

Cylinder Filling Pump



These 1" motor speed pumps have long been popular for cylinder filling, small volume motor fueling & supplying small vaporizers. They offer the same heavy-duty construction of larger Blackmer models. Available in two mounting styles & capacity ranges.



C-Face Mounting — Direct Motor Drive

Pumps in the LGF Series mount directly to standard C-Face, 1750 rpm motors with flexible coupling. LGF1 pumps use a 1 hp motor as standard and LGF1P pumps use a 1-1/2 hp motor as standard. Standard motors for these pumps are single-phase, 115/230 volt, right-hand rotation, explosion-proof construction, with automatic reset thermal overload protection. U.L. listed & suitable for continuous duty. An explosion-proof manual switch is also available for mounting either at the motor or at a remote location.

Base Mounting — Direct Motor Drive

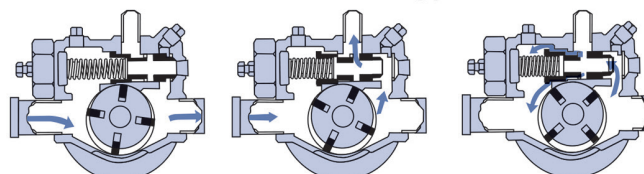
LGB1 Series pumps have brackets for foot-mounting to a conventional baseplate. The mounted pump is furnished with a flexible shaft coupling for connection to a standard motor. These units are designated as LGB1-DM or LGB1P-DM. Motors for these units are shipped to customer specifications. Coupling guard included.

Part #	Description	Factory Relief Valve Setting	Pump & Motor Speed	Approx. Delivery of Propane @ Diff. Pressures & Pump Speeds		Motor Size (HP)	Normal Time to Fill LP Gas Cylinders (Min.)		Max. Diff. Pressure in PSI for Continuous Duty Rated @	Shaft Size
				50 PSI Diff.	100 PSI Diff.		20 lb.	100 lb.		
LGF1E	1" Flange Mounted C-Face Style	105 PSI	1,750 RPM	8	6	1	3/4	3	105	11/16
LGF1PE		120 PSI	1,750 RPM	13	10	1.5	1/2	2	120	11/16
LGB1E	1" Bracket Mounted DM Style	105 PSI	1,750 RPM	8	6	1	3/4	3	105	11/16
LGB1PE		120 PSI	1,750 RPM	13	10	1.5	1/2	2	120	11/16

Built-in Combination Valve Eliminates Cost of Separate Bypass Valves

Built into the LGF1 & LGB1 Series pump is a patented "combination" valve acting as a back-to-tank bypass valve & as an internal relief valve. This feature lowers installation costs by eliminating the need for a separate bypass valve. It also assures pressure relief if the back-to-tank bypass line is closed. The valve's unique three-stage operation is illustrated to the right.

Combination Relief/Bypass Valve



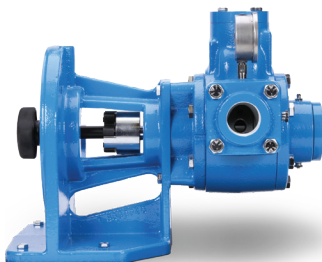
Normal Operations
Valve completely closed during normal operation with discharge line open.

Back-to-Tank Bypassing
Discharge pressure exceeding the valve setting opens valve to second stage, returning all or part of flow back to supply tank.

Pressure Relief
If back-to-tank line is closed, valve opens to third stage, passing flow back to inlet side of pump.

LGL150 Series Autogas Pump

High Differential Pressure Pump



Designed for use with single and dual hose fuel dispenser in above or underground applications.

Part #	Max. Speed	GPM	HP	Maximum Differential Pressure	Recommended Bypass Valve Setting	Relief Valve Setting	Maximum Working Pressure
LGL158	1750	32.3	7.5	200 PSI	200 PSI	225 PSI	425 PSI

Ebsray RC Series Autogas Pump

Regenerative Turbine Pump for Liquefied Gas Applications



The Ebsray RC Series Regenerative Turbine Pumps are single-stage regenerative turbine pumps designed and precision built for high-pressure transfer of LPG, and Autogas.



Part #	Inlet	Outlet	Pump Speed	Approx. Delivery in GPM		Motor Size	Max. Diff. Pressure PSI
				110 PSI Diff	160 PSI Diff		
RC20	1" FNPT	1" FNPT	3500	13	10	3 HP	200
RC25	1" FNPT	1" FNPT	3500	23	19	5 HP	200
RC40	1-1/2" FNPT and ANSI Flange	1" FNPT and ANSI Flange	3500	45	39	5 HP / 7.5 HP	200

Pumps & Compressors

Multi-Cylinder & Motor Fuel Filling Pumps



These motor-speed pumps offer higher capacities than the LGF1/B1 Series pumps. They are suited to a variety of small transfer jobs, but are especially popular for multi-station cylinder-filling systems. They are equipped with a built-in relief valve and are fitted for both LP Gas or anhydrous ammonia service. These pumps are designed for foot-mounting. All of the pumps are equipped with replaceable cylinder liners and end discs, permitting rebuilding of the pump to like new condition.

C-Face Mounting - Direct Motor Drive

This drive is available for the LGLF1-1/4 & LGLF1-1/2 Series pumps. The pump is mounted to a steel baseplate and furnished with a flexible shaft coupling for connection to a standard motor. A coupling guard is included.

Base Mounting - Direct Motor Drive

This drive is available for the LGL1-1/4 & LGL1-1/2 Series pumps. The pump is mounted to a steel baseplate and furnished with a flexible shaft coupling for connection to a standard motor. A coupling guard is included.

Part #	Description	Pump & Motor Speed (RPM)	Approx. Delivery In GPM Propane		Motor Size (HP)	Max. Diff. Pressure in PSI	Max. Motor Size to Mount On Standard Base	Shaft Size
			50 PSI Diff.	100 PSI Diff.				
LGLF11/4A	1-1/4" Flange Mount for C-Face Motor	1750	21	18	2	150	215T	7/8
LGL11/4	1-1/4" Foot Mount	1750	21	18	2	150	215T	7/8
LGLF11/2A	1-1/2" Flange Mount for C-Face Motor	1750	33	29	3	150	215T	7/8
LGL11/2	1-1/2" Foot Mount	1750	33	20	3	150	215T	7/8

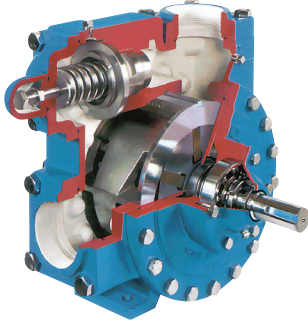
Multi-Purpose Pumps for Bulk Plants, Terminals & Truck Systems



These workhorse pumps have long been popular for a broad range of service on bobtails, transports, vaporizers and bulk transfer service. The LGLD2 and LGLD3 are particularly suited to bobtails, because they offer a double shaft extension. This permits use of the pump by either right or left handed PTO rotation simply by reversing the position in which the pump is mounted.

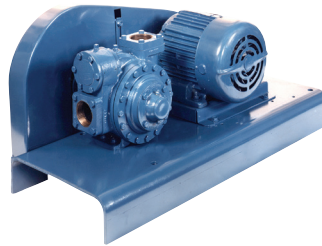
Models in these series are fitted for either LP Gas or anhydrous ammonia service. All of the pumps are equipped with replaceable cylinder liners and end discs, permitting rebuilding of the pump to like new conditions.

High Capacity Liquefied Gas Pump



Blackmer's LGLD4 pump is fitted with a special cavitation suppression liner for optimum performance & extended service life. UL listed for handling butane, propane & anhydrous ammonia, this durable pump is ideal for rapid loading & unloading of transports and bob-tails or bulk plant service. Flow rates range from 130 to 270 GPM with differential pressures up to 125 psi.

V-Belt Drive Style Pumps



These units have high torque V-belts and quick disconnect sheaves. Sheaves are thinner, which puts them closer to the bearings, reducing the stress on both motor and pump shafts. Sheaves and hubs are a two-part assembly that comes apart easily. Units come complete with belt guard pump mounted to base plate, and a motor.

Part #	Size	RPM	GPM*	HP*	Max. Diff. Pressure
LGLD2E	2"	420	40	3	150 PSI
LGLD2E	2"	520	50	5	150 PSI
LGLD2E	2"	640	65	5	150 PSI
LGLD3F	3"	420	80	5	150 PSI
LGLD3F	3"	520	108	7.5	150 PSI
LGLD3F	3"	640	133	10	150 PSI
LGLD4B	4"	420	170	10	125 PSI
LGLD4B	4"	520	220	15	125 PSI
LGLD4B	4"	640	270	20	125 PSI

* Differential Pressure = 50 PSI

Note: Delivery depends on system design, pipe sizing and valve capacity.

High Pressure Liquefied Gas Pump



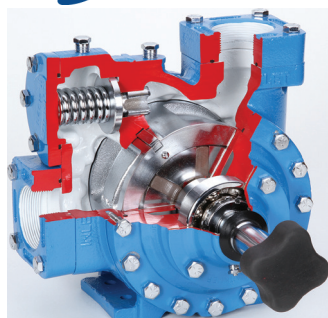
Based on Blackmer's industry standard LGLD2 transfer pump, the LGLH2 has the muscle to handle the toughest jobs. Whether pumping from a bobtail to the top of an 8-story building or feeding a vaporizer in the middle of winter — the LGLH2 can do it. The LGLH2 is dimensionally interchangeable with the LGLD2.

Part #	Performance at 145 psid Differential Pressure			Max. Diff. Pressure	Relief Valve Setting	Maximum Working Pressure
	780 rpm	640 rpm	520 rpm			
LGLH2	61 gpm	47 gpm	32.6 gpm	165 psi	190 psi	390 psi

Cold Climate 4" LPG Pump



Utilizing upgraded materials, the CCLGLD4A pump is good for cold weather installations. Minimum temperature ratings on standard ductile-iron pumps is -25°F. THE CCLGLD4 pump is certified to -40°F. NOTE: This pump is NOT UL listed.



Part #	Factory Relief Valve Setting	Pump Speed (RPM)	Approx. Delivery of Propane at Diff. Pressure and Pump Speeds Shown (1) (GPM)		Maximum Differential Pressure	Maximum Working Pressure (2)
			50 PSI	100 PSI		
CCLGLD4-VB	150 PSI	340	130	90	125	350
	150 PSI	420	170	130	125	350
	150 PSI	520	220	180	125	350
	150 PSI	640	270	220	125	350
CCLGLD4-HRB	150 PSI	400	160	120	125	350
	150 PSI	500	210	170	125	350
	150 PSI	640	270	220	125	350

(1) Check the pump's delivery and brake horsepower requirements to the performance curves on spec sheet. See footnote with the curves which explains the factors that can cause delivery to vary.

(2) Maximum rated working pressure is 350 PSI for LPG and NH3.

(3) Maximum horsepower the standard drive (V-Belt/gearbox and base) will transmit.

(4) Motors may be specified.

LGL 3021 Series



Based on Blackmer's industry standard LGLD3 transfer pump, the LGL3021 replaces competitive pumps without changing piping connections or motor drives. Whether filling an LPG bobtail or transport - the LGL3021 can do it faster and more efficiently than competitive models.



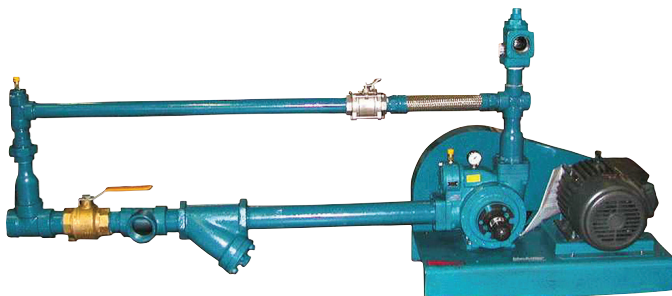
Part #	Size	Maximum Speed	GPM*	HP	Max. Diff. Pressure	Maximum Working Pressure
LGL3021	3" or 4" NPT Flange, Nodular	800 RPM	155	15	150 PSI	350 PSI

* Approximate delivery of propane at 800 RPM at 100 PSI differential pressure.

Liquid Transfer Assembly



Pre-plumbed "Loop" Bobtail-Truck-Storage loading and transport unloading. Available with 2" or 3" pumps. Approximate GPM are 50, 120, and 250 respectively 2", 3", and 4".



Part #	Pump Size	Capacity
LGLD2-VB-NH	2"	50 GPM
LGLD3-VB-NH	3"	112 GPM
LGLD4-VB-NH	4"	220 GPM

Please specify size and phase of explosion proof motor.

Note: Capacity calculated using 100 PSI differential at 640 RPM

Blackmer Flange Mounted Pumps for Transports and Bobtails




For Transport Service

The TLGLF4 series transport pump is designed to mount to 4" internal valves. It is suitable for both LP Gas and Anhydrous Ammonia service. Ideal intake conditions assure maximum pumping rates and the shortest possible transport turnaround time.




An auxiliary intake port next to the mounting flange can be used for emergency unloading of another tank or transport. Rated for differential Pressures to 125 psi, the pump has twin discharge ports which permit the use of two hoses, if necessary to reduce pressure loss when unloading into restrictive receiving systems.

For Bobtail Service

The TLGLF3 pump series flange mounts directly to the truck tank in combination with a flanged internal control valve. Because it eliminates the intake line and related restrictions to flow, it also eliminates the vaporization problem caused by them. That means longer pump life and higher effective pump capacity. The pump is rated to 125 psi differential.

The TLGLF3 pump is suitable for both LP Gas and Anhydrous Ammonia. A double shaft extension is standard, making the pump suitable for either right or left-hand PTO rotation. The pumps is equipped with replaceable cylinder liners and end discs, permitting rebuilding of the pump to like-new conditions.

Part #	Description	Suction Flange	Discharge Flange	Pump Speed (RPM)	Maximum Working Pressure (PSI)	Maximum Differential Pressure
TLGLF3C	Flange Mounted	3" 300# ANSI	2" NPT	650	350	150 PSID
TLGLFD4B	Flange Mounted	4" 300# ANSI	2" NPT	650	350	150 PSID

Bypass Valves




Part #	Common Applications	Used with Blackmer Pump Model	Ports	Max. Rated Flow* - GPM @			
				20 PSI	50 PSI	80 PSI	120 PSI
BV-034	Cylinder Filling Systems	1-1/4" or 1-1/2" Either Valve	3/4" NPT Tapped	25	40	50	60
BV-100	Cylinder Filling Systems	1-1/4" or 1-1/2" Either Valve	1" NPT Tapped	25	40	50	60
BV-114	Bobtail Trucks or Smaller Bulk Plant Systems	2" or 3" Either Valve	1-1/4" NPT Tapped	60	80	100	125
BV-112	Bobtail Trucks or Smaller Bulk Plant Systems	2" or 3" Either Valve	1-1/2" NPT Tapped	60	80	100	125
BV-200	Transports or Large Bulk Plant Systems	3" and 4"	2" NPT Companion Flanges	150	180	220	250

* Normal maximum bypass flow rates without significantly exceeding the set pressure limit.

Ebsray RV18 Bypass Valve



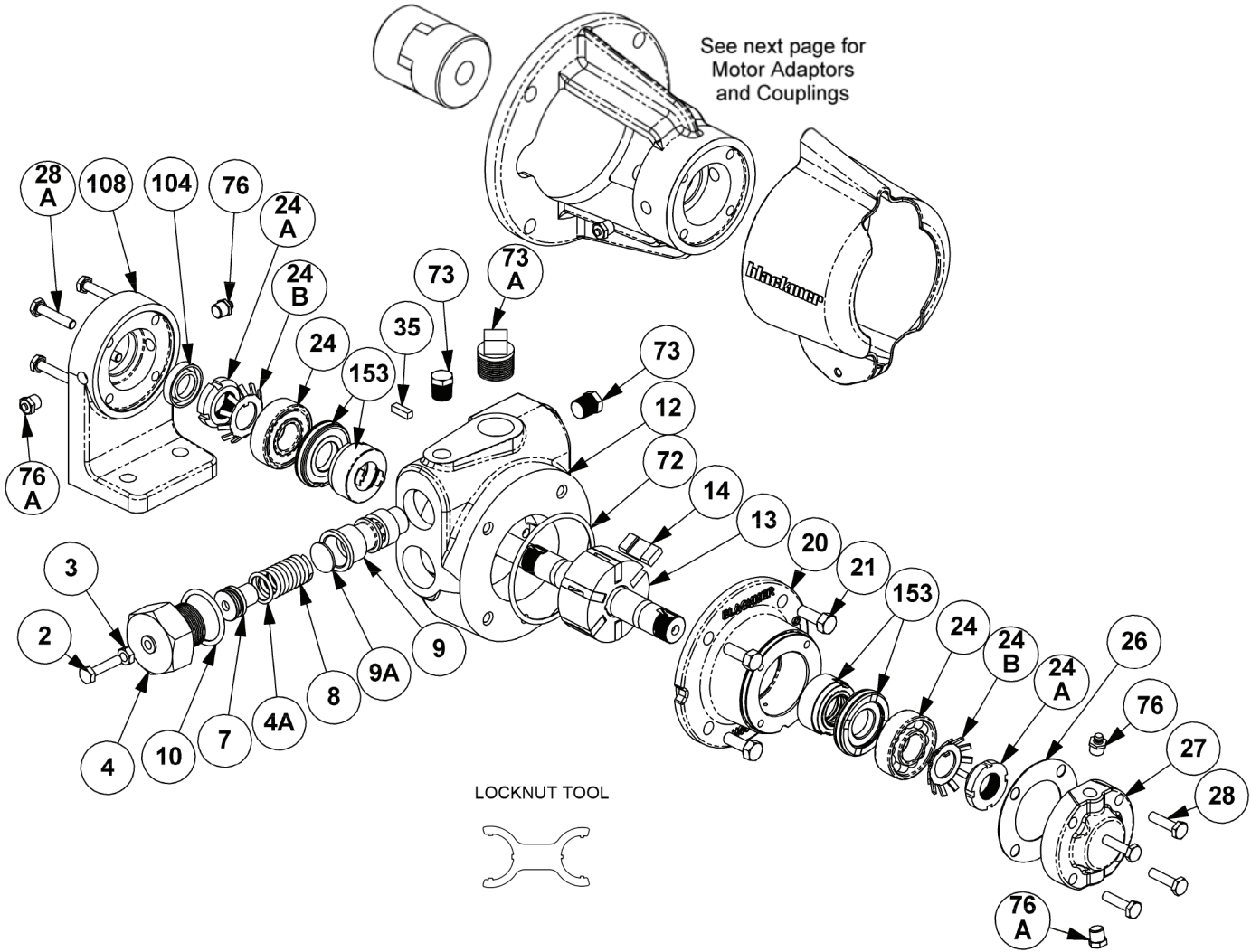

Part #	Flow Rate	Differential Pressure	Hydrostatic Test Pressure
RV18	52	203	155

Blackmer Pump Repair

Models: LGF1E, LGB1E, LGF1PE, LGB1PE



Pumps & Compressors



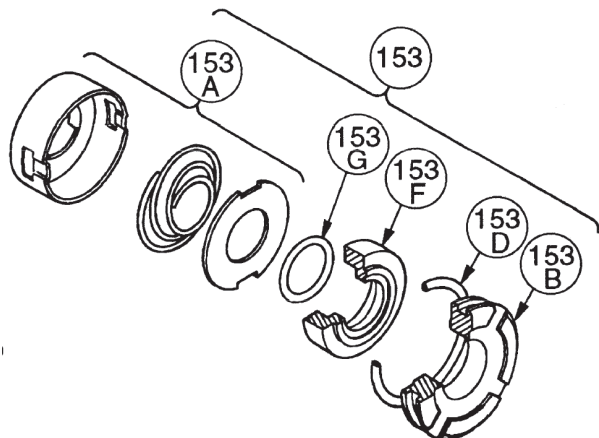
Part #	Ref. No.	Description	Parts Per Pump
432901	2 (2)	Adjusting Screw – Relief Valve (R/V)	1
922811	3 (2)	Locknut – Adjusting Screw	1
412901	4	Cover – R/V	1
711940	4A (1)(2)	O-Ring – Spring Guide	1
422901	7 (2)	Spring Guide – R/V	1
472901	8 (2)	Spring – R/V	1
452901	9 (2)	Valve – R/V	1
442901	9A (2)	Disc – R/V	1
701965	10 (2)	O-Ring – R/V Cover	1
022914	12	Cylinder – LGF1, LGB1	1
022915	12	Cylinder – LGF1P, LGB1P	1
262907	13	Rotor & Shaft Assembly, Six Vane (Includes Ref. Nos. 24A & 24B)	1
092913	14 (1)	Vane – Duravane	6
032905	20	Head	1
920178	21	Capscrews – Head	4
903405	24 (1)	Ball Bearing	2
903531	24A	Locknut – Bearing	2
903532	24B	Lockwasher – Bearing	2
383075	26 (1)	Gasket – Bearing Cover	1

Part #	Ref. No.	Description	Parts Per Pump
043071	27	Bearing Cover	1
920080	28	Capscrews – Bearing Cover	4
920090	28A	Bracket Mounting Screws	4
909152	35 (1*)	Key – Shaft, Square	1
711941	72	O-Ring – Head	1
908198	73	Gage Plug (1/4")	2
908225	73A	Gage Plug (3/4")	1
317815	76	Grease Fitting	2
701992	76A	Grease Relief Fitting	2
331934	104 (1)	Grease Seal	1
832913	108	Mounting Foot - LGB1(P)E	1
903090	—	Tool - Locknut	—
899094	—	Kit – RV Maintenance	—
898994	—	Kit – Maintenance (6-Vane)	—

- 1—Included in Maintenance Kit.
- 2—Included in RV Kit.
- 3—Install the vanes with the slot facing the direction of rotation.
- 4—Maintenance Kit also includes Woodruff Key 909126 used previously

Models: LGF1E, LGB1E, LGF1PE, LGB1PE

Mechanical Seal

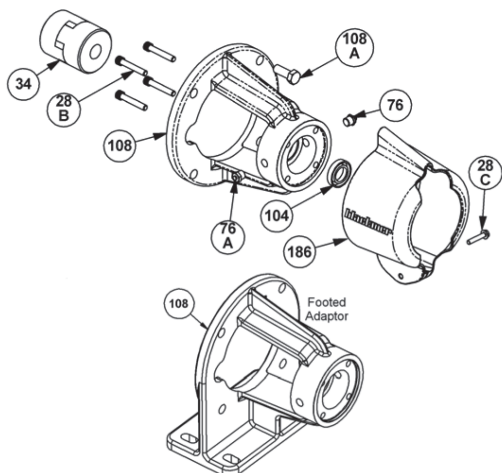


Part #	Ref. No.	Description	Parts Per Pump
332920	153 (1)	Mechanical Seal Assembly	2
**	153A**	Jacket Assembly – Seal	2
**	153B**	Stationary Seat (Steel)	2
711916	153D	O-Ring – Stationary Seat (Buna-N)	2
**	153F**	Seal Face (Carbon)	2
711939	153G	O-ring – Rotating (Buna-N)	2

1—Included in Maintenance Kit.

** Ref. Nos. 153A, 153B & 153F are not available as separate repair parts.

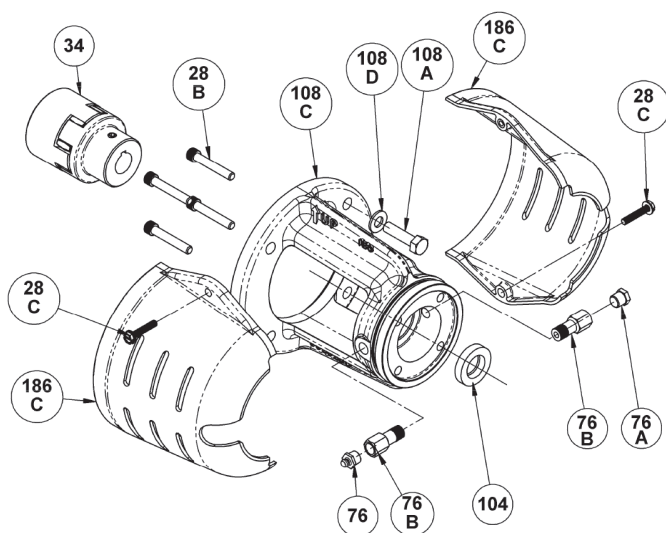
NEMA C-Faced Motor Adaptors – LGF Models



Part #	Ref. No.	Description	Parts Per Pump
920101	28B**	Motor Adaptor Mounting Screws	4
920026	28C	Guard Screw	1
906150	34	Coupling Half – Pump	1
906151	34	Coupling Half – Motor 56C	1
906147	34	Coupling Half – Motor 143/145TC, 184C	1
906155	34	Coupling Spider	1
832912	108	Motor Adaptor – Unfooted	1
833000	108	Motor Adaptor- Footed	1
920331	108A	Capscrew – Motor Adaptor	4
804120	186	Guard	1

** Ref. Nos. 153A, 153B & 153F are not available as separate repair parts.

IEC Motor Adaptors – LGF Models



Part #	Ref. No.	Description	Parts Per Pump
920101	28B	Motor Adaptor Mounting Screws	4
920026	28C	Guard Screw	2
906183	34	Coupling Half – Pump	1
906176	34	Coupling Spider	1
906186	34	Coupling Half – Motor (IEC 90)	1
317815	76	Grease Fitting	1
701992	76A	Grease Relief Fitting	1
701905	76B	Extension Coupling	2
331934	104	Grease Seal	1
920043	108A	Capscrew – Motor Adaptor to Motor	4
832920	108C	Motor Adaptor (IEC90 B14A) Includes Ref. Nos. 76, 76A & 76B	1
792094	108D	Washer	4
804196	186C	Guard Half	2

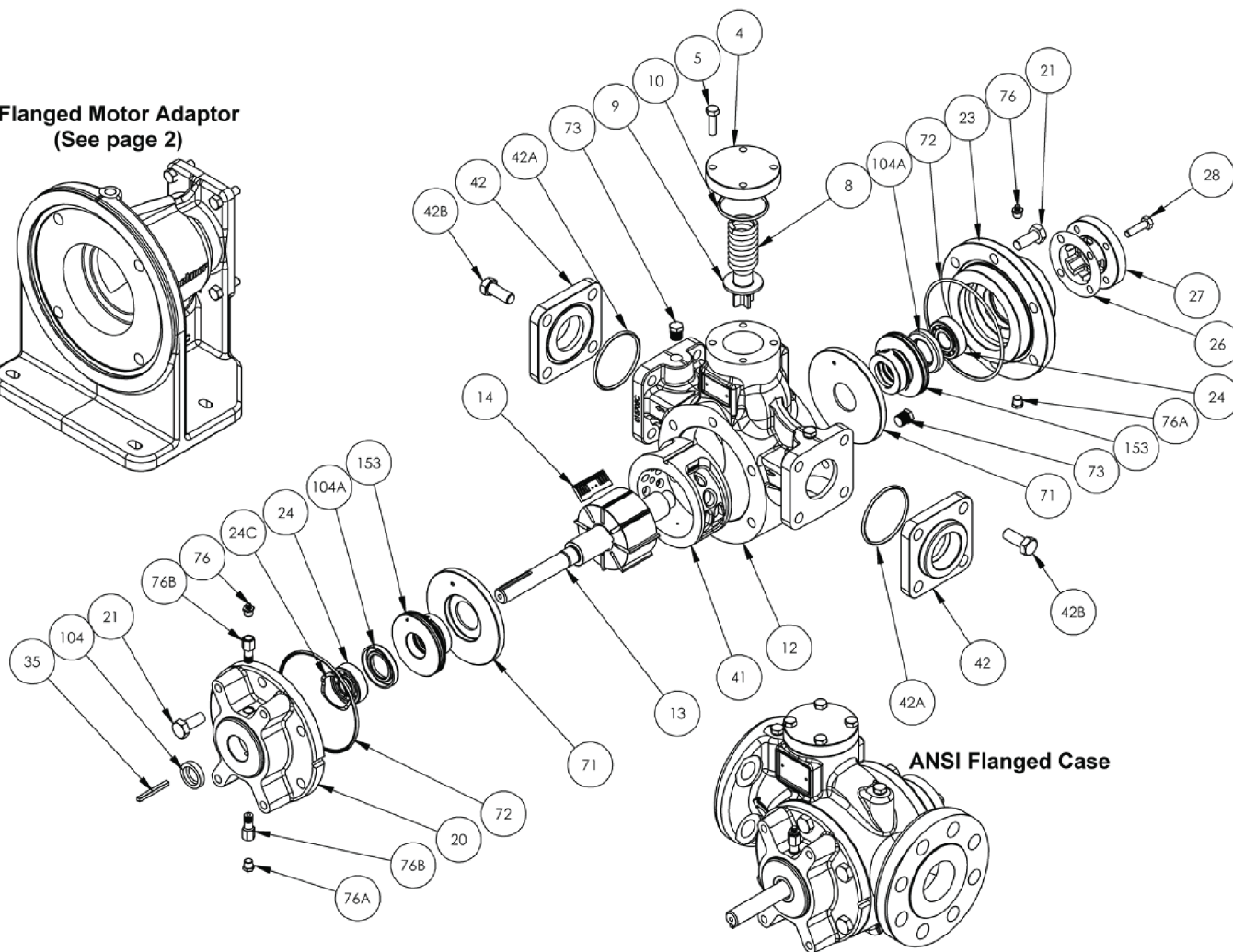
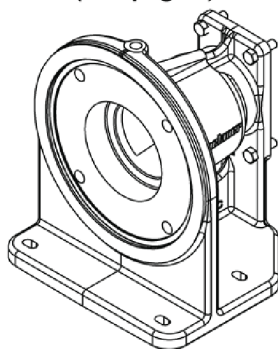
Models: LGL156C, LGL158C

Discontinued Models: LGL154C

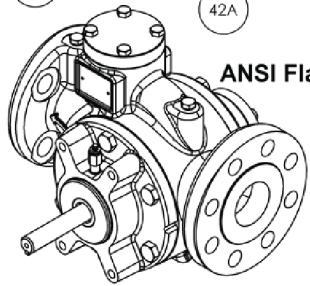


Pumps & Compressors

Flanged Motor Adaptor
(See page 2)



ANSI Flanged Case



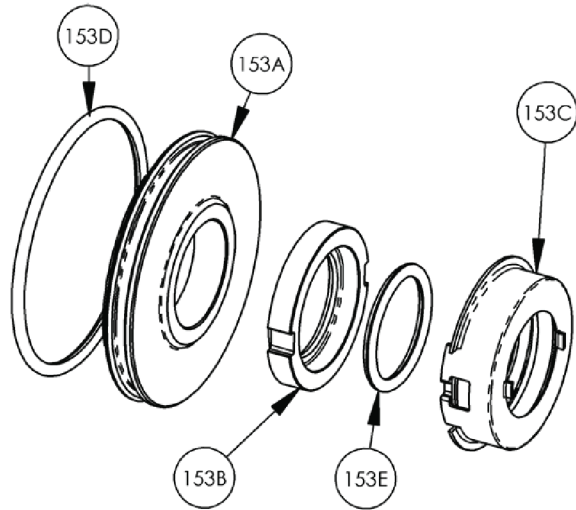
Part #	Ref. No.	Description	Parts Per Pump
415701	4	Cover - Relief Valve (R/V)	1
920122	5	Capscrews - R/V Cover	4
471400	8	Spring - R/V (225 psi)	1
455701	9	Valve - R/V	1
711924	10 (1)	O-Ring - R/V Cover	1
015705	12	Casing - 4 Bolt Flange	1
015702	12	Casing - ANSI Flange	1
265703	13	Rotor & Shaft Asy.	1
094860	14 (1)	Vane - Duravane	8
035705	20	Head Inboard	1
920468	21	Capscrews - Head	12
035703	23	Head Outboard	1
903148	24 (1)	Ball Bearing	2
903187	24C (1)	Bearing Spring	1
905172	26 (1)	Shim Kit (6 ea: .002", .005" & .010")	Varies
045701	27	Bearing Cover	1
920122	28	Capscrews - Bearing Cover	4
909153	35 (1)	Key - Shaft	1
185701	41	Liner (LGL158)	1
185710	41	Liner (LGL156)	1

Part #	Ref. No.	Description	Parts Per Pump
185711	41	Liner (LGL154)	1
See Flanges	42	Flanges	See Flanges
065701	71 (1)	Disc	2
702169	72 (1)	O-Ring - Head	2
908198	73	Gage Plug	2-4
909177	74	Key - Liner	1
317815	76	Grease Fitting	2
701992	76A	Grease Relief Fitting	2
701905	76B	Grease Fitting Extension	2
331921	104 (1)	Grease Seal - Outer	1
335702	104A (1)	Grease Seal - Inner	2
899222	—	Kit - Maintenance	—
455750	—	Priming Valve (for Underground Tank Installations)	—

1—Included in Maintenance Kit.

