

Please read and save this Repair Parts Manual. Read this manual and the General Operating Instructions carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. The Safety Instructions are contained in the General Operating Instructions. Failure to comply with the safety instructions accompanying this product could result in personal injury and/or property damage! Retain instructions for future reference.

# 1 1/2-Inch High Pressure Pumps

## Single Stage Models

Refer to form 1808-633-00 for General Operating and Safety Instructions.

### Description

These centrifugal pumps are engine-driven, self-priming (to 20 ft. lift), portable units, shipped completely assembled and mounted. A clog resistant, open impeller is used to handle clear or dirty liquids, but is not intended for the handling of large solids. A built-in check valve assists in priming and a mechanical seal prevents leakage. Handles liquids from 40° to 180° F (4° to 82° C). For use with nonflammable liquids compatible with pump component materials.

### Specifications

Suction inlet . . . . . 1 1/2" NPT  
 Discharge outlet . . . . . 1 1/2" NPT  
 Dimensions  
 3950-95 . . . . . 22"L x 17 7/8"W x 19 3/8"H  
 3960-95 . . . . . 19"L x 15 3/8"W x 16"H

### Engine

3950-95 . . . . . 5 1/2 HP B & S Intek  
 3960-95 . . . . . 3 1/2 HP B & S

### Weight

3950-95 . . . . . 73 lbs.  
 3960-95 . . . . . 51 lbs.

Basic construction . . . . . cast iron

### Maintenance

**▲ WARNING** *To prevent accidental starting always remove the spark plug, or disconnect and ground the spark plug wire before attempting to service or remove any component.*

### CLEANING

This unit has been designed with a removable volute enabling the pump to be cleaned or unclogged with ease.

Remove casing and volute as described in steps 1 and 2 under MECHANICAL SEAL REPLACEMENT. Remove any debris found inside the unit, reassemble as described in steps 16 and 17 under MECHANICAL SEAL REPLACEMENT.

**NOTE:** Depending on application it may be necessary to remove suction and discharge hoses.

### MECHANICAL SEAL REPLACEMENT

Refer to Figures 1 and 2.

**IMPORTANT:** Always replace the seal seat (Ref. No. 5), seal head (Ref. No. 6), and the shaft sleeve (Ref. No. 7) to insure proper mating of mechanical seal components!

1. Unthread cap screws (Ref. No. 14) and remove casing (Ref. No. 12) and o-ring (Ref. No. 4) from the adapter (Ref. No. 3).
2. Unthread round head screws (Ref. No. 15) and remove volute (Ref. No. 10) from adapter.

3. Unscrew impeller (Ref. No. 9) from the engine shaft. Remove the impeller shim(s) (Ref. No. 8), shaft sleeve, and seal head from engine shaft.

**NOTE:** To keep the shaft from turning, remove the shroud from the engine and hold the flywheel in place.

4. Unthread hex flange screw (Ref. No. 2) and remove the adapter from the engine mounting face.
5. Push seal seat from the adapter recess with a screwdriver.
6. Clean the adapter recess before inserting a new seal seat.
7. Carefully wipe the ceramic surface of the new seal seat with a clean cloth.
8. Wet the outside of the rubber portion of the seal seat with a light coating of soapy water.
9. Press the new seal seat squarely into the cavity in the adapter. Use finger pressure only to avoid scratching the seal seat. (This is a lapped surface and must be handled very carefully.)
10. After the seal seat is in place, insure that it is clean and has not been marred.

