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LITERATURE SUPPLEMENT	File with: 155.16-RP3 (202)	
Subject: YIA Absorption Chiller Solution/Refrigerant Pump Retrofit		

Franklin Pump Retrofit Program

The supply of repair parts for Franklin pumps at Baltimore Parts Distribution Center (PDC) is steadily decreasing and for some pump models repair parts are no longer available. When the remaining Franklin pump parts inventory is depleted, it will not be replaced. YORK is launching a retrofit program that will directly replace absorption chiller Franklin pumps with a YORK new style retrofit pump. The new style pumps listed in Tables 1 through 4 are engineered as a direct replacement for each unit model number listed.

The new style retrofit pump includes the following features:

- The pump will bolt directly to the original pump flange on the unit; and no cutting or welding is necessary.
- The new pumps directly replace the Franklin pumps and no isolation or flow setting valves are needed. The new pump matches the original unit's pressures and flow rates.
- The new style pumps use the pumping fluid to cool the motor. The chiller's motor coolant system (used to cool the Franklin pumps), is not utilized for the retrofit pumps.
- The new style pump is a complete assembly with pump and motor attached.

In all cases, the unit charge must be removed for pump installation. On solution pumps, unbolt the Franklin pump; install new gaskets at the suction and discharge flanges and bolt on the new pump. The original motor coolant system must be capped off. This same procedure is used for refrigerant pump replacements. However, since unit operational conditions can exist that could deplete the refrigerant, an additional float switch must be installed on the suction piping to protect the refrigerant pump motor from overheating. Instructions for mounting the switch are included in this literature. If the motor is detached from the pump housing, it must be oriented correctly when reassembling. Refer to Figure 7.

The following tables list pump kits currently available through the Baltimore Parts Center. Pump Kits are complete pump/motor assemblies that include the motor, impeller, impeller casing, suction and discharge gaskets. Refer to notes following Table 4 for kit contents. Note only 3HP pumps are currently available. The 5HP pumps will be added at a later date.

Table 1 - 208/230/460 60 Hz Units, Solution Pumps (S.G. 1.70)

Unit Model ¹ ES / YIA	Impeller OD	Pump Motor HP	York Pump Part Number
1A1	6 inches	3	326-37916-001
1A2	6 inches	3	326-37916-001
2A3	6 inches	3	326-37916-001
2A4	6-1/4 inches	3	326-37917-001
2B1	6 inches	3	326-37916-001
3B2	6 inches	3	326-37916-001
3B3	6-1/4 inches	3	326-37917-001
4B4	6-1/4 inches	3	326-37917-001
4C1	6-1/4 inches	3	326-37917-001

Table 2 - 208/230/460 volts 60 Hz Units, Refrigerant Pumps (S.G. 1.00)

Unit Model ¹ ES / YIA	Impeller OD	Pump Motor HP	York Pump Part Number
1A1	6-1/2 inches	3	326-37918-001
1A2	6-1/2 inches	3	326-37918-001
2A3	6-1/2 inches	3	326-37918-001
2A4	6-1/2 inches	3	326-37918-001
2B1	6-11/16 inches	3	326-37919-001
3B2	6-1/2 inches	3	326-37918-001
3B3	6-11/16 inches	3	326-37919-001
4B4	6-11/16 inches	3	326-37919-001
4C1	6-11/16 inches	3	326-37919-001
5C2	6-1/2 inches	3	326-37918-001
5C3	6-1/2 inches	3	326-37918-001

Table 3 - 380 volts 50 Hz Units Solution Pumps (S.G. 1.70)

Unit Model ¹ ES / YIA	Impeller OD	Pump Motor HP	York Pump Part Number
1A1	7-3/8 inches	3	326-37921-001
1A2	7-3/8 inches	3	326-37921-001
2A3	7 inches	3	326-37920-001
2A4	7-3/8 inches	3	326-37921-001
2B1	7 inches	3	326-37920-001
3B2	7-3/8 inches	3	326-37921-001
3B3	7-3/8 inches	3	326-37921-001
4B4	7-3/8 inches	3	326-37921-001
4C1	7-3/8 inches	3	326-37921-001

Table 4 - 380 volts 50 Hz Units Refrigerant Pumps (S.G. 1.00)

