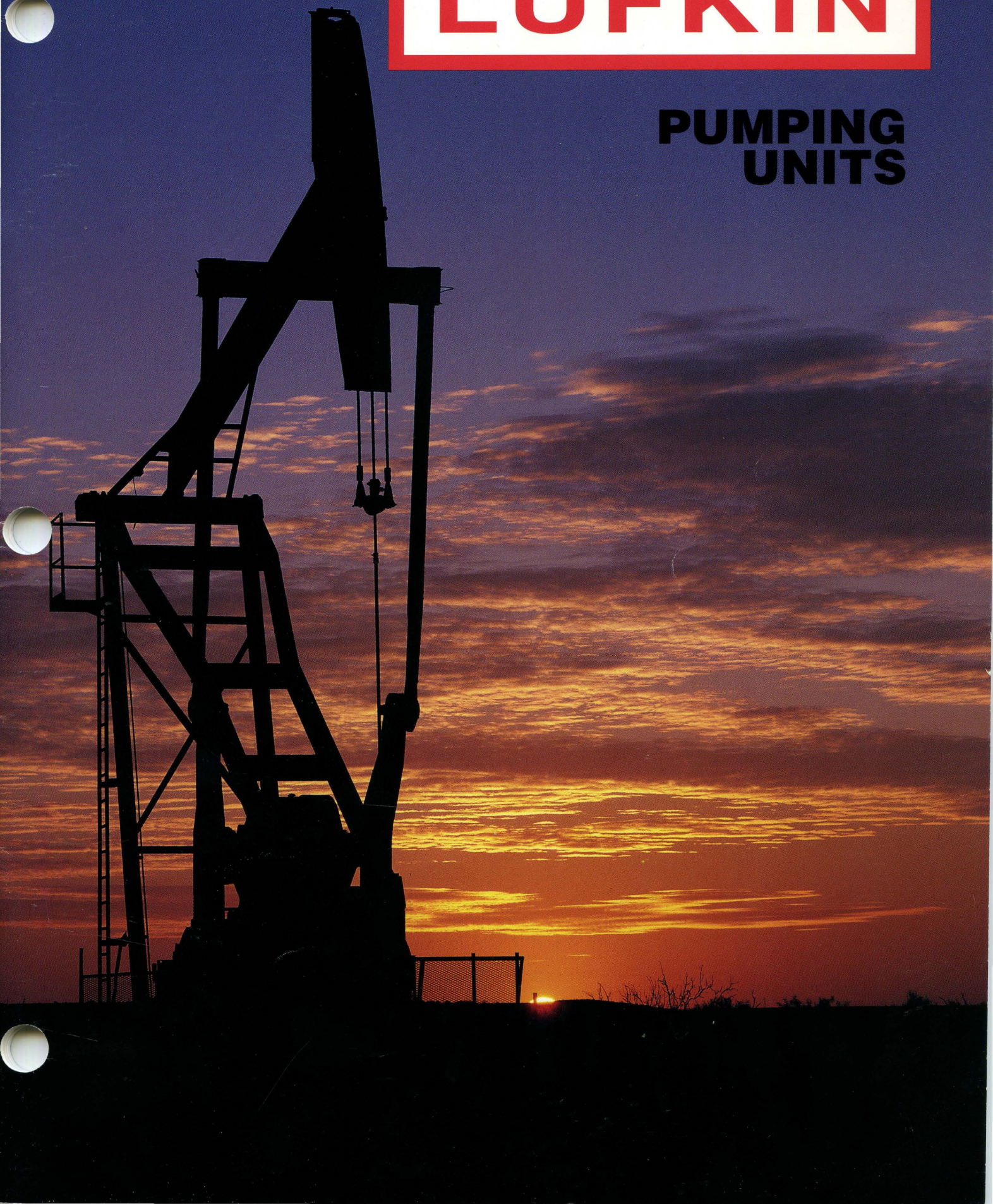
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LUFKIN

PUMPING UNITS



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FACTORY & EXECUTIVE OFFICES

P. O. Box 849 (75902-0849)
601 South Raguet (75901)
Lufkin, Texas
Phone: 409/634-2211
Fax: 409/633-3563

LUFKIN RECONDITIONED UNIT SALES

Lufkin, Texas 75901
P.O. Box 849
Phone: 409/637-5301
Fax: 409/637-5785

DOMESTIC SALES & SERVICE CENTERS

Andrews, TX 79714
P. O. Box 12
2340 N. US 385
Phone: 915/523-3836, 800-658-9612
Fax: 915/523-3972

Bakersfield, California 93308
2500 Parker Lane
Phone: 805/327-3563
Fax: 805/327-0690

Casper, Wyoming 82601
610 North Warehouse Road
Phone: 307/234-5346
Fax: 307/472-0723

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

Kilgore, Texas 75662-0871
P. O. 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)
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

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	Z.I. Iduspal B.P.118 64143 Lons Cedex, Pau, France Phone: 33-55-962-0162 Fax: 33-55-962-0730
Australia and New Zealand	Bayliss Energy Services 163 Park Road, Yeerongpilly, Queensland, 4105, Australia Phone: 61-73-892-5270 Fax: 61-73-892-2240
Austria, Hungary and Czechoslovakia	Premaberg Industrieanlagen Gesellschaft M.B.H. A-2362 Biedermannsdorf Josef Madeersperger Str. 3, Austria Phone: 43-2236-76265-33 Fax: 43-2236-76265-6
Bolivia	Gamma, Ltda. Edif. Cosmos, Piso 8 of 2, Casilla 4316, Bolivia Phone: 59-12-323-271 Fax: 59-12-325-558
Brasil	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
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Ecuador	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
Indonesia	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 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: 968-602-044 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	Agip USA, Inc. 110 East 59th Street New York, New York 10022-1374 U.S.A. Phone: 212-339-2100 Fax: 212-339-2191
Trinidad	Process Components Limited 17-19 Maharaj Avenue Marabella, Trinidad, West Indies Phone: 809-652-3386 Fax: 809-652-0809
Turkey	Agrimpex, Inc. 10600 Fallstone Road Houston, Texas 77099 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 Kingdom	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

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EIGHT TYPES OF LUFKIN SUCKER ROD PUMPING UNITS ARE AVAILABLE TO HANDLE ALL INSTALLATION PROBLEMS AND DOWN HOLE CONDITIONS.



MARK II UNITORQUE UNITS

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 down stroke with reduced acceleration where the load is greatest, resulting in lower peak loads and longer rod life.



LOW PROFILE UNITS

The LUFKIN Low Profile unit is a compact unit designed for installation in 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.

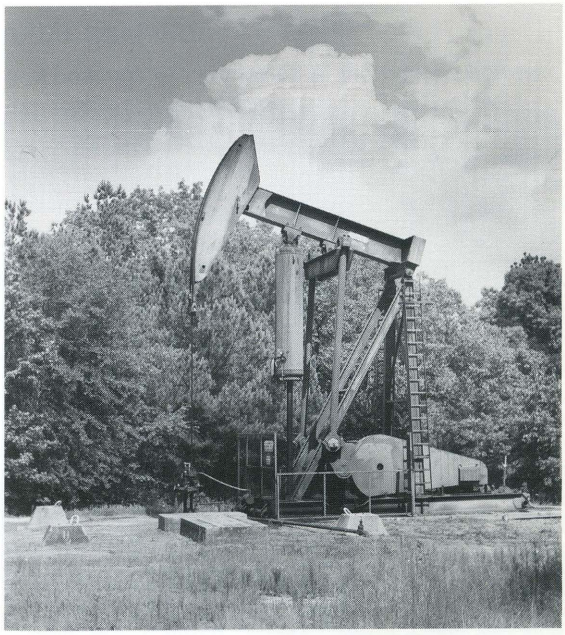
COMPUTER SERVICE IS AVAILABLE TO AID IN SIZING PUMPING UNITS, SUCKER RODS, AND PUMPS TO INSURE MAXIMUM PRODUCTION AND OPTIMUM UTILIZATION OF EQUIPMENT.

ALL LUFKIN PUMPING UNITS CARRY THE API MONOGRAM SIGNIFYING THAT THEY MEET OR EXCEED THE LATEST API STANDARD FOR THE DESIGN OF SUCKER ROD PUMPING UNITS.



CONVENTIONAL UNITS

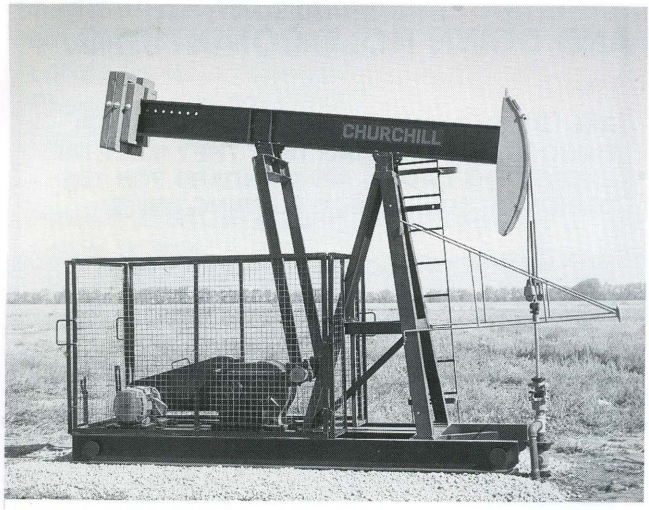
The LUFKIN Conventional Crank Balanced Unit, widely known and accepted, is the old reliable "WORK HORSE" of the oil patch. This is the most universally adaptable unit in the "LUFKIN LINE," simple to operate and requires minimum maintenance. Shown here is the two-point base design installed on front and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



AIR BALANCED UNITS

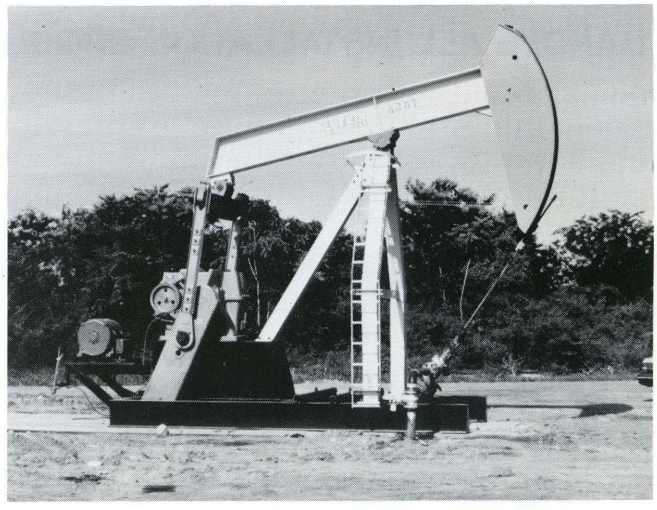
The utilization of compressed air instead of heavy cast iron counterweights allows more accurate fingertip control of counterbalance. As a result, the weight of the unit is greatly reduced, significantly lowering transportation and installation costs. Air Balanced units have a distinct advantage in the larger sizes with long strokes, where cast iron counterweights on conventional crank counterbalanced units must be so massive that their use is practically prohibitive.

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BEAM BALANCED UNITS

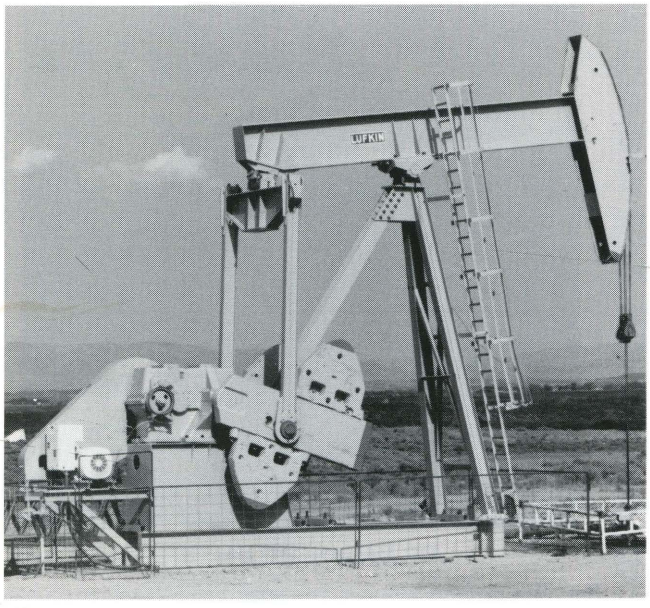
The LUFKIN Beam Balanced unit has the same rugged dependability as the Conventional unit. These units fill the need of economically producing many of the shallow wells.



*SLANT HOLE UNITS

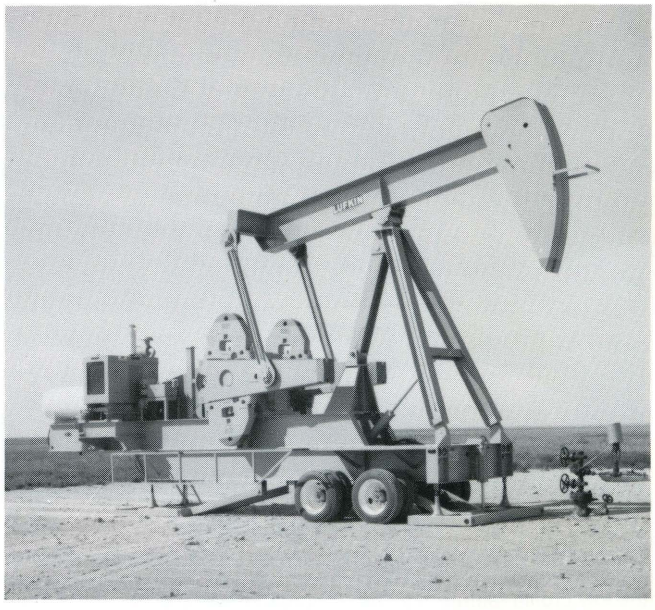
The Slant Hole unit is designed to pump wells deviated up to 45° at the surface. Many standard conventional unit components are used to manufacture these units.

*Crank guards not shown for clarity.



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.



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 sale, rental or lease.

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Explanation of Pumping Unit Designations

C - 228D-246-86

Type Pumping Unit:
A—Air Balanced
B—Beam Balanced
C—Conventional (Standard)
CM—Conventional (Portable)
M—Mark 11 Unitorque
LP—Low Profile
RM—Reverse Mark

Peak Torque Rating In Thousands of Inch Pounds

Polished Rod Load Rating In Hundreds of Pounds

Stroke Length In Inches

D-Double Reduction Gear Reducer

WARNING: USING REPAIR OR REPLACEMENT PARTS ON A LUFKIN PUMPING UNIT THAT DO NOT MEET LUFKIN SPECIFICATIONS COULD RESULT IN SERIOUS INJURY TO PERSONNEL NEAR THE PUMPING UNIT.

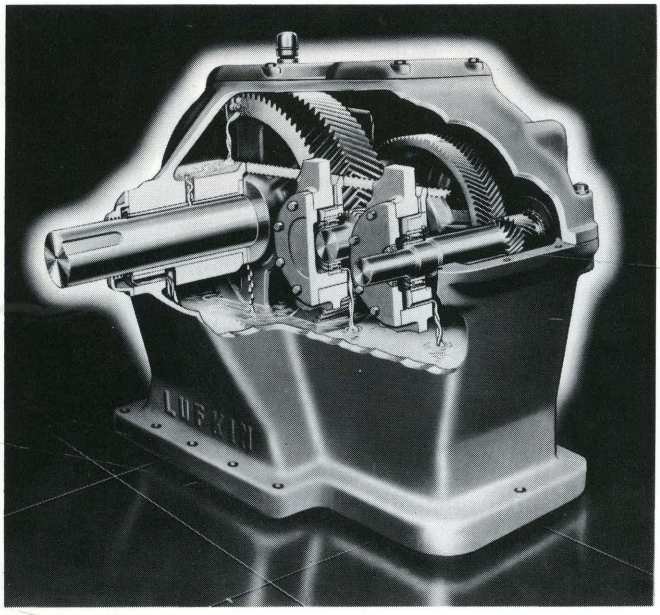
WARNING: BEFORE PERFORMING MAINTENANCE OR INSPECTION ON THE PUMPING UNIT, BE CERTAIN THAT THE PRIME MOVER IS TURNED OFF, LOCKED AND TAGGED IN THE "OFF" POSITION AND THAT THE CRANKS ARE SECURED AGAINST ROTATION. ANY MOVEMENT OF THE EQUIPMENT DURING MAINTENANCE OR INSPECTION PROCEDURES CAN CAUSE SERIOUS PERSONAL INJURY.

LUBRICATION INSTRUCTIONS

GEAR REDUCER:

For temperatures down to 0° F use an AGMA No. 5EP (ISO VG 220) premium mild extreme pressure lubricant (preferably a sulphur-phosphorous type) with rust and oxidation inhibitors and an anti-foam agent. Pour point of the oil should be 5° F or lower.

For temperatures down to -30° F use an AGMA No. 4 EP (ISO VG 150) premium mild extreme pressure lubricant (preferably sulphur-phosphorous type) with rust and oxidation inhibitors and anti-foam agent. Pour point of the oil should be – 15°F or less. Do not use multi-viscosity oils.



As long as the oil is maintained at the proper level, the slow speed and high speed gears dip in oil and provide continuous lubrication to the gear mesh.

Large oil wipers direct a flood of oil into oversized oil troughs which in turn provide each individual bearing with more than adequate lubrication above 5 SPM. Add high speed wipers below 5 SPM.

If desired, units can be shipped with the gear reducer filled with oil that will comply with the above specifications.

Maintain the oil level above the low mark on gage but do not fill the gear reducer above the high mark on gage.

Every six months the operator should collect a typical sample of the oil in a glass jar. A visual inspection will expose possible dirt, sludge, water emulsion or other forms of contamination. If the lubricant has an abnormal appearance or smell, check with your oil supplier about replacement.

STRUCTURAL BEARINGS

All structural bearings are lubricated at the factory; however, they do require periodic relubrication as outlined below.

1. WARM CLIMATES: (Lowest annual temperature is above 0°F.)

Roller Bearings except Tapered Roller Crank Pin Bearings should be relubricated every 6 months. Use a premium NLGI No. 1 lithium soap base grease with an extreme pressure additive and AGMA #7 BASE OIL. Do not use soda soap grease.

Bronze Bearings and Tapered Roller Crank Pin Bearings should be relubricated as required to maintain oil level. Use an EP140 extreme pressure oil with an extreme pressure additive and a pour point of +15°F or lower. If available, the use of a heavier oil (viscosity up to 6600 SUS at 100°F) is recommended.

2. COLD CLIMATES: (Lowest annual temperature down to -30°F.)

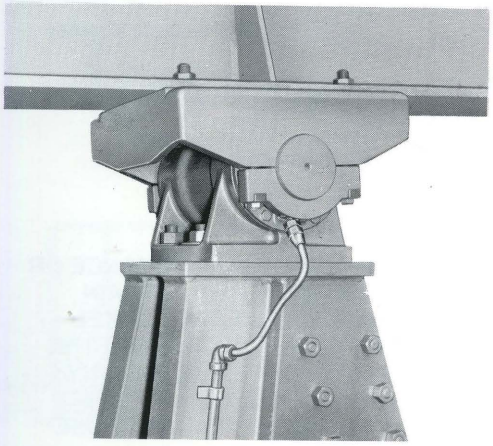
Roller Bearings except Tapered Roller Crank Pin Bearings should be relubricated every 6 months. Use a premium NLGI No. 0 lithium soap base grease with an extreme pressure additive and AGMA #5 BASE OIL. Do not use soda soap grease.

Bronze Bearings and Tapered Roller Crank Pin Bearings should be relubricated as required to maintain oil level by removing fill plug and adding oil until reservoir is full. Use an EP 80 or EP 90 extreme pressure oil with an extreme pressure additive and a pour point of -10°F or lower.

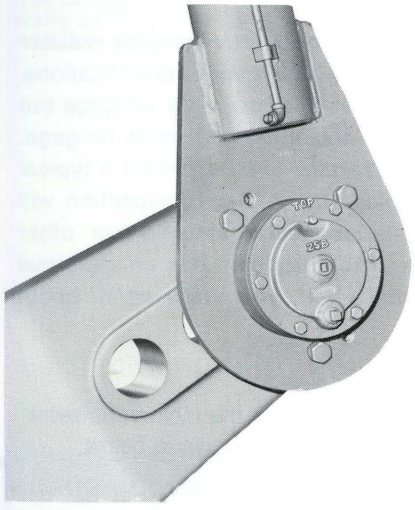
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LUFKIN PUMPING UNIT COMPONENTS

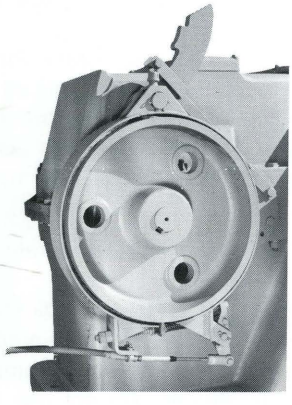
LUFKIN offers ladders that conform to LUFKIN'S interpretation of API RP11ER. If your application requires special ladders, please request them when ordering.



CENTER BEARING ASSEMBLY
Furnished with roller bearings on some C-114D and all larger sizes.

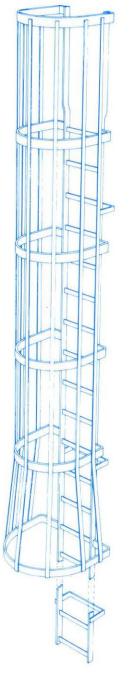


CRANK PIN ASSEMBLY
Furnished with roller bearings on some C-114D and all larger sizes.

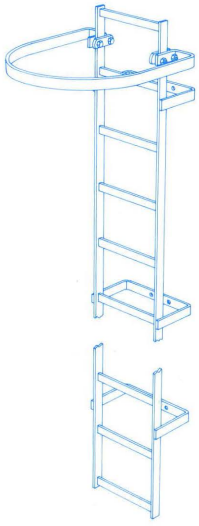


FLEX-SHOE BRAKE
Lufkin's Flex-Shoe brake provides much greater holding capacity than the Clam Shell type formerly used. Smoother acting with no "grabbing." Positive stop pawl can be engaged with notches in brake drum to provide additional safety. The pumping unit brake is not intended as a safety stop but is intended for operational stops only.

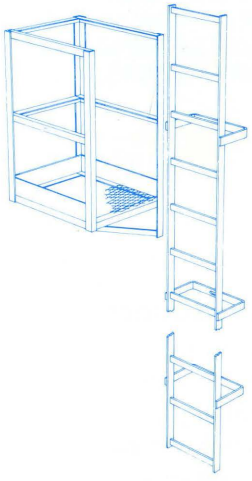
LADDER STYLES



CAGED LADDER



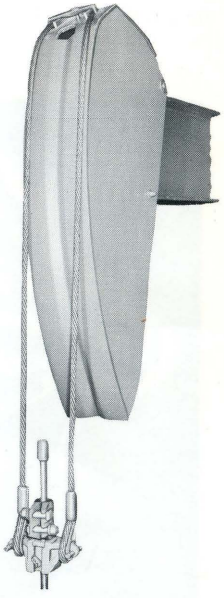
PLAIN LADDER



PLATFORM LADDER



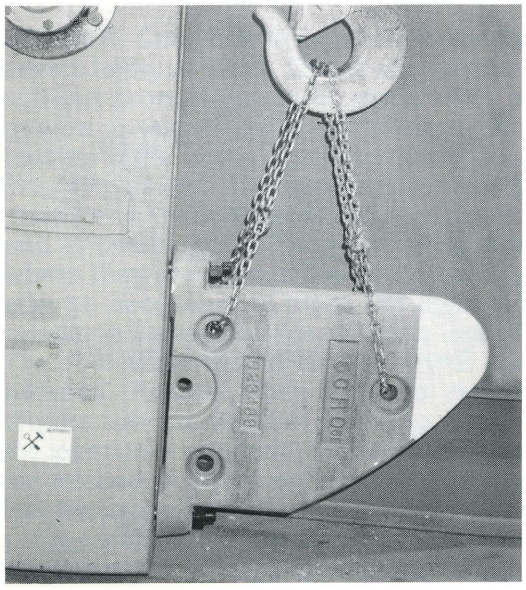
CRANK BALANCED UNIT EQUALIZER BEARING ASSEMBLY
Furnished with roller bearings on all sizes. Cross-pin-type connection to walking beam is utilized.



HORSEHEAD AND WIRE LINE ASSEMBLY
Easily aligned with polished rod without disconnecting well load. One-piece arc plate is used for greater strength. With the exception of the "C-P" & "B-P" series, the 120″ stroke length and less units are furnished with roll back horseheads for ease of well servicing.

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COMPONENTS Continued

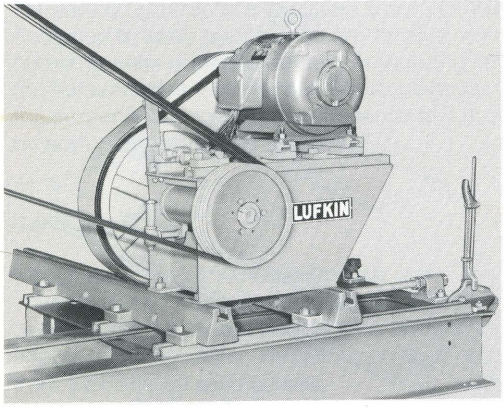


COUNTERBALANCE

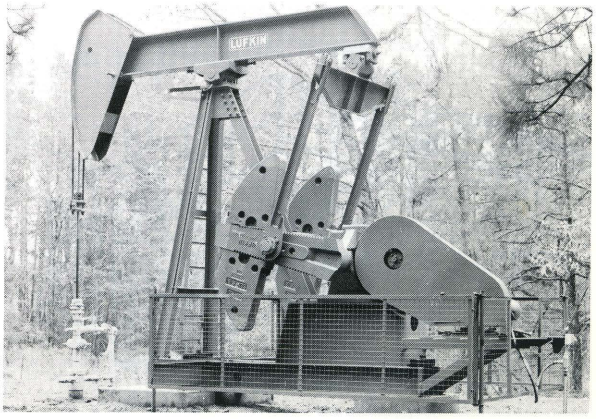
A wide range of counterbalance is available on all LUFKIN units. With the various combinations of counterweights and auxillary counterweights to choose from a very economical selection of counterbalance can be made.

The Trout Counterbalanced Crank, using sliding weights to change the counterbalance effect, is an Original LUFKIN feature.

This same Safe, Simple and Easy Trout Counterbalanced crank has been in use over a period of many years and has been installed on over TWO HUNDRED THOUSAND LUFKIN PUMPING UNITS.



This assembly utilizes an electric motor and countershaft and provides a reduction ratio of up to 4:1. This compact reduction unit package will fit on conventional slide rails and was designed for use with single reduction gear reducers where slow pumping speeds are encountered. This type assembly is manufactured in two sizes: No. 1—25-50 HP, No. 2—up to 20 HP.



Two-point foundation reduces base stresses as well as installation costs and is easily transportable.

FOUNDATION ANCHOR NUTS

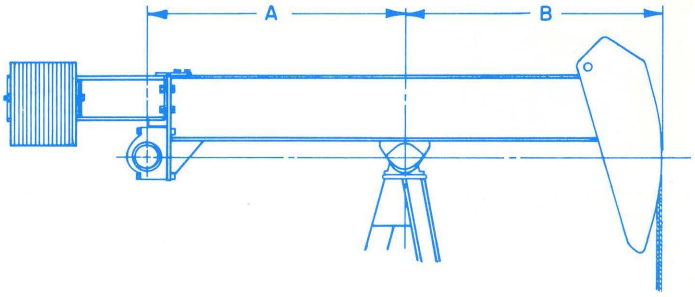
Suspended in concrete forms before foundation is poured.

Provides flush foundation. Wide foot at base of nut insures more than adequate holding power.

Available in the following sizes:

BOLT DIA.	Length
¾″	6″
1″	10″
1¼″	12″
1½″	12″





BEAM EXTENSIONS FOR EXTRA COUNTERBALANCE

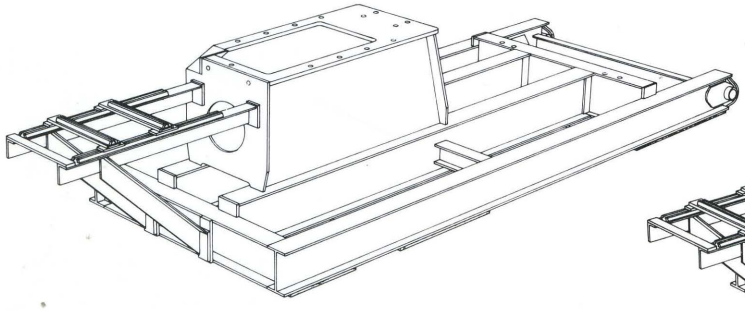
These extensions are available for older units as well as current units. They are made in two sizes and can be adapted to crank balanced units now in service by burning 8 holes in the walking beam.

Extension	Max. Weight Added, Lbs.	Distance from Equalizer Bearing to Center of Weights	Max. Counterbalance Added, Lbs.*
48″	2600	28″	2600(A+28″) ÷ B
60″	4000	40″	4000(A+40″) ÷ B

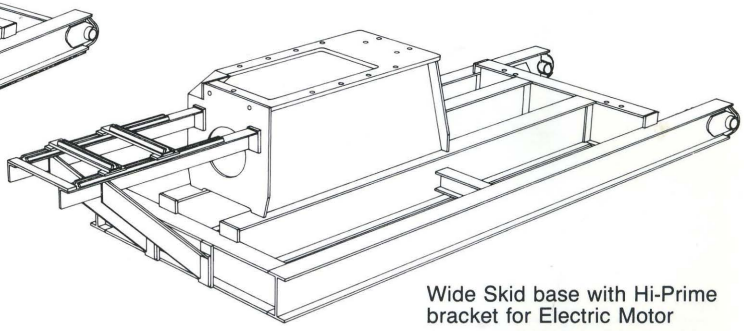
*For the A and B dimensions refer to the General Dimensions Sheet of the particular unit in question.

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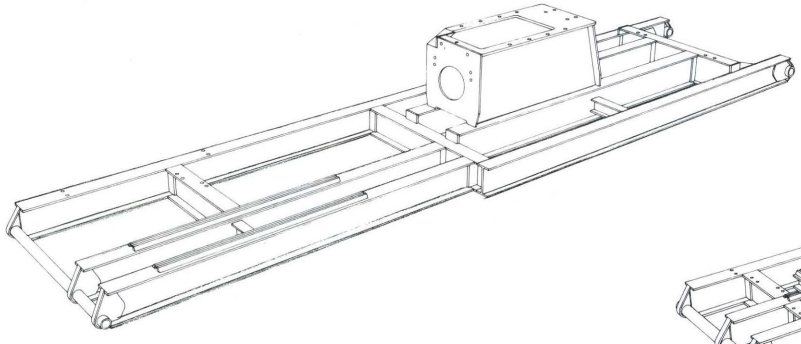
CONVENTIONAL PUMPING UNIT AND PRIME MOVER BASES



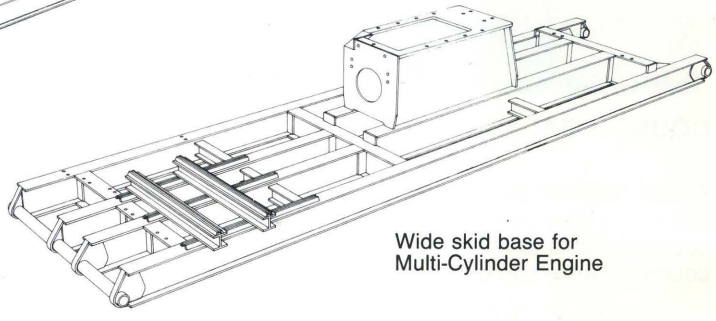
Wide Skid-UNISET base with Hi-Prime bracket for Electric Motor



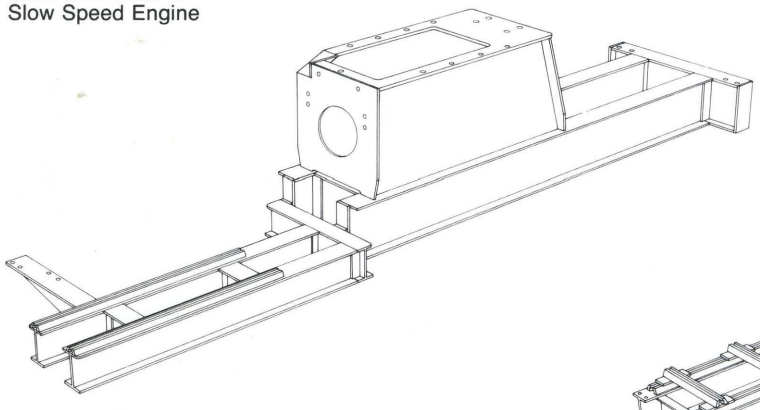
Wide Skid base with Hi-Prime bracket for Electric Motor



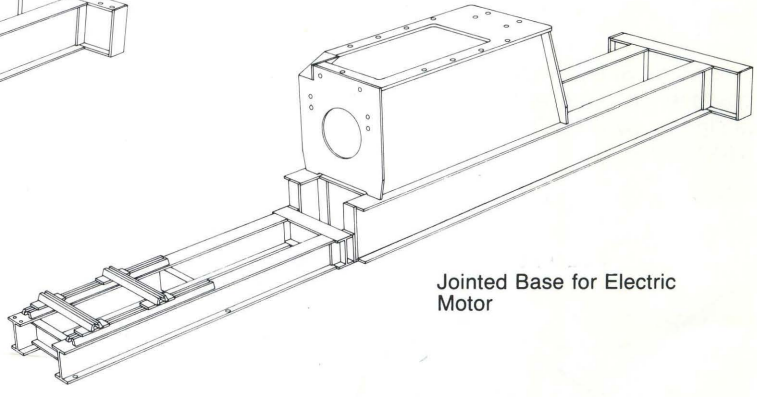
Wide Skid base for Slow Speed Engine



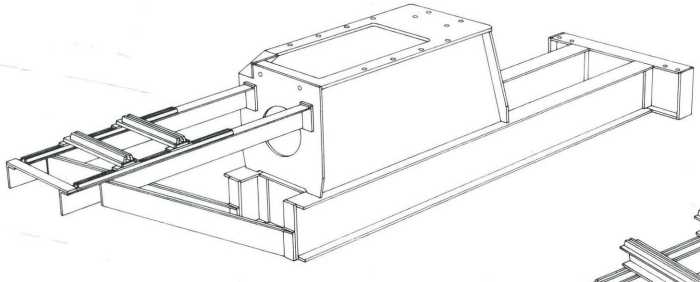
Wide skid base for Multi-Cylinder Engine



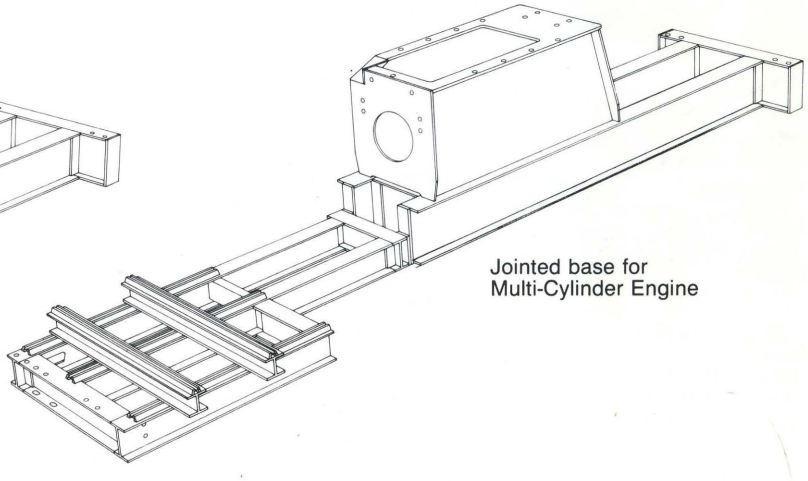
Jointed base for Slow Speed Engine



Jointed Base for Electric Motor



Stub Base with Hi-Prime Bracket for Electric Motor



Jointed base for Multi-Cylinder Engine

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GUARDING OF PUMPING UNITS

DANGER: Contact with large moving parts will cause severe injury or death. Do not operate pumping units without proper guards in place. The purpose of guards is to provide a safety barrier between the moving parts of the pumping unit and people who are familiar with the operation of pumping units. They also provide a barrier between the moving parts and animals. When pumping units are operated where they are accessible to the general public, it may be necessary to place the pumping unit with guards in an enclosed area with a locked entrance. The enclosure must prevent entry of unauthorized persons. Federal, State and local regulations may require specific types of guarding, dependent upon the location of your unit; therefore, the type of guarding needed is known only by the user who must select the proper guarding. It is essential that the user of the pumping unit comply with all applicable safety requirements. For additional information on guarding of pumping units, refer to API RP11ER.

