



## AV6 & AV8 Series

### Metallic Vertical Centrifugal Pumps

### Installation and Maintenance Instructions

## ASSEMBLY

### PUMPS WITH MOTORS

1. No assembly required. Simply unpack the pump and motor and examine for any signs of shipping damage. If damage is detected, save the packaging and contact the carrier immediately.
2. To install the pump into the system, just follow the installation instructions provided.
3. A valve should be installed in the discharge line during the initial operation of the pump. Then determine the power consumed. If necessary, throttle back the flow until the pump draws the rated horsepower of the motor.

### PUMPS WITHOUT MOTORS

1. Unpack the pump and the supplied accessories and examine for damage. If damage is detected, save the packaging and notify the carrier immediately.
2. Install the coupling half (part of item 9) onto the motor shaft so that it is flush with the end of the motor shaft (the coupling body – not the three prongs). Tighten the setscrews on the coupling, and place the coupling insert (rubber part of item 9) firmly in place on the coupling.
3. Place the motor carefully on its fan cover with the motor shaft pointing straight up. Place the motor adapter (item 1) onto the motor face making sure to align the bolt holes.
4. Carefully lower the pump assembly on to the motor so that the motor shaft goes through the motor mount (item 2). Note that the mounting plate orientation is normally set so that the discharge is opposite the motor feet (or the electrical box if the motor has no feet). Adjust the motor shaft so that the three prongs on the shaft coupling align with the three empty slots in the motor shaft coupling with the insert. Once the coupling alignment is correct (and the mounting plate alignment), rotate the pump until the bolt alignment from the motor mount (item 2), through the motor adapter (item 1) to the motor is correct. Install and tighten the four bolts and washers (items 4, 5, and 6).
5. Spin the pump shaft by gripping the coupling assembly (Item 9) to verify that there is no binding on the shaft.
6. Install the motor mount guard screen (item 3) with the hardware provided (items 7 & 8).
7. Install the pump into the system following the installation instructions provided.

## INSTALLATION REQUIREMENTS

### MOUNTING

1. Base plate must be securely fastened so that there is no vibration when pump is running.
2. Align the piping with the pump discharge. Do not connect the piping until it is aligned properly and supported independently. Do not pull the piping in line with the pump or support the piping with the pump.

### PIPING TO AND FROM THE PUMP

1. Install a valve on the discharge line to control the flow. Place the valve within a distance of ten pipe diameters. Always support the piping near the pump to minimize stress and strain.
2. Minimize frictional losses by increasing the piping size by one diameter.
3. Use a minimum number of bends, keeping any bends a minimum distance of ten pipe diameters from the pump.
4. Ensure the pump is leak free.
5. Maintain a flooded suction at all times. Use a float switch to turn off the pump at low level.

**! CAUTION: Do not run the pump dry. This pump should never be started without liquid in the casing. This could damage the pump. The fluid being transferred by the pump lubricates the pump components. Even short periods of running the pump dry could damage the pump. It is recommended that run dry protection be used. Optional electrical power monitors are available to help protect against run dry.**

### ELECTRICAL CONNECTIONS

1. Perform the motor wiring according to NEC requirements and local electrical codes.
2. Wire the motor for clock-wise rotation when facing the fan end of the motor.
3. To verify correct motor rotation
  - a. Install the pump into the system.
  - b. Fully open the suction and the discharge valves.
  - c. Allow fluid to flow into the pump. Do not allow the pump to run dry, as this will cause damage to pump components.
  - d. Jog the motor (allow it to run for only one to two seconds) and observe the rotation of the motor fan. Refer to the directional arrow on the pump if needed.

**Note:** A pump running backwards will pump, but at a greatly reduced flow and pressure.

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## OPERATION

1. Completely open the discharge valve.
2. After verifying the pump housing is flooded, start the pump and verify the liquid is flowing. If there is no liquid flowing, refer to the "Troubleshooting" section of these instructions.
3. Adjust the flow rate and pressure by regulating the discharge valve.