Unit Model ¹ ES / YIA	Impeller OD	Pump Motor HP	York Pump part number
1A1	8 inches	3	326-37923-001
1A2	7-3/4 inches	3	326-37922-001
2A3	7-3/4 inches	3	326-37922-001
2A4	7-3/4 inches	3	326-37922-001
2B1	8 inches	3	326-37923-001
3B2	8 inches	3	326-37923-001
3B3	7-3/4 inches	3	326-37922-001
4B4	7-3/4 inches	3	326-37922-001
4C1	8 inches	3	326-37923-001
5C2	8 inches	3	326-37923-001
5C3	8 inches	3	326-37923-001

Notes:

- 1) If the unit model is ER, EM, or EL, contact YORK Factory Service for pump kit selection.
- 2) Solution Pump Kits include:
 - Suction flange gasket p/n 067-53559-000
 - Discharge flange gasket, p/n 070-12519-000
- 3) Refrigerant Pump Kits include:
 - Suction flange gasket p/n 067-53559-000
 - Discharge flange gasket p/n 070-12519-000
 - 3F Float switch p/n 024R00130-000
 - 3F Float switch enclosure p/n 375R00229-000

Solution Pump Installation Procedure

1. Break the unit vacuum by using an inert gas such as nitrogen or argon.
2. Remove the solution and refrigerant charge from the unit and store in covered plastic drums. Use a nitrogen bleed on the unit to make sure no air enters the unit during this procedure. Refer to introduction in Form 155.17-M3 for additional instructions.
3. Remove all wiring from inside the motor terminal box, loosen the motor coolant lines, and unbolt the Franklin pump/motor assembly from the unit flanges.
4. Cap the motor coolant lines. The new style pump does not require these connections.
5. Clean the suction and discharge unit flanges and make sure all the original gaskets are removed.
6. Install the new suction and discharge flange gaskets, bolts, lock washers and nuts, and evenly tighten them using a criss-cross tightening sequence. Torque the discharge flange bolts to 30 ft-lbs. Torque the suction flange bolts to 55 ft-lbs.
7. Re-connect the three motor lead wires to the motor terminals and wires 71 and 83 to the motor thermal switch.
8. Make sure pump motor is well supported. Install a “T” bracket with a U-bolt if necessary. Do not let the pump motor hang without support.
9. Increase the unit’s internal pressure to 4 psig and with a soap solution check the motor flange connections and capped off motor coolant lines for possible leaks.
10. Pull the unit back into a vacuum and re-charge the solution and refrigerant back into the unit.
11. Make sure the motor drain holes are at the bottom of the motor, and the motor is turning in the correct direction before commissioning the unit.

The easiest method is to use a “motor rotation detector” available through Bell and Gossett. Refer to 155.17-RP3 (LS5) for sourcing.

The other method is to connect a compound gauge to the appropriate sample valve at the discharge of the pump. The full solution and refrigerant charge must be in the unit before doing this. Briefly operate the pump and open the valve. Read and record the delivery pressure of the pump. Shut the pump off and disconnect the power to the unit. Switch any two leads around on the pump terminals. Reconnect the power to the unit and briefly operate the pump again. Read and record the delivery pressure of the pump. The highest pressure of the two readings will indicate correct pump rotation direction.

Even if the motor terminal leads are installed in the same arrangement as they came off **do not** assume that the motor will turn in the same direction!

Refrigerant Pump Installation Procedure

1. Break the unit vacuum by using an inert gas such as nitrogen or argon.
2. Remove solution and refrigerant charge from the unit and store in covered plastic drums.
3. Use a nitrogen bleed on the unit to make sure no air enters the unit during this procedure. Refer to introduction of Form 155.17-M3 for additional instructions.
4. Remove all wiring from inside the motor terminal box, loosen the motor coolant lines, and unbolt the Franklin pump/motor assembly from the unit flanges.
5. Cap off the motor coolant lines. The new style pump does not require these connections.
6. On the vertical section of refrigerant line before the pump suction inlet. Cut two slots to the dimensions shown in Figure 1. Refer to Form 155.17-M3 for details on welding and cutting operations.