Crank Guards

Crank guards are available from LUFKIN. Under normal operating circumstances, the 48" open rail guards would be considered minimum guarding for people who are familiar with pumping units and who are accustomed to working around them. Basically, this type guard simply keeps workers from accidentally wandering or falling into the crank sweeps. The 61" and 83" wire mesh guards would normally be considered adequate guarding for people familiar with the operation of pumping units and accustomed to working around them, as well as smaller animals who might be able to move through the guards described above. Custom built guards are available to meet customer requirements.

Horsehead Guards

Horsehead guards are available from LUFKIN. This guard is designed to keep people who are familiar with the operation of pumping units from accidentally wandering into the area below the horsehead and carrier bar. This type guard is required where the horsehead or carrier bar descends to 7 ft. or less from grade or work platform (Refer to API11ER).

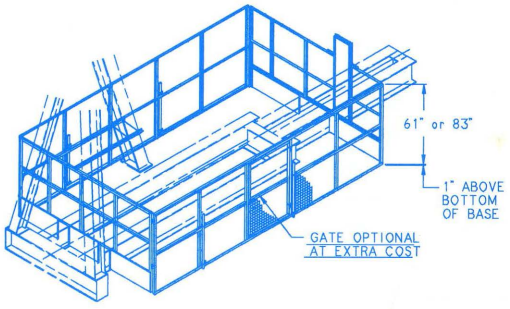
Belt Guards

Belt guards are furnished with each unit. They are designed to cover exposed sheaves and belts and to provide a barrier between these items and people who are familiar with the operation of pumping units. Replacement belt guards are available from LUFKIN.

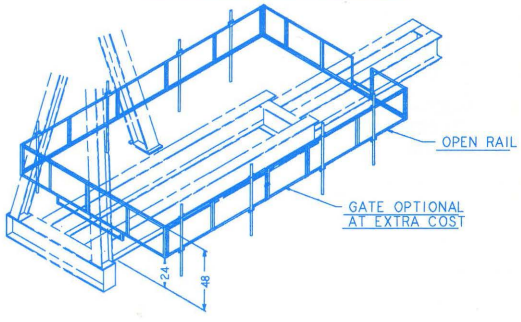
Prime Mover Guards

Exposed flywheels of prime movers must be guarded. Guards are available from LUFKIN. These guards are designed to keep people who are familiar with the operation of pumping units and engines from accidentally walking or falling into the flywheel.

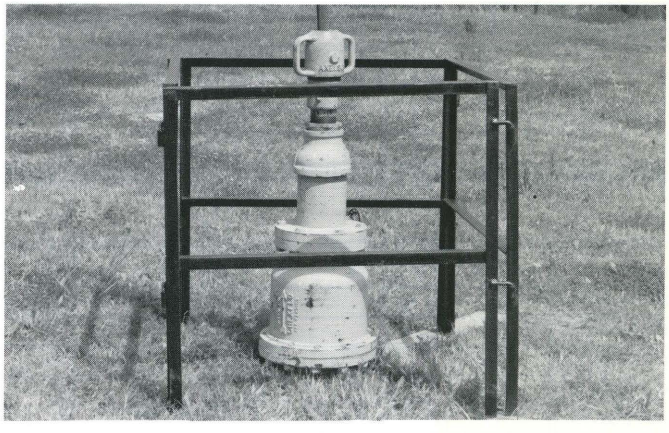
61" & 83" TYPE "W" CRANK GUARDS



48" OPEN RAIL CRANK GUARD

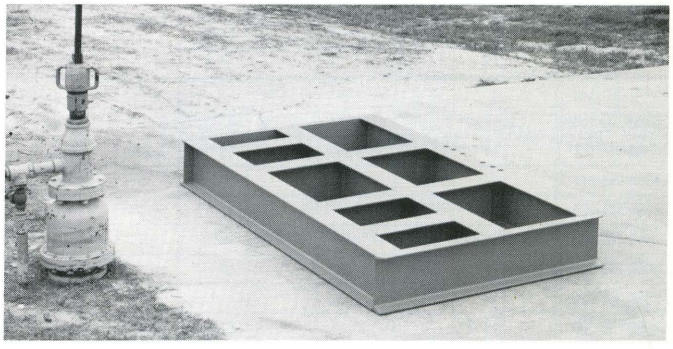


HORSEHEAD GUARDS



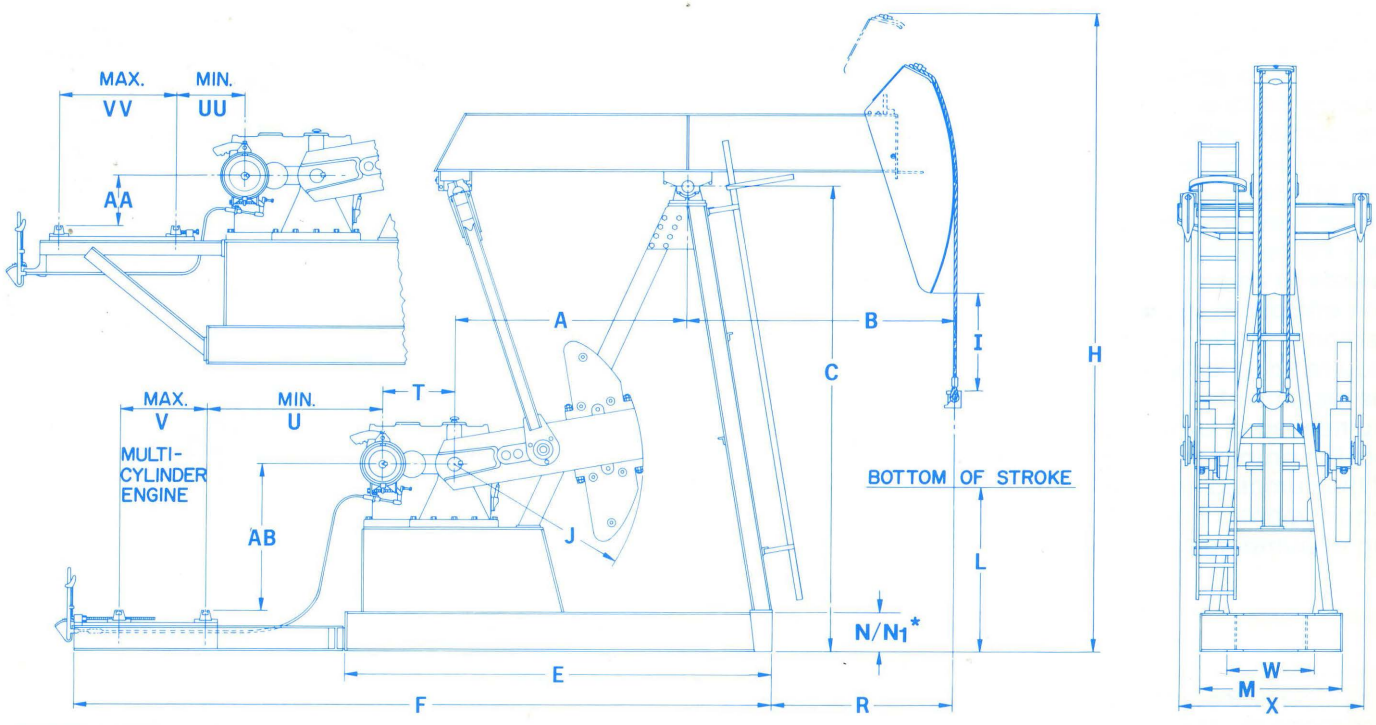
FABRICATED FOUNDATION PADS

Fabricated foundation pads below are available for use with all Mark II units and those conventional units designed for "two point" mounting. The lightweight portable fabricated pads can be shipped with the pumping unit as a convenience and cost saving feature to the customer. Once the pads are in place they are filled with crushed rock or sand to add stabilizing weight.



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CONVENTIONAL PUMPING UNIT ASSEMBLIES
GENERAL DIMENSIONS



STANDARD API MODELS SHOWN, OTHER MODELS AVAILABLE ON REQUEST.

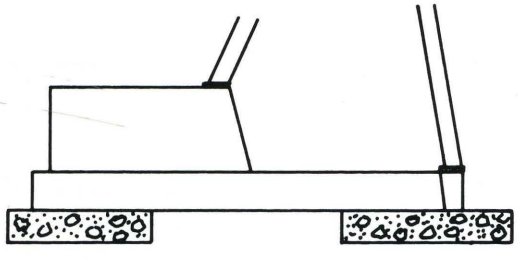
UNIT	A	B	C	E	F	H	I	J	L	M	N	N_1	R	T	U	V	W	X	AA	AB	UU	VV
C-1824D-365-192	10′-0″	17′-6″	23′-10″	21′-111/2″	33′-01/2″	38′-8″	1813/16″	110″	637/8″	6′-81/4″	–	241/2″	11′-11″	587/8″	7′-83/8″	52″	50″	10′-0″	5111/16″	7′-67/8″	241/8″	57″
C-1280D-365-192	″	″	″	″	″	″	″	″	″	″	–	″	″	521/2″	8′-23/4″	″	″	8′-10″	″	″	301/2″	″
C-912D-365-192	″	″	″	20′-71/2″	31′-81/2″	″	″	″	635/8″	″	241/2″	21″	11′-119/16″	481/2″	7′-31/2″	″	463/4″	8′-21/2″	″	″	191/4″	″
C-912D-305-192	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
C-912D-365-168	″	″	21′-10″	18′-81/2″	29′-91/2″	35′-11/2″	201/2″	″	621/4″	6′-4″	241/8″	161/8″	13′-101/2″	″	″	″	″	″	513/4″	″	″	″
C-912D-305-168	″	″	″	″	″	″	″	″	62″	″	″	″	″	″	″	″	″	″	″	″	″	″
C-912D-427-144	″	15′-0″	″	″	″	33′-4″	323/4″	″	741/4″	″	″	″	11′-41/2″	″	″	″	″	″	″	″	″	″
C-912D-365-144	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
C-640D-365-168	″	17′-6″	″	18′-5″	29′-6″	35′-11/2″	201/2″	″	621/4″	″	″	″	13′-101/2″	411/2″	7′-7″	″	″	″	″	″	23″	″
C-640D-305-168	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
C-640D-365-144	″	15′-0″	″	″	″	33′-4″	323/4″	″	741/4″	″	″	″	11′-41/2″	″	″	″	″	″	″	″	″	″
C-640D-305-144	″	″	21′-8″	18′-43/4″	29′-53/4″	33′-2″	″	″	721/2″	″	211/8″	″	11′-47/8″	″	7′-71/8″	″	″	″	″	″	″	″
C-640D-256-144	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
C-640D-365-120	″	12′-8″	″	″	″	31′-7″	541/2″	″	751/2″	″	″	″	9′-07/8″	″	″	″	″	″	″	″	″	″
C-640D-305-120	9′-3″	12′-11″	19′-6″	17′-45/8″	27′-25/8″	29′-3″	25″	95″	781/4″	70″	21″	″	9′-67/8″	″	6′-4″	″	″	8′-1″	511/8″	757/8″	263/4″	373/4″
C-456D-305-168	10′-0″	17′-6″	21′-10″	18′-5″	29′-6″	35′-11/2″	201/2″	110″	621/4″	6′-4″	241/8″	″	13′-101/2″	383/8″	7′-101/8″	″	″	8′-21/2″	513/4″	907/8″	261/8″	57″
C-456D-305-144	″	15′-0″	21′-8″	18′-43/4″	29′-53/4″	33′-2″	323/4″	″	721/2″	″	211/8″	″	11′-47/8″	″	7′-101/4″	″	″	″	″	″	″	″
C-456D-265-144	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
C-456D-365-120	″	12′-8″	″	″	″	31′-7″	541/2″	″	751/2″	″	″	″	9′-07/8″	″	″	″	″	″	″	″	″	″
C-456D-305-120	9′-3″	12′-11″	19′-6″	17′-45/8″	27′-25/8″	29′-3″	25″	95″	781/4″	70″	21″	″	9′-67/8″	″	6′-71/8″	″	″	8′-1″	511/8″	757/8″	297/8″	373/4″
C-456D-256-120	″	″	19′-4″	″	″	29′-1″	″	″	76″	″	″	″	″	″	″	″	″	″	″	″	″	″
C-456D-213-120	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
C-456D-256-100	″	10′-9″	″	″	″	27′-61/2″	453/4″	″	753/4″	″	″	″	7′-47/8″	″	″	″	″	″	″	″	″	″

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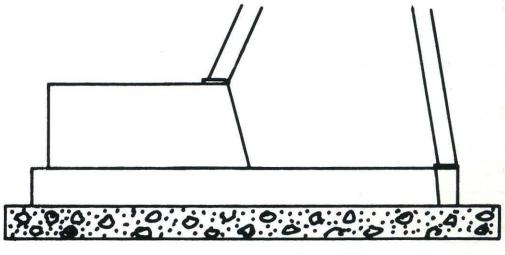
GENERAL DIMENSIONS Continued

UNIT	A	B	C	E	F	H	I	J	L	M	N	N_1	R	T	U	V	W	X	AA	AB	UU	VV
C-320D-256-144	10′-0″	15′-0″	21′-8″	17′-11¼″	29′-5¾″	33′-2″	32¾″	110″	72½″	6′-4″	21⅛″	16⅛″	11′-4⅞″	34″	8′-2⅝″	52″	43″	7′-3½″	53⅝″	93″	31″	48¼″
C-320D-256-120	9′-3″	12′-11″	19′-4″	16′-11⅛″	27′-3⅛″	29′-1″	25″	95″	76″	70″	21″	15⅞″	9′-6⅞″	″	6′-11½″	53″	″	7′-1½″	54″	79″	″	33¼″
C-320D-213-120	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
C-320D-305-100	″	10′-9″	″	″	″	27′-6½″	45¾″	″	″	″	″	″	7′-4⅞″	″	″	″	″	″	″	″	″	″
C-320D-256-100	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
C-320D-246-86	″	9′-3″	″	″	″	26′-5½″	59¾″	″	75¾″	″	″	″	70⅞″	″	″	″	″	″	″	″	″	″
C-320D-213-86	8′-0″	″	16′-4⅛″	15′-3½″	24′-2½″	23′-6″	23¾″	78″	75″	57¾″	16⅛″	″	6′-3½″	″	66½″	″	″	″	37⅛″	62⅛″	30⅞″	″
C-320D-246-74	″	8′-0″	″	″	″	22′-7″	35½″	″	77¾″	″	″	″	60½″	″	″	″	″	″	″	″	″	″
C-228D-213-120	9′-3″	12′-11″	19′-4″	16′-4⅛″	27′-2⅝″	29′-1″	25⅛″	95″	76″	70″	21″	″	9′-6⅞″	30″	7′-3″	″	37″	6′-6½″	54″	79″	28″	″
C-228D-213-100	8′-0″	10′-9″	16′-4⅛″	14′-8½″	24′-2″	24′-7″	21¾″	78″	63″	59¾″	16⅛″	″	7′-9½″	″	70″	″	″	″	37⅛″	62⅛″	27⅞″	″
C-228D-173-100	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
C-228D-246-86	9′-3″	9′-3″	19′-4″	16′-4⅛″	27′-2⅝″	26′-5½″	59¾″	95″	75¾″	70″	21″	″	7′-0⅞″	″	7′-3″	″	″	″	54″	79″	28″	″
C-228D-213-86	8′-0″	″	16′-4⅛″	14′-8½″	24′-2″	23′-6″	23¾″	78″	75″	59¾″	16⅛″	″	6′-3½″	″	70″	″	″	″	37⅛″	62⅛″	27⅞″	″
C-228D-200-74	″	8′-0″	″	″	″	22′-7″	35⅝″	″	77¼″	″	″	″	60½″	″	″	″	″	″	″	″	″	″
C-228D-173-74	7′-0″	″	14′-0¼″	13′-4″	22′-9½″	20′-3″	16¾″	68″	68¾″	51¾″	15⅞″	12¼″	65″	″	″	″	″	″	27¼″	52¼″	″	″
C-160D-173-100	8′-0″	10′-9″	16′-3⅛″	14′-4″	24′-0″	24′-7″	21½″	78″	62¾″	57¾″	″	15⅞″	7′-9½″	26″	6′-2½″	50″	32″	70½″	37⅛″	62⅞″	26⅝″	34¾″
C-160D-173-86	″	9′-3″	″	″	″	23′-6″	23¾″	″	74⅞″	″	″	″	6′-3½″	″	″	″	″	″	″	″	″	″
C-160D-200-74	″	8′-0″	″	″	″	22′-7″	35¼″	″	77¼″	″	″	″	60½″	″	″	″	″	″	″	″	″	″
C-160D-173-74	7′-0″	″	14′-0¼″	12′-11½″	21′-8½″	20′-3″	16¾″	68″	68¾″	51¾″	12¼″	″	65″	″	63½″	″	″	″	23⅝″	53¼″	″	″
C-160D-143-74	″	″	13′-10″	″	″	20′-1″	″	″	66″	″	″	″	″	″	″	″	″	″	″	″	″	″
C-160D-173-64	″	7′-0″	″	″	″	19′-4½″	26″	″	67″	″	″	″	53″	″	″	″	″	69¾″	″	″	″	″
C-160D-143-64	6′-0″	″	12′-2½″	11′-1¾″	18′-11¾″	17′-6″	18″	56″	53¾″	50¾″	12¼″	12¼″	62¾″	″	52½″	″	″	″	28¾″	41¼″	17⅛″	30¼″
C-114D-119-86	7′-0″	9′-3″	13′-10″	12′-6″	22′-2″	21′-0″	14¾″	68″	54½″	51¾″	″	″	6′-8″	24″	71″	″	25″	66¾″	27½″	53¼″	23⅛″	34¾″
C-114D-143-74	″	8′-0″	″	″	″	20′-1″	16¾″	″	66½″	″	″	″	65″	″	″	″	″	″	″	″	″	″
C-114D-173-64	″	7′-0″	″	″	″	19′-4½″	26⅛″	″	67″	″	″	″	53″	″	″	″	″	″	″	″	″	″
C-114D-143-64	6′-0″	″	12′-2½″	10′-8¼″	18′-10¼″	17′-6″	18⅛″	56″	53¾″	50¾″	12¼″	″	62¾″	″	53″	″	″	″	28¾″	41¼″	13⅝″	30¼″
C-114D-173-54	″	6′-0″	″	″	″	16′-9″	19⅜″	″	62¼″	″	″	″	50¾″	″	″	″	″	″	″	″	″	″

*** NOTE: Units listed on pages 10 and 11 are available with two-point or standard base designs. Two-point units are suitable for front and rear concrete block foundations; whereas standard units must have a one-piece block foundation supporting all of the steel base. Dimension "N" is for two-point units and dimension "N_1," is for standard units. Do not use the above dimensions for foundation. Request a foundation plan.**



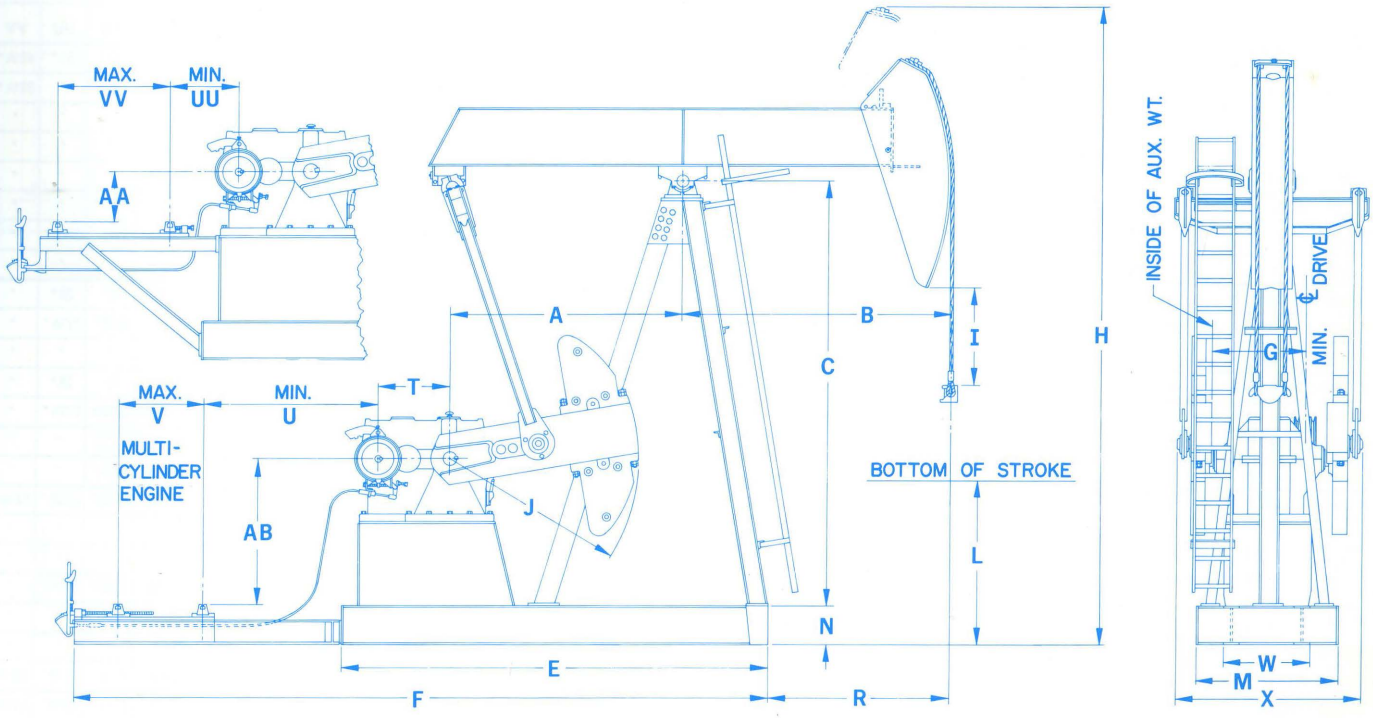
Two-point foundation



Standard foundation

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CONVENTIONAL PUMPING UNIT ASSEMBLIES
GENERAL DIMENSIONS

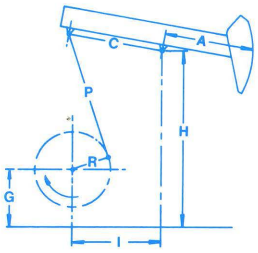


STANDARD API MODELS SHOWN, OTHER MODELS AVAILABLE ON REQUEST.

UNIT	A	B	C	E	F	G	H	I	J	L	M	N	R	T	U	V	W	X	AA	AB	UU	VV
C-114D-133-54	5′-4″	6′-0″	9′-8″	9′-11⅞″	17′-9⅞″	29⅜″	15′-3″	13½″	50″	49⅞″	47″	10⅛″	51⅛″	24″	49″	50″	25″	67¼″	22⅝″	35⅛″	13½″	30¼″
C-80D-119-64	″	7′-0″	″	″	″	″	15′-11½″	13¼″	″	40⅜″	″	″	63⅛″	″	″	″	″	″	″	″	″	″
C-80D-133-54	″	6′-0″	″	″	″	″	15′-3″	13½″	″	49⅞″	″	″	51⅛″	″	″	″	″	″	″	″	″	″
C-80D-119-54	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
C-80D-133-48	″	5′-4″	″	″	″	″	14′-9″	14⅝″	″	54⅞″	″	″	43⅛″	″	″	″	″	″	″	″	″	″
C-80D-109-48	4′-8″	″	8′-9″	9′-3⅞″	16′-8⅜″	30⅝″	13′-10¼″	″	46″	44″	40¾″	″	″	″	45½″	″	″	65¼″	18⅝″	31⅛″	″	″
C-57D-76-54	″	6′-0″	″	″	″	26″	14′-4″	13⅝″	″	38⅞″	″	″	51⅛″	20″	47½″	″	″	58¼″	″	″	17½″	″
C-57D-109-48	″	5′-4″	″	″	″	″	13′-10¼″	16″	″	42¾″	″	″	43⅛″	″	″	″	″	″	″	″	″	″
C-57D-95-48	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
C-57D-89-42	4′-0″	4′-8″	8′-2½″	8′-2″	15′-6½″	28¼″	12′-8″	16⅜″	44″	42″	38½″	8⅛″	41″	″	″	″	″	58″	16⅝″	29⅛″	″	″
C-57D-76-42	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
C-40D-76-48	″	5′-4″	″	7′-9″	15′-0″	23¾″	13′-2″	14⅝″	″	35⅝″	″	″	49″	17½″	47″	46¾″	20″	51″	10¾″	35⅞″	17″	21¼″
C-40D-89-42	″	4′-8″	″	″	″	″	12′-8″	16⅜″	″	42″	″	″	41″	″	″	″	″	51¼″	″	″	″	″
C-40D-76-42	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
C-40D-89-36	″	4′-0″	″	″	″	″	12′-2″	12¾″	″	51⅛″	″	″	33″	″	″	″	″	″	″	″	″	″
C-25D-67-36	″	″	″	7′-4″	″	20¼″	12′-1¾″	13″	″	50⅞″	″	″	″	13 9⁄16″	50½″	47⅞″	17″	47″	″	″	15½″	″
C-25D-56-36	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
C-25D-67-30	3′-0″	3′-9″	7′-01½″	6′-3″	13′-11″	20½″	10′-9″	15½″	36″	36⅝″	31″	6″	31″	″	″	″	″	″	″	27¾″	″	″
C-25D-53-30	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″

NOTE: Units on this page have standard bases only.
Do not use above dimensions for foundation. Request foundation plan.

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CONVENTIONAL PUMPING UNIT API GEOMETRY DIMENSIONS

UNIT	A	C	I	P	H	G	R1, R2, R3, R4	S.U.	T.F. @ 90°/ STROKE LENGTH
C-1824D-365-192	210	120.03	120	172.5	286	111	53, 46, 39, 32	-1985	90.51/192
C-1280D-365-192	210	120.03	120	172.5	286	111	53, 46, 39, 32	-1800	90.51/192
C-912D-365-192	210	120.03	120	172.5	286	111	53, 46, 39, 32	-1800	90.51/192
C-912D-305-192	210	120.03	120	172.5	286	111	53, 46, 39, 32	-1800	90.51/192
C-912D-365-168	210	120.03	120	148.5	262	111	47, 41, 35	-1500	80.29/168
C-912D-305-168	210	120.03	120	148.5	262	111	47, 41, 35	-1500	80.29/168
C-640D-365-168	210	120.03	120	148.5	262	111	47, 41, 35	-1500	80.29/168
C-640D-305-168	210	120.03	120	148.5	262	111	47, 41, 35	-1500	80.29/168
C-456D-305-168	210	120.03	120	148.5	262	111	47, 41, 35	-1500	80.29/168
C-912D-427-144	180	120.03	120	148.5	262	111	47, 41, 35	-650	68.82/144
C-912D-365-144	180	120.03	120	148.5	262	111	47, 41, 35	-650	68.82/144
C-640D-365-144	180	120.03	120	148.5	262	111	47, 41, 35	-650	68.82/144
C-640D-305-144	180	120.08	120	144.5	260	111	47, 41, 35	-520	68.45/144
C-456D-305-144	180	120.08	120	144.5	260	111	47, 41, 35	-520	68.45/144
C-640D-256-144	180	120.08	120	144.5	260	111	47, 41, 35	-400	68.45/144
C-456D-256-144	180	120.08	120	144.5	260	111	47, 41, 35	-400	68.45/144
C-320D-256-144	180	120.08	120	144.5	260	111	47, 41, 35	-400	68.45/144
C-640D-365-120	152	120.03	120	148.5	262	111	47, 41, 35	570	58.12/120
C-456D-365-120	152	120.03	120	148.5	262	111	47, 41, 35	570	58.12/120
C-640D-305-120	155	111.09	111	133.5	234	96	42, 36, 30	-120	57.28/120
C-456D-305-120	155	111.09	111	133.5	234	96	42, 36, 30	-120	57.28/120
C-456D-256-120	155	111.07	111	132	232	96	42, 36, 30	55	57.05/120
C-320D-256-120	155	111.07	111	132	232	96	42, 36, 30	55	57.05/120
C-456D-213-120	155	111.07	111	132	232	96	42, 36, 30	0	57.05/120
C-320D-213-120	155	111.07	111	132	232	96	42, 36, 30	0	57.05/120
C-228D-213-120	155	111.07	111	132	232	96	42, 36, 30	0	57.05/120
C-456D-256-100	129	111.07	111	132	232	96	42, 36, 30	550	47.48/100
C-320D-256-100	129	111.07	111	132	232	96	42, 36, 30	550	47.48/100
C-320D-305-100	129	111.07	111	132	232	96	42, 36, 30	550	47.48/100
C-228D-213-100	129	96.08	96	113	196.13	79.13	37, 32, 27	0	48.21/100
C-228D-173-100	129	96.05	96	114	196.13	79.13	37, 32, 27	0	48.21/100
C-160D-173-100	129	96.05	96	114	196.13	79.13	37, 32, 27	0	48.21/100
C-320D-246-86	111	111.04	111	133	232	96	42, 36, 30	800	40.96/86
C-228D-246-86	111	111.04	111	133	232	96	42, 36, 30	800	40.96/86
C-320D-213-86	111	96.05	96	114	196.13	79.13	37, 32, 27	450	41.61/86
C-228D-213-86	111	96.05	96	114	196.13	79.13	37, 32, 27	450	41.61/86
C-160D-173-86	111	96.05	96	114	196.13	79.13	37, 32, 27	450	41.61/86
C-114D-119-86	111	84.05	84	93.75	166	69.25	32, 27, 22	115	40.98/86
C-320D-246-74	96	96.05	96	114	196.13	79.13	37, 32, 27	800	35.99/74
C-228D-200-74	96	96.05	96	114	196.13	79.13	37, 32, 27	800	35.99/74
C-160D-200-74	96	96.05	96	114	196.13	79.13	37, 32, 27	800	35.99/74
C-228D-173-74	96	84.05	84	96	168.25	69.25	32, 27, 22	450	35.49/74
C-160D-173-74	96	84.05	84	96	168.25	69.25	32, 27, 22	450	35.49/74
C-160D-143-74	96	84.05	84	93.75	168.25	69.25	32, 27, 22	300	35.49/74
C-114D-143-74	96	84.05	84	93.75	168.25	69.25	32, 27, 22	300	35.49/74
C-160D-173-64	84	84.05	84	93.75	166	69.25	32, 27, 22	550	31.02/64
C-114D-173-64	84	84.05	84	93.75	166	69.25	32, 27, 22	550	31.02/64
C-160D-143-64	84	72.06	72	84	144.25	57.25	27, 22, 17	360	30.59/64
C-114D-143-64	84	72.06	72	84	144.25	57.25	27, 22, 17	360	30.59/64
C-80D-119-64	84	64	64	74.5	126.13	51.13	24, 20, 16	0	30.85/64
C-114D-173-54	72	72.06	72	84	144.25	57.25	27, 22, 17	500	26.22/54
C-114D-133-54	72	64	64	74.5	126.13	51.13	24, 20, 16	330	26.45/54
C-80D-133-54	72	64	64	74.5	126.13	51.13	24, 20, 16	330	26.45/54
C-80D-119-54	72	64	64	74.5	126.13	51.13	24, 20, 16	330	26.45/54
C-57D-76-54	72	56.05	56	65.63	115.13	47.13	21, 16, 11	330	26.22/54
C-P57D-76-54	64	51	51	64	111.25	47.13	21, 16, 11	105	25.80/54
C-P57D-89-54	64	51	51	64	111.25	47.13	21, 16, 11	105	25.80/54
C-80D-133-48	64	64	64	74.5	126.13	51.13	24, 20, 16	440	23.51/48
C-80D-109-48	64	56.05	56	65.63	115.13	47.13	21, 16, 11	320	23.30/48
C-57D-109-48	64	56.05	56	65.63	115.13	47.13	21, 16, 11	320	23.30/48
C-57D-95-48	64	56.05	56	65.63	115.13	47.13	21, 16, 11	320	23.30/48
C-P57D-109-48	57	51	51	64	111.25	47.13	21, 16, 11	180	22.89/48
C-P57D-95-48	57	51	51	64	111.25	47.13	21, 16, 11	180	22.89/48
C-40D-76-48	64	48.17	48	57.5	106.5	45	18, 14, 10	0	23.10/48
C-P40D-76-48	61	47	47	56	103.13	47.13	18, 14, 10	190	22.92/48
C-P57D-89-42	51	51	51	64	113.13	47.13	21, 16, 11	280	20.56/42
C-P57D-76-42	51	51	51	64	113.13	47.13	21, 16, 11	280	20.56/42
C-P40D-89-42	53	47	47	56	113.13	47.13	18, 14, 10	280	19.92/42
C-P40D-76-42	53	47	47	56	103.13	47.13	18, 14, 10	280	19.92/42
C-57D-89-42	56	48.17	48	57.5	106.5	45	18, 14, 10	150	20.21/42
C-57D-76-42	56	48.17	48	57.5	106.5	45	18, 14, 10	150	20.21/42
C-40D-89-42	56	48.17	48	57.5	106.5	45	18, 14, 10	150	20.21/42
C-40D-76-42	56	48.17	48	57.5	106.5	45	18, 14, 10	150	20.21/42
C-40D-89-36	48	48.17	48	57.5	106.5	45	18, 14, 10	275	17.37/36
C-P40D-89-36	47	47	47	57.5	103.13	47.13	18, 14, 10	375	17.66/36
C-25D-67-36	48	48.17	48	57.5	106.63	45.13	18, 14, 10	275	18.18/36
C-25D-56-36	48	48.17	48	57.5	106.63	45.13	18, 14, 10	275	18.18/36
C-25D-67-30	45	36.22	36	49.5	90.5	37	12, 8	150	14.53/30
C-25D-53-30	45	36.22	36	49.5	90.5	37	12, 8	150	14.53/30

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CONVENTIONAL PUMPING UNIT SPECIFICATIONS

UNIT DESIGNATION	C-1824D-365-192 C-1280D-365-192 C-912D-365-192	C-912D-305-192	C-912D-365-168 C-640D-365-168	C-912D-305-168 C-640D-305-168 C-456D-305-168	C-912D-427-144	C-912D-365-144 C-640D-365-144
POLISHED ROD CAPACITY, LBS.	36,500	30,500	36,500	30,500	42,700	36,500
STROKE LENGTHS, INCHES	192,165,139,113	192,165,139,113	168,145,124	168,145,124	144,124,106	144,124,106
WALKING BEAM	33″ × 221 Lbs.	33″ × 201 Lbs.	33″ × 221 Lbs.	33″ × 201 Lbs.	33″ × 221 Lbs.	33″ × 201 Lbs.
WIRELINE HANGER	1⅜″ × 16″ CTRS.	1¼″ × 16″ CTRS.	1⅜″ × 16″ CTRS.	1¼″ × 16″ CTRS.	1⅜″ × 16″ CTRS.	1⅜″ × 16″ CTRS.
CRANKS	106110C	106110C	94110C	94110C	94110C	94110C
CRANK PIN BEARING	1SC	1SC	1SC	1SC	1SC	1SC
EQUALIZER BEARING	0R	0R	0R	0R	0R	0R
CENTER BEARING	0TGA	0TGA	0TGA	0TGA	0TGA	0TGA

UNIT DESIGNATION	C-640D-305-144 C-456D-305-144	C-640D-256-144 C-456D-256-144 C-320D-256-144	C-640D-365-120 C-456D-365-120	C-640D-305-120 C-456D-305-120	C-456D-256-120 C-320D-256-120	C-456D-213-120 C-320D-213-120 C-228D-213-120
POLISHED ROD CAPACITY, LBS.	30,500	25,600	36,500	30,500	25,600	21,300
STROKE LENGTHS, INCHES	144, 124, 106	144, 124, 106	120, 105, 90	120, 102, 85	120, 102, 85	120, 102, 85
WALKING BEAM	30″ × 173 Lbs.	30″ × 173 Lbs.	30″ × 173 Lbs.	27″ × 161 Lbs.	27″ × 146 Lbs.	27″ × 146 Lbs.
WIRELINE HANGER	1¼″ × 16″ CTRS.	1¼″ × 16″ CTRS.	1⅜″ × 12″ CTRS.	1¼″ × 12″ CTRS.	1⅛″ × 12″ CTRS.	1⅛″ × 12″ CTRS.
CRANKS	94110C	94110C	94110C	8495C	8495C	8495C
CRANK PIN BEARING	1SC	1SC	1SC	2SC	2SC	2SC
EQUALIZER BEARING	0R	0R	0R	0R	1R	1R
CENTER BEARING	1TGA	1TGA	0TGA	1TGA	2TGB	2TGB

UNIT DESIGNATION	C-320D-305-100	C-456D-256-100 C-320D-256-100	C-228D-213-100	C-228D-173-100 C-160D-173-100	C-320D-246-86 C-228D-246-86
POLISHED ROD CAPACITY, LBS.	30,500	25,600	21,300	17,300	24,600
STROKE LENGTHS, INCHES	100, 85, 70	100, 85, 70	100, 86, 73	100, 86, 73	86, 74, 61
WALKING BEAM	27″ x 146 Lbs.	27″ x 146 Lbs.	24″ x 117 Lbs.	24″ x 104 Lbs.	24″ x 117 Lbs.
WIRELINE HANGER	1¼″ x 12″ CTRS.	1⅛″ x 12″ CTRS.	1⅛″ x 12″ CTRS.	1⅛″ x 12″ CTRS.	1⅛″ x 12″ CTRS.
CRANKS	8495C	8495C	7478C	7478C	8495C
CRANK PIN BEARING	2SC	2SC	2SC	3SD	3SD
EQUALIZER BEARING	1R	1R	1R	2RA	2RA
CENTER BEARING	2TGB	2TGB	2TGB	2TGB	2TGB