### Performance Chart in gallons per minute (GPM) of water\*

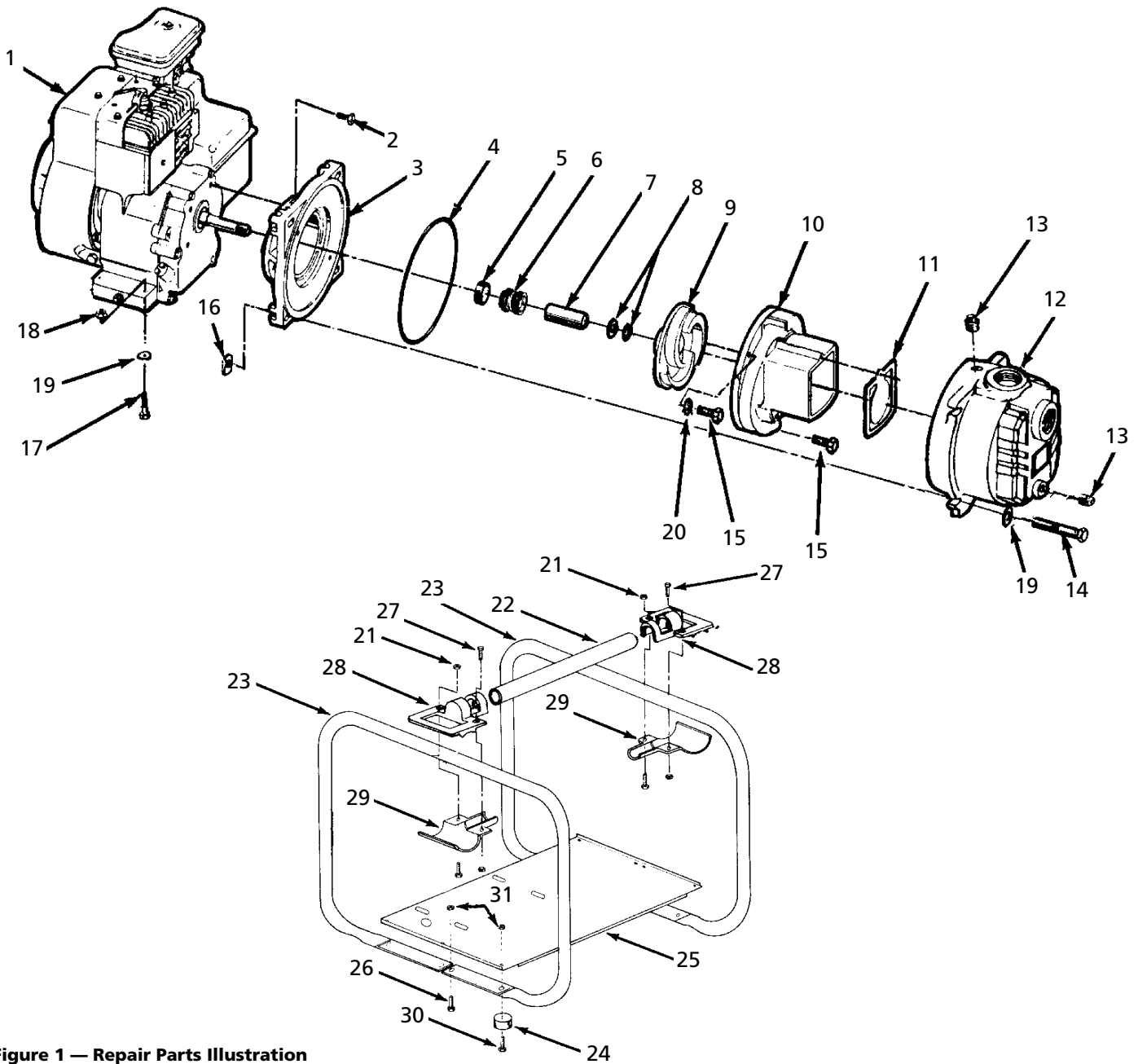
Suction Lift in feet	Model 3960-95, 3 HP Pump -Discharge pressure-psi-								Maximum Pressure psi	Suction Lift in feet	Model 3950-95, 5 HP Pump -Discharge Pressure-psi-								Maximum Pressure psi
	10	15	20	25	30	35	40	45			10	20	30	40	50	55	60	65	
5	62	56	50	42	39	26	17	8	50	5	72	67	60	49	36	28	21	12	71
10	59	53	47	39	30	22	14	5	47	10	66	65	58	47	34	26	17	8	68
15	56	51	43	35	27	18	9	-	45	15	58	56	55	44	30	22	13	-	65
20	48	45	40	32	23	14	6	-	42	20	49	48	47	41	26	18	9	-	63
25	33	32	30	26	19	11	-	-	40	25	33	32	31	30	23	14	5	-	61

(\* ) Does not include pressure losses in suction and discharge piping.

