

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.

Self-Priming Centrifugal Pumps

Medium Volume Dewatering Models

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

Description

These self-priming (to 15 ft. lift (to 10 ft. lift on aluminum models)) centrifugal pumps are designed for general purpose liquid transfer. Pumps include a semi-open clog resistant impeller. Handle liquids from 40° to 180° F (40° to 200° F with Viton seals). Some units will handle liquid with up to 1.65 specific gravity (see "Performance"). For use with non-flammable, non-abrasive, liquids compatible with pump component materials.

PUMPS

Motorized units are direct coupled to a 3450 RPM motor (see Specifications for additional motor data). Single phase pump motors have automatic reset thermal protection. All models are manual mode and require field wiring, no controls are supplied. Check motor wiring before putting unit into operation (see motor nameplate for specific wiring diagram).

UNITS SHIPPED WITHOUT MOTOR

Some models are not equipped with motors. They are suitable for mounting to 3450 RPM, NEMA 56J face threaded shaft motors, with counterclockwise rotation (looking at motor shaft). To find motor's available horsepower multiply motor's rated horsepower by service factor. This number must be equal to or greater than that required by pump. To determine minimum horsepower requirements of pump see chart below.

Model	Req'd HP
2851, 285E	0.58
285B, 285D	0.75
2852, 285F, 285M, 285P	0.80
2853, 2856, 285G, 285J	1.13
2855, 2857, 285H, 285K	1.40
285A, 285C	1.50

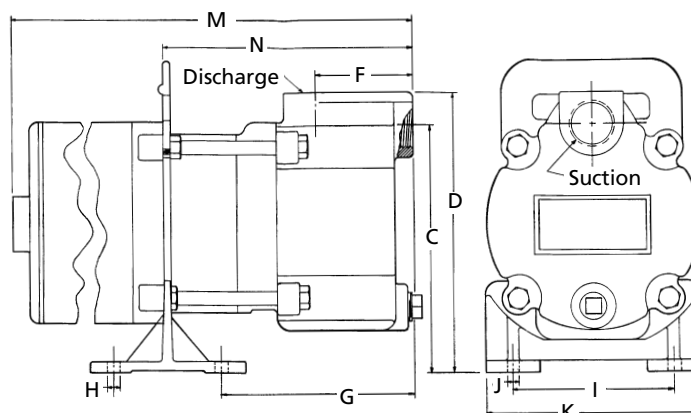


Figure 1 - Dimensions

Dimensions (Inches)

Model	Suc.*	Dis.*	C	D	F	G	H	I	J	K	M†	N
2851-95	1"	1"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	16.02	7.88
2852-95	1/4"	1/4"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	16.02	7.88
285M-95	1/4"	1/4"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	16.52	7.88
285E-95	1"	1"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	17.44	7.88
2853-95	1/4"	1/4"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	16.52	7.88
2856-95	1/4"	1/4"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	16.77	7.88
285F-95	1/4"	1/4"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	17.94	7.88
285P-95	1/4"	1/4"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	17.32	7.88
2855-95	1/4"	1/4"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	17.02	7.88
2857-95	1/4"	1/4"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	17.15	7.88
285G-95	1/4"	1/4"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	18.32	7.88
285J-95	1/4"	1/4"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	17.94	7.88
285H-95	1/4"	1/4"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	19.19	7.88
285K-95	1/4"	1/4"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	18.32	7.88
2851-96	1"	1"	6.79	7.98	2.81	6.13	0.75	4.50	0.50	6.00	16.02	7.88
285E-96	1"	1"	6.79	7.98	2.81	6.13	0.75	4.50	0.50	6.00	17.44	7.88
285B-95	1/4"	1/4"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	17.94	7.88
285D-95	1/4"	1/4"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	17.32	7.88
285A-95	1/4"	1/4"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	19.19	7.88
285C-95	1/4"	1/4"	5.94	7.13	2.81	6.88	0.44	6.00	0.44	7.00	18.32	7.88

NOTE: All dimensions have a tolerance of $\pm 1/8"$.

(*) Standard NPT (female) pipe thread.