UNIT DESIGNATION	C-320D-213-86 C-228D-213-86	C-160D-173-86	C-114D-119-86	C-320D-246-74	C-228D-200-74 C-160D-200-74
POLISHED ROD CAPACITY, LBS.	21,300	17,300	11,900	24,600	20,000
STROKE LENGTHS, INCHES	86, 74, 62	86, 74, 62	86, 72, 59	74, 64, 54	74, 64, 54
WALKING BEAM	24″ x 104 Lbs.	24″ x 104 Lbs.	24″ x 84 Lbs.	24″ x 104 Lbs.	24″ x 94 Lbs.
WIRELINE HANGER	1⅛″ x 12″ CTRS.	1⅛″ x 12″ CTRS.	1⅛″ x 12″ CTRS.	1⅛″ x 9″ CTRS.	1″ x 9″ CTRS.
CRANKS	7478C	7478C	6468C	7478C	7478C
CRANK PIN BEARING	3SD	3SD	4SD	3SD	3SD
EQUALIZER BEARING	2RA	2RA	3R	2RA	2RA
CENTER BEARING	2TGB	2TGB	4TGA	2TGB	2TGB

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CONVENTIONAL PUMPING UNIT SPECIFICATIONS

UNIT DESIGNATION	C-228D-173-74 C-160D-173-74	C-160D-143-74 C-114D-143-74	C-160D-173-64 C-114D-173-64	C-160D-143-64 C-114D-143-64	C-80D-119-64
POLISHED ROD CAPACITY, LBS.	17,300	14,300	17,300	14,300	11,900
STROKE LENGTHS, INCHES	74, 62, 51	74, 62, 51	64, 54, 44	64, 52, 40	64, 53, 42
WALKING BEAM	24″ x 84 Lbs.	24″ x 84 Lbs.	24″ x 84 Lbs.	18″ x 71 Lbs.	18″ x 60 Lbs.
WIRELINE HANGER	1″ x 9″ CTRS.	1″ x 9″ CTRS.	1″ x 9″ CTRS.	1″ x 9″ CTRS.	1″ x 9″ CTRS.
CRANKS	6468C	6468C	6468C	5456C	4850B
CRANK PIN BEARING	3SD	4SD	4SD	4SD	5SA
EQUALIZER BEARING	2RA	3R	3R	3R	4R
CENTER BEARING	2TGB	4TGA	4TGA	4TGA	4TGA

UNIT DESIGNATION	C-114D-173-54	C-114D-133-54 C-80D-133-54	C-80D-119-54	C-57D-76-54	C-80D-133-48
POLISHED ROD CAPACITY, LBS.	17,300	13,300	11,900	7,600	13,300
STROKE LENGTHS, INCHES	54, 44, 34	54, 45, 36	54, 45, 36	54, 41, 28	48, 40, 32
WALKING BEAM	18″ x 71 Lbs.	18″ x 60 Lbs.	18″ x 60 Lbs.	16″ x 36 Lbs.	16″ x 57 Lbs.
WIRELINE HANGER	1″ x 9″ CTRS.	⅞″ x 9″ CTRS.	⅞″ x 9″ CTRS.	¾″ x 9″ CTRS.	⅞″ x 9″ CTRS.
CRANKS	5456C	4850B	4850B	4246B	4850B
CRANK PIN BEARING	4SD	5SA	5SA	5SA	5SA
EQUALIZER BEARING	3R	4R	4R	5R	4R
CENTER BEARING	4TGA	4TGA	4TGA	5C	4TGA

UNIT DESIGNATION	C-80D-109-48 C-57D-109-48	C-57D-95-48	C-40D-76-48	C-57D-89-42 C-40D-89-42	C-57D-76-42 C-40D-76-42
POLISHED ROD CAPACITY, LBS.	10,900	9,500	7,600	8,900	7,600
STROKE LENGTHS, INCHES	48, 37, 25	48, 37, 25	48, 37, 27	42, 33, 23	42, 33, 23
WALKING BEAM	16″ x 45 Lbs.	16″ x 45 Lbs.	16″ x 36 Lbs.	16″ x 36 Lbs.	16″ x 36 Lbs.
WIRELINE HANGER	⅞″ x 9″ CTRS.	⅞″ x 9″ CTRS.	⅞″ x 9″ CTRS.	¾″ x 6½″ CTRS.	¾″ x 6½″ CTRS.
CRANKS	4246B	4246B	3644B	3644B	3644B
CRANK PIN BEARING	5SA	5SA	6	6	6
EQUALIZER BEARING	5R	5R	7R	7R	7R
CENTER BEARING	5C	5C	6CA	6CA	6CA

UNIT DESIGNATION	C-40D-89-36	C-25D-67-36	C-25D-56-36	C-25D-67-30	C-25D-53-30
POLISHED ROD CAPACITY, LBS.	8,900	6,700	5,600	6,700	5,300
STROKE LENGTHS, INCHES	36, 28, 20	36, 28, 20	36, 28, 20	30, 20	30, 20
WALKING BEAM	14″ x 34 Lbs.	12″ x 26 Lbs.	12″ x 26 Lbs.	12″ x 26 Lbs.	12″ x 26 Lbs.
WIRELINE HANGER	¾″ x 6½″ CTRS.	⅝″ x 6½″ CTRS.	⅝″ x 6½″ CTRS.	⅝″ x 6½″ CTRS.	½″ x 6½″ CTRS.
CRANKS	3644B	3644B	3644B	2436B	2436B
CRANK PIN BEARING	6	6	6	6	6
EQUALIZER BEARING	7R	7R	7R	7R	7R
CENTER BEARING	6CA	6CA	6CA	6CA	6CA

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CONVENTIONAL COUNTERBALANCE DATA

All Counterbalance Shown In Lbs., Effective At Polished Rod With Weights At Maximum Position, **Including Structural Unbalance.** **See Example Below.**

UNIT	C-1824D-365-192	C-1280D-365-192 C-912D-365-192 C-912D-305-192	C-912D-365-168 C-912D-305-168 C-640D-365-168 C-640D-305-168 C-456D-305-168	C-912D-427-144 C-912D-365-144 C-640D-365-144	C-640D-305-144 C-456D-305-144	C-640D-256-144 C-456D-256-144 C-320D-256-144	C-640D-365-120 C-456D-365-120	C-640D-305-120 C-456D-305-120
STROKE	192″	192″	168″	144″	144″	144″	120″	120″
STRUCTURAL UNBALANCE	– 1985 Lbs.	– 1800 Lbs.	– 1,500 Lbs.	– 650 Lbs.	– 520 Lbs.	– 400 Lbs.	+ 570 Lbs.	– 120 Lbs.
CRANKS	106110C	106110C	94110C	94110C	94110C	94110C	94110C	8495C
C'Bal., Cranks Only	3,215	3,400	4,360	6,190	6,360	6,480	8,670	5,570
4 No. OOROL Counterweights	19,970	20,155	.....	.....	.....	.....	.....	.....
4 No. OOSL Aux. Weights	24,915	25,100	.....	.....	.....	.....	.....	.....
8 No. OOSL Aux. Weights	29,860	30,045	.....	.....	.....	.....	.....	.....
4 No. OORO Counterweights	16,535	16,720	19,370	23,710	23,970	.....	29,415	.....
4 No. OOS Aux. Weights	20,555	20,740	23,900	28,995	.....	.....	35,670	.....
8 No. OOS Aux. Weights	24,575	24,760	28,430	34,285	.....	.....	.....	.....
4 No. ORO Counterweights	14,835	15,020	17,455	21,475	21,725	21,845	26,765	20,430
4 No. OS Aux. Weights	18,695	18,880	21,805	26,550	26,825	.....	32,775	25,365
8 No. OS Aux. Weights	22,555	22,740	26,150	31,625	.....	.....	.....	.....
4 No. OARO Counterweights	13,045	13,230	15,440	19,125	19,360	19,480	23,980	18,305
4 No. OAS Aux. Weights	16,090	16,275	18,870	23,130	23,385	23,505	28,725	22,250
8 No. OAS Aux. Weights	19,135	19,320	22,300	27,130	27,410	.....	33,465	26,190
4 No. 1RO Counterweights	10,865	11,050	12,980	16,250	16,470	16,590	20,580	15,505
4 No. 1S Aux. Weights	13,215	13,400	15,630	19,345	19,580	19,700	24,240	18,555
8 No. 1S Aux. Weights	15,565	15,750	18,280	22,435	22,690	*22,810	27,905	21,610
4 No. 2RO Counterweights	9,580	9,765	11,535	14,565	14,775	14,895	18,585	13,845
4 No. 2S Aux. Weights	11,860	12,045	14,105	17,565	17,790	17,910	22,135	16,810
8 No. 2S Aux. Weights	14,140	14,325	16,675	20,565	20,810	*20,930	25,690	19,770
4 No. 3CRO Counterweights	8,340	8,525	10,135	12,935	13,135	13,255	16,650	12,285
4 No. 3BS Aux. Weights	10,550	10,735	12,625	15,840	16,055	16,175	20,095	15,175
8 No. 3BS Aux. Weights	12,760	12,945	*15,115	*18,745	18,980	*19,100	23,535	18,070
4 No. 5ARO Counterweights	.....	.....	8,505	11,025	11,200	11,340	14,395	10,475
4 No. 5A Aux. Weights	.....	.....	10,165	12,965	13,165	13,285	16,690	12,445
8 No. 5A Aux. Weights	.....	.....	*11,825	*14,905	15,115	*15,235	18,985	14,410
4 No. 5CRO Counterweights	.....	.....	7,430	9,775	9,960	10,080	12,910	9,185
4 No. 5C Aux. Weights	.....	.....	8,945	11,545	11,740	11,860	15,005	10,970
8 No. 5C Aux. Weights	.....	.....	10,465	13,315	13,520	*13,640	17,105	12,755

UNIT	C-320D-246-74 C-228D-200-74 C-160D-200-74	C-228D-173-74 C-160D-173-74	C-160D-143-74 C-114D-143-74	C-160D-173-64 C-114D-173-64	C-160D-143-64 C-114D-143-64	C-80D-119-64	C-114D-173-54	C-114D-133-54 C-80D-133-54
STROKE	74″	74″	74″	64″	64″	64″	54″	54″
STRUCTURAL UNBALANCE	+ 800 Lbs.	+ 450 Lbs.	+ 300 Lbs.	+ 550 Lbs.	+ 360 Lbs.	0 Lbs.	+ 500 Lbs.	+ 330 Lbs.
CRANKS	7478C	6468C	6468C	6468C	5456C	4850B	5456C	4850B
C'Bal., Cranks Only	5,960	4,235	4,090	4,880	2,665	2,155	3,190	2,845
4 No. 2RO Counterweights	15,870	.....	.....	.....	.....	.....	.....	.....
4 No. 2S Aux. Weights	19,425	.....	.....	.....	.....	.....	.....	.....
4 No. 3CRO Counterweights	14,110	11,005	10,870	12,630	8,605	.....	10,115	.....
4 No. 3BS Aux. Weights	17,625	13,925	13,790	15,965	11,165	.....	13,105	.....
8 No. 3BS Aux. Weights	*21,140	16,840	.....	.....	13,725	.....	16,090	.....
4 No. 5ARO Counterweights	12,025	9,360	9,220	10,745	7,290	6,120	8,585	7,470
4 No. 5A Aux. Weights	14,460	11,410	11,275	13,090	9,145	7,740	10,745	9,360
8 No. 5A Aux. Weights	***16,890	*13,465	*13,330	*15,440	*10,995	.....	12,910	11,250
4 No. 5CRO Counterweights	10,445	8,040	7,900	9,235	6,120	5,135	7,220	6,320
4 No. 5C Aux. Weights	12,660	9,915	9,780	11,380	7,830	6,610	9,210	8,040
8 No. 5C Aux. Weights	***14,880	*11,795	*11,660	*13,530	*9,535	.....	11,205	9,760
4 No. 6RO Counterweights	9,460	7,220	7,075	8,295	5,400	4,515	6,380	5,595
4 No. 6 Aux. Weights	10,780	8,345	8,205	9,580	6,430	5,405	7,580	6,635
8 No. 6 Aux. Weights	12,100	9,470	9,330	10,870	7,460	6,295	8,785	7,675
4 No. 7RO Counterweights	8,205	6,160	6,015	7,085	4,440	3,700	5,260	4,645
4 No. 7 Aux. Weights	9,210	7,020	6,880	8,070	5,235	4,395	6,190	5,460
8 No. 7 Aux. Weights	10,215	7,880	7,740	9,050	6,030	5,091	7,115	6,270

EXAMPLE:

A C-640D-305-144 Unit with 4 No. 1RO Counterweights and 4 No. 1S Auxiliary Weights would have a maximum counterbalance effect of 19,580 pounds in the 144″ stroke. This effect includes a structural unbalance of – 520 pounds. If the counterbalance effect is desired for the 106″ stroke, subtract the structural unbalance from the effect in the 144″ stroke and multiply this difference by the ratio of 144 ÷ 106; then add the structural unbalance to this product. Thus, counterbalance effect in the 106″ stroke = [19,580 – (– 520)] × 144/106 + (– 520) = 20,100 × 144/106 – 520 = 26,785 pounds. Structural Unbalance with a negative (–) sign indicates a walking beam assembly that is heavy on the gear reducer end. Structural Unbalance without the negative sign indicates a walking beam assembly that is heavy on the well end.

*Use only one aux. weight per counterweight on belt cover side on 912D, 320D, 160D, & 40D units.
**Use only one aux. weight per counterweight on belt cover side on 320D & 228D units.
***Use only one aux. weight per counterweight on belt cover side on 160D units.

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CONVENTIONAL COUNTERBALANCE DATA

All Counterbalance Shown In Lbs., Effective At Polished Rod With Weights At Maximum Position, **Including Structural Unbalance.** **See Example Below.**

UNIT	C-456D-256-120 C-320D-256-120	C-456D-213-120 C-320D-213-120 C-228D-213-120	C-456D-256-100 C-320D-256-100 C-320D-305-100	C-228D-213-100 C-228D-173-100 C-160D-173-100	C-320D-246-86 C-228D-246-86	C-320D-213-86 C-228D-213-86	C-160D-173-86	C-114D-119-86
STROKE	120″	120″	100″	100″	86″	86″	86″	86″
STRUCTURAL UNBALANCE	+ 55 Lbs.	0 Lbs.	+ 550 Lbs.	+ 0 Lbs.	+ 800 Lbs.	+ 450 Lbs.	+ 450 Lbs.	+ 115 Lbs.
CRANKS	8495C	8495C	8495C	7478C	8495C	7478C	7478C	6468C
C'Bal., Cranks Only	5,740	5,685	7,330	3,910	8,720	4,910	4,910	3,395
4 No. ORO Counterweights	20,595	.....	.....	.....	.....	.....	.....	.....
4 No. OARO Counterweights	18,470	18,415	22,510	.....	.....	.....	.....	.....
4 No. OAS Aux. Weights	22,415	.....	27,210	.....	.....	.....	.....	.....
4 No. 1RO Counterweights	15,670	15,615	19,170	12,855	22,545	.....	.....	.....
4 No. 1S Aux. Weights	18,725	18,670	22,810	15,605	.....	.....	.....	.....
8 No. 1S Aux. Weights	21,775	.....	26,450	18,355	.....	.....	.....	.....
4 No. 2RO Counterweights	14,010	13,955	17,195	11,425	20,235	13,490	13,490	10,430
4 No. 2S Aux. Weights	16,975	16,920	20,725	14,120	.....	16,560	16,560	.....
8 No. 2S Aux. Weights	19,935	19,880	24,260	16,810	.....	19,635	.....	.....
4 No. 3CRO Counterweights	12,450	12,395	15,330	10,090	18,065	11,965	11,965	9,255
4 No. 3BS Aux. Weights	15,345	15,290	18,780	12,755	22,090	15,005	15,005	11,780
8 No. 3BS Aux. Weights	*18,235	**18,180	*22,230	*15,420	.....	*18,045	.....	.....
4 No. 5ARO Counterweights	10,645	10,590	13,180	8,510	15,550	10,160	10,160	7,830
4 No. 5A Aux. Weights	12,615	12,560	15,525	10,355	18,290	12,265	12,265	9,605
8 No. 5A Aux. Weights	*14,580	*14,525	*17,870	*12,195	*21,030	14,370	*14,370	11,385
4 No. 5CRO Counterweights	9,355	9,300	11,640	7,310	13,750	8,795	8,795	6,685
4 No. 5C Aux. Weights	11,140	11,085	13,765	8,990	16,235	10,710	10,710	8,315
8 No. 5C Aux. Weights	12,920	12,865	15,895	*10,670	18,720	12,630	*12,630	9,940
4 No. 6RO Counterweights	.....	.....	10,675	6,565	12,625	7,940	7,940	5,975
4 No. 6 Aux. Weights	.....	.....	11,935	7,565	14,100	9,085	9,085	6,950
8 No. 6 Aux. Weights	.....	.....	13,195	8,565	15,570	10,225	10,225	7,925
4 No. 7RO Counterweights	.....	.....	9,465	5,615	11,210	6,855	6,855	5,060
4 No. 7 Aux. Weights	.....	.....	10,420	6,375	12,330	7,725	7,725	5,805
8 No. 7 Aux. Weights	.....	.....	11,375	7,135	13,445	8,595	8,595	6,550

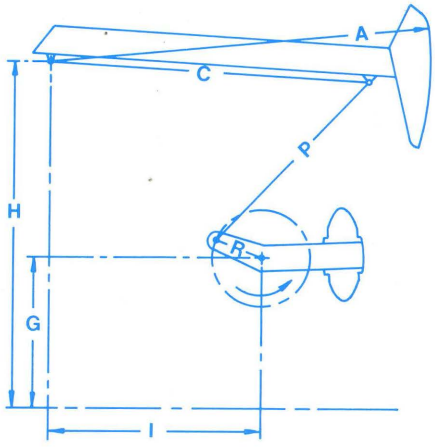
UNIT	C-80D-119-54	C-57D-76-54	C-80D-133-48	C-80D-109-48 C-57D-109-48 C-57D-95-48	C-40D-76-48	C-57D-89-42 C-57D-76-42 C-40D-89-42 C-40D-76-42	C-40D-89-36 C-25D-67-36 C-25D-56-36	C-25D-67-30 C-25D-53-30
STROKE	54″	54″	48″	48″	48″	42″	36″	30″
STRUCTURAL UNBALANCE	+ 300 Lbs.	0 Lbs.	+ 440 Lbs.	+ 320 Lbs.	0 Lbs.	+ 150 Lbs.	+ 275 Lbs.	+ 150 Lbs.
CRANKS	4850B	4246B	4850B	4246B	3644B	3644B	3644B	2436B
C'Bal., Cranks Only	2,845	1,649	3,270	2,175	1,338	1,675	2,055	1,370
4 No. 5ARO Counterweights	7,470	5,760	8,475	6,800	.....	.....	.....	.....
4 No. 5A Aux. Weights	9,360	7,440	10,595	8,690	.....	.....	.....	.....
8 No. 5A Aux. Weights	.....	.....	.....	.....	.....	.....	.....	.....
4 No. 5CRO Counterweights	6,320	4,750	7,175	5,665	4,525	5,300	6,285	.....
4 No. 5C Aux. Weights	8,040	6,285	9,115	7,395	6,160	7,165	.....	.....
8 No. 5C Aux. Weights	.....	.....	.....	.....	.....	.....	.....	.....
4 No. 6RO Counterweights	5,595	4,120	6,365	4,955	3,995	4,700	5,580	4,400
4 No. 6 Aux. Weights	6,635	5,050	7,535	6,005	5,000	5,840	6,915	5,540
8 No. 6 Aux. Weights	7,675	5,985	8,705	7,055	.....	*6,985	.....	.....
4 No. 7RO Counterweights	4,645	3,275	5,295	4,005	3,090	3,670	4,380	3,400
4 No. 7 Aux. Weights	5,460	4,005	6,210	4,830	3,885	4,570	5,435	4,320
8 No. 7 Aux. Weights	6,270	4,740	7,125	5,655	.....	*5,475	.....	.....

EXAMPLE:

A C-456D-305-144 with 4 No. 1RO Counterweights and 3 No. 1S Auxiliary Weights would have a maximum counterbalance effect in the 144″ stroke of 16,470 + 3/4 (19,580 – 16,470) = 18,800 pounds. With this same combination of weights, the counterbalance effect in the 106″ stroke is [18,800 – (– 520)] × 144/106 + (– 520) = 25,725 pounds. To convert effective counterbalance to maximum counterbalance torque for dynamometer card analysis, multiply the pounds counterbalance, minus the structural unbalance, by the torque factor at the 90° crank position.

*Use only one aux. weight per counterweight on belt cover side on 912D, 320D, 160D, & 40D units.
**Use only one aux. weight per counterweight on belt cover side on 320D & 228D units.
***Use only one aux. weight per counterweight on belt cover side on 160D units.

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MARK II PUMPING UNIT API GEOMETRY DIMENSIONS

	A	C	I	P	H	G	R1	R2	R3	PHASE ANGLE	S.U.	T.F. @ (90° - α)/ STROKE LENGTH
M-1824D-427-216	384	306	228	234.38	329.875	115.875	80.06	71.06	62.06	22	-7450	93.736/216
M-1280D-427-216	384	306	228	234.38	329.875	115.875	80.06	71.06	62.06	22	-7450	93.736/216
M-912D-305-216	384	306	228	234.38	329.875	115.875	80.06	71.06	62.06	22	-7450	93.736/216
M-912DS-365-216	384	306	228	234.38	329.875	115.875	80.06	71.06	62.06	22	-7450	93.736/216
M-1280D-427-192	384	306	228	228.06	329.875	115.875	71.69	62.69	53.69	19.5	-7160	86.069/192
M-912DS-427-192	384	306	228	228.06	329.875	115.875	71.69	62.69	53.69	19.5	-7160	86.069/192
M-912D-305-192	384	306	228	228.06	329.875	115.875	71.69	62.69	53.69	19.5	-7160	86.069/192
M-640D-305-192	384	306	228	228.06	329.875	115.875	71.69	62.69	53.69	19.5	-7160	86.069/192
M-456D-305-192	384	306	228	228.06	329.875	115.875	71.69	62.69	53.69	19.5	-7160	86.069/192
M-912DS-427-168	334	270	203	196.5	276.875	93.875	63.56	56.56	49.56	19	-6820	75.24/168
M-912D-365-168	334	270	203	193.5	276.875	93.875	63.56	56.56	49.56	19	-5385	75.24/168
M-912D-305-168	334	270	203	193.5	276.875	93.875	63.56	56.56	49.56	19	-4860	75.24/168
M-640D-365-168	334	270	203	193.5	276.875	93.875	63.56	56.56	49.56	19	-5385	75.24/168
M-640D-305-168	334	270	203	193.5	276.875	93.875	63.56	56.56	49.56	19	-4860	75.24/168
M-456D-305-168	334	270	203	193.5	276.875	93.875	63.56	56.56	49.56	19	-4860	75.24/168
M-912D-365-144	312	258	186	182.38	252.875	93.875	53.75	47.75	41.75	23	-4680	63.023/144
M-640D-365-144	312	258	186	182.38	252.875	93.875	53.75	47.75	41.75	23	-4680	63.023/144
M-456D-365-144	312	258	186	182.38	252.875	93.875	53.75	47.75	41.75	23	-4680	63.023/144
M-912D-305-144	312	258	186	182.38	252.875	93.875	53.75	47.75	41.75	23	-4300	63.023/144
M-640D-305-144	312	258	186	182.38	252.875	93.875	53.75	47.75	41.75	23	-4300	63.023/144
M-456D-305-144	312	258	186	182.38	252.875	93.875	53.75	47.75	41.75	23	-4300	63.023/144
M-640D-256-144	312	258	186	182.38	252.875	93.875	53.75	47.75	41.75	23	-4010	63.023/144
M-456D-256-144	312	258	186	182.38	252.875	93.875	53.75	47.75	41.75	23	-4010	63.023/144
M-320D-256-144	312	258	186	182.38	252.875	93.875	53.75	47.75	41.75	23	-4010	63.023/144
M-456D-365-120	312	258	186	173.75	252.875	93.875	45.13	39.13	33.13	24	-4510	53.616/120
M-640D-305-120	312	258	186	173.75	252.875	93.875	45.13	39.13	33.13	24	-4130	53.616/120
M-456D-305-120	312	258	186	173.75	252.875	93.875	45.13	39.13	33.13	24	-4130	53.616/120
M-320D-305-120	312	258	186	173.75	252.875	93.875	45.13	39.13	33.13	24	-4130	53.616/120
M-456D-256-120	312	258	186	173.75	252.875	93.875	45.13	39.13	33.13	24	-3840	53.616/120
M-320D-256-120	312	258	186	173.75	252.875	93.875	45.13	39.13	33.13	24	-3620	53.616/120
M-228D-256-120	312	258	186	173.75	252.875	93.875	45.13	39.13	33.13	24	-3435	53.616/120
M-320D-213-120	312	258	186	173.75	252.875	93.875	45.13	39.13	33.13	24	-3560	53.616/120
M-228D-213-120	312	258	186	173.75	252.875	93.875	45.13	39.13	33.13	24	-3235	53.616/120
M-320D-305-100	312	258	186	173.75	252.875	93.875	37.63	31.63	25.63	24	-3700	45.492/100
M-320D-256-100	312	258	186	173.75	252.875	93.875	37.63	31.63	25.63	24	-3470	45.492/100
M-228D-256-100	312	258	186	173.75	252.875	93.875	37.63	31.63	25.63	24	-3285	45.492/100
M-228D-173-100	312	258	186	173.75	252.875	93.875	37.63	31.63	25.63	24	-3175	45.492/100
M-228D-246-86	222	186	124	135.75	188.375	73	31.5	26.5	21.5	24.5	-2140	38.328/86
M-228D-213-86	222	186	124	135.75	188.375	73	31.5	26.5	21.5	24.5	-2040	38.328/86
M-160D-213-86	222	186	124	135.75	188.375	73	31.5	26.5	21.5	24.5	-2040	38.328/86
M-160D-173-86	222	186	124	135.75	188.375	73	31.5	26.5	21.5	24.5	-1930	38.328/86
M-114D-143-86	189	162	111	112.19	147.5	52.25	32.25	27.75	23.25	27	-1535	36.974/86
M-228D-200-74	222	186	124	130.5	188.375	73	27.25	22.25	17.25	24.5	-1960	33.523/74
M-160D-200-74	222	186	124	130.5	188.375	73	27.25	22.25	17.25	24.5	-1890	33.523/74
M-228D-173-74	222	186	124	130.5	188.375	73	27.25	22.25	17.25	24.5	-1860	33.523/74
M-160D-173-74	222	186	124	130.5	188.375	73	27.25	22.25	17.25	24.5	-1860	33.523/74
M-114D-173-74	222	186	124	130.5	188.375	73	27.25	22.25	17.25	24.5	-1820	33.523/74
M-114D-143-74	189	162	111	107.94	147.5	52	27.94	23.44	18.94	27	-1440	32.56/74
M-114D-173-64	189	162	111	107.94	147.5	52	24.19	19.69	15.19	28	-1420	28.547/64
M-114D-143-64	189	162	111	107.94	147.5	52	24.19	19.69	15.19	28	-1420	28.547/64

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LUFKIN MARK II *UNITORQUE* PUMPING UNITS

THE *UNITORQUE* GEOMETRY

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

A. Shifting the gearbox from directly under the equalizer towards the Samson post turning in a preferred direction of rotation, creates an upstroke that occurs in approximately 195° of crank rotation and a downstroke of approximately 165° of crank rotation.

B. Placing the equalizer between the horsehead and the Samson post thus creating 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 that produces a more effective counterbalance torque which at the beginning of the upstroke "lags" the well load torque approximately 7½°. Similarly, at the beginning of the downstroke, this same offset condition produces a counterbalance torque which "leads" the well load torque approximately 7½°

Independently these features would not produce a relatively uniform torque, but working together a "unitorque" system is obtained which can reduce the torque on the gearbox up to 35% as well as lowering power costs and often, prime mover size.

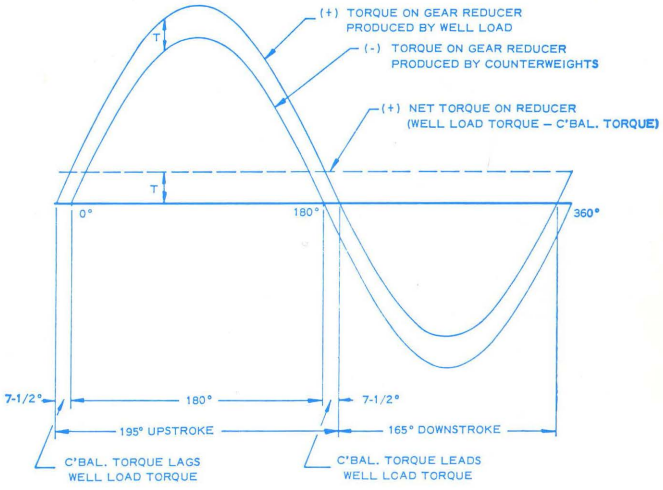
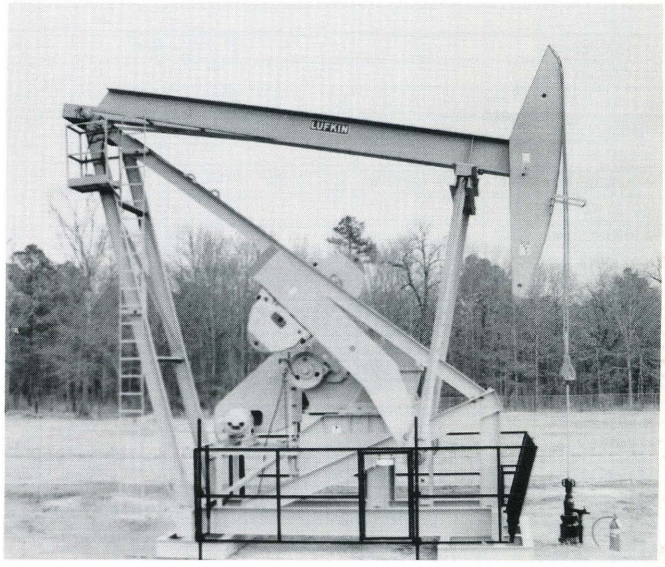


Illustration showing how a uniform torque can be obtained under ideal conditions.

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



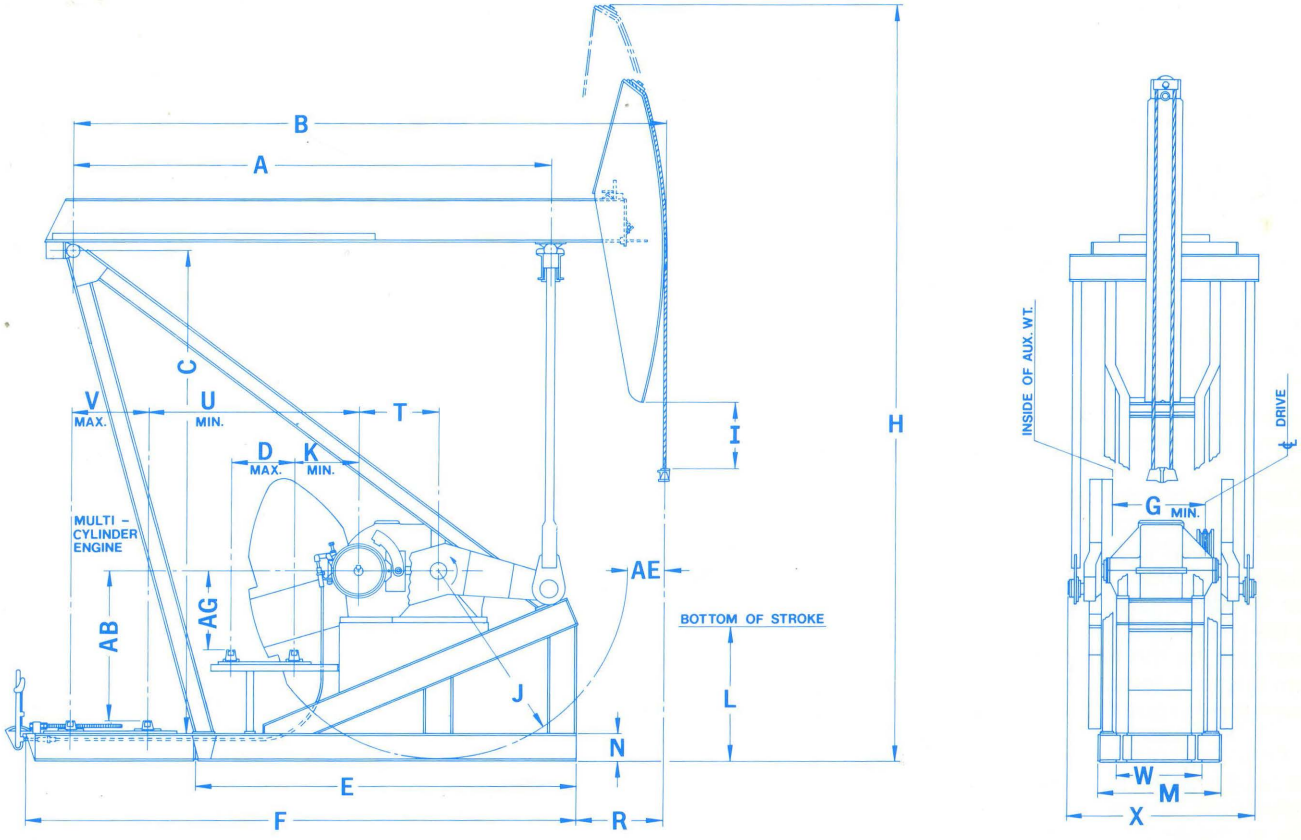


"TWO-POINT" SUSPENSION bases are standard for all Lufkin Mark II Pumping Units. The "two point" base reduces concrete requirements approximately 80% by permitting the use of small salvageable precast concrete blocks in front and rear. This simple foundation assures a completely portable unit and foundation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

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MARK II PUMPING UNIT ASSEMBLIES

GENERAL DIMENSIONS



STANDARD API MODELS SHOWN. OTHER MODELS AVAILABLE ON REQUEST.

