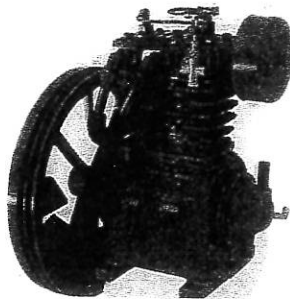


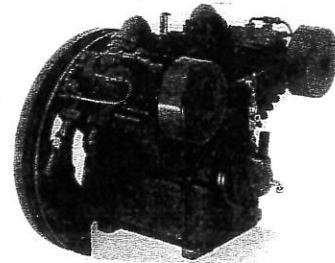
OPERATOR MANUAL for GOLD SERIES

CI5 & CI10 Cast Iron Two-Stage Service Pumps



Pump Specifications

Model No. - CI5SA
Weight - 196 lbs.
Oil Capacity - 50oz. (Approximately)
Max. RPM - 1000
Max. Outlet Pressure - 200 psi



Pump Specifications

Model No. - CI10SA
Weight - 300 lbs.
Oil Capacity - 65 oz. (Approximately)
Max. RPM - 1000
Max. Outlet Pressure - 200 psi

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In the event you should have a question or a concern with the pump, DO NOT return it to the store where you purchased it. Most problems and concerns can be taken care of on the telephone! Simply call and discuss the concern with our Customer Service Department. (785)-454-3409 Fax (785)-454-3981

CAUTION:

Read this manual carefully before attempting to operate or service this pump!
FAILURE TO COMPLY WITH INSTRUCTIONS COULD RESULT IN:
PERSONAL INJURY, PROPERTY DAMAGE, AND/OR VOIDING OF
YOUR WARRANTY! This pump is precision built from high-quality materials.

SAFETY GUIDELINES

The following information relates to PROTECTING YOUR SAFETY and PREVENTING EQUIPMENT PROBLEMS. To help you recognize this information, we use the following symbols.

Please read the manual and pay attention to these sections.

WARNING - A POTENTIAL HAZARD THAT COULD CAUSE SERIOUS INJURY OR LOSS OF LIFE.

Disconnect power when installing pump.

CAUTION - A POTENTIAL HAZARD THAT MAY CAUSE MODERATE INJURY OR DAMAGE TO EQUIPMENT. Any alterations made to this pump may result in serious personal injury and/or property damage.

Pump replacement

Unpack the pump. Inspect the unit for damage. If the unit has been damaged, contact the place of purchase. Do this immediately, because there are time limitations to damage claims.

Tools required

- | | |
|---------------------|---------------------------|
| (1) 10" Cold chisel | (1) 8" extension (socket) |
| (1) Hammer | (1) Socket set, metric |
| (1) Torque wrench | (1) Socket set, SAE |
| (60 ft-lbs minimum) | |

WARNING: To avoid personal injury, always shut off the main power disconnects for the compressor and relieve all air pressure from the system before performing any service on the air compressor.

1. Remove the beltguard.
2. Loosen the motor mounting bolts and slide the motor towards the pump.
3. Disconnect transfer and bleeder tubes from pump. Loosen compression nuts at tank fittings to allow tube movement.
4. Remove the belts.
Note: If transfer and bleeder tubes are bent at the fittings during pump removal, this will result in air leaks at the fittings during operation.
5. Remove the elbow or male connector from pump aftercooler.
Note: Prior to removing the flywheel, note the arrow on the outside of flywheel noting direction of rotation.
6. Remove the flywheel bolt, nut, and washer.

WARNING: To avoid personal injury, wear safety glasses during steps 7 & 8.

Note: If corrosion is present on the pump shaft you may need to spray the pump shaft with a rust remover to help loosen the flywheel.

7. Insert a cold chisel into the flywheel hub slot where the flywheel bolt was removed (figure 1).
8. Strike the cold chisel with the hammer with enough force to loosen flywheel from pump shaft.

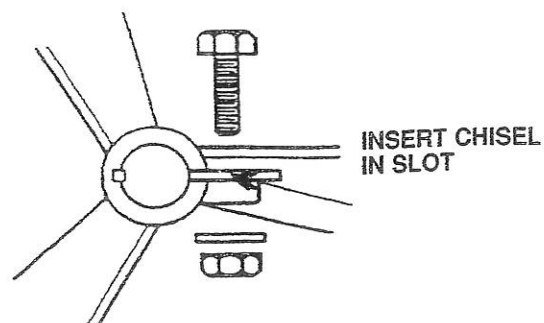
WARNING: The flywheel is very heavy. Use extreme caution when removing the flywheel from the pump shaft.

9. Remove the flywheel and flywheel key from the pump shaft.
10. Remove the pump mounting bolts.
11. Remove the pump.

Assembly

1. Remove the new pump from shipping pallet and mount it to the baseplate.
Note: Ensure that the arrow on the outside of fly wheel is facing away from pump when fly wheel is installed.
2. Place the flywheel key in the slot of the pump shaft and then carefully align and slide the flywheel onto the pump shaft.
3. Install the flywheel bolt, washer, and nut on the flywheel and torque to 47-57 ft-lbs.
4. Clean the elbow, or male connector, of old sealer and place some new sealer on the threads before installing it into the aftercooler of the pump.
5. Connect the transfer and bleeder tubes to the pump and retighten fittings.
6. Install belts between pump flywheel and motor pulley.
7. See section "Belt tension and pulley alignment" before tightening down the motor mounting bolts.
8. Reinstall the beltguard.
9. See section "Break-In of the pump".

FIGURE 1. FLYWHEEL REMOVAL



INSTALLATION AND OPERATING INSTRUCTIONS

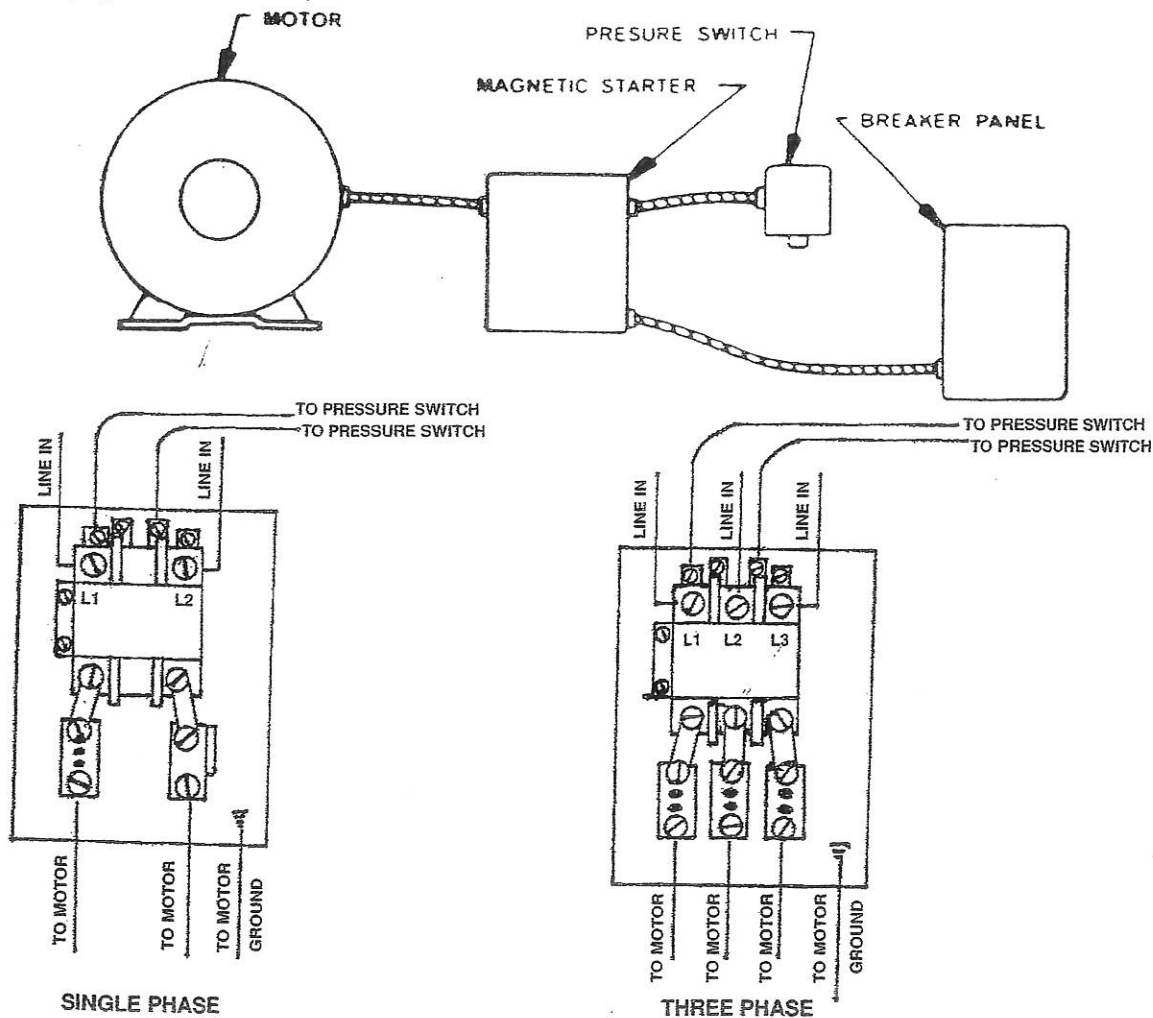
1. Make a visual check to be sure that no damage has occurred to the unit in transit.
2. Check unit serial nameplate (located on base plate directly below the compressor pump) to be sure the unit is the model ordered and rated for the pressure you intend to operate.
3. Check the electrical supply for voltage and phase to see that they match the serial nameplate located on the motor. All model series pertaining to this manual must be protected by a **magnetic starter** with properly sized overload. Failure to install a **magnetic starter** will void the manufacturers warranty.
4. The compressor should be located as close as possible to the point where the air is to be used. The flywheel side of the unit should be placed no closer than twelve (12") inches from a surface. Locate the compressor in a clean, well ventilated area. In cold climates we recommend that the compressor be installed within a heated building. It is very important that the unit is mounted in a level position for proper unit operation and lubrication. If the mounting surface is not level additional pads or shims should be used under the receiver feet. Rubber pads under receiver feet will help with vibration.
5. The wiring between the power supply and the electric motor varies according to the local electrical codes and the horsepower of the motor.