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

Self-Priming Centrifugal Pumps

Medium Volume Dewatering Models

Specifications

DRIVER								PUMP					Ship Weight (Lbs.)
Model	HP	Phase	Enclosure	Volts	Hertz	NEMA Frame	RPM	Port Size (Inches)*	Casing	Adapt.	Imp.	Seal†	
2851-95	1/3	1	ODP	115/230	60	56J	3450	1 x 1	CI	CI	CI	Buna N	39
2852-95	1/2	1	ODP	115/230	60	56J	3450	1 1/4 x 1 1/4	CI	CI	CI	Buna N	42
285M-95	1/2	3	ODP	230/460	60/50	56J	3450	1 1/4 x 1 1/4	CI	CI	CI	Buna N	45
285E-95	1/2	1	TEFC	115/230	60	56J	3450	1 x 1	CI	CI	CI	Buna N	43
2853-95	3/4	1	ODP	115/230	60	56J	3450	1 1/4 x 1 1/4	CI	CI	CI	Buna N	43
2856-95	3/4	3	ODP	230/460	60/50	56J	3450	1 1/4 x 1 1/4	CI	CI	CI	Buna N	43
285F-95	3/4	1	TEFC	115/230	60	56J	3450	1 1/4 x 1 1/4	CI	CI	CI	Buna N	48
285P-95	3/4	3	TEFC	230/460	60/50	56J	3450	1 1/4 x 1 1/4	CI	CI	CI	Buna N	43
2855-95	1	1	ODP	115/230	60	56J	3450	1 1/4 x 1 1/4	CI	CI	CI	Buna N	46
2857-95	1	3	ODP	230/460	60/50	56J	3450	1 1/4 x 1 1/4	CI	CI	CI	Buna N	44
285G-95	1	1	TEFC	115/230	60	56J	3450	1 1/4 x 1 1/4	CI	CI	CI	Buna N	48
285J-95	1	3	TEFC	230/460	60/50	56J	3450	1 1/4 x 1 1/4	CI	CI	CI	Buna N	44
285H-95	1 1/2	1	TEFC	115/230	60	56J	3450	1 1/4 x 1 1/4	CI	CI	CI	Buna N	55
285K-95	1 1/2	3	TEFC	230/460	60/50	56J	3450	1 1/4 x 1 1/4	CI	CI	CI	Buna N	48
2851-96	1/3	1	ODP	115/230	60	56J	3450	1 x 1	AL	AL	AL	Viton	25
285E-96	1/2	1	TEFC	115/230	60	56J	3450	1 x 1	AL	AL	AL	Viton	29
285B-95	3/4	1	TEFC	115/230	60	56J	3450	1 1/4 x 1 1/4	CI	CI	SS	Viton	48
285D-95	3/4	3	TEFC	230/460	60/50	56J	3450	1 1/4 x 1 1/4	CI	CI	SS	Viton	46
285A-95	1 1/2	1	TEFC	115/230	60	56J	3450	1 1/4 x 1 1/4	CI	CI	SS	Viton	55
285C-95	1 1/2	3	TEFC	230/460	60/50	56J	3450	1 1/4 x 1 1/4	CI	CI	SS	Viton	48

(ODP) Open Drip Proof; (TEFC) Totally Enclosed Fan Cooled; (CI) Cast Iron; (AL) Aluminum; (SS) Stainless Steel

(* Standard NPT (female) pipe thread.

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

Performance

Model	HP	GPM of Water at Total Head in Feet						Max. Head**
		10'	20'	30'	40'	50'	60'	
2851-96‡, 285E-96‡	1/3 ODP, 1/2 TEFC	26	19	7	-	-	-	33 ft.
2851-95, 285E-95	1/2 ODP, 1/2 TEFC	50	42	33	21	4	-	52
2852, 285F, 285M, 285P	1/2 ODP, 3/4 TEFC	67	59	49	37	20	-	59
2853, 2856, 285G, 285J	3/4 ODP, 1 TEFC	78	71	61	49	33	12	65
2855, 2857, 285H, 285K	1 ODP, 1 1/2 TEFC	82	73	64	53	40	23	70
285B, 285D	3/4 TEFC	58	49	37	21	2	-	51
285A, 285C	1 1/2 TEFC	69	61	51	40	27	9	64

(ODP) Open Drip Proof; (TEFC) Totally Enclosed Fan Cooled

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

(‡) Handles liquids up to 1.65 specific gravity.

