ	C 0.3 Si 0.9 Mn 1.0 Cr 28.0 Mo 5.5 Ni 3.0 Fe 2.0 Co 58.0	Weld metal hardness, a w ≈30 HRC Weld metal hardness, w h ≈45 HRC Hot hardness 300°C ≈280 HB Machinability By cemented carbide tools Impact resistance Good Abrasion resistance Very good Corrosion resistance Excellent	3.2 4.0 5.0	350 350 350	90-130 120-170 150-200	30 30 31
OK 93.12 **SMAW** **Type** Rutile-acid A high-recovery, surfacing electrode depositing a Co-Cr-W alloy with a fairly high carbon content. Typical applications: • hot rolls, hot rolling guide, drawing blocks. • kneading rolls, screw presses. • hot shear blades, sliding guides, mixers, feeder screws. Cutting edges of knives for wood, paper, plastic and carpets. **Welding current** DC(+), AC OCV 65 V	SFA/AWS A5.13 ECoCr-B DIN 8555 E20-UM-50-CTZ	C 1.4 Si 1.0 Mn 0.5 Cr 28.0 W 8.5 Fe 3.0 Co 56.0	Weld metal hardness, a w ≈46 HRC Hot hardness 300°C 600°C ≈37 HRC ≈32 HRC Machinability By cemented carbide tools Abrasion resistance Very good High temp. wear resistance Excellent Corrosion resistance Excellent	3.2 4.0 5.0	350 350 350	90-130 120-170 150-200	30 30 31

Product	Classification	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrodur 14.70 FCAW **Type** Basic OK Tubrodur 14.70 is a self-shielded, Cr-carbide type flux-cored wire. The weld metal is extremely resistant to abrasive wear by gritty fine grain materials such as earth, ore, clay, etc. Typical applications are the hardfacing of bucket lips, auger points, mining and earthmoving equipment, scraper blades etc. Maximum 2-3 layers should be deposited. **Welding current** DC- Ø 1,6, DC+ Ø 2,4		C 3.5 Si 0.4 Mn 0.9 Cr 22.0 Mo 3.5 V 0.4	Weld metal hardness, a w 50-60 HRC Machinability Grinding only Abrasion resistance Excellent High temp. wear resistance Very good Corrosion resistance Good	1.6 2.4		200-400 350-450	30-36 30-36
OK Tubrodur 15.40 FCAW **Type** Rutile OK Tubrodur 15.40 is a CO_2-shielded, flux-cored wire for hardfacing depositing a manganese-chromium-molybdenum-alloyed weld metal. It is used for the surfacing of wheel runners, wheels and rollers for conveyor belts, wheels for mine trucks, rolls and shafts. **Welding current** DC(+)		C 0.2 Si 1.0 Mn 1.4 Cr 1.4	Weld metal hardness, a w 32-40 HRC Machinability Good Impact resistance Good Metal-to-metal wear resistance Very good	1.6		250-350	28-34
OK Tubrodur 15.41 FCAW **Type** Basic OK Tubrodur 15.41 is a self-shielded, flux-cored wire for semi-automatic hardfacing giving a chromium-manganese-alloyed weld metal with a hardness of 28-36 HRC. It is ideal for on-site rebuilding of rollers, shafts, wheels and worn parts of CMn railway tracks, point frogs etc. **Welding current** DC(+)		C 0.12 Si <0.8 Mn 1.5 Cr 3.1 Al 1.4	Weld metal hardness, a w 28-36 HRC Machinability Good Impact resistance Good Metal-to-metal wear resistance Very good	1.2 1.6		250 320	27 26

Product	Classification	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrodur 15.42 FCAW **Type** Basic OK Tubrodur 15.42 is a self- or CO_2-shielded, flux-cored wire for GMAW hardfacing. It is designed for surfacing of wheel runners, track links, billet rolls, wheels and rollers for conveyor belts, wheels for mine trucks, rolls and shafts, where a hardness of 35-45 HRC is desired. **Welding current** DC(+)		C 0.15 Si <1.0 Mn 1.5 Cr 4.5 Ni 0.5 Mo 0.5 Al 1.4	Weld metal hardness, a w 35-45 HRC Machinability Fair Impact resistance Good Metal-to-metal wear resistance Good Abrasion resistance Good	1.6		320	26
OK Tubrodur 15.42S SAW **Type** Basic OK Tubrodur 15.42S is a flux-cored wire for SAW hardfacing in conjunction with OK Flux 10.71, giving a CrMnMo-alloy deposit with an as welded hardness of 35-44 Rockwell C. OK Tubrodur 15.42S is designed for surfacing of wheel runners, track links, billet rolls, wheels and rollers for conveyor belts, wheels for mine trucks, rolls and shafts, where a hardness of 35-45 Rockwell C is desired. **Welding current** DC+(-)		C 0.12 Si <1.3 Mn 1.3 Cr 3.7 Mo 0.7	Weld metal hardness, a w 35-45 HRC Machinability Fair Impact resistance Good Abrasion resistance Good	3.0 4.0		400-600 450-900	28-34 28-38
OK Tubrodur 15.43 FCAW **Type** Basic OK Tubrodur 15.43 is a self-shielded, flux-cored, tubular wire principally developed for the on-site rebuilding of worn CMn railway and tram track. The weld deposit is of the CrNiMo type and has excellent compressive strength with a hardness of 30-40 HRC. **Welding current** DC(+)		C 0.15 Si <0.5 Mn 1.1 Cr 1.0 Ni 2.2 Mo 0.5 Al 1.6	Weld metal hardness, a w 30-40 HRC Machinability Good Impact resistance Good Metal-to-metal wear resistance Very good	1.6		150-300	25-36

Product	Classification	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrodur 15.52 FCAW **Type** Rutile OK Tubrodur 15.52 is a self- or CO_2-shielded, flux-cored wire for hardfacing with a hardness of 55-60 HRC. Designed for hardfacing of feed screws, mixer blades and vessels, ring grooves on diesel motor pistons. **Welding current** DC(+)		C 0.4 Si 0.3 Mn 1.2 Cr 5.0 Mo 1.2	Weld metal hardness, a w 55-60 HRC Machinability Grinding only Impact resistance Fair Abrasion resistance Very good	1.6		300	26
OK Tubrodur 15.52S SAW **Type** Rutile OK Tubrodur 15.52S is a flux cored wire for SAW hardfacing in conjuction with OK Flux 10.71. OK Tubrodur 15.52S is designed for hardfacing of feed screws, mixer blades and vessels, ring grooves on diesel motor pistons. **Welding current** DC+(-)		C 0.4 Si 0.6 Mn 1.5 Cr 5.0 Mo 1.2	Weld metal hardness, a w 55-65 HRC Machinability Grinding only Impact resistance Fair Abrasion resistance Very good	3.0 4.0		400-600 450-900	28-36 28-38
OK Tubrodur 15.60 FCAW **Type** Rutile OK Tubrodur 15.60 is a self-shielded, flux-cored wire of the austentic manganese type. The work hardening characteristics and extremely tough crack-resistant weld metal ensure that OK Tubrodur 15.60 is the ideal solution for rebuilding 13Mn steels, normally found in crusher jaws, swing hammers and numerous parts of earth moving, mining and quarrying equipment. **Welding current** DC(+)		C 0.8 Si <1.0 Mn 12.5 Ni 3.0	Weld metal hardness, a w 200-250 HV Weld metal hardness, w h 400-500 HV Machinability Grinding Impact resistance Excellent	1.6		260	26

Product	Classification	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrodur 15.65 FCAW **Type** Rutile OK Tubrodur 15.65 is a flux-cored wire for self- or CO_2-shielding, depositing a martensitic-austenitic work hardening deposit. OK Tubrodur 15.65 can be used for rebuilding of mild, low-alloy and 13Mn steels. The weld metal combines excellent abrasion and impact resistance and is suitable for such applications as crusher jaws and hammers, railway point frogs, ripper teeth and wear plates. **Welding current** DC(+)		C 0.3 Si 0.3 Mn 13.5 Cr 14.5 Ni 1.5 Mo 0.7 V 0.6	Weld metal hardness, a w 200-250 HV Weld metal hardness, w h 400-500 HV Machinability Grinding Impact resistance Excellent Abrasion resistance Good	1.6 2.4		260 360	26 29
OK Tubrodur 15.73 FCAW **Type** Metal-cored OK Tubrodur 15.73 is a versatile, metal-cored, hardfacing wire which deposits a martensitic 13Cr alloy steel deposit, especially suitable for applications involving wear at elevated temperatures. These will include shafts, valve seats, rolls and other parts subjected to wear, and/or corrosion at high temperatures. Gas mix 80% Ar+20% CO_2 is recommended. **Welding current** DC+(-)		C 0.19 Si 0.3 Mn 1.2 Cr 13.0 Ni 2.5 Mo 1.5 V 0.25 Nb 0.25	Weld metal hardness, a w 45-51 HRC Machinability By cemented carbide tools Abrasion resistance Good High temp. wear resistance Very good Corrosion resistance Very good	1.6 2.0 2.4		260 300 360	29 28 28
OK Tubrodur 15.73S SAW **Type** Metal-cored OK Tubrodur 15.73S is a metal-cored, hardfacing wire which deposits a martensitic 13Cr alloy steel for use with OK Flux 10.37. It is for applications involving wear at elevated temperatures. Typical applications: steel mill concast rolls, valve seats and components subject to wear, fatigue and corrosion at high temperatures. **Welding current** DC+(-)		C 0.12 Si 0.4 Mn 1.1 Cr 12.5 Ni 2.5 Mo 1.5 V 0.2	Weld metal hardness, a w 45-51 HRC Machinability By cemented carbide tools Abrasion resistance Good High temp. wear resistance Very good Corrosion resistance Very good	2.4 3.0 4.0		250-450 400-600 450-900	28-38 28-36 28-38

Product	Classification	Typical all weld metal composition, %	Typical properties all weld metal	Ø mm	Length mm	Welding current A	Arc voltage V
OK Tubrodur 15.80 **FCAW** **Type** Basic A tubular, self-shielded, flux-cored wire which deposits a martensitic weld metal containing a high volume of titanium carbides. This wire has been developed for maximum resistance to abrasive wear under load and moderate impact. The deposit is normally crack-free and maintains good hot hardness. **Welding current** DC(+)	DIN 8555 MF-GF-10-60-GP	C 1.8 Si <1.0 Mn <2.0 Cr 6.2 Mo 1.4 Ti 5.2	Weld metal hardness, a w 55-60 HRC Machinability Grinding Impact resistance Good Abrasion resistance Very good	1.6		150-300	28-32
OK Tubrodur 15.86 **FCAW** **Type** Metal-cored OK Tubrodur 15.86 is a tubular wire designed to deposit a cobalt-based alloy for a wide range of surfacing applications. These include erosion, abrasion, heat and corrosion resistance. It is suitable for exhaust valves, chemical valves, forging dies and a host of components in the power generation, plastics, paper and rubber industries. **Welding current** DC(+)		C 1.0 Si 1.1 Mn <1.0 Fe <4.5 Co bal. Cr 27.5 Ni <2.5 W 4.0	Weld metal hardness, a w 40-43 HRC Machinability Fair Impact resistance Fair Metal-to-metal wear resistance Good Abrasion resistance Excellent High temp. wear resistance Good Corrosion resistance Excellent	1.2 1.6		300 350	30 27
OK Autrod 13.91 **GMAW** A copper-coated, low-alloyed electrode for gas metal arc hardfacing when a highly wear-resistant weld metal is required. Due to the high Cr content, about 9%, the weld metal displays relatively good resistance to general corrosion. The weld metal is resistant to softening up to about 550°C. Used for hardening for example loading machines, road machines, mixers, shovel teeth, different tools and wear parts. OK Autrod 13.91 can be welded with Ar/20CO_2 or pure CO_2 as the shielding gas. **Welding current** DC(+)	DIN 8555 MSG-6-GZ-C-60G	C 0.45 Si 3.0 Mn 0.4 Cr 9.0 Wire composition	Weld metal hardness, a w 50-60 HRC Machinability Grinding only Abrasion resistance Very good High temp. wear resistance Very good	0.8 1.0 1.2 1.6		40-170 80-280 120-350 225-480	16-22 18-28 20-33 26-38

Product	Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
		ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	Yield stress MPa	Tensile strength MPa	Charpy V Test Temp°C	Charpy V Impact Values J
OK Flux 10.37 **SAW** **Type** Basic Agglomerated, aluminate-flouride, basic flux designed primarily for surfacing of continuous casting rollers, using cored wires with single- or twin-arc technique. The flux has excellent slag removal and can tolerate high interpass temperatures. **Density** ≈0.9 kg/dm^3 **Basicity index** 1.7 **Classifications** EN 760 SA AF 2 DC	OK Tubrodur 15.73S										0.10 V	0.4 0.25	0.8 Nb	12.8 0.25	2.5	1.4				

Product	Wire	Approvals									Typical all weld metal composition, %						Typical properties all weld metal			
		ABS	LR	DNV	BV	GL	RS	CL	DB	VdTÜV	C	Si	Mn	Cr	Ni	Mo	Yield stress MPa	Tensile strength MPa	Charpy V Test Temp°C	Charpy V Impact Values J
OK Flux 10.96 **SAW**	OK Autrod 12.10										0.08	1.4	1.1	5.0	-	-				

Type Neutral

OK Flux 10.96 is a Cr-alloying agglomerated flux intended for hardfacing with hardness up to 40 HRC in combination with mild steel electrodes. OK Flux 10.96 is specifically designed for hardfacing in combination with OK Autrod 12.10 which gives a weld metal hardness of 35-40 HRC.
The flux consumption and the chromium content of the deposit in the weld metal increase with increasing arc voltage. Thus the hardness and the hardenability of the weld metal also increase as the arc voltage increass. Wheel beds for cranes loading wagons, shafts, caterpillar tracks and links are typical areas of application. Hardfacing with OK Flux 10.96 can be done on AC or DC. DC positive polarity gives higher heat input to the base material and somewhat higher flux consumption and lower deposition rate than negative polarity. Since the flux contains chromium and the chromium content of the deposit varies with the arc voltage, the latter should be kept as constant as possible.

Density ≈1.1 kg/dm^3

Basicity index 0.7

Classifications

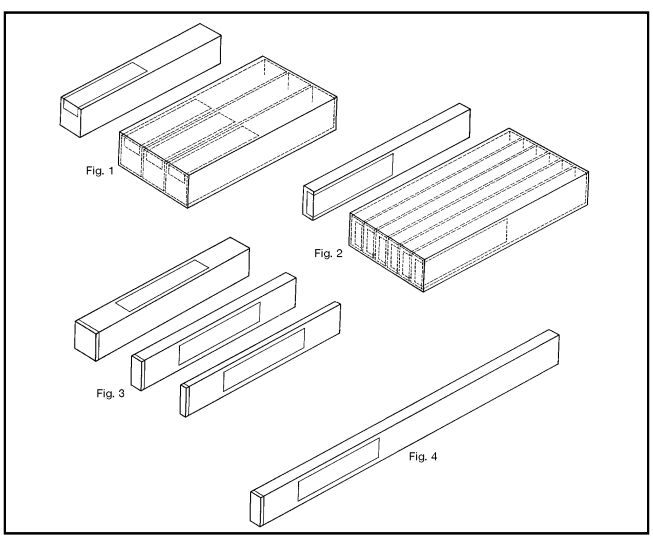
EN 760 SA CS 3 Cr DC

Packaging

Stick electrodes
Rutile and low-hydrogen electrodes are packed in cardboard packs with polyethylene shrink wrapping which are then packed in outer boxes made of corrugated board in units of 3 or 6 (Figs. 1 & 2).
Stainless electrodes are packed in polyethylene boxes with a resealable lid (Fig. 3).
Stainless and low-hydrogen electrodes are also available in Vac-Pac™. Low-alloyed and R&M electrodes are only available in Vac-Pac™ (see next page).

Tig rods
Tig rods are available in packs made of corrugated board (Fig. 4).

Strip electrodes
The OK Band welding strip is normally supplied in 30 kg coils and a frequent dimension is 60x0.5 mm. However other widths such as 30 or 90 mm or larger coil weights are also available on request.



Packaging

MARATHON PAC™ — for increased profitability

The concept

MARATHON PAC™ is the result of continuous product development. It is a bulk pack for 200-475 kg of solid or flux-cored welding wire. Outstanding for welding robots and other mechanised welding stations. The welding wire in MARATHON PAC™ has been wound using a special technique. The wire is straight and comes out of the gun without twisting or warping.

Higher productivity

Every MARATHON PAC™ contains more than thirteen 15 kg spools. Stoppages for spool changes and maintenance requirements are reduced by almost 90% — the arc-time factor is increased. MARATHON PAC™ also makes unmanned shifts or production with limited manning possible.

Improved welding quality

MARATHON PAC™ reduces repairs and rejects resulting from welding defects. You do not need to accelerate a heavy spool, just the free wire, the result is more reliable, rapid starts and less wear on the feed unit. The straight, untwisted wire offers major benefits when welding narrow joints, weaving in heavy material and welding thin plates where the wire must be precisely positioned to avoid welding defects.

VacPac™

No rebaking

The specially-designed packaging eliminates moisture pick-up. This results in very long storage time and dry, ***factory-fresh*** electrodes direct from the package without rebaking.

Reduced cost — improved control

ESAB VacPac™ reduces costs by eliminating rebaking procedures. The vacuum indicates no leakage which guarantees dry electrodes, thereby providing easy control and improved quality assurance. The date and time of issue can be recorded on the package.

Small handy packages

Depending on dimensions, the electrodes are available in packages of approximately 1, 2.5 or 4 kg providing quantities suitable for one working shift.

Packaging

Flux

ESAB fluxes are normally supplied in paper bags of 25 kg each. An inner bag of polyethene provides extra protection from moisture pick-up from the surrounding atmosphere.

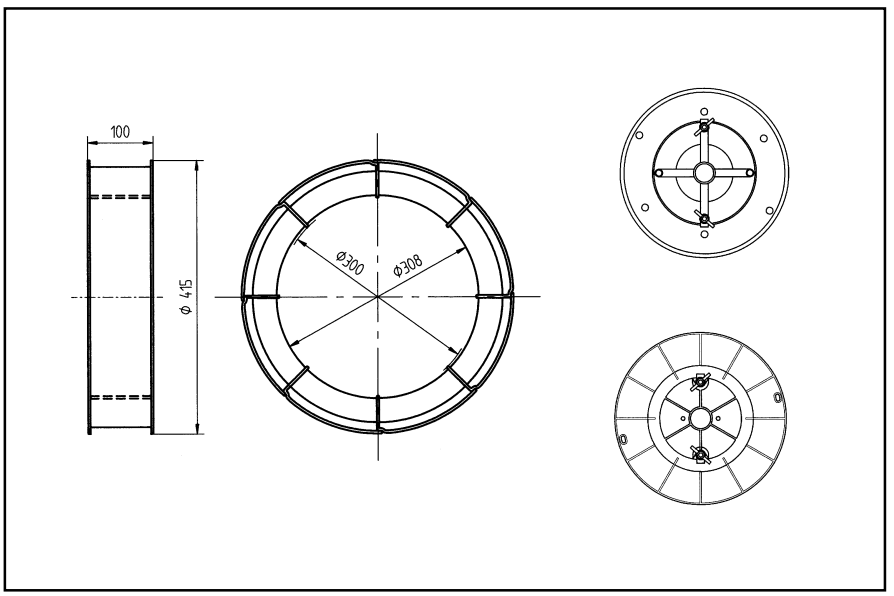
ESAB fluxes for submerged arc welding can also be supplied in steel buckets of 25 kg. This packaging type is more sturdy and thus more suitable when demanding handling conditions are involved. The metal lid can be re-closed and thus keep the moisture away from the flux.

Big Barrel is a new packaging alternative for SAW fluxes. The steel barrel contains about 250 kg, depending on the volume weight of the flux. This large packaging for flux offers more rational handling for bulk users. The Big Barrel is environmentally-compatible and reduces waste.

Big Bag makes it easier for bulk users to handle flux. Fluxes including OK Flux 10.71 are now available in 500-1,000 kg Big Bags. Big Bag offers six-fold security in terms of weight and has base dimensions of 75 x 75 cm. The height is 70-110 cm.

The sack is made of coated fabric and has an emptying unit in the base, which is opened to a diameter of 20 cm using a rope. Big Bag can be lifted on four strong lifting loops by a fork-lift truck or overhead crane and emptied directly into a specially-designed flux container. The empty Big Bag can be used again.

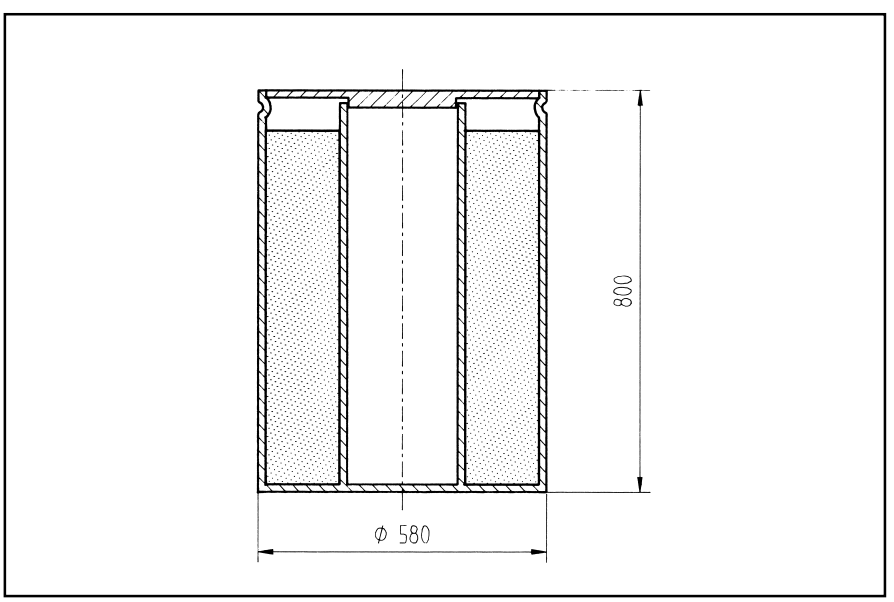
Spool types



Spool 03

03-0	25 kg
03-2	30 kg
03-3	15 kg

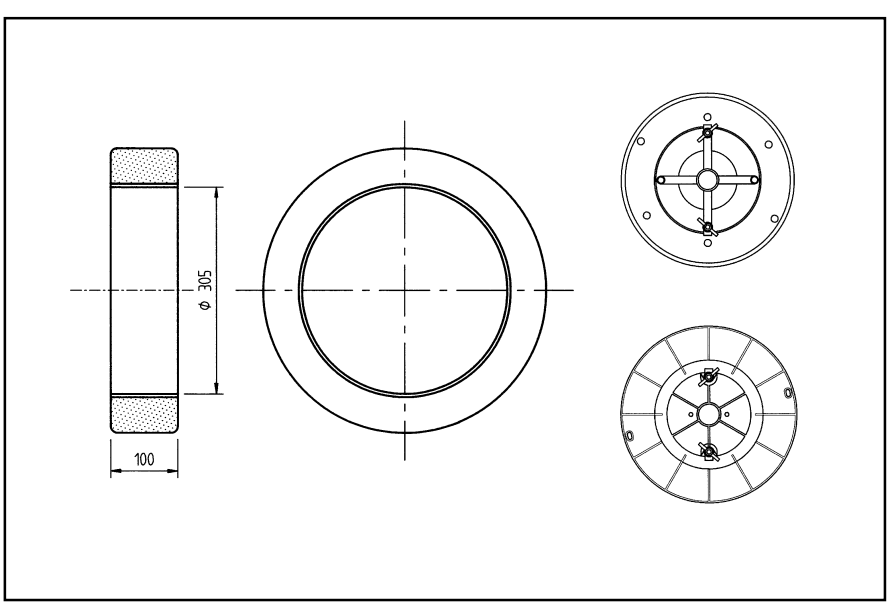
Random-wound wire basket. Can be fitted to ESAB's 0416 492 880 or 0153 872 880 coil holder. This spool is also suitable for coil holders with crossed arms. The empty basket is non-returnable.



Spool 04

04-0	250 kg
04-3	350 kg
04-5	400 kg

Random-wound pay-off drum. The empty spool is non-returnable.

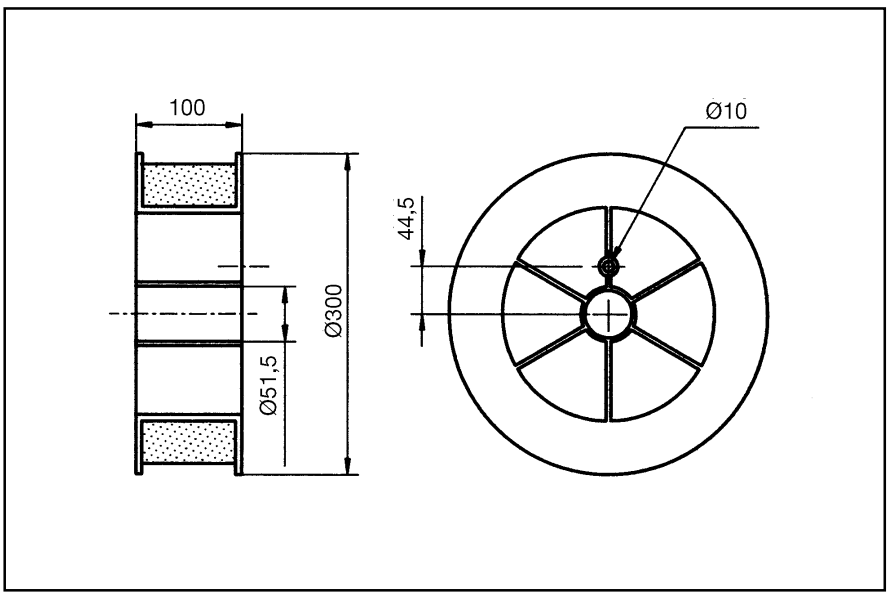


Spool 07

07-0	30 kg
07-3	25 kg

This spool can be fitted to ESAB's 0416 492 880 or 0153 872 880 coil holders. This spool is also suitable for coil holders with crossed arms.

Spool types



Spool 24

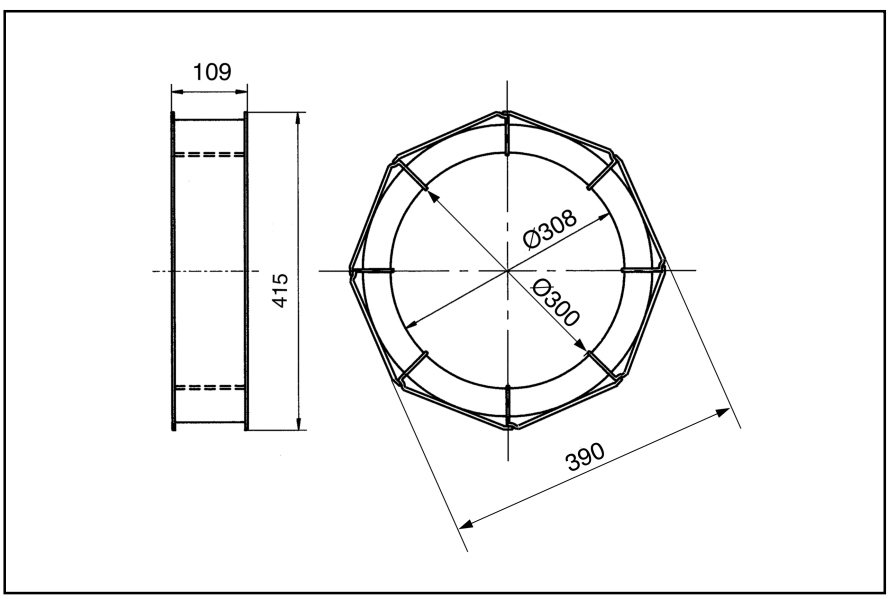
Plastic spool. Layer wound.
EN 759: S 300

24-7	15 kg

Spool 25

Plastic spool. Random wound.
EN 759: S 300

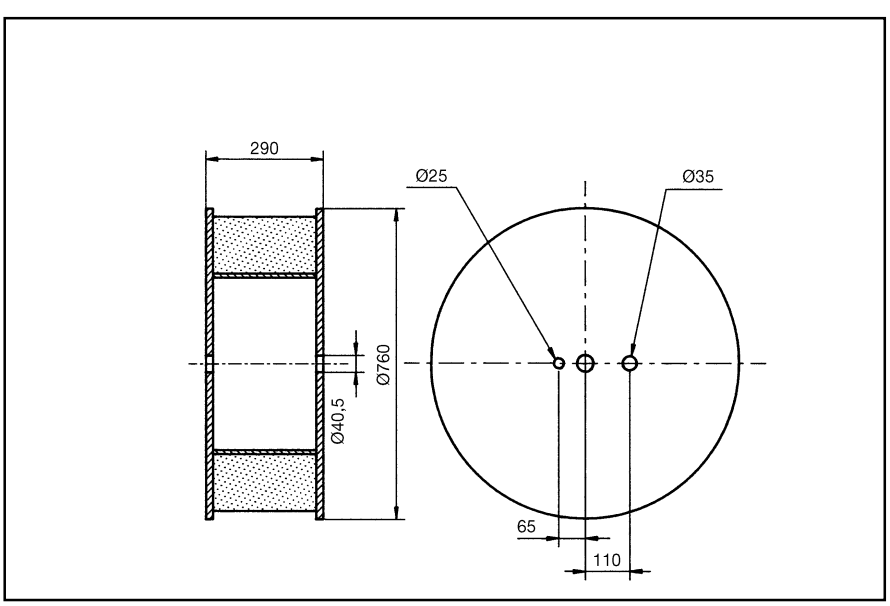
25-0	15 kg
25-2	10 kg



Spool 28 Eurospool

28-0	30 kg
28-1	25 kg
28-2	15 kg

Precision-wound octagonal wire basket. Can be fitted to ESAB's 0416 492 880 or 0153 872 880 coil holder. This spool is also suitable for coil holders with crossed arms. The empty basket is non-returnable.

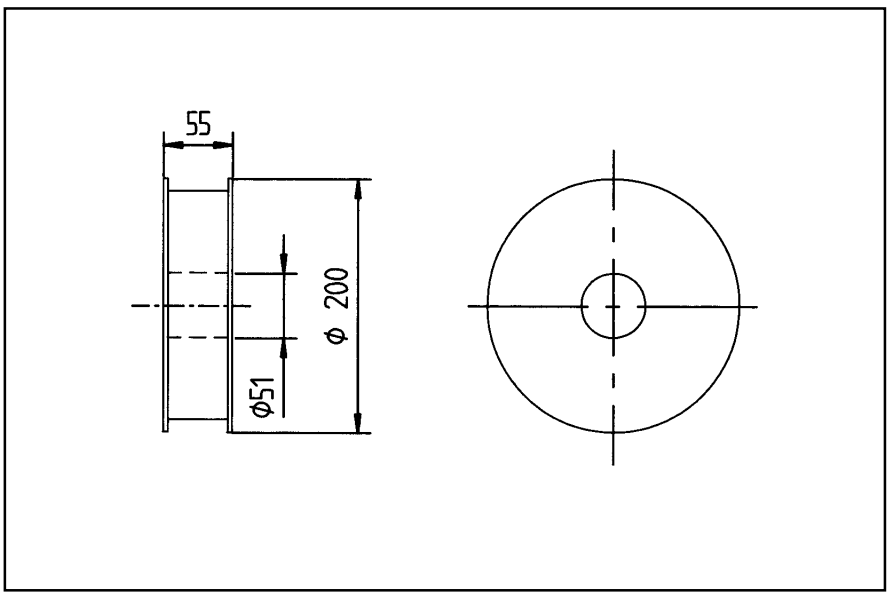


Spool 34

34-0	300 kg

Random-wound wooden bobbin. Decoiling stand required.
The empty bobbin is non-returnable.

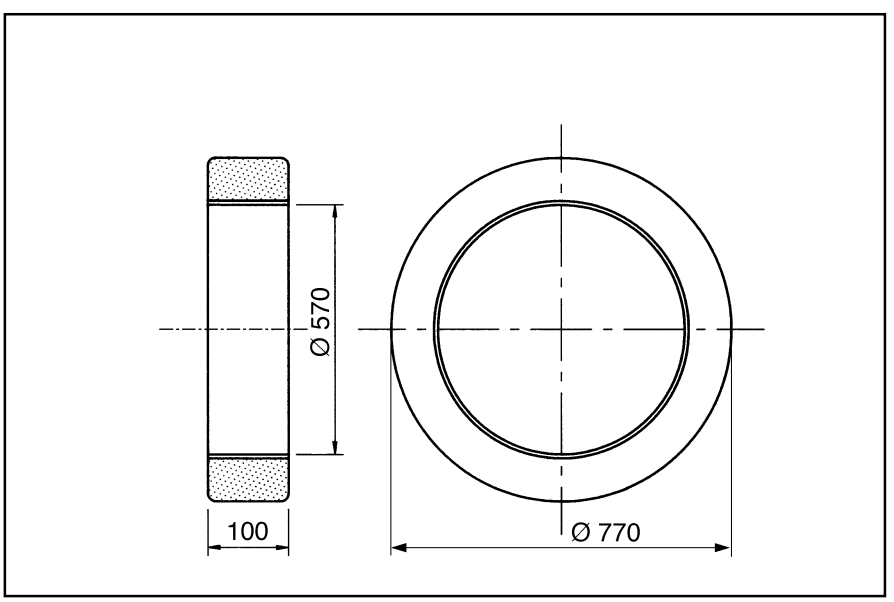
Spool types



Spool 46

Plastic spool. Random wound
EN 759: S 200

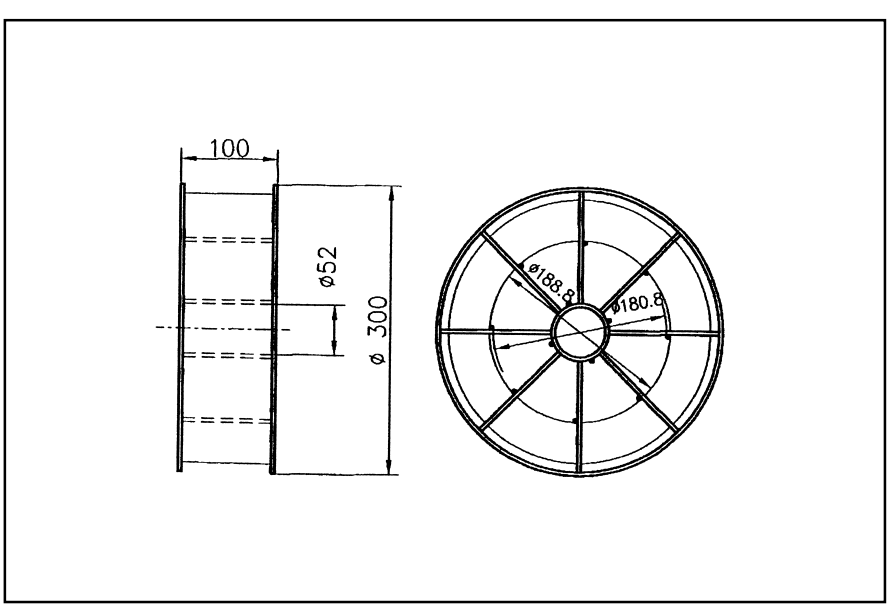
46-0	5 kg
46-2	2 kg



Spool 48

48-0	100 kg
48-1	75 kg

Random-wound coil sheet metal former. Can be fitted to ESAB's 0671 155 480 coil holder. Decoiling stand required.



Spool 66

Wire basket. Random wound.
EN 759: BS 300

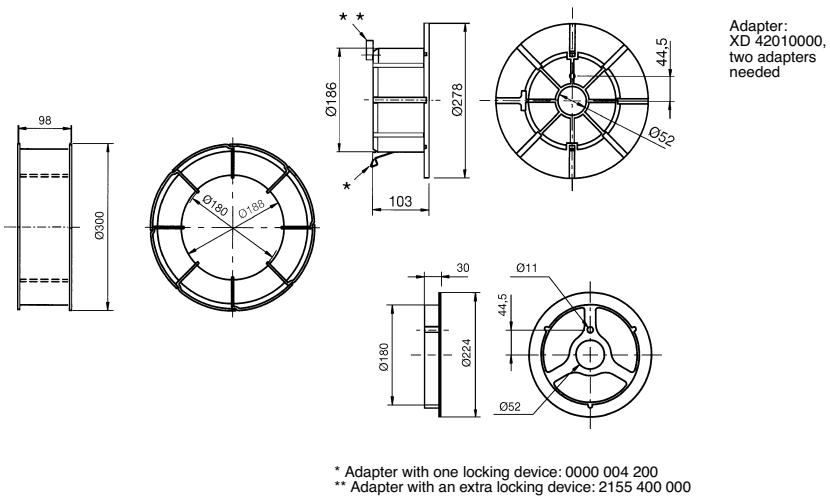
66-0	15 kg
66-1	18 kg
66-2	10 kg
66-3	16 kg

Spool 67

Wire basket. Layer wound.
EN 759: BS 300

67-0	15 kg
67-1	18 kg
67-3	16 kg

Spool types



* Adapter with one locking device: 0000 004 200
** Adapter with an extra locking device: 2155 400 000

Spool 76

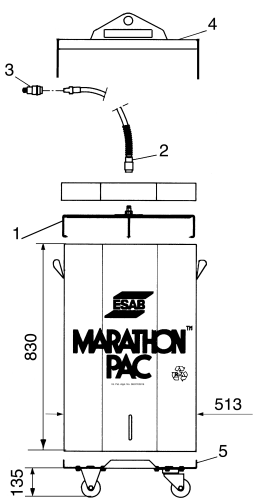
Wire basket. Random wound.
EN 759: B 300

76-0	15 kg
76-1	18 kg
76-3	16 kg

Spool 77

Wire basket. Layer wound.
EN 759: B 300

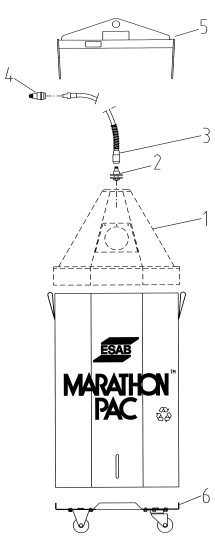
77-0	15 kg
77-1	18 kg
77-3	16 kg



Spool 93– MARATHON PAC™

93-0-200 kg, 93-2-250 kg
93-X-catch weight
Accessories:

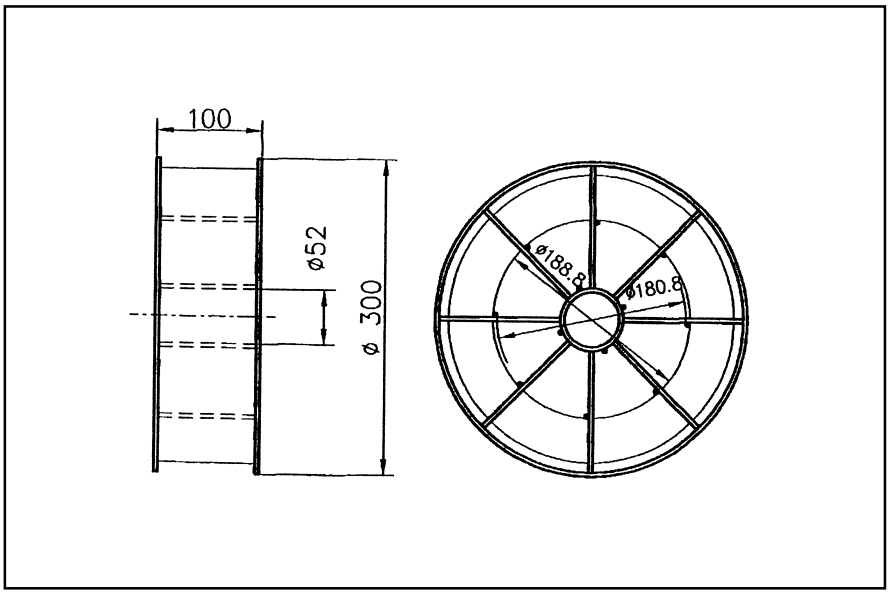
1. Wire conduit attachment	F102 433 880
2. Wire conduits	
l=0.6 m	F102 437 886
l=1.8 m	F102 437 881
l=3.0 m	F102 437 882
l=4.5 m	F102 437 883
l=8.0 m	F102 437 884
l=12.0 m	F102 437 885
3. Connector wire feed unit	F102 440 880
4. Lifting yoke	F102 607 880
5. Trolley	F102 365 880



Spool 94– MARATHON PAC™

94-0	475 kg
Accessories:	
1. Plastic hood	F103 901 001
2. Quick connector	F102 442 880
3. Wire conduits	
l=0.6 m	F102 437 886
l=1.8 m	F102 437 881
l=3.0 m	F102 437 882
l=4.5 m	F102 437 883
l=8.0 m	F102 437 884
l=12.0 m	F102 437 885
4. Connector wire feed unit	F102 440 880
5. Lifting yoke	F102 537 880
6. Trolley	F103 900 880

Spool types



Spool 98

EN 759: BS 300
Layer wound wire basket basket, plastic coated, which is used without adapter. Fitting to hub with diam. = 51 mm. Empty spool is recyclable.

98-2	15 kg
98-3	18 kg
98-4	16 kg
98-6	6 kg
98-7	7 kg

Standard welding machines

Machines, equipment and accessories needed for manual handling of following processes.

- **MMA-, TIG-, and MIG/MAG- welding**
- **Plasma cutting**

The new Aristo system
The new Aristo system is a complete product line of 400 A machines for MMA, DC-TIG, and MIG/MAG welding. Below follows a presentation of the product line. Respective machine is also presented under each welding process sector.

AristoArc 400

The AristoArc is a compact, sturdy piece of equipment. The fundamental part of the AristoArc is the power source, which is designed for MMA welding. Depending on the required functionality, it is possible to choose between two different control panels: A2 or A4.
The A4 makes it possible to choose between pre-set welding characteristics, depending on the type of electrode: basic, rutile, or cellulose, as well as characteristics for gouging. The panel also has a digital display which indicates current/voltage.
The aluminium chassis on the machine is durable and light, thereby ensuring a long service life.

AristoTig 400

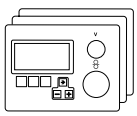
The fundamental part of the AristoTig DC-Tig system is the AristoTig 400 power source. Depending on the required functionality, it is possible to choose between two different digital display panels: T4 or T6. Both panels are suitable for TIG and MMA welding.
The T6 also has DC pulsing, a 10-position memory feature and pre-set MMA welding characteristics, depending on the type of electrode; basic, rutile, or cellulose, as well as characteristics for gouging.
The system can be supplemented with a water-cooling unit and a multiple voltage unit, depending on needs and requirements.
The aluminium chassis on the machine is durable and light, thereby ensuring a long service life.

AristoMig 400

The AristoMig power source is used together with either the AristoFeed 30 or AristoFeed 48 wire feeder. Depending on the required functionality, it is possible to choose between three different control panels: M2, MA4 or MA6. The MA4 and MA6 also have MMA in addition to MIG/MAG welding. The MA6 control panel features a synergic pulse, MMA welding and memory points for its own parameters as standard.
In addition to normal low-alloyed steels, you can weld stainless steels and aluminium with the AristoMig 400. In synergic versions, the welding power is easily adjusted with a single knob – everything else is done automatically. However, skilful users may wish to adjust or fine-tune the parameters suggested by the machine. This is naturally possible.
The aluminium chassis on the machine is durable and light, thereby ensuring a long service life for the machine.

The possible modular combinations that are available for the AristoMig and AristoFeeder are shown on the following pages.

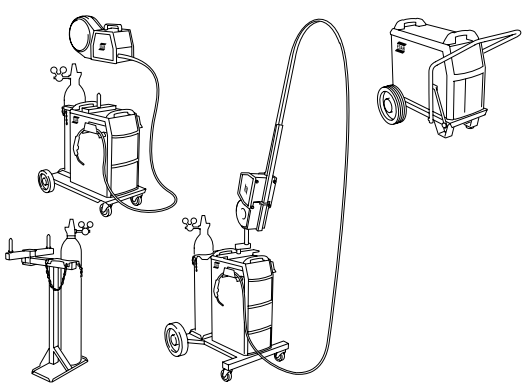
New Aristo system

	Communicator/ control panel	Power source	Power source and water-cooling unit	Power source and multivoltage unit	Power source, cooling unit and multivoltage unit
					
AristoArc					
AristoArc 400 A2	A2	0458 635 880			
AristoArc 400 A4	A4	0458 635 881			
AristoMig					
AristoMig 400		0458 625 880	0458 625 881	0458 625 882	0458 625 883
AristoTig					
AristoTig 400 T4	T4	0458 630 880	0458 630 881	0458 630 882	0458 630 883
AristoTig 400 T6	T6	0458 630 884	0458 630 885	0458 630 886	0458 630 887

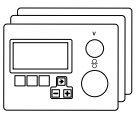
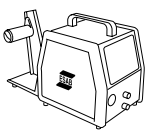
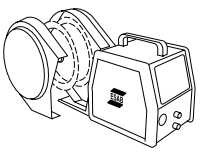
Technical data	**AristoArc**	**AristoTig**	**AristoMig**
Main voltage	3x400 V 50 Hz	3x400 V 50 Hz	3x400 V 50 Hz
Fuse, slow	25 A	25 A	25 A
Mains cable	4x2.5 mm^2	4x2.5 mm^2	4x2.5 mm^2
Setting range	16 A - 400 A	4 A - 400 A	16 A-400 A/8 V-60 V
at 35% duty cycle	400 A/36 V	400 A/26 V	400 A/34 V
at 60% duty cycle	320 A/33 V	320 A/23 V	320 A/26 V
at 100% duty cycle	250 A/30 V	250 A/20 V	250 A/26.5 V
Open circuit voltage	78 - 90 V	78 - 90 V	55 - 70 V
Energy save mode (400 V)	50 W	60 W	60 W
Working power 35% 400 A	16 kW	16 kW	16 kW
Apparant power 35% 400 A	24.6 kVA	24.6 kVA	24.6 kVA
Power factor 35% 400 A	0.649	0.649	0.649
Efficiency 35% 400 A	85%	85%	85%
Enclosure class	IP 23	IP 23	IP 23
Insulation class (main trafo.)	H	H	H
Weight	45 kg	59 kg	57 kg

Water-cooling unit	
Cooling capacity	2500 W at 40°C 1.5 l/min
Coolant volume	5.5 l
Max flow	2.0 l/min
Max pressure	3.4 bar
Weight	20 kg
Multivoltage unit	
Main voltage	3x230/400/500V 50Hz, 3x208/230/460/475/575V 60Hz
Weight	57 kg
Dimensions LxWxH	
Power source AristoArc	625x294x492 mm
Power source AristoTig, AristoMig	625x394x496 mm
Power source + water-cooling unit or multivoltage unit	625x394x776 mm
Power source + water-cooling unit + multivoltage unit	625x394x1056 mm

Accessories power source	
Trolley AristoArc	0458 525 880
Trolley AristoMig	0458 530 880
Trolley AristoTig	0458 530 881
Trolley 2 AristoMig (for feeder with counterbalance device)	0458 603 880
Guide pin (for feeder and power source without trolley)	0458 731 880
Peak reduction unit	0458 741 001
Feeder stand	0458 522 880
Return cable with clamp 5 m 70 mm^2	0156 743 881



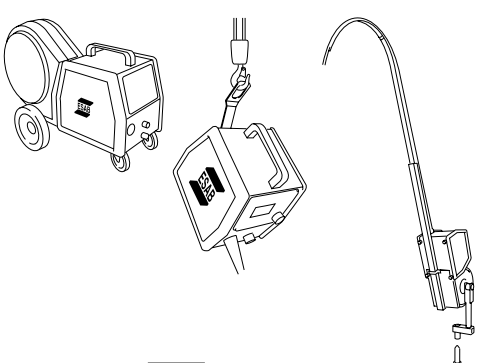
New Aristo system

	Communicator/ control panel	Water-cooling kit	Feeder for MARATHON PAC™	Feeder with open bobin	Feeder with capsuled bobin
					
AristoFeed 30					
AristoFeed 30 M2	M2		0458 804 882	0458 805 882	0458 806 882
AristoFeed 30 W M2	M2	X	0458 804 892	0458 805 892	0458 806 892
AristoFeed 30 MA4	MA4		0458 804 884	0458 805 884	0458 806 884
AristoFeed 30 W MA4	MA4	X	0458 804 894	0458 805 894	0458 806 894
AristoFeed 30 MA6	MA6		0458 804 886	0458 805 886	0458 806 886
AristoFeed 30 W MA6	MA6	X	0458 804 896	0458 805 896	0458 806 896
AristoFeed 48					
AristoFeed 48 M2	M2		0458 804 982	0458 805 982	0458 806 982
AristoFeed 48 W M2	MA2	X	0458 804 992	0458 805 992	0458 806 992
AristoFeed 48 MA4	MA4		0458 804 984	0458 805 984	0458 806 984
AristoFeed 48 W MA4	MA4	X	0458 804 994	0458 805 994	0458 806 994
AristoFeed 48 MA6	MA6		0458 804 986	0458 805 986	0458 806 986
AristoFeed 48 W MA6	MA6	X	0458 804 996	0458 805 996	0458 806 996

Technical data	**AristoFeed 30**	**AristoFeed 48**
Connection voltage	42 V/50 Hz	42 V/50 Hz
Wire spool capacity	300 mm/18 kg	300 mm/18 kg
Wire feed speed	0.8-25.0 m/min	0.8-25.0 m/min
Wire diameters		
Mild steel, Fe	0.6-1.6 mm	0.6-2.4 mm
Stainless steel, SS	0.6-1.6 mm	0.6-2.4 mm
Cored wire, FCW	0.8-1.6 mm	0.8-2.4 mm
Aluminium, Al	0.6-1.6 mm	1.0-2.4 mm
Size WxLxH		
MARATHON PAC™	380x265x340 mm	380x265x340 mm
Open	560x265x350 mm	560x265x350 mm
Capsuled	680x285x420 mm	680x285x420 mm
Weight (MARATHON PAC™/open/capsuled)	13/16/17.5 kg	18/21/22.5 kg

Accessories wire feeder

Wheel kit	0458 707 880
Bobin cover	0458 674 880
Strain relief for welding gun	0457 341 881
Lifting eye	0458 706 880
Quick connector MARATHON PAC™	F102 440 880
Adapter for 5 kg bobin	0455 410 001
Counterbalance device	0458 705 880



Connection set MIG/MAG		
Connection set 1.7 m	0456 528 880	0456 528 885
Connection set 8 m	0456 528 881	0456 528 886
Connection set 16 m	0456 528 882	0456 528 887
Connection set 25 m	0456 528 883	0456 528 888
Connection set 35 m	0456 528 884	0456 528 889

MMA equipment
Rectifiers

LHP 200/250/300/400

The power arc DC is an economical range of movable core rectifiers, robustly designed to suit industrial users, farmers, repair shops or anyone else wanting high DC welding current with good welding properties at a relatively low cost. Reliable and easy to maintain. Equipped with on/off contactor and overload protection. The current is set using a crank on the front panel.

Delivery includes
Wheels, handles and a 3 m long mains cable.

