LUFKIN OIL FIELD EQUIPMENT

CATALOG 50

Featuring the

LUFKIN *Universal* PUMPING UNIT

LUFKIN FOUNDRY & MACHINE COMPANY • LUFKIN, TEXAS

LUFKIN EQUIPMENT OF ADVANCED DESIGN

Lufkin TC-33A-18B Twin Crank Pumping Unit with sub base to clear sweep of cranks, standard multi-cylinder gas engine base with cross rails designed to accommodate Lurkin Cooper-Bessemer Type GSC Vertical Gas Engine.

LUFKIN TC-2A-36A Twin Crank Pumping Unit with Sub base to clear sweep of cranks, bolted extension base to accommodate Lufkin Cooper-Bessemer GSDH 2 Cylinder Horizontal Gas Engine mounted on "T" Slots with pusher screws for tightening V-Belts, and centerline type polished rod beam hangers.

LUFKIN FOUNDRY & MACHINE CO.

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LUFKIN, TEXAS

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INTRODUCTION

Twenty-six years ago LUFKIN manufactured and installed the first geared pumping unit ever to pump a deep well. Today thousands of LUFKIN units are operating successfully in oil fields all over the world. LUFKIN has pioneered a large majority of the steady improvements in pumping equipment during this time. LUFKIN introduced the first rotary counterbalanced crank and furnished the first unit with a brake, also was the first to develop an oil bath, dustproof pitman bearing, head and tail bearing and center iron bearing. LUFKIN introduced the first one hundred per cent center-line bearing walking beam and equalizer, and, because of patents, is the only concern able to furnish them today.

Being located close to many producing areas has enabled our engineers to keep in close touch with the performance of our equipment. It has been possible to continually watch details, which many times result in success or failure in practical operation.

Our plant is completely equipped with the finest machine tools obtainable anywhere. We invite you to visit our plant and see for yourself why LUFKIN is still leading after all these years.

UNIT DESIGNATION—EXPLANATION

Lufkin units are designated by combination of letters and numerals; taking the "TC-33A-22G" as an example:

"TC" means "Twin Crank"
"33A" is the **Structural Assembly** number.
"22G" is the number of the **Gear Box.**

A design change on the assembly is indicated by using a new letter after the assembly number. If the gear box design is changed in any way, a new letter is used after the gear box number.

Lufkin pumping unit gear reducers are manufactured in accordance with the latest edition of API Specification 11-E and conform to API designated sizes. The API size is gear rating in thousand pound inches peak torque.

Walking Beams are designated by a combination of four figures indicating the weight of the beam and its length. The first two figures indicate the weight per foot of the beam material and the last two figures indicate the overall length of the beam between working points. When the four figures are followed by "CU," the beam is a Universal center-line type with Rod Hanger, as shown on page 3003. When the four figures are followed by "CH," the beam has the same Center-line pitman-end as before but the well-end is fitted with a Hinged Horsehead with wire line.

For instance, "1625CU" means the beam is made of steel weighing 160 pounds per foot, is 25 feet long between working centers and the well-end is equipped with the Universal Rod Hanger. When the designation is "8216CH," the beam is made of material weighing 82 pounds per foot, the beam is 16 feet long between working centers and the well-end has a Hinged Horsehead.

EXCLUSIVE FEATURES OF LUFKIN PUMPING UNITS

TROUT COUNTERBALANCED CRANK

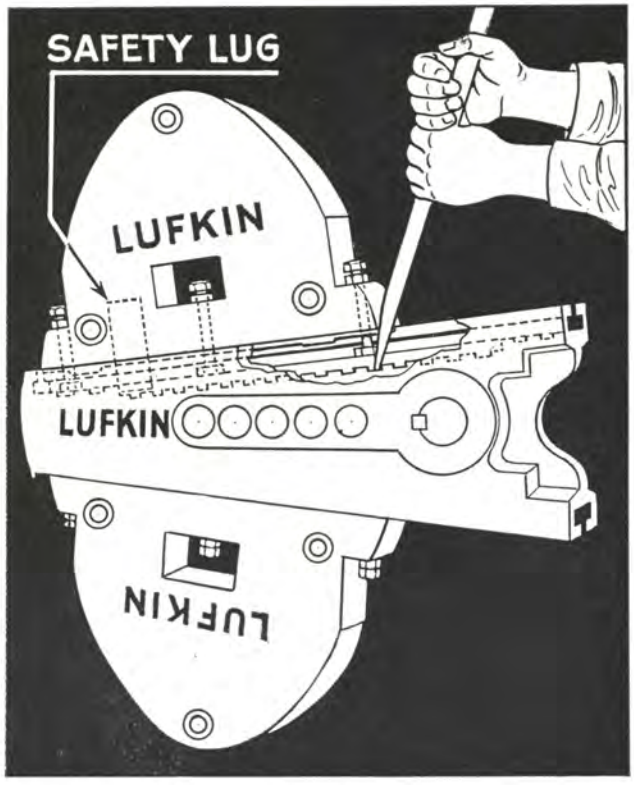


FIGURE 1

The Trout Counterbalanced Crank, using sliding weights to change the counterbalance effect, is an exclusive Lufkin feature. To change the counterbalance effect, it is not necessary for the operator to employ any tools other than a pinch bar and a wrench. With the crank slanted slightly in the direction in which the weights are to be moved, and held by the double-shoe brake, the weight is moved by means of the bar, as shown in Fig. 1. This **positive** method enables ONE man to change the counterbalance effect by either a few ounces or by hundreds of pounds. It is not necessary to add or to remove weight elements weighing 100 to 150 pounds. There is no waiting while needed weight elements are obtained from the supplier. There is no hazard to the safety of operator or equipment as it is impossible for the weight to slide off the crank even when the counterweight bolts are loosened so long as the nuts are not completely removed from the bolts. Either zero or negative counterbalance effect, as well as positive effect, may be obtained with the Trout Crank; this is a unique feature.

The Trout Crank provides absolute assurance that perfect counterbalance of all fixed load can be obtained. With the current emphasis on deeper wells, this is a factor of prime importance to the operator. On deeper wells, the rod load begins to exceed the fluid load, and perfect counterbalancing of the fixed rod load means decreased lifting costs. As much as 25% of fuel or electric bills is due to poor counterbalance. Since the Trout Crank does not employ weight elements the counterbalance effect can be adjusted to **exactly** offset the weight of the rods plus the portion of the fluid load that can be balanced; the remaining load to be carried is the relatively small portion of the fluid load which varies with well condition and rate of withdrawal. Saving on wear of gears and prime mover, as well as lower power consumption, makes the Trout Crank the most inexpensive method of counterbalance on an overall, long-term basis.

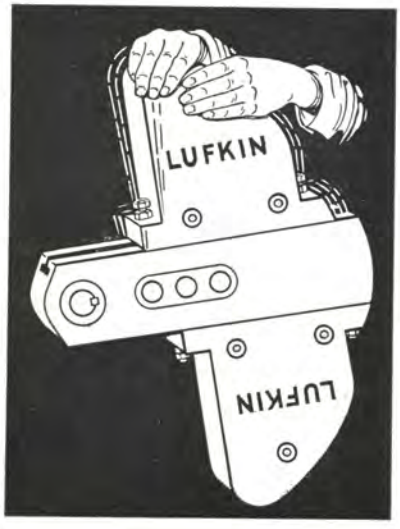


FIGURE 2

On the smaller Lufkin Units, no tools, other than the wrench furnished with the unit, are necessary to enable ONE man to change counterbalance as desired. Slanting the crank in the direction in which the weight is to go, the operator loosens the counterweight bolts, then shakes the weight back and forth as shown in Fig. 2, and the weight "walks" down the crank to the desired position. Trout Cranks employ the same fixed weight, regardless of position on the crank. This is an invaluable contribution to the complete pumping unit as the flywheel effect obtained damps out a large part of the shock loads encountered in oilfield pumping. Since the center of weight of a Lufkin counterbalance crank is concentrated near the crank pin, the bearing loads at the crank shaft and the stress in the crank shaft are lower than those encountered with the conventional type crank.

THE LUFKIN UNIVERSAL CENTER-LINE WALKING BEAM

The Lufkin Beam Construction is a patented feature that accounts for much of the success of Lufkin Units even when employed on loads exceeding the ratings of the component parts of the assembly. In addition to strength, this construction gives increased polished rod stroke and decreased lifting costs, as compared to types of construction formerly used.

All pumping units employ an arrangement of beam loading based on variations of the method used by the original standard rig, illustrated in Figure 3. Since the beam is a rolled structural member, not machined, all beams have a slight twist. When loaded as shown in Figure 3, with the load applied on TOP of the beam, it twists the beam still further since the line of the load and the line of the reaction do not coincide. The resultant horizontal force, as in Figure 4, acts about the lever arm X to twist the beam. This constant twisting under load causes this beam to fail under a fraction of the load that could be safely applied to the same beam using Lufkin Universal Centerline Beam Construction.

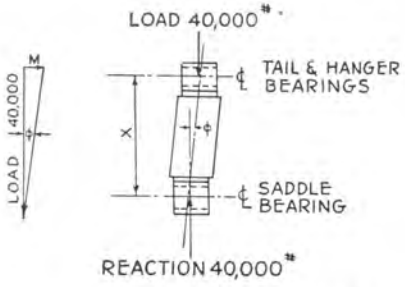


FIGURE 4

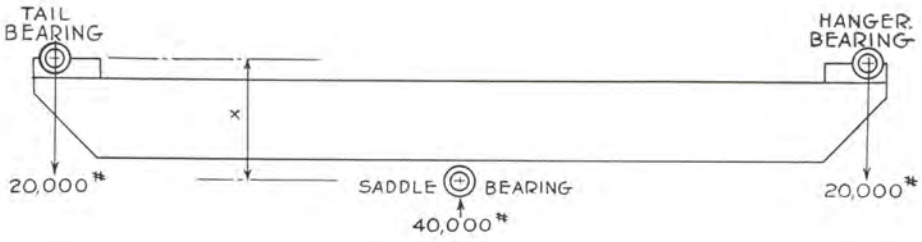


FIGURE 3

The load of 40,000 lbs. at center of beam does not coincide with line of reaction due to twist in beam (exaggerated here). The difference between the two lines is angle ϕ. The twisting load M is 40,000 $\times$ tan. ϕ. The twisting moment on the beam is 40,000 $\times$ tan. ϕ $\times$ lever arm X, in inch-pounds.

THE LUFKIN UNIVERSAL CENTER LINE UNITS

WORKING "POINTS" THAT INSURE FULL STROKE ON POLISH RODS AND HIGHEST COUNTERBALANCE EFFICIENCY

The universal center line design, patented by LUFKIN, has many advantages over the other types of construction and no disadvantages that we know of.

Field tests have been made on pumping wells, comparing this design with that of the tail bearing mounted on top of the beam both with the gear box set directly under the tail bearing, and also with it set in back of it. The results show considerably more production due to better pump plunger action, and less power consumed per barrel of fluid pumped. Peak loads were less per barrel of fluid pumped with the LUFKIN design than the others tested.

Placing the tail bearing under the beam eliminates vibration in the walking beam which is caused by the leverage which is necessarily imposed by the bearing when placed on top of the beam. No beam is made perfectly and beams break more easily due to twisting action when the load is applied to the top of the beam. Actual experience shows that in some cases LUFKIN walking beams are successfully carrying over double the A.P.I. rating and have been doing so for years.

The universal spherical bearing on the front and back of the walking beam is considerably more expensive to manufacture, as is the arch type equalizer. We are convinced, however, that this additional quality is justified in that it accounts for trouble free, long life operation.

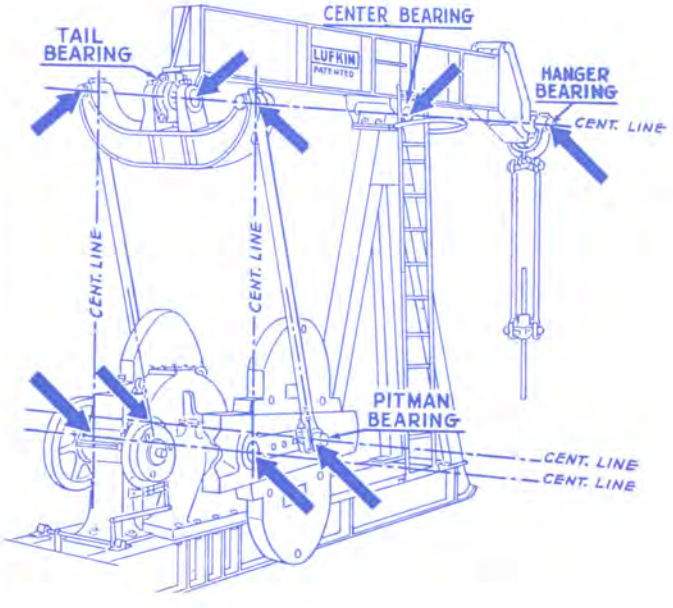


FIGURE 5

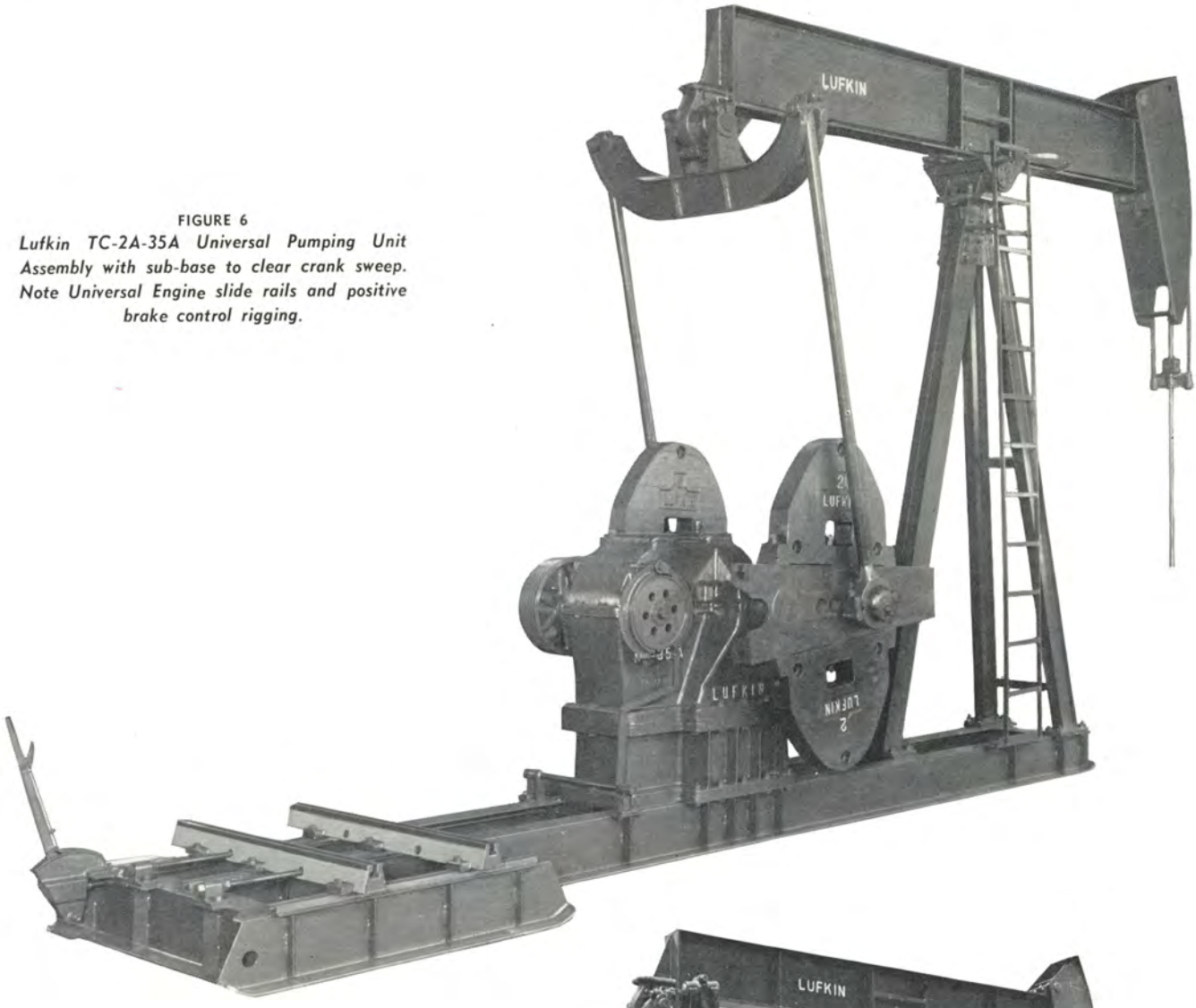


FIGURE 6
Lufkin TC-2A-35A Universal Pumping Unit Assembly with sub-base to clear crank sweep. Note Universal Engine slide rails and positive brake control rigging.

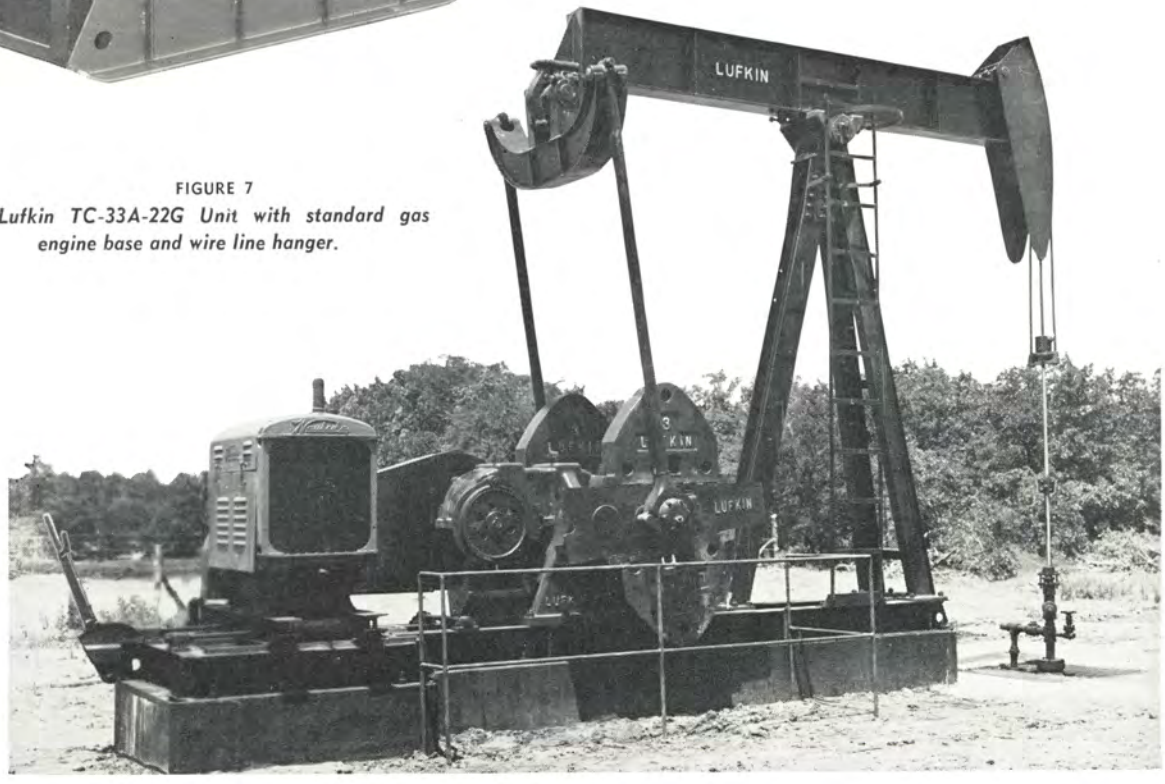


FIGURE 7
Lufkin TC-33A-22G Unit with standard gas engine base and wire line hanger.

SINGLE REDUCTION GEAR UNITS

Single reduction gear units are preferred with slow speed and medium speed engines (up to 600 r.p.m.) where over-all ratio can be accommodated. They are built in six sizes.

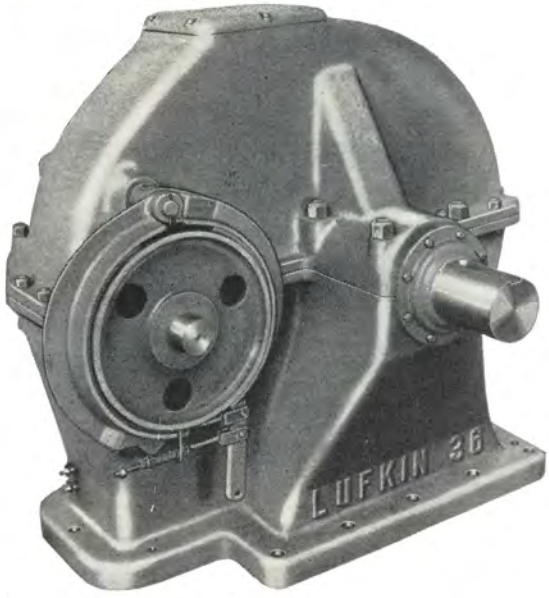


FIGURE 8

DOUBLE REDUCTION GEAR UNITS

Double reduction gear units are used with electric motors and multi-cylinder gas engines. They are made in eleven sizes.

FIGURE 10

LUFKIN ENGINEERS HAVE A RICH BACKGROUND of practical experience in unit operation, and behind their designs is a plant using modern production methods and up-to-date tools where absolute duplicate precision work is maintained.

Our entire product is made in jigs or by template, even to posts and walking beams, to secure correct alignment and absolute duplication of parts.

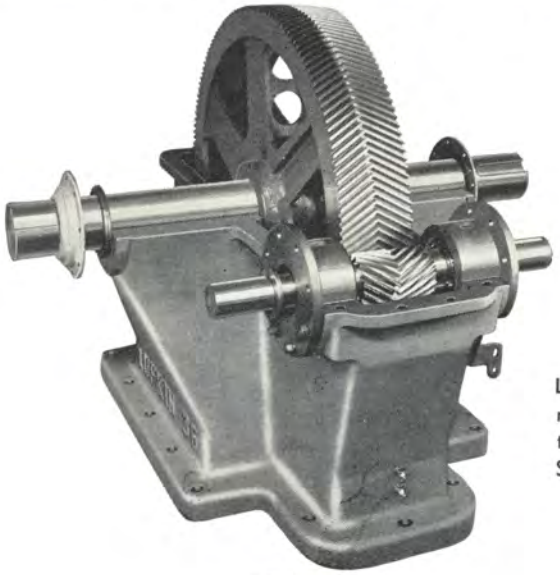


FIGURE 9

Single Reduction Gear Unit, cover removed

Lufkin Gear Reducers are rated in accordance with the latest edition of A.P.I. Standard 11-E and carry the A.P.I. monogram.

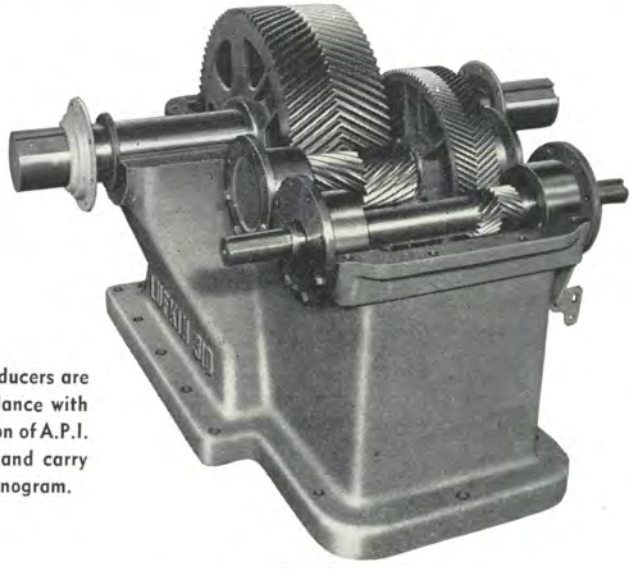


FIGURE 11

Double Reduction Gear Unit, cover removed

1. Housings especially built for oil well service, of rugged construction with large factors of safety.
2. Lufkin-Sykes Herringbone Gears, precision cut on our machines, are used exclusively in Lufkin 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 Bronzoid Bearings on crankshafts. Easily renewable.
6. Crankshaft held rigid by Bronzoid hub plates. All pinions float on Hy-Load Hyatt Roller Bearings.
7. No Oil Leaks. Pinion shaft bearings equipped with patented oil seals; main crankshaft with collar oil slinger and drain cover.
8. No Oil Pumps. Lufkin gears operate in oil bath with gear wipers to flood bearings.
9. Clam Shell Brake. No grabbing. Improved ratchet lever and stand, locomotive type.

