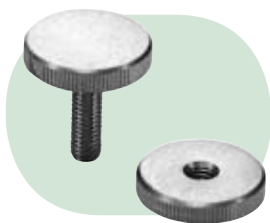


Hardware





9-6



9-7



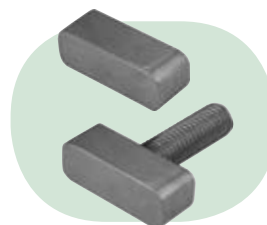
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9-8



9-9



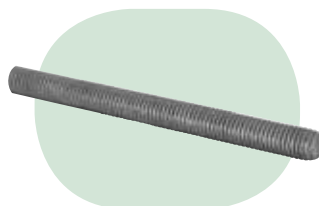
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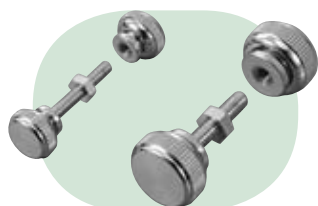
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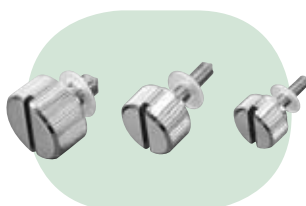
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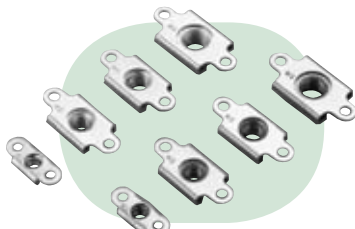
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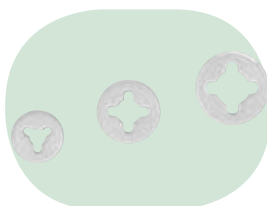
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9-17



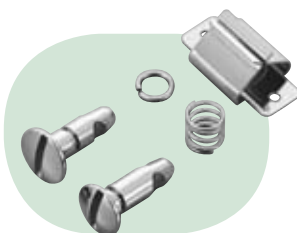
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9-19



9-20



9-21



9-22 thru 9-25



9-26 thru 9-30



9-31 thru 9-35



9-36 & 9-37



9-38



9-39



9-40 & 9-41



9-42



9-43



9-44



9-45



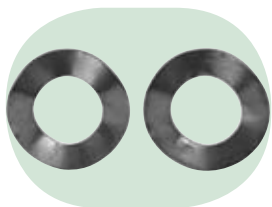
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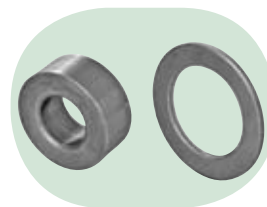
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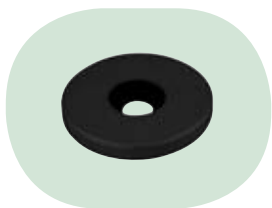
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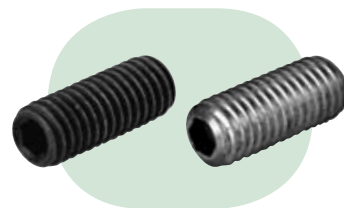
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9-52 & 9-53



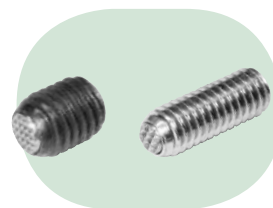
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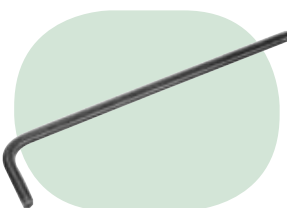
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9-57



9-58



9-59



9-60



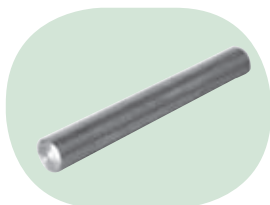
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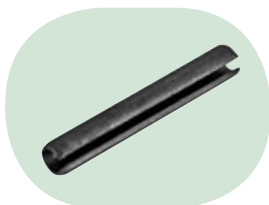
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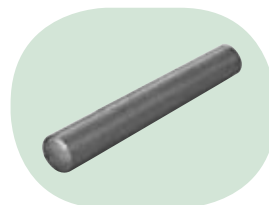
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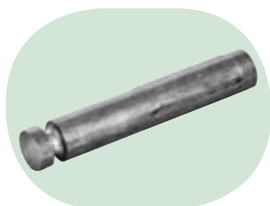
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9-67



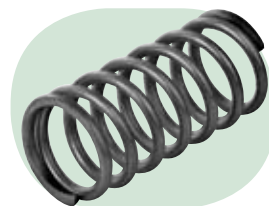
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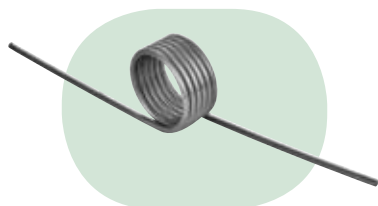
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9-70 & 9-71



9-72 & 9-73



9-74



9-75



9-76

NUT & SCREW, KNURLED

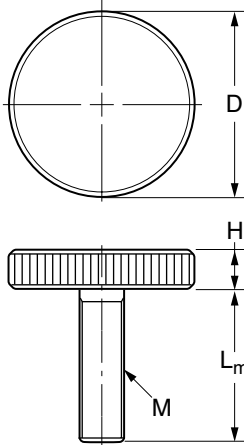


Fig. 1

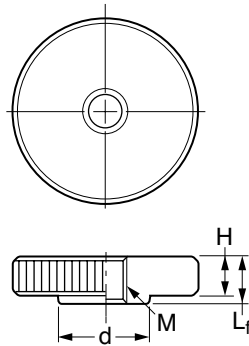


Fig. 2



Fig. 1



Fig. 2

Fig. 1 • **SCREW** – Stainless Steel, Buff Polished

Catalog Number	D	M	H	L _m	Weight g
MJAN2MMKUMS1206	12	M3	2.5	6	2
MJAN2MMKUMS1210				10	3
MJAN2MMKUMS1216				16	4
MJAN2MMKUMS1606	16	M4	3.5	6	5
MJAN2MMKUMS1610				10	6
MJAN2MMKUMS1616				16	7
MJAN2MMKUMS2010	20	M5	4	10	12
MJAN2MMKUMS2016				16	13
MJAN2MMKUMS2020				20	13
MJAN2MMKUMS2410	24	M6	5	10	20
MJAN2MMKUMS2416				16	22
MJAN2MMKUMS2420				20	23
MJAN2MMKUMS2425				25	24
MJAN2MMKUMS2430				30	25
MJAN2MMKUMS3016	30	M8	6	16	40
MJAN2MMKUMS3020				20	42
MJAN2MMKUMS3025				25	44
MJAN2MMKUMS3030				30	46
MJAN2MMKUMS3620	36	M10	8	20	78
MJAN2MMKUMS3625				25	81
MJAN2MMKUMS3630				30	84
MJAN2MMKUMS3640				40	90

Fig. 2 • **NUT** – Stainless Steel, Buff Polished • **THREADED HOLE**

Catalog Number	D	M	H	L _f	d	Weight g
MJAN2FMKUFS12	12	M3	2.5	3	6	2
MJAN2FMKUFS16	16	M4	3.5	4	8	5
MJAN2FMKUFS20	20	M5	4	5	10	10
MJAN2FMKUFS24	24	M6	5	6	12	18
MJAN2FMKUFS30	30	M8	6	8	16	34
MJAN2FMKUFS36	36	M10	8	10	20	64

NUT & SCREW, KNURLED

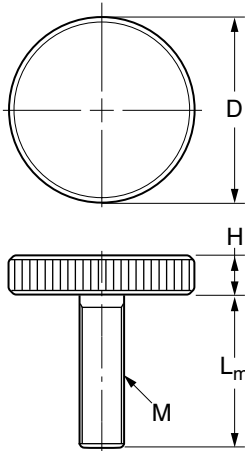


Fig. 1

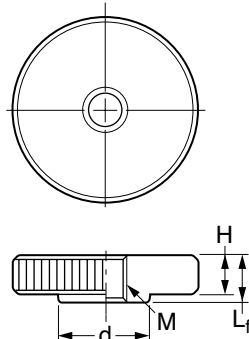


Fig. 2

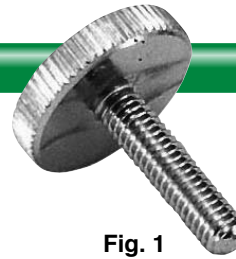


Fig. 1



Fig. 2

Fig. 1 • **SCREW** – Steel, Buff Polished & Chrome Plated

Catalog Number	D	M	H	L _m	Weight g
MJAN2MMKUM1206	12	M3	2.5	6	2
MJAN2MMKUM1210				10	3
MJAN2MMKUM1216				16	4
MJAN2MMKUM1606	16	M4	3.5	6	5
MJAN2MMKUM1610				10	6
MJAN2MMKUM1616				16	7
MJAN2MMKUM2010	20	M5	4	10	12
MJAN2MMKUM2016				16	13
MJAN2MMKUM2020				20	13
MJAN2MMKUM2410	24	M6	5	10	20
MJAN2MMKUM2416				16	22
MJAN2MMKUM2420				20	23
MJAN2MMKUM2425				25	24
MJAN2MMKUM2430				30	25
MJAN2MMKUM3016	30	M8	6	16	40
MJAN2MMKUM3020				20	42
MJAN2MMKUM3025				25	44
MJAN2MMKUM3030				30	46
MJAN2MMKUM3620	36	M10	8	20	78
MJAN2MMKUM3625				25	81
MJAN2MMKUM3630				30	84
MJAN2MMKUM3640				40	90

Fig. 2 • **NUT** – Steel, Buff Polished & Chrome Plated • **THREADED HOLE**

Catalog Number	D	M	H	L _r	d	Weight g
MJAN2FMKUF12	12	M3	2.5	3	6	2
MJAN2FMKUF16	16	M4	3.5	4	8	5
MJAN2FMKUF20	20	M5	4	5	10	10
MJAN2FMKUF24	24	M6	5	6	12	18
MJAN2FMKUF30	30	M8	6	8	16	34
MJAN2FMKUF36	36	M10	8	10	20	64

NUTS & SCREWS, KNURLED

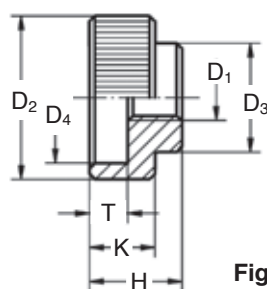


Fig. 1



Fig. 1

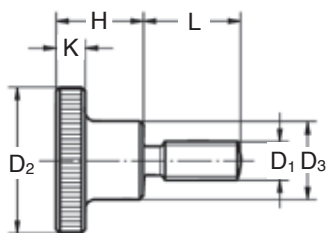


Fig. 2



Fig. 2

Fig. 1 • **NUT** – Steel, Free-Cutting, Black Oxide Finish or Stainless Steel, Natural Finish • DIN 6303

Catalog Number		D ₁	D ₂	D ₃	D ₄	H	K	T	Approx. Weight g
Steel	Stainless Steel								
MJAL60M10105	MJAL60M101052	M5	20	14	15	12	8	5	16
MJAL60M10106	MJAL60M101062	M6	24	16	18	14	10	6	27
MJAL60M10108	MJAL60M101082	M8	30	20	24	17	12	7	50
MJAL60M10110	MJAL60M101102	M10	36	28	30	20	14	8	83
MJAL60M10112	MJAL60M101122	M12	40	32	34	24	16	10	123

Fig. 2 • **SCREW** – Steel, Free-Cutting, Black Oxide Finish or Stainless Steel, Natural Finish • DIN 464

ΔCatalog Number		D ₁	D ₂	D ₃	H	K	L Length					
Steel	Stainless Steel											
MJAL60M9004X ☐	MJAL60M90042X ☐	M4	16	8	9.5	3.5	10	16	20 [*]	—	—	—
MJAL60M9005X ☐	MJAL60M90052X ☐	M5	20	10	11.5	4	10	16	20 [*]	—	—	—
MJAL60M9006X ☐	MJAL60M90062X ☐	M6	24	12	15	5	10	16	20	25 [*]	—	—
MJAL60M9008X ☐	MJAL60M90082X ☐	M8	30	16	18	6	—	16	20	25	30 [*]	—
MJAL60M9010X ☐	MJAL60M90102X ☐	M10	36	20	23	8	—	—	20	25	30	40 [*]

Δ To complete the part number, add desired length.

*The knurled thumb screw is supplied with no undercut.

NUTS & SCREWS, KNURLED

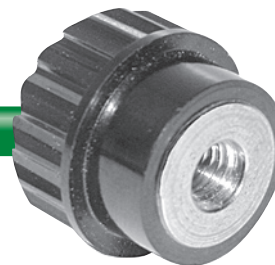


Fig. 1

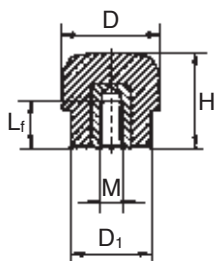


Fig. 1

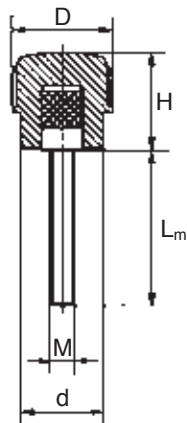


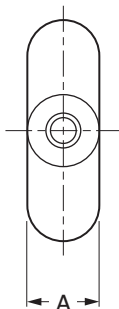
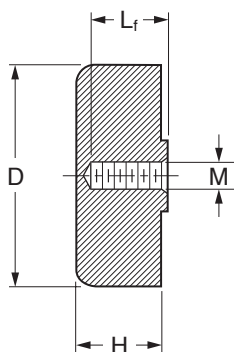
Fig. 2

Fig. 1 • **NUT** – Bakelite, Black • **THREADED INSERT** – Brass, Nickel Plated

Catalog Number	D	M	H	L _f	d	Weight g
MJAX1FM3301	17	M4	16.5	8	14	5

Fig. 2 • **NUT** – Bakelite, Black • **SCREW** – Steel, Zinc Plated

Catalog Number	D	M	H	L _m	d	Weight g
MJAX1MM3302	17	M4	16.5	26	14	7

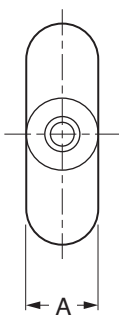
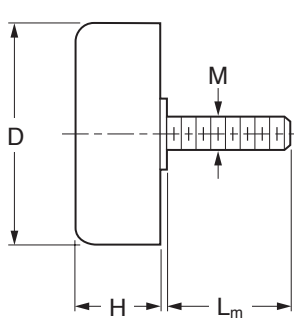


• **NUT** – Stainless Steel

Catalog Number	D	M	H	L _f	A
MKAH3FM80602506	25	M6	10	7	8
MKAH3FM80603008	30	M8	12	9	10
MKAH3FM80603510	35	M10	14	11	12

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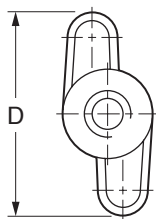
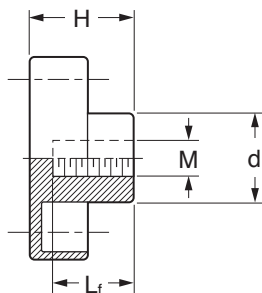


• **SCREW** – Stainless Steel

Catalog Number	D	M	H	L _m	A
MKAH3MM80500610	25	M6	8	10	10
MKAH3MM80500620				20	
MKAH3MM80500630				30	
MKAH3MM80500820	30	M8	10	20	12
MKAH3MM80500830				30	
MKAH3MM80500840				40	
MKAH3MM80501030	35	M10	12	30	14
MKAH3MM80501040				40	
MKAH3MM80501050				50	

NUTS & SCREWS, WING

RoHS
COMPLIANT



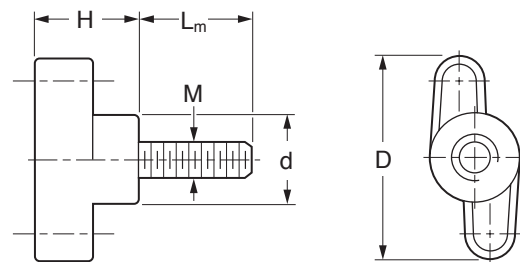
- **WING NUT**
- **BODY** – Plastic, Black • **INSERT** – Steel, Zinc Plated

Catalog Number	D	M	H	L _r	d
MKAH0FM80623506	35	M6	18	14	Ø15.6
MKAH0FM80623508		M8			
MKAH0FM80624508	45	M8	24	18	Ø20
MKAH0FM80624510		M10			

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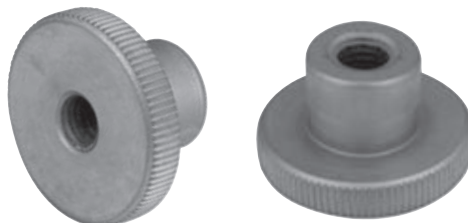
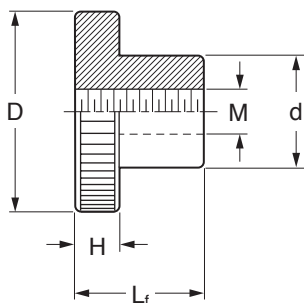
- **WING SCREW**
- **BODY** – Plastic, Black • **SCREW** – Steel, Zinc Plated

Catalog Number	D	M	H	L _m	d
MKAH0MM806130610	35	M6	18	10	Ø15.6
MKAH0MM806130615				15	
MKAH0MM806130620				20	
MKAH0MM806130625				25	
MKAH0MM806130630				30	
MKAH0MM806130810	35	M8	18	10	Ø15.6
MKAH0MM806130815				15	
MKAH0MM806130820				20	
MKAH0MM806130825				25	
MKAH0MM806130830				30	
MKAH0MM806130835				35	
MKAH0MM806140815	45	M8	24	15	Ø20
MKAH0MM806140820				20	
MKAH0MM806140825				25	
MKAH0MM806140830				30	
MKAH0MM806140835				35	
MKAH0MM806140840				40	
MKAH0MM806141015	45	M10	24	15	Ø20
MKAH0MM806141020				20	
MKAH0MM806141025				25	
MKAH0MM806141030				30	
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NUTS, KNURLED

RoHS
COMPLIANT

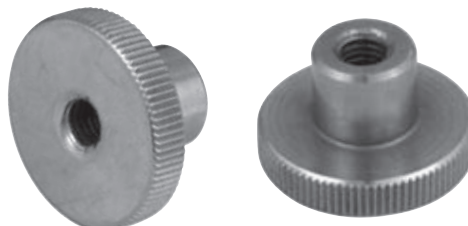
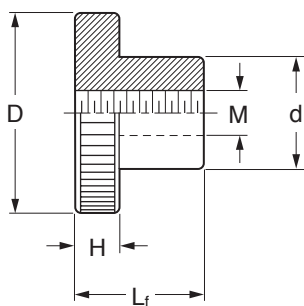


• NUT – Steel, Matte Silver

Catalog Number	D	M	H	L _f	d
MJAH1FM811012	12	M3	2.5	7.5	6
MJAH1FM811016	16	M4	3.5	9.5	8
MJAH1FM811020	20	M5	4	11.5	10
MJAH1FM811024	24	M6	5	15	12
MJAH1FM811030	30	M8	6	18	16
MJAH1FM811036	36	M10	8	23	20
MJAH1FM811040	40	M12	10	25	22

All Metric Small Parts • All Metric Small Parts • All Metric Small Parts • All Metric Small Parts • All Metric Small Parts • All Metric Small Parts

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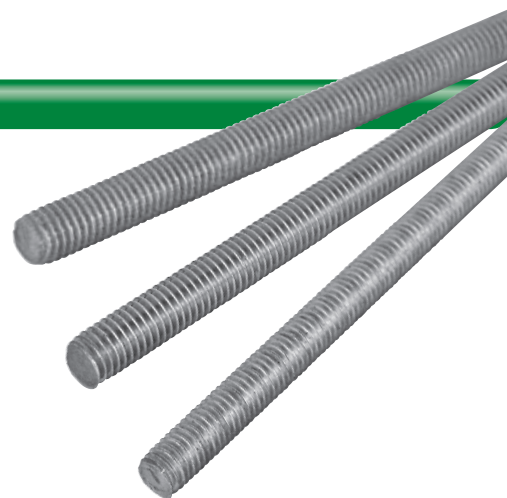


• NUT – Stainless Steel

Catalog Number	D	M	H	L _f	d
MJAH2FM812016	16	M4	3.5	9.5	8
MJAH2FM812020	20	M5	4	11.5	10
MJAH2FM812024	24	M6	5	15	12
MJAH2FM812030	30	M8	6	18	16

RODS, THREADED

RoHS
COMPLIANT



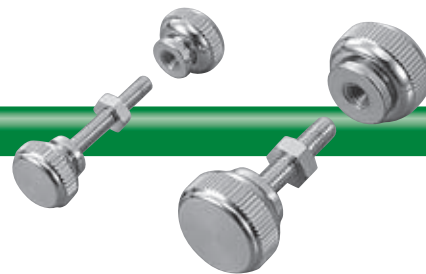
• **ROD** – Brass, Mild Steel, Stainless Steel • DIN 975

Priced Per
Meter (39.37 in.)