**For Repair Parts, contact dealer where pump was purchased.**

Please provide following information:

- Model number
- Serial number (if any)
- Part description and number as shown in parts list



**Figure 1 — Repair Parts Illustration**

# Models 3950-95 and 3960-95

## Repair Parts List

Ref. No.	Description	Part Number for Models:		Qty.
		3950-95	3960-95	
1	Engine	1639-019-00	1630-003-00	1
2	5/16"-24 UNF x 3/4" Hex head cap screw	*	*	4
3	Adapter	2182-010-01	1608-005-09	1
4	O-ring	2186-000-00	1610-000-00	1
5&6	† Seal assembly - Buna N (standard)	1640-162-96	1640-162-96	1
	† Seal assembly - Viton (optional)	1640-162-91	1640-162-91	1
	† Seal assembly - Viton & Silicon Carbide (optional)	1640-166-90	1640-166-90	1
7	Shaft sleeve	1483-000-00	1483-000-00	1
8	Impeller shim pkg. (one each .010, .020, .030")	1658-000-90	1658-000-90	1
9	Impeller	1998-002-01	379D-011-01	1
10	Volute	1998-001-01	379D-150-90	1
11	Flapper valve	1609-002-00	1609-002-00	1
12	Casing	2112-001-01	2111-001-01	1
13	1/2" NPT plug	*	*	2
14	3/8"-16 UNC x 3" Hex head cap screw	*	—	4
	3/8"-16 UNC x 2 <sup>3</sup> / <sub>4</sub> " Hex head cap screw	—	*	4
15	#10-24 UNC x 3/4" Socket head cap screw SS	—	1705-001-00	1
	#10-24 UNC x 7/8" Socket head cap screw SS	1705-000-00	—	2
	#10-24 UNC x 1 <sup>1</sup> / <sub>2</sub> " Socket head cap screw SS	—	1705-002-00	1
16	3/8"-16 UNC Special nut	2182-007-00	—	4
	3/8"-16 UNC Hex nut	—	*	4
17	5/16"-18 UNC x 2 <sup>1</sup> / <sub>2</sub> " Hex head cap screw	*	—	4
	5/16"-18 UNC x 1 <sup>1</sup> / <sub>2</sub> " Hex head cap screw	—	*	4
18	5/16"-18 UNC Hex nut	*	*	4
19	3/8" Flat washer	*	—	4
		—	*	8
20	#10 Lockwasher SS	1787-000-00	1787-000-00	2
21	1/4"-20 UNC Hex nut	*	—	8
		—	*	4
22	Frame brace	1696-116-00	—	2
		—	A433-100-00	1
23	Outside rail	1696-118-00	A433-101-00	2
24	Rubber foot	1508-000-00	1508-000-00	4
25	Frame base	1696-116-00	1668-000-00	2/1
26	5/16"-18 UNC x 1/2" Hex head cap screw	*	—	4
	1/4"-20 UNC x 1/2" Hex head cap screw	—	*	4
27	1/4"-20 UNC x 3/4" Hex head cap screw	*	—	8
		—	*	4
28	Upper frame clamp	1696-091-00	—	4
		—	1696-098-00	2
29	Lower frame clamp	1696-091-00	—	4
		—	1696-097-00	2
30	5/16"-18 UNC x 3/4" Hex head cap screw	*	—	4
	1/4"-20 UNC x 3/4" Hex head cap screw	—	*	4
31	5/16"-18 UNC Hex nut	*	—	8
	1/4"-20 UNC Hex nut	—	*	8
‡	Raising block (not shown)	1605-000-00	—	2
‡	1 <sup>1</sup> / <sub>2</sub> " NPT Pipe nipple	1696-043-00	1696-043-00	2

(\*) Standard hardware item available locally.

