

# LUFKIN

## AIR BALANCED PUMPING UNITS

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# LUFKIN

## INDUSTRIES, INC.

LUFKIN, TEXAS

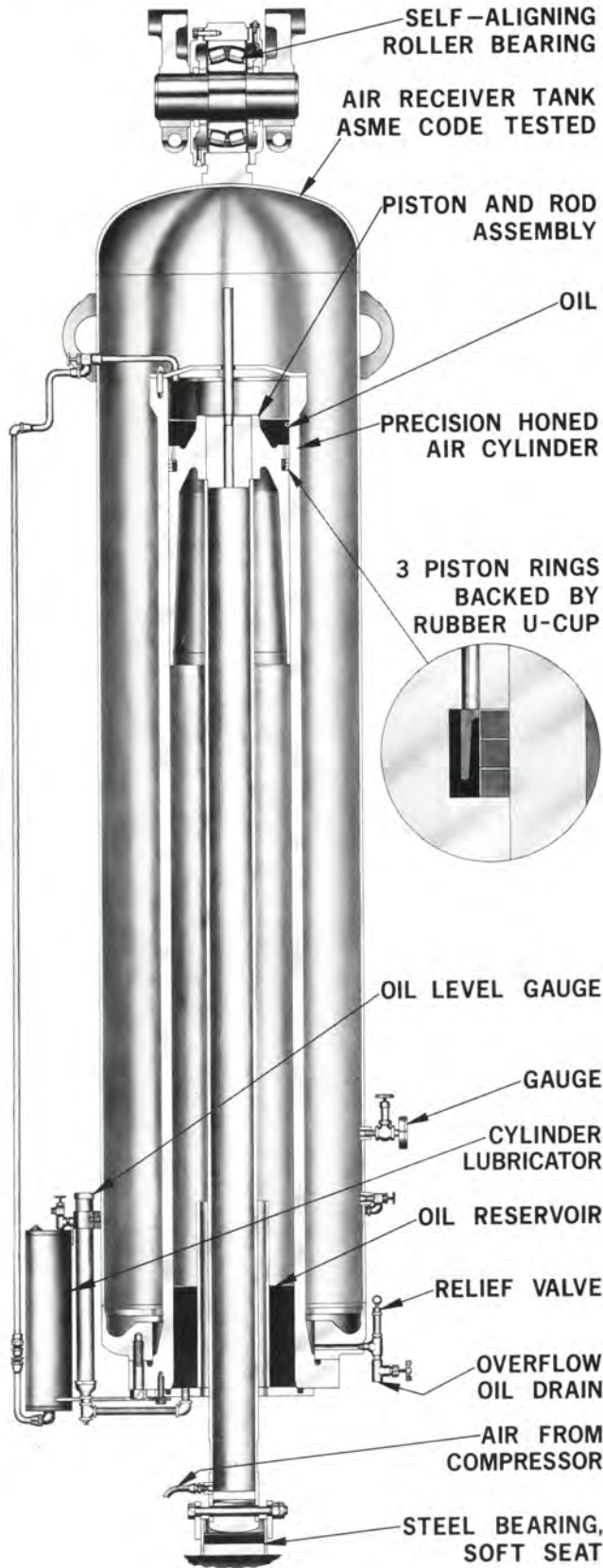


FIGURE 1

**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 pre-set 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.

# LUFKIN AIR BALANCED PUMPING UNITS



FIGURE 2

A-456D-365-120 Air Balanced Unit, driven by slow speed engine.



FIGURE 3

A-912D-427-192 Air Balanced Pumping Unit with Multi-Cylinder Engine Drive.



FIGURE 4

A-640D-305-168 Air Balanced Pumping Unit with Electric Motor Drive.



FIGURE 5

A-456D-365-120 Air Balanced Pumping Unit with Multi-Cylinder Engine Drive.

Air Counterbalance Pressure: 450 P.S.I. (Max.).  
Upper Pitman Connection: Rubber Cushioned

Structural Bearings: Roller Bearings.  
Hanger: Horsehead, Wire Line.