General Specifications—Lufkin Double Reduction Unit Assemblies TC-0A, 1A, 2A, 33A, 44A

LUFKIN UNIVERSAL TC-OA-456DA UNIT ASSEMBLY—30,000 Lb. Polish Rod Load Class

WALKING BEAM: 24¾" x 14" x 160 lbs., 12'-6" and 12'-6" working Centers, API Walking Beam Rating: 24,750 Lbs.
HANGER: Centerline type, Universal, bronze bushed.
PITMAN: Universal Equalizer with bearings "in line", 4" Heavy pipe connections, Universal lower bearings.
CENTER BEARING: No. 1AS bronze bushed, 7" x 20" oil bath, dust proof.
SAMSON POST: No. 13 Tripod, 13'-3" high.
BASE: 16" deep, 50" wide at gear box.
CRANK: No. 7472, 71½" radius.
CRANK PINS: 5½" x 5½", bronze bushed, oil bath.
TAIL AND HANGER BEARINGS: 4 15/16" x 12" Bronze Bushed.
GEAR BOX OIL CAPACITY: 75 Gallons.

GEARS: Double Reduction. Main Gear, 38" x 11"
RATING: 95 H.P. at 20 S.P.M. 469,000 lb. ins. Peak Torque
RATIO: 29.04
CRANKSHAFT: 7"
SHEAVE: 34" P.D.-7D Std., 51" P.D. Maximum. 3 7/16" Bore
WEIGHT: 40,100 lbs.
STATIC COUNTERBALANCE—LBS.:

Stroke	No. 1 Weights	C.I. Auxiliary Weights
34"	32,000	39,900
44"	24,750	30,850
54"	20,150	25,100
64"	17,000	21,200
74"	14,700	18,325

LUFKIN UNIVERSAL TC-1A-41C UNIT ASSEMBLY OR 320D API SIZE—25,000 Lb. Polish Rod Load Class

WALKING BEAM: 24¾" x 14" x 160 lbs., 12'-6" and 12'-6" working centers, API Walking Beam Rating: 24,750 Lbs.
HANGER: Centerline type, Universal, bronze bushed.
PITMAN: Universal Equalizer with bearings "in line", 4" Heavy pipe connections, Universal lower bearings.
CENTER BEARING: No. 1AS bronze bushed, 7" x 20", oil bath, dust proof.
SAMSON POST: No. 13 Tripod, 13'-3" high.
BASE: 16" deep, 43" wide at gear box.
CRANKS: No. 7472, 71½" radius.
CRANK PINS: 5½" x 5½", bronze bushed, oil bath.
TAIL AND HANGER BEARINGS: 4 15/16" x 12" Bronze Bushed.
GEAR BOX OIL CAPACITY: 55 Gallons.

GEARS: Double Reduction. Main Gear, 33.6" x 10"
RATING: 65.5 H.P. at 20 S.P.M. 324,000 lb. ins. Peak Torque
RATIO: 30.12
CRANKSHAFT: 6 7/16"
SHEAVE: 25" P.D.-8C Std., 30" P.D. Alt.; 47¼" P.D. Max. 2 15/16" Bore
WEIGHT: 37,100 lbs.
STATIC COUNTERBALANCE—LBS.

	No. 7472 Crank		No. 7472 Crank (Std.)	
Stroke	No. 2 Wts.	Aux. Wts.	No. 1 Wts.	Aux. Wts.
34"	28,800	35,600	32,000	39,900
44"	22,200	27,500	24,750	30,850
54"	18,200	22,400	20,150	25,100
64"	15,300	19,000	17,000	21,200
74"	13,040	16,250	14,700	18,325

LUFKIN UNIVERSAL TC-2A-35A UNIT ASSEMBLY OR 228D API SIZE—20,000 Lb. Polish Rod Load Class

WALKING BEAM: 27" x 10" x 102 lbs. 10'-0" and 10'-0" working centers. API Walking Beam Rating: 19,000 Lbs.
HANGER: Centerline type, Universal bronze bushed.
PITMAN: Universal Equalizer with bearings "in line", 3" Heavy pipe connections, Universal lower bearings.
CENTER BEARING: No. 2AS, bronze bushed, 6" x 17", oil bath, dust proof.
SAMSON POST: No. 12 Tripod, 12'-1", high.
BASE: 16" Deep, 37" wide at gear box.
CRANKS: No. 6460, 59½" radius.
CRANK PINS: 4¾" x 4⅝", bronze bushed, oil bath.
TAIL AND HANGER BEARINGS: 4 15/16" x 9¼" Bronze Bushed.
GEAR BOX OIL CAPACITY: 55 Gallons.

GEARS: Double Reduction. Main Gear, 30.3" P.D. 9" Face
RATING: 46.1 H.P. at 20 S.P.M. 228,000 lb. ins. Peak Torque
RATIO: 28.45
CRANKSHAFT: 6"
SHEAVE: 24¼" P.D.-6C Std., 30" P.D. Alt.; 41¼" P.D. Max. 2 7/16" Bore
WEIGHT: 27,220 lbs.
STATIC COUNTERBALANCE-LBS.:

Stroke	No. 2A Wts.	Aux. Wts.	No. 2 Wts.	Aux. Wts.
24"	25,950	31,950	28,800	35,950
34"	18,300	22,550	20,350	25,350
44"	14,150	17,400	15,700	19,600
54"	11,550	14,200	12,800	15,950
64"	9,750	12,000	10,800	13,500

LUFKIN UNIVERSAL TC-33A-22G UNIT ASSEMBLY OR 160D API SIZE—17,000 Lb. Polish Rod Load Class

WALKING BEAM: 21" x 9" x 82 lbs., 8'-0" and 8'-0" working Centers. API Walking Beam Rating: 15,800 Lbs.
HANGER: Universal centerline type, bronze bushed.
PITMAN: Universal Equalizer with bearings "in line", 3" Heavy pipe connections, Universal lower bearings.
CENTER BEARING: No. 3AS bronze bushed, 6" x 14", oil bath, dust proof.
SAMSON POST: Tripod, 12'-1" high.
BASE: 10" deep, 32" wide at gear box.
CRANKS: No. 5452, 51½" radius.
CRANK PINS: 4¾" x 4⅝", bronze bushed, oil bath.
TAIL AND HANGER BEARINGS: 4 15/16" x 9¼" bronze bushed.
GEAR BOX OIL CAPACITY: 22 Gallons.

GEARS: Double Reduction. Main Gear, 24.5" x 7⅝"
RATING: 33.2 H.P. at 20 S.P.M. 164,500 lb. ins. Peak Torque
RATIO: 28.67
CRANKSHAFT: 5 7/16"
SHEAVE: 24¼" P.D.-5C Std., 29¼" P.D. or 33¼" P.D. Alt.; 38" P.D. Max. 2 7/16" Bore
WEIGHT: 21,000 lbs.
STATIC COUNTERBALANCE—LBS.

Stroke	No. 3 Weights	Aux. Weights
24"	17,950	24,950
34"	12,650	17,500
44"	9,750	13,575
54"	7,975	11,075

LUFKIN UNIVERSAL TC-44A-15A UNIT ASSEMBLY OR 114D API SIZE—15,000 Lb. Polish Rod Load Class

WALKING BEAM: 21" x 9" x 82 lbs., 8'-0" and 8'-0" working centers. API Walking Beam Rating: 15,800 Lbs.
HANGER: Universal Centerline Type, bronze bushed.
PITMAN: Universal Equalizer with bearings "in line", 2½" Heavy pipe connections, Universal lower bearings.
CENTER BEARING: No. 3AS, bronze bushed, 6" x 14", oil bath, dust proof.
SAMSON POST: Tripod, 10'-4" high.
BASE: 8" deep, 25" wide at gear box, 19'-7½" long.
CRANKS: No. 5452, 51½" radius.
CRANK PINS: 3¾" x 3½", bronze bushed, oil bath.
TAIL BEARING: 3 15/16" x 7¼", bronze bushed.
GEAR BOX OIL CAPACITY: 17 Gallons.

GEARS: Double Reduction. Main Gear, 23.7" P.D. 6¼" Face
RATING: 25.1 H.P. at 20 S.P.M. 124,000 lb. ins. Peak Torque
RATIO: 29.4
CRANKSHAFT: 4 7/16" Diameter
SHEAVE: 19¼" P.D.-4C Std., 33¼" P.D. Maximum. 1 15/16" Bore
WEIGHT: 14,715 lbs.
STATIC COUNTERBALANCE—LBS.

Stroke	No. 3 Weights	Aux. Weights
24"	17,950	24,950
34"	12,650	17,500
44"	9,750	13,575
54"	7,975	11,075

General Specifications—Lufkin Single Reduction Unit Assemblies TC-0A, 1A, 2A, 33A, 44A

LUFKIN UNIVERSAL TC-0A-60A UNIT ASSEMBLY OR 456S API SIZE—30,000 Lb. Polish Rod Load Class

WALKING BEAM: 2 4¾" x 14" x 160 lbs., 12'-6" and 12'-6" working centers. API Walking Beam Rating: 24,750 Lbs.
HANGER: Centerline type, Universal, bronze bushed.
PITMAN: Universal Equalizer with bearings "in line", 4" Heavy pipe connections, Universal lower bearings.
CENTER BEARING: No. 1AS bronze bushed, 7" x 20" oil bath, dust proof.
SAMSON POST: No. 13 Tripod, 13'-3" high.
BASE: 16" deep, 50" wide at gear box.
CRANKS: No. 7472, 71½" radius.
CRANK PINS: 5½" x 5½", bronze bushed, oil bath.
TAIL AND HANGER BEARINGS: 4 11/16" x 12" Bronze Bushed.
GEAR BOX OIL CAPACITY: 11 Gallons.

GEARS: Single Reduction. Main Gear, 49.6" x 12"
RATING: 97.0 H.P. at 20 S.P.M. 480,000 lb. ins. Peak Torque
RATIO: 9.54
CRANKSHAFT: 6 7/16"
SHEAVE: 37" P.D.-7D or 14C Std., 37" P.D. Maximum. 3 11/16" Bore
WEIGHT: 40,185 lbs.
STATIC COUNTERBALANCE—LBS.

Stroke	No. 1 Weights	C.I. Auxiliary Weights
34"	32,000	39,900
44"	24,750	30,850
54"	20,150	25,100
64"	17,000	21,200
74"	14,700	18,325

LUFKIN UNIVERSAL TC-1A-54C UNIT ASSEMBLY OR 320S API SIZE—25,000 Lb. Polish Rod Load Class

WALKING BEAM: 2 4¾" x 14" x 160 lbs., 12'-6" and 12'-6" working centers. API Walking Beam Rating: 24,750 Lbs.
HANGER: Centerline type, Universal, bronze bushed.
PITMAN: Universal Equalizer with bearings "in line", 4" Heavy pipe connections, Universal lower bearings.
CENTER BEARING: No. 1AS bronze bushed, 7" x 20", oil bath, dust proof.
SAMSON POST: No. 13 Tripod, 13'-3" high.
BASE: 16" deep, 43" wide at gear box.
CRANKS: No. 7472, 71½" radius.
CRANK PINS: 5½" x 5½", bronze bushed, oil bath.
TAIL AND HANGER BEARINGS: 4 11/16" x 12", bronze bushed.
GEAR BOX OIL CAPACITY: 29 Gallons.

GEARS: Single Reduction. Main Gear, 47" x 10"
RATING: 71.0 H.P. at 20 S.P.M. 352,000 lb. ins. Peak Torque
RATIO: 9.4
CRANKSHAFT: 6 7/16"
SHEAVE: 34" P.D.-12C or 7D Std., 34¼" P.D. Max. 3 7/16" Bore
WEIGHT: 37,000 lbs.
STATIC COUNTERBALANCE—LBS.

Stroke	No. 7472 Crank		No. 7472 Crank (Std.)	
	No. 2 Wts.	Aux. Wts.	No. 1 Wts.	Aux. Wts.
34"	28,800	35,600	32,000	39,900
44"	22,200	27,500	24,750	30,850
54"	18,200	22,400	20,150	25,100
64"	15,300	19,000	17,000	21,200
74"	13,040	16,250	14,700	18,325

LUFKIN UNIVERSAL TC-2A-36A UNIT ASSEMBLY OR 228S API SIZE—20,000 Lb. Polish Rod Load Class

WALKING BEAM: 27" x 10" x 102 lbs., 10'-0" and 10'-0" working centers. API Walking Beam, Rating: 19,000 Lbs.
HANGER: Centerline type, Universal, bronze bushed.
PITMAN: Universal Equalizer with bearings "in line", 3" Heavy pipe connection, Universal lower bearings.
CENTER BEARING: No. 2AS, bronze bushed, 6" x 17", oil bath, dust proof.
SAMSON POST: No. 12 Tripod, 12'-1", high.
BASE: 16" deep, 37" wide at gear box.
CRANKS: No. 6460, 59½" radius.
CRANK PINS: 4¾" x 4⅝", bronze bushed, oil bath.
TAIL AND HANGER BEARINGS: 4 11/16" x 9¼" Bronze Bushed.
GEAR BOX OIL CAPACITY: 20 Gallons.

GEARS: Single Reduction. Main Gear, 45.4" P.D. 8" Face
RATING: 53.3 H.P. at 20 S.P.M. 264,000 lb. ins. Peak Torque
RATIO: 9.94
CRANKSHAFT: 6"
SHEAVE: 34" P.D. 9C or 6D Std., 34¼" P.D. Maximum. 3 7/16" Bore
WEIGHT: 27,120 lbs.
STATIC COUNTERBALANCE—LBS.

Stroke	No. 2A Wts.	Aux. Wts.	No. 2 Wts.	Aux. Wts.
24"	25,950	31,950	28,800	35,950
34"	18,300	22,550	20,350	25,350
44"	14,150	17,400	15,700	19,600
54"	11,550	14,200	12,800	15,950
64"	9,750	12,000	10,800	13,500

LUFKIN UNIVERSAL TC-33A-18B UNIT ASSEMBLY OR 160S API SIZE—17,000 Lb. Polish Rod Load Class

WALKING BEAM: 21" x 9" x 82 lbs., 8'-0" and 8'-0" working centers. API Walking Beam Rating: 15,800 Lbs.
HANGER: Universal centerline type, bronze bushed.
PITMAN: Universal Equalizer with bearings "in line", 3" Heavy pipe connections, Universal lower bearings.
CENTER BEARING: No. 3AS bronze bushed, 6" x 14", oil bath, dust proof.
SAMSON POST: Tripod, 12'-1" high.
BASE: 10" deep, 32" wide at gear box.
CRANKS: No. 5452, 51½" radius.
CRANK PINS: 4¾" x 4⅝", bronze bushed, oil bath.
TAIL AND HANGER BEARINGS: 4 11/16" x 9¼" bronze bushed.
GEAR BOX OIL CAPACITY: 20 Gallons.

GEARS: Single Reduction. Main Gear, 42" x 6"
RATING: 35 H.P. at 20 S.P.M. 173,000 lb. ins. Peak Torque
RATIO: 10.5
CRANKSHAFT: 5 7/16"
SHEAVE: 32¼" P.D.-6C or 4D Std., 28" P.D. 4D Alt., 32¼" P.D. Maximum. 2 11/16" Bore
WEIGHT: 21,000 lbs.
STATIC COUNTERBALANCE—LBS.

Stroke	No. 3 Weights	Aux. Weights
24"	17,950	24,950
34"	12,650	17,500
44"	9,750	13,575
54"	7,975	11,075

LUFKIN UNIVERSAL TC-44A-24A UNIT ASSEMBLY OR 114S API SIZE—15,000 Lb. Polish Rod Load Class

WALKING BEAM: 21" x 9" x 82 lbs., 8'-0" and 8'-0" working centers. API Walking Beam Rating: 15,800 Lbs.
HANGER: Universal Centerline Type, bronze bushed.
PITMAN: Universal Equalizer with bearings "in line", 2½" Heavy pipe connections, Universal lower bearings.
CENTER BEARING: No. 3AS bronze bushed, 6" x 14", oil bath, dust proof.
SAMSON POST: Tripod, 10'-4" high.
BASE: 8" deep, 25" wide at gear box, 19'-7½" long.
CRANKS: No. 5452, 51½" radius.
CRANK PINS: 3¾" x 3½", bronze bushed, oil bath.
TAIL BEARING: 3 11/16" x 7¼" bronze bushed.
GEAR BOX OIL CAPACITY: 5.5 Gallons.

GEARS: Single Reduction. Main Gear, 36.2" P.D. 5½" Face
RATING: 25.9 H.P. at 20 S.P.M. 128,000 lb. ins. Peak Torque
RATIO: 9.67
CRANKSHAFT: 4 7/16" Diameter
SHEAVE: 27" P.D.-6C Std., 27" P.D. Maximum. 2 11/16" Bore
WEIGHT: 14,715 lbs.
STATIC COUNTERBALANCE—LBS.

Stroke	No. 3 Weights	Aux. Weights
24"	17,950	24,950
34"	12,650	17,500
44"	9,750	13,575
54"	7,975	11,075

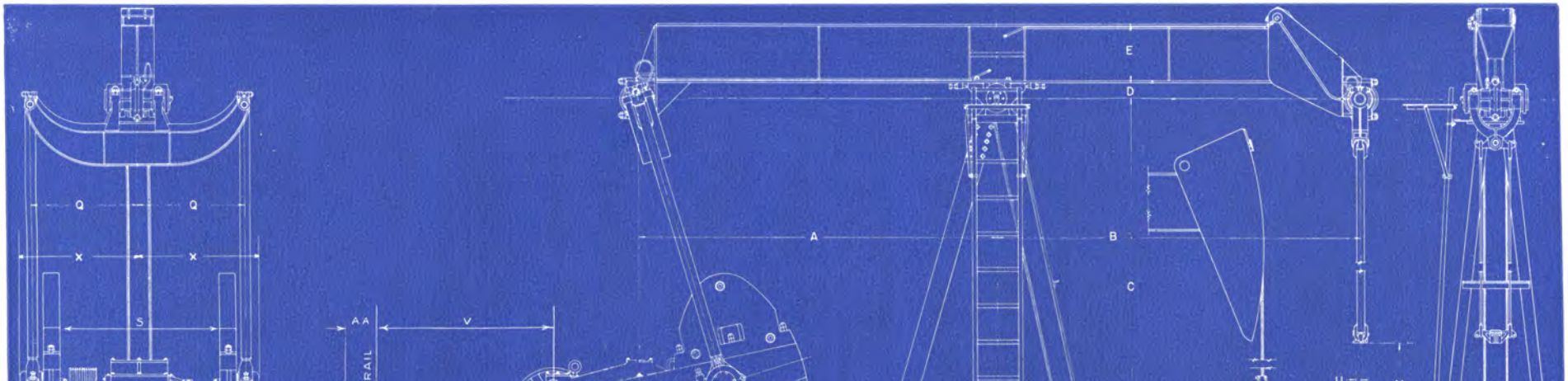


FIGURE 12

Dimensions—Standard Lufkin Units TC-OA, 1A, 2A, 33A, and 44A

UNIT	A	B	C	D	E	F	G	H	J	K	M	N	O	P
TC-OA-1625CU	12′-6″	12′-8 3/16″	13′-3″	7″	24½″	30′-0″	16′-10″	13′-2″	5′-11½″	2′-6″	3′-1″	16″	2′-1″	6′-2″
TC-1A-1625CU	12′-6″	12′-8 3/16″	13′-3″	7″	24½″	28′-0″	16′-9½″	11′-2½″	5′-11½″	2′-4″	3′-1″	16″	1′-9½″	5′-11″
TC-2A-10220CU	10′-0″	10′-2 3/16″	12′-1″	6″	27″	27′-3″	13′-9″	13′-6″	4′-11½″	2′-3″	2′-8″	16″	1′-6½″	5′-5″
TC-33A-8216CU	8′-0″	8′-2 5/8″	12′-1″	6″	21″	20′-9″	11′-2″	9′-7″	4′-3½″	2′-3″	2′-3″	10″	1′-4″	4′-8½″
TC-44A-8216CU	8′-0″	8′-2 5/8″	10′-4″	6″	21″	19′-7½″	11′-3½″	8′-4″	4′-3½″	*	2′-0″	8″	1′-0½″	4′-1″

UNIT	Q		S		T	U	V		W	X		Y	AA	BB
	Single Red.	Double Red.	Single Red.	Double Red.			Single Red.	Double Red.		Single Red.	Double Red.			
TC-OA-1625CU	3′-4 7/8″	3′-8 7/8″	4′-10½″	5′-6½″	4′-2″	2 3/16″	7′-6½″	6′-4½″	8′-2″	3′-11 5/8″	4′-3 5/8″	2′-6 5/8″	22 3/4″	22¼″
TC-1A-1625CU	3′-3 3/8″	3′-3 3/8″	4′-7½″	4′-7½″	3′-7″	2 3/16″	5′-10″	5′-2″	8′-2½″	3′-10 3/8″	3′-10 3/8″	2′-6 5/8″	22 3/4″	20¼″
TC-2A-10220CU	2′-11 1/16″	2′-11 1/16″	4′-2½″	4′-2½″	3′-1″	2 3/16″	8′-1″	7′-8″	6′-3″	3′-5 3/16″	3′-5 3/16″	1′-9 5/8″	22 3/4″	19¼″
TC-33A-8216CU	2′-7 1/16″	2′-7 1/16″	3′-6″	3′-6″	2′-8″	2 5/8″	4′-11 3/8″	4′-8 3/8″	4′-10″	3′-1½″	3′-1½″	1′-8 5/8″	22 3/4″	19¼″
TC-44A-8216CU	2′-4 13/16″	2′-4 13/16″	3′-3″	3′-3″	2′-1″	2 5/8″	4′-5″	4′-1″	4′-8½″	2′-10 1/16″	2′-10 1/16″	2′-2 5/8″	17″	†

* Dimension "K"—TC-44A-15A, 1′-6″ TC-44A-24A, 1′-9″. † Dimension "BB"—TC-44A-15A, 10¼″ TC-44A-24A, 13¼″.
The Universal centerline Rod Hanger is standard on all above Units; however, Hinged Horsehead can be furnished if desired.