UNIT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	R	T	U	V	W	X	AB	AE	AG
M-1824D-427-216	25′-6″	32′-0″	27′-57/8″	55″	18′-7″	27′-93/4″	67″	47′-5″	443/8″	130″	253/8″	751/2″	8′-5″	18″	45″	587/8″	8′-97/8″	52″	481/2″	10′-4″	9′-01/2″	26″	51″
M-1280D-427-216	″	″	″	″	″	28′-51/2″	571/4″	″	″	″	313/4″	″	8′-0″	″	″	521/2″	10′-0″	″	″	9′-6″	″	″	″
M-1280D-427-192	″	″	″	″	″	″	″	45′-10″	631/4″	″	″	801/4″	″	″	″	″	″	″	″	″	″	″	″
M-912DS-365-216	″	″	″	″	″	27′-71/2″	535/8″	47′-5″	443/8″	″	23″	751/2″	″	″	″	481/2″	9′-11/2″	″	″	8′-11″	″	″	59″
M-912DS-427-192	″	″	″	″	″	″	″	45′-10″	631/4″	″	″	801/4″	″	″	″	″	″	″	″	″	″	″	″
M-912DS-427-168	22′-6″	27′-10″	23′-07/8″	50″	18′-23/4″	24′-101/4″	″	39′-9″	323/8″	108″	251/2″	851/4″	6′-91/2″	″	48″	″	9′-03/8″	″	50″	″	9′-63/8″	233/8″	46″
M-912D-305-216	25′-6″	32′-0″	27′-57/8″	55″	18′-7″	27′-21/2″	″	47′-5″	443/8″	130″	23″	751/2″	8′-0″	″	45″	″	9′-11/2″	47″	481/2″	9′-1″	9′-01/2″	26″	59″
M-912D-305-192	″	″	″	″	″	″	″	45′-10″	631/4″	″	″	801/4″	″	″	″	″	″	″	″	″	″	″	″
M-912D-365-168	22′-6″	27′-10″	23′-07/8″	50″	18′-23/4″	24′-101/4″	″	39′-3″	401/4″	108″	251/2″	771/8″	6′-91/2″	″	48″	″	9′-03/8″	52″	50″	8′-9″	7′-63/8″	233/8″	46″
M-912D-305-168	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″″	″	
M-912D-365-144	21′-6″	26′-0″	21′-07/8″	″	″	″	″	35′-6″	335/8″	″	″	833/4″	″	″	421/2″	″	″	″	″	″	″	18″	″
M-912D-305-144	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	8′-73/8″	″	″	″
M-640D-305-192	25′-6″	32′-0″	27′-57/8″	55″	18′-7″	27′-21/2″	497/8″	45′-10″	631/4″	130″	265/8″	801/4″	8′-0″	″	45″	411/2″	9′-81/2″	47″	481/2″	8′-9″	9′-01/2″	26″	60″
M-640D-365-168	22′-6″	27′-10″	23′-07/8″	50″	18′-23/4″	24′-101/4″	″	39′-3″	401/4″	108″	241/8″	771/8″	6′-91/2″	″	48″	″	9′-71/4″	52″	50″	8′-5″	7′-63/8″	233/8″	46″
M-640D-305-168	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
M-640D-365-144	21′-6″	26′-0″	21′-07/8″	″	″	″	″	35′-6″	335/8″	″	″	833/4″	″	″	421/2″	″	″	″	″	″	″	18″	″
M-640D-305-144	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	8′-33/8″	″	″	″
M-640D-265-144	″	″	″	″	″	″	″	35′-2″	471/4″	″	″	715/8″	″	″	″	″	″	″	″	″	″	″	″
M-640D-305-120	″	″	″	″	″	″	″	33′-3″	593/4″	″	″	803/4″	″	″	″	″	″	″	″	″	″	″	″
M-456D-305-192	25′-6″	32′-0″	27′-57/8″	55″	18′-7″	27′-21/2″	″	45′-10″	631/4″	130″	293/4″	801/4″	8′-0″	″	45″	383/8″	9′-115/8″	47″	481/2″	8′-9″	9′-01/2″	26″	60″
M-456D-305-168	22′-6″	27′-10″	23′-07/8″	50″	18′-23/4″	24′-101/4″	″	39′-3″	401/4″	108″	31″	771/8″	6′-91/2″	″	48″	″	9′-71/4″	52″	50″	8′-5″	7′-63/8″	233/8″	46″
M-456D-365-144	21′-6″	26′-0″	21′-07/8″	″	″	″	″	35′-6″	335/8″	″	″	833/4″	″	″	421/2″	″	″	″	″	″	″	18″	″
M-456D-305-144	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	8′-33/8″	″	″	″
M-456D-256-144	″	″	″	″	″	″	″	36′-2″	471/2″	″	″	715/8″	″	″	″	″	″	″	″	″	″	″	″
M-456D-365-120	″	″	″	″	″	″	″	33′-3″	593/4″	″	″	803/4″	″	″	″	″	″	″	″	8′-5″	″	″	″
M-456D-305-120	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	8′-31/2″	″	″	″
M-456D-256-120	″	″	″	″	″	″	″	33′-4″	737/8″	″	″	70″	″	″	″	″	″	″	″	″	″	″	″

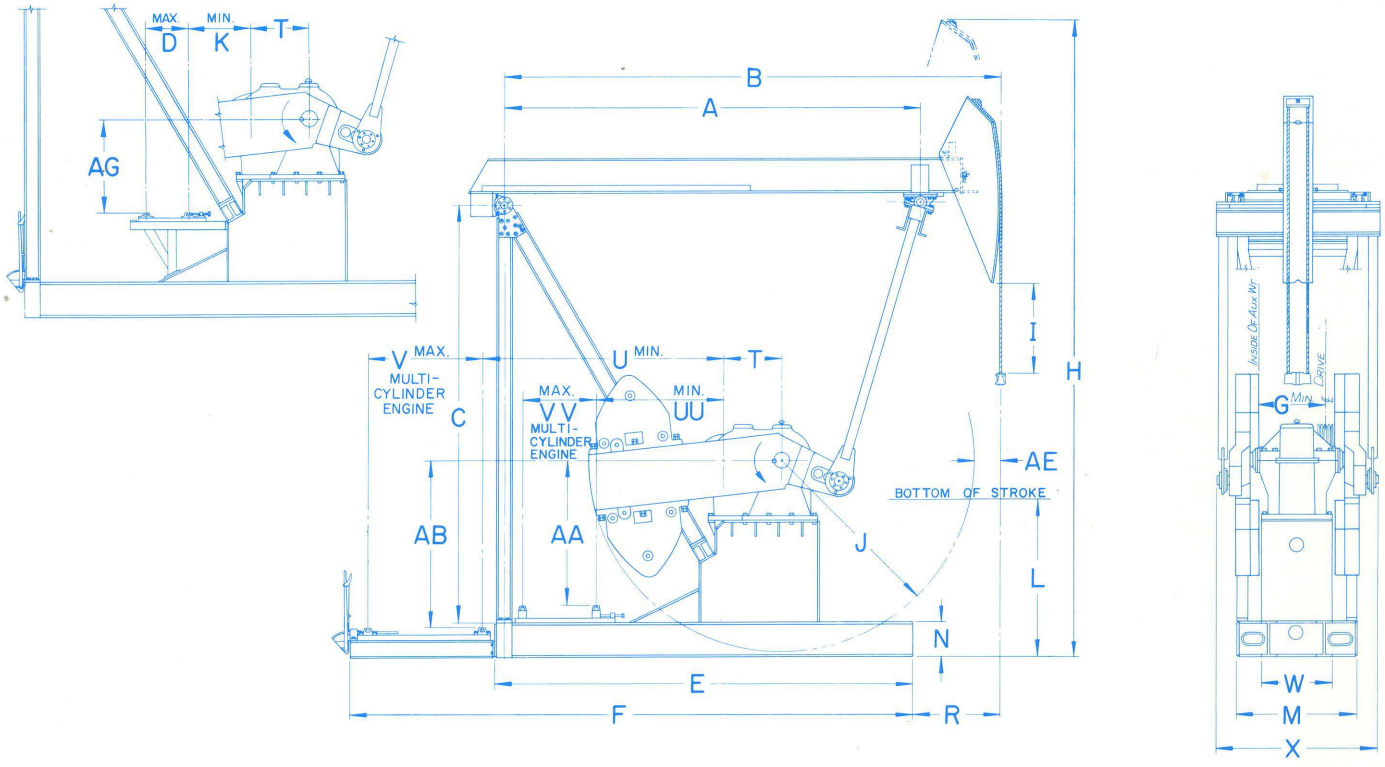
NOTE: Do not use above dimensions for foundation. Request foundation plans.

(Units on pages 20 & 21 are designed to be installed on "two point" foundations.)

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MARK II PUMPING UNIT ASSEMBLIES

GENERAL DIMENSIONS



STANDARD API MODELS SHOWN, OTHER MODELS AVAILABLE ON REQUEST.

UNIT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	R	T	U	V	W	X	AA	AB	AE	AG	UU	VV
M-320D-256-144	21'-6"	26'-0"	21'-0 7/8"	33 1/4"	21'-6 3/8"	*	42 3/4"	36'-10"	47 5/8"	108"	35 3/8"	76 7/8"	6'-3 3/4"	24"	60"	34"	*	*	43"	7'-4 3/8"	7'-2"	*	18"	46"	7'-4"	55"
M-320D-305-120	"	"	"	"	"	*	"	33'-11"	65"	"	"	87"	"	"	"	"	*	*	"	"	"	*	"	"	"	"
M-320D-256-120	"	"	"	"	"	*	"	33'-10"	69"	"	"	80 3/4"	"	"	"	"	*	*	"	"	"	*	"	"	"	"
M-320D-213-120	"	"	"	"	"	*	"	"	"	"	"	"	"	"	"	"	*	*	"	"	"	*	"	"	"	"
M-320D-305-100	"	"	"	"	"	*	"	32'-4"	84 5/8"	"	"	83 1/8"	"	"	"	"	*	*	"	"	"	*	"	"	"	"
M-320D-256-100	"	"	"	"	"	*	"	31'-9"	88 3/8"	"	"	81 1/4"	"	"	"	"	*	*	"	"	"	*	"	"	"	"
M-228D-256-120	"	"	"	28 3/4"	"	27'-10 3/8"	38 1/2"	33'-10"	69"	"	41 5/8"	80 3/4"	"	"	"	30"	14'-8 1/4"	47 1/2"	37"	6'-9 3/8"	"	7'-11 1/4"	"	50 1/4"	7'-8"	"
M-228D-213-120	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
M-228D-256-100	"	"	"	"	"	"	"	31'-9"	88 3/8"	"	"	81 1/4"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
M-228D-173-100	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
M-228D-246-86	15'-6"	18'-6"	15'-8 3/8"	29 1/4"	15'-8"	21'-11 1/2"	"	25'-8"	45 1/4"	86 5/8"	22 7/8"	75 1/2"	57 1/4"	"	39"	"	9'-8 1/2"	"	"	6'-8 3/8"	**	6'-1 3/8"	1 3/8"	41 1/2"	**	**
M-228D-213-86	"	"	"	"	15'-7 5/8"	21'-11 1/8"	"	25'-5"	"	"	"	72 1/2"	"	21"	"	"	9'-8 1/8"	"	"	8'-7 3/8"	**	70 3/8"	"	"	**	**
M-228D-200-74	"	"	"	"	"	"	"	24'-7"	52 7/8"	"	"	73 1/4"	"	"	"	"	"	"	"	"	**	"	"	"	**	**
M-228D-173-74	"	"	"	"	"	"	"	24'-6"	"	"	"	72 7/8"	"	"	"	"	"	"	"	"	**	"	"	"	**	**
M-160D-213-86	"	"	"	33 3/4"	"	21'-0 5/8"	32 1/2"	25'-5"	45 1/4"	"	24 9/16"	72 1/2"	54 1/4"	"	"	26"	8'-10 5/8"	55"	32"	6'-0 3/8"	**	6'-6 1/8"	"	38 5/8"	**	**
M-160D-173-86	"	"	"	"	"	"	"	"	41 1/8"	"	"	72 1/8"	"	"	"	"	"	"	"	"	**	"	"	"	**	**
M-160D-200-74	"	"	"	"	"	"	"	24'-7"	52 7/8"	"	"	73 1/4"	"	"	"	"	"	"	"	"	**	"	"	"	**	**
M-160D-173-74	"	"	"	"	"	"	"	24'-6"	"	"	"	72 7/8"	"	"	"	"	"	"	"	"	**	"	"	"	**	**
M-114D-143-86	13'-6"	15'-9"	12'-3 1/2"	30"	13'-5"	19'-8 1/2"	28 3/4"	21'-5"	14"	62"	20 1/4"	57 1/8"	42 3/4"	16"	32"	24"	9'-0 1/2"	52"	25"	67 3/8"	**	44 3/8"	16"	35 3/4"	**	**
M-114D-173-74	15'-6"	18'-6"	15'-8 3/8"	30 3/4"	15'-8 3/8"	21'-11 1/8"	"	24'-6"	52 7/8"	86 5/8"	28"	72 7/8"	54 1/4"	21"	39"	"	10'-2 1/8"	"	"	69"	**	70 3/8"	11 3/8"	41 5/8"	**	**
M-114D-143-74	13'-6"	15'-9"	12'-3 1/2"	30"	13'-5"	19'-8 1/2"	"	20'-7"	27 3/4"	62"	20 1/4"	56 7/8"	42 3/4"	16"	32"	"	9'-0 1/2"	"	"	67 3/8"	**	44 3/8"	16"	35 3/4"	**	**
M-114D-173-64	"	"	"	"	"	"	"	19'-10"	21"	"	"	71 5/8"	"	"	"	"	"	"	"	"	**	"	"	"	**	**
M-114D-143-64	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	**	"	"	"	**	**

*On 100", 120" and 144" Stroke Units, on This Page Multi-Cylinder Engines are Mounted on Main Base Beams Forward of Samson Post. See Dimensions UU, VV, and AA.
**On 64", 74" and 86" Stroke Units, Multi-Cylinder Engines are Mounted Behind the Samson Post. See Dimensions U, V, and AB.

NOTE: Do not use above dimensions for foundation. Request foundation plans.
(Units on pages 20 & 21 are designed to be installed on "two point" foundations.)

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MARK II COUNTERBALANCE DATA

All Counterbalance Shown In Lbs., Effective At Polished Rod With Weights At Maximum Position, **Including Structural Unbalance.**

See Example Page 23.

UNIT	M-1824D-427-216 M-1280D-427-216 M-912DS-365-216 M-912D-305-216	M-1280D-427-192 M-912DS-427-192 M-912D-305-192 M-640D-305-192 M-456D-305-192	M-912DS-427-168	M-640D-365-168 M-912D-365-168	M-912D-305-168 M-640D-305-168 M-456D-305-168	M-912D-365-144 M-640D-365-144 M-456D-365-144	M-912D-305-144 M-640D-305-144 M-456D-305-144	M-640D-256-144 M-456D-256-144 M-320D-256-144
STROKE	216″	192″	168″	168″	168″	144″	144″	144″
STRUCTURAL UNBALANCE	−7,450 Lbs.	−7,160 Lbs.	−6,820 Lbs.	−5,385 Lbs.	−4,860 Lbs.	−4,680 Lbs.	−4,300 Lbs.	−4,010 Lbs.
CRANKS	216130 MRO	192130 MRO	168108 MRO	168108 MRO	168108 MRO	144108 MRO	144108 MRO	144108 MRO
C'Bal., Cranks Only	1,875	3,365	−975	460	985	3,090	3,470	3,760
4 No. OOROL Counterweights	22,150	25,445	18,620	.....	.....	.....	.....	.....
8 No. OOSL Aux. Weights	34,110	38,475	30,180	.....	.....	.....	.....	.....
4 No. 130RO Counterweights	21,605	24,850	.....	.....	.....	.....	.....	.....
4 No. 130D Aux. Weights	32,550	36,775	.....	.....	.....	.....	.....	.....
4 No. OORO Counterweights	17,990	20,920	14,605	16,040	16,565	21,690	22,065	22,355
4 No. OOS Aux. Weights	22,855	26,215	19,305	20,740	21,265	27,300	27,680	.....
8 No. OOS Aux. Weights	27,720	31,510	24,005	25,440	25,965	32,910	.....	.....
4 No. ORO Counterweights	15,935	18,675	12,615	14,055	14,575	19,315	19,695	19,985
4 No. OS Aux. Weights	20,605	23,760	17,130	18,565	19,090	24,700	25,080	.....
8 No. OS Aux. Weights	25,275	28,850	21,645	23,075	23,605	30,085	.....	.....
4 No. OARO Counterweights	13,595	16,130	10,510	11,945	12,470	16,795	17,180	17,470
4 No. OAS Aux. Weights	17,225	20,085	14,065	15,500	16,025	21,040	21,425	21,710
8 No. OAS Aux. Weights	20,855	24,040	17,620	19,055	19,580	25,285	25,670	.....
4 No. 1RO Counterweights	10,970	13,275	7,965	9,400	9,925	13,755	14,135	14,425
4 No. 1S Aux. Weights	13,770	16,340	10,710	12,145	12,670	17,035	17,415	17,705
8 No. 1S Aux. Weights	16,570	19,365	13,455	14,890	15,415	20,315	20,695	.....
4 No. 2RO Counterweights	9,430	11,590	6,460	7,895	8,420	11,965	12,345	12,635
4 No. 2S Aux. Weights	12,135	14,535	9,125	10,560	11,085	15,145	15,525	15,815
8 No. 2S Aux. Weights	14,840	17,480	11,790	13,225	13,750	18,325	18,705	*18,995
4 No. 3CRO Counterweights	7,910	9,940	5,015	6,450	6,975	10,240	10,620	10,910
4 No. 3BS Aux. Weights	10,515	12,775	7,595	9,030	9,555	13,320	13,700	13,990
8 No. 3BS Aux. Weights	13,120	15,610	10,175	11,610	12,135	16,400	16,780	*17,070
4 No. 5ARO Counterweights	6,200	8,085	3,365	4,800	5,325	8,270	8,650	8,940
4 No. 5A Aux. Weights	7,950	9,985	5,110	6,555	7,080	10,365	10,745	11,035
8 No. 5A Aux. Weights	9,700	11,885	6,850	8,310	8,835	12,460	12,840	*13,130
4 No. 5CRO Counterweights	5,050	6,820	2,220	3,655	4,180	6,895	7,275	7,565
4 No. 5C Aux. Weights	6,620	8,530	3,795	5,230	5,755	8,780	9,160	9,450
8 No. 5C Aux. Weights	8,190	10,240	5,370	6,805	7,330	10,665	11,045	*11,335
4 No. 6RO Counterweights	4,285	5,985	1,445	2,880	3,405	5,970	6,350	6,640
4 No. 6 Aux. Weights	5,190	6,975	2,355	3,790	4,315	7,060	7,440	7,730
8 No. 6 Aux. Weights	6,095	7,965	3,265	4,700	5,225	8,150	8,530	8,820
4 No. 7RO Counterweights	3,400	5,025	565	2,000	2,525	4,925	5,305	5,595
4 No. 7 Aux. Weights	4,085	5,770	1,255	2,690	3,215	5,745	6,125	6,415
8 No. 7 Aux. Weights	4,770	6,515	1,945	3,380	3,905	6,565	6,945	7,235

UNIT	M-320D-305-100	M-320D-256-100	M-228D-256-100	M-228D-173-100	M-228D-246-86	M-228D-213-86 M-160D-213-86	M-160D-173-86	M-114D-143-86
STROKE	100″	100″	100″	100″	86″	86″	86″	86″
STRUCTURAL UNBALANCE	−3,700 Lbs.	−3,470 Lbs.	−3,285 Lbs.	−3,175 Lbs.	−2,140 Lbs.	−2,040 Lbs.	−1,930 Lbs.	−1,535 Lbs.
CRANKS	100108 MR	100108 MR	100108 MR	100108 MR	8686 MR	8686 MR	8686 MR	8662 MR
C'Bal., Cranks Only	4,660	4,890	5,075	5,185	2,715	2,815	2,925	1,525
4 No. 1RO Counterweight	19,440	19,670	19,850	19,960	15,600	15,700	15,810	9,525
4 No. 1S Aux. Weights	23,980	24,210	24,395	.....	19,565	19,665	19,775	11,980
4 No. 2RO Counterweights	16,955	17,185	17,370	17,480	13,480	13,580	13,690	8,270
4 No. 2S Aux. Weights	21,360	21,590	21,775	.....	17,335	17,435	17,545	10,690
4 No. 3CRO Counterweights	14,560	14,790	14,975	15,085	11,495	11,595	11,705	7,200
4 No. 3BS Aux. Weights	18,830	19,060	19,245	19,355	15,280	15,380	15,490	9,640
4 No. 5ARO Counterweights	11,840	12,070	12,255	12,365	9,190	9,290	9,400	5,880
4 No. 5A Aux. Weights	14,740	14,970	15,155	15,265	11,890	11,990	12,100	7,650
4 No. 5CRO Counterweights	9,935	10,165	10,350	10,460	7,495	7,595	7,705	4,770
4 No. 5C Aux. Weights	12,545	12,775	12,960	13,070	9,860	9,955	10,070	6,375
4 No. 6RO Counterweights	8,655	8,885	9,070	9,180	6,435	6,535	6,645	4,080
4 No. 6 Aux. Weights	10,160	10,390	10,575	10,685	7,840	7,940	8,050	5,045
8 No. 6 Aux. Weights	11,665	11,895	12,080	12,190	9,245	.....	.....	6,010
4 No. 7RO Counterweights	7,200	7,430	7,615	7,725	5,095	5,195	5,305	3,180
4 No. 7 Aux. Weights	8,340	8,570	8,755	8,865	6,160	6,260	6,370	3,925
8 No. 7 Aux. Weights	9,480	9,710	9,895	10,005	7,225	.....	.....	4,680

*8 Type S Aux. Weights will not clear Belt Cover on M-320D unit.

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MARK II COUNTERBALANCE DATA

All Counterbalance Shown In Lbs., Effective At Polished Rod With Weights At Maximum Position, **Including Structural Unbalance.** See Example below.

UNIT	M-456D-365-120	M-640D-305-120 M-456D-305-120 M-320D-305-120	M-456D-256-120	M-320D-256-120	M-228D-256-120	M-320D-213-120	M-228D-213-120
STROKE	120″	120″	120″	120″	120″	120″	120″
STRUCTUAL UNBALANCE	—4,510 Lbs.	—4,130 Lbs.	—3,840 Lbs.	—3,620 Lbs.	—3,435 Lbs.	—3,560 Lbs.	—3,235 Lbs.
CRANKS	120108 MR	120108 MR	120108 MR	120108 MR	120108 MR	120108 MR	120108 MR
C'Bal. Cranks Only	1,990	2,370	2,660	2,880	3,070	2,940	3,270
4 No. ORO Counterweights	21,065	21,445	21,735	21,955	22,140	.....	.....
4 No. OS Aux. Weights	27,395	27,775	.....	.....	.....	.....	.....
4 No. OARO Counterweights	18,105	18,485	18,775	18,995	19,180	19,055	19,380
4 No. OAS Aux. Weights	23,095	23,475	23,765	23,985	24,170	.....	.....
8 No. OAS Aux. Weights	28,085	*28,465	.....	.....	.....	.....	.....
4 No. 1RO Counterweights	14,530	14,910	15,200	15,420	15,605	15,480	15,805
4 No. 1S Aux. Weights	18,385	18,765	19,055	19,275	19,460	19,335	19,660
8 No. 1S Aux. Weights	22,240	*22,620	22,910	.....	.....	.....	.....
4 No. 2RO Counterweights	12,425	12,805	13,095	13,315	13,500	13,375	13,700
4 No. 2S Aux. Weights	16,165	16,545	16,855	17,055	17,240	17,115	17,440
8 No. 2S Aux. Weights	19,905	*20,285	20,575	.....	.....	.....	.....
4 No. 3CRO Counterweights	10,395	10,775	11,065	11,285	11,470	11,345	11,670
4 No. 3BS Aux. Weights	14,015	14,395	14,685	14,905	15,090	14,965	15,290
8 No. 3BS Aux. Weights	17,635	*18,015	18,305	.....	.....	.....	.....
4 No. 5ARO Counterweights	8,085	8,465	8,755	8,975	9,160	9,035	9,360
4 No. 5A Aux. Weights	10,545	10,925	11,215	11,435	11,620	11,495	11,820
8 No. 5A Aux. Weights	13,005	*13,385	13,675	.....	.....	.....	.....
4 No. 5CRO Counterweights	6,470	6,845	7,140	7,360	7,545	7,420	7,745
4 No. 5C Aux. Weights	8,685	9,060	9,355	9,575	9,755	9,630	9,960
8 No. 5C Aux. Weights	10,900	*11,275	11,570	.....	.....	.....	.....
4 No. 6RO Counterweights	5,385	5,765	6,055	6,275	6,460	6,335	6,660
4 No. 6 Aux. Weights	6,660	7,040	7,330	7,550	7,735	7,610	7,935
8 No. 6 Aux. Weights	7,035	8,315	8,605	8,825	9,010	8,885	9,210
4 No. 7RO Counterweights	4,150	4,530	4,820	5,040	5,225	5,100	5,425
4 No. 7 Aux. Weights	5,115	5,495	5,785	6,005	6,190	6,065	6,390
8 No. 7 Aux. Weights	6,080	6,460	6,750	6,970	7,155	7,030	7,355

*8 Type S Aux. Weights will not clear Belt Cover on M-320D Unit.

UNIT	M-228D-200-74	M-160D-200-74	M-228D-173-74 M-160D-173-74	M-114D-173-74	M-114D-143-74	M-114D-173-64 M-114D-143-64
STROKE	74″	74″	74″	74″	74″	64″
STRUCTURAL UNBALANCE	—1,960 Lbs.	—1,890 Lbs.	—1,860 Lbs.	—1,820 Lbs.	—1,440 Lbs.	—1,420 Lbs.
CRANKS	7486 MR	7486 MR	7486 MR	7486 MR	7462 MR	6462 MR
C'Bal., Cranks Only	3,685	3,755	3,785	3,825	2,230	2,845
4 No. 2RO Counterweights	15,990	16,060	16,090	16,130	9,890	11,580
4 No. 2S Aux. Weights	.....	.....	.....	.....	12,630	14,710
4 No. 3CRO Counterweights	13,720	13,790	13,820	13,860	8,670	10,190
4 No. 3BS Aux. Weights	18,045	18,115	18,145	18,185	11,445	13,355
4 No. 5ARO Counterweights	11,085	11,155	11,185	11,225	7,170	8,485
4 No. 5A Aux. Weights	14,080	14,150	14,180	14,220	9,180	10,775
4 No. 5CRO Counterweights	9,145	9,215	9,245	9,285	5,910	7,045
4 No. 5C Aux. Weights	11,845	11,915	11,945	11,985	7,730	9,125
4 No. 6RO Counterweights	7,935	8,005	8,035	8,075	5,130	6,150
4 No. 6 Aux. Weights	9,540	9,610	9,640	9,680	6,225	7,400
8 No. 6 Aux. Weights	11,145	.....	.....	11,285	7,320	8,650
4 No. 7RO Counterweights	6,400	6,470	6,500	6,540	4,105	4,985
4 No. 7 Aux. Weights	7,625	7,695	7,725	7,765	4,950	5,950
8 No. 7 Aux. Weights	8,850	.....	.....	8,900	5,795	6,915

EXAMPLE:
A M-456D-305-144 with 4 No. ORO Counterweights and 4 No. OS Auxiliary Weights would have a maximum counterbalance effect of 25,080 lbs. in the 144″ stroke. (See other examples, pages 16 and 17.)
Structural Unbalance with a negative (–) sign indicates a walking beam assembly that is heavy on the well end.

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MARK II PUMPING UNIT SPECIFICATIONS

UNIT DESIGNATION	M-1824D-427-216 M-1280D-427-216	M-912DS-365-216	M-912D-305-216	M-1280D-427-192 M-912DS-427-192	M-912D-305-192 M-640D-305-192 M-456D-305-192	M-912DS-427-168	M-912D-365-168 M-640D-365-168
POLISHED ROD CAPACITY, LBS.	42,700	36,500	30,500	42,700	30,500	42,700	36,500
STROKE LENGTH, INCHES	216, 192, 167	216, 191, 167	216, 192, 167	192, 168, 144	192,168,144	168,150,131	168,149,130
WALKING BEAM	24″ x 131 Lbs.	24″ x 131 Lbs.	24″ x 131 Lbs.	24″ x 131 Lbs.	24″ x 131 Lbs.	24″ x 131 Lbs.	24″ x 104 Lbs.
CRANK PIN BEARING	1SC	1SC	1SC	1SC	1SC	1SC	1SC
SAMSON POST BEARING	P19	P19	P19	P19	P19	P19	P18
CROSS YOKE BEARING	C232	C232	C232	C232	C232	C232	C22 C
WIRELINE HANGER	1⅜″ x 16″ Ctrs.	1⅜″ x 16″ Ctrs.	1⅜″ x 16″ Ctrs.	1⅜″ x 16″ Ctrs.	1⅜″ x 16″ Ctrs.	1⅜″ x 16″ Ctrs.	1⅜″ x 12″ Ctrs.
CRANKS	216130 MRO	216130 MRO	216130 MRO	192130 MRO	192130 MRO	168108 MRO	168108 MRO

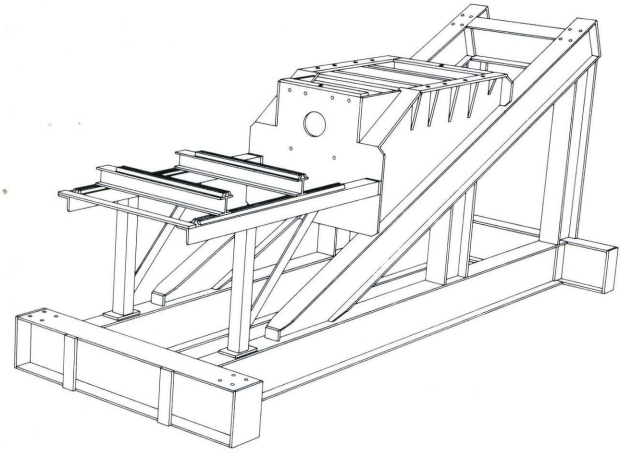
UNIT DESIGNATION	M-912D-305-168 M-640D-305-168 M-456D-305-168	M-912D-365-144 M-640D-365-144 M-456D-365-144	M-912D-305-144 M-640D-305-144 M-456D-305-144	M-640D-256-144 M-456D-256-144 M-320D-256-144	M-456D-365-120	M-640D-305-120 M-456D-305-120 M-320D-305-120	M-456D-256-120 M-320D-256-120 M-228D-256-120
POLISHED ROD CAPACITY, LBS.	30,500	36,500	30,500	25,600	36,500	30,500	25,600
STROKE LENGTH, INCHES	168, 149, 130	144, 128, 112	144, 128, 112	144, 128, 112	120, 104, 88	120, 104, 88	120, 104, 88
WALKING BEAM	24″ x 84 Lbs.	24″ x 84 Lbs.	24″ x 84 Lbs.	21″ x 68 Lbs.	24″ x 84 Lbs.	24″ x 84 Lbs.	21″ x 68 Lbs.
CRANK PIN BEARING	1SC	1SC	2SC	2SC	1SC	2SC	2SC
SAMSON POST BEARING	P18	P18	P18	P18	P18	P18	P18
CROSS YOKE BEARING	C22 C	C232	C22 C	C22 C	C232	C22 C	C22C(M-228D,C20)
WIRELINE HANGER	1¼″ x 12″ Ctrs.	1⅜″ x 12″ Ctrs.	1¼″ x 12″ Ctrs.	1⅛″ x 9″ Ctrs.	1⅜″ x 12″ Ctrs.	1¼″ x 12″ Ctrs.	1⅛″ x 9″ Ctrs.
CRANKS	168108 MRO	144108 MRO	144108 MRO	144108 MRO	120108 MR	120108 MR	120108 MR

UNIT DESIGNATION	M-320D-213-120 M-228D-213-120	M-320D-305-100	M-320D-256-100 M-228D-256-100	M-228D-173-100	M228D-246-86	M-228D-213-86 M-160D-213-86	M-160D-173-86
POLISHED ROD CAPACITY, LBS.	21,300	30,500	25,600	17,300	24,600	21,300	17,300
STROKE LENGTH, INCHES	120, 104, 88	100, 84, 68	100, 84, 68	100, 84, 68	86, 72.4, 58.6	86, 72.4, 58.6	86, 72.4, 58.6
WALKING BEAM	21″ x 62 Lbs.	24″ x 84 Lbs.	21″ x 68 Lbs.	16″ x 57 Lbs.	16″ x 57 Lbs.	16″ x 45 Lbs.	16″ x 45 Lbs.
CRANK PIN BEARING	2SC	2SC	2SC	2SC	2SC	2SC	2SC
SAMSON POST BEARING	P18(M-228D-P16)	P18	P18	P16	P16	P16	P13
CROSS YOKE BEARING	C22C(M-228D,C19)	C22 C	C22C(M-228D,C20)	C19	C20N	C20N	C18N
WIRELINE HANGER	1⅛″ x 9″ Ctrs.	1¼″ x 12″ Ctrs.	1⅛″ x 9″ Ctrs.	1⅛″ x 9″ Ctrs.	1⅛″ x 9″ Ctrs.	1″ x 9″ Ctrs.	1″ x 9″ Ctrs.
CRANKS	120108 MR	100108 MR	100108 MR	100108 MR	8686 MR	8686 MR	8686 MR

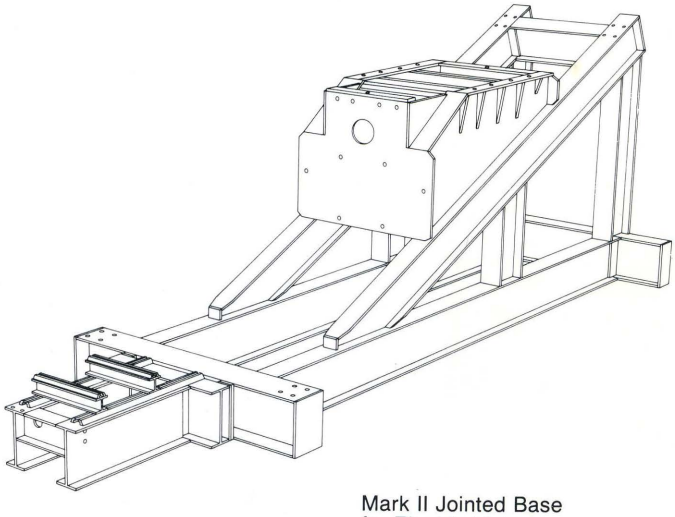
UNIT DESIGNATION	M-114D-143-86	M-228D-200-74 M-160D-200-74	M-228D-173-74 M-160D-173-74 M-114D-173-74	M-114D-143-74	M114D-173-64	M-114D-143-64	
POLISHED ROD CAPACITY, LBS.	14,300	20,000	17,300	14,300	17,300	14,300	
STROKE LENGTH, INCHES	86, 74, 62	74, 60.4, 46.8	74, 60.4, 46.8	74, 60, 46	64, 52, 40	64, 52, 40	
WALKING BEAM	14″ x 34 Lbs.	16″ x 45 Lbs.	16″ x 45 Lbs.	14″ x 34 Lbs.	14″ x 34 Lbs.	14″ x 34 Lbs.	
CRANK PIN BEARING	4SD	2SC	2SC (M-114D,3SD)	4SD	3SD	4SD	
SAMSON POST BEARING	P13	P16	P13	P13	P13	P13	
CROSS YOKE BEARING	C18N	C20N	C18N	C18N	C18N	C18N	
WIRELINE HANGER	1″ x 9″ Ctrs.	1″ x 9″ Ctrs.	1″ x 9″ Ctrs.	1″ x 9″ Ctrs.	1″ x 9″ Ctrs.	1″ x 9″ Ctrs.	
CRANKS	8662 MR	7486 MR	7486 MR	7462 MR	6462 MR	6462 MR	

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MARK II PUMPING UNIT AND PRIME MOVER BASES

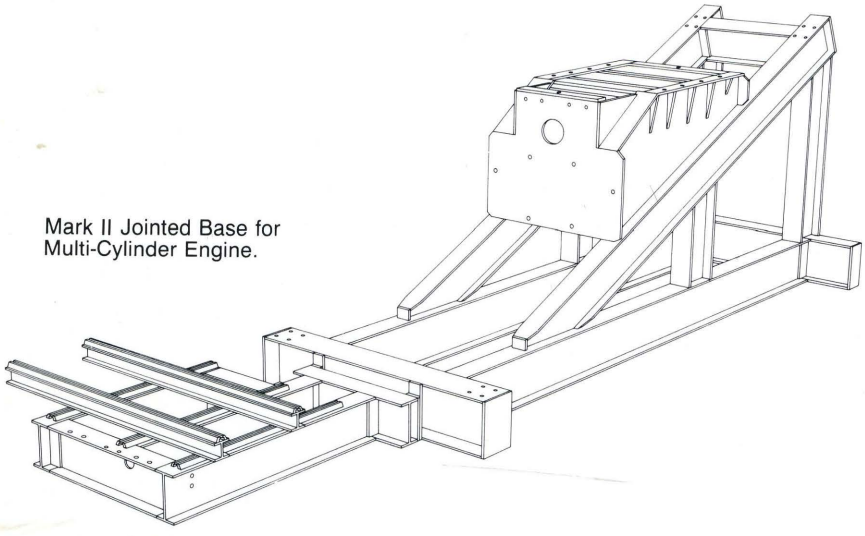


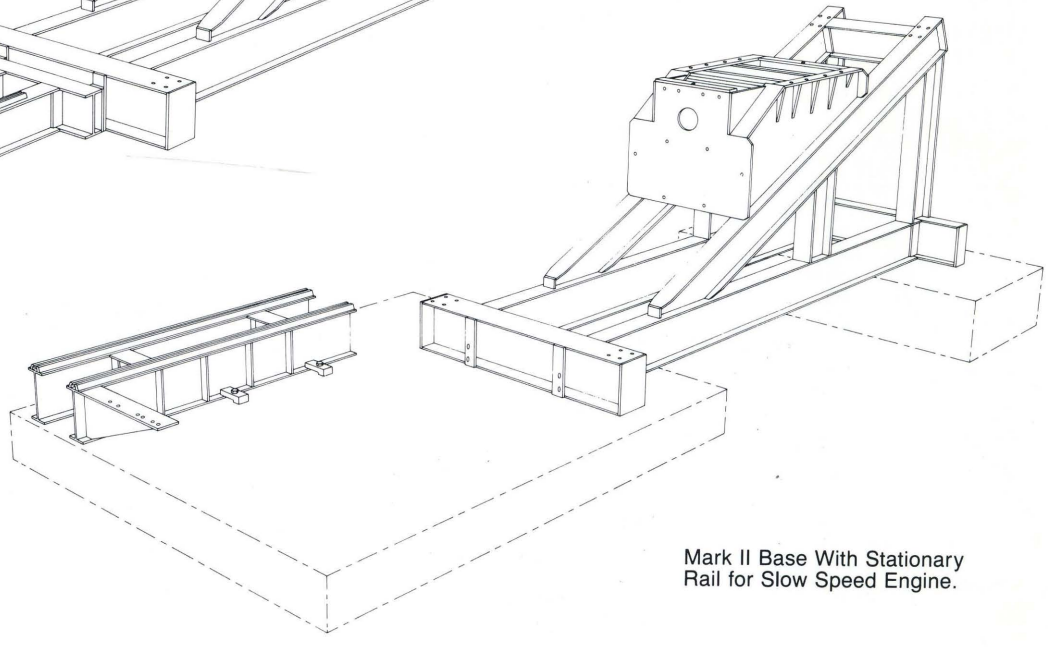
Mark II Base with Hi-Prime Bracket for Electric Motor.



