

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-Inch Self-Priming Centrifugal Pumps

## Low Volume Liquid Transfer

Refer to form 1808-634-00 for General Operating and Safety Instructions.

### Description

These centrifugal pumps are self-priming (to 6 ft. lift) units designed for transferring perchlorethylene (and other non-flammable liquids) from drums or storage tanks. Handle liquids from 40° F to 180° F (4° C to 82° C). Units should be used only with non-abrasive, non-flammable liquids that are compatible with pump component materials.

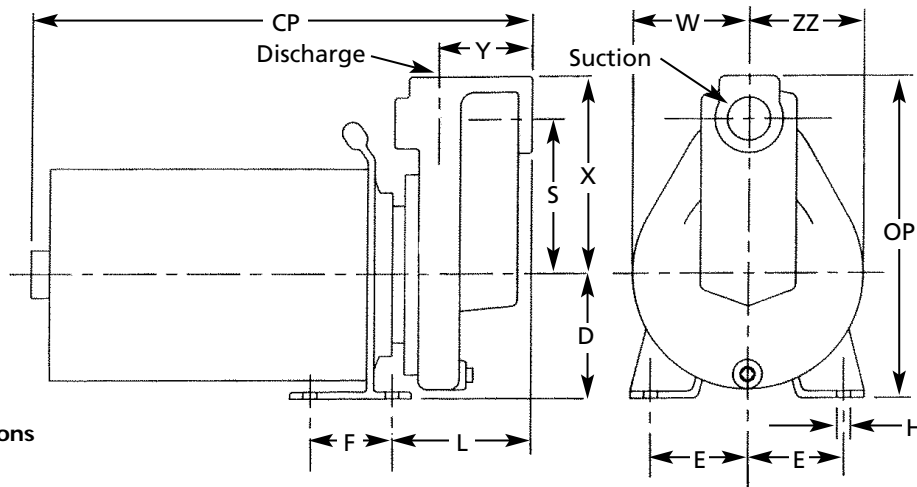


Figure 1 - Dimensions

### Dimensions (Inches)

Model	Suc.*	Dis.*	CP**	D	E	F	H	L	OP	S	W	X	Y	ZZ
4294-98	1"	1"	14.11	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50
4295-98	1	1	14.11	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50
4296-98	1	1	14.61	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50
4297-98	1	1	15.11	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50
4298-98	1	1	15.49	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50
5141-98	1	1	14.61	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50
5142-98	1	1	14.86	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50
5143-98	1	1	15.24	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50
5144-98	1	1	15.74	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50
429A-98	1	1	15.53	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50
429B-98	1	1	16.03	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50
429C-98	1	1	16.41	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50
429D-98	1	1	17.28	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50
429E-98	1	1	17.66	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50
514A-98	1	1	15.41	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50
514B-98	1	1	16.03	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50
514C-98	1	1	16.41	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50
514D-98	1	1	16.53	3.50	2.25	3.00	0.44	4.28	8.75	4.00	3.00	5.25	3.94	3.50

(\*) Standard NPT (female) pipe thread.

(\*\*) This dimension may vary due to motor manufacturer's specifications.