All starters, both manual and magnetic, include thermal overload protection to prevent motor damage due to overloading.

The manufacturer will not accept responsibility for damage arising from failure to provide adequate motor protection.

Note: This page shows a typical magnetic starter installation.

6. To avoid invalidating your fire insurance and giving yourself an electrical shock, it is extremely important to have all electrical work done by a licensed electrician. Be sure that the installation meets all applicable codes, including those of local origin.
7. Prior to the initial starting of the compressor, check the oil level of the compressor pump. Units are shipped with break-in oil (see Lubrication section under Maintenance). The oil must be maintained to the full mark at all times. Do not overfill or underfill. Full mark is the center of sight glass (red circle center).
8. During periods of temperatures above 32° use a good grade SAE 30/40 weight non-detergent oil, and during periods of temperatures below 32° use SAE 20/30 weight non-detergent oil. Air compressor oil or synthetic oil is also an excellent choice as long as it is non-detergent, and synthetic oil should probably be SAE 40.
9. Compressor rotation should be checked prior to operation of the unit. This can be done by flicking the start-stop switch. Rotation is shown by an arrow on the flywheel. If rotation is incorrect, disengage the power supply and check the motor wiring. Improper rotation of compressor will cause unit failure.



TYPICAL MAGNETIC STARTER INSTALLATION

INSTALLATION AND OPERATING INSTRUCTIONS (CONT.)

10. Before operation of unit, close the service valve (see figure 4A) and start compressor allowing the receiver to build up to the maximum pressure. At this pressure, if the unit is equipped with automatic start-stop regulation, the pressure switch should cause the compressor to stop. If the unit is equipped with a constant-speed control it should unload (run without compressing air). If the unit does not operate properly shut down immediately and contact the nearest Service Center. If the unit operates properly refer to break in procedure on page 6 under the Lubrication section.
11. After completing unit installation and break-in, fill out the enclosed Registration Card and return it to the factory.
12. The diagram below (figure 4A) shows a typical installation of a compressor with permanent air lines attached.

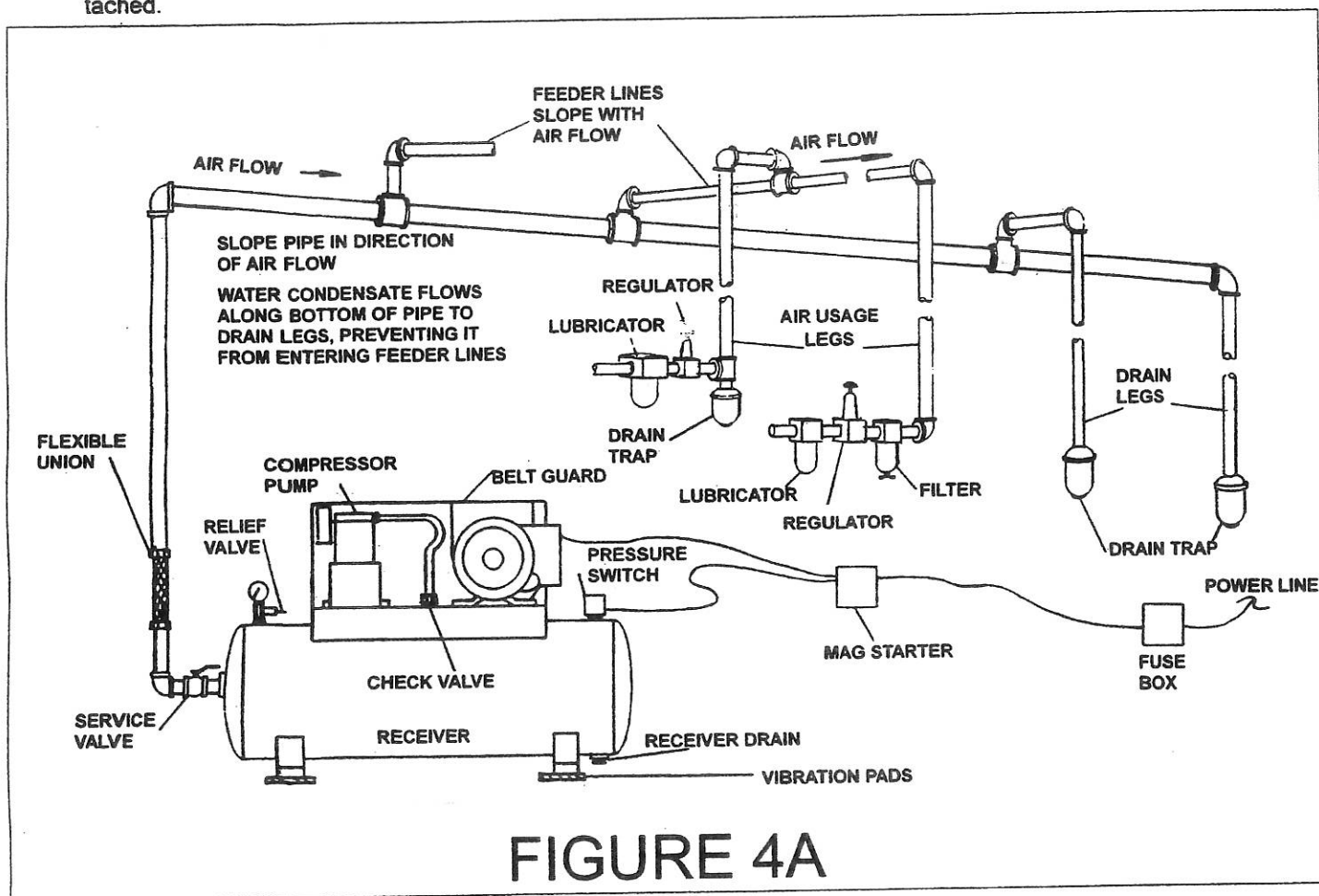


FIGURE 4A

SAFETY INFORMATION

1. **WARNING!** Before doing any repair work on the unit, be certain the starting switch is in the Off position. and/or the electrical power is disconnected to prevent the unit from accidentally starting. Release air pressure by pulling the ring on the relief valve located on the air receiver. These simple precautions will prevent accidents.
2. **WARNING!** Do not re-adjust the pressure switch or relief valve settings for any reason. Doing so voids all warranties. They have been preset at the factory for the maximum pressure of this unit. Personal injury and / or property damage may result if the pressure relief valve or pressure switch are tampered with.
3. Pull the relief valve ring periodically to insure that it is functioning properly and to clear the valve of any possible obstructions.
4. In order to provide proper ventilation for cooling, the unit must be kept a minimum of twelve (12") inches away from the closest wall in a well ventilated area.
5. Follow all local codes to insure safe operation of the air compressor.