## MAINTENANCE

### DISASSEMBLY

1. Disconnect the power, and remove the electrical wiring.
2. Close the discharge valve, and disconnect the piping.
3. Remove the mounting bolts and pull the pump from the tank.
4. **For AV6**— lubricate the threaded part of the v-clamp (item 29), and then loosen the v-clamp nut. Remove the v-clamp (note clamp orientation for re-assembly) and the housing/discharge pipe (items 28, 30, 31 and 32). Remove the housing o-ring (item 25).
- For AV8** – Remove the 8 bolts, washers, and nuts (items 14, 16, 33 and 34), and the housing/discharge pipe (items 28, 30, 31 and 32). Remove the housing O-ring (item 25).
5. Gripping the impeller firmly, remove the single bolt and washer (items 14 and 27) from the middle of the impeller and pull the impeller (item 26) straight off.
6. Remove the 4 screws/washers (items 7 and 8) and remove the motor mount screen guard (item 3). Mark the motor end of the motor mount for future reference.
7. Remove 4 bolts, washers, and lock washers (items 4, 5 and 6) and separate the motor mount (item 2) from the motor adapter (item 1). **Note the mounting plate orientation in comparison to the motor.** You will need to pull the pump straight back to separate the coupling halves. Remove the bolts, washers, & lock washers (items 15, 14, and 16) and separate the motor mount (item 2) from the lower bearing mount (item 12).
8. Loosen the setscrews and remove the coupling half (item 9) on the pump shaft (item 23). Accurately measure the distance from the end of the shaft to the locking collar on the bearing assembly. Make sure to file down any setscrew marks on the shaft.
9. Loosen the setscrew on the locking ring (part of item 10) and find the dimple in the ring. The locking ring is tightened onto the shaft in a cam style design. Note the mark made in the dimple when it was tightened and use a drift to drive the ring in the opposite direction. Remove the locking ring and file the setscrew mark smooth. Slide the pump shaft toward the impeller end of the pump and remove it.
10. Remove the 4 bolts/washers (items 14 and 13) and the bearing assembly (item 10) from the lower bearing mount (item 12). Remove (note seal orientation) the lip seal (item 11) from the lower bearing mount and discard.