Models: LGL156C, LGL158C

Mechanical Seal - LPG



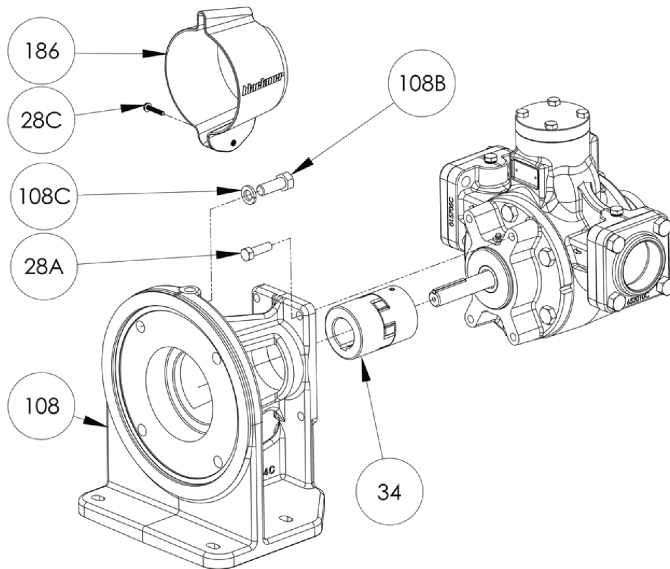
Part #	Ref. No.	Description	Parts Per Pump
335703	153 (1)	Mechanical Seal Assembly - SNCN	2
**	153A	Stationary Seat (Steel)	2
**	153B	Seal Face (Carbon)	2
**	153C	Jacket Assembly	2
701934	153D	O-Ring - Stationary (Buna-N)	2
711917	153E	O-Ring Rotating (Buna-N)	2

1—Included in Maintenance Kit and Rebuild Kit.

**Mechanical Seal Ref. No. 153 is only sold as a complete assembly.

Ref. Nos. 153A, 153B & 153C are not available as separate replacement parts.

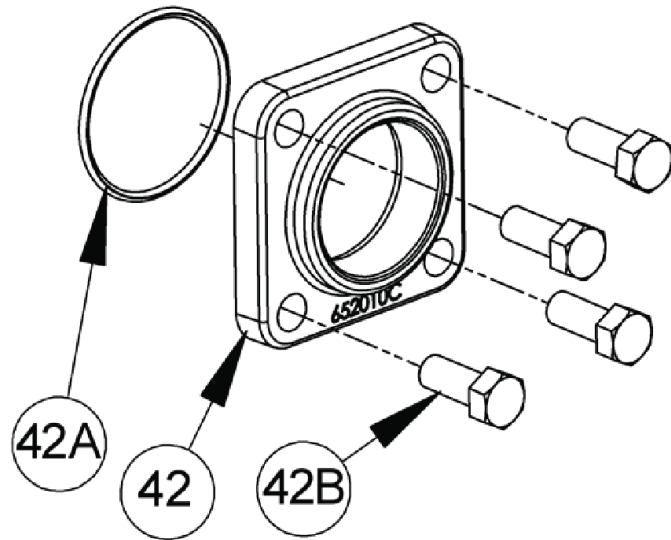
Flanged Motor Adapter



Part #	Ref. No.	Description	Parts Per Pump
920026	28C	Guard Screw	1
920359	28A	Bracket Mounting Screws	4
906033	34	Coupling Half – Pump (NEMA)	1
906181	34	Coupling Half – Pump (IEC)	1
906034	34	Coupling Spider (NEMA)	1
906178	34	Coupling Spider (IEC)	1
906164	34	Coupling Half – Motor (182TC, 184TC, 215C)	1
906032	34	Coupling Half – Motor (213TC, 215TC)	1
906180	34	Coupling Half – Motor (IEC 112)	1
906179	34	Coupling Half - Motor (IEC 132)	1
833004	108	Mounting Bracket – NEMA	1
833005	108	Mounting Bracket – IEC 100/112 B5	1
833006	108	Mounting Bracket – IEC 132 B14	1
098277	108B	Motor Mounting Screw (NEMA)	4
920055	108B	Motor Mounting Screw (IEC 100/112)	4
920050	108B	Motor Mounting Screw (IEC 132)	4
909706	108C	Lockwasher (NEMA)	4
909707	108C	Lockwasher (IEC 100/112)	4
793095	108C	Lockwasher (IEC132)	4
804120	186	Guard	1

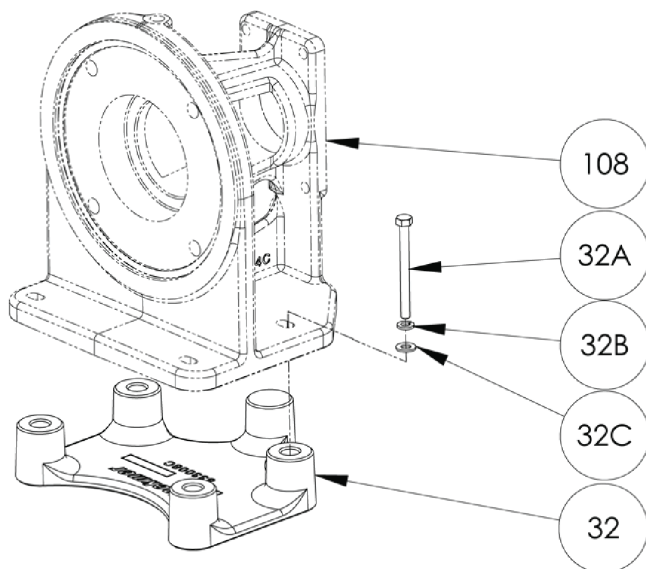
Models: LGL156C, LGL158C

Flange Options (4 bolt flange cases)



Part #	Ref. No.	Description	Parts Per Pump
652010	42	Flange – 2" NPT	2
652024	42	Flange – 2" Slip-on Weld	2
655109	42	Flange – 2" Socket Weld El	2
652028	42	Flange – 1.5" NPT	2
652026	42	Flange – 1.5" Slip-on Weld	2
652029	42	Flange – 1.25" NPT	2
652027	42	Flange – 1.25" Slip-on Weld	2
702004	42A	O-Ring – Flange (Buna-N)	2
920491	42B	Capscrews – Flange	8

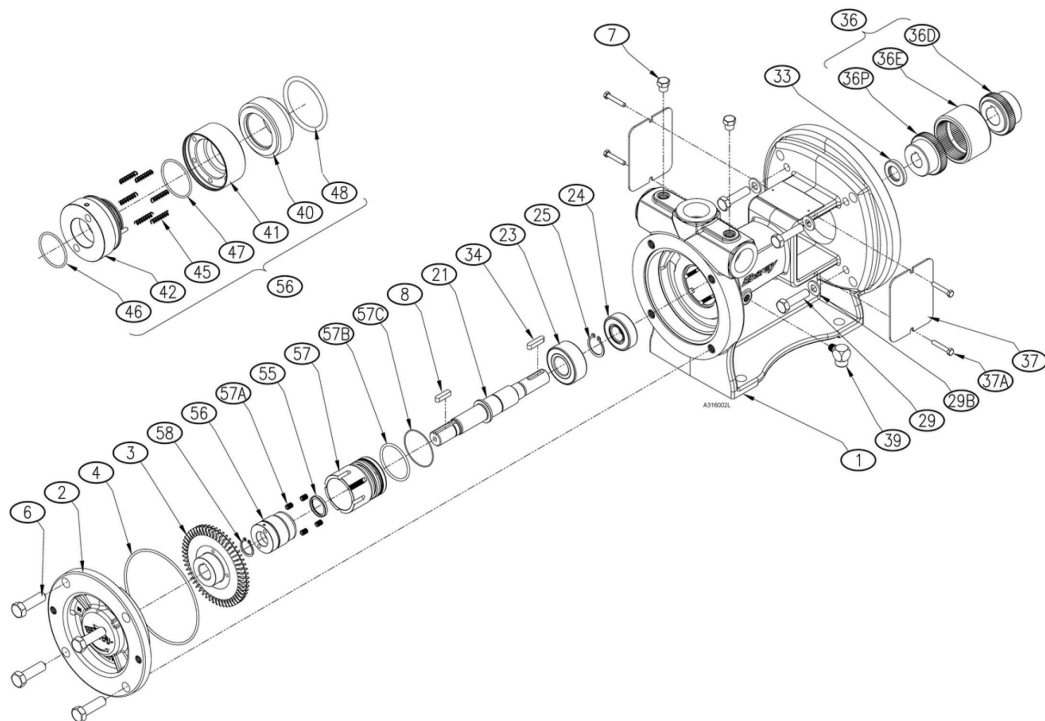
Optional Riser Spacer



Part #	Ref. No.	Description	Parts Per Pump
833008	32	Bracket Riser	1
920246	32A	Capscrews - Bracket	4
909613	32B	Mounting Lockwashers	4
790494	32C	Mounting Washers	4

Models: Ebsray RC20 & RC25

Repair Parts



Pumps & Compressors

Part #	Ref. No.	Description	Qty
815722	1	Body - NEMA - RC20	1
815727	1	Body - NEMA - RC25	1
815723	2	Cover - RC20	1
815728	2	Cover - RC25	1
815724	3	Impeller - RC20	1
815729	3	Impeller - RC25	1
815701	4	O-Ring – Cover - RC20	1
815701	4	O-Ring – Cover - RC25	1
—	6	Hex Head Capscrew, M12-1.75x40	4
908198	7	Plug –Gauge Tap	2
—	8	Key – Impeller, Steel 6x6x20	1
815702	21	Shaft	1
815703	23	Ball Bearing – Impeller End	1
815704	24	Ball Bearing – Motor End	1
815705	25	Circlip – Bearing	1
815706	33	Dust Seal - Bearing	1
—	34	Key – Pump Shaft, Steel 6x6x20	1
815750	36	Coupling Assembly - 0.875 Motor Shaft, NEMA 140TC, 184C	1
815751	36	Coupling Assembly - 1.125 Motor Shaft, NEMA 180TC, 215C	1
—	36	#36D Half Coupling – 0.875 Motor Shaft	0-1
—	36	#36D Half Coupling – 1.125 Motor Shaft	0-1
—	36	#36E Coupling Element	1
—	36	#36P Half Coupling – Pump	1
815707	37	Coupling Guard	2
—	37A	Hex Head Capscrew – Coupling Guard, M5-0.8x30	4
—	38	Plug - Spare Port	1
815708	39	Seal Drain Elbow	1

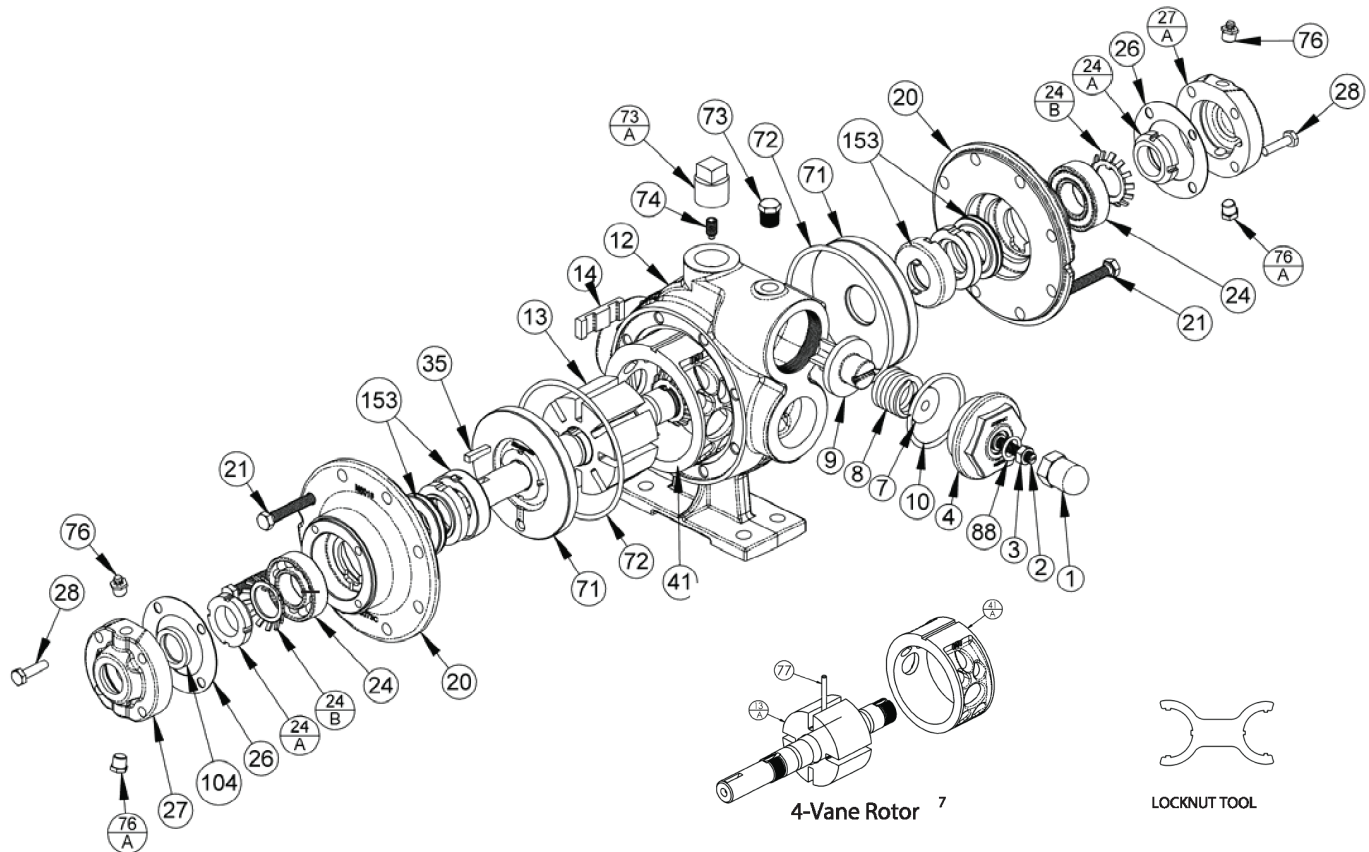
Part #	Ref. No.	Description	Qty
815710	55	Lip Seal - Secondary Seal	1
815709	56	Mechanical Seal Assembly	1
—	40	Seal Seat	1
—	41	Rotating Seal Face	1
—	42	Seal Sleeve	1
—	45	Seal Spring	6
—	46	O-Ring – Shaft	1
—	47	O-Ring – Seal Sleeve	1
—	48	O-Ring – Seal Seat	1
815711	57	Cartridge - Mechanical Seal	1
—	57A	Oval Point Setscrew, 1/4-28x0.375	4
815712	57B	O-Ring – Cartridge Primary	1
815713	57C	O-Ring – Cartridge Secondary	1
815714	58	Circlip - Mechanical Seal	1
815715	—	Shaft Assembly, All items marked 1	1
Motor Attachment - NEMA 140TC, 184C			
—	29	Hex Head Capscrew - 0.375-16 x 1.50	4
—	29B	Spring Lock Washer - 0.375	4
Motor Attachment - NEMA 180TC, 215C			
—	29	Hex Head Capscrew - 0.500-13 x 2.00	4
—	29B	Spring Lock Washer - 0.500	4
SPARE PARTS			
When ordering spare parts, ALWAYS quote the pump Serial Number located on the nameplate of the pump.			

Models: LGRL1.25, LGL1.25, LGL1.5, LGRLF1.25A, LGLF1.25A, LGLF1.5A



Repair Parts

Pumps & Compressors



Part #	Ref. No.	Description	Parts Per Pump
413200	1	Cap – Relief Valve (R/V)	1
433909	2	Adjusting Screw – R/V	1
922923	3	Locknut – Adjusting Screw	1
413076	4	Cover – R/V	1
423955	7	Spring Guide – R/V	1
471428	8	Spring – R/V (81 – 150 psi)	1
453077	9	Valve - R/V	1
711924	10 (1)	O-Ring – R/V Cover	1
013075	12	Casing with feet (1.25)	1
013376	12	Casing with feet (1.5)	1
262300	13 (2)	Rotor & Shaft Assembly, Eight	1
262300	13 (2)	Vane (with Ref. Nos. 24A & 24B)	1
093088	14 (1)	Vane – Duravane	8
033073	20	Head	2
920276	21	Capscrews – Head	16
903114	24 (1)	Ball Bearing	2
903534	24A (2)	Locknut – Bearing	2
903533	24B (1)	Lockwasher – Bearing	2
383075	26 (1)	Gasket - Bearing Cover	2
043070	27	Bearing Cover – Inboard	0-1
043071	27A	Bearing Cover – Outboard	1
920080	28	Capscrews – Bearing Cover	8
909152	35 (1)(3)	Shaft Key	1

Part #	Ref. No.	Description	Parts Per Pump
183019	41 (2)	Liner – LGRL(F)1.25 [8 - Vane Only]	1
183020	41 (2)	Liner – LGL(F)1.25 [8 - Vane Only]	1
183310	41 (2)	Liner – LGL(F)1.5 [8 - Vane Only]	1
063075	71 (1)	Disc	2
701918	72 (1)	O-Ring – Head	2
908198	73	Gage Plug (1/4")	1
908225	73A (4)	Gage Plug (3/4")	1
922088	74	Setscrew – Liner	1
317815	76	Grease Fitting	2
701992	76A	Grease Relief Fitting	2
701949	88 (1)	O-Ring – R/V Cap	1
331927	104 (1)	Grease Seal	1
903090	—	Tool - Locknut	—
898976	—	Kit - Maintenance [8 Vane]	—
899076	—	Kit - Rebuild LGRL(F)1.25(A) [8 Vane]	—
899077	—	Kit - Rebuild LGL(F)1.25(A) [8 Vane]	—
899078	—	Kit - Rebuild LGL(F)1.5(A) [8 Vane]	—

1—Included in Maintenance Kits and Rebuild Kits.

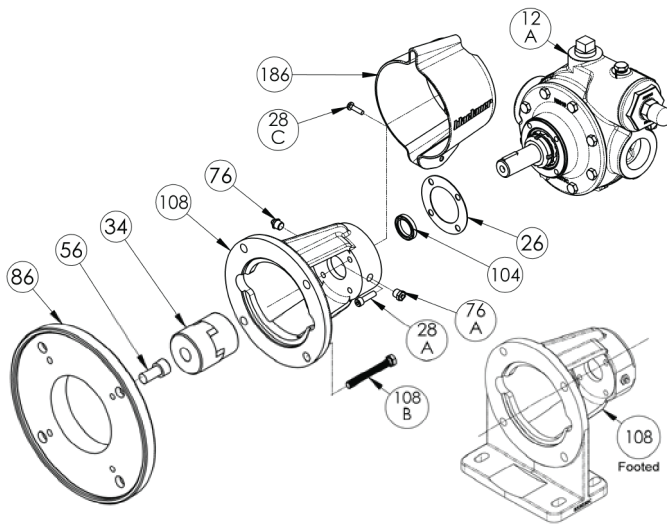
2—Included in Rebuild Kits.

3—Ref. No. 73A: Older pumps may use a 1/4" plug (pn 908198) or 1/2" plug (pn 908215).

4—Ref. No. 35: Early pumps used Woodruff Key 909125.

Models: LGRLF1.25A, LGLF1.25A, LGLF1.5A

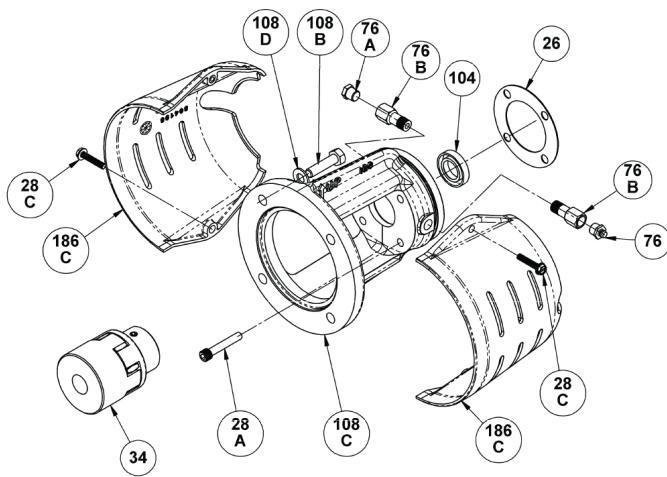
NEMA C-Face Motor Adapters



Part #	Ref. No.	Description	Parts Per Pump
013077	12A	Casing without Feet – LG(R)LF1.25	1
013377	—	Casing without Feet – LGLF1.5	—
383075	26	Gasket - Bearing Cover	1
920101	28A	Motor Adaptor Mounting Screws	4
920026	28C	Guard Screw	1
906147	34	Coupling Half – Pump	1
906155	34	Coupling Spider	1
906151	34	Coupling Half – Motor (56C)	1
906147	34	Coupling Half – Motor (143TC, 145TC, 184C)	1
906146	34	Coupling Half – Motor (182TC, 184TC, 215C)	1
920480	56	Capscrews – Adapter Ring Mounting	4
317815	76	Grease Fitting	1
701992	76A	Grease Relief Fitting	1
832914	86	Motor Adapter Ring - 182TC, 184TC, 215C	1
331927	104	Grease Seal	1
832912	108	Motor Adaptor – Unfooted (Includes Ref. 76 & 76A)	1
833000	108	Motor Adaptor – Footed (Includes Ref. 76 & 76A)	1
920331	108B	Capscrews - Motor Adaptor	4
804120	186	Guard	1

Models: LGRLF1.25A, LGLF1.25A, LGLF1.5A

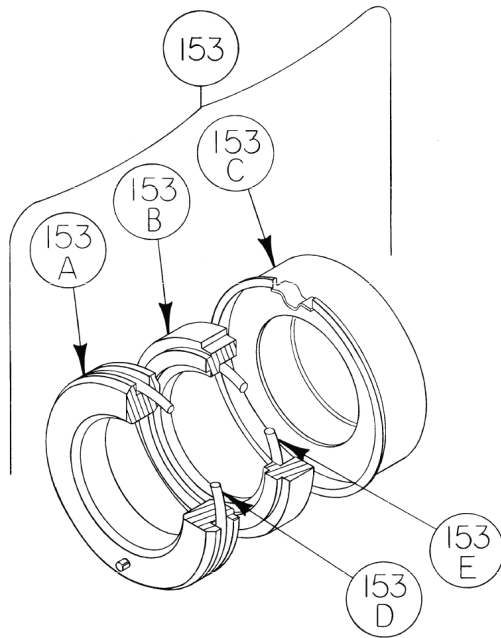
IEC Flanged Face Motor Adaptor



Part #	Ref. No.	Description	Parts Per Pump
383075	26	Gasket - Bearing Cover	1
920101	28A	Motor Adaptor Mounting Screws	4
920026	28C	Guard Screw	2
906182	34	Coupling Half – Pump (for IEC100/112)	1
906178	34	Coupling Spider (for IEC100/112)	1
906180	34	Coupling Half – Motor (IEC100/112)	1
317815	76	Grease Fitting	1
701992	76A	Grease Relief Fitting	1
701905	76B	Extension Coupling	2
331927	104	Grease Seal	1
920044	108B	Capscrew – Motor Adaptor to Motor	4
832930	108C	Motor Adaptor (IEC 100/112 B14A) Includes Ref. Nos. 76, 76A & 76B	1
792094	108D	Washer	4
804198	186C	Guard Half	2

Models: LGRLF1.25A, LGLF1.25A, LGLF1.5A

Mechanical Seal



Part #	Ref. No.	Description	Parts Per Pump
333045	153 (1)	Mechanical Seal Assembly	2
**	153A	Stationary Seat (Hardened Steel)	2
**	153B	Seal Face (Carbon)	2
**	153C	Jacket Assembly	2
711916	153D	O-Ring – Stationary (Buna-N)	2
711915	153E	O-Ring – Rotating (Buna-N)	2

1—Included in Maintenance Kit.

** Ref. Nos. 153A, 153B & 153F are not available as separate repair parts.

4-Vane Rotor/Shaft Parts

Part #	Ref. No.	Description	Parts Per Pump
263076	13A (2)	Rotor & Shaft Assembly, Four Vane	1
263076	13A (2)	(Includes Ref. Nos. 24A & 24B)	1
093088	14 (1)	Vane – Duravane	4
183003	41A (2)	Liner – LGRL(F)1.25 [4 - Vane Only]	1
183004	41A (2)	Liner – LGL(F)1.25 [4 - Vane Only]	1
183301	41A (2)	Liner – LGL(F)1.5 [4 - Vane Only]	1
123004	77 (1)	Push Rod – LGRL(F)1.25	2
123076	77 (1)	Push Rod – LGL(F)1.25	2
123401	77 (1)	Push Rod LGL(F)1.5	2

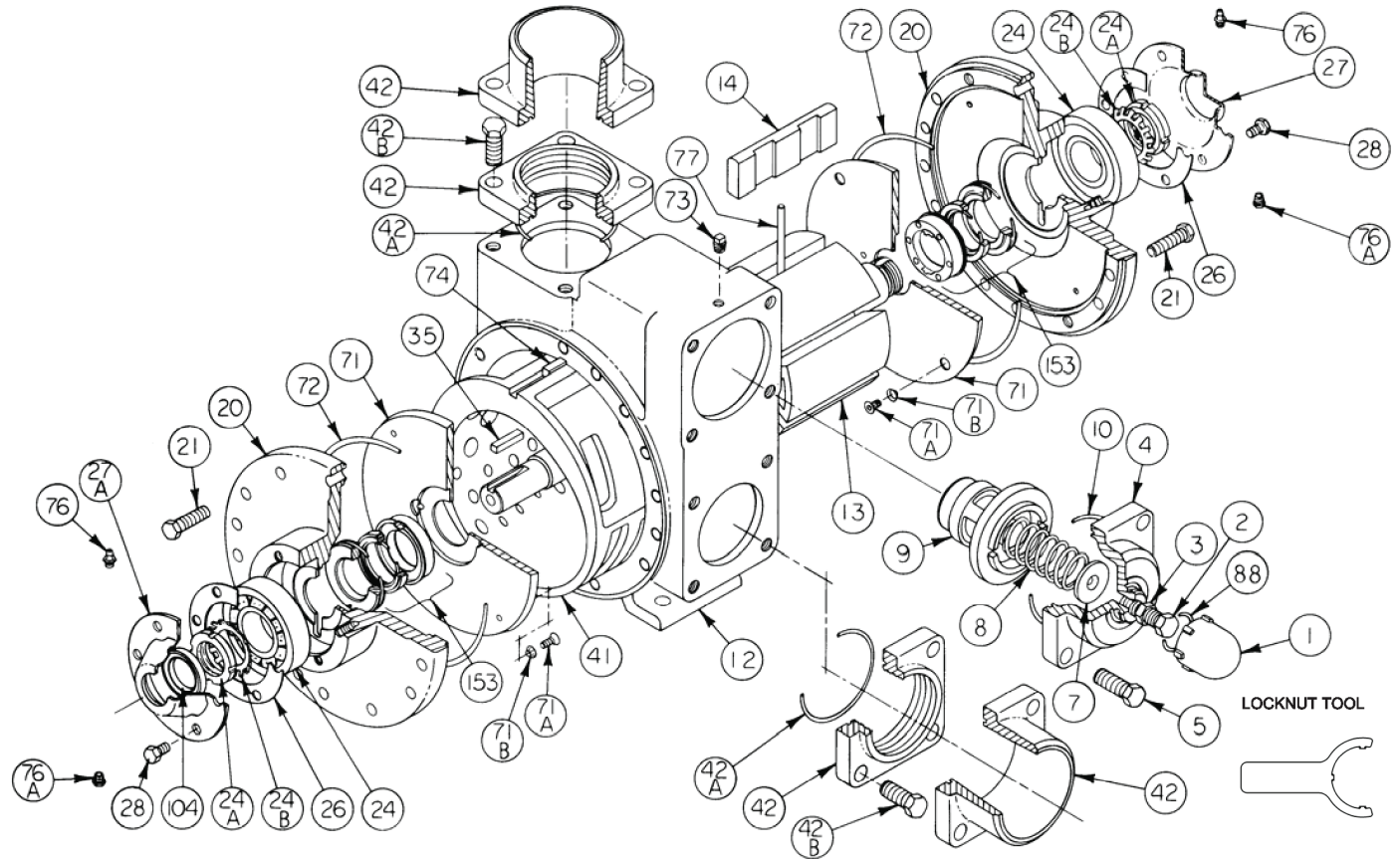
1—Included in Maintenance Kit and Rebuild Kit.

2—Included in Rebuild Kit.

Part #	Description
898917	Kit – Maint LGRL(F)1.25A [4 Vane]
898918	Kit - Maint LGL(F)1.25(A) [4 Vane]
898919	Kit - Maint LGL(F)1.5(A) [4 Vane]
899017	Kit - Rebuild LGRL(F)1.25A [4 Vane]
899018	Kit - Rebuild LGL(F)1.25(A) [4 Vane]
899019	Kit - Rebuild LGL(F)1.5(A) [4 Vane]

Models: LGL4B

Repair Parts



Pumps & Compressors

Part #	Ref. No.	Description	Parts Per Pump
413957	1	Cap - Relief Valve (R/V)	1
436310	2	Adjusting Screw - R/V	1
432039	3	Locknut - Adjusting Screw	1
412001	4	Cover - R/V	1
920663	5	Capscrew - R/V Cover	4
426355	7	Spring Guide - R/V	1
472039	8 (1)	Spring - R/V	1
452001	9	Valve - R/V	1
701946	10 (1)	O-Ring - R/V Cover	1
012019	12	Casing	1
262023	13	Rotor & Shaft Asy, Single End (Includes Ref. No. 24A & 24B)	1
092019	14 (1)	Vane - Duravane	6
032041	20	Head	2
920532	21	Capscrews - Head	28
903172	24 (1)	Ball Bearing	2
903541	24A	Locknut - Bearing	2
903542	24B (1)	Lockwasher - Bearing	2
385125	26 (1)	Gasket - Bearing Cover	2
041815	27	Bearing Cover - Inboard, LGL4B	1
041817	27A	Bearing Cover - Outboard, LGL4B	1
920285	28	Capscrews - Bearing Cover	12
909183	35 (1)	Key - Shaft	1
182000	41	Liner	1
652012	42	Flange - 3" NPT	1-2

Part #	Ref. No.	Description	Parts Per Pump
652007	42	Flange - 3" Weld	1-2
652005	42	Flange - 4" Weld	1-2
701937	42A (1)	O-Ring - NPT, Weld Flange	2
920663	42B	Capscrew - NPT Flange	8
920640	42B	Capscrew - Weld Flange	8
62039	71 (1)	Disc	2
920015	71A	Machine Screw - Disc	8
909634	71B	Lockwasher - Machine Screw	8
702039	72 (1)	O-Ring - Head	2
908198	73	Gage Plug	2
182040	74	Key - Liner	1
317815	76	Grease Fitting	2
701992	76A	Grease Relief Fitting	2
122005	77 (1)	Push Rod - metal - LGL4B	3
701926	88 (1)	O-Ring - R/V Cap	1
331908	104 (1)	Grease Seal - LGL4B	1
903092		Tool - Locknut	
898922		Kit - Maintenance	

1—Included in Maintenance Kit.