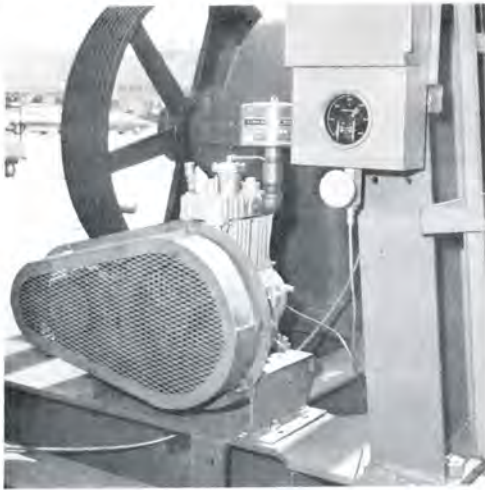


FIGURE 6

**MOTOR DRIVEN COMPRESSOR**

Furnished on units where electric power is available. Shown is the Quincy Model 310 compressor with Murphy Air Control System. Murphy Systems can be furnished in lieu of standard pressure switch. Quincy Model 325 and Ingersoll-Rand Model 231 compressors are also available.

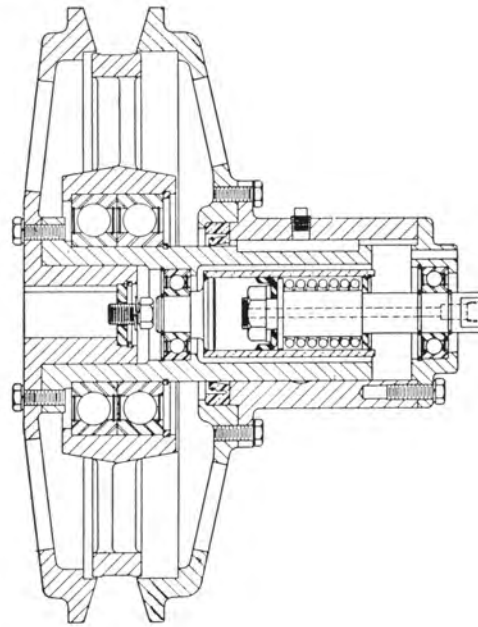


FIGURE 7

**CLUTCH, 11½" P.D.**

For air compressor—engages by spring pressure at initial starting and also when air pressure drops too low for proper counter-balance; disengages automatically when air pressure builds up to predetermined setting.

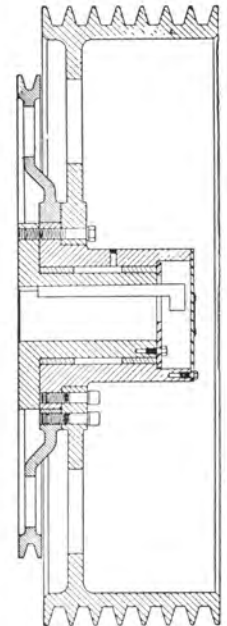


FIGURE 8

**FLOATING SHEAVE ASSEMBLY**

For Gear Reducer which permits running air compressor at initial starting without operating gear reducer. Note 1-C groove compressor drive rim bolted to floating hub. Select proper size to effect optimum compressor speed; 17¼", 23½", 28", 34", and 47¼" P.D. rims are available.