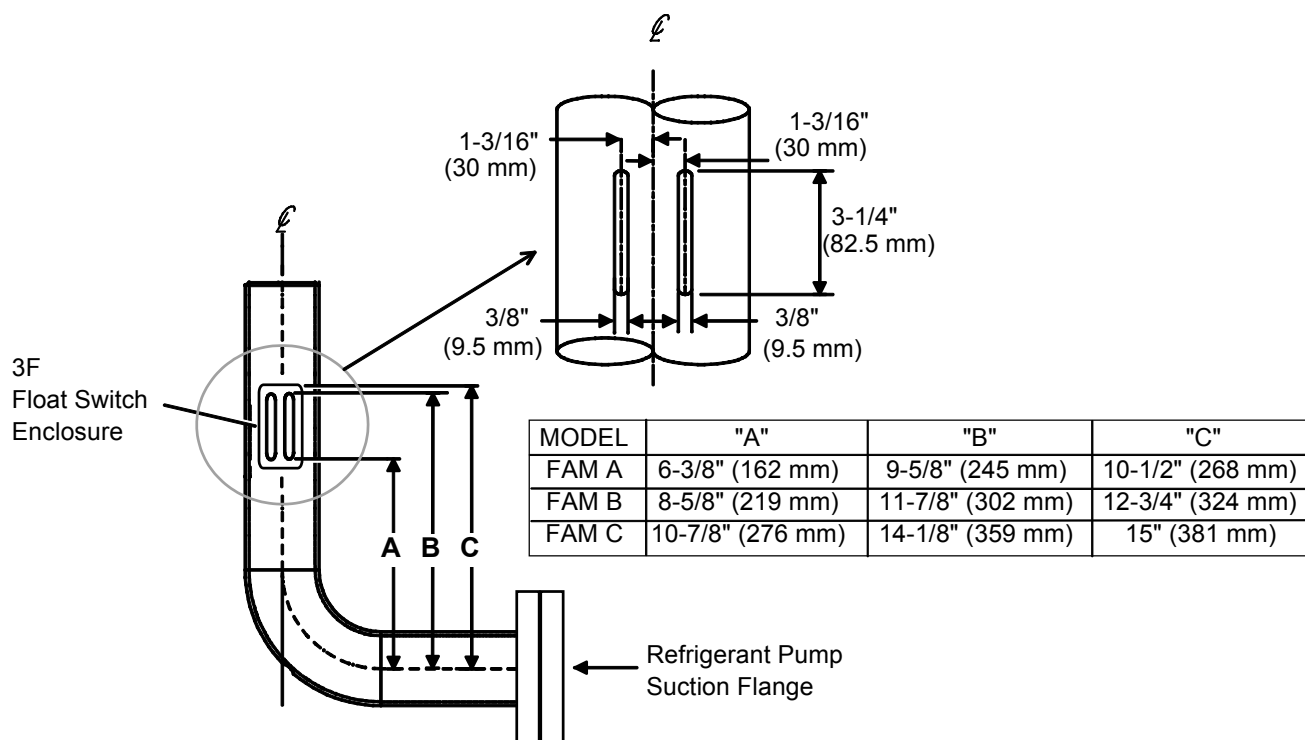


Figure 1 – Location of Float Switch Slots & Enclosure

7. Weld the 3F Float switch enclosure, p/n 375R00229-000 over the two slots as shown in Figure 1. Refer to York form 155.17-M3 for details on welding and cutting.
8. Remove all metal fragments, welding slag, and any other debris created from steps 6 and 7 from the interior of the refrigerant line and interior of 3F enclosure before proceeding to the next steps.
9. Clean the suction and discharge unit flanges and make sure that all the original gaskets are removed.
10. Install the new suction and discharge flange gaskets, bolts, lock washers and nuts, evenly tighten them using a criss-cross tightening sequence. Torque the discharge flange bolts to 30 ft-lbs. Torque the suction flange bolts to 55 ft-lbs.
11. Re-connect the three motor leads to the motor terminals and wires 70 and 84 to the motor thermal switch.
12. Install the 3F refrigerant float switch. Make sure the float is able to move freely without touching the walls of the enclosure. Refer to YORK form 155.17-NM1 (SB3) for the thread joint sealing procedure.