Mark II Jointed Base for Electric Motor.

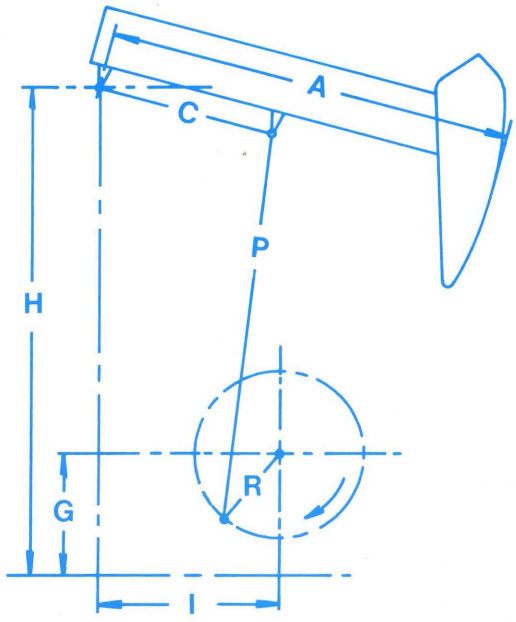
Mark II Jointed Base for Multi-Cylinder Engine.





Mark II Base With Stationary Rail for Slow Speed Engine.

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AIR BALANCED PUMPING UNIT API GEOMETRY DIMENSIONS

UNIT	A	C	I	P	H	G	R1, R2, R3	M	S
A-2560D-470-240	336	134.5	130	261.5	303.5	42	47, 39.44	114.8	150
A-1824D-470-240	336	134.5	130	267.5	303.5	36	47, 39.44	114.8	150
A-1280D-470-240	336	134.5	130	267.5	303.5	36	47, 39.44	114.8	150
A-912D-470-240	336	134.5	130	267.5	303.5	36	47, 39.44	114.8	150
A-1824D-427-216	308	121.5	114.5	246	282	36	41.75, 36.63, 32	92	140
A-1280D-427-216	308	121.5	114.5	246	282	36	41.75, 36.63, 32	92	140
A-912D-427-216	308	121.5	117.5	252	282	30	41.75, 36.63, 32	92	140
A-1824D-427-192	276	121.5	114.5	216	252	36	41.75, 36.63, 32	102.8	112
A-1280D-427-192	276	121.5	114.5	216	252	36	41.75, 36.63, 32	102.8	112
A-912D-427-192	276	121.5	117.5	222	252	30	41.75, 36.63, 32	102.8	112
A-1280D-305-168	231	88	84	208	244	36	31.25, 26.19, 22	75.54	112.81
A-912D-305-168	231	88	84	214	244	30	31.25, 26.19, 22	75.54	112.81
A-640D-305-168	231	88	85	216	244	28	31.25, 26.19, 22	75.54	112.81
A-912D-427-144	200	88	84	184	214	30	31.25, 26.19, 22	87.3	90
A-640D-427-144	200	88	85	186	214	28	31.25, 26.19, 22	87.3	90
A-640D-305-144	208	77	74.5	186	214	28	26.19, 22, 18.94	64.16	95.16
A-456D-305-144	208	77	74.5	186	214	28	26.19, 22, 18.94	64.16	95.16
A-640D-365-120	175	77	74.5	159	187	28	26.19, 22, 18.94	76.2	88
A-456D-365-120	175	77	74.5	159	187	28	26.19, 22, 18.94	76.2	88
A-456D-256-120	184	69	66	159	187	28	22, 18.94, 16.31	55.25	77
A-320D-256-120	184	70	68	159	187	28	22.38, 19.38, 16.75	55.25	77
A-320D-305-100	155	70	68	132	160	28	22.38, 19.38, 16.75	65.6	76
A-228D-173-100	151	56	54	122	149	27	18.25, 15.75, 13.75	45.49	85.75
A-228D-246-86	131	56	54	122	149	27	18.25, 15.75, 13.75	52.5	73
A-160D-200-74	120	50	48	114	141	27	15.25, 13.25, 11.25	50.7	63
A-114D-173-64	115	48	46.5	114	132	18	13.31, 11.25	31.7	63

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LUFKIN AIR BALANCED PUMPING UNITS

1. **Perfect counterbalance with finger-tip control.**
2. **Lower installation cost.**
3. **Compact and portable; ideal for well testing.**
4. **Small size and lighter weight make it ideal for export.**
5. **Stroke lengths to 25 feet for high volume production from great depths.**

These are some of the outstanding advantages of LUFKIN AIR BALANCED PUMPING UNITS. These units employ compressed air to counterbalance the well load rather than beam weights or crank weights. The air system has been so simplified that the only continuously operating parts are the balance cylinder and piston. The reservoir capacity of the cylinder is enlarged by a steel receiver which moves with the cylinder as a unit.

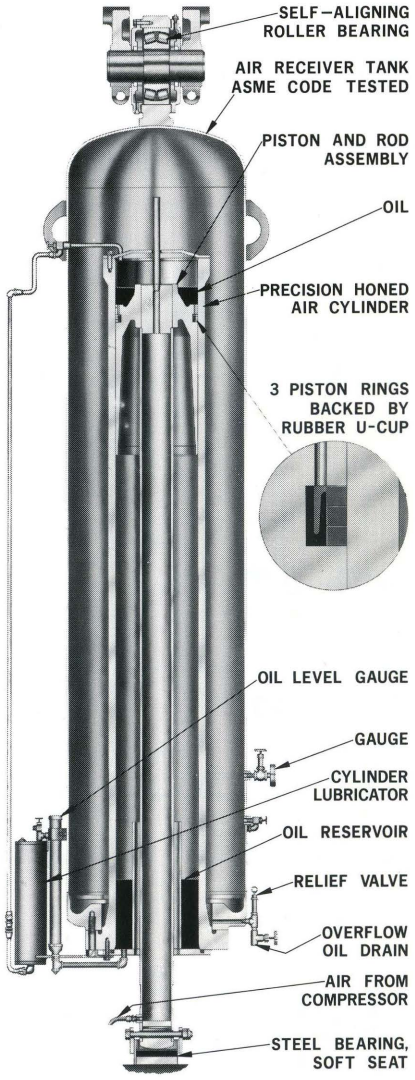
On engine-driven units, when the system is in need of air, an automatic regulator engages an air operated clutch (driven by one belt from the unit sheave) and replaces any lost air. The operator sets regulator, initially, at a pressure sufficient to counterbalance well load, and this pressure is maintained automatically. Should the load change appreciably, a slight adjustment of this regulator will restore perfect counterbalance.

A safety shut-off switch is available, which will ground out engine, or shut off motor, if pressure should exceed a preset figure or fall below a minimum pre-set figure.

For units pumping with electricity, a separate motor-driven compressor assembly is standard equipment.

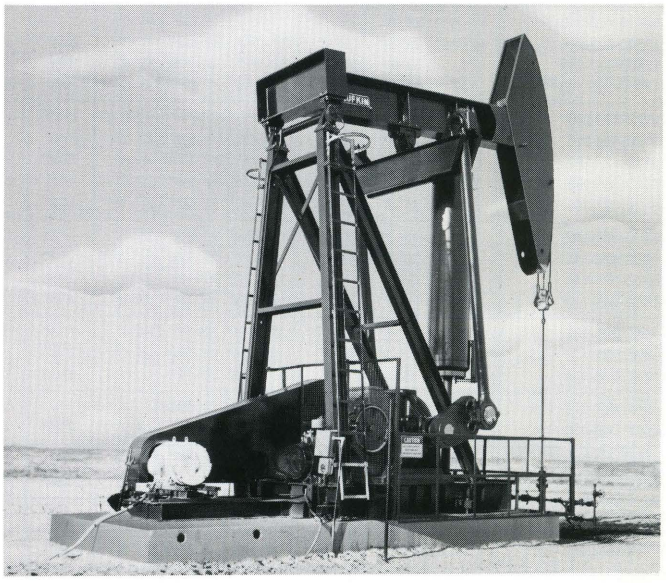
Since the Lufkin Air Balanced Units are approximately 35% shorter and 40% lighter than crank-type units, they are ideal for use as portable or test units, and for installation on piling or superstructures. Since changing counterbalance effect is a matter of adjusting a valve, the air balanced unit is ideal for use in testing wells.

All the ruggedness and simplicity of the conventional Lufkin Pumping Units are incorporated in the design of the Lufkin Air Balanced Pumping Unit.





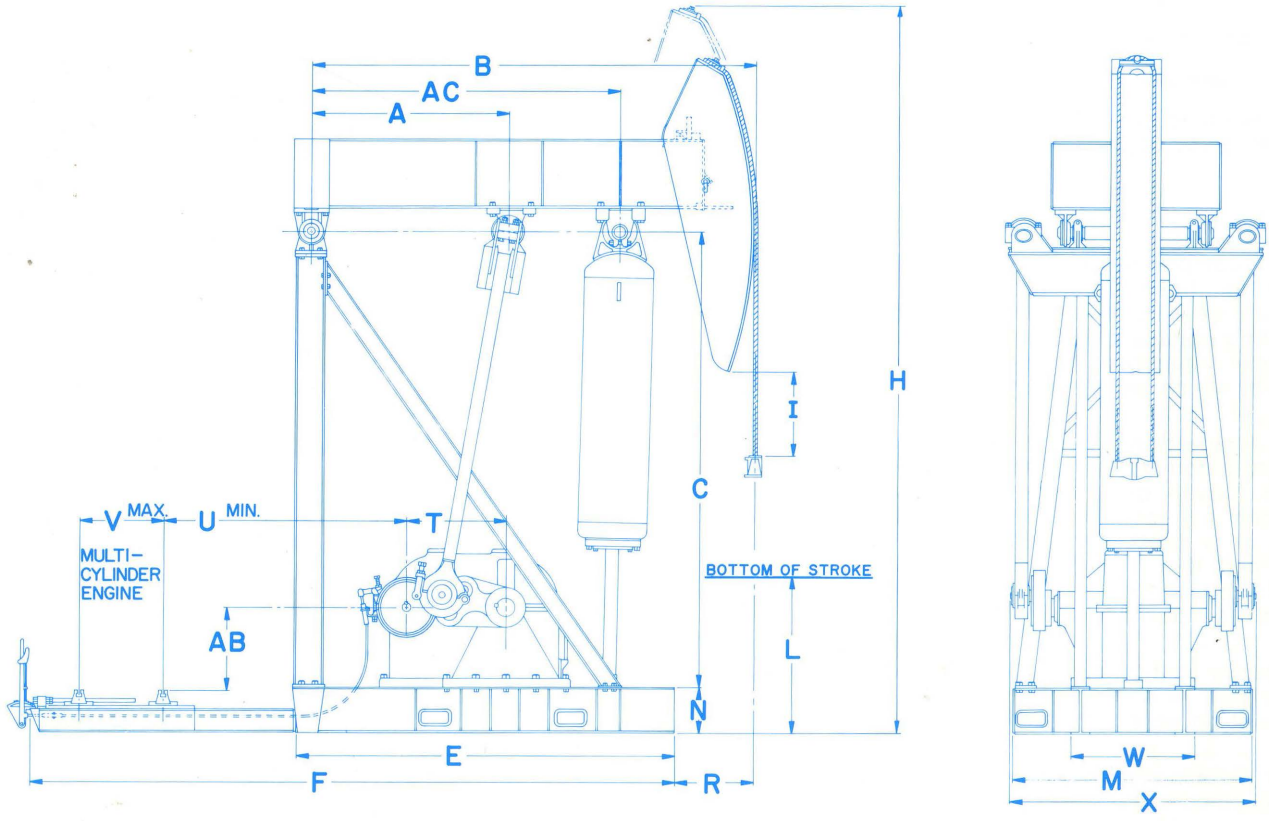
Mobile A-456D-365-120 Air Balanced Unit, Multi-Cylinder Engine Drive. This trailer-mounted unit with prime mover and diesel fuel tank built integral is ideal for test purposes.



A-456D-305-144 Air Balanced Unit, Electric Motor Drive.

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LUFKIN AIR BALANCED PUMPING UNITS
GENERAL DIMENSIONS



UNIT	A	B	C	E	F	H	I	L	M	N	R	T	U	V	W	X	AB	AC
A-2560D-470-240	11′-2½″	28′-0″	25′-3½″	*	31′-7¼″	46′-6½″	19⅜″	54″	8′-10″	21″	51 1/16″	70″	8′-4⅜″	46½″	66¼″	10′-10⅝″	39⅛″	19′-5½″
A-1824D-470-240	"	"	"	*	"	"	"	"	8′-0″	"	"	58⅞″	9′-3½″	"	50¼″	9′-7⅝″	33⅛″	"
A-1824D-427-216	10′-1½″	25′-8″	23′-6″	22′-07⅛″	29′-6⅞″	43′-0″	20⅝″	56⅛″	7′-11½″	"	48″	"	8′-0″	"	"	"	"	14′-3½″
A-1824D-427-192	"	23′-0″	21′-0″	19′-4⅞″	26′-10⅞″	38′-8″	19⅜″	50⅛″	"	"	"	"	"	"	"	"	"	"
A-1280D-470-240	11′-2½″	28′-0″	25′-3½″	*	31′-7¼″	46′-6½″	"	54″	8′-0″	"	51 1/16″	52½″	9′-9⅞″	"	"	9′-1⅝″	"	19′-5½″
A-1280D-427-216	10′-1½″	25′-8″	23′-6″	22′-07⅛″	29′-6⅞″	43′-0″	20⅝″	56⅛″	7′-11½″	"	48″	"	8′-6⅜″	"	"	"	"	14′-3½″
A-1280D-427-192	"	23′-0″	21′-0″	19′-4⅞″	26′-10⅞″	38′-8″	19⅜″	50⅛″	"	"	"	"	"	"	"	"	"	"
A-1280D-305-168	7′-4″	19′-3″	20′-4″	14′-10½″	22′-01½″	35′-6″	17⅝″	65¼″	"	16⅛″	59″	"	7 1/4″	40½″	"	8′-11⅛″	36⅜″	10′-11½″
A-912D-470-240	11′-2½″	28′-0″	25′-3½″	*	31′-7¼″	46′-6½″	19⅜″	54″	8′-0″	21″	51 1/16″	48½″	10′-1⅞″	46½″	50″	8′-6⅝″	33⅛″	19′-5½″
A-912D-427-216	10′-1½″	25′-8″	23′-6″	22′-07⅛″	29′-6⅞″	43′-0″	20⅝″	56″	7′-11½″	"	48″	"	9′-1⅜″	"	"	"	27⅛″	14′-3½″
A-912D-427-192	"	23′-0″	21′-0″	19′-4⅞″	26′ 10⅞″	38′-8″	19⅜″	50″	"	"	"	"	"	"	"	"	"	"
A-912D-305-168	7′-4″	19′-3″	20′-4″	14′-10½″	22′-01½″	35′-6″	17⅝″	65¼″	"	16⅛″	59″	"	6′-3¾″	40½″	"	8′-4⅛″	30⅜″	10′-11½″
A-912D-427-144	"	16′-8″	17′-10″	12′-3½″	19′-5½″	31′-3½″	19⅜″	56″	"	"	"	"	"	"	"	"	"	"
A-640D-305-168	"	19′-3″	20′-4″	14′-10½″	22′-01½″	35′-6″	17⅝″	65¼″	"	"	"	41½″	6′-11¾″	"	46¾″	"	28⅜″	"
A-640D-427-144	"	16′-8″	17′-10″	12′-3½″	19′-5½″	31′-2½″	19⅜″	56″	"	"	"	"	"	"	"	"	"	"
A-640D-305-144	6′-5″	17′-4″	"	12′-11¼″	20′-1¼″	31′-0″	21⅛″	54⅞″	7′-7″	"	57″	"	7 1/4″	"	"	"	"	9′-10″
A-640D-365-120	"	14′-7″	15′-7″	10′-11¾″	18′-1¾″	27′-0″	22½″	50″	"	"	47½″	"	"	"	"	"	"	"
A-456D-305-144	"	17′-4″	17′-10″	12′-11¼″	20′-1¼″	31′-0″	21⅛″	54⅞″	"	"	57″	38⅜″	6′-2⅛″	"	"	"	"	"
A-456D-365-120	"	14′-7″	15′-7″	10′-11¾″	18′-1¾″	27′-0″	22½″	50″	"	"	47½″	"	"	"	"	"	"	"
A-456D-256-120	69″	15′-4″	"	11′-11¾″	19′-1¾″	"	17¼″	56⅛″	7′-1½″	"	53″	"	"	"	"	"	"	8′-11″
A-320D-256-120	70″	"	"	11′-3¼″	18′-11¼″	"	"	56″	"	"	"	34″	7 1/4″	"	43¼″	7′-3⅜″	30⅛″	"
A-320D-305-100	"	12′-11″	13′-4″	10-0¼″	17′-8¼″	23′-4″	25½″	40⅜″	"	"	39″	"	"	"	"	"	"	"
A-228D-173-100	56″	12′-7″	12′-5″	8′-3¼″	14′-9″	22′-3″	15″	40½″	6′-1½″	"	56″	30″	47″	"	37¼″	6′-8⅜″	29⅛″	7′-3½″
A-228D-246-86	"	10′-11″	"	"	"	21′-3″	18⅛″	50¾″	"	"	36″	"	"	"	"	"	"	"
A-160D-200-74	50″	10′-0″	11′-9″	7′-11″	14′-6¾″	19′-3″	18⅞″	49½″	"	9¾″	35½″	26″	5 4¾″	48″	32″	6 9⅞″	15⅞″	6′-5½″
A-114D-173-64	48″	9′-7″	11′-0″	7′-5½″	14′-5¾″	17′-8″	20⅜″	50⅜″	6 3¾″	"	36″	24″	62″	46″	25¼″	6 6⅞″	11⅞″	6′-0½″

*Portable Base is Standard. One Piece and Portable Bases Available on All Units.

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

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RATING CHART

UNIT	Polish Rod Load Class, Lbs.	Stroke Length, Inches	Piston Dia., Inches	Walking Beam Size	Wireline Hanger Dia. & Centers	*Floating Hub Sheave Sizes, P.D. Inches	Bearings			
							Crank Pin	Equal-izer	Samson Post	Air Tank
A-2560D-470-240	47,000	240-200	14 1/2	36 x 16 1/2 @ 245#	1 3/8" x 16"	68" (16D)	OT	E32	P19	334
A-1824D-470-240	"	"	"	"	"	40, 46, 51, 55, 68 (11D)	"	E26	"	"
A-1824D-427-216	42,700	216-190-162	"	33 x 15 3/4 @ 201#	"	"	"	"	"	"
A-1824D-427-192	"	192-168-144	"	"	"	"	"	"	"	"
A-1280D-470-240	47,000	240-200	"	36 x 16 1/2 @ 245#	"	40, 46, 51, 55, 68 (10D)	"	"	"	"
A-1280D-427-216	42,700	216-190-162	"	33 x 15 3/4 @ 201#	"	"	"	"	"	"
A-1280D-427-192	"	192-168-144	"	"	"	"	"	"	"	"
A-1280D-305-168	30,500	168-141-118	13	27 x 14 @ 161#	"	"	"	"	"	232
A-912D-470-240	47,000	240-200	14 1/2	36 x 16 1/2 @ 245#	"	28, 34, 40, 46, 51 (8D)	"	"	"	334
A-912D-427-216	42,700	216-190-162	"	33 x 15 3/4 @ 201#	"	"	"	"	"	"
A-912D-427-192	"	192-168-144	"	"	"	"	"	"	"	"
A-912D-305-168	30,500	168-141-118	13	27 x 14 @ 146#	"	28, 34, 40, 46, 51 (7D)	"	"	"	232
A-912D-427-144	42,700	144-120-100	"	27 x 14 @ 161#	"	"	"	"	"	"
A-640D-305-168	30,500	168-141-118	"	27 x 14 @ 146#	"	28, 34, 40, 46, 51 (6D)	"	"	"	"
A-640D-427-144	42,700	144-120-100	"	27 x 14 @ 161#	"	"	"	"	"	"
A-640D-305-144	30,500	"	12	27 x 14 @ 146#	1 1/4" x 12"	"	"	"	P18	326
A-640D-365-120	36,500	120-100-86	"	"	"	"	"	"	"	"
A-456D-305-144	30,500	144-120-100	"	"	"	28, 34, 40, 46 51 (6D or 8C)	"	"	"	"
A-456D-365-120	36,500	120-100-86	"	"	"	"	"	"	"	"
A-456D-256-120	25,600	120-104-90	11	24 x 12 3/4 @ 104#	"	"	"	"	"	324
A-320D-256-120	"	"	"	"	"	25, 30, 36, 42, 47 1/4 (6C or 5D)	2T	E22	"	"
A-320D-305-100	30,500	100-86-74	"	"	"	"	"	"	"	"
A-228D-173-100	17,300	"	10	21 x 12 @ 101#	1 1/8" x 12"	24 1/4, 30, 36, 41 1/4 (5C or 4D)	"	"	P17	322
A-228D-246-86	24,600	86-74-64	"	"	"	"	"	"	"	"
A-160D-200-74	20,000	74-64-54	"	18 x 11 @ 76#	"	24 1/4, 29 1/4, 33 1/4, 38 (4C or 3D)	3TA	E19	P16	"
A-114D-173-64	17,300	64-54	8	16 x 8 1/2 @ 67#	1" x 9"	19 1/4, 24, 33 1/4 (3C)	"	E18	"	318

* Standard Sheave Sizes Shown are Floating Hub Sheaves for Clutch Driven Compressors; Largest Size Shown is Maximum Available. For Electric Motor Driven Compressors, Use Solid Type Reducer Sheave as Shown in Crank Balance Unit Specifications.

COUNTERBALANCE DATA

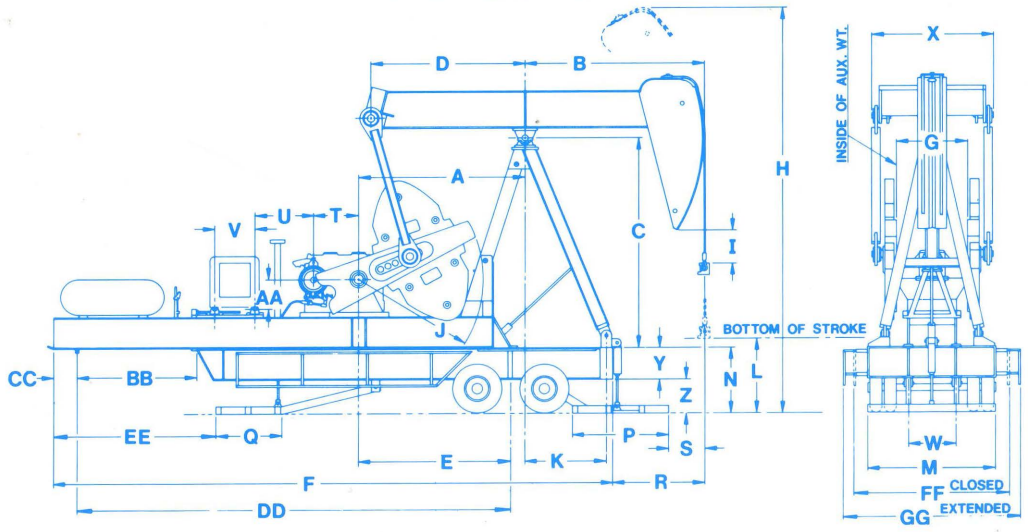
Effective Counterbalance In Pounds Based On Average Pressure

UNIT	*Average Pressure, PSIG											
	150	175	200	225	250	275	300	325	350	375	400	410
A-2560D-470-240 A-1824D-470-240 A-1280D-470-240 A-912D-470-240	.....	2,870	5,740	8,610	11,480	14,350	17,220	20,090	22,960	25,830	28,700	29,850
A-1824D-427-216 A-1280D-427-216 A-912D-427-216	920	3,220	5,520	7,820	10,120	12,420	14,720	17,020	19,320	21,620	23,920	24,830
A-1824D-427-192 A-1280D-427-192 A-912D-427-192	3,905	6,475	9,045	11,615	14,185	16,755	19,325	21,895	24,465	27,035	29,605	30,635
A-1280D-305-168 A-912D-305-168 A-640D-305-168	2,810	4,700	6,585	8,475	10,365	12,250	14,140	16,030	17,915	19,805	21,695	22,450
A-912D-427-144 A-640D-427-144	5,240	7,420	9,605	11,785	13,970	16,150	18,335	20,515	22,700	24,880	27,065	27,935
A-640D-305-144 A-456D-305-144	3,520	5,125	6,725	8,330	9,935	11,540	13,145	14,745	16,350	17,955	19,560	20,200
A-640D-365-120 A-456D-365-120	4,725	6,630	8,535	10,440	12,345	14,250	16,155	18,060	19,965	21,870	23,775	24,535
A-456D-256-120 A-320D-256-120	4,035	5,415	6,795	8,175	9,560	10,940	12,320	13,700	15,085	16,465	17,845	18,400
A-320D-305-100	4,855	6,495	8,135	9,775	11,415	13,055	14,695	16,335	17,975	19,615	21,255	21,910
A-228D-173-100	2,925	4,060	5,195	6,335	7,470	8,610	9,745	10,885	12,020	13,160	14,295	14,750
A-228D-246-86	4,045	5,355	6,670	7,980	9,295	10,605	11,920	13,230	14,545	15,855	17,170	17,695
A-160D-200-74	4,410	5,680	6,945	8,215	9,480	10,750	12,015	13,285	14,550	15,820	17,085	17,595
A-114D-173-64	2,760	3,550	4,345	5,135	5,930	6,720	7,515	8,305	9,100	9,890	10,685	11,000

* Pressure Shown is Average Pressure Between Maximum and Minimum and Occurs at Approximately Beam Horizontal Position. For Counterbalance at Other Pressures Use Direct Interpolation.

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LUFKIN CONVENTIONAL PORTABLE PUMPING UNITS
GENERAL DIMENSIONS



UNIT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q
CM-456D-305-120	10'-4"	13'-3 3/8"	13'-3 3/4"	9'-7"	9'-5"	34'-9 1/2"	52 1/2"	27'-2 7/16"	17 15/16"	92"	61"	66"	8'-0"	51 7/8"	59"	48"
CM-320D-305-100	*	11'-1 1/2"	13'-1 3/4"	*	*	*	44 3/4"	25'-8 11/16"	32 7/8"	*	*	71 5/16"	*	*	47"	*
CM-228D-246-86	9'-10"	9'-5 1/2"	12'-7 3/16"	9'-6 1/16"	10'-1"	29'-6"	38 5/8"	23'-7 3/4"	20 3/4"	78"	37"	67 1/16"	*	46 5/8"	48"	*
CM-160D-173-74	*	9'-7 1/8"	12'-7 1/16"	*	8'-11"	31'-0"	33 1/8"	23'-1 3/8"	43 1/8"	*	*	69 1/4"	*	47"	*	*

UNIT	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG
CM-456D-305-120	7'-9 13/16"	57 3/8"	38 3/8"	6'-11 1/8"	26"	36"	8'-1 3/8"	23 3/4"	28 1/8"	26"	7'-5 3/4"	18"	26'-11"	10'-7 1/2"	8'-1"	10'-11"
CM-320D-305-100	68"	43 7/16"	34"	7'-3 1/4"	*	*	7'-2 3/8"	*	*	*	*	*	*	*	*	*
CM-228D-246-86	6'-1"	48 1/2"	30"	6'-0 3/4"	*	26 1/8"	6'-6 1/2"	23 5/8"	23"	20 1/2"	7'-6"	24"	24'-4 1/2"	9'-9 1/4"	7'-11"	9'-3 1/2"
CM-160D-173-74	6'-1 5/8"	50 1/8"	26"	70"	*	*	70 1/2"	23 3/4"	23 1/4"	14 3/8"	*	*	24'-7 1/2"	10'-8 1/2"	*	9'-1"

STRUCTURAL DATA

UNIT DESIGNATION	CM-456D-35-120	CM-320D-305-100	CM-228D-246-86	CM-160D-173-74
POLISHED ROD CAPACITY, LBS.	30,500	30,500	24,600	17,300
STROKE LENGTH, INCHES	120, 101, 84, 66	100, 84, 70, 55	83, 73, 60, 48	74, 61, 48, 36
WALKING BEAM	27" X 161 LBS.	27" X 146 LBS.	27" X 117 LBS.	
WIRELINE HANGER	1 1/4" X 12" CTRS.	1 1/4" X 12" CTRS.	1 1/8" X 12" CTRS.	1" X 9' CTRS.
CRANKS	8492RX	8492RX	8478RX	7278RX
CRANK PIN BEARING	2SE	2SE	3SF	3SF
EQUALIZER BEARING	2SE	2SE	3SF	3SF
CENTER BEARING	1MTG	2MTG	2MTG	2MTG
ENGINE TYPE	CAT3304G	WAUESHA 330G	WAUESHA 220G	WAUESHA 220G
ENGINE H.P.@1800 RPM	83	63	41	41

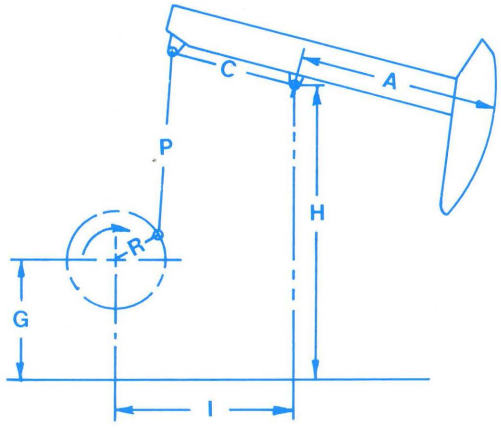
COUNTERBALANCE DATA

All Counterbalance Shown In Lbs., Effective At Polished Rod With Weights At Maximum Position, Including Structural Unbalance. Minimum Counterbalance Shown Is With Weights Moved All The Way In On The Crank.

UNIT DESIGNATION	CM-456D-35-120		CM-320D-305-100		CM-228D-246-86		CM-160D-173-74	
STROKE	120"		100"		86"		74"	
STRUCTURAL UNBALANCE	125 LBS.		400 LBS.		630 LBS.		700 LBS.	
CRANKS	8492RX		8492RX		8478RX		7278RX	
			8015					
	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.
4 No. 0R0 Counterweights	21,145	8,105	.....	.....	.....	.....	.....	.....
4 No. 0R00 Counterweights	19,075	6,875	.....	.....	.....	.....	.....	.....
4 No. OAS Aux. Weights	22,970	6,990	.....	.....	.....	.....	.....	.....
4 No. 1R0 Counterweights	16,265	6,605	19,695	8,150	.....	.....	.....	.....
4 No. 1S Aux. Weights	19,270	6,640	23,285	8,190	.....	.....	.....	.....
8 No. 1S Aux. Weights	22,275	6,675	.....	.....	.....	.....	.....	.....
4 No. 2R0 Counterweights	14,770	6,500	17,910	8,025	.....	.....	.....	.....
4 No. 2S Aux. Weights	17,735	6,505	21,455	8,030	.....	.....	.....	.....
8 No. 2S Aux. Weights	20,700	6,510	25,000	8,035	.....	.....	.....	.....
4 No. 3CR0 Counterweights	13,195	6,205	16,025	7,665	13,540	5,430	.....	.....
4 No. 3BS Aux. Weights	16,085	6,080	19,480	7,515	16,810	5,200	.....	.....
8 No. 3BS Aux. Weights	18,975	5,955	22,935	7,365	.....	.....	.....	.....
4 No. 5AR0 Counterweights	11,430	5,820	13,915	7,210	11,630	4,885	13,225	5,550
4 No. 5A Aux. Weights	13,410	5,550	16,280	6,885	13,905	4,455	15,815	5,060
8 No. 5A Aux. Weights	15,390	5,280	18,645	6,560	16,180	4,025	17,110	4,815
4 No. 5CR0 Counterweights	.....	.....	.....	.....	10,140	5,155	11,530	5,850
4 No. 5C Aux. Weights	.....	.....	.....	.....	12,205	4,755	13,880	5,395
8 No. 5C Aux. Weights	.....	.....	.....	.....	14,270	4,355	15,055	5,170
4 No. 6R0 Counterweights	.....	.....	.....	.....	9,220	5,285	10,480	6,000
4 No. 6 Aux. Weights	.....	.....	.....	.....	10,450	5,030	11,880	5,710
8 No. 6 Aux. Weights	.....	.....	.....	.....	11,680	4,775	13,280	5,420
4 No. 7R0 Counterweights	.....	.....	.....	.....	8,045	5,495	9,140	6,240
4 No. 7 Aux. Weights	.....	.....	.....	.....	8,970	5,290	10,195	6,005
8 No. 7 Aux. Weights	.....	.....	.....	.....	9,895	5,085	11,250	5,770

* USE ONLY ONE AUX. WEIGHT PER COUNTERWEIGHT ON BELT COVER SIDE

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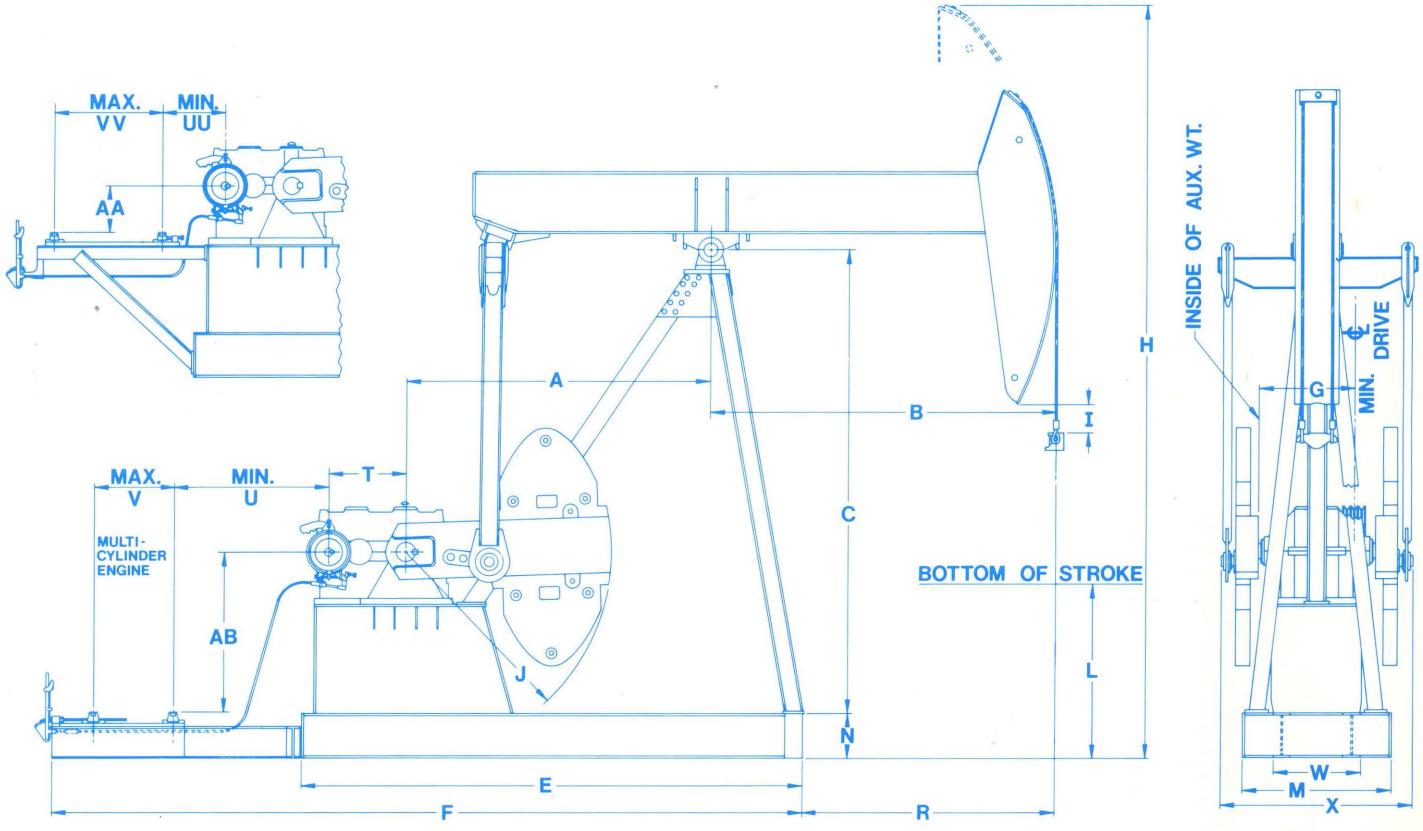
RM PUMPING UNIT API GEOMETRY DIMENSIONS

Unit Designation	A	C	P	I	H	G	R1	R2	R3	Phase Angle	T.F. @ (90° - Phase Angle)	S.U.
RM-1824D-427-192	228.5	118	171	163	274	111	45	38	31	-9	86.11	-1650
RM-1824D-365-192	228.5	118	171	163	274	111	45	38	31	-9	86.11	-1650
RM-1824D-427-168	200	118	171	163	274	111	45	38	31	-9	75.37	-1340
RM-1824D-365-168	200	118	171	163	274	111	45	38	31	-9	75.37	-1340
RM-1280D-427-192	228.5	118	171	163	274	111	45	38	31	-9	86.11	-1650
RM-1280D-365-192	228.5	118	171	163	274	111	45	38	31	-9	86.11	-1650
RM-1280D-427-168	200	118	171	163	274	111	45	38	31	-9	75.37	-1340
RM-1280D-365-168	200	118	171	163	274	111	45	38	31	-9	75.37	-1340
RM-912D-427-192	228.5	118	171	163	274	111	45	38	31	-12	85.35	-1365
RM-912D-365-192	228.5	118	171	163	274	111	45	38	31	-12	85.35	-1365
RM-912D-305-192	228.5	118	171	163	274	111	45	38	31	-9	86.11	-1695
RM-912D-427-168	200	118	171	163	274	111	45	38	31	-12	74.7	-695
RM-912D-365-168	200	118	171	163	274	111	45	38	31	-9	74.7	-1340
RM-912D-305-168	200	118	171	163	274	111	45	38	31	-9	75.37	-1630
RM-912D-427-144	171.5	118	171	163	274	111	45	38	31	-9	64.63	630
RM-912D-365-144	171.5	118	171	163	274	111	45	38	31	-9	64.63	-125
RM-912D-305-144	171.5	118	171	163	274	111	45	38	31	-9	64.63	-125
RM-640D-305-192	228.5	118	171	163	274	111	45	38	31	-12	85.35	-1600
RM-640D-365-168	200	118	171	163	274	111	45	38	31	-12	74.71	-695
RM-640D-305-168	200	118	171	163	274	111	45	38	31	-9	75.37	-1630
RM-640D-427-144	171.5	118	171	163	274	111	45	38	31	-12	64.06	630
RM-640D-365-144	171.5	118	171	163	274	111	45	38	31	-9	64.63	-125
RM-640D-305-144	171.5	118	171	163	274	111	45	38	31	-9	64.63	-125
RM-640D-256-144	171.5	118	171	163	274	111	45	38	31	-9	64.63	-140
RM-640D-305-120	144.5	103	149	142	237.88	96	39	33	27	-12.5	53.5	335
RM-640D-256-120	144.5	103	149	142	237.88	96	39	33	27	-12.5	53.5	65
RM-456D-305-168	202	103	149	142	237.88	96	39	33	27	-14	74.4	-1580
RM-456D-365-144	173	103	149	142	237.88	96	39	33	27	-14	63.72	-765
RM-456D-305-144	173	103	149	142	237.88	96	39	33	27	-12.5	64.05	-700
RM-456D-256-144	173	103	149	142	237.88	96	39	33	27	-12.5	64.05	-870
RM-456D-365-120	144.5	103	149	142	237.88	96	39	33	27	-12.5	53.5	680
RM-456D-305-120	144.5	103	149	142	237.88	96	39	33	27	-12.5	53.5	335
RM-456D-256-120	144.5	103	149	142	237.88	96	39	33	27	-12.5	53.5	65
RM-320D-256-144	173	103	149	142	237.88	96	39	33	27	-14	63.72	-1180
RM-320D-305-120	144.5	103	149	142	237.88	96	39	33	27	-14	53.22	335
RM-320D-256-120	144.5	103	149	142	237.88	96	39	33	27	-12.5	53.5	65
RM-320D-213-120	144.5	103	149	142	237.88	96	39	33	27	-12.5	53.51	25
RM-320D-305-100	120.5	103	149	142	237.88	96	39	33	27	-12.5	44.61	765
RM-320D-256-100	120.5	103	149	142	237.88	96	39	33	27	-12.5	44.61	765
RM-320D-246-86	103.5	92	134	127	206	79	35	30	25	-14	38.29	695
RM-228D-213-120	144.5	103	149	142	237.88	96	39	33	27	-14	53.22	40
RM-228D-256-100	120.5	103	149	142	237.88	96	39	33	27	-14	44.39	750
RM-228D-213-100	120	92	134	127	206	79	35	30	25	-14	44.39	90
RM-228D-173-100	120	92	134	127	206	79	35	30	25	-14	44.39	90
RM-228D-246-86	103.5	92	134	127	206	79	35	30	25	-14	38.29	695
RM-228D-213-86	103.5	92	134	127	206	79	35	30	25	-14	38.29	340
RM-228D-200-74	89	92	134	127	206	79	35	30	25	-14	32.93	680
RM-228D-173-74	89	92	134	127	206	79	35	30	25	-14	32.93	680

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RM SERIES PUMPING UNIT ASSEMBLIES

GENERAL DIMENSIONS



STANDARD API MODELS SHOWN, OTHER MODELS AVAILABLE ON REQUEST.