Catalog Number			Thread Size
Brass	Mild Steel	Stainless Steel	
—	—	MKAABMMX020	M2 X 0.4
—	*MKAABMMC023	—	M2.3 X 0.4
—	—	MKAABMMX025	M2.5 X 0.45
—	MKAABMMC026	—	M2.6 X 0.45
MKAABMMB030	—	MKAABMMX030	M3 X 0.5
MKAABMMB040	—	MKAABMMX040	M4 X 0.7
MKAABMMB050	MKAABMMC050	MKAABMMX050	M5 X 0.8
MKAABMMB060	MKAABMMC060	MKAABMMX060	M6 X 1
MKAABMMB080	MKAABMMC080	MKAABMMX080	M8 X 1.25
—	MKAABMMC100	—	M10 X 1.5
MKAABMMB120	MKAABMMC120	—	M12 X 1.75

*Will be discontinued when present stock is depleted.

NUTS & SCREWS, KNURLED - Brass

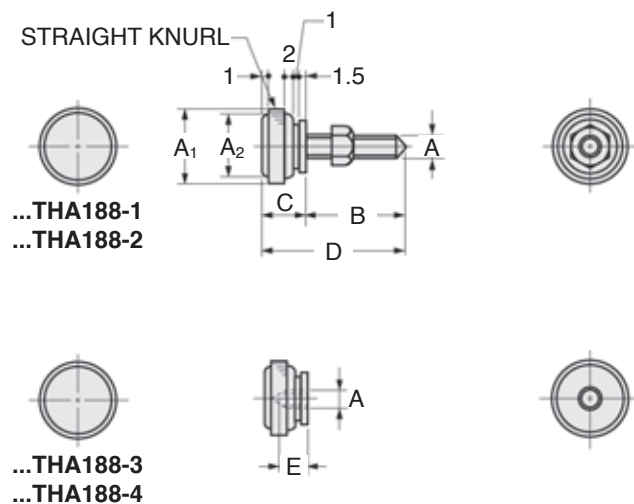


- **APPLICATIONS**

Small boxes / Small devices

- **CHARACTERISTIC**

Available as a screw type or a nut type.



- **SCREW** – Brass, Chrome Plated • **NUT** – Brass, Nickel Plated

Catalog Number	A	A ₁	A ₂	B	C	D	E	Net Weight g
MKAT04MTHA188-1	M4	Ø16	Ø15	20	10	30	—	15.5
MKAT04MTHA188-2	M3	Ø11	Ø10	—	8	28	—	6
MKAT04MTHA188-3	M4	Ø16	Ø15	—	10	—	6	12.5
MKAT04MTHA188-4	M3	Ø11	Ø10	—	8	—	4	4

SCREWS, KNURLED

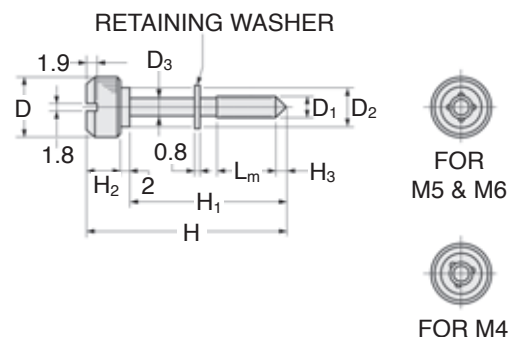
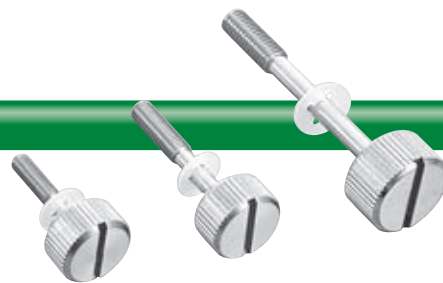
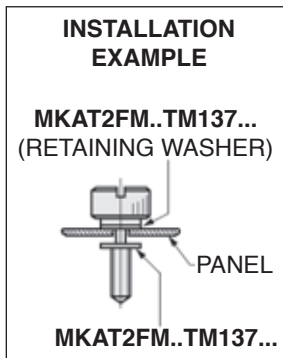


APPLICATIONS

Measuring instruments / Machine tools

CHARACTERISTICS

These are each supplied with one **MKAT2FM..TM137...** series retaining washer, which can be used to prevent the screw from falling off. If the washer is under the head of the screw, the washer will avoid scratching the mounting surface. The stainless steel screws have excellent corrosion and chemical resistance. For shorter screws, please see **..TL233...** series.



LONG SCREW – Stainless Steel • WASHER – Nylon, Natural Color

Catalog Number	Nominal Size	D	D ₁	D ₂	D ₃	H	H ₁	H ₂	H ₃	L _m	Net Weight g
MKAT02MTL215-1	M4 X 20	15	M4	10	Ø3	30	20	8	2	12	13
MKAT02MTL215-2	M4 X 30		M4		Ø3	40	30			15	13.4
MKAT02MTL215-3	M5 X 30		M5		Ø3.8	40	30			15	14.6
MKAT02MTL215-4	M5 X 40		M5		Ø3.8	50	40				15.2
MKAT02MTL215-5	M6 X 40	18	M6	12	Ø4.5	52	40	10	3	15	26.1
MKAT02MTL215-6	M6 X 50		M6		Ø4.5	62	50				27.3

All Metric Small Parts • All Metric Small Parts • All Metric Small Parts • All Metric Small Parts • All Metric Small Parts • All Metric Small Parts

9

APPLICATIONS

Measuring instruments / Distribution panels

CHARACTERISTICS

These are the shorter versions of **...TL112..** series knurled screws. Available in chrome plated brass or stainless steel. They can be used as pull knobs by attaching nuts. One **MKAT2FMTM147..** series of washer is supplied with each screw.

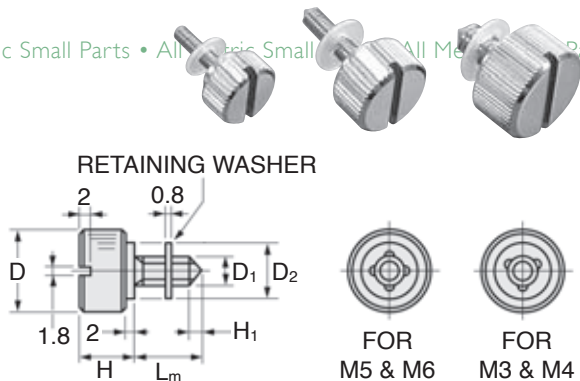
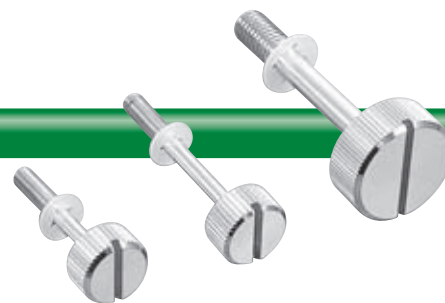


Fig 1 • **SCREW** – Brass, Chrome Plated • **WASHER** – Nylon, Natural Color

Fig 2 • **SCREW** – Stainless Steel • **WASHER** – Nylon, Natural Color

Catalog Number	Net Weight g	Catalog Number	Net Weight g	Nominal Size	D	D ₁	D ₂	H	H ₁ Ref.	L _m
Fig. 1 Brass		Fig. 2 Stainless Steel								
MKAT03MTL233-1	6.2	MKAT03MTL233SUS1	5.8	M3 X 8	Ø12	M3	Ø8	8	1.5	8
MKAT03MTL233-2	6.5	MKAT03MTL233SUS2	5.9	M3 X 12						12
MKAT03MTL233-3	13	MKAT03MTL233SUS3	12	M4 X 10	Ø15	M4	Ø10	10	2	10
MKAT03MTL233-4	13.6	MKAT03MTL233SUS4	12.5	M4 X 15						15
MKAT03MTL233-5	14	MKAT03MTL233SUS5	13	M5 X 10	Ø18	M5	Ø12	12	2.5	10
MKAT03MTL233-6	14.8	MKAT03MTL233SUS6	13.1	M5 X 15						15
MKAT03MTL233-7	23.7	MKAT03MTL233SUS7	21.9	M6 X 10		M6		12	3	10
MKAT03MTL233-8	24.6	MKAT03MTL233SUS8	22.8	M6 X 15						15

SCREWS, KNURLED - Long



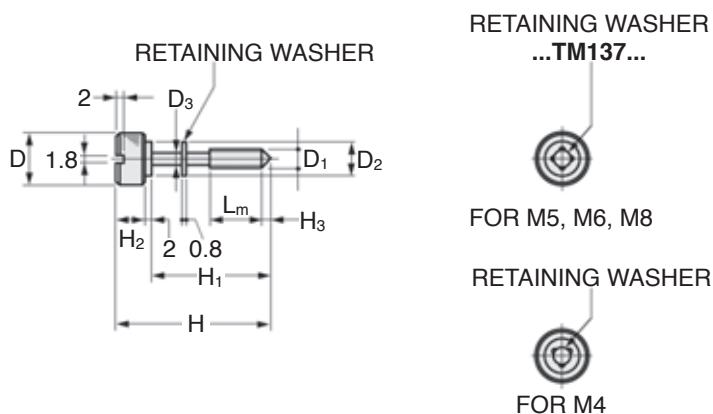
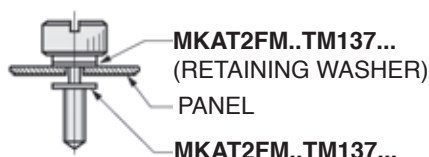
• APPLICATIONS

Measuring instruments / Machine tools /
Industrial machines or devices

• CHARACTERISTICS

Each screw is supplied with one **MKAT2FM..TM137...** series retaining washer, which can be used to prevent the screw from falling off. If the washer is under the head of the screw, the washer will not scratch the mounting surface. Some of the screw sizes are also available in **...TL215...** stainless steel series. For shorter screws, please see **...TL233...** series.

INSTALLATION EXAMPLE



• SCREW – Brass, Chrome Plated • WASHER – Nylon, Natural Finish

9

Catalog Number	Nominal Size	D ₁	D	D ₂	D ₃	H	H ₁	H ₂	H ₃	L _m	Net Weight g
MKAT01MTL112-420	20	M4	15	10	Ø3	30	20	8	2	12	13.5
MKAT01MTL112-425	M4 X 25					35	25			12	13.9
MKAT01MTL112-430	30					40	30			15	14.2
MKAT01MTL112-520	M5 X 20	M5	15	10	Ø3.8	30	20	8	2.5	12	14.5
MKAT01MTL112-525	25					35	25			15	15.3
MKAT01MTL112-530	M5 X 30					40	30				15.5
MKAT01MTL112-535	35					45	35				16.1
MKAT01MTL112-540	40					50	40				16.5
MKAT01MTL112-625	25	M6	18	12	Ø4.5	37	25	10	3	15	26.2
MKAT01MTL112-630	30					42	30				26.5
MKAT01MTL112-635	M6 X 35					47	35				27.4
MKAT01MTL112-640	40					52	40				28
MKAT01MTL112-645	45					57	45				28.7
MKAT01MTL112-650	50					62	50				29
MKAT01MTL112-835	35	M8	24	14	Ø6	47	35	4	4	15	48.6
MKAT01MTL112-840	M8 X 40					52	40				49
MKAT01MTL112-845	45					57	45				50.6
MKAT01MTL112-850	50					62	50				52

NUTS, FLOATING



• APPLICATIONS

Measuring instruments / Machine tools

• CHARACTERISTIC

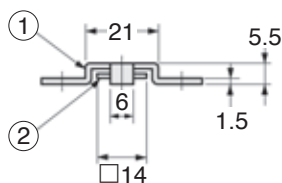
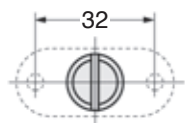
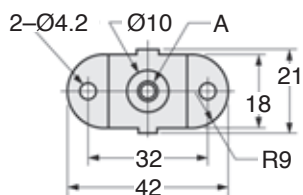
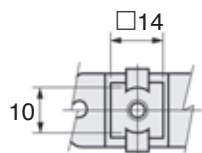
It is possible to fasten the screw even when the holes of the two panels are slightly misaligned.

• PARTS LIST

No.	Part Name	Material	Finish	Qty.
1	Nut Retainer	Stainless	Barrel	1
2	Square Nut	Steel	Polish	

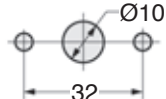
• NUTS

Catalog Number	A	Net Weight g
MKAT07MTL216-1	M4	11.1
MKAT07MTL216-2	M5	
MKAT07MTL216-3	M6	10.9

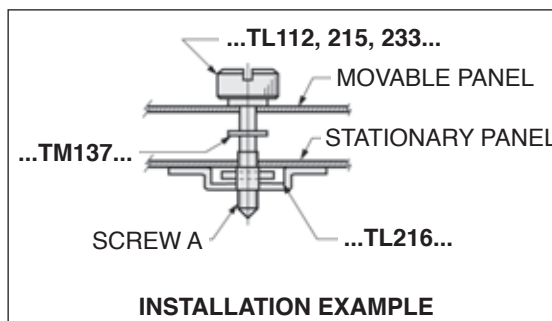


DIMENSION "A" IS COUNTERSUNK

LAYOUT OF A HOLE FOR MOVABLE PANEL



LAYOUT OF HOLES FOR STATIONARY PANEL



NUTS, FLOATING

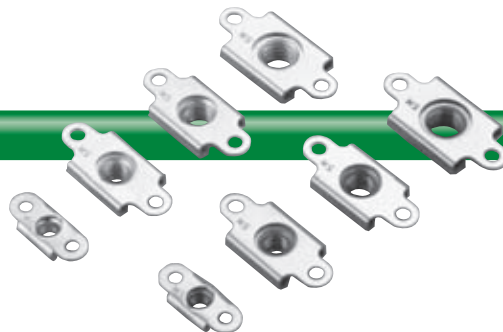


• APPLICATIONS

Vehicles / Aircraft / Measuring instruments /
Office automation appliances

• CHARACTERISTICS

It is a small, locking, floating nut plate, which was developed to save space. The floating nut allows the screw to be fastened even when the holes of the two panels are slightly misaligned. It is available in steel ...TL227.. or stainless steel ...TL264..



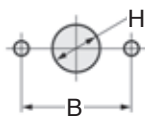
• NUT & NUT RETAINER – Steel, Zinc Plated

Catalog Number	A	B	C	D	F	H	J	Net Weight g
MKAT08MTL227-1	16	10.8	8	6.5	3.3	Ø4.2	M3	0.5
MKAT08MTL227-2	23	18	12	10	5	Ø6.6	M4	1.5
MKAT08MTL227-3							M5	
MKAT08MTL227-4	25	20	14	12		Ø8.4	M6	2

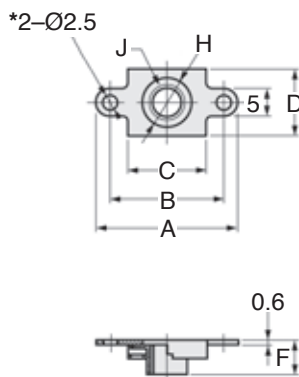
• NUT & NUT RETAINER – Stainless Steel, Barrel Polish

Catalog Number	A	B	C	D	F	H	J	Net Weight g
MKAT08MTL264-1	16	10.8	8	6.5	3.3	Ø4.2	M3	0.5
MKAT08MTL264-2	23	18	12	10	5	Ø6.6	M4	1.45
MKAT08MTL264-3							M5	1.40
MKAT08MTL264-4	25	20	14	12		Ø8.4	M6	1.85

9

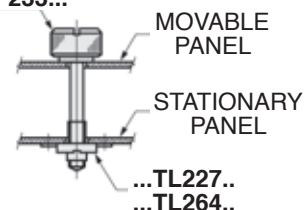


LAYOUT OF HOLES FOR
STATIONARY PANEL



INSTALLATION EXAMPLE

...TL112, 215, 233...



*FOR CATALOG NUMBERS ...TL227-1 AND
...TL264-1, 2-HOLES OF Ø2.25

• APPLICATIONS

Use with various types of bolts, screws and fasteners

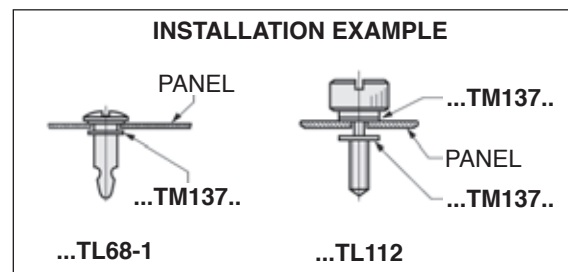
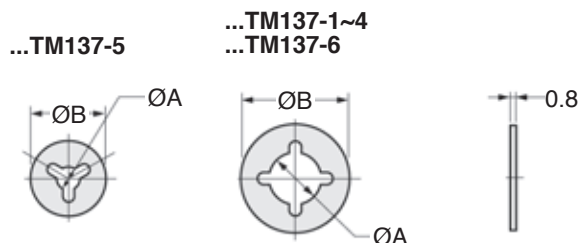
• CHARACTERISTICS

Just putting these washers on the tips of screws prevents the screws from falling off the panel while installing equipment.

The nylon washers also prevent scratches on panels if used under the screw heads or between the panels and nuts.

• WASHER – Nylon, Natural Color

Catalog Number	A	B	Net Weight g	For Use With Screw
MKAT2FM1TM137-5	3.1	10	0.06	...TL112, -215 M4
MKAT2FM2TM137-4	3.9		0.05	...TL112, -215 M5
MKAT2FM3TM137-3	4.6		0.08	...TL112, -215 M6
MKAT2FM4TM137-6	5	10	0.04	...TL68-1
MKAT2FM5TM137-2	6.1	14	0.1	...TL112 M8
MKAT2FM6TM137-1	6.5		0.09	—



All Metric Small Parts • All Metric Small Parts • All Metric Small Parts • All Metric Small Parts • All Metric Small Parts • All Metric Small Parts

• APPLICATIONS

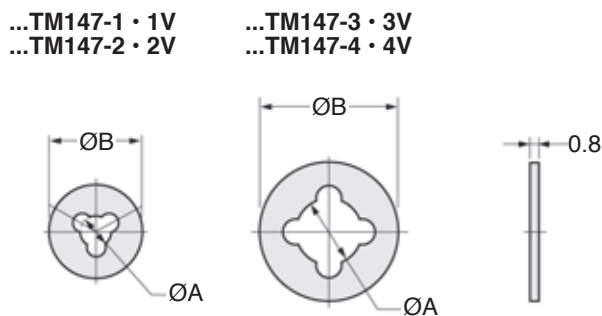
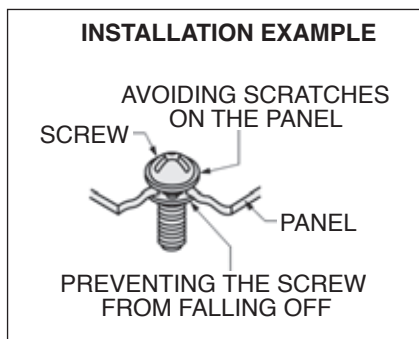
Use with various types of bolts, screws and fasteners

• CHARACTERISTICS

Just putting these washers on the tips of screws prevents the screws from falling off the panel while installing equipment. The nylon washers also prevent scratches on panels if used under the screw heads or between the panels and nuts.

Available for UL standardized washers using UL approved material.

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• WASHER – Nylon, Natural Color

Catalog Number	Catalog Number Meet UL Standard (94V-0)	A	B	Net Weight g	For Use With Screw
MKAT2FMTM147-1	MKAT2FMTM147-1V	2.6	8	0.04	M3
MKAT2FMTM147-2	MKAT2FMTM147-2V	3.6	10	0.06	M4
MKAT2FMTM147-3	MKAT2FMTM147-3V	4.6	12	0.08	M5
MKAT2FMTM147-4	MKAT2FMTM147-4V	5.6			M6

FASTENER, FRACTIONAL TURN - With Receptacle



• APPLICATIONS

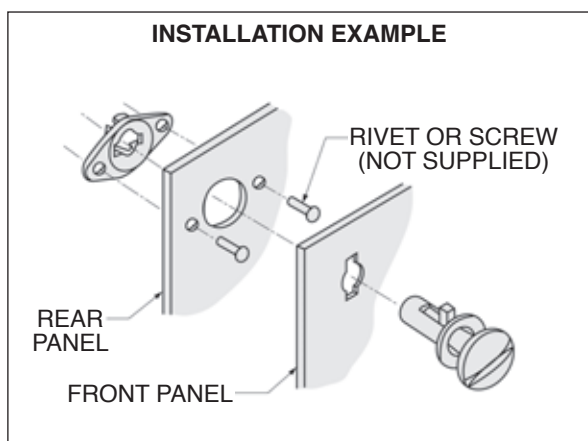
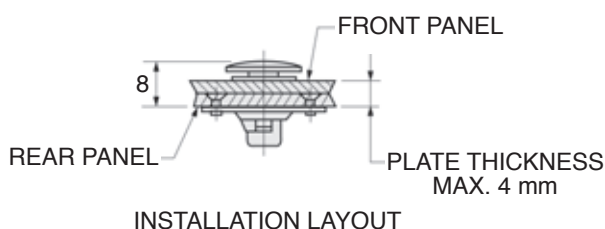
Measuring instruments / Distribution panels / Machine tools

• CHARACTERISTIC

Even in a released position, the fastener will not fall off.