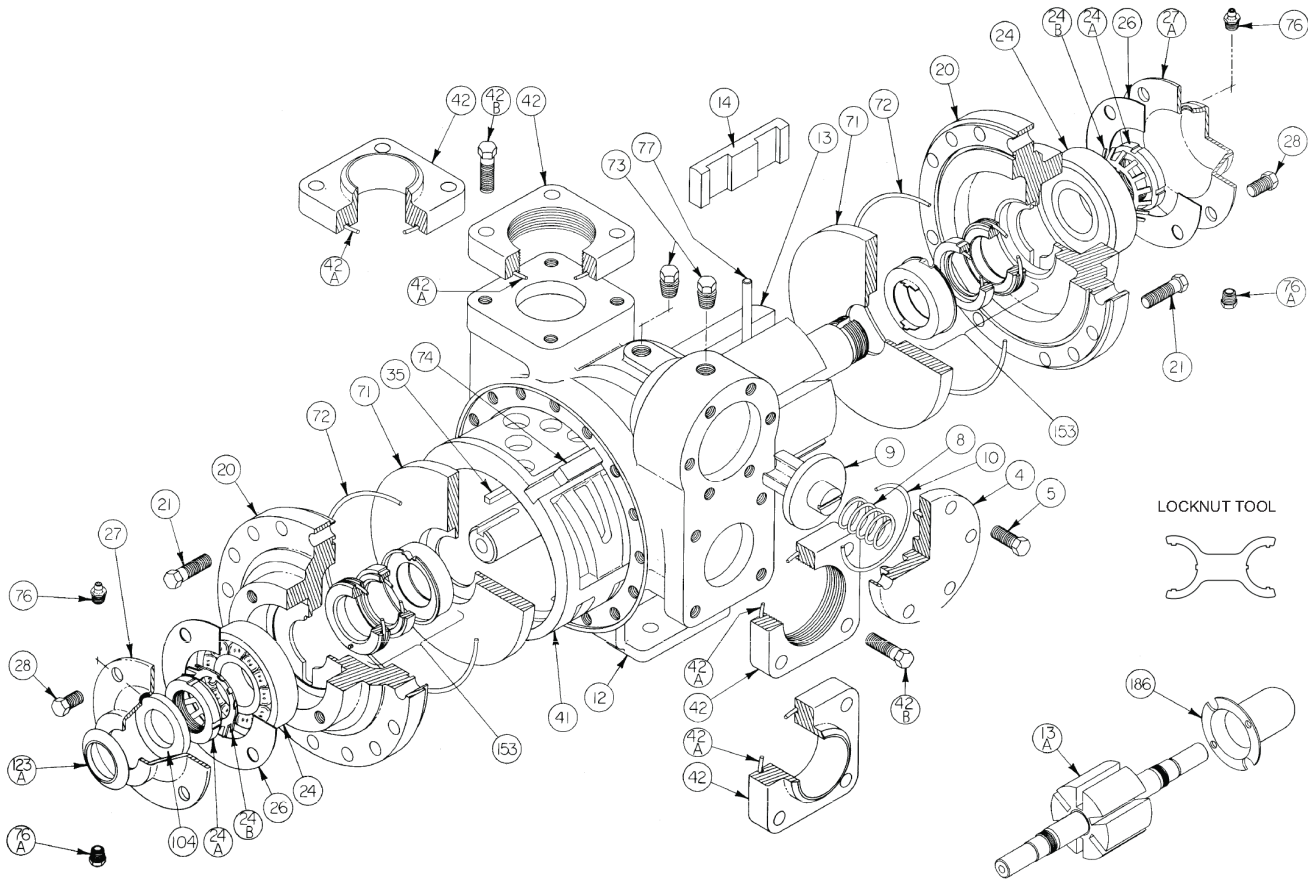
Blackmer Pump Repair

Models: LGLD2E, LGL2E, LGLD3F, LGL3F

Discontinued Models: LGLD3E, LGL3E



Pumps & Compressors



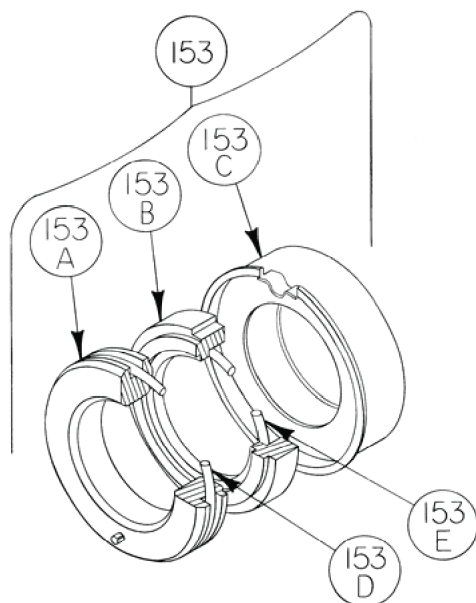
Size 2 Part #	Size 3 Part #	Ref. No.	Description	Parts Per Pump
414401	415113	4	Cover - Relief Valve (R/V)	1
920331	920331	5	Capscrews - R/V Cover	6
471423	475135	8 (1)	Spring - R/V	1
454405	455129	9	Valve - R/V	1
701919	701925	10 (1)	O-Ring - R/V Cover	1
014405	015127	12	Casing	1
264443	265149	13	Rotor & Shaft Asy. - LGL (Includes Ref. Nos. 24A & 24B)	1
264445	265148	13A (2) (5)	Double-Ended Rotor & Shaft Asy. - LGLD (Includes Ref. Nos. 24A & 24B)	1
091419	095131	14 (1)	Vane - Duravane (Std.)	6
034416	035128	20	Head	2
920351	N/A	21	Capscrews - Head (Size 2)	32
N/A	920369	21	Capscrews - Head (Size 3)	40
903156	903166	24 (1)	Ball Bearing	2
903521	903523	24A (2)	Locknut - Bearing	2
903522	903524	24B (1)	Lockwasher - Bearing	2
383940	385125	26 (1)	Gasket - Bearing Cover	2
041431	041815	27 (3)	Bearing Cover (Inboard)	1
041433	041817	27A (4)	Bearing Cover (Outboard)	1
920285	920285	28	Capscrews - Bearing Cover	8 - 12
909209	090209	35 (1)(7)	Key - Shaft, 1/4" Square	1
184405	185111	41 (2)	Liner	1
654401	655112	42	Flange - NPT	2
654405	655102	42	Flange - Weld	2

Size 2 Part #	Size 3 Part #	Ref. No.	Description	Parts Per Pump
702004	702002	42A (1)	O-Ring - Flange	2
920384	920547	42B	Capscrew - NPT Flange	8
920351	920510	42B	Capscrew - Weld Flange	8
064412	065112	71 (1)	Disc	2
702022	702041	72 (1)	O-Ring - Head	2
908198	908198	73	Gage Plug	2
183991	185191	74 (2)(8)	Key - Liner	1
317815	317815	76	Grease Fitting	2
701992	702992	76A	Grease Relief Fitting	2
123905	125110	77 (1) (6)	Push Rod	3
331918	331908	104 (1) (3)	Grease Sea	1
701480	N/A	123A (1) (3)	Dirt Shield	1
341601	341801	186	Shaft Protector (LGLD Models Only)	1
903091	903091	—	Tool - Locknut	—
898979	898981	—	Kit - Maintenance	—
899079	899081	—	Kit - Rebuild	—

1-Included in Maintenance Kit and Rebuild Kit. 2-Included in Rebuild Kit.
 The following applies to double end shaft pumps (LGLD): 3-Use Two 4-Use None
 5-Double-Ended Rotor & Shaft. 6-2" pushrod is metal, 3" is composite.
 7-Pumps before April 2008 used Woodruff key 909130, included in Maintenance kits.
 8-Pump before 1995 require liner key 184407.

Models: LGLD2E, LGL2E, LGLD3F, LGL3F

Mechanical Seal - NH3 or Dual Service - SNCN (ID Code = QA)

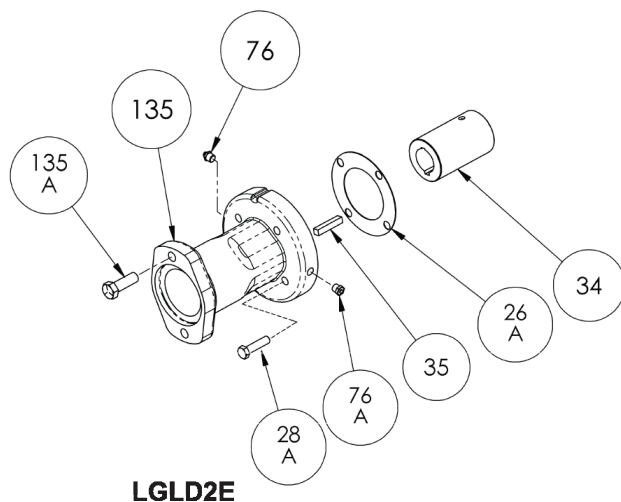


Size 2 Part #	Size 3 Part #	Ref. No.	Description	Parts Per Pump
334439	335225	153(1)	Mechanical Seal Assembly	2
**	**	153A	Stationary Seat (Steel)	2
**	**	153B	Seal Face (Carbon)	2
**	**	153C	Jacket Assembly	2
711924	702025	153D	O-Ring - Stationary (Buna-N)	2
711918	711912	153E	O-Ring Rotating (Buna-N)	2

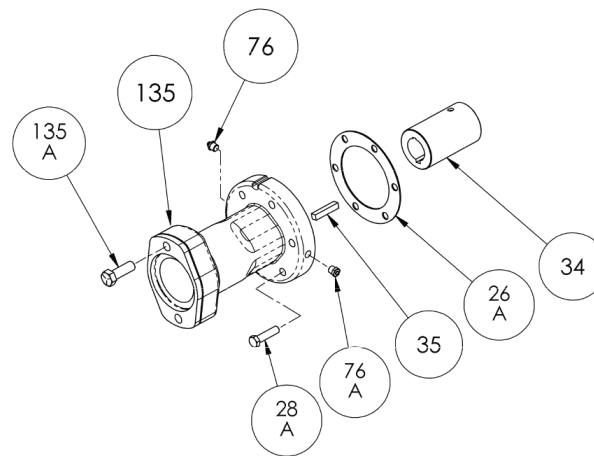
1— Included in Maintenance Kit and Rebuild Kit.

** NOTE: Mechanical Seal Ref. No. 153 is only sold as a complete assembly. Ref. Nos. 153A, 153B & 153C are not available as separate replacement parts.

Optional Hydraulic Motor Adapter Parts



LGLD2E



LGLD3F

Part # Size 2 1-1/4" Hyd Motor Shaft	Part # Size 3 1-1/4" Hyd Motor Shaft	Part # Size 3 1" Hyd Motor Shaft	Ref. No.	Description	Parts Per Pump
894425	894425	895140	See Below	Hydraulic Motor Adapter Kit *	See Below
383940	381817	381817	26A	Gasket- Hydraulic Motor Adapter	1
920369	920369	920369	28A	Capscrew – Hydraulic Motor Adapter / Head	4 / 6
906967	906967	906990	34	Coupling w/ Setscrew – straight key hydraulic motor shaft	1
909184	909184	909184	35	Key – Coupling	1
317815	317815	317815	76	Grease Fitting	1
701992	701992	701992	76A	Grease Relief Fitting	1
041827	041831	041831	135	Hydraulic Motor Adapter – SAE A Flange	1
920510	920510	920510	135A	Capscrew – Adapter / Motor	2

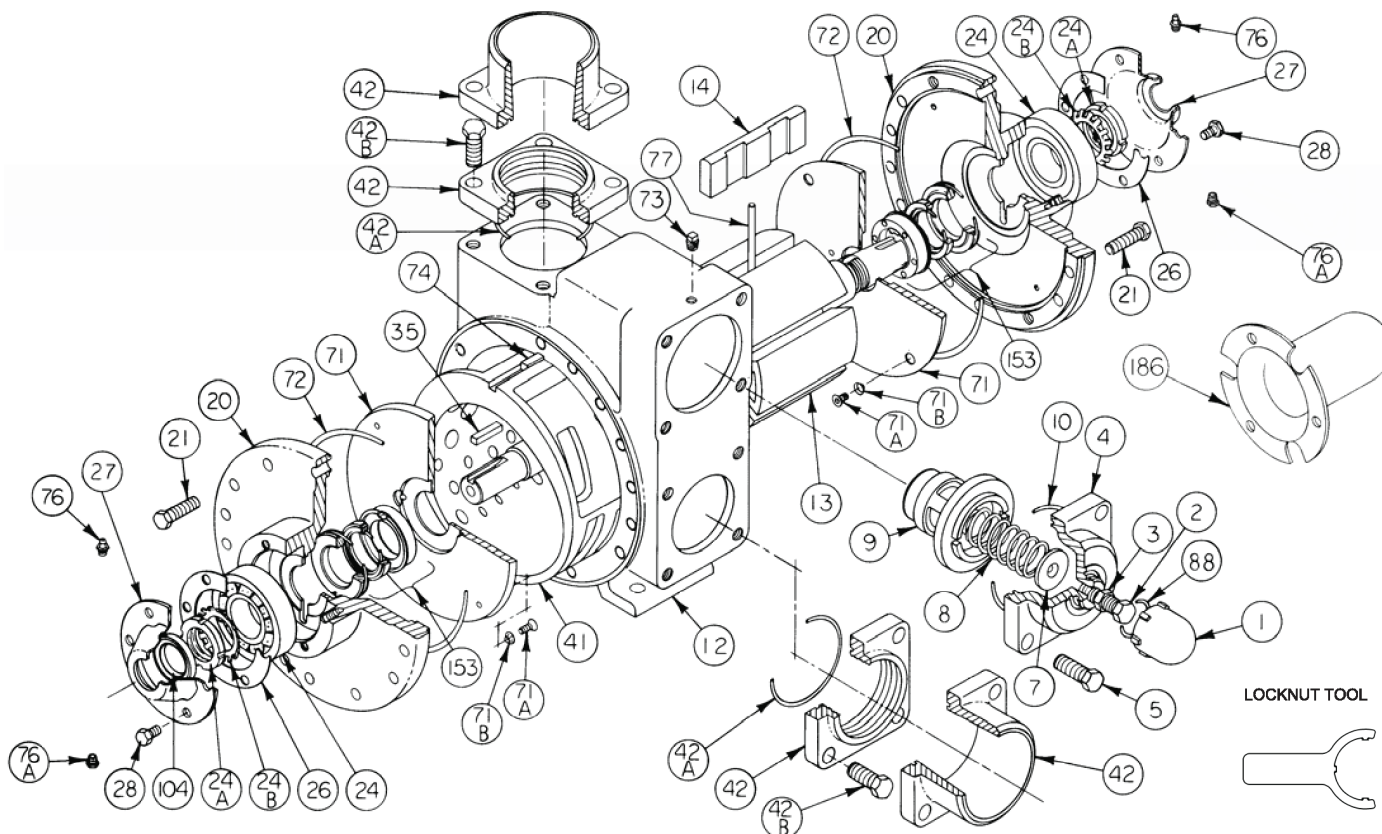
* Hydraulic Motor Adapter Kits shipped prior to Spring 2002 were of a two piece design – refer to page 206-C00.

Models: LGLD4B

Repair Parts



Pumps & Compressors



Part #	Ref. No.	Description	Parts Per Pump
413957	1	Cap - Relief Valve (R/V)	1
436310	2	Adjusting Screw - R/V	1
432039	3	Locknut - Adjusting Screw	1
412001	4	Cover - R/V	1
920663	5	Capscrew - R/V Cover	4
426355	7	Spring Guide - R/V	1
472039	8 (1)	Spring - R/V	1
452001	9	Valve - R/V	1
701946	10 (1)	O-Ring - R/V Cover	1
12019	12	Casing	1
262041	13 (2)	Rotor & Shaft Asy, Dbl. End (Includes Ref. No. 24A & 24B)	1
92019	14 (1)	Vane - Duravane	6
32041	20	Head	2
920532	21	Capscrews - Head	28
903166	24 (1)	Ball Bearing	2
903541	24A (2)	Locknut - Bearing	2
903542	24B (1)	Lockwasher - Bearing	2
385125	26 (1)	Gasket - Bearing Cover	2
041815	27	Bearing Cover - LGLD4B	2
920285	28	Capscrews - Bearing Cover	12
909183	35 (1)	Key - Shaft	1
182000	41 (2)	Liner	1
652012	42	Flange - 3" NPT	1-2
652007	42	Flange - 3" Weld	1-2
652005	42	Flange - 4" Weld	1-2

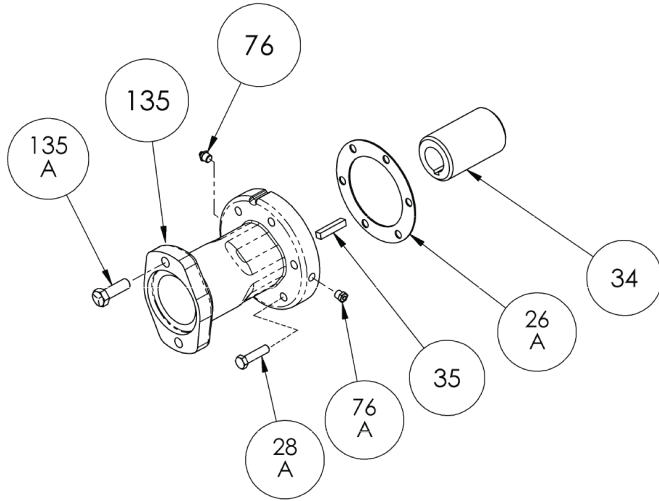
Part #	Ref. No.	Description	Parts Per Pump
701937	42A (1)	O-Ring - NPT, Weld Flange	2
920663	42B	Capscrew - NPT Flange	8
920640	42B	Capscrew - Weld Flange	8
062039	71 (1)	Disc	2
920015	71A (2)	Machine Screw - Disc	8
909634	71B (2)	Lockwasher - Machine Screw	8
702039	72 (1)	O-Ring - Head	2
908198	73	Gage Plug	2
182040	74 (2)	Key - Liner	1
317815	76	Grease Fitting	2
701992	76A	Grease Relief Fitting	2
122009	77 (1)	Push Rod - composite - LGLD4B	3
701926	88 (1)	O-Ring - R/V Cap	1
331908	104 (1)	Grease Seal - LGLD4B	2
341801	186	Shaft Protector	1
903092		Tool - Locknut	
898922		Kit - Maintenance	
899022		Kit - Rebuild -LGLD4B	

1—Included in Maintenance Kit and Rebuild Kit.

2—Included in Rebuild Kit only.

Models: LGLD4B

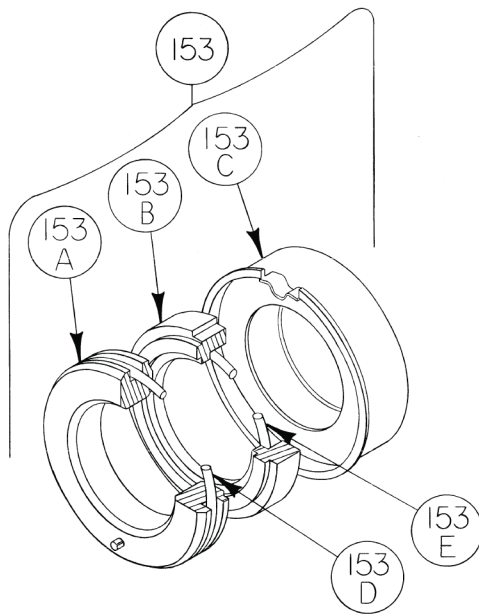
Hydraulic Motor Adapter Parts



Part #	Ref. No.	Description	Parts Per Pump
892037	—	Hydraulic Motor Adapter Kit *	See Below
Includes Items Listed Below			
381817	26A	Gasket – Hydraulic Motor Adapter	1
920369	28A	Capscrew – Hydraulic Motor Adapter / Head	6
906970	34	Coupling w/ Setscrew – 1.25" straight key hyd. motor shaft	1
909184	35	Key – Coupling	1
317815	76	Grease Fitting	1
701992	76A	Grease Relief Fitting	1
041829	135	Hydraulic Motor Adapter – SAE A Flange	1
920510	135A	Capscrew – Adapter / Motor	2

Models: LGLD4B & LGL4B

Mechanical Seal - Standard



Part #	Ref. No.	Description	Parts Per Pump
332050	153 (1)	Mechanical Seal Assembly	2
**	153A	Stationary Seat (Hardened Steel)	2
**	153B	Seal Face (Carbon)	2
**	153C	Jacket Assembly	2
701934	153D	O-Ring - Stationary (Buna-N)	2
711912	153E	O-Ring - Rotating (Buna-N)	2

1—Included in Maintenance Kit and Rebuild Kit.

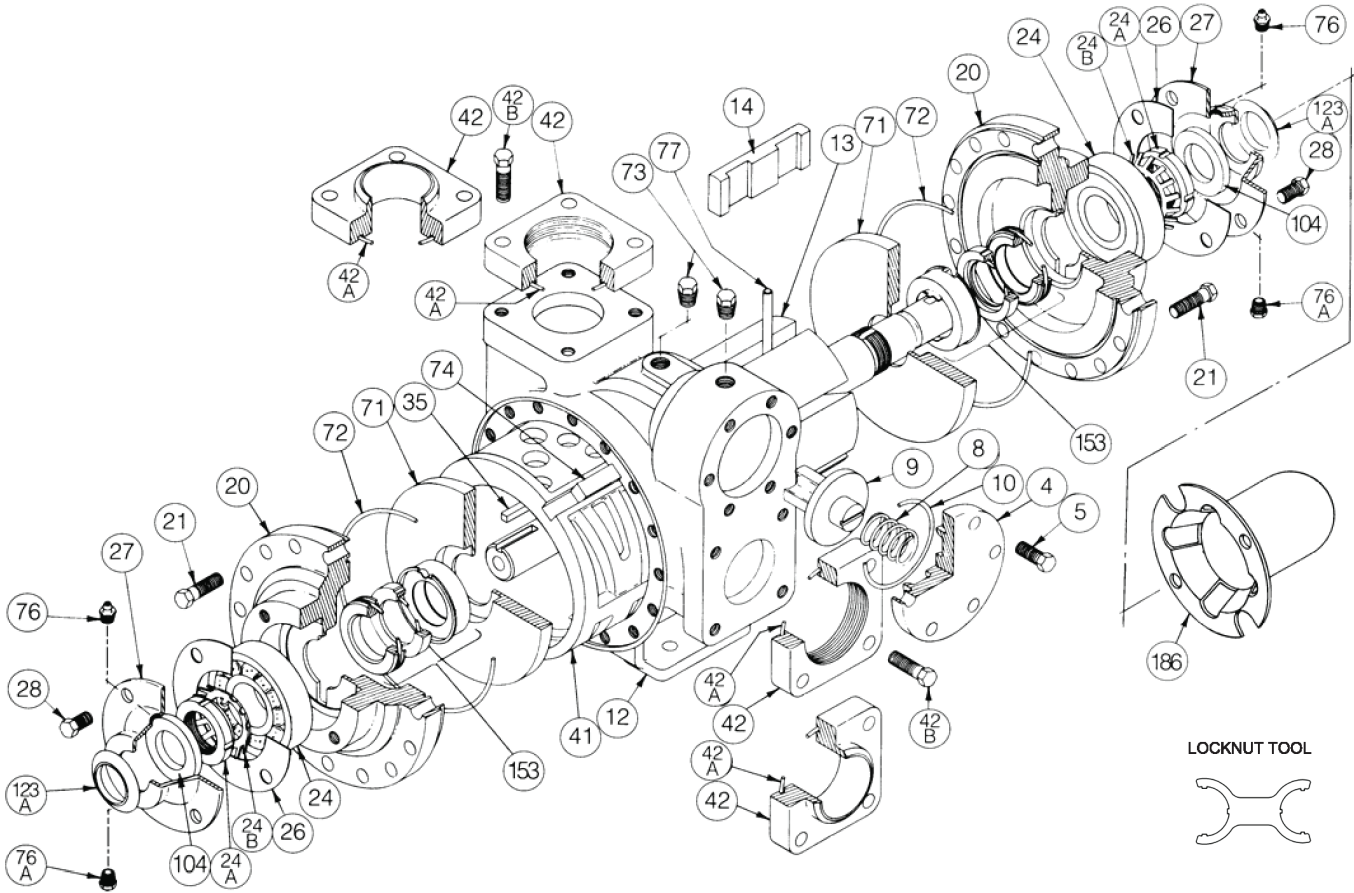
** NOTE: Mechanical Seal Ref. No. 153 is only sold as a complete assembly. Ref. Nos. 153A, 153B & 153C are not available as separate replacement parts

Models: LGLH2A

Repair Parts



Pumps & Compressors



Part #	Ref. No.	Description	Parts Per Pump
414401	4	Cover - Relief Valve (R/V)	1
920331	5	Capscrews - R/V Cover	6
471622	8 (1)	Spring - R/V (190 psi)	1
454405	9	Valve - R/V	1
701919	10 (1)	O-Ring - R/V Cover	1
014405	12	Casing	1
264446	13 (2)	Rotor & Shaft Asy. (Includes Ref. Nos. 24A & 24B)	1
091419	14 (1)	Vane - Duravane	6
034416	20	Head	2
920351	21	Capscrews - Head	32
903191	24 (1)	Spherical Roller Bearing	2
903521	24A	Locknut - Bearing	2
903522	24B (1)	Lockwasher - Bearing	2
383940	26 (1)	Gasket - Bearing Cover	2
041431	27	Bearing Cover	2
920285	28	Capscrews - Bearing Cover	8
909209	35 (1)(3)	Key - Shaft	1
184405	41	Liner	1
654401	42	Flange - NPT	2
654405	42	Flange - Weld	2
702004	42A (1)	O-Ring - Flange	2
920384	42B	Capscrew - NPT Flange	8
920351	42B	Capscrew - Weld Flange	8

Part #	Ref. No.	Description	Parts Per Pump
064412	71 (1)	Disc	2
702022	72 (1)	O-Ring - Head	2
908198	73	Gage Plug	2
183991	74	Key - Liner	1
317815	76	Grease Fitting	2
701992	76A	Grease Relief Fitting	2
123905	77 (1)	Push Rod	3
331918	104 (1)	Grease Seal	2
701480	123A (1)	Dirt Shield	2
341601	186	Shaft Protector	1
903091	—	Tool - Locknut	—
899221	—	Kit - Maintenance	—
899121	—	Kit - Rebuild	—

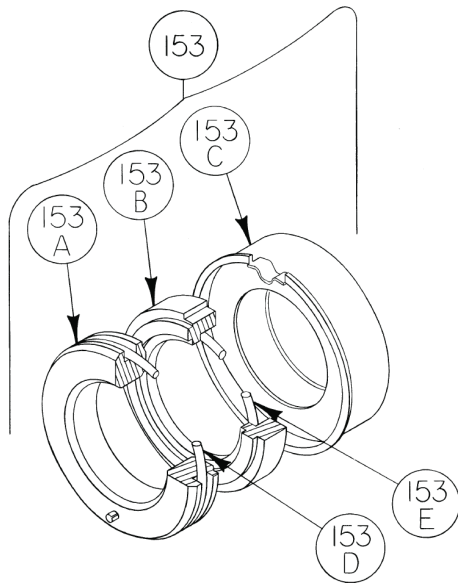
1—Included in Maintenance Kit.

2—Marked "46" on shaft ends.

3—Previous versions used Woodruff Key 909130

Models: LGLH2A

Mechanical Seal- NH3 or Dual Service - SNCN (ID Code =QA)

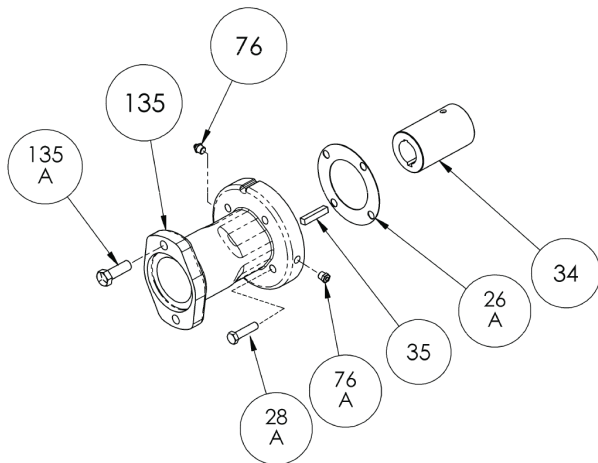


Part #	Ref. No.	Description	Parts Per Pump
334439	153 (1)	Mechanical Seal Assembly	2
**	153A	Stationary Seat (Steel)	2
**	153B	Seal Face (Carbon)	2
**	153C	Jacket Assembly	2
711924	153D	O-Ring - Stationary (Buna-N)	2
711918	153E	O-Ring Rotating (Buna-N)	2

1—Included in Maintenance Kit.

** NOTE: Mechanical Seal Ref. No. 153 is only sold as a complete assembly. Ref. Nos. 153A, 153B & 153C are not available as separate replacement parts.

Optional Hydraulic Motor Adapter Parts



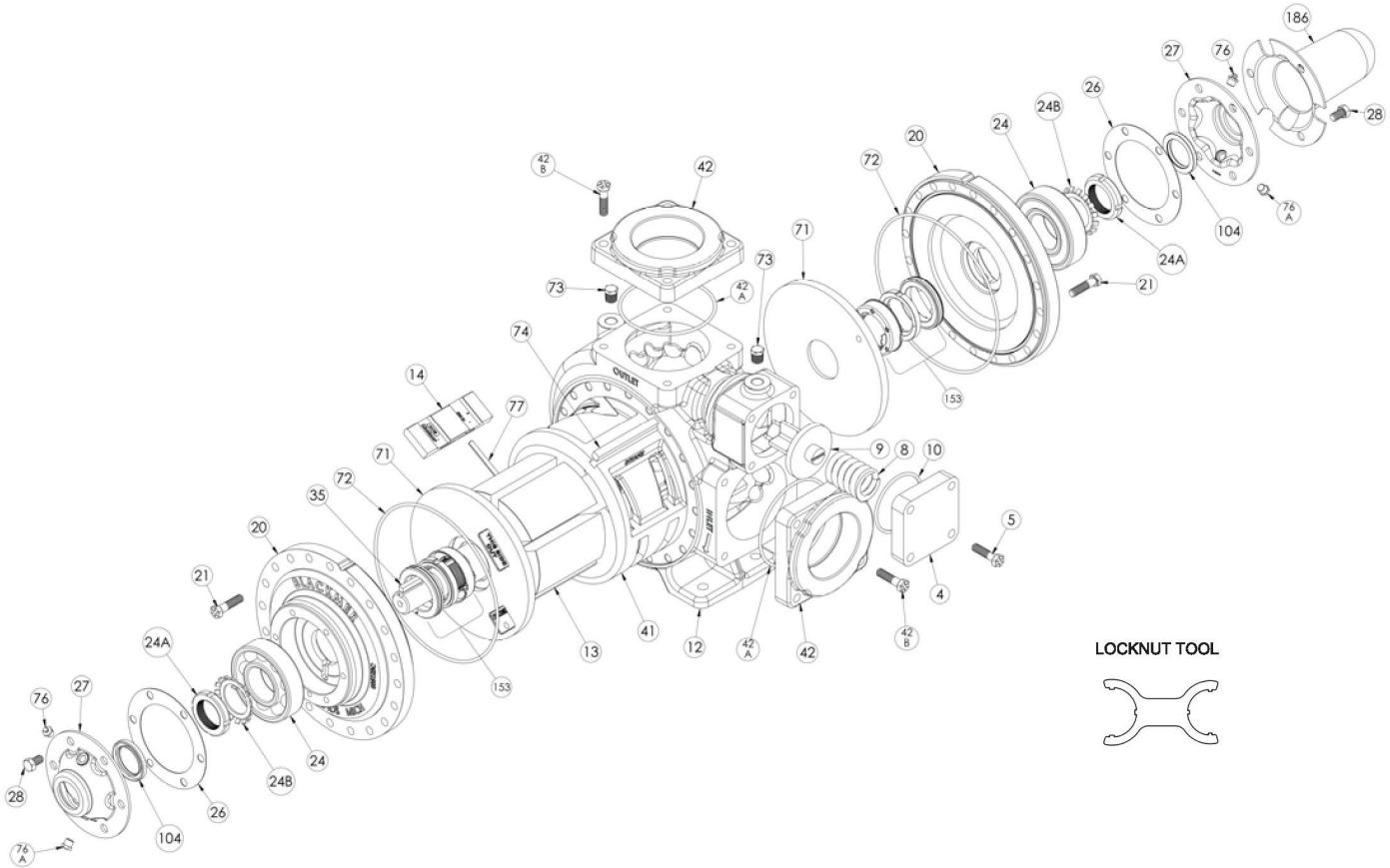
Part #	Ref. No.	Description	Parts Per Pump
894425		Hydraulic Motor Adapter Kit	
383940	26A	Gasket- Hydraulic Motor Adapter	1
920369	28A	Capscrew – Hydraulic Motor Adapter / Head	4
906967	34	Coupling w/ Setscrew – 1.25" straight key hydraulic motor shaft	1
909184	35	Key – Coupling	1
317185	76	Grease Fitting	1
701992	76A	Grease Relief Fitting	1
041827	135	Hydraulic Motor Adapter – (SAE A Flange)	1
920510	135A	Capscrew – Adapter / Motor	2

Models: LGL3021A

Repair Parts



Pumps & Compressors



Part #	Ref. No.	Description	Parts Per Pump
415115	4	Cover - Relief Valve (R/V)	1
920379	5	Capscrews - R/V Cover	4
475135	8 (1)	Spring - R/V	1
455129	9	Valve - R/V	1
711941	10 (1)	O-Ring - R/V Cover	1
015131	12	Casing	1
265190	13A (2)	Rotor & Shaft Asy. (Includes Ref. Nos. 24A & 24B)	1
095131	14 (1)	Vane - Duravane	6
035128	20	Head	2
920379	21	Capscrews - Head	40
903166	24 (1)	Ball Bearing	2
903523	24A (2)	Locknut - Bearing	2
903524	24B (1)	Lockwasher - Bearing	2
385125	26 (1)	Gasket - Bearing Cover	2
041815	27	Bearing Cover	2
920285	28	Capscrews - Bearing Cover	12
909209	35 (1)	Key - Shaft, 1/4" Square	1
185111	41 (2)	Liner	1
655132	42	Flange - NPT 3"	2
655133	42	Flange - NPT 4"	2
712245	42A (1)	O-Ring - 3" Flange	2
794126	42A (1)	O-Ring - 4" Flange	2
920379	42B	Capscrew - NPT Flange	8

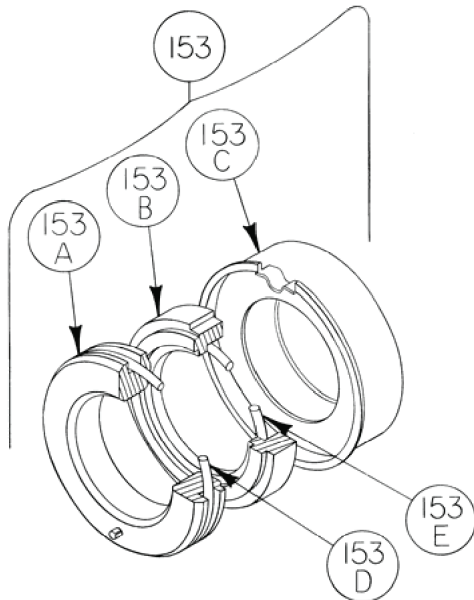
Part #	Ref. No.	Description	Parts Per Pump
065112	71 (1)	Disc	2
702041	72 (1)	O-Ring - Head	2
908198	73	Gage Plug	2
185191	74 (2)	Key - Liner	1
317815	76	Grease Fitting	2
701992	76A	Grease Relief Fitting	2
125110	77 (1)	Push Rod	3
331908	104	Grease Seal	2
341801	186	Shaft Protector	1
903091	—	Tool - Locknut	—
899195	—	Kit - Maintenance	—
899095	—	Kit - Rebuild	—

1—Included in Maintenance Kit and Rebuild Kit.