13. Wire the 3F float in accordance to one of the following methods that best fits your unit:
 - a. For units with micropanel control and all pumps are to be retrofitted to the new style; Remove the original wiring to the motor coolant level switch and install the 3F float switch wiring in its place (the 3F float switch wiring will terminate on terminal 11 on the digital input board).
 - b. For units with micropanel control and at least one pump on the unit is the old style. Wire as shown in Figure 2.

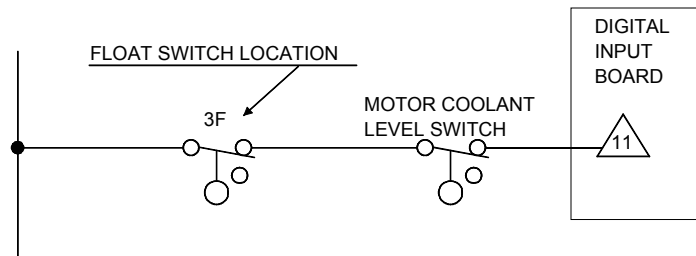


Figure 2 – Wiring for Float Switch (Micropanel Control)

- c. For units with electro-mechanical control and all pumps are to be retrofitted to the new style: Remove the original wiring from the motor coolant level switch and install the 3F float switch wiring in its place (on some units, this wiring will be between terminals 6 & 7 just ahead, in series, of the refrigerant pump motor starter).
- d. For units with electro-mechanical control, and at least one pump on the unit is the old style: keep the motor coolant level switch wiring intact and install an additional switch in series just ahead of the refrigerant pump motor starter. See Figure 3 for a typical wiring schematic showing location of the float switch. Note that unit wiring may be different than shown.

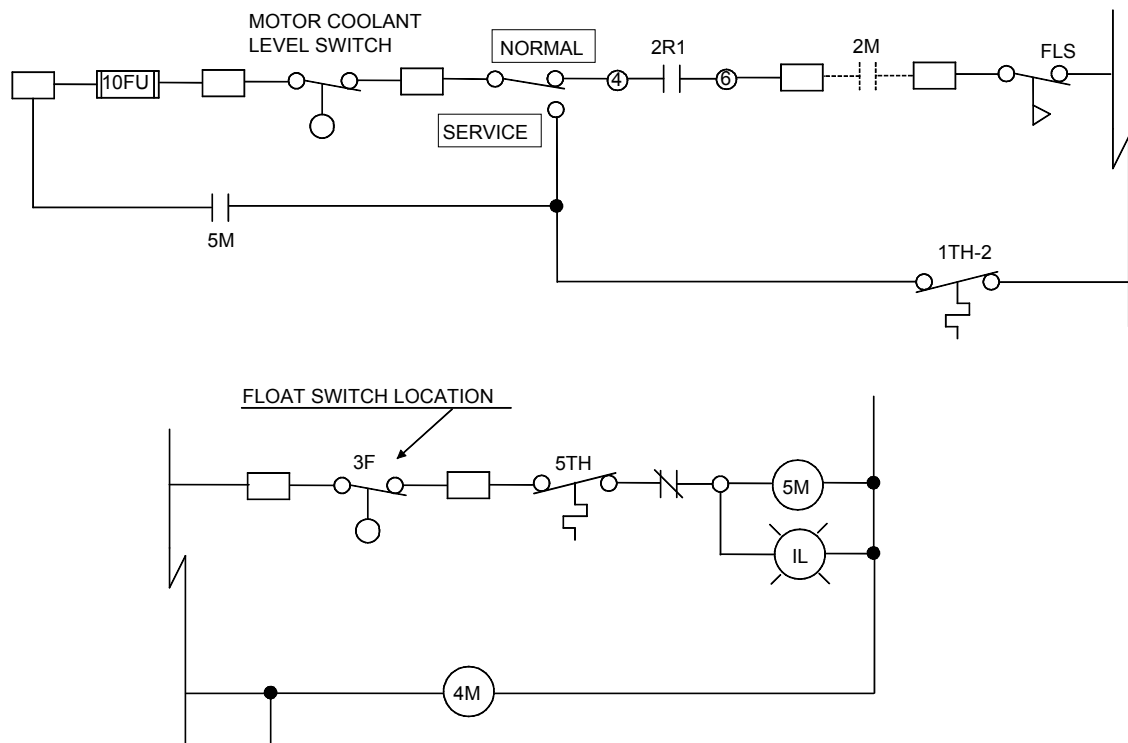


Figure 3 – Wiring for Float Switch (Electro-mechanical Control)