SAFETY INFORMATION (CONT.)

6. **IMPORTANT!** Fasten the compressor down if transporting is necessary.
7. Protect the air hose and the electrical lines from damage or puncture. Inspect periodically for weak or worn spots and replace if necessary.
8. After a few days of operation, remove the belt guard, adjust the belt tension, tighten all of the fittings and check all other bolts to make sure that they are tight. A periodic inspection of these areas is also recommended.
9. **WARNING!** TO AVOID PERSONAL INJURY BE SURE TO RE-INSTALL THE GUARD. All moving parts must be guarded.
10. WELDING OR ANY OTHER ALTERATIONS TO THIS UNIT WILL VOID ALL WARRANTIES.
11. **WARNING!** High temperatures may be generated by the electric motor, the compressor pump, and air lines. Keep children away from the unit to prevent possible burns or other injuries.
12. Drain the moisture from the receiver on a daily basis. A clean, dry receiver will help guard against corrosion.
13. Always wear safety glasses or goggles while using the compressor.
14. **WARNING!** The air produced by the compressor is not suitable for breathing purposes.

DRIVE BELTS

WARNING! Before doing any repair work on the unit, be certain the starting switch is in the OFF position and / or the electrical power is disconnected to prevent the unit from accidentally starting. Release air pressure by pulling the ring on the relief valve located on the air receiver. These simple precautions will prevent accidents. Proper belt tension and pulley alignment must be maintained for maximum drive efficiency and belt life. The correct tension of the belt exists when a deflection of one (1") inch occurs by placing a slight pressure midway between the motor pulley and the compressor flywheel (see figure A). This deflection can be adjusted by using the following procedure.

1. Loosen the electric motor mounting bolts.
2. Shift the motor to the point where the correct deflection exists.
3. Retighten the motor mounting bolts.
4. Check to assure that the tension remained correct.

Three examples of pulley misalignment
(only one belt is shown, for clarity)

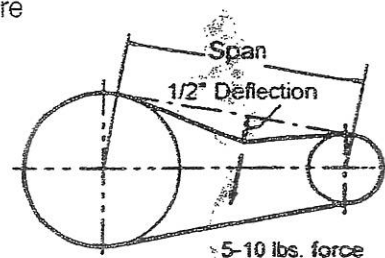
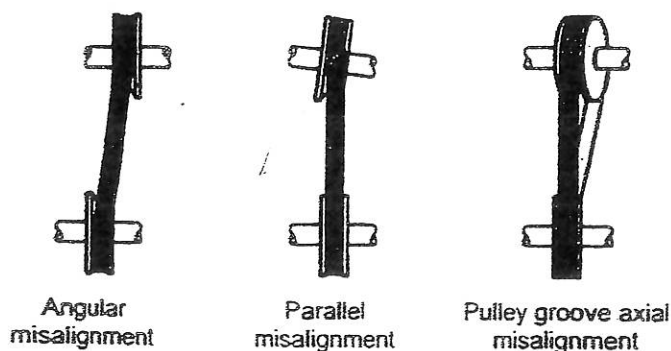


Figure 2. Drive belt tension

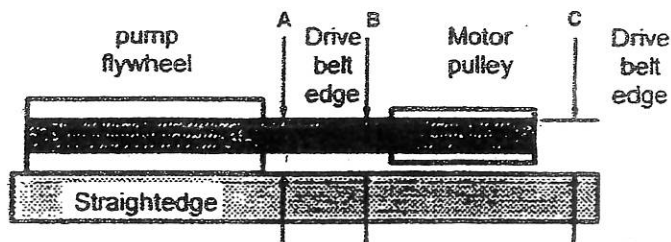


Figure 3. Checking pulley alignment

WARNING! Before doing any repair work on the unit, be certain the starting switch is in the OFF position and/or the electrical power is disconnected to prevent the unit from accidentally starting. Release air pressure by pulling the ring on the relief valve located on the air receiver. These simple precautions will prevent accidents. Check the pulley by placing a straightedge against the compressor flywheel (see figure 3). Measure the distance from the straightedge and the center of the drive belt groove at points A, B and C. The distance should be the same at all three points. If any of the three measurements varies, there is a misalignment which must be corrected before the compressor is run. To correct a belt misalignment, use the following procedure:

1. Remove the belt guard.
2. Loosen the motor mounting bolts.
3. Loosen the set screw on the motor pulley.
4. Align the motor pulley with the compressor flywheel (see figure 3).
5. Retighten the motor pulley set screw.
6. Adjust the proper belt tension as stated above.
7. Retighten the motor mounting bolts.
8. Re-install the belt guard. All moving parts must be guarded.

MAINTENANCE

WARNING! To avoid personal injury always disconnect the power source and de-pressurize the receiver before attempting any type of service work on the air compressor or any component utilized in the air system.

Regular maintenance will insure trouble-free operation. Your industrial air compressor represents the finest engineering and construction available, however, the finest machinery requires periodic maintenance. The items listed below should be inspected on a regular basis.

1. LUBRICATION: Always operate the unit in a level position. Industrial air compressors are shipped with break in oil which should be changed after running the unit for about 8 hours. The warranty on the unit will be voided if the break in oil is not changed before 40 hours, or one month. Check the oil level frequently and change the oil every 250 working hours. Never overfill or underfill the compressor. Before putting your new compressor to work open the petcock on the bottom of the receiver and run it for about 15 minutes under no-load to lubricate the internal moving parts and break it in properly.

2. DRAIN RECEIVER: CAUTION Disconnect the power source and de-pressurize the receiver. Condensation will build up on the compressor receiver. This condensation should be drained at the end of every working day. A clean dry receiver will help guard against corrosion. The drain petcock is located on the bottom of the receiver.

3. CLEAN AIR FILTER: A dirty air filter will reduce the compressor's performance and life. Check and clean this area frequently. The air filter should be blown out with air. Do this as needed to avoid any internal contamination of the compressor pump. Do not allow the air filter to become filled with dirt or paint and replace the filter on a regular basis. Direct exposure to dirty conditions and painting areas will void your warranty.

4. BELT TENSION AND PULLEY ALIGNMENT: Proper belt tension and pulley alignment must be maintained for maximum drive efficiency and belt life. The correct tension exists when a deflection of one (1/2") inch occurs by placing a slight pressure on the belt midway between the motor pulley and the compressor flywheel. The pulley and the flywheel should be carefully aligned and all set screws should be kept tight (see Figure 2 and 3 under Drive Belts section).

5. TEST FOR LEAKS: A small air leak in your hose or piping connections will make a big difference in the performance of your compressor. If a leak is suspected, brush a small amount of soapy water around the area. If bubbles appear, reseal and retighten the connection.

6. CHECK RELIEF VALVE: Pull the relief valve ring periodically to insure that it is functioning properly and to clear the valve of any possible obstructions.

