LUFKIN

PUMPING UNITS



CONVENTIONAL



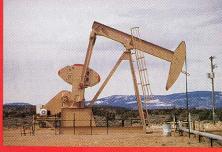
MARK II UNITORQUE



AIR BALANCED



LOW PROFILE



REVERSE MARK II



CONVENTIONAL PORTABLE



AMERICAN UNIT



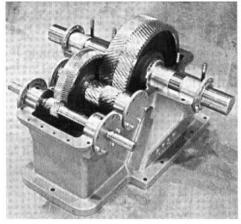
SERVICE CENTERS



CHURCHILL BEAM BALANCED

Why is the **LUFKIN Pumping Unit so** Reliable?

The LUFKIN design field proven by over 70 years of service.



LUFKIN research and development perfected nodular iron Herringbone gears, now the world standard for pumping unit gear reducers.

- Less sensitive to mis-alignment.
- · Higher torque capacity than
- required by API.
- Bronze bushings on the crankshafts need no adjustment at assembly and can be replaced without removing the cranks.

LUFKIN designed and manufactured Herringbone (Double Helical) Gears have proven to be the standard of excellence for pumping unit gear reducers. Herringbone Gears are less sensitive to mis-alignment and withstand load reversals better than other types of gears. Heavy Duty sleeve bushings on the crankshaft and straight roller bearings on the high speed and intermediate shafts need no adjustment at assembly or when field service is required. The nodular iron gears with high strength alloy pinion used by most manufacturers of pumping units were pioneered by LUFKIN over thirty (30) years ago.

LUFKIN's Quality Policy

LUFKIN's Quality Policy clearly defines our understanding of Quality:



At Lufkin Industries, quality does not happen by chance... Quality happens because we make sure it happens.

We define quality as error free products and service that meets or exceeds customer requirements.

Quality performance is achieved through teamwork and commitment to a process of continuous improvement.

LUFKIN's reputation for quality is well established. To ensure that our products and service continue to lead the industry in reliability and durability, LUFKIN has invested millions of dollars in state-of-the-art manufacturing facilities and equipment and human resource talent and training.



LUFKIN Sucker Rod Pumping Units are available to handle most installation problems and down hole conditions.

Computer service is available to aid in sizing pumping units, sucker rods, and pumps to insure maximum production and optimum utilization of equipment.

All LUFKIN pumping units with the API monogram signify that they meet or exceed the latest API standard for the design of sucker rod pumping units.

In addition to API models. LUFKIN also designs and manufactures non-API sizes at customer

Explanation of Pumping Unit Designations

C - 228D-246-86 Type Pumping Unit: Stroke Length In Inches A-Air Balanced C-Conventional (Standard) CM—Conventional (Portable) M-Mark 11 Unitorque Polished Rod Load Rating LP-Low Profile In Hundreds of Pounds RM—Reverse Mark Peak Torque Rating In **D-Double Reduction Gear Reducer** Thousands of Inch Pounds

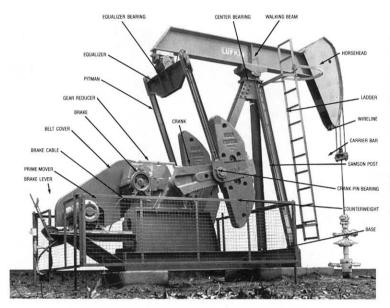
Parts Replacement

The use of parts which do not meet LUFKIN's design and specifications could result in serious injury to personnel near the pumping unit. When ordering spare parts, the designation

and serial number of the unit must be given. Refer to the latest issue of operator's manual for instruction of the safe way to install or perform maintenance on pumping units.

LUFKIN Conventional Crank Balanced Units

The LUFKIN Conventional Crank Balanced Pumping Unit is the most widely known and is available in sizes up to the C-1824D-365-192, a 192 inch stroke unit with a polished rod capacity of 36,500 pounds and a 1,824,000 inch pound double reduction gear box.