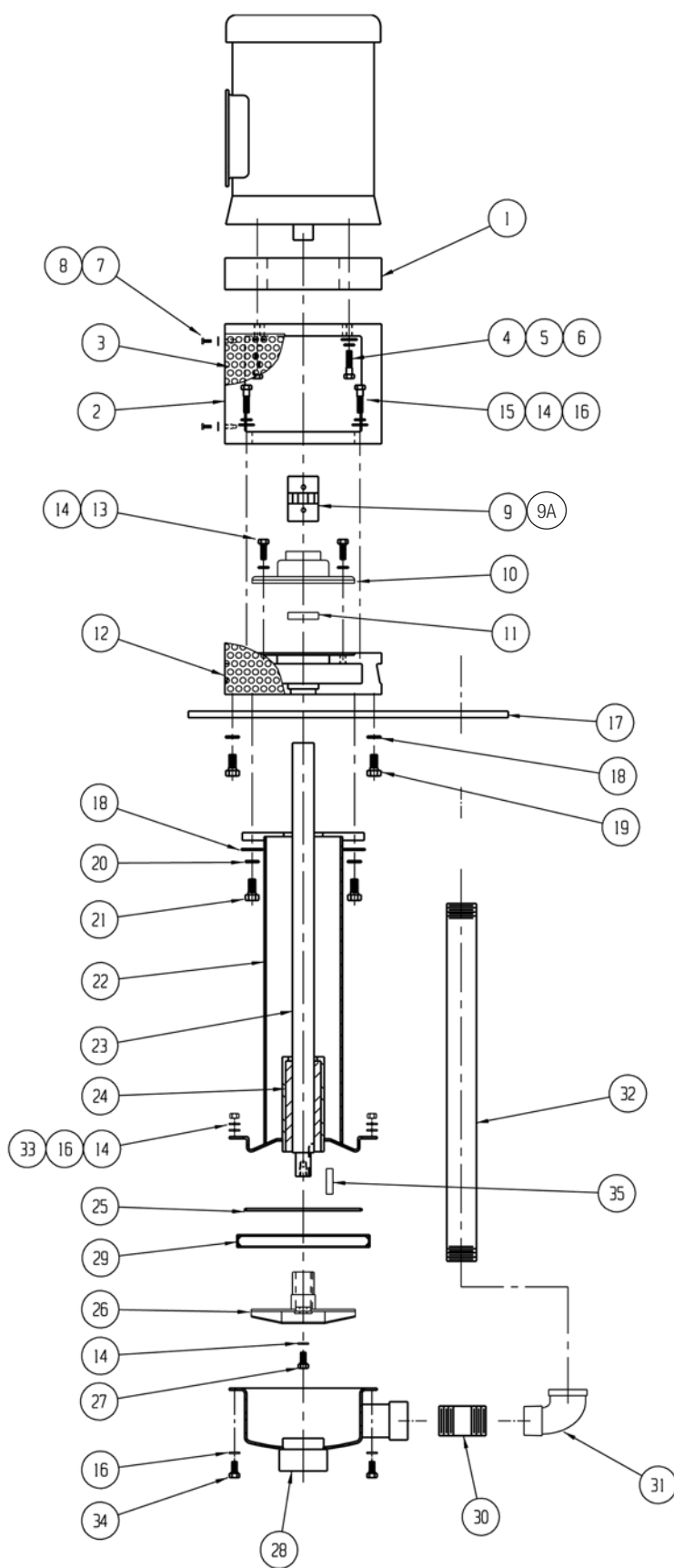
## INSPECTION

1. Inspect the bearing assembly (item 10) for corrosion or wear.
2. Inspect the pump shaft (item 23) for wear in the lower bushing area.
3. Inspect the lower bushing for unusual wear. (item 24). If any is detected consult the factory.

### REASSEMBLY

1. Install the lip seal (item 11) into the lower bearing mount (item 12). Note that the open side of the seal faces the motor end.
2. Install both the bearing assembly (item 10) and the bolts with washers (items 13 & 14) but do not tighten the bolts.
3. Lubricate (with a chemically compatible lubricant) the inner diameter of the lip seal, and then gently insert the pump shaft up through the lower bearing, through the lip seal, and through the bearing assembly. Install the bearing locking ring. Adjust the pump shaft to the dimension taken before disassembly (step 8), and tighten the locking collar. Tighten the setscrew on the locking collar.
4. Install the coupling half (part of item 9) so that the body (not the 3 prongs) is flush with the end of the shaft and tighten the setscrews.
5. Set motor mount (item 2) onto the lower bearing mount (item 12) and install the bolts and washers (items 14, 15 and 16). Do not tighten the bolts yet.
6. Set the motor carefully on its fan cover with the motor shaft pointing straight up. Place the motor adapter (item 1) onto the motor face making sure to align the bolt holes.
7. Make sure the coupling insert (part of item 9) is installed in the motor coupling half. Carefully lower the pump assembly onto the motor so that the motor shaft goes through the motor mount (item 2). Replace the mounting plate (item 17) in its original orientation (as noted during disassembly step 7), and guide the pump shaft coupling half into the motor coupling half. Insert and snug the bolts & washers (items 4, 5 and 6) through the motor mount (item 2), the motor adapter (item 1) and into the motor.
8. Grab hold of the couplings (item 9) and spin the shaft several times. Continue spinning the shaft as you tighten the 4 bolts (items 13 and 14) on the bearing assembly (item 10). If the shaft starts to bind, gently tap the bearing assembly in one of four directions until the shaft spins freely.
9. Repeat this process as you tighten the bolts (items 14, 15 and 16) holding the motor mount (item 2) to the lower bearing mount (item 12), and as you tighten the bolts (items 4, 5 and 6) which hold the motor mount (item 2).
10. Replace the motor mount screen guard (item 3) using the correct screws and washers (items 7 and 8).
11. Reinstall the pump into the system according to the installation instructions.