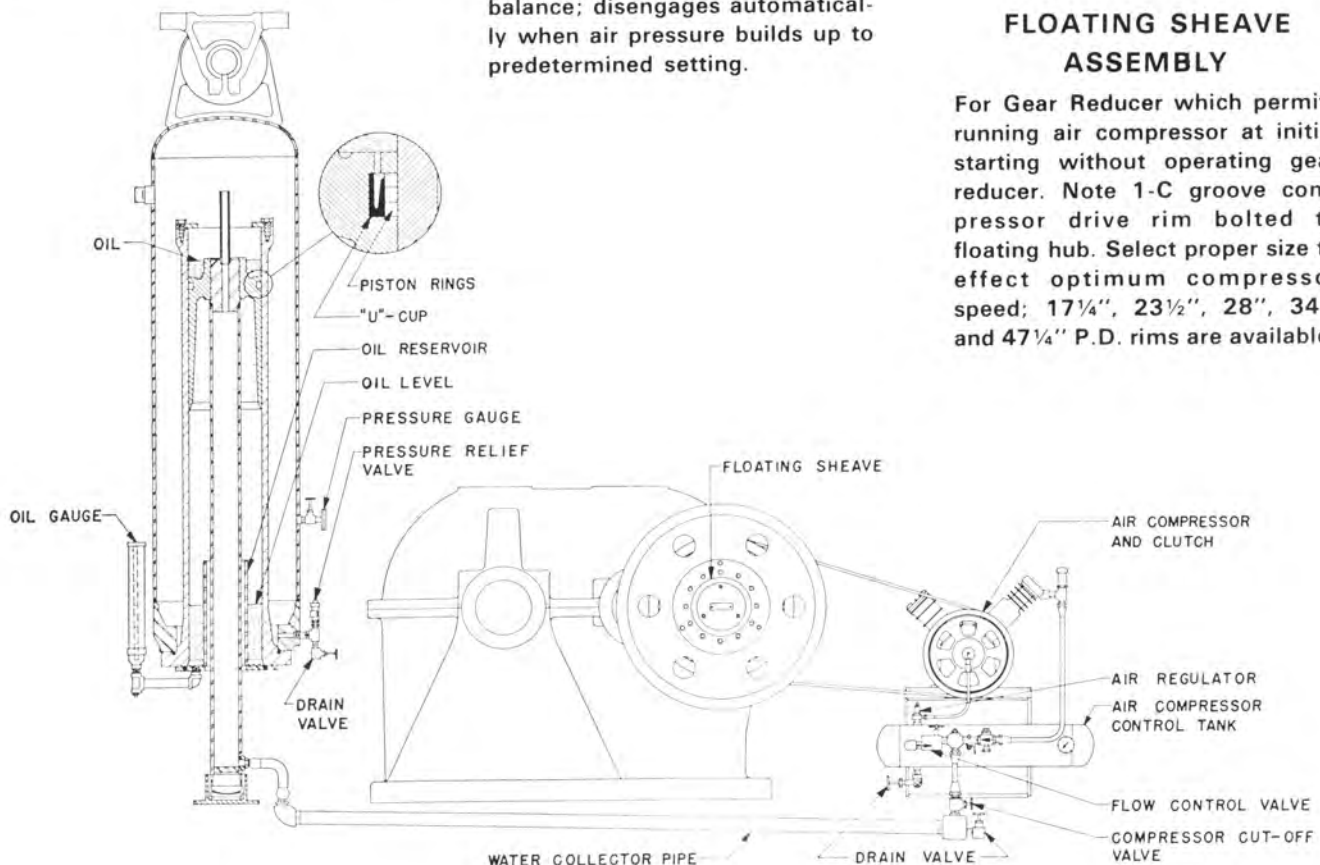


FIGURE 9

Schematic outline of Air System, Clutch Driven Compressor.