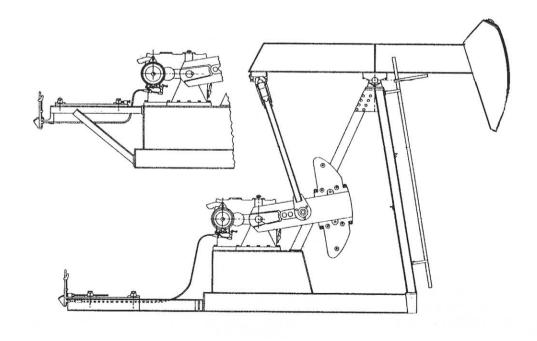
Conventional Pumping Unit Nomenclature

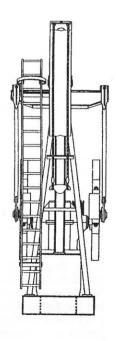


Conventional Units

The LUFKIN Conventional Crank Balanced Unit, widely known and accepted, is the old reliable "work horse" of the oil patch. This is the most universally adaptable unit in the "LUFKIN LINE," simple to operate and requires minimum maintenance. Shown here is the two-point base design installed on front and rear concrete blocks.

Conventional Pumping Unit





LUFKIN Mark II Unitorque Pumping Units

The LUFKIN MARK II Unitorque Pumping Units are available in sizes up to the M-1824D-427-216, a 216 inch stroke unit with a polished rod capacity of 42,700 pounds and a 1,824,000 inch pound double reduction gear box.



*Mark II Unitorque "Two-Point" Suspension

"Two-Point" Suspension bases are standard for all LUFKIN Mark II Pumping Units. The "two point" base reduces concrete requirements approximately 80% by permitting the use of small salvageable precast concrete blocks in front and rear. This simple foundation assures a completely portable unit and foundation which requires a mimimum of installation time.

The Mark II's unique UNITORQUE geometry is characterized by three (3) design configurations which reduce the rod load and peak torque over that of a conventional pumping unit.

- A. Shifting the gearbox from directly under the equalizer towards the Samson post turning in a preferred direction of rotation, creates an upstroke of 195° and a downstroke of 165°.
- B. Placing the equalizer between the horsehead and the Samson post creates a "push-up" or "Class 3" lever system.

The 195° upstroke, coupled with the front-mounted geometry, reduces the acceleration at the beginning of the upstroke where the load is greatest, thereby effecting a reduction in polished rod load. Locating the cross-yoke forward of the gear reducer creates a greater mechanical advantage for lifting the heavy load on the upstroke, and a lesser mechanical advantage for the reduced downstroke load, i.e., the maximum upstroke torque factor is reduced while the maximum downstroke torque factor is increased.

C. An angular offset in the crank produces a more effective counterbalance torque which, at the beginning of the upstroke, "lags" the well load torque approximately 7 1/2°. Similarly, at the beginning of the downstroke, this same offset condition produces a counterbalance torque which "leads" the well load torque approximately 7 1/2°.

Independently, these features would not produce a relatively

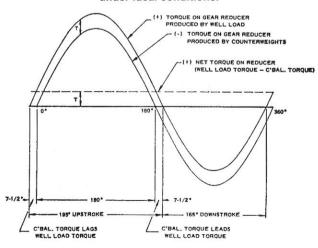


Mark II Unitorque

The Mark II unit, due to its unique geometry and phased counterbalance feature, lowers peak torque and horsepower requirements. The unusual geometry of the Mark II produces a somewhat slower up stroke and faster downstroke with reduced acceleration where the load is greatest, resulting in lower peak loads and longer rod life.

uniform torque, but working together a "unitorque" system is obtained which reduces the torque on the gearbox up to 35% as well as lowering power costs and often, prime mover size.

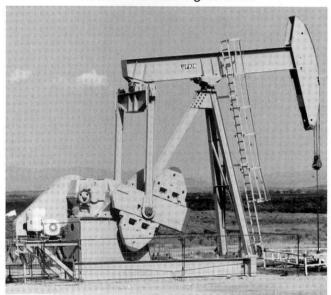
Illustration showing how a uniform torque can be obtained under ideal conditions.



NOTE: The Mark II Unit must be operated in a counterclockwise direction (Standing at the side of the unit with the wellhead to the right.)