2—Included in Rebuild Kit.

Models: LGL3021A

Mechanical Seal- NH3 or Dual Service - SNCN (ID Code =QA)



Part #	Ref. No.	Description	Parts Per Pump
335225	153 (1)	Mechanical Seal Assembly	2
**	153A	Stationary Seat (Steel)	2
**	153B	Seal Face (Carbon)	2
**	153C	Jacket Assembly	2
702025	153D	O-Ring - Stationary (Buna-N)	2
711912	153E	O-Ring Rotating (Buna-N)	2

1—Included in Maintenance Kit and Rebuild Kit.

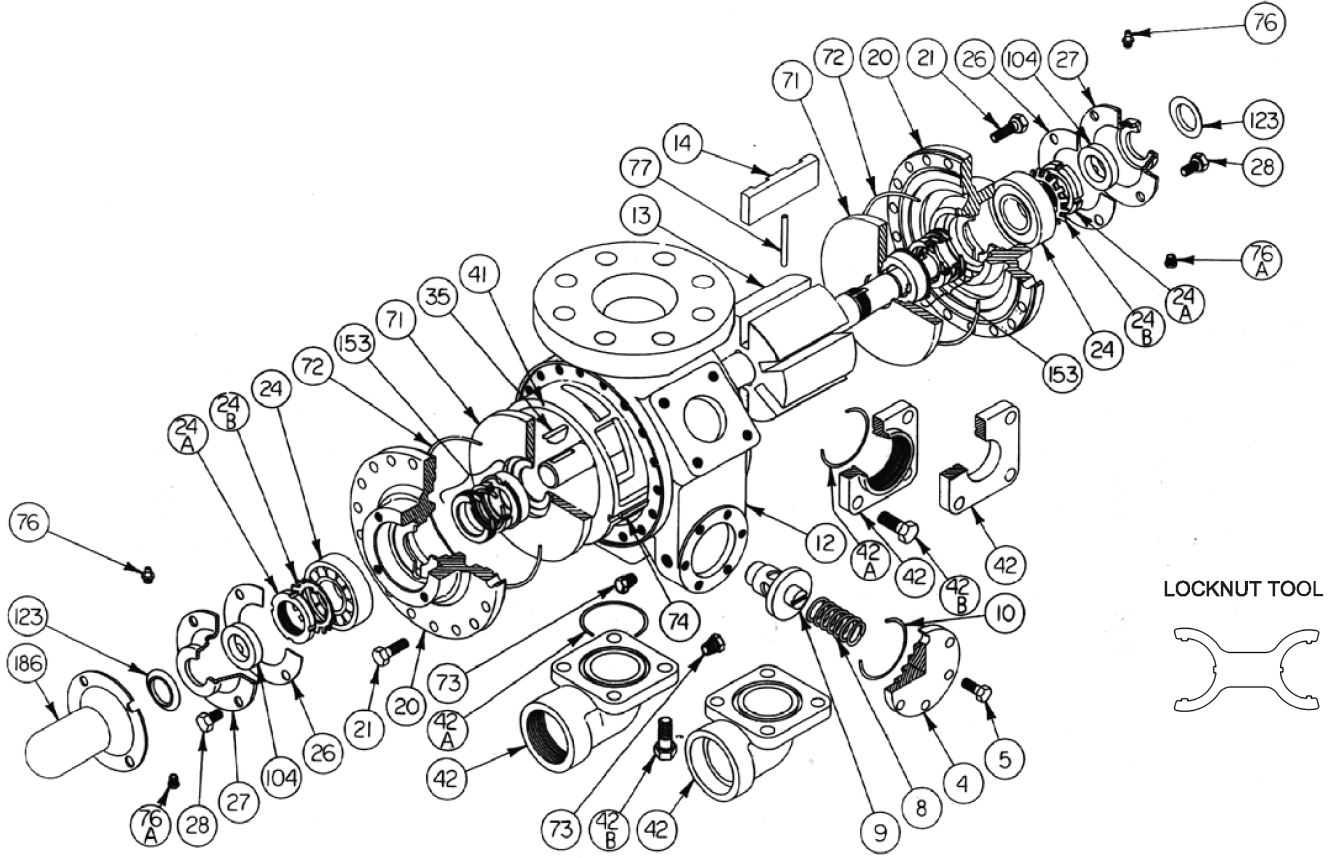
** NOTE: Mechanical Seal Ref. No. 153 is only sold as a complete assembly. Ref. Nos. 153A, 153B & 153C are not available as separate replacement parts.

Models: TLGLF3C

Repair Parts



Pumps & Compressors



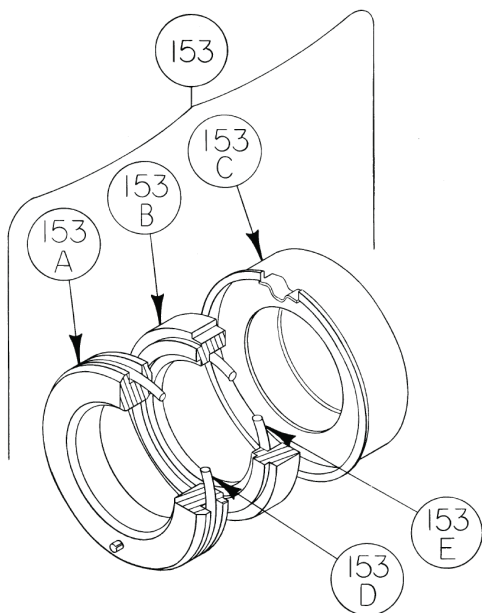
Part #	Ref. No.	Description	Parts Per Pump
415108	4	Cover - Relief Valve (R/V)	1
920331	5	Capscrew - R/V Cover	6
471428	8 (1)	Spring - R/V	1
451460	9 (4)	Valve - R/V	1
332907	9A	Relief Valve Shim, .035"	0-1
332937	9A	Relief Valve Shim, .075"	0-1
701919	10 (1)	O-Ring - R/V Cover	1
015128	12	Casing	1
265147	13 (2)(5)	Rotor & Shaft Assembly	1
095132	14 (1)	Vane - Duravane	6
35132	20	Head	2
920351	21	Capscrews - Head	36
903156	24 (1)	Ball Bearing	2
903521	24A (2)	Locknut - Bearing	2
903522	24B (1)	Lockwasher - Bearing	2
383940	26	Gasket - Bearing Cover	2
041431	27	Bearing Cover	2
920285	28	Capscrews - Bearing Cover	8
909130	35 (1)	Key - Shaft	1
185101	41 (2)	Liner	1
652010	42	Flange - 2" NPT	1-2
652024	42	Flange - 2" Slip-on Weld	1-2
655100	42	Flanged Elbow - 2" NPT	1-2
655109	42	Flanged El - 2" Socket Weld	1-2
652036	42	Blank Flange for Auxiliary Inlet	1-2

Part #	Ref. No.	Description	Parts Per Pump
702004	42A (1) (3)	O-Ring - Flange 2 5/8" x 2 7/8" (current)	2
701919	42A (1)	O-Ring - Flange 2 1/2" x 2 3/4" (older pumps)	2
920491	42B	Capscrew - Flanges	8
065121	71 (1)	Disc	2
711923	72 (1)	O-Ring - Head	2
908198	73	Gage Plug	2
185193	74 (2)	Key - Liner	1
317815	76	Grease Fitting	2
701992	76A	Grease Relief Fitting	2
121607	77 (1)	Push Rod	3
331918	104 (1)	Grease Seal	2
701480	123 (1)	Dirt Shield	2
341601	186	Shaft Protector	1
903091	—	Tool - Locknut	—
898980	—	Kit - Maintenance	—
899225	—	Kit - Maintenance with R/V	—
899080	—	Kit - Rebuild	—
899125	—	Kit - Rebuild with R/V	—

- 1—Included in Maintenance Kit and Rebuild Kit.
- 2—Included in Rebuild Kit.
- 3—Larger O-Ring introduced October 2002.
- 4—Additional parts Included in Kits with R/V.
- 5—Includes Ref. No. 24A & 24B.

Models: TLGLF3C

Mechanical Seal- NH3 or Dual Service - SNCN (ID Code =QA)



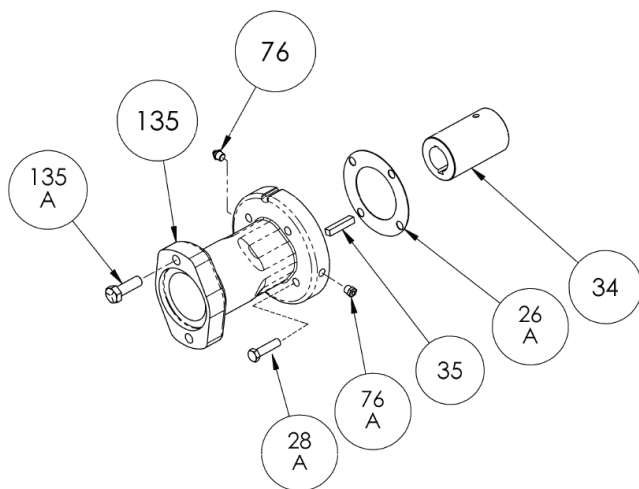
Part #	Ref. No.	Description	Parts Per Pump
334439	153 (1)	Mechanical Seal Assembly	2
**	153A	Stationary Seat (Steel)	2
**	153B	Seal Face (Carbon)	2
**	153C	Jacket Assembly	2
711924	153D	O-Ring - Stationary (Buna-N)	2
711918	153E	O-Ring - Rotating (Buna-N)	2

1—Included in Maintenance Kit and Rebuild Kit.

** NOTE: Mechanical Seal Ref. No. 153 is only sold as a complete assembly. Ref. Nos. 153A, 153B & 153C are not available as separate replacement parts.

Pumps & Compressors

Optional Hydraulic Motor Adapter Parts



Part # 1-1/4" Hyd Motor Shaft	Part # 1" Hyd Motor Shaft	Ref. No.	Description	Parts Per Pump
891458	891205	See Below*	Hydraulic Motor Adapter Kit	See Below
383940	383940	26A	Gasket – Hydraulic Motor Adapter	1
920369	920369	28A	Capscrew – Hydraulic Motor Adapter / Head	4
906967	906966	34	Coupling w/ Setscrew – straight key hyd. motor shaft	1
909184	N/A	35	Key – Coupling	1
317815	317815	76	Grease Fitting	1
701992	701992	76A	Grease Relief Fitting	1
041828	041827	135	Hydraulic Motor Adapter – SAE A Flange	1
920510	920510	135A	Capscrew – Adapter / Motor	2

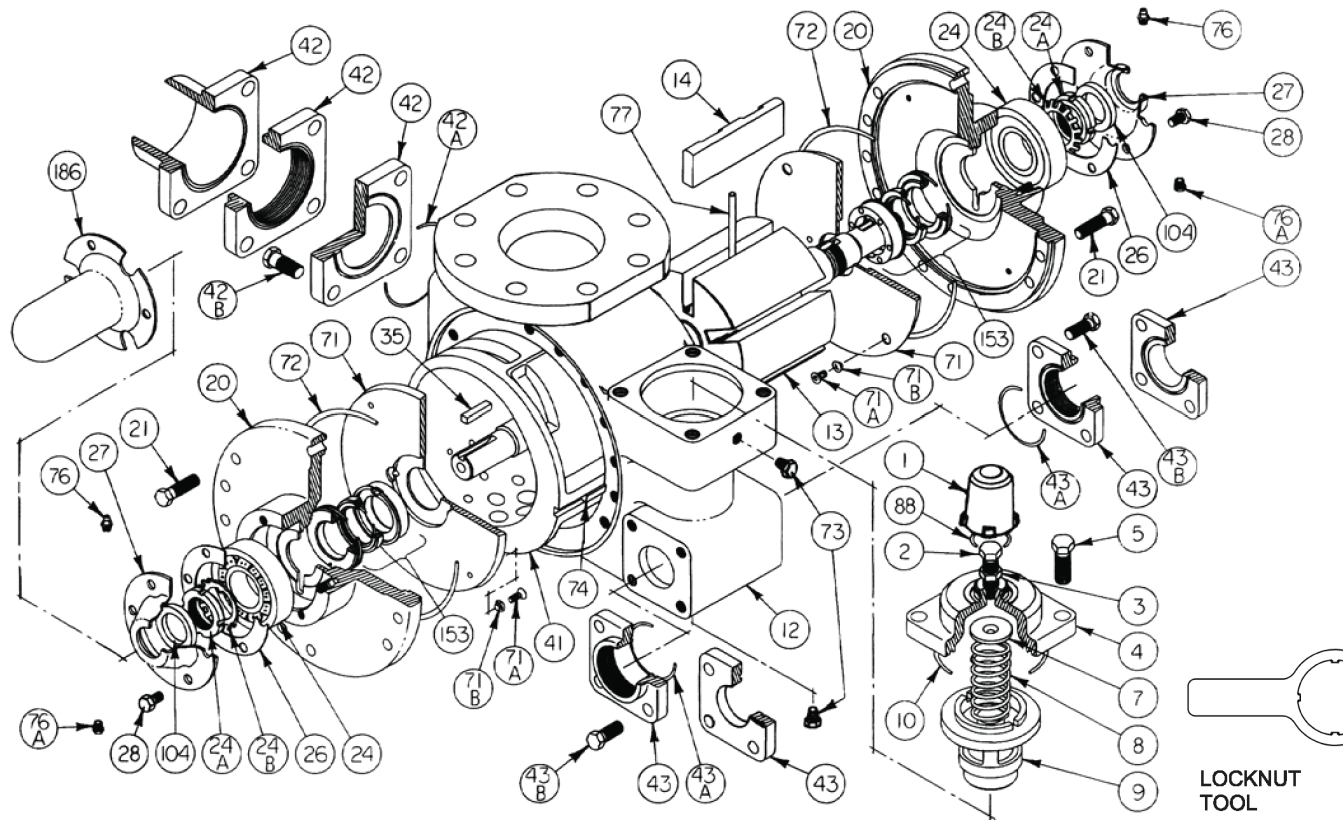
* Hydraulic Motor Adapter Kits shipped prior to Spring 2002 were a two piece design - refer to page 206-C00

Models: TLGLF4B

Repair Parts



Pumps & Compressors



Part #	Ref. No.	Description	Parts Per Pump
413957	1	Cap - Relief Valve (R/V)	1
436310	2	Adjusting Screw - R/V	1
432039	3	Locknut - Adjusting Screw	1
412001	4	Cover - R/V	1
920663	5	Capscrews - R/V Cover	4
426355	7	Spring Guide - R/V	1
472039	8 (1)	Spring - R/V	1
452001	9	Valve - R/V	1
701946	10 (1)	O-Ring - R/V Cover	1
012041	12	Casing	1
262041	13 (2)	Rotor & Shaft Asy. (includes Ref. No. 24A & 24B)	1
92019	14 (1)	Vane - Duravane	6
032041	20	Head	2
920532	21	Capscrews - Head	28
903166	24 (1)	Ball Bearing	2
903541	24A (2)	Locknut - Bearing	2
903542	24B (1)	Lockwasher - Bearing	2
385125	26 (1)	Gasket - Bearing Cover	2
041815	27	Bearing Cover	2
920285	28	Capscrews - Bearing Cover	12
909183	35 (1)	Key - Shaft	1
182000	41 (2)	Liner	1
AUXILIARY INLET OPTIONS			
652012	42	Flange - 3" NPT	1
652030	42	Flange - 2" NPT	1
652005	42	Flange - 4" Weld	1
652007	42	Flange - 3" Weld	1

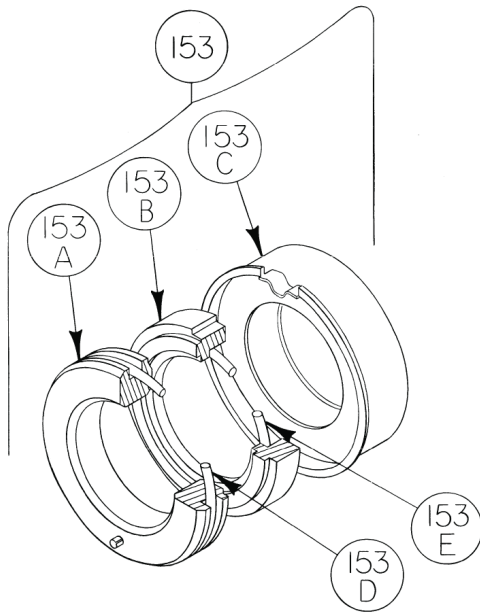
Part #	Ref. No.	Description	Parts Per Pump
652000	42	Flange - Blank	1
701937	42A	O-Ring - Aux. Inlet Flanges	1
920663	42B	Capscrew - 2", 3" NPT Flange	4
920640	42B	Capscrew - 3", 4" Weld Flange; Blank Flange	4
TWIN DISCHARGE PORT OPTIONS			
652010	43	Flange - 2" NPT	2
652024	43	Flange - 2" Slip-on Weld	2
702004	43A (1)	O-Ring - 2" Discharge Flanges	2
920491	43B	Capscrew - Discharge Flange	8
062039	71 (1)	Disc	2
920015	71A (2)	Machine Screw - Disc	8
909634	71B (2)	Lockwasher - Machine Screw	8
702039	72 (1)	O-Ring - Head	2
908198	73	Gage Plug	2
182040	74 (2)	Key - Liner	1
317815	76	Grease Fitting	2
701992	76A	Grease Relief Fitting	2
122009	77 (1)	Push Rod - Composite	3
701926	88 (1)	O-Ring - R/V Cap	1
331908	104 (1)	Grease Seal	2
341801	186	Shaft, Protector	1
903092	—	Tool - Locknut	—
898922	—	Kit - Maintenance	—
899022	—	Kit - Rebuild	—

1-Included in Maintenance Kit and Rebuild Kit.

2-Included in Rebuild Kit.

Models: TLGLF4B

Mechanical Seal

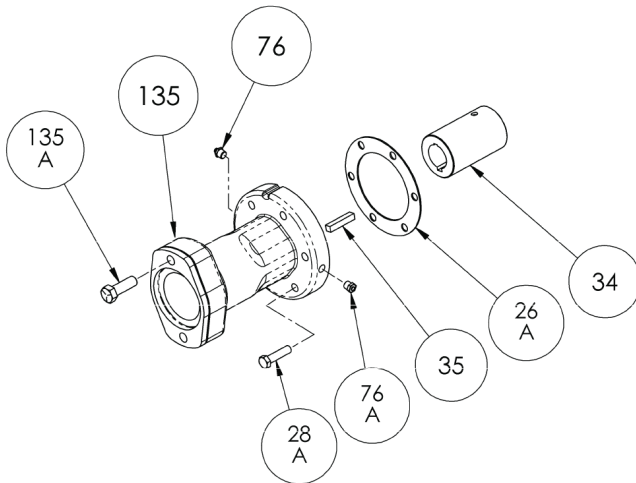


Part #	Ref. No.	Description	Parts Per Pump
332050	153 (1)	Mechanical Seal Assembly	2
**	153A	Stationary Seat (Hardened Steel)	2
**	153B	Seal Face (Carbon)	2
**	153C	Jacket Assembly	2
701934	153D	O-Ring - Stationary (Buna-N)	2
711912	153E	O-Ring - Rotating (Buna-N)	2

1—Included in Maintenance Kit and Rebuild Kit.

** NOTE: Mechanical Seal Assy. (Ref. 153) is only sold as a complete assembly. Ref. Nos. 153A, 153B & 153C are not available as separate replacement parts.

Optional Hydraulic Motor Adapter Parts

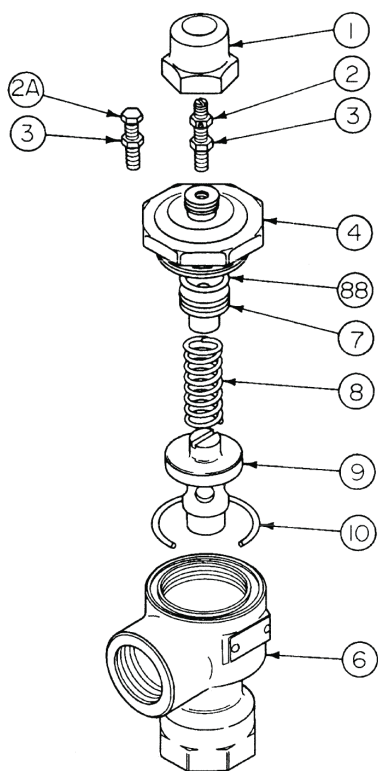


Part #	Ref. No.	Description	Parts Per Pump
892037		Hydraulic Motor Adapter Kit	See Below
Includes Items Listed Below			
381817	26A	Gasket – Hydraulic Motor Adapter	1
920369	28A	Capscrew – Hydraulic Motor Adapter / Head	6
906970	34	Coupling w/ Setscrew – 1.25" straight key hyd. motor shaft	1
909184	35	Key – Coupling	1
317815	76	Grease Fitting	1
701992	76A	Grease Relief Fitting	1
41829	135	Hydraulic Motor Adapter – SAE A Flange	1
920510	135A	Capscrew – Adapter / Motor	2

Blackmer Bypass Valve Repair

Models: BV0.75A, BV1A Differential Bypass Valve

Discontinued Models: BV0.75, BV3/4 and BV1



Part #	Ref. No.	Description	Parts Per Unit
414402	1	Cap	1
*	2	Adjusting Stud & Nut Assy. (71 - 100 psi) (Std.)	1
*	2	Adjusting Stud & Nut Assy. (101 - 200 psi)	1
431808	2A (1)	Adjusting Screw (20 - 40 psi)	1
431808	2A	Adjusting Screw (41 - 70 psi)	1
922923	3	Locknut	1
412845	4	Cover	1
402845	6	Body - 0.75" NPT	1
402846	6	Body 1", NPT	1
422853	7	Spring Guide	1
471411	8 (1)	Spring (20 - 40 psi)	1
471412	8	Spring (41 - 70 psi)	1
471415	8	Spring (71 - 100 psi) (Std.)	1
471420	8 (3)	Spring (101 - 125 psi) & (126 - 150 psi)	1
471428	8 (4)	Spring (151 - 200 psi)	1
452841	9	Valve	1
701933	10	O-Ring - Cover (Buna-N) (Std.)	1
701967	10 (2)	O-Ring - Cover (FKM)	1
711917	88	O-Ring - Spring Guide (Buna-N) (Std.)	1
701979	88 (2)	O-Ring - Spring Guide (FKM)	1

*—Assembly is not a saleable part; preset at factory.

1—Used on BV1 only

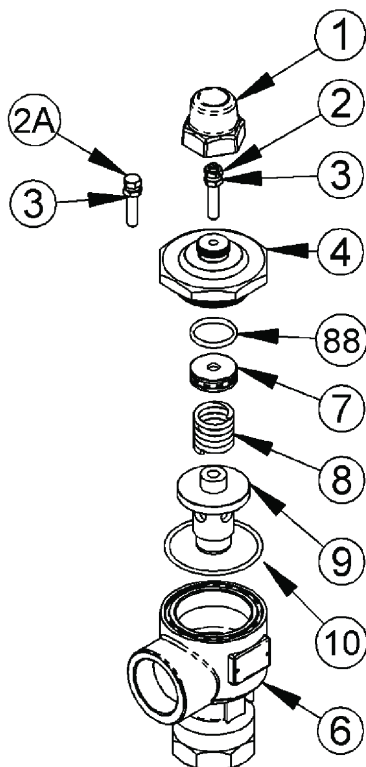
2—Not U.L. listed.

3—For use with pumps rated over 125 psi differential pressure.

4—For use with pumps rated over 150 psi differential pressure.

Models: BV1.25A, BV1.50A Differential Bypass Valve

Discontinued Models: BV1-1/4, BV1-1/2



Part #	Ref. No.	Description	Parts Per Unit
414402	1	Cap	1
*	2	Adjusting Stud & Nut Assy. (springs over 70 psi)	1
437803	2A	Adjusting Screw (20 - 40 psi)	1
437803	2A	Adjusting Screw (41 - 70 psi)	1
922923	3	Locknut	1
413045	4	Cover	1
403045	6	Body - 1.25" NPT	1
403345	6	Body - 1.5", NPT	1
422853	7	Spring Guide	1
471415	8	Spring (20 - 40 psi)	1
471417	8 (3)	SS Spring (20 - 40 psi) (BV1.50A only)	1
471420	8	Spring (41 - 70 psi)	1
471428	8	Spring (71 - 125 psi) (Std.)	1
471428	8 (1)	Spring (126 - 165 psi)	1
471426	8 (2)	Spring (166 - 200 psi)	1
453042	9	Valve	1
701934	10	O-Ring - Cover (Buna-N) (Std.)	1
701921	10 (3)(4)	O-Ring - Cover (FKM) 3, 4	1
711917	88	O-Ring - Spring Guide (Buna-N) (Std.)	1
701979	88 (3)(4)	O-Ring - Spring Guide (FKM) 3, 4	1

*—Assembly is not a saleable part; preset at factory.

1—For use with pumps rated over 125 psi differential pressure.

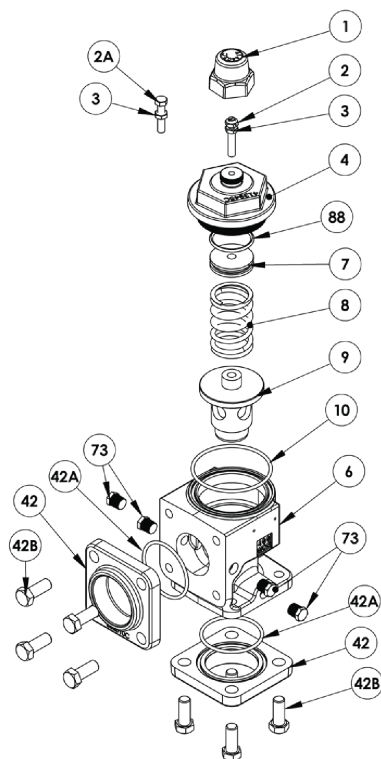
2—For use with pumps rated over 150 psi differential pressure.

3—Not U.L. listed.

4—For MAPP Gas; to be used with stainless steel (SS) spring only.

Models: BV2A Differential Bypass Valves

Discontinued Models: BV2



Part #	Ref. No.	Description	Parts Per Unit
414402	1	Cap	1
*	2	Adjusting Stud & Nut Asy. (91-125 psi) (std)	1
437803	2A	Adjusting Screw (20 - 40 psi)	1
437803	2A	Adjusting Screw (41 - 70 psi)	1
437803	2A	Adjusting Screw (71 - 90 psi)	1
433905	2A	Adjusting Screw (126 - 150 psi)	1
922923	3	Locknut	1
413945	4	Cover	1
403945	6	Body	1
423953	7	Spring Guide	1
471803	8	Spring (20 - 40 psi)	1
471805	8	Spring (41 - 70 psi)	1
471815	8	SS Spring (41 - 70 psi)	1
471811	8	Spring (71 - 90 psi)	1
471806	8	Spring (91 - 125 psi) (Std.)	1
471810	8	Spring (126 - 150 psi)	1
453942	9	Valve (with pressure equalizing hole)	1
701916	10	O-Ring - Cover (Buna-N) (Std.)	1
711959	10	O-Ring - Cover (FKM)	1
652010	42	Flange - 2" NPT (Std.)	2
652024	42	Flange - 2" Slip-on Weld **	2
655109	42	Flange - 2" Socket Weld El	2
652029	42	Flange - 1.25" NPT	2
652028	42	Flange - 1.5" NPT	2
652027	42	Flange - 1.25" Slip-on Weld	2
652026	42	Flange - 1.5" Slip-on Weld	2
702004	42A	O-Ring - Flange (Buna-N) (Std.) **	2
702086	42A (1)(2)	O-Ring - Flange (FKM)1,3	2
920491	42B	Capscrews - Flange	8
908198	73	Pipe Plug - 1/4" NPT	4
711916	88	O-Ring Spring Guide (Buna-N)	1
711908	88 (1)(2)	O-Ring - Spring Guide (FKM)1,3	1

*—Assembly is not a saleable part; preset at factory.

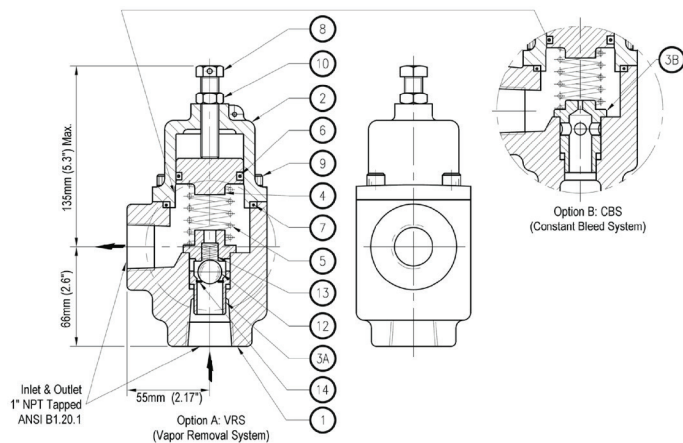
**—Weld Flange O-rings before Nov 2002: 701919 Buna-N, 711929 FKM (Not U.L. Listed).

1—Not-U.L. Listed.

2—For MAPP Gas; use FKM O-rings and SS spring together.

Models: Ebsray RV18 Inline Bypass Valve

Repair Parts



Ref. No.	Description	Qty
1	Housing NPT	1
2	Valve Cover	1
3a	Valve	1
3b	Valve	1
4	Spring Cap	1
5	Spring Bypass	1
6	O-Ring, 1/8x1-7/16	1
7	O-Ring, 1/8x2	1
8	Adjusting Screw	1
9	Socket Hd Capscrew M8x1.25x25	4
10	Nut Hexagon Head Metric	1
12	Ball	1
13	Spring Vent	1
14	Circlip	1

Spare Parts Inquiries

To facilitate Parts inquiries, please provide Blackmer with:
 a. Model and Serial Number on the valve nameplate.
 b. Ref. # and Description from the Parts Designation table.
 c. Quantity required.