• PARTS LIST

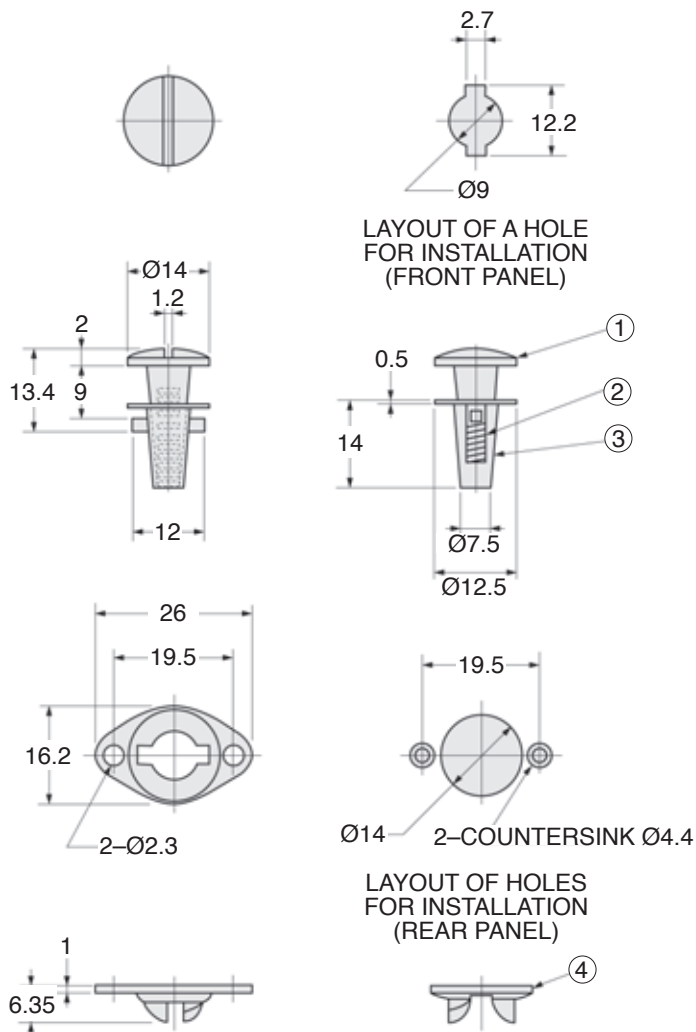
No.	Part Name	Material	Finish	Qty.
1	Fastener Head	Steel	Bright Zinc Plated	1
2	Spring			
3	Holder			
4	Receptacle			



NOTE: By rotating the screw 90°, the front panel can be removed.

• FASTENER

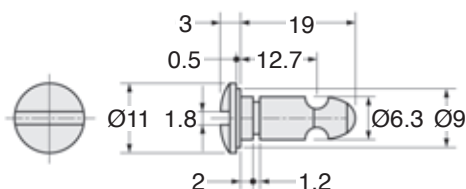
Catalog Number	Net Weight g
MKAT06MTL69	8



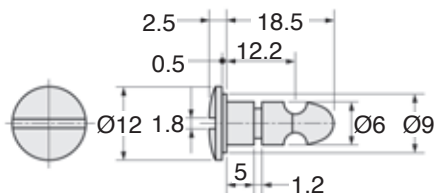
STUDS, 1/4 TURN OVAL SLOTTED - With Retainer



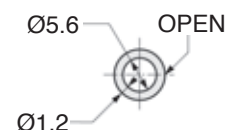
1A
STUD FOR
MKAT05MTL68-001



1B
STUD FOR
MKAT05MTL68-002



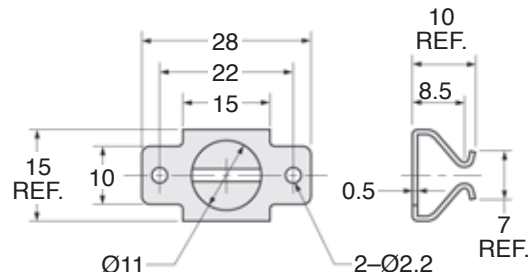
2
RING



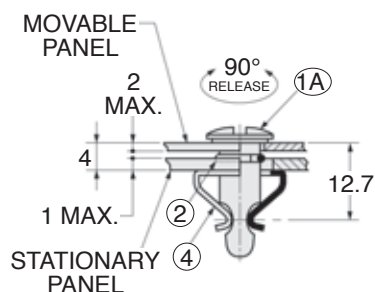
3
SPRING



4
RETAINER



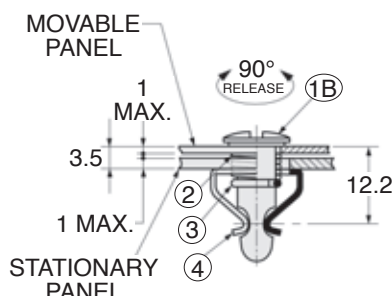
INSTALLATION EXAMPLE
MKAT05MTL68-001



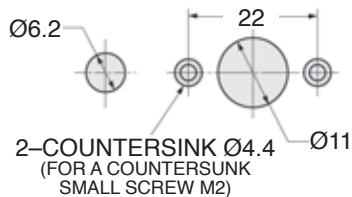
LAYOUT OF HOLES FOR
MOVABLE PANEL **STATIONARY PANEL**



INSTALLATION EXAMPLE
MKAT05MTL68-002



LAYOUT OF HOLES FOR
MOVABLE PANEL **STATIONARY PANEL**



• MKAT05MTL68-001 SET WITHOUT SPRING

Catalog Number	No.	Part Name	Material	Finish	Net Weight g
MKAT05MTL68-001	1A	Stud	Brass	Nickel Plated	5.5
	2	Ring	Piano Wire		0.2
	4	Retainer	Phosphor Bronze	—	3

• MKAT05MTL68-002 SET WITH SPRING

Catalog Number	No.	Part Name	Material	Finish	Net Weight g
MKAT05MTL68-002	①B	Stud	Brass	Nickel Plated	5
	②	Ring	Piano Wire		0.2
	③	Spring			0.4
	④	Retainer	Phosphor Bronze	—	3

• APPLICATIONS

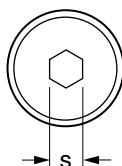
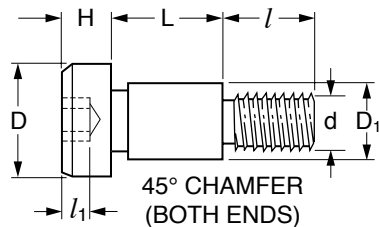
Measuring instruments /
Machine tools

• CHARACTERISTIC

A simple fastener allows locking
and unlocking action with a 1/4
turn of the stud.

SCREWS, SOCKET HEAD SHOULDER

RoHS
COMPLIANT



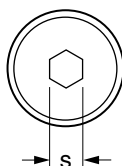
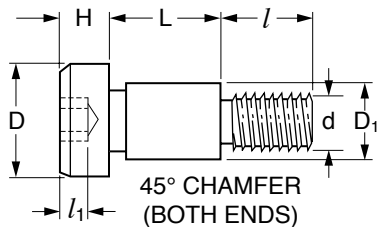
• SCREW – 303 Stainless Steel

Catalog Number	d Thread Size	ØD	D ₁ 0 -0.078	H	L +0.2 +0.05	l	s	l ₁
MKAA3MM0304	M3 X 0.5	6	4	3	4	4	2	1.6
MKAA3MM0305					5			
MKAA3MM0306					6			
MKAA3MM0308	M3 X 0.5	6	4	3	8	4	2	1.6
MKAA3MM0310					10			
MKAA3MM0404	M4 X 0.7	8	5	4	4	5	2.5	2
MKAA3MM0405					5			
MKAA3MM0406					6			
MKAA3MM0408	M4 X 0.7	8	5	4	8	5	2.5	2
MKAA3MM0410					10			
MKAA3MM0412					12			
MKAA3MM0414	M4 X 0.7	8	5	4	14	5	2.5	2
MKAA3MM0416					16			
MKAA3MM0420					20			
MKAA3MM0425	M4 X 0.7	8	5	4	25	5	2.5	2
MKAA3MM0430					30			
MKAA3MM0504	M5 X 0.8	10	6	5	4	6	3	2.4
MKAA3MM0505					5			
MKAA3MM0506					6			
MKAA3MM0508	M5 X 0.8	10	6	5	8	6	3	2.4
MKAA3MM0510					10			
MKAA3MM0512					12			

Continued on the next page

SCREWS, SOCKET HEAD SHOULDER

RoHS
COMPLIANT



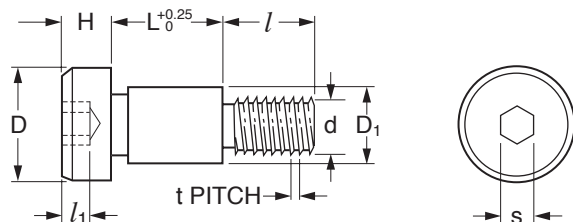
• SCREW – 303 Stainless Steel

Catalog Number	d Thread Size	D Dia.	D ₁ 0 -0.078	H	L +0.2 +0.05	l	s	l ₁
MKAA3MM0514	M5 X 0.8	10	6	5	14	6	3	2.4
MKAA3MM0516					16			
MKAA3MM0520					20			
MKAA3MM0525	M5 X 0.8	10	6	5	25	6	3	2.4
MKAA3MM0530					30			
MKAA3MM0606	M6 X 1	12	8	6	6	11	4	3.2
MKAA3MM0608					8			
MKAA3MM0610					10			
MKAA3MM0612	M6 X 1	12	8	6	12	11	4	3.2
MKAA3MM0616					16			
MKAA3MM0620					20			
MKAA3MM0608A	M6 X 1	12	10	6	8	11	4	3.2
MKAA3MM0610A					10			
MKAA3MM0612A					12			
MKAA3MM0616A					16			
MKAA3MM0808	M8 X 1.25	14	10	7	8	12	5	4
MKAA3MM0810					10			
MKAA3MM0812					12			
MKAA3MM0816					16			
MKAA3MM1012A	M10 X 1.5	20	12	8	12	16	6	4.8
MKAA3MM1016A					16			
MKAA3MM1020					20			
MKAA3MM1025					25			



SCREWS, SOCKET HEAD SHOULDER

RoHS
COMPLIANT



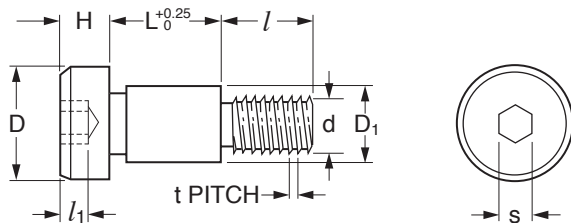
• SCREW – Steel • STANDARD SHOULDER LENGTH SERIES

Catalog Number	d Thread Size	L Length	D	D ₁ *	H	s	l ₁	l	t
MKAA4MM0505 MKAA4MM0506	M5	5 6	12	6	4	3.5	2.4	6	0.8
MKAA4MM0608 MKAA4MM0610	M6	8 10	14	8	4	4.5	3.2	8	1
MKAA4MM0810 MKAA4MM0812	M8	10 12	16	10	5	6	4	10	1.25
MKAA4MM1016	M10	16	20	12	6	7	4.8	12	1.5

*D₁ Tolerance: Thread Size M5 -0.01 to -0.04
M6 & M8 -0.013 to -0.049
M10 -0.016 to -0.059

SCREWS, SOCKET HEAD SHOULDER

RoHS
COMPLIANT



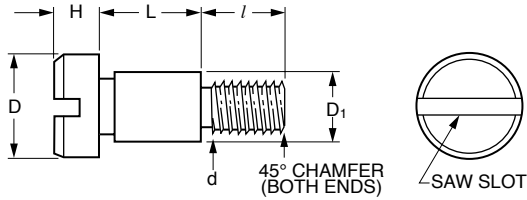
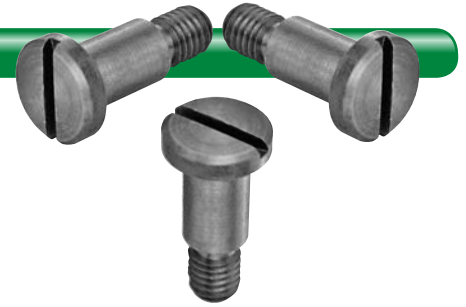
• SCREW – Steel • LONG SHOULDER LENGTH SERIES

Catalog Number	d Thread Size	L Length	D	D ₁ *	H	s	l ₁	l	t
MKAA4MML0510	M5	10	10	6	4.5	3	2	9.5	0.8
MKAA4MML0512		12							
MKAA4MML0516		16							
MKAA4MML0520		20							
MKAA4MML0525		25							
MKAA4MML0530		30							
MKAA4MML0540		40							
MKAA4MML0612	M6	12	13	8	5.5	4	2.4	11	1
MKAA4MML0616		16							
MKAA4MML0620		20							
MKAA4MML0625		25							
MKAA4MML0630		30							
MKAA4MML0640		40							
MKAA4MML0650		50							
MKAA4MML0816	M8	16	16	10	7	5	3.3	13	1.25
MKAA4MML0820		20							
MKAA4MML0825		25							
MKAA4MML0830		30							
MKAA4MML0840		40							
MKAA4MML0850		50							
MKAA4MML0860		60							
MKAA4MML0870		70							
MKAA4MML0880		80							
MKAA4MML1016	M10	16	18	12	8	6	4.2	16	1.5
MKAA4MML1020		20							
MKAA4MML1025		25							
MKAA4MML1030		30							
MKAA4MML1040		40							
MKAA4MML1050		50							
MKAA4MML1060		60							
MKAA4MML1070		70							
MKAA4MML1080		80							

*D₁ Tolerance: Thread Size M5 -0.01 to -0.04
M6 & M8 -0.013 to -0.049
M10 -0.016 to -0.059

SCREWS, SLOTTED HEAD SHOULDER

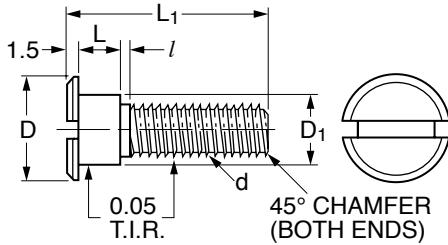
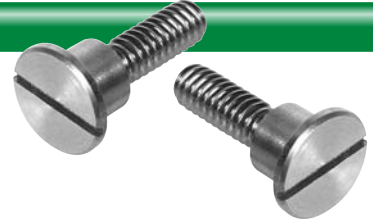
RoHS
COMPLIANT



• SCREW – 303 Stainless Steel

Catalog Number	d Thread Size	D Dia.	D ₁ 0 -0.078	H	L + 0.2 + 0.05	l
MKAA5MM0304	M3 X 0.5	6	4	3	4	4
MKAA5MM0305					5	
MKAA5MM0306					6	
MKAA5MM0308					8	
MKAA5MM0310					10	
MKAA5MM0404	M4 X 0.7	8	5	4	4	5
MKAA5MM0405					5	
MKAA5MM0406					6	
MKAA5MM0408					8	
MKAA5MM0410					10	
MKAA5MM0412					12	
MKAA5MM0414					14	
MKAA5MM0416					16	
MKAA5MM0420					20	
MKAA5MM0425					25	
MKAA5MM0430					30	
MKAA5MM0504	M5 X 0.8	10	6	5	4	6
MKAA5MM0505					5	
MKAA5MM0506					6	
MKAA5MM0508					8	
MKAA5MM0510					10	
MKAA5MM0512					12	
MKAA5MM0514					14	
MKAA5MM0516					16	
MKAA5MM0520					20	
MKAA5MM0525					25	
MKAA5MM0530					30	
MKAA5MM0606	M6 X 1	12	8	6	6	11
MKAA5MM0608					8	
MKAA5MM0610					10	
MKAA5MM0612					12	
MKAA5MM0616					16	
MKAA5MM0620					20	
MKAA5MM0608A	M6 X 1	12	10	6	8	11
MKAA5MM0616A					16	
MKAA5MM0808	M8 X 1.25	14	10	7	8	12
MKAA5MM0810					10	
MKAA5MM0816					16	
MKAA5MM1012	M10 X 1.5	20	12	8	12	16
MKAA5MM1016					16	
MKAA5MM1025					25	

SCREWS, SLOTTED HEAD SHOULDER



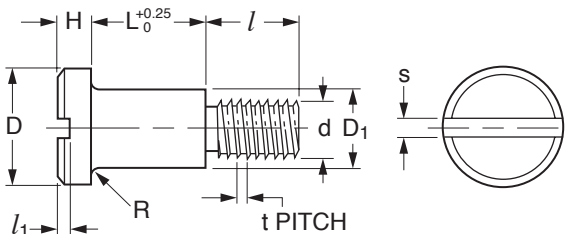
• SCREW – 303 Stainless Steel • SHALLOW HEAD

Catalog Number	d Thread Size	D	D ₁ 0 -0.025	L	L ₁	l
MKAA6MMCF1	M2 x 0.4	5	3	3.75	11.5	0.6
MKAA6MMCF2	M3 x 0.5	6	4	3.75	13.5	0.75
MKAA6MMCF3				4.75	14.5	
MKAA6MMCF4	M5 x 0.8	8	6	18.5	1.2	
MKAA6MMCF5	M6 x 1	10	8	4.75	22.5	1.5

SCREWS, SLOTTED HEAD SHOULDER

RoHS
COMPLIANT

Shallow Head



• **SCREW** – Steel • DIN 923

Priced Per 100 Pieces

Catalog Number	d Thread Size	L Length	D	D ₁ h ₉	H
MD0923MCO03X002	M3	2	7	4	1.8
MD0923MCO03X0025		2.5			
MD0923MCO03X003		3			
MD0923MCO03X004		4			
MD0923MCO03X005		5			
MD0923MCO03X006		6			
MD0923MCO03X008		8			
MD0923MCO03X010		10			
MD0923MCO04X002	M4	2	8.5	5.5	2.4
MD0923MCO04X0025		2.5			
MD0923MCO04X003		3			
MD0923MCO04X004		4			
MD0923MCO04X005		5			
MD0923MCO04X006		6			
MD0923MCO04X008		8			
MD0923MCO04X010		10			
MD0923MCO04X012		12			
MD0923MCO04X016		16			

TOLERANCE:

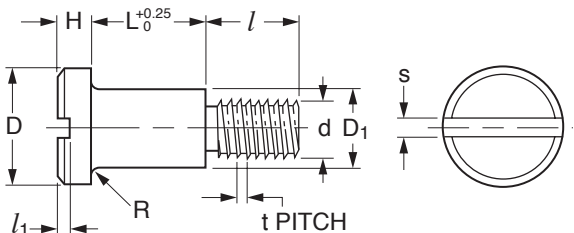
L Shoulder Length	Tolerance
2, 2.5, 3	+0.10 +0.06
4, 5, 6, 8, 10	+0.15 +0.07
12, 16	+0.2 +0.1

Catalog Number	s	l ₁ Min.	l Max.	R Max.	t
MD0923MCO03X002	0.8	0.9	4.5	0.1	0.5
MD0923MCO03X0025					
MD0923MCO03X003					
MD0923MCO03X004					
MD0923MCO03X005					
MD0923MCO03X006					
MD0923MCO03X008					
MD0923MCO03X010					
MD0923MCO04X002	1	1.2	6	0.2	0.7
MD0923MCO04X0025					
MD0923MCO04X003					
MD0923MCO04X004					
MD0923MCO04X005					
MD0923MCO04X006					
MD0923MCO04X008					
MD0923MCO04X010					
MD0923MCO04X012					
MD0923MCO04X016					

SCREWS, SLOTTED HEAD SHOULDER

RoHS
COMPLIANT

Shallow Head



• **SCREW** – Steel • DIN 923

Priced Per 100 Pieces

Catalog Number	d Thread Size	L Length	D	D ₁ h ₉	H
MD0923MCO05X0025	M5	2.5	11	7	2.7
MD0923MCO05X003		3			
MD0923MCO05X004		4			
MD0923MCO05X005		5			
MD0923MCO05X006		6			
MD0923MCO05X008		8			
MD0923MCO05X010		10			
MD0923MCO05X012		12			
MD0923MCO05X016	M6	16	13	8	3.1
MD0923MCO06X003		3			
MD0923MCO06X004		4			
MD0923MCO06X005		5			
MD0923MCO06X006		6			
MD0923MCO06X008		8			
MD0923MCO06X010		10			
MD0923MCO06X012		12			
MD0923MCO06X016		16			
MD0923MCO06X020		20			