	LHP 200	LHP 250	LHP 300	LHP 400
Mains supply, V/Hz	400/50	400/50	400/50	400/50
Fuse, slow, A	16	16	25	25
Mains cable, Ø mm^2	4x1.5	4x1.5	4x2.5	4x4
Max output at 35% duty cycle, A	170	235	270	370
Max output at 100% duty cycle, A	100	140	160	230
Setting range, A	30-195	35-250	35-285	45-375
Open circuit voltage, V	59-67	60-68	65-75	69-79
Weight, kg	56	65	81	107

Ordering information

LHP 200, 230/400/440 V, 50/60 Hz	0457 270 880
LHP 250, 230/400/440 V, 50/60 Hz	0457 271 880
LHP 300, 230/400/440 V, 50/60 Hz	0457 272 880
LHP 400, 230/400/440 V, 50/60 Hz	0457 273 880

LHF 400/630/800

The LHF 400/630/800 rectifiers are designed to meet the highest expectations in terms of robustness and operational performance and reliability. The alu/zinc sheet-metal casing is corrosion-resistant and the transformers and switches have been specially chosen to withstand the toughest conditions. Dynamic characteristics, current range, “anti-stick” function and power capacity make the LHF a tool for contractors and fabricators who require top performance. LHFs are also good for TIG scratch starts or with TIG add-on units. The 630 and 800 have been optimized for carbon arc gouging.

Delivery includes
Two OKC welding cable connectors.

	LHF 400	LHF 630	LHF 800
Mains supply, V/Hz	400/50	400/50	400/50
Fuse, slow, A	25	50	63
Mains cable, Ø mm^2	4x4	4x10	4x10
Max output at 35% duty cycle, A	400	630	800
Max output at 60% duty cycle, A	315	500	630
Max output at 100% duty cycle, A	250	400	500
Setting range, A	8-400	8-630	8-800
Open circuit voltage, V	80-87	65-72	69-76
Weight, kg	195	235	275

Ordering information

LHF 400*	0319 783 882
LHF 400 Offshore*	0319 783 886
LHF 630*	0319 950 882
LHF 630 Offshore*	0319 950 886
LHF 800 Offshore*	0319 951 884
LHF 400 w V/A-meter and time control fan	0468 680 880
LHF 630 w V/A-meter and time control fan	0468 680 881

* 220/400/415/500 V, 50 Hz, 220/440/550 V, 60 Hz

For remote controls, see page 178

MMA equipment
Inverters

Caddy 150

The newest Caddy model designed to continue the tradition of excellent welding properties in an ergonomic package for welders on the move.
Particularly suitable for maintenance and repair welding in places which are difficult to reach. Designed for use with 20 m long mains cables from nominal voltage. Built-in air filter.
Fulfills IP 23 for outdoor use.

Delivery includes
Lifting strap and 3 m mains cable.

	LHQ 150
Mains supply, V/Hz	230/50-60
Fuse, slow, A	16
Mains cable, Ø mm^2	3x1.5
Max output at 35% duty cycle, A	140 (25% 150 A)
Max output at 60% duty cycle, A	120
Max output at 100% duty cycle, A	100
Open circuit voltage, V	62
Weight, kg	5.5

Ordering information

LHQ 150, 230 V	0700 150 880
Complete set of welding/return cable 3 m, with OKC, electrode holder and clamp:	
As above with ESAB 200 electrode holder	0349 501 079
As above with "crocodile" type electrode holder	0349 501 078

Caddy Professional 140/200

An inverter range specially designed for professional welders with rigorous requirements. Built-in automatic arc force and the Arc plus function secures professional performance. High operating voltage permits long mains cables. The remote control is useful when welding pipes or when welding in damp and confined areas. They also have a built-in filter and varnished printed circuit boards for a long service life. Excellent scratch start TIG performance.

Delivery includes
Welding and return cables complete with electrode holder and return clamp, mains cable.

	LHN 140	LHN 200
Mains supply, V/Hz	230/50-60	400/50-60
Fuse, slow, A	16	10
Mains cable, Ø mm^2	3x1.5	4x1.5
Max output at 35% duty cycle, A	140	200
Max output at 60% duty cycle, A	110	150
Max output at 100% duty cycle, A	80	115
Setting range, A	3-140	5-200
Open circuit voltage, V	50-75	50-75
Weight, kg	11	11

Ordering information

LHN 140, 230 V, 1-ph, 50/60 Hz	0468 020 880
LHN 200, 400 V, 3-ph, 50/60 Hz	0468 220 880
TIG torch HW-20 ARV	0588 000 714
PHA 1, remote control, 10 m cable	0367 657 881
PHB 1, remote control	0367 317 880
Connection cable, 5 m	0367 144 881
Connection cable, 10 m	0367 144 882
For further remote controls, see page 178	

MMA equipment
Inverters

Caddy Professional 250

A high-capacity inverter designed for professional welders working with thick materials. For example, when welding thick beams on building sites or repairing heavy machinery with 5 mm electrodes. Same casing and features as the Caddy Professional 200.

Delivery includes
3 m mains cable, welding and return cables complete with electrode holder and return clamp.

	LHN 250
Mains supply, V/Hz	400/50-60
Fuse, slow, A	16
Mains cable, Ø mm^2	4x2.5
Max output at 35% duty cycle, A	250
Max output at 60% duty cycle, A	180
Max output at 100% duty cycle, A	140
Setting range, A	4-250
Open circuit voltage, V	50-80
Weight, kg	11

Ordering information

LHN 250, 3-ph, 400 V	0457 516 880
TIG torch HW-20 ARV	0588 000 714
PHA 1, remote control, 10 m cable	0367 657 881
PHB 1, remote control	0367 317 880
Connection cable, 5 m	0367 144 881
Connection cable, 10 m	0367 144 882

For further remote controls, see page 178

AristoArc 400

The AristoArc is a compact, sturdy piece of equipment. The fundamental part of the AristoArc is the power source, which is designed for MMA welding. Depending on the required functionality, it is possible to choose between two different control panels: A2 or A4.
The A4 makes it possible to choose between pre-set welding characteristics, depending on the type of electrode: basic, rutile, or cellulose, as well as characteristics for gouging. The panel also has a digital display which indicates current/voltage.
The aluminium chassis on the machine is durable and light, thereby ensuring a long service life.

Delivery includes
5 m mains cable without connector for the mains supply.

	AristoArc 400
Mains supply, V/Hz	3x400/50
Fuse, slow, A	25
Mains cable, Ø mm^2	4x2.5
Max output at 35% duty cycle, A	400/36 V
Max output at 60% duty cycle, A	320/33 V
Max output at 100% duty cycle, A	250/30 V
Setting range, A	16-400
Open circuit voltage, V	78-90
Weight, kg	45

For more technical data please see pages 132 and 133.

Ordering information

AristoArc 400 A2	0458 635 880
AristoArc 400 A4	0458 635 881

Engine driven welders

KHM 190 HS

A combined engine-driven welding unit and 1ph 230V and 3ph 400V power-generating unit. It allows you to work in environments in which it is difficult or impossible to connect to the mains supply.
Compact and portable, the ESAB KHM 190 HS gives you a combination of 190A strong, high-quality DC welding and up to 6kVA of electric power. All in the same unit. The perfect partner for quick repair or assembly work.
The KHM 190 HS has a Honda petrol engine with a pull start. Other features include: oil alert engine protection, thermal load and residual current device.

Delivery includes

Wrap-around protection frame, single-phase 230 V and three-phase 400 V EEC plugs, OKC

	KHM 190 HS
Setting range, A	20-100, 90-190
Max output at 35% duty cycle, A	190
Max output at 60% duty cycle, A	160
Max output at 100% duty cycle, A	120
Open circuit voltage, V	98
Engine type	Honda GX 340 VXB
Sound level, DbA/LWA	73/98
Power, hp/rpm	10/3000
Weight, kg	115

Ordering information

KHM 190 HS	0794 000 880
Trolley	0794 009 880
Earthing kit	0794 017 880
Welding cable kit	0160 302 889

KHM 190 YS

This unit has the same performance as the KHM 190 HS, but it has a diesel engine.
A diesel engine is sometimes preferred as it has a much higher flashpoint than petrol and is thereby much safer in terms of combustibility. Diesel can also be stored a couple of years and still be usable.
Diesel engines consume less fuel, at a lower cost for the same power. Diesel engines are also known to have a longer service life. One disadvantage is the higher weight!
The KHM 190 YS has a Yanmar diesel engine with battery and electrical start. Other features include: battery charge indicator, oil alert engine protection, thermal load and residual current device.

Delivery includes

Wrap-around protection frame, single-phase 230 V and three-phase 400 V EEC plugs, OKC

	KHM 190 YS
Setting range, A	20-100, 90-190
Max output at 35% duty cycle, A	190
Max output at 60% duty cycle, A	160
Max output at 100% duty cycle, A	120
Open circuit voltage, V	98
Engine type	Yanmar L100AE-DG
Sound level, DbA/LWA	75/100
Power, hp/rpm	8.8/3000
Weight, kg	145

Ordering information

KHM 190 YS	0794 000 882
Trolley	0794 010 880
Earthing kit	0794 017 880
Welding cable kit	0160 302 889

Engine driven welders

KHM 300 YS - CC/CV

The wide working range together with the opportunity to use semi-automatic welding makes it possible to perform a wide variety of work in environments in which it is difficult or impossible to connect to the mains supply.
Compact and easy to transport, the ESAB KHM 300 YS gives you a combination of 280A strong, high-quality DC (MMA, TIG) or 220A 100% (MIG/MAG) welding and up to 10kVA of electrical power. All in the same unit.
The KHM 300 YS has a water-cooled Yanmar diesel engine with battery and electrical start. Other features include: automatic idle when not in use, an hour meter, battery charge/low fuel/oil pressure indicators, thermal load, arc force, voltmeter, lifting eyelet and residual current device.

Delivery includes

Single-phase 230 V and three-phase 400 V EEC plugs

	KHM 300 YS - CC/CV
Setting range, A	20-300
Max output at 35% duty cycle, A	300
Max output at 60% duty cycle, A	250
Max output at 100% duty cycle, A	200
Open circuit voltage, V	65
Engine type	Yanmar 3/TNE 68
Sound level, DbA/LWA	74/99
Power, hp/rpm	17.3/3000
Weight, kg	400

Ordering information

KHM 300 YS	0794 001 880
Remote control	0794 008 880
2 wheels site tow	0794 013 880
Earthing kit	0794 017 880
Welding cable kit	0160 302 880
V/A-meter kit	0794 000 160

KHM 350 YS - CC/CV

The even wider working range together with the opportunity to use semi-automatic welding makes it possible to perform a wide variety of work in environments in which it is difficult or impossible to connect to the mains supply.
Compact and easy to transport, the ESAB KHM 350 YS gives you a combination of 350A strong, high-quality DC (MMA) or 270A 100% (MIG/MAG) welding and up to 12 kVA of electrical power. All in the same unit.
The KHM 350 YS has a water-cooled Yanmar diesel engine with battery and electrical start. Other features include: automatic idle when not in use, an hour meter, battery charge/low fuel/oil pressure indicators, thermal load, arc force, voltmeter, lifting eyelet and residual current device.

Delivery includes

Single-phase 230 V and three-phase 400 V EEC plugs

	KHM 350 YS - CC/CV
Setting range, A	20-350
Max output at 35% duty cycle, A	350
Max output at 60% duty cycle, A	320
Max output at 100% duty cycle, A	270
Open circuit voltage, V	65
Engine type	Yanmar 3/TNE 74
Sound level, DbA/LWA	73/98
Power, hp/rpm	22.3/3000
Weight, kg	475

Ordering information

KHM 350 YS - CC/CV	0794 002 880
Remote control	0794 008 880
2 wheels site tow	0794 014 880
Earthing kit	0794 017 880
Welding cable kit	0160 302 881
V/A-meter kit	0794 000 160

Engine driven welders

KHM 500 PS CC/CV and KHM 600 PS

For the toughest environments requiring high capacity. The widest working range together with the opportunity to carbon rod gouge makes it possible to perform a wide variety of work in environments in which it is difficult or impossible to connect to the mains supply.
ESAB's KHM 500 and 600 PS gives you a combination of 500 or 600A strong, high-quality DC (MMA, gouging) and up to 20 or 40kVA of electric power. The KHM 500 PS also makes it possible to weld up to 2.8 mm solid MIG/MAG wire.
The KHM 500 and 600 have water-cooled Perkins Diesel engines with battery and electrical start. Other features include separate gouging outlets, an hour meter, overspeed protection, battery charge/low fuel/oil pressure indicators, thermal load, arc force, voltmeter, lifting eyelet and residual current device.

Delivery includes

Single-phase 230 V and three-phase 400 V EEC plugs

	KHM 500 PS CC/CV	KHM 600 PS
Setting range, A	20-500	20-600
Max output at 35% duty cycle, A	500	600
Max output at 60% duty cycle, A	450	500
Max output at 100% duty cycle, A	400	450
Open circuit voltage, V	70	60
Engine type	Perkins/3.1524	Perkins/4.236
Sound level, DbA/LWA	72/97	75/100
Power, hp/rpm	36.3/1500	55.6/1500
Weight, kg	925	1000

Ordering information

KHM 500 PS CC/CV	0794 003 880
KHM 600 PS	0794 004 880
Remote control	0794 008 880
2 wheels site tow	0794 012 880
Earthing kit	0794 017 880
Wire feeder adapter	0794 740 880
Welding cable kit	0160 302 882
V/A-meter kit	0794 000 160

KHM 2x400

When two welders are working at the same time on the same site, far away from mains supply, this unit reduces handling and transport costs. Two welders can weld with 400A from the same power source. Ideal for pipelines when two welders weld the joint from opposite sides. One engine and two welding outputs.
ESAB's KHM 2x400 PS gives you a combination of 2x400A strong, high-quality DC (MMA) welding and up to 35 kVA of electrical power. All in the same unit.
The KHM 2x400 PS has a water-cooled Perkins diesel engine with battery and electrical start. Other features include: low range for small electrodes, an hour meter, fuel gauge, battery charge/low fuel/oil pressure indicators, thermal load, arc force, voltmeter, lifting eyelet and isometer protection (eliminates need to earth).

Delivery includes

Single-phase 230 V and three-phase 400 V EEC plugs

	KHM 2x400
Setting range, A	(2x) 20-400
Max output at 35% duty cycle, A	(2x) 400
Max output at 60% duty cycle, A	(2x) 360
Max output at 100% duty cycle, A	(2x) 330
Open circuit voltage, V	70
Engine type	Perkins/4.236
Sound level, DbA/LWA	68/93
Power, hp/rpm	55.6/1500
Weight, kg	1250

Ordering information

KHM 2x400 PS	0794 005 880
Remote control	0794 008 880
2 wheels site tow	0794 014 880

TIG equipment

Caddy Tig 150 DC

The Caddy Tig 150 is a lightweight TIG/MMA unit. It weighs only 5.5 kg, making it easy to take to places which are difficult to reach.
The touch start feature means that you start at a minimum current, 13 A, and automatically increases to the pre-set current. Starts are smooth and there is less risk of tungsten enclosures. Use with an ESAB TIG torch with gas valve.

Delivery includes

3 m of mains cable and lifting strap.

	LTV 150
Mains supply, V/Hz	230/50-60
Fuse, slow, A	16
Mains cable, Ø mm^2	3x1.5
Max output at 25% duty cycle, A	150
Max output at 60% duty cycle, A	120
Max output at 100% duty cycle, A	100
Setting range, A	3-150
Open circuit voltage, V	62
Weight, kg	5.5

Ordering information

LTV 150 with OKC connection	0700 150 881
Return cable, 3 m, with clamp and OKC connection (TIG welding)	0349 501 080

Welding cable set the same as for LHQ 150, see page 135

Power Tig 160/200/255 DC

The Power Tig 160/200/255 DC portable welding rectifiers with outstanding welding performance are ideal for assembly and maintenance welding. They are easy to use and reliable in operation.
The current range from 3 to 160/200/255 A means that the machine can be used for the majority of TIG welding procedures. A perfect start is guaranteed with a choice of HF or LIFTARC™ starting.

Delivery includes

5 m of mains cable, 2 m of gas hose with 2 hose clamps and 5 m of return cable.

	LTR 160	LTR 200	LTR 255
Mains supply, V/Hz	230/50-60, 1	400/50-60	400/50-60
Fuse, slow, A	16	10	10
Mains cable, Ø mm^2	3x2.5	4x1.5	4x1.5
Max output at 35% duty cycle, TIG, A	160	200	250
Max output at 60% duty cycle, MMA, A	110	150	180
Max output at 100% duty cycle, MMA, A	80	115	140
Slope down, s	0.1-10	0.1-10	0.1-10
Gas post-flow, s	5-20	5-20	5-20
Open circuit voltage, V	70	70	70
Current range TIG DC	3-160	3-200	3-250
Current range MMA DC	3-160	3-200	3-250
Weight, kg	23	23	23

Ordering information

LTR 160, 230 V, 1 ph, central connection	0456 840 880
LTR 160, 230 V, 1 ph, OKC connection	0456 840 881
LTR 200, 400 V, 3 ph, central connection	0456 840 882
LTR 200, 400 V, 3 ph, OKC connection	0456 840 883
LTR 255, 400 V, 3 ph, central connection	0456 840 884
LTR 255, 400 V, 3 ph, OKC connection	0456 840 885
Trolley for 5 l gas bottle	0468 530 880
Trolley for water cooling unit and 10-50 l gas bottle	0301 100 880
Handle bar, protects panel	0468 305 880
Welding cable, compl., 5 m	0468 539 880
PHA 5 pulse unit	0367 970 880
Water cooling unit OCF 2L	0457 216 880

For TIG torches, see page 147

TIG equipment

Aristotig 160/200/255 DC

The Aristotig 160/200/255 DC, that is based on inverter technology, increases productivity and quality. The memory will hold up to 4 sets of welding parameters. Settings are easy to enter, are very accurate and can quickly be stored in memory. Current pulsing in the TIG mode can be set in either micro pulse or long pulse durations. TIG striking by either LIFTARC™ or HF. The operator can choose manual or automatic arc-force. Arc-plus function software controls the MMA performance in a totally new way.

Delivery includes

5 m of mains cable, 2 m of gas hose with 2 hose clamps and 1 OKC cable connector and 5 m of return cable.

	LTN 160	LTN 200	LTN 255
Mains supply, V/Hz	230/50-60	400/50-60	400/50-60
Fuse, slow, A	16	10	10
Mains cable, Ø mm^2	3x2.5	4x1.5	4x1.5
Max output at 35% duty cycle, A	160	200	250
Max output at 60% duty cycle, A	110	150	180
Max output at 100% duty cycle, A	80	115	140
Slope up, s	0-10	0-10	0-10
Slope down, s	0-10	0-10	0-10
Gas pre-flow, s	0-25	0-25	0-25
Gas post-flow, s	0-25	0-25	0-25
Open circuit voltage, V	70	70	70
Current range TIG DC	3-160	3-200	3-250
Current range MMA DC	3-140	3-200	3-250
Weight, kg	23	23	23

Ordering information

LTN 160, 230 V 1 ph, central connection	0468 300 880
LTN 160, 230 V 1 ph, OKC-connector	0468 300 881
LTN 200, 400 V 3 ph, central connection	0468 300 882
LTN 200, 400 V 3 ph, OKC-connector	0468 300 883
LTN 255, 400 V 3 ph, central connection	0468 300 894
LTN 255, 400 V 3 ph, OKC-connector	0468 300 895
Handle bar, protects panel	0468 305 880
Welding cable, compl. 5 m	0468 539 880
Trolley for 5 l gas bottle	0468 530 880
Trolley for water cooling unit and 10-50 l gas bottle	0301 100 880
Water cooling unit OCF 2 L	0457 216 880

For remote controls/TIG torches, see pages 178/ 147
For trolleys, see page 163

AristoTig 400 DC

The fundamental part of the AristoTig DC-Tig system is the AristoTig 400 power source. Depending on the required functionality, it is possible to choose between two different digital display panels: T4 or T6. Both panels are suitable for TIG and MMA welding. The T6 also has DC pulsing, a 10-position memory feature and pre-set MMA welding characteristics, depending on the type of electrode; basic, rutile, or cellulose, as well as characteristics for gouging. The system can be supplemented with a water-cooling unit and a multiple voltage unit, depending on needs and requirements. The aluminium chassis on the machine is durable and light, thereby ensuring a long service life.

Delivery includes

5 m mains cable without connector for the mains supply.

	AristoTig 400 DC
Mains supply, V/Hz	3x400/50
Fuse, slow, A	25
Mains cable, Ø mm^2	4x2.5
Max output at 35% duty cycle, A	400/26 V
Max output at 60% duty cycle, A	320/23 V
Max output at 100% duty cycle, A	250/20 V
Slope up, s	0-5
Slope down, s	0-10
Gas pre-flow, s	0-5
Gas post-flow, s	0-25
Setting range, A	4-400
Open circuit voltage, V	78-90
Weight, kg	59

For more technical data please see pages 132 and 133.

Ordering information

AristoTig 400 T4	0458 630 880
AristoTig 400 T6	0458 630 884
AristoTig 400 T4 with water-cooling unit	0458 630 881
AristoTig 400 T6 with water-cooling unit	0458 630 885
AristoTig 400 T4 with multivoltage unit	0458 630 882
AristoTig 400 T6 with mulitvoltage unit	0458 630 886
AristoTig 400 T4 with cooling and multivoltage units	0458 630 883
AristoTig 400 T6 with cooling and multivoltage units	0459 630 887

TIG equipment

Caddy Tig HF DC

The Caddy Tig HF is a lightweight TIG unit for repair and maintenance welding using TIG welding or stick electrode welding. The Caddy Tig HF is equipped with high-frequency start and is easy to handle with only the basic functions of main current and slope-down on the front panel.
The Caddy Tig HF also has a menu set-up function for advanced functions such as pre-gas, post-gas, final current, slope-up and, in MMA, hot start and arc force.

Delivery includes

3 m of mains cable, BTF 150 OKC 25 4 m, MMA welding and return cable kit DTF 180, OKC connection

	Caddy Tig HF
Mains supply, V/Hz	230/50-60
Fuse, slow, A	16
Mains cable, Ø mm^2	3x1.5
Current range TIG DC	5-150
Current range MMA DC	5-150
Open circuit voltage, V	95
Weight, kg	4.5

Ordering information

Caddy Tig HF, ready to use: BTF 150 OKC 25 4 m, MMA welding and return cable kit	0700 159 881

Handy Tig 180 AC/DC

The Handy Tig 180 is suitable TIG welding equipment for craftsmen and repair and maintenance. It is easy to adjust and use. The unit is designed with the PFC technique which permits more power from the voltage supply than conventional inverters. It is less sensitive to unstable voltage supply.
It weighs just 11.5 kg, making the Handy Tig 180 easy to carry around.

Delivery includes

3.5 m of mains cable, 1.8 m of gas hose with 2 hose clamps, 4 m of return cable with OKC and return clamp.

	DTF 180
Mains supply, V/Hz	230/50-60
Fuse, slow, A	16
Mains cable, Ø mm^2	3x1.5
Max output at 25% duty cycle, A	180
Max output at 60% duty cycle, A	100
Max output at 100% duty cycle, A	80
Setting range, A	3-180/10-180 (TIG AC/DC)
Open circuit voltage, V	75
Weight, kg	11.5

Ordering information

DTF 180, OKC connection	0457 377 880
FS 002, remote control	0349 090 886

TIG equipment

Aristotig 200/255 AC/DC

The Aristotig 200/255 AC/DC are inverter-based power sources for TIG and MMA processes. In both DC and AC mode, this TIG machine produces a safe start and a stable arc.
The Aristotig 200/255 have a built-in pulse device, which provides improved control of the weld pool. Using true square wave produces deeper penetration. At the same time, it is possible to weld without continuous HF and thus work in electronically sensitive areas. The trigger operation can be selected as two-stroke or two four-stroke options, one of which permits switching between two pre-programmed current settings.

Delivery includes

5 m of mains cable, 2 m of gas hose with 2 hose clamps, 1 OKC cable connector and 5 m of return cable.

	DTE 200	DTE 255
Mains supply, V/Hz	400/3/50-60	400/3/50-60
Fuse, slow, A	10	16
Mains cable, Ø mm^2	4x1.5	4x1.5
Max output at 35% duty cycle, TIG, A	200	-
Max output at 50% duty cycle, TIG, A	-	250
Max output at 60% duty cycle, TIG, A	150	225
Pulse frequency DC, Hz	0.3-300	0.3-300
Pulse frequency AC aut. fixed, Hz	100	100
Frequency AC, Hz	30-300	30-300
AC balance, %	40-80	40-80
Slope up, s	0-10	0-10
Slope down, s	0-10	0-10
Gas pre-flow, s	0.3 (0-5 s)	0.3 (0-5 s)
Gas post-flow, s	3-30	3-30
Setting range, A	5-200	5-250 (MMA/ TIG AC/DC)
Open circuit voltage, V	70-90	70-90 (DC)
Weight, kg	45	45

Ordering information

DTE 200 with central connection	0301 070 880
DTE 200 with OKC connection	0301 070 881
DTE 255 with central connection	0301 035 880
DTE 255 with OKC connection	0301 035 881
Cooling unit, OCF 2 D	0457 216 881
Trolley	0301 100 880

Aristotig 405 AC/DC

A powerful TIG welding package for advanced welding and for the most demanding applications. A soft-hot start function gives secure starts. The possibility to combine 2 different pulse frequency settings together with AC-frequency control for better stability and penetration. End current setting reduces risk for craters. Pre-setting of current with digital display.

Delivery includes

5 m of mains cable with 32A Europlug, 1.8 m gas hose with 2 clamps, 5 m return cable with clamp, gas cylinder shelf and wheels.

	DTG 405
Mains supply, V/Hz	400/50
Fuse, slow, A	25
Mains cable, Ø mm^2	4x4
Max output at 35% duty cycle, A	400/26V
Max output at 60% duty cycle, A	305/22V
Max output at 100% duty cycle, A	236/20V
Slope up, s	related to A setting
Slope down, s	related to A setting
Gas pre-flow, s	≈ 0.5
Gas post-flow, s	0.2-30
Open circuit voltage, V	90 (DC) < 48 (AC)
Setting range, A	3-400
Weight, kg	116 (incl. water)

Ordering information

DTG 405, 400 V, 3-ph, central connection, water-cooled	0458 165 880
DTG 405, 400 V, 3-ph, OKC connection, water-cooled	0458 165 881

TIG equipment
Torches and components

Tigaid 315 AC/DC

The Tigaid 315 AC/DC is a useful tool for converting MMA machines, transformers and rectifiers for TIG applications. Tigaid controls the supply of current, HF ignition and gas flow. When steplessly and electronically-controlled MMA power sources are used, it is possible to obtain current setting and slope functions, as well as current pulsing by adding the PHA 5.

	Tigaid 315
Mains supply, V/Hz	230/50-60
Fuse, slow, A	10
Mains cable, Ø mm^2	3x1.5
Max output at 35% duty cycle, A	315
Slope up, s	0.1-10
Slope down, s	0.1-10
Gas pre-flow, s	0.1-5.0
Gas post-flow, s	1.0-60
Weight, kg	15

Ordering information

Tigaid 315 AC/DC, 110/220/240 V, 50/60 Hz, OKC-connection	0369 136 882
Tigaid 315 AC/DC, 110/220/240 V, 50/60 Hz, central connection	0369 136 880
Connection kit for self-cooled torch and power source with remote control socket type Burndy	0467 348 880
Connection kit for water-cooled torch and power source with Burndy socket	0467 348 881
Connection kit for air-cooled torch and welding transformer	0467 348 882

For remote controls/TIG torches, see pages 178/ 147

TIG equipment
Torches and components

BTF 140V, 140VS, 140VS RK

The BTF 140 torches are specifically designed for small, confined spaces where accessibility is the primary concern.
• Miniature head provides maximum accessibility
• Excellent visibility
• Gas lens available for improved shielding and higher weld quality
• Compact body provides easier access to permit welding in confined spaces
• Ergonomic silicon rubber body includes gas valve
The BTF 140VS is the same as 140V but with an integrated switch.
The BTF 140VS RK is used together with MMA machines such as Caddy. The torch provides a convenient starting procedure, RK start, and the opportunity for manual pulsing.
All BTF 140 torches are designed for 140 A and are suitable for electrodes with a diameter of 0.5 mm to 3.2 mm.

Delivery includes
Ready-to-use torch, cable cover, collet body Ø 2.4 mm

Ordering information

BTF 140V (valve), 4 m, OKC 25	0458 217 880
BTF 140V (valve), 8 m, OKC 25	0458 217 881
BTF 140VS (valve, switch), 4 m, OKC 25	0458 217 882
BTF 140VS (valve, switch), 8 m, OKC 25	0458 217 883
BTF 140VS RK (valve, switch, RK-start), 4 m, OKC 25	0458 217 888

BTF 150, 150V, 150F

The BTF 150 torches are the industrial standard for reliability and durability.
• Flexible head (BTF 150 F) provides added versatility
• Ergonomic silicon rubber body with gas valve included (BTF 150 V)
• Gas lens available for improved shielding and higher weld quality
• Suitable for electrodes from 0.5 mm to Ø 3.2 mm

Delivery includes
Ready-to-use torch, cable cover, collet body Ø 2.4 mm

Ordering information

BTF 150, 4 m, OKC	0458 218 882
BTF 150, 8 m, OKC	0458 218 884
BTF 150V (valve), 4 m, OKC	0458 217 884
BTF 150V (valve), 8 m, OKC	0458 217 885
BTF 150F (flex head), 4 m, OKC	0458 216 881
BTF 150F (flex head), 8 m, OKC	0458 216 883

TIG equipment
Torches and components

BTF 200V, 200F

The BTF 200 torches have an advanced design which provides greater current capacity.
• A well-proven handle for effective heat dissipation and secure torch grip
• Flexible head (BTF 200F) provides added versatility
• Ergonomic silicon rubber bodies
• Integrated gas valve in BTF 200V
• Suitable for electrodes from 0.5 mm to Ø 4.0 mm

Delivery includes
Ready-to-use torch, cable cover, collet body Ø 2.4 mm

Ordering information

BTF 200, 4 m, OKC	0458 218 886
BTF 200, 8 m, OKC	0458 218 888
BTF 200F, 4 m, OKC	0458 216 885
BTF 200F, 8 m, OKC	0458 216 887
BTF 200V, 4 m, OKC	0458 217 886
BTF 200V, 8 m, OKC	0458 217 887

BTF 250W, 400W

The BTF 250W torches have a compact, water-cooled design for higher current applications.
• Compact body for welding in confined spaces
• Torch head is water-cooled for increased efficiency
• Gas lens available for improved shielding and higher weld quality
• Suitable for electrodes from Ø 0.5 mm to Ø 3.2 mm
The BTF 400W torches have a compact water-cooled design for higher current applications in confined spaces.
• Ideal for production welding
• Torch head is water-cooled for increased efficiency
• Light weight – reduces operator fatigue
• Gas lens available for improved shielding and higher weld quality
• Suitable for electrodes from Ø 0.5 mm to Ø 4.0 mm

Delivery includes
Ready-to-use torch, cable cover, collet body: BTF 400W Ø 3.2 mm, BTF 250W Ø 2.4 mm

Ordering information

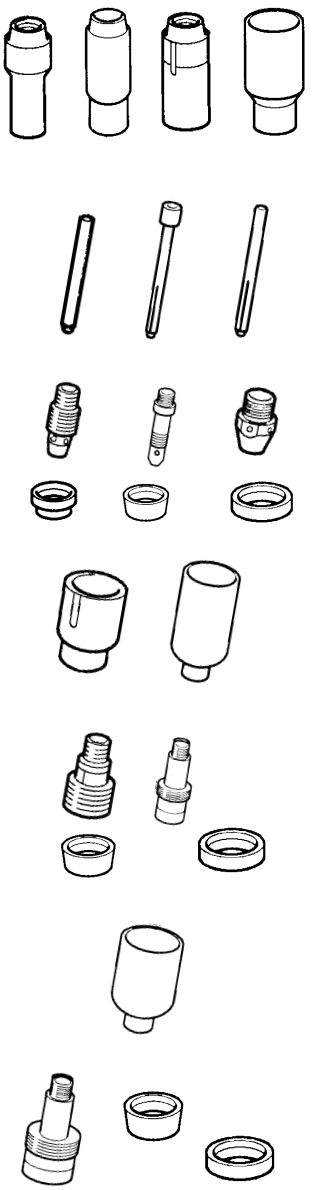
BTF 250W, 4 m, OKC	0457 827 880
BTF 250W, 8 m, OKC	0457 827 881
BTF 400W, 4 m, OKC	0457 827 882
BTF 400W, 8 m, OKC	0457 827 883

TIG equipment
Torches and components

Nozzles, collets, collet bodies and gas lenses for BTF torches.

Type			BTF 140/250W	BTF 150/200	BTF 400W
	Ø 4.0	Gas nozzle standard			
No 4	Ø 6.4		0365 310 044	0157 123 052	0157 123 057
No 5	Ø 8.0		0365 310 045	0157 123 053	0157 123 058
No 6	Ø 9.8		0365 310 046	0157 123 054	0157 123 059
No 7	Ø 11.2		0365 310 047	0157 123 055	0157 123 060
No 8	Ø 12.7		0365 310 048	0157 123 056	0157 123 061
No 10	Ø 15.9		0588 000 440	0558 000 442	
No 12	Ø 19			0558 000 441	
	Ø 1.0	Collet standard	0365 310 028	0157 123 010	0157 123 010
	Ø 1.6	and for gas lens	0365 310 029	0157 123 011	0157 123 011
	Ø 2.4		0365 310 030	0157 123 012	0157 123 077
	Ø 3.2		0365 310 091	0157 123 013	0157 123 078
	Ø 4.0			0157 123 014	0157 123 079
	Ø 4.8				0157 123 074
	Ø 1.0	Collet body standard	0365 310 037	0157 123 015	0157 123 081
	Ø 1.6		0365 310 038	0157 123 016	0157 123 081
	Ø 2.4		0365 310 039	0157 123 017	0157 123 081
	Ø 3.2		0365 310 090	0157 123 018	0157 123 082
	Ø 4.0-4.8			0157 123 019	0157 123 082
		Isolator	0366 960 017	0366 960 016	0157 123 076
No 4	Ø 6.4	Gas nozzle for gas lens	0157 121 032	0157 123 057	0157 123 057
No 5	Ø 8.0		0157 121 033	0157 123 058	0157 123 058
No 6	Ø 9.8		0157 121 034	0157 123 059	0157 123 059
No 7	Ø 11.2		0157 121 039	0157 123 060	0157 123 060
No 8	Ø 12.7		0157 121 040	0157 123 061	0157 123 061
Short	Ø 17.5			0588 000 439	0588 000 439
	Ø 1.0	Collet body for gas lens	0157 121 016	0157 123 021	0157 123 091
	Ø 1.6		0157 121 017	0157 123 022	0157 123 092
	Ø 2.4		0157 121 018	0157 123 023	0157 123 093
	Ø 3.2		0157 121 041	0157 123 024	0157 123 094
	Ø 4.0			0157 123 025	0157 123 095
	Ø 4.8				0157 123 075
		Isolator		0366 960 020	0157 123 076
No 6	Ø 9.8	Extra large gas nozzle	0157 123 088	0157 123 088	0157 123 088
No 8	Ø 12.7	for gas lens		0157 123 089	0157 123 089
No 10	Ø 15.9			0588 000 438	0588 000 438
No 12	Ø 19			0157 123 098	0157 123 098
Short	Ø 24			0588 000 437	0588 000 437
	Ø 2.4	Extra large collet body	0157 123 085	0157 123 103	0157 123 103
	Ø 3.2	for gas lens		0157 123 086	0157 123 103
	Ø 4.0-4.8			0157 123 087	0157 123 105
		Isolator		0366 960 021	0157 123 076

General examples



Tungsten electrodes, l=175 mm

Ø mm	Tungsten pure, AC	Thoriated DC	Zirconiated AC/DC	Lathaniated AC/DC	Ceriated AC/DC
1.0	0151 574 008	0151 574 001	0151 574 017	0151 574 030	0151 574 036
1.6	0151 574 009	0151 574 002	0151 574 018	0151 574 031	0151 574 037
2.4	0151 574 010	0151 574 003	0151 574 019	0151 574 032	0151 574 038
3.2	0151 574 011	0151 574 004	0151 574 020	0151 574 033	0151 574 039
4.0	0151 574 012	0151 574 005	0151 574 021	0151 574 034	0151 574 040
4.8	0151 574 013		0151 574 022		0151 574 041

MIG/MAG equipment
Compacts

LKA Original

The ESAB Originals 150/180/240 MIG/MAG compacts have been developed with a unique design to give the user a maximum of advantages in MIG/MAG welding with or without shielding gas in unalloyed steel. Aluminium and stainless steel can also be welded. The value for money these compacts offer means that farmers, repair shops and light production users will be able to meet most of their needs by using these Originals for repair and occasional production applications.

Delivery includes

Mains cable, welding torch, return lead with clamp, gas hose with clamps, contact tips for 0.6/0.8 mm wire, wheels and platform for gas bottle.

	LKA 150	LKA 180-1	LKA 180-3	LKA 240
Mains supply, V/Hz	230/50	230/50	230/400/50	400/50
Max output at 20% duty cycle, A	100	113	117/126	200
Max output at 60% duty cycle, A	55	75	65/75	120
Wire feed, m/min	2.5-15	1-15	1-15	1-15
Wire Ø, unall. solid	0.6-0.8	0.6-0.8	0.6-0.8	0.6-1.0
Wire Ø, SS	0.6-0.8	0.6-0.8	0.6-0.8	0.6-1.0
Wire Ø, Al	-	1.0	1.0	1.0
Wire Ø, CW	0.8	0.8-0.9	0.8-0.9	0.8-0.9
Interval/spot welding	-/•	-/•	-/•	-/•
Open circuit voltage, V	28	33	33	37
Weight, kg	36	53	53	56

Ordering information

LKA 150 230 V, 50 Hz 1 ph	0469 375 880
LKA 180 230 V, 50 Hz 1 ph	0469 560 880
LKA 180 400 V, 50 Hz 3 ph	0469 440 880
LKA 240 400 V, 50 Hz 3 ph	0469 450 880

LKB 160

The LKB 160 is a compact power source in the Power MIG range. The unit is designed for light-duty work. It has seven voltage steps, a built-in wire feeder and potentiometers to set the wire speed, spot welding and adjustable burnback time.

Delivery includes

The LKB 160 is delivered with a 3 m PSF 160 welding torch, 4.5 m return cable with clamp, 3 m mains cable and 1.5 m gas hose.

	LKB 160
Mains supply, V/Hz	230/50
Max output at 30% duty cycle, A	160
Max output at 60% duty cycle, A	112
Max output at 100% duty cycle, A	87
Wire feed, m/min	1.4-19
Wire Ø, unall. solid	0.6-1.0
Wire Ø, SS	0.6-1.0
Wire Ø, Al	1.0
Wire Ø, CW	0.8-1.0
Interval/spot welding	-/•
Open circuit voltage, V	20-160
Weight, kg	73.5

Ordering information

LKB 160	0349 302 081
V/A-meter kit, optional	0349 302 078

MIG/MAG equipment
Compacts

LKB 220/220S

The LKB 220 and 220S are compact power sources in the Power MIG range. The units are designed for light- and medium-duty industrial welding. They have 21 voltage steps, a built-in two-wheel wire feeder, potentiometers for setting the wire speed, spot welding and adjustable spot welding time. The LKB 220 has a synergic function which simplifies the setting of voltage and wire speed. An LED indicates the choice of optimal choke setting.

Delivery includes
The LKB 220 and 220S are delivered with a 4.5 m PSF 250 welding torch, 4.5 m return cable with clamp, 3 m mains cable and 1.5 m gas hose.

	LKB 220/220S
Mains supply, V/Hz	400-415/50
Max output at 30% duty cycle, A	220
Max output at 60% duty cycle, A	155
Max output at 100% duty cycle, A	120
Wire feed, m/min	1.4-19
Wire Ø, unall. solid	0.6-1.0
Wire Ø, SS	0.6-1.0
Wire Ø, Al	1.0
Wire Ø, CW	0.8-1.0
Interval/spot welding	-/•
Open circuit voltage, V	14-32
Weight, kg	90

Ordering information

LKB 220	0349 302 082
LKB 220S	0349 302 083
V/A-meter kit (optional for LKB 220)	0349 302 079

LKB 265

A full-grown compact power source in the Power Mig range. The power sources are suited for production welding in both light and medium duty industries. It has 10 voltage steps, a built-in wire feeder and potentiometers to set the wire feed speed, spot-welding and adjustment of burnback time, it is also possible to change polarity of the welding torch.

Delivery includes
4.5 m PSF 250 welding torch, 4.5 m return lead with clamp, gas bottle platform and 3 m mains cable.

	LKB 265
Mains supply, V/Hz	400/50
Max output at 30% duty cycle, A	265
Max output at 60% duty cycle, A	190
Max output at 100% duty cycle, A	150
Wire feed, m/min	1.9-19
Wire Ø, unall. solid	0.6-1.0
Wire Ø, SS	0.6-1.0
Wire Ø, Al	1.0
Wire Ø, CW	0.8-1.0
Interval/spot welding	-/•
Open circuit voltage, V	15-38
Weight, kg	92

Ordering information

LKB 265, 400-415V, 50 Hz	0455 470 880
LKB 265, 230/400-415/500, 50 Hz 230-440V-460V, 60 Hz	0455 470 881
V/A instrument	0456 008 880

MIG/MAG equipment
Compacts

LKB 320

A compact power source in the Power Mig range, for production welding in light and medium duty industry. LKB 320 has built-in wire feeder and 2/4 stroke function with gas pre- and post-flow, potentiometers to set the wire feed speed and burnback time, it´s also possible to change polarity of the welding torch. It has 4x10 voltage steps.

Delivery includes
4.5 m PSF 315 welding torch, 4.5 m return lead with clamp, gas bottle platform and 5 m mains cable.

	LKB 320
Mains supply, V/Hz	400/50
Max output at 30% duty cycle, A	320
Max output at 60% duty cycle, A	250
Max output at 100% duty cycle, A	195
Wire feed, m/min	1.9-19
Wire Ø, unall. solid	0.6-1.2
Wire Ø, SS	0.6-1.2
Wire Ø, Al	1.0-1.2
Wire Ø, CW	0.8-1.2
Interval/spot welding	-
Open circuit voltage, V	16-40
Weight, kg	112

Ordering information

LKB 320, 400-415V, 50Hz	0455 480 880
LKB 320, 230/400-415/500V, 50Hz 230-440-460V, 60Hz	0455 480 881
V/A instrument	0456 008 880

For extension cables see page 162

LKB 400W/WS

The LKB 400W and 400WS are water-cooled power sources in the Power MIG range. The unit is designed for heavy-duty industrial welding. It has 35 voltage steps, a built-in wire feeder, potentiometers for setting the wire speed, adjustable burnback time and a built-in water-cooling system.
The main feature for LKB 400WS is a synergic function that simplifies the welding, by setting the voltage and material thickness the synergic machine suggests the proper current setting.

Delivery includes
The LKB 400W is delivered with a 4.5 m PSF 410W welding torch, 5 m return cable with clamp, 5 m mains cable and 1.5 m gas hose.

	LKB 400W/WS
Mains supply, V/Hz	400-415/50
Max output at 35% duty cycle, A	400
Max output at 60% duty cycle, A	305
Max output at 100% duty cycle, A	237
Wire feed, m/min	1.6-25
Wire Ø, unall. solid	0.8-1.2
Wire Ø, SS	0.8-1.2
Wire Ø, Al	1.0-1.2
Wire Ø, CW	1.0-1.2
Interval/spot welding	-/-
Open circuit voltage, V	14-47
Weight, kg	215

Ordering information

LKB 400W	0349 302 111
LKB 400WS	0349 302 215
V/A-meter kit (only for LKB 400WI)	0349 302 118

MIG/MAG equipment
Semi-automats

Power Mig 320/380

Two power sources in the A10 system with 4x10 voltage steps. They have a simple and robust design and can be used at almost any production site. LAX 380 has a thermostat-controlled fan and is available with or without water-cooling. Both have separate wire feed units, MEK 2 or MEK 4. There is a large number of modules and accessories in the A10 system to fit your needs.

Delivery includes

Both are delivered with 4.5 m return lead with clamp, gas bottle platform, 5 m mains cable and a guide pin for the wire feeder.

	LAX 320	LAX 380	LAX 380 W
Mains supply, V/Hz	400/50	400/50	400/50
Fuse, slow, A	16	20	20
Mains cable, Ø mm^2	4x2.5	4x2.5	4x2.5
Max output at 30% duty cycle, A	320	-	-
Max output at 50% duty cycle, A	-	380	380
Max output at 60% duty cycle, A	250	350	350
Max output at 100% duty cycle, A	195	280	280
Open circuit voltage, V	16-40	17-45	17-45
Weight, kg	110	143	157

Ordering information

LAX 320, 400-415V, 50Hz	0455 490 880
LAX 320, 230/400-415/500V, 50Hz; 230/440V-460V,60Hz	0455 490 881
LAX 380, 400-415V, 50Hz	0455 500 880
LAX 380, 230/400-415/500V, 50Hz; 230/440-460V, 60Hz	0455 500 881
LAX 380 W, 400-415V, 50Hz Water	0455 500 882
LAX 380 W, 230/400-415/500V, 50Hz; 230/440V-460V, 60Hz Water	0455 500 883
V/A instrument for LAX 320	0456 008 880
V/A instrument for LAX 380	0456 008 882

For extension cables, see page 162

LAY 500

The LAY 500 is a member of the A10 range of sturdy and robust rectifiers. The LAY 500 is delivered complete and ready to use, making installation easy and fast. The large, robust wheels, lifting eyes and protection class IP 23, plus the sturdy design, make the LAY 500 ideal for tough working conditions. The power source is equipped as standard with a built-in water-cooling unit.

Delivery includes

5 m return cable with clamp, gas bottle platform, 5 m mains cable guide pin for wire feeder

	LAY 500
Mains supply, V/Hz	400/50
Fuse, slow, A	35
Mains cable, Ø mm^2	4x6
Max output at 60% duty cycle, A	500
Max output at 100% duty cycle, A	390
Open circuit voltage, V	55
Weight, kg	238

Ordering information

LAY 500	0349 302 001
Volt and amperemeter kit	0349 302 066

MIG/MAG equipment
Semi-automats

Power Mig 420/520

The LAW 420 and 520 MIG/MAG power sources belong to the A10 range. These welding machines are designed for heavy use, in- and outdoors. They are equipped with large wheels, sturdy lifting eyelets and the carriage is specially designed to be lifted with a fork-lift truck. The power sources LAW 420 and 520 offer a wide current range and work excellently with mixed gas and CO_2 shielding gases. They are optimized for cored and solid wires. Some models have a built-in water-cooling system. The operator can weld up to 65 meters away from the power source with an intermediate feeder and extension cables. To be close to the welder the voltage control, wire feed speed control and crater fill function are located on the wire feeder.

Delivery includes

5 m of mains cable, wheels, return cable with clamp, cable connectors, gas bottle platform and a guide pin for the wire feeder.

	LAW 420	LAW 520
Mains supply, V/Hz	400/50	400/50
Fuse, slow, A	25	35
Mains cable, Ø mm^2	4x4	4x6
Max output at 45% duty cycle, A	400	-
Max output at 60% duty cycle, A	350	500
Max output at 100% duty cycle, A	280	400
Setting range, A	40-400	40-500
Open circuit voltage, V	54-57	57-61
Weight, kg	200	225

Ordering information

LAW 420, 400/415 V, 50 Hz	0458 115 880
LAW 420, 230/400-415/500 V, 50Hz, 230/440-460 V, 60 Hz	0458 115 881
LAW 420 W, 400/415 V, 50 Hz, Water	0458 115 882
LAW 420 W, 230/400-415/500 V, 50Hz, 230/440-460 V, 60 Hz, Water	0458 115 883
LAW 520, 400/415 V, 50 Hz	0458 117 880
LAW 520, 230/400-415/500 V, 50Hz, 230/440-460 V, 60 Hz	0458 117 881
LAW 520 W, 400/415 V, 50 Hz, Water	0458 117 882
LAW 520 W, 230/400-415/500 V, 50Hz, 230/440-460 V, 60 Hz, Water	0458 117 883
V/A instrument LAW/MEK	0455 173 881

For extension cables, see page 162

AristoMig 400

The AristoMig power source is used together with either the AristoFeed 30 or AristoFeed 48 wire feeder. Depending on the required functionality, it is possible to choose between three different control panels: M2, MA4 or MA6. The MA4 and MA6 also have MMA in addition to MIG/MAG welding. The MA6 control panel features a synergic pulse, MMA welding and memory points for its own parameters as standard.
In addition to normal low-alloyed steels, you can weld stainless steels and aluminium with the AristoMig 400. In synergic versions, the welding power is easily adjusted with a single knob – everything else is done automatically. However, skilful users may wish to adjust or fine-tune the parameters suggested by the machine. This is naturally possible.
The aluminium chassis on the machine is durable and light, thereby ensuring a long service life for the machine.

	AristoMig
Mains supply, V/Hz	3x400/50
Fuse, slow, A	25
Mains cable, Ø mm^2	4x2.5
Max output at 35% duty cycle, A	400/34 V
Max output at 60% duty cycle, A	320/26 V
Max output at 100% duty cycle, A	250/26.5 V
Setting range, A	16-400
Open circuit voltage, V	55-70
Weight, kg	57

The possible modular combinations that are available for the AristoMig and AristoFeeder are shown on pages 132 and 133.

Ordering information

AristoMig 400	0458 625 883

MIG/MAG equipment
Multi-purpose

Aristo 320/450

Powerful equipment with CAN bus control system. All the welding parameters are stored and presented in a easily accessible and logical setting box with large display. The Aristo 320/450 contains 210 pre-programmed synergic lines. It is also possible to store and recall 95 different own welding datas. You can copy all the welding datas to the PC-card. The operator can then move the card from one power source to another. Features such as pulsing, hot start and crater fill ensures perfect welding results. With the LUD machines it´s also possible to weld MMA and you can even weld TIG with the universal versions.

Delivery includes

5 m of mains cable, return lead with clamp, guide pin for the wire feeder and gas bottle shelf.