LUFKIN Reverse Mark (RM) Pumping Units

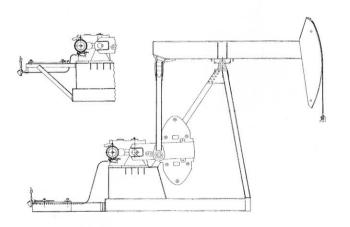
The LUFKIN RM Series Pumping Units are available in sizes up to RM-1824D-427-192, a 192 inch stroke unit with a polished rod capacity of 42,700 pounds and a 1,824,000 inch pound double reduction gear box.



Reverse Mark Units

The LUFKIN RM Series Pumping Unit offers the customer an improved alternative to the conventional type geometry. Although similar in appearance to the LUFKIN Conventional pumping unit, the RM unit geometry can reduce the torque and power requirements on many pumping applications. In some instances a smaller reducer and prime mover can be used.

LUFKIN RM Pumping Units



LUFKIN Conventional Portable Units

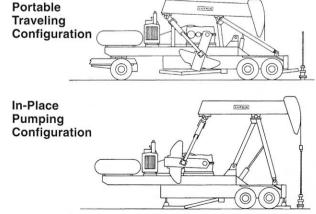
The LUFKIN Conventional Portable "Roadrunner" Pumping Units are available for lease only in sizes up to the CM-456D-305-120, a 120 inch stroke unit with a polished rod capacity of 30,500 and a 456,000 inch pound double reduction gear box.



Conventional Portable Units

The LUFKIN "Roadrunner" is a trailer-mounted, self-contained conventional pumping unit that lowers for legal highway transportation and can be erected and pumping in a few minutes at the well site. These units are available for rental or lease for such typical applications as removing frac fluids, stripper well pumping, gas well dewatering, temporary production, well testing, and as an alternative to swabbing units.

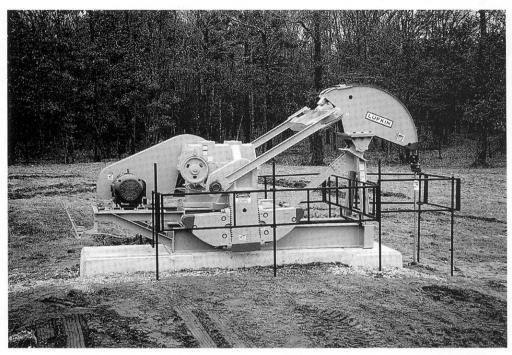
LUFKIN Conventional Portable Pumping Units General Dimensions



For further information and specific data on any LUFKIN Pumping Unit please call Oilfield Sales Department, LUFKIN Industries, Inc.: Tel (713) 468-7804, Fax (713) 468-6880.

LUFKIN Low Profile Unit

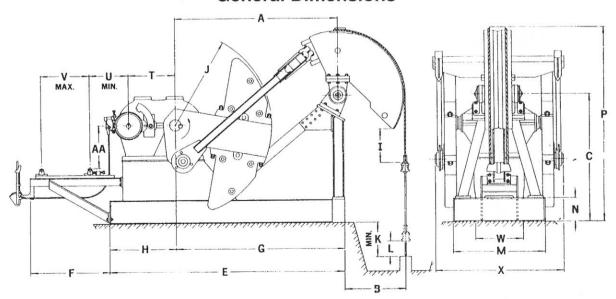
The LUFKIN Low Profile Pumping Units are available in sizes up to the LP-320D-246-86, a 86 inch stroke unit with a polished rod capacity of 24,600 pounds and a 320,000 inch pound double reduction gear box.



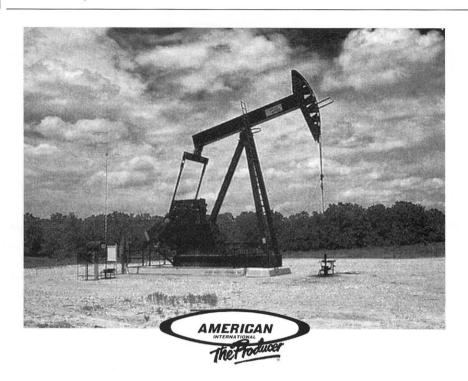
Low Profile Units

The LUFKIN Low Profile unit is a compact unit designed for installation in the fields irrigated by traveling sprinkler systems or in urban areas where the low profile feature may be desirable. Several sizes of the unit can be shipped from the factory completely assembled.