By-Pass Valves **CORKEN**



Pump & Compressors

Part #	Description	Common Applications	Ports	Flow Rate GPM	O-ring Material Options
B166-12	Automatic Dual-Purpose By-pass Valve	Cylinder Filling	3/4" NPT	Up to 30	Buna-N (std), Neoprene®, PTFE, Viton®, Ethylene-Propylene
B166-16	Automatic Dual-Purpose By-pass Valve	Cylinder Filling	1" NPT	Up to 40	Buna-N (std), Neoprene®, PTFE, Viton®, Ethylene-Propylene
B166-1BAU	Automatic Dual-Purpose By-pass Valve	Autogas Filling	3/4" NPT	Up to 30	Buna-N (std), Neoprene®, PTFE, Viton®, Ethylene-Propylene
B166-1CAU	Automatic Dual-Purpose By-pass Valve	Autogas Filling	1" NPT	Up to 40	Buna-N (std), Neoprene®, PTFE, Viton®, Ethylene-Propylene
T166-20	Pump Flow Control Valve	Bobtail Truck & Smaller Bulk Plant Systems	1-1/4" NPT	Up to 80	Buna-N (std), Neoprene®, PTFE, Viton®, Ethylene-Propylene
T166-24	Pump Flow Control Valve	Bobtail Truck & Smaller Bulk Plant Systems	1-1/2" NPT	Up to 100	Buna-N (std), Neoprene®, PTFE, Viton®, Ethylene-Propylene
ZV200	Differential By-pass Valve	Transports or Large Bulk Plant Systems	2" NPT	Up to 250	Buna-N (std), Neoprene®, PTFE, Viton®, Ethylene-Propylene

Note: By-Pass valves are NOT preset. Refer to Corken's installation instruction manual for proper setting procedures.

Cylinder Filling & Motor Fuel Dispensing Pumps

CORKEN



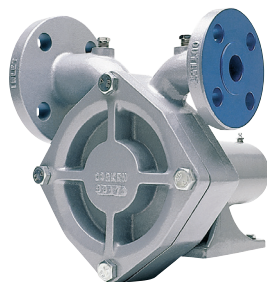
The close-coupled design of a C-model turbine pump makes installation easy and eliminates alignment issues. Ideal for dispensing applications like propane cylinder filling stations and dispensers. Five models available with NPT connections only.

Part #	Motor Only*	Motor Specs				Capacity in GPM			Max. Diff.	Connections	
		HP	Voltage	Phase	RPM	20 PSID	50 PSID	75 PSID		Inlet	Outlet
C10KD6A	4261-1	1	208-230	1	3450	12	6.5	2.5	75	1-1/4"	1"
C12KD6A	4261-1	1	208-230	1	3450	19	15	11	100	1-1/2"	1"
C12FD6A	4261	2	115/208-230	1	3450	19	15	11	100	1-1/2"	1"
C13FD6A	4261	2	115/208-230	1	3450	26	21	17	125	1-1/2"	1"
C14MD6A	2557	3	115/208-230	1	3450	38	32	25	125	1-1/2"	1"
C14GD6A	2557	3	230/460	3	3450	38	32	25	125	1-1/2"	1"
C16MF6A	4885	3	115/208-230	1	3450	13	11	10	150	1-1/4"	1"
C16GD6A	2557	3	230/460	3	3450	13	11	10	150	1-1/4"	1"

Note: See page 192 for motor and wall mounted start switches.

* When ordering motors only, switch box & switch are ordered separately.

Autogas Pumps **CORKEN**



The frame mount design requires a baseplate, coupling, and coupling guard and utilizes a direct drive configuration so the pump runs at motor speed. With a frame mount design, the user has the flexibility to choose from a variety of motor sizes. FF- & DLF-models 075, and 150 produce higher differential pressures than F-Model pumps and are commonly used in Autogas applications.

Part #	GPM	HP	Inlet	Outlet	RPM	Max. Working Pressure	Max Diff. Pressure	Mounting
FF075	22.5	7.5	1.5" ANSI 300# Raised Face Flange	1" ANSI 300# Raised Face Flange	3,450 @ 60 Hz or 2,880 @ 50 HZ	400 PSI	150 PSI	Rigid Base
DLF075	22.5	7.5	1.5" ANSI 300# Raised Face Flange	1" ANSI 300# Raised Face Flange	3,450 @ 60 Hz or 2,880 @ 50 HZ	400 PSI	150 PSI	C-Face
FF150	33.79	10	1.5" ANSI 300# Raised Face Flange	1" ANSI 300# Raised Face Flange	3,450 @ 60 Hz or 2,880 @ 50 HZ	400 PSI	250 PSI	Rigid Base
DLF150	33.79	10	1.5" ANSI 300# Raised Face Flange	1" ANSI 300# Raised Face Flange	3,450 @ 60 Hz or 2,880 @ 50 HZ	400 PSI	250 PSI	C-Face

Part #	Motor Only*	Motor Specs			Capacity in GPM			Max. Diff.	Connections		Heater Element
		HP	Voltage	Phase	100 PSID	125 PSID	150 PSID		Inlet	Outlet	
DL16CD6A (HDPDL16-1P3)	6037-2CNA1	3	115/230	1	13	11	10	200	1-1/4"	1"	Internal
DL16CD6A (HDPDL16-3P3)	6037-2C2B1	3	230/460	3	13	11	10	200	1-1/4"	1"	Internal

* When ordering motors only, switch box & switch are ordered separately.

Companion Flange Kit

Part #	Description
6133-X1	Companion Flange Kit for FF/DLF075 or FF/DLF150. Includes flanges, gaskets, studs and nuts for both inlet and outlet.

Autogas Pump Packages

Includes pump, coupling, motor and bypass valve. Some packages include a VFD.



Part #	Description
HDPDL16-1P3-75BAU	Pump, coupling, B166B-75BAU bypass & 3HP-1PH C-face motor
HDPDL16-3P3-75BAU	Pump, coupling, B166B-75BAU bypass & 3HP-3PH C-face motor
HDPDL16-1P33-75BAU	Pump, coupling, B166B-75BAU bypass, 3HP-3PH C-face motor & 4204-6X1 VFD
HDPDLF060-3P53	Pump, coupling, B166B-1CAU bypass, & 5HP-3PH C-face motor
HDPDLF075-1P75	Pump, coupling, B166B-1CAU bypass, 7.5HP-3PH C-face motor & 4204 VFD
HDPDLF075-3P75	Pump, coupling, B166B-1CAU bypass & 7.5HP-3PH C-face motor
HDPFF075-3P75	Pump, 101 mounting, B166B-1CAU bypass & 7.5HP-3PH motor
HDPFF150-3P10	Pump, 101 mounting, B166B-1CAU bypass & 10HP-3PH motor

Stationary Bottle Pumps

CORKEN

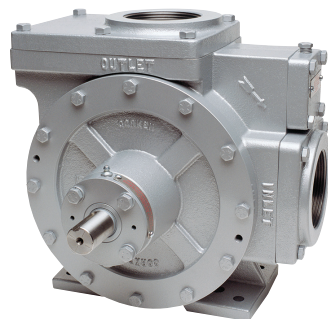
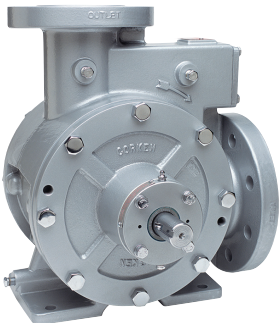
Turbine pumps, motor driven or engine driven for handling high head pressure at 75 PSID.



Part #	Inlet x Outlet	Capacity	RPM	Shaft Size	Includes
F10-101-8	1-1/4" X 1"	3 GPM	3600	1"	Pump base, flex coupling, coupling guard
F12-101-8	1-1/2" X 1"	12 GPM	3600	1"	Pump base, flex coupling, coupling guard
F14-101-8	1-1/2" X 1"	25 GPM	3600	1"	Pump base, flex coupling, coupling guard
F10CD6A	1-1/4" X 1"	3 GPM	3600	1"	Pump only
F12CD6A	1-1/2" X 1"	12 GPM	3600	1"	Pump only
F14CD6A	1-1/2" X 1"	25 GPM	3600	1"	Pump only

Coro-Vane Stationary Pumps

CORKEN



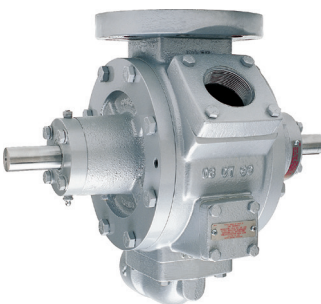
The Z-Series pump is a special type of rotary positive displacement pump, known as a sliding vane pump for use in bulk plant installations. The sliding vane pump has many of the positive displacement advantages of the gear pump, plus the ability to compensate for wear, and operate at a lower noise level. The sliding vane pump consists of a rotor turning in a cam (liner) machined eccentrically in relation to the rotor; thereby displacing the liquid trapped between the rotor, cam and vanes. The Z-Series pumps are made with vanes produced from advanced polymers which exhibit extremely low coefficients of friction. The vanes are self-adjusting for wear which gives the pump long life.

Part #	Flange Size	Capacity
Z2000	2"	84 GPM
Z3500	3"	185 GPM
Z4500	4" x 3"	385 GPM

Note: Pump capacity shown are only approximate and will vary depending on motor horsepower, RPM, differential pressures and piping.

Coro-Vane Truck Pumps

CORKEN



The Z-Series pump is a special type of rotary positive displacement pump, known as a sliding vane pump for use in mobile applications.

The sliding vane pump has many of the positive displacement advantages of the gear pump, plus the ability to compensate for wear, and operate at a lower noise level.

The sliding vane pump consists of a rotor turning in a cam (liner) machined eccentrically in relation to the rotor; thereby displacing the liquid trapped between the rotor, cam and vanes. The Z-Series pumps are made with vanes produced from advanced polymers which exhibit extremely low coefficients of friction. The vanes are self-adjusting for wear which gives the pump long life..

Part #	Suction Flange	Discharge Flange	Max. RPM	Max. Working Pressure PSIG	Max Differential Pressure
Z2000	2" NPT	2" NPT	800	400	125 psid
Z3200	3" 300# ANSI	2" EL	800	400	125 psid
Z4200	4" 300# ANSI	2" Dual NPT	800	400	125 psid
Z3500	3" NPT	3" NPT	800	400	125 psid
Z4500	4" 300# ANSI	3" ANSI	800	400	125 psid

Coro-Vane LP-Gas Bulk Plant Selection Guide



Pump Model	Pump RPM	GPM @ 20 PSI	HP	Phase	Frame Size	Suggested Pipe Size			By-pass Valve	Hose Size	
						Inlet	Outlet	Vapor		Liquid	Vapor
Z2000-103-9	780	84	5	3	182T	2-1/2"	2"	1-1/4"	1-1/4"	1-1/2"	1"
Z2000-103-9	780	84	5	1	213T	2-1/2"	2"	1-1/4"	1-1/4"	1-1/2"	1"
Z3500-103	640	160	7-1/2	3	184T	3"	3"	1-1/4"	2"	2"	1-1/4"
Z3500-103	640	160	7-1/2	3	215T	3"	3"	1-1/2"	2"	2"	1-1/4"
Z3500-103	780	185	10	3	215T	3"	3"	1-1/2"	2"	2"	1-1/4"
Z4500-103	640	315	15	3	254T	4"	4"	2"	2"	2"	1-1/2"
Z4500-103	780	385	20	3	256T	4" to 6"	4"	2"	2"	2"	1-1/2"

Coro-Vane Truck Pump Selection Guide



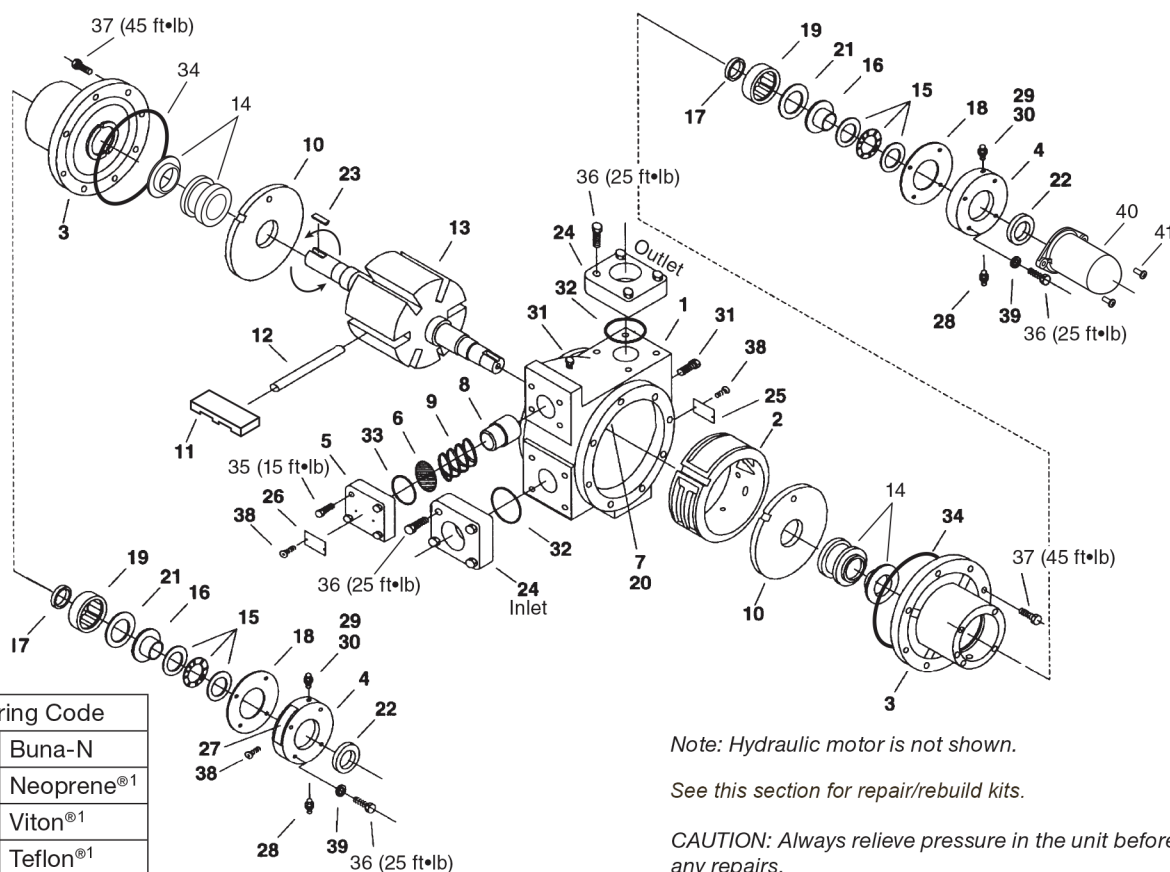
Pump Model	Pump Speed (RPM)	Differential Pressure (PSI)	Approximate Delivery of Propane ¹ (GPM)	Brake HP Required (BHP)	Pump Torque Required (Ft ² Lb)
Z2000	750	50	82	2.9	20.4
Z2000	750	100	77	5.8	40.8
Z2000	650	50	69	2.5	20.4
Z2000	650	100	64	5.1	40.8
Z2000	600	50	63	2.3	20.4
Z2000	600	100	58	4.6	40.8
Z2000	500	50	52	1.9	20.4
Z2000	500	100	46	3.9	40.8
Z3200	750	50	112	6.2	43.4
Z3200	750	100	99	9.9	69.3
Z3200	650	50	95	5.2	42
Z3200	650	100	84	8.2	66.3
Z3200	600	50	86	5	41.3
Z3200	600	100	76	7.8	64.8
Z3200	500	50	70	3.8	39.9
Z3200	500	100	62	5.8	60.9
Z4200	750	50	369	12.5	87
Z4200	750	100	325	25.1	175
Z4200	650	50	316	10.8	87
Z4200	650	100	278	21.7	175
Z4200	600	50	289	9.9	87
Z4200	600	100	254	20	175
Z4200	500	50	236	8.4	87
Z4200	500	100	208	16.7	175

¹ The chart shows approximate delivery rates as seen in vapor equalized propane systems at 70°F (21°C) with no pressure loss in pump suction piping.

The following will cause increased vaporization of the liquid in pump suction, adversely affecting the delivery.

1. Restrictions in the suction piping such as internal valves, excess flow valves, elbows, etc.
2. Restriction or lack of a vapor return line.
3. Temperatures below 70°F (21°C)

This loss of delivery is not caused by the pump but is a result of the natural thermodynamic properties of liquified petroleum gases. See the GUIDE TO CORKEN LIQUIFIED GAS TRANSFER EQUIPMENT CP226 for a complete description of these phenomena.



O-ring Code	
A	Buna-N
B	Neoprene ^{®1}
D	Viton ^{®1}
E	Teflon ^{®1}

Note: Hydraulic motor is not shown.

See this section for repair/rebuild kits.

CAUTION: Always relieve pressure in the unit before attempting any repairs.

Part #	Ref. No.	Description	Qty.
4413	1	Case	1
4414	2	Cam	1
4416	3	Head	2
4417	4	Bearing cap	2
1174-3	5	Relief valve cap	1
4282	6	Shim	1
4424	7	Cam key	1
4425	8	Relief valve cap	1
4426	9	Relief valve spring	1
4427	10	Sideplate	2
4428	11 (2)	Vane	6
4262-X	12	Vane driver	3
4430-X2R	13	Rotor-shaft assembly	1
4431-X_6	14 (4)	Seal Assembly	2
4432	15	Thrust bearing assembly	2
4435	16	Bearing race mounting ring	2
4438	17	Grease seal	2
4439	18	Bearing cap shim (.002) Red	As Req.
4439-1	18	Bearing cap shim (.010) Brown	As Req.
4439-2	18	Bearing cap shim (.020) Yellow	As Req.
2754-X	19	Bearing	2
3253	20	Cam key pin	2
2760-244	21	Retainer ring	2

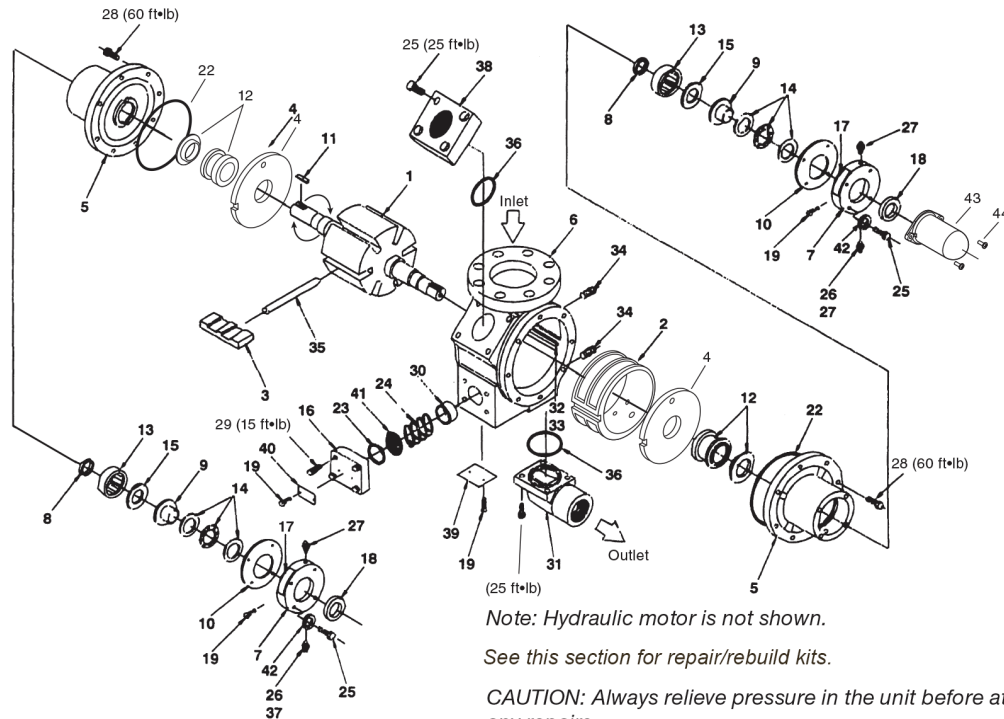
Part #	Ref. No.	Description	Qty.
4441	22	Grease seal	2
2270	23	Shaft key — 1/4" x 1-9/16"	2
4479-2	24 (3)	Flange — 2" NPT	2
2649	25	Nameplate	1
4248	26	Relief valve nameplate	1
1359	27	Lubrication instruction plate	2
1342	28	1/8" NPT relief fitting	4
2158	29	1/8" NPT grease zerk	2
2159	30	Lubricap	2
3442	31	1/4" NPT pipe plug	2
2-231_	32 (4)	O-ring — flange	2
2-224_	33 (4)	O-ring — relief valve cap	1
2-261_	34 (4)	O-ring — case	2
7001-031NC125A	35	Bolt — hexagon head	4
7001-037NC150A	36	Bolt — hexagon head	16
7001-043NC125A	37	Bolt — hexagon head	16
7012-006SF025E	38	Screw	8
7206-037A	39	Lockwasher	8

(1) Registered trademarks of the DuPont company.

(2) Slots in blades must face TOWARDS the direction of rotation.

(3) Optional: 479-2S 2" welded.

(4) _Denotes O-ring code.



O-ring Code	
A	Buna-N
B	Neoprene ^{®1}
D	Viton ^{®1}
E	Teflon ^{®1}

Note: Hydraulic motor is not shown.

See this section for repair/rebuild kits.

CAUTION: Always relieve pressure in the unit before attempting any repairs.

Part #	Ref. No.	Description	Qty.
4495-X2R	1	Rotor shaft assembly	1
4242	2	Cam	1
4232	3 ⁽¹⁾	Vane	6
4321	4	Sideplate	2
4488	5	Head	2
4239	6	Case	1
4417	7	Bearing cap	2
4438	8	Grease seal	2
4435	9	Mounting ring	2
4439	10	Bearing cap shim (.002) Red	As Req.
4439-1	10	Bearing cap shim (.010) Brown	As Req.
4439-2	10	Bearing cap shim (.020) Yellow	As Req.
2270	11	Shaft key	2
4431-X_6	12 ⁽³⁾	Seal assembly	2
2754	13	Bearing outer race	2
4432	14	Thrust bearing assembly	2
2760-244	15	Retainer ring	2
1174-2	16	Relief valve cap	1
1359	17	Lubrication instruction plate	2
4441	18	Grease seal	2
7012-006SF019E	19	Screw	8
2-223_	20 ⁽³⁾	O-ring — seal	2
2-227_	21 ⁽³⁾	O-ring — seat	2
2-262_	22 ⁽³⁾	O-ring — case	2
2-224_	23 ⁽³⁾	O-ring — relief valve cap	1
1240	24	Relief valve spring	1
7001-037NC150A	25	Bolt - 3/8-16 x 1-1/2" hex head	16
2158	26	1/8" NPT grease zerk	2

Part #	Ref. No.	Description	Qty.
1343	27	1/8" NPT relief fitting	4
7001-050NC150A	28	Bolt — 1/2-13 x 1-1/2" hex head	16
7001-031NC125A	29	Bolt — 5/16-16 x 1-1/4" hex head	4
1241	30	Relief valve	1
4243	31 ⁽²⁾	Flanged elbow — 2"	1
4241	32	Cam key	1
3253	33	Cam key pin	1
3442	34	1/4" NPT pipe plug	1
4262-X	35	Vane driver	3
2-234_	36 ⁽³⁾	O-ring — flange	1
2159	37	Lubricap	2
1172-2	38	Flange — 2" NPT	1
2649	39	Nameplate	1
4248	40	Relief valve nameplate	1
4282	41	Relief valve shim	As Req.
7206-037A	42	3/8" lockwasher	8

(1) Registered trademarks of the DuPont company.

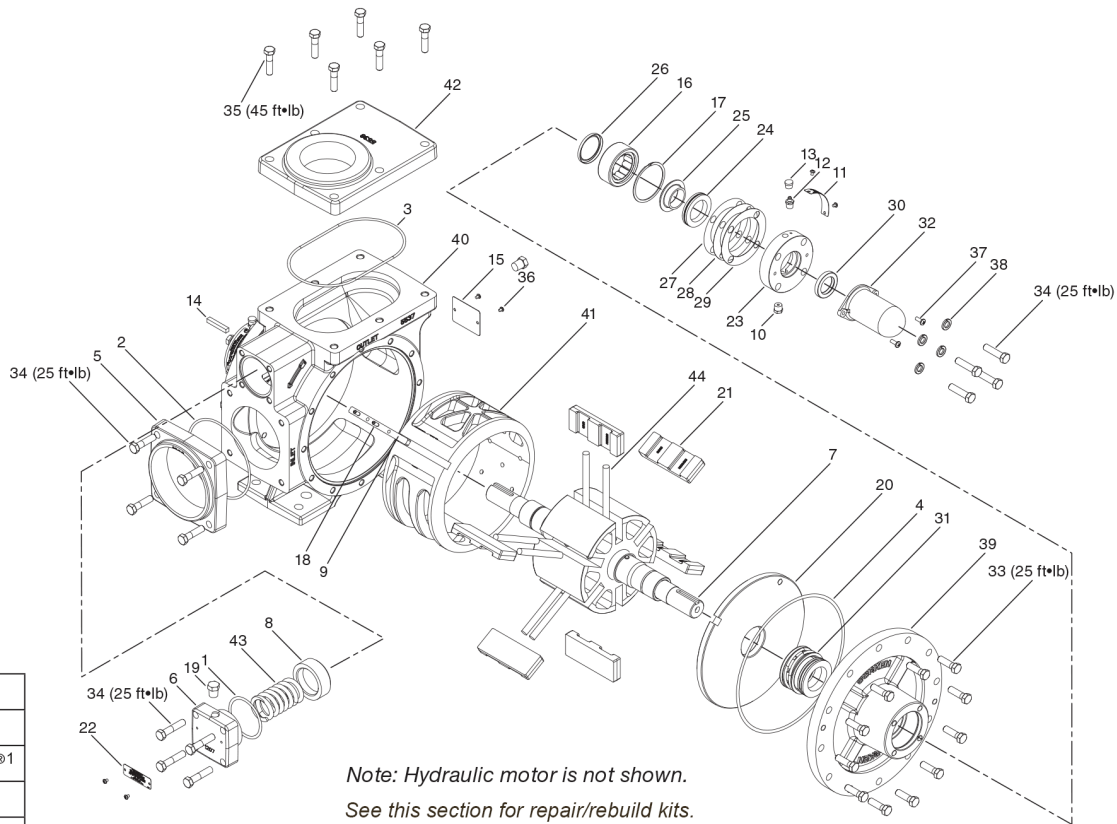
(2) See flange chart for options.

(3) _Denotes O-ring code.

(4) Slots in blades must face TOWARDS the direction of rotation.

Corken Pump Repair

Models: Z3500



O-ring Code	
A	Buna-N
B	Neoprene ^{®1}
D	Viton ^{®1}
E	Teflon ^{®1}

Note: Hydraulic motor is not shown.

See this section for repair/rebuild kits.

CAUTION: Always relieve pressure in the unit before attempting any repairs.

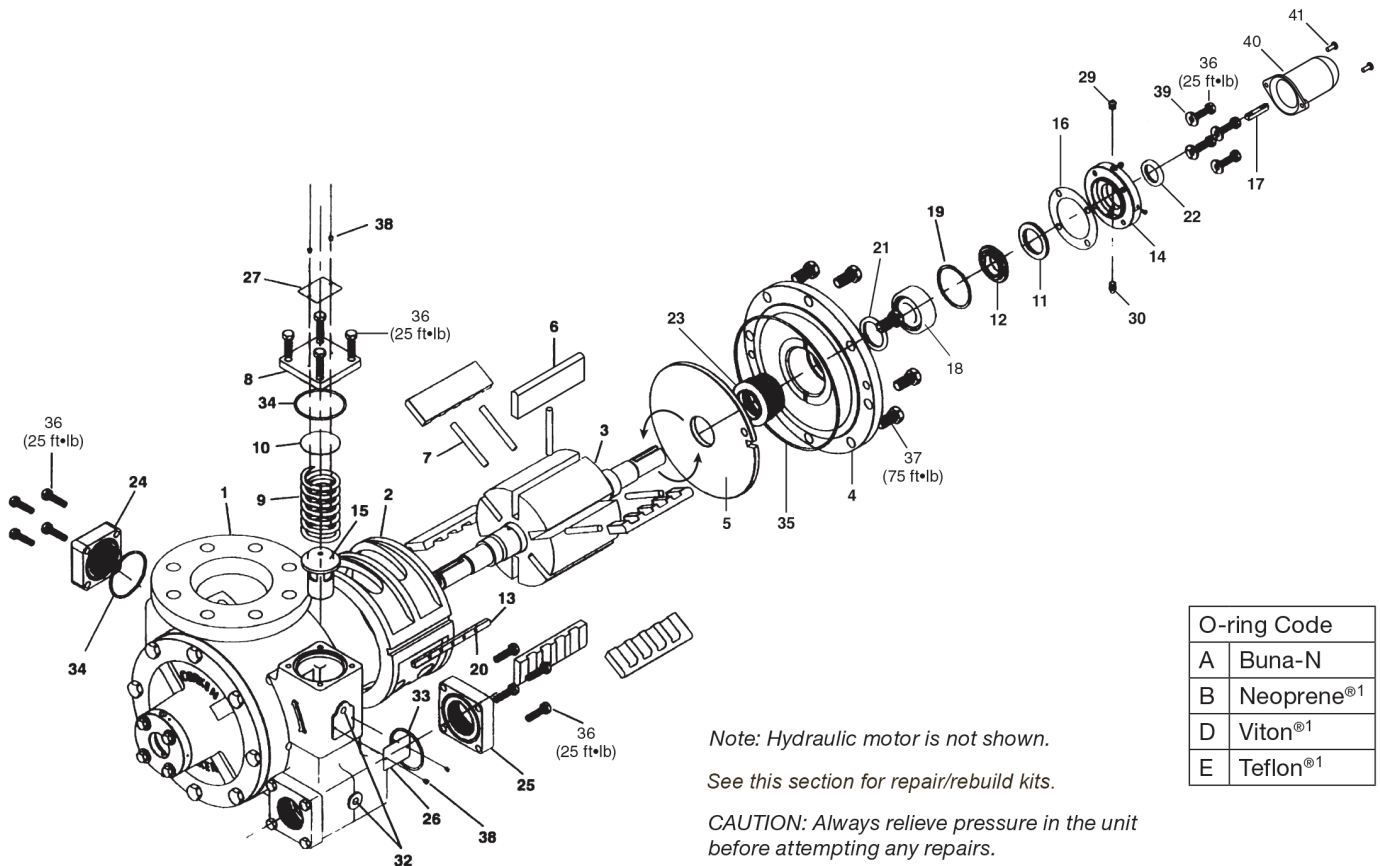
Part #	Ref. No.	Description	Qty.
2-228_	1 (2)	O-ring	1
2-245_	2 (2)	O-ring	1
2-259_	3 (2)	O-ring	1
2-268_	4 (2)	O-ring	2
1206-3	5	Inlet flange — 3" NPT	1
1206-4	5	Inlet flange — 4" NPT	1
1206-3S	5	inlet flange — 3" WF	1
1206-4S	5	inlet flange — 4" WF	1
1207-2	6	Relief valve cap	1
1208-1X6R	7	Rotor shaft assembly	1
1224	8	Relief valve	1
1309	9	Cam key	1
1343	10	Grease relief fitting	4
1359	11	Lubrication plate	2
2158	12	Grease zerk	2
2159	13	Lubricap	2
2270	14	Shaft key — 1/4"	1
2649	15	Nameplate	1
2754	16	Outer bearing	2
2760-244	17	Retainer ring	2
3253	18	Cam key pin	2
3442	19	Pipe plug — 1/4" NPT	2
3935	20	Sideplate	2
3936	21 (3)	Vane	6
4248	22	Relief valve warning tag	1
4417	23	Bearing cap	2
4432	24	Thrust bearing assembly	2
4435	25	Thrust bearing mounting ring	2
4438	26	Grease seal / Oil seal	2

Part #	Ref. No.	Description	Qty.
4439	27	Bearing cap shim (.002) Red	2
4439-1	28	Bearing cap shim (.010) Brown	2
4439-2	29	Bearing cap shim (.020) Yellow	2
4441	30	Grease seal	2
4431-X_6	31 (2)	Mechanical seal assembly	2
4985	32	Coro-vane shaft cover	1
7001-037NC125A	33	Hex head bolt	24
7001-037NC150A	34	Hex head bolt	16
7001-043NC150A	35	Hex head bolt	6
7012-006SF019E	36	Screw	9
7012-010SF050E	37	Screw	2
7206-037A	38	Lockwasher — 0.375"	8
5534	39	head	2
5537	40	Case	1
5539	41	Cam	1
5538	42	Outlet flange — 3" NPT Elongated	1
5538-3S	42	Outlet flange — 3" WF Elongated	1
5548	43	Spring	1
5554-X	44	Vane driver	6

(1) Registered trademarks of the DuPont company.