UNIT	A	B	C	E	F	G	H	I	J	L	M	N	R	T	U	V	W	X	AA	AB	UU	VV
RM-1824D-427-192	13′-7″	19′-01/2″	21′-1″	23′-11/2″	34′-21/2″	615/8″	37′-2″	19″	110″	523/8″	7′-2″	21″	14′-11″	587/8″	6′-11″	52″	50″	8′-10″	513/4″	7′-67/8″	121/2″	57″
RM-1824D-365-192	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-1824D-427-168	″	16′-8″	″	″	″	″	35′-5″	353/8″	″	601/8″	″	″	12′-61/2″	″	″	″	″	″	″	″	″	″
RM-1824D-365-168	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-1280D-427-192	″	19′-01/2″	″	″	″	″	37′-2″	19″	″	523/8″	″	″	14′-11″	521/2″	″	″	″	″	″	″	″	″
RM-1280D-365-192	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-1280D-427-168	″	16′-8″	″	″	″	″	35′-5″	353/8″	″	601/8″	″	″	12′-61/2″	″	″	″	″	″	″	″	″	″
RM-1280D-365-168	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-912D-427-192	″	19′-01/2″	21′-57/8″	22′-91/2″	33′-101/2″	58″	37′-113/4″	19″	″	523/8″	″	161/8″	14′-11″	481/2″	7′-3″	″	463/4″	8′-5″	″	″	161/2″	″
RM-912D-365-192	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-912D-305-192	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-912D-427-168	″	16′-8″	″	″	″	″	35′-11″	171/2″	″	781/8″	″	″	12′-61/2″	″	″	″	″	″	″	″	″	″
RM-912D-365-168	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-912D-305-168	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-912D-427-144	″	14′-31/2″	″	″	″	″	33′-8″	411/2″	″	781/8″	″	″	10′-2″	″	″	″	″	″	″	″	″	″
RM-912D-365-144	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-912D-305-144	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-640D-305-192	″	19′-01/2″	″	22′-6″	33′-7″	541/4″	37′-2″	19″	″	523/8″	″	″	14′-11″	411/2″	7′-61/2″	″	″	″	″	″	231/2″	″
RM-640D-365-168	″	16′-8″	″	″	″	″	36′-21/8″	″	″	763/8″	″	″	12′-61/2″	″	″	″	″	″	″	″	″	″
RM-640D-305-168	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-640D-427-144	″	14′-31/2″	″	22′-91/2″	33′-101/2″	″	33′-8″	411/2″	″	781/8″	″	″	10′-2″	″	″	″	″	″	″	″	″	″
RM-640D-365-144	″	″	″	22′-6″	33′-7″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-640D-305-144	″	″	″	″	″	″	34′-43/4″	141/8″	″	853/4″	″	″	″	″	″	″	″	″	″	″	″	
RM-640D-256-144	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-640D-305-120	11′-10″	12′-01/2″	18′-6″	20′-1″	29′-11″	″	28′-10″	383/8″	95″	693/8″	70″	157/8″	8′-7″	″	6′-4″	″	″	8′-21/2″	″	757/8″	263/4″	373/4″
RM-640D-256-120	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″

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

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GENERAL DIMENSIONS Continued

UNIT	A	B	C	E	F	G	H	I	J	L	M	N	R	T	U	V	W	X	AA	AB	UU	VV
RM-456D-305-168	11′-10″	16′-10″	18′-6″	20′-1″	29′-11″	513/8″	32′-4″	193/8″	95″	401/8″	6′-4″	157/8″	13′-41/2″	383/8″	6′-7″	52″	463/4″	8′-21/2″	513/4″	757/8″	261/8″	373/4″
RM-456D-365-144	″	14′-5″	″	″	″	″	30′-8″	231/2″	″	601/8″	″	″	10′-111/2″	″	″	″	″	″	″	″	″	″
RM-456D-305-144	″	″	″	″	″	″	34′-43/4″	141/8″	″	853/4″	″	″	″	″	″	″	″	″	″	″	″	″
RM-456D-256-144	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-456D-365-120	″	12′-01/2″	″	″	″	″	28′-10″	383/8″	″	693/8″	70″	″	8′-7″	″	″	″	″	″	″	″	″	″
RM-456D-305-120	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-456D-256-120	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM320D-256-144	″	14′-5″	″	19′-71/2″	29′-111/2″	443/4″	30′-8″	231/2″	″	601/8″	″	″	10′-111/2″	34″	6′-111/2″	53″	43″	7′-11/2″	54″	6′-7″	31″	331/4″
RM-320D-305-120	″	12′-01/2″	″	″	″	″	29′-6″	383/8″	″	693/8″	″	″	8′-7″	″	″	″	″	″	″	″	″	″
RM-320D-256-120	″	″	″	″	″	″	″	333/4″	″	73″	″	″	″	″	″	″	″	″	″	″	″	″
RM-320D-213-120	″	″	″	″	″	″	29′-63/4″	″	″	733/8″	″	″	″	″	″	″	″	″	″	″	″	″
RM-320D-305-100	″	10′-01/2″	″	″	″	″	27′-4″	331/2″	″	941/8″	″	″	6′-7″	″	″	″	″	″	″	″	″	″
RM-320D-256-100	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-320D-246-86	10′-7″	8′-71/2″	15′-101/8″	18′-01/2″	26′-111/2″	″	23′-7″	367/8″	78″	735/8″	593/4″	″	5′-2″	″	661/2″	″	″	″	371/8″	621/8″	30″	″
RM-228D-213-120	11′-10″	12′-01/2″	18′-6″	19′-01/2″	29′-11″	385/8″	28′-10″	383/8″	95″	693/8″	70″	″	8′-7″	30″	7′-3″	″	37″	6′-61/2″	54″	6′-7″	28″	″
RM-228D-256-100	″	10′-01/2″	″	″	″	″	28′-01/2″	331/2″	″	941/8″	″	″	6′-7″	″	″	″	″	″	″	″	″	″
RM-228D-213-100	10′-7″	10′-0″	15′-101/8″	17′-51/2″	26′-11″	391/8″	24′-7″	23″	78″	733/4″	593/4″	″	6′-61/2″	″	70″	″	″	″	371/8″	621/8″	277/8″	″
RM-228D-173-100	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-228D-246-86	″	8′-71/2″	″	″	″	″	24′-41/4″	367/8″	″	735/8″	″	″	5′-2″	″	″	″	″	″	″	″	″	″
RM-228D-213-86	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″
RM-228D-200-74	″	7′-5″	″	″	″	″	22′-9″	467/8″	″	775/8″	″	″	471/2″	″	″	″	″	″	″	″	″	″
RM-228D-173-74	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″	″

STRUCTURAL DATA

UNIT DESIGNATION	RM-1824D-427-192 RM-1280D-427-192 RM-912D-427-192	RM-1824D-365-192 RM-1280D-365-192 RM-912D-365-192	RM-912D-305-192 RM-640D-305-192	RM-1824D-427-168 RM-1280D-427-168 RM-912D-427-168	RM-1824D-365-168 RM-1280D-365-168 RM-912D-365-168 RM-640D-365-168	RM-912D-305-168 RM-640D-305-168	RM-456D-305-168
POLISHED ROD CAPACITY, LBS.	42,700	36,500	30,500	42,700	36,500	30,500	30,500
STROKE LENGTHS, INCHES	192″, 158″, 127″	192″, 158″, 127″	192″, 158″, 127″	168″, 139″, 111″	168″, 139″, 111″	168″, 139″, 111″	168″, 139″, 112″
WALKING BEAM	W36 x 260#	W36 x 245#	W33 x 221#	W36 x 245#	W33 x 221#	W33 x 201#	W33 x 201#
WIRELINE HANGER	13/8″ x 16″ Ctrs.	13/8″ x 16″ Ctrs.	13/8″ x 16″ Ctrs.	13/8″ x 16″ Ctrs.	13/8″ x 16″ Ctrs.	11/4″ x 16″ Ctrs.	11/4″ x 16″ Ctrs.
CRANKS	90110 RM	90110 RM	90110 RM	90110 RM	90110 RM	90110 RM	7895 RM
CRANK PIN BEARING	0S	0S	1SE	0S	1SE	1SE	1SE
EQUALIZER BEARING	00R	00R	00R	00R	00R	0R	0R
CENTER BEARING	00TG	0TG	0TG	0TG	0TG	0TG	0TG

UNIT DESIGNATION	RM-912D-427-144 RM-640D-427-144	RM-912D-365-144 RM-640D-365-144	RM-456D-365-144	RM-912D-305-144 RM-640D-305-144	RM-456D-305-144	RM-640D-256-144	RM-456D-256-144 RM-320D-256-144
POLISHED ROD CAPACITY, LBS.	42,700	36,500	36,500	30,500	30,500	25,600	25,600
STROKE LENGTHS, INCHES	144″, 119″, 95″	144″, 119″, 95″	144″, 119″, 96″	144″, 119″, 95″	144″, 119″, 96″	144″, 119″, 95″	144″, 119″, 96″
WALKING BEAM	W33 x 201#	W33 x 201#	W33 x 201#	W30 x 173#	W30 x 173#	W30 x 173#	W30 x 173#
WIRELINE HANGER	13/8″ x 16″ Ctrs.	13/8″ x 16″ Ctrs.	13/8″ x 16″ Ctrs.	11/4″ x 16″ Ctrs.	11/4″ x 16″ Ctrs.	11/4″ x 16″ Ctrs.	11/4″ x 16″ Ctrs.
CRANKS	90110 RM	90110 RM	7895 RM	90110 RM	7895 RM	90110 RM	7895 RM
CRANK PIN BEARING	1SE	1SE	1SE	1SE	1SE	1SE	2SE
EQUALIZER BEARING	00R	0R	0R	0R	0R	0R	0R
CENTER BEARING	0TG	0TG	0TG	0TG	0TG	0TG	1TGA

UNIT DESIGNATION	RM-456D-365-120	RM-640D-305-120 RM-456D-305-120 RM-320D-305-120	RM-640D-256-120 RM-456D-256-120 RM-320D-256-120	RM-320D-213-120 RM-228D-213-120	RM-320D-305-100	RM-320D-256-100 RM-228D-256-100	
POLISHED ROD CAPACITY, LBS.	36,500	30,500	25,600	21,300	30,500	25,600	
STROKE LENGTHS, INCHES	120″, 100″, 80″	120″, 100″, 80″	120″, 100″, 80″	120″, 100″, 80″	100″, 83″, 67″	100″, 83″, 67″	
WALKING BEAM	W30 x 173#	W27 x 146#	W27 x 146#	W27 x 146#	W27 x 146#	W27 x 146#	
WIRELINE HANGER	13/8″ x 12″ Ctrs.	11/4″ x 12″ Ctrs.	11/8″ x 12″ Ctrs.	11/8″ x 12″ Ctrs.	11/4″ x 12″ Ctrs.	11/8″ x 12″ Ctrs.	
CRANKS	7895 RM	7895 RM	7895 RM	7895 RM	7895 RM	7895 RM	
CRANK PIN BEARING	1SE	2SE	2SE	2SE	2SE	2SE	
EQUALIZER BEARING	0R	0R	1R	2RA	1R	2RA	
CENTER BEARING	0TG	1TGA	1TGA	2TGC	1TGA	2TGC	

UNIT DESIGNATION	RM-228D-213-100	RM-228D-173-100	RM-320D-246-86 RM-228D-246-86	RM-228D-213-86	RM-228D-200-74	RM-228D-173-74	
POLISHED ROD CAPACITY, LBS.	21,300	17,300	24,600	21,300	20,000	17,300	
STROKE LENGTHS, INCHES	100″, 84″, 69″	100″, 84″, 69″	86″, 72″, 59″	86″, 72″, 59″	74″,62″, 51″	74″, 62″, 51″	
WALKING BEAM	W24 x 117#	W24 x 104#	W24 x 117#	W24 x 104#	W24 x 94#	W24 x 84#	
WIRELINE HANGER	11/8″ x 12″ Ctrs.	11/8″ x 12″ Ctrs.	11/8″ x 12″ Ctrs.	11/8″ x 12″ Ctrs.	1″ x 9″ Ctrs.	1″ x 9″ Ctrs.	
CRANKS	7078 RM	7078 RM	7078 RM	7078 RM	7078 RM	7078 RM	
CRANK PIN BEARING	3SF	3SF	3SF	3SF	5SA	5SA	
EQUALIZER BEARING	2RA	2RA	2RA	2RA	3R	3R	
CENTER BEARING	2TGC	4TG	2TGC	2TGC	4TG	4TG	

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RM SERIES COUNTERBALANCE DATA

All Counterbalance Shown In Lbs., Effective At Polished Rod With Weights At Maximum Position, **Including Structural Unbalance.**

UNIT	RM-1824D-427-192 RM-1280D-427-192 RM-1824D-365-192 RM-1280D-365-192	RM-912D-427-192 RM-912D-365-192	RM-912D-305-192	RM-640D-305-192	RM-1824D-427-168 RM-1280D-427-168 RM-1824D-365-168 RM-1280D-365-168 RM-912D-365-168	RM-912D-427-168 RM-640D-365-168	RM-912D-305-168 RM-640D-305-168
STROKE	192″	192″	192″	192″	168″	168″	168″
STRUCTURAL UNBALANCE	-1650	-1365	-1695	-1600	-1340	-695	-1630
CRANKS	90110 RM	90110 RM	90110 RM	90110 RM	90110 RM	90110 RM	90110 RM
C'Bal., Cranks Only	4,725	5,070	4,680	4,835	6,010	6,655	5,655
4 No. OORO Counterweights	18,565	19,100	18,590	18,800	22,040	22,685	21,545
4 No. OOS Aux. Weights	22,740	23,335	22,785	23,015	26,880	27,525	26,340
8 No. OOS Aux. Weights	26,915	27,570	26,980	27,230	31,720	32,365	.....
4 No. ORO Counterweights	16,800	17,310	16,815	17,015	19,995	20,640	19,520
4 No. OS Aux. Weights	20,810	21,375	20,845	21,060	24,640	25,285	24,125
8 No. OS Aux. Weights	24,820	25,440	24,875	25,105	29,285	29,930	28,730
4 No. OARO Counterweights	14,950	15,400	14,920	15,150	17,815	18,460	17,355
4 No. OAS Aux. Weights	18,115	18,600	18,090	18,345	21,470	22,115	20,975
8 No. OAS Aux. Weights	21,280	21,800	21,260	21,540	25,125	25,770	24,595
4 No. 1RO Counterweights	12,680	13,105	12,645	12,860	15,190	15,835	14,755
4 No. 1S Aux. Weights	15,125	15,575	15,095	15,325	18,015	18,660	17,555
8 No. 1S Aux. Weights	17,570	18,045	17,545	17,790	20,840	21,485	20,355
4 No. 2RO Counterweights	11,350	11,750	11,300	11,515	13,645	14,290	13,220
4 No. 2S Aux. Weights	13,725	14,145	13,675	13,910	16,380	17,025	15,930
8 No. 2S Aux. Weights	16,100	16,540	16,050	16,305	19,115	19,760	18,640
4 No. 3CRO Counterweights	10,060	10,450	10,015	10,215	12,160	12,805	11,750
4 No. 3BS Aux. Weights	12,360	12,770	12,315	12,535	14,810	15,455	14,375
8 No. 3BS Aux. Weights	14,660	*15,090	*14,615	14,855	*17,460	18,105	*17,000
4 No. 5ARO Counterweights	8,585	8,965	8,545	8,730	10,465	11,110	10,070
4 No. 5A Aux. Weights	10,135	10,525	10,095	10,290	12,250	12,895	11,840
8 No. 5A Aux. Weights	11,685	*12,085	*11,645	11,850	*14,035	14,680	*13,610
4 No. 5CRO Counterweights	7,560	7,935	7,515	7,695	9,280	9,925	8,895
4 No. 5C Aux. Weights	8,960	9,350	8,915	9,110	10,895	11,540	10,495
8 No. 5C Aux. Weights	10,360	10,765	10,315	10,525	12,510	13,155	12,095

UNIT	RM-456D-256-144	RM-320D-256-144	RM-456D-365-120	RM-640D-305-120 RM-456D-305-120	RM-320D-305-120	RM-640D-256-120 RM-456D-256-120 RM-320D-256-120	RM-320D-213-120
STROKE	144″	144″	120″	120″	120″	120″	120″
STRUCTURAL UNBALANCE	-870	-1180	+680	+335	+335	+65	+25
CRANKS	7895 RM	7895 RM	7895 RM	7895 RM	7895 RM	7895 RM	7895 RM
C'Bal., Cranks Only	5,405	5,125	8,190	7,845	7,885	7,575	7,535
4 No. ORO Counterweights	18,405	18,220	23,755	23,410	23,530	23,170	.....
4 No. OS Aux. Weights	22,720	22,570	28,925	28,580	28,725	.....	.....
8 No. OS Aux. Weights	.....	.....	34,095	.....	.....	.....	.....
4 No. OARO Counterweights	16,560	16,340	21,545	21,200	21,310	20,930	20,890
4 No. OAS Aux. Weights	20,015	19,810	25,680	25,335	25,465	25,065	.....
8 No. OAS Aux. Weights	.....	23,280	29,815	.....	.....	.....	.....
4 No. 1RO Counterweights	14,110	13,875	18,610	18,265	18,360	17,995	17,955
4 No. 1S Aux. Weights	16,785	16,565	21,815	21,470	21,580	21,200	21,160
8 No. 1S Aux. Weights	19,460	*19,255	25,020	24,675	24,800	24,405	.....
4 No. 2RO Counterweights	12,655	12,415	16,870	16,525	16,610	16,255	16,215
4 No. 2S Aux. Weights	15,255	15,025	19,980	19,635	19,735	19,365	19,325
8 No. 2S Aux. Weights	17,855	*17,635	23,090	22,745	22,860	22,475	.....
4 No. 3CRO Counterweights	11,290	11,040	15,235	14,890	14,970	14,620	14,580
4 No. 3BS Aux. Weights	13,825	13,590	18,275	17,930	18,025	17,660	17,615
8 No. 3BS Aux. Weights	16,360	*16,140	21,315	20,970	*21,080	*20,700	*20,650
4 No. 5ARO Counterweights	9,710	9,460	13,345	13,000	13,070	12,735	12,695
4 No. 5A Aux. Weights	11,435	11,194	15,410	15,065	15,150	14,805	14,765
8 No. 5A Aux. Weights	13,160	*12,930	17,475	17,130	*17,230	*16,875	*16,835
4 No. 5CRO Counterweights	8,575	8,315	11,990	11,645	11,705	11,375	11,335
4 No. 5C Aux. Weights	10,140	9,890	13,865	13,520	13,590	13,250	13,210
8 No. 5C Aux. Weights	11,705	*11,465	15,740	15,395	15,475	15,125	15,085
4 No. 6RO Counterweights	7,870	7,590	11,140	10,795	10,850	10,515	10,475
4 No. 6 Aux. Weights	8,800	8,520	12,250	11,905	11,970	11,625	11,580
8 No. 6 Aux. Weights	9,730	9,450	13,360	13,015	13,090	12,735	12,685
4 No. 7RO Counterweights	6,975	6,700	10,070	9,725	9,775	9,450	9,410
4 No. 7 Aux. Weights	7,675	7,400	10,905	10,560	10,615	10,285	10,245
8 No. 7 Aux. Weights	8,375	8,100	11,740	11,395	11,455	11,120	11,080

* Use only one aux. weight per counterweight on belt cover side on 912D and 320D units.

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RM SERIES COUNTERBALANCE DATA

All Counterbalance Shown In Lbs., Effective At Polished Rod With Weights At Maximum Position, **Including Structural Unbalance.**

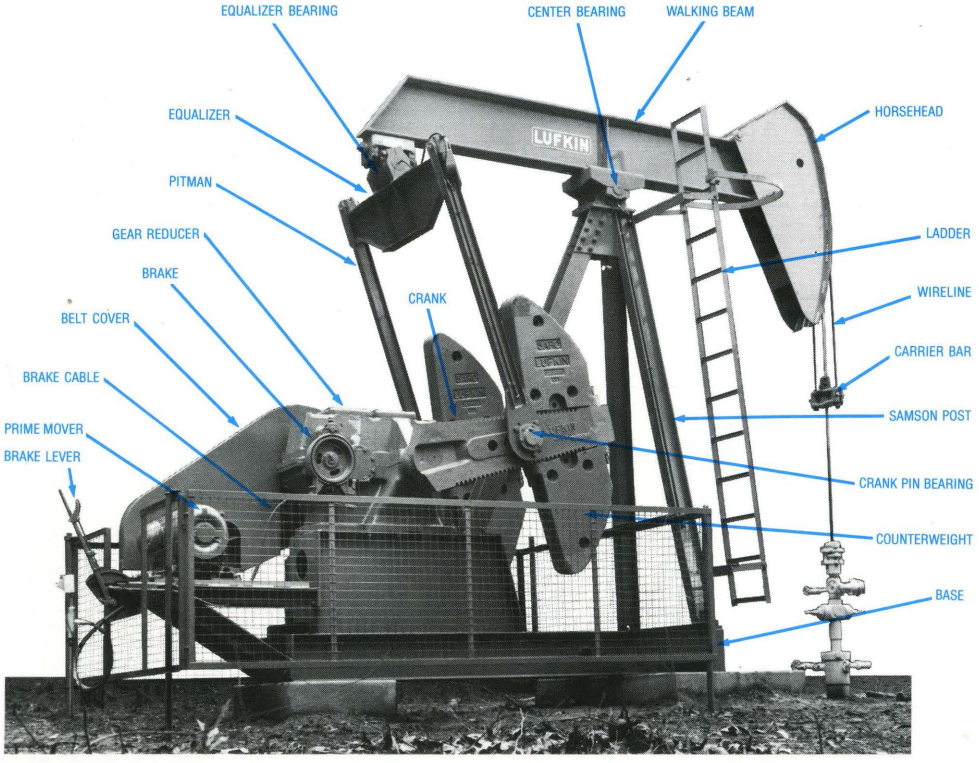
UNIT	RM-456D-305-168	RM-912D-427-144	RM-640D-427-144	RM-912D-365-144 RM-640D-365-144 RM-912D-305-144 RM-640D-305-144	RM-456D-365-144	RM-456D-305-144	RM-640D-256-144
STROKE	168″	144″	144″	144″	144″	144″	144″
STRUCTURAL UNBALANCE	-1580	+630	+630	-125	-765	-700	-140
CRANKS	7895 RM	90110 RM	90110 RM	90110 RM	7895 RM	7895 RM	90110 RM
C'Bal., Cranks Only	3,820	9,125	9,200	8,370	5,540	5,575	8,335
4 No. OORO Counterweights	.....	27,565	27,805	26,900	.....	.....	.....
4 No. OOS Aux. Weights	.....	33,130	33,420	32,490	.....	.....	.....
8 No. OOS Aux. Weights	.....	38,695	39,035	.....	.....	.....	.....
4 No. ORO Counterweights	15,010	25,215	25,430	24,535	18,610	18,575	24,445
4 No. OS Aux. Weights	18,725	30,555	30,820	29,905	22,950	22,890	.....
8 No. OS Aux. Weights	22,440	35,895	36,210	.....	27,290	27,205	.....
4 No. OARO Counterweights	13,425	22,745	22,945	22,015	16,755	16,730	21,975
4 No. OAS Aux. Weights	16,400	26,965	27,200	26,240	20,225	20,185	.....
8 No. OAS Aux. Weights	19,375	31,185	31,455	30,465	23,695	23,640	.....
4 No. 1RO Counterweights	11,310	19,270	19,890	18,985	14,290	14,280	18,950
4 No. 1S Aux. Weights	13,615	22,980	23,175	22,250	16,980	16,955	22,210
8 No. 1S Aux. Weights	15,920	26,240	26,460	25,515	19,670	19,630	25,470
4 No. 2RO Counterweights	10,060	17,950	18,100	17,195	12,830	12,825	17,810
4 No. 2S Aux. Weights	12,295	21,110	21,290	20,355	15,440	15,425	20,340
8 No. 2S Aux. Weights	14,530	24,270	24,480	23,515	18,050	18,025	23,500
4 No. 3CRO Counterweights	8,890	16,230	16,370	15,475	11,455	11,460	15,460
4 No. 3BS Aux. Weights	11,075	19,295	19,460	18,540	14,005	13,995	18,525
8 No. 3BS Aux. Weights	13,260	*22,360	22,550	*21,605	16,555	16,530	21,590
4 No. 5ARO Counterweights	7,530	14,270	14,390	13,515	9,870	9,880	13,500
4 No. 5A Aux. Weights	9,015	16,330	16,470	15,580	11,605	11,605	15,560
8 No. 5A Aux. Weights	10,500	*18,390	18,550	*17,645	13,340	13,330	17,620
4 No. 5CRO Counterweights	6,550	12,905	13,010	12,150	8,730	8,745	12,135
4 No. 5C Aux. Weights	7,900	14,770	14,895	14,020	10,305	10,310	14,000
8 No. 5C Aux. Weights	9,250	16,635	16,780	15,890	11,880	11,875	15,865
4 No. 6RO Counterweights	5,940	.....	.....	11,295	8,015	8,040	.....
4 No. 6 Aux. Weights	6,740	.....	.....	12,395	8,950	8,970	.....
8 No. 6 Aux. Weights	7,540	.....	.....	13,495	9,885	9,900	.....
4 No. 7RO Counterweights	5,175	.....	.....	10,230	7,120	7,145	.....
4 No. 7 Aux. Weights	5,775	.....	.....	11,055	7,820	7,845	.....
8 No. 7 Aux. Weights	6,375	.....	.....	11,880	8,520	8,545	.....

UNIT	RM-228D-213-120	RM-320D-305-100 RM-320D-256-100	RM-228D-256-100	RM-228D-213-100 RM-228D-173-100	RM-320D-246-86 RM-228D-246-86	RM-228D-213-86	RM-228D-200-74 RM-228D-173-74
STROKE	120″	100″	100″	100″	86″	86″	74″
STRUCTURAL UNBALANCE	+40	+765	+750	+90	+695	+340	+680
CRANKS	7895 RM	7895 RM	7895 RM	7078 RM	7078 RM	7078 RM	7078 RM
C'Bal., Cranks Only	7,590	9,770	9,800	4,670	6,005	5,650	6,855
4 No. ORO Counterweights	.....	28,470	.....	.....	.....	.....	.....
4 No. OARO Counterweights	.....	25,785	.....	.....	.....	.....	.....
4 No. 1RO Counterweights	18,065	22,265	22,360	.....	.....	.....	.....
4 No. 1S Aux. Weights	.....	26,105	.....	.....	.....	.....	.....
4 No. 2RO Counterweights	16,315	20,180	20,260	12,595	15,190	14,835	17,535
4 No. 2S Aux. Weights	19,440	23,910	24,010	15,435	18,480	18,125	.....
8 No. 2S Aux. Weights	.....	27,640	.....	18,275	21,770	.....	.....
4 No. 3CRO Counterweights	14,675	18,220	18,295	11,195	13,565	13,210	15,645
4 No. 3BS Aux. Weights	17,730	21,865	21,955	14,005	16,825	16,470	.....
8 No. 3BS Aux. Weights	**20,785	*25,510	.....	16,815	*20,085	19,730	.....
4 No. 5ARO Counterweights	12,775	15,960	16,020	9,530	11,645	11,285	13,405
4 No. 5A Aux. Weights	14,855	18,440	18,515	11,475	13,905	13,540	16,030
8 No. 5A Aux. Weights	16,935	*20,920	21,010	13,420	*16,165	15,795	.....
4 No. 5CRO Counterweights	11,410	14,325	14,380	8,265	10,175	9,815	11,700
4 No. 5C Aux. Weights	13,295	16,575	16,645	10,040	12,235	11,875	14,090
8 No. 5C Aux. Weights	15,180	18,825	18,910	11,815	*14,295	13,935	16,480
4 No. 6RO Counterweights	10,555	13,295	13,340	7,475	9,255	8,905	10,640
4 No. 6 Aux. Weights	11,675	14,625	14,675	8,535	10,480	10,130	12,065
8 No. 6 Aux. Weights	12,795	15,955	16,010	9,595	11,705	11,355	13,490
4 No. 7RO Counterweights	9,480	12,020	12,060	6,470	8,090	7,740	9,280
4 No. 7 Aux. Weights	10,320	13,020	13,065	7,270	9,020	8,665	10,360
8 No. 7 Aux. Weights	11,160	14,020	14,070	8,070	9,950	9,590	11,440

* Use only one aux. weight per counterweight on belt cover side on 912D and 320D units.
** Use only one aux. weight per counterweight on belt cover side on 228D units.