LUFKIN Low Profile Pumping Units General Dimensions



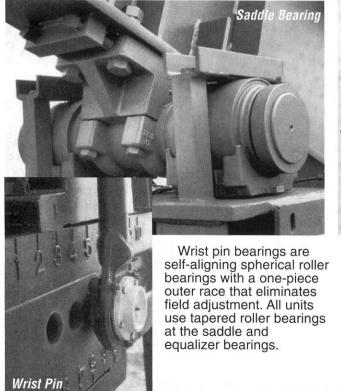
UNIT	Α	В	C	E	F	G	Н	1	J	K	L	M	N	Р	T	U	٧	W	Χ	AA
LP-320D-246-86	8'-6"	453/4"	7'-4"	133/4'-113/4"	523/4"	8'-91/2"	52"	101/2"	64"	24"	6"	513/4"	16 ³ /8"	11'-6"	34"	313/8"	311/4"	43"	7'-2"	407/8"
LP-228D-173-64	7'-10"	411/2"	6'-0"	11'-101/2"		8'-11/2"	45"	12"	56"	19"	63/8"		н	9'-11"	30"	291/2"	30"	37"	6"-61/2"	241/8"
LP-160D-173-64	. 10	п	11	11'-6"	403/8"	н	401/2"	H.	11	"	.11		и	э.	26"	171/8"	301/4"	32"	701/8"	289/16
LP-114D-133-54	7'-0"	311/8"	66"	10'-21/4"	н	7'-31/4"	35"	17"	50"	н	67/16"	481/4"	121/4"	8'-6"	24"	135/8"	291/4"	25"	663/4"	229/16"



Features

- The Producer devotes a full 186° of its clockwise crank rotation to the upstroke where it can do more work.
- Dependable, improved geometry of The Producer effects lower cost.
- The Producer can be run in either direction and used with either steel or fiberglass rods.
- The Producer maintains its structural integrity and its ability to perform across a varied range of well conditions.

High quality bearings.



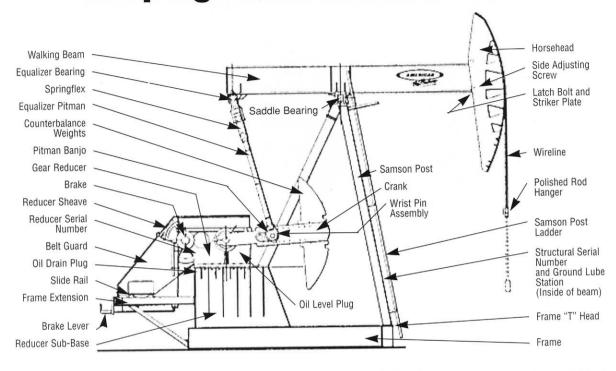


and resist torque

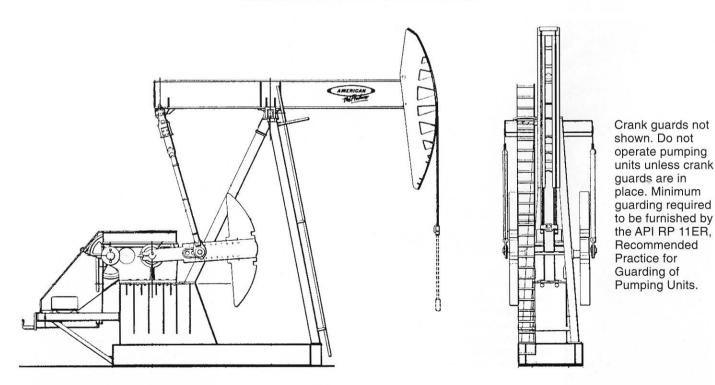
reversals.