	LUD 320	LUD 450
Mains supply, V/Hz	400/50	400/50
Fuse, slow, A	20	25
Mains cable, Ø mm^2	4	4
Max output at 45% duty cycle, A	-	450
Max output at 60% duty cycle, A	320	425
Max output at 100% duty cycle, A	270	360
Current range MIG	15-320	15-450
Current range MMA DC	16-320	16-450
Current range TIG DC	4-320	4-450
Open circuit voltage, V	65–80	65-80
Weight, kg	96	110

Ordering information

LUD 320 MIG/MAG, MMA, 400-415 V, 50/60Hz	0456 600 880
LUD 320 MIG/MAG, MMA, water, 400-415 V, 50/60Hz	0456 600 881
LUD 320 MIG/MAG, MMA*	0456 600 882
LUD 320 MIG/MAG, MMA*, Water	0456 600 883
LUD 320 U, 400-415 V, 50/60Hz, Water, TIG OKC	0456 600 884
LUD 320 U, 400-415 V, 50/60Hz, Water, TIG central	0456 600 885
LUD 320 U*, Water, TIG OKC	0456 600 886
LUD 320 U*, Water, TIG central	0456 600 887
LUD 450 MIG/MAG, MMA, 400-415 V, 50/60Hz, Water	0456 300 881
LUD 450 MIG/MAG, MMA*, Water	0456 300 883
LUD 450 U, 400-415 V, 50/60Hz, Water,TIG OKC	0456 300 884
LUD 450 U, 400-415 V, 50/60Hz, Water, TIG central	0456 300 885
LUD 450 U*, Water, TIG OKC	0456 300 886
LUD 450 U*, Water, TIG central	0456 300 887
Control box PUA1, E, G, F, It	0456 290 881
Control box PUA1, E, S, Fi, Dan, No	0456 290 882
Control box PUA1, E, Sp, Port, Dutch	0456 290 883
Control box PUA1, E, Hun, Pol, Czech	0456 290 884

*230/400/500V, 50Hz; 208/230/460/475V, 60Hz

LAR 630 Magma

The LAR 630 Magma is a member of the A10 range of sturdy and robust rectifiers. Thyristor control combined with microprocessor control produces many advantages resulting in excellent welding characteristics.
The LAR 630 Magma is delivered complete and ready to use, which makes installation easy and fast. The large, robust wheels, lifting eyes and protection class IP 23, plus the sturdy design, make the LAR 630 Magma ideal for tough outdoor working conditions. This rectifier is capable of MIG/MAG and MMA welding and air-arc gouging.

Delivery includes

5 m return cable with clamp, gas bottle platform, 5 m mains cable, guide pin for the wire feeder and 1.8 m cable for MMA welding

	LAR 630 Magma
Mains supply, V/Hz	230/400/550/60
Fuse, slow, A	35
Mains cable, Ø mm^2	4X10
Max output at 60% duty cycle, A	630
Max output at 100% duty cycle, A	500
Open circuit voltage, V	51
Weight, kg	250

Ordering information

LAR 630 Magma	0467 976 881
Analouge volt and ampmeter kit	0319 429 882
Digital volt and ampmeter kit	0368 123 884

MIG/MAG equipment
Wire feeders

MEK 2

The MEK 2 is part of the A10 system and has been adapted for the LAX power sources. It is a stable, encapsulated wire feeder, minimized to carry 18 kg spools. The MEK 2 can be mounted on the power source, suspended, counterbalanced or put on a trolley to provide maximum versatility. Extension cables make it possible to lift the MEK 2 off the power source and carry it to the work site.
The MEK 2 has 2-wheel drive, creep start, adjustable backburn time and tachometer control of wire feed speed to ensure even and reliable wire feed. It is available with or without water-cooling.

	MEK 2
Mains supply, V/Hz	42/50
Wire feed, m/min	1.9-20
Max spool dimension/weight, Ø mm/kg	300/18
Wire Ø, unall. solid	0.6-1.2
Wire Ø, SS	0.6-1.2
Wire Ø, Al	1.0-1.2
Wire Ø, CW	0.8-1.2
Weight, kg	13

Ordering information

MEK 2	0455 590 881
MEK 2, water	0455 590 883
Counterbalance	0469 792 881
Trolley	0469 786 880
Suspension	0469 789 880
Counterbalance device, spiral	0456 693 880
Mast for counterbalance	0156 746 880

For extension cables see page 162

MEK 4/4 S

The MEK 4/4 S wire feeders are part of the A10 MIG/MAG range and are adapted for the LAW power sources. They are rugged, portable and encapsulated, minimised to carry 18 kg spools. By optional components they can be trollied, suspended or counterbalanced for maximum versatility. Extension cables allow for any production layout. There are quick-lock connections for gas, control power, water and remote control for shortest set-up time. All settings are made on the feeder unit.
Features as 2/4-stroke, pre- and post-gas flow, adjustable burnback time, creep start and crater filling are standards.
With the synergic version MEK 4 S, there is a possibility to store 3 different sets of welding parameters, which then can be chosen using an optional remote control on the welding gun. Further to the three stored programs, there are 14 synergic lines to choose from. Using the remote control on the gun, the synergic lines can be steplessly adjusted.

	MEK 4/MEK 4 S
Mains supply, V/Hz	42/50
Wire feed, m/min	1.9-25
Max spool dimension/weight, Ø mm/kg	300/18
Wire Ø, unall. solid	0.6-1.6/1.0*-1.2*
Wire Ø, SS	0.6-1.6/1.0*-1.2*
Wire Ø, Al	1.0-1.6/1.2*-1.6*
Wire Ø, CW	0.8-1.6/1.2*-1.6*
Weight, kg	14

* MEK 4 S pre-programmed synergic lines.

Ordering information

MEK 4	0469 962 880
MEK 4 with digital V/A instruments	0469 962 881
MEK 4 with water connection	0469 962 882
MEK 4 with water con. and digital V/A instruments	0469 962 883
MEK 4 S, synergic	0455 175 880
MEK 4 S, synergic water	0455 175 881
Counterbalance spiral	0456 693 880
Mast	0156 746 880
Trolley	0469 786 880
Suspension device	0469 789 880
PAH 1 programming box	0455 525 880
Adapter unit PKE-MEK 4	0456 196 881
Adapter unit PKE-MEK 4 S/4 SP	0457 850 880

For extension cables, see page 162

MIG/MAG equipment
Wire feeders

MEK 4 SP

The MEK SP together with the LAW 420/520 power source creates a strong and efficient combination when it comes to pulsing. Man-machine communication is easy. The pulse function is controlled using just one knob, the pulse ON/OFF switch. When the switch on the front is in the pulse mode, there are 10 pre-programmed synergic lines to choose between. When the pulse mode is not in use, there are an additional 14 pre-programmed synergic lines on the menu. The optional programming box, PAH 1, offers an opportunity to make and store your own synergic lines.
Features such as 2/4 stroke, pre- and post-gas flow, adjustable burn-back time, creep start and crater filling are standard.

	MEK 4 SP
Mains supply, V/Hz	42/50
Wire feed, m/min	1.9-25
Max spool dimension/weight, Ø mm/kg	300/18
Wire Ø, unall. solid	0.6-1.6/1.0*-1.2*
Wire Ø, SS	0.6-1.6/1.0*-1.2*
Wire Ø, Al	1.0-1.6/1.2*-1.6*
Wire Ø, CW	1.2-1.6/1.2*-1.6*
Weight, kg	14

* MEK 4 SP pre-programmed pulsed synergic lines. Synergic line for continuous welding same as for MEK 4 S.

Ordering information

MEK 4 SP	0456 815 881
PAH 1, programming box	0455 525 880
Counterbalance spiral	0456 693 880
Mast	0156 746 880
Trolley	0469 786 880
Suspension device	0469 789 880
Adapter unit PKE-MEK 4	0456 196 881
Adapter unit PKE-MEK 4 S/4 SP	0457 850 880

MEH 44 B

The feeder units MEH 44 Basic is microprocessor controlled and feature infinitely variable wire feed speed. The electronics automatically compensate, by using a tachometer, for any fluctuations in the mains supply, temperature, friction etc. This means that the wire speed always remains constant and always provides the correct welding current. The feed roller to MEH 44 have three different grooves.

Delivery includes

MEH 44 is delivered with a 3 meter control cable with Burndy connector as well as a 95 mm^2 welding lead.

	MEH 44 B
Mains supply, V/Hz	42/50
Wire feed, m/min	1.5-25
Max spool dimension/weight, Ø mm/kg	440/30
Wire Ø, unall. solid	0.8-2.4
Wire Ø, SS	0.8-1.6
Wire Ø, Al	1.0-2.4
Wire Ø, CW	0.9-2.4
Weight, kg	19

Ordering information

MEH 44 Basic	0466 955 880
A9E connection kit	0467 820 880
Turning piece	0156 681 882
Counterbalance device	0467 816 880
Mast for counterbalance	0156 746 880
Trolley	0332 650 880
Suspension device	0456 909 880
Adapter unit PKE-MEH	0467 820 880

For assembly components, see page 160

MIG/MAG equipment
Wire feeders

MED 304

The MED 304 encapsulated feeder is electronically controlled with stepless wire feed settings. Deviations in mains voltage, temperature, friction etc are electronically countered with a tachometer, thus supplying correct feed speed and welding current at all times. MED 304 feeder rollers have three separate tracks, allowing different wire thicknesses to be fed off the same rollers.

Delivery includes
Welding lead 70 mm^2.

	MED 304
Mains supply, V/Hz	42/50
Wire feed, m/min	1.5-18
Max spool dimension/weight, Ø mm/kg	300/18
Wire Ø, unall. solid	0.8-2.4
Wire Ø, SS	0.8-1.6
Wire Ø, Al	1.0-2.4
Wire Ø, CW	0.9-2.4
Weight, kg	21

Ordering information

MED 304 4-wheel drive feeder	0369 595 880
Analogue instrument < 400 A	0466 810 880
Adapter unit PKE-MED	0365 942 880
Wheel kit	0369 599 880

For extension cables, see page 162
For assembly components, see page 160

MLC 30/30C/302

The MLC 30/30C/302 wire feeder is a part of the A9 push-pull system. The electrical feed device in the wire feeder pushes the wire through the welding gun which PKB provides the main feed power, through the pneumatically operated turbine motor.
The push-pull system produces smooth and even wire feeding, excellent for soft wires (such as aluminium) or fine wire dimensions. Hoses of up to 16 m in length can be used.
The MLC 302 wire feeder is an encapsulated feeder, for dusty environments, with the same feature as the MLC 30. The MLC 30C is designed for use together with the Aristo 2000 system.

Delivery includes
3 m of control cable, welding lead 70 mm^2.

	MLC 30	MLC 30C	MLC 302
Mains supply, V/Hz	42/50	42/50	42/50
Wire feed, m/min	0-18	0-18	0-18
Max spool dimension/weight, Ø mm/kg	300/18	300/18	300/18
Wire Ø, unall. solid	0.6-1.6	0.6-1.6	0.6-1.6
Wire Ø, SS	0.6-1.6	0.6-1.6	0.6-1.6
Wire Ø, Al	0.8-1.6	0.8-1.2	0.8-1.6
Wire Ø, CW	0.8-1.6	0.8-1.6	0.8-1.6
Weight, kg	10	16	18

Ordering information

MLC 30	0157 466 880
MLC 30 turning piece	0156 681 880
MLC 30 counter balance device	0156 683 880
MLC 30 mast for counter balance	0156 746 880
MLC 30 trolley	0332 650 880
MLC 30 suspension device	0456 909 880
MLC 30C, E, G, F, It	0457 040 680
MLC 30C, E, S, Fi, Dan, No	0457 040 681
MLC 30C, E, Sp, Port, Dutch	0457 040 682
MLC 30C, E, Hun, Pol, Czech	0457 040 683
MLC 30C turning piece	0156 681 883
MLC 30C counter balance device	0467 816 880
MLC 30C mast for counter balance	0456 746 880
MLC 30C trolley	0332 650 880
MLC 30C suspension device	0456 909 880
MLC 302	0467 540 880
Wheel kit for MLC 302	0369 599 880

For extension cables/assembly components, see pages 162/ 160

MIG/MAG equipment
Wire feeders

MEK 4 C

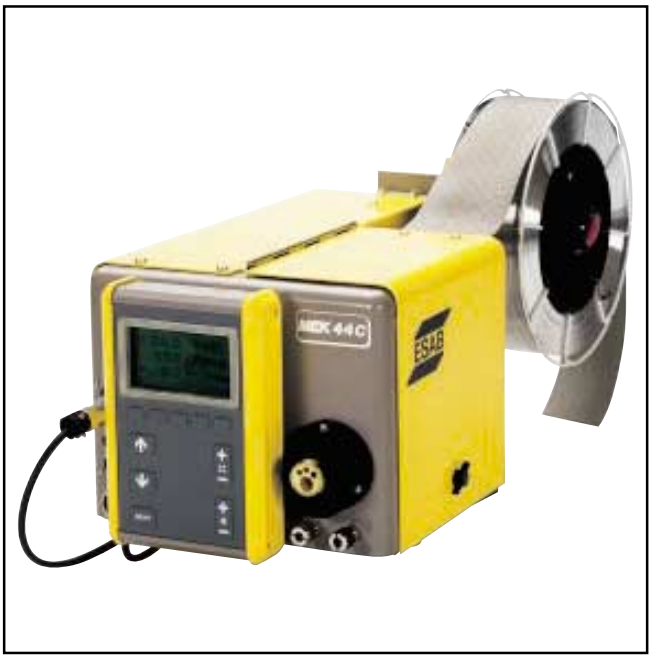
The MEK 4 C wire feeder is adapted for the Aristo 2000 power sources. It is rugged, portable and encapsulated and has been minimized to carry 18 kg spools. Optional components enable it to be trollied, suspended or counterbalanced for maximum versatility. Extension cables between the power source and wire feed unit permit the use of any production layout. All adjustments are made from the control box PUA1.

	MEK 4 C
Mains supply, V/Hz	42/50
Wire feed, m/min	1.5-25
Max spool dimension/weight, Ø mm/kg	300/18
Wire Ø, unall. solid	0.6-1.6
Wire Ø, SS	0.6-1.6
Wire Ø, Al	1.0-1.6
Wire Ø, CW	0.8-1.6
Weight, kg	14

Ordering information

MEK 4 C	0456 400 880
MEK 4 C, water-cooled	0456 400 881
Control box PUA1, E, G, F, It	0456 290 881
Control box PUA1, E, S, Fi, Dan, No	0456 290 882
Control box PUA1, E, Sp, Port, Dutch	0456 290 883
Control box PUA1, E, Hun, Pol, Czech	0456 290 884
Counterbalance	0456 693 880
Mast	0156 746 880
Trolley	0469 786 880
Suspension device	0469 789 880
Adapter unit PKE-MEK	0456 196 881

For extension cables see page 162



MEK 44 C

The MEK 44 C wire feeder is adapted for the Aristo power sources. It is robust and has two motors and a four-wheel drive stand. Voltage and temperature deviations are compensated for electronically, thereby ensuring a constant welding current and a precise wire-feed speed. The wire speed is set steplessly from 1.5 to 25 m/min.
All adjustments are made from the control box PUA1.

	MEK 44 C
Mains supply, V/Hz	42/50
Wire feed, m/min	1.5-25
Max spool dimension/weight, Ø mm/kg	440/30
Wire Ø, unall. solid	0.6-2,4
Wire Ø, SS	0.8-1.6
Wire Ø, Al	1.0-2.4
Wire Ø, CW	0.8-2.4
Weight, kg	19

Ordering information

MEK 44 C	0456 800 880
MEK 44 C, water-cooled	0456 800 881
Control box PUA1, E, G, F, It	0456 290 881
Control box PUA1, E, S, Fi, Dan, No	0456 290 882
Control box PUA1, E, Sp, Port, Dutch	0456 290 883
Control box PUA1, E, Hun, Pol, Czech	0456 290 884
Counterbalance	0467 816 880
Mast	0156 746 880
Trolley	0332 650 880
Suspension device	0456 909 880
Turning piece	0156 681 883
Adapter unit PKE-MEK	0456 196 881

For extension cables, see page 162

MIG/MAG equipment
Wire feeders

MEH 25

MEH 25 is an intermediate wire feed unit which combined with an A10 system's wire feed unit can give you a working range of up to 60 m from the power source's placement. MEH 25 gives excellent and trouble-free wire feeding with all types of wire electrodes and with cored wires. This is due to the unit's system of a 4 feed roll mechanism. MEH 25 can be combined with cable bundles in three different lenghts: 12.5 m, 19 m and 25 m. The cable bundles are also available equipped with hoses and hose connectors for water cooling. Remote sockets for both Cannon and Burndy connection are available. MEH 25 is adapted for MEH 44, MED 304 and MEH 20.

	MEH 25
Mains supply, V/Hz	42/50
Wire feed, m/min	1-18
Max spool dimension/weight, Ø mm/kg	-
Wire Ø, unall. solid	0.8-1.2
Wire Ø, SS	0.8-1.2
Wire Ø, Al	0.8-1.2
Wire Ø, CW	0.8-1.6
Weight, kg	7.4

Ordering information

MEH 25 intermediate feeder, Cannon	0469 420 880
MEH 25 intermediate feeder, Burndy	0469 420 881
Water connection kit	0469 487 880
Gas flow meter	0469 427 880

For extension cables, see page 162

MEK 25

MEK 25 is an intermediate wire feed unit which is used together with ESAB's well-known MEK feeding system to achieve long distance welding (max. 65 m). MEK 25 gives excellent and trouble-free wire feeding with all types of wire electrodes and, above all, with cored wire. This is due to the unit's system of a 4 feed roll mechanism. MEK 25 can be combined with cable bundles in three different lengths: 12.5 m, 19 m and 25 m. The cable bundles are also available equipped with hoses and hose connectors for water-cooling. MEK 25 is fitted for MEK 4 and the Aristo 2000 system.

	MEK 25
Mains supply, V/Hz	42/50
Wire feed, m/min	1-18
Max spool dimension/weight, Ø mm/kg	-
Wire Ø, unall. solid	0.8-1.2
Wire Ø, SS	0.8-1.2
Wire Ø, Al	0.8-1.2
Wire Ø, CW	0.8-1.6
Weight, kg	7.5

Ordering information

MEK 25 intermediate feeder, Burndy	0455 295 880
Water connection kit	0469 487 880
Gas flow meter	0469 427 880

For extension cables, see page 162

MIG/MAG equipment
Wire feeders

MEK 20/20 C

The MEK 20 YARDFEEDER™ is encapsulated and weighs only 12.5 kg. It carries 5 kg spools and uses 4-wheel drive. Using extension cables and the MEK 20, the welder can work up to 40 m from the power source.
The MEK 20 YARDFEEDER™ is designed for every standard welding situation and takes most wires on 5 kg spools. The MEK 20C is designed for use together with the Aristo 2000 system.

	MEK 20/20 C
Mains supply, V/Hz	42/50
Wire feed, m/min	1.9-25
Max spool dimension/weight, Ø mm/kg	200/5
Wire Ø, unall. solid	0.6-1.6
Wire Ø, SS	0.6-1.6
Wire Ø, Al	1.0-1.6
Wire Ø, CW	0.8-1.6
Weight, kg	12.5

Ordering information

MEK 20	0457 235 880
MEK 20, water	0457 235 881
MEK 20 C	0456 980 880
MEK 20 C, water	0456 980 881
Protection frame	0457 203 880

For extension cables, see page 162

AristoFeed 30/48

The AristoFeed wire feeders are suited for the AristoMig 400 power source. They can be lifted on and off the power source, assembled on a counter balance arm or on wheels for increased mobility. Sturdy construction with gas-attenuated aluminium side that can be opened. Powerful feeding mechanism with encoder on the motor provide an even and secure wire feed.
Possibility to choose between open or encapsulated spool, or equipped for use together with MARATHON PAC™.
Extension cables allow for any production layout. There are quick-lock connections for gas, control power, water and current for shortest set-up time. All settings are made on the feeder unit.
Different control panels can be chosen, please go to page 133 for specification.

	AristoFeed 30	AristoFeed 48
Mains supply, V/Hz	42/50	42/50
Wire feed, m/min	0.8-25.0	0.8-25.0
Max spool dimension/weight, Ø mm/kg	300/18	300/18
Wire Ø, unall. solid	0.6-1.6	0.6-2.4
Wire Ø, SS	0.6-1.6	0.6-2.4
Wire Ø, Al	0.6-1.6	1.0-2.4
Wire Ø, CW	0.8-1.6	0.8-2.4
Weight, kg	13	18

Ordering information

Please go to page 133 for detailed ordering information.

MIG/MAG equipment

Assembly possibilities for wire feeders

Counterbalance device/mast

The feeder unit is assembled with a spring unit which lifts the welding gun and hose with adjustable force. The lifting force is independent of the weight of the wire spool. The device can be rotated through 360°.

Ordering information

Counterbalance for MLC 30	0156 683 880
Counterbalance for MED 44	0156 682 880
Counterbalance for MEH 30	0467 815 880
Counterbalance for MEH 44, MEK 44 C, MLC 30C	0467 816 880
Counterbalance for MEK 4 and MEK 2	0469 792 881
Counterbalance MEK spiral	0456 693 880
Mast for MLC, MED, MEH	0156 746 880

Turning piece

The feeder unit can be rotated on the power source through 360°.

Ordering information

Turning piece for MLC 30, MED 30/44, MEH 30	0156 681 880
Turning piece for MEH 44	0156 681 882
Turning piece for MEK 44 C, MLC 30C	0156 681 883

Trolley

Increases the working radius from the power source. Can be further extended with an extension unit between the feeder and the power source. The trolley has four wheels and can also be placed to pivot on the power source.

Ordering information

Trolley for MLC 30/30C, MED 30/44, MEH 30/44, MEK 44 C	0332 650 880
Trolley for MEK 4 and MEK 2	0469 786 880
Trolley for MED 304 & MLC 302	0369 599 880

Suspension device

Using this device, the feeder unit can be suspended in a swinging arm.

Ordering information

Suspension device for MLC 30/30C, MED 30/44, MEH 30/44, MEK 44 C	0156 730 880
Isolated device for MLC 30/30C, MED 30/44, MEH 30/44 & MEK 44C, max 300 mm Ø bobin	0456 909 880
Suspension device for MEK 4 and MEK 2	0469 789 880

Other equipment for MIG/MAG welding

Ordering information

Boom extension, 3 m	0152 571 001
Boom extension, 5 m	0152 571 002
Spool protector, 30 cm	0157 482 880
Water cooling kit for MEH, MED	0365 943 881
Voltage pot kit for MEH 44 B	0467 650 880

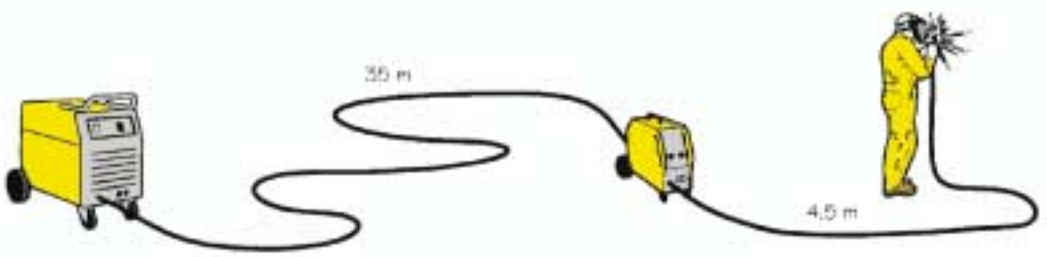
For extension cables, see page 162

MIG/MAG equipment
Layout guide

1

2

3



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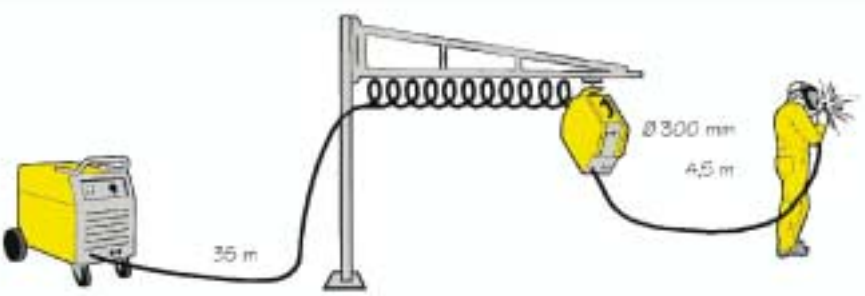

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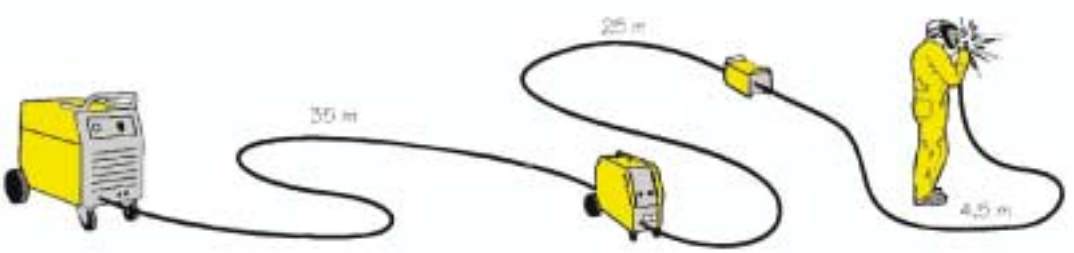

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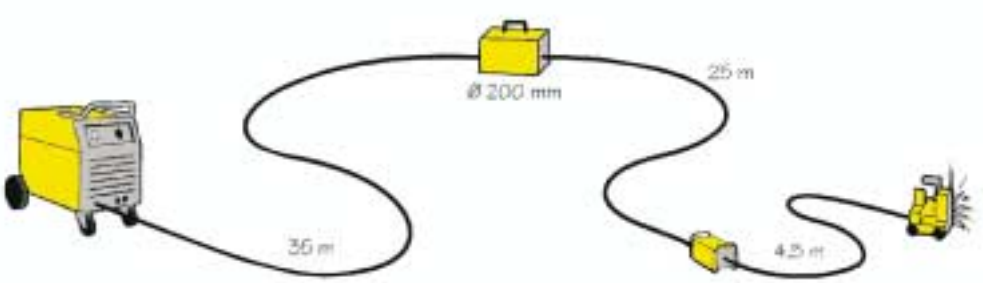


MIG/MAG equipment
Extension cables

MIG/MAG power source	Extension cables, Burndy 23 poles	Wire feeder	Torches	Extension cables to intermediate feeder	Inter-mediate feeder	Torches
LAW LAR LAX LAY	1.7 m 0469 836 880, 400 Amp/air 8.0 m 0469 836 881, 400 Amp/air 16.0 m 0469 836 882, 400 Amp/air 25.0 m 0469 836 883, 400 Amp/air 35.0 m 0469 836 884, 400 Amp/air 1.7 m 0469 836 885, 400 Amp/W 8.0 m 0469 836 886, 400 Amp/W 16.0 m 0469 836 887, 400 Amp/W 25.0 m 0469 836 888, 400 Amp/W 35.0 m 0469 836 889, 400 Amp/W 1.7 m 0469 836 890, 500 Amp/air 8.0 m 0469 836 891, 500 Amp/air 16.0 m 0469 836 892, 500 Amp/air 25.0 m 0469 836 893, 500 Amp/air 35.0 m 0469 836 894, 500 Amp/air 1.7 m 0469 836 895, 500 Amp/W 8.0 m 0469 836 896, 500 Amp/W 16.0 m 0469 836 897, 500 Amp/W 25.0 m 0469 836 898, 500 Amp/W 35.0 m 0469 836 899, 500 Amp/W	MEK 4[1] MEK 4 S[2] MEK 4 SP[2] MEK 2[3] MEK 20	PSF System 2100	12.5 m 0469 961 880, air 19.0 m 0469 961 881, air 25.0 m 0469 961 882, air 12.5 m 0469 961 883, W 19.0 m 0469 961 884, W 25.0 m 0469 961 885, W	MEK 25	PSF System 2100

	Extension cables, Burndy 12 poles					
LUD AristoMig	1.7 m 0456 528 880, 500 Amp/air 8.0 m 0456 528 881, 500 Amp/air 16.0 m 0456 528 882, 500 Amp/air 25.0 m 0456 528 883, 500 Amp/air 35.0 m 0456 528 884, 500 Amp/air 1.7 m 0456 528 885, 500 Amp/W 8.0 m 0456 528 886, 500 Amp/W 16.0 m 0456 528 887, 500 Amp/W 25.0 m 0456 528 888, 500 Amp/W 35.0 m 0456 528 889, 500 Amp/W	MEK 4 C MEK 44 C MEK 20 C MLC 30C AristoFeed[5]	PSF System 2100	12.5 m 0469 961 880, air 19.0 m 0469 961 881, air 25.0 m 0469 961 882, air 12.5 m 0469 961 883, W 19.0 m 0469 961 884, W 25.0 m 0469 961 885, W	MEK 25	PSF System 2100

[1] If MEK 4 is connected to LAR, LAX or LAY, there will be no crater filling or V/A-meter functions. [2] Only in combination with LAW.
[3] In combination with LAR, LAX or LAY. [4] Only in combination with LUD. [5] Only in combination with AristoMig.

MIG/MAG power source	Wire feeder	Cable for PKB push/pull	PKB push/pull torches
LAW LAR LAX LAY LUD	MLC 30 MLC 302 MLC 30C[4]	5 m 0468 790 880, 250 Amp 10 m 0468 790 881, 250 Amp 16 m 0468 790 882, 250 Amp 5 m 0468 790 883, 400 Amp 10 m 0468 790 884, 400 Amp 16 m 0468 790 885, 400 Amp	PKB 250, 0152 700 881 PKB 400, 0152 470 881

Power source	Extension cables, Burndy 23 poles	Wire feeder	Torches
LAW LAR LAX LAY	8.0 m 0367 733 880, 400 Amp/air 16.0 m 0367 733 881, 400 Amp/air 25.0 m 0367 733 882, 400 Amp/air 35.0 m 0367 733 883, 400 Amp/air 8.0 m 0367 733 884, 500 Amp/water 16.0 m 0367 733 885, 500 Amp/water 25.0 m 0367 733 886, 500 Amp/water 35.0 m 0367 733 887, 500 Amp/water	MEH 20 MEH 44 MED 304	PSF System 2100

MIG/MAG equipment

Trolleys

Trolley for DTE, LTN, LTR and LTO

Trolley for AristoArc

Trolley for AristoMig

Trolley 2 for AristoMig

Trolley for AristoTig

ESAB has a wide range of different trolleys to facilitate the welding and to increase the working radius.

Ordering information

	LTO 160/250	LTP 450 LTS 320	DTE 200/255	LTR/LTN series	LUD 320/450	AristoArc	AristoMig	AristoTig
TIG trolley for 5 l gas bottle 0468 530 880				•				
TIG trolley 0301 100 880	•		•	•				
TIG trolley for 50 l gas bottle 0457 221 880		•						
Trolley for 2 gas bottles 0457 221 881					•			
Trolley AristoArc 0458 525 880						•		
Trolley AristoMig 0458 530 880							•	
Trolley 2 AristoMig (for feeder with counterbalance device) 0458 603 880							•	
Trolley AristoTig 0458 530 881								•

MIG/MAG equipment
Torches and components

PKB

The A9A is a push-pull system consisting of PKB 250 and 400, an MLC 30 or 302 wire feeder and welding hoses of different lengths and dimensions. The gun is powered by air and the feed speed is set steplessly by a knob on the gun. The trigger permits creep starts and speed reductions during welding. The hose connection supplies current, wire, shielding gas and air in the same connection.

	PKB 250	PKB 400
Pressure, bar	5	5
Wire Ø, unall. solid	0.6-1.2	0.6-1.6
Wire Ø, SS	0.6-1.2	0.6-1.6
Wire Ø, Al	0.8-1.2	0.8-1.6
Wire Ø, CW	1.0-1.2	1.0-1.6
Wire feed, m/min	0-18	0-18
Weight, kg	1.2	1.4

Ordering information

PKB 250 welding torch	0152 700 881
5 m hose for PKB 250	0468 790 880
10 m hose for PKB 250	0468 790 881
16 m hose for PKB 250	0468 790 882
PKB 400 welding torch	0152 470 881
5 m hose for PKB 400	0468 790 883
10 m hose for PKB 400	0468 790 884
16 m hose for PKB 400	0468 790 885

PKE

The A9E is a push-pull system consisting of PKE 200 and PKE 400. They are powered by an electric motor and can be connected to most ESAB wire feeders (see ordering information). The feed speed can be set steplessly by a potentiometer on the gun handle.
The PKE 200 is air-cooled, while the PKE 400 is water-cooled.

	PKE 400W	PKE 200
Wire Ø, unall. solid	0.6-1.6	0.6-1.2
Wire Ø, SS	0.6-1.6	0.6-1.2
Wire Ø, Al	0.8-1.6	0.8-1.2
Wire Ø, CW	1.0-1.6	1.0-1.2
Max load at 60% duty cycle, A	400	160

Ordering information

PKE 200 4.5 m, ESAB connection	0333 366 880
PKE 200 10 m, ESAB connection	0333 366 881
PKE 200 16 m, ESAB connection	0333 366 882
PKE 400W 4.5 m, ESAB connection	0333 366 883
PKE 400 10 m, ESAB connection	0333 366 884
PKE 400 16 m, ESAB connection	0333 366 885
PKE 200 4.5 m, Euro connection	0469 990 880
PKE 200 10 m, Euro connection	0469 990 881
PKE 200 16 m, Euro connection	0469 990 882
PKE 400 4.5 m, Euro connection	0469 990 883
PKE 400W 10 m, Euro connection	0469 990 884
PKE 400 16 m, Euro connection	0469 990 885
Heat protection	0365 837 880
Adapter set, MEK 4B old	0456 199 880
Adapter set, MEH	0467 820 880
Adapter set, MED	0365 942 880
Adapter set, MEK 4B, MEK 4C, MEK 44C	0456 196 881
Adapter set, MEK 4S, MEK 4SP	0457 850 880
Adapter set, MED 44A	0457 850 881

MIG/MAG equipment
Torches and components

PSF water-cooled

The water-cooled PSF guns are probably the coolest welding guns on the market. The excellent cooling allows for a smaller swan neck with no reduction in current capacity, plus reduced wear part consumption. The ergonomic handle is equipped with an integrated hanger that is folded away for increased accessibility. A swivel at the back of the handle reduces strain on the welder's wrist. Together with the opportunity to use different angled swan necks, this provides easy access to all welding positions and a comfortable working position.
Both guns are available with a built-in, three-step, remote-control switch.

	PSF 410W/ 410W RS3	PSF 510W/ 510W RS3
Max load at 100% duty cycle, A	425	500
Wire Ø, unall. solid	0.8-1.6	1.0-2.4
Wire Ø, SS	0.8-1.2	1.0-1.6
Wire Ø, Al	1.0-1.6	1.2-2.4
Wire Ø, CW	1.0-1.6	1.0-2.4

Ordering information

Euro connection

PSF 410W, 3 m/4.5 m	0458 400 882/883
PSF 510W, 3 m/4.5 m	0458 400 884/885
PSF 410W RS3, 3 m/4.5 m	0458 400 898/899
PSF 510W RS3, 3 m/4.5 m	0458 400 900/901

W = water connection
RS3 = remote control 3-steps

PSF self-cooled

There are six different types of self-cooled PSF welding gun and they can be ordered with two different hose lengths. The handles are ergonomically curved. A range of different angled swan necks provides easy access to all the different welding positions and a comfortable working position.
Two of the guns are available with a built-in, three-step, remote-control switch.

	PSF 160	PSF 200XX	PSF 250	PSF 305	PSF 405/ 405 RS3	PSF 505
Max load at 100% duty cycle, A	160	200	250	315	380	475
Wire Ø, unall. solid	0.6-0.8	0.6-0.8	0.6-1.0	0.8-1.2	0.8-1.6	1.0-2.4
Wire Ø, SS	0.6-0.8	0.6-0.8	0.6-1.0	0.8-1.2	0.8-1.6	1.0-1.6
Wire Ø, Al	1.0	1.0	1.0	1.0-1.2	1.0-1.6	1.2-2.4
Wire Ø, CW	-	-	1.0	1.0-1.2	1.0-1.6	1.0-2.4

Ordering information

Euro connection

PSF 160, 3 m/4.5 m	0368 100 880/881
PSF 200XX, 3 m/4.5 m	0469 798 882/883
PSF 250, 3 m/4.5 m	0368 100 882/883
PSF 305, 3 m/4.5 m	0458 401 880/881
PSF 405, 3 m/4.5 m	0458 401 882/883
PSF 505, 3 m/4.5 m	0458 401 884/885
PSF 405 RS3, 3 m/4.5 m	0458 401 892/893

W = water connection
RS3 = remote control 3-steps
XX = remote control 3-steps (old type)

MIG/MAG equipment
Torches and components

PSF Centrovac self-cooled

The Centrovac welding guns have integrated smoke extraction, providing a smoke-free working environment for the welder. The handles are ergonomically designed and incorporate a reduction valve for suction adjustment. The PSF 250C and 315CLD have a small handle, providing easy access to all the different welding positions. The PSF 305C, 405C and 505C also have a swivel at the back of the handle to reduce the strain on the welder's wrist.
Some of the guns are available with a built-in, three-step, remote-control switch.

	PSF 250C	PSF 315 CLD	PSF 305C/ 305C RS3	PSF 405C/ 405C RS3	PSF 505C/ 505C RS3
Max load at 60% duty cycle, A	250	315	315	350	450
Wire Ø, unall. solid	0.6-1.0	0.8-1.2	0.8-1.0	0.8-1.6	1.0-2.4
Wire Ø, SS	0.6-1.0	0.8-1.2	0.8-1.2	0.8-1.6	1.0-1.6
Wire Ø, Al	1.0	1.0-1.2	1.0-1.2	1.0-1.6	1.2-2.4
Wire Ø, CW	1.0	1.0-1.2	1.0-1.2	1.0-1.6	1.0-2.4

Ordering information

Euro connection

PSF 250 C, 3 m/4.5 m	0468 410 882/883
PSF 315 CLD, 3 m/4.5 m	0468 410 885/886
PSF 305C, 3 m/4.5 m	0458 499 880/881
PSF 405C, 3 m/4.5 m	0458 499 882/883
PSF 505C, 3 m/4.5 m	0458 499 884/885
PSF 305C RS3, 3 m/4.5 m	0458 499 886/887
PSF 405C RS3, 3 m/4.5 m	0458 499 888/889
PSF 505C RS3, 3 m/4.5 m	0458 499 890/891

C = smoke extraction
W = water connection
RS3 = remote control 3-steps

PSF Centrovac water-cooled

The water-cooled Centrovac welding guns are probably the coolest welding guns on the market. The integrated smoke extraction provides a smoke-free working environment for the welder. Ergonomically-designed handle incorporating a reduction valve for suction adjustment. All water-cooled Centrovac guns have a swivel at the back of the handle to reduce the strain on the welder's wrist. Both the PSF 410CW and 510CW are available with a built-in, three-step, remote-control switch.

	PSF 410CW/ 410CW RS3	PSF 510CW/ 510CW RS3
Max load at 100% duty cycle, A	380	460
Wire Ø, unall. solid	0.8-1.6	1.0-2.4
Wire Ø, SS	0.8-1.2	1.0-1.6
Wire Ø, Al	1.0-1.6	1.2-2.4
Wire Ø, CW	1.0-1.6	1.0-2.4

Ordering information

Euro connection

PSF 410CW, 3 m/4.5 m	0458 450 880/881
PSF 510CW, 3 m/4.5 m	0458 450 882/883
PSF 410CW RS3, 3 m/4.5 m	0458 450 884/885
PSF 510CW RS3, 3 m/4.5 m	0458 450 886/887

C = smoke extraction
W = water connection
RS3 = remote control 3-steps

MIG/MAG equipment
Torches and components

Wear parts	Type of welding gun	PSF 160	PSF 250 PSF 250C	PSF 315 CLD	PSF 305 PSF 410W PSF 305C PSF 410CW	PSF 405 PSF 510W PSF 405C PSF 510CW	PSF 505 PSF 505C
Swan neck self-cooled PSF 160-505	Acc. 0° Std. 45° Acc. 60°	- 0366 324 880 -	0469 329 880 0366 315 880 0467 985 880	- - -	0469 333 880 0366 388 880 0467 988 881	0469 334 880 0366 389 880 0467 988 880	0469 335 880 0366 390 880 0467 989 880
Swan neck water-cooled PSF 410W-510W	Acc. 0° Std. 45° Acc. 60°	- - -	- - -	- - -	0458 403 886 0458 403 881 0458 403 884	0458 403 887 0458 403 882 0458 403 885	- - -
Swan neck self-cooled Centrovac	Std. 45°	-	0366 315 880	0457 862 880	0366 388 880	0366 389 880	0366 390 880
Swan neck water-cooled Centrovac	Std. 45°	-	-	-	0458 487 880	0458 488 880	-
Gas nozzle self-/water-cooled Threaded	Tapered Std. Straight	0458 465 880 0458 464 880 -	0458 465 881 0458 464 881 0458 470 881	0458 465 882 0458 464 882 0448 470 882	0458 465 882 0458 464 882 0458 470 882	0458 465 883 0458 464 883 0458 470 883	0458 465 884 0458 464 884 0458 470 884
Spatter protection	self-/water-cooled gas nozzle	0458 471 001	0458 471 002	0458 471 003	0458 471 003	0458 471 004	0458 471 005
Spotwelding acc.	self- and water-cooled	0366 643 880	0366 643 881	0366 643 882	0366 643 882	0366 643 883	0366 643 884
Tip adaptor self-cooled	M6 M8 HELIX™ M7 HELIX™ M8	0469 249 001 - - -	0366 314 001 - 0368 310 001 -	- 0366 394 001 0368 311 001 -	0366 394 001 0366 394 002 0368 311 001 0366 394 002	0366 394 001 0366 394 002 0368 311 001 0366 394 002	- 0366 395 001 0368 312 001 0366 395 001
Contact tip		**M6 x 27 CuCrZr**					
CO_2 **Mix/Ar** 0.6 - - 0.6 0.8 - 0.9 0.8 1.0 0.9 1.2 1.0 1.4 1.2 1.6 - - 1.6		0468 500 001 0468 500 002 0468 500 003* - - - - - -	0468 500 001 0468 599 002 0468 500 003* 0468 500 004 0468 500 005* 0468 500 007* - - -	0468 500 001 0468 599 002 0468 500 003* 0468 500 004 0468 500 005* 0468 500 007* 0468 500 008* - -	0468 500 001 0468 500 002 0468 500 003* 0468 500 004 0468 500 005* 0468 500 007* 0468 500 008* 0468 500 009 0468 500 010	0468 500 001 0468 500 002 0468 500 003* 0468 500 004 0468 500 005* 0468 500 007* 0468 500 008* 0468 500 009 0468 500 010	- - - - - - - - -
		M8 x 37 CuCrZr					
CO_2 **Mix/Ar** 0.8 - 0.9 0.8 1.0 0.9 1.2 1.0 1.4 1.2 1.6 - - 1.6 2.0 2.0 2.4 2.4		- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	0468 502 003* 0468 502 004 0468 502 005* 0468 502 007* 0468 502 008* 0468 502 009 0468 502 010 - -	0468 502 003* 0468 502 004 0468 502 005* 0468 502 007* 0468 502 008* 0468 502 009 0468 502 010 0468 502 011 0468 502 012	0468 502 003* 0468 502 004 0468 502 005* 0468 502 007* 0468 502 008* 0468 502 009 0468 502 010 0468 502 011 0468 502 012
Contact tip HELIX™ and Nib.	Please see main brochure or manual	*available in 100-pack as 0468 500/502 - 303, 305, 307					
Liner Steel liner for non-alloyed and cored wires.		**3 m/4.5 m**	**3 m/4.5 m**	**3 m/4.5 m**	**3 m/4.5 m**	**3 m/4.5 m**	**3 m/4.5 m**
	0.6 - 0.8 0.9 - 1.0 1.2 1.4 1.6 2.0 2.4	0366 549 882/883 - - - - - -	0366 549 882/883 0366 549 884/885 0366 549 886/887 - - - -	0366 549 882/883 0366 549 884/885 0366 549 886/887 - - - -	0366 549 882/883 0366 549 884/885 0366 549 886/887 0366 549 888/889 0366 549 890/891 - -	0366 549 882/883 0366 549 884/885 0366 549 886/887 0366 549 888/889 0366 549 890/891 0366 549 892/893 0366 549 894/895	- 0366 549 884/885 0366 549 886/887 0366 549 888/889 0366 549 890/891 0366 549 892/893 0366 549 894/895
Liner Teflon liner for Fe, Ss, Al When welding aluminium the wear insert should be changed to a carbon-teflone type. Please see manual.	0.6 0.8 0.9 - 1.0 1.2 1.4 1.6 2.0 2.4	0366 550 880/881 - - - - - - -	0366 550 880/881 - - - - - - -	0366 550 880/881 0366 550 882/883 0366 550 884/885 0366 550 886/887 - - - -	- 0366 550 882/883 0366 550 884/885 0366 550 886/887 0366 550 888/889 0366 550 890/891 0366 550 892/893 -	- 0366 550 882/883 0366 550 884/885 0366 550 886/887 0366 550 888/889 0366 550 890/891 0366 550 892/893 0366 550 894/895	- - 0366 550 884/885 0366 550 886/887 0366 550 888/889 0366 550 890/891 0366 550 892/893 0366 550 894/895
Teflon liner beige Full length without wear insert	0.6-0.8 1.0-1.2 1.4-1.6	0457 969 880/881 - -	0457 969 880/881 0457 969 882/883 -	0457 969 880/881 0457 969 882/883 -	0457 969 880/881 0457 969 882/883 0457 969 884/885	0457 969 880/881 0457 969 882/883 0457 969 884/885	- 0457 969 882/883 0457 969 884/885

Manual plasma cutting equipment
Plasma cutting packages

CaddyCut

CaddyCut is small and portable. Perfect for the repair and maintenance. Cuts all metals, including copper and aluminium. Mild steels up to 12 mm can be separated. Few settings makes it easy to use. Just add electricity and compressed air. The powerful HF start goes straight through a drawing, placed or glued on top of the plate – cuts the exact part you need.

Delivery includes

CaddyCut, 4.5 m PT 31XL torch, 4 m return lead, 2.5 m mains cable with Schuko plug, carrying strap and wear part kit

	CaddyCut
Mains supply, V/Hz	230/50
Fuse, slow, A	16
Mains cable, Ø mm^2	3x1.5
Max output at 35% duty cycle, A	35
Setting range, A	15-35
Open circuit voltage, V	270
Air, l/min	120
Pressure, bar	5.5
Cutting capacity, Fe mm	8/12
Cutting capacity, SS mm	6/8
Cutting capacity, Al mm	8/12
Weight, kg	9

Ordering information

CaddyCut	0700 156 880

Manual plasma cutting equipment

Plasma cutting packages

HandyPlasma 50

Small, lightweight plasma cutting unit for workshops or repair and maintenance work. The 7.5 m long torch gives you a wide working range. Cuts all metals. You can separate mild steel up to 15 mm. 10 mm can be done quickly with a nice cut. There is a separate compartment for the wear part kit and tools. Cuts easily through a paper drawing – simplifies making the exact part.

Delivery includes

7.6 m PT 31XL torch, mains cable with 16 A Europlug, return lead with clamp, wear part kit and regulator with filter

	HandyPlasma 50
Mains supply, V/Hz	400/50
Fuse, slow, A	16
Mains cable, Ø mm^2	4x2.5
Max output at 45% duty cycle, A	50
Max output at 100% duty cycle, A	34
Setting range, A	20-50
Open circuit voltage, V	250
Air, l/min	120
Pressure, bar	5.5
Cutting capacity, Fe mm	10/15
Cutting capacity, SS mm	8/12
Cutting capacity, Al mm	12/15
Weight, kg	22

Ordering information

HandyPlasma 50, 3ph 400 V	0700 157 880

HandyPlasma 70

The perfect unit for cutting in the workshop, on-site assembly or for repair and maintenance work. Small and lightweight. Can cut all metals, separates up to 20 mm mild steel. Gratings can also be cut. The 7.5 m long PT 27 torch gives you a long working range. Has HF and pilot arc. Separate compartment for tools and wear parts.

Delivery includes

7.6 m PT 27 torch, mains cable with 16 A Europlug, return lead with clamp, wear part kit and regulator with filter

	HandyPlasma 70
Mains supply, V/Hz	400/50
Fuse, slow, A	15
Mains cable, Ø mm^2	4x2.5
Max output at 45% duty cycle, A	70
Max output at 100% duty cycle, A	47
Setting range, A	25-70
Open circuit voltage, V	250
Air, l/min	150
Pressure, bar	4.5-5.2
Cutting capacity, Fe mm	12/20
Cutting capacity, SS mm	10/15
Cutting capacity, Al mm	12/20
Weight, kg	22

Ordering information

HandyPlasma 70, 3ph 400 V	0700 158 880

Manual plasma cutting equipment
Plasma cutting packages

PCM 875 Plasmarc™

Excellent general-purpose portable unit for a wide range of cutting tasks. Also cuts grills and grating. Cuts 18 mm steel and stainless and 20 mm aluminium at 350 mm/min. Continuous setting for optimal cutting, pilot arc and 6 mm stand-off (or drag cutting up to 40 A) makes it easy to start cutting in the correct position. Gas pre- and post-flow, trigger lock function and warning lamps help to support the operator for the best possible operation.

Delivery includes
Torch PT 27 7.6 m, 3 m of mains cable with clamp, wear part kit, stand-off guide, regulator and gauge. Everything is factory-fitted.

	PCM 875
Mains supply, V/Hz	400/50
Fuse, slow, A	25
Mains cable, Ø mm^2	4x6
Max output at 60% duty cycle, A	60
Max output at 100% duty cycle, A	50
Setting range, A	10-60
Open circuit voltage, V	275
Air, l/min	150
Pressure, bar	4.5-5.2
Cutting capacity, Fe mm	14/22*
Cutting capacity, SS mm	14/22*
Cutting capacity, Al mm	20/22*
Weight, kg	40

* at 700 mm/min / at 250 mm/min

Ordering information

PCM 875, package 3x230 V	0558 000 688
PCM 875, package 3x400 V	0558 000 687
Torch reel and wear part kit holder	0558 000 420
Wheel kit	0558 000 789

Manual plasma cutting equipment
Plasma cutting packages

PowerCut 1500

A powerful and robust package for high production cutting rates. Fitted with the ergonomic PT 32EH torch with very long wear part life. Cuts up to 42 mm mild steel. For high-speed production cutting, we recommend approx. 18 mm. Trigger lock function for long cuts.

Delivery includes
7.6 m PT 32EH torch, 7.6 m return lead with clamp, mains cable, wear part kit and regulator with filter

	PowerCut 1500
Mains supply, V/Hz	400/50
Fuse, slow, A	25
Mains cable, Ø mm^2	4x6
Max output at 40% duty cycle, A	90
Setting range, A	20-90
Open circuit voltage, V	320
Air, l/min	170
Pressure, bar	5.2
Cutting capacity, Fe mm	42
Cutting capacity, SS mm	38
Cutting capacity, Al mm	38
Weight, kg	43

Ordering information

PowerCut 1500 CE, 3x400 V	0558 001 945
Optional accessories	
PT 32EH torch, 15 m	0558 003 549
Torch wrap kit	0558 003 059
Wheel kit	0558 003 060

ESP 150i

This heavy-duty, water-cooled plasma cutting and gouging system provides the perfect solution for production cutting and plasma gouging.
The ESP 150i can cut up to 50 mm manually, using either an Ar/H_2 mixture or compressed air.
Gas options for higher quality cuts, especially on aluminium and "stainless", resulting in lower total operating costs – the PT 26 torch cuts with nitrogen or argon-hydrogen mixtures; choice of carbon dioxide, air, nitrogen or oxygen for torch cooling.

Delivery includes
The ESP 150i package includes a 7.6 m PT 26 torch, torch wear part kit, 7.6 m work cable, dual cylinder rack, regulator, torch coolant and gas hose.