## AV 6 & 8 EXPLODED VIEW



## AV SPARE PARTS LIST

| Item | Description                                 | Part Numbers |           |           |           |
|------|---------------------------------------------|--------------|-----------|-----------|-----------|
|      |                                             | AV6          | AV6H      | AV8       | AV8H      |
| 1    | <b>Motor Adapter</b>                        |              |           |           |           |
|      | NEMA 182/184TC                              | M101938-1    | M101938-1 | M101938-1 | M101938-1 |
|      | NEMA 213/215TC                              | M101938-2    | M101938-2 | M101938-2 | M101938-2 |
| 2    | <b>Motor Mount</b>                          |              |           |           |           |
|      |                                             | M101940      | M101940   | M101940   | M101940   |
| 3    | <b>Coupling Guard</b>                       |              |           |           |           |
|      | 304 stainless steel                         | M101974      | M101974   | M101974   | M101974   |
| 4    | <b>Flat Washer</b>                          |              |           |           |           |
|      | 1/2" stainless steel - 182/184TC, 213/215TC | J101360      | J101360   | J101360   | J101360   |
|      | 3/8" stainless steel - 56C, 143/145TC       | J100128      | J100128   | J100128   | J100128   |
| 5    | <b>Lock Washer</b>                          |              |           |           |           |
|      | 1/2" stainless steel - 182/184TC, 213/215TC | J101023      | J101023   | J101023   | J101023   |
|      | 3/8" stainless steel - 56C, 143/145TC       | J100115      | J100115   | J100115   | J100115   |
| 6    | <b>Hex Head Bolt</b>                        |              |           |           |           |
|      | 1/2-13 x 2-1/4" stainless steel             | J103208      | J103208   | J103208   | J103208   |
| 7    | <b>Machine Screw</b>                        |              |           |           |           |
|      | 10-32 x 1/2"                                | J100932      | J100932   | J100932   | J100932   |
| 8    | <b>Flat Washer</b>                          |              |           |           |           |
|      | Plated - #10                                | J101310      | J101310   | J101310   | J101310   |
| 9    | <b>Coupling L-100</b>                       |              |           |           |           |
|      | 5/8" - 56C frame                            | A102512      | A102512   | A102512   | A102512   |
|      | 7/8" - 143/145TC frame                      | A102513      | A102513   | A102513   | A102513   |
|      | 1-1/8" - 182/184TC frame                    | A102514      | A102514   | A102514   | A102514   |
|      | 1-3/8" - 213/215TC frame                    | A102515      | A102515   | A102515   | A102515   |
| 9A   | <b>Coupling Insert</b>                      |              |           |           |           |
|      | Fits all motor frames                       | J103241      | J103241   | J103241   | J103241   |
| 10   | <b>Top Bearing</b>                          |              |           |           |           |
|      |                                             | J103116      | J103116   | J103116   | J103116   |
| 11   | <b>Lip Seal</b>                             |              |           |           |           |
|      |                                             | J103246      | J103246   | J103246   | J103246   |
| 12   | <b>Lower Bearing Mount</b>                  |              |           |           |           |
|      |                                             | M101939      | M101939   | M101939   | M101939   |
| 13   | <b>Hex Head Bolt</b>                        |              |           |           |           |
|      | Stainless steel - 3/8-16 x 1-1/4"           | J103118      | J103118   | J103118   | J103118   |
| 14   | <b>Lock Washer</b>                          |              |           |           |           |
|      | 3/8" stainless steel                        | J100115      | J100115   | J100115   | J100115   |
| 15   | <b>Hex Head Cap Screw</b>                   |              |           |           |           |
|      | 3/8" - 16 x 1-1/2" stainless steel          | J103207      | J103207   | J103207   | J103207   |
| 16   | <b>Flat Washer</b>                          |              |           |           |           |
|      | 3/8" stainless steel                        | J100128      | J100128   | J100128   | J100128   |
| 17   | <b>Mounting Plate</b>                       |              |           |           |           |
|      | 304 stainless steel                         | J103121      | J103121   | J103121   | J103121   |
| 18   | <b>Flat Washer</b>                          |              |           |           |           |
|      | 1/2" stainless steel                        | J101360      | J101360   | J101360   | J101360   |
| 19   | <b>Hex Head Bolt</b>                        |              |           |           |           |
|      | 1/2" - 13 x 1" stainless steel              | J101359      | J101359   | J101359   | J101359   |
| 20   | <b>Lock Washer</b>                          |              |           |           |           |
|      | 1/2" stainless steel                        | J101023      | J101023   | J101023   | J101023   |
| 21   | <b>Hex Head Bolt</b>                        |              |           |           |           |
|      | 1/2-13 x 1-1/2" stainless steel             | J101858      | J101858   | J101858   | J101858   |
|      | 1/2-13 x 2-1/4" stainless steel             | N/A          | N/A       | J103208   | J103208   |