# 1-Inch Self-Priming Centrifugal Pumps

## Low Volume Liquid Transfer

### Specifications

DRIVER							PUMP					Ship Weight (Lbs.)
Model	HP	Phase	Enclosure	Power Supply	Hertz	NEMA Frame	RPM	Casing	Adapt.	Imp.	Seals‡	
4294-98	1/3	1	ODP	115/230 VAC	60	56J	3450	SS	SS	SS	Viton	35
4295-98	1/2	1	ODP	115/230 VAC	60	56J	3450	SS	SS	SS	Viton	38
4296-98	3/4	1	ODP	115/230 VAC	60	56J	3450	SS	SS	SS	Viton	39
4297-98	1	1	ODP	115/230 VAC	60	56J	3450	SS	SS	SS	Viton	42
4298-98	1½	1	ODP	115/230 VAC	60	56J	3450	SS	SS	SS	Viton	50
429A-98	1/2	1	TEFC	115/230 VAC	60	56J	3450	SS	SS	SS	Viton	41
429B-98	3/4	1	TEFC	115/230 VAC	60	56J	3450	SS	SS	SS	Viton	43
429C-98	1	1	TEFC	115/230 VAC	60	56J	3450	SS	SS	SS	Viton	46
429D-98	1½	1	TEFC	115/230 VAC	60	56J	3450	SS	SS	SS	Viton	54
429E-98	2	1	TEFC	115/230 VAC	60	56J	3450	SS	SS	SS	Viton	65
5141-98	1/2	3	ODP	230/460 VAC	60/50	56J	3450	SS	SS	SS	Viton	35
5142-98	3/4	3	ODP	230/460 VAC	60/50	56J	3450	SS	SS	SS	Viton	36
5143-98	1	3	ODP	230/460 VAC	60/50	56J	3450	SS	SS	SS	Viton	39
5144-98	1½	3	ODP	230/460 VAC	60/50	56J	3450	SS	SS	SS	Viton	46
514A-98	3/4	3	TEFC	230/460 VAC	60/50	56J	3450	SS	SS	SS	Viton	40
514B-98	1	3	TEFC	230/460 VAC	60/50	56J	3450	SS	SS	SS	Viton	43
514C-98	1½	3	TEFC	230/460 VAC	60/50	56J	3450	SS	SS	SS	Viton	51
514D-98	2	3	TEFC	230/460 VAC	60/50	56J	3450	SS	SS	SS	Viton	62

(ODP) Open Drip Proof; (TEFC) Totally Enclosed Fan Cooled; (SS) 316 Stainless Steel

(‡) Shaft seal also contains carbon, ceramic, and stainless steel components.

**NOTE:** Driver data is subject to change without notice, see label on driver for actual specifications.

### Performance

Model	HP	GPM of Water at Total Head in Feet							Max. Head**
		10'	20'	30'	40'	50'	60'		
4294, 429A	1/3 ODP, 1/2 TEFC	30	24	15	5	—	—	44	
4295, 429B, 5141, 514A	1/2 ODP, 3/4 TEFC	42	36	28	16	—	—	49	
4296, 429C, 5142, 514B	3/4 ODP, 1 TEFC	49	43	35	25	10	—	54	
4297, 429D, 5143, 514C	1 ODP, 1½ TEFC	56	50	43	35	23	—	60	
4298, 429E, 5144, 514D	1½ ODP, 2 TEFC	63	57	51	42	33	20	68	

(\*\*) Shutoff; to convert to PSI, multiply by SG (specific gravity of liquid), then divide by 2.31.

### Maintenance

**⚠ WARNING** *Make certain that power source is disconnected before attempting to service or disassemble any components! If power disconnect is out-of-sight, lock it in open position and tag it to prevent application of power.*

#### MECHANICAL SEAL REPLACEMENT

Refer to Figures 2 and 3.

**IMPORTANT:** Always replace both seal seat and seal head to insure proper mating of mechanical seal components!

**NOTE:** It is not necessary to remove piping from pump casing. The motor and impeller assembly is removed from back of casing.

1. Drain pump before disassembling  
Unscrew pipe plug (Ref. No. 14) to drain most of liquid; some will be left

in bottom.

2. Unthread hex nuts (Ref. No. 5) and remove pump casing (Ref. No. 13) and o-ring (Ref. No. 8) from casing cover (Ref. No. 7).
3. To unscrew impeller (Ref. No. 12), turn counterclockwise (CCW) facing

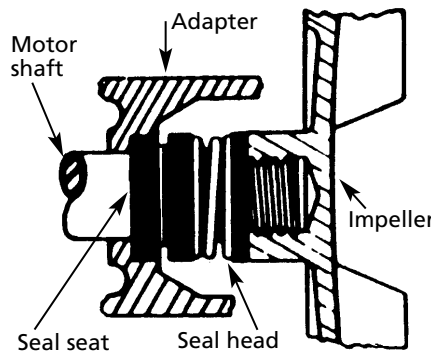


Figure 2 - Mechanical Seal Replacement

impeller. Unscrew acorn nut (Ref. No. 17) and o-ring gasket (Ref. No. 16) before unscrewing impeller.