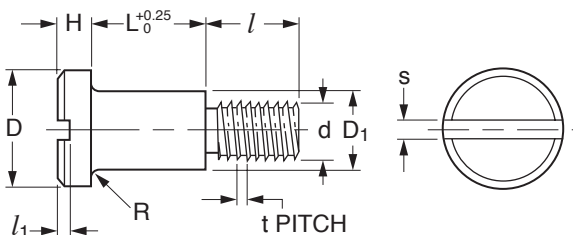
TOLERANCE:

L Shoulder Length	Tolerance
2.5, 3	+0.10 +0.06
4, 5, 6, 8, 10	+0.15 +0.07
12, 16, 20	+0.2 +0.1

9

Catalog Number	s	l ₁ Min.	l	R Max.	t
MD0923MCO05X0025	1.2	1.3	7	0.2	0.8
MD0923MCO05X003					
MD0923MCO05X004					
MD0923MCO05X005					
MD0923MCO05X006					
MD0923MCO05X008					
MD0923MCO05X010					
MD0923MCO05X012					
MD0923MCO05X016	1.6	1.5	9	0.25	1
MD0923MCO06X003					
MD0923MCO06X004					
MD0923MCO06X005					
MD0923MCO06X006					
MD0923MCO06X008					
MD0923MCO06X010					
MD0923MCO06X012					
MD0923MCO06X016					
MD0923MCO06X020					

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• **SCREW** – Steel • DIN 923

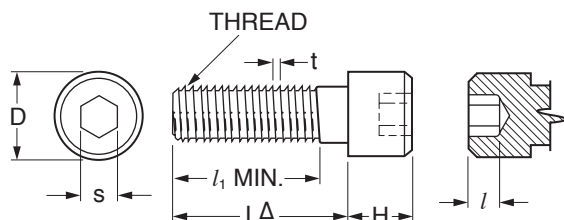
Priced Per 100 Pieces

Catalog Number	d Thread Size	L Length	D	D ₁ h9	H
MD0923MCO08X004	M8	4	16	10	3.8
MD0923MCO08X005		5			
MD0923MCO08X006		6			
MD0923MCO08X008		8			
MD0923MCO08X010		10			
MD0923MCO08X012		12			
MD0923MCO08X016		16			
MD0923MCO08X020		20			
MD0923MCO08X025		25			

TOLERANCE:

L Shoulder Length	Tolerance
4, 5, 6, 8, 10	+0.15 +0.07
12, 16, 20, 25	+0.2 +0.1

Catalog Number	s	l ₁ Min.	l	R Max.	t
MD0923MCO08X004	2	1.9	11	1.4	1.25
MD0923MCO08X005					
MD0923MCO08X006					
MD0923MCO08X008					
MD0923MCO08X010					
MD0923MCO08X012					
MD0923MCO08X016					
MD0923MCO08X020					
MD0923MCO08X025					



• **SCREW** – 304 Stainless Steel • DIN 912

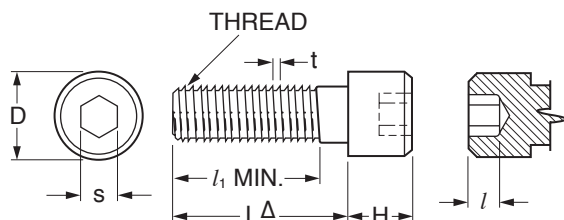
Priced Per 100 Pieces

Catalog Number	Thread Size	L ^Δ Length	t	D	H	s	l	l ₁ Min.
*MD0912MXO016X003	M1.6	3	0.35	3	1.7	1.5	0.7	15
*MD0912MXO016X004		4						
*MD0912MXO016X005		5						
*MD0912MXO016X006		6						
*MD0912MXO016X008		8						
MD0912MXO020X004	M2	4	0.4	3.8	2	1.5	1	16
MD0912MXO020X005		5						
MD0912MXO020X006		6						
MD0912MXO020X008		8						
MD0912MXO020X010		10						
MD0912MXO025X005	M2.5	5	0.45	4.5	2.5	2	1.1	17
MD0912MXO025X006		6						
MD0912MXO025X008		8						
MD0912MXO025X010		10						
MD0912MXO025X012		12						
MD0912MXO030X006	M3	6	0.5	5.5	3	2.5	1.3	18
MD0912MXO030X008		8						
MD0912MXO030X010		10						
MD0912MXO030X012		12						
MD0912MXO030X016		16						
MD0912MXO040X008	M4	8	0.7	7	4	3	2	20
MD0912MXO040X010		10						
MD0912MXO040X012		12						
MD0912MXO040X016		16						
MD0912MXO040X020		20						
MD0912MXO040X025		25						
MD0912MXO040X030		30						

*M1.6 material is 316 Stainless Steel.

ΔScrew is fully threaded unless L length is greater than l₁.

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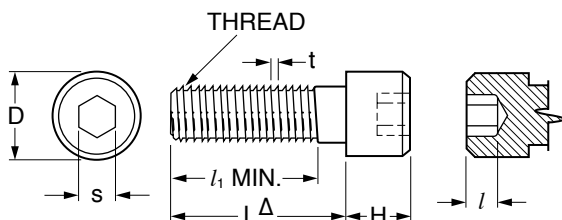
• **SCREW** – 304 Stainless Steel • DIN 912

Priced Per 100 Pieces

Catalog Number	Thread Size	L ^Δ Length	t	D	H	s	l	l ₁ Min.
MD0912MXO050X010	M5	10	0.8	8.5	5	4	2.5	22
MD0912MXO050X012		12						
MD0912MXO050X016		16						
MD0912MXO050X020		20						
MD0912MXO050X025		25						
MD0912MXO050X030		30						
MD0912MXO050X035		35						
MD0912MXO060X012	M6	12	1	10	6	5	3	24
MD0912MXO060X016		16						
MD0912MXO060X020		20						
MD0912MXO060X025		25						
MD0912MXO060X030		30						
MD0912MXO060X035		35						
MD0912MXO060X040		40						
MD0912MXO060X045		45						
MD0912MXO060X050		50						
MD0912MXO080X012	M8	12	1.25	13	8	6	4	28
MD0912MXO080X016		16						
MD0912MXO080X020		20						
MD0912MXO080X025		25						
MD0912MXO080X030		30						
MD0912MXO080X035		35						
MD0912MXO080X040		40						
MD0912MXO080X045		45						
MD0912MXO080X050		50						
MD0912MXO080X055		55						
MD0912MXO080X060		60						
MD0912MXO100X040	M10	40	1.5	16	10	8	5	32

^ΔScrew is fully threaded unless L length is greater than l₁.

SCREWS, SOCKET HEAD CAP



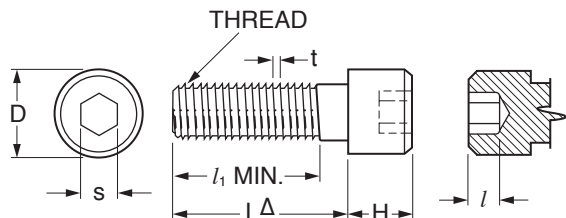
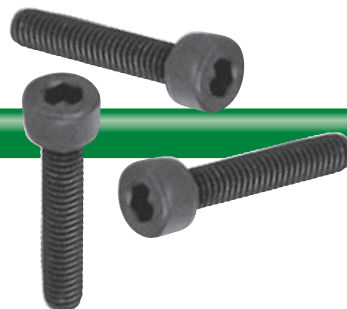
• **SCREW** – High-Tensile Steel, Grade 12.9, Black Oxide Finish • DIN 912

Priced Per 100 Pieces

Catalog Number	Thread Size	L ^Δ Length	t	D	H	s	l	l ₁ Min.
MD0912MQB020X004	M2	4	0.4	3.8	2	1.5	1	16
MD0912MQB020X005		5						
MD0912MQB020X006		6						
MD0912MQB020X008		8						
MD0912MQB020X010		10						
MD0912MQB025X005	M2.5	5	0.45	4.5	2.5	2	1.1	17
MD0912MQB025X006		6						
MD0912MQB025X008		8						
MD0912MQB025X010		10						
MD0912MQB025X012		12						
MD0912MQB030X006	M3	6	0.5	5.5	3	2.5	1.3	18
MD0912MQB030X008		8						
MD0912MQB030X010		10						
MD0912MQB030X012		12						
MD0912MQB030X016		16						
MD0912MQB040X006	M4	6	0.7	7	4	3	2	20
MD0912MQB040X008		8						
MD0912MQB040X010		10						
MD0912MQB040X012		12						
MD0912MQB040X016		16						
MD0912MQB040X020		20						
MD0912MQB040X025		25						

^ΔScrew is fully threaded unless L length is greater than l₁.

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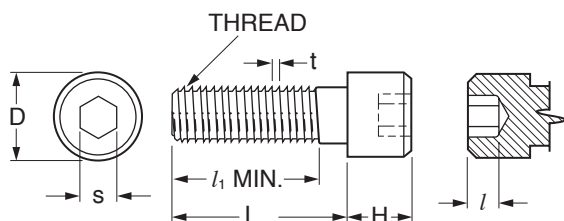
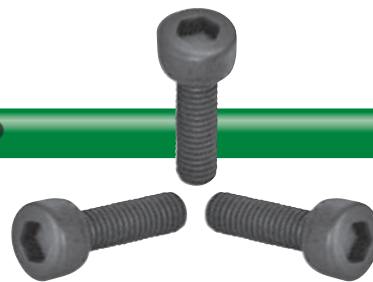
• **SCREW** – High-Tensile Steel, Grade 12.9, Black Oxide Finish • DIN 912

Priced Per 100 Pieces

Catalog Number	Thread Size	L ^Δ Length	t	D	H	s	l	l ₁ Min.
MD0912MQB050X010	M5	10	0.8	8.5	5	4	2.5	22
MD0912MQB050X012		12						
MD0912MQB050X016		16						
MD0912MQB050X020		20						
MD0912MQB050X025		25						
MD0912MQB050X030		30						
MD0912MQB050X035		35						
MD0912MQB060X012	M6	12	1	10	6	5	3	24
MD0912MQB060X016		16						
MD0912MQB060X020		20						
MD0912MQB060X025		25						
MD0912MQB060X030		30						
MD0912MQB060X035		35						
MD0912MQB060X040		40						
MD0912MQB060X045		45						
MD0912MQB060X050		50						
MD0912MQB080X016	M8	16	1.25	13	8	6	4	28
MD0912MQB080X020		20						
MD0912MQB080X025		25						
MD0912MQB080X030		30						
MD0912MQB080X035		35						
MD0912MQB080X040		40						
MD0912MQB080X055		55						
MD0912MQB080X060		60						
MD0912MQB080X065		65						
MD0912MQB080X070		70						

^ΔScrew is fully threaded unless L length is greater than l₁.

SCREWS, MOLY COATED SOCKET HEAD CAP



• **SCREW** – High-Tensile Steel, Grade 12.9

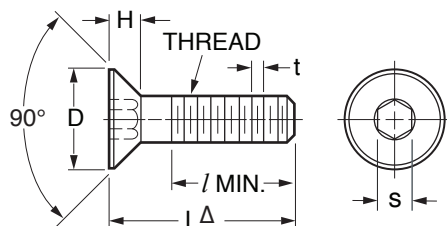
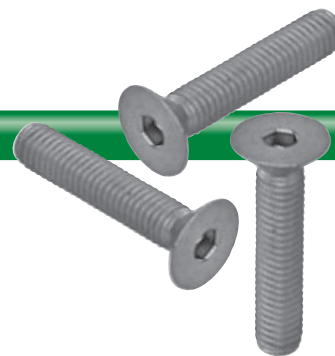
Coated with Dry Molybdenum Disulfide • DIN 912

Priced Per 100 Pieces

Catalog Number	Thread Size	L Length	t	D	H	s	l ₁	l Ref.
MD0912MQBM020X10	M2	10	0.4	3.8	2	1.5	1	0.7
MD0912MQBM025X06	M2.5	6	0.45	4.5	2.5	2	1.1	0.9
MD0912MQBM025X08		8						
MD0912MQBM025X10		10						
MD0912MQBM025X12		12						
MD0912MQBM030X06	M3	6	0.5	5.5	3	2.5	1.3	1
MD0912MQBM030X08		8						
MD0912MQBM030X10		10						
MD0912MQBM030X12		12						
MD0912MQBM030X16	M4	16	0.7	7	4	3	2	1.4
MD0912MQBM040X08		8						
MD0912MQBM040X10		10						
MD0912MQBM040X12		12						
MD0912MQBM040X16		16						
MD0912MQBM040X20		20						

These screws are ideal for use with aluminum to prevent galling of threaded holes.

SCREWS, SOCKET HEAD CAP



• SCREW – 304 Stainless Steel • DIN 7991

Priced Per 100 Pieces

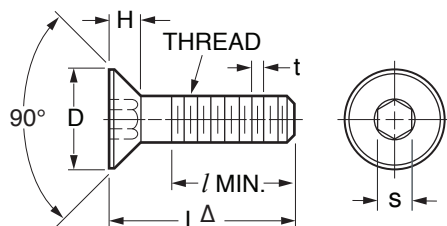
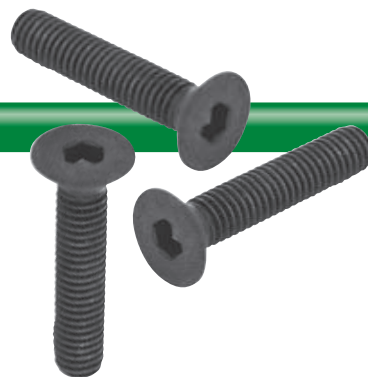
Catalog Number	Thread Size	L ^Δ Length	t	D	H	s	l Min.
MD7991MXO040X012	M4	12	0.7	8	2.3	2.5	14
MD7991MXO040X016		16					
MD7991MXO040X020		20					
MD7991MXO050X010	M5	10	0.8	10	2.8	3	16
MD7991MXO050X012		12					
MD7991MXO050X016		16					
MD7991MXO050X020		20					
MD7991MXO050X025		25					
MD7991MXO050X030		30					
MD7991MXO060X012	M6	12	1	12	3.3	4	18
MD7991MXO060X020		20					
MD7991MXO080X012	M8	12	1.25	16	4.4	5	22
MD7991MXO080X020		20					
MD7991MXO080X025		25					
MD7991MXO080X030		30					

^Δ Screw is fully threaded unless L length is greater than l.

SCREWS, SOCKET HEAD CAP

RoHS
COMPLIANT

Flat Head



- **SCREW** – High-Tensile Steel, Grade 10.9
Black Oxide Finish • DIN 7991

Priced Per 100 Pieces

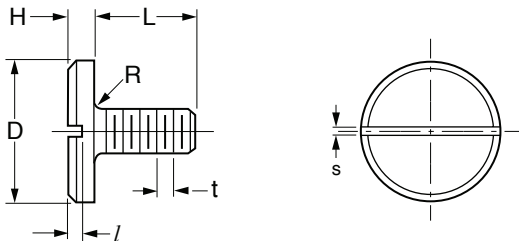
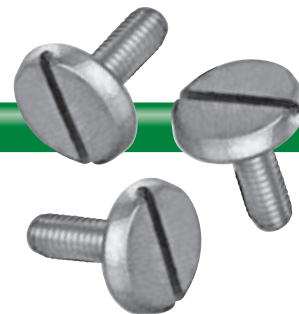
Catalog Number	Thread Size	L Δ Length	t	D	H	s	l Min.
MD7991MQB040X008	M4	8	0.7	8	2.3	2.5	14
MD7991MQB040X010		10					
MD7991MQB040X012		12					
MD7991MQB040X016		16					
MD7991MQB040X020		20					
MD7991MQB040X025		25					
MD7991MQB040X030		30					
MD7991MQB050X012	M5	12	0.8	10	2.8	3	16
MD7991MQB050X020		20					
MD7991MQB050X025		25					
MD7991MQB050X030		30					
MD7991MQB050X040		40					
MD7991MQB050X050		50					
MD7991MQB060X008	M6	8	1	12	3.3	4	18
MD7991MQB060X010		10					
MD7991MQB060X012		12					
MD7991MQB060X016		16					
MD7991MQB060X025		25					
MD7991MQB060X030		30					
MD7991MQB060X035		35					
MD7991MQB060X040		40					
MD7991MQB060X050		50					
MD7991MQB080X010	M8	10	1.25	16	4.4	5	22
MD7991MQB080X012		12					
MD7991MQB080X016		16					
MD7991MQB080X020		20					
MD7991MQB080X025		25					
MD7991MQB080X030		30					
MD7991MQB080X035		35					
MD7991MQB080X040		40					
MD7991MQB080X050		50					

Δ Screw is fully threaded unless L length is greater than l.

SCREWS, SLOTTED HEAD

RoHS
COMPLIANT

Large Shallow Head



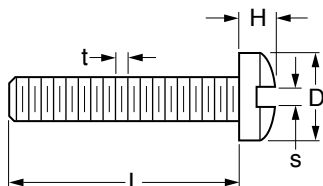
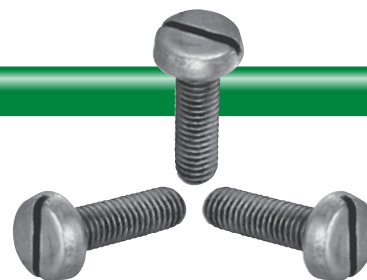
• **SCREW** – Steel • DIN 921

Priced Per 100 Pieces

Catalog Number	Thread Size	L Length	t	D	H	s	l / Min.	R Max.
MD0921MCO03X005	M3	5	0.5	8	1.8	0.8	0.9	0.1
MD0921MCO03X006		6						
MD0921MCO03X008		8						
MD0921MCO03X010		10						
MD0921MCO04X005	M4	5	0.7	12	2.4	1	1.2	0.2
MD0921MCO04X006		6						
MD0921MCO04X008		8						
MD0921MCO04X010		10						
MD0921MCO04X012		12						
MD0921MCO05X008	M5	8	0.8	16	2.7	1.2	1.3	0.2
MD0921MCO05X010		10						
MD0921MCO05X012		12						
MD0921MCO05X016		16						
MD0921MCO06X010	M6	10	1	20	3.1	1.6	1.5	0.25
MD0921MCO06X012		12						
MD0921MCO06X016		16						
MD0921MCO08X010	M8	10	1.25	25	3.8	2	1.9	0.4

MACHINE SCREWS, PAN HEAD

RoHS
COMPLIANT

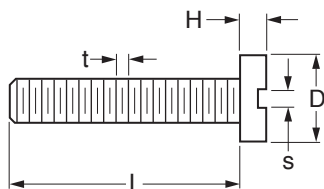
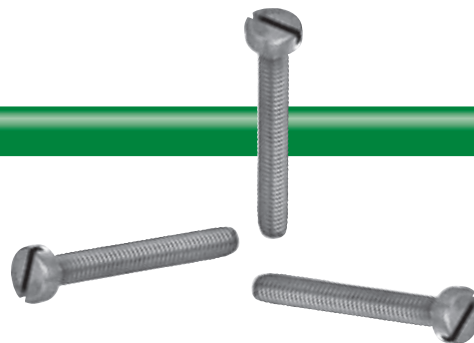


• **SCREW** – 304 Stainless Steel • DIN 85

Priced Per 100 Pieces

Catalog Number	Thread Size	L Length	t	D	H	s
MD0085MXO020X006	M2	6	0.4	3.7	1.2	0.5
MD0085MXO020X010		10				
MD0085MXO025X006	M2.5	6	0.45	5	1.5	0.6
MD0085MXO025X008		8				
MD0085MXO025X010		10				
MD0085MXO025X012		12				
MD0085MXO025X016		16				
MD0085MXO025X020		20				
MD0085MXO025X025		25				
MD0085MXO030X006	M3	6	0.5	6	1.8	0.8
MD0085MXO030X008		8				
MD0085MXO030X016		16				
MD0085MXO030X020		20				
MD0085MXO030X030		30				
MD0085MXO040X006	M4	6	0.7	8	2.4	1
MD0085MXO040X010		10				
MD0085MXO040X012		12				
MD0085MXO040X016		16				
MD0085MXO040X020		20				
MD0085MXO040X025		25				
MD0085MXO040X030		30				
MD0085MXO050X008	M5	8	0.8	10	3	1.2
MD0085MXO050X010		10				
MD0085MXO050X012		12				
MD0085MXO050X016		16				
MD0085MXO050X020		20				
MD0085MXO050X025		25				
MD0085MXO050X030		30				
MD0085MXO060X012	M6	12	1	12	3.6	1.6
MD0085MXO060X030		30				

MACHINE SCREWS, FILLISTER HEAD



• **SCREW** – 304 Stainless Steel • DIN 84

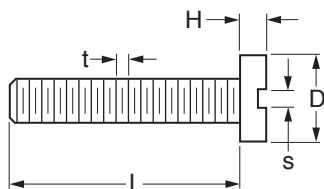
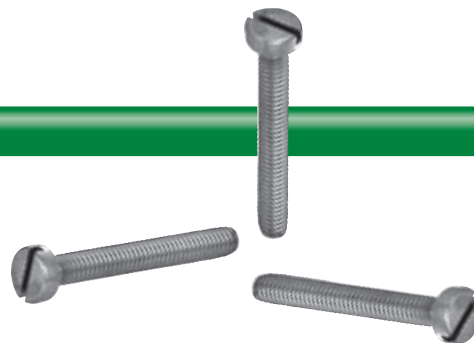
Priced Per 100 Pieces