Assembly

MOTOR (FOR UNITS SHIPPED WITHOUT MOTOR ONLY)

1. If any parts are missing or damaged, do not attempt to assemble or operate pump until replacement parts are obtained and properly installed.
2. Verify that motor conforms to ALL standards specified in "Description", and is equipped with flinger washer (Ref. No. 2) not included with pump head.
3. Place motor in vertical position with shaft end up. Set adapter (Ref. No. 3) on top of motor.
4. See "Shaft Seal Replacement" and

follow steps to complete assembly.

Maintenance

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

MECHANICAL SEAL REPLACEMENT

Refer to Figures 2, 3, and 4.

IMPORTANT: Always replace both the seal seat (Ref. No. 6) and the seal head (Ref. No. 8) to insure proper mating of mechanical seal components!

NOTE: It is not necessary to remove

pipings from pump casing. The motor and impeller assembly is removed from back of casing.

1. Unthread cap screws (Ref. No. 13) and remove pump casing (Ref. No. 11) from adapter (Ref. No. 5).
2. The motor used with this pump is a 56J frame. It has a threaded shaft; impeller is screwed directly onto shaft. To unscrew the impeller (Ref. No. 10), turn counterclockwise (CCW) facing impeller.

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

Models 2851, 2852, 2853, 2855, 2856, 2857, 285A, 285B, 285C, 285D, 285E, 285F, 285G, 285H, 285J, 285K, 285M and 285P

Maintenance (Continued)

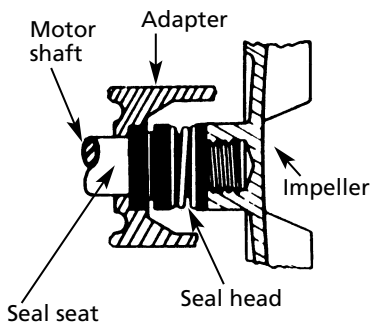


Figure 2 - Models 2851, 2852, 2853, 2855, 285E, 285F, 285G, 285H

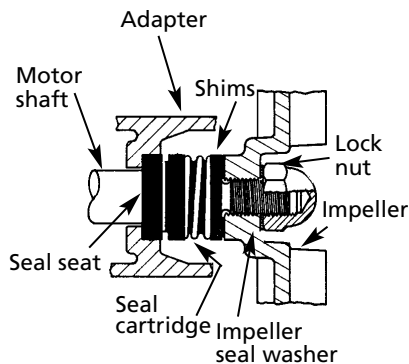


Figure 3 - Models 2856, 2857, 285A, 285M, 285P, 285B, 285C, 285D, 285J, 285K

either insert a large screwdriver blade into the slot or use a 7/16" wrench across the flats.

Before removing impeller, remove impeller nut (Ref. No. 15) and impeller seal washer (Ref. No. 16) (where applicable).

3. Remove the adapter from the motor mounting face. The seal head (Ref. No. 8) and impeller shims (Ref. No. 9) will come loose at this time.

IMPORTANT: Retain impeller shims for use when reassembling unit.

4. Push seal seat (Ref. No. 6) from the adapter recess with a screwdriver.
5. Clean the adapter recess before inserting a new seal seat.
6. Carefully wipe the ceramic surface of the new seal seat with a clean cloth.

7. Wet the rubber portion of the seal seat with a light coating of soapy water.
8. Press the new seal seat squarely into the cavity in the adapter. If the seal seat does not press squarely into the cavity, it can be adjusted into place by pushing on it with a piece of pipe. Always use a piece of cardboard between the pipe and seal seat to avoid scratching the seal seat. (This is a lapped surface and must be handled very carefully.)

9. After the seal seat is in place, insure that it is clean and has not been marred.
10. Using a clean cloth, wipe the shaft and make certain that it is perfectly clean.