	ESP 150i
Mains supply, V/Hz	400/50
Fuse, slow, A	63
Mains cable, Ø mm^2	4x25
Max output at 100% duty cycle, A	140
Setting range, A	25-150
Open circuit voltage, V	370
Air, l/min	94/112
Pressure, bar	6/5.6
Cutting capacity, Fe mm	50
Cutting capacity, SS mm	38
Cutting capacity, Al mm	50
Weight, kg	308

Ordering information

ESP 150i CE package, 400 V	0558 003 472
Optional accessories	
Torch PT 26, 70°, 15 m	0558 002 209
Torch PT 26, mech, 7.6 m	0558 002 320
Torch PT 26, mech, 15 m	0558 002 321
Remote hand switch	0558 003 796
Leather protection for torch hose 7.6 m	0558 002 921
Leather protection for torch hose 15 m	0558 002 922

Manual plasma cutting equipment
Plasma cutting packages

LPH 35 handy cut

Designed for repair work and small workshops. Ideal when small, effective and easy-to-transport cutting unit is needed. 2 step control for easier setting - thinner or thicker materials. Built-in manometer makes air pressure control fast and easy.

Delivery includes
Torch PT 30 KK, return cable with clamp, stand-off guide.

	LPH 35
Mains supply, V/Hz	3x400/50
Fuse, slow, A	16
Mains cable, Ø mm^2	4x1.5
Max output at 35% duty cycle, A	35
Max output at 100% duty cycle, A	20
Setting range, A	20-35
Open circuit voltage, V	295
Air, l/min	130
Pressure, bar	3.5-7
Cutting capacity, Fe mm	8/12*
Cutting capacity, SS mm	6/12*
Cutting capacity, Al mm	6/12*
Weight, kg	52

* sever capacity

Ordering information

LPH 35, 3x400 V	0457 288 880
LPH 35, 3x230 V	0457 288 881

LPH 50 power cut

Designed for small workshops and industrial users. 7,6m long torch,wheels and handle makes it easy to reach the work at hand. Two step control for easier setting - thinner or thicker materials.
Cuts gratings without any additional accessory.

Delivery includes
PT 27 torch, return cable with clamp, stand-off guide..

	LPH 50
Mains supply, V/Hz	3x400/50
Fuse, slow, A	24
Mains cable, Ø mm^2	4x2.5
Max output at 60% duty cycle, A	50
Max output at 100% duty cycle, A	30
Setting range, A	30-50
Open circuit voltage, V	320
Air, l/min	118
Pressure, bar	4.5-7
Cutting capacity, Fe mm	12/15*
Cutting capacity, SS mm	8/15*
Cutting capacity, Al mm	8/15*
Weight, kg	89

* sever capacity

Ordering information

LPH 50, 3x400 V	0457 289 880
LPH 50, 3x 230/400 V	0457 289 881

Manual plasma cutting equipment
Plasma cutting packages

LPH 80 power cut

Designed for industrial users who require good performance at an attractive price. Easy to move thanks to a well-positioned handle and 4 wheels. 3 step control for easier setting - thinner medium or thicker material. Can cut gratings without any additional accessory.

Delivery includes
7.6 m PT 27 torch, return cable with clamp, stand-off guide, filter/regulator and wheels

	LPH 80
Mains supply, V/Hz	3x400/50
Fuse, slow, A	29
Mains cable, Ø mm^2	4x4
Max output at 60% duty cycle, A	80
Max output at 100% duty cycle, A	60
Setting range, A	40-80
Open circuit voltage, V	310
Air, l/min	118
Pressure, bar	4.5-7
Cutting capacity, Fe mm	25/35*
Cutting capacity, SS mm	20/35*
Cutting capacity, Al mm	20/35*
Weight, kg	131

* sever capacity

Ordering information

LPH 80, 3x400 V	0457 290 880

LPH 120 power cut

Designed for industrial users who require heavy-duty performance at an attractive price. Easy to move thanks to well-positioned handle and lifting eyelets. Efficient power source using a high-performance transformer. 3 Step control for easier setting - thin, medium or thick materials. Built-in manometer with air-filter pre-regulator makes air pressure control fast and easy. Cuts gratings without any additional accessory. Also superb for gouging applications.

Delivery includes
7.6 m PT 25 torch, return cable with clamp, stand-off guide, regulator/filter and wheels.

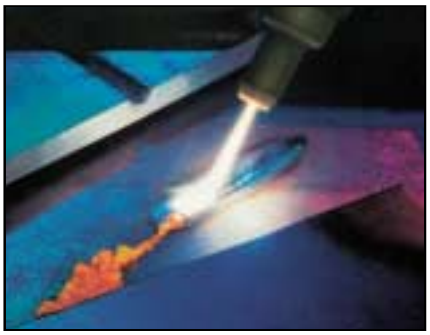
	LPH 120
Mains supply, V/Hz	3x400/50
Fuse, slow, A	45
Mains cable, Ø mm^2	4x6
Max output at 60% duty cycle, A	115
Max output at 100% duty cycle, A	90/60
Setting range, A	60-115
Open circuit voltage, V	310
Air, l/min	186/236
Pressure, bar	4.9-7
Cutting capacity, Fe mm	35/40*
Cutting capacity, SS mm	30/40*
Cutting capacity, Al mm	30/40*
Weight, kg	167

* sever capacity

Ordering information

LPH 120, 3x400 V	0457 291 880
LPH 120, 3x230/400 V	0457 291 881

Manual plasma cutting equipment
Plasma torches



Plasma gouging

Plasma gouging is an effective way of removing material, when preparing for the next layer to be welded or for removing faults. Generally speaking, the advantages of using plasma instead of carbon rods are 50% less noise, 50% fewer particles in the air, 50% less energy consumed, no carbon deposits in the material and the fact that gouging can be performed on all materials (even high-alloyed and aluminium). Only two parts need to be changed (no tools needed) to gouge instead of cut - the nozzle and an additional metal gouging heat shield.

Ordering information

Gouging nozzle, PT 25	0558 000 729
Gouging shield, PT 25	0558 000 737
Gouging nozzle, PT 27	0558 000 480
Gouging shield, PT 27	0558 000 481
Gouging nozzle, PT 32	0558 003 089
Gouging shield, PT 32	0558 003 090

Wear part kits

These wear part kits organize your wear parts for more efficient handling. Includes: electrodes, swirl baffle, nozzles, heat shield etc.

Ordering information

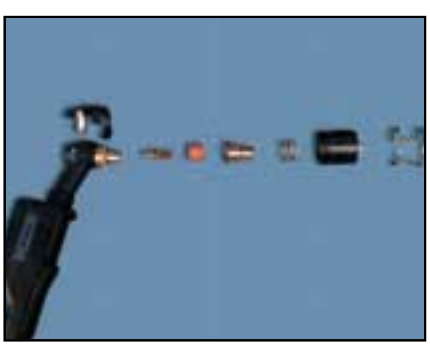
Wear parts kit, PT 25	0558 000 742
Wear parts kit, PT 26	0558 002 864
Wear parts kit, PT 27, 60 A	0558 000 488
Wear parts kit, PT 27, 70 A	0558 003 466
Wear parts kit, PT 27, 80 A	0558 000 489
Wear parts kit, PT 30 KK	0457 288 168
Wear parts kit, PT 31XL, 35 A	0558 000 505
Wear parts kit, PT 31XL, 50 A	0558 003 464
Wear parts kit, PT 32 EH, 90 A	0558 003 557

Torch guide kits

The deluxe guide kit can be used for straight line, circular (45 to 1050 mm) or bevel plate edge preparations. Position using pin on rivot mark, magnet or suction cup. The same kit can be used for torches PT 17, 23, 25, 27, 31XL, 32EH and 34. A basic kit for torches PT 23, 27, 31XL, 32EH and 34 with circular guide (45 to 750 mm) using pin on rivot mark is also available. Separate 2 wheel guide kits are available for PT 31XL and PT 27.

Ordering information

Deluxe cutting guide kit, PT 17, 23, 25, 27, 31XL, 32EH and 34	0558 003 258
Basic circle guide kit, PT 23, 27, 31XL, 32EH	0558 002 675
2-wheel guide PT 31XL	0558 000 947
2-wheel guide PT 27	0558 000 943



PT 30 KK

The PT 30 KK is a compact plasma torch where the pilot arc is generated without HF. Rated at 30 A at 60% and 50 A at 35% duty cycle. This torch is used on LPH 35.

Ordering information

PT 30 KK, 4 m torch	0457 288 001
Stand-off guide, metal wire	0457 288 150
Cap (heat shield)	0457 288 151
Spring	0457 288 152
Nozzle	0457 288 153
Insulating sleeve	0457 288 154
Electrode	0457 288 155
Torch body	0457 288 156
Safety clamp	0457 288 157
Multiple wrench	0457 288 158
Electrode wrench	0457 288 159
Stand-off guide, solid metal (optional)	0457 288 160

PT 31XL

The PT 31XL is the smallest 50 A plasma cutting torch on the market. Designed for superior operator comfort. Rated at 50 A in continuous operation. Specially-designed to make it easy to access places that are difficult to reach. For drag cutting with HF starts.
This torch is used on CaddyCut, HandyPlasma 50 and PCM 500i.

Ordering information

PT 31XL, 7.6 m torch	0558 000 690
Heat shield	0558 000 509
Nozzle, 35/40 A	0558 000 508
Swirl baffle	0558 000 506
Electrode	0558 000 507
Plunger	0558 000 511
Replaceable seat	0558 000 510
Torch body	0558 000 790
Nozzle, 50 A	0558 000 513
PT 31XL, 4.5 m	0558 001 466

Manual cutting equipment
Plasma torches

PT 27

The plasma cutting torch PT 27 is a rugged, compact, small-size, high-capacity torch. Made to be used with up to 80 A in continuous operation.
Produces clean, exceptionally fine cuts. Normally used with pilot arc.
PT 27 is used on LPH 50, LPH 80, HandyPlasma 70, PCM 875 and PCM 1000i.

Ordering information

PT 27, 7.6 m torch	0558 000 487
PT 27, 15 m torch	0558 000 490
Heat shield	0558 000 486
Nozzle, 50-70 A	0558 000 363
Nozzle, 80 A	0558 000 457
Swirl baffle	0558 000 365
Electrode	0558 000 364
Seat and valve assembly	0558 003 032
Torch body with O-ring & seat	0558 000 477
O-ring	0558 000 425
Gouging nozzle	0558 000 480
Gouging shield	0558 000 481

PT 32EH

This ergonomical, heavy-duty torch simplifies cutting. The two switches gives the operator the opportunity to choose the preferred position. Exceptionally long service life for wear parts increases productivity rates. This torch is used on PowerCut 1500.

Ordering information

PT 32EH, 7.6 m	0558 003 548
PT 32EH, 15 m	0558 003 549
Nozzle, 90 A	0558 002 837
Nozzle, 40 A	0558 002 908
Electrode	0558 001 969
Heat shield, long	0558 003 110
Valve pin	0558 001 959
Stand off guide	0558 002 393
Nozzle gouging	0558 003 089
Heat shield drag	0558 003 374
Heat shield gouging	0558 003 090
Torch head w O-ring	0558 003 694

PT 25

Plasma cutting torch PT 25 is designed for heavy-duty cutting and gouging operations. Can use compressed air or two different gases simultaneously; one as the cutting gas, the other as the cooling gas. Rated at 150 A in continuous operation. This torch is used on LPH 120 and ESP 100i.

Ordering information

PT 25, 7.6 m torch	0558 000 724
PT 25, 15 m torch	0558 000 725
Heat shield	0558 000 730
Nozzle, 100 (120) A	0558 000 727
Swirl baffle, ESP 100i	0558 000 735
Electrode, compr. air or N_2	0558 000 732
Electrode, Ar-H_2	0558 000 733
Electrode holder	0558 000 731
O-ring	0558 000 734
Gouging nozzle	0558 000 729
Gouging shield	0558 000 737
Swirl baffle, LPH 120	0558 001 457

PT 26

This versatile, easy-to-use, 300 Amp, water-cooled torch provides superior performance for a full range of manual and mechanised cutting. Available in a manual version and a mechanised version (IN-LINE). Used on ESP 150i.

Ordering information

PT 26, 70°, 7.6 m	0558 002 208
PT 26, 70°, 15 m	0558 002 209
PT 26, IN-LINE, 7.6 m	0558 002 320
PT 26, IN-LINE, 15 m	0558 002 321
Electrode, air N, N/H	0558 003 722
Electrode Ar/H (H35)	0558 003 723
Nozzle, 150 A, w O-ring	0558 003 717
Nozzle, gouging, w O-ring	0558 003 718
Heat shield	0558 003 714
Stand-off guide	0558 003 713
Remote hand switch	0558 003 796

Ancillary equipment
Remote-controls

MMA 1

The remote-control MMA 1 is equipped with one knob, giving the welder the opportunity steplessly to adjust the current. It comes with a 10-metre rubber cable with a 12-pole Burndy connector and a metal hook for easy handling when not welding.

Ordering information

Remote-control MMA 1	0349 501 024

PHA 1

Stepless current setting with potentiometer.
Mounted with cable, 10 or 25 m.
PHA 1 will be replaced by remote-control MMA 1 during the year 2003.

Ordering information

PHA 1 with 10 m of cable	0367 657 881
PHA 1 with 25 m of cable	0367 657 880

PHB 1

Handy and lightweight. One-hand-setting. A planetary gear for accurate and stepless setting from 1-10.
PHB 1 can also be replaced by remote-control MMA 1.

Ordering information

PHB 1 excl cable	0367 317 880

PHA 2

"Hot start" function. Two separate current levels can be set. The choice is made using a switch mounted on the electrode holder.

Ordering information

PHA 2 excl cable	0367 601 880

MMA 2

The remote-control MMA 2 is equipped with two knobs, giving the welder the opportunity to make both rough and fine current settings. It comes with a 10-metre rubber cable with a 12-pole Burndy connector and a metal hook for easy handling when not welding.

Ordering information

Remote-control MMA 2	0349 501 025

PHB 2

Stepless setting of welding current, both coarse and fine. The fine setting is graduated as a percentage of the coarse setting.
PHB 2 will be replaced by remote-control MMA 2 during the year 2003.

Ordering information

PHB 2 excl cable	0367 318 880

Ancillary equipment
Remote-controls

PHC 2

Robust unit. Coarse setting with 10 steps and fine setting within each coarse step for exact current adjustment.
PHC 2 can also be replaced by remote-control MMA 2.

Ordering information

PHC 2 excl cable	0367 620 880

MIG 2

The remote-control MIG 2 is equipped with a 23-pole connector and is suitable for MIG/MAG machines. With this remote, it is possible to set both current and voltage. It comes with a five-metre rubber cable and a metal hook for easy handling when not welding.

Ordering information

Remote-control MIG 2	0349 501 028

PAB 6

Remote-control of welding current (wire feed) and voltage. Storage of three welding parameter sets. Easy selection using a switch. Two of the parameter sets can also be selected using the switch which can be fitted on the welding gun.

Ordering information

PAB 6 excl cable, 12-pole	0367 308 880
Switch for welding gun	0157 422 881

PHA 5

Can be used for pulsing. The two current levels and the pulse times can be set steplessly by potentiometers.
Remote-control of current setting is also possible.

Ordering information

PHA 5 excl cable, 12-pole	0367 970 880

FS 002

Foot pedal for starting and stopping as well as for stepless current setting. Max. current can also be set using a potentiometer. Used mostly for TIG welding.

Ordering information

FS 002 with 5 m of cable	0349 090 886
FS 002 with 5 m of cable for LUD 320/450	0349 090 887

PAE 2 and Aristo control

Sets both current and voltage. Planet gears produce an accurate setting. Two versions available: box or bar. The Aristo control synergic is intended for setting wire-feed motion in accordance with the synergic curve as pre-set in the micro-computer. The pre-set welding voltage is automatically obtained at a certain wire-feed setting. The Aristo control five programs recalls the first five welding programs stored by the user in the memory space of the Aristo control unit.

Ordering information

PAE 2 bar with 5 m of cable, 12-pole	0466 515 882
PAE 2 box with 5 m of cable, 12-pole	0467 277 880
Aristo control synergic bar with 5 m of cable, 23-pole	0466 515 880
Aristo control synergic box with 5 m of cable, 23-pole	0466 801 880
Aristo control 5-program bar with 5 m of cable, 23 pole	0466 515 881
Aristo control 5-program box with 5 m of cable, 23-pole	0466 801 881

Ancillary equipment
Remote-controls

Recommendation table - combinations of remote-controls and power sources plus feeders.
For functional descriptions, see page 176.

Description	PAB 6	MIG 2	PAE 2	Aristo control	MMA 1/ PHA 1/ PHB 1	PHA 5	MMA 2/ PHB 2	PHC 2	FS 002	FS 003	FS 002 + Tigaid	PHA 5 + Tigaid
DTE/DTG					•		•	•	•	-/•		
DTF					•	•	•	•	•			
LHF					•		•	•			•	•
*AristoArc					•		•	•				
LHN					•		•	•			•	•
*AristoTig					•		•	•	•			
LTN					•		•	•	•			
LTR					•	•	•	•	•			
LUD				•								
Tigaid					•	•	•	•	•			
*AristoFeed	•		•	•								
MED 304	•		•									
MEK 20	•	•	•									
MEH 25	•		•									
MEH 44 B	•		•									
MEK 25		•		•								
MEK 4, 4 S, 4 SP		•		•								
MEK 4 C, 20 C, 44 C		•		•								
MLC 30, 302	•		•									
MLC 30 C		•		•								

*Together with the remote-control you need a 12 pole adapter except when you are using the Aristo 23 remote-control together with the feeder unit AristoFeed. Then you need a 23 pole adapter.

Adapter 12 pole	0458 757 880
Adapter 23 pole	0458 757 881

Connection cables for remote-controls:

Connection cables between remote-control and power source, MMA, TIG:

Cable, 12 poles, 5 m	0367 144 881
Cable, 12 poles, 10 m	0367 144 882
Cable, 12 poles, 15 m	0367 144 887
Cable, 12 poles, 25 m	0367 144 883
Extension cable, 25 m	0367 662 880

Connection cables between remote-control and feeder, MIG/MAG:

Cable, 12 poles, 5 m	0367 144 884
Cable, 12 poles, 10 m	0367 144 885
Cable, 12 poles, 16 m	0367 144 886
Extension cable, 23 poles, 8 m	0467 197 880
Extension cable, 23 poles, 16 m	0467 197 881
Extension cable, 23 poles, 25 m	0467 197 882
Extension cable, 23 poles, 35 m	0467 197 883

Ancillary equipment
Cooling units

OCE-2 H

The OCE-2 H water-cooling unit is an efficient, compactly-dimensioned cooling unit designed for use together with water-cooled equipment for arc welding by hand or in automatic plants. The water tank and pump are made of stainless corrosion-resistant material.

	OCE-2 H
Mains supply, V/Hz	230/50-60
Cooling water, l/min	6.0
Max water pressure, bar	2.8
External dimensions, LxWxH, mm	320x270x360
Weight, kg	15

Ordering information

OCE-2 H	0414 191 881
Flow guard to OCE-2 H	0414 231 880

OCF 2 L/D/M/A

The OCF 2 cooling unit comes in four versions, designed for use with Power Tig DC and Aristotig 200/255 (L+A), Aristotig 200/255 AC/DC (D), Prowelder 160/250 and semi-automated power sources (A).
The water-cooling unit is easily mounted under the power source, thereby providing flexibility when adapting to customer requirements.The OCF 2 A can also be used free-standing, upright.
The maximum working height is 7 m.

	2 L	2 D	2 M	2 A
Mains supply, V/Hz	400/50-60	400/50-60	230/50-60	230/50-60
Cooling water, l/min	4	4	4	4
Max water pressure, bar	3	3	3	3
External dimensions, LxWxH, mm	515x285x210	510x295x210	515x285x210	515x285x210
Weight, kg	22	25	19.5	19.5

Ordering information

OCF 2 L	0457 216 880
OCF 2 D	0457 216 881
OCF 2 M	0457 216 882
OCF 2 A	0457 216 883

General technical data

Designation	Processes				Specifications									
	MMA	TIG	MIG/MAG	Plasma cut	Current	Phase no:s	Active power kW (at 100 % rated A)	Apparent power kVA (at 100 % rated A)	Idling effect W	Power factor cos φ (at 100 %)	Efficiency % (at 100 %)	Choke taps	Enclosure class	Dimensions LxWxH mm
LHP 200	x	(x)			DC	3	3.7	4.8	400	0.75	65		IP23	520x600x650
LHP 250	x	(x)			DC	3	5.3	7.0	500	0.76	68		IP23	520x600x650
LHP 300	x	(x)			DC	3	6.5	9.3	600	0.68	65		IP23	520x600x650
LHP 400	x	(x)			DC	3	10.2	15.5	800	0.66	66		IP23	520x600x650
LHF 400	x	(x)			DC	3	10.3	3.8	400	0.95	71		IP23	1300x750x700
LHF 630	x*	(x)			DC	3	17.9	26.3	600	0.90	75	2	IP23	1300x750x700
LHF 800	x*	(x)			DC	3	26.8	34.8	650	0.80	79	2	IP23	1300x750x700
LHQ 150	x	(x)			DC	1	2.8	3.9	72	0.99	87		IP23	375x145x280
LHN 140	x	(x)			DC	1	2.4	3.4	25	0.67	77		IP23	472x142x256
LHN 200	x	(x)			DC	3	4.8	6.1	30	0.55	82		IP23	472x142x256
LHN 250	x	(x)			DC	3	4.6	7.8	30	0.59	83		IP23	472x142x256
AristoArc 400	x				DC	3	16	24.6	50	0.65	85		IP23	625x294x492
LTV 150	x	x			DC	1	1.6	2.2	72	0.9	87		IP23	375x145x280
KHM 190 HS	x	(x)			DC	engine							IP23	910x530x580
KHM 190 YS	x	(x)			DC	engine							IP23	890x540x580
KHM 300 YS	x		x		DC	engine							IP23	1350x780x890
KHM 350 YS	x		x		DC	engine							IP23	1550x930x900
KHM 500 PS	x		x		DC	engine							IP23	1950x872x1120
KHM 600 PS	x				DC	engine							IP23	2150x972x1120
KHM 2x400 PS	x				DC	engine							IP23	2260x1000x1300 (1450)
DTF 180	x	x			AC/DC	1	2.2	2.2	25	0.99	75		IP23	430x138x320
DTE 200	x	x			AC/DC	3	2.8	3.0	75	0.94	75		IP23	510x310x555
DTE 255	x	x			AC/DC	3	4.3	4.6	50	0.92	75		IP23	510x310x555
DTG 405	x	x			AC/DC	3	6.6	7.5	450	0.80	72		IP23	910x642x835
LTR/LTN 160	x	x			DC	1	1.4	2.1	30	0.69	75		IP23	515x285x415
LTR/LTN 200	x	x			DC	3	1.8	3.4	50	0.54	76		IP23	515x285x415
LTR/LTN 255	x	x			DC	3	4.5	7.5	45	0.56	79		IP23	515x285x415
AristoTig 400	x	x			DC	3	16	24.6	60	0.65	85		IP23	625x394x496

General technical data

Designation	Processes				Specifications																	
	MMA	TIG	MIG/MAG	Plasma cut	Current	Phase no:s	Active power kW (at 100 % rated A)	Apparent power kVA (at 100 % rated A)	Idling effect W	Power factor cos φ (at 100 %)	Efficiency % (at 100 %)	Choke taps	Pulsed arc	Feed rolls, no and Ø	Ext. remote possibility	Ext. pulse possibility	Ext. program possibility	Sep. carriage possibility	Count.balance possibility	Extension possibility	Enclosure class	Dimensions LxWxH mm
LKA 150			x		DC	1	0.9	1.1	0	0.92	70	1		1/30							IP21	674x374x480
LKA 180-1/180-3			x		DC	1/3	1.3	1.4	20	0.96	70	1		1/30							IP21	777x477x598
LKA 240			x		DC	3	2.2	2.5	30	0.95	76	1		1/30							IP21	777x477x598
LKB 160			x		DC	1	2.8	3.4		0.81	56	1		1/30							IP23	770x520x620
LKB 220/220S			x		DC	3	3.4	3.5		0.96	76	2		1/30							IP23	770x520x620
LKB 265			x		DC	3	4.3	4.5	50	0.97	73	2		1/30							IP23	770x520x620
LKB 320			x		DC	3	5.8	6.2	50	0.95	81	2		2/30							IP23	770x520x620
LKB 400W			x		DC	3	7.9	8.4		0.94	77	3		2/30							IP23	800x640x835
LAX 320			x		DC	3	6.2	6.5	50	0.96	77	2		-				•	•	•	IP23	770x520x620
LAX 380			x		DC	3	10.4	10.8	130	0.97	75	2		-				•	•	•	IP23	800x640x835
LAX 380 W			x		DC	3	10.4	10.8	130	0.97	75	2		-				•	•	•	IP23	800x640x835
LAY 500			x		DC	3	15	16.2	25	0.92	83	3		-					•	•	IP23	1080x515x920
LAW 420			x		DC	3	13.4	15.4	600/800	0.87	75	2	(X)*	-	•		•		•	•	IP23	800x640x835
LAW 520			x		DC	3	20.7	23	760/960	0.90	78	2	(X)*	-	•		•		•	•	IP23	800x640x835
LUD 320	x	x	x		DC	3	8.9	10.1	140	0.88	83		x	-	•		•		•	•	IP23	910x642x835
LUD 450	x	x	x		DC	3	14.8	16.3	140	0.91	82		x	-	•		•		•	•	IP23	910x642x835
AristoMig 400	(x)		x		DC	3	16	24.6	60	0.65	85		(x)	-	•			•	•	•	IP23	625x294x492
CaddyCut				x	DC	1	4.9	5.8	60	0.85	85										IP23	375x145x280
HandyPlasma 50				x	DC	3	7.5	8.8	130	0.85	85										IP22	525x180x410
HandyPlasma 70				x	DC	3	11.2	13	130	0.85	85										IP22	525x180x410
PCM 875				x	DC	3	8.2	9.0	70	0.92	90							•			IP23	516x275x465
PowerCut 1500				x	DC	3	10.62	16.62	51	0.81	88										IP23	826x318x419
ESP 150i				x	DC	3	29.5	50.85	0.4	0.58	72										IP21	1016x552x800
LPH 35				x	DC	3	2.7	5.6	100	0.47	72										IP23	610x255x515
LPH 50				x	DC	3	4.6	9.6	150	0.48	58										IP23	680x325x715
LPH 80				x	DC	3	8.9	14.6	160	0.61	81										IP23	760x390x845
LPH 120				x	DC	3	15.4	22.7	380	0.68	82										IP23	760x390x845

(x) Scratch or HF ald
* Air carbon arc
** Extension cables recommended at LIFTARC™ mode
(x)* with MEK 4 SP

Head protection

Eye-Tech 5-13

The Eye-Tech 5-13 offers unlimited personal setting options. It combines the traditional optimised balance of the Eye-Tech family with the latest LCD technology. It offers a range of shade levels between DIN 5 and 13, as well as a grinding mode (DIN 4). The Eye-Tech 5-13 is also suitable for oxy-gas welding.

Ordering information

Eye-Tech 5-13 welding helmet	0700 000 890
Eye-Tech 5-13 + Air 140	0700 002 907
Eye-Tech 5-13 + Air 175 AL 5h	0700 002 904
Eye-Tech 5-13 + Air 175 AL 8h	0700 002 905
Eye-Tech 5-13 + Air CA	0700 002 906
Cartridge, incl satellite	0700 000 035

Eye-Tech 9-13

The ESAB Eye-Tech welding helmet is based on excellence in ergonomic design and the clever use of modern advanced electronics. Comfort and safety means opportunities for increased productivity and quality. CE approved. Main features:
• No on/off operation - it is always on • Shade levels chosen DIN 9-13 by step-free setting • Shade levels adjustable from outside during welding • No battery change - solar cells used • 4 comfort adjustments in headgear compared with the usual 3

Ordering information

Eye-Tech 9-13, weight 480 g	0700 000 880
Eye-Tech 9-13, with Air CA compressed air unit	0700 002 891
Eye-Tech 9-13 with Air 175 AL filter unit, 5H	0700 002 892
Eye-Tech 9-13 with Air 175 AL filter unit, 8H	0700 002 893
Eye-Tech 9-13 with Air 140 filter unit	0700 002 897
Eye-Tech 9-13 cartridge	0700 000 001

Eye-Tech 10-12 Select

The Eye-Tech 1012 Select has a switch for easy changing between shade areas 10-11 and 11-12 to suit your individual requirements. CE approved.
• Solar cells — no battery changes • Waterproof, shock-resistant • Lightweight • No on/off operation — always on • Cover shade DIN 10-12

Ordering information

Eye-Tech 10-12 Select, 480 g	0700 000 884
Eye-Tech 10-12 Select with Air CA, compressed air unit	0700 002 894
Eye-Tech 10-12 Select with Air 175 AL, filter unit, 5H	0700 002 895
Eye-Tech 10-12 Select with Air 175 AL, filter unit, 8H	0700 002 896
Eye-Tech 10-12 Select with Air 140, filter unit	0700 002 898
Eye-Tech 10-12 Select cartridge	0700 000 022

Eye-Tech Mono

Eye-Tech Mono 10/11 has a switch which enables the customer to change between 10 and 11 fixed shade levels.
Eye-Tech Mono 10/11 is suitable for the majority of welding jobs in which the material and welding method do not vary too much, in view of the fixed DIN rating. Eye-Tech Mono has the same fine range of adjustments as other Eye-Tech helmets. CE-approved.
All helmets and cartridges are fully interchangeable with previous Mono 10 and Mono 11 items.

Ordering information

Eye-Tech Mono 10/11, weight 480 g	0700 000 888
Eye-Tech Mono 10/11 cartridge	0700 000 028

Head protection

Albatross 60x110

Weight 370 g. This is a lightweight, comfortable, safe helmet. The Albatross has an eye-shade that can be folded up and an inner eyeglass, both of which provide effective facial protection. A range of accessories allows you to customise the helmet to suit your requirements. Also available with a protective helmet. Choose either compressed air (Air CA) or a filter unit (Air 140/175 AL) for fresh air and a better working environment.

Ordering information

Welding helmet Albatross 60x110	0000 595 200
Welding helmet Albatross 60x110 with Air CA, compressed air unit	0349 501 880
Welding helmet Albatross 60x110 with Air 140, filter unit	0349 501 881

Albatross 90x110

Weight 380 g. ESAB's Albatross 90x110 welding helmet has a larger eyeshade and is designed for use together with bifocal spectacles. Otherwise, similar to the Albatross 60 x 110. An eyeshade made of plastic and a chin cover are also included.

Ordering information

Welding helmet Albatross 90x110	0349 502 204
Welding helmet Albatross 90x110 with Air CA, compressed air unit	0349 501 882
Welding helmet Albatross 90x110 with Air 140, filter unit	0349 501 883

Albatross 2000, 60x110

Every type of Albatross helmet is tested and approved according to CE standards. These helmets are very light (360 g) and comfortable and are of the "flip-up" type with glass measuring 60 x 110 mm. The Albatross is available as a protective helmet and/or fresh-air unit, as well as in a version with a specially designed glass welding visor which means that the welder only needs to lower his/her eyes to obtain clear visibility before the arc is struck and can then continue to look through the glass during welding.
Chin cover included.

Ordering information

Albatross 2000 welding helmet	0000 595 600
Albatross 2000 welding helmet with Air CA, compressed air unit	0349 501 884
Albatross 2000 welding helmet with Air 140, filter unit	0349 501 885

Albatross 3000

Weight 360 g. The Albatross 3000, with its large panoramic window behind the visor, provides an excellent overview of the workplace when you are not welding. It is also available as a protective helmet and with a compressed-air unit or particle filter as an option.
Chin cover included.

Ordering information

Albatross 3000, 60x110	0349 502 200
Albatross 3000 with Air CA, compressed air unit	0349 501 886
Albatross 3000 with Air 140, filter unit	0349 501 887
Albatross 3000, 50x105	0349 502 208

Albatross Toughweld 60x110

Welding helmet made of glassfibre-reinforced polyester with an adjustable head strap. The welding glass and protective glass is fitted on a liftable frame. CE approved.

Ordering information

Albatross Toughweld 60x110	0700 000 896
Head strap	0000 500 519

Albatross with protective helmet G2000c

Flexible solution that provides improved safety. The Albatross with a protective helmet is available in four alternative models and a compressed-air unit or particle filter can also be connected. All combinations are ready to use.

Delivery includes

chin cover as standard

Ordering information

Albatross protective helmet 60x110, with hearing protectors	0349 501 888
Albatross protective helmet 60x110, without hearing protectors	0349 501 889
Albatross protective helmet 60x110 with Air CA compressed air unit and hearing protectors	0349 501 890
Albatross protective helmet 60x110 with Air CA compressed air unit, without hearing protectors	0349 501 891
Albatross protective helmet 60x110 with Air 140 filter unit and hearing protectors	0349 501 892
Albatross protective helmet 60x110 with Air 140 filter unit, without hearing protectors	0349 501 893
Albatross protective helmet 90x110, with hearing protectors	0349 501 894
Albatross protective helmet 90x110, without hearing protectors	0349 501 895
Albatross protective helmet 90x110 with Air CA compressed air unit and hearing protectors	0349 501 896
Albatross protective helmet 90x110 with Air CA compressed air unit, without hearing protectors	0349 501 897
Albatross protective helmet 90x110 with Air 140 filter unit and hearing protectors	0349 501 898
Albatross protective helmet 90x110 with Air 140 filter unit, without hearing protectors	0349 501 899
Albatross protective helmet 2000, with hearing protectors	0349 501 900
Albatross protective helmet 2000, without hearing protectors	0349 501 901
Albatross protective helmet 2000 with Air CA compressed air unit and hearing protectors	0349 501 902
Albatross protective helmet 2000 with Air CA compressed air unit, without hearing protectors	0349 501 903
Albatross protective helmet 2000 with Air 140 filter unit and hearing protectors	0349 501 904
Albatross protective helmet 2000 with Air 140 filter unit, without hearing protectors	0349 501 905
Albatross protective helmet 3000, with hearing protectors	0349 501 906
Albatross protective helmet 3000, without hearing protectors	0349 501 907
Albatross protective helmet 3000 with Air CA compressed air unit and hearing protectors	0349 501 908
Albatross protective helmet 3000 with Air CA compressed air unit, without hearing protectors	0349 501 909
Albatross protective helmet 3000 with Air 140 filter unit and hearing protectors	0349 501 910
Albatross protective helmet 3000 with Air 140 filter unit, without hearing protectors	0349 501 911

Head protection

Protective helmet G22c

Tried and tested, popular helmet. Suitable for Euromask. Models in different colours. Hearing protectors as an option.

Ordering information

Protective helmet, yellow	0468 051 880
Protective helmet, blue	0000 595 222
Protective helmet, white	0000 595 220
Protective helmet, orange	0000 595 224
Hearing protectors, yellow H9P3E	0367 420 002

Protective helmet G2000c

Protective helmet with a low weight — just 300 g. The ventilation holes are situated at the top to provide the best possible ventilation throughout the helmet. The helmet has attachments for the straightforward fitting of hearing protection, a phone or a visor. CE-approved.

Ordering information

Protective helmet, yellow	0468 051 881
Protective helmet, orange	0468 051 882
Hearing protectors, yellow H31P3	0367 420 003
Hearing protectors, orange	0367 420 004

Euromask

Euromask is a helmet for welding and cutting that provides effective protection from UV and IR radiation. The visor must always be down when welding. The large field of vision provides effective protection for the eyes when grinding and so on. Euromask can be combined with various IR and UV protectors. Also available with a protective helmet.

Ordering information

Euromask DIN 11	0000 500 500
Euromask DIN 10	0000 500 501
Euromask for protective helmet G22c, DIN 11	0349 501 912
Euromask for protective helmet G22c, DIN 10	0349 501 913
Chin cover	0000 500 522
Head fastener	0000 500 519
Flip-up complete	0000 500 511
Visor DIN 5	0000 500 525
Visor DIN 8	0000 500 514
Visor DIN 10	0000 500 515
UV protector clear, for grinding	0000 500 526
UV protector DIN 1.7	0000 500 512
UV protector DIN 3	0000 500 513
UV protector DIN 5	0000 500 524

Air 140, filter unit

A filter unit with a highly efficient P3 particle filter as standard. The air flow of 140 l/min provides a comfortable and pleasant working environment. The Air 140 is attached to a convenient belt worn around the waist. The entire unit weighs only one kg, which makes it easy to carry. The cadmium-free battery is rechargeable and has a full 8-hour operating period. The charging period is 16 hours after an initial charge of 20 hours. The battery has a service life of two years or around 500 charges. The Air 140 can easily be fitted either with Eye-Tech or Albatross helmets.

Delivery includes

A motor unit, flow meter, battery, battery charger, P3 filter and prefilter fitted (+ 5 prefilters as spares), waist belt and comfort pad.

Ordering information

ESAB Air 140 complete - EN 146	0700 002 026
Exchange unit - EN 146	0700 002 033
Air hose Eye-Tech	0468 127 011
Fitting kit with Eye-Tech	0700 002 030
Air hose Albatross	0700 002 032
Prefilter 5 units	0700 002 023
P3 filter - TH3PSL	0700 002 024
P2 filter - TH2PSL	0700 002 018
Combination filter carbon+P3	0700 002 041
Battery small (8 h)	0700 002 013
Battery charger small	0700 002 020

Air 175 AL, filter unit

A breathing mask with particle filter, a P3 filter with pre-filter and a rechargeable battery are included. Constant air flow of 175 l/min. Double alarm functions provide warnings of clogged filter and low battery voltage. Choose between a small battery (5 h with this unit) or a large battery (8 h with this unit). Very light and safe to carry. The Air 175 AL can easily be fitted either with Eye-Tech or Albatross helmets. Protection factor 50.

Delivery includes

A motor unit with alarms, battery, battery charger, Eye-Tech mounting kit, hose, P3 filter and prefilter fitted, waist belt and comfort pad.

Ordering information

Air 175 AL complete, 5 h - EN 12941	0700 002 884
Air 175 AL complete, 8 h - EN 12941	0700 002 887
ESAB Air 175 AL filter unit - EN 12941	0700 002 025
Exchange unit - EN 12941	0700 002 016
Air hose Eye-Tech	0468 127 011
Fitting kit with Eye-Tech	0700 002 030
Prefilter 5 pcs	0700 002 023
P3 filter - TH3PSL	0700 002 024
P2 filter - TH2PSL	0700 002 018
Combination filter carbon+P3	0700 002 041
Battery small (5 h)	0700 002 013
Battery large (8 h)	0700 002 014
Battery charger small	0700 002 020
Battery charger large	0700 002 031

Head protection

Air CA, compressed air unit

A breathing mask with a compressed-air supply, suitable for environments requiring a high protection factor. The mask requires a supply of breathable compressed air when in operation. Air flow 140 to 300 litres/min (the selected flow is kept constant). If the pressure drops, an alarm is activated. The Air CA can of course be fitted either with Eye-Tech or Albatross helmets.
Protection factor 200.

Ordering information

Air CA, compressed air unit	0349 501 072

Moon

Moon is a simple and robust low cost helmet, available with 50x105, 51x108, 75x98 and 90x110 mm lenses.
50x105 and 75x98 mm versions are sold in bulk, excluding welding lenses.
51x108 and 90x110 mm versions are sold ready to use, including welding lenses.

Ordering information

Ready to use, including lenses:	
Moon helmet, 51x108 mm	0700 000 893
Moon helmet, 90x110 mm	0700 000 894
Bulk, excluding lenses:	
Moon helmet, 50x105 mm	0590 028 215
Moon helmet, 75x98 mm	0000 915 006

Leather mask

This leather mask can be used when there is not enough space for welding with an ordinary welding helmet.
Glass size 90 x 110 mm.

Ordering information

Leather mask	0000 593 221

Hearing protection

ESAB's hearing protectors are available in three models from Peltor; neck support, head support and head support with radio. Cannot be combined with protective helmet. All these hearing protectors provide effective protection at different decibel levels.

Ordering information

Hearing protector with neck support	0700 001 880
Hearing protector with head support	0000 595 199
Hearing protector with radio	0000 595 372

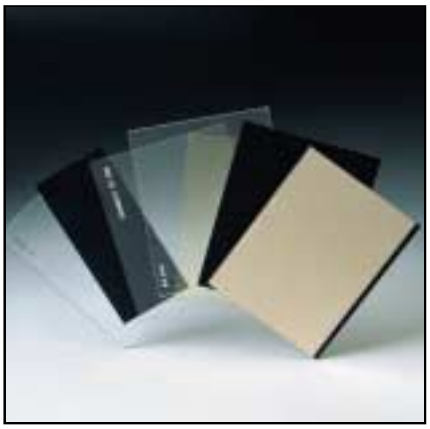
Welding glasses

All ESAB welding and safety are of the best possible quality. All rectangular welding glasses are sold in nice ESAB boxes of 25 pcs, suitable both for distributors and end-users.

Ordering information

60 x 110 mm	
Welding glass DIN 8	0160 292 000
Welding glass DIN 9	0160 292 001
Welding glass DIN 10	0160 292 002
Welding glass DIN 11	0160 292 003
Welding glass DIN 12	0160 292 004
Welding glass DIN 13	0160 292 005
90 x 110 mm, 80 g	
Welding glass DIN 9	0760 031 631
Welding glass DIN 10	0760 031 632
Welding glass DIN 11	0760 031 633
Welding glass DIN 12	0760 031 634
Welding glass DIN 13	0760 031 635
90 x 110 mm, 40 g	
Welding glass DIN 10 plastic	0160 307 006
Welding glass DIN 11 plastic	0160 307 007
Welding glass DIN 12 plastic	0160 307 008
Welding glass DIN 13 plastic	0160 307 009
51 x 108 mm	
Welding glass DIN 9	0760 031 601
Welding glass DIN 10	0760 031 602
Welding glass DIN 11	0760 031 603
Welding glass DIN 12	0760 031 604
Welding glass DIN 13	0760 031 605
50 x 105 mm	
Welding glass DIN 9	0590 028 216
Welding glass DIN 10	0590 028 217
Welding glass DIN 11	0590 028 218
Welding glass DIN 12	0590 028 219
Welding glass DIN 13	0590 028 220
75 x 98 mm	
Welding glass DIN 9	0000 915 059
Welding glass DIN 10	0000 904 305
Welding glass DIN 11	0000 915 060
Welding glass DIN 12	0000 915 061
Welding glass DIN 13	0000 915 062
Welding glass Mirror DIN 11	0000 904 316
Welding glass Mirror DIN 12	0000 904 317
Welding glass Mirror DIN 13	0000 915 064
85 x 110 mm	
Welding glass DIN 9	0760 008 621
Welding glass DIN 10	0760 008 622
Welding glass DIN 11	0760 008 623
Welding glass DIN 12	0760 008 624
Welding glass DIN 13	0760 008 625
100 x 120 mm	
Welding glass DIN 9	0760 008 641
Welding glass DIN 10	0760 008 642
Welding glass DIN 11	0760 008 643
Welding glass DIN 12	0760 008 644
Welding glass DIN 13	0760 008 645
50 mm diameter - for protection goggles	
Welding glass DIN 2	0000 665 602
Welding glass DIN 3	0000 665 603
Welding glass DIN 4	0000 665 604
Welding glass DIN 5	0000 665 605
Welding glass DIN 6	0000 665 606
Welding glass DIN 7	0000 665 607
Welding glass DIN 8	0000 665 608
Welding glass DIN 9	0000 665 609
Welding glass DIN 10	0000 665 610
Welding glass DIN 11	0000 665 611
Welding glass DIN 12	0000 665 612
Welding glass DIN 13	0000 665 613

Welding screens



Cover glasses

Ordering information

Safety glass 60 x 110 mm	
Safety glass, clear	0291 102 701
Safety glass, plastic LT	0160 307 001
Safety glass 90 x 110 mm	
Safety glass, clear	0760 031 040
Safety glass, plastic LT	0160 307 004
Safety glass, inner DIN 2 for Albatross	0160 307 005
Safety glass 51 x 108 mm	
Safety glass, clear	0000 130 226
Safety glass, plastic LT	0160 307 002
Safety glass 50 x 105 mm	
Safety glass, clear	0590 028 221
Safety glass, plastic LT	0590 028 222
Safety glass 75 x 98 mm	
Safety glass, clear	0000 915 058
Safety glass, plastic LT	0000 915 097
Safety glass 85 x 110 mm	
Safety glass, clear	0760 031 030
Safety glass, plastic LT	0760 031 230
Safety glass 100 x 120 mm	
Safety glass, clear	0760 031 050
Safety glass, plastic LT	0760 031 250
50 mm diameter - for protection goggles	
Clear glass	0000 665 600
Clear glass, shatterproof	0000 665 601
Clear glass, plastic. For Neptune.	0000 665 618

Welding screen H

A safe welding screen that protects the whole hand. Made of plastic. Replaceable welding glass, size 60 x 110 mm. Weight 330 g.

Ordering information

Welding screen H with clear and coloured glass	0160 294 880

Welding screen E

A safe welding screen with replaceable welding glass, 60 x 110.

Ordering information

Welding screen E	0332 109 880

Welding screens

Auto-shade 10/11

ESAB's Auto-shade electronic welding glass with a fixed darkness value of 10 and, in bright surroundings, a darkness value of 3. Size 60 x 110 or 51 x 108 mm. Supplied with an extra glass with a darkness value of 2 that can be put inside the welding glass so that the darkness value increases from 10 to 11.

Ordering information

Auto-shade DIN 10/11 cartridge, 60 x 110 mm	0700 000 029
Safety glass DIN 2, Auto-shade, 60 x 110 mm	0700 000 031
Auto-shade DIN 10/11 cartridge, 51 x 108 mm	0700 000 032
Safety glass DIN 2, Auto-shade, 51 x 108 mm	0700 000 033

Magnifying lenses

The 51 x 108 mm (2"x4.25") magnifying lenses fit either alone in an Albatross helmet or in an Eye-Tech adapter frame.

Ordering information

Diopter +1.0	0367 951 001
Diopter +1.5	0367 951 002
Diopter +2.0	0367 951 003
Diopter +2.5	0367 951 004
Adapter frame for Eye-Tech	0700 000 030

General eye-protection
Eye-wear

Neptune

Protective goggles, shade 5, for gas welding, brazing and gas cutting. Neptune is ventilated and has a flip-front mechanism. CE approved according to EN 175/EN 166-F.

Ordering information

Neptune	0701 548 800

Uranus

Protective goggles with optimum coverage for the eye. Suitable for gas welding, brazing and gas cutting. CE approved according to EN 175.

Ordering information

Uranus	0700 012 002

Pluto

Protective goggles for grinding and chipping. They have a soft PVC frame with integrated vents. The lens is clear and is made of polycarbonate. CE approved according to EN 166 B349.

Ordering information

Pluto	0701 414 790

Jupiter clear and Jupiter anti-fog

Spectacles for drilling, chipping and metalworking. They are available either with a clear lens or with an anti-fog lens, that provides a clear sight even when the humidity is high. Common features are the positive ratchet adjustment and the slide-adjust temples. CE approved according to EN 166-F.

Ordering information

Jupiter clear	0700 012 003
Jupiter anti-fog	0700 012 004

Venus clear

Spectacles for drilling, chipping and metalworking. The wraparound shape gives maximum coverage to the eye. These spectacles have adjustable temple arms and abrasion-resistant lenses. CE approved according to EN 166-F.

Ordering information

Venus clear	0700 012 005

Venus shade 5

Spectacles with shade 5 for drilling, chipping and metalworking. The wraparound shape gives maximum coverage to the eye. These spectacles have adjustable temple arms and abrasion-resistant lenses. CE approved according to EN 166-F.

Ordering information

Venus shade 5	0700 012 006

General eye-protection

Eye-wear

Saturn clear

Protective spectacles for drilling, chipping and metalworking. The coverage for the eye is optimised and the spectacles are equipped with abrasion-resistant lenses and adjustable temple arms. CE approved according to EN 166/EN 169-F.

Ordering information

Saturn clear	0701 362 181

Saturn shade 5

Protective spectacles in shade 5 for welding inspection, profiling and brazing. The coverage for the eye is optimised and the spectacles are equipped with abrasion-resistant lenses and adjustable temple arms. CE approved according to EN 166/ EN 169-F.

Ordering information

Saturn shade 5	0701 362 182

Mars

Visitor's spectacles ideal for occasional use. They have a clear polycarbonate lens and ventilated side-arms. CE approved according to EN 166-F.

Ordering information

Mars	0701 414 786

Tellus Sodium

Protective spectacles for drilling, chipping and metalworking. They are designed and styled to provide maximum coverage for the eye. Tellus Sodium has an anti-mist lens that is especially suitable for low ambient light conditions and it gives the user unobscured peripheral vision. CE approved according to EN 166-F.

Ordering information

Tellus Sodium	0701 415 935

Mercury blue

Stylish spectacles for drilling, chipping and metalworking. The special abrasion-resistant blue lenses are suitable for high ambient light conditions. The wraparound shape gives good coverage to the eye. CE approved according to EN 166-F.

Ordering information

Mercury blue	0701 415 936

Mercury indoor/ outdoor

Stylish spectacles for drilling, chipping and metalworking. The special abrasion-resistant lenses are suitable for high ambient light conditions, but still they are possible to wear at lower ambient light conditions thanks to the clear glass. The wraparound shape gives good coverage to the eye. CE approved according to EN 166-F.

Ordering information

Mercury indoor/outdoor	0701 415 943

Electrode holders and clamps

Electrode holder ESAB 200, 400 and 500

ESAB's CE-approved screw-type electrode holder offers many advantages including: • Excellent current transfer between electrode and holder • Two hole positions at 45° and 90° for welding in different positions • Electrode cable held in place by two Allen screws • All electrode holders are fully insulated to provide maximum safety
The ESAB 200 and 400 with remote control offers: • Universal cable connection with three control cables • The potentiometer is 1 kOhm

Ordering information

ESAB 200, 200 A	0333 249 001
ESAB 400, 400 A	0369 849 880
ESAB 500, 500 A	0369 850 880
ESAB 200 with remote control	0700 006 200
ESAB 400 with remote control	0700 006 400

Electrode holder Optimus

Closed head. The electrode can be fitted either horizontally or vertically. The electrode holder is made of glassfibre-reinforced plastic. All Optimus electrode holders are fully insulated and approved to EN-60974-11.

Ordering information

Optimus 300, 300 A (60%)	0760 001 300
Optimus 400, 400 A (60%)	0760 001 400
Optimus 600, 600 A (60%)	0760 001 600

Electrode holder Samson

Open head. Samson is like the "classic" electrode tongs with an open design. The electrode holder is made of glassfibre-reinforced plastic. All Samson electrode holders are fully insulated and approved to EN-60974-11.

Ordering information

Samson 300, 300 A (60%)	0760 002 300
Samson 400, 400 A (60%)	0760 002 400
Samson 500, 500 A (60%)	0760 002 500

Eco holder Prima

Prima is a low-cost electrode holder, 200 and 300 A.

Ordering information

Prima 200, 200 A 35%	0700 006 006
Prima 300, 300 A 35%	0700 006 007
Prima 400, 400 A 35%	0700 006 014

Electrode holders and clamps

Eco holder Handy

Handy is a low-cost electrode holder, 200 A.