Catalog Number	Thread Size	L Length	t	D	H	s
MD0084MXO016X004	M1.6	4	0.35	3	1	0.4
MD0084MXO016X006		6				
MD0084MXO020X003	M2	3	0.4	3.8	1.3	0.5
MD0084MXO020X004		4				
MD0084MXO020X005		5				
MD0084MXO020X006		6				
MD0084MXO020X008		8				
MD0084MXO020X010		10				
MD0084MXO020X016		16				
MD0084MXO020X020		20				
MD0084MXO025X005	M2.5	5	0.45	4.5	1.6	0.6
MD0084MXO025X006		6				
MD0084MXO025X008		8				
MD0084MXO025X010		10				
MD0084MXO025X012		12				
MD0084MXO025X016		16				
MD0084MXO025X020		20				
MD0084MXO030X005	M3	5	0.5	5.5	2	0.8
MD0084MXO030X006		6				
MD0084MXO030X008		8				
MD0084MXO030X010		10				
MD0084MXO030X012		12				
MD0084MXO030X020		20				
MD0084MXO030X025		25				
MD0084MXO035X008	M3.5	8	0.6	6	2.5	0.9
MD0084MXO035X012		12				
MD0084MXO035X016		16				

Continued on the next page

MACHINE SCREWS, FILLISTER HEAD

RoHS
COMPLIANT



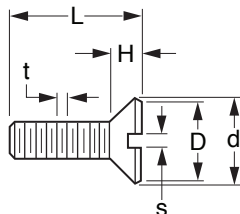
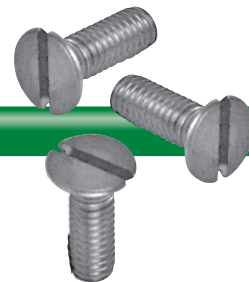
• **SCREW** – 304 Stainless Steel • DIN 84

Priced Per 100 Pieces

Catalog Number	Thread Size	L Length	t	D	H	s
MD0084MXO040X006	M4	6	0.7	7	2.6	1
MD0084MXO040X008		8				
MD0084MXO040X010		10				
MD0084MXO040X012		12				
MD0084MXO040X016		16				
MD0084MXO040X020		20				
MD0084MXO040X025		25				
MD0084MXO040X030		30				
MD0084MXO040X035		35				
MD0084MXO040X040		40				
MD0084MXO050X010	M5	10	0.8	8.5	3.3	1.2
MD0084MXO050X012		12				
MD0084MXO050X016		16				
MD0084MXO050X020		20				
MD0084MXO050X025		25				
MD0084MXO050X030		30				
MD0084MXO050X035		35				
MD0084MXO050X040		40				
MD0084MXO060X008	M6	8	1	10	3.6	1.6
MD0084MXO060X010		10				
MD0084MXO060X012		12				
MD0084MXO060X016		16				
MD0084MXO060X020		20				
MD0084MXO060X025		25				
MD0084MXO060X030		30				

MACHINE SCREWS, 90° FLAT HEAD

RoHS
COMPLIANT

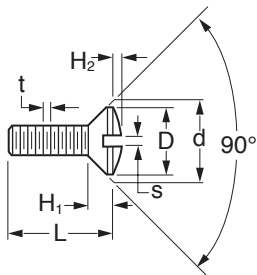
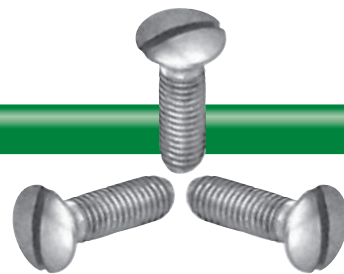


• **SCREW** – 304 Stainless Steel • DIN 963

Priced Per 100 Pieces

Catalog Number	Thread Size	L Length	t	D	d (c'sink)	H	s
MD0963MXO020X004	M2	4	0.4	3.8	4.6	1.2	0.5
MD0963MXO020X005		5					
MD0963MXO020X006		6					
MD0963MXO020X008		8					
MD0963MXO020X010		10					
MD0963MXO020X012		12					
MD0963MXO025X004	M2.5	4	0.45	4.7	5.7	1.5	0.6
MD0963MXO025X006		6					
MD0963MXO025X008		8					
MD0963MXO025X010		10					
MD0963MXO025X012		12					
MD0963MXO025X016		16					
MD0963MXO025X020		20					
MD0963MXO030X005	M3	5	0.5	5.6	6.5	1.65	0.8
MD0963MXO030X006		6					
MD0963MXO030X008		8					
MD0963MXO030X010		10					
MD0963MXO030X012		12					
MD0963MXO030X016		16					
MD0963MXO030X020		20					
MD0963MXO030X025		25					
MD0963MXO040X006	M4	6	0.7	7.5	8.6	2.2	1
MD0963MXO040X008		8					
MD0963MXO040X010		10					
MD0963MXO040X012		12					
MD0963MXO040X016		16					
MD0963MXO050X008	M5	8	0.8	9.2	10.4	2.5	1.2
MD0963MXO050X010		10					
MD0963MXO050X012		12					
MD0963MXO050X016		16					
MD0963MXO050X020		20					

MACHINE SCREWS, OVAL HEAD



• **SCREW** – 304 Stainless Steel • DIN 964

Priced Per 100 Pieces

Catalog Number	Thread Size	L Length	t	D	d (c'sink)	H ₁	H ₂ & s
MD0964MXO020X006	M2	6	0.4	3.8	4.6	1.2	0.5
MD0964MXO020X010		10					
MD0964MXO020X012		12					
MD0964MXO020X020		20					
MD0964MXO025X006	M2.5	6	0.45	4.7	5.7	1.5	0.6
MD0964MXO025X008		8					
MD0964MXO025X010		10					
MD0964MXO030X005	M3	5	0.5	5.6	6.5	1.65	0.8
MD0964MXO030X006		6					
MD0964MXO030X008		8					
MD0964MXO030X010		10					
MD0964MXO030X016		16					
MD0964MXO030X020		20					
MD0964MXO030X025		25					
MD0964MXO040X006	M4	6	0.7	7.5	8.6	2.2	1
MD0964MXO040X008		8					
MD0964MXO040X025		25					
MD0964MXO040X030		30					
MD0964MXO050X010	M5	10	0.8	9.2	10.4	2.5	1.2
MD0964MXO050X016		16					
MD0964MXO050X020		20					
MD0964MXO050X025		25					
MD0964MXO050X030		30					

WASHERS

RoHS
COMPLIANT



ALUMINUM



COPPER



FIBER

Priced Per 100 Pieces

Catalog Number			I.D. X O.D.	Thickness
Aluminum	Copper	Fiber*		
MKAY2NMRRL0610	MKAY2NMRRA0610	MKAY2NMRRF0610	06 X 10	1.5
—	—	MKAY2NMRRF0612	06 X 12	1
MKAY2NMRRL0812	MKAY2NMRRA0812	MKAY2NMRRF0812	08 X 12	1.5
—	—	MKAY2NMRRF0914	09 X 14	1
MKAY2NMRRL1016	MKAY2NMRRA1016	MKAY2NMRRF1016	10 X 16	1.5
MKAY2NMRRL1218	MKAY2NMRRA1218	MKAY2NMRRF1218	12 X 18	
MKAY2NMRRL1319	MKAY2NMRRA1319	—	13.5 X 19	
MKAY2NMRRL1420	MKAY2NMRRA1420	MKAY2NMRRF1420	14 X 20	
MKAY2NMRRL1622	MKAY2NMRRA1622	MKAY2NMRRF1622	16 X 22	
MKAY2NMRRL1722	MKAY2NMRRA1722	—	17 X 22	
MKAY2NMRRL1824	MKAY2NMRRA1824	MKAY2NMRRF1824	18 X 24	
MKAY2NMRRL2026	MKAY2NMRRA2026	—	20 X 26	
MKAY2NMRRL2127	MKAY2NMRRA2127	—	21.5 X 27	
MKAY2NMRRL2228	MKAY2NMRRA2228	MKAY2NMRRF2228	22 X 28	
MKAY2NMRRL2430	MKAY2NMRRA2430	MKAY2NMRRF2430	24 X 30	
—	—	MKAY2NMRRF2632	26.5 X 32	
MKAY2NMRRL2733	MKAY2NMRRA2733	—	27 X 33	
—	—	MKAY2NMRRF3238	32 X 38	
MKAY2NMRRL3340	MKAY2NMRRA3340	—	33.5 X 40	
MKAY2NMRRL4250	MKAY2NMRRA4250	—	42 X 50	
MKAY2NMRRL4855	MKAY2NMRRA4855	—	48 X 55	

*Oil absorbing insulating properties.

WASHER KITS, ASSORTED

RoHS
COMPLIANT



• ALUMINUM WASHER KITS

Catalog Number

MKAY2NM330RRLC



• COPPER WASHER KITS

Catalog Number

MKAY2NM331RRAC

9

Pieces	I.D. X O.D.	Thickness
50	6 X 10	1.5
	6 X 12	
	8 X 12	
	8 X 14	
	10 X 14	
	10 X 16	
14	12 X 16	
13	12 X 18	
	13.5 X 18	
10	14 X 20	
	16 X 22	
	17 X 22	
	18 X 24	
	20 X 26	
	22 X 28	



• FIBER WASHER KITS

Catalog Number

MKAY2NM332RRFC



Fig. 1



Fig. 2

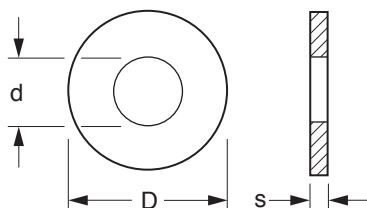


Fig. 1

• **FLAT WASHER** – Steel, Zinc Plated or Stainless Steel • DIN 125

Priced Per
100 Pieces

Catalog Number		d	D	s	Nominal Screw Size
Steel	Stainless Steel				
MD0125MCA025	MD0125MXO025	2.7	6.5	0.5	M2.5
MD0125MCA030	MD0125MXO030	3.2	7		M3
MD0125MCA040	MD0125MXO040	4.3	9	0.8	M4
MD0125MCA050	MD0125MXO050	5.3	10	1	M5
MD0125MCA060	MD0125MXO060	6.4	12.5	1.6	M6
MD0125MCA080	MD0125MXO080	8.4	16		M8

Fig. 2

• **SINTERED THRUST WASHERS**

Oil-Impregnated Bronze, Self-Lubricating

Catalog Number	d ±0.13	D ±0.25	s ±0.07
MKAA2FM0316	3.2	9.5	1.6
MKAA2FM0416	4.3		
MKAA2FM0516	5.3	12.5	
MKAA2FM0616	6.4	12.5	1.6
MKAA2FM0816	8.4	19	
MKAA2FM1016	10.5	19	1.6
MKAA2FM1032			3.2
MKAA2FM1316	13	25	1.6
MKAA2FM1332			3.2



Fig. 1

Fig. 2

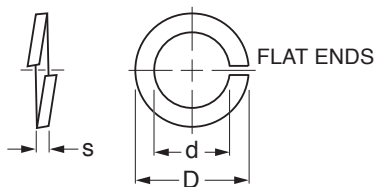


Fig. 1

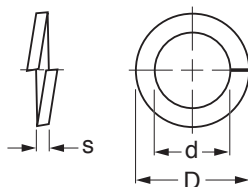


Fig. 2

Fig. 1 • For Use With Pan Head Screws

• **WASHER** – Spring Steel or Stainless Steel • DIN 127 B

Priced Per 100 Pieces

Catalog Number		Screw Size Ref.	d	D	s
Spring Steel	Stainless Steel				
MD0127MQB020	MD0127MXO020	M2	2.1	4.4	0.5
MD0127MQB025	MD0127MXO025	M2.5	2.6	5.1	0.6
MD0127MQB030	MD0127MXO030	M3	3.1	6.2	0.8
MD0127MQB040	MD0127MXO040	M4	4.1	7.6	0.9
MD0127MQB050	MD0127MXO050	M5	5.1	9.2	1.2
MD0127MQB060	MD0127MXO060	M6	6.1	11.8	1.6
MD0127MQB080	MD0127MXO080	M8	8.1	14.8	2
MD0127MQB100	MD0127MXO100	M10	10.2	18.1	2.2
MD0127MQB120	MD0127MXO120	M12	12.2	21.1	2.5

9

Fig. 2 • For Use With Socket & Cheese Head Screws

• **WASHER** – Spring Steel or Stainless Steel • DIN 7980

Priced Per 100 Pieces

Catalog Number		Screw Size Ref.	d	D	s
Spring Steel	Stainless Steel				
MD7980MQB030	MD7980MXO030	M3	3.1	5.6	1
MD7980MQB040	MD7980MXO040	M4	4.1	7	1.2
MD7980MQB050	MD7980MXO050	M5	5.1	8.8	1.6
MD7980MQB060	MD7980MXO060	M6	6.1	9.9	1.6
MD7980MQB080	MD7980MXO080	M8	8.1	12.7	2

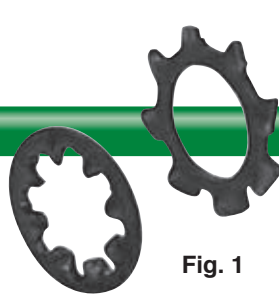


Fig. 1

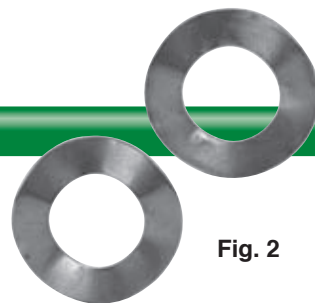
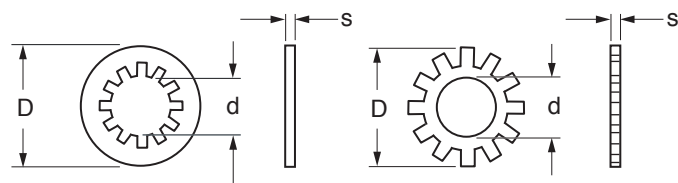


Fig. 2



INTERNAL "I" SERIES

EXTERNAL "E" SERIES

Fig. 1

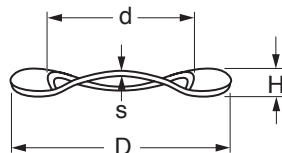


Fig. 2

Fig. 1 • **LOCK WASHER** – Spring Steel • DIN 6797

Priced Per 100 Pieces

Catalog Number		Nominal Screw Size	d	D	s
Internal	External				
MD6797MQZI020	MD6797MQZE020	2	2.2	4.5	0.3
MD6797MQZI025	MD6797MQZE025	2.5	2.7	5.5	0.4
MD6797MQZI030	MD6797MQZE030	3	3.2	6	0.4
MD6797MQZI040	MD6797MQZE040	4	4.3	8	0.5
MD6797MQZI050	MD6797MQZE050	5	5.3	10	0.6
MD6797MQZI060	MD6797MQZE060	6	6.4	11	0.7
MD6797MQZI080	MD6797MQZE080	8	8.4	15	0.8

Fig. 2

• **WAVE SPRING WASHER** – Beryllium Copper or Stainless Steel

Priced Per
100 Pieces

Catalog Number		d	D	s	H		Nominal Screw Size
Beryllium Copper	Stainless Steel				Min.	Max.	
MD4463MEA046X016	MD4463MXP046X016	2.2	4.6	0.16	0.38	0.53	M2
MD4463MEA058X016	MD4463MXP058X016	2.7	5.8	0.16	0.38	0.53	M2.5
MD4463MEA064X016	MD4463MXP064X016	3.2	6.4	0.16	0.46	0.61	M3
MD4463MEA081X028	MD4463MXP081X028	4.3	8.1	0.28	0.69	0.84	M4
MD4463MEA092X030	MD4463MXP092X030	5.3	9.2	0.3	0.74	0.89	M5
MD4463MEA115X040	MD4463MXP115X040	6.4	11.5	0.4	0.99	1.14	M6
MD4463MEA150X040	MD4463MXP150X040	8.4	15	0.4	1.25	1.4	M8
MD4463MEA196X055	MD4463MXP196X055	10.5	19.6	0.55	1.55	1.7	M10
MD4463MEA220X055	MD4463MXP220X055	13	22	0.55	1.65	1.9	M12
MD4463MEA278X070	MD4463MXP278X070	17	27.8	0.7	2.16	2.41	M16

WASHERS, SPRING

RoHS
COMPLIANT



Fig. 1

Fig. 2

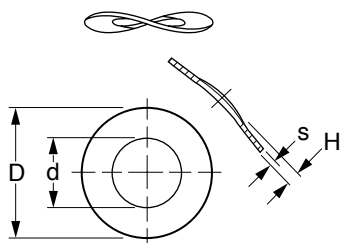


Fig. 1

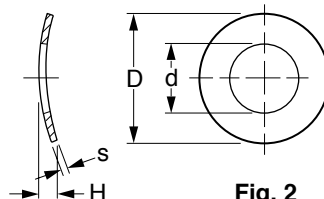


Fig. 2

Fig. 1 – Wave Spring Washers

- **WASHER** – Spring Steel, HRC 43...50, Zinc
- DIN 137 Type B

Priced Per 100 Pieces

Catalog Number	d* H14	DΔ js16	H min.	S	For Screw Size
MD0137MQB080	3.2	8	0.8	0.5 ±0.05	M3
MD0137MQB090	4.3	9	1		M4
MD0137MQB110	5.3	11	1.1		M5
MD0137MQB120	6.4	12	1.3		M6
MD0137MQB150	8.4	15	1.5	0.8 ±0.06	M8
MD0137MQB210	10.5	21	2.1	1 ±0.07	M10
MD0137MQB240	13	24	2.5	1.2 ±0.07	M12
MD0137MQB300	17	30	3.2	1.6 ±0.08	M16
MD0137MQB360	21	36	3.7	1.8 ±0.1	M20
MD0137MQB440	25	44	4.1		M24

*d Tolerance (H14):
 3.2 to 5.3 mm +0.30
 6.4 & 8.4 mm +0.36
 10.5 to 17 mm +0.43
 21 & 25 mm +0.52

ΔD Tolerance (js16):
 8 & 9 mm ±0.45
 11 to 15 mm ±0.55
 21 & 30 mm ±0.65
 36 & 44 mm ±0.80

Fig. 2 – Curved Spring Washers

- **WASHER** – Spring Steel, HRC 43...50, Zinc
- DIN 137 Type A

Priced Per 100 Pieces

Catalog Number	d* H14	DΔ js16	H min.	S	For Screw Size
MD0137MQA045	2.2	4.5	0.5	0.3	M2
MD0137MQA055	2.8	5.5	0.55		M2.5
MD0137MQA060	3.2	6	0.65	0.4	M3
MD0137MQA080	4.3	8	0.8	0.5	M4
MD0137MQA100	5.3	10	0.9		M5
MD0137MQA110	6.4	11	1.1		M6
MD0137MQA150	8.4	15	1.7		M8
MD0137MQA180	10.5	18	2	0.8	M10

*d Tolerance (H14):
 2.2 & 2.8 mm +0.25
 3.2 to 5.3 mm +0.30
 6.4 & 8.4 mm +0.36
 10.5 mm +0.43

ΔD Tolerance (js16):
 4.5 to 6 mm ±0.38
 8 & 10 mm ±0.45
 11 to 18 mm ±0.55

SPACERS, SHAFT & SHIM

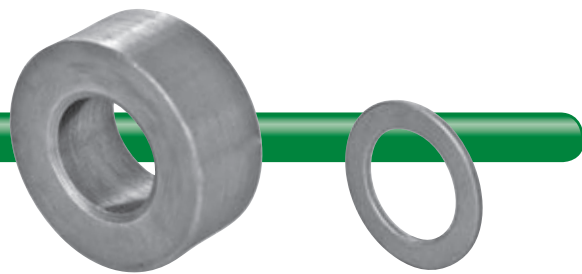


Fig. 1

Fig. 2

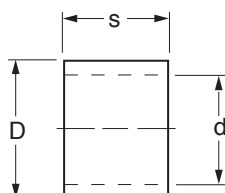


Fig. 1

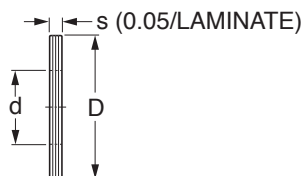


Fig. 2

Fig. 1 • **SHAFT SPACER** – Steel

Priced Per 100 Pieces

Catalog Number	d	D	s
MKAACFMC03060H2	3	6	0.25
MKAACFMC0306005			0.5
MKAACFMC0306030			3
MKAACFMC0306050			5
MKAACFMC0306100			10
MKAACFMC0408005	4	8	0.5
MKAACFMC0408010			1
MKAACFMC0408030			3
MKAACFMC0408050			5
MKAACFMC0408100			10
MKAACFMC05100H2	5	10	0.25
MKAACFMC0510005			0.5
MKAACFMC0510010			1
MKAACFMC0510030			3
MKAACFMC0510050			5
MKAACFMC0510100			10
MKAACFMC06120H2	6	12	0.25
MKAACFMC0612005			0.5
MKAACFMC0612010			1
MKAACFMC0612030			3
MKAACFMC0612050			5
MKAACFMC0612100			10
MKAACFMC08140H2	8	14	0.25
MKAACFMC0814005			0.5
MKAACFMC0814010			1