ALTERNATE SETTINGS—LUFKIN UNIT ASSEMBLIES TC-0A, 1A, 2A, 33A AND 44A

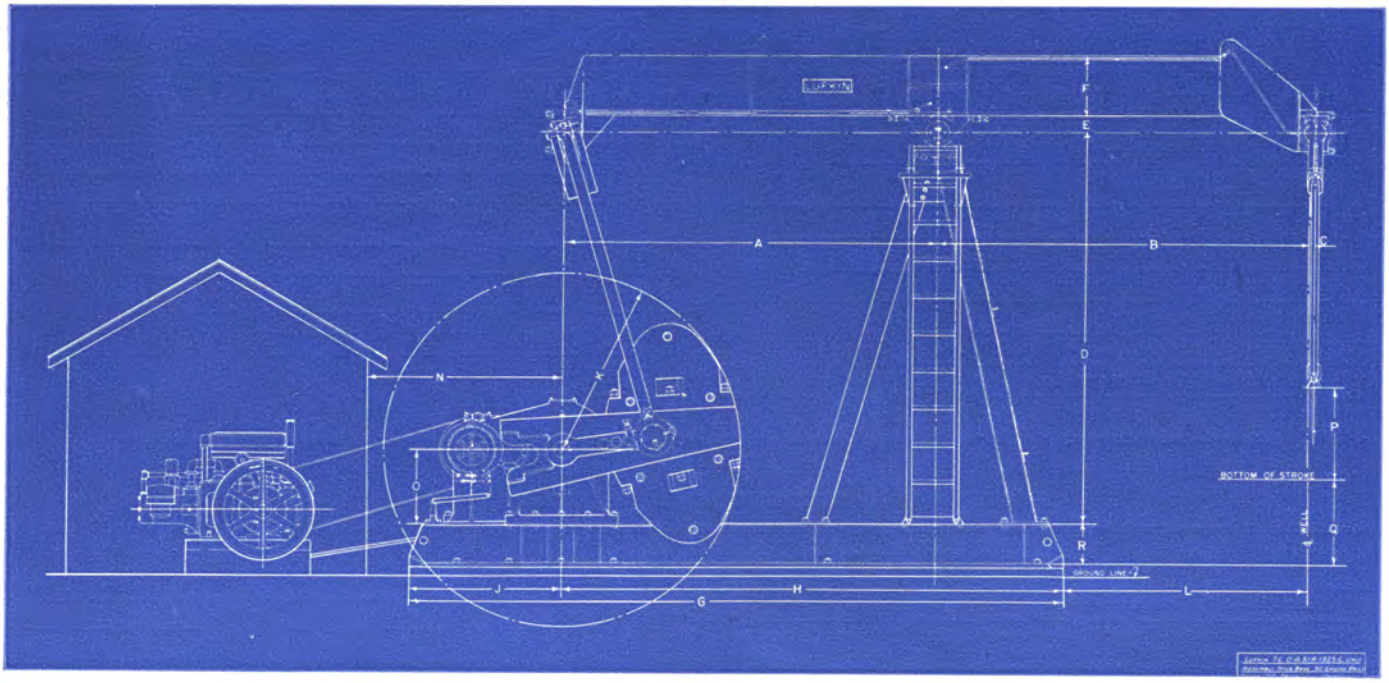


FIGURE 13

Single Reduction TC-0A, 1A, 2A, 33A and 44A with Stub Base and House for Lufkin Cooper-Bessemer Gas Engine

LUFKIN UNIT ALTERNATIVES, TC-0A, 1A, 2A, 33A, AND 44A

GENERAL DIMENSIONS

UNIT	A	B	C	D	E	F	G	H	J	K	L	N	O	P	Q	R
TC-0A-1625CU...	12′-6″	12′-6″	2 3/16″	13′-3″	7″	24½″	21′-3″	16′-10″	4′-5″	5′-11½″	8′-2″	6′-6″	2′-6″	3′-1″	2′-6⅝″	16″
TC-1A-1625CU...	12′-6″	12′-6″	2 3/16″	13′-3″	7″	24½″	21′-11″	16′-9½″	5′-1½″	5′-11½″	8′-2½″	6′-6″	2′-4″	3′-1″	2′-6⅝″	16″
TC-2A-10220CU..	10′-0″	10′-0″	2 3/16″	12′-1″	6″	27″	18′-0″	13′-9″	4′-3″	4′-11½″	6′-3″	5′-6″	2′-3″	2′-8″	1′-9⅝″	16″
TC-33A-8216CU..	8′-0″	8′-0″	2⅝″	12′-1″	6″	21″	14′-8″	11′-2″	3′-6″	4′-3½″	4′-10″	4′-10″	2′-3″	2′-3″	1′-8⅝″	10″
TC-44A-8216CU..	8′-0″	8′-0″	2⅝″	10′-4″	6″	21″	14′-1½″	11′-3½″	2′-10″	4′-3½″	4′-8½″	4′-4″	*	2′-0″	2′-2⅝″	8″

* Dimension "O" TC-44A-15A, 1′-6″, TC-44A-24A, 1′-9″.

Ask for Certified Print before making foundations.

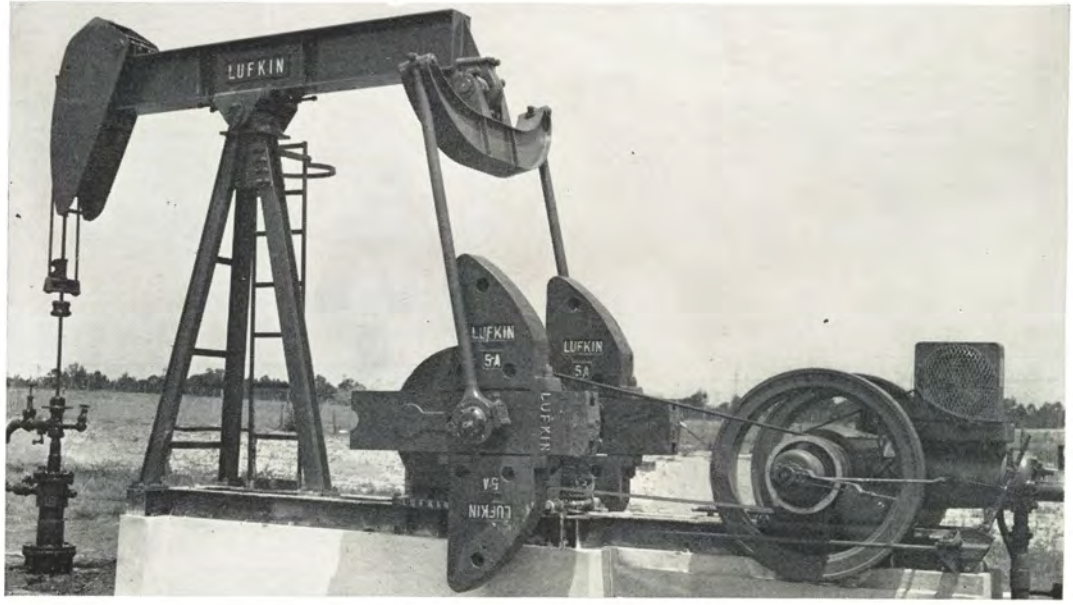


FIGURE 14

Lufkin TC-44-24A unit with jointed type base and single cylinder engine drive. This type base allows the engine to be set considerably lower than the regular full length base with universal rails.

General Specifications—Lufkin Double Reduction Unit Assemblies TC-1, 2, 33 and 44

LUFKIN UNIVERSAL TC-1-41C UNIT ASSEMBLY OR 320D API SIZE—25,000 Lb. Polish Rod Load Class

WALKING BEAM: 24″ x 14″ x 130 lbs., 10′-0″ and 10′-0″ working centers. API Walking Beam Rating: 26,650 Lbs.

HANGER: Hinged Horsehead with 1″ wire rope on Equalizing Sheave.

PITMAN: Universal Equalizer with bearings "in line", 4″ Heavy pipe connections, Universal lower bearings.

CENTER BEARING: No. 1AS bronze bushed, 7″ x 20″ oil bath, dust proof.

SAMSON POST: No. 13 Tripod, 13′-3″ high.

BASE: 16″ deep, 43″ wide at gear box.

CRANKS: 7472, 71½″ radius.

CRANK PINS: 5½″ x 5½″ bronze bushed, oil bath.

TAIL BEARING: 4 15/16″ x 12″ bronze bushed.

GEAR BOX OIL CAPACITY: 55 Gallons.

GEARS	Double Reduction.	Main Gear, 33.6″ x 10″
RATING	65.5 H.P. at 20 S.P.M.	324,000 lb. ins. Peak Torque
RATIO	30.12	
CRANKSHAFT	6 7/16″	
SHEAVE	25″ P.D.-8C Std., 30″ P.D. Alt.; 47¼″ P.D. Maximum 2 15/16″ Bore	
WEIGHT	35,250 lbs.	

STATIC COUNTERBALANCE—LBS.

Stroke	No. 7472 Cranks		No. 7472 Cranks (Std.)	
	No. 2 Wts.	Aux. Wts.	No. 1 Wts.	Aux. Wts.
34″	28,800	35,600	32,000	39,900
44″	22,200	27,500	24,750	30,850
54″	18,200	22,400	20,150	25,100
64″	15,300	19,000	17,000	21,200
74″	13,040	16,250	14,700	18,325

LUFKIN UNIVERSAL TC-2-35A UNIT ASSEMBLY OR 228D API SIZE—20,000 Lb. Polish Rod Load Class

WALKING BEAM: 24″ x 12″ x 100 lbs., 8′-0″ and 8′-0″ working centers. API Walking Beam Rating: 25,550 lbs.

HANGER: Hinged Horsehead with 1″ wire rope on Equalizing Sheave.

PITMAN: Universal Equalizer with bearings "in line", 3″ Heavy pipe connections, Universal lower bearings.

CENTER BEARING: No. 2AS, bronze bushed, 6″ x 17″, oil bath, dust proof.

SAMSON POST: No. 12 Tripod, 12′-1″ high.

BASE: 16″ deep, 37″ wide at gear box, 22′-1″ long.

CRANKS: No. 6460, 59½″ Radius.

CRANK PINS: 4¾″ x 4⅝″ bronze bushed, oil bath.

TAIL BEARING: 4 15/16″ x 9¼″, bronze bushed.

GEAR BOX OIL CAPACITY: 55 Gallons.

GEARS	Double Reduction.	Main Gear, 30.3″ P.D. 9″ Face
RATING	46.1 H.P. at 20 S.P.M.	228,000 lb. ins. Peak Torque
RATIO	28.45	
CRANKSHAFT	6″	
SHEAVE	24¼″ P.D.-6C Std., 30″ P.D. Alt., 41¼″ P.D. Max. 2 7/16″ Bore	
WEIGHT	26,550 lbs.	

STATIC COUNTERBALANCE—LBS.

Stroke	No. 2A Wts.	Aux. Wts.	No. 2 Wts.	Aux. Wts.
24″	25,950	31,950	28,800	35,950
34″	18,300	22,550	20,350	25,350
44″	14,150	17,400	15,700	19,600
54″	11,550	14,200	12,800	15,950
64″	9,750	12,000	10,800	13,500

LUFKIN UNIVERSAL TC-33-22G UNIT ASSEMBLY OR 160D API SIZE—17,000 Lb. Polish Rod Load Class

WALKING BEAM: 18″ x 8¾″ x 77 lbs., 7′-0″ and 5′-3¼″ working centers. API Walking Beam Rating: 16,400 Lbs.

HANGER: Hinged Horsehead with 1″ wire line on Equalizing Sheave.

PITMAN: Universal Equalizer with bearings "in line", 3″ Heavy pipe connections, Universal lower bearings.

CENTER BEARING: No. 3AS, bronze bushed, 6″ x 14″, oil bath, dust proof.

SAMSON POST: Tripod, 10′-4″ high.

BASE: 10″ deep, 32″ wide at gear box, 18′-6″ long.

CRANKS: No. 4152, 51½″ radius.

CRANK PINS: 4¾″ x 4⅝″, bronze bushed, oil bath.

TAIL BEARING: 4 15/16″ x 9¼″, bronze bushed.

GEAR BOX OIL CAPACITY: 22 Gallons.

GEARS	Double Reduction.	Main Gear, 24.5″ x 7⅝″
RATING	33.2 H.P. at 20 S.P.M.	164,000 lb. ins. Peak Torque
RATIO	28.67	
CRANKSHAFT	5 7/16″	
SHEAVE	24¼″ P.D.-5C Std., 29¼″ P.D. or 33¼″ P.D., Alt., 38″ P.D. Maximum. 2 7/16″ Bore	
WEIGHT	19,760 lbs.	

STATIC COUNTERBALANCE—LBS.

Stroke	No. 3 Wts.	Aux. Wts.
27.9″	15,840	21,850
41.2″	10,720	14,800
54.4″	8,140	11,220

LUFKIN UNIVERSAL TC-44-15A UNIT ASSEMBLY OR 114D API SIZE AND TC-44-80D—13,500 Lb. Polish Rod Load Class

WALKING BEAM: 16″ x 8½″ x 64 lbs., 6′-0″ and 6′-0″ working centers. API Walking Beam Rating: 14,060 Lbs.

HANGER: Hinged Horsehead with ⅞″ wire line on Equalizing Sheave.

PITMAN: Universal Equalizer with bearings "in line", 2½″ Heavy pipe connections, Universal lower bearings.

CENTER BEARING: No. 4AS, bronze bushed, 5″ x 10½″, oil bath, dust proof.

SAMSON POST: Tripod, 8′-9½″ high.

BASE: 8″ deep, 25″ wide at gear box, 16′-1¼″ long.

CRANKS: No. 4846, 46″ radius.

CRANK PINS: 3¾″ x 3½″, bronze bushed, oil bath.

TAIL BEARING: 3 15/16″ x 7¼″, bronze bushed.

GEAR BOX OIL CAPACITY: No. 15A, 17 Gallons; No. 80D, 17 Gallons.

	No. 15A or 114D	No. 80D
GEARS	Double Red. 23.7″, 6¼″ Face	Double Red. 22.2″, 5½″ Face
RATING	25.1 H.P.—124,000 Lb. Ins.	16.2 H.P.—80,000 Lb. Ins.
RATIO	29.4	29.15
CRANKSHAFT	4 7/16″ Diameter	4 7/16″ Diameter
SHEAVE	19¼″ P.D.-4C Std. 33¼″ P.D. Max. 1 15/16″ Bore	19¼″ P.D.-4C Std. 29¼″ P.D. Max. 1 15/16″ Bore
WEIGHT	13,940 Lbs.	13,670 Lbs.

STATIC COUNTERBALANCE—LBS.

Stroke	No. 5A Reg. Wts.	Aux. Wts.
24″	12,465	16,060
32″	9,350	12,050
40″	7,480	9,640
48″	6,230	8,030

General Specifications—Lufkin Single Reduction Unit Assemblies TC-1, 2, 33 and 44

LUFKIN UNIVERSAL TC-1-54C UNIT ASSEMBLY OR 320S API SIZE—25,000 Lb. Polish Rod Load Class

WALKING BEAM: 24″ x 14″ x 130 lbs., 10′-0″ and 10′-0″ working centers. API Walking Beam Rating: 26,650 Lbs.

HANGER: Hinged Horsehead with 1″ Wire Rope on Equalizing Sheave.

PITMAN: Universal Equalizer with Bearings "in line", 4″ Heavy pipe connections, Universal lower bearings.

CENTER BEARING: No. 1AS, bronze bushed, 7″ x 20″, oil bath, dust proof.

SAMSON POST: No. 13 Tripod, 13′-3″ high.

BASE: 16″ deep, 43″ wide at gear box.

CRANKS: 7472, 71½″ radius.

CRANK PINS: 5½″ x 5½″ bronze bushed, oil bath.

TAIL BEARING: 4 15/16″ x 12″ bronze bushed.

GEAR BOX OIL CAPACITY: 29 Gallons.

GEARS..... Single Reduction. Main Gear, 47″ x 10″

RATING..... 71.0 H.P. at 20 S.P.M. 352,000 lb. ins. Peak Torque

RATIO..... 9.4

CRANKSHAFT... 6 7/16″

SHEAVE..... 34″ P.D.-12C or 7D Std., 34¼″ P.D. Max. 3 7/16″ Bore

WEIGHT..... 35,150 lbs.

STATIC COUNTERBALANCE—LBS.

Stroke	No. 7472 Crank		No. 7472 Crank (Std.)	
	No. 2 Wts.	Aux. Wts.	No. 1 Wts.	Aux. Wts.
34″	28,800	35,600	32,000	39,900
44″	22,200	27,500	24,750	30,850
54″	18,200	22,400	20,150	25,100
64″	15,300	19,000	17,000	21,200
74″	13,040	16,250	14,700	18,325

LUFKIN UNIVERSAL TC-2-36A UNIT ASSEMBLY OR 228S API SIZE—20,000 Lb. Polish Rod Load Class

WALKING BEAM: 24″ x 12″ x 100 lbs., 8′-0″ and 8′-0″ working centers. API Walking Beam Rating: 25,550

HANGER: Hinged Horsehead with 1″ wire rope on equalizing Sheave.

PITMAN: Universal Equalizer with bearings "in line", 3″ Heavy pipe connections, Universal lower bearings.

CENTER BEARING: No. 2AS, bronze bushed, 6″ x 17″, oil bath, dust proof.

SAMSON POST: No. 12 Tripod, 12′-1″ high.

BASE: 16″ deep, 37″ wide at gear box, 22′-1″ long.

CRANKS: No. 6460, 59½″ radius.

CRANK PINS: 4¾″ x 4⅝″, bronze bushed, oil bath.

TAIL BEARING: 4 15/16″ x 9¼″, bronze bushed.

GEAR BOX OIL CAPACITY: 20 Gallons.

GEARS..... Single Reduction. Main Gear, 45.4″ P.D. 8″ Face

RATING..... 53.3 H.P. at 20 S.P.M. 264,000 lb. ins. Peak Torque

RATIO..... 9.94

CRANKSHAFT..... 6″

SHEAVE..... 34″ P.D.-9C or 6D Std., 34″ P.D. Maximum. 3 7/16″ Bore

WEIGHT..... 26,450 lbs.

STATIC COUNTERBALANCE—LBS.

Stroke	No. 2A Wts.	Aux. Wts.	No. 2 Wts.	Aux. Wts.
24″	25,950	31,950	28,800	35,950
34″	18,300	22,550	20,350	25,350
44″	14,150	17,400	15,700	19,600
54″	11,550	14,200	12,800	15,950
64″	9,750	12,000	10,800	13,500

LUFKIN UNIVERSAL TC-33-18B UNIT ASSEMBLY OR 160S API SIZE—17,000 Lb. Polish Rod Load Class

WALKING BEAM: 18″ x 8¾″ x 77 lbs., 7′-0″ and 5′-3¼″ working centers. API Walking Beam Rating: 16,400 Lbs.

HANGER: Hinged Horsehead with 1″ wire line on Equalizing Sheave.

PITMAN: Universal Equalizer with bearings "in line", 3″ Heavy pipe connections, Universal lower bearings.

CENTER BEARING: No. 3AS, bronze bushed, 6″ x 14″, oil bath, dust proof.

SAMSON POST: Tripod, 10′-4″ high.

BASE: 10″ deep, 32″ wide at gear box, 18′-6″ long.

CRANKS: No. 4152, 51½″ radius.

CRANK PINS: 4¾″ x 4⅝″, bronze bushed, oil bath.

TAIL BEARING: 4 15/16″ x 9¼″, bronze bushed.

GEAR BOX OIL CAPACITY: 20 Gallons.

GEARS..... Single Reduction. Main Gear, 42″ x 6″

RATING..... 35.0 H.P. at 20 S.P.M. 173,000 lb. ins. Peak Torque

RATIO..... 10.5

CRANKSHAFT..... 5 7/16″

SHEAVE..... 32¼″ P.D.-6C or 4D Std., 28″ P.D.-4D Alt., 32¼″ P.D. Maximum. 2 15/16″ Bore

WEIGHT..... 19,300 lbs.

STATIC COUNTERBALANCE—LBS.

Stroke	No. 3 Wts.	Aux. Wts.
27.9″	15,840	21,850
41.2″	10,720	14,800
54.4″	8,140	11,220

LUFKIN UNIVERSAL TC-44-24A UNIT ASSEMBLY OR 114S API SIZE—13,500 Lb. Polish Rod Load Class

WALKING BEAM: 16″ x 8½″ x 64 lbs., 6′-0″ and 6′-0″ working centers. API Walking Beam Rating: 14,060 Lbs.

HANGER: Hinged Horsehead with ⅞″ wire line on Equalizing Sheave.

PITMAN: Universal Equalizer with bearings "in line", 2½″ Heavy pipe connections, Universal lower bearings.

CENTER BEARING: No. 4AS, bronze bushed, 5″ x 10½″, oil bath, dust proof.

SAMSON POST: Tripod, 8′-9½″ high.

BASE: 8″ deep, 25″ wide at gear box, 16′-1¼″ long.

CRANKS: No. 4846, 46″ radius.

CRANK PINS: 3¾″ x 3½″, bronze bushed, oil bath.

TAIL BEARING: 3 15/16″ x 7¼″, bronze bushed.

GEAR BOX OIL CAPACITY: 5.5 Gallons.

GEARS..... Single Reduction. Main Gear, 36.2″ P.D. 5½″ Face

RATING..... 25.9 H.P. at 20 S.P.M. 128,000 lb. ins. Peak Torque

RATIO..... 9.67

CRANKSHAFT..... 4 7/16″ Diameter

SHEAVE..... 27″ P.D.-6C Std., 27″ P.D. Maximum. 2 15/16″ Bore

WEIGHT..... 13,940 lbs.

STATIC COUNTERBALANCE—LBS.

Stroke	No. 5A Reg. Wts.	Aux. Wts.
24″	12,465	16,060
32″	9,350	12,050
40″	7,480	9,640
48″	6,230	8,030

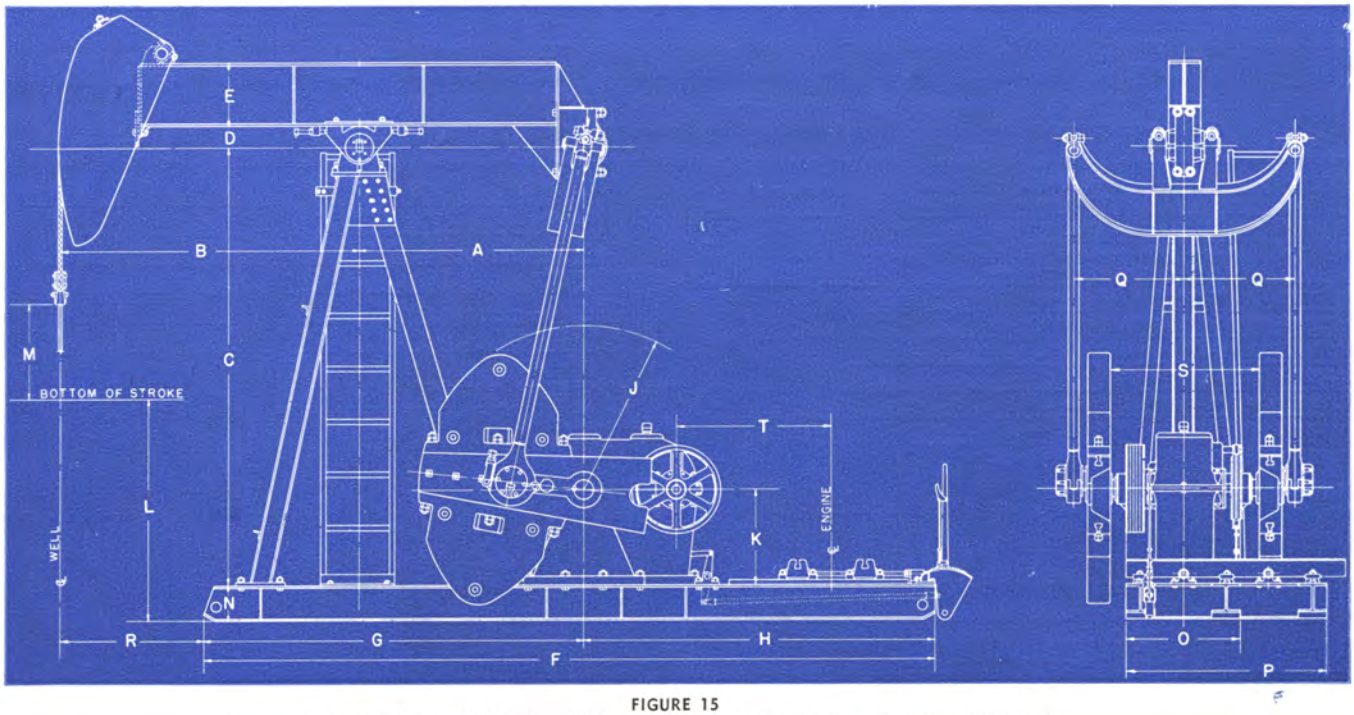


FIGURE 15

STANDARD LUFKIN UNIT ASSEMBLIES TC-1, 2, 33 AND 44

GENERAL DIMENSIONS

Unit	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	
																			Single Red.	Double Red.
TC-1	10′-0″	10′-0″	13′-3″	7″	24″	25′-10″	14′-3″	11′-7″	5′-11½″	2′-4″	3′-4″	3′-1″	16″	3′-7″	5′-11″	3′-3⅜″	5′-9″	4′-7½″	6′-5″	5′-9″
TC-2	8′-0″	8′-0″	12′-1″	6″	24″	22′-1″	11′-9″	10′-4″	4′-11½″	2′-3″	5′-5″	2′-8″	16″	3′-1″	5′-5″	2′-11 7/16″	4′-3″	4′-2½″	5′-1″	4′-8″
TC-33	5′-3¼″	7′-0″	10′-4″	6″	18″	18′-6″	8′-10¾″	9′-7¼″	4′-3½″	2′-3″	5′-2½″	2′-3″	10″	2′-8″	4′-8½″	2′-7 7/16″	3′-4½″	3′-6″	4′-11⅝″	4′-8¾″
TC-44	6′-0″	6′-0″	8′-9½″	6″	16″	16′-11¼″	7′-9¼″	8′-4″	3′-10″	*	3′-6″	2′-0″	8″	2′-1″	4′-1″	2′-4 13/16″	4′-2¾″	3′-3″	4′-5″	4′-1″

* Dimension "K"—TC-44-15A, 1′-6″ TC-44-24A, 1′-9″.