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LUFKIN PUMPING UNITS NOMENCLATURE

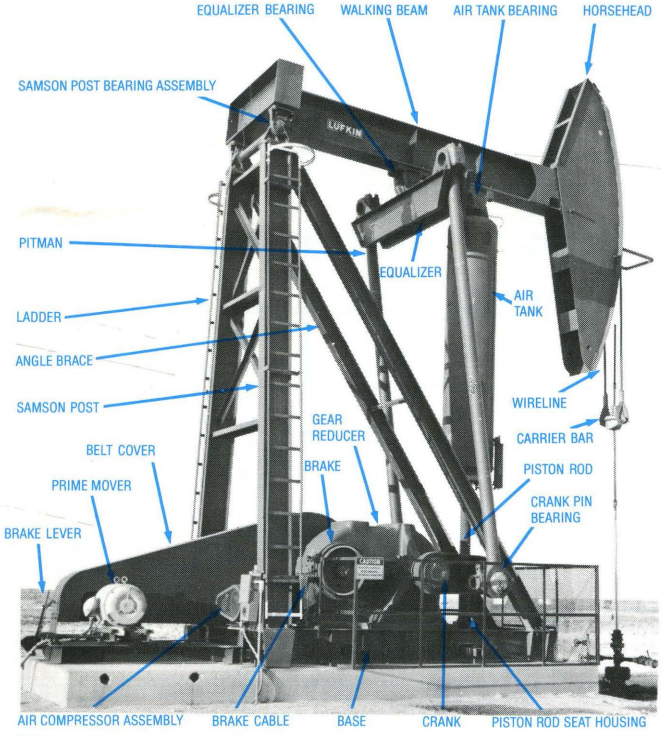


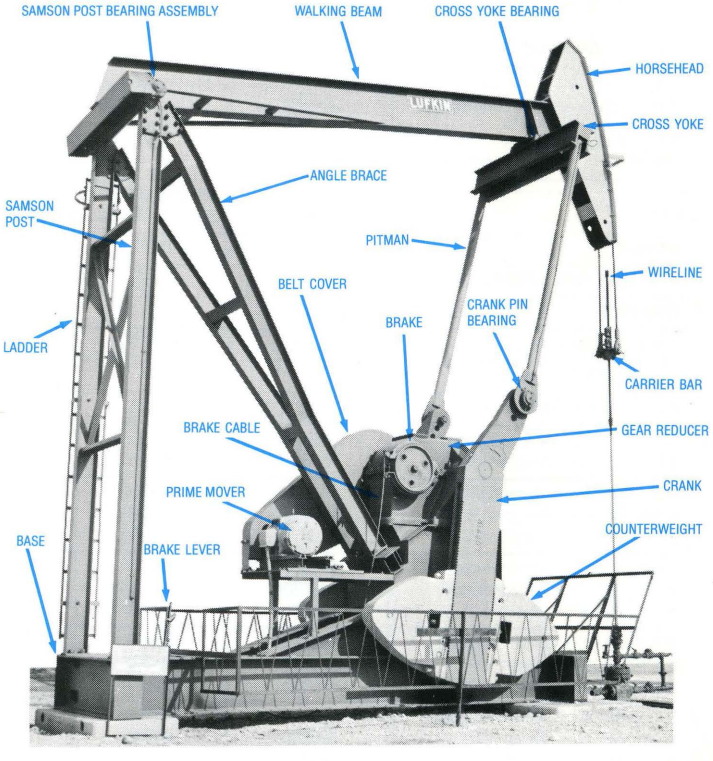
Conventional Pumping Unit Nomenclature

Reprints Available
Request Forms
F-1079 A for Conventional Pumping Unit,
F-1080 for Mark II Pumping Unit, and
F-1081 for Air Balanced Pumping Unit

Also Available in Spanish

Air Balanced Pumping Unit

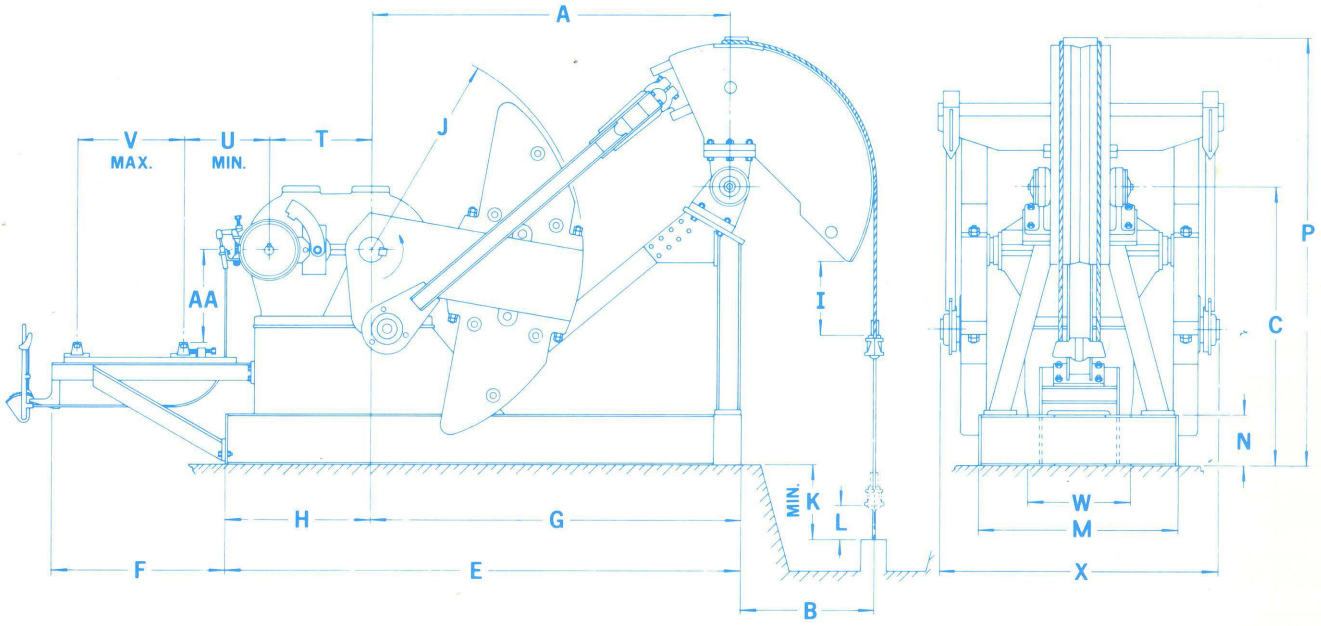




Mark II Pumping Unit

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LUFKIN LOW-PROFILE PUMPING UNITS
GENERAL DIMENSIONS



GENERAL DIMENSIONS

UNIT	A	B	C	E	F	G	H	I	J	K	L	M	N	P	T	U	V	W	X	AA
LP-320D-246-86	9′-1″	55 1/2″	7′-4″	13′-1½″	52¾″	8′-9½″	52″	93/4″	64″	24″	7½″	51¾″	16⅜″	9″	34″	31⅜″	31¼″	43″	7′-2″	40⅞″
LP-228D-173-64	7′-10″	41½″	6′-0″	11′-10½″	"	8′-1½″	45″	12″	56″	19″	6⅜″	"	"	9′-11″	30″	29½″	30″	37″	6′-6½″	24⅛″
LP-160D-173-64	"	"	"	11′-6″	40⅜″	"	40½″	"	"	"	"	"	"	"	26″	17⅛″	30¼″	32″	70⅛″	28 9/16″
LP-114D-133-54	7′-0″	31⅛″	66″	10′-2¼″	"	7′-3¼″	35″	17″	50″	"	6 1/16″	48¼″	12¼″	8′-6″	24″	13⅝″	29¼″	25″	66¾″	22 9/16″

STRUCTURAL DATA

UNIT	LP-320D-246-86	LP-228D-173-64 LP-160D-173-64	LP-114D-133-54
POLISHED ROD CAPACITY, LBS.	24,600	17,300	13,300
STROKE LENGTH, INCHES	86″, 74″, 64″	64″, 54″, 44″	54″, 42″, 36″
CRANK PIN BEARING	2SC	3SD	4SD
SAMSON POST BEARING	2LPTGA	2LPTGA	P19
EQUALIZER BEARING	1R	2RA	3R
WIRELINE HANGER	1⅛″ x 12″ CTRS.	1″ x 9″ CTRS.	⅞″ x 9″ CTRS.
CRANKS	LP8664	LP6456	LP5450

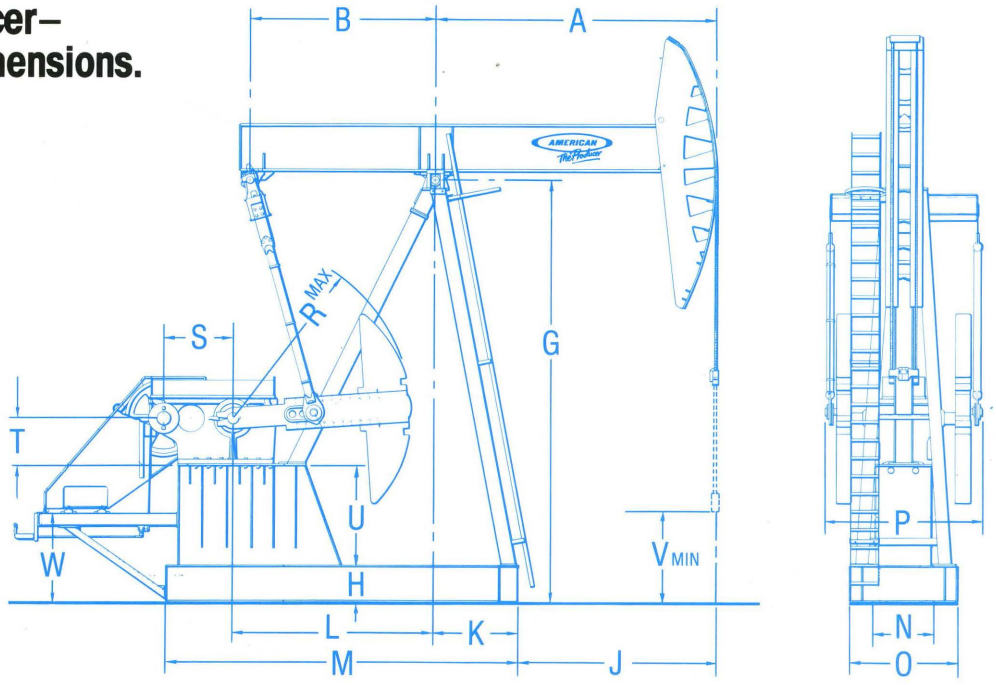
COUNTERBALANCE DATA

UNIT	LP-320D-246-86			LP-228D-173-64 LP-160D-173-64			LP-114D-133-54		
STROKE	86″	74″	64″	64″	54″	44″	54″	42″	36″
STRUCTURAL UNBALANCE	240 Lbs.	240 Lbs.	240 Lbs.	100 Lbs.	100 Lbs.	100 Lbs.	305 Lbs.	305 Lbs.	305 Lbs.
C`BAL., CRANKS ONLY	4.835	5.415	6.040	3.700	4.100	4.985	2.940	3.585	4.080
4 No. 2RO Counterweights	12.130	13.635	15.245	.....	.....	.....	.....	.....	.....
4 No. 2S Aux. weights	14.745	16.580	18.545	.....	.....	.....	.....	.....	.....
8 No. 2S Aux. weights	17.360	19.525	21.845	.....	.....	.....	.....	.....	.....
4 No. 3CRO Counterweights	10.940	12.290	13.740	.....	.....	.....	.....	.....	.....
4 No. 3BS Aux. weights	13.570	15.255	17.060	.....	.....	.....	.....	.....	.....
8 No. 3BS Aux. weights	16.200	18.220	20.380	.....	.....	.....	.....	.....	.....
4 No. 5ARO Counterweights	9.455	10.615	11.865	8.850	9.820	11.970	7.945	9.820	11.260
4 No. 5A Aux. weights	11.305	12.700	14.200	10.915	12.115	14.770	9.950	12.320	.....
8 No. 5A Aux. weights	13.155	14.785	16.535	12.980	14.410	.....	11.955	.....	.....
4 No. 5CRO Counterweights	8.270	9.285	10.375	7.550	8.375	10.205	6.700	8.270	9.475
4 No. 5C Aux. weights	9.965	11.195	12.515	9.450	10.485	12.785	8.560	10.585	12.140
8 No. 5C Aux. weights	11.660	13.105	14.655	11.350	12.595	15.365	10.420	12.900	.....
4 No. 6RO Counterweights	.....	.....	.....	6.755	7.495	9.130	5.945	7.325	8.390
4 No. 6 Aux. weights	.....	.....	.....	7.905	8.775	10.690	7.080	8.735	10.015
8 No. 6 Aux. weights	.....	.....	.....	9.055	10.055	12.250	8.215	10.145	11.640
4 No. 7RO Counterweights	.....	.....	.....	5.685	6.305	7.680	4.905	6.030	6.895
4 No. 7 Aux. weights	.....	.....	.....	6.570	7.285	8.875	5.775	7.115	8.145
8 No. 7 Aux. weights	.....	.....	.....	7.455	8.265	10.070	6.645	8.200	9.395

NOTE: Do no use above dimensions for foundation. Request foundation plan.

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The Producer– outline dimensions.



SIZE	A	B	G	H	J	K	L	M	N	O	P	R	S	T	U	V	W
1280-365-216	19' - 9 3/8"	10' - 1 1/2"	25' - 11"	24 1/4"	15' - 1 1/2"	4' - 7 7/8"	11' - 0"	19' - 4"	4' - 6"	7' - 1"	9' - 5 3/4"	117"	52.356"	33"	5' - 3 3/4"	5' - 0 3/4"	4' - 10 1/8"
1280-427-192	17' - 7"	"	"	"	12' -11 1/8"	"	"	"	"	"	"	"	"	"	"	7' - 1 1/4"	"
1280-365-192	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
1280-427-168	15' - 4 3/4"	"	"	"	10' - 8 7/8"	"	"	"	"	"	"	"	"	"	"	7' - 2"	"
1280-365-168	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
912-365-168	"	10' - 2"	23' - 2"	24 1/8"	"	"	"	"	3' - 3 1/2"	5' - 10 1/2"	8' - 6 1/2"	"	45.750"	30"	5' - 6 7/8"	4' - 11"	"
912-305-168	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
912-427-144	13' - 2 3/8"	"	"	"	8' - 6 1/2"	"	"	"	"	"	"	"	"	"	"	7' - 4 3/4"	"
912-365-144	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
640-365-168	15' - 4 3/4"	"	"	"	10' - 8 7/8"	"	"	"	"	"	8' - 2 1/4"	"	"	"	"	4'-11"	"
640-305-168	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
640-365-144	13' - 2 3/8"	"	"	"	8' - 6 1/2"	"	"	"	"	"	"	"	"	"	"	7' - 4 3/4"	"
640-305-144	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
640-256-144	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
640-305-120	11' - 0"	"	"	"	6' - 4 1/8"	"	"	"	"	"	"	"	"	"	"	7' - 4 1/4"	"
456-305-168	15' - 4 3/4"	"	"	"	10' - 8 7/8"	"	"	"	"	"	7' - 6 3/4"	"	39.933"	28"	"	4' - 11"	"
456-305-144	13' - 2 3/8"	"	"	"	8' - 6 1/2"	"	"	"	"	"	"	"	"	"	"	7' - 4 3/4"	"
456-256-144	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
456-213-144	"	8' - 3 3/8"	21' - 0 1/4"	21 1/4"	9' - 7"	3' - 7 3/8"	9' - 2"	16' - 0"	3' - 1 3/4"	5' - 8"	7' - 5 1/2"	99"	"	"	4' - 8"	5' - 6"	4' - 10"
456-365-120	11' - 0"	10' - 2"	23' - 2"	24 1/8"	6' - 4 1/8"	4' - 7 7/8"	11' - 0"	19' - 4"	3' - 3 1/2"	5' - 10 1/2"	7' - 6 3/4"	117"	"	"	5' - 6 7/8"	7' - 4 1/4"	4' - 10 1/8"
456-305-120	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
456-256-120	"	8' - 3 3/8"	21' - 0 1/4"	21 1/4"	7' - 4 5/8"	3' - 7 3/8"	9' - 2"	16' - 0"	3' - 1 3/4"	5' - 8"	7' - 5 1/2"	99"	"	"	4' - 8"	5' - 3"	4' - 0"
456-213-120	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
456-305-100	9' - 2"	"	"	"	5' - 6 5/8"	"	"	"	"	"	"	"	"	"	"	5' - 2 1/2"	"
456-256-100	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
320-213-144	13' - 2 3/8"	"	"	"	9' - 7"	"	"	"	"	"	7' - 1 1/4"	"	35.167"	24"	"	5' - 6"	"
320-119-144	"	6' - 11"	17' - 7"	16 1/8"	9' - 9 7/8"	3' - 4 1/2"	7' - 6 1/8"	14' - 0"	2' - 9"	5' - 0"	6' - 8 5/8"	76"	"	"	3' - 6"	4' - 3 7/8"	3' - 6 1/4"
320-256-120	11' - 0"	8' - 3 3/8"	21' - 0 1/4"	21 1/4"	7' - 4 5/8"	3' - 7 3/8"	9' - 2"	16' - 0"	3' - 1 3/4"	5' - 8"	7' - 1 1/4"	99"	"	"	4' - 8"	5' - 3"	4' - 0"
320-213-120	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
320-143-120	"	6' - 11"	17' - 7"	16 1/8"	7' - 7 1/2"	3' - 4 1/2"	7' - 6 1/8"	14' - 0"	2' - 9"	5' - 0"	6' - 8 5/8"	76"	"	"	3' - 6"	4' - 6 1/8"	3' - 6 1/4"

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The Producer– outline dimensions (con't.)

SIZE	A	B	G	H	J	K	L	M	N	O	P	R	S	T	U	V	W
320-305-100	9'-2"	8'-3 3/8"	21'-0 1/4"	21 1/4"	5'-6 5/8"	3'-7 3/8"	9'-2"	16'-0"	3'-1 3/4"	5'-8"	7'-1 1/4"	99"	35.167"	24"	4'-8"	5'-2 1/2"	4'-0"
320-256-100	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
320-173-100	"	6'-11"	17'-7"	16 1/8"	5'-9 1/2"	3'-4 1/2"	7'-6 1/8"	14'-0"	2'-9"	5'-0"	6'-8 5/8"	76"	"	"	3'-6"	4'-5 7/8"	3'-6 1/4"
320-246-86	7'-10 1/2"	"	"	"	4'-6"	"	"	"	"	"	"	"	"	"	"	4'-3 15/16"	"
320-213-86	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
320-246-74	6'-9 3/8"	"	"	"	3'-4 7/8"	"	"	"	"	"	"	"	"	"	"	4'-2 3/8"	"
228-173-144	13' - 2 3/8"	8' - 3 3/8"	21' - 0 1/4"	21 1/4"	9' - 7"	3' - 7 3/8"	9' - 2"	16' - 0"	3' - 1 3/4"	5' - 8"	6' - 6"	99"	33.312"	24"	4' - 8"	5' - 6"	4' - 0"
228-213-120	11'-0"	"	"	"	7'-4 5/8"	"	"	"	"	"	"	"	"	"	"	5'-3"	"
228-143-120	"	6'-11"	17'-7"	16 1/8"	7'-7 1/2"	3'-4 1/2"	7'-6 1/8"	14'-0"	2'-9"	5'-0"	6'-1 3/8"	76"	"	"	3'-6"	4'-6 1/8"	3'-6 1/4
228-213-100	9'-2"	8'-3 3/8"	21'-0 1/4"	21 1/4"	5'-6 5/8"	3'-7 3/8"	9'-2"	16'-0"	3'-1 3/4"	5'-8"	6'-6"	99	"	"	4'-8"	5'-2 1/2"	4'-0"
228-173-100	"	6'-11"	17'-7"	16 1/8"	5'-9 1/2"	3'-4 1/2"	7'-6 1/8"	14'-0"	2'-9"	5'-0"	6'-1 3/8"	76"	"	"	3'-6"	4'-5 7/8"	3'-6 1/4"
228-246-86	7'-10 1/2"	"	"	"	4'-6"	"	"	"	"	"	"	"	"	"	"	4'-3 15/16"	"
228-213-86	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
228-246-74	6'-9 3/8"	"	"	"	3'-4 7/8"	"	"	"	"	"	"	"	"	"	"	4'-2 3/8"	"
228-200-74	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
228-173-74	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
160-143-120	11'-0"	"	"	"	7'-7 1/2"	"	"	"	"	"	5'-4 3/8	"	30.200"	20"	"	4'-6 1/8"	"
160-173-100	9'-2"	"	"	"	5'-9 1/2"	"	"	"	"	"	"	"	"	"	"	4'-5 7/8"	"
160-143-100	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
160-173-86	7'-10 1/2"	"	"	"	4'-6"	"	"	"	"	"	"	"	"	"	"	4'-3 15/16"	"
160-200-74	6'-9 3/8"	"	"	"	3'-4 7/8"	"	"	"	"	"	"	"	"	"	"	4'-2 3/8"	"
160-173-74	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
160-143-74	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
160-173-64	"	7'-10"	"	"	"	"	"	"	"	"	"	"	"	"	"	4'6"	"
160-143-64	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
114-143-100	9'-2"	6'-11"	"	"	5'-9 1/2"	"	"	"	"	"	"	"	"	"	"	4'-5 7/8"	"
114-119-100	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
114-173-86	7'-10 1/2"	"	"	"	4'-6"	"	"	"	"	"	"	"	"	"	"	4'-3 15/16"	"
114-173-74	6'-9 3/8"	"	"	"	3'- 4 7/8"	"	"	"	"	"	"	"	"	"	"	4'-2 3/8"	"
114-143-74	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
114-143-64	"	7'-10"	"	"	"	"	"	"	"	"	"	"	"	"	"	4'-6"	"

Gear Reducer Specifications

REDUCER NUMBER	PEAK TORQUE RATING IN.-LBS	RATIO OF GEARS	GEAR BOX OIL CAPACITY U.S. GALLONS	SHEAVE DIMENSIONS	CRANKSHAFT DIAMETER INCHES
D1280G	1,280,000	28.05	120	5" Bore 44" -10C, 50" -10C, 27" -8D, 33" -8D, 58" -8D	9
D912G	912,000	29.25	100	4-1/4" Bore 44" -8C, 50" -8C, 27" -5D, 33" -5D, 40" -5D	7-1/4
D640G	640,000	29.25	100	4-1/4" Bore 30" -8C, 36" -6C, 44" -6C, 50" -6C, 27" -4D, 33" -4D, 40" -4D	7-1/4
D456G	456,000	29.78	60	3-5/8" Bore 30" -6C, 36" -6C, 44" -5C, 50" -5C, 27" -4D, 33" -4D	7-1/4
D320G	320,000	3-.32	55	3-1/2" Bore 24" -5C, 30" -5C, 36" -4C, 44" -4C, 27" -4D, 33" -4D	7-1/4
D228G	228,000	30.03	35	3-1/8" Bore 20" -5C, 24" -4C, 30" -4C, 36 -3C	6
D160G	160,000	29.02	25	2-15/16" Bore 20" -3C, 24" -3C, 30" -3C, 36 -3C	6
D114G	114,000	29.02	25	2-5/8" Bore 20" -3C, 24" -3C, 30" -3C, 36 -3C	6

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The Producer– counterbalance data. (MAXIMUM EFFECTIVE COUNTERBALANCE AT POLISHED ROD AT MAXIMUM STROKE)

UNIT	1280-365-216	1280-427-192 1280-365-192	1280-427-168 1280-365-168	912-365-168 640-365-168 912-305-168 640-305-168 456-305-168	912-365-168 640-365-168 912-305-168 640-305-168 456-305-168	912-427-144 912-365-144 640-365-144 640-305-144 456-305-144 640-256-144 456-256-144	912-427-144 912-365-144 640-365-144 640-305-144 456-305-144 640-256-144 456-256-144	456-213-144 320-213-144
Crank Number	KC-117-53	KC-117-53	KC-117-53	KB-117-53	KLB-117-53	KB-117-53	KLB-117-53	KB-99-43
Cranks Only	4530	6180	8830	5740	3810	7870	5620	5440
4-B	-	-	-	7850	5910	10330	8080	7460
2-B,2-D	-	-	-	8220	6290	10770	8520	7820
4-D	6740	8670	11670	8600	6670	11210	8960	8180
2-D,2-F	7040	9010	12060	8990	7060	11660	9410	8540
4-F	7340	9350	12450	9380	7450	12120	9870	8910
2-F,2-H	7615	9660	12805	9730	7800	12530	10280	9240
4-H	7890	9970	13160	10090	8160	12950	10700	9580
2-H,2-J	8235	10360	13605	10540	8610	13470	11220	10000
4-J	8580	10750	14050	10990	9060	14000	11750	10420
2-J,2-L	8870	11070	14415	11360	9430	14430	12180	10760
4-L	9160	11390	14780	11730	9800	14860	12610	11100
2-L,2-N	9715	12015	15500	12450	10520	15700	13450	11760
4-N	10270	12640	16220	13170	11240	16550	14290	12420
2-N,2-PJ	10475	12870	16480	13430	11500	16850	14600	12750
4-PJ	10680	13100	16740	13700	11770	17160	14910	13080
2-PJ,2-RJ	11340	13845	17595	14560	12620	18160	15910	13910
4-RJ	12000	14590	18450	15420	13480	19160	16910	14740
2-L,2-XJ	12810	15495	19475	16450	14520	20370	18120	15550
2-PJ,2-XJ	13570	16350	20455	17440	15500	21520	19270	16540
2-RJ,2-XJ	14230	17095	21310	18300	16360	22520	20270	17370
4-XJ	16460	19600	24170	21180	19240	25880	23630	20000
2-XJ,2-YJ	19010	22470	27450	24480	22540	29730	27480	-
4-YJ	21560	25340	30730	27780	25850	33580	31330	-

UNIT	456-213-144 320-213-144 228-173-144	456-365-120 640-305-120 456-305-120	456-365-120 640-305-120 456-305-120	456-256-120 320-256-120 456-213-120 320-213-120	456-256-120 320-256-120 456-213-120 320-213-120 228-213-120	456-305-100 320-305-100 456-256-100 320-256-100	456-305-100 320-305-100 456-256-100 320-256-100 228-213-100
Crank Number	KLB-99-43	KB-117-53	KLB-117-53	KB-99-43	KLB-99-43	KB-99-43	KLB-99-43
Cranks Only	3180	10350	7650	7270	4550	9400	6140
4-B	5200	13290	10590	9690	6980	12300	9050
2-B,2-D	5560	13820	11120	10120	7410	12820	9560
4-D	5920	14350	11650	10550	7840	13340	10080
2-D,2-F	6280	14980	12190	10990	8270	13860	10600
4-F	6650	15440	12740	11430	8710	14390	11130
2-F,2-H	6980	15940	13240	11820	9110	14860	11610
4-H	7310	16440	13740	12220	9510	15340	12090
2-H,2-J	7730	17070	14360	12720	10010	15940	12690
4-J	8150	17700	14990	13230	10520	16550	13300
2-J,2-L	8490	18210	15510	13640	10930	17040	13790
4-L	8840	18730	16030	14050	11340	17540	14280
2-L,2-N	9490	19740	17040	14840	12130	18480	15230
4-N	10150	20750	18050	15630	12920	19430	16180
2-N,2-PJ	10480	21120	18420	16020	13310	19910	16650
4-PJ	10820	21490	18790	16420	13710	20390	17130
2-PJ,2-RJ	11650	22690	19990	17420	14710	21580	18320
4-RJ	12480	23890	21190	18420	15710	22780	19520
2-L,2-XJ	13280	25340	22640	19388	16670	23940	20680
2-PJ,2-XJ	14270	26720	24020	20570	17860	25370	22110
2-RJ,2-XJ	15100	27920	25220	21570	18860	26560	23300
4-XJ	17730	31950	29250	24720	22010	30350	27090

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The Producer– counterbalance data. (MAXIMUM EFFECTIVE COUNTERBALANCE AT POLISHED ROD AT MAXIMUM STROKE)

UNIT	320-119-144	320-143-120	228-143-120 160-143-120	228-143-120 160-143-120	228-173-100 160-173-100 160-143-100 114-143-100 114-119-100	228-173-100 160-173-100 160-143-100 114-143-100 114-119-100	320-173-100	320-246-86 320-213-86	228-246-86 228-213-86 160-173-86 114-143-86	228-246-86 228-213-86 160-173-86 114-143-86
Crank Number	K-76-320	K-76-320	K-76-36	KL-76-36	K-76-36	KL-76-36	K-76-320	K-76-320	K-76-36	KL-76-36
Cranks Only	1530	2620	2470	680	3690	1540	3860	4760	4550	2050
4-B	3020	4400	4250	2180	5820	3340	6000	7240	7040	4140
2-B,2-D	3270	4710	4560	2430	6190	3640	6370	7670	7470	4500
4-D	3530	5020	4870	2690	6570	3950	6750	8110	7900	4860
2-D,2-F	3780	5320	5170	2940	6930	4250	7110	8530	8330	5200
4-F	4040	5630	5480	3190	7300	4550	7480	8960	8760	5550
2-F,2-H	4270	5900	5750	3400	7620	4810	7800	9340	9140	5850
4-H	4500	6170	6030	3620	7950	5070	8130	9730	9520	6160
2-H,2-J	4790	6520	6380	3900	8370	5410	8550	10210	10010	6550
4-J	5080	6880	6730	4190	8790	5750	8970	10700	10500	6950
2-J,2-L	5310	7150	7000	4410	9120	6010	9300	11090	10880	7250
4-L	5540	7430	7280	4630	9460	6270	9640	11480	11270	7560
2-L,2-N	5970	7950	7800	5030	10080	6750	10260	12200	11990	8120
4-N	6410	8470	8320	5430	10710	7240	10890	12930	12720	8690
2-N,2-P	6630	8740	8590	5640	11030	7490	11210	13310	13100	8980
4-P	6860	9010	8860	5860	11350	7750	11530	13690	13480	9280
2-P,2-R	7400	9660	9510	6390	12130	8380	12310	14590	14380	10020
4-R	7940	10310	10160	6920	12910	9020	13090	15500	15290	10760
2-R,2-S	8740	11270	11120	7690	14060	9950	-	16840	16630	11840
4-S	9550	-	12090	8470	15220	10890	-	18190	17980	12930

The Producer– counterbalance data.

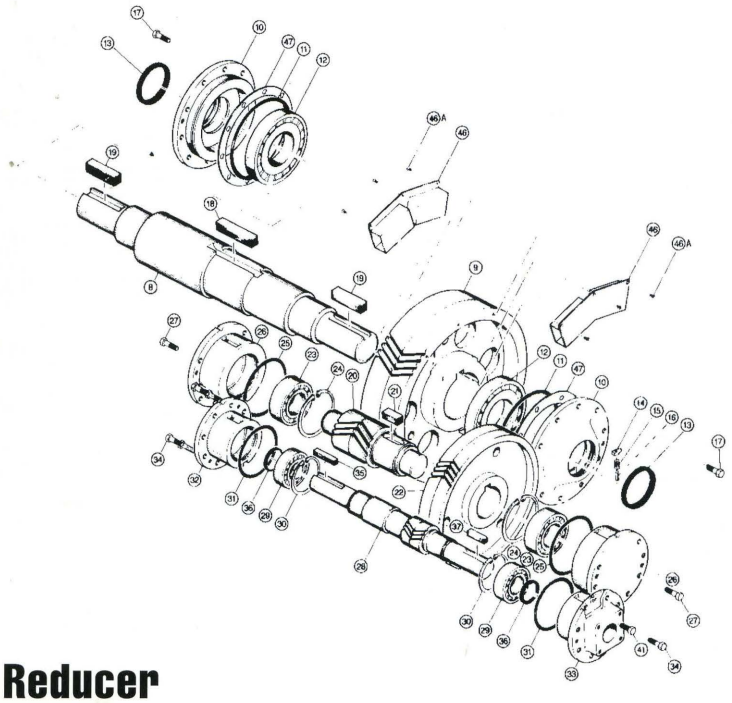
MAXIMUM EFFECTIVE COUNTERBALANCE @ THE POLISHED ROD@ MAXIMUM STROKE					
UNIT	320-246-74	228-246-74 228-200-74 160-200-74 228-173-74 160-173-74 114-173-74 160-143-74 114-143-74	228-246-74 228-200-74 160-200-74 228-173-74 160-173-74 114-173-74 160-143-74 114-143-74	160-173-64 160-143-64 114-143-64	160-173-64 160-143-64 114-143-64
Crank Number	K-76-320	K-76-36	KL-76-36	K-76-36	KL-76-36
Cranks Only	5780	5530	2630	6430	3110
4-B	8660	8420	5060	9730	5890
2-B,2-D	9160	8920	5480	10310	6370
4-D	9670	9430	5900	10890	6850
2-D,2F	10160	9920	6300	11450	7300
4-F	10660	10420	6700	12020	7760
2-F,2-H	11100	10860	7050	12520	8160
4-H	11540	11300	7400	13030	8570
2-H,2-J	12110	11870	7860	13680	9090
4-J	12680	12440	8320	14330	9620
2-J,2-L	13130	12890	8670	14840	10030
4-L	13580	13340	9030	15360	10440
2-L,2-N	14420	14180	9680	16320	11180
4-N	15270	15030	10340	-	11930
2-N,2-P	15700	15460	10680	-	12320
4-P	16140	15900	11030	-	12720
2-P,2-R	17190	16950	11890	-	13700
4-R	18250	18010	12750	-	14690
2-R,2-S	-	19570	14010	-	16130
4-S	-	21130	15270	-	-



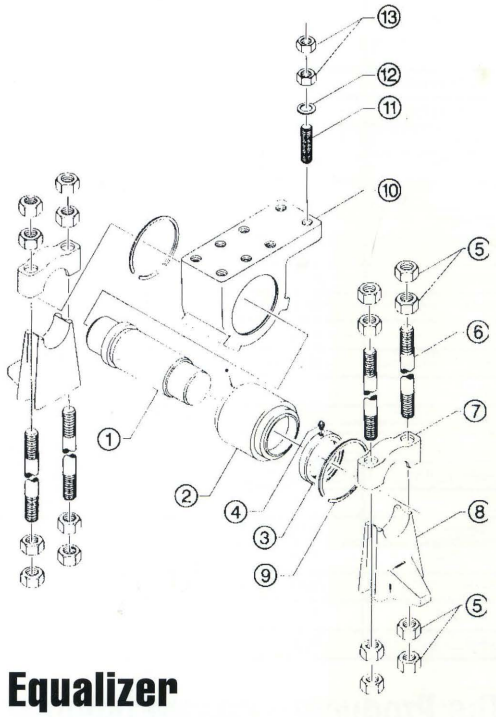
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Parts Replacement

Reducer, Wrist Pin and Equalizer Bearing.



Reducer



Equalizer

ITEM	DESCRIPTION
8	L.S. SHAFT
9	L.S. GEAR
10	L.S. BRG. HSG.
11	O-RING L.S.
12	L.S. BEARING
13	DUST SEAL
14	WIPER
15	SPRING
16	PIN
17	BOLT

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

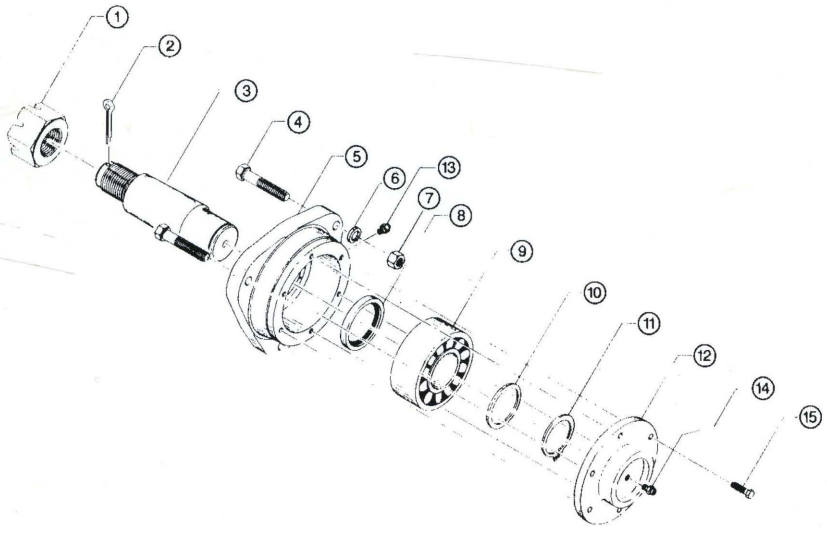
ITEM	DESCRIPTION
28	H.S. PINION
29	H.S. BEARING
30	H.S. SNAP RING
31	O-RING, H.S.
32	H.S BRG. HSG. L.H
33	H.S. BRG. HSG. R.H
34	BOLT
35	SHEAVE KEY
36	DUST SEAL
37	BRAKE DRUM KEY

ITEM	DESCRIPTION
41	BOLT
46	OIL SCOOP
46	A SCREW
47	SHIM

ITEM	DESCRIPTION
1	EQUALIZER PIN
2	BEARING ASSEMBLY
3	RETAINING RING
4	GREASE FITTING
5	HEX. NUT

ITEM	DESCRIPTION
6	STUD BOLT
7	CENTER CLAMP CAP
8	CENTER CLAMP
9	RETAINING RINGS

ITEM	DESCRIPTION
10	EQUALIZER BRG HOUSING
11	STUD
12	HARDENED WASHER
13	HEX. NUT

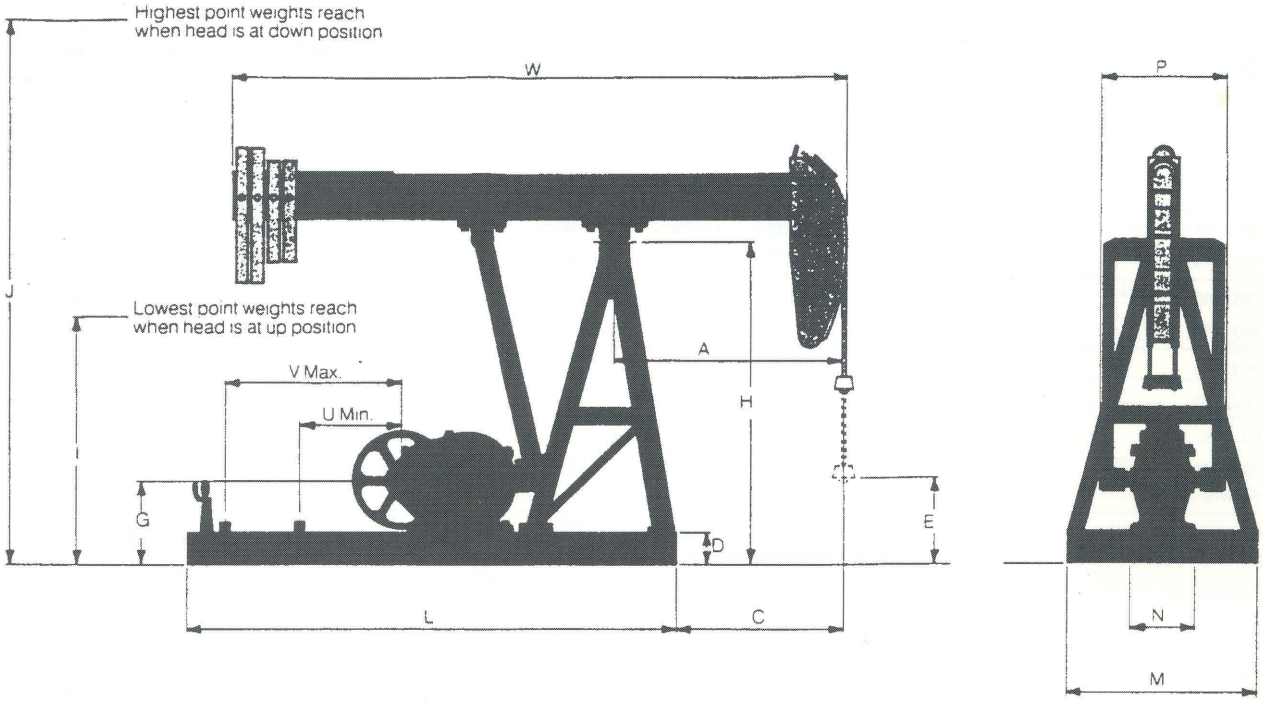


Wrist Pin

ITEM	DESCRIPTION
1	WRIST PIN NUT
2	COTTER PIN
3	WRIST PIN
4	BOLT
5	BEARING HOUSING
6	LOCK WASHER
7	HEX. NUT
8	OIL SEAL
9	WRIST PIN BEARING
10	SUPPORT WASHER
11	RETAINING RING
12	BEARING HOUSING CAP
13	RELIEF FITTING
14	GREASE FITTING
15	BOLT

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CHURCHILL
Beam Balanced Pumping Units



Dimensional Data (inches)

Unit Size*	A	C	D	E	G	H	I	J	L	M	N	P	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	38.25	34.25	8	42.3	17.8	83.0	39.8	123.2	110.0	36.00	13.13	34.60	16	44.50	117.1
25-67-30	38.25	34.25	8	44.4	17.8	83.0	41.3	125.1	110.0	36.00	13.13	34.60	16	44.50	117.2
25-56-36	38.25	34.25	8	25.2	17.8	83.0	33.3	126.8	110.0	36.00	13.13	34.60	16	44.50	118.0
25-67-36	38.25	34.25	8	27.3	17.8	83.0	35.5	128.8	110.0	36.00	13.13	34.60	16	44.50	117.8
40-89-36	48.00	32.00	8	48.6	22.1	96.5	48.9	146.8	133.5	42.75	14.81	37.20	16	37.50	149.5
40-76-42	48.00	32.00	8	40.2	22.1	96.5	40.0	151.0	133.5	42.75	14.81	37.20	16	36.50	149.5
40-89-42	48.00	32.00	8	39.6	22.1	96.5	42.5	152.0	133.5	42.75	14.81	37.20	16	37.25	149.5
40-76-48	56.00	41.25	8	42.9	22.1	96.5	36.5	156.5	148.5	42.75	14.81	37.20	16	36.50	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

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CHURCHILL
Beam Balanced Pumping Units

Counterbalance Data* (lbs.)