Catalog Number	d	D	s
MKAACFMC0814030	8	14	3
MKAACFMC0814050			5
MKAACFMC0814100			10
MKAACFMC10160H2	10	16	0.25
MKAACFMC1016005			0.5
MKAACFMC1016010			1
MKAACFMC1016030			3
MKAACFMC1016050			5
MKAACFMC1016100			10
MKAACFMC10180H2	10	18	0.25
MKAACFMC1018010			1
MKAACFMC1018050			5
MKAACFMC1018100			10
MKAACFMC1220005	12	20	0.5
MKAACFMC1220010			1
MKAACFMC1220030			3
MKAACFMC1220050			5
MKAACFMC1220100			10
MKAACFMC12240H2	12	24	0.25
MKAACFMC1224005			0.5
MKAACFMC1224010			1
MKAACFMC1224030			3
MKAACFMC1224050			5
MKAACFMC1224100			10

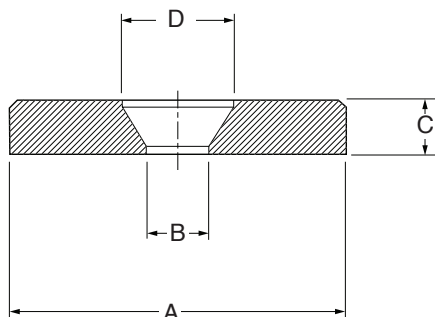
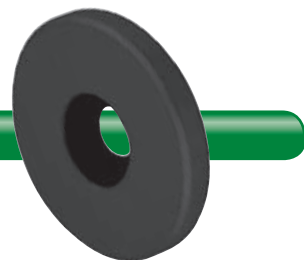
Fig. 2

• **SHIM SPACER** – Laminated Brass

Priced Per
100 Pieces

Catalog Number	d	D	s
MKAACFMB0306	3	6	0.8
MKAACFMB0408	4	8	
MKAACFMB0510	5	10	
MKAACFMB0612	6	12	
MKAACFMB0814	8	14	
MKAACFMB1016	10	16	
MKAACFMB1218	12	18	

WASHERS, COUNTERSUNK

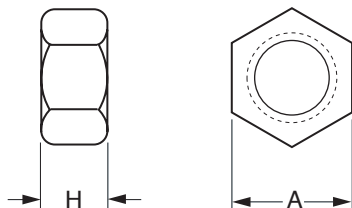
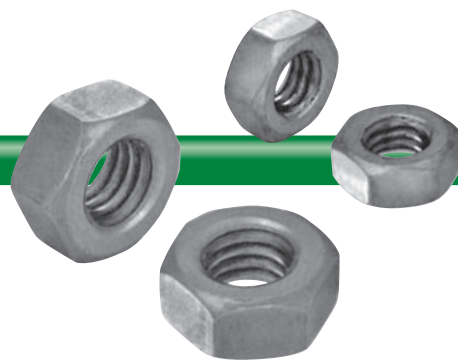


• COUNTERSUNK WASHER – Steel, Matte Black

Catalog Number	A	B	C	D
MKAH2FM909016	16	4.3	3	8
MKAH2FM909020	20			
MKAH2FM909022	22	5.3	3.5	10
MKAH2FM909025	25			
MKAH2FM909028	28			
MKAH2FM909032	32	6.4	4	12
MKAH2FM909036	36		5	
MKAH2FM909040	40			
MKAH2FM909045	45		6	
MKAH2FM909052	52			

NUTS, HEXAGONAL

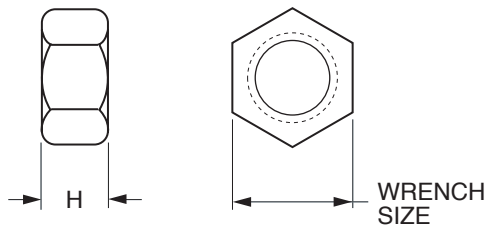
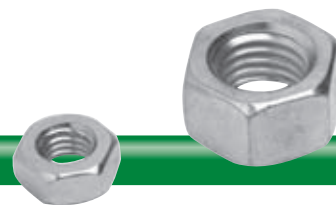
RoHS
COMPLIANT



• **NUT** – Alloy Steel or Stainless Steel • DIN 934

Priced Per 100 Pieces

Catalog Number		Thread Size	A Flats	H Height
Alloy Steel	Stainless Steel			
MD0934MQO016	MD0934MXO016	M1.6 X 0.35	3.2	1.3
MD0934MQO020	MD0934MXO020	M2 X 0.4	4	1.6
MD0934MQO025	MD0934MXO025	M2.5 X 0.45	5	2
MD0934MQO030	MD0934MXO030	M3 X 0.5	5.5	2.4
MD0934MQO035	MD0934MXO035	M3.5 X 0.6	6	2.8
MD0934MQO040	MD0934MXO040	M4 X 0.7	7	3.2
MD0934MQO050	MD0934MXO050	M5 X 0.8	8	4
MD0934MQO060	MD0934MXO060	M6 X 1	10	5
MD0934MQO080	MD0934MXO080	M8 X 1.25	13	6.5
MD0934MQO100	MD0934MXO100	M10 X 1.5	17	8
MD0934MQO120	MD0934MXO120	M12 X 1.75	19	10

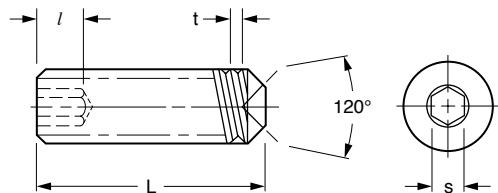
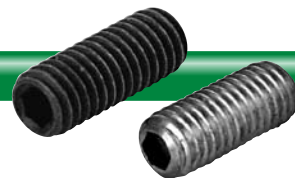


• **NUTS** – Steel, Zinc Plated • UNI 5588-65

Catalog Number	H Height	Wrench Size	Thread
MKAY1FM07634	6.5	13	M8
MKAY1FM17269	8	17	M10
MKAY1FM17270	10	19	M12
MKAY1FM17275	13	24	M16
MKAY1FM17276	16	30	M20

SET SCREWS, SOCKET HEAD

RoHS
COMPLIANT



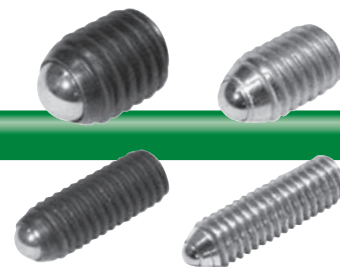
• CUP POINT SET SCREW – Hardened Steel or

304 Stainless Steel • DIN 916

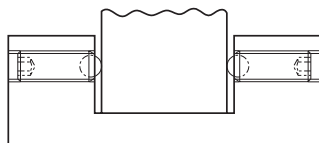
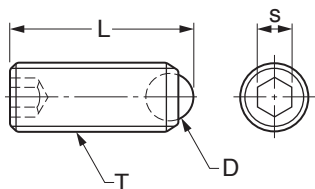
Priced Per 100 Pieces

Catalog Number		Thread Size	L Length	t	l min.	s
Hardened Steel	304 Stainless Steel					
MD0916MQB020X003	MD0916MXO020X003	M2	3	0.4	0.8	0.9
MD0916MQB020X004	MD0916MXO020X004		4			
MD0916MQB020X005	MD0916MXO020X005		5			
MD0916MQB025X003	MD0916MXO025X003	M2.5	3	0.45	1.2	1.3
MD0916MQB025X004	MD0916MXO025X004		4			
MD0916MQB025X005	MD0916MXO025X005		5			
MD0916MQB025X006	MD0916MXO025X006		6			
MD0916MQB030X003	MD0916MXO030X003	M3	3	0.5	1.2	1.5
MD0916MQB030X004	MD0916MXO030X004		4			
MD0916MQB030X005	MD0916MXO030X005		5			
MD0916MQB030X006	MD0916MXO030X006		6			
MD0916MQB030X008	MD0916MXO030X008		8			
MD0916MQB040X004	MD0916MXO040X004	M4	4	0.7	1.5	2
MD0916MQB040X005	MD0916MXO040X005		5			
MD0916MQB040X006	MD0916MXO040X006		6			
MD0916MQB040X008	MD0916MXO040X008		8			
MD0916MQB040X010	MD0916MXO040X010		10			
MD0916MQB050X005	MD0916MXO050X005	M5	5	0.8	2	2.5
MD0916MQB050X006	MD0916MXO050X006		6			
MD0916MQB050X008	MD0916MXO050X008		8			
MD0916MQB050X010	MD0916MXO050X010		10			
MD0916MQB050X012	MD0916MXO050X012		12			
MD0916MQB060X006	MD0916MXO060X006	M6	6	1	2	3
MD0916MQB060X008	MD0916MXO060X008		8			
MD0916MQB060X010	MD0916MXO060X010		10			
MD0916MQB060X012	MD0916MXO060X012		12			
MD0916MQB060X016	MD0916MXO060X016		16			
MD0916MQB080X008	MD0916MXO080X008	M8	8	1.25	3	4
MD0916MQB080X010	MD0916MXO080X010		10			
MD0916MQB080X012	MD0916MXO080X012		12			
MD0916MQB080X016	MD0916MXO080X016		16			
MD0916MQB080X020	MD0916MXO080X020		20			

SCREWS, ROLLING-BALL TIP SET



Example of application to fasten workpiece that damages easily.

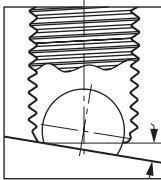
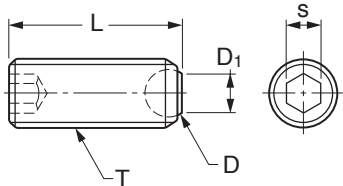
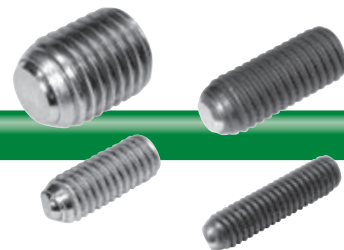


- **SCREW** – Carbon Steel, Black Oxide Finish; 304 Stainless Steel
- **BALL** – Carbon Steel, HRC 56...60; 440C Stainless Steel, HRC 55...60

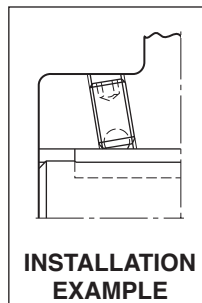
Catalog Number		T Thread Size	L Length	D	s Hex Size	Mass g
Carbon Steel	Stainless Steel					
MKAS7MMC0305	MKAS7MMY0305	M3 X 0.5	5.2	1.5	1.5	0.3
MKAS7MMC0310	MKAS7MMY0310		10.2			0.6
MKAS7MMC0407	MKAS7MMY0407	M4 X 0.7	6.5	2.5	2	0.4
MKAS7MMC0411	MKAS7MMY0411		10.5			0.7
MKAS7MMC0417	MKAS7MMY0417		16.5			1
MKAS7MMC0509	MKAS7MMY0509	M5 X 0.8	8.6	3	2.5	0.8
MKAS7MMC0513	MKAS7MMY0513		12.6			1.3
MKAS7MMC0521	MKAS7MMY0521		20.6			2.3
MKAS7MMC0611	MKAS7MMY0611	M6 X 1	10.8	4	3	1.5
MKAS7MMC0617	MKAS7MMY0617		16.8			2.5
MKAS7MMC0621	MKAS7MMY0621		20.8			3.4
MKAS7MMC0626	MKAS7MMY0626		25.8			4
MKAS7MMC0811	MKAS7MMY0811	M8 X 1.25	11.2	5.5	4	2.5
MKAS7MMC0813	MKAS7MMY0813		13.2			3.2
MKAS7MMC0821	MKAS7MMY0821		21.2			5.7
MKAS7MMC0826	MKAS7MMY0826		26.2			7.7
MKAS7MMC0831	MKAS7MMY0831		31.2			9
MKAS7MMC1014	MKAS7MMY1014	M10 X 1.5	13.7	7	5	5
MKAS7MMC1018	MKAS7MMY1018		17.7			7
MKAS7MMC1022	MKAS7MMY1022		21.7			9.5
MKAS7MMC1027	MKAS7MMY1027		26.7			11
MKAS7MMC1037	MKAS7MMY1037		36.7			16
MKAS7MMC1218	MKAS7MMY1218	M12 X 1.75	18	8.5	6	10
MKAS7MMC1222	MKAS7MMY1222		22			12.5
MKAS7MMC1232	MKAS7MMY1232		32			20
MKAS7MMC1242	MKAS7MMY1242		42			28
MKAS7MMC1623	MKAS7MMY1623	M16 X 2	23.3	12	8	22
MKAS7MMC1628	MKAS7MMY1628		28.3			28
MKAS7MMC1638	MKAS7MMY1638		38.3			41
MKAS7MMC1653	MKAS7MMY1653		53.3			48

SCREWS, FLAT-BALL TIP SET

RoHS
COMPLIANT



The ball can rotate
up to 9° to securely
fasten the object.

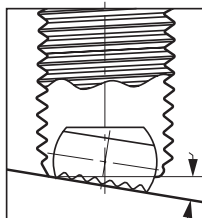
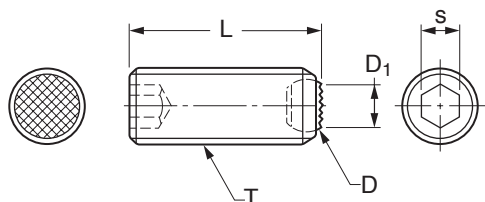


- **SCREW** – Carbon Steel, Black Oxide Finish; 304 Stainless Steel
- **BALL** – Carbon Steel, HRC 56...60; 440C Stainless Steel, HRC 55...60

Catalog Number		T Thread Size	L Length	D	D ₁	s Hex Size	Mass g
Carbon Steel	Stainless Steel						
MKAS9MMC0406	MKAS9MMY0406	M4 X 0.7	6	2.5	2	2	0.4
MKAS9MMC0410	MKAS9MMY0410		10				0.7
MKAS9MMC0416	MKAS9MMY0416		16				1
MKAS9MMC0508	MKAS9MMY0508	M5 X 0.8	8	3	2.5	2.5	0.8
MKAS9MMC0512	MKAS9MMY0512		12				1.3
MKAS9MMC0520	MKAS9MMY0520		20				2.3
MKAS9MMC0610	MKAS9MMY0610	M6 X 1	10	4	3.2	3	1.5
MKAS9MMC0616	MKAS9MMY0616		16				2.5
MKAS9MMC0620	MKAS9MMY0620		20				3.4
MKAS9MMC0625	MKAS9MMY0625		25				4
MKAS9MMC0810	MKAS9MMY0810	M8 X 1.25	10	5.5	4.5	4	2.5
MKAS9MMC0812	MKAS9MMY0812		12				3.2
MKAS9MMC0820	MKAS9MMY0820		20				5.7
MKAS9MMC0825	MKAS9MMY0825		25				7.7
MKAS9MMC0830	MKAS9MMY0830		30				9
MKAS9MMC1012	MKAS9MMY1012	M10 X 1.5	12	7	6	5	5
MKAS9MMC1016	MKAS9MMY1016		16				7
MKAS9MMC1020	MKAS9MMY1020		20				9.5
MKAS9MMC1025	MKAS9MMY1025		25				11
MKAS9MMC1035	MKAS9MMY1035		35				16
MKAS9MMC1216	MKAS9MMY1216	M12 X 1.75	16	8.5	7.2	6	10
MKAS9MMC1220	MKAS9MMY1220		20				12.5
MKAS9MMC1230	MKAS9MMY1230		30				20
MKAS9MMC1240	MKAS9MMY1240		40				28
MKAS9MMC1620	MKAS9MMY1620	M16 X 2	20	12	10.7	8	22
MKAS9MMC1625	MKAS9MMY1625		25				28
MKAS9MMC1635	MKAS9MMY1635		35				41
MKAS9MMC1650	MKAS9MMY1650		50				48

SCREWS, DIAMOND-KNURLED TIP SET

RoHS
COMPLIANT



The ball can rotate up to 9°
to securely fasten the object

- **SCREW** – Carbon Steel, Black Oxide Finish; 304 Stainless Steel
- **BALL** – Carbon Steel, HRC 56...60; 440C Stainless Steel, HRC 55...60

Catalog Number		T Thread Size	L Length	D	D ₁	s Hex Size	Mass g
Carbon Steel	Stainless Steel						
MKAS8MMC0610	MKAS8MMY0610	M6 X 1	10	4	3.2	3	1.5
MKAS8MMC0616	MKAS8MMY0616		16				2.5
MKAS8MMC0620	MKAS8MMY0620		20				3.4
MKAS8MMC0625	MKAS8MMY0625		25				4
MKAS8MMC0810	MKAS8MMY0810	M8 X 1.25	10	5.5	4.5	4	2.5
MKAS8MMC0812	MKAS8MMY0812		12				3.2
MKAS8MMC0820	MKAS8MMY0820		20				5.7
MKAS8MMC0825	MKAS8MMY0825		25				7.7
MKAS8MMC0830	MKAS8MMY0830		30				9
MKAS8MMC1012	MKAS8MMY1012	M10 X 1.5	12	7	6	5	5
MKAS8MMC1016	MKAS8MMY1016		16				7
MKAS8MMC1020	MKAS8MMY1020		20				9.5
MKAS8MMC1025	MKAS8MMY1025		25				11
MKAS8MMC1035	MKAS8MMY1035		35				16
MKAS8MMC1216	MKAS8MMY1216	M12 X 1.75	16	8.5	7.2	6	10
MKAS8MMC1220	MKAS8MMY1220		20				12.5
MKAS8MMC1230	MKAS8MMY1230		30				20
MKAS8MMC1240	MKAS8MMY1240		40				28
MKAS8MMC1620	MKAS8MMY1620	M16 X 2	20	12	10.7	8	22
MKAS8MMC1625	MKAS8MMY1625		25				28
MKAS8MMC1635	MKAS8MMY1635		35				41
MKAS8MMC1650	MKAS8MMY1650		50				48

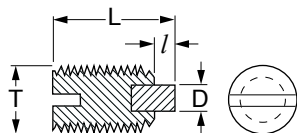
SCREWS, NYLON TIPPED SET



Fig. 1

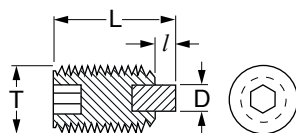


Fig. 2



SLOTTED STYLE

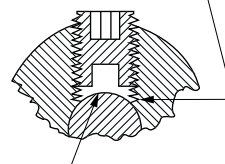
Fig. 1



SOCKET STYLE

Fig. 2

COMPRESSES INTO THREADS
BECOMING SELF-LOCKING



CONFORMS TO SHAFT
WITHOUT MARRING

Fig. 1 • SLOTTED STYLE

- **SCREW** – Stainless Steel • **TIP** – Nylon
- **SELF-LOCKING** • **NONMARRING**

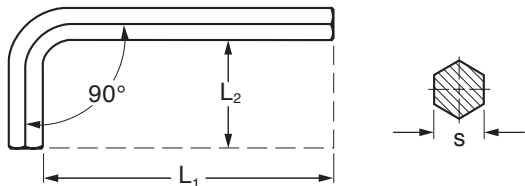
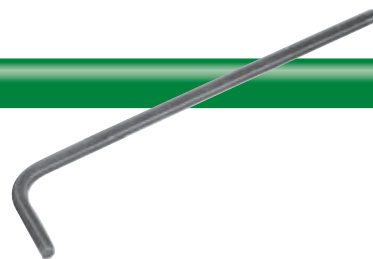
Catalog Number	T Thread Size	L	l	D
MKAAAMMSL030050	M3 X 0.5	5	0.8	1.6
MKAAAMMSL040070	M4 X 0.7	7	1.2	2.4
MKAAAMMSL050110	M5 X 0.8	11	1.2	2.4
MKAAAMMSL060075	M6 X 1	7.5	1.6	3.2

Fig. 2 • SOCKET STYLE

- **SCREW** – Stainless Steel • **TIP** – Nylon
- **SELF-LOCKING** • **NONMARRING**