Pumping Unit Nomenclature



The Producer. Outline Dimensions

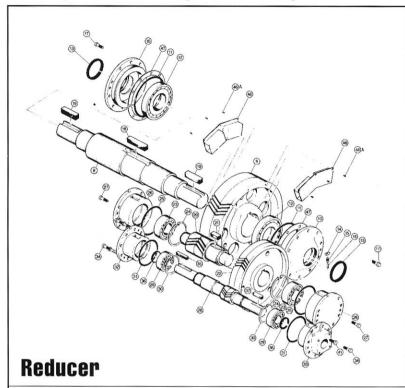


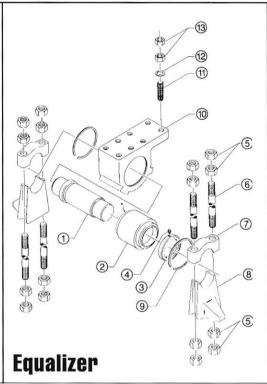
The AMERICAN **Producer** by LUFKIN is available in sizes up to the 1280-365-216, a 216 inch stroke with 36,500 pound polished rod capacity and 1,280,000 inch pounds of peak torque capacity.



Parts Replacement

Reducer, Wrist Pin and Equalizer Bearing.





ITEM DESCRIPTION

L.S. SHAFT L.S. GEAR L.S. BRG. HSG. O-RING L.S. L.S. BEARING DUST SEAL WIPER SPRING PIN BOLT

ITEM DESCRIPTION

L.S. GEAR KEY CRANK KEY

CRANK KEY
I.S. PINION
H.S. GEAR KEY
H.S. GEAR.
I.S. BEARING
SNAP RING
O-RING, I.S.
I.S. BRG. HSG
BOLT 20 21 22 23 24 25 26 27

ITEM DESCRIPTION

H.S. PINION H.S. BEARING H.S. SNAP RING O-RING, H.S. H.S BRĞ, HSG, L.H H.S. BRG, HSG, R.H BOLT 28 29 30 31 32 33 34 35 36 37

SHEAVE KEY DUST SEAL BRAKE DRUM KEY

ITEM DESCRIPTION

OIL SCOOP A SCREW SHIM

ITEM DESCRIPTION

EOUALIZER PIN BEARING ASSEMBLY RETAINING RING

GREASE FITTING HEX. NUT

ITEM DESCRIPTION

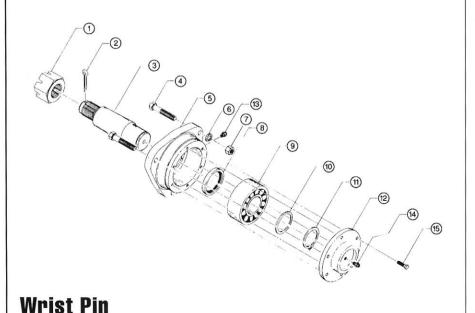
STUD BOLT

CENTER CLAMP CAP CENTER CLAMP RETAINING RINGS

ITEM DESCRIPTION

EQUALIZER BRG HOUSING STUD HARDENED 11 12

WASHER HEX. NUT

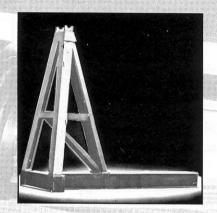


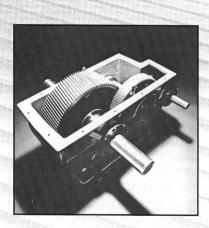
ITEM DESCRIPTION

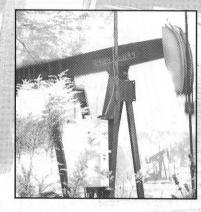
- WRIST PIN NUT
- **COTTER PIN**
- WRIST PIN
- 4 **BOLT**
- BEARING HOUSING
- LOCK WASHER
- 7 HEX. NUT
- OIL SEAL
- WRIST PIN BEARING
- SUPPORT WASHER 10
- 11 RETAINING RING
- BEARING HOUSING CAP 12
- 13 RELIEF FITTING
- 14 **GREASE FITTING**
- 15 BOLT

CHURCHILL®

Beam Balanced Pumping Units







Structural Frames

Extensive use of wide flange beams and full-length welds make for a rugged structure capable of withstanding extreme well loads. Beam balanced units have slide rails that adapt to all prime movers.