ALTERNATE FEATURES

Lufkin TC-1, 2, 33 and 44 assemblies with Stub Base and Gas Engine Drive.

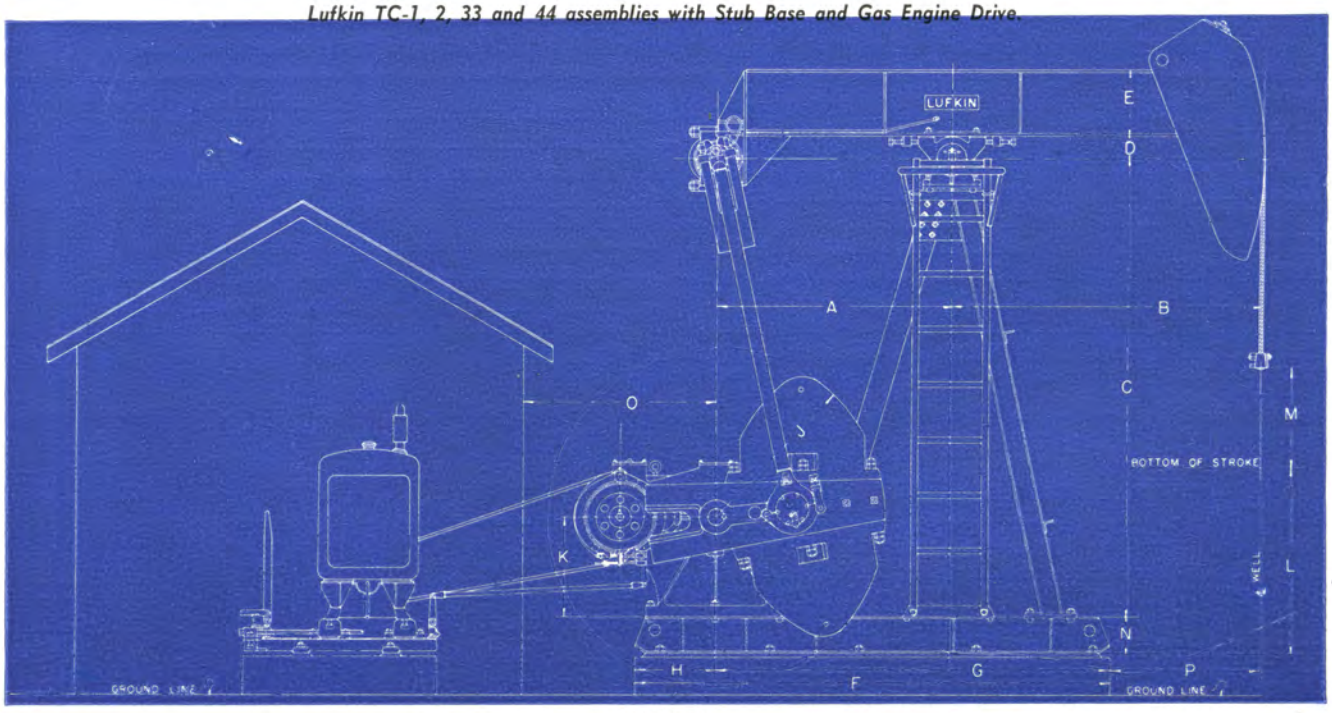


FIGURE 16

Unit	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P
TC-1	10′-0″	10′-0″	13′-3″	7″	24″	18′-2⅝″	14′-5″	3′-9⅝″	5′-11½″	2′-4″	3′-4″	3′-1″	16″	6′-6″	5′-7″
TC-2	8′-0″	8′-0″	12′-1″	6″	24″	16′-0″	11′-9″	4′-3″	4′-11½″	2′-3″	5′-5″	2′-8″	16″	6′-0″	4′-3″
TC-33	5′-3¼″	7′-0″	10′-4″	6″	18″	12′-3⅜″	8′-11¼″	3′-4½″	4′-3½″	2′-3″	5′-2½″	2′-3″	10″	4′-10″	3′-4″
TC-44	6′-0″	6′-0″	8′-9½″	6″	16″	10′-7¼″	7′-9¼″	2′-10″	3′-10″	*	3′-6″	2′-0″	8″	4′-4″	4′-2¾″

* Dimension "K"—TC-44-15A, 1′-6″ TC-44-24A, 1′-9″.

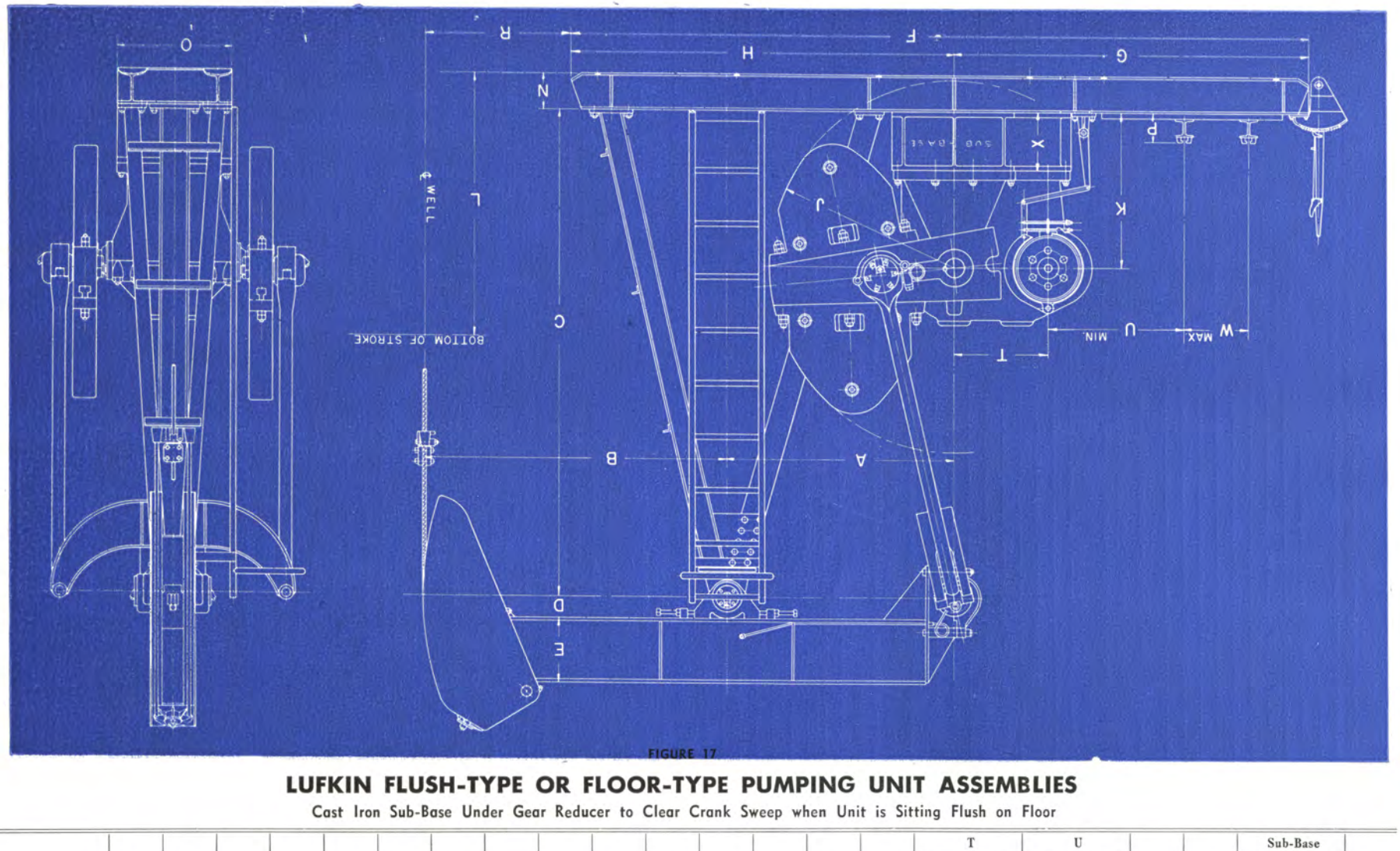


FIGURE 17

LUFKIN FLUSH-TYPE OR FLOOR-TYPE PUMPING UNIT ASSEMBLIES

Cast Iron Sub-Base Under Gear Reducer to Clear Crank Sweep when Unit is Sitting Flush on Floor

Unit	A	B	C	D	E	F	G	H	J	K	L	N	O††	P	R	T		U		W	X	Sub-Base		Part No.
																Single Red.	Double Red.	Single Red.	Double Red.			Wt., Lbs.	Mat'l.	
T7-3A	3′-6″	3′-6″	6′-3⅝″	2¼″	10″	11′-0″	6′-4″	4′-8″	2′-8″	2′-4″	2′-5″	6¼″	2′-10½″	3⅜″	2′-4″	.....	1′-1⅞″	.....	2′-0⅜″	2′-7″	1′-2″	280	C.I.	C7167
T6A-9A	4′-0″	4′-0″	7′-10⅞″	2¼″	14″	13′-6″	8′-3″	5′-3″	3′-4″	2′-10″	4′-3½″	8″	3′-2½″	3⅜″	2′-9″	.....	1′-5½″	.....	2′-4″	2′-11″	1′-8″	460	C.I.	C5307
T5A	5′-0″	5′-0″	9′-9″	4¾″	14″	15′-6″	8′-6¾″	6′-11¼″	3′-6″	3′-3″	5′-2¾″	8″	3′-9″	4⅞″	3′-0¾″	1′-5⅞″	*	3′-0⅝″	†	2′-3⅛″	1′-9″	725	C.I.	C5807
TC-44	6′-0″	6′-0″	9′-9½″	6″	16″	16′-1¼″	8′-4″	7′-9¼″	3′-10″	**	4′-6″	8″	3′-5½″	7¾″	4′-2¾″	1′-8″	2′-0″	3′-0¾″	2′-8¾″	2′-10″	1′-9″	725	C.I.	C5807
TC-44A	8′-0″	8′-2⅝″	10′-4″	6″	21″	19′-7½″	8′-4″	11′-3½″	4′-3½″	**	3′-2″	8″	2′-1″	7¾″	4′-8½″	1′-8″	2′-0″	3′-0¾″	2—8¾″	2′-10″	1′-9″	725	C.I.	C5807
TC-33	5′-3¼″	7′-0″	10′-4″	6″	18″	18′-6″	9′-7¼″	8′-10¾″	4′-3½″	3′-7″	5′-2⅞″	10″	2′-8″	7¾″	3′-4½″	1′-11″	2′-2″	2′-8⅜″	2′-5⅜″	3′-9″	1′-4″	925	C.I.	8789
TC-33A	8′-0″	8′-0″	12′-1″	6″	21″	20′-9″	9′-7″	11′-2″	4′-3½″	3′-7″	5′-1″	10″	2′-8″	7¾″	4′-10″	1′-11″	2′-2″	2′-8⅜″	2′-5⅜″	3′-9″	1′-4″	925	C.I.	8789
TC-2	8′-0″	8′-0″	12′-1″	6″	24″	22′-1″	10′-4″	11′-9″	4′-11½″	3′-9″	5′-8″	16″	3′-1″	7¾″	4′-3″	2′-1″	2′-6″	3′-2¼″	2′-9¼″	3′-9½″	1′-6″	1580	C.I.	8746
TC-2A	10′-0″	10′-0″	14′-7″	6″	27″	27′-3″	13′-6″	13′-9″	4′-11½″	3′-9″	8′-2″	16″	3′-1″	7¾″	6′-3″	2′-1″	2′-6″	6′-2¼″	5′-9¼″	3′-9½″	1′-6″	1580	C.I.	8746
TC-1	10′-0″	10′-0″	15′-9″	7″	24″	25′-10″	11′-7″	14′-3″	5′-11½″	4′-10″	5′-10″	16″	3′-7″	7¾″	5′-9″	2′-2″	2′-10″	4′-6″	3′-10″	3′-9½″	2′-6″	2380	C.I.	C5193
TC-1A	12′-6″	12′-6″	15′-9″	7″	24½″	28′-0″	11′-2½″	16′-9½″	5′-11½″	4′-10″	5′-0⅜″	16″	3′-7″	7¾″	8′-2½″	2′-2″	2′-10″	4′-6″	3′-10″	3′-2¾″	2′-6″	2380	C.I.	C5193
TC-0A	12′-6″	12′-6″	15′-9″	7″	24½″	30′-0″	13′-2″	16′-10″	5′-11½″	5′-0″	5′-0⅜″	16″	4′-2″	7¾″	8′-2″	2′-3⅜″	3′-5½″	5′-7⅞″	4′-5¾″	3′-9½″	2′-6″	2380	C.I.	C6936

* Dimension "T": T5A-7B=1′-8″, T5A-80D=1′-10″. † Dimension "U": T5A-7B=2′-10½″, T5A-80D=2′-8½″. †† Dimension "O" shows width of Base at Samson Post. ** Dimensions "K": TC-44-15A=3′-3″, TC-44-24A=3′-6″.

LUFKIN **LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS**

General Specifications—Lufkin Unit Assemblies T5A, T6A and T7

LUFKIN UNIVERSAL T5A-15A DOUBLE REDUCTION UNIT ASSEMBLY OR 114D API SIZE—10,000 lb. Polish Rod Load Class

WALKING BEAM: 14" x 8" x 43 lbs., 5'-0" and 5'-0" working centers
API Walking Beam Rating: 10,450 Lbs.
HANGER: Hinged Horsehead with ¾" wire line.
PITMAN: Universal Cross Pin Type Equalizer. Side members 4" I Beam.
CENTER BEARING: Bronze Bushed, 4 7/16" x 9".
SAMSON POST: Tripod, 8'-0" high.
BASE: 8" deep, 2'-1½" wide at gear box, 15'-6" long.
CRANK: No. 4242C, 42" radius.
CRANK PINS: 3¾" x 3½" oil bath, bronze bushed.
TAIL BEARING: 3 7/16" x 6½", bronze bushed.
GEAR BOX OIL CAPACITY: 17 Gallons.

GEARS: Double Reduction
Main Gear: 23.7" x 6¼" Face
RATING: 25.1 H.P. @ 20 S.P.M.
124,000 lb. ins. Peak Torque
RATIO: 29.4
CRANKSHAFT: 4 7/16"
SHEAVE: 19¼" P.D.-4C Std.
33¾" P.D. Max.
Bore 1 15/16"
WEIGHT: 9,100 lbs.
STATIC COUNTERBALANCE—LBS.

Stroke	No. 5C Wts.	Aux. Wts.
22"	9,225	12,230
32"	6,340	8,400
42"	4,830	6,400

LUFKIN UNIVERSAL T5A-80D DOUBLE REDUCTION UNIT ASSEMBLY—10,000 Lb. Polish Rod Load Class

WALKING BEAM: 14" x 8" x 43 lbs., 5'-0" and 5'-0" working centers.
API Walking Beam Rating: 10,450 Lbs.
HANGER: Hinged Horsehead with ¾" wire line.
PITMAN: Universal Cross Pin type Equalizer. Side members 4" I Beam.
CENTER BEARING: Bronze Bushed, 4 7/16" x 9".
SAMSON POST: Tripod, 8'-0" high.
BASE: 8" deep, 2'-1½" wide at gear box, 15'-6" long
CRANK: No. 4242C, 42" radius.
CRANK PINS: 3¾" x 3½" oil bath, bronze bushed.
TAIL BEARING: 3 7/16" x 6½", bronze bushed.
GEAR BOX OIL CAPACITY: 17 Gallons.

GEARS: Double Reduction
Main Gear: 22.2" x 5½"
RATING: 16.2 H.P. at 20 S.P.M.
80,000 lb. ins. Peak Torque
RATIO: 29.15
CRANKSHAFT: 4 7/16"
SHEAVE: 19¼" P.D.-4C Std.
28" P.D. Maximum
1 15/16" Bore
WEIGHT: 8,880 lbs.
STATIC COUNTERBALANCE—LBS.

Stroke	No. 5C Wts.	Aux. Wts.
22"	9,225	12,230
32"	6,340	8,400
42"	4,830	6,400

LUFKIN UNIVERSAL T5A-7B DOUBLE REDUCTION UNIT ASSEMBLY OR 57D API SIZE—10,000 Lb. Polish Rod Load Class

WALKING BEAM: 14" x 8" x 43 lbs., 5'-0" and 5'-0" working centers.
API Walking Beam Rating: 10,450 Lbs.
HANGER: Hinged Horsehead with ¾" wire line.
PITMAN: Universal Cross Pin type Equalizer. Side members 4" I Beam.
CENTER BEARING: Bronze Bushed, 4 7/16" x 9".
SAMSON POST: Tripod, 8'-0" high.
BASE: 8" deep, 2'-1½" wide at gear box, 15'-6" long.
CRANKS: No. 4242C, 42" radius.
CRANK PINS: 3¾" x 3½", oil bath, bronze bushed.
TAIL BEARING: 3 7/16" x 6½", bronze bushed.
GEAR BOX OIL CAPACITY: 12.5 Gallons.

GEARS: Double Reduction
Main Gear: 19½" x 5"
RATING: 11.8 H.P at 20 S.P.M.
58,000 lb. ins. Peak Torque
RATIO: 29.32
CRANKSHAFT: 4"
SHEAVE: 19¼" P.D.-3C Std., 24¼" P.D. Alt.
27¼" P.D. Maximum
1 15/16" Bore
WEIGHT: 8,500 lbs.
STATIC COUNTERBALANCE—LBS.

Stroke	No. 5C Wts.	Aux. Wts.
22"	9,225	12,230
32"	6,340	8,400
42"	4,830	6,400

LUFKIN UNIVERSAL T5A-16 SINGLE REDUCTION UNIT ASSEMBLY OR 57S API SIZE—10,000 Lb. Polish Rod Load Class

WALKING BEAM: 14" x 8" x 43 lbs., 5'-0" and 5'-0" working centers.
API Walking Beam Rating: 10,450 Lbs.
HANGER: Hinged Horsehead with ¾" wire line.
PITMAN: Universal Cross Pin type Equalizer. Side members 4" I Beam.
CENTER BEARING: Bronze bushed, 4 7/16" x 9".
SAMSON POST: Tripod, 8'-0" high.
BASE: 8" deep, 2'-1½" wide at gear box, 15'-6" long.
CRANKS: No. 4242C, 42" radius.
CRANK PINS: 3¾" x 3½", oil bath, bronze bushed.
TAIL BEARING: 3 7/16" x 6½" bronze bushed.
GEAR BOX OIL CAPACITY: 7.5 Gallons.

GEARS: Single Reduction
Main Gear: 32½" x 4"
RATING: 15.5 H.P. at 20 S.P.M.
77,000 lb. ins. Peak Torque
RATIO: 10
CRANKSHAFT: 4"
SHEAVE: 23½" P.D.-5C Std.
23½" P.D. Maximum
2 7/16" Bore
WEIGHT: 8,500 lbs.
STATIC COUNTERBALANCE—LBS.

Stroke	No. 5C Wts.	Aux. Wts.
22"	9,225	12,230
32"	6,340	8,400
42"	4,830	6,400

LUFKIN UNIVERSAL T6A-9A DOUBLE REDUCTION UNIT ASSEMBLY OR 40D API SIZE—8,000 Lb. Polish Rod Load Class

WALKING BEAM: 14" x 6¾" x 30 lbs., 4'-0" and 4'-0" working Centers.
API Walking Beam Rating: 8,708 Lbs.
HANGER: Hinged Horsehead with 5/8" wire line.
PITMAN: Universal Cross Pin type Equalizer. Side members 3" I Beam.
CENTER BEARING: Bronze bushed, 2 15/16" x 10½".
SAMSON POST: Tripod, 6'-2⅞" high.
BASE: 8" deep, 13'-6" long, 1'-8" wide at gear box.
CRANK: No. 3440, 40" radius.
CRANK PINS: 2¾" x 3", oil bath, bronze bushed.
TAIL BEARING: 3 7/16" x 6½", bronze bushed.
GEAR BOX OIL CAPACITY: 7 Gallons.

GEARS: Double Reduction
Main Gear: 16.8" x 4⅜"
RATING: 8.1 H.P. at 20 S.P.M.
40,000 lb., ins. Peak Torque
RATIO: 29.2
CRANKSHAFT: 4"
SHEAVE: 21" P.D.-2C or 4B Std.
23" P.D. Maximum
1 15/16" Bore
WEIGHT: 6,915 lbs.
STATIC COUNTERBALANCE—LBS.

Stroke	No. 6 Wts.	Aux. Wts.
16"	10,060	12,670
22"	7,260	9,160
28"	5,725	7,215
34"	4,700	5,930

LUFKIN UNIVERSAL T7-3A DOUBLE REDUCTION UNIT ASSEMBLY OR 25D API SIZE—6,000 Lb. Polish Rod Load Class

WALKING BEAM: 10" x 5¾" x 25 lbs., 3'-6" and 3'-6" working centers.
API Walking Beam Rating: 6,285 Lbs.
HANGER: Hinged Horsehead with 5/8" wire line.
PITMAN: Universal Cross Pin type Equalizer. Side members 3" I Beam.
CENTER BEARING: Bronze bushed, 2 15/16" x 10½".
SAMSON POST: Tripod, 6'-3⅝" high.
BASE: 6¼" deep, 11'-0" long, 1'-5" wide at gear box.
CRANK: No. 2432, 32" radius.
CRANK PINS: 2¾" x 3", oil bath, bronze bushed.
TAIL BEARING: 2 15/16" x 6½", bronze bushed.
GEAR BOX OIL CAPACITY: 4 Gallons.

GEARS: Double Reduction
Main Gear: 13.5" x 4"
RATING: 5.2 H.P. at 20 S.P.M.
26,000 lb. ins. Peak Torque
RATIO: 28.9
CRANKSHAFT: 3"
SHEAVE: 18" P.D.-2B or 3A Std.
18" P.D. Maximum
1⅞" Bore
WEIGHT: 4,600 lbs.
STATIC COUNTERBALANCE—LBS.