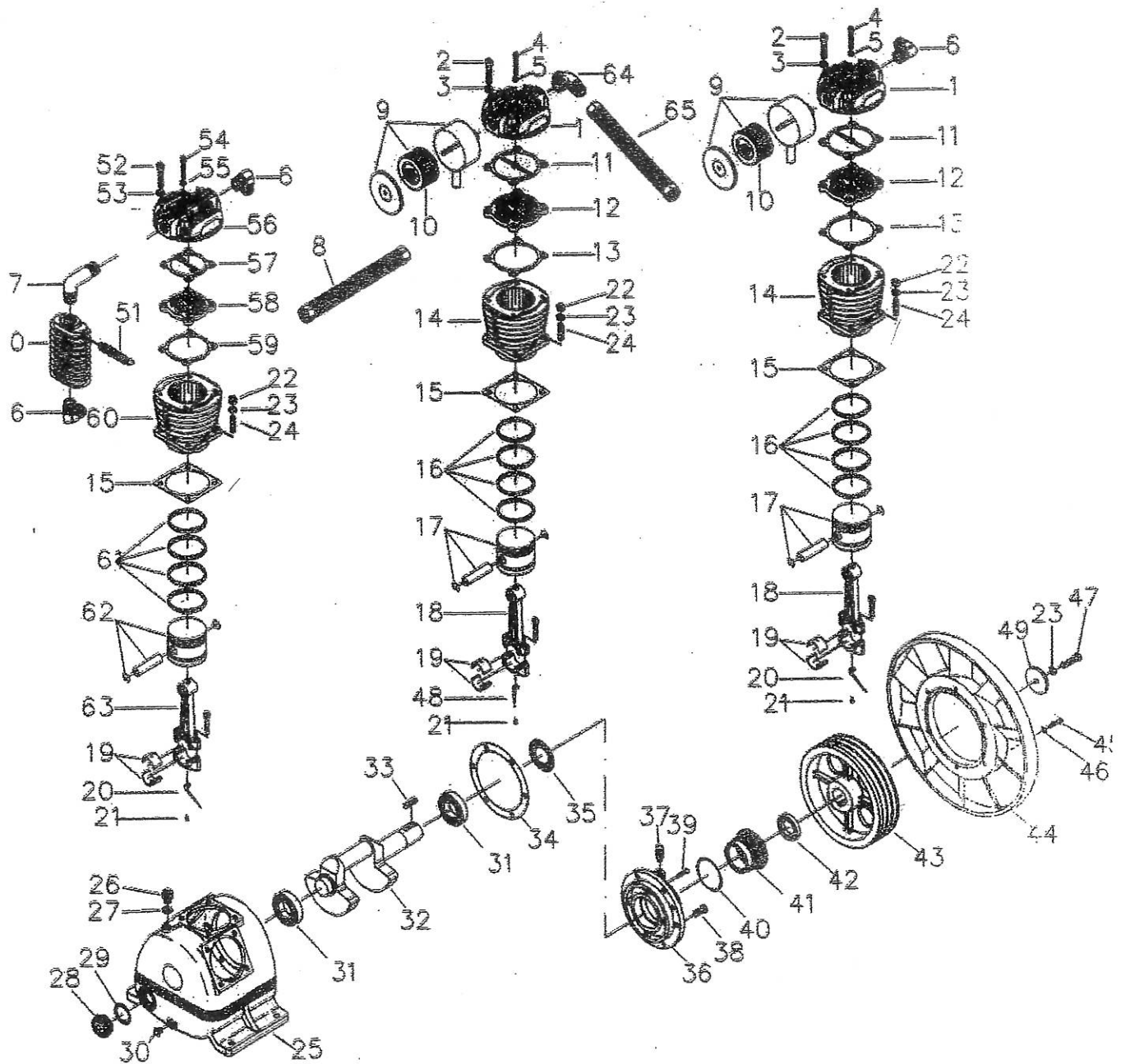
SERVICE INTERVAL

	Operating Hours / Months - whichever comes first				
COMPRESSOR	50 / 3	250 / 6	500 / 9	750 / 12	1000 / 15
Air Inlet Filter - Inspect & Clean	Daily				
Crankcase Oil Level Check	Daily				
Crankcase Oil Change	X	X	X	X	X
Compressor Valves - Inspect & Clean		X			
Operate Safety Valves	Weekly				
Clean	X	X	X	X	X
V-BELT DRIVE					
Belt Tension - Check	X	X	X	X	X
RECEIVER					
Drain Condensate - Manual	Daily				
Operate Safety Valve	Weekly				
GENERAL					
Tighten or Check All Bolts	X	X	X	X	X

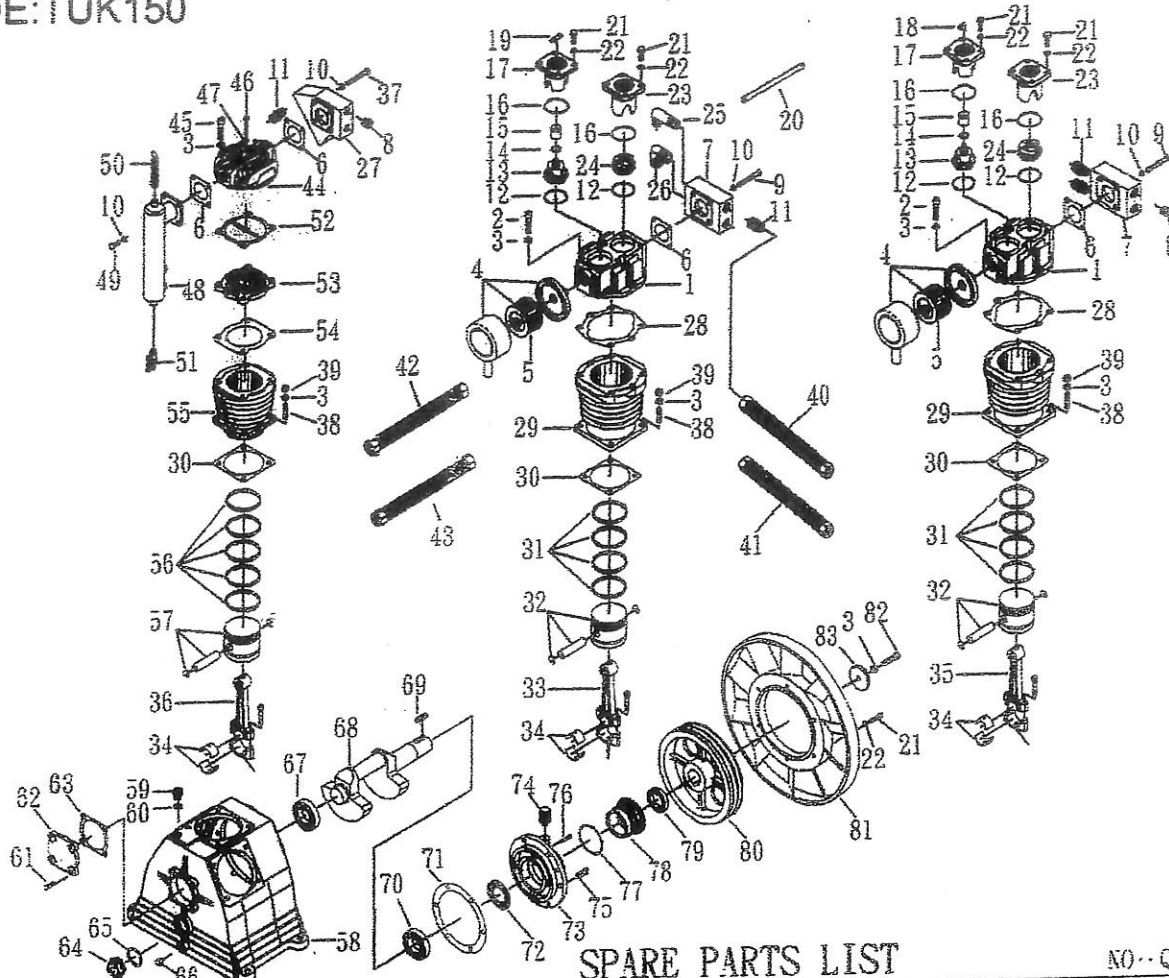
TK-100 PUMP SPARE PARTS LIST

<u>Ref. #</u>	<u>Description</u>	<u>Part #</u>	<u>Q</u>	<u>Ref. #</u>	<u>Description</u>	<u>Part #</u>	<u>Q</u>
<u>#</u>				<u>#</u>			
1	Cylinder head	3101019	2	34	Rear bearing sea	2G06-003	1
2	Hexagon socket set bo	2B01-M12*55	8	35	oil mesh	2352004	1
3	Spring washer	2B00-M12	8	36	Rear bearing set	3311007	1
4	Hexagon socket set bo	2B01-M08*55	2	37	Breathing cover	2321008	1
5	Aluminum washer	2B31-004	2	38	Hexagon head bc	2B00-SM12*030	6
6	Exhaust elbow	206-10T10H	3	39	Hexagon head bc	2B001-SM06*035	1
7	Exhaust elbow	2N06-10T10T	1	40	O-ring	2N52-20*78	1
8	Exhaust tube set	3B2-10*580	1	41	Trust ring	3312002	1
9	air filter	2140011	2	42	oil seal	2N50-TC50*72*12	1
10	Filter Sieve	2142009	2	43	pulley	3PBF-115B350	1
11	Cylinder head gasket	2G01-012	2	44	Flywheel	3PBF-516*228	1
12	Inlet & Exh. Valve asse	3B13-AP100	2	45	Hexagon head bc	2B00-SM08*035A	6
13	Valve seat gasket	2G03-006	2	46	Spring washer	2B00-M08	6
14	Cylinder	3201016	2	47	Hexagon head bc	2B00-SM12*050	1
15	Cylinder gasket	2G04-010	3	48	Oil splasher	2317024	1
16	Piston ring set	3B32-100	2	49	Puley washer	2B34-13*75*13	1
17	Piston set	3B31-100L	2	50	spare tank	3125002	1
18	Rod	2315040	2	51	Safety relief valve	2406007	1
19	Rod bush	2316002	6	52	Hexagon socket s	2B01-M10*050	4
20	oil splasher	2317023	2	53	Spring washer	2B33-M10	4
21	Round head bolt (+)	2B02-FM5*01C	3	54	Hexagon socket s	2B01-M06*055	2
22	Hexagon nut	2B20-FM12	12	55	Aluminum washer	2B31-005	2
23	Spring washer	2B33-M12	13	56	Cylinder head	3101030	1
24	Double head screw	2B11-004	12	57	Cylinder head gas	2G01-011	1
25	Crankcase	3301019	1	58	Intake & Exh. Val	3B13-AP80	1
26	Oil filling plug	2319004	1	59	Valve seat gasket	2G03-005	1
27	O-ring	2N52-30*15	1	60	Cylinder head	3201013	1
28	Oil sight guage	2303005	1	61	Piston ring set	3B32-70	1
29	Oil sight gauge gasket	2B11-010	1	62	Piston set	3B31-T70	1
30	Oil draining plug	2N33-002	1	63	Rod	2315023	1
31	Bearing	2N35-32210	2	64	Exhaust 3-way plj	2N09-10H10T10H:1	1
32	crankshaft & balancer	3304027	1	65	Exhaust tube set	3B2-10*265	1
33	Pulley key	2N47-10*8*40	1				