Ordering information

Handy 200, 200 A 35%	0700 006 003
Handy 300, 300 A 35%	0700 006 016
Handy 400, 400 A 35%	0700 006 013

Eco holder Confort

Confort is a low-cost electrode holder, 200 and 300A.

Ordering information

Confort 200, 200 A 35%	0700 006 004
Confort 300, 300 A 35%	0700 006 005
Confort 400, 400 A 35%	0700 006 015

Earth lead clamp EG 600

The EG 600 is an extremely robust earth lead clamp made of brass. The welding cable is attached using an hexagonal socket screw. The largest gap is 50 mm. Max 600 amperes.

Ordering information

EG 600	0160 288 001

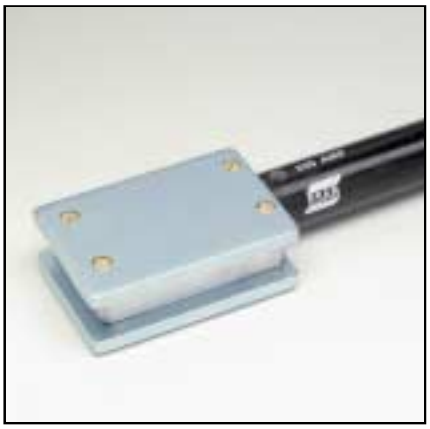
MK 150, MP 200 and MP 300

The MK 150 is a small, easy-to-use assembly clamp. It is fully galvanised and can be used as an earth lead clamp for smaller size welding cables. The largest gap is 50 mm. Max 150 amperes.
The MP 200 and MP 300 are robust earth lead clamps with strong springs for good contact. The largest gap is 50 mm for the MP 200 and 55 mm for the MP 300. Max 200 amperes for the MP 200 and max 350 amperes for the MP 300.

Ordering information

MK 150	0682 103 801
MP 200	0367 558 880
MP 300	0682 103 803

Electrode holders and clamps



Magnetic clamps

Magnetic earth clamps with strong gripping power that permits attachment to any ferrous object.
Large contact area.
Less overheating thanks to fewer junctions.

Ordering information

Magnetic earth clamp 400 A	0000 500 415
Magnetic earth clamp 600 A	0000 500 416

Eco clamps

Low cost return clamps, 250 and 400A.

Ordering information

Eco clamp 250, 250 A 35%	0700 006 001
Eco clamp 400, 400 A 35%	0700 006 002

Rotatable earth couplings

A good connection to the workpiece is needed to obtain the optimal manual or automatic welding. For rotating workpieces, an earth connection with a rotatable earth coupling is the safest choice. A range of current couplings is available.

To attach the coupling to the workpiece, special clamps are available, please see Earth clamps for rotating workpieces..

Ordering information

NKK 400 - max 400 A, 1.65 kg	0000 595 133
NKK 600 - max 600 A, 2.2 kg	0700 004 007
NKK 800 - max 800 A, 2.7 kg	0700 004 001
NKK 1200 - max 1200 A, 4.0 kg	0700 004 002
NKK 2000 - max 2000 A, 7.3 kg	0700 004 003

Earth clamps for rotating workpieces

To enable attachment to a rotating workpiece, the following accessories are recommended.
The K2 clamp head with a clamping span of 43 mm (Tommy screw M16). If you have a stationary workpiece, the GA 800 handle connection (cable cross-section 70-120 mm) can be used instead of the rotating coupling.
The PZ3 pole clamp is recommended when using a current load above 1,200 A.
These earth clamps can be used together with the NKK rotating couplings or separately.

Ordering information

K2 - clamp head for NKK 800 or 1200	0700 004 004
GA 800 - handle connection for K2	0700 004 005
PZ3 - pole clamp for NKK 2000	0700 004 006

OKC cable connection

A new generation of CE-approved, fully insulated cable connections with neoprene rubber. Bayonet-type connection which locks firmly to provide safe and effective contact. The cable is fixed with a socket and two Allen screws.

Ordering information

OKC 25 male 10-25 mm^2	0160 360 880
OKC 25 female 10-25 mm^2	0160 361 880
OKC 50 male 35-50 mm^2	0160 360 881
OKC 50 female 35-50 mm^2	0160 361 881
OKC 95 male 70-95 mm^2	0160 360 882
OKC 95 female 70-95 mm^2	0160 361 882
OKC 95 male 120 mm^2	0160 360 883
OKC 95 female 120 mm^2	0160 361 883

ZBK cable connection

Fully insulated with neoprene rubber. Sturdy and robust with low contact resistance. The cable is fixed with a socket and an Allen screw. The two halves of the connection in a ZBK connection are identical and can therefore be used in any order.

Ordering information

ZBK 25-35 mm^2	0265 902 482
ZBK 50-70 mm^2	0265 902 481
ZBK 95-120 mm^2	0265 902 480

OKC machine contacts

Female contacts.

Ordering information

OKC machine contact -25 mm^2	0160 362 880
OKC machine contact 50-95 mm^2	0160 362 881
OKC machine contact 120 mm^2	0160 362 882

OKC angle connection

Two types for 50-95 mm^2 male and female cable connections.

Ordering information

Type 1, 1 male, 2 female	0365 557 001
Type 2, 2 male, 1 female	0365 558 001

Cable and connections

Welding cable

ESAB's welding cable is of high quality and has top-class characteristics. This cable is approved in accordance with international standards. It comes in two versions, standard welding cable and highly-flexible welding cable. This cable is extremely resistant to light, chemicals and mechanical damage. The following current load is recommended for the individual sectional areas and intermittence factors.

Maximum permissible current (A) for sectional cable area mm^2	Intermittence factor 100%	85%	60%	35%
10	100	100	101	106
16	135	136	139	150
25	180	182	190	213
35	225	229	243	279
50	285	293	316	371
70	355	367	403	482
95	430	448	498	606
120	500	524	587	721

Ordering information

Welding cable, <HAR> H01N2-D

Sectional area 16 mm^2 external diameter 10 mm, sold per 50 m coils	0190 429 801
Sectional area 25 mm^2 external diameter 13 mm, sold per 50 m coils	0262 613 601
Sectional area 35 mm^2 external diameter 14 mm, sold per 50 m coils	0262 613 602
Sectional area 50 mm^2 external diameter 17 mm, sold per 50 m coils	0262 613 606
Sectional area 70 mm^2 external diameter 18 mm, sold per 50 m coils	0262 613 603
Sectional area 95 mm^2 external diameter 21 mm, sold per 50 m coils	0262 613 604
Sectional area 120 mm^2 external diameter 24 mm, sold per 25 m coils	0262 613 605

Highly-flexible welding cable (PVC)

Sectional area 16 mm^2, sold per 50 m coils	0000 916 498
Sectional area 25 mm^2, sold per 50 m coils	0000 916 499
Sectional area 35 mm^2, sold per 50 m coils	0000 916 501
Sectional area 50 mm^2, sold per 50 m coils	0000 916 502
Sectional area 70 mm^2, sold per 50 m coils	0000 916 503
Sectional area 95 mm^2, sold per 50 m coils	0000 916 500

Chipping hammer SH2 and SH3

The SH2 chipping hammer is made of special high-quality steel, user-friendly handle. The SH3 is a small hammer with a chisel and tip. Steel handle with a plastic grip.

Ordering information

Chipping hammer SH2	0000 663 000
Chipping hammer SH3	0683 200 001

Pneumatic chipping hammer HCB

This chipping hammer produces virtually no vibration in the hand as a result of a built-in balance system which absorbs recoil and counteracts shaking. High impact speed.

Technical specification	
Working pressure	6-7 bar
Air consumption	approx. 290 l/min
Impact frequency	125 strokes/sec
Weight	2 kg

Three different chisels are available for the HCB. They all have a tungsten-carbide tip, a long service life and high precision.
Narrow chisel: 15 mm wide for normal de-slagging and cleaning.
Wide chisel: 35 mm wide for removing spatter and deburring after gas cutting.

Ordering information

Chipping hammer HCB	0193 305 001
Chisel 15 x 100 mm	0156 627 001
Chisel 35 x 100 mm	0156 627 002
Chisel 15 x 200 mm	0156 627 006
Chisel 15 x 300 mm	0156 627 007
Sound-damping chisel	0156 627 004
Chisel extension	0156 627 005

Wire brushes

Lightweight, easy-to-use steel brushes made of wood. Two, three or four rows of bristles.

Ordering information

Two-row mild steel brush	0760 024 100
Three-row mild steel brush	0760 024 200
Four-row mild steel brush	0760 024 300
Two-row stainless steel brush	0760 024 500
Three-row stainless steel brush	0760 024 600
Four-row stainless steel brush	0760 024 700

Tools and gas regulators

Fix pliers

Applications:
- Simple removal of burnt welding wire
- Fast, effective cutting of welding wire
- Fast, effective removal of spatter from the gas nozzle and the contact nozzle
- Removal and attachment of contact nozzles, intermediate nozzles and gas nozzles

Ordering information

Fix 1 Ø 12-15 mm	0760 022 100
Fix 2 Ø 15-18 mm	0760 022 200

Universal TopTool™

Pliers specially designed for MIG/MAG welding. Applications:
- Removal of spatter from the nozzle
- Removal of tips
- Cutting of welding wire
- Removal of nozzles
- Drawing of welding wire

Ordering information

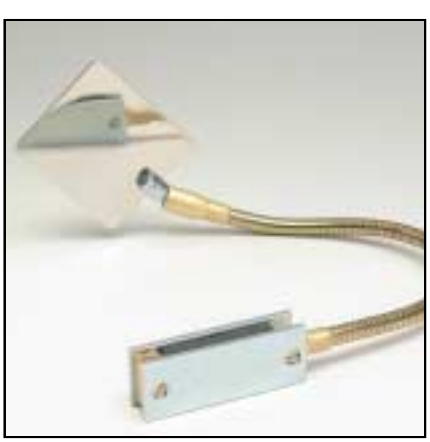
Universal TopTool™	0000 134 716
Universal TopTool™ Mini	0000 139 054

Gas save valve and flow meter

The gas-save valve is attached to the gas hose between the tube and the machine. When the gas flow is opened by pushing the button on the welding gun, the initial burst of gas is reduced.
Use the plastic flow meter for argon or CO_2 to check the flow from the welding gun. The measurement pipe should be held against the gas nozzle on the welding gun. Measurement range 5-25 litres/minute.

Ordering information

Plastic flow meter	0155 716 880
Gas save valve, incl. flow meter	0349 502 250



Inspection mirrors

Inspection mirror, for inspecting welds.
The mirror frame is made of stainless steel.

Ordering information

Inspection mirror 500 mm, with magnetic base	0000 595 319

Tools and gas regulators

Jetcontrol PLUS HT 100

The Jetcontrol PLUS HT 100 has been designed for manual connection to gas bottles. No tools are required. The opportunity rapidly to connect or disconnect the regulator without a spanner/key increases productivity at temporary workplaces. The gasket takes the form of an O-ring which fits securely in a specially-designed groove.
The Jetcontrol PLUS HT is available for different gases and flow capacities and has been adapted to comply with the requirements specified in the EN 585, DIN 8549 and ISO 2503 standards.

Ordering information

Jetcontrol PLUS HT 100, Argon	G213 005 304

Jetcontrol PLUS HT 300

The Jetcontrol PLUS HT 300 has been designed for manual connection to gas bottles. No tools are required. The opportunity rapidly to connect or disconnect the regulator without a spanner/key increases productivity at temporary workplaces. The gasket takes the form of an O-ring which fits securely in a specially-designed groove.
The Jetcontrol PLUS HT is available for different gases and flow capacities and has been adapted to comply with the requirements specified in the EN 585, DIN 8549 and ISO 2503 standards.

Ordering information

Jetcontrol PLUS HT 300, Argon	G213 007 300

Fixicontrol HT

The Fixicontrol HT is designed for use during gas welding when the consumption of gas ranges from a small to a medium out-take. It has a hand-tight connection for easy attachment to the gas cylinder. This is especially suitable for smaller sets of equipment that are frequently moved or carried in cars and so on.
The Fixicontrol HT is available for both oxygen and acetylene and comes with a gas hose coupling nipple to fit a gas hose with a diameter of 5.0 mm, a coupling nut and three spare washers.

Ordering information

Fixicontrol HT, oxygen	G203 000 342
Fixicontrol HT, acetylene	G203 001 323

Fixicontrol HT Argon/CO_2

The Fixicontrol HT Argon/CO_2 is designed for use during welding when the consumption of gas ranges from 0-22 l/min. It has a hand-tight connection for easy attachment to the gas cylinder. The connection outlet is R 3/8".
The Fixicontrol HT Argon/CO_2 comes with a gas hose coupling nipple to fit a gas hose with a diameter of 5.0 mm, a coupling nut and three spare O-rings.

Ordering information

Fixicontrol HT, Argon	G203 007 335
Fixicontrol HT, CO_2	G203 007 336

Tools and gas regulators

Welding gauge KL-1 laser

To measure the a-dimension of fillet welds. Two measurement areas: max. 7 mm and max. 15 mm. Delivered in a nice leather pocket.

Ordering information

Welding gauge KL-1 laser	0000 139 931

Welding gauge KL-2 laser

To measure the a-dimension of fillet welds and to measure the leg (small side of a right-angled triangle) and weld reinforcement height. Delivered in a nice leather pocket.

Ordering information

Welding gauge KL-2 laser	0000 139 932

MIG/MAG gun holder

MIG/MAG gun holder is simple and practical. It is equipped with a magnetic foot for stability. Suitable for most MIG/MAG welding guns.

Ordering information

MIG/MAG gun holder	0760 022 300

TIG torch holder

TIG torch holder is simple and practical. It is equipped with a magnetic foot for stability. Suitable for most TIG torches.

Ordering information

TIG torch holder	0760 022 400

Pipe-Tech

Root gas cover for reduced gas consumption
Using the ESAB Pipe-Tech, the pipe welder can reduce gas consumption and costs. ESAB offers various products for different pipe dimensions. By ordering separate rubber and aluminium discs, the user can then build his own Pipe-Tech solution, based on individual needs.
Pipe-Tech is mounted directly on the gas hose with quick connections.
Features
- Flexible tool for many applications.
- Standard range 25-275 mm pipes
- Can easily be adapted to match individual needs
- All tools delivered with quick connection

Pipe-Tech 25 is designed differently from the other products in the range. It is only designed for 25 mm tubes.

Description	Pipe diameter (mm)		Pipe-Tech compl	Plastic disc		Aluminium disc	
	Outer	Inner	Part number	Ø (mm)	Part number	Ø (mm)	Part number
Pipe-Tech 25	25	22.6	0700 015 880	23.5	0700 015 001	19	0700 015 002
Pipe-Tech 38/43	38-43	35-37	0700 015 881	41	0700 015 003	27	0700 015 004
Pipe-Tech 48/49	48-49	43-46	0700 015 882	50	0700 015 005	27	0700 015 004
Pipe-Tech 50/54	50-54	47-50	0700 015 883	55	0700 015 006	35	0700 015 007
Pipe-Tech 57/61	57-61	54-57	0700 015 884	62	0700 015 008	35	0700 015 007
Pipe-Tech 63/65	63-65	58-61	0700 015 885	66	0700 015 009	45	0700 015 010
Pipe-Tech 68/70	68-70	63-66	0700 015 886	71	0700 015 011	45	0700 015 010
Pipe-Tech 76/80	76-80	70-73	0700 015 887	78	0700 015 012	55	0700 015 013
Pipe-Tech 83/85	83-85	77-81	0700 015 888	86	0700 015 014	55	0700 015 013
PIpe-Tech 88/90	88-90	82-85	0700 015 889	90	0700 015 015	55	0700 015 013
Pipe-Tech 101/104	101-104	95-100	0700 015 890	107	0700 015 016	75	0700 015 017
Pipe-Tech 114/116	114-116	105-110	0700 015 891	120	0700 015 018	85	0700 015 019
Pipe-Tech 128/133	128-133	118-123	0700 015 892	133	0700 015 020	85	0700 015 019
Pipe-Tech 135/140	135-140	130-135	0700 015 893	145	0700 015 021	100	0700 015 022
Pipe-Tech 153/156	153-156	145-150	0700 015 894	160	0700 015 023	120	0700 015 024
Pipe-Tech 168/170	168-170	160-165	0700 015 895	175	0700 015 025	120	0700 015 024
Pipe-Tech 173/178	173-178	167-173	0700 015 896	185	0700 015 026	145	0700 015 027
Pipe-Tech 199/204	199-204	193-198	0700 015 897	210	0700 015 028	160	0700 015 029
Pipe-Tech 218/223	218-223	210-215	0700 015 898	230	0700 015 030	160	0700 015 029
Pipe Tech 270/275	270-275	264-275	0700 015 899	285	0700 015 031	200	0700 015 032

Welding wear

Welding aprons and jackets

Welding apron for shoulder jacket
A 24-inch apron worn in combination with the shoulder jacket
Apron
A protective apron with a belt system to distribute the weight and effectively relieve the load.
Jacket
A jacket with a reinforced front for proper protection against welding spatter.
Shoulder jacket
A shoulder jacket for freedom of movement. Reinforced front with adjustable tapes. The shoulder jacket must be worn together with the apron for shoulder jacket.
All products CE-approved to EN 470-1.

Ordering information

Welding apron for shoulder jacket	0700 010 006
Welding apron with belt system	0700 010 007
Jacket, size L	0700 010 002
Jacket, size XL	0700 010 003
Shoulder jacket, size L	0700 010 004
Shoulder jacket, size XL	0700 010 005

Welding gloves

TIG Eco: A low cost TIG-welding glove with a 15cm split leather chrome cuff. This is the only non branded glove in the range.
TIG Soft: A TIG-welding glove in thin pigskin with a 13 cm leather cuff and a reinforced thumb for a good grip. The absence of an index finger seam increases flexibility.
TIG SuperSoft: Exclusive TIG-welding glove in goatskin with seams in threefold KEVLAR. The straight thumb makes it easy to grip different objects. The leather cuff is 13 cm long. The index finger has no seam for increased flexibility.
Heavy duty Basic: Basic welding glove in selected cowhide with a lining that is both comfortable and protective. The thumb is angled for high comfort.
ESAB heavy duty R glove: Welding glove in hard-wearing and heat-resistant cowhide. The threefold KEVLAR seam is protected. The thumb is reinforced.
Heavy duty EXL: Welding glove in oxhide. The cuff is made from thick, flexible cowhide. The back of the glove is padded with COMFOflex, and the seam is sewn with fourfold KEVLAR. The thumb is reinforced.
Worker: A hard-wearing work glove made of selected cowhide with a cotton lining for comfort. The rubber-reinforced cuff provides extra protection, and the thumb is angled for high comfort.
All welding gloves approved to EN 12477. Working glove approved to EN 388.

Ordering information

TIG Eco	0700 005 013
TIG Soft	0700 005 005
TIG SuperSoft	0700 005 006
Heavy duty Basic	0700 005 007
Heavy duty R	0700 005 008
Heavy duty EXL.	0700 005 009
Worker	0700 005 011

Hand protection

Heavy duty ALU: Welding glove with two layers of cowhide capable of withstanding extreme heat. Suitable for tubular wire welding. The facing of aluminium-coated PFR rayon reflects 95% of the thermal radiation. The glove is padded with COMFOflex and is sewn with fourfold KEVLAR. The thumb is angled for high comfort.
Hand guard: A heat-refelcting hand guard with aluminium-coated ryon. The leatherunder-surface provides extra protection and high resistance to heat. The steel-stapled seam is sewn with fivefold KEVLAR to make the glove extra hard-wearing.

Ordering information

Heavy duty ALU.	0700 005 010
Hand guard	0700 010 009

Welding footwear

Shoe
A comfortable leather shoe with a steel toe-cap that is easy to put on and take off. The sole is very resilient and withstands oil and heat.
Leather gaiters
For effective protection from welding spatter.
Ankle boots
A comfortable welding ankle boot made of strong leather. The tongue is covered by a piece of leather to provide protection from heat and welding spatter. Steel toe-cap. The sole is very resilient and withstands oil and heat.
Boot
A protective and comfortable welding boot made of strong leather. The steel toe-cap provides the feet with effective protection from heavy objects. The resilient sole withstands oil and heat.
All ESAB footwear is approved to EN 345.

Ordering information

Shoe, size 40	0700 010 010
Shoe, size 41	0700 010 011
Shoe, size 42	0700 010 012
Shoe, size 43	0700 010 013
Shoe, size 44	0700 010 014
Shoe, size 45	0700 010 015
Leather gaiters	0700 010 008
Ankle boot, size 40	0700 010 016
Ankle boot, size 41	0700 010 017
Ankle boot, size 42	0700 010 018
Ankle boot, size 43	0700 010 019
Ankle boot, size 44	0700 010 020
Ankle boot, size 45	0700 010 021
Boot, size 40	0700 010 022
Boot, size 41	0700 010 023
Boot, size 42	0700 010 024
Boot, size 43	0700 010 025
Boot, size 44	0700 010 026
Boot, size 45	0700 010 027

Chemical sundries

Clean Weld welding spray

A welding spray that is based exclusively on vegetable oil and grease. These substances are totally harmless and totally biodegradable. CO_2 is used as the propellant. Clean Weld effectively prevents spatter from burning. The spray has good adhesion, withstands high temperatures and has a good cooling effect.

Ordering information

Clean Weld welding spray, 200 ml	0366 959 001

Clean Weld welding paste

A welding paste which prevents spatter from sticking as it forms a heat-resistant coat. The hot gas nozzle on the welding torch should be dipped about 20-25 mm into the paste for effective results. The paste should be applied to tools and fixtures with a paintbrush. To prevent the torch nozzle becoming blocked, the gun should be hung up with the nozzle facing downwards after use. This paste is odourless and contains no solvents, silicone or abrasive agents.
Delivered in a metal can.
0.5 kg

Ordering information

Clean Weld welding paste, net weight 0.5 kg	0365 560 001

High-Tech weld-protect airspray

Combines uncompromising efficiency with active environmental and health protection. The High-Tech spray effectively prevents spatter from sticking on the work piece or in the welding torch. The High-Tech weld-protect airspray is absolutely non-combustible, no toxic classification, uses no harmfull gases and is safe for the skin. The propellant is pure air, it is solvent free and gives no indirect air pollution or contribution to the greenhouse effect. It is absolutely silicon-free and water-soluble. The design of the Aluminium can and valve makes it possible to spray in all positions.
High-Tech contains no dangerous or harmful substances according to 88/379/EEC.

Ordering information

High-Tech weld-protect airspray 400 ml	0760 025 500

High-Tech weld-protect liquid

Same spray liquid as above but in 10- or 25-litre plastic cans.
Easily applied using our robust and ergonomic spray bottle.

Ordering information

High-Tech 10 l	0760 025 010
High-Tech 25 l	0760 025 025
Weld-protect spray bottle 400 ml	0000 138 408

Chemical sundries

Protective cream

ESAB's UV skin-protection cream protects the parts of the body that are exposed to UV rays during welding or welding inspections. This cream is also water resistant.
Sun-shade factor 19.
100 ml.

Ordering information

Protective cream	0349 501 033

Mask spray

Mask spray, keeps glass mist-free.

Ordering information

Mask spray	0000 595 312

Weld marker

The ESAB weld marker marks all metal, wood, plastic, glass and hard surfaces.
Low chloride colour makes it safe for marking stainless steel and nuclear applications.
Do not roll tube.
Dries in five minutes.

Ordering information

ESAB Weld marker, white	0700 013 003

Stainclean pickling gel

Stainclean pickling gel can be used for cleaning welded stainless steel.
Before use, follow the instructions on the bottle, as well as the user manuals.

Ordering information

Stainclean pickling gel, 1 kg	2129 001 000
Stainclean pickling gel, 2 kg	2129 002 000
Stainclean pickling gel, 10 kg	2129 010 000

Chemical sundries

Temperature indicator

These temperature sticks mark the surface of the piece to be heated with the appropriate temperature. The mark has a dull, chalky appearance. When the desired temperature is reached, the mark quickly dissolves into a glossy, transparent liquid. This glossy appearance is retained after cooling.
Ignore any colour change. Melting is the only sign that the correct temperature has been reached.

Ordering information

Temperature indicator 52°C, 125°F	0000 916 120
Temperature indicator 73°C, 163°F	0000 916 121
Temperature indicator 132°C, 269°F	0000 916 128
Temperature indicator 152°C, 306°F	0000 916 124
Temperature indicator 166°C, 331°F	0000 916 131
Temperature indicator 253°C, 488°F	0000 916 127
Temperature indicator 371°C, 700°F	0000 916 130

Arc air gouging

OK Carbon™

Arc air gouging with carbon electrodes and compressed air is the fastest and cheapest process for cutting/gouging material in conjunction with repairs and the like. A carbon electrode is used to melt the material and, at the same time, a powerful jet of air blows away the molten material. The compressed air also cools the carbon electrode. Carbon electrodes can be used for the arc air gouging of unalloyed and low-alloy steel, stainless steel, cast iron and other metals.

A complete set of arc air gouging equipment consists of an arc air gouger, the Flair 600 or Flair 1600, alternatively the K4000, together with a special hose with an integrated current cable with a 350° rotating connection, mono cable.

OK Carbon™, ESAB's focused but comprehensive range of arc air carbons enables the user to gouge in a wide range of applications, within foundries, steel industry, shipbuilding, steel construction and in maintenance workshops.

The OK Carbon™ range gives the user the highest possible efficiency by removal of

Item number	Dimensions		Current range, A	Metal removal g/cm	Groove		Cutting width, mm	Boring Ø, mm	Weight, g
	mm	inch			Width, mm	Depth, mm			
DC pointed, 305 mm									
0700 007 002	4x305	5/32x12	150-200	10	6-8	3-4	7	8	7
0700 007 003	5x305	3/16x12	200-250	12	7-9	3-5	8	8	10
0700 007 004	6.35x305	1/4x12	300-350	18	9-11	4-6	9	10	16
0700 007 006	8x305	5/16x12	400-450	33	11-13	6-9	11	12	26
0700 007 007	10x305	3/8x12	500-550	49	13-15	8-12	13	14	41
DC pointed, 510 mm/455 mm									
0700 007 104	6.35x510	1/4x20	300-350	18	9-11	4-6	9	10	27
0700 007 106	8x510	5/16x20	400-450	33	11-13	6-9	11	12	44
0700 007 107	10x510	3/8x20	500-550	49	13-15	8-12	13	14	68
0700 007 108	13x455	1/2x17	700-900	89	16-18	9-13	14	15	103
DC jointed, 455 mm									
0700 007 402	10x455	5/32x9/16x12	500-550	49	13-15	8-12	13	14	41
0700 007 404	13x455	5/32x3/4x12	700-900	89	16-18	9-13	14	15	102
0700 007 405	16x455	3/16x9/16x12	1000-1200	105	20-22	10-14	17	19	155
0700 007 406	19x455	3/16x3/4x12	1200-1400	148	24-26	17-21	21	23	219
DC rectangular, 305 mm									
0114 800 112	4x15x305	3/8x17	200-250	29	6-8	8-10	7	8	31
0114 800 113	4x20x305	1/2x17	250-300	32	6-8	12-14	7	8	41
0700 007 502	5x15x305	5/8x17	350-400	45	7-9	8-10	8	8	39
0700 007 503	5x20x305	3/4x17	450-500	67	7-9	12-14	8	8	52
AC pointed, 305 mm									
0700 007 601	4x305	5/32x12	100-200	6	6-8	3-4	6	7	6
0700 007 602	5x305	3/16x12	150-250	10	7-9	3-5	7	8	10
0700 007 603	6.35x305	1/4x12	200-300	15	9-11	4-6	9	10	15
0700 007 604	8x305	5/16x12	300-400	24	10-12	5-7	10	11	25
0700 007 704	10x305	3/8x12	350-450	32	12-14	6-8	12	13	38

Arc air gouging

Flair 600

Arc air torch for carbon up to Ø 10 mm (3/8") and 4 x 15 mm (5/32 x 9/16") rectangular carbon.
Flair 600 is in conformity with 73/23/EEC.

Delivery includes
2.5 m (8') mono cable

Ordering information

Flair 600 complete with mono cable	0468 253 880
Mono cable 2R - 600 A	0468 253 015
Flair 600 without mono cable	0468 253 016

Flair 1600

Arc air torch for carbon up to Ø 19 mm (3/4") and 5 x 20 mm (3/16 x 3/4") rectangular carbon.
Flair 1600 is in conformity with 73/23/EEC.

Delivery includes
2.5 m (8') mono cable

Ordering information

Flair 1600 complete with mono cable	0468 253 881
Mono cable 5R -1600 A	0468 253 035
Flair 1600 without mono cable	0468 253 036

K4000

Arc air torch with 2.14 m (7') cable
The torch accepts both round and flat electrodes, ranging in size from 4 mm (5/32") to 13 mm (1/2") round electrodes and 10 mm (3/8") and 16 mm (5/8") flat electrodes.
The K4000 is rated at 1,000 Amps, it uses compressed air between 5.6 and 7.0 kg/cm^2 (80 and 100 psi) and between 0.85 and 0.99 m^3/min (30 and 35 cfm). The torch and cable weigh 2.4 kg (5.4 lbs).

Ordering information

K4000 arc air torch, compl. with mono cable	0760 018 100

Welding curtains

Welding curtains

Three colour types are available and all three can be supplied as standard curtains, as well as strip curtains. The self-extinguishing material provides good protection from dangerous welding radiation.
The curtains are equipped with press-studs for easy, strong fastening and they are folded at the top and the bottom to withstand harsh use.
The strip curtain enables people and material to pass through it even when it is closed. All approved according to prEN 1598, which allows a maximum risk factor of 1. A 50-metre roll of material to enable you to make your own strip curtains is also available. It comes in a fourth lighter red colour.

The mounting rings comes in a package of seven pieces, which is enough to mount any of the curtains (standard as well as strip). Choose between metal rings or PVC rings with a snap lock.

Ordering information

Welding curtain, dark red, 1.8x1.4 m, risk factor: <0.55	0700 008 004
Welding curtain, green transparent, 1.8x1.4 m, risk factor: <0.1	0700 008 005
Welding curtain, dark green none transparent, 1.8x1.4 m, risk factor: <0.1	0700 008 006
Mounting rings PVC	0700 008 007
Mounting rings metal	0700 008 008
Welding strip curtain, dark red, 1.8x1.3 m, risk factor: <0.55	0700 008 001
Welding strip curtain, green transparent, 1.8x1.3 m, risk factor: <0.1	0700 008 002
Welding strip curtain, dark green none transparent, 1.8x1.3 m, risk factor: <0.1	0700 008 003
Mobile curtain, without wheel, dark red, 2x1.4 m, risk factor: <0.55	0000 595 313
Mobile curtain, without wheel, dark red, 2x2 m, risk factor: <0.55	0000 595 315
Welding strip curtain, roll of 50 meters, red, 300x2 mm, risk factor: 3	0700 008 013

Anti-flame mat

With long-term heat resistance of 1,100°C, this anti-flame mat provides good protection for the surroundings while welding. The risk of material near the working place catching fire is reduced considerably. This product is available in dimensions of 900 x 1,500 mm.

Ordering information

Anti-flame mat, 900x1500 mm	0700 014 003

Fume extraction

Carryvac

The Carryvac P150/P150 AST are two small, lightweight, portable extraction units designed to be carried to the working area. Connected to a welding torch or to an extraction nozzle, the Carryvac units extract the fume directly at source. The polluted air is filtered and captured in an hygienically-packed filter.
The Carryvac is equipped with a filter indicator which shows when the filter must be replaced. It is ideal for maintenance welding, low and medium-duty cycle. The filter capacity is approximately 200 kg of solid wire or twelve 15 kg spools.
The Carryvac P150 AST is equipped with an automatic start/stop function which increases the service life of each filter and of the unit itself. The Carryvac P150 can be mounted on ESAB's standard welding machines using the supplied mounting kit.
Please also see ESAB Centrovac extraction torch range.

Delivery includes

Delivered complete with a 3 m extraction hose.

	Carryvac
Maximum airflow, m^3/h	165
Maximum vacuum, Pa	2170
Filtration efficiency, %	99.7
Filter area, m^2	5.3
Mains supply, V/Hz	230/50
Phase, ~	1
Motor power, kW	1
External dimensions LxWxH, mm	860x226x425
Weight, kg	14
Noise level (ISO 6081), dB (A)	75

Ordering information

Carryvac P150	0468 269 882
Carryvac P150 AST	0468 269 880
Motor 220 V	0468 455 021
Hose Ø 45 mm, 1.6 m	0154 352 015
Hose Ø 45 mm, 3.5 m	0154 352 008
Hose Ø 45 mm, 5 m	0154 352 006
Hose Ø 45 mm, 15 m	0154 352 002
Filter cassette - separation rate 99.7%, active filter area 5.3 m^2	0468 455 001
Pre filter	0468 455 002
Mounting set	0468 455 003
Suction nozzle TM-80, round Ø 80 mm	0700 100 080
Suction nozzle TM-200, 200 mm wide	0700 100 200
Suction nozzle PM-300, 300 mm wide	0700 100 300

TIG accessories

G-Tech

The ESAB G-Tech is a tungsten-electrode grinder with a unique enclosed wet-grinding system.
- Automatic collection of the polluted grinding dust
- No separate dust extraction system required
- All grinding is on the rim of the diamond wheel and ensures correct electrode grain direction – along the electrode axis
- Longer life for the electrode point
- Concentrated welding arc
- No oxidation of the tungsten electrode during wet grinding
- Better TIG welding with a stable arc and consistent level of penetration

The ESAB G-Tech is available in the following single-phase versions: 220/240 V 50 Hz, 115 V 50 Hz and 115 V 60 Hz (CSA approved).
The small table seen in the picture, is not included and is not available from ESAB.

Delivery includes

ESAB's TIG-Selector XA00091420 (in English and German) and a start up kit with five 175 mm cerium electrodes.

Ordering information

G-Tech, 220/240 V, 50 Hz	0700 009 880
G-Tech, 115 V, 50 Hz, UK connector	0700 009 881
G-Tech, 115 V, 60 Hz - CSA approved	0700 009 882
Side wall seal	0700 009 001
Diamond disc	0700 009 002
Inspection cover	0700 009 003
Fluid 250 ml	0700 009 004
Return bottle 250 ml	0700 009 005
Electrode clamp 1.0 mm	0700 009 007
Electrode clamp 1.6 mm	0700 009 008
Electrode clamp 2.4 mm	0700 009 009
Electrode clamp 3.2 mm	0700 009 010
Electrode clamp 4.0 mm	0700 009 011
T-piece	0700 009 012
Spacer piece	0700 009 013
Electrode holder stainless	0700 009 014
Fluid 5000 ml	0700 009 015
Acc. box	0700 009 016
Waste container	0700 009 017
Electrode clamp 4.8 mm	0700 009 019
Acc. box complete	0700 009 020
Shaft seal	0700 009 021
O-ring motor	0700 009 022
Seal abrasive wheel	0700 009 023
Brass handle	0700 009 024
Elastic washer	0700 009 025
Multi-language manual	0700 009 027

TIG PEN™

The TIG PEN™ allows the welder to control the tip of the filler wire with great accuracy even at a long distance from the weld seam and helps the welder to obtain a higher welding quality. It also eliminates waste of the filler wire.
- Easy to use
- Lightweight
- Can be used in either hand, with or without gloves, and fits in a pocket
- Uses any wire diameter from 1.0 to 3.2 mm

Ordering information

TIG PEN™	0700 009 026

TIG accessories

G-Tech Handy

The G-Tech Handy is a simple tungsten electrode grinder that is easy to use, where angles are easily adjusted.
The G-Tech Handy grinds from 1.0 to 4.0 mm electrodes.
Equipped with dust filter.
Adjustable speed control.
Weight 2.8 kg.

The G-Tech Handy is delivered in a durable hard case that makes it easy to transport.

Ordering information

G-Tech Handy, 230 V	0700 009 883
G-Tech Handy, 230 V, 50 Hz, UK connector	0700 009 884
G-Tech Handy, 110 V, 60 Hz, CSA approved	0700 009 885
Diamond disc	0700 009 028
Filter kit	0700 009 029
Electrode holder	0700 009 030
Collet body 1.6 mm	0700 009 031
Collet body 2.4 mm	0700 009 032
Collet body 3.2 mm	0700 009 033
Collet body 1.0 mm	0700 009 034
Collet body 2.0 mm	0700 009 035
Collet body 4.0 mm	0700 009 036

Drying equipment

PK 1 dry-storage container

The PK 1 is a light and handy dry-storage container for electrodes. It is easy to carry around. The storage temperature is around 100°C.

Ordering information

PK 1, 24 V	0000 515 063
PK 1, 42 V	0000 515 052
PK 1, 110 V	0000 515 062
PK 1, 230 V	0000 515 064

PK 5 drying equipment

The PK 5 is a combined drying and dry-storage system for most types of electrodes. The drying time at full effect is 1-7 hours depending on the type of electrode. The temperature is thermostatically controlled and ranges from 50-300°C. The electrodes should be stored in the PK 5 without packaging.

Ordering information

PK 5 drying equipment, 110 V	0700 011 070
PK 5 drying equipment, 230 V	0000 515 075

LK 10 drying cabinet

The LK 10 is a cabinet for the drying and dry storage of flux-cored wire, with room for 10 bobbins.
The temperature is set manually at between 20 and 50°C.
Dimensions 650 x 500 x 920 mm.
Weight 85 kg.

Ordering information

LK 10 drying cabinet, 230 V	0000 515 077

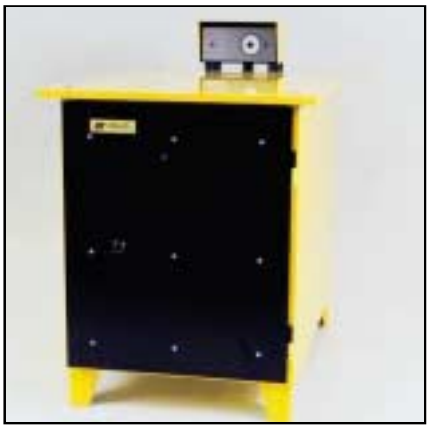
SK 40 dry-storage cabinet

The SK 40 is a dry-storage cabinet with 4 removable shelves for storing electrodes. The electrodes should be stored without packing. The cabinet is equipped with a thermometer, thermostat and control lamp. Temperature range 50-180°C.

Ordering information

SK 40 dry-storage cabinet, 230 V	0000 515 102

Drying equipment



PK 40 drying cabinet

The PK 40 is a robust cabinet for the drying and dry storage of electrodes, with space for 10 packs. The drying time is set manually at between 50 and 350°C.
Dimensions 570 x 620 x 790 mm.
Weight 70 kg.
Otherwise similar to the PK 410.

Ordering information

PK 40 drying cabinet, 230 V	0000 515 105

PK 410 drying cabinet

The PK 410 is a robust cabinet for the drying and dry storage of electrodes. The drying temperature can be regulated between 50 and 400°C (450°C 3-phase). The dry-storage temperature is around 150°C. The PK 410 is equipped with a control lamp, electronic thermometer and electronic thermostat.
The PK 410 also has a 7-day timer. This timer makes it possible to change automatically from drying to dry storage at selected times and temperature ranges.

Ordering information

PK 410 drying cabinet, 230 V, 1-phase	0000 515 103
PK 410 drying cabinet, 400 V, 3-phase	0000 515 108

Drying equipment

JS 200 storage silo

The JS 200 is a storage silo for welding powder (flux). The JS 200 keeps the flux dry and clean and also makes it extremely easy to handle the flux. The temperature can be adjusted between 50 and 300°C.

Ordering information

JS 200 storage silo	0000 515 090

JK 50 powder drier

The JK 50 is a container for drying and storing welding powder (flux).The JK 50 dries 50 litre flux at a maximum temperature of 500°C in around three hours. (The drying temperature can be regulated between 200-250°C). After drying, the temperature falls automatically to the pre-set dry storage temperature (150°C) within 12 hours.

Ordering information

JK 50, 400 V, 3-phase	0000 515 091

Technical specification

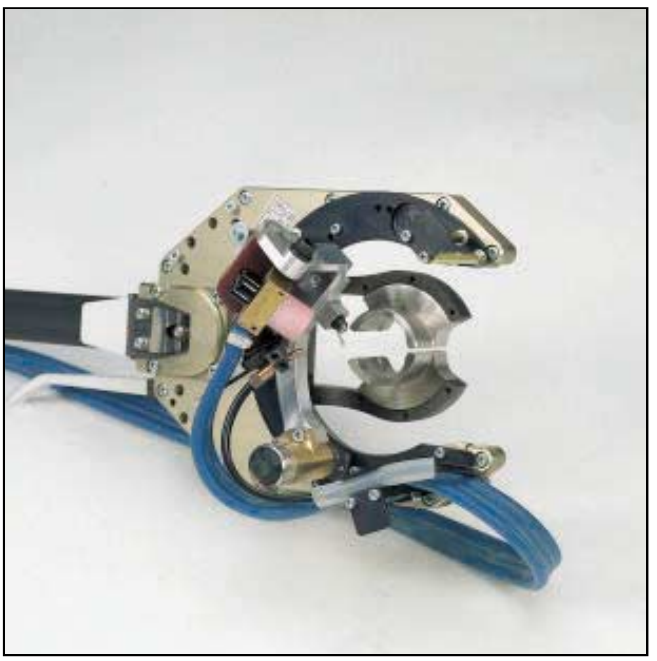
Drying takes place without packaging on the electrode and powder.

Designation		PK 1	PK 5	SK 40	PK 410	JK 50	JS 200
Capacity	pk[1], l[2]	1.5[1]	3-5[1]	20[1]	42[1]	50[2]	200[2]
Storage temperature	°C	100		50-180	150	<200	50-300
Drying temperature:							
1-phase	°C		50-300		0-400		
3-phase	°C				0-450	<500	
Mains voltage	V	24/42/230	230	230	230-1/400-3	400-3	230
Output	W	100	500	700	3500/4500	3700	2000
Dimensions LxWxH	mm			530x640x750	860x820x1260		510x570x1750
Inner diameter xH	mm	100x590	160x630			1720	
Weight	kg	6	14	55	230	190	115

Orbital TIG welding
Welding heads

Introduction orbital TIG welding heads

New and improved metal qualities, rising material and labour costs, but also more sensitive materials, and continuously increasing demands on quality and productivity are factors which you have to deal with daily.
ESAB helps you to get ahead and stay ahead. Our metallurgists, chemists, engineers, technicians and skilled welders have one dedication: to find better materials and develop better equipment for your welding.
The ESAB welding program for mechanised tube welding is based on the TIG welding method with a non-consumable tungsten electrode.
To further improve weld quality and decrease costs, ESAB have developed micro-processor controlled power sources for orbital TIG welding, the Mechtig, Prowelder and Protig Inverter.
A21 is ESAB's welding head for tube-to-tube welding, A22 is a welding head for tube-to-tube sheet welding and A25 is a modular component system for orbital TIG welding.



A21 PRB

The PRB welding head is compact and easy to use as a result of its unique pincer action which reduces setting-up times to a minimum. The welding head is positioned and secured around the tube with great accuracy in seconds. The PRB welding heads are available in five sizes for tubes with outer diameters of 17 to 170 mm.
Use these welding heads together with the Mechtig, Prowelder and Protig power sources.

Delivery includes

The PRB comes with 7 m of connection cable (current, gas, water).

	PRB 17-49	PRB 33-90	PRB 60-170
Orbital speed, rpm	0.1-2.4	0.07-1.6	0.04-0.95
Tube diameters OD, mm	17-49	33-90	60-170
Max welding current, water, A	250	250	250
Max welding current, air, A	100	100	100
Electrode diameter, mm	1.6, 2.4	2.4, 1.6	2.4, 1.6
Weight, kg	2.8	3.2	5.0

Ordering information

PRB 17-49, water-cooled	0443 750 880
PRB 17-49, air-cooled	0443 750 881
PRB 33-90, water-cooled	0443 760 880
PRB 33-90, air-cooled	0443 760 881
PRB 60-170, water-cooled	0443 770 880
PRB 60-170, air-cooled	0443 770 881
Connection box necessary when connecting PRB with:	
PAL1 - Mechtig 315	0456 926 880
PAL 2 - Protig 315	0457 217 880
Rebuilding kit for PRB/PRC 17-49 for welding tubes with outside diameters from 8-17 mm	0444 002 880
Wire holder complete with gas lense diameter 24 mm with adjustable wire nozzle for PRB/PRC 33-170	0443 923 880
Adjustable wire holder Ø 24 mm for PRB 140-220	0442 511 880
Rebuilding kit PRB/PRC 33-90 20-33 mm	0443 908 880
Rebuilding kit PRB/PRC 60-170 44-60mm	0443 909 880

Orbital TIG welding
Welding heads

A21 PRC

The PRC welding head is a further development of our PRB welding head. The PRC features a zig-zag weaving movement and arc voltage control, which produces higher productivity and better welding quality, particularly when welding thick-walled tubes. These welding heads are used in combination with the Protig power source.

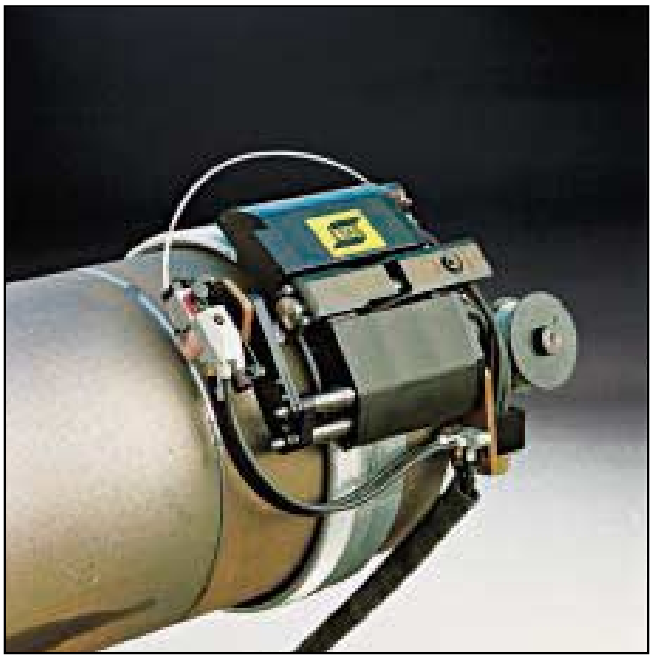
Delivery includes

The PRC welding head is delivered with 7 m of connection cable (current, gas, water).

	PRC 17-49	PRC 33-90	PRC 60-170
Orbital speed, rpm	0.1-2.4	0.07-1.6	0.04-0.95
Tube diameters OD, mm	17-49	33-90	60-170
Max welding current, A	250	250	250
Weaving range, mm	20	20	20
Weaving reach, mm	7	7	7
Weaving speed, mm/s	1.0-12	1.0-12	1.0-12
Dwell time, s	0.1-10	0.1-10	0.1-10
Arc setting speed, mm/s	1.1	1.1	1.1
Weight, kg	3.4	6.9	14.3

Ordering information

PRC 17-49 with AVC	0443 751 880
PRC 17-49 with AVC and weaving	0443 752 880
PRC 33-90 with AVC	0442 761 880
PRC 33-90 with AVC and weaving	0442 762 880
PRC 60-170 with AVC	0442 771 880
PRC 60-170 with AVC and weaving	0442 772 880
PAL 2 connection box necessary when connecting PRC with Protig 315	0457 217 880



A21 PRD 100

The PRD 100 welding head is designed for precision, quality and technology of the highest class. It is a TIG welding head for tubes with an outer diameter of 100 mm and upwards. The PRD 100 is very compact in design and, as a result of its low profile, requires only 73 mm of clearance around the tube. The welding head is water-cooled and designed for amperage of up to 400 A. The mechanical settings are easy, all the welding parameters are incorporated in the procedure program which are controlled by a microprocessor system. Use this welding head together with the Protig 450 power source.

Delivery includes

The PRD 100 welding head is delivered with 8 m of connection cable (current, gas, water) and motor cable.

	PRD
Orbital speed, rpm	0.02-0.4
Tube diameters OD, mm	100 to flat
Electrode diameter, mm	1.0-4.0
Max welding current, A	400
Weaving range, mm	+/-15
Weaving speed, mm/s	1-10
Dwell time, s	0.1-2
Arc voltage control amplitude, mm	25
Arc setting speed, mm/s	2.0
Weight, kg	8

Ordering information

PRD 100 welding head	0444 016 880

Racks and accessories see page 225

Orbital TIG welding
Welding heads

A22 POC

The POC 12-60 is a welding head for tube-to-tube sheet TIG welding. It is a precision-built, robust and versatile welding head which can be used for all types of tube-to-tube-sheet welding. The POC has a working range of 12 to 60 (93) mm outer tube diameter. The centering accuracy of the POC is very high and patented centering mandrels are available for inner tube diameters from 9.9 mm.

Delivery includes

The POC welding head is delivered with 8 m of connection cable (current, gas, water).

	POC
Orbital speed, rpm	0.2-4.5
Working range, electrode parallel to tube axis, mm	12-60
Working range, electrode at 30° from tube axis, mm	12-36 (93)
Filler wire diameter, mm	0.8-0.9
Filler wire speed, mm/s	2.5-25
Max spool dimension/weight, Ø mm/kg	100/0.5
Weight, kg	4.8

Ordering information

POC 12-60 welding head	0443 930 880
PAL 1 - connection box Mechtig 315	0456 926 880
PAL 2 - connection box Protig 315	0457 217 880

A21 PRH

ESAB's new PRH tube-welding tool is designed for welding thin-walled, stainless steel tubes in order to provide maximum gas shielding around the tube. The tool has been designed according to the chamber principle to produce this shield. This means that the rotating part and the tungsten electrodes are enclosed in a gas chamber formed by the outer casing, which also constitutes the clamping arrangement for the tube to be welded.
The tube-welding tool is water-cooled and forms a complete unit which also incorporates the return conductor. It is available in three sizes, PRH 6-40, PRH 25-90 and PRH 40-115, making it possible to weld tubes of between 6 mm and 115 mm.

Delivery includes

The PRH welding head is delivered with 8 m of connection cable (current, gas, water and return).

	PRH 6-40	PRH 25-90	PRH 40-115
Orbital speed, rpm	0.10-1.62	0.10-1.58	0.068-1.36
Tube diameters OD, mm	6-40	25-90	40-115
Max welding current, water, A	100 (pulsed 150)	100 (pulsed 150)	100 (pulsed 150)
Electrode diameter, mm	1.6/2.4	1.6/2.4	1.6/2.4
Weight, kg	7.5	10	12

Ordering information

Welding head PRH 6-40	0456 940 880
Welding head PRH 25-90	0456 941 881
Welding head PRH 40-115	0456 942 880
Blank for clamping dies, PRH 6-40	0457 485 001
Blank for clamping dies, PRH 25-90	0457 485 002
Blank for clamping dies, PRH 40-115	0457 485 003
Turning attachment for clamping dies, PRH 6-40	0457 486 001
Turning attachment for clamping dies, PRH 25-90	0457 486 002
Turning attachment for clamping dies, PRH 40-115	0457 486 003
PAL1 - connection box, Mechtig 315	0456 926 880
PAL2 - connection box, Protig 315	0457 217 880
Tool holder for PRH 6-40/25-90/40-115	0456 940 122

Orbital TIG welding
A25 modular components

A25

A25 is a modular component system - the key to TIG welding mechanisation. The modular components can easily be put together to create a system to suit your requirements. The TIG-narrow gap method can also be used together with the A25 system. Narrow gap with an extremely small joint angle and subsequent low joint volume.
The A25 modular system is used together with the Mechtig, Prowelder and Protig power sources.