Catalog Number	T Thread Size	L	l	D
MKAAAMMSO020040	M2 X 0.4	4	0.8	0.8
MKAAAMMSO020050		5		
MKAAAMMSO020060		6		
MKAAAMMSO020070		7		
MKAAAMMSO030040	M3 X 0.5	4	0.8	1.6
MKAAAMMSO030050		5		
MKAAAMMSO030060		6		
MKAAAMMSO030070		7		
MKAAAMMSO040050	M4 X 0.7	5	1.2	2.4
MKAAAMMSO040070		7		
MKAAAMMSO040110		11		
MKAAAMMSO040150		15		
MKAAAMMSO050070	M5 X 0.8	7	1.2	2.4
MKAAAMMSO050110		11		
MKAAAMMSO050150		15		
MKAAAMMSO050210		21		
MKAAAMMSO060075	M6 X 1	7.5	1.6	3.2
MKAAAMMSO060115		11.5		
MKAAAMMSO060175		17.5		
MKAAAMMSO060265		26.5		
MKAAAMMSO100145	M10 X 1.5	14.5	2.4	4.8
MKAAAMMSO100225		22.5		
MKAAAMMSO100325		32.5		

WRENCHES, HEXAGONAL



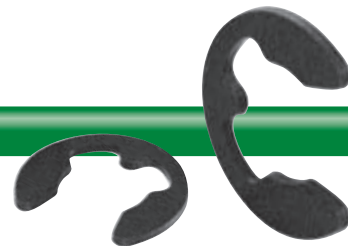
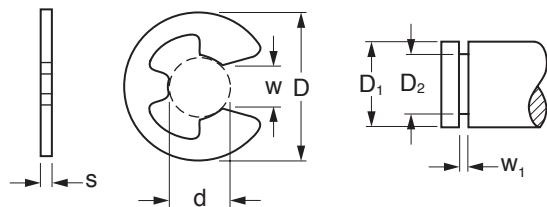
• **WRENCH** – High-Tensile Steel, Black Oxide Finish • DIN 911

Catalog Number	s	L ₁	L ₂	Set Screw Size
MD0911MQB007X03	0.71	30	7	M1.4 & M1.6
MD0911MQB009X03	0.89	30	12	M2 & #2-56
MD0911MQB013X04	1.27	40	15	M2.5 & #4-40
MD0911MQB015X05	1.5	50	15	M3
MD0911MQB020X05	2	55	16	M4
MD0911MQB025X06	2.5	60	20	M5
MD0911MQB030X06	3	65	20	M6
MD0911MQB040X07	4	72	25	M8
MD0911MQB050X08	5	80	28	M10
MD0911MQB060X09	6	90	32	M12 & M14

Catalog Number	Description
MD0911MQBHEXSET	Set of 10 Pieces (0.71 to 6)

E-RINGS, EXTERNAL

RoHS
COMPLIANT



• **RING** – Carbon Spring Steel, Oil-Dipped • DIN 6799 Priced Per 100 Pieces

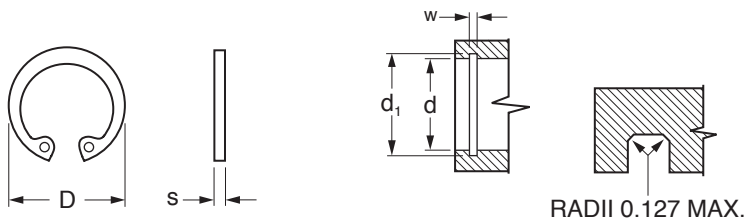
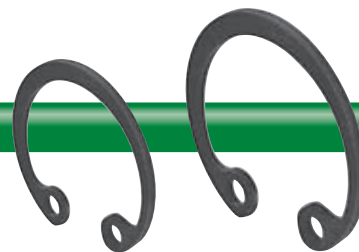
Catalog Number	Free Ring			D ₁ Shaft Diameter	Groove Diameter	
	w Gap	d Dia.	D Dia.		D ₂	Tolerance
MD6799MQB008	0.58	0.8	2	1	0.8	-0.06
MD6799MQB012	1.01	1.2	3	1.4	1.2	
MD6799MQB015	1.28	1.5	4	2	1.5	
MD6799MQB019	1.61	1.9	4.5	2.5	1.9	
MD6799MQB023	1.94	2.3	6	3	2.3	
MD6799MQB032	2.7	3.2	7	4	3.2	-0.07
MD6799MQB040	3.34	4	9	5	4	
MD6799MQB050	4.11	5	11	6	5	
MD6799MQB060	5.26	6	12	7	6	
MD6799MQB070	5.84	7	14	8	7	-0.09
MD6799MQB080	6.52	8	16	9	8	
MD6799MQB090	7.63	9	18.5	10	9	
MD6799MQB100	8.32	10	20	11	10	
MD6799MQB120	10.45	12	23	13	12	-0.11

9

Catalog Number	Groove Width		Ring Thickness		Ring Thrust Strength-kg
	w ₁	Tolerance	s	Tolerance	Safety Factor = 4
MD6799MQB008	0.24	+0.02	0.2	±0.02	2
MD6799MQB012	0.34		0.3		4
MD6799MQB015	0.44		0.4		7
MD6799MQB019	0.54		0.5		10
MD6799MQB023	0.64		0.6		14
MD6799MQB032	0.64		0.6		20
MD6799MQB040	0.74	+0.03	0.7	±0.02	30
MD6799MQB050					40
MD6799MQB060					50
MD6799MQB070	0.94	+0.03	0.9	±0.02	60
MD6799MQB080	1.05	+0.06	1	±0.03	70
MD6799MQB090	1.15	+0.06	1.1	±0.03	80
MD6799MQB100	1.25	+0.06	1.2	±0.03	90
MD6799MQB120	1.35	+0.06	1.3	±0.03	100

RETAINING RINGS, INTERNAL

RoHS
COMPLIANT



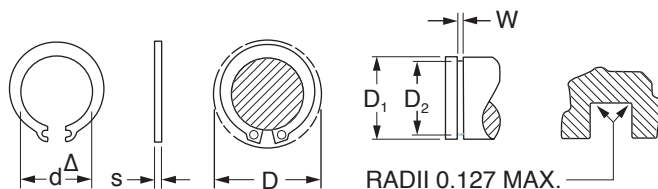
• **RING** – Carbon Spring Steel, Oil-Dipped • DIN 472 Priced Per 100 Pieces

Catalog Number	Free Diameter		Housing Diameter	Groove Diameter	
	D	Tolerance	d	d ₁	Tolerance
MD0472MQB008	8.7	+0.36	8	8.4	+0.09
MD0472MQB009	9.8	-0.10	9	9.4	0
MD0472MQB010	10.8	+0.36 -0.10	10	10.4	+0.11 0
MD0472MQB011	11.8		11	11.4	
MD0472MQB012	13		12	12.5	
MD0472MQB013	14.1		13	13.6	
MD0472MQB014	15.1		14	14.6	
MD0472MQB015	16.2		15	15.7	
MD0472MQB016	17.3		16	16.8	
MD0472MQB017	18.3	+0.42	17	17.8	+0.11/0
MD0472MQB018	19.5	-0.13	18	19	+0.13/0
MD0472MQB019	20.5		19	20	+0.13/0
MD0472MQB020	21.5	+0.42	20	21	+0.13
MD0472MQB021	22.5	-0.13	21	22	0
MD0472MQB022	23.5		22	23	
MD0472MQB024	25.9	+0.42	24	25.2	+0.21
MD0472MQB025	26.9	-0.21	25	26.2	0

Catalog Number	Groove Width	Ring Thickness		Ring Thrust Strength-kg
	w +0.14 0	s	Tolerance	
MD0472MQB008 MD0472MQB009	0.9	0.8	0 -0.05	204
MD0472MQB010 MD0472MQB011 MD0472MQB012	1.1	1	0 -0.06	408
MD0472MQB013 MD0472MQB014 MD0472MQB015 MD0472MQB016				428 459 510 561
MD0472MQB017 MD0472MQB018 MD0472MQB019				612 663 693
MD0472MQB020 MD0472MQB021 MD0472MQB022				734 775 816
MD0472MQB024 MD0472MQB025	1.3	1.2		1417 1489

RETAINING RINGS, EXTERNAL

RoHS
COMPLIANT



• **RING** – Carbon Spring Steel, Oil-Dipped • DIN 471 Priced Per 100 Pieces

Catalog Number	Free Diameter		D Ring Clear.	D ₁ Shaft Diameter	Groove Diameter	
	d	Tolerance			D ₂	Tolerance
Δ MD0471MQB003	2.7	+ 0.06 - 0.12	7.4	3	2.8	- 0.04
Δ MD0471MQB004	3.7	+ 0.08	8.8	4	3.8	- 0.04
Δ MD0471MQB005	4.7	- 0.15	10.7	5	4.8	
Δ MD0471MQB006	5.6		12.2	6	5.7	
Δ MD0471MQB007	6.5		13.8	7	6.7	- 0.06
Δ MD0471MQB008	7.4	+ 0.09	15.2	8	7.6	
Δ MD0471MQB009	8.4	- 0.18	16.4	9	8.6	
MD0471MQB010	9.3	+ 0.15 - 0.30	17.6	10	9.6	- 0.11
MD0471MQB011	10.2	+ 0.18 - 0.36	18.6	11	10.5	- 0.11
MD0471MQB012	11		19.6	12	11.5	
MD0471MQB013	11.9		20.8	13	12.4	
MD0471MQB014	12.9		22	14	13.4	
MD0471MQB015	13.8		23.2	15	14.4	
MD0471MQB016	14.7		24.4	16	15.2	

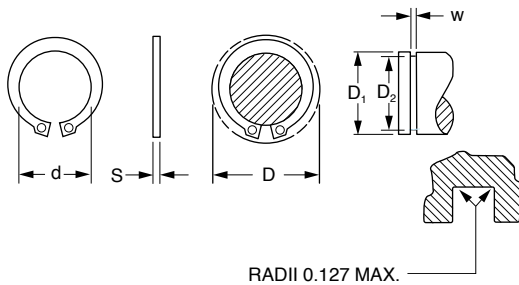
Catalog Number	Groove Width		s Ring Thick. - 0.06	Ring Thrust Strength-kg Safety Factor = 4
	w	Tolerance		
Δ MD0471MQB003	0.5	+0.14	0.4	68
Δ MD0471MQB004	0.5	+0.14	0.4	90
Δ MD0471MQB005	0.7		0.6	176
Δ MD0471MQB006	0.8		0.7	252
Δ MD0471MQB007	0.9	+0.14	0.8	341
Δ MD0471MQB008	0.9		0.8	390
Δ MD0471MQB009	1.1		1	560
MD0471MQB010	1.1	+0.14	1	622
MD0471MQB011	1.1	+0.14	1	685
MD0471MQB012				747
MD0471MQB013				809
MD0471MQB014				872
MD0471MQB015				935
MD0471MQB016				996

Δ These rings only have slotted holes for retaining ring pliers.

See next page for larger sizes

RETAINING RINGS, EXTERNAL

RoHS
COMPLIANT



• RING – Carbon Spring Steel, Oil Dipped • DIN 471

Catalog Number	Free Diameter		D Ring Clear.	D ₁ Shaft Diameter	Groove Diameter	
	d	Tolerance			D ₂	Tolerance
MD0471MQB019	17.5	+0.10 -0.36	27.2	19	18	-0.11
MD0471MQB021	19.5	+0.13 -0.42	29.6	21	20	-0.21
MD0471MQB022	20.5	+0.13 -0.42	30.8	22	21	-0.21
MD0471MQB026	24.2	+0.21 -0.42	35.5	26	24.9	-0.21
MD0471MQB032	29.6	-0.42	43	32	30.3	-0.25
MD0471MQB040	36.5	+0.39	52.6	40	37.5	-0.25
MD0471MQB047	43.5	-0.90	61.6	47	44.5	-0.25
MD0471MQB062	57.8	+0.46	77.8	62	59	-0.3
MD0471MQB075	70.5	-1.10	92.8	75	72	-0.3
MD0471MQB090	84.5	+0.54	108.5	90	86.5	-0.35
MD0471MQB120	113	-1.30	143.1	120	116	-0.54

Catalog Number	Groove Width		S Ring Thick. - 0.06	Ring Thrust Strength-kg Safety Factor = 4
	w	Tolerance		
MD0471MQB019	1.3	+0.14	1.2	1631
MD0471MQB021	1.3	+0.14	1.2	1811
MD0471MQB022	1.3	+0.14	1.2	1901
MD0471MQB026	1.3	+0.14	1.2	2475
MD0471MQB032	1.6	+0.14	1.5	4725
MD0471MQB040	1.85	+0.14	1.75	8572
MD0471MQB047				10125
MD0471MQB062	2.15	+0.14	2	15975
MD0471MQB075	2.65	+0.14	2.5	19350
MD0471MQB090	3.15	+0.18	3*	27225
MD0471MQB120	4.15	+0.18	4*	41625

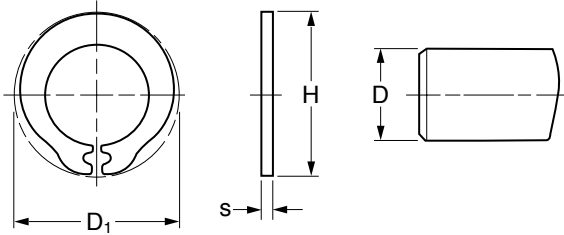
NOTE: The items on this page are sold with unit of EACH.

See previous page for smaller sizes

*Tolerance: -0.075

RINGS, GROOVELESS RETAINING

RoHS
COMPLIANT



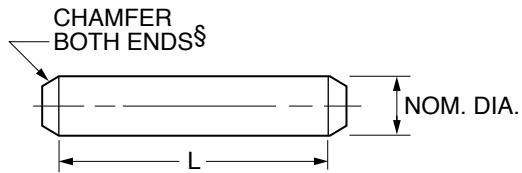
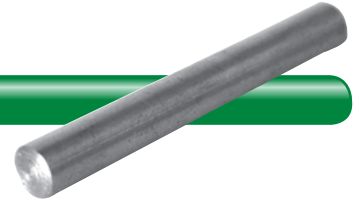
- **RING** – Spring Steel HRC 46...52, Black Oxide Finish
- **EXTERNAL • FOR AXIAL ASSEMBLY • NO GROOVE REQUIRED**

Catalog Number	D* Shaft Dia.	D ₁ Ring Clearance	H Ring Height	Thickness		Allowable Axial Load N
				S	Tol.	
MKASDNMGR555-020	2	5.8	5.2	0.5	±0.03	50
MKASDNMGR555-025	2.5	6.5	5.9	0.6		60
MKASDNMGR555-030	3	7.4	6.8	0.7		75
MKASDNMGR555-040	4	9	8.3	0.8		100
MKASDNMGR555-050	5	10.2	9.75	0.8	±0.04	130
MKASDNMGR555-060	6	11.4	11.1	1		170
MKASDNMGR555-070	7	12.8	12.5	1		180
MKASDNMGR555-080	8	14.8	14.3	1.2		200
MKASDNMGR555-100	10	17.5	16.9	1.2	±0.05	250
MKASDNMGR555-120	12	21	20.6	1.5		300
MKASDNMGR555-160	16	28.5	26.5	1.5		500
MKASDNMGR555-200	20	35	33.25	1.75		750

*Shaft Tolerance (h9): 2 to 3 mm -0.025
(h11): 4 to 6 mm -0.075
(h11): 7 to 10 mm -0.090
(h11): 12 to 16 mm -0.110
(h11): 20 mm -0.130

PINS, PRECISION DOWEL

RoHS
COMPLIANT



§Chamfer or rounded ends at aMSP option

• **PIN** – 304 Stainless Steel • DIN 7

CATALOG NUMBER DESIGNATION:

M D 0 0 0 7 M X 0 0 **X 0**

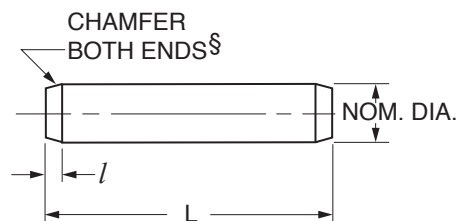
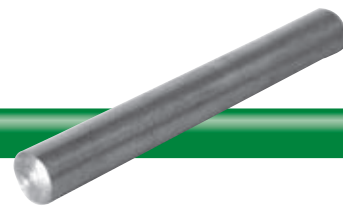
Priced Per
100 Pieces

Nominal Diameter m6*						L Length Code mm	Length Tolerance
2	2.5	3	4	5	6		
Diameter Code							
20	25	30	40	—	—	06	± 0.25
20	25	30	40	50	—	08	
20	25	30	40	50	60	10	
20	25	30	40	50	60	12	± 0.5
20	25	30	40	50	60	14	
—	25	30	40	50	60	16	
20	25	30	40	50	60	20	
—	25	30	40	50	60	24	
—	—	—	40	50	60	40	
—	—	—	—	50	60	50	± 0.75
—	—	—	—	—	60	60	

*Nominal Diameter Tolerance: 2 to 3 mm +0.008 / +0.002
4 to 6 mm +0.012 / +0.004

PINS, PRECISION DOWEL

RoHS
COMPLIANT



§Chamfer or rounded ends at aMsp option

Nominal Diameter	1	1.5	2	2.5	3	4	5	6
<i>l</i>	0.48	0.62	0.78	0.95	1.1	1.4	1.7	2.1

• **PIN** – Hardened Steel, HRC 58-62 • DIN 6325/ISO 8734

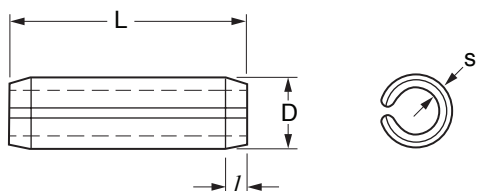
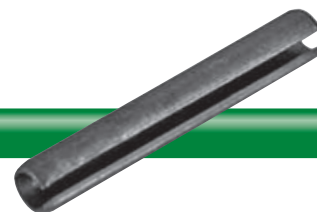
CATALOG NUMBER DESIGNATION:

M D 6 3 2 5 M Q 0 0 X 0

Priced Per
100 Pieces

Nominal Diameter m6*								L Length Code mm	Length Tolerance
1	1.5	2	2.5	3	4	5	6		
Diameter Code									
10	—	—	—	—	—	—	—	04	± 0.25
10	15	20	25	30	—	—	—	05	
10	15	20	25	30	40	50	—	06	
10	15	20	25	30	40	50	60	08	
10	15	20	25	30	40	50	60	10	
10	15	20	25	30	40	50	60	12	± 0.50
—	15	20	25	30	40	50	60	14	
—	15	20	25	30	40	50	60	16	
—	15	20	25	30	40	50	60	20	
—	15	20	25	30	40	50	60	24	
—	15	20	25	30	40	50	60	25	
—	15	20	25	30	40	50	60	28	
—	15	20	25	30	40	50	60	30	
—	15	20	25	30	40	50	60	32	
—	—	20	25	30	40	50	60	35	
—	—	20	25	30	40	50	60	36	± 0.75
—	—	20	25	30	40	50	60	40	
—	—	—	25	—	40	50	60	45	
—	—	—	25	30	40	50	60	50	
—	—	—	—	—	—	50	60	55	
—	—	—	—	30	—	50	60	60	
—	—	—	—	—	—	—	60	70	
—	—	—	—	—	—	—	60	80	

*Nominal Diameter Tolerance: 1 to 3 mm +0.008 / +0.002
4 to 6 mm +0.012 / +0.004



• **PIN** – Hardened Steel, Black Oxide Finish or Stainless Steel • DIN 1481/ISO 8752

CATALOG NUMBER DESIGNATION:

M D 1 4 8 1 M 0 X 0

Material Code

Steel, Hardened
Black Oxide Finish **QB**

Stainless Steel **XO**

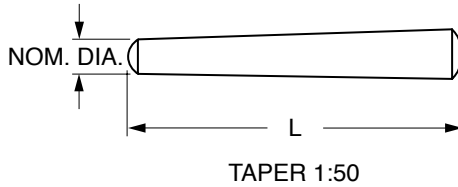
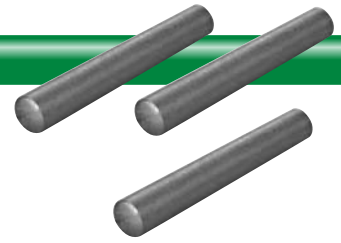
Priced Per
100 Pieces

Nominal Diameter m6*						L Length Code mm
1*	1.5*	2	2.5	3	4	
Diameter Code						
10	15	—	—	—	—	04
10	15	20	—	—	—	05
10	15	20	25	—	—	06
10	15	20	25	30	—	08
10	15	20	25	30	40	10
—	15	20	25	30	40	12
—	15	20	25	30	40	14
—	—	20	25	30	40	16
—	—	20	25	30	40	18
—	—	—	25	30	40	20
—	—	—	25	30	40	22
—	—	—	—	30	40	24
—	—	—	—	30	40	26
—	—	—	—	—	40	28
—	—	—	—	—	40	30

Nominal Diameter	s Wall Thickness	l Chamfer	D Free Diameter
1	0.2	0.15	1.2
1.5	0.3	0.25	1.7
2	0.4	0.35	2.3
2.5	0.5	0.4	2.8
3	0.6	0.5	3.3
4	0.8	0.65	4.4

*Stainless Steel is not available in 1 & 1.5 mm diameters.