Precision cut helical gears are encased in a strong, heavy-walled cast-iron gear reducer housing. All gear reducer bearings are rated for over 100,000 hours L-10 life.

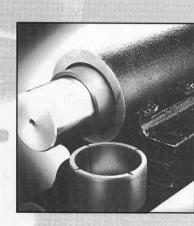
Horseheads

Horseheads on beam balanced units are easily detached for well servicing. A radius on the horsehead's support plate permits lateral adjustment for proper alignment of the wireline.

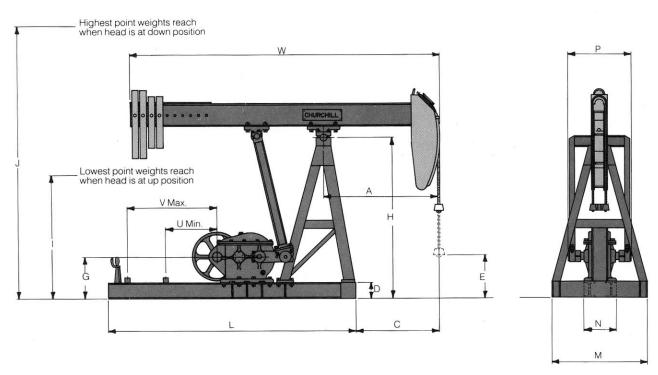
Bearings

Friction-Ease™ non-metallic bearings are durable and economical, are resilient to shocks and blows, have high lubricity, and are easily field replaceable.





CHURCHILL Beam Balanced Pumping Units



Dimensional Data (inches)

Unit Size*	Α	С	D	E	G	Н	ı	J	L	M	N	Р	U	V	W
6.4-28-12	18.25	16.00	4	17.8	11.1	44.5	21.5	71.5	63.5	24.00	5.91	20.80	16	25.62	65.5
6.4-32-16	25.50	23. 25	5	18.8	12.1	50.2	20.0	73.0	63.5	30.00	6.25	20.80	16	23.75	79.2
10-32-18	25.50	23.25	5	18.2	14.3	50.2	17.5	77.0	69.5	30.00	6.50	21.60	16	24.38	79.0
13-32-24	33.80	33.30	5	28.8	14.8	62.0	18.8	98.2	75.5	33.50	8.75	29.50	16	25.72	115.4
16-40-24	38.25	35.75	6	28.8	15.8	66.0	28.1	99.6	88.0	33.50	8.88	28.90	16	36.25	117.0
16-53-30	38.25	35.75	6	35.2	15.8	76.0	30.0	114.5	88.0	36.00	8.88	28.90	16	36.25	117.3
25-53-30 25-67-30 25-56-36 25-67-36	38.25 38.25 38.25 38.25	34.25 34.25 34.25 34.25	8 8 8	42.3 44.4 25.2 27.3	17.8 17.8 17.8 17.8	83.0 83.0 83.0 83.0	39.8 41.3 33.3 35.5	123.2 125.1 126.8 128.8	110.0 110.0 110.0 110.0	36.00 36.00 36.00 36.00	13.13 13.13 13.13 13.13	34.60 34.60 34.60 34.60	16 16 16 16	44.50 44.50 44.50 44.50	117.1 117.2 118.0 117.8
40-89-36 40-76-42 40-89-42 40-76-48	48.00 48.00 48.00 56.00	32.00 32.00 32.00 41.25	8 8 8	48.6 40.2 39.6 42.9	22.1 22.1 22.1 22.1	96.5 96.5 96.5 96.5	48.9 40.0 42.5 36.5	146.8 151.0 152.0 156.5	133.5 133.5 133.5 148.5	42.75 42.75 42.75 42.75	14.81 14.81 14.81 14.81	37.20 37.20 37.20 37.20	16 16 16 16	37.50 36.50 37.25 36.50	149.5 149.5 149.5 172.2
50-89-42	48.00	32.00	8	39.6	26.2	96.5	42.5	152.0	133.5	42.75	14.81	37.20	16	37.25	148.8
50-89-48	60.00	43.62	8	41.0	26.2	96.5	41.5	159.0	148.5	42.75	14.81	37.20	16	37.25	176.9
50-89-54	60.00	44.00	8	30.8	26.2	96.5	40.0	162.0	148.5	42.75	14.81	37.20	16	37.25	177.0
57-109-42	48.00	31.50	10	39.6	26.2	98.7	42.5	152.0	148.0	42.75	21.50	49.12	16	47.50	148.8
57-109-48	60.00	44.18	10	41.0	26.2	98.7	41.5	159.0	148.0	42.75	21.50	49.12	16	47.50	176.9
57-76-54	60.00	44.18	10	30.8	26.2	98.7	40.0	162.0	148.0	42.75	21.50	49.12	16	47.50	177.0
80-109-42	48.00	31.50	10	41.6	26.2	98.7	39.0	148.5	148.0	42.75	21.50	49.12	16	47.50	148.8
80-109-48	60.00	44.18	10	43.0	26.2	98.7	38.0	155.5	148.0	42.75	21.50	49.12	16	47.50	176.9
80-76-54	60.00	44.18	10	32.0	26.2	98.7	38.0	158.5	148.0	42.75	21.50	49.12	16	47.50	177.0
80-76-64	71.00	55.00	10	32.0	26.2	116.0	53.8	175.8	148.0	42.75	21.50	49.12	16	47.50	188.0