14. Make sure pump motor is well supported. Install a “T” bracket with a U-bolt if necessary. Do not let pump motor hang without support.
15. Increase the unit’s internal pressure to 4 psig and with a soap solution check for leaks at the motor flange connections, capped off motor coolant lines, and 3F-float switch and enclosure.
16. Pull the unit back into a vacuum and re-charge the solution and refrigerant back into the unit.
17. Make sure the motor drain holes are at the bottom of the motor, and the motor is turning in the correct direction before commissioning the unit

The easiest method is to use a “motor rotation detector” available through Bell and Gossett. Refer to 155.17-RP3 (LS5) for sourcing.

The other method is to connect a compound gauge to the appropriate sample valve at the discharge of the pump. The full solution and refrigerant charge must be in the unit before doing this. Briefly operate the pump and open the valve. Read and record the delivery pressure of the pump. Shut the pump off and disconnect the power to the unit. Switch any two leads around on the pump terminals. Reconnect the power to the unit and briefly operate the pump again. Read and record the delivery pressure of the pump. The highest pressure of the two readings will indicate correct pump rotation direction.

Even if the motor terminal leads are installed in the same arrangement as they came off **do not** assume the motor will turn in the same direction!

All pump part numbers in Tables 1 through 4 are complete pump assemblies. If the unit already has a new style retrofit pump and repairs are necessary, YORK has four separate pump repair kits that will solve almost every pump failure. All kits are available through the Baltimore Parts Center in kit form only, individual parts are not sold separately. See Figures 4 and 5 and Table 5 for repair kit part number and kit contents.

