

# FRANKLIN AID



Franklin Electric



Franklin Application/Installation Data (AID) ... For The Professional Driller-Installer

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## FIELD ALERT:

### ***Hitachi Control Boxes Cause Premature Failure of Franklin Electric 15 HP Motors***

Laboratory testing has established that Hitachi 15 HP control boxes will cause premature failure of Franklin Electric 15 HP motors. The Hitachi boxes are easily identified by their red color, while the Franklin Electric boxes are a blue-gray color.

The Hitachi 15 HP control box was designed for use with Hitachi single-phase motors. It is not compatible with Franklin Electric motors for a variety of reasons. The most significant reasons are described below.

- The Hitachi control box has considerably lower capacitance than the Franklin Electric control box. Total start capacitance is 60% of Franklin's, and run capacitance is only 50% of Franklin's.
- The Hitachi control box does not contain a lighting arrestor.
- The Hitachi control box does not have a start-winding overload.

The lower run capacitance in the Hitachi control box will cause a Franklin motor to operate at a higher current, often exceeding service factor amps. This will result in a higher operating temperature and will shorten the life of the Franklin motor. Therefore, *the Hitachi control box is*

*NOT compatible with Franklin motors, and Franklin motors used with Hitachi control boxes are not covered by Franklin's warranty.*

The lower start capacitance in the Hitachi control box will also reduce the starting torque of a Franklin Electric motor, and may cause starting problems in certain installations.

In addition, the reduced motor protection capability of the Hitachi control box is not optimum for Franklin motors. Franklin Electric recommends the use of lightning arrestors and proper overload protection in all submersible motor applications.

Conversely, Franklin Electric warned in September 2000 that 15 HP Hitachi *motors* will also cause premature failure of Franklin's 15 HP *control boxes*.

***NOTE: This alert specifically addresses single-phase, 15 HP Hitachi control boxes used with Franklin Electric motors. Similar problems could exist on other ratings or with other competitive product. Franklin Electric motors should only be used with the recommended Franklin Electric control boxes for proper performance, reliability, and warranty.***

## PRODUCT IMPROVEMENT

As part of our program of continuous improvement, Franklin Electric has changed the run capacitance in our 5 HP 60 Hz control box from 60mfd to 80mfd, effective January 1, 2001. Control boxes with the capacitor change start with date codes 01A and will not have a model number change.

What led to this change was the rapid pulsating torque inherent to a single-phase motor's rotating field. This pulsating torque can contribute to torsional stressing of the motor shaft, coupling, and pump shaft. Franklin Electric believes that a reduction of torsional stress by

minimizing torque pulsations will result in a better quality system in the field. Franklin is making a contribution in this direction by changing the run capacitance to reduce torque pulsations in 5 HP 60 Hz single-phase motors.

Submersible motor, coupling and pump components should be selected with consideration to the effects of single-phase pulsating torque. Other factors influencing torsional stress include pump-shaft length, critical speed, material properties, and surface finish, as well as shaft alignment, coupling attachment, pump loading, and corrosion. *(Continued on reverse.)*

## Summer Hours are back!



Franklin Electric's Corporate Offices, including the **Submersible Service Hotline**, will again observe 'Summer Hours' beginning Monday, April 2, 2001, through Friday, October 26, 2001. Regular office hours through this period will be from **7:30 a.m. to 4:30 p.m.** These times are Central Daylight Time as Indiana does not observe Daylight Savings Time. Regular office hours of 8:00 a.m. to 5:00 p.m. Eastern Standard Time will resume Monday, October 29, 2001.

Since pulsating torque is only one of many factors affecting shaft stress, this capacitor change by Franklin Electric on the 5 HP control box motor will assist pump designers by reducing, *but not eliminating*, the stress of single-phase torque pulsations on 4" motor shaft, coupling, and pump shaft systems. For 6" systems, the masses and dimensions are much larger, and consequently torsional stress due to pulsating torque is typically not a major consideration in pump system design.

The new 5 HP control boxes are compatible with 4" and 6" 5HP motors currently in the field. The start winding in the 5 HP 4" motor will be slightly modified, but this motor will be compatible with 5 HP control boxes currently in the field.

A 40 mfd capacitor kit (2 required) is available under the part number 305203914.

The following tables show the changes in electrical specifications of the 4" and 6" motors found on page 13 of the new AIM Manual (August 2000 edition):

#### 4" Motor Specifications (Changes in bold)

Motor Model Prefix	HP	KW	Volts	Hz	SF	Full Load Amps	Max. (SF Load) Amps	Winding Resistance (in Ohms)	Efficiency%			Power Factor%			Locked Rotor Amps	KVA Code
									SF	FL	3/4	SF	FL	3/4		
<b>OLD</b>						Y 23.0	Y 27.5	M .68-1.0								
<b>224303</b>	5	3.7	230	60	1.15	B 19.1	B 23.2	S 2.1-2.8	71	72	70	98	96	94	121	F
						R 8.0	R 7.8									
<b>NEW</b>						Y 23.0	Y 27.5	M .68-1.0								
<b>224303</b>	5	3.7	230	60	1.15	<b>B 15.9</b>	<b>B 19.1</b>	<b>S 1.8-2.8</b>	<b>72</b>	<b>71</b>	<b>68</b>	<b>100</b>	<b>99</b>	<b>99</b>	121	F
						<b>R 11.0</b>	<b>R 10.8</b>									

#### 6" Motor Specifications (Changes in bold)

Motor Model Prefix	HP	KW	Volts	Hz	SF	Full Load Amps	Max. (SF Load) Amps	Winding Resistance (in Ohms)	Efficiency%			Power Factor%			Locked Rotor Amps	KVA Code
									SF	FL	3/4	SF	FL	3/4		
<b>OLD</b>						Y 23.0	Y 27.5	M .55-.68								
<b>226110</b>	5	3.7	230	60	1.15	B 18.2	B 23.2	S 1.3-1.6	76	75	72	98	98	99	99	E
						R 8.0	R 7.8									
<b>NEW</b>						Y 23.0	Y 27.5	M .55-.68								
<b>226110</b>	5	3.7	230	60	1.15	<b>B 14.3</b>	<b>B 17.4</b>	S 1.3-1.6	<b>77</b>	<b>76</b>	<b>72</b>	<b>100</b>	<b>99</b>	99	99	E
						<b>R 10.8</b>	<b>R 10.5</b>									

## TOLL-FREE HELP FROM A FRIEND

Phone Franklin's toll-free SERVICE HOTLINE for answers to your installation questions on submersible pump motors. When you call, a Franklin expert will offer assistance in troubleshooting submersible systems and provide immediate answers to your motor application questions.

**Franklin Electric SERVICE HOTLINE 800-348-2420 FAX 219-827-5102**  
[www.franklin-electric.com](http://www.franklin-electric.com)