## GENERAL DIMENSIONS—Lufkin Air Balanced Pumping Units

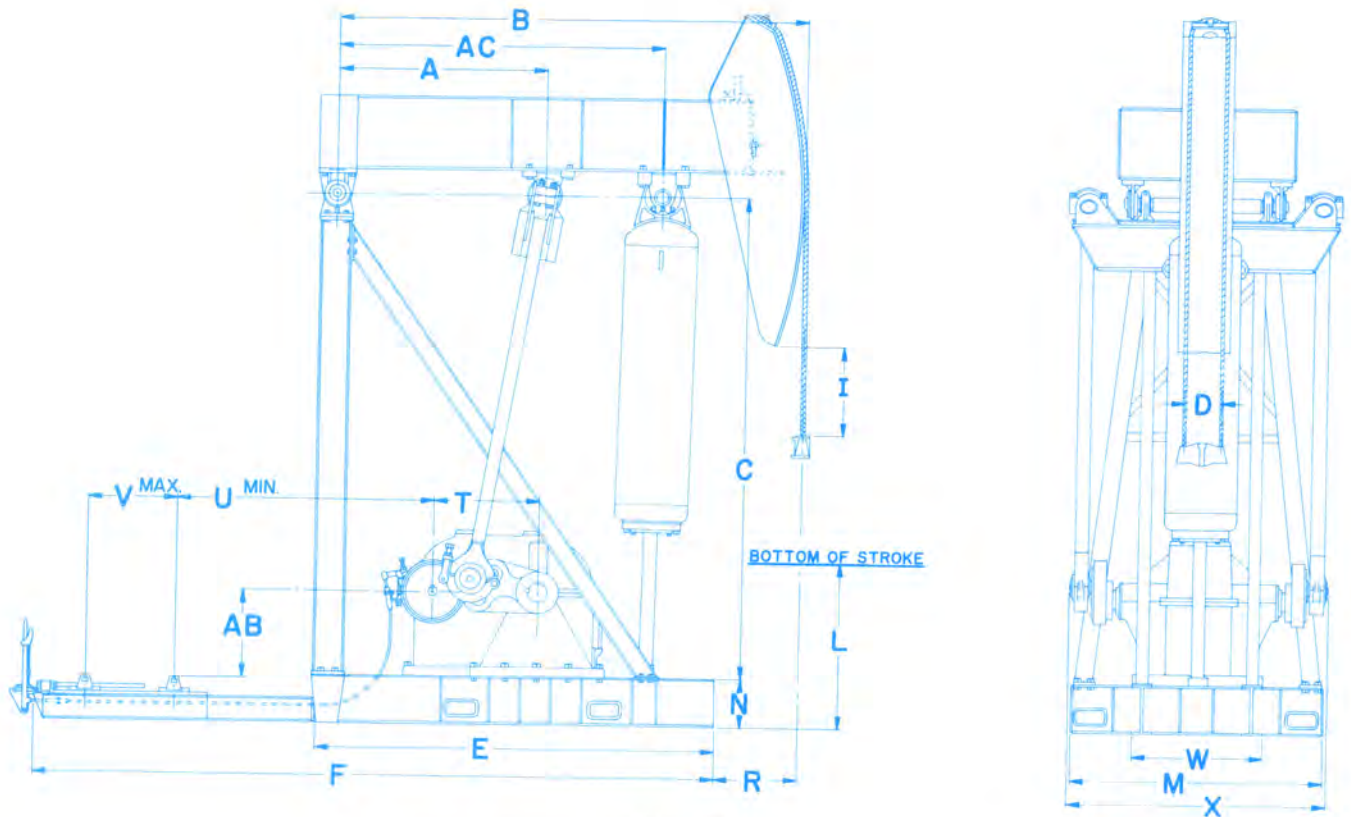


FIGURE 10

UNIT	A	B	C	D	E	F	I	L	M	N	R	T	U	V	W	X	AB	AC
A-3648D-470-300	10'-5"	28'-6"	30'-0"	16"	*	35'-6"	19½"	54"	9'-8"	24"	48"	84½"	6'-1½"	44¾"	70¼"	11'-4½"	42"	17'-2"
A-3648D-470-240	11'-2½"	28'-0"	25'-3½"	"	*	32'-0"	16½"	56"	9'-6"	21"	"	"	6'-11½"	"	"	"	"	19'-5½"
A-2560D-470-300	10'-5"	28'-6"	30'-0"	"	*	35'-6"	19½"	54"	9'-8"	24"	"	70"	"	"	66¼"	11'-0½"	"	17'-2"
A-2560D-470-240	11'-2½"	28'-0"	25'-3½"	"	*	32'-0"	16"	57½"	8'-10"	21"	"	"	7'-9½"	"	"	10'-10½"	36"	19'-5½"
A-1824D-470-300	10'-5"	28'-6"	30'-0"	"	*	35'-6"	19½"	54"	9'-8"	24"	"	58½"	7'-10½"	"	50¼"	9'-9½"	42"	17'-2"
A-1824D-470-240	11'-2½"	28'-0"	25'-3½"	"	*	32'-0"	16"	57½"	8'-0"	21"	"	"	8'-8½"	"	"	9'-7½"	30"	19'-5½"
A-1824D-427-192	10'-1½"	23'-0"	21'-0"	"	19'-4¾"	27'-1½"	17½"	52"	7'-11½"	"	"	"	8'-1"	41"	"	"	34¾"	14'-3½"
A-1280D-470-300	10'-5"	28'-6"	30'-0"	"	*	35'-6"	19½"	54"	9'-8"	24"	"	52½"	8'-5"	44¾"	"	9'-3½"	42"	17'-2"
A-1280D-470-240	11'-2½"	28'-0"	25'-3½"	"	*	32'-0"	16"	57½"	8'-0"	21"	"	"	9'-3"	"	"	9'-1¾"	30"	19'-5½"
A-1280D-427-192	10'-11½"	23'-0"	21'-0"	"	19'-4¾"	27'-1½"	17½"	52"	7'-11½"	"	"	"	8'-7¾"	"	"	"	34¾"	14'-3½"
A-1280D-305-168	7'-4"	19'-3"	20'-4"	"	14'-10½"	22'-0½"	16"	66½"	"	16½"	59"	"	6'-0"	"	"	8'-11½"	38½"	10'-11½"
A-912D-470-240	11'-2½"	28'-0"	25'-3½"	"	*	32'-0"	"	57½"	8'-10"	21"	48"	48½"	9'-7"	44¾"	50"	8'-6½"	24"	19'-5½"