Note: Do not use above dimensions for foundation. Request foundation plan.

^{*} Example: 40-89-36

^{40,000} in-pounds of peak torque

^{8,900} pounds of polished rod capacity

³⁶ inches maximum stroke length



FACTORY & EXECUTIVE OFFICES

P. O. Box 849 (75902-0849) 601 South Raguet (75901)

Lufkin, Texas

Phone: 409/634-2211 Fax: 409/633-3563

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Lufkin, Texas 75901 P.O. Box 849

Phone: 409/637-5301 Fax: 409/637-5785

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Houston, Texas 77024 9821 Katy Freeway, Suite 900 Phone: 713/468-7804 Fax: 713/468-6880

Kilgore, Texas 75662-0871 P. Ö. Box 871 1-20 & Hwy 42 Phone: 903/984-3875

Fax: 903/984-2449

Levelland, TX 79336 P. O. Box 1594 West State Road 114 Phone: 806/894-2889, 800-658-9611 Fax: 806/894-2364 Lovington, NM 88260 P. O. Box 40 Artesia Highway Phone: 505/396-2620, 800-658-9613 Fax: 505/396-5298

Odessa, Texas 79766 P. O. Box 1632 (79760) 13400 W. Hwy 80 Phone: 915/563-0363 Fax: 915/561-8203

Oklahoma City, Oklahoma 73143 P. O. Box 95205

2300 South Prospect Phone: 405/677-0567 Fax: 405/677-7045

INTERNATIONAL

Argentina (Sales) LUFKIN Argentina S.A. (LASA) Reconguista 656 6'h Floor A. (1003) Buenos Aires, Arentina Phone: 54-1-315-1641, 54-1-315-1642, 54-1-312-7620 Fax: 54-1 -311 -8181

Argentina (Plant) Parque Ind. Comodoro Rivadavia Macizo 3, Casilla de Correo 104 (9000) Comodoro Rivadavia - Chubut Argentina

Phone: 54-97-481-750 Fax: 54-97-482-735

Canada (Sales) Canada (Sales) Lufkin Industries Canada Ltd. 225 McDougall Place #1050, 808-4th Avenue S.W. Calgary, Alberta T2P 3E8 Canada Phone: 403-234-7692 Fax: 403-25-6913

Canada (Plant) 1107-8'h A Street Nisku Industrial Park Nisku, Alberta T9E 7R3 Canada Phone: 403-955-7566 Fax: 403-955-3359

Indonesia (Plant) PT LUFKIN Indonesia Jl. Tenggiri Kav. 21 Batu Ampar Pulau Batam- Indonesia Phone: 62-778-412-242 Fax: 62-778-412-283, 62-778-412-284