PINS, TAPER



• PIN – Steel • DIN I/ISO 2339

CATALOG NUMBER DESIGNATION:

M D 0 0 0 1 M C 0 0 X

Priced Per
100 Pieces

Nominal Diameter						L Length Code mm
1	1.5	2	2.5	3	4	
Diameter Code						
10	—	20	—	—	—	008
10	15	20	25	30	—	010
10	15	20	25	30	—	012
10	15	20	25	30	40	014
10	15	20	25	30	40	016
10	15	20	25	30	40	018
—	15	20	25	30	40	020
—	15	20	25	30	40	022
—	15	20	25	30	40	024
—	15	20	25	30	40	026
—	—	20	25	30	40	028
—	—	20	25	30	40	030
—	—	—	25	30	40	032
—	—	—	25	30	40	036
—	—	—	25	30	40	040
—	—	—	—	30	40	045
—	—	—	—	30	40	050
—	—	—	—	—	40	060

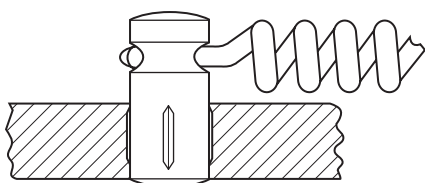
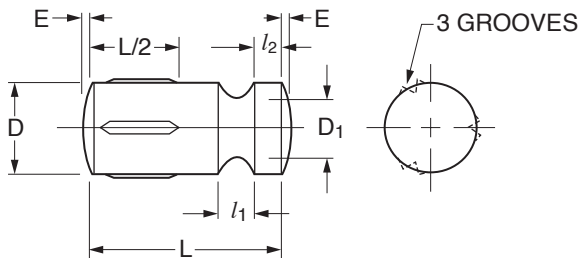
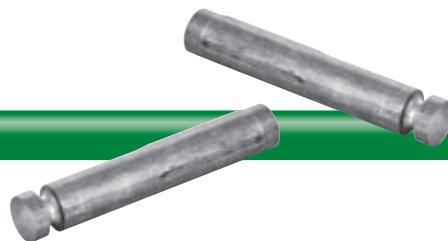
• PIN – 303 Stainless Steel • DIN I/ISO 2339

CATALOG NUMBER DESIGNATION:

M D 0 0 0 1 M X 0 0 X

Priced Per
100 Pieces

Nominal Diameter						L Length Code mm
1	1.5	2	2.5	3	4	
Diameter Code						
10	—	—	—	—	—	008
10	15	20	—	—	—	010
10	15	20	—	30	—	012
10	15	20	—	30	—	014
10	15	20	25	30	40	016
10	15	20	25	30	—	018
—	15	20	25	30	40	020
—	—	20	25	30	40	024
—	—	20	25	30	40	026
—	—	20	25	30	40	030
—	—	—	25	30	40	036
—	—	20	25	30	40	040
—	—	—	—	—	40	045
—	—	20	—	30	40	050
—	—	—	—	—	40	060



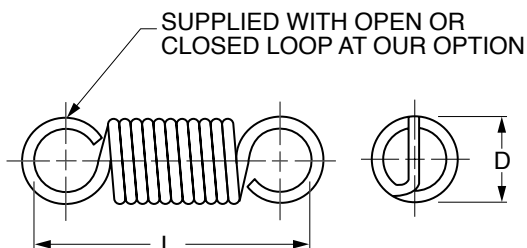
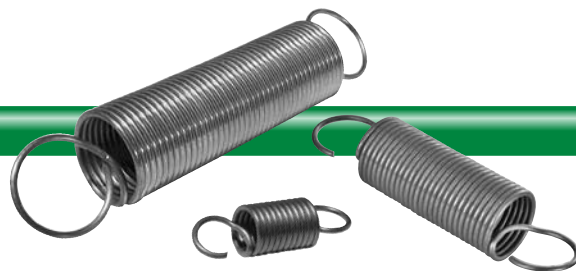
• **POST** – Carbon Steel • DIN 1469 Type C

Priced Per 100 Pieces

Catalog Number	D	Hole Tolerance	L	l_1	D_1	l_2	E Crown Height
MKASENM3010	3	H9 +0.025	10	1	1.5	1	0.4
MKASENM3012			12				
MKASENM3016			16				
MKASENM3020			20				
MKASENM3025			25				
MKASENM4012	4	H11 +0.075	12	1.4	2.4	1.4	0.5
MKASENM4016			16				
MKASENM4020			20				
MKASENM4025			25				
MKASENM4030			30				
MKASENM5012	5	H11 +0.075	12	1.6	2.8	1.6	0.6
MKASENM5016			16				
MKASENM5020			20				
MKASENM5025			25				
MKASENM5030			30				
MKASENM6016	6	H11 +0.075	16	1.6	3.8	1.6	0.8
MKASENM6020			20				
MKASENM6025			25				
MKASENM6030			30				

SPRINGS, EXTENSION

RoHS
COMPLIANT



- **SPRING** – 302 Stainless Steel, Spring Temper
- **CROSSOVER LOOPS OR MACHINE LOOPS • CLOSE WOUND**

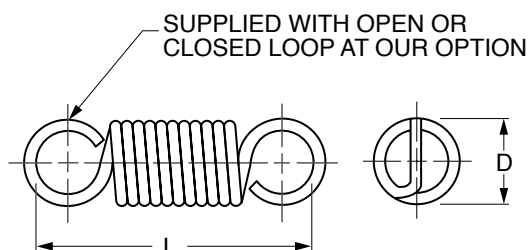
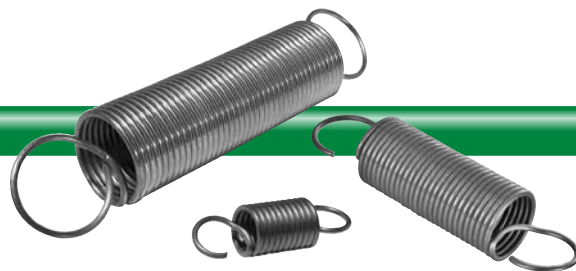
Catalog Number	D O.D.	Wire Dia.	L Free Length	Max. Load N	Max. Extension	Spring Rate N/mm
MKASFNM025025009	2.5	0.25	9.5	2.04	13.49	0.14
MKASFNM025025012			12.5		21.24	0.089
MKASFNM025025015			15.5		28.79	0.066
MKASFNM030035017	3	0.35	17	4.08	18.04	0.202
MKASFNM030035021			21		23.93	0.152
MKASFNM030035025			25		29.99	0.121
MKASFNM030035030			30		37.15	0.097
MKASFNM030035035			35		45.26	0.08
MKASFNM045045017	4.5	0.45	17	5.71	20.32	0.255
MKASFNM045045021			21		28.91	0.179
MKASFNM045045025			25		37.43	0.138
MKASFNM045045030			30		48.71	0.107
MKASFNM045045035			35		59.27	0.087
MKASFNM045060017	4.5	0.6	17	13.08	10	1.153
MKASFNM045060021			21		14.08	0.818
MKASFNM045060025			25		18.16	0.635
MKASFNM045060030			30		23.3	0.495
MKASFNM045060035			35		28.42	0.406
MKASFNM063055019	6.3	0.55	19	7.33	23.44	0.283
MKASFNM063055022			22		32.25	0.206
MKASFNM063055025			25		40.96	0.162
MKASFNM063055030			30		55.45	0.12
MKASFNM063055035			35		69.95	0.095
MKASFNM063075019	6.3	0.75	19	16.33	10.35	1.381
MKASFNM063075022			22		13.95	1.025
MKASFNM063075025			25		17.54	0.816
MKASFNM063075030			30		23.51	0.608
MKASFNM063075035			35		29.53	0.484
MKASFNM063080019	6.3	0.8	19	20.41	9.19	1.927
MKASFNM063080022			22		12.33	1.437
MKASFNM063080025			25		15.45	1.147
MKASFNM063080030			30		20.68	0.856
MKASFNM063080035			35		25.89	0.684

NOTE: Supplied right- or left-hand wound at our option.
Loop orientation may vary.

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SPRINGS, EXTENSION

RoHS
COMPLIANT

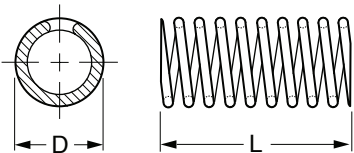
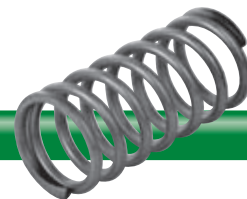


- **SPRING** – 302 Stainless Steel, Spring Temper
- **CROSSOVER LOOPS OR MACHINE LOOPS • CLOSE WOUND**

Catalog Number	D O.D.	Wire Dia.	L Free Length	Max. Load N	Max. Extension	Spring Rate N/mm
MKASFNM080075025	8	0.75	25	13.91	26.25	0.477
MKASFNM080075030			30		37.99	0.33
MKASFNM080075035			35		49.63	0.252
MKASFNM080075040			40		61.32	0.204
MKASFNM095095025	9.5	0.95	25	21.66	15.78	1.205
MKASFNM095095030			30		24.68	0.77
MKASFNM095095035			35		33.58	0.566
MKASFNM095095040			40		42.58	0.446
MKASFNM095120025	9.5	1.2	25	44.98	10.06	3.903
MKASFNM095120030			30		15.3	2.567
MKASFNM095120035			35		20.54	1.913
MKASFNM095120040			40		25.79	1.523
MKASFNM095150025	9.5	1.5	25	81.63	5.71	12.165
MKASFNM095150030			30		8.43	8.24
MKASFNM095150035			35		11.15	6.23
MKASFNM095150040			40		13.87	5.01
MKASFNM095150045	12.5	1.2	45	32.65	16.59	4.188
MKASFNM125120030			30		17.03	1.728
MKASFNM125120040			40		36.87	0.798
MKASFNM125120050			50		56.65	0.519
MKASFNM125120060	12.5	1.6	60	73.51	76.39	0.385
MKASFNM125160030			30		8.95	7.116
MKASFNM125160035			35		13.52	4.712
MKASFNM125160040			40		18.09	3.522
MKASFNM125160045	19	1.6	45	47.4	22.65	2.813
MKASFNM125160050			50		27.22	2.34
MKASFNM125160055			55		31.78	2.004
MKASFNM190160050			50	130	42.08	1.02
MKASFNM190160060	19	1.6	60		67.15	0.639
MKASFNM190160070			70		95.2	0.466
MKASFNM190160080			80		117.18	0.367
MKASFNM190160090			90		142.09	0.302
MKASFNM190160100			100		167.12	0.257
MKASFNM190160130			130		243.08	0.177

NOTE: Supplied right- or left-hand wound at our option.
Loop orientation may vary.

SPRINGS, COMPRESSION



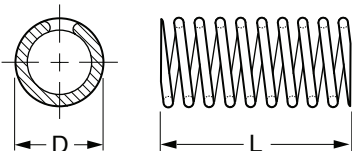
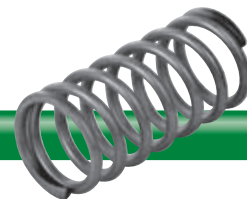
- **SPRING** – 302 Stainless Steel, Spring Temper
- **RIGHT-HAND WOUND • SQUARE AND GROUND ENDS**

Catalog Number	D O.D.	Wire Dia.	L Free Length	Approx. Load at Solid Hgt. N	Approx. Solid Height	Spring Rate N/mm
*MKASGNM022025006	2.25	0.25	6.5	2.92	2.4	0.69
*MKASGNM022025008			8		2.8	0.55
*MKASGNM022025009			9.5		3.2	0.46
*MKASGNM022025011			11		3.6	0.39
*MKASGNM022025012			12.5		4	0.34
MKASGNM030035006	3	0.35	6.5	6.78	2.4	1.59
MKASGNM030035008			8		2.8	1.26
MKASGNM030035009			9.5		3.2	1.05
MKASGNM030035011			11		3.6	0.89
MKASGNM030035012			12.5		4	0.78
MKASGNM030050006	3	0.5	6.5	17.08	3.76	6.25
MKASGNM030050008			8		4.52	4.91
MKASGNM030050009			9.5		5.26	4.04
MKASGNM030050011			11		6.02	3.43
MKASGNM030050012			12.5		6.76	2.98
MKASGNM046035008	4.6	0.35	8	4.08	1.6	0.65
MKASGNM046035011			11		1.98	0.46
MKASGNM046035014			14		2.36	0.36
MKASGNM046035017			17		2.74	0.29
MKASGNM046045008	4.6	0.45	8	9	2.31	1.58
MKASGNM046045011			11		2.9	1.11
MKASGNM046045014			14		3.51	0.86
MKASGNM046045017			17		4.09	0.7
MKASGNM046055008	4.6	0.55	8	14.7	3.23	3.08
MKASGNM046055011			11		4.14	2.14
MKASGNM046055014			14		5.05	1.65
MKASGNM046055017			17		5.99	1.33
MKASGNM046060008	4.6	0.6	8	19.58	3.56	4.42
MKASGNM046060011			11		4.6	3.07
MKASGNM046060014			14		5.66	2.35
MKASGNM046060017			17		6.71	1.91

*Ends squared, not ground

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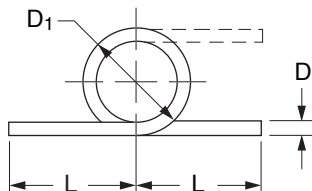
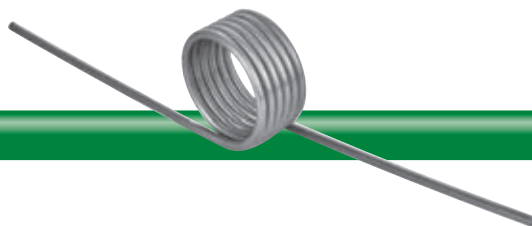
SPRINGS, COMPRESSION



- **SPRING** – 302 Stainless Steel, Spring Temper
- **RIGHT-HAND WOUND • SQUARE AND GROUND ENDS**

Catalog Number	D O.D.	Wire Dia.	L Free Length	Approx. Load at Solid Hgt. N	Approx. Solid Height	Spring Rate N/mm
MKASGNM046080008	4.6	0.8	8	46.56	4.95	15.31
MKASGNM046080011			11		6.53	10.42
MKASGNM046080014			14		8.1	7.9
MKASGNM046080017			17		9.68	6.36
MKASGNM060060011	6	0.6	11	12.25	3.73	1.68
MKASGNM060060014			14		4.5	1.29
MKASGNM060060017			17		5.26	1.04
MKASGNM060080011	6	0.8	11	36.74	4.93	6.05
MKASGNM060080014			14		5.97	4.58
MKASGNM060080017			17		7.04	3.69
MKASGNM060110011	6	1.1	11	78.47	7.49	22.31
MKASGNM060110014			14		9.3	16.64
MKASGNM060110017			17		11.1	13.26
MKASGNM060110019			19		12.29	11.69
MKASGNM060110022			22		14.1	9.91
MKASGNM075080011	7.5	0.8	11	27.82	3.96	3.96
MKASGNM075080014			14		4.72	3
MKASGNM075080017			17		5.49	2.42
MKASGNM075080021			21		6.5	1.92
MKASGNM075080025			25		7.52	1.59
MKASGNM075095011	7.5	0.95	11	44.98	5.05	7.55
MKASGNM075095014			14		6.07	5.67
MKASGNM075095017			17		7.11	4.55
MKASGNM075095021			21		8.51	3.6
MKASGNM075095025			25		9.88	2.97
MKASGNM090110017	9	1.1	17	58.81	6.99	5.87
MKASGNM090110021			21		8.28	4.62
MKASGNM090110025			25		9.58	3.82
MKASGNM120140025	12	1.4	25	73.55	10.49	5.06
MKASGNM150160030	15	1.6	30	84.97	11.4	4.57
MKASGNM183200040	18.3	2	40	143.77	15.04	5.76

SPRINGS, TORSION



- **SPRING** – 302 Stainless Steel, Spring Temper
- **LEFT-HAND WOUND • 180° DEFLECTION**

Catalog Number	D Wire Dia.	Mandrel Size	D ₁ O.D.	L	Min.* Axial Space	Torque N • cm
MKASHNM030180027	0.3	2.77	4.24	12.7	1.5	0.5
MKASHNM038180027	0.38		4.67	19.05	1.9	1.1
MKASHNM046180035	0.46	3.56	5.51	19.05	2.77	1.6
MKASHNM053180039	0.53	3.96	6.3	25.4	3.22	2.6
MKASHNM064180051	0.64	5.16	7.75	25.4	3.84	4.4
MKASHNM076180063	0.76	6.35	10.03	25.4	4.6	7.2
MKASHNM089180071	0.89	7.14	11.46	31.75	5.38	11.3
MKASHNM102180087	1.02	8.71	13.18	50.8	6.15	15.8
MKASHNM122180103	1.22	10.31	15.72	50.8	7.42	29
MKASHNM137180116	1.37	11.68	16.61		9.91	36.9
MKASHNM160180138	1.6	13.89	19.48		11.68	58

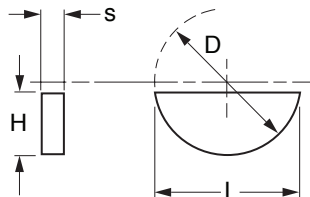
*Space required on application to allow for operation of the spring.

NOTE: Right-hand wound and special springs available on special order.



KEYS, WOODRUFF

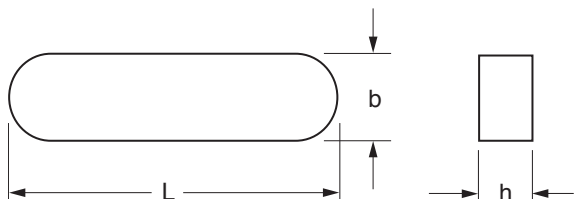
RoHS
COMPLIANT



• KEY – Carbon Steel • DIN 6888

Catalog Number	Width		Height		L Length	D Dia.	For Shaft Dia.	
	s	Tol.	H	Tol.			Over	To
MKAAINM01507	1.5	-0.025	2.6	-0.1	6.76	7	4	6
MKAAINM02007	2							
MKAAINM02010	2	-0.025	3.7	-0.12	9.66	10	6	8
MKAAINM02013			5		12.65	13		
MKAAINM02510	2.5	-0.025	3.7	-0.12	9.66	10	8	10
MKAAINM03010	3							
MKAAINM03013	3	-0.025	5	-0.12	12.65	13	8	10
MKAAINM03016			6.5	-0.15	15.72	16		
MKAAINM03019			7.5	-0.15	18.57	19		
MKAAINM04013	4	-0.03	5	-0.12	12.65	13	10	12
MKAAINM04016			6.5	-0.15	15.72	16		
MKAAINM04019			7.5	-0.15	18.57	19		
MKAAINM04022			9	-0.15	21.68	22		
MKAAINM05016	5	-0.03	6.5	-0.15	15.72	16	12	17
MKAAINM05019			7.5		18.57	19		
MKAAINM05022			9		21.63	22		
MKAAINM05025			10		24.49	25		
MKAAINM06022	6	-0.03	9	-0.15	21.63	22	17	22
MKAAINM06025			10	-0.15	24.49	25		
MKAAINM06028			11	-0.18	27.35	28		
MKAAINM08028	8	-0.036	11	-0.18	27.35	28	22	30
MKAAINM08032			13		31.43	32		
MKAAINM10032	10	-0.036	13	-0.18	31.43	32	30	38
MKAAINM10045			16		43.08	45		

KEYS, SQUARE MACHINE - Round Ended



• KEY – Carbon Steel • DIN 6885A

Catalog Number	b* Width h9	h Height	L Length
MKAAJNM030306	3	3	6
MKAAJNM030308			8
MKAAJNM030310			10
MKAAJNM030314			14
MKAAJNM030320			20
MKAAJNM030325			25
MKAAJNM040408	4	4	8
MKAAJNM040410			10
MKAAJNM040414			14
MKAAJNM040416			16
MKAAJNM040420			20
MKAAJNM040425			25
MKAAJNM050510	5	5	10
MKAAJNM050514			14
MKAAJNM050516			16
MKAAJNM050520			20
MKAAJNM050525			25
MKAAJNM050536			36
MKAAJNM060610	6	6	10
MKAAJNM060614			14
MKAAJNM060616			16
MKAAJNM060620			20
MKAAJNM060628			28
MKAAJNM060636			36

Catalog Number	b* Width h9	h Height	L Length
MKAAJNM080710	8	7	10
MKAAJNM080716			16
MKAAJNM080720			20
MKAAJNM080725			25
MKAAJNM080736			36
MKAAJNM080745			45
MKAAJNM100825	10	8	25
MKAAJNM100828			28
MKAAJNM100836			36
MKAAJNM100845			45
MKAAJNM100856			56
MKAAJNM120828	12	8	28
MKAAJNM120836			36
MKAAJNM120845			45
MKAAJNM120856			56
MKAAJNM120863			63
MKAAJNM140936	14	9	36
MKAAJNM140945			45
MKAAJNM140956			56
MKAAJNM140963	16	10	63
MKAAJNM161056			56
MKAAJNM161063			63

*b Width Tolerance: 3 mm -0.025
 4, 5 & 6 mm -0.030
 8 & 10 mm -0.036
 12, 14 & 16 mm -0.043