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

11. Secure the adapter (Ref. No. 5) on the motor mounting face. Carefully guide motor shaft through the seal seat.
 12. Apply a light coating of soapy water to the inside rubber portion of seal head (Ref. No. 8) and slide onto the shaft (with the sealing face first) so that the rubber portion is just up over the shaft shoulder.
 13. Replace any impeller shims which may have been removed in disassembly. (See "Shim Adjustment".)
 14. Screw the impeller (Ref. No. 10) back in place, tightening until it is against the shaft shoulder.
- NOTE:** After impeller clearance has been set (see "Shim Adjustment"), place a new impeller seal washer onto exposed shaft. Screw impeller nut onto shaft and tighten (where applicable).
15. Remount the pump casing (Ref. No. 11) on the adapter (Ref. No. 5). (See "Shim Adjustment" if motor or impeller was replaced.)

IMPORTANT: Always inspect the O-ring

gasket (Ref. No. 7) for cracks or cuts when unit is disassembled, replace if damaged.

SHIM ADJUSTMENT

When installing a replacement impeller (Ref. No. 10) or motor (Ref. No. 1), it may be necessary to adjust the number of shims (Ref. No. 9) to insure proper running clearance between the impeller and the casing. Proceed as follows:

NOTE: A proper running clearance is less than 0.010.

1. For impeller replacement, add one (1) shim in addition to the one (1) removed originally.
2. For motor replacement, add two (2) shims in addition to the shims removed during disassembly.
3. Reassembly the pump using MECHANICAL SEAL REPLACEMENT for reference.

IMPORTANT: Insure that the casing is snugly in place and check the shaft to make sure it is turning freely (use the screwdriver slot in the motor to turn the shaft). If it turns freely, check to insure that the casing cover and casing are fitted "metal to metal" where they meet on the outside. If they are not "metal to metal" tighten the fasteners (Ref. No. 13) and recheck the shaft for free turning. Tighten carefully turning the shaft while tightening so that the motor bearings are not damaged in the event that too many shims were installed. If the shaft seizes before fasteners are completely tight, disassemble the pump and remove one (1) 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