MODEL : TK-100



NO: OC-0203



SPARE PARTS LIST

NO. QC-0205

REF. NO.	DESCRIPTION	PART NO.	QTY.	REF. NO.	DESCRIPTION	PART NO.	QTY.
1	Cylinder head	3101054	2	43	Exhaust tube set	3B2-06*610	1
2	Hexagon socket set bolt	2B01-M12*050	12	44	Cylinder head	3101024	1
3	Spring washer	2B33-M12	29	45	Hexagon socket set bolt	2B01-M12*065	4
4	Air filter	2140011	2	46	Hexagon socket set bolt	2B01-M08*090	1
5	Filter sieve	2142009	2	47	Aluminum packing	2B31-004	1
6	Exhaust tank packing	2G09-004	2	48	Spare tank	3125003	1
7	Exhaust tank	3127001	4	49	Hexagon head bolt	2B00-SM10*025	4
8	Plug	2B14-ST06E	4	50	Safety relief valve	2406007	1
9	Hexagon head bolt	2B00-SM10*080	8	51	Air cock	2413001	1
10	Spring washer	2B33-M10	16	52	Cylinder head packing	2G01-012	1
11	Nipple	2N01-009	7	53	Inlet&Exhaust valve assembly	3B13-AP100	1
12	Inlet&Exhaust washer	2B32-004	4	54	Valve seat packing	2G03-006	1
13	Inlet valve assembly	3B12-NK150A	2	55	Cylinder	3201034	1
14	O-ring	2N52-P22AV	2	56	Piston ring set	3B32-T100	1
15	Unloading piston	2113008	2	57	Piston set	3B31-T100	1
16	O-ring	2N52-G65V	2	58	Crankcase	3301032	1
17	Inlet press plate	3103002	4	59	Oil filling pulg	2319004	1
18	Unloading elbow	2N06-01T02H	1	60	O-ring	2N52-32*15	4
19	Unloading 3-way pipe	2N09-02H01T02H4	1	61	Hexagon head bolt	2B00-SM10*030	1
20	Unloading tube set	3B2-02*630	1	62	Front bearing seat	3309010	1
21	Hexagon head bolt	2B00-SM08*030	22	63	Front bearing seat packing	2G05-008	1
22	Spring washer	2B33-M08	22	64	Oil sight gauge	2303005	1
23	Exhaust press plate	3126009	2	65	Oil sight gauge packing	2G11-010	1
24	Exhaust valve assembly	3B11-NK150A	2	66	Oil draining plug	2N33-003	1
25	Exhaust elbow	2N06-06T06H85	1	67	Bearing	2N35-32210	1
26	Exhaust elbow	2N06-06T06H	2	68	Crankshaft & balancer	330151	1
27	Exhaust tank	3127002	1	69	Pulley key	2N47-10*8*45	1
28	Cylinder head packing	2G01-020	2	70	Bearing	2N35-30310	1
29	Cylinder	3201044	2	71	Rear bearing seat packing	2G06-014	1
30	Cylinder packing	2G04-008	3	72	Oil mesh	2352005	1
31	Piston ring set	3B32-120	2	73	Rear bearing seat	3311022	1
32	Piston set	3B31-120NP	2	74	Breathing cover	2321008	1
33	Rod set	3B33-NP150A	1	75	Hexagon head bolt	2B00-SM12*030	6
34	Rod bush	2316007	6	76	Hexagon head bolt	2B00-SM06*035	1
35	Rod set	3B33-NP150B	1	77	O-ring	2N52-568*156	2
36	Rod set	3B33-NP150C	1	78	Thrust ring	3312001	1
37	Hexagon head bolt	2B00-SM10*075	4	79	Oil seal	2N50-TC50*80*13	1
38	Double head screw	2B11-005	12	80	Pulley	3PBF-138B150	1
39	Hexagon nut	2B20-FM12	12	81	Fly wheel	3PBF-630*280	1
40	Exhaust tube set	3B2-06*275	1	82	Hexagon head bolt	2B00-SM12*050	1
41	Exhaust tube set	3B2-06*215	1	83	Pulley washer	2B34-13*95*12	1
42	Exhaust tube set	3B2-06*580	1				

PARTS LIST

Model: TUK-150120M3 (3 PHASE, 230V)

VER.: PH-001

REF. NO.	Component ID	Component Description	QUANTITY
1	TUK-150	PUMP	1.00
2	4001-120	TANK	1.00
	050-20MN04FN	BUSHING 2" x 1/2"	1.00
	050-20MN06FN	BUSHING 2" x 3/4"	1.00
3	4027-150-43	MOTOR (FACTORY WIRED AT 460V)	1.00
4	3353102	LOW OIL SWITCH	1.00
5	2140011	AIR FILTER ASSEMBLY	2.00
6	1809 (2142009)	FILTER ELEMENT	2.00
7	056-CD175P4-001	PRESSURE SWITCH: 145-175 PSI (4 PORT)	1.00
8	84006010	PRESSURE RELIEF VALVE: 200PSI	1.00
9	046-02N-H00	PLUG 1/4"	2.00
10	2N01-016	NIPPLE (HEX)	1.00
11	050-14MN06FN	BUSHING 1-1/2" x 3/4"	1.00
12	CV3434M	CHECK VALVE: 3/4"	2.00
13	063-CU01X790	COPPER UNLOADING TUBE (CHECK VALVE to PRESSURE SWITCH)	1.00
14	2N06-06T06H	ELBOW: 3/4" W/ FLARE	2.00
15	2T02-060900	BRAID STAINLESS DISCHARGE TUBE	2.00
16	2N16-C01TW02M	ELBOW	2.00
17	063-CU01X725	COPPER TUBE 1/8" (PILOT VALVE - HEAD UNLOADER)	1.00
18	041-PV175FN-000	PILOT VALVE	1.00
19	2413020	SERVICE VALVE: FOR DUAL CONTROL SWITCH & DRAIN VALVE	2.00
20	046-01N-S00	PLUG 1/8"	1.00
21	2413007	SERVICE VALVE 1/2" M/F	1.00
22	3417010	BRACKET - M S. MOUNTING PLATE	1.00
23	MS-150-3	MAGNETIC STARTER: 15HP 3PH 460V	1.00
24	B-79	HEATER ELEMENT (FUSE)	3.00
25	025A-10N-000	WIRE CLAMP 1"	2.00
26	025A-03N-000	WIRE CLAMP 3/8"	2.00
28	2E02-3521152Y2F	ELECTRIC CABLE (PRESSURE SWITCH - STARTER, 720MM L)	1.00
29	025-A06W1BX575	ELECTRIC WIRE	3.00
29	025-A12W1GX575	ELECTRIC WIRE (GROUND)	1.00
29	025C-A06X420	CONDUIT	1.00
30	4BL50	PULLEY	1.00
30	048A-SD15SS-000	PULLEY BUSHING	1.00
31	2N31-B76	V-BELT B76	4.00
32	2D12-25D20K	PRESSURE GAUGE	1.00
33	3427051	BRACKET	1.00
34	3427050	BRACKET	1.00
35	3426049	BELT GUARD 1100L	1.00

TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Low Discharge Pressure	<ol style="list-style-type: none"> 1. Air Leaks 2. Leaking valves 3. Restricted air intake 4. Blown gaskets 	<ol style="list-style-type: none"> 1. Tighten or replace fittings or connections. 2. Replace worn parts and reassemble with new gaskets. 3. Clean or replace the air filter elements. 4. Replace any gaskets that are found to be faulty.
Low Compression	<ol style="list-style-type: none"> 1. Worn rings or cyl. walls. 2. Leaking valves 	<ol style="list-style-type: none"> 1. Rehone the cylinder walls and replace the rings. 2. Replace worn parts and reassemble with new gaskets.
Pump Knocking	<ol style="list-style-type: none"> 1. Loose motor pulley and/or compressor flywheel. 2. Lack of oil in crankcase. 3. Excess carbon on valves or the top of the piston. 	<ol style="list-style-type: none"> 1. Retighten the pulley and the flywheel. 2. MAINTAIN the oil in the crankcase to the full mark at all times. 3. Clean thoroughly or replace carbonized parts.
Oil in Discharge Air	<ol style="list-style-type: none"> 1. Worn rings or cyl. walls. 2. Restricted air intake. 3. Oil level too high. 	<ol style="list-style-type: none"> 1. Rehone the cylinder walls and replace the rings. 2. Clean or replace the air filter elements. 3. Do not overfill with oil. Use non-detergent oil.
Abnormal Piston, Ring or Cylinder Wear.	<ol style="list-style-type: none"> 1. Dusty operating conditions 2. Improper oil weights. 	<ol style="list-style-type: none"> 1. Operate in a clean environment and change the oil and air filter elements frequently. 2. Use SAE 40 grade non-detergent oil in temperatures above 32°F. Use SAE 30 grade non-detergent oil in temperatures below 32°F.
Heating	<ol style="list-style-type: none"> 1. Poor ventilation. 2. Dirty cooling surfaces. 3. Leaking or broken valves. 4. Incorrect pulley rotation. 	<ol style="list-style-type: none"> 1. Relocate the compressor to an area with cool, dry and well circulated air. 2. Clean all cooling surfaces of the pump thoroughly. 3. Replaced worn or inoperative parts. 4. When facing the flywheel side of the pump, the direction of rotation should be counterclock-wise (or as shown by the arrow on the flywheel). If incorrect, consult a competent electrician to have the motor reversed
Excessive Belt Wear	<ol style="list-style-type: none"> 1. Pulley out of alignment. 2. Improper belt tension. 3. Bent pulley. 	<ol style="list-style-type: none"> 1. Realign pulley with compressor flywheel 2. Readjust the belt tension. 3. Replace the pulley and check for a damaged crank of flywheel.
Excessive Starting and Stopping	<ol style="list-style-type: none"> 1. Air leaks. 2. Worn rings. 3. Leaking or broken valves. 	<ol style="list-style-type: none"> 1. Tighten or replace leaking fittings or connections 2. Rehone the cylinder walls and replace the rings. 3. Replace worn or inoperative parts and reassemble with new.
Draws Excessive Current Trips Circuit Breaker	<ol style="list-style-type: none"> 1. Low voltage / overload motor. 2. Excessive wire length. 3. Overtight drive belt. 4. Restricted air passages. 5. Back pressure in compressor head. 	<ol style="list-style-type: none"> 1. Furnish with adequate power. Also, breaker size should be double fully loaded amps. 2. Consult electrician. 3. Readjust the belt tension (see Maintenance). 4. Replace the check valve. 5. Replace the check valve.
Stall	<ol style="list-style-type: none"> 1. Overloaded motor. 2. Bad check valve. 3. Seized pump. 4. Low voltage on start. 	<ol style="list-style-type: none"> 1. Furnish adequate power. 2. Replace the check valve. 3. Contact a Service Center. 4. Consult electrician.

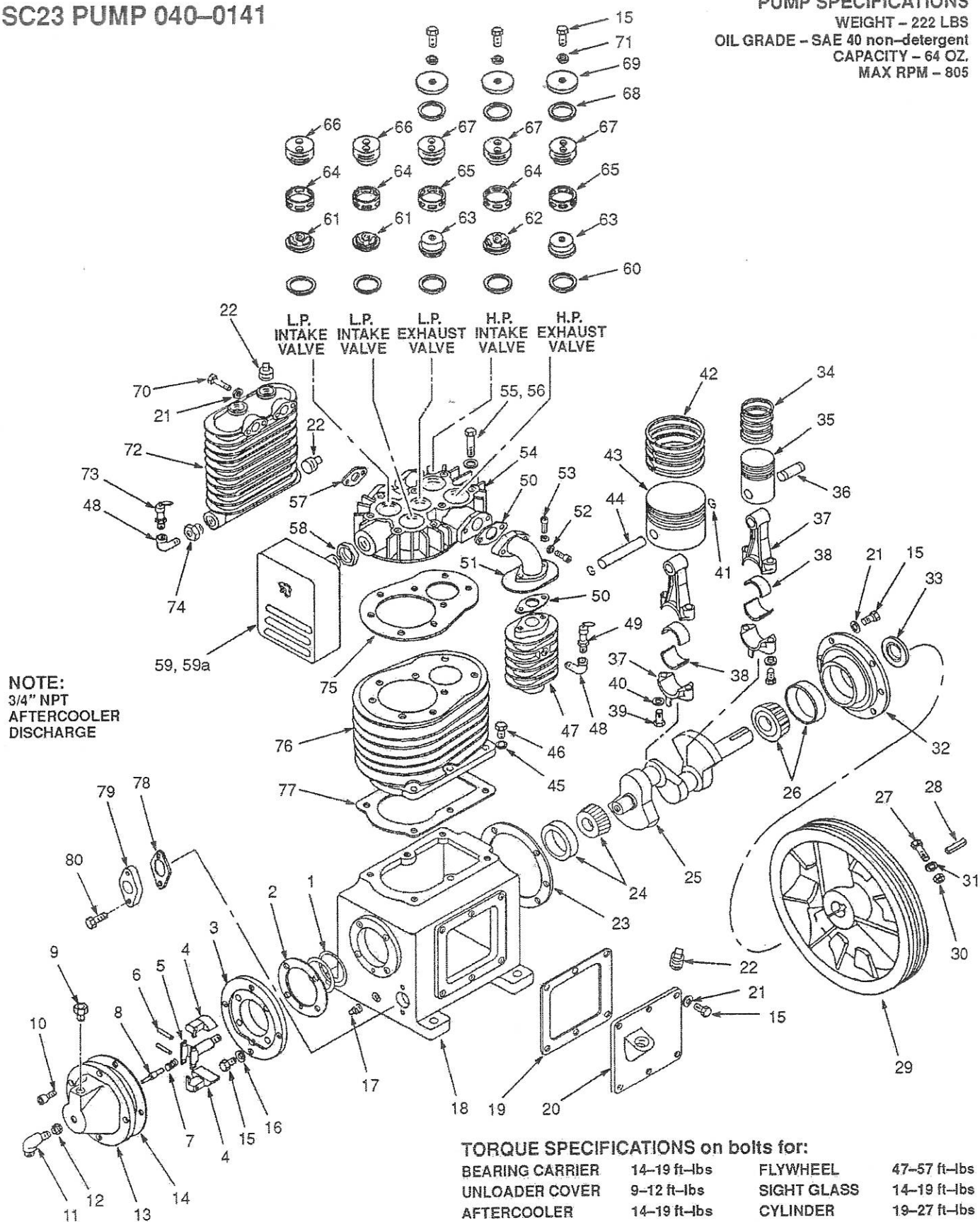
NOTE: Trouble shooting problems may have similar causes and solutions.