United States (Sales) 9821 Katy Freeway, Suite 900 Houston, Texas 77024 Phone: 713/468-7804 Fax: 713/468-6880

Venezuela (Plant) LUFKIN de Venezuela, S.A. (LUFSA) Carretera A Perija KM. 15 Maracaibo, Venezuela Phone: 58-61-591-470, 58-61-594-129 Fax: 58-61-595-241, 58-61-592-282

INTERNATIONAL REPRESENTATIVES & DISTRIBUTORS

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Gamma, Ltda. Edif. Cosmos, Piso 8 of 2, Casilla 4316, Bolivia Phone: 59-12-323-271 Fax: 59-12-325-558

Cotema Equipamentos Epecas Ltda. Rua Carlos Vicari, 317 - Ague Branca 05033-070 Sao Paulo/SP- Brasil Phone: 55-11-872-3922 Fax: 55-11-62-0697 Brasil

Colombia

Bolivia

Lukiven, S.A. Avenida 15, No.129-52, Casa 1 Bogota - Colombia, S.A. Phone: 57-1-626-2549 Fax: 57-1-259-4866

Ecuado

The Ecuatex Group 5250 Gulfton, Suite 2D Houston, Texas 77081 U.S.A. Phone: 713-661 -2704 Fax: 713-661 -6994

Egypt

Tawakol Enterprises 70, El Thawra Street Heliopolis, Cairo, Egypt 11341 Phone: 20-2-291-6482 Fax: 20-2-291-7985

PT. IMECO Jl. Ampera Raya no. 9-10 Jakarta - 12550 - Indonesia Phone: 62-21-780-8068 Fax: 62-21-780-8055

Kuwait

Safwan Trading & Contracting Enterprises P.O. Box 20704 Safat 13068 Safat, Kuwait Phone: 965-481-1606, 965-481-6528 Fax: 965-484-8916, 965-483-2454

Mexico

Cables Y Accesorios Del Sureste, S.A. De

Cables Y Accesorios Del Sure C.V.(CABSA) Francisco Marquez No.143 Col. Condesa, 06140, Mexico Phone: 525-211-2666 Fax No. 525-211-6097

Oman

Oman Oilfields Supply Centre L.L.C. P.O. Box 1160, Ruwi, Postal Code 112 Sultanate of Oman Phone: 988-602-044 Fax: 968-699-730

Peru

Fauc International, Inc. 10211 West Sample Road, Suite 114 Coral Springs, Florida 33065 U.S.A. Phone: 954-344-7746 Fax: 954-341-9839

Fauc International, Inc. Jr. Porta 170 - Oficina 903 Miraflores - Lima 18 Peru Phone/Fax: 51 -14-448545

F-5C Ex Campamento Grana Talara - Peru Phone/Fax: 51 -64-381112

Peru

Al. Das Quaresmeiras, 45 Granja Julieta - Sao Paulo CEP 4716-070 - SP - Brasil Phone/Fax: 55-11-522-4493

Syria

Trinidad

Turkey

Agip USA, Inc. 110 East 59th Street New York, New York 10022-1374 U.S.A. Phone: 212-339-2100 Fax: 212-339-2191

Process Components Limited 17-19 Maharaj Avenue Marabella, Trinidad, West Indies Phone: 809-652-3386 Fax: 809-652-0809

Agrimpex, Inc. 10600 Fallstone Road Houston, Texas 77099 U.S.A. U.S.A. Phone: 281-530-9858 Fax: 281 -530-9613

Sub-Agent: Insmak 3511 Cinari Izmir, Turkey Phone: 232-486-1911 Fax: 232-486-3567

United

Edward H. Mills Associates 2, Fernhill, Oxshott, Surrey, KT22 OJK, England Phone: 441-37-284-3067 Fax: 441-37-284-3067 Venezuela

Venezuela

Lukiven, S.A. Circunvalacion #2, #111A-250 Frente Al Hotel Maruma Maracaibo, Venezuela Phone: 58-61-360-289, 58-61-360-516, 58-61-361-793 Fax: 58-61-360-087, 58-61-360-195, 58-61-361-697