Unit Size	6.4-28-12	6.4-32-16	10-32-18	13-32-24	16-40-24	16-53-30	25-53-30	25-67-30	25-56-36	25-67-36
Structural Unbalance	83	63	96	145	103	109	135	125	101	128
1 set-std. wts.	644	523	556	634	559					
2 sets-std. wts.	1166	955	988	1103	996					
3 sets-std. wts.	1650	1360	1393	1552	1415					
4 sets-std. wts.	2095	1737	1770	1982	1815					
5 sets-std. wts.	2501	2087	2120	2392	2198					
6 sets-std. wts.		2409	2442	2782	2561					
7 sets-std. wts.					2906					
8 sets-std. wts.					3233					
1 set-std. wts.						563	589	579	555	582
2 sets-std. wts. or 1 set-HD wts.						999	1025	1015	991	1018
3 sets-std. wts. or 1 set-std. wts./1 set-HD wts.						1417	1443	1433	1409	1436
4 sets-std. wts. or 2 sets-HD wts.						1816	1842	1832	1808	1835
5 sets-std. wts. or 1 set-std. wts./2 sets-HD wts.						2196	2222	2212	2188	2215
6 sets-std. wts. or 3 sets-HD wts.						2558	2584	2574	2550	2577
7 sets-std. wts. or 1 set-std. wts./3 sets-HD wts.						2902	2928	2918	2894	2921
8 sets-std. wts. or 4 sets-HD wts.						3228	3254	3244	3220	3247
9 sets-std. wts. or 1 set-std. wts./4 sets-HD wts.						3535	3561	3551	3527	3554
10 sets-std. wts. or 5 sets-HD wts.						3823	3849	3839	3815	3842
1 set-std. wts./5 sets-HD wts.						4414	4440	4430	4406	4433
6 sets-HD. wts.						4736	4762	4752	4728	4755
1 set-std. wts./6 sets-HD wts.								5095		5098
7 sets-HD. wts.								5401		5404
1 set-std. wts./7 sets-HD wts.								5726		5729

*Counterbalance effect at polished rod with weights mounted as far to rear of the beam as possible, including structural balance.
NOTE: HD = heavy-duty.

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CHURCHILL
Beam Balanced Pumping Units

Counterbalance Data* (lbs.)

Unit Size	40-89-36	40-76-42 40-89-42	40-76-48	50-84-42	50-84-48	50-84-54	57-109-42 80-109-42	57-109-48 80-109-48	57-76-54 80-76-54	80-76-64
Structural Unbalance	321	244	258	276	135	146	366	324	213	193
1 set-std. wts.	787	710	723	742	570	580	837	759	647	553
2 sets-std. wts. or 1 set-HD wts.	1238	1161	1175	1193	992	1001	1293	1181	1068	1116
3 sets-std. wts. or 1 set-std. wts./1 set-HD wts.	1674	1597	1614	1629	1403	1412	1734	1592	1479	1560
4 sets-std. wts. or 2 sets-HD wts.	2096	2019	2041	2051	1803	1810	2160	1992	1877	1992
5 sets-std. wts. or 1 set-std. wts./2 sets-HD wts.	2504	2427	2455	2459	2190	2197	2571	2379	2264	2412
6 sets-std. wts. or 3 sets-HD wts.	2896	2819	2857	2851	2566	2572	2968	2755	2639	2821
7 sets-std. wts. or 1 set-std. wts./3 sets-HD wts.	3274	3197	3246	3229	2930	2935	3350	3119	3002	3218
8 sets-std. wts. or 4 sets-HD wts.	3637	3560	3623	3592	3283	3286	3717	3472	3353	3603
9 sets-std. wts. or 1 set-std. wts./4 sets-HD wts.	3986	3909	3987	3941	3624	3626	4069	3813	3693	3977
10 sets-std. wts. or 5 sets-HD wts.	4320	4243	4338	4275	3953	3954	4407	4142	4021	4339
1 set-std. wts./5 sets-HD wts.	4836	4759	4810	4791	4393	4395	4929	4582	4462	4794
6 sets-HD wts.	5185	5108	5167	5140	4727	4728	5281	4916	4795	5157
1 set-std. wts./6 sets-HD wts.	5563	5486	5556	5518	5092	5091	5663	5281	5158	5554
7 sets-HD wts.	5899	5822	5902	5854	5415	5414	6003	5604	5481	5907
1 set-std. wts./7 sets-HD wts.	6262	6185	6279	6217	5768	5766	6370	5957	5833	6293
8 sets-HD wts.	6585	6508	6614	6540	6081	6078	6696	6270	6145	6635
1 set-std. wts./8 sets-HD wts.	6934	6857		6889	6422	6418	7048	6611	6485	
9 sets-HD wts.	7243	7166		7198	6725	6720	7361	6914		
1 set-std. wts./9 sets-HD wts.	7577	7500			7054	7048	7699	7243		
10 sets-HD wts.					7346	7340	7999	7535		
1 set-std. wts./10 sets-HD wts.							8321	7853		
11 sets-HD wts.							8608	8135		
1 set-std. wts./11 sets-HD wts.							8916	8440		
12 sets-HD wts.							9190	8712		

*Counterbalance effect at polished rod weights mounted as far to rear of the beam as possible, including structural unbalance.
NOTE: HD = heavy duty.

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CHURCHILL
Beam Balanced Pumping Units

Structural Data

Unit Size	Polished Rod Capacity (lbs.)	Adjustable Stroke Lengths (inches)	Pitman Bearing (type)	Saddle Bearing (type)	Crank Pin Bearings (type)	Wireline Hanger (inches)
6.4-28-12	2800	12, 9	Friction-ease	Friction-ease	Friction-ease	1/2 x 4-1/4
6.4-32-16	3200	16, 13	Friction-ease	Friction-ease	Friction-ease	1/2 x 4-1/4
10-32-18	3200	18, 15, 12, 10	Friction-ease	Friction-ease	Friction-ease	1/2 x 4-1/4
13-32-24*	3200	24, 19½, 16, 13	Friction-ease	Friction-ease	Friction-ease	1/2 x 4-1/4
16-40-24	4000	24, 20½, 16, 13½	Friction-ease	Friction-ease	Spherical Roller	5/8 x 6
16-53-30	5300	30, 24, 20, 16	Friction-ease	Friction-ease	Spherical Roller	5/8 x 6
25-53-30	5300	30, 25, 19½, 16	Friction-ease	Friction-ease	Spherical Roller	5/8 x 6
25-67-30	6700	30, 25, 19½, 16	Friction-ease	Friction-ease	Spherical Roller	5/8 x 6
25-56-36	5600	36, 29, 23, 19	Friction-ease	Friction-ease	Spherical Roller	5/8 x 6
25-67-36	6700	36, 29, 23, 19	Friction-ease	Friction-ease	Spherical Roller	5/8 x 6
40-89-36	8900	36, 31, 27, 24	Friction-ease	Friction-ease	Spherical Roller	3/4 x 7
40-76-42	7600	42, 35, 32, 27	Friction-ease	Friction-ease	Spherical Roller	3/4 x 7
40-89-42	8900	42, 35, 32, 27	Friction-ease	Friction-ease	Spherical Roller	3/4 x7
40-76-48	7600	48, 40, 36, 31	Friction-ease	Friction-ease	Spherical Roller	3/4 x 7
50-84-42*	8900	42, 35, 32, 27	Friction-ease	Friction-ease	Spherical Roller	3/4 x 7
50-84-48*	8900	48, 41, 37, 32	Friction-ease	Friction-ease	Spherical Roller	3/4 x 7
50-84-54*	8900	54, 45, 41, 35	Friction-ease	Friction-ease	Spherical Roller	3/4 x 7
57-95-42	9500	42, 35, 32, 27	Friction-ease	Friction-ease	Spherical Roller	3/4 x 7
57-109-48	10,900	48, 41, 37, 32	Friction-ease	Friction-ease	Spherical Roller	3/4 x 7
57-76-54	7600	54, 45, 41, 35	Friction-ease	Friction-ease	Spherical Roller	3/4 x 7
80-109-42	10,900	42, 35, 32, 27	Friction-ease	Friction-ease	Spherical Roller	3/4 x 7
80-109-48	10,900	48, 41, 37, 32	Friction-ease	Friction-ease	Spherical Roller	3/4 x 7
80-76-54	7600	54, 45, 41, 35	Friction-ease	Friction-ease	Spherical Roller	3/4 x 7
80-76-64	7600	64, 54, 49,41	Friction-ease	Friction-ease	Spherical Roller	3/4 x 7

*Non API size.

Portable Base Dimensions (inches)

Unit Size	Base	Length	Width	Unit Size	Base	Length	Width	Unit Size	Base	Length	Width
6.4-28-12	EPB	75.0	27.1	25-67-36	GPB	167.0	40.5	57-95-42	EPB	160.0	72.0
6.4-32-16	EPB	82.0	33.5	40-89-36	EPB	162.0	46.5	57-95-42	GPB	206.0	72.0
10-32-18	EPB	88.0	33.5	40-89-36	GPB	188.0	46.5	57-109-48	EPB	160.0	72.0
13-32-24	EPB	96.0	36.5	40-76-42	EPB	162.0	46.5	57-109-48	GPB	206.0	72.0
16-40-24	EPB	119.0	37.3	40-76-42	GPB	188.0	46.5	57-76-54	EPB	160.0	72.0
16-40-24	GPB	143.0	37.3	40-89-42	EPB	162.0	46.5	57-76-54	GPB	206.0	72.0
16-53-30	EPB	119.0	39.8	40-89-42	GPB	188.0	46.5	80-109-42	EPB	160.0	72.0
16-53-30	GPB	143.0	39.8	40-76-48	EPB	177.0	46.5	80-109-42	GPB	206.0	72.0
25-53-30	EPB	132.0	40.5	40-76-48	GPB	188.0	46.5	80-109-48	EPB	160.0	72.0
25-53-30	GPB	167.0	40.5	50-84-42	EPB	162.0	46.5	80-109-48	GPB	206.0	72.0
25-67-30	EPB	132.0	40.5	50-84-42	GPB	188.0	46.5	80-76-54	EPB	160.0	72.0
25-67-30	GPB	167.0	40.5	50-84-48	EPB	177.0	46.5	80-76-54	GPB	206.0	72.0
25-56-36	EPB	132.0	40.5	50-84-48	GPB	188.0	46.5	80-76-64	EPB	160.0	72.0
25-56-36	GPB	167.0	40.5	50-84-54	EPB	177.0	46.5	80-76-64	GPB	206.0	72.0
25-67-36	EPB	132.0	40.5	50-84-54	GPB	188.0	46.5				

EPB = Electric Portable Base
GPB = Gas Portable Base

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USEFUL FORMULAS

STROKES PER MINUTE

$$SPM = \frac{RPM}{R} \times \frac{d}{D}$$

Example:

RPM = 1170 Revolutions per minute of prime mover
R = 30.12 (320D Gear Reducer)
d = 12" Pitch Diameter of Prime Mover Sheave
D = 47" Pitch Diameter of Gear Reducer Sheave

$$SPM = \frac{1170}{30.12} \times \frac{12}{47} = 9.9$$

PRIME MOVER SHEAVE DIAMETER

$$d = \frac{SPM \times R \times D}{RPM}$$

Example:

SPM = 12 Strokes Per Minute
R = 30.12 Ratio (320D Gear Reducer)
D = 47" Pitch Diameter of Gear Reducer Sheave
RPM = 1170 Revolutions Per Minute of Prime Mover

$$d = \frac{12 \times 30.12 \times 47}{1170} = 14.5 \text{ Inches}$$

Use nearest size available depending upon belt section and number of grooves in sheave.

BELT VELOCITY

$$v = \frac{\pi \times d \times RPM}{12}$$

Limit Between 2000 and 5000 feet per min.
Belt Velocity less than 2000 FPM results in poor belt life
Belt Velocity greater than 5000 FPM requires dynamically balanced sheaves.

Example:

d = 14.5 Inch Pitch Diameter
RPM = 1170 Revolutions per minute of Prime Mover

$$v = \frac{3.1416 \times 14.5 \times 1170}{12} = 4441 \text{ FPM}$$

CENTER DISTANCE

$$CD = \sqrt{\left(U + \frac{V}{2}\right)^2 + (AB - b)^2}$$

$$\text{also} = \sqrt{\left(UU + \frac{VV}{2}\right)^2 + (AA - b)^2}$$

Example:

Assume Hi-Prime Electric Motor
Driven C-320D-256-100 Conventional Unit

UU = 31 (See General Dimensions)
VV = 33.25 (See General Dimensions)
AA = 54 (See General Dimensions)
b = 8 (Assume 25 HP, Frame 324T Motor)

$$CD = \sqrt{\left(31 + \frac{33.25}{2}\right)^2 + (54 - 8)^2}$$

CD = 66.21 Inches

BELT LENGTH

$$PL = 2\,CD + 1.57\,(D + d) + \frac{(D - d)^2}{4 \times CD}$$

Example:

CD = 66.21 Inch Center Distance of Shafts
D = 47 Inch Pitch Diameter of Gear Reducer Sheave
d = 14.5 Inch Pitch Diameter of Prime Mover Sheave

$$PL = 2 \times 66.21 + 1.57\,(47 + 14.5) + \frac{(47 - 14.5)^2}{4 \times 66.21}$$

PL = 232.96 Inches

Use C225 or D225 Belts Depending on Sheaves Selected.

HORSEPOWER OF PRIME MOVER

*These values are approximate
For High Slip (Nema D) Electric Motors and Slow Speed Engines

$$^*HP = \frac{BPD \times Depth}{56000}$$

For Normal Slip Electric Motors and Multi-cylinder Engines

$$^*HP = \frac{BPD \times Depth}{45000}$$

Multiply HP by 0.8 for Mark II Units

Example:

BPD = 217 @ 100% pump efficiency

Depth = 5600 Feet pump setting

Assume High Slip (Nema D) Motor)

$$^*HP = \frac{217 \times 5600}{56000} = 21.7, \text{ use 25 HP Motor}$$

Maximum Strokes Per Minute Based on the Free Fall Speed of the Rod

Conventional Units

$$SPM = .7\sqrt{\frac{60000}{L}}$$

Air Balanced Units

$$SPM = .63\sqrt{\frac{60000}{L}}$$

Mark II Units

$$SPM = .56\sqrt{\frac{60000}{L}}$$

Example:

Assume C-320D-256-100 Unit

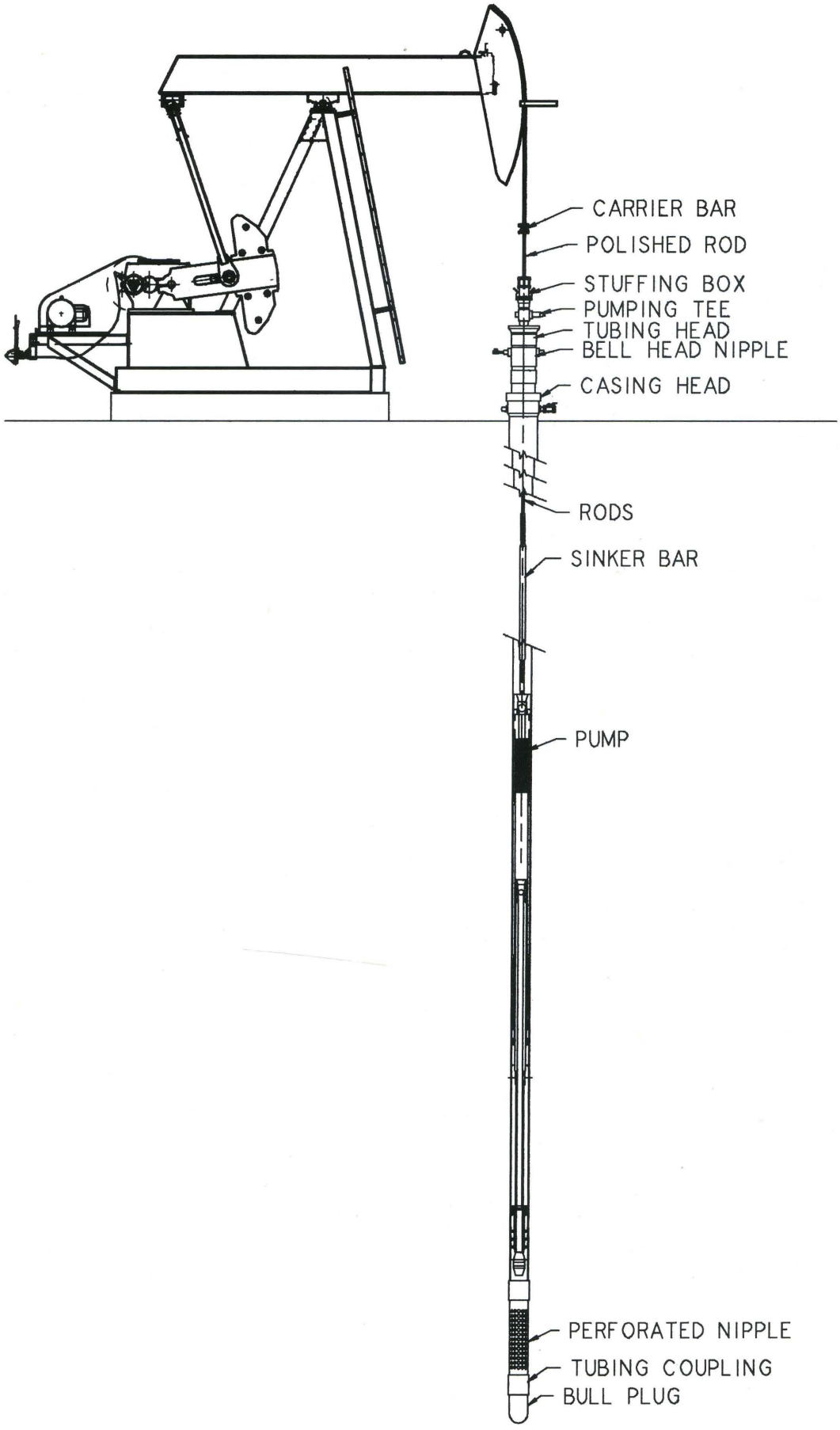
$$SPM = .7\sqrt{\frac{60000}{100}} = 17.15 \text{ SPM Maximum}$$

DEFINITION OF SYMBOLS USED:

SPM = Strokes Per Minute
RPM = Revolutions Per Minute of Prime Mover
R = Gear Reducer Ratio
D = Gear Reducer Sheave Pitch Diameter, Inches
d = Prime Mover Sheave Pitch Diameter, Inches
v = Belt Velocity, Feet per Minute
π = 3.1416 (Pi)
PL = Belt Pitch Length, Inches
CD = Shaft Center Distance, Inches
U = See General Dimensions
V = See General Dimensions
AB = See General Dimensions
UU = See General Dimensions
VV = See General Dimensions
AA = See General Dimensions
b = Prime Mover Backing (Vertical Distance from Mounting Feet to Center to Shaft), In.
HP = Horsepower
BPD = Barrels Per Day at 100% Pump Efficiency
Depth = Pump Setting, Feet
L = Stroke Length, Inches

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Illustration of Artificial Lift System



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Pumping Unit Operation & Maintenance Training School



Background. LUFKIN's Pumping Unit Operation & Maintenance Training School began in 1987 in response to customers encouraging LUFKIN to develop and conduct maintenance training classes for their employees.

Objective. Train oil production employees to keep pumping units well-maintained and operating efficiently because maintenance is the key to the pumping unit's long productive life.

Purpose. The school is designed to further the stated Objective for the benefit of major oil companies and independents.

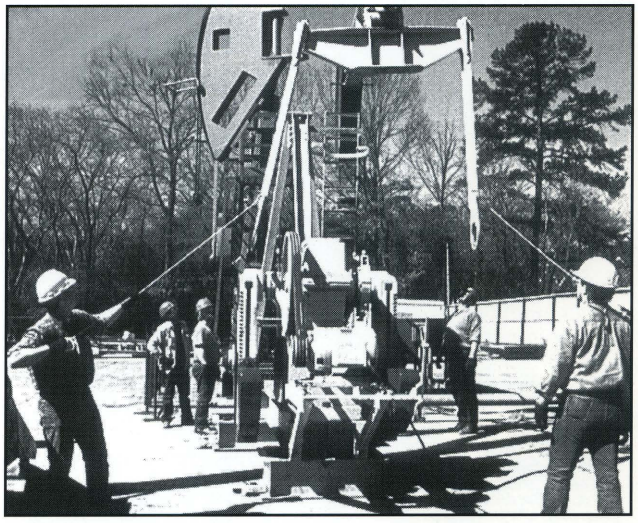
The School. The Pumping Unit Operation & Maintenance Training School is a 4-day school conducted for six sessions each year during spring and autumn months. The school is conducted at LUFKIN's Factory Training Center in Lufkin, TX. Class sizes are 16-18 people to permit personalized training. Class instructors include LUFKIN employees who are experienced in operation and maintenance of pumping units.

Curriculum. The school curriculum is taught by classroom instruction and hands-on activities, including :

- Safety Procedures for working around pumping units.
- Hands-on training in the safe setup and operation of a pumping unit.
- Counterbalance adjustments.
- Lubrication needs.
- Stroke changes.
- Structural bearing assembly and disassembly.
- Preventive maintenance.
- A plant tour showing how pumping units are designed, tested and manufactured.

Note: Technical calculations for equipment selection are not a regular part of training, but available on request.

Cost and Registration. The cost of each school session is $600 per person. This cost includes training materials, noon meals, a banquet dinner, local transportation, and a certificate of completion.



After registration, a registrant may send a substitute if they are unable to attend or they may transfer to another scheduled session.

Cancellations received less than two weeks before the start of a scheduled session are subject to a $150 service charge. There is no refund if the confirmed registrant fails to attend unless they contact LUFKIN Industries prior to the school's start.

Contact LUFKIN Industries for hotel facilities in Lufkin. Transportation will be provided from the hotel to the Factory Training Center each day.

For additional information about the LUFKIN Pumping Unit Operation & Maintenance Training School, schedules, or registration, contact:



Linda Coulter
LUFKIN Industries, Inc.
P.O. Box 849
Lufkin, TX 75902-0849
TEL: 409/637-5363
FAX: 409/633-3563

LUFKIN

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LUFKIN DOUBLE REDUCTION GEAR UNITS

1. Horizontally split gear housing especially built for oil well service, of rugged construction with large factors of safety.
2. Precision cut Lufkin herringbone gears are used exclusively in all Lufkin pumping units.
3. Gear Cases are jig bored to same accuracy as gears.
4. All shafts forged from alloy steel, heat treated and precision ground.
5. Oversize bronze bushings on crankshafts. Easily renewable but seldom requiring replacement.
6. All pinions float on Straight Roller Bearings.
7. No Oil Pumps. Lufkin gears operate in oil bath with gear wipers to flood bearings.

GEAR SPECIFICATIONS
DOUBLE REDUCTION

2560D GEAR REDUCER:
RATING: 2,560,000 In. Lbs. Peak Torque
RATIO OF GEARS: 34.53
CRANKSHAFT DIA.: 11 3/4"
SHEAVE: 55", 68" P.D.–12D
61/2" Bore
GEAR BOX OIL CAPACITY: 235 Gallons

1824D GEAR REDUCER:
RATING: 1,824,000 In. Lbs. Peak Torque
RATIO OF GEARS: 28.33
CRANKSHAFT DIA.: 9" (Mark II, 10 1/2")
SHEAVE: 55", 68" P.D.–10D
41 5/16" Bore
GEAR BOX OIL CAPACITY: 165 Gallons

1280D GEAR REDUCER:
RATING: 1,280,000 In. Lbs. Peak Torque
RATIO OF GEARS: 28.05
CRANKSHAFT DIA.: 8 1/2" (Mark II, 10 1/2")
SHEAVE: 36", 68" P.D.–10C
35", 68" P.D.–8D 41 5/16" Bore
GEAR BOX OIL CAPACITY: 120 Gallons

912D GEAR REDUCER:
RATING: 912,000 In. Lbs. Peak Torque
RATIO OF GEARS: 28.72
CRANKSHAFT DIA.: 7" (Mark II, 9", Mark II, 912DS, 10 1/2")
SHEAVE: 33", 40", 48", 55.2" P.D.–6D
50", 55.2" P.D.–8C, 43/16" Bore
GEAR BOX OIL CAPACITY: 107 Gallons

640D GEAR REDUCER:
RATING: 640,000 In. Lbs. Peak Torque
RATIO OF GEARS: 28.6
CRANKSHAFT DIA.: 7" (Mark II, 9")
SHEAVE: 22", 27", 33", 48", 55.4" P.D.–5D
24", 36", 44", 50", 55.6" P.D.–6C
37/16" Bore
GEAR BOX OIL CAPACITY: 70 Gallons

456D GEAR REDUCER:
RATING: 456,000 In. Lbs. Peak Torque
RATIO OF GEARS: 29.04
CRANKSHAFT DIA.: 7" (Mark II, 9")
SHEAVE: 22", 27", 33", 48" P.D.–4D
24", 36", 44", 50" P.D.–6C
37/16" Bore
GEAR BOX OIL CAPACITY: 55 Gallons

320D GEAR REDUCER:
RATING: 320,000 In. Lbs. Peak Torque
RATIO OF GEARS: 30.12
CRANKSHAFT DIA.: 67/16" (Mark II, 8 1/2")
SHEAVE: 24", 30", 36", 44", 47" P.D.–5C
215/16" Bore
GEAR BOX OIL CAPACITY: 50 Gallons

228D GEAR REDUCER:
RATING: 228,000 In. Lbs. Peak Torque
RATIO OF GEARS: 28.45
CRANKSHAFT DIA.: 6" (Mark II, 7")
SHEAVE: 24", 30", 36", 41" P.D.–4C
27/16" Bore
GEAR BOX OIL CAPACITY: 34 Gallons

160D GEAR REDUCER:
RATING: 160,000 In. Lbs. Peak Torque
RATIO OF GEARS: 28.67
CRANKSHAFT DIA.: 57/16" (Mark II, 7")
SHEAVE: 20", 24", 30", 36", 38" P.D.–3C
23/16" Bore
GEAR BOX OIL CAPACITY: 22 Gallons

114D GEAR REDUCER:
RATING: 114,000 In. Lbs. Peak Torque
RATIO OF GEARS: 29.4
CRANKSHAFT DIA.: 47/16" (Mark II, 67/16")
SHEAVE: 20", 24", 30", 33.6" P.D.–2C
115/16" Bore
GEAR BOX OIL CAPACITY: 17 Gallons

80D GEAR REDUCER:
RATING: 80,000 In. Lbs. Peak Torque
RATIO OF GEARS: 29.15
CRANKSHAFT DIA.: 47/16"
SHEAVE: 20", 24", 30" P.D.–2C 115/16" Bore
GEAR BOX OIL CAPACITY: 17 Gallons

57D GEAR REDUCER:
RATING: 57,000 In. Lbs. Peak Torque
RATIO OF GEARS: 29.32
CRANKSHAFT DIA.: 4"
SHEAVE: 20", 24", 27" P.D.–2C
20", 25", 27.6" P.D.–3B, 115/16" Bore
GEAR BOX OIL CAPACITY: 13 Gallons

40D GEAR REDUCER:
RATING: 40,000 In. Lbs. Peak Torque
RATIO OF GEARS: 29.2.
CRANKSHAFT DIA.: 4"
SHEAVE: 20", 24" P.D.–2C
20", 23.3" P.D.–3B, 111/16" Bore
GEAR BOX OIL CAPACITY: 7 Gallons

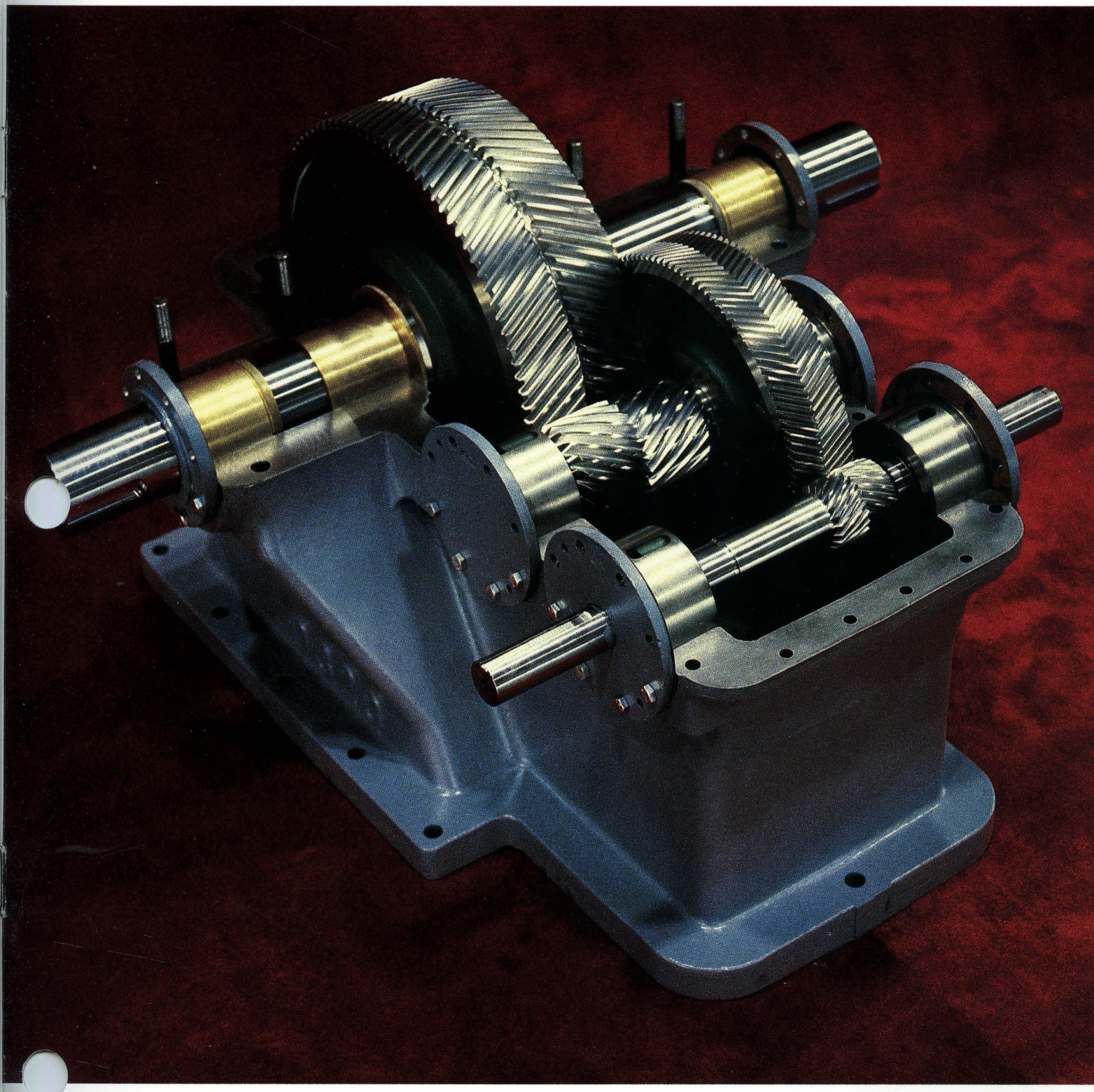
25D GEAR REDUCER:
RATING: 25,000 In. Lbs. Peak Torque
RATIO OF GEARS: 28.9
CRANKSHAFT DIA.: 3"
SHEAVE: 18.4" P.D.-2B, 1-3/8" Bore
GEAR BOX OIL CAPACITY: 5 Gallons

16D GEAR REDUCER:
RATING: 16,000 In. Lbs. Peak Torque
RATIO OF GEARS: 35.7
CRANKSHAFT DIA.: 2 1/2"
SHEAVE: 15.3" P.D.–3A or 2B, 13/16" Bore
GEAR BOX OIL CAPACITY: 5 Gallons

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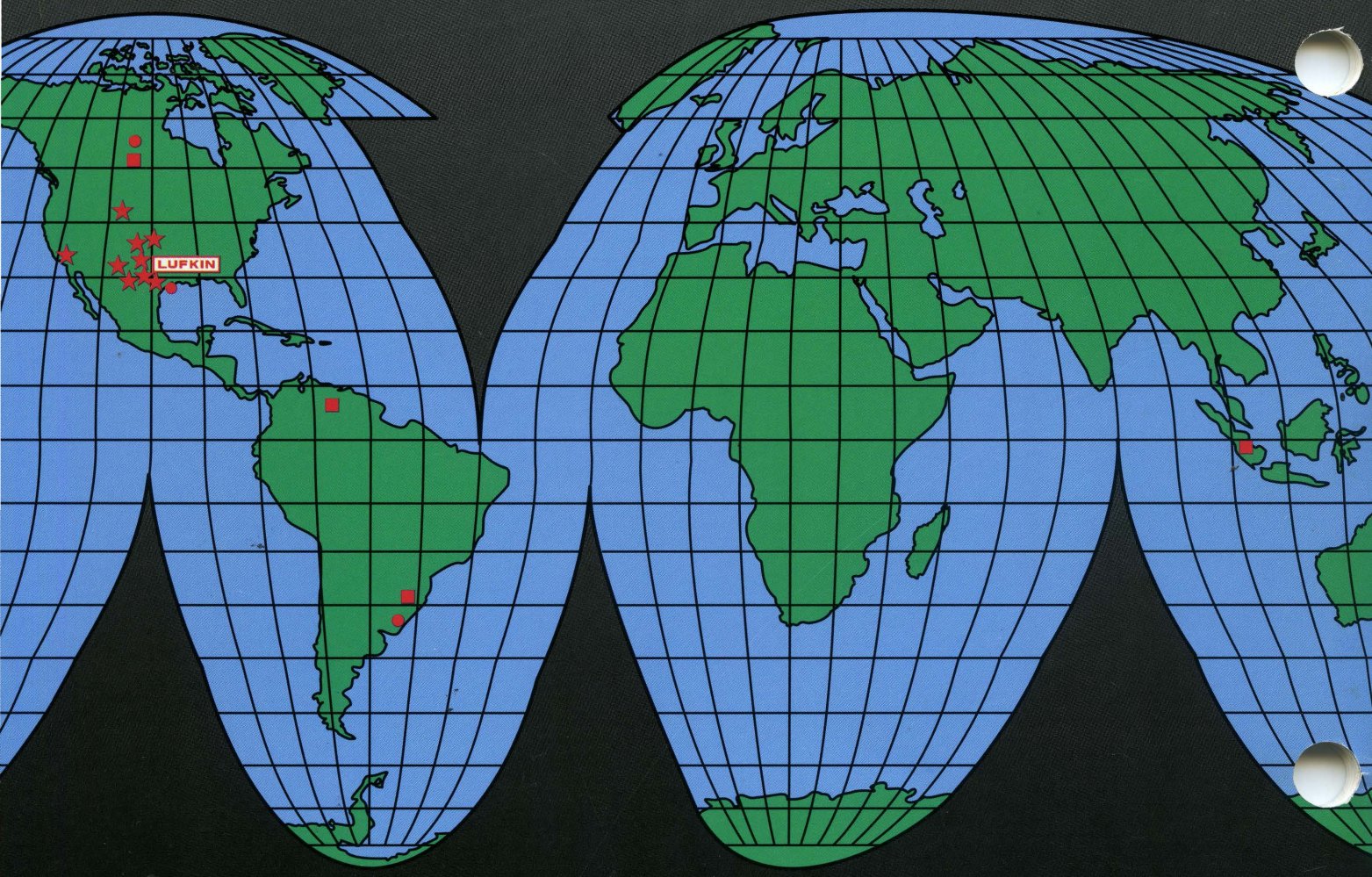
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INSIDE THE HEART OF THE LUFKIN PUMPING UNIT



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.

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Lufkin, Texas

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