	A25
AVC slide amplitude, mm	76
AVC slide speed, mm/s	2.81
Weaving slide amplitude, mm	76
Weaving slide speed, mm/s	19
Manual slide amplitude, mm	93
Floating slide amplitude, mm	76
Wire diameter, mm	0.6-1.6
Wire feed, m/min	0.1-2.6
Motor VEC with encoder, speed, rpm	1000
Motor VEC with encoder, ratio	672:1

Ordering information

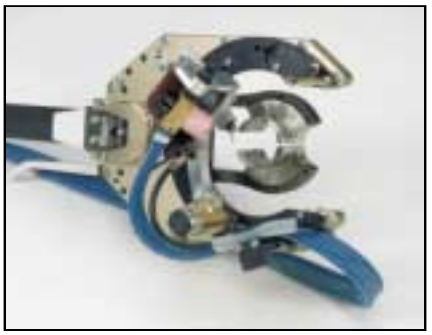
A25 welding automat with AVC and weaving slides, wire feed unit, VEC motor with turntable and BTE 250M torch mounted on a stand	0443 910 880
A25 welding automat with AVC and weaving slides, wire feed unit, VEC motor with turntable and BTE 500M torch mounted on a stand	0443 910 881
A25 welding automat with AVC and BTE 250M torch	0443 911 880
A25 welding automat with AVC and BTE 500M torch	0443 911 881
A25 welding automat with AVC and weaving slides, BTE 250M torch	0443 911 882
A25 welding automat with AVC and weaving slides, BTE 500M torch	0443 911 883
A25 welding automat with AVC and manual horizontal slide, BTE 250M torch	0443 911 884
A25 welding automat with AVC and manual horizontal slide, BTE 500M torch	0443 911 885
A25 welding automat with manual vertical and horizontal slide, BTE 250M torch	0443 911 886
A25 welding automat with manual vertical and horizontal slide, BTE 500 M torch	0443 911 887
A25 welding automat with slides for floating head, BTE 250M torch	0443 912 880
A25 welding automat with slides for floating head, BTE 500M torch	0443 912 881
Railbound carriage with a 2 m track for fitting A25 welding heads	0458 002 880
Extra track, 2 m	0157 377 880
PAL 3 connection box for external motor regulator	0457 870 880

A25 welding heads	Arc voltage control	Weaving	Manual cross slide	Manual vertical slide	Floating slide	Circular slide	Wire feeder	BTE 250 torch
STA 250	•					•	•	•
STA 500	•					•	•	
STA 250	•	•				•	•	•
STA 500	•	•				•	•	
STA 250	•		•			•	•	•
STA 500	•		•			•	•	
STA 250			•	•		•	•	•
STA 500			•	•		•	•	
STB 250					•	•	•	•

Wire capacity as standard STA/STB 250 0.6-1.2 mm, STA/STB 500 0.6-0.8, 1.2-1.6 mm
Accessories see page 226

Orbital TIG welding

Accessories



Angular support

The angular support is used to adjust the electrode angle in the joint. The support is available for PRB/PRC 17-49, 33-90 and 60-170.

Ordering information

Angular support	0443 875 880
Angular support for PRB 140-220	0333 610 880
Angular support 45° for fillet welding, PRB 140-220	0333 222 880

Orbital TIG welding
Accessories

Narrow gap head for PRD

ESAB have developed equipment for Narrow Gap welding together with the PRD welding head. The TIG Narrow Gap Orbital Welding has an extremely narrow groove with a subsequent small joint volume. Welding in all positions is possible. Stainless and carbon steel can be welded.

Ordering information

Narrow Gap head 50 mm	0441 623 880
Narrow Gap head 80 mm	0441 623 881
Wire straightener Ø 0.8 mm	0441 355 882
Wire straightener Ø 1.0 mm	0441 355 881
Wire straightener Ø 1.2 mm	0441 355 880

Balancing block

The balancing block is capable of carrying welding heads, drilling and grinding machines weighing 5.5-9 kg. The wire can be extended to a maximum length of 2.7 metre. The spring force is constant, i.e. the wire has the same lifting capacity irrespective of the length to which it has been extended.

Ordering information

Balancing block	0332 330 005

Orbital TIG welding
Accessories

Standard racks for PRD

A specific size of rack is used for each pipe diameter. The standard racks are listed under ordering information. Individual requirements relating to racks for other diameters can be supplied to order within the working range of the PRD welding head.

Ordering information

Outer diameter of the pipe:

114.30 mm - 4 inch	0333 400 880
141.30 mm - 5 inch	0333 400 881
168.27 mm - 6 inch	0333 400 882
219.07 mm - 8 inch	0333 400 883
273.05 mm - 10 inch	0333 400 884
323.85 mm - 12 inch	0333 400 885
355.60 mm - 14 inch	0333 400 886
406.40 mm - 16 inch	0333 400 887
457.20 mm - 18 inch	0333 400 888
508.00 mm - 20 inch	0333 400 889
558.80 mm - 22 inch	0333 400 890
609.60 mm - 24 inch	0333 400 891
660.00 mm - 26 inch	0333 400 892
711.00 mm - 28 inch	0333 400 893
762.00 mm - 30 inch	0333 400 894
813.00 mm - 32 inch	0333 400 895
864.00 mm - 34 inch	0333 400 896
914.00 mm - 36 inch	0333 400 897
Straight rack with suction feet, 2 m	0334 150 880
Straight rack with suction feet, 4 m	0334 150 881
Suction pump for rack	0334 504 001
Locking screw for standard racks together with feet 0333 402 880	0212 204 306
Locking screw for standard racks together with feet 0333 402 882-885	0190 507 451
Locking screw for standard racks together with feet 0333 402 886-890	0212 204 352

Feet for standard racks with tube diameters minus ....

4 mm	0333 402 881
8 mm	0333 402 882
12 mm	0333 402 883
16 mm	0333 402 884
20 mm	0333 402 885
24 mm	0333 402 886
28 mm	0333 402 887
32 mm	0333 402 888
36 mm	0333 402 889
40 mm	0333 402 890

Extension cables Prowelder 160/250

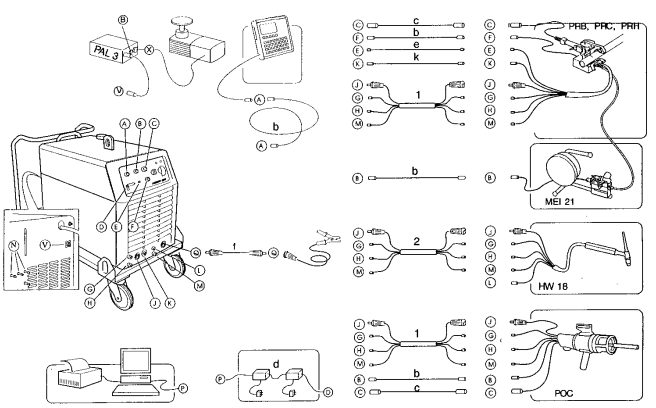
Ordering information

Programming box cable, 15 m	0369 143 887
Motor cable, drive unit PRB, 10 m	0456 906 880
Motor cable, wire feed unit, 10 m	0456 904 880
Welding cable, current-gas-water, 8 m	0456 905 880
For further information, please contact your nearest ESAB representative	

Extension cables Prowelder/ Protig

Ordering information

Extension cable **b**, thread, weaving, programming box, CAN 42 V (10 m)	0456 904 880
Extension cable **c**, rotation (10 m)	0456 906 880
Extension cable **e**, AVC (10 m)	0457 219 880
Extension cable **f**, return cable (8 m)	0152 349 888
Extension cable **k**, measuring cable (2 m)	0457 219 881
Extension cable kit **1**, current, water, gas (8 m)	0456 905 880
Extension cable kit **2**, current, water, gas, torch contact (8 m)	0466 705 881
For further information, please contact your nearest ESAB representative	



Orbital TIG welding
Accessories

A25 components and accessories

Ordering information

Bracket	0441 404 880
Wire feed unit 0.6 - 0.8 mm	0441 300 882
Feed roller 1.0 - 1.2 mm	0369 557 003
Feed roller 1.2 - 1.6 mm	0369 557 007
Outlet pipe 0.8 - 1.2 mm	0441 456 881
Outlet pipe 1.6 mm	0441 456 882
Connection cable, feed unit 10 m	0456 904 880
Wire hose, per metre (std 400 mm)	0192 799 112
Wire nozzle, BTE 250M	0441 407 880
Wire nozzle, BTE 500M	0441 407 881
TIG torch BTE 250M	0441 362 880
TIG torch BTE 500M	0441 418 880
Holder BTE 250M	0441 414 880
Holder BTE 500M	0441 414 881
Slide AVC	0443 913 880
Circular slide	0145 945 880
Slide manual	0413 518 880
Slide weaving	0443 913 881
Slide floating	0441 674 881
Single guide wheel unit, BTE 250M	0441 833 880
Double guide wheel unit, BTE 250M	0441 358 880
Double guide wheel unit, BTE 500M	0441 358 881
Single guide wheel unit, BTE 500M	0441 833 881
Bracket	0441 412 880
Brake hub	0146 967 881
Bobbin protection	0157 482 880
Multi-contact plug for connection with Protig	0441 600 880
Motor VEC with tacho, speed 1000 rpm, ratio 672:1	0457 258 880
Control unit to VEC	0457 222 880
Turntable with return cable connection for VEC motor	0442 712 880
Narrow Gap kit for BTE 500M	0441 667 880
Motor control unit PAL 3	0457 870 990

POC spindles and centering cartridges

Ordering information

Spindle type A	0442 741 880
Cartridge Ø 9.9 - 10.5 mm	0442 634 880
Cartridge Ø 10.3 - 10.9 mm	0442 634 881
Cartridge Ø 10.7 - 11.3 mm	0442 634 882
Cartridge Ø 11.1 - 11.7 mm	0442 634 883
Cartridge Ø 11.5 - 12.1 mm	0442 634 884
Cartridge Ø 11.9 - 12.7 mm	0442 634 885
Cartridge Ø 12.5 - 13.3 mm	0442 634 886
Spindle type B	0332 208 880
Cartridge Ø 13.1 - 13.9 mm	0442 635 880
Cartridge Ø 13.7 - 14.5 mm	0442 635 881
Cartridge Ø 14.3 - 15.4 mm	0442 635 882
Cartridge Ø 15.2 - 16.3 mm	0442 635 883
Cartridge Ø 16.1 - 17.6 mm	0442 635 884
Cartridge Ø 17.4 - 19.0 mm	0442 635 885
Cartridge Ø 18.8 - 20.2 mm	0442 635 886
Cartridge Ø 19.9 - 21.7 mm	0442 635 887
Spindle type C	0332 209 880
Cartridge Ø 21.4 - 23.2 mm	0442 636 880
Cartridge Ø 22.9 - 24.7 mm	0442 636 881
Cartridge Ø 24.4 - 26.6 mm	0442 636 882
Cartridge Ø 26.3 - 28.5 mm	0442 636 883
Cartridge Ø 28.1 - 30.7 mm	0442 636 884
Cartridge Ø 30.3 - 33.1 mm	0442 636 885
Cartridge Ø 32.7 - 36.7 mm	0442 636 886
Cartridge Ø 36.2 - 40.1 mm	0442 636 887
Spindle type D	0332 210 880
Cartridge Ø 39.6 - 43.7 mm	0442 637 880
Cartridge Ø 43.2 - 47.3 mm	0442 637 881
Cartridge Ø 46.7 - 51.8 mm	0442 637 882
Cartridge Ø 51.2 - 57.2 mm	0442 637 883
Cartridge Ø 56.6 - 63.7 mm	0442 637 884
Cartridge Ø 63.0 - 71.4 mm	0442 637 885
Cartridge Ø 70.6 - 79.0 mm	0442 637 886
Cartridge Ø 78.2 - 86.6 mm	0442 637 887

POC 12-60 accessories

Ordering information

Counterbalancing block	0332 330 005
Three-point support complete with electrode holder. To be used for fillet weld up to Ø 36 mm	0333 897 880
Three-point support complete with electrode holder. To be used for fillet weld from Ø 36 mm to Ø 93 mm	0333 897 883
Front casting, titanium	0441 000 880
Internal bore welding torch 9.5-15	0441 131 880
Internal bore welding torch 15-20	0441 132 880
Internal bore welding torch 20-30	0441 133 880

Orbital TIG welding
Ancillary equipment

MEI 21 wire feed unit

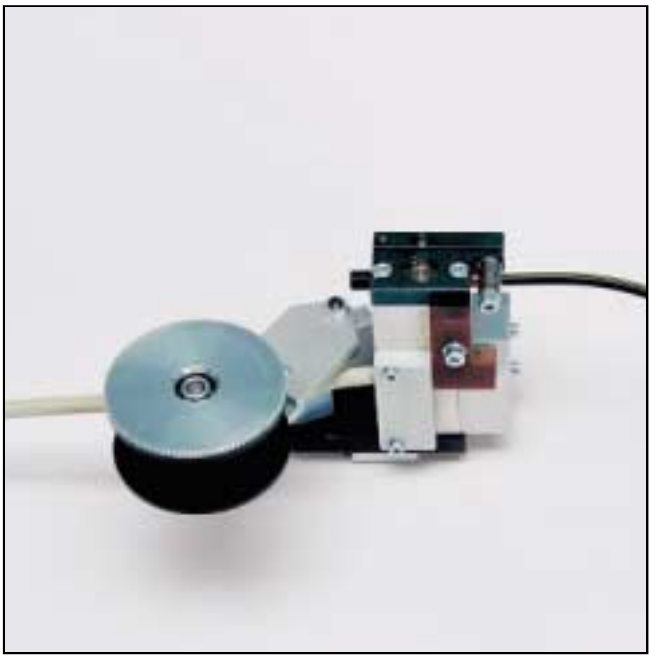
The MEI 21 is a wire feed unit with four wire rollers for orbital TIG welding. A separate wire feed unit is a great advantage since it eliminates the need for a wire feed unit and wire spool mounted on the welding head. 5 kg wire spools can be used. The MEI 21 can be used for wire dimensions from 0.6 mm to 0.8 mm.

Delivery includes
The MEI 21 wire feed unit is delivered with a wire hose.

	MEI 21
Wire diameter, mm	0.6-0.8 (0.9)
Wire feed, m/min	0.1-2.6
Max spool dimension/weight, Ø mm/kg	200/5
Hub width, mm	60
Hub hole diameter, mm	51.5
Wire guide length, m	4.2
Weight, kg	4

Ordering information

MEI 21	0443 830 880



MEI 10

The MEI 10 is a wire-feed unit developed for mounting on PRB 17-170 tools (PRC17-49 only with AVC). PRB tools with the MEI 10 can be used on Prowelder 160/250/320. PRC tools with the MEI 10 can be used on Protig 450.
The compact design of the wire-feed unit keeps the increase in the size of the tool when the unit is mounted to a minimum. Thanks to the very short distance the wire needs to be fed, from the reel to the molten pool, the MEI 10 is ideal for aluminium welding. It is naturally also possible to use the wire-feed unit for mild and stainless steel welding.
The MEI 10 weighs only 0.5 kg (without reel and cable) and it can be used for wire dimensions of 0.8 mm to 1.0 mm for aluminium and 0.8 mm for steel. A geared DC motor drives the feed roller via gear wheels. The motor is equipped with a pulsegenerator which enables the precise adjustment of the wire feed speed.

Delivery includes
The MEI 10 is delivered with a feed bobin.

	MEI 10
Wire diameter, mm	0.8
Wire feed, m/min	0.1-1.2
Max spool dimension/weight, Ø mm/kg	60/0.26
Hub width, mm	-
Hub hole diameter, mm	-
Wire guide length, m	0.1
Weight, kg	0.5

Ordering information

PRB 17-49 & PRC 17-49 with AVC	0444 211 880
PRB 33-90, PRC 33-90 with AVC & PRC with AVC and weaving	0444 212 880
PRB 60-170, PRC 60-170 with AVC & PRC 60-170 with AVC and weaving	0444 213 880

Orbital TIG welding
Ancillary equipment

OCE-2 H cooling unit

The OCE-2 H water-cooling unit is an efficient, compactly-dimensioned cooling unit designed for use together with water-cooled equipment for arc welding by hand or in automatic plants. The water tank and pump is made of corrosion-resistant material.

	OCE-2 H
Mains supply, V/Hz	230/50-60
Max power consumption, W	250
Max water pressure, bar	50.3/60, 4.1
Cooling power, °deg, l/min, kW	40, 2.0, 1.1
Total water consumption, l	8

Ordering information

Cooling unit OCE-2 H	0414 191 881
Flowguard	0414 231 880

OCF 2M cooling unit

The OCF 2M cooling unit is designed for use with Prowelder 160/250.
This water-cooling unit is easily mounted under the power source, thereby providing flexibility when adapting to customer requirements. The maximum working height is 7 m.

	OCF 2M
Mains supply, V/Hz	230
Max power consumption, W	250
Max water pressure, bar	3
Cooling power, °deg, l/min, kW	4
Total water consumption, l	5

Ordering information

Cooling unit OCF 2M	0457 216 882

Orbital TIG welding
Power sources

Prowelder 160/250

The Prowelder 160/250 is designed for tube-to-tube joining using the PRB welding heads, tube-to-tube sheet welding with the POC welding head or the A25 modular component system for the TIG mechanisation welding of several products. A programmable welding power source makes it possible to customise the welding process. The programs can be stored in the internal memory. The Prowelder 160/250 is equipped with an RS 232 output, which makes it possible to use Weldoc WMS 4000 (Welding Monitoring System). Weldoc WMS 4000 is a computer program designed for use during welding to monitor the welding parameters. Weld-protected, EMC-safe PC to be supplied by the customer.

Delivery includes

The Prowelder 160/250 is supplied with 5 m of return cable and 5 m of mains cable.

	Prowelder 160	Prowelder 250
Mains supply, V/Hz	1x230/50-60	3x400/50-60
Setting range, A	5-160	5-250
Max output at 35% duty cycle, A	160/16	250/20
Max output at 60% duty cycle, A	110/15	180/17
Max output at 100% duty cycle, A	80/13	140/16
Open circuit voltage, V	50-60	50-60
No load power, W	50	55
External dimensions, LxWxH, mm	515x285x835	515x285x620
Weight, kg	37	38

Ordering information

Prowelder 160 without cooling unit	0458 300 880
Prowelder 250 without colling unit	0458 300 881
Trolley for Prowelder 160 & 250	0301 100 880
OCF 2M cooling unit	0457 216 882
Weldoc™ WMS 4000	0457 410 880
SPS 4000	0457 410 881
Optical connection kit for connecting of the computer to the Prowelder 160/250, 15 m	0457 072 881
Optical connection kit for connecting of the computer to the Prowelder 160/250, 2m	0457 072 882

Prowelder 320

The Prowelder 320 is designed for tube-to-tube joining using PRB welding heads, tube-to-tube sheet welding with the POC welding head or the A25 modular component system for the TIG mechanisation welding of several products. A programmable welding power source makes it possible to customize the welding process. The programs can be stored in the internal memory. The Prowelder 320 is equipped with an RS 232 output, which makes it possible to use Weldoc™ WMS 4000 (Welding Monitoring System). Weldoc™ WMS 4000 is a computer program designed for use during welding to monitor the welding parameters. Weld-protected, EMC-safe PC to be supplied by the customer.

Delivery includes

The Prowelder 320 is delivered with 5 m of return cable and 5 m of mains cable.

	Prowelder 320	Prowelder 320
Mains supply, V/Hz	3x400/50-60	3x230-400-500/50, 3x208-230-460-475/60
Setting range, A	5-320	5-320
Max output at 60% duty cycle, A	320	320
Max output at 100% duty cycle, A	270	270
Open circuit voltage, V	50-60	50-60
No load power, W	520	520
External dimensions, LxWxH, mm	734x489x695	734x489x695
Weight, kg	110	156

Ordering information

Prowelder 320, 3x400/50-60	0456 650 882
Prowelder 320, 3x250-400-500/50, 3x208-230-460-475/60	0456 650 883
Trolley	0457 221 880
Weldoc™ WMS 4000, complete version	0457 410 880
SPS 4000, documentation program	0457 410 881
Opto-cable WMS 4000, 15 m or	0457 072 881
Opto-cable WMS 4000, 2 m	0457 072 882
For further information, please contact your nearest ESAB representative	

Orbital TIG welding
Power sources

Protig 450

The Protig 450 can be used equally well with the A21 tube-to-tube welding head, the tube-to-tube sheet A22 head and the A25 component system. When using welding equipment with AVC and weaving, this power source is a must. The Protig 450 is capable of splitting welding programs into a large number of independent and free-standing units. The programs can be stored in the internal memory to be used again. The Protig 450 is equipped with an RS 232 output, which makes it possible to use Weldoc™ WMS 4000 (Welding Monitoring System). Weldoc™ WMS 4000 is a computer program designed for use during welding to monitor the welding parameters. The SPS 4000 is a setting parameter documentation system, a setting version without monitoring possibilities. Weld-protected, EMC-safe PC to be supplied by the customer.

Delivery includes

The Protig 450 is delivered with 5 m of return cable and 5 m of mains cable.

	Protig 450	Protig 450
Mains supply, V/Hz	3x400/50-60	3x230-400-500/50, 3x208-230-460-475/60
Setting range, A	5-450	5-450
Max output at 45% duty cycle, A	450	450
Max output at 100% duty cycle, A	360	360
Open circuit voltage, V	50-60	50-60
No load power, W	520	520
External dimensions, LxWxH, mm	734x489x695	734x489x695
Weight, kg	113	159

Ordering information

Protig 450, 3x400/50-60	0456 650 880
Protig 450, 3x208-500/50-60	0456 650 881
Trolley	0457 221 880
Weldoc™ WMS 4000, complete version	0457 410 880
SPS 4000, documentation program	0457 410 881
Opto-cable WMS 4000, 15 m or	0457 072 881
Opto-cable WMS 4000, 2 m	0457 072 882

For further information, please contact your nearest ESAB representative

Plasma welding process

Plasma welding is the ideal welding process for welding plates in thicknesses of up to 8 mm. In the range of 0.1 to 2 mm, plasma welding is very reminiscent of TIG welding, but it has a more concentrated and defined arc column.
In the range of 3 mm and upwards, the key-hole welding technique offers a number of advantages such as high welding speed, low heat input, small deformation and high quality and finish of the weld.

PW 3000

The PW 3000 plasma welding control unit is a compact, portable control unit for plasma welding of stainless steel, titanium and other high-alloy materials. The unit is intended for manual or mechanised welding in plate thicknesses from 0.7 to 8 mm. It is easy to operate and service thanks to its modular design and clear presetting possibilities.
The PW 3000 has a current potentiometer, three gas flow meters for pilot gas, plasma gas, shielding gas and backing gas, a digital A-meter, start and stop switches with indicator lamps and all necessary connections or power, water and gas supply.
The PW 3000 has a mixing gas valve for active gas in the plasma arc.

CW 3000

CW 3000 is a portable wire feed unit for high precision TIG and plasma welding with Ø 0.8 -1.6 mm wire. The feeding speed is steplessly adjustable from 0 - 4 m/min. The CW 3000 offers features such as; accurate speed control, start and stop of wire feeding, pulsed wire feed, forward and reverse feeding. The CW 3000 is prepared for remote-control.

Welding automation
Plasma welding

PTW plasma welding torches

The PTW plasma welding torches are lightweight, well balanced and flexible. They are intended for both manual or mechanised welding of all types of electrically conductive materials.
The PTW 150 is a manual plasma welding torch with a capacity of 150 A at 100% d.c. It is supplied complete with nozzle No 4 and 4 m cable and hose package. Weld start and stop is activated by means of a torch handle switch.
The PTW 150 M is a machine plasma welding torch with a capacity of 150 A at 100% d.c. It is supplied complete with nozzle No 4 and 4 m cable and hose package. This torch is also available with 1.5 m cable and hose package.
The PTW 300 M is a machine plasma welding torch with a capacity of 300 A at 100% d.c. It is supplied complete with nozzle No 5 and 4 m cable and hose package. This torch is also available with 1.5 m cable and hose package.
Weld start and stop with the machine torches are controlled from the plasma control unit or a remote control box.

WP 45 water cooling unit

The WP 45 is a high capacity cooling unit, ideal for arc welding and thermal cutting as well as for other processes which require high cooling capacity like for example heavy duty resistance welding.
The unit is very strong and efficient thanks to its large heat exchanger, heavy pump and large volume of cooling water. The WP 45 has a tank volume of 6 l and a cooling capacity of 5 kW at 100% d.c. Mains voltage: 400 V/50 Hz, 3-phase.

Plasmaweld 202/402

Plasmaweld 202/402 are thyristor-controlled power sources for DC plasma welding. Infinitely-variable adjustment of the welding current makes the units suitable for high-current plasma and plasma keyhole welding.
The pilot arc, started by HF, remains ignited and permits the safe and touch-free starting of the main arc.

Welding automation
Plasma welding

PT-8

The PT-8, 8 m, is a machine plasma-welding torch with a capacity of 400 A at 100% d.c.

LT-3

The LT-3 is an external water cooler with a cooling capacity of 3 kW.

CWF 1/CWC 3

The CWF/CWC unit is a cold wire feeder for TIG and plasma.
The CWF/CWC provides precise feed of the cold wire towards the arc in automatic TIG and plasma processes.
The system can be used for any welding fixture or positioner.

Welding automation
Universal mechanisation equipment

Railtrac BV1000/BVR1000

Railtrac BV1000 and BVR1000 are two automatic units for mechanising the repair and hardfacing of rail profiles smoothly and efficiently. The equipment can be assembled, programmed and controlled quickly and easily by one person. Learning to use it is easy and handling is extremely fast.
The system comprises two rail fasteners, a stable aluminium profile, a carriage with a weaving unit, control electronics and remote control. The weaving unit and control electronics are fully synchronised to enable a number of weaving patterns to be pre-programmed.
The weaving movements start from a laterally adjustable zero line, either the outer side or the inner side of the rail. This zero line can also be moved laterally during welding. Different speeds can be used in each program to produce the most consistent weld metal thickness possible.
The remote control unit enables the welder to have full control of all the movements of the machine without lifting his/her welding visor.
Railtrac BV1000, with a weaving device and four different programs.
Railtrac BVR1000, with a weaving device, start and stop indicators, return function for automatic operation and six different programs.

	Railtrac BV
Rail length, m	2
Welding speed, m/min	0.1-1.5
Weaving range, mm	1-80
Weaving speed, mm/s	7-50
Max power consumption, W	80
Control voltage, V, AC	30-46
Crater fill duration, s	0-9.9
Zero-line shift, mm	25 (12.5)
Programmable edge length, cm	6-99
Weight, kg	7

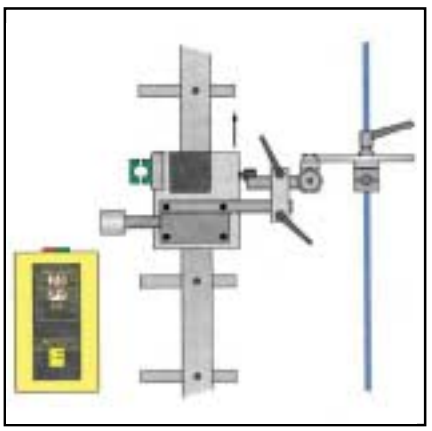
Railtrac 1000

Railtrac 1000 is a series of programmable and portable equipment for mechanising welding and cutting. Different solutions often provide the answer to monotonous, gruelling work and produce higher productivity and more consistent quality at the same time. Railtrac is specially designed for MIG/MAG and TIG welding and thermal cutting.
Railtrac is made up of robust components and is available in the following four basic models. All the models have five different programs, including interval welding. The rail can be fixed in place using suction cups of the ejector type, screw attachments or permanent magnets.
• Railtrac F1000, Flexi, the least complex equipment for welding or cutting along a combi-rail, either flexible or stiffened.
• Railtrac FW1000, Flexi Weaver, the Flexi system plus a remote-control unit and a weaving device which makes it possible to weave the arc according to different patterns.
• Railtrac FR1000, Flexi Return, has the combi-rail. It also has movable start and stop indicators for automatic operation.
• Railtrac FWR1000, Flexi Weaver Return, also has the flexible combi-rail, a remote-control unit, a weaving device and start and stop indicators for automatic operation.
Using the remote control, it is possible to select:
• Start and stop
• Travel or welding direction/cutting direction
• Travel or welding speed/cutting speed
• Weaving width
• Zero-line displacement
• Rapid speed on/off
• Backfill function
• Potentiometer control of welding parameters

	Railtrac 1000
Rail length, m	2.5
Rail bending radius, min, mm	1000/3000
Welding speed, m/min	0.05-0.99
Travel speed, m/min	1.5
Weaving range, mm	1-30
Weaving speed, mm/s	7-65
Dwell time, s	0.1-9.9

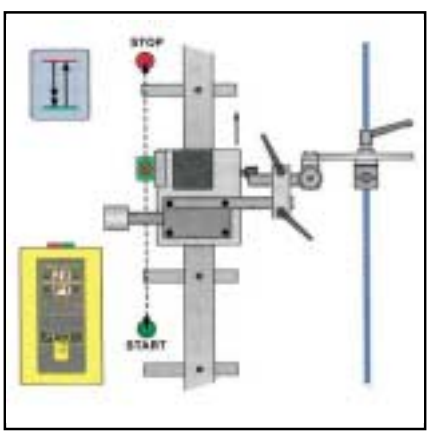
Welding automation

Universal mechanisation equipment



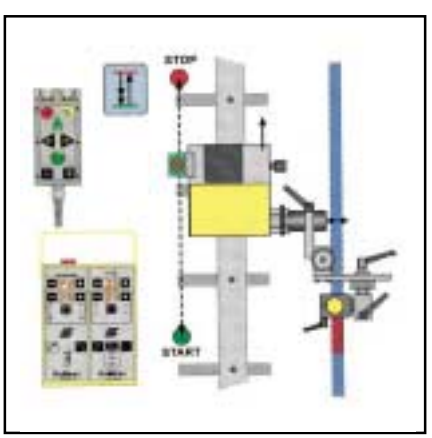
Railtrac F1000

Railtrac F1000, Flexi, for welding and thermal cutting.
- Welds and cuts in all positions on magnetic and non-magnetic materials
- Quick assembly and easy operation
- Programmable with five programs
- Calibrated setting values in cm, mm and sec
- Programmable "backfill" for crater filling
- Self-instructive programming manual
- Stiff or flexible, robust rail made of standard aluminium profiles without racks
- Track which can be extended or cut to required length
- Angled attachment for quick adjustment of pistol angle (option)
- "Floating" head for mechanical height maintenance (option)



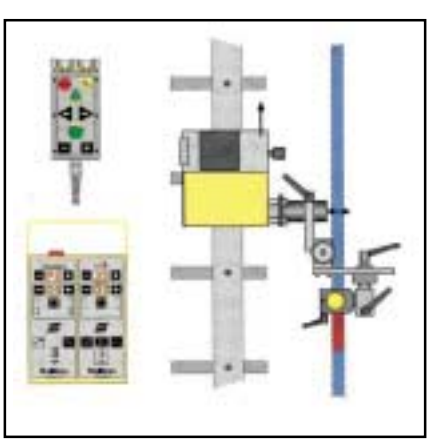
Railtrac FR1000

Railtrac FR1000, Flexi Return, for welding and cutting with automatic return.
- Welds and cuts in all positions on magnetic and non-magnetic materials
- Quick set-up and easy operation
- Programmable with five programs
- Calibrated setting values in mm, cm and sec
- Programmable "backfill" for crater filling
- Self-instructive programming manual
- Stiff or flexible rail made of standard aluminium profiles without racks
- Rail which can be extended bent or cut
- Angle bracket for quick adjustment of torch angle (option)
- "Floating" head for mechanical height maintenance (option)



Railtrac FWR1000

Railtrac FWR1000, Flexi Weaver Return, for oscillated welding with automatic return.
- Welds in all positions on magnetic and non-magnetic materials
- Quick set-up and easy operation
- Programmable with five programs
- Calibrated setting values in mm, cm and sec
- Programmable "backfill" for crater filling
- Self-instructive programming manual
- Flexible rail made of standard aluminium profiles without racks
- Rail which can be extended or cut to required length
- Angle bracket for quick adjustment of torch angle (option)
- Tiltable weaving unit for fillet welds (option)
- Turnable weaving unit for horizontal weaving in sloping joints (option)
- "Floating" head for mechanical height maintenance (option)
- Potentiometers in the remote control for parameter adjustments



Railtrac FW1000/FW1000 L

Railtrac FW1000, Flexi Weaver, for oscillated welding. The Railtrac FW1000 can be delivered in a "FW1000 L" version if the welding process need to be done with a lower welding speed then with FW1000.
- Welds and cuts in all positions on magnetic and non-magnetic materials
- Quick set-up and easy operation
- Programmable with five programs
- Calibrated setting values in cm, mm and sec
- Self-instructive programming manual
- Resilient remote control with profiled membrane buttons
- Stiff or flexible rail made of standard aluminium profiles without racks
- Rail which can be extended or cut to required length
- Angle bracket for quick adjustment of torch angle (option)
- Tiltable weaving unit for fillet welds (option)
- Turnable weaving unit for horizontal weaving in sloping joints (option)
- "Floating" head for mechanical height maintenance (option)
- Potentiometers in the remote controlf for parameter adjustments

Welding automation
Tractor automats

Miggytrac 1000

The Miggytrac 1000 is a small and compact, motor-powered tractor to which a standard ESAB welding torch can be quickly attached.
The four driving wheels, together with the magnet which is fitted on the tractor, guarantee even, stable movement. The magnet holds the tractor in the correct position on the workpiece, even if it is bent or angled. The tractor functions as a straightforward remote control for the feed unit; you decide on the travel direction and then start and stop welding from the panel. The panel features additional functions such as travel speed settings, wire feed, voltage, magnet on/off and welding on/off. The tractor follows the joint using guide wheels and has an automatic stop facility via limit switches mounted at the front and rear of the unit.

	Miggytrac 1000
Welding speed, m/min	0.15-1.2
Control voltage, V, AC	36-46
Power, W	50
Weight, kg	8
External dimensions, LxWxH, mm	250x250x330

Ordering information

Miggytrac 1000	0457 357 880
Connection cable MEK 4	0457 360 880
Cable kit for wire feed unit MEK 4 to be used for extra wire feed unit	0457 462 880
Welding screen	0457 463 880
Universal connectors	
Transformer 230/36 V	0457 467 880
Universal connection cable for other transformers	0457 360 881

Miggytrac 2000

The Miggytrac 2000 is a small, compact, motor-operated trolley that is designed for the mechanisation of GMAW, gas metal arc welding, in particular. Just fix the torch in the holder and Miggytrac 2000 will take over the welding procedure. The permanent built-in magnet, which can be switched on/off, holds the tractor in the correct position on the workpiece. The lightweight trolley has four-wheel drive to ensure smooth and steady welding travel.
The Miggytrac 2000 has a digital display to permit simple programming. It is very easy to move the trolley from one welding task to the next.

	Miggytrac 2000
Travel speed, m/min	0.2-1.5
Welding speed, m/min	0.15-1.5
Control voltage, V, AC	36-42
Control voltage, V, DC	40-60
Max power consumption, W	25
Fast speed, m/min	2.5
Intermittent welding range, cm	1-99
Crater fill duration, s	0-9.9
Weight, kg	8.5
External dimensions, LxWxH, mm	400x340x370

Ordering information

Miggytrac 2000	0457 358 880
Connection cable MEK 4	0457 360 880
Cable kit for wire feed unit MEK 4 to be used for extra wire feed unit	0457 462 880
Welding screen	0457 463 880
Universal connectors	
Transformer 230/36 V	0457 467 880
Universal connection cable for other transformers	0457 360 881

Welding automation
Tractor automats

A2 Multitrac

The A2 Multitrac is available for both the SAW and for the GMAW method.
If the SAW-version is chosen, the automat is capable of working equally well with either single or twin wire.
The feed unit secures an even and stable wire feed speed.
Accurate travel speed is ensured by means of four-wheel drive.
Exact presetting and control of the welding parameters is done on the instrument panel, which is equipped with a digital display.
The Multitrac is fully mobile and can easily be moved from one welding station to another. It can also be quickly set-up for different workpieces.

	Single SAW	Twin SAW	Single GMAW
Max load at 100% duty cycle, A	800	800	600
Wire Ø, unall. solid	1.6-4.0	2x1.2-2.5	0.8-1.6
Wire Ø, SS	1.6-4.0	-	0.8-1.6
Wire Ø, Al	-	-	1.2-1.6
Wire Ø, CW	1.6-4.0	-	1.2-2.4
Wire feed, m/min	9	9	19
Travel speed, m/min	0.1-1.7	0.1-1.7	0.1-1.7
External dimensions, LxWxH, mm	870x400 x830	870x302 x830	870x302 x830
Weight, kg	47	45	43

Ordering information

A2 Multitrac SAW/single	0449 160 880
A2 Multitrac SAW/twin	0449 160 881
A2 Multitrac GMAW	0449 161 880
A2 Multitrac GMAW with MTW 600 welding torch	0449 161 881

Accessories see page 244
Optional equipment see page 243
A2 Multitrac SAW/Twin arc see optional equipment

Welding automation
Tractor automats

A6 Mastertrac

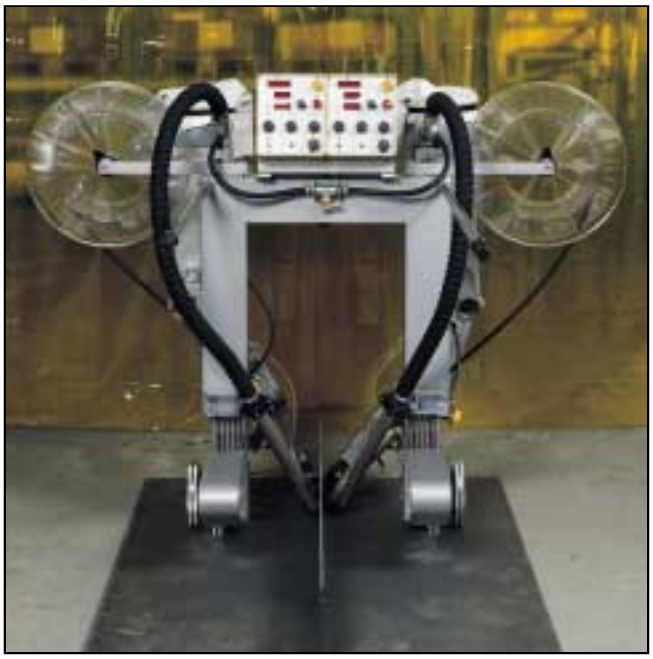
The A6 Mastertrac is a heavily-dimensioned self-propelled, four-wheel drive, automatic welding machine. The advanced electronic control equipment provides high precision and the digital display enables all the welding parameters to be preset accurately - either beforehand or during welding. The A6 Mastertrac is easy to use and once it is running, it requires only the supervision of the operator. The automat can be supplied for SAW in single, twin or tandem version. Also available for GMAW.

	Single SAW	Single GMAW	Twin SAW	Tandem
Max load at 100% duty cycle, A	1500	600	1500	2x1500
Wire diameter, mm	3.0-6.0	1.0-3.2	2x2.0-3.0	2x3.0-6.0
Wire feed, m/min	0.2-4.0	0.8-16.6	0.2-4.0	0.2-4.0
Travel speed, m/min	0.1-2.0	0.1-2.0	0.1-2.0	0.1-2.0
External dimensions, LxWxH, mm	1410x750 x850	1410x750 x850	1410x750 x850	1410x990 x850
Weight, kg	110	100	110	158

Ordering information

A6 Mastertrac GMAW, compl.	0456 485 880
A6 Mastertrac/SAW single complete	0456 486 880
A6 Mastertrac/SAW tandem, compl.	0334 191 882

Accessories see page 244
Optional equipment see page 243
A6 Mastertrac/SAW Twin arc see optional equipment



A6-DK

The A6-DK welding machine has two welding heads. It is built up of components from the well-known A6 system. A6-DK is designed for simultaneously welding horizontal-vertical fillets on both sides of a web or trough panels.
A6-DK straddles work pieces up to 800 mm high and with a symmetrical profile of 400 mm. A6-DK travels directly on the work piece and is guided along the joint with the aid of a guide unit attached to the contact unit. The travel speed is steplessly adjustable from 0.15 to 2.0 m/min.

	A6-DK SAW
Max load at 100% duty cycle, A	1500
Wire diameter, mm	3.0-6.0
Wire feed, m/min	0.2-4.0
Travel speed, m/min	0.15-2.0
Vertical space limitation, mm	800
Longitudinal symmetrical extension, mm	400
External dimensions, LxWxH, mm	870x400x830
Weight, kg	150

Ordering information

A6-DK SAW single wire excl. wire reel, feed rollers and contact jaws*	0454 200 901
Wire reel plastic 30 kg	0153 872 880
Wire reel steel 30 kg	0416 492 880

*When contact equipment is excluded feed rollers and contact jaws have to be ordered separately.

Welding automation
Welding heads

A2 S Mini Master

The A2 S Mini Master represents an automatic welding system designed with the emphasis on low weight, compactness and flexible use. The system is built around basic units. The degree of automation and process orientation of the basic unit you choose can be expanded or modified as required, depending on the application. Appropriate welding heads can be combined with suitable manipulators, which results in a total solution to a specific welding problem.

	Single SAW	Twin SAW	Single GMAW
Max load at 100% duty cycle, A	800	800	600
Wire diameter, mm	1.6-4.0	2x1.2-2.5	0.8-2.4
Wire feed, m/min	9	9	16

Ordering information

For ordering information please contact your nearest ESAB representative
Accessories see page 244
Optional equipment see page 243

A2 S GMAW Mini Master

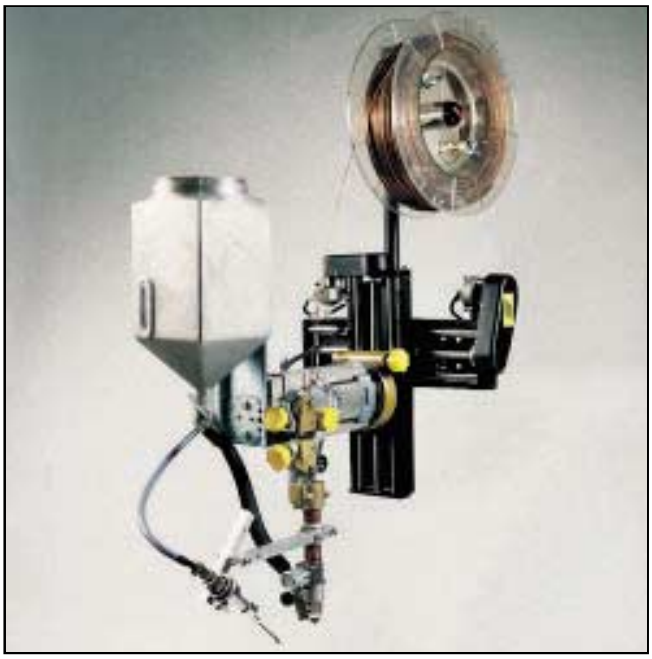
The A2 S GMAW Mini Master is a compact MIG/MAG version of the A2 S SAW Mini Master welding head. The GMAW welding head is equipped with an MTW 600 welding torch, which is specially designed for use where an automatic MIG/MAG welding torch is required for heavy-duty use.
The very effective "whirlcool liquid cooling system" is integrated in both the contact tube and the outer jacket of the torch for maximum cooling effect. All connections are positioned in the upper end of the torch to facilitate the mounting of the necessary supply and to protect the connection from welding arc radiation.

	Single GMAW
Max load at 100% duty cycle, A - Mix/Ar	600
Max load at 100% duty cycle, A - CO_2	650
Wire diameter, mm	1.0-2.4
Wire feed, m/min	2-25

Ordering information

For ordering information, please contact your nearest ESAB representative

Welding automation
Welding heads



A6 S Arc Master

The A6 S Arc Master is the complete system for heavy production welding offering flexibility, operational reliability and durability.
It constitutes the base of ESAB's automatic welding program with an extensive modular and component system. It is available in a number of standard models and can be adapted to suit the customer's specific demands.
From an existing model, the A6 S can be rebuilt and extended to the required automation level, by means of positioning, joint tracking, flux handling and so on as the requirements change.

	Single HD SAW	Twin HD SAW	Single LD SAW	Twin LD SAW	Single GMAW
Max load at 100% duty cycle, A	1500	1500	1500	1500	600
Wire diameter, mm	3.0-6.0	2x2.0-3.0	1.6-4.0	2x1.2-2.5	0.8-3.2
Wire feed, m/min	0.2-4.0	0.2-4.0	0.4-8.0	0.4-8.0	0.8-16.6

Ordering information

For ordering information please contact your nearest ESAB representative
Accessories see page 244
Optional equipment see page 243

A6 S Tandem Master

The A6 S Tandem Master is a highly versatile welding automat equipped with two A6 heads - for either DC/DC or DC/AC welding.
Direct current provides good penetration, whereas alternating current secures a high deposition rate. The A6 S Tandem Master is available in a number of models to match the customer's safety, quality and productivity requirements.

	A6 S Tandem Master
Max load at 100% duty cycle, A	2x1500
Wire diameter, mm	2x3.0-6.0
Wire feed, m/min	0.2-4.0

Ordering information

For ordering information please contact your nearest ESAB representative
Accessories see page 244
Optional equipment see page 243

Welding automation
Welding heads

A6 S Compact

The A6 S Compact 300/500 are two reliable members of the A6 family for the efficient, high-productivity SAW method. These welding heads make it possible to build highly-efficient stations for the internal welding of butt joints inside tubes down to Ø 300 mm and Ø 500 mm. TV monitoring equipment can be integrated into the system, thereby enabling the operator to supervise and adjust the head position from the outside via the TV screen.

	A6 S Compact
Max load at 100% duty cycle, A	800
Wire diameter, mm	2.5, 3.0, 4.0
Wire feed, m/min	0.5-9.0

Ordering information

For ordering information please contact your nearest ESAB representative
Accessories see page 244
Optional equipment see page 243

Welding automation
Carriers

A2/A6 Beam-travelling carriage

For many applications, a beam-mounted carriage, fitted with an A2 or A6 welding head, is the ideal solution for submerged arc and gas metal arc welding.
The beam-bound carriage has a robust, cast-metal chassis with the opportunity to mount a standard A2S or A6S welding head.

A2/A6 Beam-travelling carriage

Travel speed, m/min	0.06-2.0
Weight, kg	60

Ordering information

For ordering information, please contact your nearest ESAB representative

MechTrac 1500 and 2000

MechTrac can be the most flexible and quickest way to increase your productivity. The MechTrac is built as a gantry and can be equipped with A2 welding equipment for SAW or MIG/MAG as a complete welding station. If the workpiece rotates, other welding methods such as TIG and plasma can be used, depending on the application and handling equipment.
The MechTrac unit is suitable for different types of workpiece that can be covered by a gantry. The gantry makes it possible to weld profiles such as I-, T-, or L-beams, columns or tapered beams. Depending on the size of the workpiece, the MechTrac can be delivered in two versions. The difference is the width of the gantry, 1500 mm or 2000 mm between the legs.
The length of the legs is the same for both types, 1500 mm from the top of the rail to the inside of the overhead beam.
The gantry can carry a maximum of 220 kg, e.g two A2 welding heads, single or twin wire, complete with automatic joint tracking GMD and an OPC flux recovery unit.