A-912D-427-192	10'-1½"	23'-0"	21'-0"	"	19'-4¾"	27'-1½"	17½"	52"	"	"	"	"	9'-2"	"	"	"	28½"	14'-3½"
A-912D-305-168	7'-4"	19'-3"	20'-4"	"	14'-10½"	22'-0½"	16"	66½"	"	16½"	59"	"	6'-4"	"	"	8'-4½"	32½"	10'-11½"
A-912D-427-144	"	16'-8"	17'-10"	"	12'-3½"	19'-5½"	20½"	55"	"	"	"	"	"	"	"	"	"	"
A-640D-305-168	"	19'-3"	20'-4"	"	14'-10½"	22'-0½"	16"	66½"	"	"	"	41½"	7'-0"	"	46¾"	"	30½"	"
A-640D-427-144	"	16'-8"	17'-10"	"	12'-3½"	19'-5½"	20½"	55"	"	"	"	"	"	"	"	"	"	"
A-640D-305-144	6'-5"	17'-4"	"	12"	12'-11¼"	20'-1¾"	12½"	62½"	7'-6"	"	57"	"	71½"	"	"	"	"	9'-10"
A-640D-365-120	"	14'-7"	15'-7"	"	10'-11¼"	18'-1¾"	22"	49½"	"	"	47½"	"	"	"	"	"	"	"
A-456D-305-144	"	17'-4"	17'-10"	"	12'-11¼"	20'-1¾"	12½"	62½"	"	"	57"	38½"	6'-2"	"	"	"	"	"
A-456D-365-120	"	14'-7"	"	"	10'-11¼"	18'-1¾"	22"	49½"	"	"	47½"	"	"	"	"	"	"	"
A-456D-256-120	69"	15'-4"	15'-7"	"	11'-11¼"	19'-1"	14½"	57"	7'-1½"	"	"	"	"	"	"	"	"	8'-8"
A-320D-256-120	70"	15'-7"	"	"	11'-3¼"	18'-11¼"	"	"	"	"	53"	34"	6'-6"	"	43¼"	7'-3½"	"	8'-11"
A-320D-305-100	"	"	13'-4"	"	10'-0¼"	17'-8¼"	13"	53"	"	"	39"	"	"	"	"	"	"	"
A-228D-173-100	56"	12'-7"	12'-5"	"	8'-3¾"	15'-0¼"	17"	46¾"	6'-1½"	"	36"	30"	47"	50"	37¼"	6'-8¾"	29½"	7'-3½"
A-228D-246-86	"	10'-11"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
A-160D-200-74	50"	10'-0"	11'-9"	"	7'-11"	14'-6¾"	16½"	51"	"	9¾"	35½"	26"	57"	43½"	32"	69¾"	22"	6'-5½"
A-114D-173-64	48"	9'-7"	11'-0"	9"	7'-5½"	14'-5¾"	15"	55½"	63¾"	"	36"	24"	64"	42"	25¼"	66¾"	13¾"	6'-0½"