Stroke	No. 7 Wts.	Aux. Wts.
12"	6,200	8,200
18"	4,125	5,465
24"	3,100	4,100

Dimensions—Standard Lufkin Units T5A, T6A and T7

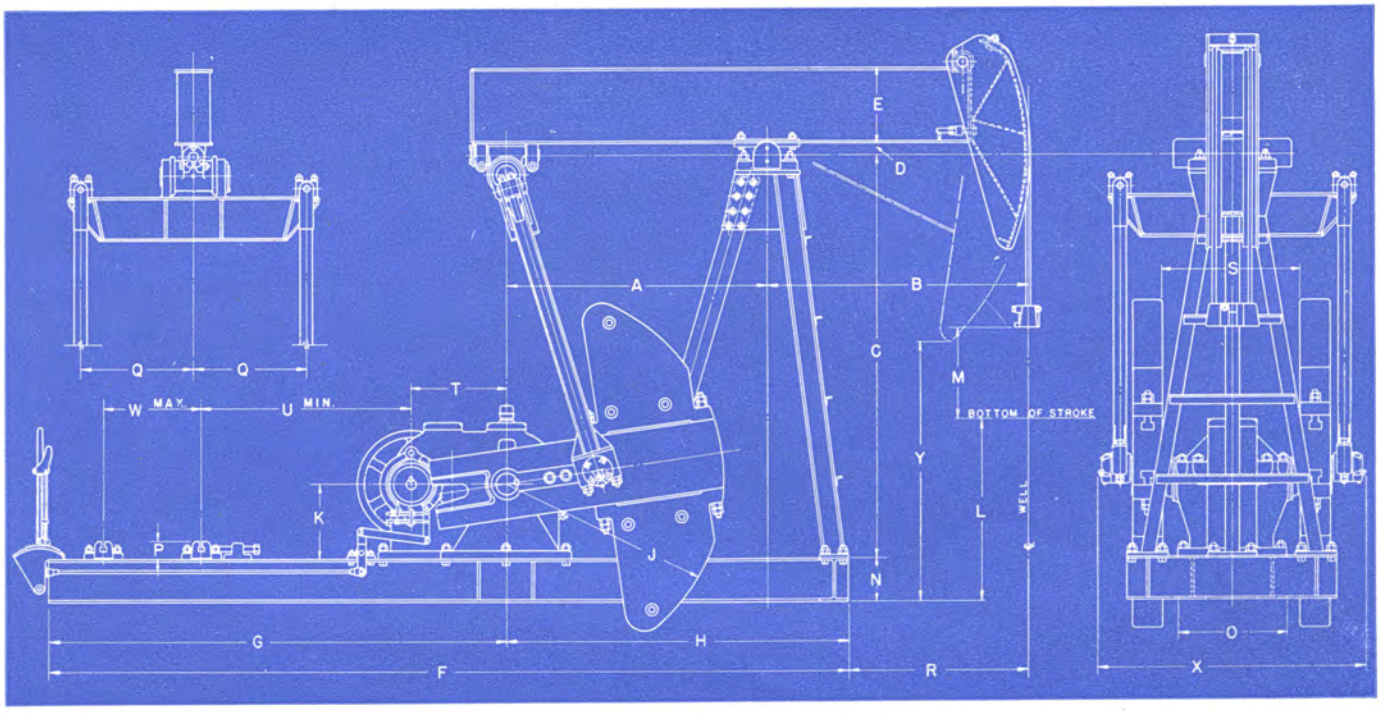


FIGURE 18

Unit	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	W	X	Y
T5A-15A	5′-0″	5′-0″	8′-0″	4¾″	14″	15′-6″	8′-6¾″	6′-11¼″	3′-6″	18″	3′-5¾″	21″	8″	2′-1½″	4⅞″	2′-5″	3′-01¼″	3′-3½″	2′-0″	2′-6½″	3′-3⅞″	5′-5″	5′-3⅛″
T5A-80D	5′-0″	5′-0″	8′-0″	4¾″	14″	15′-6″	8′-6¾″	6′-11¼″	3′-6″	18″	3′-5¾″	21″	8″	2′-1½″	4⅞″	2′-5″	3′-01¼″	3′-3½″	1′-10″	2′-8½″	3′-3⅞″	5′-5″	5′-3⅜″
T5A-7B	5′-0″	5′-0″	8′-0″	4¾″	14″	15′-6″	8′-6¾″	6′-11¼″	3′-6″	18″	3′-5¾″	21″	8″	2′-1½″	4⅞″	2′-1½″	3′-01¼″	2′-8½″	1′-8″	2′-10½″	3′-3⅞″	4′-10″	5′-3⅜″
T5A-16	5′-0″	5′-0″	8′-0″	4¾″	14″	15′-6″	8′-6¾″	6′-11¼″	3′-6″	18″	3′-5¾″	21″	8″	2′-1½″	4⅞″	2′-1½″	3′-01¼″	2′-8½″	1′-5⅞″	3′-05⅝″	3′-3⅞″	4′-10″	5′-3⅜″
T6A-9A	4′-0″	4′-0″	6′-2⅞″	2¼″	14″	13′-6″	8′-3″	5′-3″	3′-4″	14″	2′-7½″	17″	8″	1′-8″	3⅜″	1′-9¾″	2′-9″	2′-3¾″	1′-5½″	2′-4″	4′-2″	4′-3¼″	4′-3″
T7-3A	3′-6″	3′-6″	6′-3⅝″	2¼″	10″	11′-0″	6′-4″	4′-8″	2′-8″	14″	3′-5⅝″	12″	6¼″	1′-5″	3⅜″	1′-7⅝″	2′-4″	2′-1½″	1′-1⅜″	2′-0⅜″	2′-7″	3′-10⅝″	4′-0⅛″

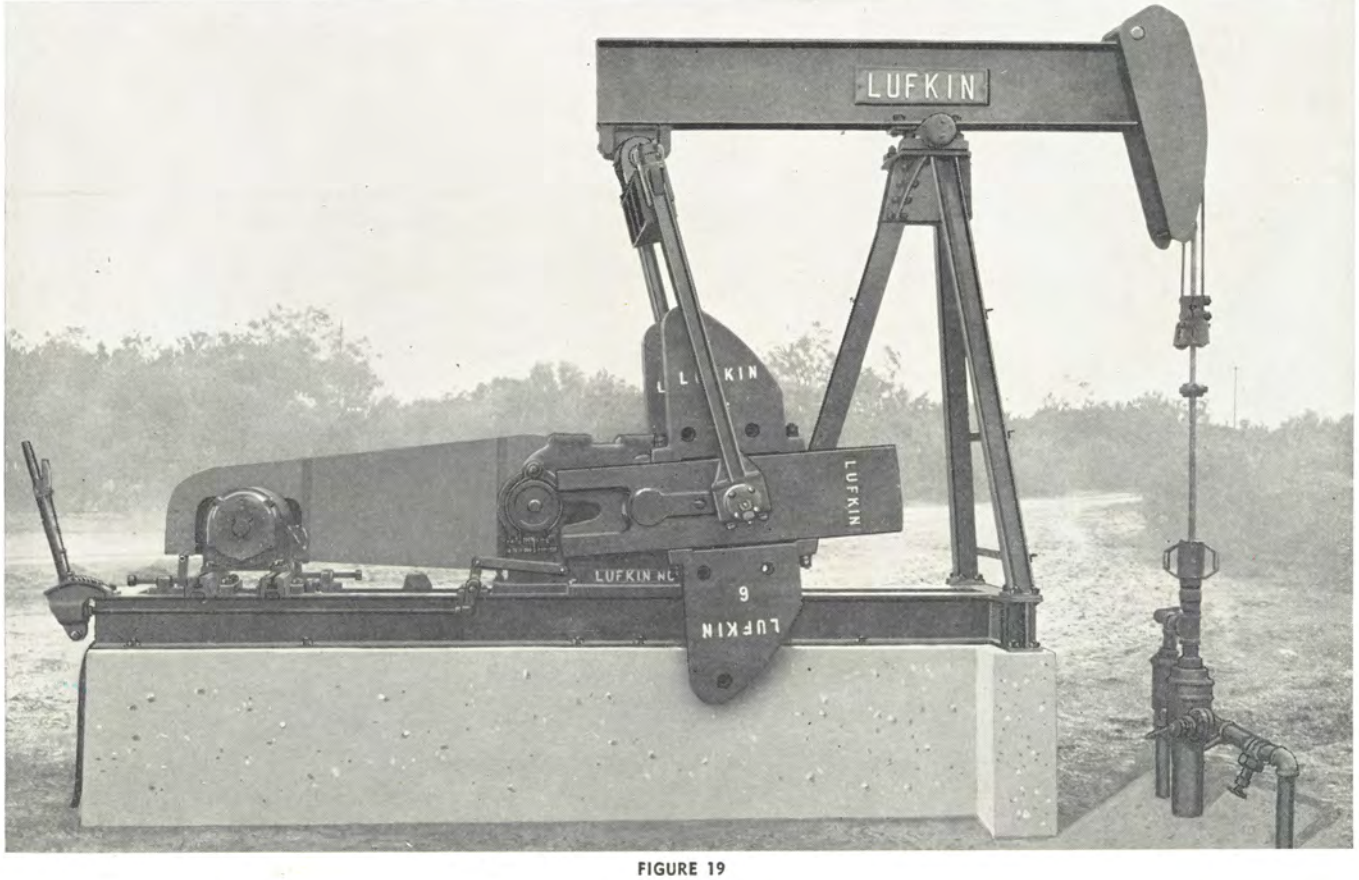
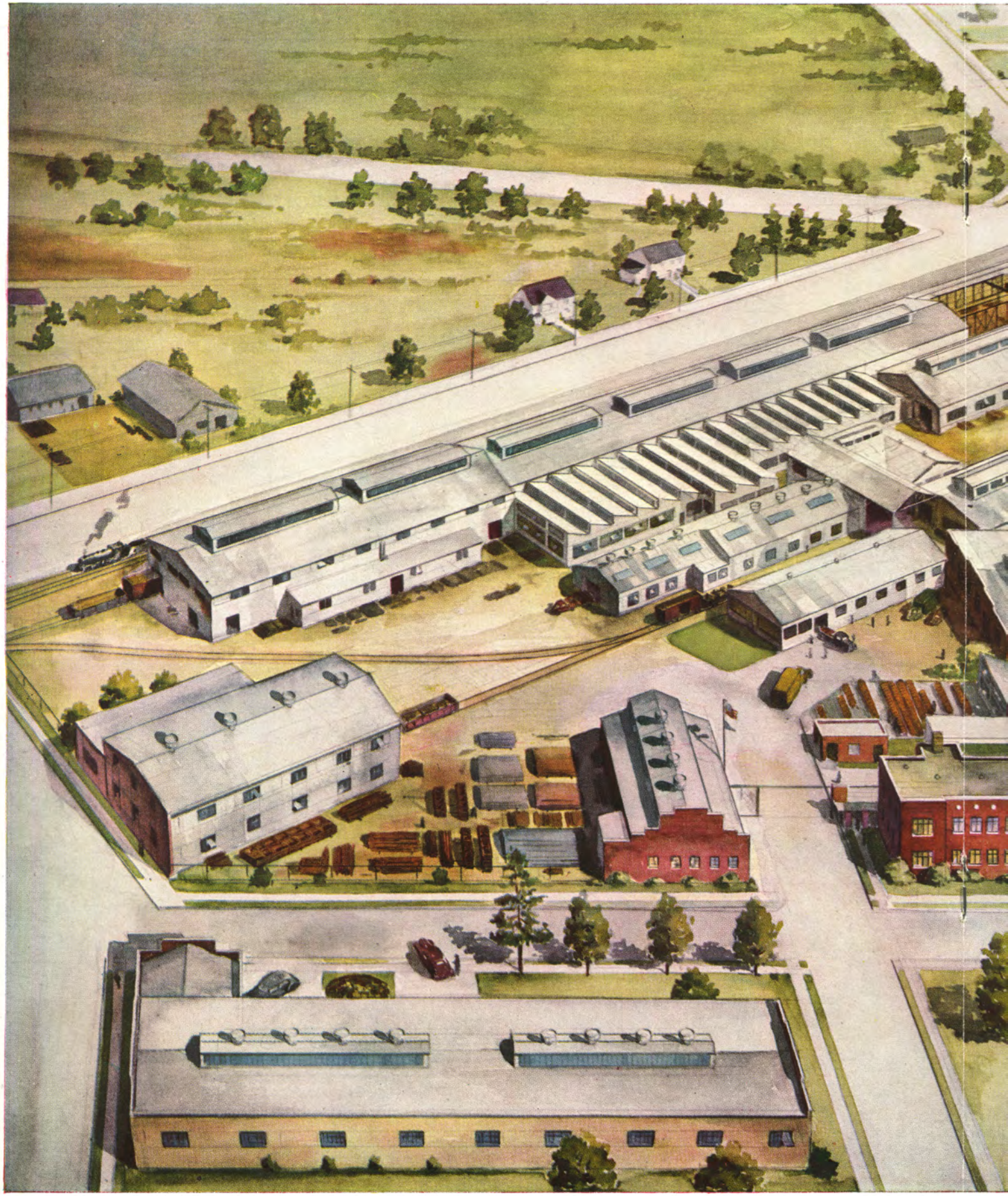
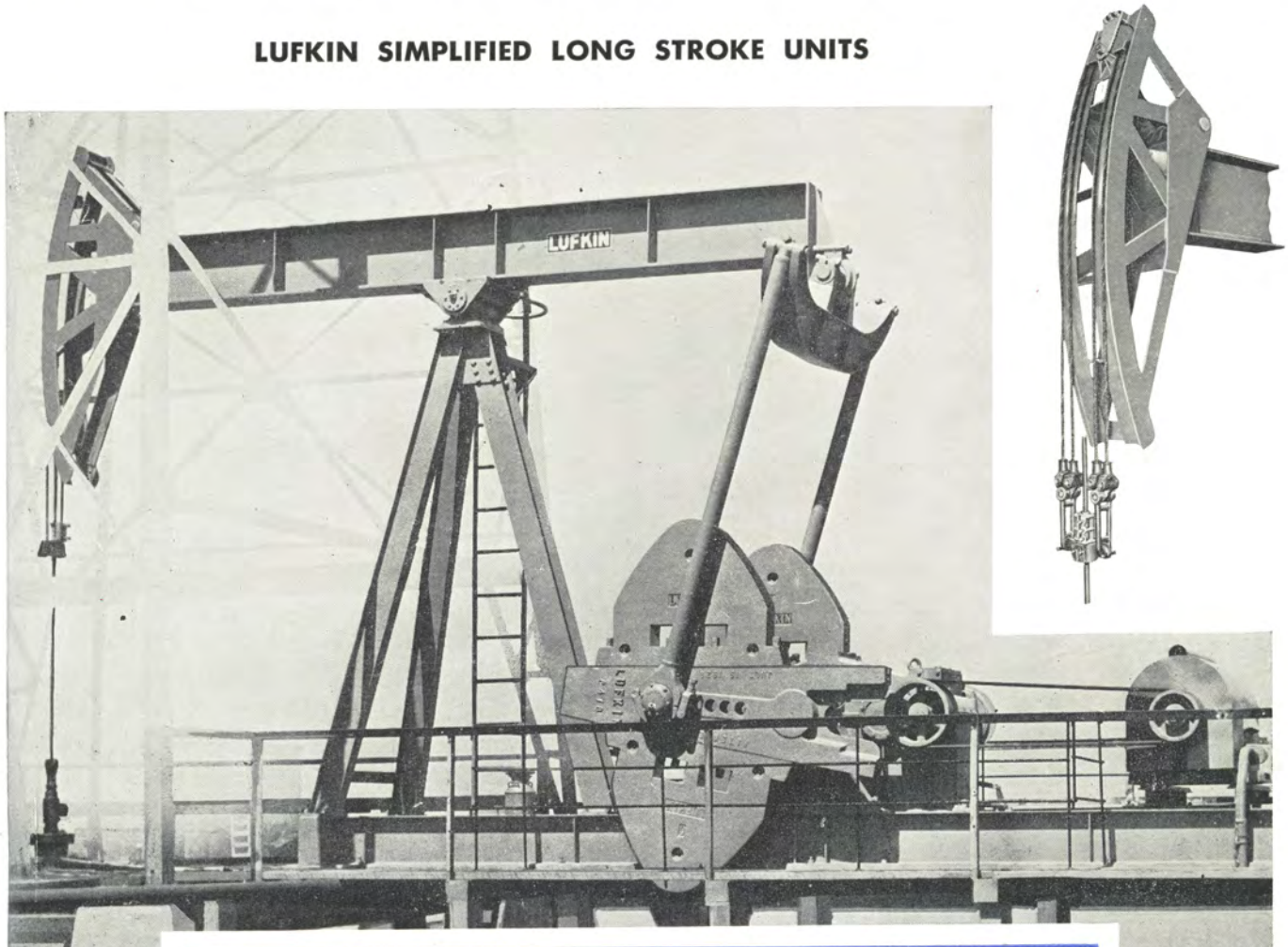


FIGURE 19

LUFKIN **LUFKIN FOUNDRY & MACHINE CO. LUFKIN, TEXAS**



LUFKIN SIMPLIFIED LONG STROKE UNITS



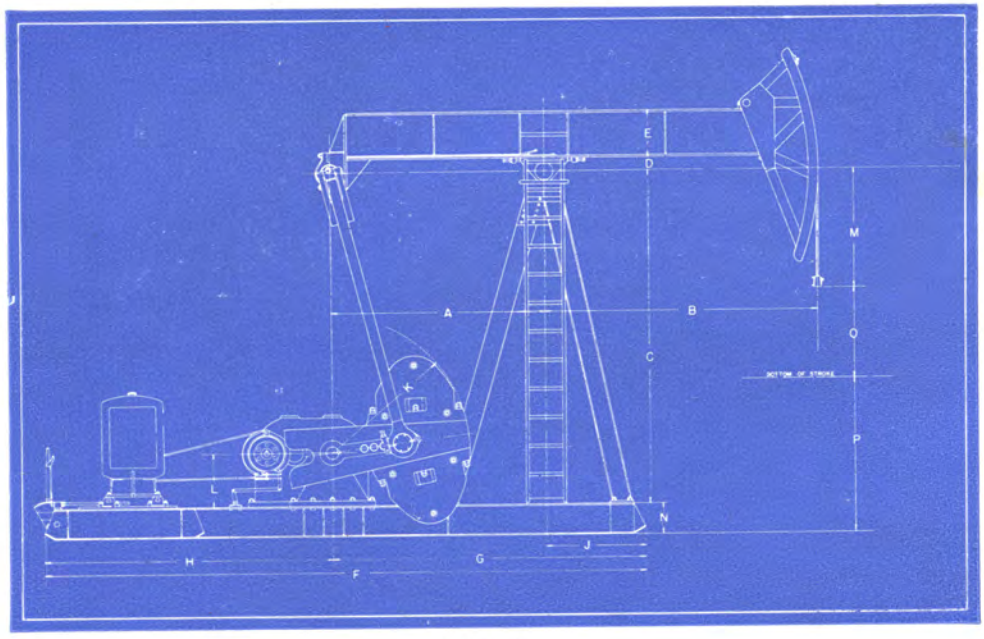


FIGURE 20

GENERAL DIMENSIONS LUFKIN LONG STROKE UNITS

UNIT	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P
TC-OL-456DA...	10′-11¼″	14′-0¾″	14′-6″	7″	30″	28′-5″	15′-1″	13′-4″	4′-1¾″	78″	2′-4″	5′-7″	16″	54″	5′-9″
TC-OL-61B.....	10′-11¼″	14′-0¾″	14′-6″	7″	30″	28′-5″	15′-1″	13′-4″	4′-1¾″	78″	2′-6″	5′-7″	16″	54″	5′-9″
TC-OOL-71A....	11′-9″	15′-0″	16′-0″	9″	33″	30′-9″	16′-5″	14′-4″	4′-8″	92″	3′-0″	7′-1″	21″	60″	5′-8″

LUFKIN SIMPLIFIED LONG STROKE UNIT

Lufkin Long Stroke Units were engineered and built expressly to

1. **Handle extremely large volumes of fluid from nominal depths.**
2. **Handle moderate fluid volume from extreme depths.**
3. **Reduce peak loading and minimize sucker rod failures.**
4. **Increase pump volumetric efficiency when handling gassy fluid.**

The ever increasing popularity of Lufkin Long Stroke Pumping Units is responsible for our stocking these units for immediate delivery. They are an economically sound investment and fundamentally sound in their performance. They make a tough job easy; i.e., they are capable of producing greater volumes of fluid from a given depth with a given unit rod stress.

Twelve years of long stroke pumping experience on the toughest of pumping wells is our proof of a sound performance record and their increasing popularity is evidence of successful principle.

Complete analysis of test data on most wells pumped by long stroke units indicate the correct size and balance of gear box and walking beam assembly on our number 61B unit. On severe cases requiring 1⅛" sucker rods we offer our ten foot stroke unit No. 71A which is the "Big Bertha" of the industry. It is the answer to the ultimate in sucker rod production.

Of identical design with our smaller twin crank units, these long-strokers provide simplicity, ease of counter-balance adjustment, smoothness of operation, and require practically no attention.

GENERAL SPECIFICATIONS

Lufkin Long Stroke Double Reduction Unit Assemblies TC-OOL and TC-OL

Lufkin TC-OOL-71A Unit Assembly

WALKING BEAM: 33" x 15¾" x 200 lbs., 15'-0" and 11'-9" working centers. API Walking Beam Rating: 33,900 Lbs.

HANGER: Hinged Horsehead with four 1" wire lines. Special load-equalizing device.

PITMAN: Universal Equalizer with bearings "in line", 5" Extra Heavy pipe.

CENTER BEARING: Bronze Bushed, 7½" x 22½", oil bath, dust proof.

SAMSON POST: Tripod, 16'-0" high.

BASE: 21" deep, 60½" wide at gear box, 30'-9" long.

CRANKS: No. 9492, 92" radius.

CRANK PINS: Timken Bearings.

TAIL BEARING 5 11/16" x 13½", Bronze Bushed.

GEAR BOX OIL CAPACITY: 165 Gallons.

GEARS	Double Reduction Main Gear: 50.4" x 12"
RATING	171.8 H.P. at 20 S.P.M. 850,000 lb. ins. Peak Torque
RATIO	28.72
CRANKSHAFT	7 1/16"
SHEAVE	35"-10D Std. 66" Maximum 4 7/16" Bore
WEIGHT	70,000 lbs.

STATIC COUNTERBALANCE—LBS.

Stroke	No. 00 Weights	With Aux. Wts.
43.4"	55,900	67,000
58.7"	40,400	49,600
74.0"	32,000	39,300
89.3"	27,550	32,600
104.6"	22,650	27,800
120.0"	19,750	24,300

Lufkin TC-OL-61B Unit Assembly or 640DA API Size

WALKING BEAM: 30" x 15" x 172 lbs., 14'-0¾" and 10'-11¼" working centers. API Walking Beam Rating: 30,945 Lbs.

HANGER: Hinged Horsehead with 1" wire lines.

PITMAN: Universal Equalizer with bearings "in line", 5" Extra Heavy pipe.

CENTER BEARING: No. 1AS bronze bushed, 7" x 20", oil bath, dust proof.

SAMSON POST: Tripod, 14'-6" high.

BASE: 16" deep, 50" wide at gear box, 28'-5" long.

CRANKS: No. 8478, 78" radius.

CRANK PINS: Timken Bearings.

TAIL BEARING: 4 11/16" x 12", Bronze bushed.

GEAR BOX OIL CAPACITY: 75 Gallons.