(‡) Not shown.

(†) Seal assembly includes one seal seat (Ref. No. 5) and one seal head (Ref. No. 6), not available separately.

# 1½-Inch High Pressure Pumps

## Single Stage Models

### Maintenance (continued)

11. Using a clean cloth, wipe the shaft and make certain that it is perfectly clean.
12. Secure the adapter on the engine mounting face.

**▲ CAUTION** *Tighten hex flange screws **EVENLY** to avoid cocking rabbet on engine mounting face.*

13. Apply a light coating of soapy water to the inside rubber portion of seal head and slide onto the shaft sleeve. Slip the shaft sleeve with seal head onto the engine shaft with the black carbon face toward the white ceramic seal seat.

**▲ CAUTION** *Do not touch or wipe the face of the polished surface part of the seal head.*

14. Replace any impeller shim(s) removed in disassembly.
15. Screw impeller back in place, tightening until it is against the shaft sleeve.
16. Remount volute and position O-ring in place.

**IMPORTANT:** Always inspect O-ring. Replace when cracked or worn. Wet O-ring with soapy water for ease of assembly.

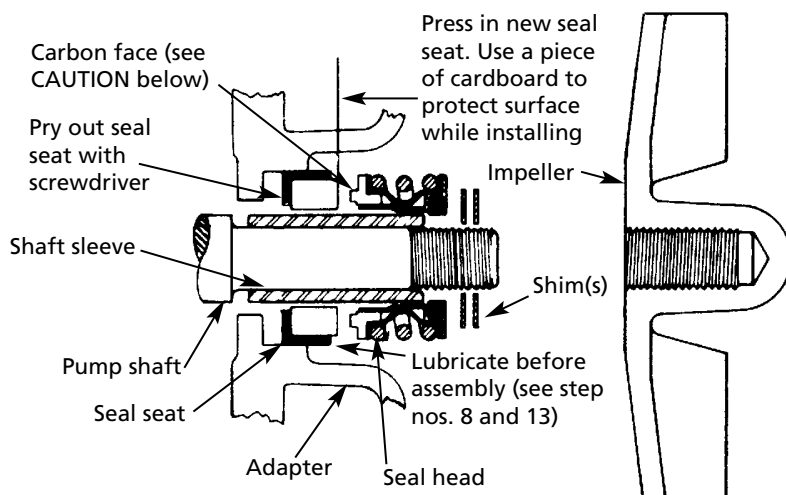
17. Remount casing.

### SHIM ADJUSTMENT

1. When installing a replacement engine, adapter, impeller, shaft sleeve, volute or casing it may be necessary to vary the number of impeller shims (Ref. No. 8) that will be required. This is easily done by adding one shim more than was removed and reassembling the pump as described in MECHANICAL SEAL REPLACEMENT section.

**NOTE:** When adding or removing shims, it is best to proceed with a 0.010" increment each time. Remove spark plug wire from engine and ground. While tightening the unit together turn the shaft (by pulling on the recoil starter, etc.); feel for the shaft seizing. If shaft begins to seize before the fasteners are completely tight, disassemble the pump and remove one shim and repeat assembly.

2. Once having added one shim more than original, ensure that the volute (Ref. No. 10) and adapter (Ref. No. 3) are firmly fitted (check fasteners Ref. Nos. 2 & 15). When engine turns freely add shims until it does strike, then remove a 0.010" shim. This should allow the proper clearance.



**Figure 2 - Mechanical Seal Replacement**