MechTrac 1500 and 2000

Travel speed, m/min	0.2-2.0
Rail length, m	3
Weight, kg	220

Ordering information

MechTrac 1500	0806 490 880
MechTrac 2000	0806 490 881
Travelling rail	0806 707 880
Rail, 3 m to extend travelling rail	0806 707 881

Welding automation

Optional equipment and accessories

Auxiliary guiding equipment

Ordering information

		A2 Multitrac	A6 Mastertrac	A2 Mini Master	A6 Arc Master	A6 Tandem Master	A6 Compact
Guide wheel bogie	0413 542 880	•					
Idling roller	0333 164 880	•	•				
V-guide wheel, fillet	06711 257 80		•				
V-guide wheel	0333 098 880	•					
V-wheel track in steel	0443 682 881	•					
Guide bar 3 m	0154 203 880	•	•				
Pilot lamp D20	0153 143 886	•		•	•		
Pilot lamp D35	0153 143 885		•		•	•	•

Flux handling equipment

Ordering information

Flux recovery unit OPC basic	0148 140 880	•	•	•	•	•	
Bracket suction nozzle	0332 947 880	•	•				
Flux hopper of silumin alloy, 6 l	0413 315 881	•					
Concentric flux funnel D20	0145 221 881	•		•	•		
Centric flux funnel D35	0254 900 880		•		•		
Insert extended	0254 900 301		•		•		

Gas handling equipment

Ordering information

Cooling unit OCE-2 220 V/50-60 Hz	0414 191 881	•	•	•	•		
Hose (gas)	0190 270 102	•	•	•	•		
Hose (cooling water)	0190 315 104	•	•	•	•		
Number of meters to be specified							
Conversion set MIG/MAG, A2	0413 526 881	•		•			
Conversion set MIG/MAG, A6	0334 299 890		•		•		
Arc shield	0334 689 880	•	•	•	•		

Other accessories

Ordering information

Limit switch	0413 578 880	•					
Loop for connection of two tractor automats	0334 680 881	•	•				

SAW process components

Ordering information

Supplementary kit Twin arc, A2	0413 541 882	•		•			
Supplementary kit Light twin arc, complete, A6	0334 291 888		•		•		
Supplementary kit Heavy twin arc, complete	0334 291 889		•		•		
Strip cladding 0.5 x 30 - 100 mm	0155 972 880		•		•		
Strip cladding: Suction nozzle, flux	0156 025 001		•		•		
Carbon arc gouging for carbon electrodes 8.0-12.7 mm	0153 592 880		•		•		
Contact tube, bent	0413 511 001	•		•			

Wire equipment

Ordering information

Wire straightener	0413 983 880		•		•		
Wire straightener	0413 983 881		•		•		
Twin wire straightener*	0145 787 880	•	•	•	•		
Fine wire straightener, single wire	0332 565 880	•	•	•	•		
Wire reel, steel, 30 kg	0416 492 880	•	•		•		
Wire reel, steel Ø 220 mm	06711 640 80	•		•			
Wire reel plastic, 30 kg	0153 872 880	•	•	•	•		
Wire reel holder in steel	0449 125 880	•	•	•	•		

*) included in the supplementary kits for twin arc

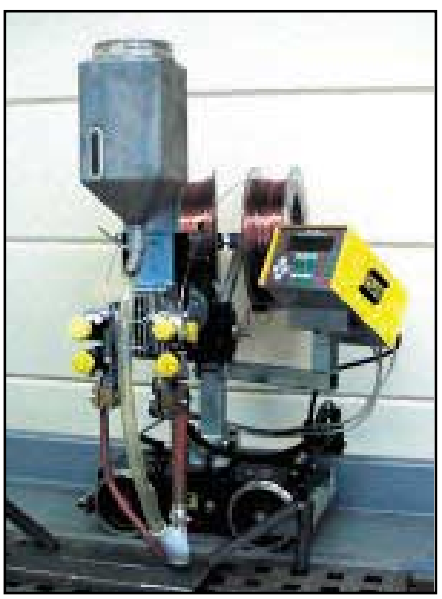
Welding automation
Wear parts

*Tandem head - see single head SAW
tw = twin wire, s = single wire, G = GMAW

		A2 Multitrac			A6* Mastertrac			A2 Mini Master			A6* Arc Master			A6 Compact
		SAW		G	SAW		G	SAW		G	SAW		G	SAW
		s	tw		s	tw		s	tw		s	tw		single
Contact nozzles wire size														
Ordering information														
M6 0.8 mm	0153 501 002			•			•			•			•	
M6 1.0 mm	0153 501 004			•			•			•			•	
M6 1.2 mm	0153 501 005		•	•		•	•		•	•		•	•	
M6 1.6 mm	0153 501 007		•	•		•	•		•	•		•	•	
M6 2.0 mm	0153 501 009		•			•			•			•		
M6 2.4-2.5 mm	0153 501 010		•						•					
M10 1.6 mm	0258 000 909			•			•			•			•	
M10 2.0 mm	0258 000 910			•			•			•			•	
M10 2.4 mm	0258 000 911			•			•			•			•	
M10 3.2 mm	0258 000 915			•			•			•			•	
M12 1.6 mm	0154 623 008	•			•			•			•			
M12 2.0 mm	0154 623 007	•			•			•			•			
M12 2.5 mm	0154 623 006	•			•			•			•			
M12 3.0 mm	0154 623 005	•			•			•			•			
M12 4.0 mm	0154 623 003	•			•			•			•			
Adapter M6/M10														
Ordering information														
Adapter M6/M10	0147 333 001			•			•			•			•	
Contact jaws D35														
Ordering information														
2.0 mm	0332 581 880													•
2.5 mm	0332 581 881													•
3.0 mm	0265 900 880				•						•			•
4.0 mm	0265 900 882				•						•			•
5.0 mm	0265 900 883				•						•			
6.0 mm	0265 900 884				•						•			
Contact jaws heavy twin														
Ordering information														
2 x 1.6 mm	0265 902 882		•			•			•			•		
2 x 2.0 mm	0265 902 881		•			•			•			•		
2 x 2.5-3.0 mm	0265 902 880		•			•			•			•		
Feed roller single wire size														
Ordering information														
0.8 mm	0145 538 881			•						•				
1.0 mm	0145 538 882			•			•			•				
1.2 mm	0145 538 883			•			•			•				
1.6 mm	0218 510 281	•		•	•		•	•		•	•			
2.0 mm	0218 510 282	•			•		•	•			•			•
2.4-2.5 mm	0218 510 283	•			•		•	•			•			•
3.0-3.2 mm	0218 510 298	•			•		•	•			•			•
4.0 mm	0218 510 286	•			•			•			•			•
5.0 mm	0218 510 287				•						•			
6.0 mm	0218 510 288				•						•			
Feed roller twin wire size														
Ordering information														
2 x 1.2 mm	0218 522 486		•			•			•			•		
2 x 1.6 mm	0218 522 488		•			•			•			•		
2 x 2.0 mm	0218 522 484		•			•			•			•		
2 x 2.4-2.5 mm	0218 522 480		•			•			•			•		
2 x 3.0 mm	0218 522 481					•						•		
Feed roller grooved														
Ordering information														
Tubular wire 1.2-1.6 mm	0146 024 880			•	•		•	•		•	•		•	
Tubular wire 2.0-4.0 mm	0146 024 881			•	•		•	•		•	•		•	
Pressure roller wire size														
Ordering information														
0.8-1.6 mm	0146 025 880			•	•		•	•		•	•		•	
2.0-4.0 mm	0146 025 881			•	•		•	•		•	•		•	
Shaft stud for knurled pressure roller														
Ordering information														
Shaft stud for knurled pressure roller	0212 901 101			•	•		•	•		•	•		•	

Iron powder feed unit OGA

Welding with a controlled addition of iron powder is a profitable method of increasing the productivity of submerged arc welding. It can for example be incorporated in a single wire, multi wire and twin arc systems. The addition of metal powder offers substantial rationalization potential. A two- or threefold increase of the deposition rate (kg/hour) compared with conventional single wire welding is realistically achievable. This method gives competitive advantages and has now been successfully implemented by many users of submerged arc welding.



A6 synergic cold wire

The ESAB A6 - SCW SAW process

The ESAB A6-SCW kit offers a unique opportunity to increase productivity by boosting the deposition rate. The cold wire is fed in synergy with the arc wire into a weld pool where it melts. This means that the arc and cold wire ratio always remains constant after a suitable wire diameter is selected. The chemistry of the weld and the deposition rate is controlled and pre-selected. It is easy for the operator to use as no additional control unit or separate feed device is needed.

The SCW process can be used in an endless variety of combinations with solid and/or cored wires, single, twin, tandem, and multiple wire applications and so on. It can also be used in surfacing applications with cored/solid wires such as concast rollers or built-up, large-diameter engine pistons. The cold wire has no arc and therefore carries no restrictions when it comes to incorporating “hard to weld” alloys in cored wires.

The cold wire kit is suitable for all ESAB's new and existing A6 systems and can be installed in a few minutes.

Ordering information

Synergic cold wire kit	0449 022 880
Contact tube 45°	0449 021 004
Liner, order per meter, 0.5 m	0366 548 021
Wire reel, plastic	0153 872 880
Wire reel, steel	0416 492 880
Contact device, 400 mm	0417 959 882
Accessories; Contact tips 1.6 mm	0154 623 008
Contact tips 2.0 mm	0154 623 007
Contact tips 2.5 mm	0154 623 006
Contact tips 3.0 mm	0154 623 005
Feed rollers 1.6 mm	0218 510 281
Feed rollers 2.0 mm	0218 510 282
Feed rollers 2.4-2.5 mm	0218 510 283
Feed rollers 3.0 mm	0218 510 298

Welding automation
Components and modules

Slides

For the accurate and comfortable positioning of the welding head in the joint, the robust A2 and A6 slides are available in a series of standard lengths for any mounting position.
The A2 linear slides have a compact box profile and adjustable guides, which form a light and plain slide. The A6 linear slide is a flexible component and, with its high loading capacity, it can be freely mounted for positioning the A6 welding head. The A6 linear slide can also be supplied with an extended runner which increases loading capacity by 25%.
The A6 servo slide is primarily intended for use in connection with positioning and joint tracking. It can be operated jointly with other A6 components, such as rotary slides for the rotation of the welding head in the joint. These servo slides are normal supplementary units for our standard joint tracking systems, like the A6 GMD.
The ORB 40 is a rotary slide for the A2 welding head. It has a lockable rotary slide and compact design with a divided clamp. The A6 rotary slide with worm gear is used when the electrode angle requires frequent adjustment in relation to the joint. These adjustments can be made continuously from 0-360° using the hand-wheel. The A6 rotary ball bearing slide is another type designed for heavier loads. The rotary ball bearing disc can be rotated 360° and locked by a lever.

Flux equipment FFRS - Basic & Super

ESAB has a number of different flux equipment/systems to combine with our automatic welding equipment. The OPC flux recoveries ae of a robust and compact design. They can be fitted equally well to A2 and A6 equipment, regardless of whether it is stationary or tractor travelling.
As a complement the system can be equipped with a hanging filter with a cyclon principle function which increase the capacity.
The OPC Basic unit works on the ejector principle using compressed air.
The OPC Super unit is like the OPC Basic. It has been developed for use in difficult environments and for heavy-duty work. With its stronger ejector and cyclone, it is especially suitable for high-capacity, continuous welding.

CRE 30/60 air-drying units

• reduces the risk of hydrogen cracking • built-in monitor - warns if the pre-set humidity is exceeded • reduces condensation - less corrosion and malfunction
The A6 CRE 30/60 air-drying units are designed for use with the ESAB flux handling system. The air-drying units works on the adsorption principle and is reactivated cold. Most industries use compressed air as an energy source for many processes. For most of them, humidity is of no importance. The welding industry uses compressed air to transport flux for submerged arc welding. The necessity to keep these consumables dry is well known. The need to keep the humidity in the air at a low level is of the same importance as all the other precautions that are taken in a weld shop to limit the risk of hydrogen cracking.
The CRE 30/60 are air dryers for compressed air. It connects to the normal air distribution system at a plant. The capacity is sufficient to handle a delivery/recovery system for SAW. Thirty normal cubic metres per hour is the capacity at rated input for CRE 30. For CRE 60 the capacity is sixty normal cubic metres per hour.
The CRE 30/60 reduces the condensation of water in pneumatic systems and thereby reduces corrosion and malfunction. Another advantage is the built-in monitor that emits a warning if the pre-set dewpoint of the air is exceeded.

Ordering information

CRE 30 air-drying unit	0443 570 880
CRE 60 air-drying unit	0443 570 881
Desiccant type 512, 10 kg	0443 570 017

Welding automation
Components and modules

Wire feed units

The ESAB A2/A6 system comprises five different wire feed units; A6 Light Duty (LD), A6 Heavy Duty (HD), A6 G, A2 SAW and A2 GMAW. The A6 LD is designed for submerged arc welding with small wire or in very narrow spaces. The A6 HD is designed for heavy-duty welding, also with submerged arc welding. The HD wire feed unit is the standard base in most SAW automatics in the heavy production industry. You can use single or twin wire, strip cladding or arc-air gouging. The A6G wire feed unit is specially designed for the mechanization of MIG/MAG welding in steel and aluminium. The G version is robust equipment for heavy-production welding. It has a water-cooled torch mounted directly on the feed unit.

A2/A6 PEH process controller

The A2/A6 PEH process controller is a control box which can be used for SAW or Gas Metal Arc welding together with A2/A6 automatic welding machines.
The control box is adapted to ESAB's LAF and TAF welding power sources. Extensive integration of the control system with the power source guarantees very high reliability in the welding process. The set parameters are monitored and error messages are transmitted when the tolerances are exceeded.
All the controls required to control the welding motions and the entire welding process are located on the control panel.

Positioning and joint tracking system

The high-precision, heavy-duty A6 servo slide forms an important part of ESAB's automatic welding program. The slide is primarily intended for use in connection with positioning and joint tracking. Depending on the desired function and the work to be performed, the slide can be combined with two different control systems: PAK or GMD. The PAK is a manual, servo-assisted, joystick-controlled positioning and joint-tracking system for one or two slides. The GMD automatic joint-tracking system covers a wide range of applications and provides convenient handling. The basic function of the GMD is to correct irregularities in weld joints and to track simple workpiece geometries. You can also use sensor fingers with the GMD system to eliminate parallax faults.

Welding automation
Column and boom

MKR 300 arc center

The MKR 300 column and boom can reach over distances of 3 to 5 m both vertically and horizontally. The 180° column rotation facility provides a total action radius. The 4x4 size is capable of 150 kg load at the end of the boom. The A2 and A6 welding systems are easily combined with the MKR 300.

Ordering information

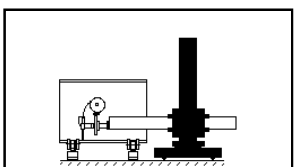
MKR 300, 3x3 meter	
Mobile	0443 222 910
Stationary performance	0443 227 910
MKR 300, 4x4 meter	
Mobile	0443 222 911
Stationary performance	0443 227 911
MKR 300, 5x5 meter	
Mobile	0443 222 912
Stationary performance	0443 227 912

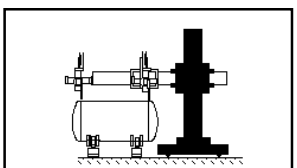
For other combinations please contact your nearest ESAB representative

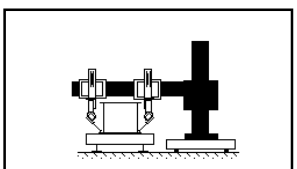
CaB arc centers

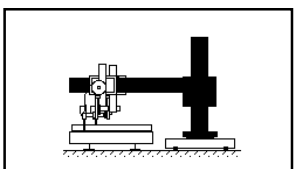
A wide range of welding column and booms is covered by this flexible programme, with loading capacities and working strokes for utmost accessibility to the welding joints. A genuine modular welding system in terms of welding methods and processes for convinient integration with the versatile column and boom is available as well. We can offer four basic stations with numerous alternatives.

Basic station 1 is a conventional column and boom with a movable boom and the welding head mounted at the end of the boom.
Basic station 2 is a conventional column and boom, with a movable boom and one welding head mounted at the end, combined with a boom-carriage-mounted welding head. (Not CaB 300).
Basic station 3 side-boom manipulator with one or two welding heads. This welding station with 5-axes movement is the basic unit for welding girders and profiles and for joining plates and sections.
Basic station 4 is a side-boom manipulator with a double track boom. The welding heads are placed on each side of the boom. The boom carriages can be individually controlled by the joint tracking systems, on separate tracks. Positioning from the rail carriage helps to create a highly-efficient welding station for the transversal, double fillet welding of stiffeners, for example.


Basic station 1


Basic station 2


Basic station 3


Basic station 4

Welding automation
Handling equipment

Positioners

ESAB has a comprehensive range of positioners for automatic welding. These very versatile handling tools enable welding to be carried out in the optimum positions to benefit the quality of the work. The positioners are easily integrated with A2/A6 automatic welding equipment. ESAB's positioner range comprises four versions with capacities ranging from 250 to 100,000 kg.

The ESAB 3500-100 000 FA is a series of a two-axle positioners: angle and rotation speed are adjustable. They come into their own when large, heavy objects need to be handled.

The 500-35000 AHMA positioners are the best solution to the problem of lifting, rotating and tilting demanding workpieces. Height, angle and speed are all adjustable. They have infinitely variable height control as a result of an hydraulic cylinder and remote control of all functions.

Ordering information

For ordering information please contact your nearest ESAB representative

Roller beds

ESAB offers a wide range of roller beds - conventional roller beds with mechanical adjustment for circular workpieces and self-aligning roller beds which automatically adapt to the workpiece diameter. These roller beds are designed to operate in combination with A2/A6 automatic welding equipment and ESAB's columns and booms.

The ESAB 5-500 TA is a series of self-aligning roller beds which are ideal for difficult and demanding workpieces. All four axles of the power section are motorised to ensure smooth rotation and even weight distribution. This is a significant advantage, especially with thin-walled workpieces and heavy objects.

In the ESAB 3-500 TNA series of roller beds, the position of the rollers can be quickly adjusted to the diameters of the workpiece using a screw. These roller beds are especially suitable for handling workpieces with small diameters. Rotation is even and accurate as both axles of the power section are motorised. The low-profile, space-saving design of the TN Series makes it ideal for use where space is limited.

Ordering information

For ordering information please contact your nearest ESAB representative

Welding automation
Flux equipment

Flux equipment FFRS 1200 & 3000

The FFRS system is designed for continuous, high-capacity welding operations. It is ideal for long runs and mass production. The FFRS 1200 & 3000 are based on the vacuum principle. On the FFRS 1200 and 3000, there is an electrically-powered recovery unit. The recovered flux is cleaned from dust and slag in the pre-separator and passed back to the pressure tank for re-use. On the FFRS 1200, the power is 1200 W and, on the FFRS 3000, the power is 3000 W. The FFRS 1200/3000 is a combined system for heavy production stations or submerged arc welding in confined spaces.

Ordering information

For ordering information please contact your nearest ESAB representative

Welding automation
Power sources

ESAB DC Arc Power LAF

LAF welding power sources have excellent welding characteristics throughout the entire current and voltage range. The starting and re-ignition characteristics are particularly good. These power sources demonstrate good arc stability at both high and low arc voltages. The continuously variable voltage control permits very precise adjustments of welding parameters.
LAF power sources produce a stable arc at very low currents and voltages. This means that they are also ideal for Gas Metal Arc welding.

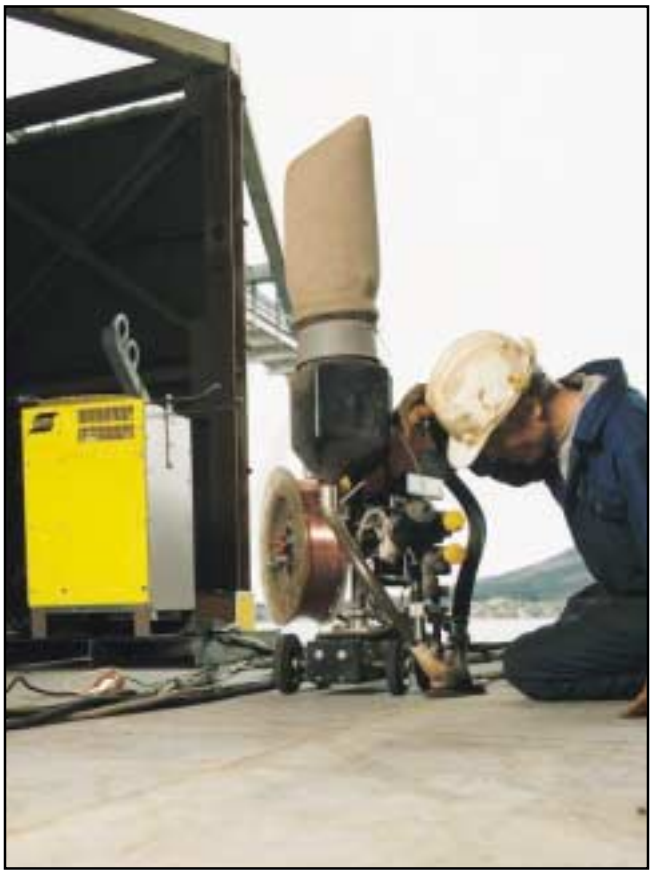
	LAF 635	LAF 800	LAF 1000	LAF 1000M	LAF 1250	LAF 1250M	LAF 1600	LAF 1600M
Mains supply, V/Hz	400/50-60	400/50-60	400/50-60	400/50-60	400/50-60	400/50-60	400/50-60	400/50-60
Max output at 60% duty cycle, A	800/44	1000/44	1000/44	1000/44	-	-	-	-
Max output at 100% duty cycle, A	630/44	800/44	800/44	800/44	1250/44	1250/44	1600/44	1600/44
Setting range, A/V	30/21-800/44	40/22-1000/45	40/22-1000/45	40/22-1000/45	40/22-1250/44	40/22-1250/44	40/22-1600/46	40/22-1600/46
Open circuit voltage, V	54	52	52	52	51	51	54	54
Efficiency at max current	0.84	0.84	0.84	0.84	0.87	0.87	0.86	0.86
Power factor at max current	0.90	0.95	0.95	0.95	0.92	0.92	0.87	0.87
Enclosure class, protection	IP 23	IP 23	IP 23	CSA	IP 23	IP23	IP 23	IP23
External dimensions, LxWxH, mm	670x490x930	646x552x1090	646x552x1090	646x552x1090	774x598x1228	774x598x1428	774x598x1428	774x598x1428
Weight, kg	260	330	330	330	490	490	585	585

Ordering information

LAF 635	0457 350 880
LAF 800	0456 321 880
LAF 1000	0456 321 881
LAF 1000M	0456 321 882
LAF 1250	0456 323 880
LAF 1250M	0456 323 881
LAF 1600	0456 324 880
LAF 1600M	0456 324 881
Control cable 15 m	0456 500 880
Control cable 25 m	0456 500 881
Control cable 35 m	0456 500 882
Control cable 50 m	0456 500 883
Control cable 75 m	0456 500 884
Control cable 100 m	0456 500 885
Wheelkit incl. space for gas cylinder for LAF 635	0457 787 880

For more information please contact your nearest sales representative

Submerged arc welding
Power sources



ESAB AC Arc Power TAF

TAF welding power sources use a thyristor rectifier bridge to convert sinusoidal secondary voltage into a square wave output that has excellent arc ignition characteristics and good welding properties.
The excellent welding characteristics of the TAF series make these power sources ideal for submerged arc welding.

	TAF 800	TAF 1250
Mains supply, V/Hz	400/50-60	400/50-60
Max output at 100% duty cycle, A	800	1250
Setting range, A/V	300/28-800/44	400/28-1250/44
Open circuit voltage, V	71	72
Efficiency at max current	0.86	0.86
Power factor at max current	0.75	0.76
Enclosure class, protection	IP 23	IP 23
External dimensions, LxWxH, mm	774x598x1228	774x598x1228
Weight, kg	495	608

Ordering information

TAF 800	0456 325 880
TAF 1250	0456 326 880
Control cable 15 m	0456 500 880
Control cable 25 m	0456 500 881
Control cable 35 m	0456 500 882
Control cable 50 m	0456 500 883
Control cable 75 m	0456 500 884
Control cable 100 m	0456 500 885

Foiltech

The Foiltech F275/300E is an easy-to-operate, foil-welding machine. It uses a transistor-controlled inverter power source with high efficiency and perfect control of the TIG welding process. It also includes shears for the accurate and clean preparation of the foil strip ends.
Maximum foil width is 275 mm, foil thickness 0.25-0.4 mm.
Machine for foil width 400-600 mm on request.

Welding automation

External seamer

• For longitudinal welds of plates and cylindrical workpieces
• Heavy-duty backing with water-cooling
• Seamer length 1,000-6,000 mm
• Plate thickness 1-8 mm
• With tack welds up to 10 mm plate thickness
• Standard Ø 1,000 mm, extension blocks available for larger diameters of 1,500/2,000 mm
• 3,000 and 6,000 mm long seamers available, with hydraulic height adjustment for diameters of 1,000-3,000 mm

Internal seamer

For longitudinal welds of plates/cylindrical workpieces (internal)
• Heavy-duty backing with water-cooling
• Seamer lengths 3,000 and 6,000 mm
• Minimum workpiece Ø 1,500 mm
• Plate thickness 1-8 mm
• With tack welds up to 10 mm plate thickness

Welding automation

A2/A6 Circotech

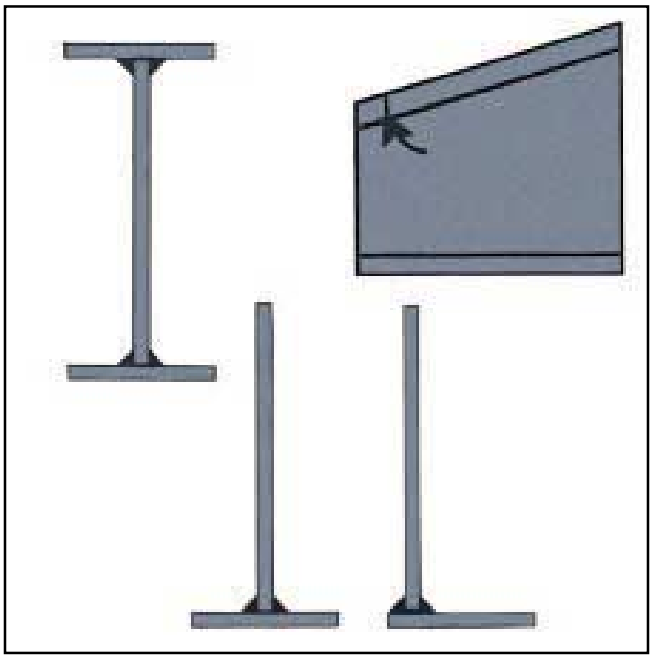
A2/A6 Circotech is a motorised, fully-automatic welding machine designed for horizontal welds on tank walls, silos, blast furnaces, chimneys, cowpers, large pennstocks and so on. The A2/A6 Circotech is available in either a single- or a double-sided version. The machine is equipped for submerged arc welding. The A2/A6 Ciroctech is also designed for double wall tanks where one side is slimmed to pass between the walls.
The machine is very easy to set up and prepare for welding and is also easy to transport as a result of its compact frame and overall design.

Rototech 80

The Rototech 80 is an automatic machine of the lathe type for the all-round welding of lightweight cylindrical workpieces with a weight of up to 80 kg. The modular design makes it easy to adapt the Rototech 80 for a wide range of applications. The machine frame is available in different lengths for workpieces with lengths of between 500 and 3,000 mm. It can be fitted with one or two equipment for MIG/MAG, TIG and plasma welding.
The turning head with its face plate is powered by an asynchronous motor via a vectorised frequency converter, which guarantees a uniform rotation speed even when the load is asymmetrical.
The support head with an air cylinder for clamping a workpiece can be moved to any point along the frame. The air cylinder is controlled with a manual valve.
In the same way, the MIG/MAG, TIG or plasma torch can also be moved to any point along the frame. Movements to and from the welding position are controlled by an air cylinder.
The Rototech 80 is PLC-controlled. The operating sequence is automatic from the start of welding until the work is finished. Continuous welding is standard. Run-off can take place with crater-filling if the welding equipment has this function. The different options enable among other things the operating cycle to be extended to permit intermittent welding to be programmed.
The machine can weld with one or two torches simultaneously.

	Rototech
Workpiece, max weight, kg	80
Torque, max, Nm	60
Orbital speed, rpm	0.12-7.0
Workpiece, max diameter, mm	400
Workpiece length, max, m	0.5 1 1.5 2 2.5 3
Clamping force, max, N	150 (3 bar)
Stroke of clamping cylinder, max, mm	80
Connection voltage, 1 phase, V/Hz	230-240/50-60

Welding automation



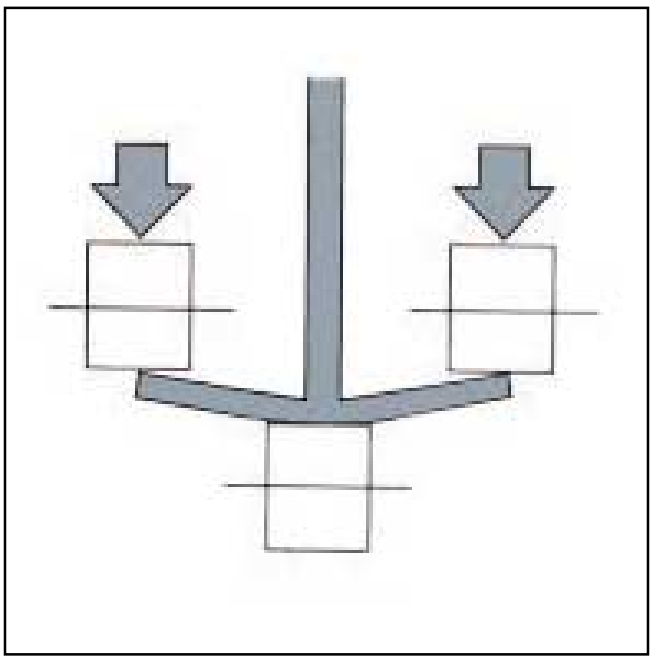
Beam welder

ESAB has more than 25 years of experience in the field of beam and profile welding. ESAB's beam and profile machines were previously marketed under the name of Gränges, but they always included the well-proven ESAB welding equipment.

ESAB offers you a complete and efficient way of welding beams and profiles. Whether you weld I-, T- or L-beams, wide flange beams, columns, tapered beams or non-symmetrical beams, ESAB has the know-how and the welding equipment to suit your efficiency, quality, precision, versatility, productivity and overall welding economy requirements.

The machines are of two types: IT-machines where the beams are welded with the web unit in the vertical position and BW-machines where the beams are produced in the horizontal position.

The main advantage of both machine types, apart from their high production capacity, is that the welding operation takes place when the flange and the web is pressed together under pressure completely to eliminate the gap between the surfaces. This ensures perfect weld quality.
The IT-machines have a built-in straightening device which compensates for the pull-back of the flanges (see picture).
ESAB's beam-welding machine program gives you the opportunity to choose the right type of equipment for your particular type of production.
Total range of beam sizes that can be welded:
Height 200-3,200 mm
Width 100-1,600 mm



Ordering information

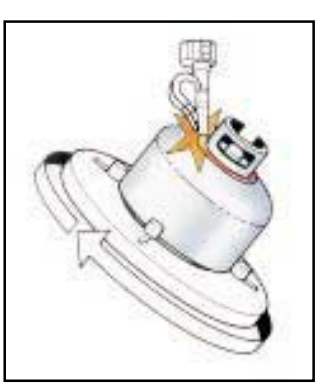
For more information please contact ESAB
Automation & Engineering, Fax no. +46 584 411721

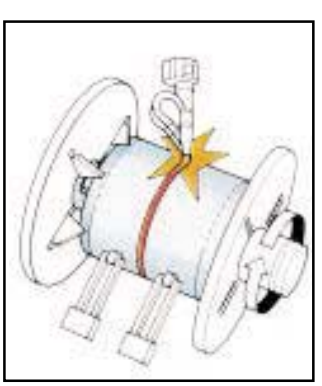
Welding automation
Engineering

LPG bottles

The production of LPG cylinders is an interesting segment for ESAB Engineering. During the 1980s, the company developed and supplied welding equipment and production lines to 13 different plants which produce LPG cylinders.
As a result of a joint venture with one of Europe's leading producers of small and medium-sized hydraulic presses, ESAB is able to offer the market a complete turn-key solution. Responsibility for all the production procedures, from sheet-metal working and welding to heat treatment, quality control and surface treatment, therefore rests with a single supplier.
ESAB can supply all the welding equipment needed for a pressure vessel production line. There is a special longitudinal welding fixture for the welding of shells. ESAB has a lathe type welder for welding the dish end, and there is a multipurpose boss welder for nipples, base rings and handles. All this equipment is dimensioned for continuous, heavy-duty operation and is made up of reliable components selected from ESAB's well-known and well-tested A6 module system.
As a result of its design and flexibilty, this welding equipment can easily be arranged to form a complete production line for pressure vessels. Nor is it restricted to only one welding method. It can easily be converted to other modes, from submerged arc welding to MIG/MAG or TIG welding.
Programming offers the benefits of an automatic welding process with single or multi-pass welding and the adjustment of overlapping, intermittent welding and so on. This automatic work cycle makes it possible for one operator to supervise a number of machines.

	Seamer ED 10	Seamer ED 15	Lathe type welder	Multipurpose boss welder
Workpiece				
Workpiece, max diameter, mm	950	950	1000	1000
Workpiece, max height, mm	-	-	-	600
Workpiece, max weight, kg	-	-	1000	500
Workpiece, max welding length, mm	1000	1500	1000/1500/2000	-
Workpiece, max plate thickness, mm	6	6	-	-





Welding automation
Engineering

Submerged Arc Welding of thick-walled material

During the past decade different welding systems for fully automatic welding have been developed and delivered by ESAB. The main characteristic of this equipment is its high degree of mechanization, which permits the multi-run fill to be performed with little or no interference by the operator as far as the operational aspects of the weld are concerned.
Especially when heavy wall structures requiring an extended quality standard are welded, it is extremely important to obtain a defect-free result since repairs are very costly.
As a result, manufacturers should apply the new philosophy which says that the welding result should not be dependent on the operator 's skill in handling the position and formation of the run sequences. Instead the quality should be secured by the welding system itself, which is capable of handling these operations with high accuracy and repeatability, whilst always maintaining a constant wire tip/workpiece distance in spite of any workpiece ovality.
ESAB have developed four different "state of the art" systems for various applications in heavy wall welding: HNG-S, HNG-T, FANG, ABW.

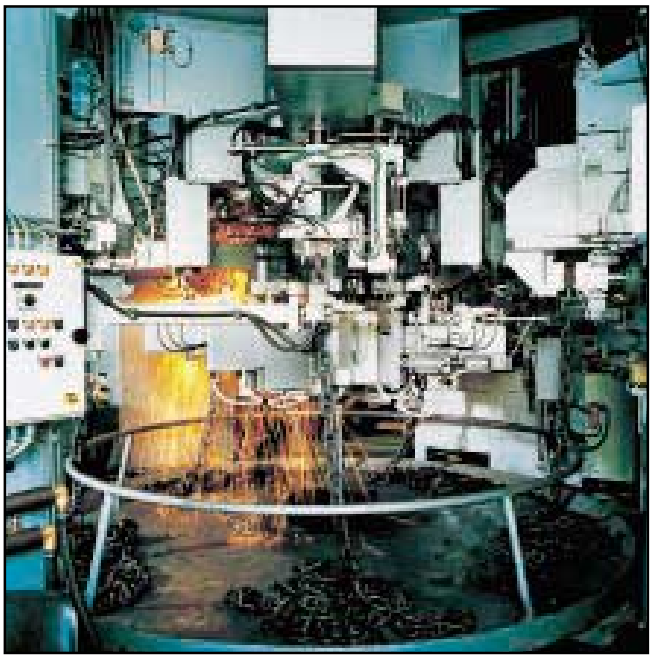
Type HNG-S
HNG is our basic Narrow Gap welding system intended primarly for the single-wire welding of heavy pressure vessels. The system can handle joint depth of up to 350 mm. The HNG system has a programmable PLC welding control with the following main features:
• Recipe handling - permitting the programming of different parameter set combinations and dimensional data (e.g. vessel diameter and overlap length)
• Programming of alarm limits and delay times
• Display of actual process data
• Control of automatic electrode shift function enabling fully automatic multi-run welding of main fill at Narrow Gap welding.
• Automatic 2-axes joint tracking - vertical with reference from joint bottom and horizontal with reference from both joint sides during Narrow Gap welding.

Type HNG-T
The technical concept for the HNG-T, is the same as for HNG. The only difference is that the HNG-T is designed for tandem welding. The system will provide fabricators with an optimum combination of running characteristics and metallurgical properties.
A deposition rate of 15-16 kg/hour - run after run in continuous welding - will cut welding times by about 50%.

Type FANG
The FANG welding system is capable of accomplishing fully-automated longitudinal and circumferential seam operations. As a result of this high degree of automation, one operator can supervise several machines working simultaneously for either circumferential or longitudinal welding. However, since the automatic bead placement function requires consistency of joint volume, thereby enabling a uniform fill, a special procedure for joint preparation is necessary for the optimum use of the system. For this reason, FANG is recommended first and foremost for the continuous mass production of products such as e.g. pipe mill production.

Type ABW
ABW stands for Adaptive Butt Welding. Further advancements in development have resulted in the innovation of the fully-automatic and adaptive ABW system, which is as far as we know, the only of its kind in the world capable of emulating the human intelligence associated with the complete weld fill during multi-run welding.
The system can cope with any kind of normal butt joint configuration. As a result of its excellent adaptive function, the ABW is able to handle joint gap or mismatch deviations along the joint line.
Programming the ABW is simple - only your welding parameter data has to be programmed and stored in the MMC library. This fully-automatic and adaptive system will produce tremendous savings primarly as a result of much shorter production times, and virtually no repairs. ABW will also supply a weld report justifying how the work that has been accomplished. The system is available for both single wire and tandem technology.

Welding automation
Resistance welding



Flash butt welding

ESAB manufacture a complete series of flash butt welding machines for different welding objects with a welding area of 500 mm^2 up to 30,000 mm^2.
The flash butt welding technique is especially convenient and profitable for precision and mass production work as it permits a high level of mechanization and automation of the manufacturing process.
Our engineers have designed and constructed plants and turn-key projects all over the world.

ESAB's resistance welding program
Chain-making installations, type Carousel
Size 5 Ø 18-47 mm
Size 6 Ø 25-63 mm
Size 7 Ø 30-81 mm
Size 8 Ø 60-107 mm
Size 9 Ø 80-127 mm
Size 10 Ø 90-173 mm

Fully automated chain-making plant type ZAC
ZAC 554 Ø 18-34 mm
ZAC 42M Ø 18-42 mm

Chain-welding installation, type Rocat
WT 18-26 Ø 18-26 mm
WT 22-36 Ø 22-36 mm

Fully automatic link-bending plant, type YLNB
YLNB 451 Ø 14-26 mm
YLNB 552 Ø 22-36 mm

Flash butt welding machines, type SVU-K
5883-K Welding areas 1,400 mm^2
6883-K Welding areas 2,000 mm^2
7883-K Welding areas 5,000 mm^2
8883-K Welding areas 8,000 mm^2
9883-K Welding areas 10,000 mm^2
The figures are based on an up setting force of 5 kp/mm^2

Resistance heaters, type ZSM
ZSM 055-360 Ø 14-26 mm
ZSM 155-800 Ø 18-36 mm
ZSM 155-640 Ø 16-34 mm
ZSM 255-640 Ø 17-47 mm
ZSM 355-1200 Ø 30-81 mm
ZSM 555-1500 Ø 60-107 mm
ZSM 654-2400 Ø 80-140 mm
ZSM 754-3200 Ø 90-173 mm

Chain-bending machines, type ZKBH
ZKBH 25 Ø 17-56 mm
ZKBH 45 Ø 30-96 mm
ZKBH 55 Ø 60-128 mm
ZKBH 65 Ø 80-152 mm
ZKBH 75 Ø 90-173 mm

Rail-welding machine, type ZFR
ZFSC 10 Welding areas 12,000 mm^2
ZFR 10 B Welding areas 10,000 mm^2
ZFR 11 GC Welding areas 12,000 mm^2

Flash butt welding machine for tubes, type SVU
SVU 7884-H Welding areas 2,300 mm^2
SVU 8884-H Welding areas 3,600 mm^2

Welding machine for extended surfaces, type FMA
FMA-01 Welding areas 200 mm^2 x 2 Round studs
FMA-11 Welding areas 320 mm^2 x 2 Plate fins
FMA 12 Welding areas 320 mm^2 x 2 Flat studs

Steel grating machine
ZRGB 135 bearing bars 3x25 - 5x60

Flash butt welding machines for repair anode studs in the aluminium industry
SVU 9883-S Ø 140 mm
ZF 12 AA Ø 160 mm

Friction Stir welding

ESAB SuperStir™

ESAB has extended its product programme to include machines for a new welding method, Friction Stir Welding (FSW). This method has been developed and patented by TWI in the UK. The FSW method is based on the principle of obtaining sufficiently high temperatures to forge two aluminium components, using a rotating tool which moves along the joint.
Using the FSW method, aluminium components are joined together without increasing the temperature above melting point.

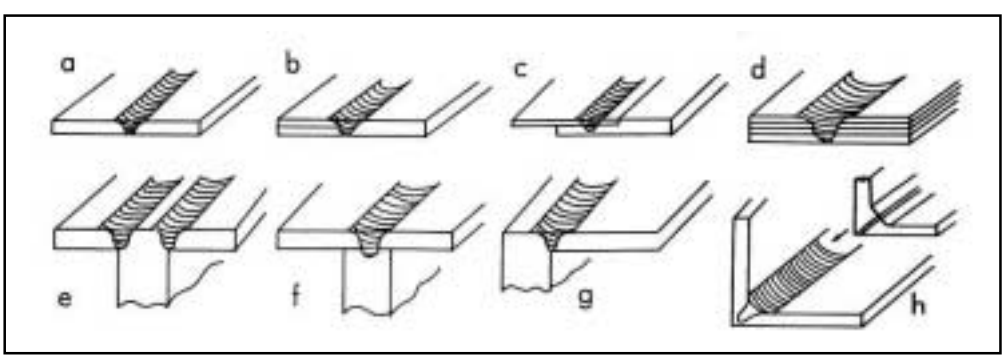
ESAB's SuperStir™ programme includes a variety of machines developed from a standardized ESAB SuperStir™ base unit and with working ranges of 0.5 x 1.5 m up to 10x20 m within the same concept. The programme also includes models of the gantry type of different kinds.

The Friction Stir Welding of aluminium has been shown to produce joints with high-strength values and without inclusions and impurities.
Bending tests and tensile tests have been conducted with superb results. The fatigue properties are outstanding compared with other welding methods.
Furthermore, the joint is almost free from stress and has a perfect root surface when welded from one side. This results in a minimum of supplementary work.

Friction Stir Welding is ideal for joining straight profiles and flat plates with a thickness of 1.6-30 mm. When welding materials with a thickness of more than 15 mm, the welding is done from both sides. The maximum thickness is around 30 mm at 100% penetration.

Suitable applications:
- Shipbuilding
- Offshore platforms
- Air craft industry
- Space industry
- Railway wagons, trams, underground train carriages
- Automotive industry
- Brewing industry
- Bridge building
- Production of electric motors
- Defence industry
- Cooling elements.

Joint configurations suited to Friction Stir Welding



a-Square butt, b-Combined butt and lap, c-Single lap, d-Multiple lap, e-3-piece T butt, f-2-piece T butt, g-Edge butt, h-Possible extrusion design to enable corner fillet weld to be made.

Resistance welding
Spot welding

4607 RN

The 4607 is an air-operated, high-speed, spot-welding machine of the rocker arm type. It is equipped with a built-in, programmable welding timer of the TE 90 type. Up-slope and impulses can be selected to improve the welding capability in galvanised steel sheet. If the machine is equipped with an extra foot pedal, two different welding programs can be used. This is useful when different sheet combinations are welded on the same workpiece.
Different types of lower arm with direct-mounted electrodes are available as options.
Electrode dimension Ø 12.7 mm “1/2” cone 5° as standard.

	4607RN
Rating at 50% duty cycle, kVA	16
Max short circuit current, kA	13.5
Secondary voltage, V	3.4
Electrode force, kN	2.4-0.95
Throat depth, max/min, mm	500-230
Throat gap, mm	225
Compressed air supply, bar	6
Cooling water, l/min	2.5
Mains supply, V/Hz	400/50
Fuse, slow, A	35
Weight, kg	121

4620 N/4623 N

The 4620 N and 4623 N are air-operated, high-speed, spot-welding machines of the rocker arm type. The machines are equipped with a built-in, programmable welding timer of the TE 90 type. Up-slope and impulses can be selected to improve the welding capability in galvanised steel sheet. If the machine is equipped with an extra foot pedal, two different welding programs can be used. This is useful when different sheet thickness combinations are welded on the same workpiece.
Different types of lower arm with direct-mounted electrodes are available as options.
Electrode dimension Ø 14.8 mm cone 5º as standard.
Other types of spot-welding machine can be offered on request.

.

	4620N	4623N
Rating at 50% duty cycle, kVA	35	50
Max short circuit current, kA	17.5	16.5
Secondary voltage, V	4-5.4	6.1
Electrode force, kN	4.25-2.1	2.6-1.6
Throat depth, max/min, mm	600-280	800-480
Throat gap, mm	280	280
Compressed air supply, bar	6	6
Cooling water, l/min	4	4
Mains supply, V/Hz	400/50	400/50
Fuse, slow, A	63	100
Weight, kg	200	215

Resistance welding

8009/8005

Combined spot- and projection-welding machine for production workshops. The machine has water-cooled fixture tables and is a true all-round machine for all types of spot-welding in thin steel sheets, plus the projection welding of crossed wires.
Two-hand manoeuvre on a separate stand and key-switch controlled opening stroke are standard.
The weld timer can be programmed from the simplest welding cycle to the most complex, which could include up-slope, down-slope and several impulses.
As an option, the machine can be equipped with an RS232 output for a printer or a computer.

	8009	8005
Rating at 50% duty cycle, kVA	35	60
Max short circuit current, kA	20	26
Secondary voltage, V	4/5.4	5/7.1
Electrode force, kN	4.7	4.7
Throat depth, spotwelding, mm	500	500
Throat depth, fixture table, mm	380	380
Throat gap, mm	max 400	max 400
Compressed air supply, bar	6.5	6.5
Cooling water, l/min	4.6	4.6
Mains supply, V/Hz	400/50	400/50
Fuse, slow, A	63	125
Weight, kg	315	340

8007

The 8007 is a combined spot- and projection-welding machine for heavy production. The high electrode force of 7.4 kN permits the spot welding of stainless steel sheets with a good weld appearance.
Many types of projection welding can be performed with this machine, which has well-dimensioned fixture tables made of copper alloy.
Two-hand manoeuvre on a separate stand and key-switch controlled opening stroke are standard.
The weld timer can be programmed from the simplest welding cycle to the most complex, which could include up-slope, down-slope and several impulses.
As an option, the machine can be equipped with an RS232 output for a printer or a computer.

	8007
Rating at 50% duty cycle, kVA	80
Max short circuit current, kA	34
Secondary voltage, V	6.1-8.3
Electrode force, kN	7.4
Throat depth, spotwelding, mm	550
Throat depth, fixture table, mm	420
Throat gap, mm	max 400
Compressed air supply, bar	6.5
Cooling water, l/min	5
Mains supply, V/Hz	400/50
Fuse, slow, A	160
Weight, kg	440

Resistance welding

6102 3 phase/DC

A three-phase DC machine offers the following advantages compared with AC:
o Improved weldability because of smooth heat penetration into the weld
o Symmetrical load on the three-phase network
o Reduced installation costs (smaller fuses)
o Less reactive power consumption
The 6102 is a combined spot and projection welder. Because of the high short circuit current (60 kA), the machine is suitable for the spot-welding of aluminium.
If the machine is equipped with option 6135 (cylinder 12.4 kN), it offers a powerful combination of current and electrode force for many projection welding appliances.
As standard, the machine is equipped with a lever for the “head descent without pressure” function, which makes it easy to adjust electrodes and tools. Key-switch controlled double stroke, emergency stop and protection involving an automatic circuit breaker are standard.
This machine model is also available as an AC welding machine.

	6102
Rating at 50% duty cycle, kVA	100
Max short circuit current, kA	60
Secondary voltage, V	5.5/6.3
Electrode force, kN	7.4 (option 12.4)
Throat depth, spotwelding, mm	535
Throat depth, fixture table, mm	410
Throat gap, mm	max 475
Compressed air supply, bar	6.5
Cooling water, l/min	12
Mains supply, V/Hz	400/50
Fuse, slow, A	100
Weight, kg	660

ZRFD 164

The ZRFD 164 is a projection-welding machine with a high production capacity. The very strong design of the arms and frame makes it suitable for highly demanding projection welding. The size of the upper T-slot table is 180x180 mm. The size of the lower table is 200x180 mm.
The ZRFD 164 can be supplied mounted to a fixed table or, as shown in the picture, to a lifting table, thereby providing adjustable working height which really helps the operator to do an efficient job. Manual adjustment with a ratchet spanner is standard, servo motor adjustment is available on request.
A microprocessor-controlled Bosch weld timer is standard, see the ZSFD machine. Four programs, up-slope and impulse welding meet the requirement for efficient projection welding.

	ZRFD 164
Rating at 50% duty cycle, kVA	132
Max short circuit current, kA	70
Secondary voltage, V	6.7-13.2
Electrode force, kN	16
Throat depth, max/min, mm	300
Compressed air supply, bar	5.6
Cooling water, l/min	10
Mains supply, V/Hz	400/50
Fuse, slow, A	250

Resistance welding

ZSFD

The ZSFD is a series of microprocessor-controlled seam-welding machines designed to meet the demands of modern industry. These machines are available with either a lower universal head (type U) or exchangeable lower heads for the circumferential and longitudinal welding of tubes (type T).
The control equipment, made by Bosch, includes:
- Programming module PSP 2000
- Timer module PSS 2036.00A
- Power module PSL 2000

The welding control can be set for continuous current or intermittent current. Four programs can be preset and selections are made using the program selector on the welding machine.
The ZSFD machines are available with
- 6.3 kN or 10 kN max electrode force at 5.6 bar air pressure
- Throat depth of 500 mm or 900 mm
- Transformer capacity of 80 kVA or 160 kVA at 50% duty cycle.

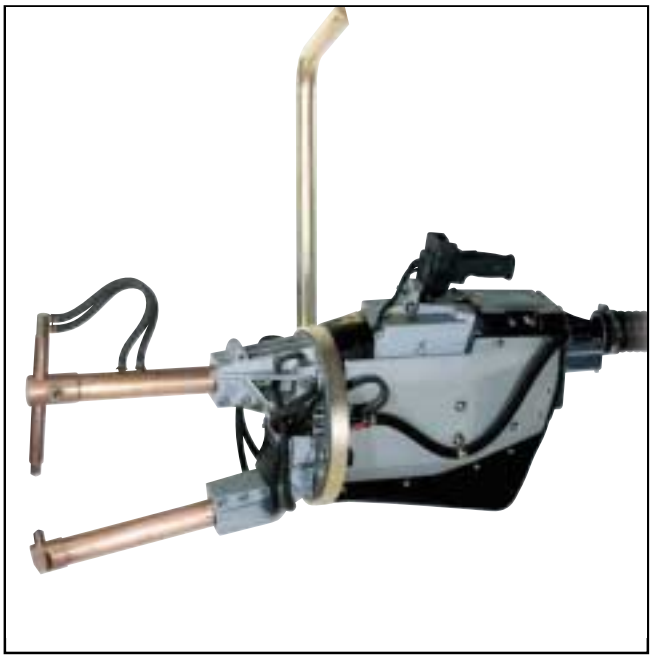
	ZSFD 147T	ZSFD 155U
Rating at 50% duty cycle, kVA	80	160
Max short circuit current, kA	23	40
Secondary voltage, V	4-8	5-10
Electrode force, kN	6.3	10
Throat depth, max/min, mm	900	500
Compressed air supply, bar	5.6	5.6
Cooling water, l/min	8	12
Mains supply, V/Hz	400/50	400/50
Fuse, slow, A	150	300

Bench machines 2102/2134

A wide range of bench machines in spot- and projection-welding versions is available. These machines can be used as manual machines or as a ready-to-use component in a mechanised application. Ready-to-use machines usually produce better welding results at a lower cost compared with units you put together yourself.
The machines are delivered complete with a built-in, programmable weld timer and are ideal for positioning on lift tables.
The 2102 is a linear-action, spot-welding machine. The built-in timer offers a great deal of potential, including storing two programs and current compensation.
The 2134 is a linear-action, projection-welding machine and the timer can be programmed from the simplest welding cycle to the most complex.
Other types of bench welding machine can be offered on request.

	2102	2134
Rating at 50% duty cycle, kVA	20	80
Max short circuit current, kA	19	44
Secondary voltage, V	4	6.1-8.3
Electrode force, kN	1.87	7.36
Throat depth, spotwelding, mm	160	-
Throat depth, fixture table, mm	-	230
Throat gap, mm	max 118	max 313
Compressed air supply, bar	6.5	6.5
Cooling water, l/min	2.7	8
Mains supply, V/Hz	400/50	400/50
Fuse, slow, A	63	160
Weight, kg	81	325

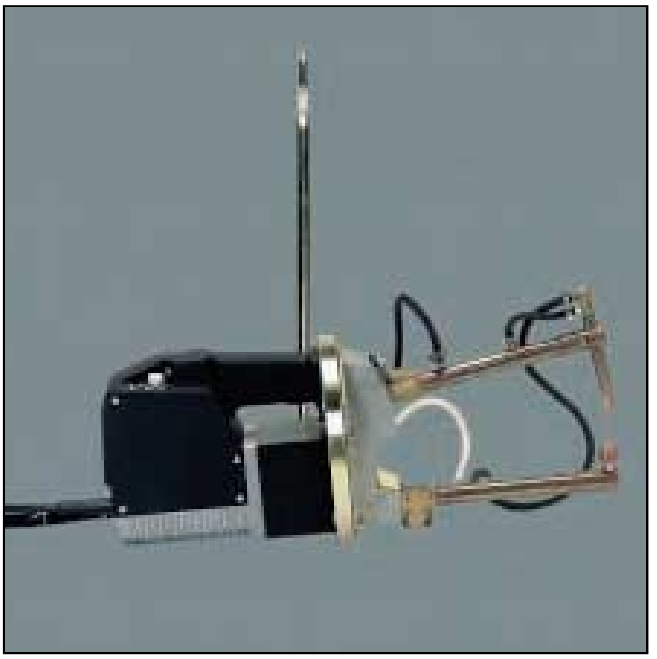
Resistance welding
Spot welding



Spot-welding guns

The 3300 Series comprises air-operated, spot-welding guns designed for powerful production.
The weld timer, which is built into the handle of the gun, can be programmed from the simplest welding cycle to the most complex, including up-slope, down-slope and several impulses.
The gun has a flexible journalled gyroscope ring and is suspended in a spring balancer.
Different gun versions are available; they include C guns and extra-powerful guns up to 60 kVA.
Supplied complete with earth leakage safety switch.