GEARS	Double Reduction Main Gear: 41.6" x 12½"
RATING	129 H.P. at 20 S.P.M. 640,000 lb. ins. Peak Torque
RATIO	28.6
CRANKSHAFT	7"
SHEAVE	34"-7D Std. 56" Maximum 3 7/16" Bore
WEIGHT	49,100 lbs.

STATIC COUNTERBALANCE—LBS.

Stroke	No. 0 Weights	With Aux. Wts.
46.4"	35,250	44,530
61.9"	26,440	33,390
77.4"	21,150	26,720
92.9"	17,620	22,260
108.4"	15,110	19,080

Lufkin TC-OL-456DA Unit Assembly

WALKING BEAM: 30" x 15" x 172 lbs., 14'-0¾" and 10'-11¼" working centers. API Walking Beam Rating: 30,945 Lbs.

HANGER: Hinged Horsehead with 1" wire lines.

PITMAN: Universal Equalizer with bearings "in line", 5" Extra Heavy pipe.

CENTER BEARING: No. 1AS bronze bushed, 7" x 20", oil bath, dust proof.

SAMSON POST: Tripod, 14'-6" high.

BASE: 16" deep, 46½" wide at gear box, 28'-5" long.

CRANKS: No. 8478, 78" radius.

CRANK PINS: Timken Bearings.

TAIL BEARING: 4 11/16" x 12", Bronze Bushed.

GEAR BOX OIL CAPACITY: 75 Gallons.

GEARS	Double Reduction Main Gear, 38" x 11"
RATING	95 H.P. at 20 S.P.M. 469,000 lb. ins. Peak Torque
RATIO	29.04
CRANKSHAFT	7"
SHEAVE	34" P.D.-7D Std. 51" P.D. Maximum 3 7/16" Bore
WEIGHT	47,250 lbs.

STATIC COUNTERBALANCE—LBS.

Stroke	No. 0 Weights	With Aux. Wts.
46.4"	35,250	44,530
61.9"	26,440	33,390
77.4"	21,150	26,720
92.9"	17,620	22,260
108.4"	15,110	19,080

LUBRICATION INSTRUCTIONS

LUFKIN PUMPING UNITS

It is very important to the successful and satisfactory operation of a pumping unit that careful attention be given to proper lubrication.

The Gear Box and all bearings are shipped dry and must be lubricated before starting.

Do not use any lubricant containing sulphur or sulphurized compounds.

GEAR BOX: For temperatures between 10° F. and 100° F. use an SAE 90 **Transmission Oil** having a pour point of 0° F. or lower. (This is a straight mineral gear oil and is not a motor oil or extreme pressure lubricant. It has a viscosity comparable to SAE 40 or SAE 50 motor oil.)

In the event the SAE 90 Transmission Oil is not accessible a good quality SAE 40 or SAE 50 Motor Oil may be used as a substitute; however, care must be taken to use an oil having a pour point at least 10° F. below the minimum outside temperature.

Maintain the oil level above the bottom pet cock but do not fill the gear box above the top pet cock.

PITMAN BEARING: Use the same oil as in the gear box, or use an SAE 140 Extreme Pressure lubricant having a pour point of 5° F. or lower.

CENTER BEARING: Use an SAE 140 Extreme Pressure Lubricant having a pour point of 5° F. or lower.

HANGER and EQUALIZER BEARINGS: Use an SAE 140 Extreme Pressure Lubricant having a pour point of 5° F. or lower.

Care must always be taken to use a lubricant having a pour point at least 10° F. lower than the outside temperature.

The several points requiring lubrication should be checked at regular intervals to insure that proper oil levels are maintained. For 24 hour service change oil semi-annually; for intermittent service change annually.

The above instructions are for average operating conditions. For unusual conditions of exceptionally heavy well loads and extremely cold weather lubrication should be watched more closely and one of our field men should be consulted for individual recommendations.

PORTABLE TYPE TESTING UNITS MADE IN ALL SIZES

FIGURE 21

A very popular portable assembly requiring practically no foundation. It may be skidded from one location to another without "take-down" time or reassembly. While illustration is of medium size unit, all sizes of Lufkin units are easily adaptable to this type installation.

LUFKIN UNIVERSAL CENTERLINE PITMAN EQUALIZER

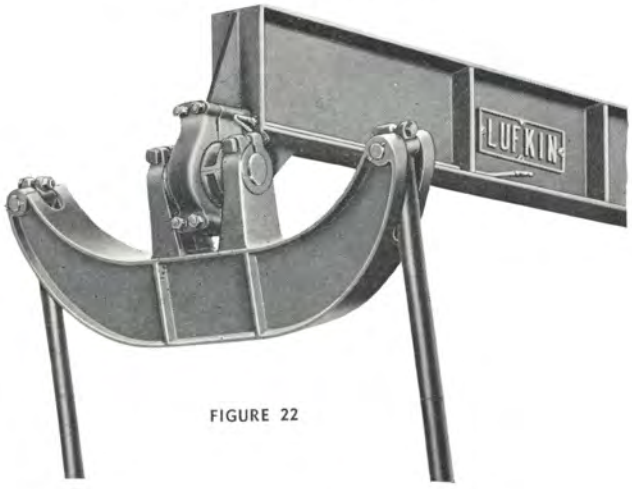


FIGURE 22

LUFKIN WIRE LINE HANGER

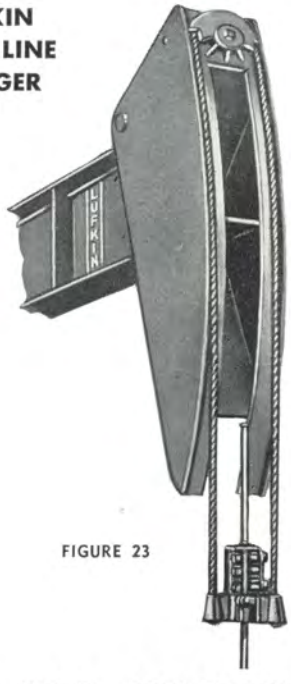


FIGURE 23

OIL TIGHT—BRONZE BUSHED CENTER BEARING

FIGURE 24

Series "AS" Center Bearings are full Bronzoid bushed, with patent oil seals and are designed to allow beam to headache to about 40° either front or back and as usual with Lufkin center bearings, beams can be swung sideways about 25° from center line. We believe this is a superior bearing in every respect, being dust proof, oil tight with renewable bronzoid bushing. They have ample bearing surface.

LUFKIN UNIVERSAL CENTERLINE ROD HANGER

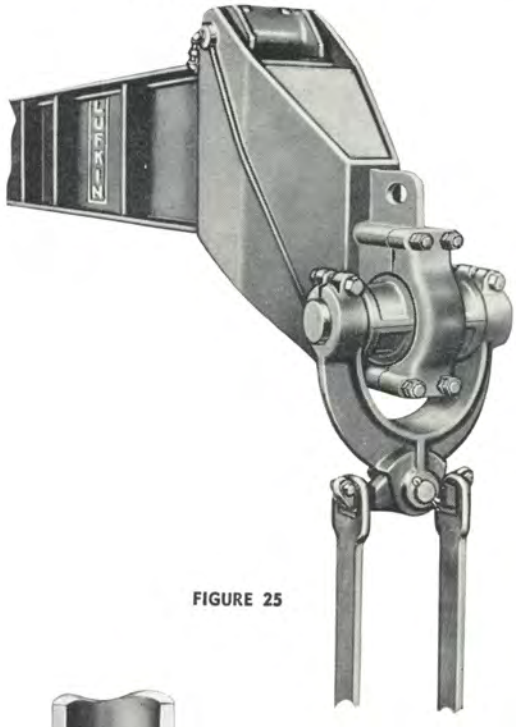


FIGURE 25

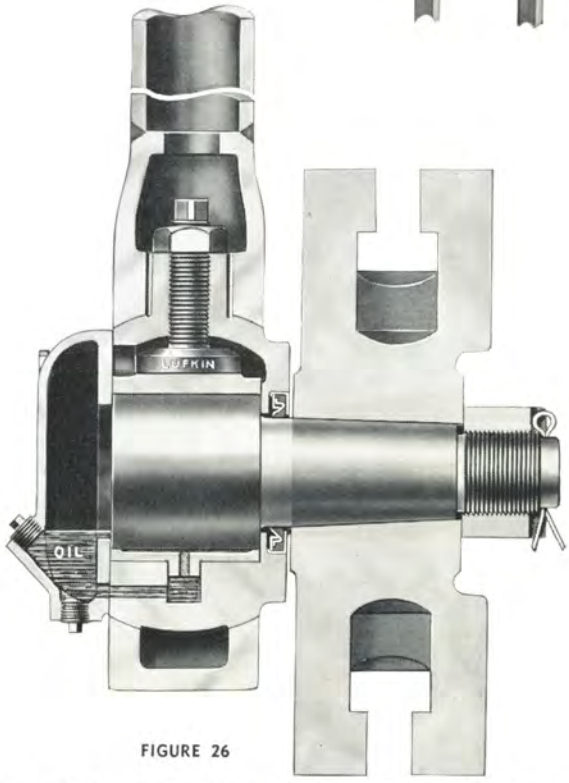


FIGURE 26

General characteristics of the new "Universal" pitman are:

1. **One-third more bearing surface**
2. **Bronzoid Bearings top and bottom, with adjustable top bearing.**
3. **Patented oil seal—no leaks. No head of oil against seal.**
4. **Both the interior of the strap and the exterior of the pitman box are machined, and thus insure alignment without possibility of binding.**
5. **The pitman bearing is adjustable when strap or shackle is removed, and may be tested by hand before shackle is re-applied.**
6. **Lufkin Universal pitmans are designed to pull or push—no lost motion.**
7. **Journal box is semi-steel; straps and shackles are of cast steel welded to extra heavy tubing.**
8. **Crank pins are forged alloy steel turned and ground.**

ROLLER BEARING PITMANS ARE FURNISHED WHEN DESIRED AT SLIGHT EXTRA COST.

UNIVERSAL RAILS—FOR MOTORS OR GAS ENGINES

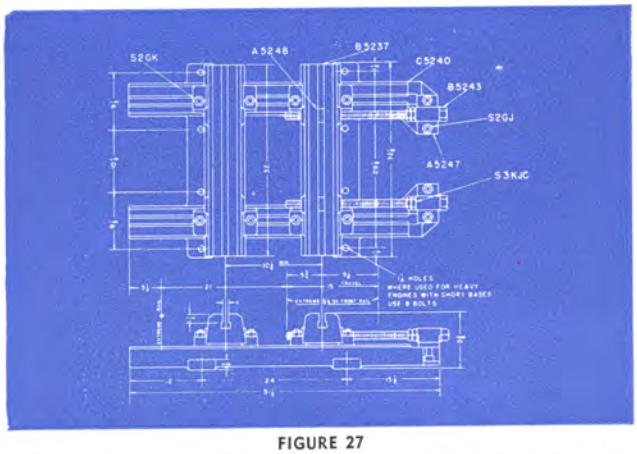


FIGURE 27

Universal rails are of heavy cast iron with machined tongue and groove fits, which with double adjusting screws assure perfect alignment. The substantial design of these rails assist in the elimination of vibration of all types of prime movers.

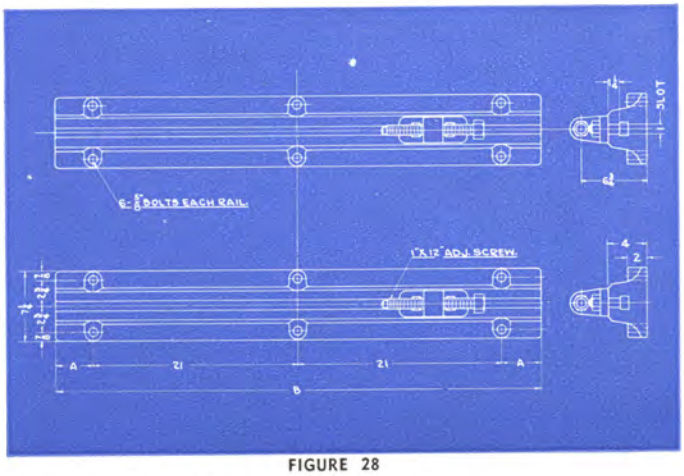


FIGURE 28

	A	B
50" Rails	4"	50"
60" Rails	9"	60" (Required for GSDH Engine)

Dimensions of plain engine rail with adjusting screws for two cylinder vertical engines and horizontal engines.

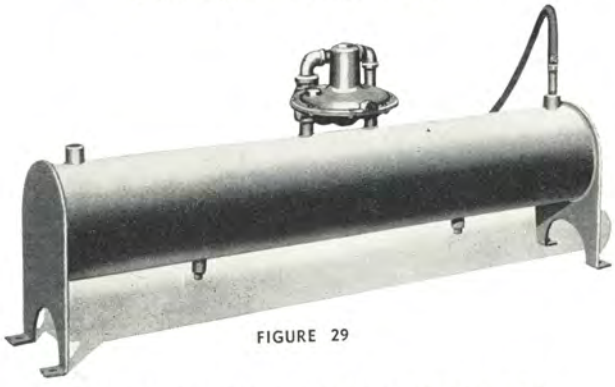
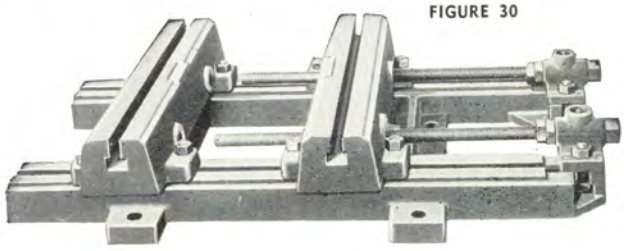


FIGURE 29

VOLUME TANK AND REGULATOR FOR GAS ENGINES

Double chamber volume tanks for gas engines are furnished in two sizes. Both are equipped with Fisher regulators and dial cocks. The smaller size is for multi-cylinder gas engines and is 8" diameter by 48" long with partition in center. It has hose connection to engine. The larger size is recommended for Lufkin Cooper-Bessemer engines and is 14" diameter by 42" long with a volume chamber of 2.5 cu. ft.

FIGURE 30



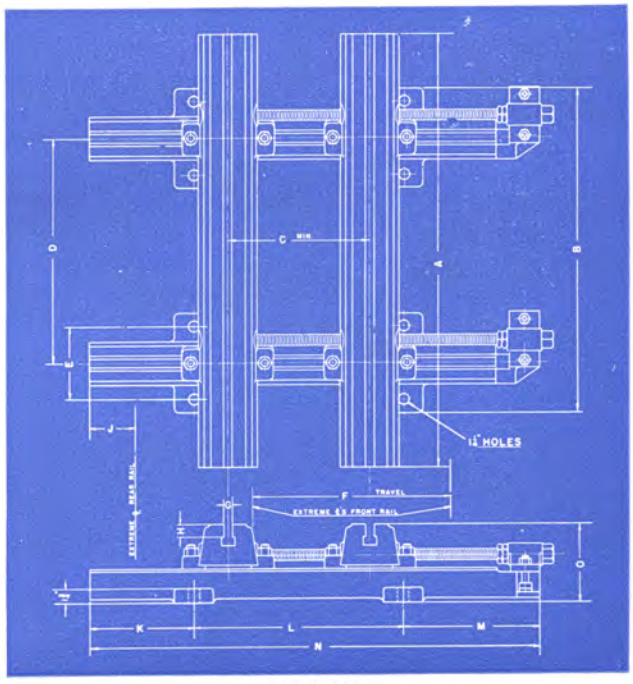


FIGURE 31

UNIVERSAL GAS ENGINE RAILS													
DESCRIPTION	A	B	C	D	E	F	G	H	J	K	L	M	N	O
50" ENG. RAILS	50"	37½"	10½"	26"	8½"	23½"	1"	1½"	5¼"	12"	24"	15½"	51½"	9⅜"
69" ENG. RAILS	69"	47½"	10½"	36"	8½"	38½"	1"	1½"	5¼"	12"	36"	15½"	63½"	9⅜"

FIGURE 32

Lufkin Universal Belt Tightener is of all welded rigid construction. The sheave is raised or lowered by a hand wheel through machined miter gears to screws which turn in floating bronze nuts. The idler sheave is equipped with Timken Anti-friction bearings. One man can adjust this tightener easily and quickly by simply turning the hand wheel.

FIGURE 33

Lufkin TC-2A-35A Twin Crank Pumping Unit with sub base to clear sweep of cranks, multi-cylinder gas engine drive and hinged horsehead wire line polished rod hanger.

FIGURE 34

Lufkin TC-33-22G Twin Crank Pumping Unit with "L" Type multi-cylinder gas engine base but driven by electric motor.

LUFKIN GEAR REDUCERS AND SPEED INCREASERS

Illustrated below are typical examples of standard and special Gear Reducers and Speed Increasers. Consult our nearest representative or our Home Office concerning your Herringbone, Helical, Spur or Worm gear requirements. A complete Standard Line of Single and Double Reduction Gear Reducers and Single Reduction Speed Increasers are available.

FIGURE 35

Lufkin Speed Reducers; typical booster station installation.

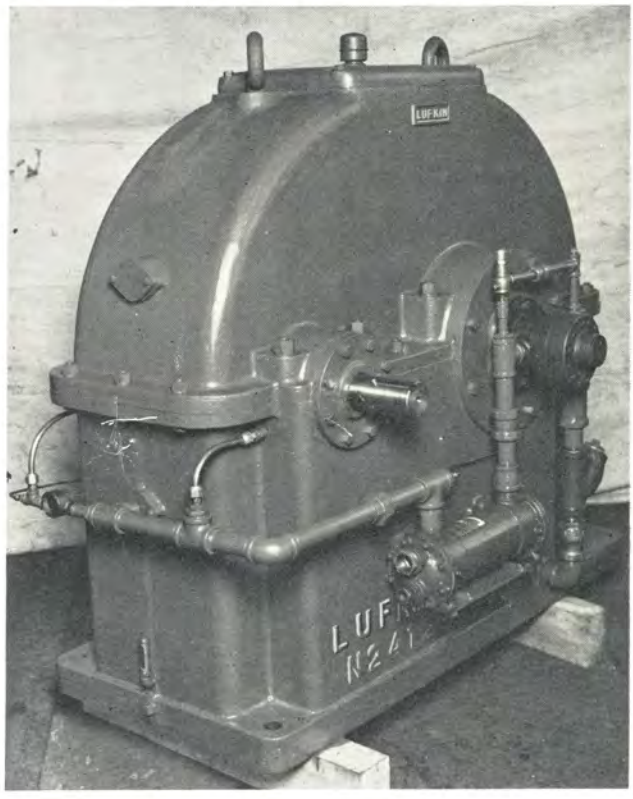


FIGURE 36

Lufkin N2412 Speed Increaser commonly used for pump station main drive installations.

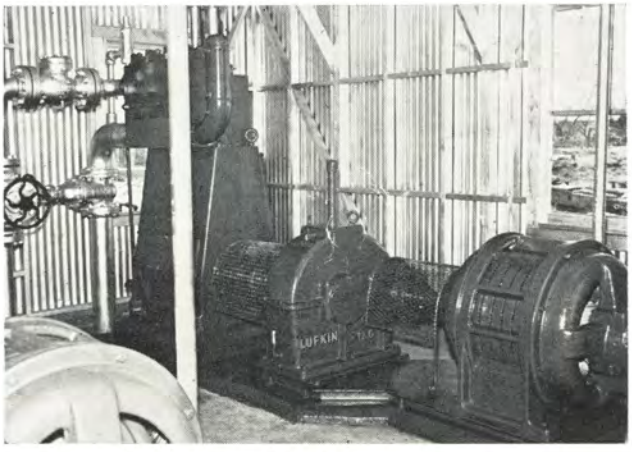


FIGURE 37

Lufkin S126 Speed Reducer with electric motor drive. An Oklahoma salt water disposal installation.

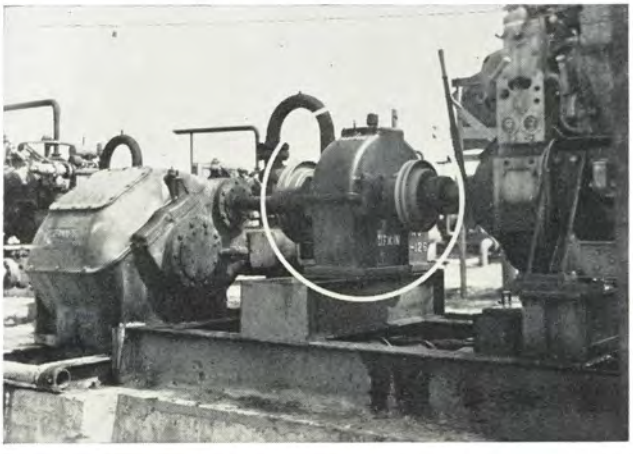


FIGURE 38

Lufkin S126 Speed Reducer. Standard booster station application.

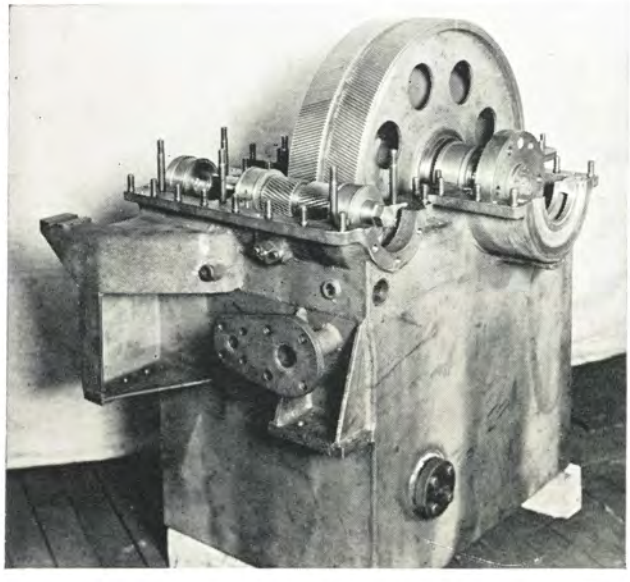


FIGURE 39

240 KW Turbo-Electric Lighting Set Gear Reducer Unit for Destroyer Escorts. Pinion Speed 10,000 r.p.m.

WRITE FOR GEAR CATALOG covering single and double reduction herringbone gear reducers Types S and D in sizes ranging from 3 to 1,000 horsepower and ratios from 1.25 up to 75:1; also Type N High Speed Reducers and Speed Increasers in a complete range of sizes and ratios especially designed for pipe line pumping service.

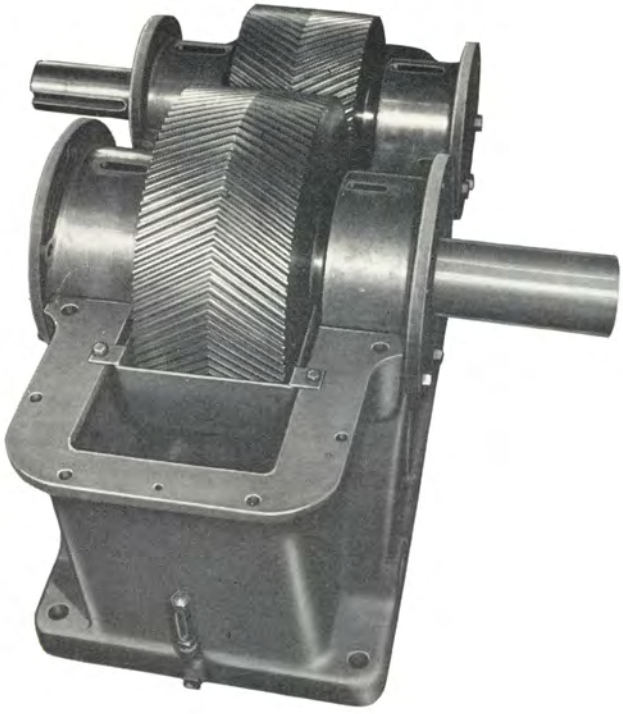


FIGURE 40
Medium Speed Gear Reducer, Type M, with oil pan, for speeds higher than standard.