(2) _ Denotes O-ring code.

(3) Slots in blades must face TOWARDS the direction of rotation.



O-ring Code	
A	Buna-N
B	Neoprene® ¹
D	Viton® ¹
E	Teflon® ¹

Note: Hydraulic motor is not shown.

See this section for repair/rebuild kits.

CAUTION: Always relieve pressure in the unit before attempting any repairs.

Part #	Ref. No.	Description	Qty.
4442	1	Case	1
4443	2	Cam	1
4444-X2R	3	Rotor-shaft assembly	1
4445	4	Head	2
4446	5	Sideplate	2
4448	6 ⁽⁴⁾	Vane	6
4449-X	7	Vane driver	5
4450	8	Relief valve cap	1
4451	9	Relief valve spring	1
4452	10	Shim	1
4453	11	Thrust bearing assembly	2
4454	12	Bearing race mounting ring	2
4455	13	Cam key	1
4456	14	Bearing cap	2
4457	15	Relief valve	1
4458	16	Bearing cap shim (.002) Red	As Req.
4458-1	16	Bearing cap shim (.010) Brown	As Req.
4458-2	16	Bearing cap shim (.020) Yellow	As Req.
4459	17	Shaft key — 5/16" x 1-3/4"	1
4460-X	18	Roller bearing	2
2760-281	19	Retainer ring	2
3253	20	Cam key pin	5
4462	21	Grease seal	2
4463	22	Grease seal	2
4464-X 6	23 ⁽³⁾	Seal assembly	2

Part #	Ref. No.	Description	Qty.
1172-2	24 ⁽²⁾	Aux. inlet flange — 2" NPT	1
4479-2	25 ⁽²⁾	Discharge flange — 2" NPT	2
2649	26	Nameplate	1
4248	27	Relief valve nameplate	1
1359	28	Lubrication instruction plate	2
1343	29	1/8" NPT relief valve	4
2158	30	1/8" NPT grease zerk	2
2159	31	Lubricap	2
3442	32	1/4" NPT pipe plug	2
2-231	33 ⁽³⁾	O-ring — discharge flange	2
2-234	34 ⁽³⁾	O-ring — auxiliary inlet flange	1
2-270	35 ⁽³⁾	O-ring — case	2
7001-037NC150A	36	Bolt — hexagon head	24
7001-062NC125A	37	Bolt — hexagon head	16
7012-006SF019E	38	Screw	8
7206-037A	39	Lockwasher	8

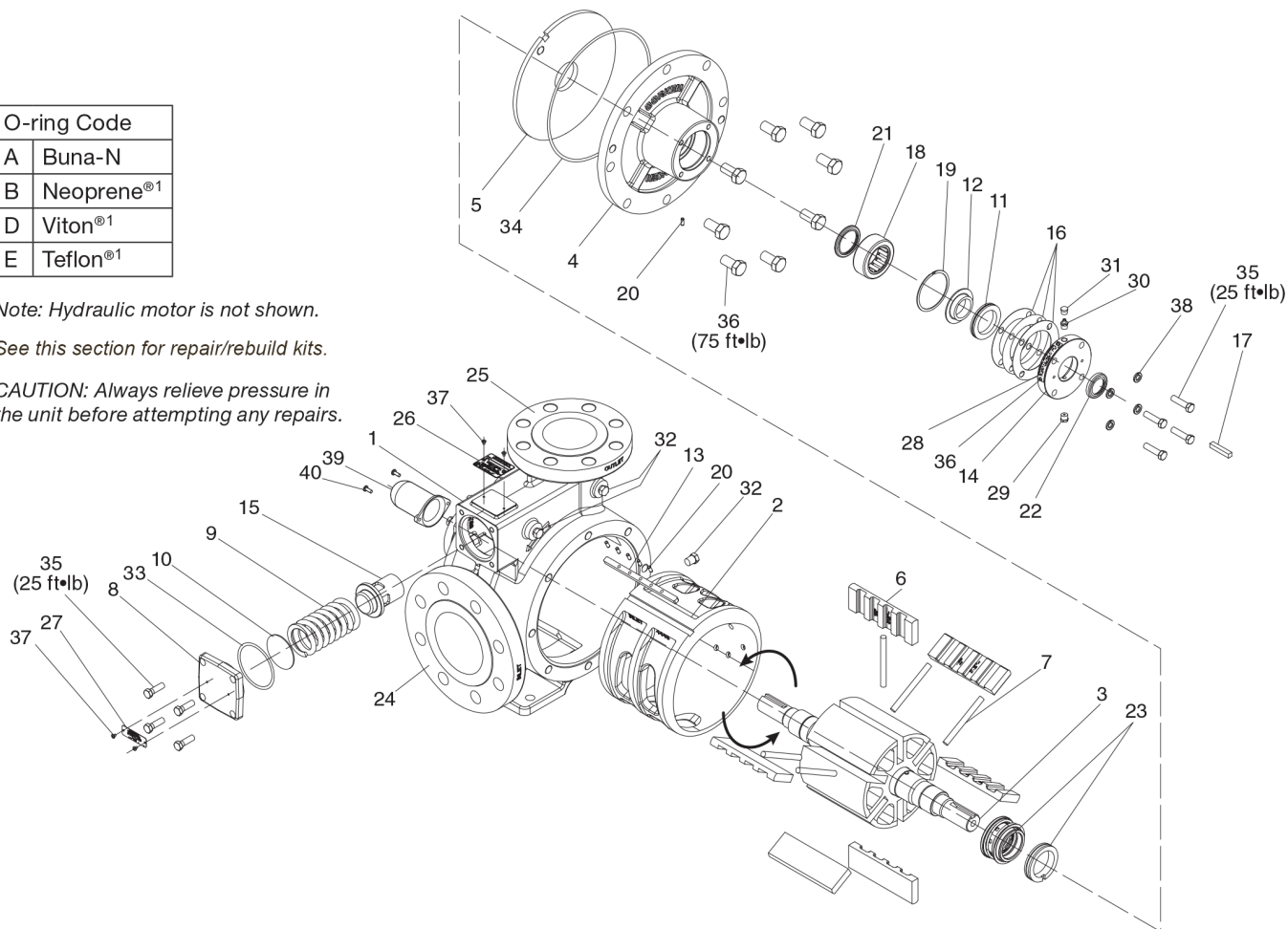
- (1) Registered trademarks of the DuPont company.
- (2) See flange chart for options.
- (3) _Denotes O-ring code.
- (4) Slots in blades must face TOWARDS the direction of rotation.

O-ring Code	
A	Buna-N
B	Neoprene ^{®1}
D	Viton ^{®1}
E	Teflon ^{®1}

Note: Hydraulic motor is not shown.

See this section for repair/rebuild kits.

CAUTION: Always relieve pressure in the unit before attempting any repairs.



Part #	Ref. No.	Description	Qty.
5522	1	Case	1
4443	2	Cam	1
4444-X2R	3	Rotor-shaft assembly	1
4445	4	Head	2
4446	5	Sideplate	2
4448	6 ⁽³⁾	Vane	6
4449-X	7	Vane driver	5
4450	8	Relief valve cap	1
4451	9	Relief valve spring	1
4452	10	Shim	1
4453	11	Thrust bearing assembly	2
4454	12	Bearing race mounting ring	2
4455	13	Cam key	1
4456	14	Bearing cap	2
4457	15	Relief valve	1
4458	16	Bearing cap shim (.002) Red	As Req.
4458-1	16	Bearing cap shim (.010) Brown	As Req.
4458-2	16	Bearing cap shim (.020) Yellow	As Req.
4459	17	Shaft key — 5/16" x 1-3/4"	1
4460-X	18	Roller bearing	2
2760-283	19	Retainer ring	2
3253	20	Cam key pin	5
4462	21	Grease seal	2
4463	22	Grease seal	2
4464-X_6	23 ⁽²⁾	Mechanical sea assembly	2

Part #	Ref. No.	Description	Qty.
— —	24	Inlet flange — 4" ANSI	1
— —	25	Outlet flange — 3" ANSI	2
2649	26	Nameplate	1
4248	27	Relief valve nameplate	1
1359	28	Lubrication instruction plate	2
1343	29	1/8" NPT relief fitting	4
2158	30	1/8" NPT grease zerk	2
2159	31	Lubricap	2
3442	32	1/4" NPT pipe plug	2
2-231_	33 ⁽²⁾	O-ring — discharge flange	2
2-234_	34 ⁽²⁾	O-ring — auxiliary inlet flange	1
2-270_	35 ⁽²⁾	O-ring — case	2
7001-037NC150A	36	Bolt — hexagon head	24
7001-062NC125A	37	Bolt — hexagon head	16
7012-006SF019E	38	Screw	8
7206-037A	39	Lockwasher	8
4985	40	Shaft cover	1
7012-010SF050E	41	Screw	2

(1) Registered trademarks of the DuPont company.

(2) _Denotes O-ring code.

(3) Slots in blades must face TOWARDS the direction of rotation.

Repair Kit 3193-X16 Z2000

Part #	Description	Qty.
2-224A	Relief valve O-ring, Buna-N	1
2-231A	Flange O-ring, Buna-N	2
2-261A	Case O-ring, Buna-N	2
2754-X	Roller bearing	2
4262-X	Vane driver	3
4428	Vane	6
4431-XA6	Seat assembly	2
4432	Thrust bearing	2
4435	Thrust bearing mounting ring	2
4439	Bearing cap shim (.002) Red	8
4439-1	Bearing cap shim (.010) Brown	2
4439-2	Bearing cap shim (.020) Yellow	2
4441	Grease seal (outer)	2
4438	Grease seal (inner)	2
2270	Shaft key	1

Repair Kit 3195-X16 Z3200

Part #	Description	Qty.
2-224A	Relief valve O-ring, Buna-N	1
2-234A	Flange O-ring, Buna-N	2
2-261A	Case O-ring, Buna-N	2
2754-X	Roller bearing	2
4262-X	Vane driver	3
4232	Vane	6
4431-XA6	Seat assembly	2
4432	Thrust bearing	2
4435	Thrust bearing mounting ring	2
4439	Bearing cap shim (.002) Red	8
4439-1	Bearing cap shim (.010) Brown	2
4439-2	Bearing cap shim (.020) Yellow	2
4441	Grease seal (outer)	2
4438	Grease Seal (inner)	2
2270	Shaft key	1

Rebuild Kit 3194-X16 Z2000

Includes all the items in the Repair Kit Plus the following

Part #	Description	Qty.
4414	Cam	1
4427	Sideplate	2

Rebuild Kit 3196-X16 Z3200

Includes all the items in the Repair Kit Plus the following

Part #	Description	Qty.
4242	Cam	1
4231	Sideplate	2

Full Rebuild Kit 3194-X36 Z2000

Includes all the items in the Repair Kit Plus the following

Part #	Description	Qty.
4414	Cam	1
4427	Sideplate	2
4430-X2R	Rotor-shaft assembly	1

Full Rebuild Kit 3196-X36 Z3200

Includes all the items in the Repair Kit Plus the following

Part #	Description	Qty.
4242	Cam	1
4231	Sideplate	2
4495-X2R	Rotor-shaft assembly	1

Repair Kit 3195-X26 Z3500

Part #	Description	Qty.
2-228A	Relief valve O-ring, Buna-N	2
2-268A	Case O-ring, Buna-N	2
2-245A	Flange O-ring, Buna-N	1
2-259A	Flange O-ring, Buna-N	1
2754-X	Roller bearing	2
5554-X	Vane driver	6
3936	Vane	6
6660-XA6	Seat assembly	2
4432	Thrust bearing	2
4435	Thrust bearing mounting ring	2
4439	Bearing cap shim (.002) Red	8
4439-1	Bearing cap shim (.010) Brown	2
4439-2	Bearing cap shim (.020) Yellow	2
4441	Grease seal (outer)	2
4438	Grease seal (inner)	2
2270	Shaft key	1

Repair Kit 3197-X16 Z4200 & Z4500

Part #	Description	Qty.
2-231A	Flange O-ring, Buna-N	1
2-234A	Relief valve O-ring, Buna-N	2
2-270A	Case O-ring, Buna-N	2
4460-X	Roller bearing	2
4449-X	Vane driver	3
4448	Vane	6
4464-XA6	Seat assembly	2
4453	Thrust bearing	2
4454	Thrust bearing mounting ring	2
4458	Bearing cap shim (.002) Red	8
4458-1	Bearing cap shim (.010) Brown	2
4458-2	Bearing cap shim (.020) Yellow	2
4463	Grease seal (outer)	2
4462	Grease seal (inner)	2
4459	Shaft key	1

Rebuild Kit 3196-X26 Z3500

Includes all the items in the Repair Kit Plus the following

Part #	Description	Qty.
5539	Cam	1
3935	Sideplate	2

Rebuild Kit 3198-X16 Z4200 & Z4500

Includes all the items in the Repair Kit Plus the following

Part #	Description	Qty.
4443	Cam	1
4446	Sideplate	2

Full Rebuild Kit 3196-X46 Z3500

Includes all the items in the Repair Kit Plus the following

Part #	Description	Qty.
5539	Cam	1
3935	Sideplate	2
1208-1X6R	Rotor-shaft assembly	1

Full Rebuild Kit 3198-X36 Z4200 & Z4500

Includes all the items in the Repair Kit Plus the following

Part #	Description	Qty.
4443	Cam	1
4446	Sideplate	2
4444-X2R	Rotor-shaft assembly	1

Repair Kit 3193-X1 Z2000

Part #	Description	Qty.
2-224A	O-ring, Buna-N	1
2-231A	O-ring, Buna-N	2
2754-X	Roller bearing	2
4262-X	Vane driver	3
4428	Vane	6
4431-XA2	Seat assembly	2
4432	Thrust bearing	2
4435	Thrust bearing mounting ring	2
4439	Bearing cap shim (.002) Red	8
4439-1	Bearing cap shim (.010) Brown	2
4439-2	Bearing cap shim (.020) Yellow	2
4441	Grease seal	2
2270	Shaft key	1

Repair Kit 3195-X1 Z3200

Part #	Description	Qty.
2-224A	O-ring, Buna-N	1
2-234A	O-ring, Buna-N	2
2754-X	Roller bearing	2
4262-X	Vane driver	3
4232	Vane	6
4431-XA2	Seat assembly	2
4432	Thrust bearing	2
4435	Thrust bearing mounting ring	2
4439	Bearing cap shim (.002) Red	8
4439-1	Bearing cap shim (.010) Brown	2
4439-2	Bearing cap shim (.020) Yellow	2
4441	Grease seal	2
2270	Shaft key	1

Rebuild Kit 3194-X1 Z2000

Includes all the items in the Repair Kit Plus the following

Part #	Description	Qty.
4414	Cam	1
4427	Sideplate	2

Rebuild Kit 3196-X1 Z3200

Includes all the items in the Repair Kit Plus the following

Part #	Description	Qty.
4424	Cam	1
4231	Sideplate	2

Full Rebuild Kit 3194-X3 Z2000

Includes all the items in the Repair Kit Plus the following

Part #	Description	Qty.
4414	Cam	1
4427	Sideplate	2
4430-X2R	Rotor-shaft assembly	1

Full Rebuild Kit 3196-X3 Z3200

Includes all the items in the Repair Kit Plus the following

Part #	Description	Qty.
4424	Cam	1
4231	Sideplate	2
4495-X2R	Rotor-shaft assembly	1

Repair Kit 3195-X2 Z3500

Part #	Description	Qty.
2-228A	O-ring, Buna-N	2
2754-X	Roller bearing	2
5554-X	Vane driver	6
3936	Vane	6
6660-xa2	Seat assembly	2
4432	Thrust bearing	2
4435	Thrust bearing mounting ring	2
4439	Bearing cap shim (.002) Red	8
4439-1	Bearing cap shim (.010) Brown	2
4439-2	Bearing cap shim (.020) Yellow	2
4441	Grease seal	2
2270	Shaft key	1

Repair Kit 3197-X1 Z4200 & Z4500

Part #	Description	Qty.
2-231A	O-ring, Buna-N	1
2-234A	O-ring, Buna-N	2
4460-X	Roller bearing	2
4449-X	Vane driver	3
4448	Vane	6
4464-XA2	Seat assembly	2
4453	Thrust bearing	2
4454	Thrust bearing mounting ring	2
4458	Bearing cap shim (.002) Red	8
4458-1	Bearing cap shim (.010) Brown	2
4458-2	Bearing cap shim (.020) Yellow	2
4463	Grease seal	2
4459	Shaft key	1

Rebuild Kit 3196-X2 Z3500

Includes all the items in the Repair Kit Plus the following

Part #	Description	Qty.
5539	Cam	1
3935	Sideplate	2

Rebuild Kit 3198-X1 Z4200 & Z4500

Includes all the items in the Repair Kit Plus the following

Part #	Description	Qty.
4443	Cam	1
4446	Sideplate	2

Full Rebuild Kit 3196-X4 Z3500

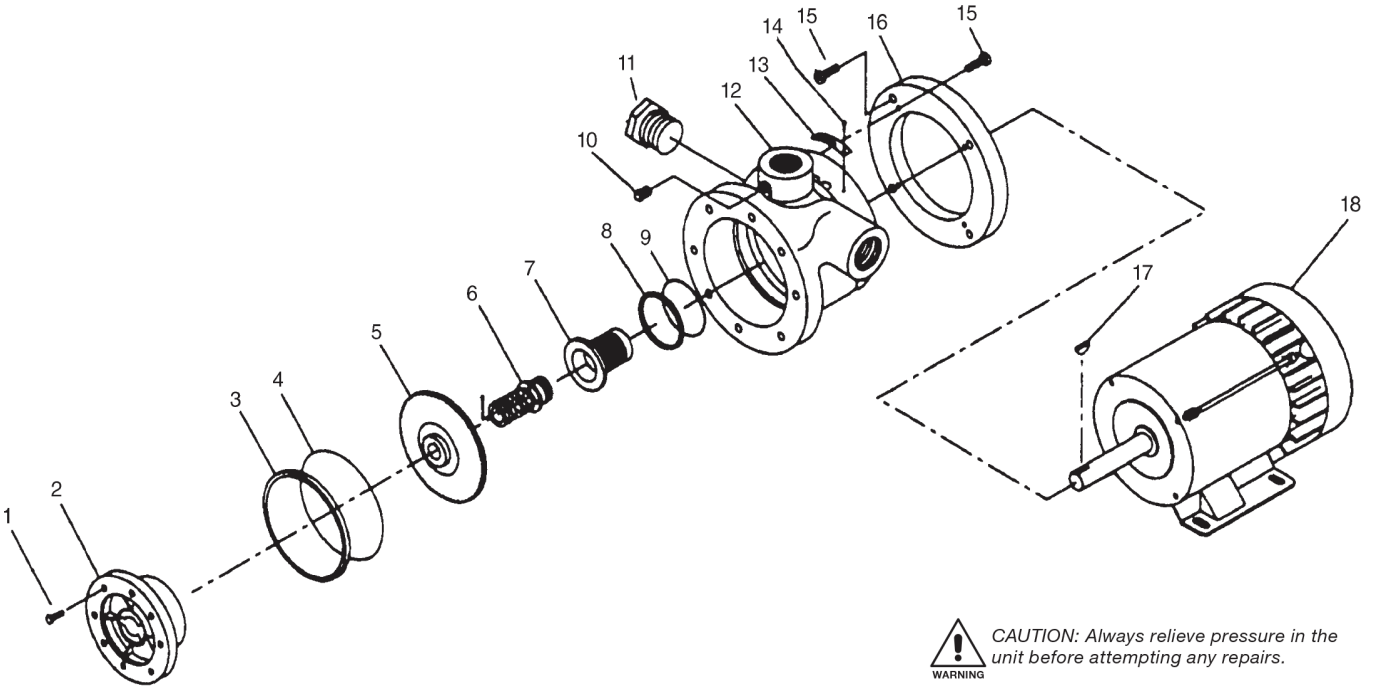
Includes all the items in the Repair Kit Plus the following

Part #	Description	Qty.
5539	Cam	1
3935	Sideplate	2
1208-1X6R	Rotor-shaft assembly	1

Full Rebuild Kit 3198-X3 Z4200 & Z4500

Includes all the items in the Repair Kit Plus the following

Part #	Description	Qty.
4443	Cam	1
4446	Sideplate	2
4444-X2R	Rotor-shaft assembly	1



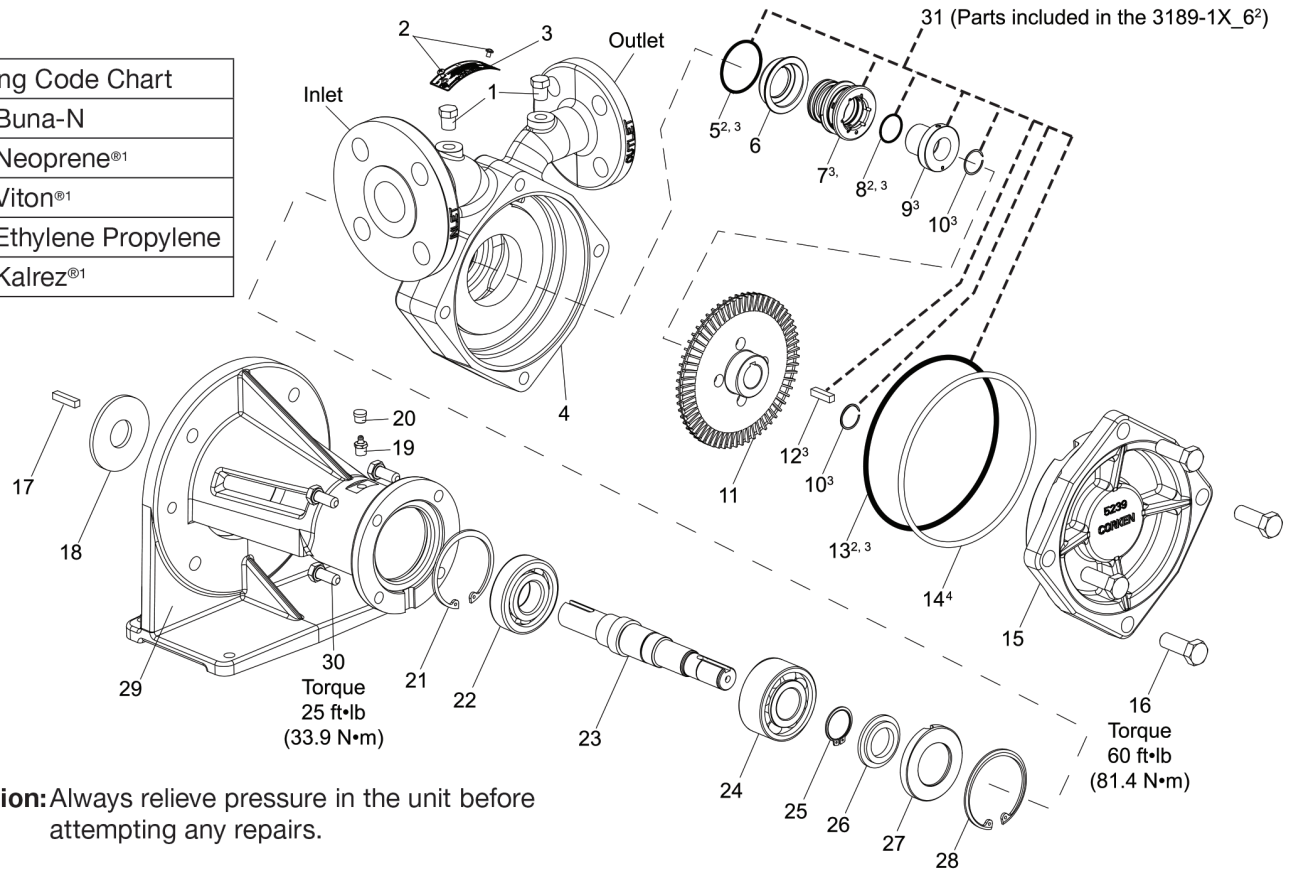
WARNING CAUTION: Always relieve pressure in the unit before attempting any repairs.

Part #	Ref. No.	Description	Qty.
7001-031NC100A	1	Hex head cap screw	8
1001-0	2	Cover — model 10	1
1001-2	2	Cover — model 12	1
1001-3	2	Cover — model 13	1
1001-4	2	Cover — model 14	1
1001-6	2	Cover — model 16	1
1014	3 (a)	Case clearance shim (.002" red)	As req.
1014-1	3 (a)	Case clearance shim (.003" green)	As req.
2-246	4 (a)	Case O-ring (Buna-N)	1
1003-0	5 (b)	Impeller, brass — model 10	1
1003-2	5 (b)	Impeller, brass — model 12	1
1003-3	5 (b)	Impeller, brass — model 13	1
1003-4	5 (b)	Impeller, brass — model 14	1
1003-6	5 (b)	Impeller, brass — model 16	1
113-CXA6	6 (b)	Seal assembly (Buna-N O-rings)	1
1004-1X	7	Seal housing (Steel)	1
1013	8	Housing adjustment shim (.010")	As req.
1013-1	8	Housing adjustment shim (.020")	As req.
2-224	9 (a)	Housing O-ring (Buna-N)	1
3442	10	Pipe plug — 1/4" NPT	1

Part #	Ref. No.	Description	Qty.
3444	11	Pipe plug — 3/4" NPT	1
1002-0	12	Case — model 10	1
1002-2	12	Case — model 12	1
1002-3	12	Case — model 13	1
1002-4	12	Case — model 14	1
1002-6	12	Case — model 16	1
1914-1	13	Nameplate	1
7012-006SF019E	14	Phillips head screw 6-32 x 1/4"	2
7002-037NC087A	15	Socket head cap screw	8
1015	16	Adapter ring	1
2497	17 (a)	Woodruff key — steel	1
2497-1	17 (a)	Woodruff key — SS	1
2557	18	Motor 3 HP — models 10, 12 and 13	1
4261	18	Motor 2 HP — models 10, 12 and 13	1
4261-1	18	Motor 1 HP — models 10 and 12	1
4885	18	Motor 3 HP — models 14 and 16 (single phase)	1

(a) - Included with seal assembly/repair kit 113-CXA6
 (b) - Add a 1 to # for Iron or a 2 for Stainless Steel (example: model 10 with iron is 1003-01).

O-ring Code Chart	
A	Buna-N
B	Neoprene ^{®1}
D	Viton ^{®1}
G	Ethylene Propylene
K	Kalrez ^{®1}



Caution: Always relieve pressure in the unit before attempting any repairs.

Part #	Ref. No.	Description	Qty.
3442	1	1/4" pipe plug	2
7012-0065F019E	2	Nameplate screw	2
1914-1	3	Nameplate	1
5238-060	4	060 Case — ANSI flange (FF)	1
5238-75	4	075 Case — ANSI flange (FF)	1
5238	4	150 Case — ANSI flange (FF)	1
5238-061	4	060 Case — DIN flange (FD)	1
5238-751	4	075 Case — DIN flange (FD)	1
5238-1	4	150 Case — DIN flange (FD)	1
2-133_	5 ^(2,3)	Seal housing — O-ring	1
5244-1X	6	Seal housing assembly	1
Not Sold Separately	7 ⁽³⁾	Seal sub assembly	1
2-018	8 ^(2,3)	Seal sleeve O-ring	1
Not Sold Separately	9	Seal sleeve assembly	1
2760-88	10 ⁽³⁾	7/8" retainer ring	1
5240-060	11	060 Impeller (bronze)	1
5240-75	11	075 Impeller (bronze)	1
5240	11	150 Impeller (bronze)	1
5240-061	11	060 Impeller (stainless steel)	1
5240-751	11	075 Impeller (stainless steel)	1
5240-1	11	150 Impeller (stainless steel)	1
5240-062	11	060 Impeller (steel)	1
5240-752	11	075 Impeller (steel)	1
5240-2	11	150 Impeller (steel)	1
4244	12 ⁽³⁾	Impeller key	1
2-260_	13 ^(2,3)	Case O-ring	1

Part #	Ref. No.	Description	Qty.
5248	14 ⁽⁴⁾	Case clearance shim	1
5239-75	15	075 Cover	1
5239	15	150 Cover	1
7301-140MC040A	16	M14-2 x 40mm hex head bolt	4
3226	17	Shaft key	1
4377	18	Bearing plate	1
2158	19	Grease zerk	1
2159	20	Lubricap	1
5000-281	21	Retainer ring	1
4378	22	Single row ball bearing	1
5241-2	23	Shaft	1
2758	24	Double row ball bearing	1
5102-118	25	Retaine ring	1
1006	26	Grease seal	1
1238	27	Bearing cap	1
5002-281	28	Retainer ring	1
4298	29	Mounting frame — NEMA	1
4298-1	29	Mounting frame — IEC	1
7301-100MC025A	30	N10-1.5 x 25mm hex head bolt	4
3189-1X_6	31 ⁽²⁾	Seal assembly 2	1

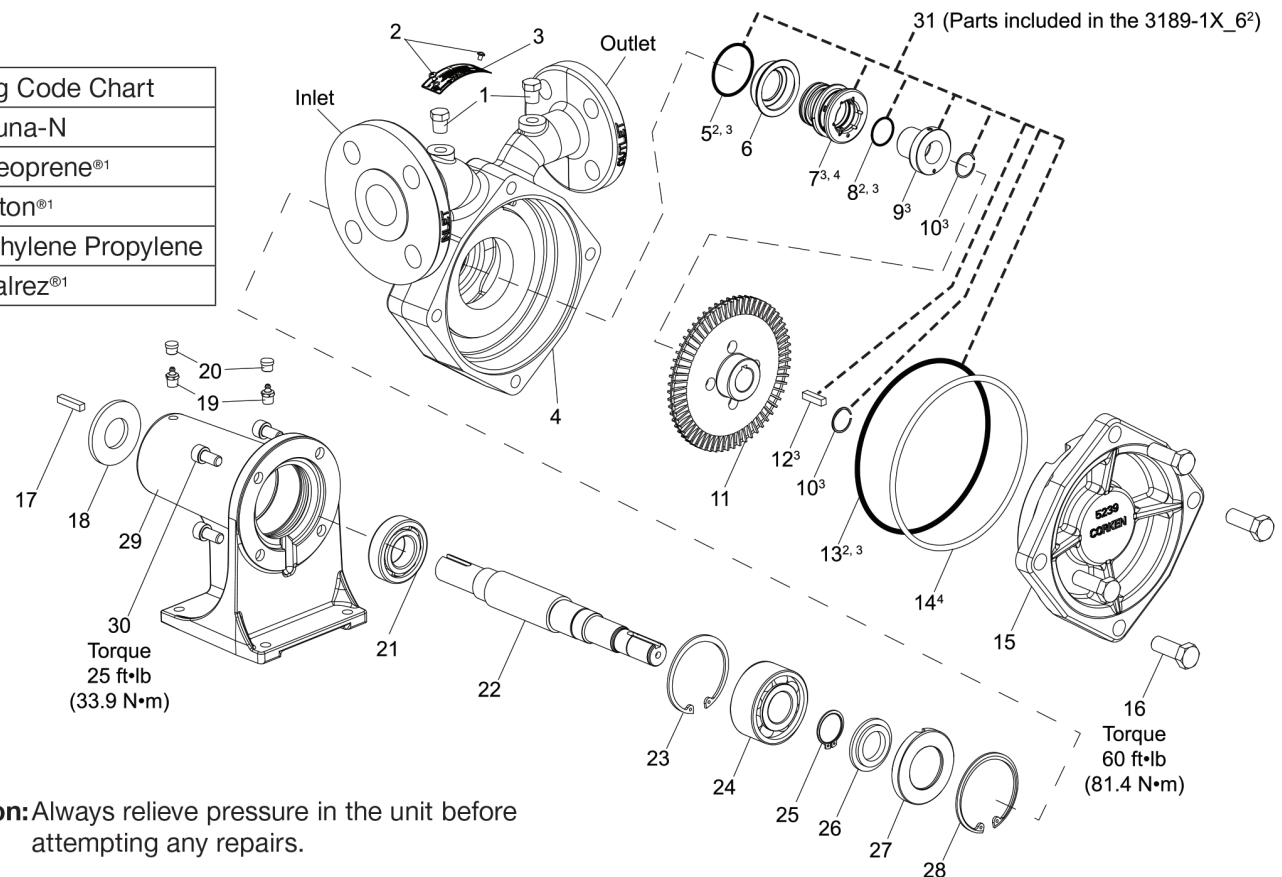
(1) Registered trademarks of the DuPont company.
 (2) _Denotes O-ring code.
 (3) Included in seal assembly kit 3189-1X_6. 2
 (4) The case clearance shim only applies to model prior to serial number prefix YU. For a complete explanation of Corken's serial number prefix codes, see "Policy and Prices" section of Corken's sales catalog or service manual.