	3321	3327
Rating at 50% duty cycle, kVA	16	38
Max short circuit current, kA	14.8	27
Secondary voltage, V	2.8	5
Electrode force, kN	0.95-2.86	1.56-6.95
Throat depth, max/min, mm	650/190	1030/250
Throat gap, mm	165	155
Compressed air supply, bar	6.5	6.5
Cooling water, l/min	2.4	3.6
Mains supply, V/Hz	400/50	400/50
Fuse, slow, A	35	63
Weight, kg	39	86



Spot-welding gun 7913

The 7913 spot-welding gun is a small, lightweight gun with a built-in timer for welding thin sheets. It is water-cooled and air-operated. Special arms without water-cooling are also available for use in confined spaces. Weld time and welding current can be set on the built-in timer. Arms with a length of 150 mm to 500 mm can be used. This spot-welding gun should be hinged in a balancer.

	7913
Rating at 50% duty cycle, kVA	6
Max short circuit current, kA	8.2
Secondary voltage, V	2.7
Electrode force, kN	0.42-1.25
Throat depth, max/min, mm	500/150
Throat gap, mm	93
Compressed air supply, bar	6.5
Cooling water, l/min	1
Mains supply, V/Hz	400/50
Fuse, slow, A	16
Weight, kg	15

Cutting technologies

Oxy-fuel cutting technology

• Traditional thermal cutting process for low-alloyed steel
• For vertical cuts and bevelling (welding preparation)
• Cost-effective especially with multiple burner operation
• Most effective technology even in the future for mechanized oxy/fuel cutting with the best cutting quality in material thicknesses of up to 300 mm

Plasma cutting technology

• Modern technology for all electrically-conductive materials, used particularly for structural steel, stainless and non-ferrous metals
• Low heat distortion of the material due to densely concentrated plasma arc
• High cutting speeds (5 to 7 times higher than with oxy/fuel cutting) and low dead times (no preheating required)
• Material thickness 0.5 to 160 mm cuttable with plasma current up to 1,000 amperes
• Efficient cuts in structural steel of up to 30 mm vertically or bevelling
• Highest cutting quality obtainable with fine-beam plasma or water-injection plasma method

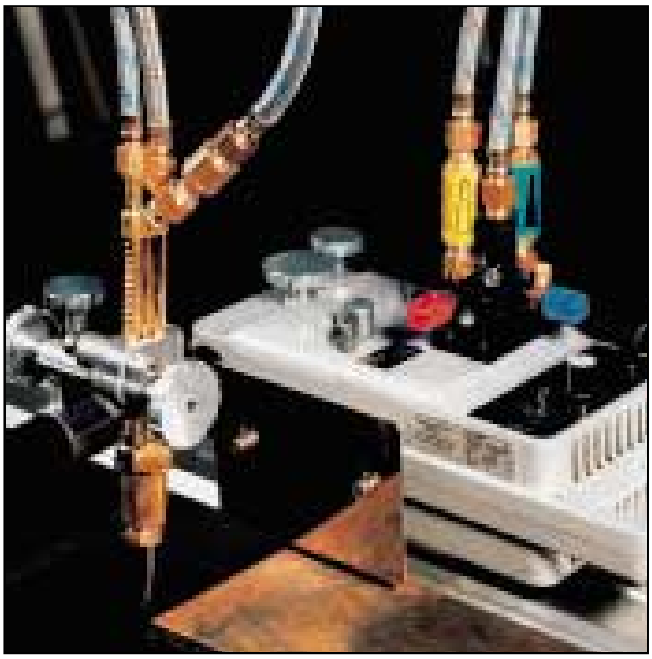
Laser cutting technology

• Contact-free thermal cutting process for highest precision
• Due to highly focused laser beam, very small kerfs (0.1 to 0.6 mm) and minimum heat distortion
• High cutting quality with various materials; in mild steel with a thickness of up to 20 mm
• Compared with oxy/fuel and plasma cutting, additional further finishing operation is not required after laser cutting

Waterjet cutting technology

Cutting with high-pressure waterjet is a useful alternative to the conventional thermal cutting process. With the addition of abrasive materials into the waterjet a wide range of metal and non-metal materials can be cut with excellent precision of the contour, such as mild and stainless steels, titanium, aluminium, stones, glass, ceramics, filled and unfilled plastics and compounds.
Attached to an ESAB cutting machine best cutting results can be achieved.
To meet the requirements of this cutting process, ESAB has developed continuous path controlled guide machines which enable full use of the potential offered by waterjets. Servo drive units run the abrasive cutting machines in a speed of 2.5-25,000 mm/min. For pure waterjet cutting up to 50,000 mm/min.

Portable gas cutting machines



IMP

A portable hand gas cutting machine with steplessly variable adjustment of the cutting machine speed for manually guided profile cutting and for I, V, X and K weld bevel cuts by means of a track guide. To produce disks or flanges, a circle cutting device can be included to the machine. IMP can be delivered with a support arm of 342 mm or 525 mm length.

	arm 525 mm	arm 342 mm
Max number of torches	2	2
Cutting thickness (1 torch), mm	3-100	3-100
Cutting thickness (2 torches), mm	3-75	3-75
Cutting speed, mm/min	75-700	75-700
Max torch lateral adjustment, mm	330	150
Max parallel cut, mm	480	300
Min parallel cut, mm	45	45
Max/Min circle cut, Ø mm	1740/75	1380/75
Mains supply, V/Hz	230/50-60	230/50-60
Input power, VA	60	60
Weight, kg	9	9

Ordering information

Contact your nearest ESAB representative for more information.

Cadet

Cadet YRK is a portable, single torch gas cutting machine for manually guided profile cutting and for I and V weld bevels cuts. To produce disks or flanges, an adjustable circle cutting device is available. The minimum radius is 35 mm.

	YRK
Max number of torches	1
Cutting thickness, steel, mm	75
Cutting speed, mm/min	720
Max/Min circle cut, Ø mm	1200/70
Max torch lateral adjustment, mm	120
Mains supply, V/Hz	220/50
Weight, kg	8

Ordering information

Contact your nearest ESAB representative for more information.

Portable gas cutting machines

Pipe cutting

Tubocadet

The Tubocadet is a portable pipe gas cutting machine for producing I or V cuts up to 45° angle setting. The cutting plane for size G1 up to G4 can be adjusted from 0° up to 22.5° inclined cuts. The Tubocadet is available in four sizes for pipe diameters from 50 mm up to 1,500 mm for cuts perpendicular to the axis of the pipe and four sizes for pipe diameters from 65 mm up to 1,400 mm for cuts inclined to the axis of the pipe. Maximum cutting thickness is 75 mm (see picture).

PPC-S

The PPC-S is a portable pipe gas cutting machine designed for demanding cuts on pipes perpendicular to the pipe centre line. It is used for the preparation of vertical (I) cuts or bevels in V shape up to an angle of 45°. A link chain around the pipe is used to guide the machine. Movement is carried out via a double crank with spindle and a worm drive.
PPC-S cuts pipes up to 600 mm diameter with the standard chain set (32 links) and extension sets of 20 links are available. Maximum cutting thickness is 25 mm.

Ordering information

Contact your nearest ESAB representative for more information.

Star

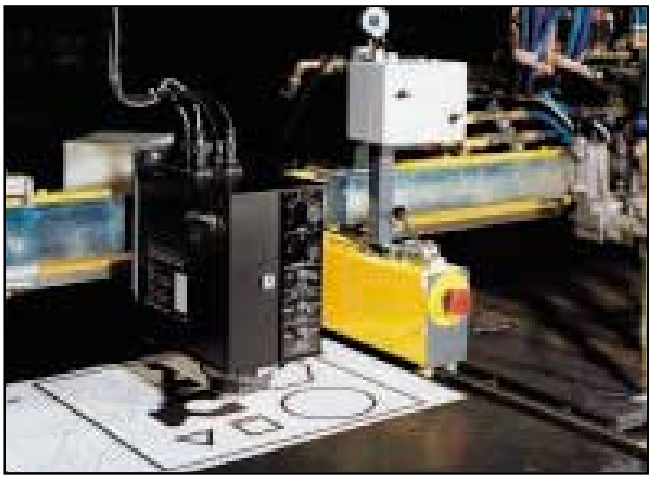
Star is a portable articulated-arm gas cutting machine, which is available as a table model (T) or a standing model (S) with magnetic roller drive for profile cutting from mild steel templates (models TM or SM) - with a manually-guided serrated wheel drive for profile cutting from markings on the workpiece (models TL or SL) - with magnetic roller drive and with a manually-guided serrated wheel drive (models TML or SML). The TL/TML and SL/SML models can be equipped with a circle-cutting device.

	Star
Max number of torches	1
Cutting thickness, steel, mm	3-125
Cutting speed, mm/min	100-700
Max/Min circle cut, Ø mm	865/50
Max profile cut from template, mm	750x900
Max straight cut from template, mm	1950
Mains supply, V/Hz	230/50-60
Input power, VA	50

Ordering information

Contact your nearest ESAB representative for more information.

Stationary cutting machines
Oxy-fuel and plasma cutting



ULTRAREX™ UXB

A stationary co-ordinate gas cutting machine with photo-electric tracer control (scale 1:1) designed for profile cutting (edge tracing from drawing lines, min. line thickness 0.8 mm). The machine can be equipped with manual or motorized torch height controls. The gas distribution is performed by central, manually-operated cut-off valves. The cutting oxygen can be switched on automatically via an electro-magnetic valve. An optional circle-cutting device can be supplied.

	12.5	15	15/20
Max number of torches	4	4	4
Cutting width (1 torch), mm	1250	1500	1500
Cutting width (4 torches), mm	4x310	4x375	4x500
Cutting thickness (1 torch), mm	3-200	3-200	3-200
Cutting thickness (4 torches), mm	3-75	3-75	3-75
Cutting speed, mm/min	100-1000	100-1000	100-1000
Max/min parallel cut, mm	1250/95	1500/95	2000/95
Max/Min circle cut, Ø mm	1000/150	1000/150	1000/150
Cutting length 4000 mm track, mm	3250	3250	3250
Tracing length, mm	1000	1000	1000
Tracing width, mm	1250	1500	1500
Mains supply, V/Hz	230/50	230/50	230/50
Input power, VA	≈ 200	≈ 200	≈ 200
External dimensions, LxWxH, mm	750x3200 x2100	750x3700 x2100	750x4200 x2100
Cutting table height, mm	700	700	700

Ordering information
Contact your nearest ESAB representative for more information.

ULTRAREX™ UXC

A stationary co-ordinate gas cutting machine with ASE photo-electronic tracer control (scale 1:1) designed for profile cutting (edge or line tracing). Tracer speed up to 3,000 mm/min. The machine can be equipped with manual, motorized or automatic capacitive torch height control. The electrical ignition device results in ease of operation when more than one torch is used. For plasma cutting the machine can be equipped with a plasma torch and automatic height control. The height control depends on the plasma system.

	12.5	15	15/20
Max number of torches	4	4	4
Cutting width (1 torch), mm	1250	1500	1500
Cutting width (4 torches), mm	4x310	4x375	4x500
Cutting thickness (1 torch), mm	3-200	3-200	3-200
Cutting thickness (4 torches), mm	3-75	3-75	3-75
Cutting speed, mm/min	100-3000	100-3000	100-3000
Max/min parallel cut, mm	1250/140	1500/140	2000/140
Max/Min circle cut, Ø mm	1000/150	1000/150	1000/150
Cutting length 4000 mm track, mm	3250	3250	3250
Tracing length, mm	1000	1000	1000
Tracing width, mm	1250	1500	1500
Mains supply, V/Hz	230/50-60	230/50-60	230/50-60
Input power, VA	≈200	≈200	≈ 200
External dimensions, LxWxH, mm	750x3200 x2100	750x3700 x2100	750x4200 x2100
Cutting table height, mm	700	700	700

Ordering information
Contact your nearest ESAB representative for more information.

Stationary cutting machines
Oxy-fuel and plasma cutting

ULTRAREX™ UXD-P

For cutting speeds of up to 20,000 mm/min.
With the NCE numerical control, the strong co-ordinate drives and a cutting speed of up to 20,000 mm/min, this machine is suitable for cutting using plasma methods. However, oxy/fuel or a combination of oxy/fuel and plasma cutting are also cost effective alternatives.
Two versions are available:
• with plastic drag chain for hose and cable support for one plasma torch
• with profile rail for hose and cable suspension of one plasma torch and one oxy/fuel torch or two oxy/fuel torches.
Several plasma cutting power sources can be supplied. See specification on page 281.

	1100	1500	2000
Max number of torches	1	2	2
Cutting width (1 torch), mm	1100	1500	2000
Cutting thickness, steel, mm	acc to plasma specs	acc to plasma specs	acc to plasma specs
Cutting speed, mm/min	50-20000	50-20000	50-20000
Cutting length 4000 mm track, mm	2650	2650	2650
Mains supply, V/Hz	230/50-60	230/50-60	230/50-60
Input power, VA	≈500	≈500	≈500
External dimensions, LxWxH, mm	1300x2260 x1630	1300x2660 x1650	1300x3160 x1650
Cutting table height, mm	700	700	700
Oxy/Fuel Mode			
Cutting width (2 torches), mm	2x550	2x750	2x1000
Cutting thickness (2 torches), mm	3-125	3-125	3-125
External dimensions, LxWxH, mm	1300x2260 x2450	1300x2660 x2450	1300x3160 x2450

Ordering information
Contact your nearest ESAB representative for more information.

PEGASUS precision plasma cutting system

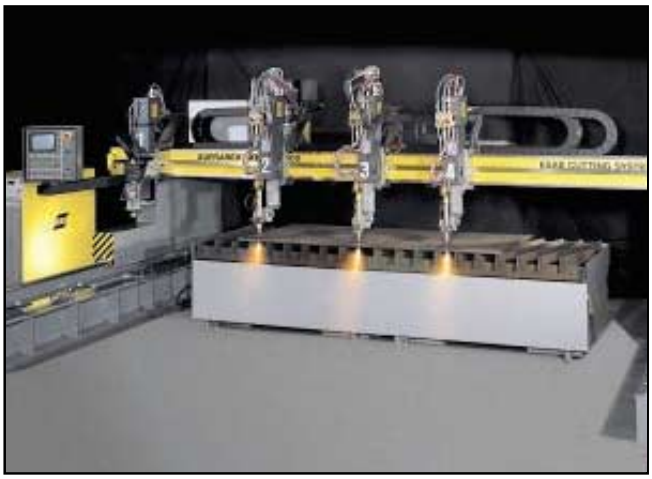
ESAB cutting systems have developed a revolutionary machine tool that takes advantage of the latest developments in ESAB precision plasma to cut parts close to laser quality but at a fraction of the cost. By offering fully integrated components, we have produced an advanced ESAB cutting system that can be supported from one source.
Features:
• dynamic machine performance
• high-speed torch lift and lower
• pre-flow and pre-switch of plasma gases
• high CNC processing speed

As standard, the PEGASUS precision cutting system is equipped with the ESAB Precision Plasmarc™ system. All materials can be cut with one plasma torch and one electrode (6-100 A): mild steel up to 20 mm (3/4 inches), stainless steel and aluminium up to 16 mm (5/8 inches). See also page 281.

	PEGASUS
Cutting width (1 torch), mm	2000
Cutting length, mm	4000
Cutting thickness, mild steel, mm	20
Max positioning speed X, Y, m/min	40
Max acceleration, g	0.1
Positioning accuracy, mm	±0.1
Repeatable accuracy, mm	±0.05

Ordering information
Contact your nearest ESAB representative for more information.

Stationary cutting machines
Oxy-fuel and plasma cutting



SUPRAREX™ SXE-P1

The SUPRAREX™ SXE-P1 is equipped with tools for exact positioning and high performance and with rugged drive elements for the highest machine response to obtain efficient production. An NCE control of the latest generation is included as standard for maximum ease of operation. Positioning speed up to 20,000 mm/min. Needless to say, the SUPRAREX™ SXE-P1 can be fitted with all applications such as plasma and/or oxy-fuel in combination with marking applications.
1) For cutting thicknesses of more than 200 mm, the cutting table must be lower
2) Other gases on request
3) Other connection voltages on request

	3000	4500
Max number of torches	6	6
Cutting width (1 torch), mm	2200	3700
Cutting width (2 torches), mm	2x1100	2x1850
Cutting width (6 torches), mm	6x365	6x615
Cutting thickness (1 torch), mm	3-200 1)	3-200 1)
Cutting thickness (2 torches), mm	3-200	3-200
Cutting thickness (4 torches), mm	3-150	3-150
Cutting thickness (6 torches), mm	3-100	3-100
Cutting thickness, 3-torch head, mm	8-75	8-75
Positioning speed, mm/min	20000	20000
Mains supply, V/Hz	230/50 3)	230/50 3)
Input power, VA	≈2000	≈2000
External dimensions, LxWxH, mm	2000x3650 x2000	2000x5150 x2000
Cutting table height, mm	700	700

Ordering information
Contact your nearest ESAB representative for more information.

SUPRAREX™ SXE-P2

Using the SUPRAREX™ SXE-P2, the lean production of cut parts is assured, along with reproducible high quality, functionality and efficiency. The advantages are high flexibility to comply with customer-specific requirements. Ease of operation is guaranteed, even for complex cutting requirements, due to user-friendly NCE controls.
1) For cutting thicknesses of more than 200 mm, the cutting table must be lower
2) Other gases on request
3) Other connection voltages on request

	4000	5500
Max number of torches	8	8
Cutting width (1 torch), mm	3200	4700
Cutting width (2 torches), mm	2x1600	2x2350
Cutting width (6 torches), mm	6x535	6x785
Cutting width (8 torches), mm	8x400	8x585
Cutting thickness (1 torch), mm	3-200 1)	3-200 1)
Cutting thickness (2 torches), mm	3-200	3-200
Cutting thickness (4 torches), mm	3-150	3-150
Cutting thickness (6 torches), mm	3-100	3-100
Cutting thickness (8 torches), mm	3-40	3-40
Cutting thickness, 3-torch head, mm	8-75	8-75
Positioning speed, mm/min	20000	20000
Mains supply, V/Hz	230/50 3)	230/50 3)
Input power, VA	≈2000	≈2000
External dimensions, LxWxH, mm	2000x4650 x2000	2000x6150 x2000
Cutting table height, mm	700	700

Ordering information
Contact your nearest ESAB representative for more information.

Stationary cutting machines

SUPRAREX™ SXE-P3

Due to the use of high-precision guidance elements in the machine design, the SUPRAREX™ SXE-P3 guarantees reproducible accuracy in the cut parts. Economical and cost-oriented cutting technology thanks to high positioning and processing speeds. In addition to all the usual plasma and oxy-fuel applications and marking methods, the SUPRAREX™ SXE-P3 can also be equipped with an endless rotating triple-torch unit.
1) For cutting thicknesses of more than 200 mm, the cutting table must be lower
2) Other gases on request
3) Other connection voltages on request

	5000	8000
Max number of torches	12	12
Cutting width (1 torch), mm	4200	7200
Cutting width (2 torches), mm	2x2100	2x3600
Cutting width (6 torches), mm	6x700	6x1200
Cutting width (8 torches), mm	8x525	8x900
Cutting width (12 torches), mm	12x350	12x600
Cutting thickness (1 torch), mm	3-200 1)	3-200 1)
Cutting thickness (2 torches), mm	3-200	3-200
Cutting thickness (4 torches), mm	3-150	3-150
Cutting thickness (6 torches), mm	3-100	3-100
Cutting thickness (8 torches), mm	3-40	3-40
Cutting thickness, 3-torch head, mm	8-75	8-75
Positioning speed, mm/min	20000	20000
Mains supply, V/Hz	230/50 3)	230/50 3)
Input power, VA	≈2000	≈2000
External dimensions, LxWxH, mm	2000x5650 x2000	2000x7650 x2000
Cutting table height, mm	700	700

Ordering information

Contact your nearest ESAB representative for more information.

PRO-LAS 1® laser guard system

Laser technology enjoys the advantages of speed and precision, technological advances mean you can expect great things in the future. However, such advanced technology demands a high level of safety. For this reason, internal standards requires that safety standards must be met, ranging from safety class 4 to safety class 1 for laser cutting systems.

Laser safety class 1
ESAB manufactures complete cutting systems with stringent safety standards!
Every user of a laser cutting system bears responsibility for safety and conformity with current standards. The trade association supervises conformity with safety standards designed for worker protection.
The PRO-LAS 1® laser guard system, together with the ALPHAREX laser cutting systems, was prototype-tested and approved by the trade association. This means that the operator is not burdened with the cost and inconvenience of converting his shop floor or of complex acceptance inspections by the trade association.

Extended running times without the need for permanent supervision
The patented laser-protection material can withstand direct exposure to the laser for extremely long periods. PRO-LAS 1® permits the unsupervised running of the laser cutting machine for up to eight hours.

Economical on space
Thanks to its economical design, PRO-LAS 1® provides comprehensive safety but takes up very little space. Normal work routines can continue undisturbed alongside the laser cutting equipment.

Ordering information

Contact your nearest ESAB representative for more information.

Stationary cutting machines

ALPHAREX large plate laser cutting

Laser cutting imposes rigorous demands on guiding machines and the ALPHAREX offers precision technology which sets new standards. A strong, rigid machine portal structure with an integrated drive system for both longitudinal and transverse axes using well-established technology. Double-sided longitudinal drives with maintenance-free, brushless motors, in conjunction with anti-backlash high dynamic planetary gears operating via pinions and precision-tooled rack quality, the highest guidance and positioning accuracy, high acceleration performance and high dynamic feed rates.

The ALPHAREX features:
• Microprocessor laser control (Pentium processor) with NCE 620
• Bevel with five-axis laser cutting technique for welding edge preparation in mild steel, stainless steel and aluminium
Max. angle to be cut, laser cutting quality in mild steel:
Material thickness ≤ 10 mm, 45° angle
Material thickness ≤ 12 mm, 30° angle
• CO_2 laser power 3,000 W, 4,000 W or 5,000 W with an enclosed beam delivery system
• Flexible material handling
• Stationary or table-pallet table change system
• Programmable gas selection
• Cutting parameter manager
• Laser oxygen cutting – cutting gas oxygen O_2 for mild steel
• Laser fusion cutting (high-pressure cutting) – nitrogen N_2 for aluminium and stainless steel
• Tele service diagnostics
• Operator calling system
• Cutting width, 3,000 and 5,000 mm
• Cuttingh length, no limitation

Ordering information

Contact your nearest ESAB representative for more information.

HYDROREX HXA-P mid rail cutting machine

The HYDROREX HXA-P has a traditional gantry construction. Together with a powerful NC control with integrated waterjet cutting technology, cutting accuracies for the highest requirements are obtained.

• Stable mechanical construction
• Ball screw axis drive system for X, Y and Z axis
• Rack and pinion axis drive system (dual side) for X axis
• Digital brushless AC drives
• Contour cutting speed up to 15,000 mm/min (high speed 15,000 mm/min)
• Positioning accuracy 0.125 mm
• Repeatability 0.025 mm
• Lip seal design with positive air purge
• 1-4 abrasive cutting heads
• Cutting table with garnet removal system
• Closed loop water filtration system

	2400x1200	4000x2000	4000x4000
Cutting width, mm, 1 carriage	2600	4000	4000
Cutting width, mm, 2 carriages	2500	3800	3800
External dimensions, LxWxH, mm	3300x4500 x2630	4300x5700 x2630	6100x5700 x2630
Table width (inside), mm	3000	4200	4200
Cutting table height, mm	900	900	900
Z-axis travel range, mm	300	300	300
Max number of torches	2	4	4

Ordering information

Contact your nearest ESAB representative for more information.

Stationary cutting machines
Waterjet cutting

HYDROREX HXA-H high rail cutting machine

The design of the HYDROREX HXA-H high rail cutting machine was specially adapted to take account of ergonomic considerations. In addition to a stable mechanical construction and high cutting accuracy, the operator has very good access to the cutting table. This provides the highest flexibility during the waterjet cutting process.

- Stable mechanical construction
- Ball screw axis drive system for X, Y and Z axis
- Linear ways on X and Y axis
- Digital brushless AC drives
- Contour cutting speed up to 15,000 mm/min.
- Positioning accuracy 0.1 mm
- Repeatability 0.025 mm
- Lip seal design with positive air purge (6.2 bar)
- 1-4 abrasive cutting heads
- Cutting table with garnet removal system
- Closed loop water filtration system

	2400x 1200	4000x 2000	4000x 4000	5000x 4000
Cutting width, mm, 1 carriage	2600	4000	4000	4500
Cutting width, mm, 2 carriages	2500	3800	3800	5000
Track length, mm	1200	2000	4000	4000
External dimensions, LxWxH, mm	4100x 4500x 5500	4700x 5700x 5500	6500x 5700x 5500	6500x 5700x 5500
Table width (inside), mm	3000	4200	4200	5200
Cutting table height, mm	900	900	900	900
Z-axis travel range, mm	300	300	300	300
Max number of torches	4	4	4	4
Spreader bar, mm	600/ 1200	600/ 1200	600/ 1200	600/ 1200

Ordering information
Contact your nearest ESAB representative for more information.

HYDROREX HXA-L low-rail cutting machine

The major elements that make up the HYDROREX HXA-L low-rail waterjet cutting system are the basic gantry structure and rail system, the Vision computer numerical control system and the range of process equipment which is also manufactured by ESAB. Rack & pinion dual-side drive system, way covers and powerful servo drives guarantee a high level of accuracy and availability. The efficient NC control with integrated waterjet cutting technology makes the HYDROREX HXA-L a versatile waterjet cutting machine.

- Stable mechanical construction
- Rack and pinion drive for X and Y axis
- Linear ways "T"-rail system
- Digital brushless AC drives
- Contour cutting speed, 2.5 up to 10,000 mm/min
- Positioning accuracy +/- 0.2 mm over 2 x 2 m area
- Repeatability +/- 0.075 mm over 2 x 2 m area
- Way covers
- 1-4 abrasive cutting heads
- Cutting table with abrasive removal system
- Closed-loop water filtration system

	3200	3900	4500	5100	5700	6300	6900
Cutting width, mm, 1 carriage	2600	3200	3800	4500	5100	5700	6300
Cutting width, mm, 2 carriages	2400	3000	3600	4300	4900	5500	6000
External dimensions, LxWxH, mm	(X+ 2200)x 4500x 3520*	(X+ 2200)x 5100x 3520*	(X+ 2200)x 5700x 3520*	(X+ 2200)x 6300x 3520*	(X+ 2200)x 6900x 3520*	(X+ 2200)x 7500x 3520*	(X+ 2200)x 8100x 3520*
Cutting table height, mm	700	700	700	700	700	700	700
Z-axis travel range, mm	300	300	300	300	300	300	300
Max number of torches	4	4	4	4	4	4	4

* X, cutting length, 2600, 3200, 5400 or 7500 mm

Ordering information
Contact your nearest ESAB representative for more information.

Stationary cutting machines

HYDROREX-PR pedestal-rail cutting machine

The HYDROREX-PR (pedestal rail) is a dual-side drive, low-cost, gantry style waterjet cutting machine comprising the basic gantry structure and a 4,800 mm longitudinal rail. It features AC brushless motors, planetary gearboxes and digital servo amplifiers. The following table details the technical specifications of the machine and many of the individual components. Additional options include ESAB's Vision PC computer numerical control, the video-path tracing system, hand pendant, way covers and laser pointer. The pedestal mount HYDROREX-PR is available in cutting widths of 1,500 mm and 2,000 mm and lengths of up to 6,100 mm.

- Stable mechanical construction
- Rack and pinion drive for X (dual side drive) and Y axis
- Digital brushless AC drives
- Planetary gearboxes
- Contour cutting speed, 2.5 up to 25,000 mm/min
- Positioning accuracy +/- 0.25 mm
- Repeatability +/- 0.125 mm
- Way covers for X, Y and Z axis
- 1 abrasive cutting head
- Cutting table with abrasive removal system

	2100	2400
Cutting width, mm, 1 carriage	1500	2000
Track length, mm	3300-6100	3300-6100
External dimensions, LxWxH, mm	(4800-7600)x2700 x2600	(4800-7600)x3000 x2600
Cutting table height, mm	660	660
Max number of torches	1	1

Ordering information

Contact your nearest ESAB representative for more information.

NUMOREX™ NXB/ TELEREX™ TXB

The NUMOREX™ NXB and TELEREX™ TXB machines permit all cutting and marking operations to be carried out fully automatically. The CNC and/or optically-controlled machines are designed for use in the fabrication of small, medium and large components, both congruent and mirror image, and are used for one-off and batch manufacture in the ship building, steel and mechanical engineering industries.
New: Plasma marking tool Arc marker
Cutting torch with automatic internal ignition Multijet.

NUMOREX™ NXB

Track width (mm)	Working area 2 single torch carriages (mm)	Working area 2 three torch carriages (mm)
4000	3200	2800
4500	3700	3300
5000	4200	3800
5500	4700	4300
6000	5200	4800
6500	5700	5300
7000	6200	5800
7500	6700	6300
8000	7200	6800

TELEREX™ TXB

Track width (mm)	Working area 2 single torch carriages (mm)	Working area 2 three torch carriages (mm)
7000	6200	5800
7500	6700	6300
8000	7200	6800
8500	7700	7300
9200	8400	8000
9700	8900	8500
10200	9400	9000
10700	9900	9500
11200	10400	10000
12200	11400	11000
13200	12400	12000
14200	13400	13000

TELEREX™ TXB machines up to 30000 track width on request.

Ordering information

Contact your nearest ESAB representative for more information.

Stationary cutting machines
Oxy-fuel and plasma cutting

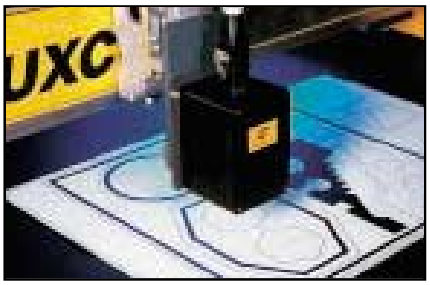
Water-injection plasma

High-power plasma cutting system, see picture, can be used for all electrically conductive materials up to 50 mm cutting thickness. In comparison to the conventional flame cutting of thin material, the cutting speed with water-injection plasma is more than 6 times faster. Minimized pollution utilizing the water muffler in connection with an exhaust system around the torch and the water table. Cutting on, in and under water can be performed.
The system can be extended up to 1,000 A cutting current for the cutting range from 50 up to 150 mm using argon and hydrogen as carrier gases. Water-injection will not be used in this cutting range.
Comprehensive options for water-injection plasma:
- different system of torch height control
- digital cutting meter
- water muffler or air/water muffler
- exhaust system at the torch

The ESAB ESP 600C power source is recommended for the high-power plasma cutting process. Output current capacity is 600 A at a 100% duty cycle and the open circuit voltage is 427 V DC. For high-current cutting, two ESP 600Cs can be connected in parallel.

Ordering information
Contact your nearest ESAB representative for more information.

Continuous path control systems



ASE 2010

The photoelectronic tracing system ASE 2010 is based on a CCD camera chip. It has more than 100,000 light sensors and is a fully microprocessor controlled system. The tracing speed is only limited by the dynamics of the machine. ASE 2010 has automatic lead calculation, digital set up kerf and cutting speed, automatic stop by loss of drawing contour. Tracing accury ± 0.1 mm.

NCE 290

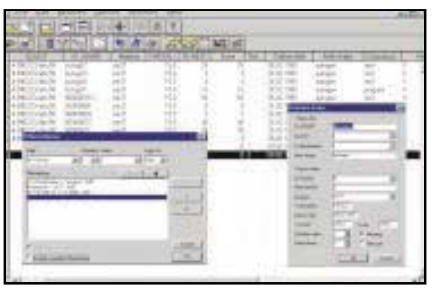
The NCE 290 CNC control designed exclusively for the ESAB-HANCOCK medium-size machine range sets a new standard for the future. All the requirements for a true CNC control are met by the NCE 290: Operator friendly, integrated data input options, accurate motion control joystick, speed potentiometer and multi-function-wheel.
The operating elements are clearly arranged on the panel.
Data input is available by means of manual data input (MDI), pre-programmed shape library (65 shapes), floppy disk drive or host PC.

NCE Vision PC

ESAB's NCE Vision PC Windows based cutting machine controller is based on Microsoft Windows 98 operating system. Ease of operation is the focus of this powerful CNC, which incorporates an array of new user-friendly features, and is built upon the latest in PC based hardware and Windows based software. Software features like menu-driven operation, real-time tool path display, and kerf-override provide the plate cutting market with focused tools to increase productivity.
The NCE Vision PC features an industrial x86 based CPU, 10.4" color LCD display, 2 gigabyte hard disk drive (minimum), and 3.5" floppy disk drive. Hardware features like the 8-position joystick, hand-wheel, and speed potentiometer make it easier to operate by putting the necessary controls at your fingertips.
The NCE Vision PC integrates station control and process control into an ergonomic operator's panel, allowing the most technologically advanced process control in the industry. Programmable station selection is included, and provides the basis for ESAB's exclusive process parameter programming.

NCE 620

Applications: High end controller for high-tech cutting machines, up to eight-axis controller (approved for five-axis control), AXA laser bevel cutting, integrated network connection available (LAN), one operation console can control two cutting machines and one cutting machine can have multiple operating consoles.
Features: New HW design, stand-alone version with new fashion flat housing, colour 10.4" LCD display, user-friendly, Windows-based operator's interface, same control elements as on all other NCEs in this family, easy operation, similar to NCE 520, extended operation panel, four mode keys, 22 input keys, six cursor keys, eight soft keys, 26 station keys, 14 macro-keys, one rapid-speed, start and stop key and 26 LED signal lamps.



Columbus II programming system (32-bit)

Based on the latest software technologies, the Columbus II offers the user a completely adaptable and flexible tool for the creation of CNC cutting programs.

Highlights:
- All the well-known cutting and nesting functions
- Perfect match for all the different ESAB cutting applications
- Flexible post-processor to adapt non-ESAB machines
- Database for plates/remnant plates/parts/material/technology
- Order and part management
- Integrated CAD
- Automatic data import from different software systems
- Flexible definition of customised calculation data
- PPS (import/export)
- Investment reliability by individual extension opportunities
- Full network integration
- Easy to learn
- Demo version (showing all modules)

Available modules:
- Basic module (contains creation of layouts by interactive nesting and definition of the technology)
- Data management module (database for geometry and part administration)
- Plate management module
- Data information module (cutting process analysis)
- Automatic real contour nesting
- PPS interface
- Import/export interface (DXF/ESSI/EIA/DSTV)
- Print layout designer
- Licence management module
- Netware server database
- Bevel cutting technology module VBA (oxy-fuel/plasma/laser)
- Integrated CAD system
- ModuLIB (unwrapping and contour data software)
- Standard shape module
- WinUdl (up/down-load to NC)
- WinPunch (paper tape punch and reader)

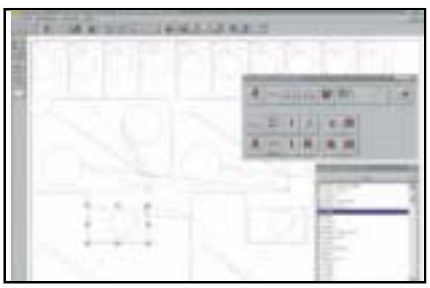
Hardware requirement:
- Intel Pentium II personal computer recommended

Operating system:
- MS Windows '95/98/Me/NT©/2000

Software

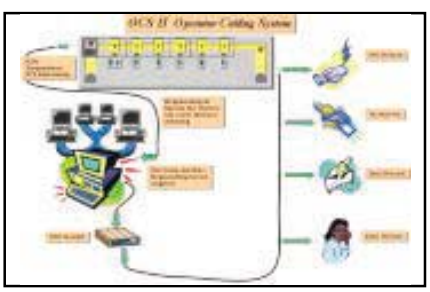
PCE process control ESAB

PCE remote monitoring and reporting system
In today's high-tech production facilities, shop automation, production planning and production tracking are becoming a necessity. The PCE system provides these features and more, when used in conjunction with the ESAB CNC. It provides remote monitoring, data reporting, report generation and remote Direct Numerical Control (DNC) capabilities. It also permits increased shop automation through the AutoCycle feature, which enables you to run the right program, on the right machine, in the right order automatically.
One or more of the following options can be used:
• Monitoring software, provides on-screen display of machine status for up to 16 ex
• Reporting software, writes the data from the machines to a Microsoft Access database
• Report generator, creates customised reports based on the data stored by the reporting software



WOP

Workshop oriented programming on the machine control
• WOP makes your machine more effective, safer and more flexible
• Numerous nesting and technology functions enable you to produce programs quickly
• The integrated CAD module fulfils all expectations in the creation of a geometrical shape
• Creating a program is even quicker with the aid of integrated firmware programs



OCS I and II

Operator calling system
• OCS I automatically detects the status of the machine
• The transmission takes place using four preselectable and prioritised telephone numbers
• A number of machines can be supervised by one operator
OCS II has the same functions as OCS I and also includes:
• PCE process control

Plasma power sources

Plasma cutting power sources

PCM 875 Plasmarc™ - cutting package from ESAB
This air-cooled package, which is immediately ready for use, is the ideal solution for fast, powerful cutting on a practical, compact machine.

ESP 100i
The ESP-100i is specially developed for mechanised cutting. The ESP technology is the perfect solution for all mechanized cutting applications with material thicknesses up to 15 mm (serves up to 30 mm). The inverter technology enables an efficient use of power for low cost of operation. A continuously variable output current from 10 to 100 A enables a tailormade adaption to all cutting requirements.

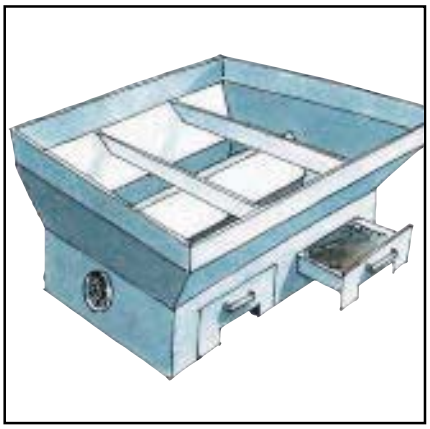
ESP 200
The ESP-200 uses ESAB's Smart Plasmarc™ concept, producing a plasma torch-cutting console which is ideally suited to different mechanised plasma-cutting applications. Since operation with or without a plumbing box is possible, the console can be configured to match the application situation. The expanded connection potential offered by the ESAB ESP-200 enables it to be easily installed for most automation applications.

ESP 600C
This high-power plasma cutting system can be used for all electrically conductive materials up to 50 mm (75 mm) cutting thickness by means of the water-injection system. In comparison to the conventional flame cutting for thin material, the cutting speed with water-injection plasma is more than 6 times faster. Cutting on, in and under water can be performed. The system can be extended up to 1000 A cutting current for the cutting range from 75 up to a max. of 150 mm when using argon and hydrogen as carrier gases. Water-injection will not be used in this cutting range.

ESAB Precision Plasmarc™ system
In ESAB's Precision Plasmarc™ system, the plasma current is compressed into a very high energy density. This produces a plasma beam which can compete with the laser in both areas - in the quality of the cutting edges and in dimensional accuracy. ESAB precision plasma cuts metals in thicknesses of up to 20 mm in mild steel, 16 mm in stainless steel and 16 mm in aluminium.

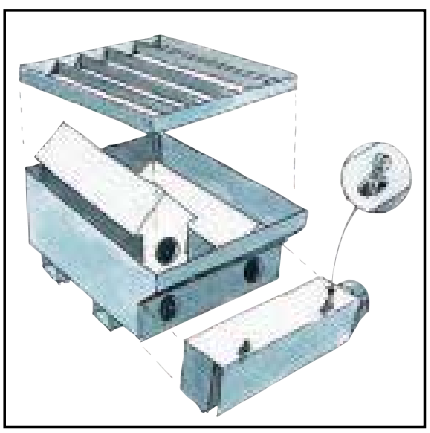
	PCM 875	ESP 100i	ESP 200	ESP 600C	Precision Plasmarc™
Cutting thickness, steel, mm	12.5	1-15 (25)	1.5-50	2-25 (50) (35)	1-20
Plasma gas	Air	Air	Air, O_2, N_2, Ar-H_2	O_2, N_2	O_2
Operating current, A	10-60	10-100	50-200	100-600	100
Output power, kW	7.2	20	40	120	20
Open circuit voltage, V	275	325	325	427	315
Mains supply, V/Hz	400/50	400/50-60	400/50-60	400/50-60	400/50
Fuse, slow, A	13 (400 V)	45	100	250	60
Input power, VA	5200	20000	25000	145000	26000
External dimensions, LxWxH, mm	520x275x410	890x530x700	1050x550x1100	1150x950x1090	550x1050x1100
Weight, kg	40	173	330	928	254

Cutting tables



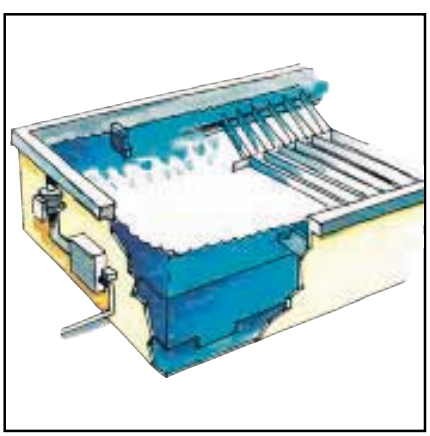
ULTRAREX™ cutting table

Suitable for oxy-fuel and plasma cutting, the single piece table comprises a combined slag box and central fume extraction air duct with an outlet point at one end of the box. Lifting eyes are welded on the inside of the table and fork lift truck lifting points are located underneath to permit easy emptying.
Two basic models available:
M for machine cutting
H for manual cutting
Table sizes: between 1,250x1,250 mm and 3,000x2,000 mm.
Cutting table height: M-model 700 mm, H-model 860 mm.



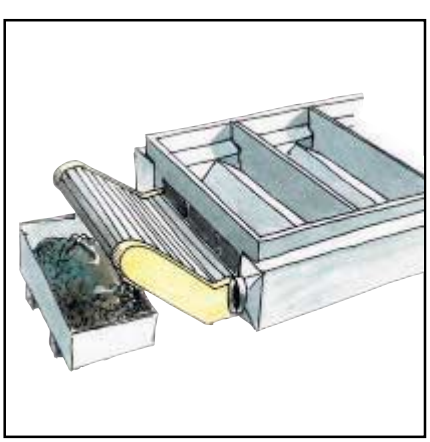
Section cutting table S

A table designed for cutting sheet metal with a maximum thickness of 200 mm* and a maximum weight of 1,600 kg/m²*. It can be used for both oxygen and plasma cutting. The extraction duct is fixed to the ground in a precise position and proportional to the cutting machine rail. Swivel dampers are located at intervals of 750 or 500 mm on the side nearest the slag boxes. The ducts have single, double or single-double positions, depending on the cutting width.
The table is composed of a number of emptyable slag boxes. There is no maximum length of the table. The minimum working width is 1,250 mm and the maximum working width is 4,500 mm.
* When using grid with flat bars. If grid for studs is used, the maximum thickness is 300 mm and the maximum weight is 2,400 kg/m².
Maximum length of the table frame section is the working width + 100 mm and the maximum width is 2.5 metres.



Water cutting table

A superior cutting table solution for plasma cutting as well as for gas cutting.
The water container is made of thick sheet steel with a rim around the table. Inside the container there are a number of brackets for the cutting grid.
The water level control can be suppiled in four alternative versions, from a simple manual level control to an automatic remote control mounted on the cutting machine panel.
Table dimensions:
Water tables are manufactured to meet the customer's plate size specifications. The table has an external reinforced rim with a width of 100 mm and a normal work height of 700 mm.
Capacity:
The table is designed for plasma cutting in sheet metal in a maximum thickness of 100 mm and a maximum weight of 800 kg/m².



Extraction cutting table with conveyor

This cutting table is designed for the oxy-cutting of sheet metal with a maximum thickness of 100 mm and a weight of 800 kg/m².
Extraction
On both sides of the conveyor there are air ducts. Depending on the working width, one or both ducts are active and equipped with duct swivel dampers at 750 mm intervals. The fan connection is Ø 315 mm.
The standard table height is 750 mm with standard cutting widths of 1,500, 2,000, 2,500, 3,000, 3,500 and 4,000 mm. Standard conveyor table length is from 3,000 to 6,000 mm. Longer lengths can be created by tandem table operation.

Standard and special cutting grids are available for all types of cutting tables.

Optional equipment

Flame and cutting monitoring

Photoelectric sensors in the torches monitor the ignition of the heating flame and measure the temperature of the liquid iron oxide during cutting. If any faults occur, either during the ignition or the cutting process, error signals are sent to the NC system. The flame monitoring system for oxy-acetylen cutting is offered for the SUPRAREX™, NUMOREX™ and TELEREX™ series.

Three torch head

Three torch heads allow to produce all usual welding edges. Depending on contour to be cut ESAB has different torch heads available: ± 90° swivelable, endless rotating with automatic torch height control, endless rotating with automatic lateral and angle setting of outside torches and with additional tools.

Powder marking

For the installation at the cutting machine ESAB offers powder marking devices, which enables all types of marking signs like crosses, lines, circles or letters to be performed NC-controlled on metal plates. The use of special marking powder and the burning in operation generates clear and very durable markings.

Arc marker

The Arc marker is available in two versions, Arc marker plasma marking tool and Arc marker variable.
Plasma marking is a new technique to sign and mark mild and stainless steel. In this process a plasma torch is used as the marking tool. Any kind of marks like dots, lines, letters and numbers are produced with a low current plasma arc transferred to the surface of the material.
The Arc marker consists of power supply, arc starter with solenoids and a plasma torch with shielded torch leads.

Plasma cutting

This process uses a concentrated electrical arc which melts the material through a high temperature plasma beam. All conductive material can be cut. ESAB offers plasma cutting units with currents from 20 to 1,000 A to cut plates with 0.6 to 150 mm thicknesses. Plasma gases used are compressed air, nitrogen, oxygen or argon/ hydrogen to cut mild and alloy steels, aluminium, copper and other metals.

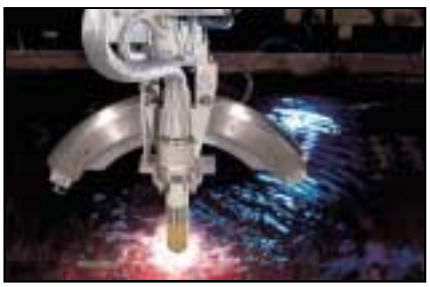
Grid cutting

To do grid cutting it is necessary to cut with “flying start” which means that after a material-less area, cold material must be cut without stop. The preheating torch is designed in such a manner that the material will be warmed up to ignition temperature. Cut-offs, section cuts, diagonal cuts and segment cuts of grids can be executed with high performance.

Optional equipment

Internal torch ignition

The Multijet torch works on the principle of an injector torch. All the components for ignition are inside the torch. The construction is compact and the ignition is protected from any dust. The cutting range covers all material thicknesses from 3 to 300 mm. The standard nozzles of the IAC, IAD, IPA, IPB and IPD types can be used. All new machines can be equipped with up to 12 Multijet torches.



Plasma variable bevel head

This plasma torch head makes it possible to produce all welding edges (V-cuts). Endless rotation, angle of bevel adjustment ± 45°. The cutting angle and lateral adjustment of the burner are controlled by the NC control. Automatic kerf correction and height control. The centre point of the burner can be defined at either the top or the bottom surface of a plate. Correspondingly, the angle is positive or negative. The plasma torch head is equipped with special collision protection.

Collision protection for plasma burner

In the event of collision with an upright part, a limit switch mounted on the torch holder will stop the machine immediately. This protects the plasma torch reliably from damage. Afterwards, the plasma torch can be easily fixed to the bracket again. This collision protection device is suitable of plasma torches of all types, but not if a plate rider system is in use.

Cutting profiles

ESAB-HANCOCK have adopted a new way of cutting profiles: only a single torch is used for cutting webs and flanges in the oxy-fuel or plasma modes. The torch assembly has three additional axes, one ± 90° swivelable swing axis (A/B), one Z axis and one ± 90° rotating torch (C). The position of the profile is checked automatically prior to cutting. As a result of profile cutting assembly, positive and negative bevel cuts of up to 45° can be executed.

Vacublast shot blasting

For further welding preparation of metal plates, Vacublast shot blasting is the ideal working tool. This process removes corrosion and primer in an area with a width of 4 to 5 cm from the surface of the steel plates. The advantages for the containing welding process are higher speed and better quality. Depending on the machine, equipment marking lines can be executed with the powder marking unit at the same time.

Ink-jet marking unit

The ink-jet marking unit permits the contactless writing of data such as markings, dates and personal marks on sheets. The solvent ink is formed in drops and is sprayed to types on the sheets as required. A choice of six different fonts is available. The symbols are 6 and 18 mm high. Bar codes can also be sprayed on the sheets. The usable speed for ink-jet marking is up to 18 m per minute.

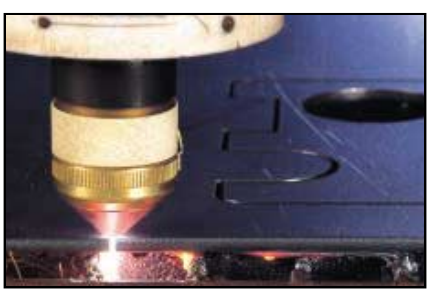
Optional equipment

Punch marking unit

The use of a punch-marking device on a cutting machine is efficient, especially when the plate has to be drilled or tooled in some other way at a later stage. This device is equipped with a pneumatic hammer unit and permits the NC-controlled punch marking of points, lines or letters.

Inscription generator “buge”

With this software option on the NC control NCE, the marking tools are used for the inscription of cutting parts. For powder marking, the minimum height of letters must be 30 mm. The code number is called by macros.



Precision plasma

In precision plasma, the plasma current is compressed into a very high energy density. This produces a precision plasma beam which can compete in terms of quality and dimensional accuracy with the laser. Precision plasma cutting of 20 mm in mild steel and 16 mm in stainless and aluminium can be performed.

Grinding

With the grinding device, the surface of plates can be cleaned very quickly from primer and prepared for marking and welding. The advantage is the high process speed. Feed speeds of more than 15 m/min are possible in a fully-automatic process with grinding and arc marking.

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