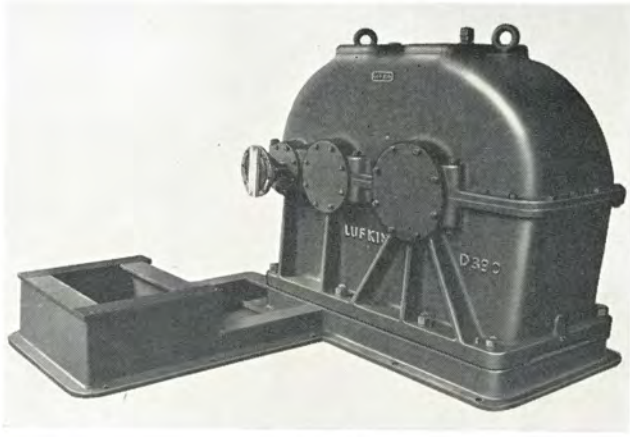


FIGURE 41
Large Double Reduction Gear Reducer for paper mill in Georgia.

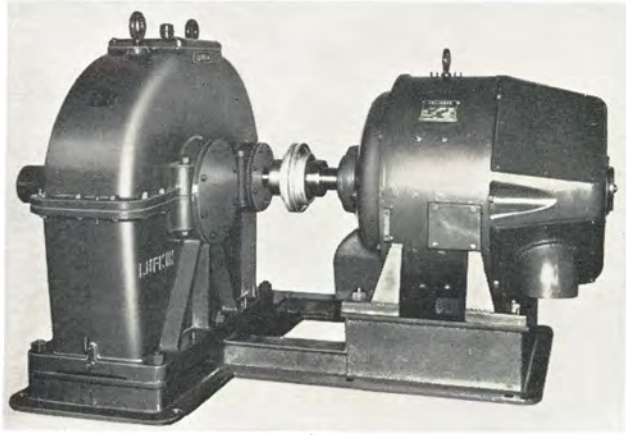


FIGURE 42
Single Reduction Gear Reducer for Texas paper mill.

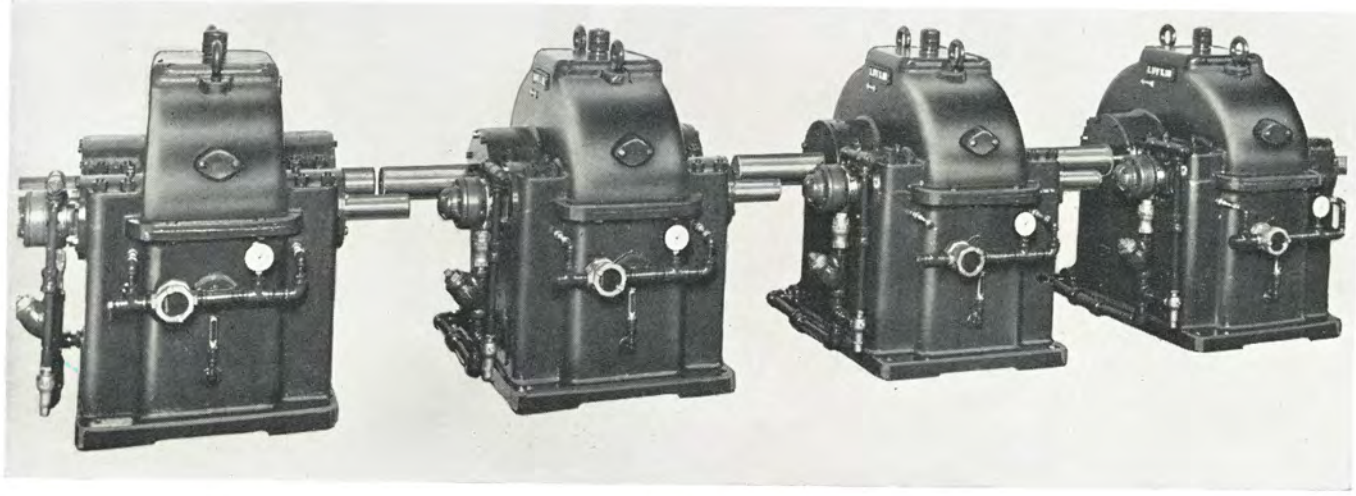


FIGURE 43
Four of a group of twelve identical N128 Speed Increasers, 850 Hp., for pump station service, going to major pipe line company.

LUFKIN COOPER-BESSEMER HORIZONTAL

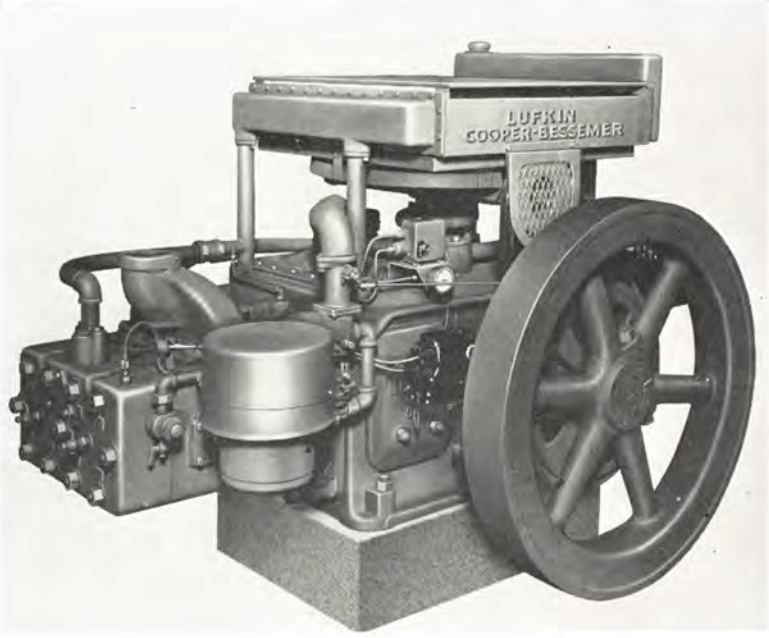


FIGURE 44

60 HP — 600 RPM CONTINUOUS SERVICE

The Model GSDH engine is supplied as a gas or oil engine and is convertible at a minimum of expense and time in the field. This engine was developed to meet the needs of the oil field for a medium speed, heavy duty, long life engine which is easy to maintain and service in the hands of the average operator.

The GSDH engine is designed to operate at speeds of 300 to 600 RPM and up to 60 HP continuous duty. Its conservative rating, dependability, and smooth steady flow of power make it ideally adapted for pumping, pipe line pumps, generators and other oil field power requirements.

THESE FEATURES GUARANTEE RELIABLE SERVICE

Two Cylinder, Two Cycle Design Gives Two Power Impulses per Revolution of the Crank Shaft and Assures Smoother Performance and Low Maintenance.

Oil Cooled Pistons and Built-in Oil Cooler.—Optional.

Horizontally Mounted Radiator Gives Non-Directional Cooling.

Cylinder Block and Head Is Designed to Give Positive Water Circulation Completely Around Cylinders and Through Water Cooled Exhaust Port Bridges—Thermostatically Controlled.

Full Pressure, Filtered Lubrication to Crank Pins, Crossheads and Auxiliary Accessories.

Die Forged Counterbalanced Crank Shaft Carried on Taper Roller Main Bearings for Long Life and Trouble-Free Service.

Die Forged Connecting Rods Fitted with Precision Type Thin Wall Crank Pin Bearings Which Require No Fitting.

Saddle Type Crosshead Pin Provides 50% More Bearing Area. Crossheads Fitted with Bronze Shoes and Pin Bearing Which Can Be Renewed Without Fitting or Requiring Special Tools.

Twin Disc Clutch Especially Adapted for Slow Speed Operation. Special Sheaves Not Required.

Ensign Natural Gas Mixers.—Self Regulating.

Convertible From Gas to Oil in the Field. Easy Starting, Clean Burning, Operates as Diesel After Starting. Low Firing Pressures.

No Crankcase Oil Contamination From Fuel. Frequent Oil Changes Not Necessary.

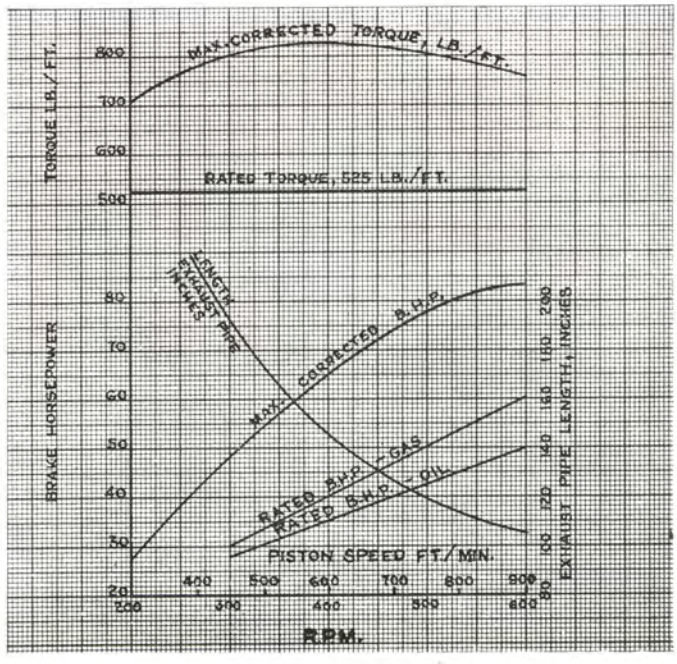


FIGURE 45
Performance Curve GSDH Gas & Oil Engines

GSDH 2-CYLINDER 2-CYCLE GAS AND OIL ENGINES

ENGINE GENERATOR UNITS

The Lufkin engine generator units due to their smooth steady output will operate in parallel with similar power units or with existing power facilities, making them adapted to generating plants for oil well pumping, main plant auxiliaries, pipe line stations, and all uses of electric power. This unit is recommended where a heavy duty, dependable, long life generating unit is desired.

The Lufkin engine-generator unit consists of the GSDH engine, a packaged type AC generator, a 5 "D" section V-belt drive and belt cover, all mounted on a steel base with a built-in gas volume tank and regulator.

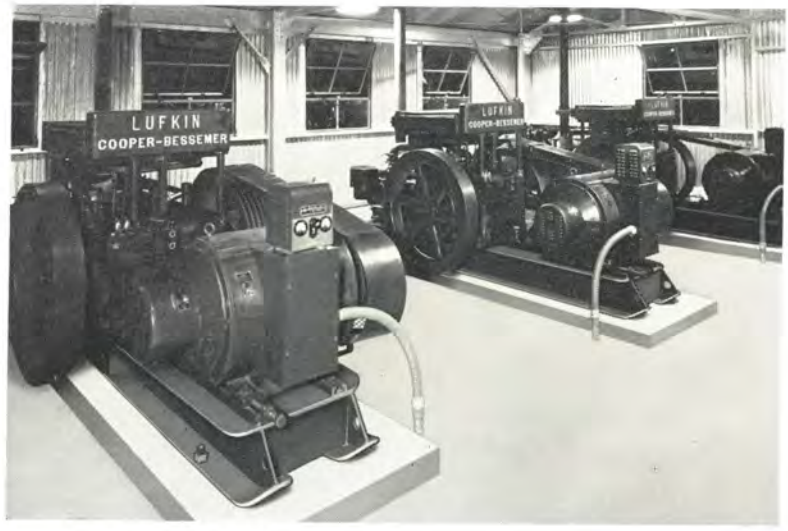


FIGURE 46
3 Engine Generator Units Operating in Parallel

On engine generator units the GSDH engine is furnished with oil cooled pistons, built-in oil cooler, Woodward hydraulic governor, overspeed stop, and oil and water safety controls. The clutch is omitted from the engine and the V-belt drive is mounted directly on the crank shaft. The engine operates at approximately 575 RPM for synchronous speed.

The Lufkin engine generator unit is normally supplied with a 40 KW, 3 phase, 60 cycle, 240/480 volt, AC packaged type generator with direct connected exciter. An automatic voltage regulator with volt, ammeter, and field rheostat is built in. A wall line disconnect switch and automatic synchronizer for parallel operation completes the unit assembly, no switch panel or other equipment being necessary; however, switchboard equipment may be used.

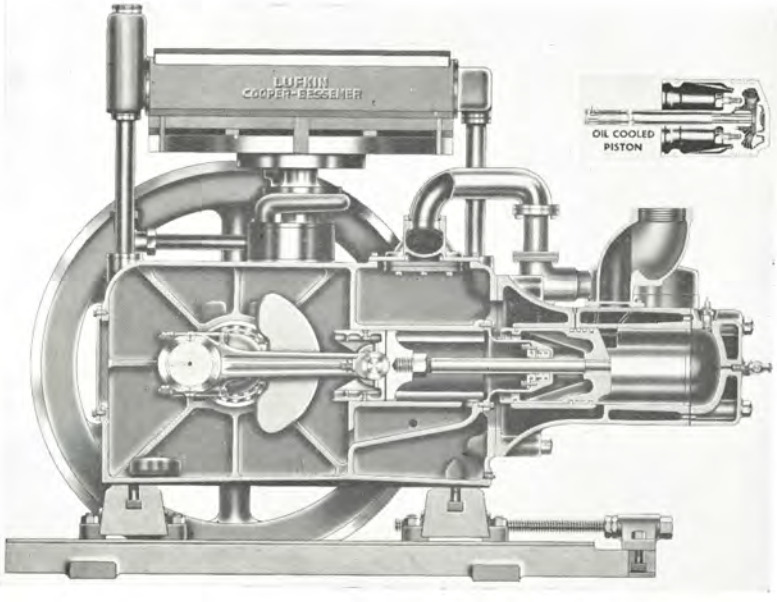


FIGURE 47
Cross Section GSDH Gas Engines

BRIEF ENGINE SPECIFICATIONS

No. Cylinders	2
Size (Bore X Stroke)	7½" x 9"
Recommended Speed Range, R.P.M.	300-600
Rated B.H.P. Gas	30-60
Rated B.H.P. Oil	25-50
Max. Piston Speed (Ft./Min.)	900
Type Main Bearings	Roller
Dia. Main Bearing Journal	4½"
Type Crankpin Bearing (Thin Wall)	Insert
Dia. Crankpin Bearing	4½"
Length Crankpin Bearing	3½"
Type Crosshead Bearing (Bronze)	Insert
Type Crosshead Shoes (Bronze)	Insert
Dia. Crosshead Pin	2¾"
Proj. Area Crosshead Pin Bearing (Sq. In.)	13.75
Piston Rod Packing	Metallic
Auxiliary Drive	Gear
Diameter Flywheel	40"
Flywheel WR^2 (FT^2 Lbs.)	1580
Dia. Exhaust Pipe	4"
Dia. Gas Inlet	1"
Capacity Cooling System (Gal.)	13
Overall Length	69"
Overall Width	68½"
Overall Height Above Foundations	50¾"
Foundation Bolts	4—1"
Weight	4500 Lbs.

LUFKIN MODEL H-333 HORIZONTAL

25 HP — 600 RPM CONTINUOUS SERVICE
HEAVY DUTY, CROSSHEAD TYPE DESIGN

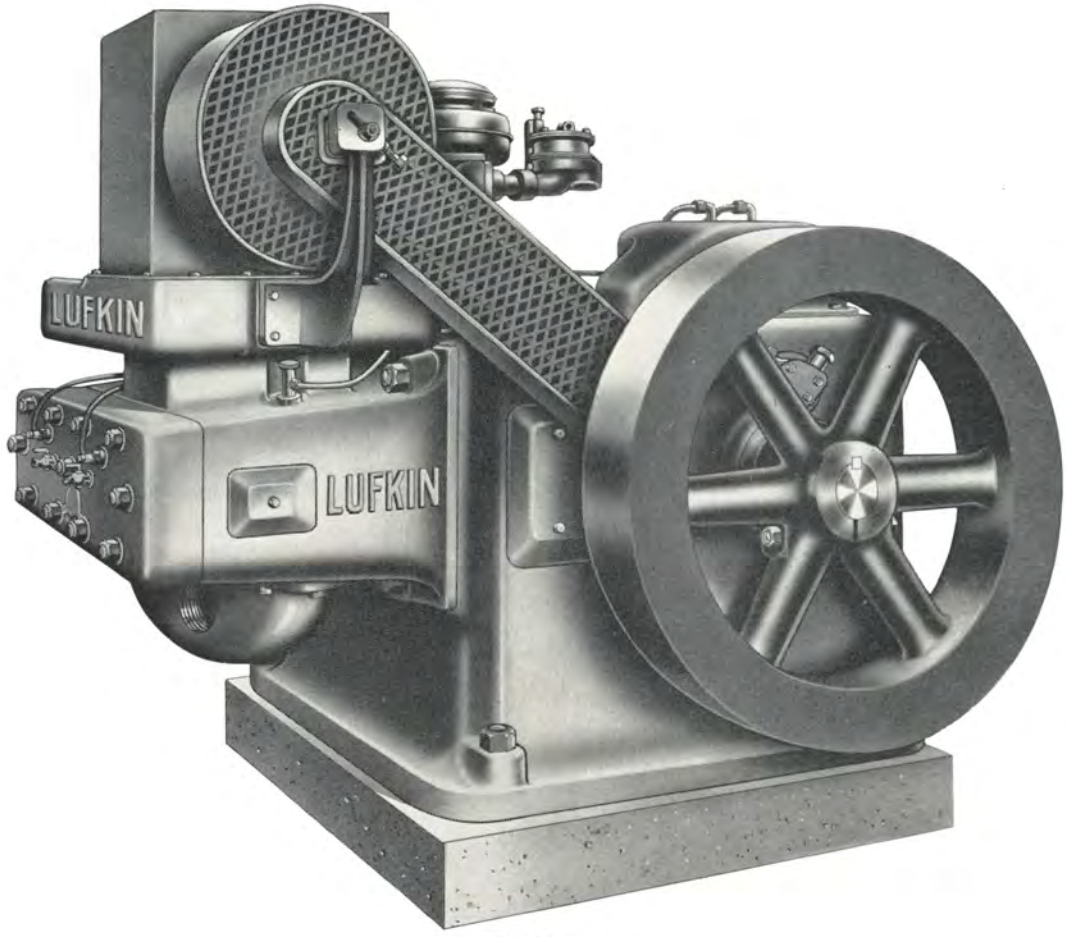


FIGURE 48

The Lufkin Model H-333 horizontal 2 cylinder, 2 cycle gas engine has been developed after a careful study of the rigid requirements of the oil fields. Its medium speed, heavy duty, simple, long life construction, and smoothness of operation assures a dependable power unit.

Low maintenance costs are assured with the Lufkin H-333 engine because field proven, advanced construction features make this engine economical to operate and maintain. Precision parts assure complete interchangeability and proper fitting when repairs are needed after long service. All wearing parts can be removed and replaced without removing the engine from its location. Service operations are simple. No delicate adjustments or settings are required.

The Lufkin H-333 engine offers the operator a rugged engine with a large heavy flywheel that does not extend below the engine base. This makes the engine easily mounted on standard pumping unit structural bases.

The Lufkin H-333 2 cylinder gas engine is furnished as a complete power unit suitable for operating in open weather. Weather covers are standard for the magneto. All other parts are weather proof. Standard equipment includes full pressure lubrication, weather proof magneto assembly, condensing type cooler, Ensign gas mixer, Pierce centrifugal governor, cylinder lubricator and Twin Disc power take-off. Starting by hand is easy. Optional starting equipment may be air or electric.

2 CYLINDER, 2 CYCLE GAS ENGINE

THE LUFKIN H-333 ENGINE IS A TOUGH DEPENDABLE ENGINE BECAUSE OF THESE DESIRABLE FEATURES

Two Cylinder, 2 Cycle Design With Two Power Impulses for Each Revolution of the Crank Shaft Assures Smooth Performance.

Simple, Compact, Efficient Gear Auxiliary Assembly Easily Serviced and Maintained.

Sub Base Made Integral with Engine Allows Ample Clearance of Flywheel Above Base. Does Not Require Special Foundations or Slide Rails.

Crosshead Type Design Gives Simplicity of Construction and Lower Maintenance. No Valves to Replace or Grind.

Counterbalanced Heavy Duty Crank Shaft Is Mounted on Taper Roller Bearings for Long Life and Trouble-Free Service.

Connecting Rod Bearings are Precision Thin Wall Type Which Require No Fitting. Easy to Replace After Long Service.

No Crank Case Oil Contamination From Fuel. Frequent Oil Changes Unnecesary. Lower Operating Costs in Sweet and Sour Gases.

Condenser Type Cooler. Engine Cylinders Maintain a Constant Uniform Temperature. More Efficient Operation. No Water Pump Is Used.

Positive, Full Pressure Lubrication to Crank Pins and Crossheads. Guarantes Longer Life and Less Maintenance.

Saddle Type Crosshead Pin Bearing Gives 50% More Bearing Area. Pressure Lubricated.

Easy Starting by Hand. Electric or Air Starting Optional.

Twin Disc Clutch; No Special Sheaves Required.

Ensign Natural Gas Mixers. Easily Adjusted for All Gases—Self Regulating.