PARTS DRAWING

SC23 PUMP 040-0141

PUMP SPECIFICATIONS

WEIGHT - 222 LBS
OIL GRADE - SAE 40 non-detergent
CAPACITY - 64 OZ.
MAX RPM - 805



TORQUE SPECIFICATIONS on bolts for:

BEARING CARRIER	14-19 ft-lbs	FLYWHEEL	47-57 ft-lbs
UNLOADER COVER	9-12 ft-lbs	SIGHT GLASS	14-19 ft-lbs
AFTERCOOLER	14-19 ft-lbs	CYLINDER	19-27 ft-lbs
INTERCOOLER	14-19 ft-lbs	ROD	34-37 ft-lbs
VALVE RETAINERS	51-57 ft-lbs	HEAD	32-37 ft-lbs
VALVE COVER	14-19 ft-lbs	VALVE	9-12 ft-lbs

PARTS LIST

SC23 PUMP 040-0141 Includes items

1-80 on pages 4 & 5, see item 6 on page 3

ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY
1	046-0175	SHIM, bearing adj., .005 thick	and/or	60	060-0062	WASHER, copper,	2
	046-0176	SHIM, bearing adj., .010 thick	and/or			1.62" O.D. x 1.368" I.D.	
	046-0177	SHIM, bearing adj., .020 thick	A/R	61	043-0098	INTAKE VALVE ASSY, low pressure	2
2	046-0027	GASKET, adapter plate	1			includes items 61a-61f	
3	077-0070	PLATE, adapter, centrifugal unloader	1	61a	--	.NUT, self-locking, hex jam	1
4	096-0009	WEIGHT	2	61b	--	.SEAT, valve	1
5	114-0112	HOLDER, weight	1	61c	--	.PLATE, valve	1
6	107-0015	PIN	2	61d	--	.SPRING, valve	1
7	055-0051	SPRING	1	61e	--	.GUIDE, valve	1
8	078-0011	PLUNGER	1	61f	--	.BOLT, M6 x 20mm lg	1
9	056-0018	BREATHER, crankcase	1	62	043-0099	INTAKE VALVE ASSY, high pressure	1
10	059-0156	BOLT, M6 x 20 mm lg.	4			includes items 62a-62f	
11	031-0034	VALVE, air, w/valve core	1	62a	--	.NUT, self-locking, hex jam	1
12	058-0084	NUT, brass, M10	1	62b	--	.SEAT, valve	1
13	077-0071	HOUSING, centrifugal unloader	1	62c	--	.PLATE, valve	1
14	046-0171	GASKET	1	62d	--	.SPRING, valve	1
15	059-0166	BOLT, M8 x 20mm lg.	21	62e	--	.GUIDE, valve	1
16	060-0070	WASHER, lock, 8mm	4	62f	--	.BOLT, M6 x 20mm lg	1
17	062-0004	PLUG, oil drain	1	63	043-0100	EXHAUST VALVE ASSY, high & low	2
18	049-0027	CRANKCASE	1			includes items 63a-63e	
19	046-0169	GASKET, side cover	1	63a	--	.BOLT, M6 x 12mm lg	1
20	077-0069	COVER, side	1	63b	--	.GUIDE, valve	1
21	060-0061	WASHER, copper	14	63c	--	.SPRING, valve	1
		.52" O.D. x .32" I.D.		63d	--	.PLATE, valve	1
22	062-0006	PLUG, pipe, 3/4" NPT	4	63e	--	.SEAT, valve	1
23	046-0168	GASKET, front cover	1	64	043-0094	SPACER, intake valve	3
24	051-0054	BEARING SET, rear	1	65	043-0095	SPACER, exhaust valve	2
25	053-0051	CRANKSHAFT	1	66	058-0082	RETAINER, valve, low pressure	2
26	051-0053	BEARING SET, front	1	67	058-0083	RETAINER, valve	
27	059-0163	BOLT, M16 x 80mm lg	1			low pressure exhaust or	
28	146-0015	KEY, flywheel	1			high pressure intake and exhaust	
29	044-0037	FLYWHEEL, 16 7/8" O.D.	1	68	046-0174	GASKET, valve cover	3
30	058-0086	NUT, M16	1	69	077-0073	COVER, valve	3
31	060-0069	WASHER, lock, 16mm	1	70	059-0157	BOLT, M8 x 90mm lg	4
32	045-0044	BEARING CARRIER, front	1	71	060-0061	WASHER, copper	3
33	046-0179	SEAL, shaft	1	72	082-0012	INTERCOOLER	1
34	054-0178	RING SET, high pressure	1	73	136-0039	VALVE, pressure relief, 70 PSI	1
35	048-0055	PISTON, high pressure	1	74	063-0006	BUSHING, reducer	1
36	052-0028	PIN, wrist, high pressure	1	75	046-0166	GASKET, cylinder head	1
37	047-0054	ROD, connecting	2	76	050-0030	CYLINDER	1
38	051-0055	INSERT, bearing	2 pair	77	046-0167	GASKET, cylinder/crankcase	1
39	059-0154	BOLT, rod, M10 x 45mm lg	4	78	046-0178	GASKET, sight glass flange	1
40	060-0072	WASHER, lock 10mm	4	79	032-0031	FLANGE, w/sight glass	1
41	054-0119	RING, retaining	2	80	059-0153	BOLT, M8 x 30 mm lg.	2
42	054-0179	RING SET, low pressure	1				
43	048-0054	PISTON, low pressure	1				
44	052-0027	PIN, wrist, low pressure	1				
45	060-0063	WASHER, copper, .66 O.D. x .39 I.D.	6				
46	059-0159	BOLT, cylinder M10 x 30mm lg	6				
47	082-0014	AFTERCOOLER	1				
48	064-0022	ELBOW, 90° street, 1/4"	2				
49	136-0032	VALVE, pressure relief, 250 PSI	1				
50	046-0172	GASKET, manifold, aftercooler	2				
51	083-0009	ELBOW, manifold, aftercooler	1				
52	060-0070	WASHER, lock, 8mm	4				
53	059-0158	BOLT, manifold, M8 x 25mm lg	4				
54	042-0055	HEAD, cylinder	1				
55	059-0167	BOLT, head, M12 x 70mm lg	8				
56	060-0105	WASHER, M12	8				
57	046-0173	GASKET, intercooler	2				
58	058-0087	NUT, conduit, 1"	1				
59	019-0097	FILTER CANNISTER ASSY	1				
		includes item 59a	1				
59a	019-0023	.ELEMENT, filter replacement	1				

AVAILABLE SERVICE KITS

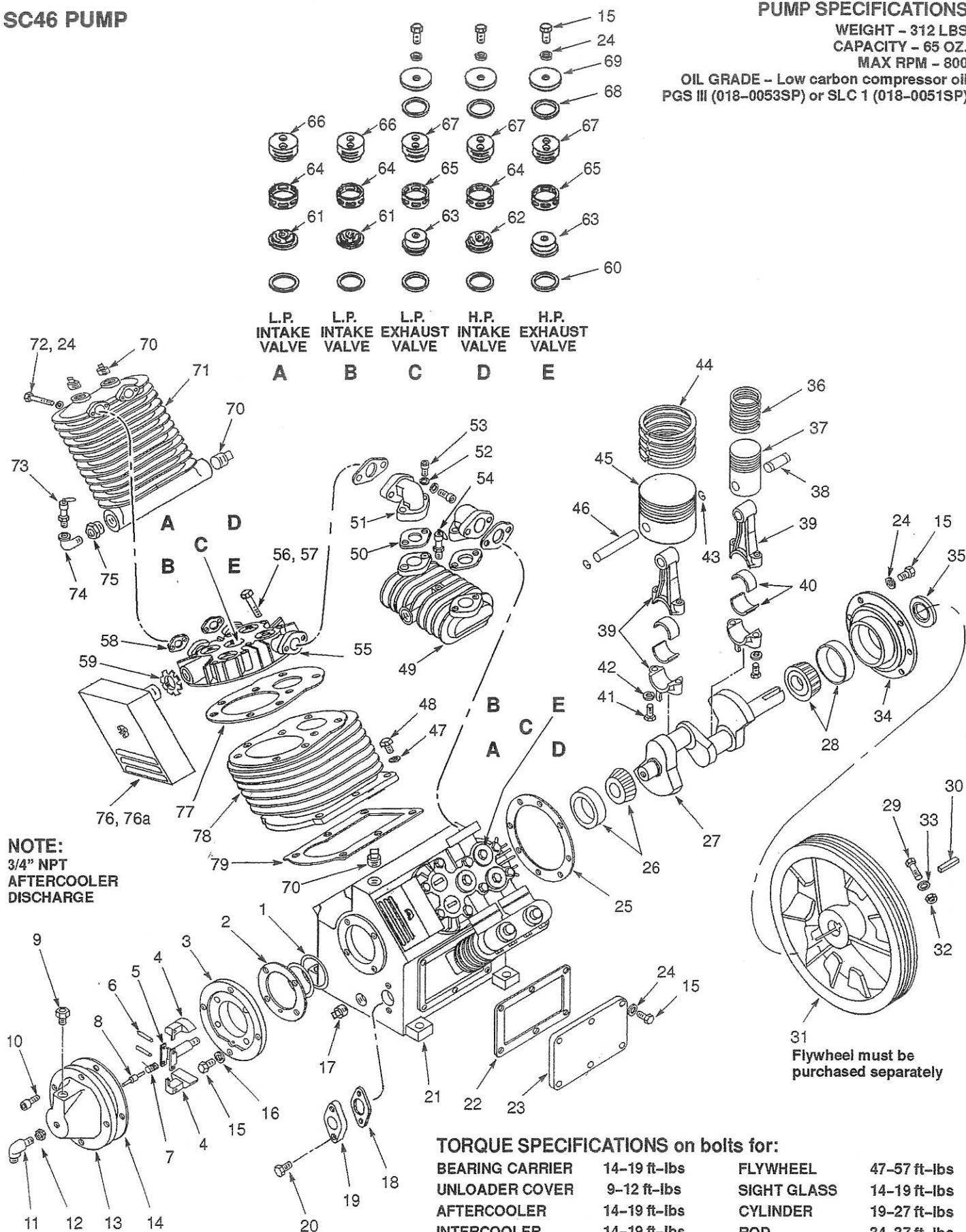
PART NO	DESCRIPTION
046-0183	GASKETS, complete set includes items 2, 14, 19, 23, 45, 50, 55, 57, 68, 77, 78, washers 21, 60 and 71
046-0184	GASKETS, valve set includes items 60, 68 and three washers item 71
070-0020	CENTRIFUGAL UNLOADER ASSY includes items 4-8
165-0064	OVERHAUL KIT, includes items 33, 34, 38 and 42