**NOTE:** A screwdriver slot or two flats for use with an open end 7/16" wrench, are provided at rear of motor shaft (remove bearing cap for access). To hold motor shaft from turning, either insert a large screwdriver blade into the slot, or use a 7/16" wrench across the flats.

4. Unthread cap screws (Ref. No. 6) and remove motor adapter (Ref. No. 4). Seal head (Ref. No. 10) and impeller shims (Ref. No. 11) will come loose at this time.

**NOTE:** Casing cover will still be attached to motor adapter.

**IMPORTANT:** Retain impeller shims for use when reassembling unit.

## Models 4290-98 thru 429E-98 & 5140-98 thru 514D-98

### Maintenance (Continued)

5. Push seal seat (Ref. No. 9) from casing cover with screwdriver.
6. Clean adapter recess before inserting a new seal seat.
7. Carefully wipe polished surface of new seal seat with a clean cloth.
8. Wet outside of rubber portion of seal seat with a light coating of soapy water.
9. Press new seal seat squarely into cavity in casing cover. If seal seat does not press squarely into cavity, it can be adjusted into place by pushing on it carefully with a piece of pipe or dowel. Always use a piece of cardboard between pipe and seal seat to avoid scratching seal seat. (This is a lapped surface and must be handled very carefully.)
10. After seal seat is in place, insure that it is clean and has not been marred.
11. Using a clean cloth, wipe shaft and make certain that it is perfectly clean.

**NOTE:** If removed, slide slinger washer (Ref. No. 2) onto shaft until it is located approximately 1/8" from face of motor bearing hub.

12. Carefully guide motor shaft

through seal seat. Secure motor adapter on motor mounting face.

13. Apply a light coating of soapy water to inside rubber portion of seal head and slide onto shaft (with sealing face first) so that rubber portion is just up over shaft shoulder.

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

14. Replace any impeller shims which may have been removed in disassembly (see "Shim Adjustment").
15. Screw impeller back in place, tightening until it is against shaft shoulder. Replace o-ring gasket and acorn nut.
16. Remount o-ring and pump casing on casing cover.

**IMPORTANT:** Always inspect o-ring gasket for cracks or cuts when unit is disassembled. Replace if damaged.

#### SHIM ADJUSTMENT

When installing a replacement impeller (Ref. No. 12) or motor (Ref. No. 1), it may be necessary to adjust number of shims (Ref. No. 11) to insure proper running clearance between impeller and casing. Proceed as follows:

**NOTE:** A proper running clearance is less than 0.010.

1. For impeller replacement, add one 0.010" shim in addition to shims removed originally.
2. For motor replacement, add two 0.010" shims in addition to shims removed during disassembly.
3. Reassemble pump using "Mechanical Seal Replacement" for reference.

**IMPORTANT:** Insure that casing is in place and check shaft to make sure it is turning freely (use screwdriver slot or two flats at rear of motor to turn shaft). If it turns freely, check to insure that casing cover and casing are fitted "metal to metal" where they meet on outside. If they are not "metal to metal" tighten the hex nuts (Ref. No. 5) and recheck shaft for free turning. Tighten carefully turning shaft while tightening so that motor bearings are not damaged in event that too many shims were installed. If shaft seizes before fasteners are completely tight, disassemble pump and remove one shim and repeat reassembly.