Models: FF075, FF150



Pump & Compressors

O-ring Code Chart	
A	Buna-N
B	Neoprene ^{®1}
D	Viton ^{®1}
G	Ethylene Propylene
K	Kalrez ^{®1}



Caution: Always relieve pressure in the unit before attempting any repairs.

Part #	Ref. No.	Description	Qty.
3442	1	1/4" pipe plug	2
7012-0065F019E	2	Nameplate screw	2
1914-1	3	Nameplate	1
5238-060	4	060 Case — ANSI flange (FF)	1
5238-75	4	075 Case — ANSI flange (FF)	1
5238	4	150 Case — ANSI flange (FF)	1
5238-061	4	075 Case — DIN flange (FD)	1
5238-751	4	075 Case — DIN flange (FD)	1
5238-1	4	150 Case — DIN flange (FD)	1
2-133_	5 ^(2,3)	Seal housing — O-ring	1
5244-1X	6	Seal housing assembly	1
Not Sold Separately	7 ⁽³⁾	Seal sub assembly	1
2-018	8 ^(2,3)	Seal sleeve O-ring	1
Not Sold Separately	9	Seal sleeve assembly	1
2760-88	10 ⁽³⁾	7/8" retainer ring	1
5240-060	11	060 Impeller (bronze)	1
5240-75	11	075 Impeller (bronze)	1
5240	11	150 Impeller (bronze)	1
5240-061	11	060 Impeller (stainless steel)	1
5240-751	11	075 Impeller (stainless steel)	1
5240-1	11	150 Impeller (stainless steel)	1
5240-062	11	060 Impeller (steel)	1
5240-752	11	075 Impeller (steel)	1
5240-2	11	150 Impeller (steel)	1
4244	12 ⁽³⁾	Impeller key	1
2-260_	13 ^(2,3)	Case O-ring	1

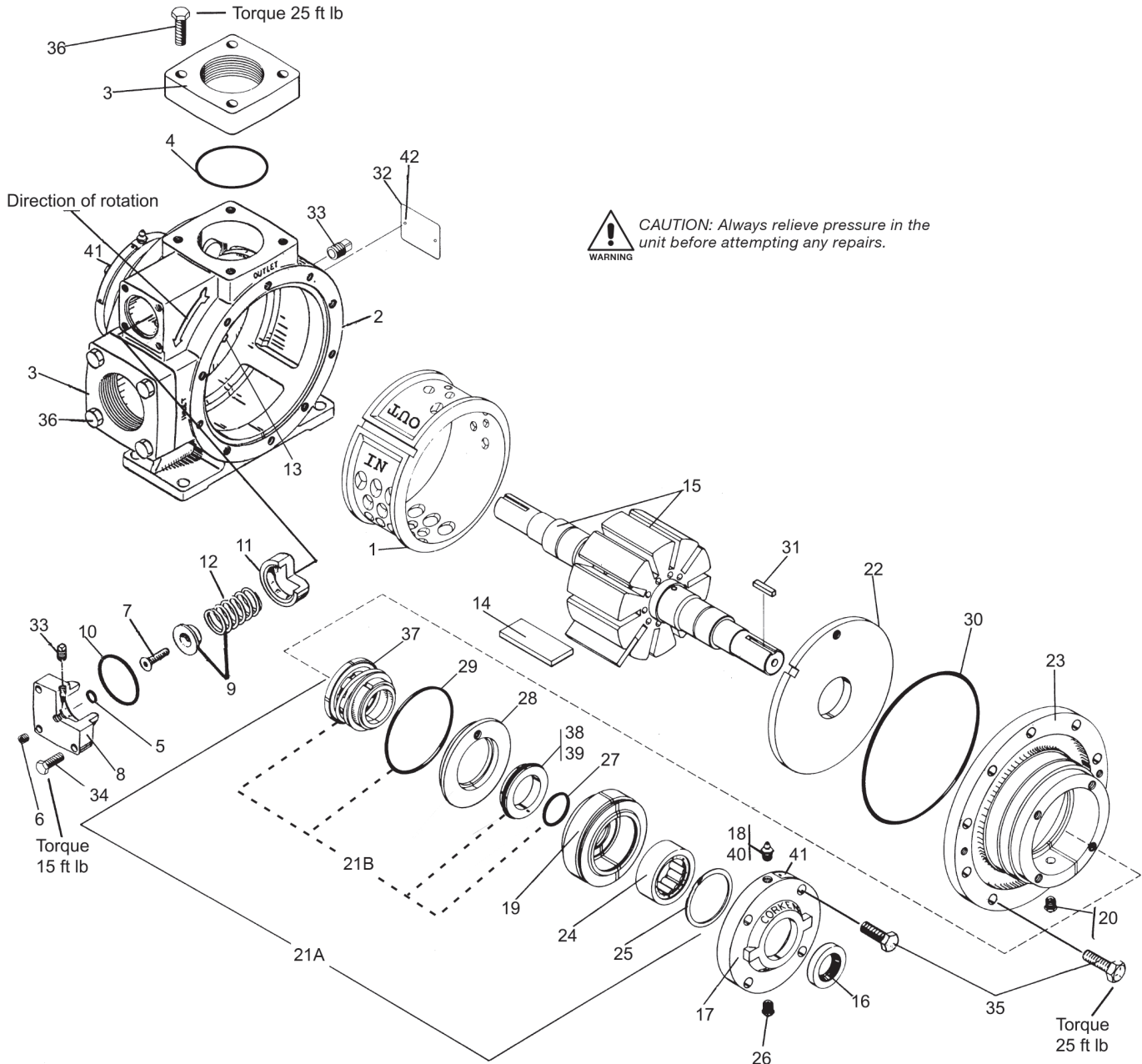
Part #	Ref. No.	Description	Qty.
5248	14 ⁽⁴⁾	Case clearance shim	1
5239-060	15	060 Cover	1
5239-75	15	075 Cover	1
5239	15	150 Cover	1
7301-140MC040A	16	M14-2 x 40mm hex head bolt	4
3226	17	Shaft key	1
3227	18	Bearing plate	1
2158	19	Grease zerk	1
2159	20	Lubricap	1
2759	21	Single row ball bearing	1
5241-1	22	Shaft	1
5000-281	23	Retainer ring	1
2758	24	Double row ball bearing	1
5102-118	25	Retainer ring	1
1006	26	Grease seal	1
1238	27	Bearing cap	1
5002-281	28	Retainer ring	1
1010-3	29	Mounting frame	1
7301-100MC025A	30	N10-1.5 x 25mm hex head bolt	4
3189-1X_6	31 ⁽²⁾	Seal assembly	1

(1) Registered trademarks of the DuPont company.

(2) _Denotes O-ring code.

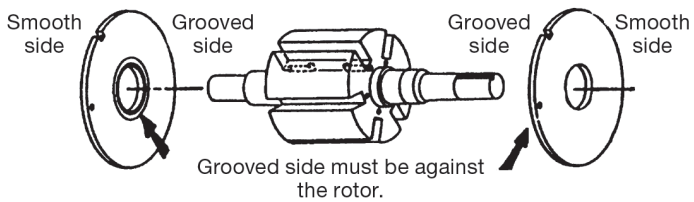
(3) Included in seal assembly kit 3189-1X_6. 2

(4) The case clearance shim only applies to model prior to serial number prefix YU. For a complete explanation of Corken's serial number prefix codes, see "Policy and Prices" section of Corken's sales catalog or service manual.

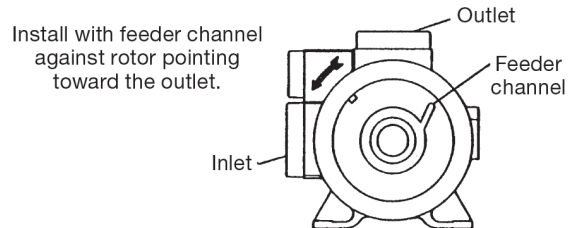


Sideplate Replacement Instructions

Model 521



Model 1021



Part #	Ref. No.	Description	Qty.
1162-2	1	Cam (521, 522)	1
1201-2	1	Cam (1021, 1022)	1
2832	2	Case (521, 522)	1
2841	2	Case (1021, 1022)	1
1172-2.5	3-b ⁽³⁾	2.5" Flange (521, 522)	1
1172-2	3-b ⁽³⁾	2" Flange (521, 522)	1
1206-3	3-c ⁽⁴⁾	3" Flange (1021, 1022)	2
2-234_	4 ⁽²⁾	Flange O-ring (521, 522)	2
2-245_	4 ⁽²⁾	Flange O-ring 3" (1021, 1022)	2
2-249_	4 ⁽²⁾	Flange O-ring 4" (1021, 1022)	2
2-112_	5 ⁽²⁾	Adjusting screw O-ring	1
2590	6	Flush seal plug 1/8" NPT	1
2252	7	Relief valve adjusting screw	1
1174	8	Valve Cap (521, 522)	1
1207	8	Valve Cap (1021, 1022)	1
1242-X	9	Relief valve spring & guide (521, 522)	1
1227	9	Relief valve spring & guide (1021, 1022)	1
2-224_	10 ⁽²⁾	Relief valve cap O-ring (521, 522)	1
2-228_	10 ⁽²⁾	Relief valve cap O-ring (1021, 1022)	1
1241	11	Relief valve (521, 522)	1
1224	11	Relief valve (1021, 1022)	1
1242	12	Relief valve spring (521, 522)	1
1226	12	Relief valve spring (1021, 1022)	1
1170	13	Cam key (521, 522)	1
1309	13	Cam key (1021, 1022)	1
1168-7	14	Blade (521, 522)	10
1308-9	14	Blade (1021, 1022)	10
1166-1X1R	15	Rotor & shaft assembly (521, 522)	1
1208-1X1R	15	Rotor & shaft assembly (1021, 1022)	1
1358	16	Grease seal	2
1164-1	17	Bearing cap	2
2158	18	Grease zerk 1/8" NPT	2
1769	19	Bearing housing	2
1343	20	Relief fitting (seal vent)	2
1769-X_	21 ^(1,2)	Seal assembly — replacement	2
1769-XR_	21 ^(1,2)	Seal assembly — replacement	2
1163-2	22 ⁽⁷⁾	Sideplate (521, 522)	2
1209-1	22 ⁽⁷⁾	Sideplate (1021, 1022)	2
1161-4	23	Head (521, 522)	2
1205-4	23	Head (1021, 1022)	2
2754-X	24	Roller bearing — complete	2

Part #	Ref. No.	Description	Qty.
2755	24	Bearing inner race	2
2754	24	Bearing outer race	2
2760-244	25	Retainer ring	2
1343	26	Relief fitting (grease)	2
2-128_	27 ⁽⁶⁾	Shaft O-ring	2
1822	28	Seat adapter plate O-ring	2
2-240_	29 ⁽²⁾	Adapter plate O-ring	2
2-261_	30 ⁽²⁾	Case O-ring (521, 522)	2
2-268_	30 ⁽²⁾	Case O-ring (1021, 1022)	2
2270	31	1/4" key	2
2949	32	Nameplate	1
3442	33	1/4" NPT plug	1
7001-031 NC125A	34	Hex head bolt 5/16-18 x 1-1/4" (521, 522)	4
7001-037 NC125A	34	Hex head bolt 3/8-16 x 1-1/4" (1021, 1022)	4
7001-037 NC125A	35	Hex head bolt 3/8-16 x 1-1/4" (521, 522)	28
7001-037 NC125A	35	Hex head bolt 3/8-16 x 1-1/4" (1021, 1022)	32
7001-037 NC150A	36	Hex head bolt 3/8-16 x 1-1/2"	8
Not Sold Separately	37	Retainer	2
Not Sold Separately	38	Seal seat	2
2-227_	39 ⁽²⁾	Seal seat O-ring	2
2159	40	Lubricap #2	2
1359	41	Lubrication instruction tag	2
7003-004 DR0198	42	Round head plated drive screw 4 x 3/16"	2

(1) Seal assembly kits available in two forms

a. Complete seal kit including bearing housing, seat adapter plate, bearings, retainer ring, seal and O-rings. Part number 1769-X_ (2)

b. Field replacement seal assembly containing only the seal and O-rings. Part number 1769-XR_ (2)

(2) _Denotes O-ring code.

(3) Optional flanges, (521, 522):

1172-1.5	1-1/2" NPT
1172-1.5S	1-1/2" Weld
1172-2	2" NPT
1172-2S2	2" Weld
1172-2.5	2-1/2" NPT
1172-2.5S	2-1/2" Weld

(4) Optional flanges, (1021, 1022):

1206-3S	3" Weld
1206-4	4" NPT
1206-4S	4" Weld

(5) Registered trademarks of the DuPont company.

(6) Available in Buna-N only

(7) Sideplate Instructions

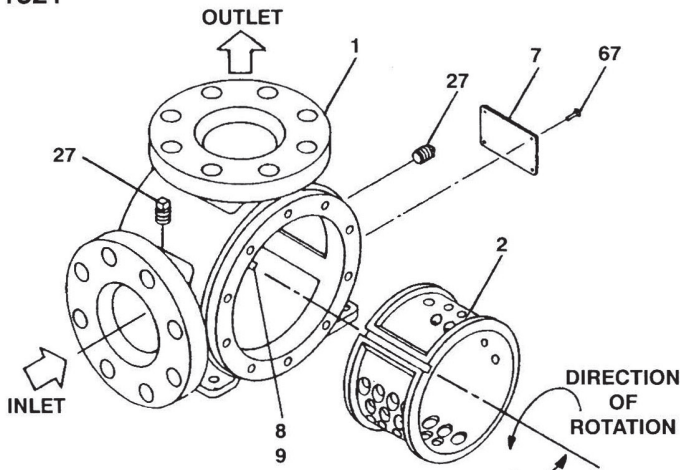
Models: F1521, T1522

(Discontinued. Replaced by Z4200)

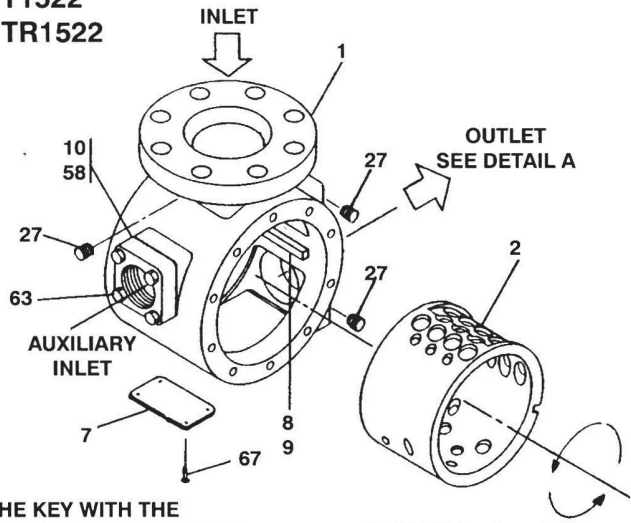


Pump & Compressors

F1521



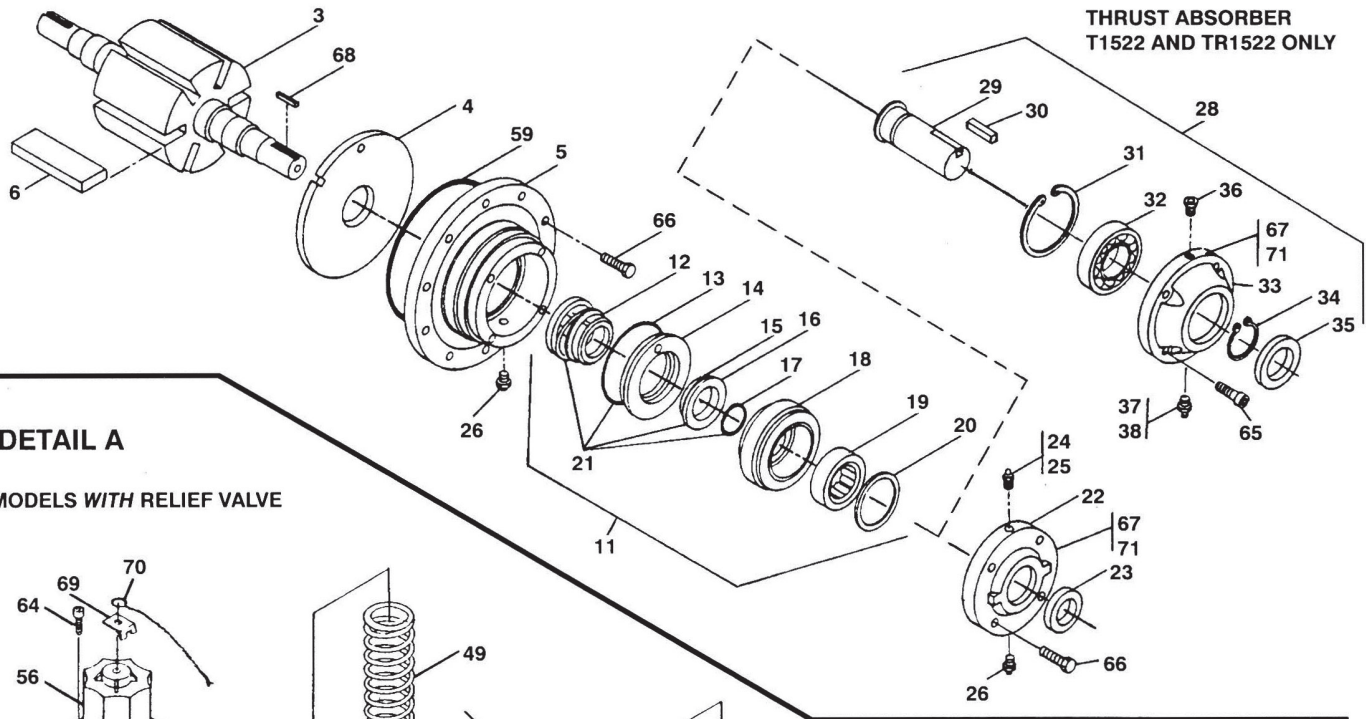
T1522 TR1522



NOTE: ALIGN THE CAM ON THE KEY WITH THE LARGEST GROUP OF HOLES NEAR THE INLET.

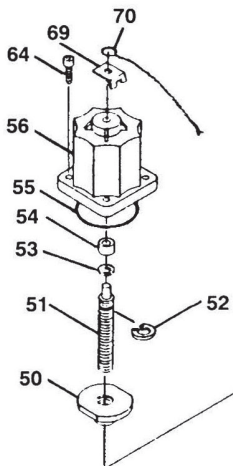
DIRECTION OF ROTATION

THRUST ABSORBER T1522 AND TR1522 ONLY

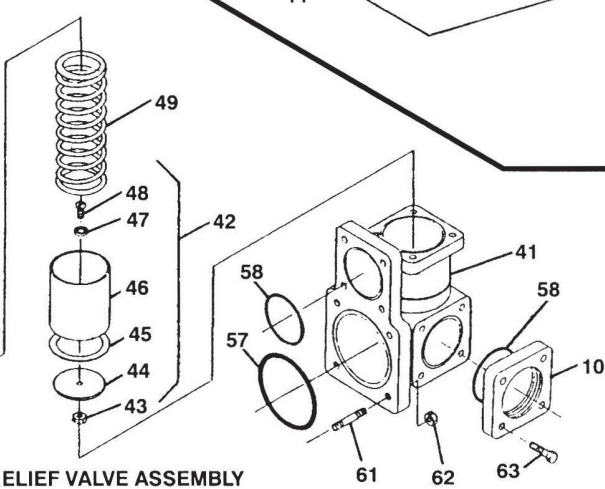


DETAIL A

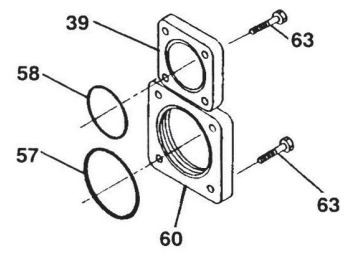
MODELS WITH RELIEF VALVE



40 RELIEF VALVE ASSEMBLY



MODELS WITHOUT RELIEF VALVE



Models: F1521, T1522

(Discontinued. Replaced by Z4200)



Part #	Ref. No.	Description
2437	1	Case (T1521)
1923	1	Case (T1522)
1792-1	2	Cam
3350-X1R	3	Rotor-shaft assembly (T1521)
3350-X2R	3	Rotor-shaft assembly (T1522)
3476-R	4	Sideplate
3476-L	4	Sideplate
1205-4	5	Head
3477	6	Blade
2649	7	Nameplate
1880	8	Cam key
3253	9	Cam key pin
1172-2	10 ^(b)	Flange — 2" NPT (T1522)
1769-X	11 ^(a)	Seal assembly
Not Sold Separately	12	Seal retainer
2-240_	13 ^(e)	Adapter plate O-ring
1822	14	Seat adapter plate
2-223_	15 ^(e)	Seal seat O-ring
Not Sold Separately	16	Seat
2-128_	17 ^(e)	Shaft O-ring
1769	18	Bearing housing
2754	19	Bearing outer race
2760-244	20	Retaining ring
1769-X	21 ^(a)	Field replacement seal assembly (includes seal, seat, O-ring)
1164-1	22	Bearing cap
1358	23	Grease seal
2158	24	Grease zerk 1/8" NPT
2159	25	Lubricap #2 (Not shown)
1343	26	Relief fitting
3448	27	1/4" NPT Plug
254-X2	28	Thrust absorber
1958-X2	29 ^(d)	Shaft keyway
2623	30	5/16" Key
5102-177	31	Retainer ring
3209	32	Ball bearing
1957	33	Bearing cap
5002-334	34	Retainer ring
2014	35	Grease seal
1343	36	Relief fitting — thruster absorber
2158	37	Grease Zerk (1/8" NPT)
2159	38	Lubricap #2 (Not Shown)
1920	39	Blind flange
178-X	40	Relief valve assembly
1787	41	Relief valve manifold
1699-X	42	Plunger assembly
1873	43	Nut
1703	44	Retainer plate
1700	45	Set, PTFE
1699	46	Plunger assembly

Part #	Ref. No.	Description
2732	47	Gasket
1872	48	Plunger bolt
1839	49	Spring
1701	50	Spring seat
1878	51	Adjusting screw
5133-87	52	Retainer ring
1789	53	Stem washer
1887	54	Stem seal
2-238_	55 ^{(b)(e)}	O-ring
1796	56	Relief valve bonnet
2-245_	57 ^(e)	O-ring — 3" Flange or relief valve
2-249_	57 ^(e)	O-ring — 4" Flange
2-234_	58 ^(e)	O-ring — 2" Flange
2-268_	59 ^(e)	O-ring — Case
1206-3	60 ^(c)	Flange — 3" NPT
2018	61	Stud, 3/8" x 2-1/4" Relief valve
7101-037 NC01A	62	Nut, 3/8-16 relief valve
7001-037 NC150A	63	Bolt, 3/8-16 x 1-1/2" hex head
7002-037 NC100A	64	Bolt, 3/8-16 x 1" SOC head
7002-037 NC125A	65	Bolt, 3/8-16 x 1-1/4" SOC head
7001-037 NC125A	66	Bolt, 3/8-16 x 1-1/4" hex head
7012-006 SF025E	67	Drive screw #4 C 3/16" RD head
2270	68	1/4" key
2080	69	Lock
3546	70	Seal wire
1359	71	Lubrication instruction tag

(a) Seal assembly kits available in two forms

Complete seal kit including bearing housing, seat adapter plate, bearings, retainer ring, seal and O-rings. Part number 1769-X_. (e)

Field replacement seal assembly containing only the seal and O-rings. Part number 1769-XR_. (e)

(b) Optional flanges:

1172-1.5	1-1/2" NPT
1172-1.5S	1-1/2" Weld
1172-2S	2" Weld
1172-2.5	2-1/2" NPT
1172-2.5S	2-1/2" Weld
1947-1.5	Flanged E11 — 1-1/2" NPT
2008	Flanged E11 — 2" NPT
1920	Blind flange

(c) Optional flanges:

1206-3S	3" Weld
1206-4	4" NPT
1206-4S	4" Weld

(d) Optional:

1958-X1 Shaft — 1-3/8"-6B Spine

(e) _ Denotes O-ring code.

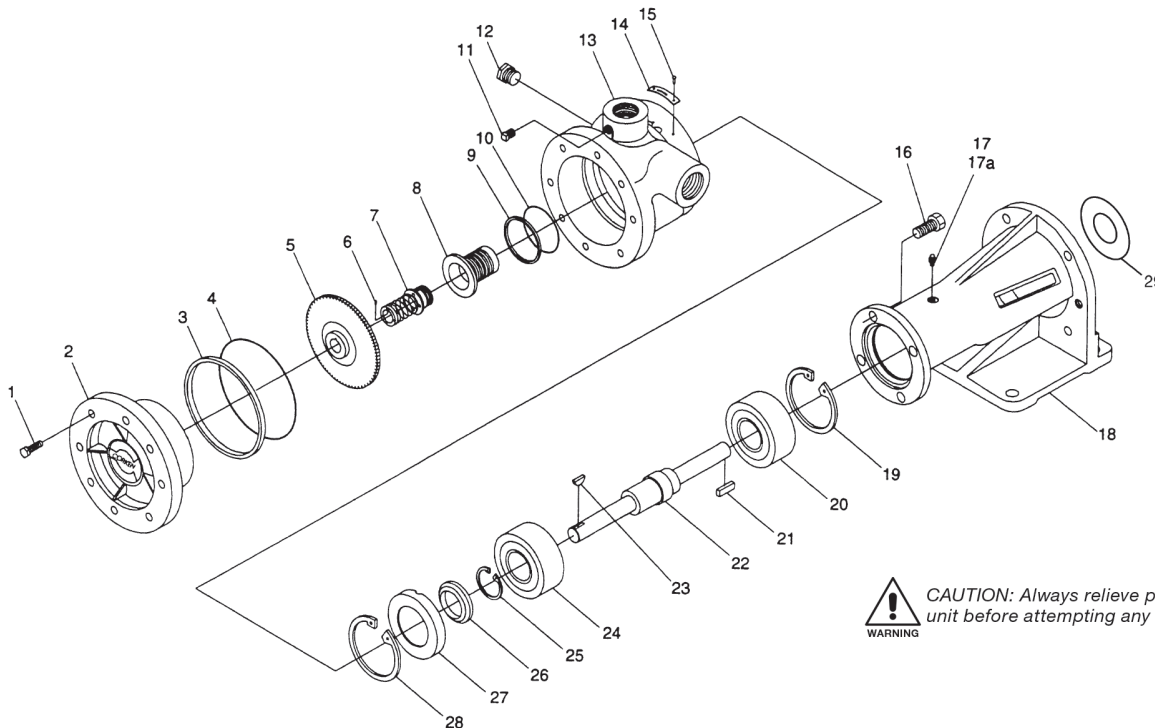
(f) Registered trademarks of the DuPont company.

Corken Pump Repair

Model: DL16



Pump & Compressors



CAUTION: Always relieve pressure in the unit before attempting any repairs.

Part #	Ref. No.	Description	Qty.
7001-031NC100A	1	Hex head cap screw	8
1001-6	2	Cover - Model 16	1
1014	3 (c)	Case clearance shin (0.002-Red)	As Req.
1014-1	3 (c)	Case clearance shim (0.003-Green)	As Req.
2-246_	4 (a)(c)	Case O-Ring (non PTFE)	1
2-247	4 (a)(c)	Case O-Ring (PTFE)	1
1003-6	5 (d)	Impeller - Model 16	1
1009	6	Seal Pin	1
113-CX_6	7 (a)	Seal assembly (aluminum sleeve)	1
113-CX_6A	7 (a)	Seal assembly (stainless steel sleeve)	1
1004-1X	8	Seal housing steel (for non-PTFE O-rings)	1
1004-11X	8	Seal housing stainless steel (for non-PTFE O-rings)	1
1004-2X	8	Seal housing steel (for PTFE O-rings)	1
1004-21X	8	Seal housing stainless steel (for PTFE O-rings)	1
1013	9	Housing adjustment shim (0.010)	As Req.
1013-1	9	Housing adjustment shim (0.020)	As Req.
2-224_	10 (a)(c)	O-ring (housing)	1
3442	11	Pipe plug 1/4"	1
3444	12	Pipe Plug 3/4"	1
1002-6	13	Case - Model 16	1
1914-1	14	Name plate	1
7012-0065F019E	15	Phillips head scre 6-32 x 1/4"	2
7001-037NC100A	16	Hex head mounting bolts	4

Part #	Ref. No.	Description	Qty.
2158	17	Grease zerck	2
2159	17A	Lubricap	2
4298	18	Mounting frame - DL	1
5002-281	19	Bearing retainer ring	1
4378	20	Bearing	1
3226	21	Key	1
4303	22	Shaft	1
2497	23 (c)	#5 Woodruff key, steel	1
3497-1	23 (c)	#5 Woodruff key, stainless steel	1
2758	24	Bearing	1
5102-118	25	Bearing retainer ring	1
1006	26	Grease seal	1
1238	27	Bearing cap	1
5000-281	28	Bearing retainer ring	1
4377	29	Bearing plate	1

(a) _denotes O-ring. See O-ring chart for details.

O-RING CODES
A - Buna-N
B - Neoprene®(b)
D - Viton®(b)
E - PTFE
G - Ethylene Propylene
F - Kalrez®(b)

(b) Registered trademark of the DuPont Company.

(c) Included with seal assembly/repair kit.

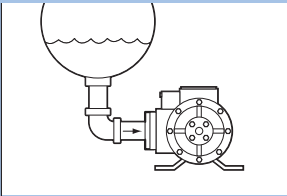
(d) Add a 1 to # for iron or a 2 for stainless steel

Quick Reference Guide For Trouble Free Operation

Make sure you are thoroughly trained before you attempt any pump installations. Improper conditions or procedures can cause accidents resulting in property damage and personal injury.

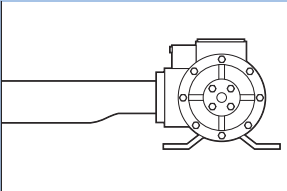
ALWAYS FOLLOW ORIGINAL EQUIPMENT MANUFACTURER'S GUIDELINES.

Inlet Piping



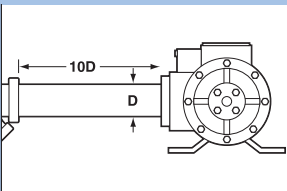
PUMP LOCATION

- Underneath and as close to the supply tank as possible.
- Inlet to the pump is very important.



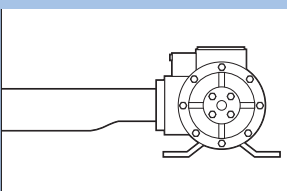
INLET PIPE SIZE

- Same as pump inlet connection or one pipe size larger.

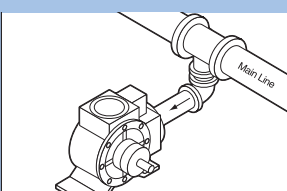


INLET PIPING
Use full port ball valves.

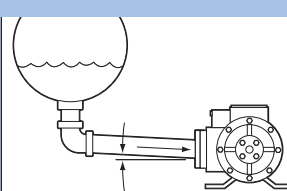
- Use strainer on inlet 10X pipe diameter from pump inlet
- Last valve, fitting, elbow should also be 10X the pipe diameter away from the inlet



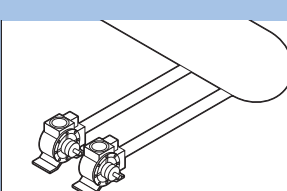
- If using a reducer at the pump inlet, use an eccentric reducer flat side up.



- When using a piping tee off a supply line, come off the bottom of the piping for liquid.



- Have inlet piping slope downward towards the pump inlet.