AV SPARE PARTS LIST cont.

| Item | Description                     | Part Numbers |           |           |           |
|------|---------------------------------|--------------|-----------|-----------|-----------|
|      |                                 | AV6          | AV6H      | AV8       | AV8H      |
| 22   | <b>Column Assembly</b>          |              |           |           |           |
|      | 22" 316 stainless steel         | A102215-1    | A102215-1 | A102215-4 | A102215-4 |
|      | 34" 316 stainless steel         | A102215-2    | A102215-2 | A102215-5 | A102215-5 |
|      | 46" 316 stainless steel         | A102215-3    | A102215-3 | A102215-6 | A102215-6 |
| 23   | <b>Shaft</b>                    |              |           |           |           |
|      | 22" 316 stainless steel         | M102147-1    | M102147-1 | M102147-1 | M102147-1 |
|      | 34" 316 stainless steel         | M102147-2    | M102147-2 | M102147-2 | M102147-2 |
|      | 46" 316 stainless steel         | M102147-3    | M102147-3 | M102147-3 | M102147-3 |
| 24   | <b>Lower Bushing</b>            |              |           |           |           |
|      | Carbon                          | J103077      | J103077   | J103077   | J103077   |
|      | FKM                             | J103075      | J103075   | J103075   | J103075   |
|      | EPDM                            | J103076      | J103076   | J103076   | J103076   |
| 25   | <b>Housing O-Ring</b>           |              |           |           |           |
|      | FKM                             | J103084      | J103084   | J103087   | J103087   |
|      | EPDM                            | J103085      | J103085   | J103088   | J103088   |
|      | PTFE                            | J103257      | J103257   | J103258   | J103258   |
| 26   | <b>Impeller</b>                 |              |           |           |           |
|      | 5.25"                           | A102734-6    | N/A       | N/A       | N/A       |
|      | 5.75"                           | A102734-7    | N/A       | N/A       | N/A       |
|      | 6.00"                           | A102734-8    | N/A       | N/A       | N/A       |
|      | 6.25"                           | N/A          | A102735-1 | N/A       | N/A       |
|      | 6.50"                           | N/A          | N/A       | A102734-1 | N/A       |
|      | 7.00"                           | N/A          | N/A       | A102734-2 | A102735-6 |
|      | 7.50"                           | N/A          | N/A       | A102734-3 | N/A       |
|      | 8.00"                           | N/A          | N/A       | A102734-9 | A102735-7 |
| 27   | <b>Hex Head Cap Screw</b>       |              |           |           |           |
|      | 3/8-16 x 1-1/2" stainless steel | J103207      | N/A       | J103207   | N/A       |
|      | 3/8"-16 x 1" stainless steel    | N/A          | J100114   | N/A       | J100114   |
| 28   | <b>Impeller Housing</b>         |              |           |           |           |
|      | 2" x 1-1/2" stainless steel     | A102184-2    | N/A       | A102747-1 | N/A       |
|      | 1-1/4" x 3/4" stainless steel   | N/A          | A102232   | N/A       | A102528   |
| 29   | <b>V Clamp</b>                  |              |           |           |           |
|      | 304 stainless steel             | J103090      | J103090   | N/A       | N/A       |
| 30   | <b>Pipe Nipple</b>              |              |           |           |           |
|      | 1-1/2" x 3" stainless steel     | J103193      | N/A       | N/A       | N/A       |
|      | 3/4" x 4" stainless steel       | N/A          | J103576   | N/A       | N/A       |
|      | 3/4" x 3-1/2" stainless steel   | N/A          | N/A       | N/A       | J103193   |
| 31   | <b>Street Elbow</b>             |              |           |           |           |
|      | 1-1/2" stainless steel          | J103194      | N/A       | J101910   | N/A       |
|      | 3/4" stainless steel            | N/A          | J103575   | N/A       | J103575   |
| 32   | <b>Discharge Pipe</b>           |              |           |           |           |
|      | 22" x 1-1/2" stainless steel    | M101931-1    | M101931-4 | M101931-1 | M101931-4 |
|      | 34" x 1-1/2" stainless steel    | M101931-2    | M101931-5 | M101931-2 | M101931-5 |
|      | 46" x 1-1/2" stainless steel    | M101931-3    | M101931-6 | M101931-3 | M101931-6 |
| 33   | <b>Hex Head Bolt</b>            |              |           |           |           |
|      | Stainless steel                 | N/A          | N/A       | J100135   | J100135   |
| 34   | <b>Hex Head Cap Screw</b>       |              |           |           |           |
|      | Stainless steel                 | N/A          | N/A       | J100114   | J100114   |
| 35   | <b>Shaft Key</b>                |              |           |           |           |
|      |                                 | M102328      | M102328   | M102328   | M102328   |