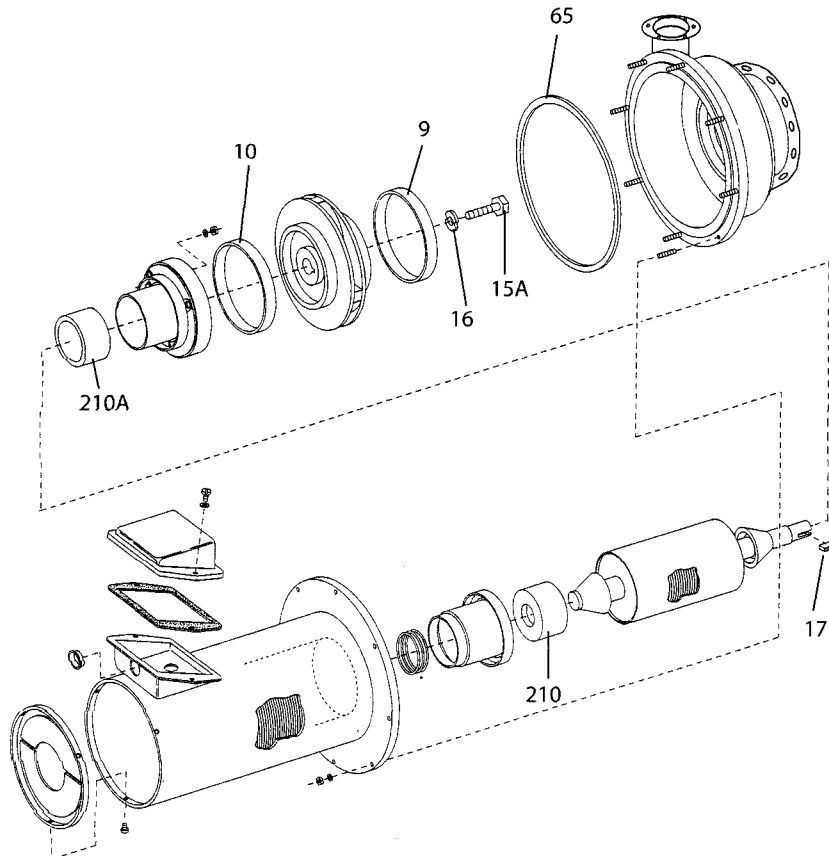


Figure 4 – Exploded View of Pump

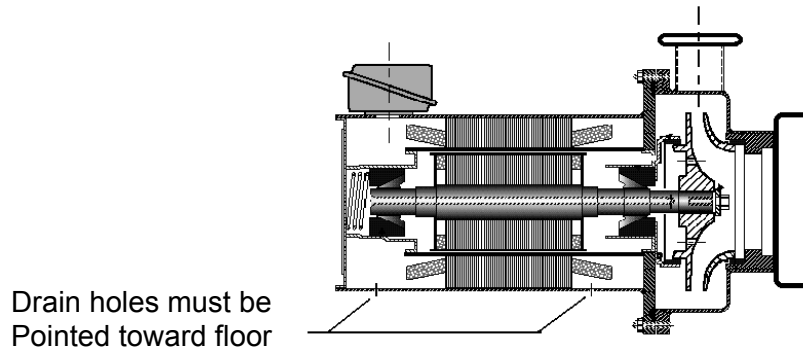


Figure 5 – Pump Cross Section

Table 5 – New Style Pump/Motor Bearing Repair Kits

Pump Repair Kit		Motor Bearing Repair Kit		New Motor with Pump Repair Kit		Casing Gasket	
026-37924-000		026-37925-000		024-30999-000		028-15062-000	
Contents		Contents		Contents		Contents	
Item	Part	Item	Part	Item	Part	Item	Part
9	Casing wear ring	9	Casing wear ring	9	Casing wear ring	65	Casing gasket
10	Motor side wear ring	10	Motor side wear ring	10	Motor side wear ring		
15A	Impeller locking screw	15A	Impeller locking screw	15A	Impeller locking screw		
16	Impeller locking washer	16	Impeller locking washer	16	Impeller locking washer		
17	Impeller key	17	Impeller key	17	Impeller key		
65	Casing gasket	65	Casing gasket	65	Casing gasket		
		210A	Bearing front end	201	Multi-voltage motor		
		210	Bearing back end				