PARTS DRAWING

SC46 PUMP

PUMP SPECIFICATIONS

WEIGHT - 312 LBS
CAPACITY - 65 OZ.
MAX RPM - 800
OIL GRADE - Low carbon compressor oil
PGS III (018-0053SP) or SLC 1 (018-0051SP)



PARTS LIST

SC46 PUMP :

FLYWHEEL 044-0051

item 31 (must be purchased separately)

ITEM	PART NO	DESCRIPTION	QTY
1	046-0175	SHIM, bearing adj., .005 thick	and/or
	046-0176	SHIM, bearing adj., .010 thick	and/or
	046-0177	SHIM, bearing adj., .020 thick	A/R
2	046-0227	GASKET, adapter plate	1
3	077-0070	PLATE, adapter, centrifugal unloader	1
4	096-0009	WEIGHT	2
5	114-0112	HOLDER, weight	1
6	107-0015	PIN	2
7	055-0051	SPRING	1
8	078-0011	PLUNGER	1
9	056-0018	BREATHER, crankcase	1
10	059-0156	BOLT, M6 x 20 mm lg.	4
11	031-0057	VALVE, air, w/ valve core	1
12	058-0084	NUT, brass, M10	1
13	077-0071	HOUSING, centrifugal unloader	1
14	046-0171	GASKET	1
15	059-0166	BOLT, M8 x 20mm lg.	21
16	060-0070	WASHER, lock, 8mm	4
17	062-0004	PLUG, oil drain	1
18	046-0178	GASKET, sight glass flange	1
19	032-0031	FLANGE, w/sight glass	1
20	059-0153	BOLT, M8 x 30 mm lg.	2
21	049-0028	CRANKCASE	1
22	046-0170	GASKET, side cover	1
23	077-0072	COVER, side	1
24	060-0061	WASHER, copper .52" O.D. x .32" I.D.	14
25	046-0168	GASKET, front cover	1
26	051-0054	BEARING SET, rear	1
27	053-0052	CRANKSHAFT	1
28	051-0053	BEARING SET, front	1
29	059-0163	BOLT, M16 x 80mm lg	1
30	146-0015	KEY, flywheel	1
31	044-0051	FLYWHEEL, 19" O.D. must be purchased separately	1
32	058-0086	NUT, M16	1
33	060-0069	WASHER, lock, 16mm	1
34	045-0044	BEARING CARRIER, front	1
35	046-0179	SEAL, shaft	1
36	054-0127	RING SET, high pressure	2
37	048-0055	PISTON, high pressure	2
38	052-0028	PIN, wrist, high pressure	2
39	047-0054	ROD, connecting	4
40	051-0055	INSERT, bearing	4 pair
41	059-0154	BOLT, rod, M10 x 45mm lg	8
42	060-0072	WASHER, lock 10mm	8
43	054-0119	RING, retaining	4
44	054-0126	RING SET, low pressure	2
45	048-0054	PISTON, low pressure	2
46	052-0027	PIN, wrist, low pressure	2
47	060-0063	WASHER, copper, .66 OD x .39 ID	12
48	059-0159	BOLT, cylinder M10 x 30mm lg	12
49	082-0013	AFTERCOOLER	1
50	046-0172	GASKET, manifold, aftercooler	4
51	083-0008	ELBOW, manifold, aftercooler	2
52	060-0070	WASHER, lock, 8mm	8
53	059-0158	BOLT, manifold, M8 x 25mm lg	8
54	136-0032	VALVE, pressure relief, 250 PSI	1
55	042-0055	HEAD, cylinder	1
56	059-0167	BOLT, head, M12 x 70mm lg	16
57	060-0105	WASHER, M12	16
58	046-0173	GASKET, intercooler	4
59	058-0087	NUT, conduit, 1"	2
60	060-0062	WASHER, copper, 1.62" O.D. x 1.368" I.D.	10
61	043-0098	INTAKE VALVE ASSY, low pressure includes items 61a-61f	4
61a	--	.NUT, self-locking, hex jam	1
61b	--	.SEAT, valve	1
61c	--	.PLATE, valve	1
61d	--	.SPRING, valve	1
61e	--	.GUIDE, valve	1
61f	--	.BOLT, M6 x 20mm lg	1
62	043-0099	INTAKE VALVE ASSY, high pressure includes items 62a-62f	2
62a	--	.NUT, self-locking, hex jam	1
62b	--	.SEAT, valve	1
62c	--	.PLATE, valve	1
62d	--	.SPRING, valve	1
62e	--	.GUIDE, valve	1
62f	--	.BOLT, M6 x 20mm lg	1
63	043-0100	EXHAUST VALVE ASSY, high & low includes items 63a-63e	4
63a	--	.BOLT, M6 x 12mm lg	1
63b	--	.GUIDE, valve	1
63c	--	.SPRING, valve	1
63d	--	.PLATE, valve	1
63e	--	.SEAT, valve	1
64	043-0094	SPACER, intake valve	6
65	043-0095	SPACER, exhaust valve	4
66	058-0082	RETAINER, valve, low pressure	4
67	058-0083	RETAINER, valve low pressure exhaust or high pressure intake and exhaust	6
68	046-0174	GASKET, valve cover	6
69	077-0073	COVER, valve	6
70	062-0006	PLUG, pipe, 3/4" NPT	7
71	082-0012	INTERCOOLER	2
72	059-0157	BOLT, M8 x 90mm lg	8
73	136-0039	VALVE, pressure relief, 70 PSI	2
74	064-0022	ELBOW, 90° street, 1/4"	2
75	063-0006	BUSHING, reducer	2
76	019-0097	FILTER CANNISTER ASSY includes item 76a	2
76a	019-0023	.ELEMENT, filter replacement	2
77	046-0166	GASKET, cylinder head	2
78	050-0030	CYLINDER	2
79	046-0167	GASKET, cylinder/crankcase	2



WARRANTY

ONE YEAR LIMITED WARRANTY



DOWNS, Kansas 67437 • 785/454-3409

WARRANTS, That for a period of twelve (12) months from the date of purchase, it will replace or repair, free of charge for the original retail purchaser only, any part or parts, manufactured by the Company, found upon examination by the Company or its assigned representatives, to be defective in material or workmanship or both. All transportation charges for parts submitted for replacement or repair under this warranty must be borne by the original retail purchaser. This is the exclusive remedy under this warranty.

Failure by the original retail purchaser to install, maintain and operate said equipment in accordance with good industry practices, or failure to comply with the specific recommendations of the Company set forth in the owner's manual, shall render this warranty null and void.

The Company shall not be liable for any repairs, replacements, or adjustments to the equipment or any costs for labor performed by the purchaser without the Company's prior written approval. The effects of corrosion, erosion and normal wear and tear are specifically excluded from this warranty.

Notwithstanding the above, any legal claim against the Company shall be barred if legal action thereon is not commenced within twelve (12) months from the date of purchase or delivery whichever occurs last. This warranty constitutes the entire agreement between the Company and the original retail purchaser and no representative or agent is authorized to alter the terms of same without expressed written consent of the Company.

THE COMPANY MAKES NO OTHER WARRANTY OR REPRESENTATION OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE. ALL IMPLIED WARRANTIES, INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIABILITY FOR CONSEQUENTIAL AND INCIDENTAL DAMAGES UNDER ANY AND ALL WARRANTIES, OTHER CONTRACTS, NEGLIGENCE, OR OTHER TORTS IS EXCLUDED TO THE EXTENT EXCLUSION IS PERMITTED BY LAW.