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## TROUBLESHOOTING

### NO OR INSUFFICIENT FLOW

1. Pump not primed.
2. Closed valve.
3. Viscosity too high.
4. Air leaks in suction piping.
5. Discharge head higher than anticipated.
6. Suction lift too high or insufficient NPSH.
7. Check for clogged suction line.

### INSUFFICIENT PRESSURE

1. Air or gas in liquid.
2. Impeller diameter too small.
3. Discharge head higher than anticipated.
4. Motor speed insufficient (too low) or rotation incorrect.

### LOSS OF PRIME

1. Leaking suction line.
2. Foot valve or suction opening not submerged enough.
3. Foot valve too small or leaking.
4. Air or gas in liquid.
5. Foreign matter in impeller.

### EXCESSIVE POWER CONSUMPTION

1. Head lower than rating. Excessive flow.
2. Specific gravity or viscosity of liquid is too high.

### EXCESSIVE VIBRATION

1. Loose piping or bolts.
2. Pump cavitating from improper suction or feed.

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## WARRANTY

Finish Thompson, Inc. warrants this pump product to be free of defects in materials and workmanship for a period of 180 days from date of purchase by original purchaser. If a warranted defect, which is determined by manufacturer's inspection, occurs within this period, it will be repaired or replaced at the manufacturer's option, provided (1) the product is submitted with proof of purchase date and (2) transportation charges are prepaid to the manufacturer. Liability under this warranty is expressly limited to repairing or replacing the product or parts thereof and is in lieu of any other warranties, either expressed or implied. This warranty does apply only to normal wear of the product or components. This warranty does not apply to products or parts broken due to, in whole or in part, accident, overload, abuse, chemical attack, tampering, or alteration. The warranty does not apply to any other equipment used or purchased in combination with this product. The manufacturer accepts no responsibility for product damage or personal injuries sustained when the product is modified in any way. If this warranty does not apply, the purchaser shall bear all cost for labor, material and transportation.

Manufacturer shall not be liable for incidental or consequential damages including, but not limited to process down time, transportation costs, costs associated with replacement or substitution products, labor costs, product installation or removal costs, or loss of profit. In any and all events, manufacturer's liability shall not exceed the purchase price of the product and/or accessories.

**Call our toll free Technical Service Hot Line, 1-800-888-3743, if you have any questions regarding product operation or repair.**

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## ADDITIONAL INFORMATION

### ORDERING SPARE PARTS

Spare parts can be ordered from your local distributor. Always refer to pump model number to avoid error.

### OTHER FTI PRODUCTS

**Drum Transfer Pumps** are available in sanitary construction, stainless steel, polypropylene and CPVC. Flows to 40 gpm, discharge heads to 300 feet and viscosities to 100,000 cP.

**Portable Mixers** for turbine mixing and blending handle viscosities to 1,000 cP with gentle, non-vortex circulation. Available in 316 stainless steel construction.

**Sealed Centrifugal Pumps** in GF polypropylene and CF PVDF come with a wide variety of sealing materials. Flows to 250 gpm, discharge heads to 130 feet and temperatures to 200 degrees F (93° C).

**Sealless Mag Drive Centrifugal Pumps** in GF polypropylene, CF PVDF, and ETFE lined ductile iron. Flows to 330 gpm and discharge heads to 325 feet. Handles temperatures up to 220°F. Run-dry capability. Mounts to standard frame motors.



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Service 1-800-888-3743  
Literature ID Number FT01-830D  
Part Number J103335, Rev 7, 5-14-13