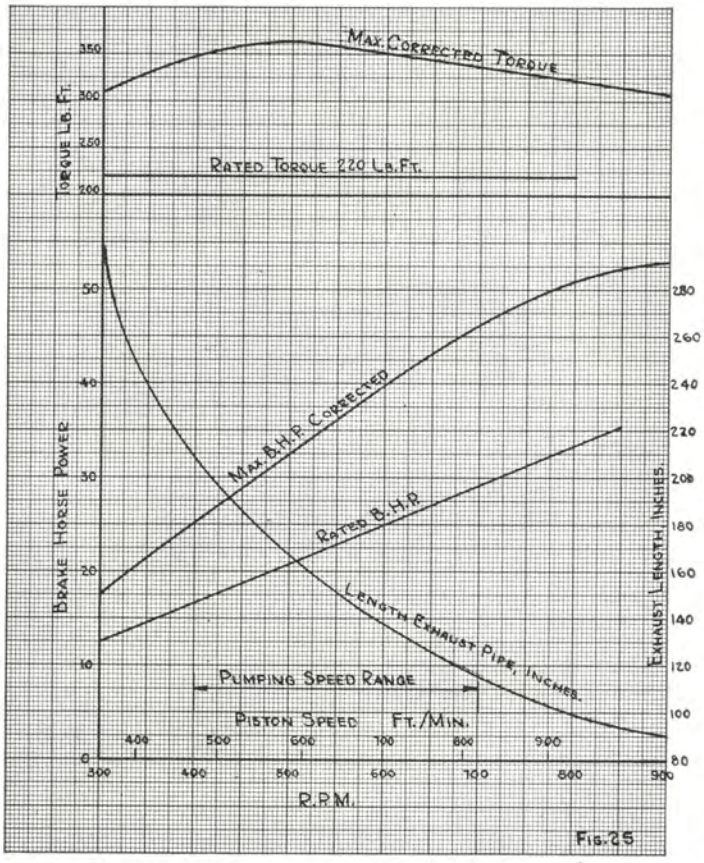


FIGURE 49

Performance Curves H-333 Gas Engine

BRIEF SPECIFICATIONS

No. of Cylinders	2
Size (Bore X Stroke)	5½ x 7
Displacement—Cu. In.	333
Recommended Speed Range, RPM	400-700
Rated BHP 600 RPM	25
Type Main Bearings	Roller
Dia. Main Bearing Journal	3⅞"
Type Crank Pin Bearing (Thin Wall)	Insert
Dia. Crank Pin Bearing	3¾"
Length Crank Pin Bearing	2⅞"
Type Crosshead (Bronze)	(2 Shoe)
Dia. Crosshead Pin	2½"
Proj. Area Crosshead Pin (Sq. In.)	11.6
Piston Rod Packing	Metallic
Auxiliary Drive	Gear
Dia. Flywheel	32"
Flywheel WR² Ft./Lbs.	510
Type Cooling System	Condenser
Dia. Exhaust Pipe	4"
Dia. Gas Inlet	1"
Clutch	Twin Disc
Gas Mixer	Ensign

LUFKIN PIPE, POLE, FLOAT AND CUSTOM BUILT TRAILERS

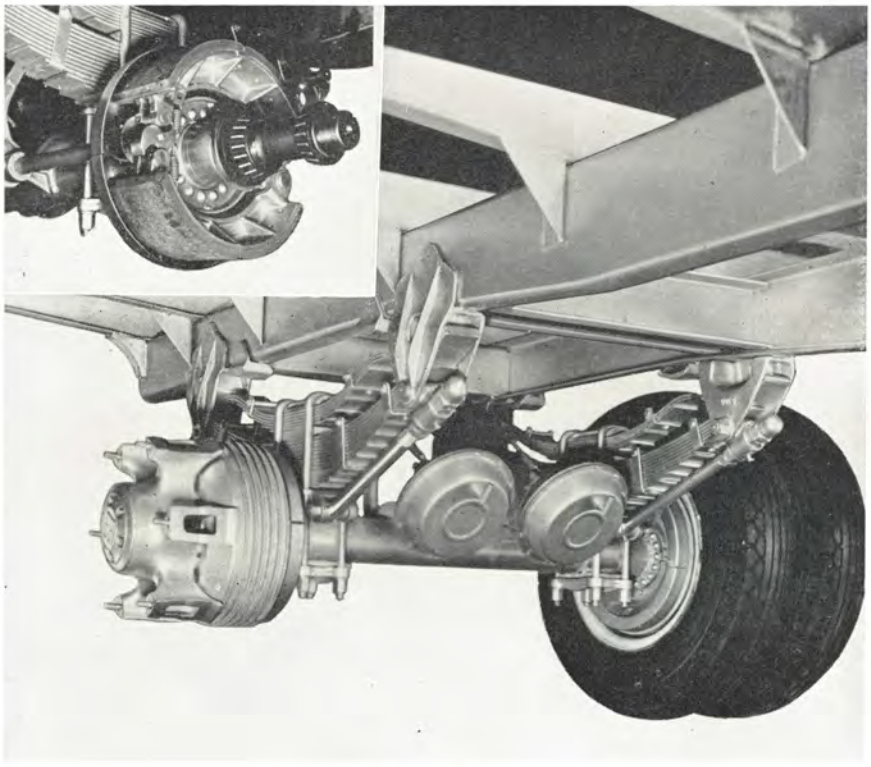


FIGURE 50

RADIUS RODS
. . . pull the load

The major task of radius rods is to pull the load. All torsional strains are absorbed by Lufkin's two-way oscillating, universal action radius rod knuckle. Brake torque, the cause of much spring breakage, is absorbed by radius rods.

Perfect axle alignment can be obtained and maintained with Lufkin's adjustable radius rods. Keeping axle in alignment eliminates side drag, resulting in maximum tire mileage and a minimum pulling power demand. Less power demand means longer truck life. Spring hangers are welded to frame.

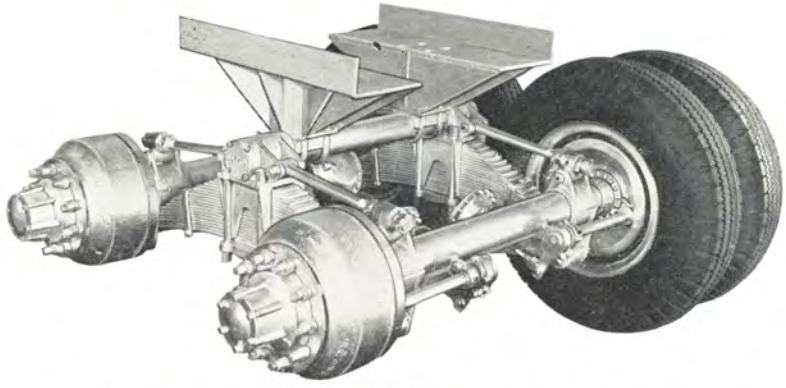


FIGURE 51

Oil Field Tandem, With Adjustable Radius Rods, is the Foundation of the Lufkin Self-Loading Tandem Trailers

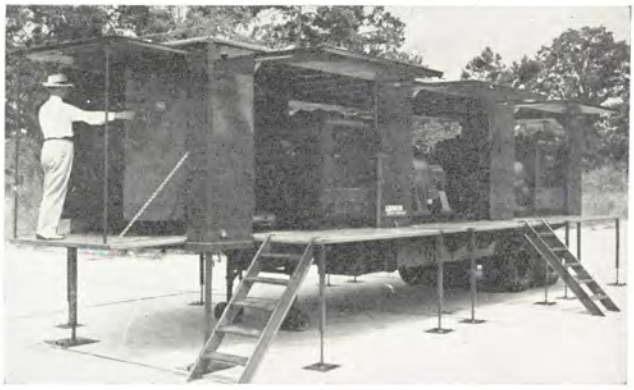


FIGURE 52

FIGURE 53

Special built well servicing trailers for heavy engines, mobile light plants and many other field on-the-job uses.

LUFKIN PIPE, POLE, FLOAT AND VAN TRAILERS

Lufkin Truck-Trailers and bodies offer users the latest improvement in design, construction and engineering.

Look, for instance, at these special Lufkin features: rubber-bushed, forged radius rods, maintaining constant and positive axle alignment; free-flowing, extra-heavy springs (no shackle bolts to wear out); and Lufkin's exclusive channel-shaped side bracing. These are typical of the many advancements to be found in sturdy Lufkin-built models.

It takes special "know-how" to produce a job light enough to allow you maximum payload weight, yet strong enough to give you dependable year-in, year-out service with minimum upkeep cost.

This "know-how" Lufkin has developed through years of experience, in the South's largest, most modern truck-trailer factory; trained transportation men, both technical and practical, engineer and manufacture Lufkin Truck-Trailers. New production methods, new steels, new fixtures contribute to the dependability.

You can depend on "Lufkins" to haul profitable capacity loads, day after day, with unfailing reliability.

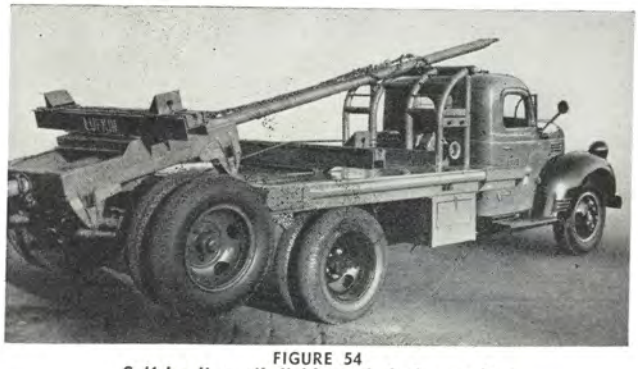


FIGURE 54
Self-loading oil field truck bed complete.

FIGURE 55
Model T170F: Tandem Self Loading Float.

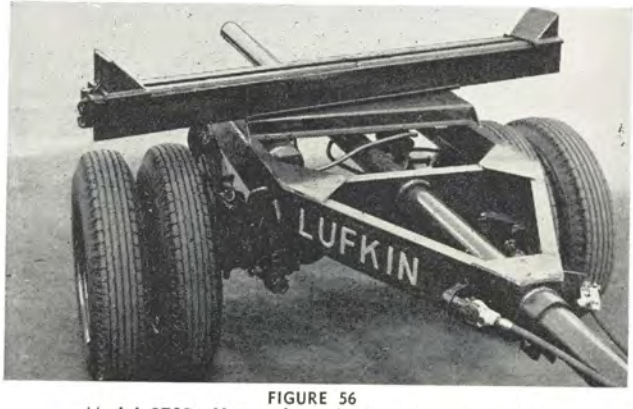


FIGURE 56
Model 170P: Heavy duty single axle pipe trailer.

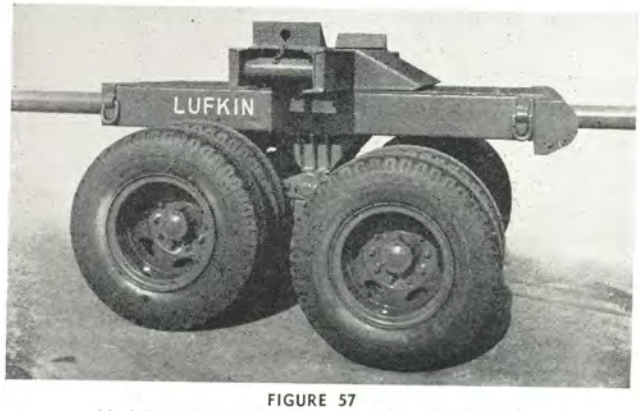


FIGURE 57
Model T170P: Heavy Duty Tandem Pipe Trailer.

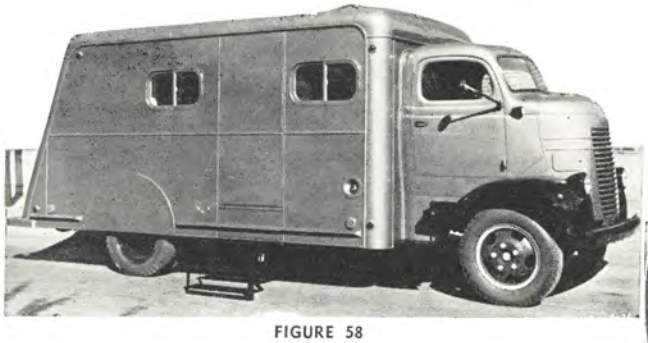


FIGURE 58

LEFT:
Portable Laboratory for Oil-well logging service, like all Lufkin all-steel vans and bodies, is modern in design and construction and is made to special size and finish. Modern streamlining adds to the beauty of this truck body and to the prestige of its owner.

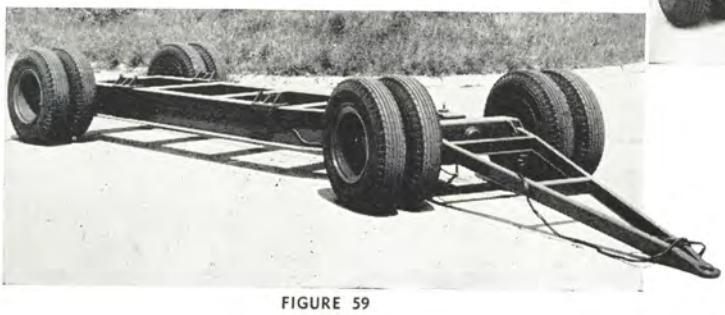


FIGURE 59

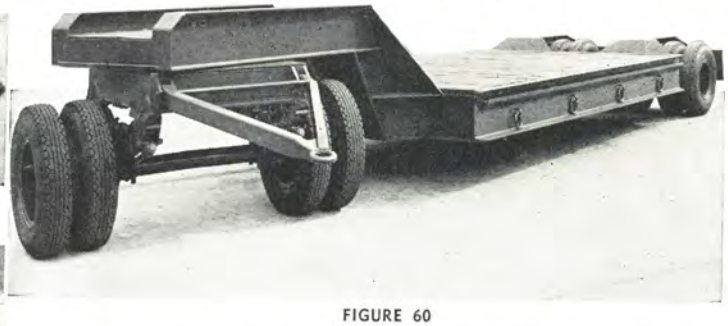


FIGURE 60

ABOVE: A 50,000 pound capacity Low Bed Machinery Trailer. OUR AIM is to build a BETTER TRAILER at a LOWER COST. OUR JOB is to solve your Transportation problems.

LEFT: Another Lufkin custom built trailer, designed and constructed for transporting oil-well pulling units to the job. Modern manufacturing facilities and skilled craftsmanship guarantee quality equipment at a minimum of cost.

LUFKIN TRACTOR WINCHES

Lufkin heavy duty worm drive tractor winches are being used by operators who have the most severe type of winching service. They are particularly in demand for oil field and pipe line service or any other similar heavy construction work. Rugged construction and reserve capacity make it possible to transmit the full torque of the tractor engine into the winch. High gear reduction through the worm drive develops tremendous pulling power for heavy moving jobs. Special heavy duty herringbone gear transmissions give a wide range of operating speeds in forward and reverse.

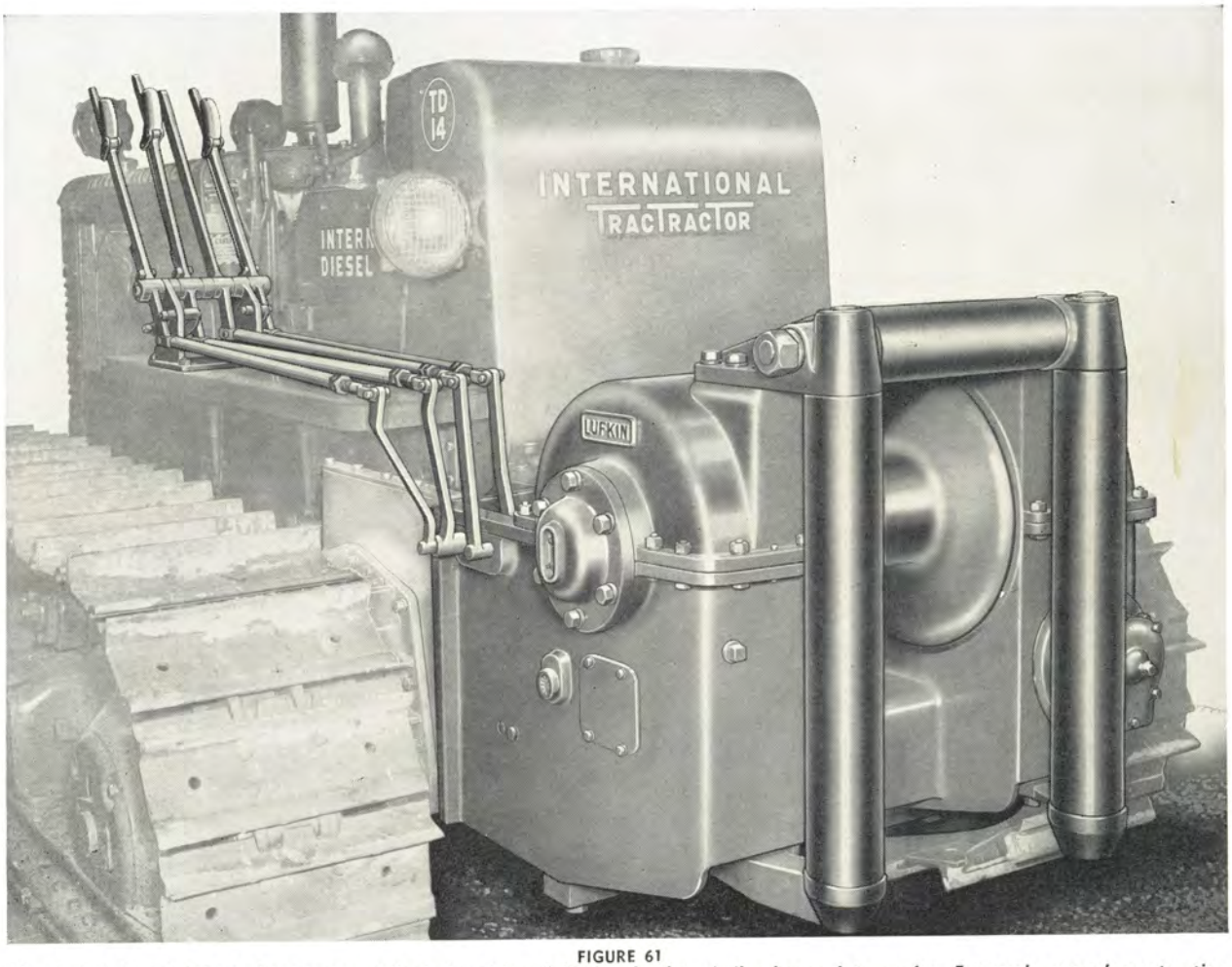


FIGURE 61

The Models 60 and 125 winches are especially designed for oil field and other similar heavy duty service. Extremely rugged construction and a wide operating range make them well suited for heavy moving jobs.

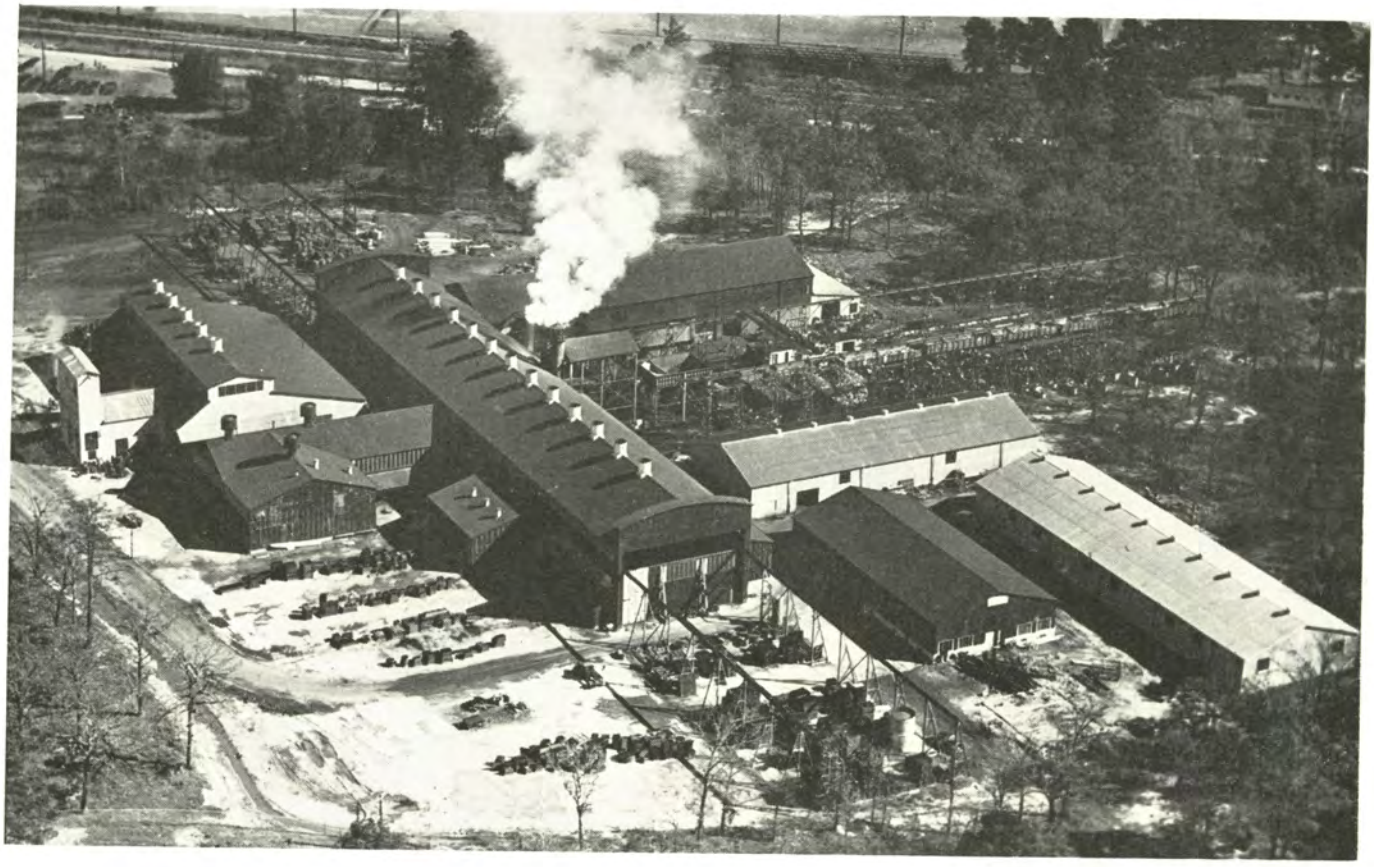
SPECIFICATIONS

	Model 60		Model 125		Model 125-TD24	
Built for Installation on	International TD14 Wide Tread Crawler Tractor		International TD18 Wide Tread Crawler Tractor		International TD24 Wide Crawler Tractor	
Drum Center to Ground	38″		47″		51⅜″	
Drum Center to Tractor	21½″		28″		27½″	
Overall Length	38½″		51″		53″	
Drum Diameter	8″		9⅜″		9⅜″	
Drum Flange Diameter	20″		22¼″		22¼″	
Drum Length	16″		16¼″		16¼″	
Cable Capacity:						
⅝″	1109′		....		....	
¾″	769′		....		....	
⅞″	516′		565′		....	
1″	....		433′		433′	
1⅛″	....		342′		342′	
1¼″	....		276′		276′	
Line Pull, Lbs.:	**Bare Drum**	**Full Drum**	**Bare Drum**	**Full Drum**	**Bare Drum**	**Full Drum**
Forward Low	60,000	26,000	125,000	52,000	150,000	78,000
Forward High	21,000	9,500	54,000	23,000	85,000	45,000
Line Speed, Feet per Minute:	(at 1400 r.p.m. engine speed)		(at 1300 r.p.m. engine speed)		(at 1375 r.p.m. engine speed)	
Forward Low	26	59	29	69	20	47
Forward High	76	170	67	160	47	112
Reverse Low	28	29	32	75	22	52
Reverse High	82	85	78	174	50	114
Weight, Lbs. (including cable rollers)	2800		5600		5800	

Slow speed final drive transmission gears can be furnished upon request for the TD14 and TD18 winches which will reduce the line speed through all gear changes approximately one-third.

LUFKIN ALLOY IRON CASTINGS

Controlled Specification Iron



New gray iron foundry No. 2, having dual cupola operation with capacity of 150 tons per day. Modern in every respect with emphasis on metallurgically controlled cupola charging for high strength, fine grain iron. Your casting requirements on all sizes from a fraction of a pound up to fifty thousand pounds each can be shipped with unusual promptness.

FIGURE 62
Die castings made of special alloy for presses up to 5000 tons capacity.

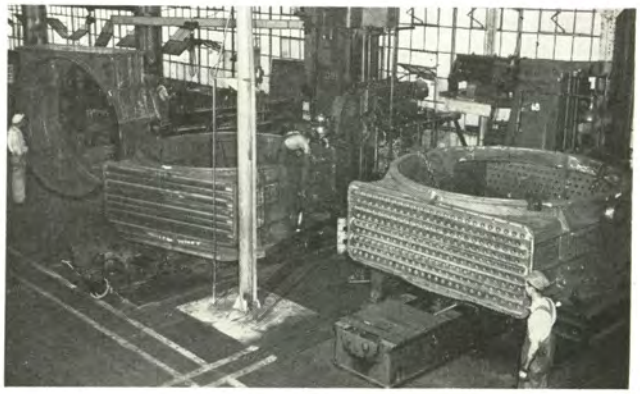


FIGURE 63
Chemical tower for a southern alkali plant. Sections are 9-foot diameter weighing 16,000 lbs. each.

LUFKIN INSTALLATIONS

TYPICAL OF THE MORE THAN TWENTY THOUSAND LUFKIN PUMPING UNITS NOW GIVING SATISFACTORY SERVICE

FIGURE 64
Lufkin TC-2AL-35A Twin Crank Pumping Unit with sub base and multi-cylinder gas engine drive and centerline polished rod hanger.

FIGURE 65
Lufkin TC-44-15 Twin Crank Pumping Unit, stub base type, driven by single cylinder gas engine mounted separately on slide rails.

Printed in U.S.A.

LUFKIN

EQUIPMENT OF ADVANCED DESIGN