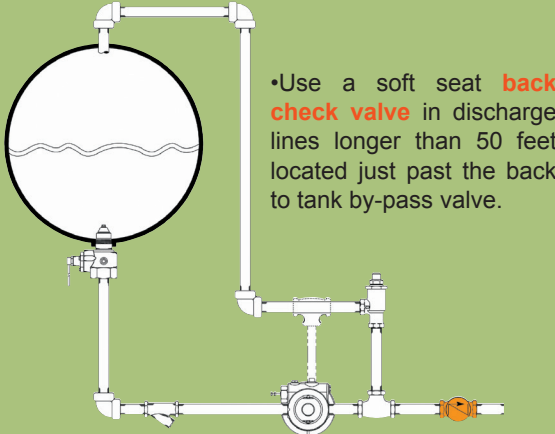


- Use separate liquid lines to supply each pump when using more than one pump at one time.

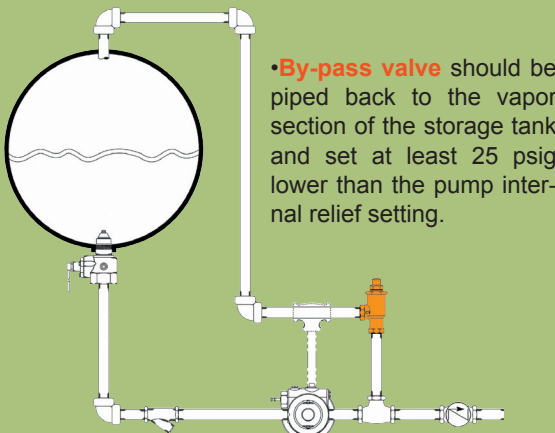
Above illustrations courtesy of Corken, Inc., a Unit of IDEX Corporation.

Discharge Piping

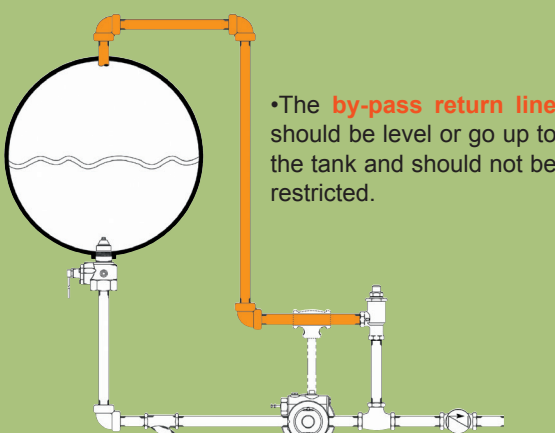
- A differential by-pass valve must always be installed in a pumping system.
- Can use smaller piping on discharge side of the pump - watch total distance from pump to filling point.



- Use a soft seat **back check valve** in discharge lines longer than 50 feet located just past the back to tank by-pass valve.



- By-pass valve** should be piped back to the vapor section of the storage tank and set at least 25 psig lower than the pump internal relief setting.



- The **by-pass return line** should be level or go up to the tank and should not be restricted.

Above illustrations courtesy of Blackmer, PSG, a Dover Company.

Introduction

Most LP Gas & anhydrous systems use pumps to move liquid from one location to another. Unloading transport trailer tanks into plant storage, loading delivery trucks, filling bulk tanks, engine fuel tanks, portable cylinders, etc. & pressurizing LP Gas vaporizers are only a few applications. A well-designed & properly installed pumping system will perform well for some time, but eventually problems occur requiring attention.

Determining the problem and fixing it will take time and be confusing, unless one knows clearly how to proceed. The purpose of this technical guide is to provide simple, guidelines for correcting LP Gas & anhydrous ammonia pumping difficulties.

The procedure includes a preliminary checklist to help find out if the problem can be fixed without taking anything apart. Then, it shows how to zero in on more serious problems by using a few pressure gauges to pinpoint the cause.

Before trouble occurs, equip the pumping system for easy pressure gauge installation. Small manual shutoff valves can be installed at proper locations, with plugs inserted in the outlets. This allows simple placement of pressure gauges without removing the LP Gas or anhydrous ammonia from the system at the time trouble occurs, saving a lot of time and money. Pressure gauges should be installed temporarily when the system is first installed, and pressure readings recorded while the system is working properly. Then, in many cases, comparing pressures with original readings may tell what the trouble is.

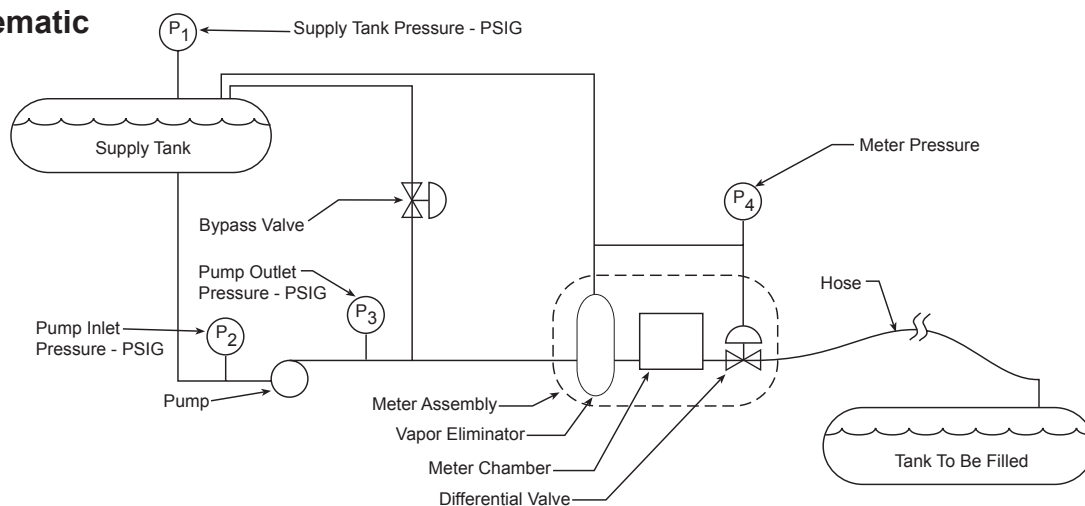
Note: Figure 1 shows where pressure gauges should be installed and provides blank spaces to record pressure gauge readings from the original tests.

The pressure gauges should not be used continuously, because vibrations and the ravages of weather cause their damage or ruin. Therefore, as soon as the initial tests are complete, it is best to close the shutoff valves, remove the gauges, plug the valves and keep the gauges in a safe place, ready for troubleshooting when really needed. Diagnosing a problem is easier if the original test results are available, but not essential. It requires more time and effort.

Be sure to obtain and keep available for quick referral the Manufacturer's Operation and Service Manuals for the valves, pump, meter and all operating equipment in the system. To avoid delays, maintain a complete stock of recommended spare parts on hand for quick repairs.

Follow the steps as shown. Don't assume the answer is known beforehand, or skip any applicable steps. Rather, be thorough and methodical, and in most instances, you will solve the problem. On the other hand, if you have done all of this and still haven't worked out your problem, feel free to call Gas Equipment Company or Engineered Controls International, Inc. direct. We will do our best to help. Perhaps, between us, we will be able to solve your problem and add something new to the procedure which could help everyone in the future.

Pump System Schematic



A



Tank pressure doesn't change



Pump inlet pressure decreases



Pump outlet pressure does not change

The trouble is most likely in the inlet line. It could be:

- The pump may be running at a speed too low to develop differential pressure.
- An inlet strainer is clogged.
- A valve is partially closed somewhere in the inlet line.
- Ice has formed either in the bottom of the supply tank or somewhere in the inlet line. This is common particularly when the tank has been hydrostatically tested or purged with steam & not completely drained & dehydrated.
- If a Flomatic valve is used, it may not be opening for a number of reasons:
 - Pressure in the tank to be filled may be considerably less than that in the supply tank, making it impossible for the pump to develop sufficient differential pressure to open the valve (simply throttle a manual valve on the discharge line to cause the pump to develop enough differential pressure to open the Flomatic valve. As the pressure in the tank to be filled goes up, it will be possible to re-open the valve in the discharge line.)
 - The pump by-pass valve may be blocked open or have broken or damaged parts, preventing the pump from developing sufficient differential pressure to open the Flomatic valve. (Pump outlet pressure must rise at least 21 PSI to open the Flomatic valve.)
 - The Flomatic strainer, filter, three-way valve or other element in the actuating line is clogged, or the actuating line is kinked.
 - The Flomatic valve internal parts may be damaged or worn. (Refer to Rego installation manual #A7884F-301 for flanged valves or #L-451 for diaphragm-type threaded valves for repair instructions.)
- If an internal valve is used, the main valve may not be opening due to insufficient equalization time, broken or damaged valve parts, valve lever in closed position or insufficient excess flow sizing.

Note: Meter pressure is not needed for this condition.

B



Tank pressure doesn't change



Pump inlet pressure doesn't change



Pump outlet pressure goes up a little

The trouble is most likely related to the pump or bypass valve. It could be:

- The pump may have excessively worn parts.
- The internal by-pass valve in the pump may be blocked open by foreign material, or may have broken or damaged parts.
- The back-to-tank by-pass valve may be blocked open by foreign material or may have broken or damaged parts.
- The manual by-pass valve, if so equipped, may be open.

NOTE: Meter pressure is not needed for this condition.

Basic Assumption

The pumping system did work OK, but now the transfer rate is considerably less, or the system won't pump at all.

Preliminary Review

- Check the supply tank liquid level. The transfer rate could be considerably reduced if the level is low, due to bubbles in the line, because of insufficient liquid head, or a vortex effect in the tank. Remember, reduction in the pumping rate from these causes will be more extreme in cold weather (tank pressures are low).
- Examine the pump drive to make sure the pump is rotating properly. Inspect for loose drive belts, damaged or broken flexible couplings or universal joints, broken drive keys & damaged or inoperative power take-off or pump clutch, etc.
- If the system is equipped with the Rego Flomatic Valve.
 - Three-way valve handle should be straight out, allowing the valve to open.
 - Check the position indicator on the Flomatic Valve when the pump is running. If the indicator shows that the valve is open, the trouble must be downstream of the valve.
- Make sure the priming valve is open, allowing pressure to equalize between the tank and pump inlet.
- If the system is equipped with internal valves, make sure the operating lever moves to a full open position. Repair if needed.
- Make sure all valves in the system are either open or closed as required for normal operation. Check each valve in sequence, starting from the supply tank, making sure that no valve element is missed.

If the cause of the problem has not been determined during preliminary review, it will be necessary to conduct diagnostic tests, using pressure gauges at key points in the system.

Diagnostic Tests

Open all valves as required for proper pumping operation. Gauges should show tank pressure, pump inlet pressure, pump outlet pressure and meter pressure to be equal.

Start the pump and observe all pressure gauges. Match results with conditions A, B, C, or D. Follow the appropriate steps.

Final Results

Make repairs or adjustments as needed, and test the system's operation. Record a new set of test pressures for future reference, and other replacements for all space parts used. The system now is ready to return to service.

C



Tank pressure doesn't change



Pump inlet pressure doesn't change



Pump outlet pressure rises substantially



Meter pressure rises substantially

The trouble is most likely in the meter vapor eliminator or meter differential valve. It could be:

- The meter's vapor eliminator may be malfunctioning. If the valve at the outlet of the vapor eliminator does not seat when the vapors have been purged, the differential valve downstream of the meter will not open. Such failure could be caused by a damaged vapor eliminator valve seat, foreign material blocking the vapor eliminator valve, a leak in the ball float, or a jammed or binding linkage between the ball and valve.
- The diaphragm could be ruptured, or other parts could be damaged or broken in the differential valve downstream of the meter.

D



Tank pressure doesn't change



Pump inlet pressure doesn't change



Pump outlet pressure rises substantially



Meter pressure rises substantially

The problem is probably downstream of the pump. Look for a closed valve, or some type of blockage in the discharge line. It could be:

- The meter strainer may be clogged.
- A back check valve at the inlet of the meter may be blocked, closed, or jammed.
- The meter rotor may be jammed by foreign material, preventing it from moving properly, which would prevent or retard flow.
- The drive key on the meter gears may be sheared. (In this case, flow would actually be moving through the meter but not registering.)
- The differential valve downstream of the meter may be closed due to damage, foreign material or ice.
- If screw type hose fittings are used, it is extremely important that they be installed properly. If not, it is possible that a flap of rubber may be cut from the inside diameter of the hose, acting as a back check. It can flap across the discharge line, effectively stopping the flow.
- Check the hose nozzle valve, if so equipped. In some brands, a bent handle or other defect may prevent the inner valve from opening sufficiently to allow a proper amount of flow.
- The problem could be in the valve assemblies in the tank to be filled. If you are dealing with a delivery truck application, move to another tank and see whether the problem still exists. If not, it may be a problem with one specific tank, rather than the pumping system.
- Some delivery trucks are equipped with a quick-acting valve immediately upstream of the hose reel. Make sure that this valve is open.
- Some delivery trucks are equipped with excess flow valves between the meter & hose reel. Improper sizing, a weak spring, or other valve damage can cause this valve to close prematurely, effectively stopping the flow.
- If, with a delivery truck system, the flow reduced considerably while the tank is being filled, it is possible that the back-to-tank by-pass valve is not set high enough to compensate for vapor pressure buildup in the tank being filled. This can be solved merely by adjusting the by-pass valve at a slightly higher level.

Warning: Do not raise the back-to-tank by-pass setting high enough to cause the internal relief valve in the pump to actuate. Excessive cavitation, loss of capacity and premature pump wear can occur.

Final Results

Make repairs or adjustments as needed, and test the system's operation. Record a new set of test pressures for future reference, and other replacements for all space parts used. The system now is ready to return to service.

SERO Side Channel Pumps

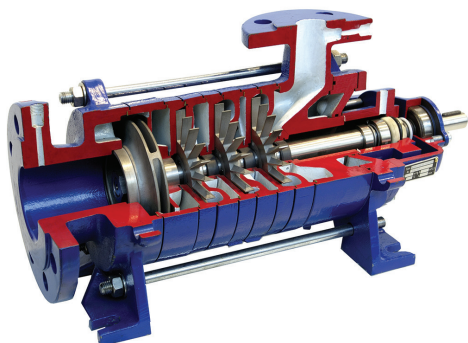
Replaces Corken's SC Series Side Channel Pump



SERO Pumps are a proven state-of-the-art multi-stage, radially split segmented pump that combines the functionality of a low NPSH first stage impeller with the performance of a side channel design.

Magnetically Driven Side Channel Pump

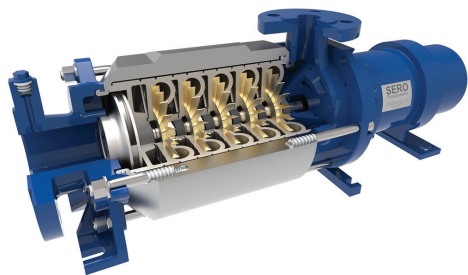
Sealless Side Channel Pump Designed for Zero Emission Services



Part #	Number of Stages	Suction Flange	Discharge Flange	Max RPM (60Hz)	Maximum Working Pressure (PSI)	Capacity Range GPM (M3/H)	Head Range at Min Flow, FT	Temperature Range	Maximum Allowable Entrained Vapor
SEMA-S110	1 To 8	1-1/2"	3/4"	1750	580	6-12	100-740	-75°F - 410°F	.5
SEMA-S220	1 To 8	2-1/2"	1-1/4"	1750	580	13-24	140-1080	-75°F - 410°F	.5
SEMA-S330	1 To 8	2-1/2"	1-1/4"	1750	580	26-40	110-790	-75°F - 410°F	.5
SEMA-S440	1 To 8	3"	1-1/2"	1750	580	47-64	105-800	-75°F - 410°F	.5
SEMA-S550	1 To 8	4"	2"	1750	580	76-106	130-1000	-75°F - 410°F	.5
SEMA-S660	4	4"	2-1/2"	1750	580	130-186	160-600	-75°F - 410°F	.5

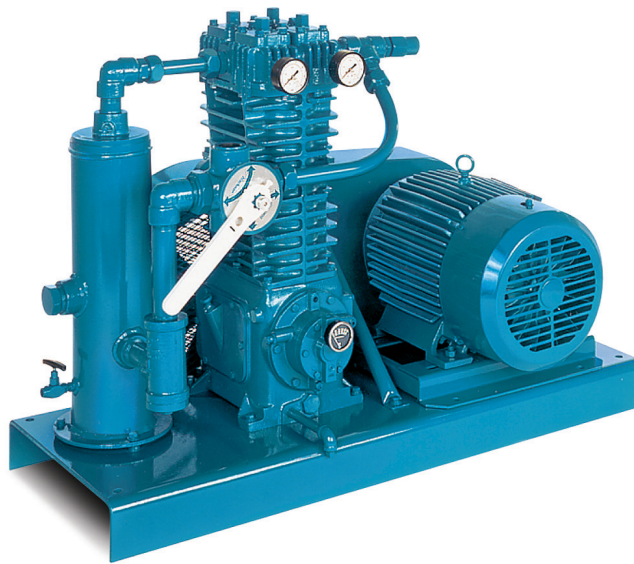
Multifunction Side Channel Pump

Side Channel Pump Designed for Critical Process Services



Part #	Number of Stages	Suction Flange	Discharge Flange	Max RPM (60Hz)	Maximum Working Pressure (PSI)	Capacity Range GPM (M3/H)	Head Range at Min Flow, FT	Temperature Range	Maximum Allowable Entrained Vapor
SRZS-110	1 to 8	1-1/2"	3/4"	1750	580	6-12	100-740	-10° - 430° F	50%
SRZS-220	1 to 8	2-1/2"	1-1/4"	1750	580	13-24	140-1080	-10° - 430° F	50%
SRZS-330	1 to 8	2-1/2"	1*1/4"	1750	580	26-40	110-790	-10° - 430° F	50%
SRZS-440	1 to 8	3"	1-1/2"	1750	580	47-64	105-800	-10° - 430° F	50%
SRZS-550	1 to 8	4"	2"	1750	580	76-106	130-1000	-10° - 430° F	50%
SRZS-660	1 to 8	4"	2-1/2"	1750	580	130-186	160-1150	-10° - 430° F	50%

Single-Stage Reciprocating Compressor



Blackmer oil-free compressor for high performance transfer and vapor recovery of Propane, Butane, Anhydrous Ammonia and other liquefied gases.

Stationary Base Mounting

Compressors are factory mounted for all three of its oil-free compressor models. The stationary base mounting includes liquid trap, four-way valve, belt guard, adjustable motor slide base, V-belt drive assembly including motor sheave and hub, strainer, valves, pressure gauges and interconnecting piping all mounted on a unit base.

Blackmer compressors may be adapted for either direct drive or V-belt drive applications.

Transport Mounting

Blackmer compressors can be transport-mounted. All models of

Part #	Speed (RPM)	Approx Delivery ¹		Motor HP ²	Pipe Diameter ³	
		GPM	LPM		Vapor	Liquid
LB-161-LU	425*	49	186	3	1"	2"
LB-161-LU	560	65	246	5	1"	2"
LB-161-LU	715*	63	314	5	1.25"	2"
LB-161-LU	780	90	341	7.5	1.25"	2"
LB-161-LU	825*	92	348	7.5	1.25"	2"
LB-361A-LU	495*	123	466	7.5	1.25"	2.5"
LB-361A-LU	540	134	507	10	1.25"	2.5"
LB-361A-LU	650*	161	609	10	1.5" - 2"	3"
LB-361A-LU	780	194	734	15	1.5" - 2"	3"
LB-361A-LU	825*	205	761	15	1.5" - 2"	3"
LB-601A-LU	550	245	937	15	2" - 2.5"	4"
LB-601A-LU	640	285	1079	20	2" - 2.5"	4"
LB-601A-LU	735*	327	1238	20	2" - 2.5"	4"
LB-601A-LU	790	351	1329	25	2" - 2.5"	4"
LB-942-LU	470	400	1514	25	3" - 4"	6"
LB-942-LU	565	480	1817	30	3" - 4"	6"
LB-942-LU	750	640	2422	40	3" - 4"	6"
LB-942-LU	825	700	2650	50	3" - 4"	6"

1. Delivery will depend on proper system design, piping size and value capacity.

2. HP is for liquid transfer and vapor recovery in moderate climates. Consult your GEC representative for HP requirements in severe climates. For liquid transfer applications without vapor recovery, multiply by 0.4.

3. Use next larger pipe size if piping exceeds 100 feet.

* Indicates maximum RPM for respective motor HP.

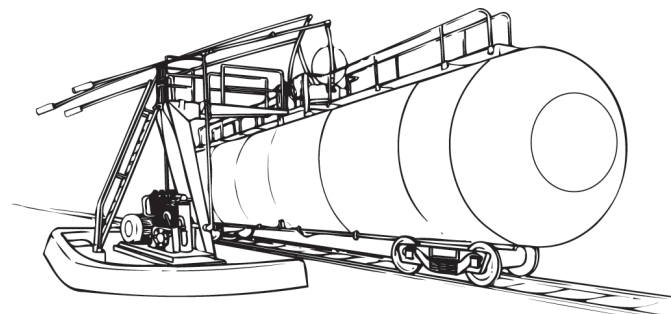
Propane Vapor Recovery

- 33,000 water gallon capacity (124,915 lts.) tank car.
- Blackmer LB-361 Gas Compressor, 36 CFM Piston Displacement.
- The chart indicates the volume of recoverable liquid and recovery time required at various pressures.

Beginning Tank Pressure	Total Product* (in Vapor Form)		Economically Recoverable Product**	
	PSIG	Gallons	Liters	Gallons
200	1650	6246	1153	4365
175	1485	5621	969	3668
150	1315	497	845	3199
125	1137	4304	713	2699
100	953	3607	580	2196
75	760	2877	441	1659
50	561	2124	419	1586

* Physical properties based on NFPA #58 data for commercial propane.

** Economically recoverable product based on reduction of tank pressure to 25% of original value. Residual liquid not included.

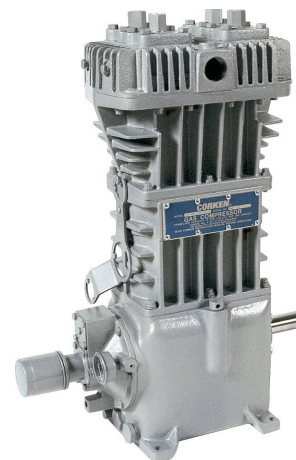
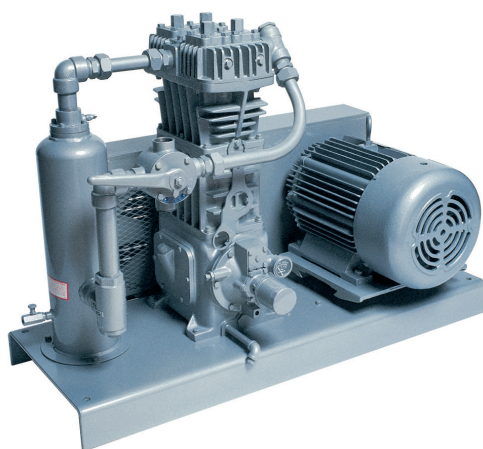


If, for example, after the liquid transfer phase of the unloading operation is complete, the vapor pressure reads 150 psig, there would be approximately 1315 gallons of LP Gas in vapor form remaining in the tank car. Of this, 845 gallons can be economically recovered in less than three hours.

Corken Compressors

CORKEN

A compressor unit for liquid transfer and residual vapor recovery of volatile liquids.



SPECIFY MOTOR HORSE POWER TO BE USED.

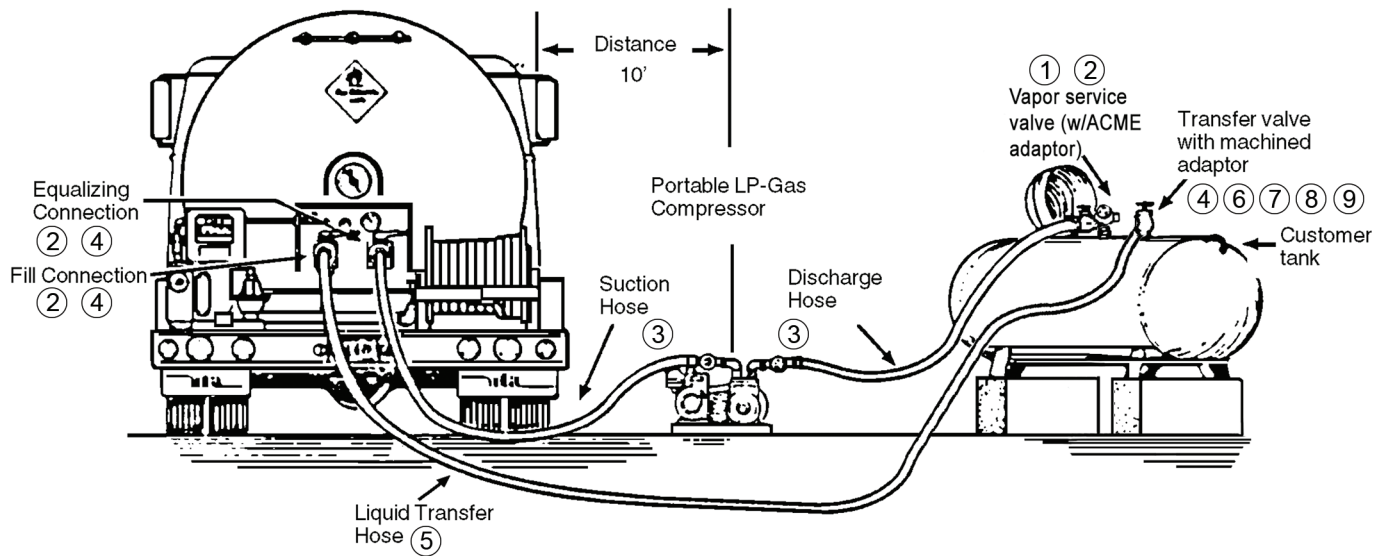
LP-Gas Compressors - Sized for Liquid Transfer and Vapor Recovery

Part #	Comp RPM	Approx. Capacity GPM	HP	Phase	Suggested Pipe Size Inlet	Outlet	Hose Size Liquid	Vapor
91-107	640	30	5	3/1	1"	1.5"	1"	1.5"
91-107	800	38	7.5	3	1"	1.5"	1"	1.5"
291-107	640	61	7.5	3	1.25"	2"	1.25"	2"
291-107	800	76	10	3	1.25"	2"	1.25"	2"
491-107	640	130	15	3	1.25"	3"	1.25"	3"
491-107	800	165	20	3	1.25"	3"	1.25"	3"
691-107	640	216	20	3	2"	4"	2"	4"
691-107	800	270	25	3	2"	4"	2"	4"
D791-107*	640	480	30	3	3"	4"	3"	6"
D791-107*	800	598	40	3	3"	4"	3"	6"
891-107	640	415	25	3	3"	4"	3"	6"
891-107	800	518	40	3	3"	4"	3"	6"

NOTE: The capacity shown will vary depending on the length and size of piping and hoses. If piping is complex or over 100' in length, use the next larger pipe size.

*2-Stage Compressor

Typical Krug Compressor Installation



K2-Saver Piping Kit for Compressor

Contains fittings required to connect Krug Compressors to evacuate customer's tank into Bobtail Delivery Truck as shown in the illustration above.

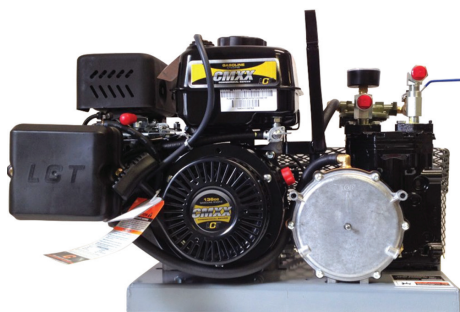
Part #	Ref. No.	Description	Qty.
3171A	1	Brass Vapor Hose Coupling 1/2" MNPT 1-1/4" ACME	1
T-100-012	2	1/2" Fullport Ball Valve - 600 WOG	3
E8LP2X12FT	3	1/2" LP Gas Hose Assembly x 12 feet	2
3175B	4	Brass Filler Coupling 1/2" MNPT x 1-3/4" ACME	3
E8LP2X25FT	5	1/2" LP Gas Hose Assembly x 25 feet	1
FC-012-3M	6	FS Full Coupling - 1/2"	1
5765D	7	Brass Adapter 1-3/4" Male ACME x 3/4" MNPT	1
7550P	8	Angle Transfer Valve 3/4"	1
7572C-14A	9*	Chek-Lok Adapter 3/4" F (Use w/7550 Series)	1
7590U-10	9*	Chek-Lok Adapter 1-5/8" UNF x 3/4" F (Use w/7550 Series)	1

* Use Appropriate Check-Lok Adapter.

Bobtail liquid connection will require RegO 5776 or equivalent adapter, 3-1/4" F. ACME x 1-3/4" M. ACME (not included in kit).

Krug Vapor Compressor

For efficient transfer of Butane, Propane or Anhydrous Ammonia.



Part #	Description
K20-3G	Compressor with 4 HP Gasoline Engine
K20-3L	Compressor with 4 HP LP-Gas Engine
16771B	Compressor Only
K380	Belt
K3927	Pulley
LTSGA	Liquid transfer sight glass adapter with 1-3/4" M-ACME x 1-3/4" F-ACME



LTSGA

Tank Evacuation System

Ventur-Evac



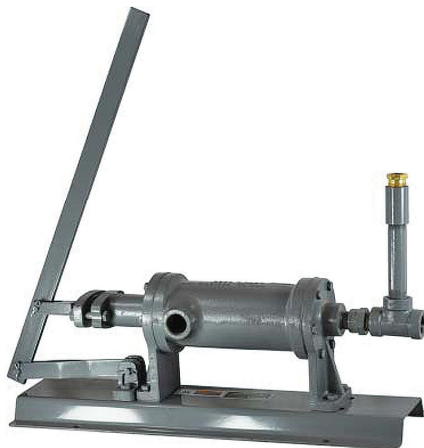
LTSGA

Part #	Description
Ventur-Evac	Tank Evacuation Valve
Ventur-Evac Hose Kit-25 T	25 ft Hose and Valve Assemblies. Kit includes 2 Hoses - 1 for Vapor and 1 for Liquid
Ventur-Evac Hose Kit-50FT	50 ft Hose and Valve Assemblies. Kit includes 2 Hoses - 1 for Vapor and 1 for Liquid
LTSGA	Liquid transfer sight glass adapter with 1-3/4" M-ACME x 1-3/4" F-ACME

Ventur-Evac Hose Kit Parts

Part #	Description
3121	Unloading Adapter Angle 1-3/4" F-ACME X 3/4" F-NPT
3165C	Vent Valve 1/4"
3171A	Brass Vapor Hose Coupling 1/2" M-NPT X 1-1/4" F-ACME
3175	Brass Filler Coupling 3/4" M-NPT X 1-3/4" F-ACME
3175B	Brass Filler Coupling 1/2" M-NPT X 1-3/4" F-ACME
5763D	Brass Adapter 1-1/4" M-ACME X 3/4" M-NPT
5765D	Brass Adapter 1-3/4" M-ACME X 3/4" M-NPT
7550P	Angle Transfer Valve 3/4"
7572C-14A	Check-Lok Adapter 3/4" M-NPT x 3/4" F-NPT
7590U-10	Check-Lok Adapter 1-5/8" UNF X 3/4" F-NPT
C5765N	Plug w/Chain & Ring 1-3/4
E12LP2X__FT	3/4" LPG Hose Assmy Parker-Tested/Certified
E8LP2X__FT	1/2" LPG Hose Assmy 1/2" M-NPT Ends
FC-012-3M	FS Full Coupling-1/2"
FC-034-3M	FS Full Coupling-3/4"
T-100-012	1/2" Fullport Ball Valve - 600 WOG

Krug Hand Pump



Piston type hand pump for filling portable and motor fuel cylinders. Connects to 1" inlet and 3/4" outlet. Weighs 55 lbs. and pumps 6 gallons per minute at 40 strokes per minute.

Part #	Description
K640	Krug Hand Pump

K6 Piping Kit for Hand Pump

Contains all fittings required to install K640 Krug Hand Pump from 3/4" top liquid opening.

Part #	Description	Qty
K6	Piping Kit for Hand Pump	
7572C-14A	Chek-Lok, old style	1
7590U-10	Chek-Lok, new style	1
7550P	3/4" x 3/4" Transfer Valve	1
E12LP2X6FT	3/4" x 6 ft LPG Hose Assy	1
12M-12UFS	3/4" Female x 3/4" Male Swivel Connector	1
BU100X034-3M	FS Bushing 1" x 3/4"	1
BU034X012-3M	FS Bushing 3/4" x 1/2"	1
E8LP2X12FT	1/2" x 12 ft LPG Hose Assy	1
7704P	1/2" Globe Valve	1
3175B	Hose Coupling, 1-3/4" Female ACME Swivel x 1/2" MNPT	1