**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

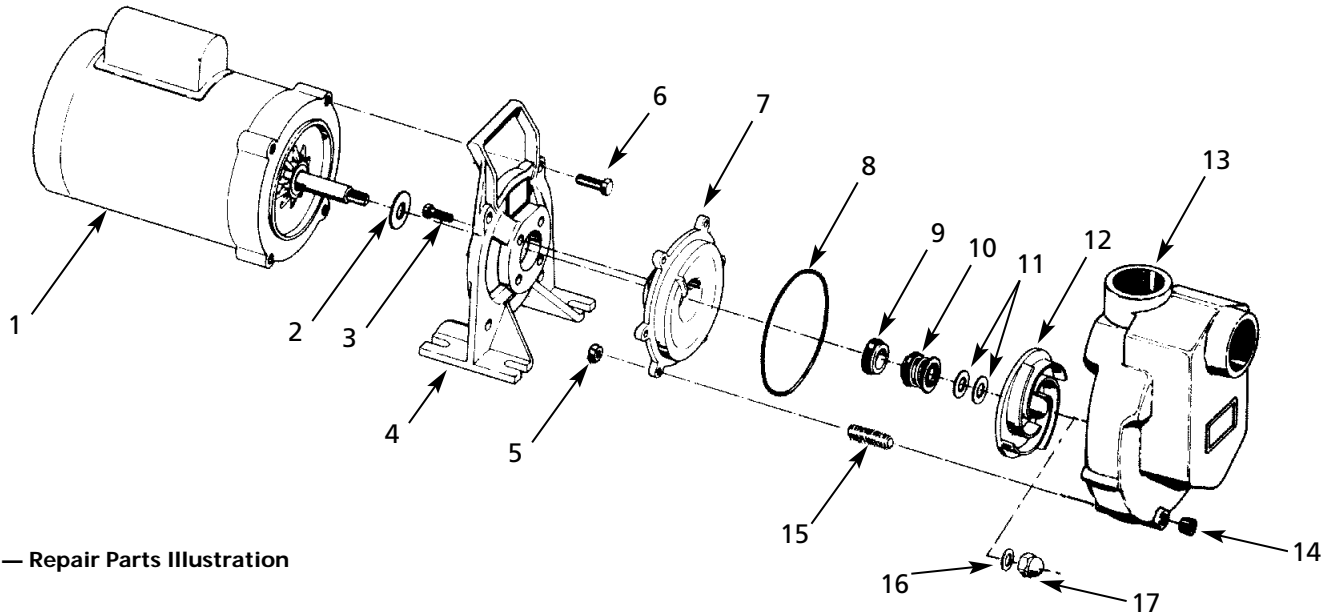


Figure 3 — Repair Parts Illustration

**Repair Parts List**

Ref. No.	Description	Part Number For Models:					Qty.	
		4294-98 (1/3HP)	4295-98 (1/2HP)	4296-98 (3/4HP)	4297-98 (1HP)	4298-98 (1 1/2HP)		
1	Motor	-1 Phase ODP	1626-008-00	1626-009-00	1626-010-00	1626-011-00	1626-012-00	1
		-3 Phase ODP	—	1626-013-00	1626-014-00	1626-015-00	1626-016-00	
		-1 Phase TEFC	1626-068-00	1626-051-00	1626-069-00	1626-050-00	1626-070-00	
		-3 Phase TEFC	—	1626-052-00	1626-077-00	1626-053-00	1626-054-00	
2	Slinger washer		1534-000-00	1534-000-00	1534-000-00	1534-000-00	1534-000-00	1
3	Fastener		*	*	*	*	*	4
4	Adapter		4294-030-09	4294-030-09	4294-030-09	4294-030-09	4294-030-09	1
5	Fastener		*	*	*	*	*	6
6	Fastener		*	*	*	*	*	4
7	Casing cover		4294-020-01	4294-020-01	4294-020-01	4294-020-01	4294-020-01	1
8	O-ring -Viton		2105-023-00	2105-023-00	2105-023-00	2105-023-00	2105-023-00	1
9	† Seal seat -Viton		1640-161-91	1640-161-91	1640-161-91	1640-161-91	1640-161-91	1
10	† Seal head -Viton		1640-161-91	1640-161-91	1640-161-91	1640-161-91	1640-161-91	1
11	Impeller shim (package of 3)		1657-000-90	1657-000-90	1657-000-90	1657-000-90	1657-000-90	1 pkg
12	Impeller		4294-010-01	4295-010-08	4295-010-07	4295-010-06	4295-010-05	1
13	Casing		4294-001-01	4294-001-01	4294-001-01	4294-001-01	4294-001-01	1
14	Pipe plug		*	*	*	*	*	1
15	Fastener		*	*	*	*	*	6
16	O-ring -Viton		2105-037-00	2105-037-00	2105-037-00	2105-037-00	2105-037-00	1
17	Impeller fastener		1784-001-00	1784-001-00	1784-001-00	1784-001-00	1784-001-00	1

(†) Seal Assembly (Ref. Nos. 9 & 10) includes Seal Head and Seal Seat and is available as a set only.

(\*) Standard hardware item, available locally.