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

**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-3648D-470-300 A-3648D-470-240	47,000 "	300-240 240-200	17½ 14½	36 x 16½ @ 280#	Double 1¼" x 16"	80" (18D) "	OS OT	E44 "	P22 P19	240 334
A-2560D-470-300 A-2560D-470-240	" "	300-240 240-200	17½ 14½	36 x 16½ @ 245#	" 1¾" x 16"	68" (16D) "	OS OT	E32 "	P22 P19	240 334
A-1824D-470-300 A-1824D-470-240 A-1824D-427-192	" " 42,700	300-240 240-200 192-168-144	17½ 14½ "	" " 33 x 15¾ @ 200#	Double 1¼" x 16" 1¾" x 16"	40, 46, 51, 55, 68, (11D) "	OS OT "	E26 " "	P22 P19 "	240 334 "
A-1280D-470-300 A-1280D-470-240 A-1280D-427-192 A-1280D-305-168	47,000 " 42,700 30,500	300-240 240-200 192-168-144 168-141-118	17½ 14½ " 13	36 x 16½ @ 245# 33 x 15¾ @ 200# 27 x 14 @ 160#	Double 1¼" x 16" 1¾" x 16" "	40, 46, 51, 55, 68, (10D) " "	OS OT " "	" " " "	P22 P19 " "	240 334 " 232
A-912D-470-240 A-912D-427-192 A-912D-305-168 A-912D-427-144	47,000 42,700 30,500 42,700	240-200 192-168-144 168-141-118 144-120-100	14½ " 13 "	36 x 16½ @ 245# 33 x 15¾ @ 200# 24 x 14 @ 145# 27 x 14 @ 160#	" " " "	28, 34, 40, 46, 51, (8D) " 28, 34, 40, 46, 51, (6D) "	OT " " "	" " " "	" " " "	334 " 232 "
A-640D-305-168 A-640D-427-144 A-640D-305-144 A-640D-365-120	30,500 42,700 30,500 36,500	168-141-118 144-120-100 " 120-100-86	" " 12 "	24 x 14 @ 145# 27 x 14 @ 160# 24 x 14 @ 130#	" " 1¼" x 12"	28, 34, 40, 46, 51, (6D) " "	" " " "	" " " P18	" " " "	" " 326 "
A-456D-305-144 A-456D-365-120 A-456D-256-120	30,500 36,500 25,600	144-120-100 120-100-86 "	" " 11	" " 24 x 12 @ 100#	" " "	28,34,40,46,51(6D or 8C) "	" " "	" " "	" " "	" " 324
A-320D-256-120 A-320D-305-100	" 30,500	120-104-90 100-86-74	" "	" "	" "	25, 30, 36, 42, 47¼ (6C or 5D) "	2T "	E22 "	" "	" "
A-228D-173-100 A-228D-246-86	17,300 24,600	" 86-74-64	10 "	21 x 9 @ 82# "	1½" x 12" "	24¼, 30, 36, 41¼ (5C or 4D) "	" "	" "	P17 "	322 "
A-160D-200-74 A-114D-173-64	20,000 17,300	74-64-54 64-54	" 8	18 x 8¾ @ 77# 16 x 8½ @ 64#	" 1" x 9"	24¼, 29¼, 33¼, 38 (4C or 3D) 19¼,24,29¼,33¼, (3C)	3TA "	E19 E18	P16 "	" 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-3648D-470-300 A-2560D-470-300 A-1824D-470-300 A-1280D-470-300		3,045	6,665	10,290	13,910	17,535	21,155	24,780	28,400	32,025	35,645	37,000
A-3648D-470-240 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-427-192 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.

# LUFKIN AIR BALANCED UNIT INSTALLATIONS



FIGURE 11

**A-640D-305-168 Air Balanced Unit with Electric Motor Drive.**



FIGURE 12

**A-912D-427-192 Air Balanced Pumping Unit with Electric Motor Drive.**

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# **LUFKIN** TAKES SUCKER ROD PUMPING OFFSHORE

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