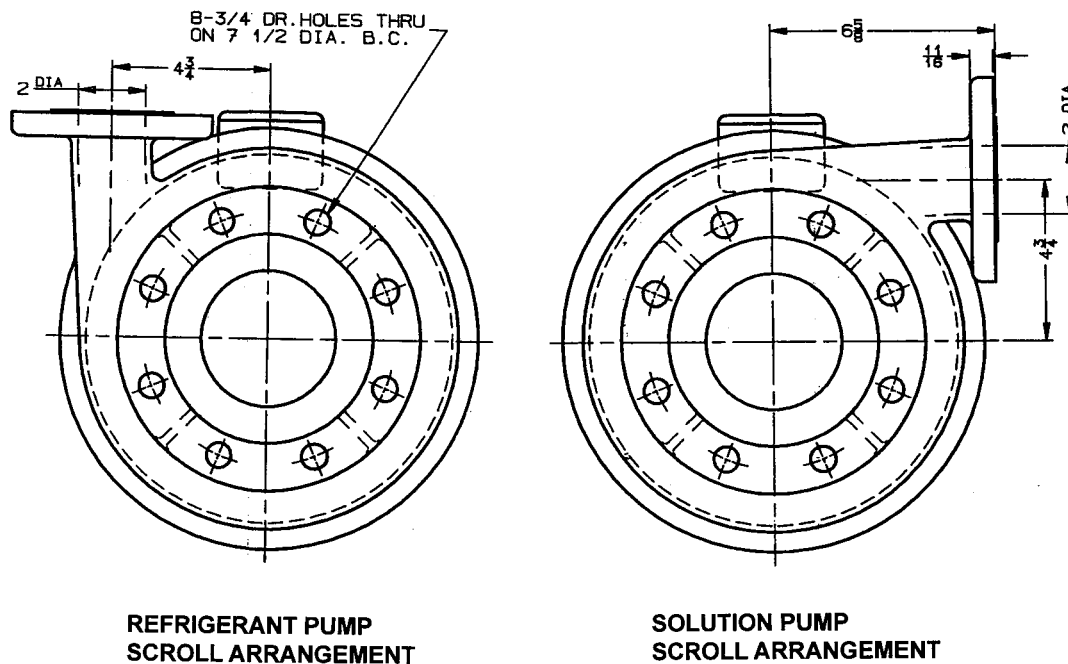


Figure 6 – Pump Dimensions – End Views

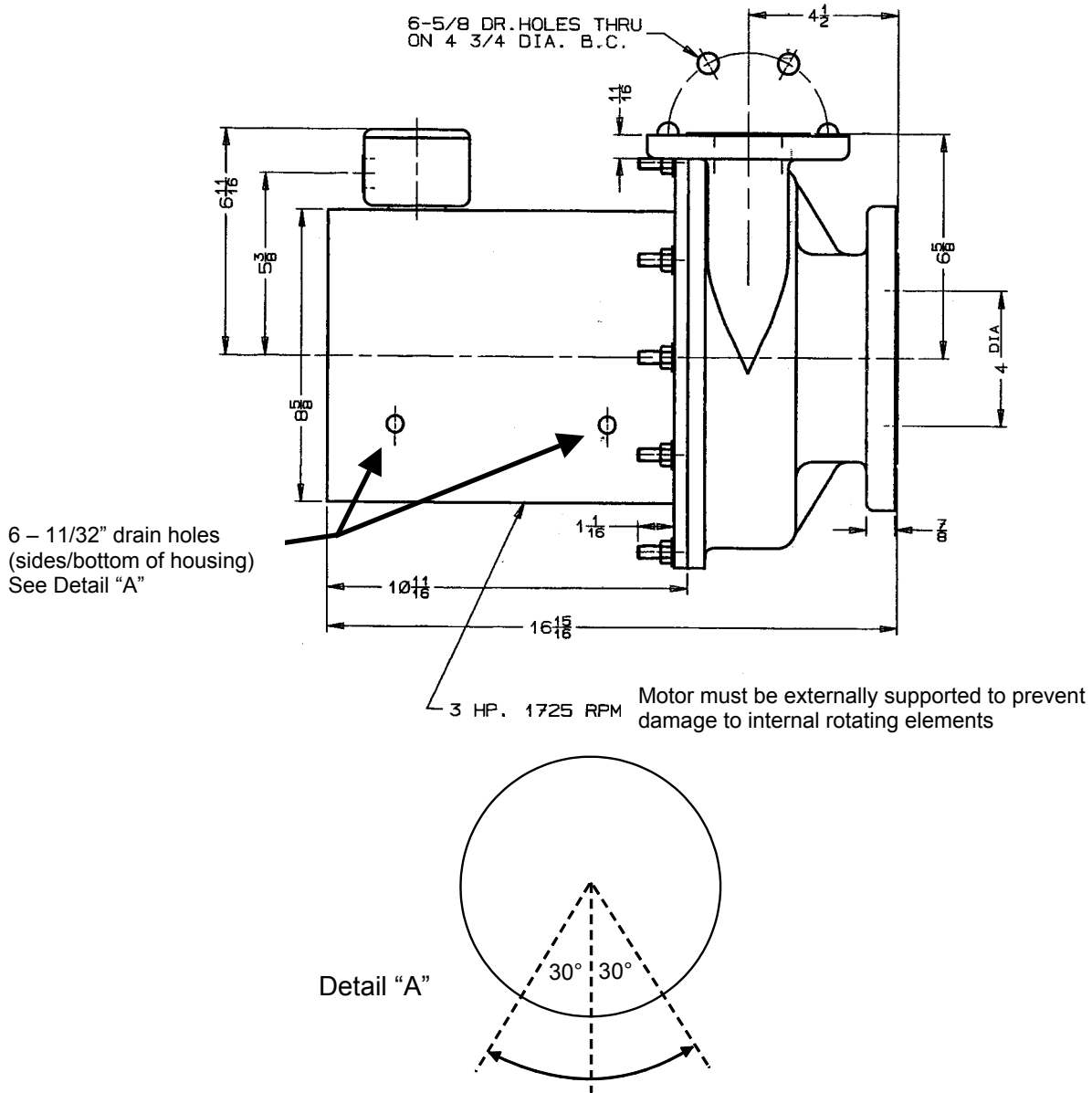


Figure 7 – Pump Dimensions - Motor End