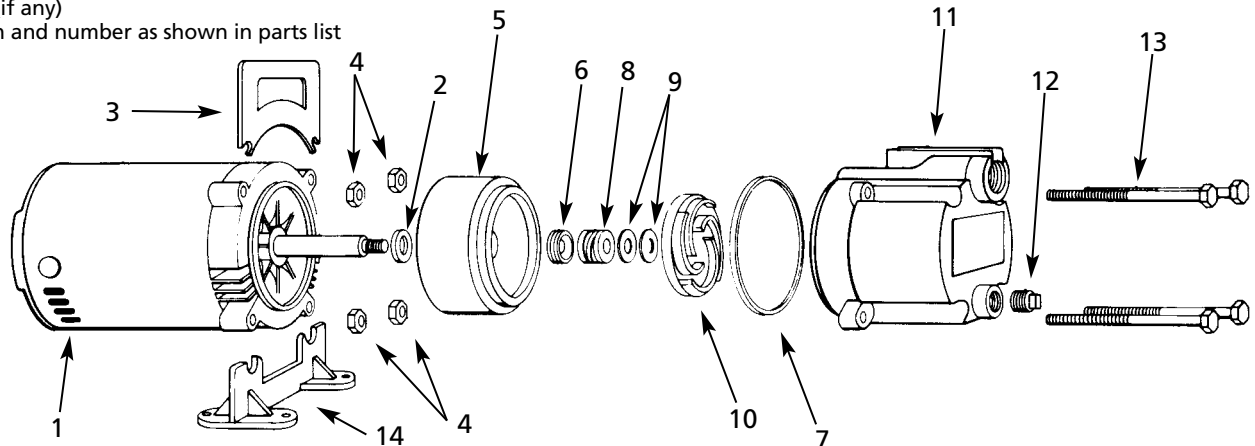


Figure 4 — Repair Parts Illustration

Repair Parts List

Ref. No.	Description	Part Number for Models:						Qty.
		2852-95 & 285F-95	2853-95 & 285G-95	2855-95 & 285H-95	2856-95 & 285J-95	2857-95 & 285K-95	2851-95 & 285E-95	
1	Motor (ODP) (TEFC)	1626-009-00 1626-051-00	1626-010-00 1626-069-00	1626-011-00 1626-050-00	1626-014-00 1626-077-00	1626-015-00 1626-053-00	1626-008-00 1626-068-00	1 1
2	Slinger washer	1534-000-00	1534-000-00	1534-000-00	1534-000-00	1534-000-00	1534-000-00	1
3	Handle	-	-	-	-	-	-	1
4	Fastner	*	*	*	*	*	*	4
5	Adapter	1560-000-02‡	1560-000-02‡	1560-000-02‡	1560-000-02‡	1560-000-02‡	1560-000-02‡	1
6 & 8	Shaft seal assembly (Buna N) (Viton)	1640-161-90	1640-161-90	1640-161-90	1640-161-90	1640-161-90	1640-161-90	1 1
7	O-ring (Buna N) (Viton)	1531-000-00	1531-000-00	1531-000-00	1531-000-00	1531-000-00	1531-000-00	1 1
9	Shim package 0.010, 0.020, 0.030 (1 of each)	1657-000-90	1657-000-90	1657-000-90	1657-000-90	1657-000-90	1657-000-90	1
10	Impeller	1537-000-01	1537-000-02	1538-000-01	1541-000-03	1542-000-01	1535-000-01	1
11	Casing	1524-000-02	1524-000-02	1524-000-04	1524-000-02	1524-000-04	1524-000-01	1
12	1/2" NPT Drain plug	*	*	*	*	*	*	1
13	Fastner	*	*	*	*	*	*	4
14	Foot	-	-	-	-	-	-	1
15	†Impeller nut	-	-	-	1784-000-00	1784-000-00	-	1
16	†Impeller seal washer	-	-	-	1471-020-00	1471-020-00	-	1

Ref. No.	Description	Part Number for Models:						Qty.
		285B-95	285D-95	285A-95	285C-96	2851-96 & 285E-96	285M-95 & 285P-95	
1	Motor (ODP) (TEFC)	- 1626-051-00	- 1626-052-00	- 1626-050-00	- 1626-053-00	1626-008-00 1626-068-00	1626-013-00 1626-052-00	1 1
2	Slinger washer	1534-000-00	1534-000-00	1534-000-00	1534-000-00	1534-000-00	1534-000-00	1
3	Handle	-	-	-	-	1515-000-00	-	1
4	Fastner	*	*	*	*	*	*	4
5	Adapter	1560-000-02‡	1560-000-02‡	1560-000-02‡	1560-000-02‡	1525-000-01	1560-000-02	1
6 & 8	Shaft seal assembly (Buna N) (Viton)	1640-161-90	1640-161-90	1640-161-90	1640-161-90	1640-161-90	1640-161-90	1 1
7	O-ring (Buna N) (Viton)	1532-000-00	1532-000-00	1532-000-00	1532-000-00	1532-000-00	1531-000-00	1 1
9	Shim package 0.010, 0.020, 0.030 (1 of each)	1657-000-90	1657-000-90	1657-000-90	1657-000-90	1657-000-90	1657-000-90	1
10	Impeller	4295-010-0B	4295-010-0B	4295-010-0A	4295-010-0A	1540-000-01	1541-000-02	1
11	Casing	1524-000-02	1524-000-02	1524-000-04	1524-000-04	1519-000-01	1524-000-02	1
12	1/2" NPT Drain plug	*	*	*	*	*	*	1
13	Fastner	*	*	*	*	*	*	4
14	Foot	-	-	-	-	1506-000-00	-	1
15	†Impeller seal washer	1471-020-00	1471-020-00	1471-020-00	1471-020-00	-	1784-000-00	1
16	†Impeller nut	1784-000-00	1784-000-00	1784-000-00	1784-000-00	-	1471-020-00	1

(*) Standard hardware item, available locally.

(‡) Includes handle and foot (unitized construction)

(-) Not applicable

(†) Not shown