

# FRANKLIN AID



Franklin Electric



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

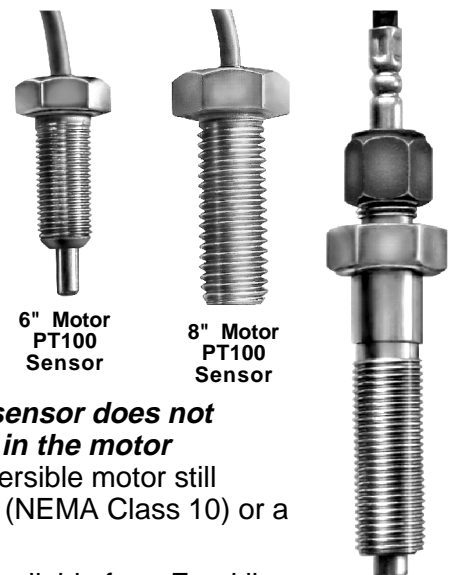
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## PRODUCT OPTION: PT100 Temperature Sensors

Lately, more and more of our readers have been inquiring about RTDs, or resistance temperature detectors. A common type of RTD is the PT100. This type of device has begun appearing more frequently on bid specifications and product requirements, and as a result, our Submersible Service Hotline has seen a surge of requests for information. What is it? What does it do? Does Franklin Electric supply it? To get the word out most effectively, we are therefore giving this topic special attention in this issue of Franklin AID.

Simply put, the PT100 is a platinum wire precision resistor that is placed in a special stud bolt for the Franklin Electric motor. Separate control leads must then run to a surface control unit to monitor temperature. The PT100 can then be used to detect insufficient cooling to the motor and thus contribute to its protection. Note, however, that **this sensor does not replace the required electrical overload protection that is specified in the motor installation manual.** All three power supply legs of a three-phase submersible motor still require an ambient compensated overload with quick-trip characteristics (NEMA Class 10) or a Franklin Electric Subtrol-Plus premium motor protection system.

PT100 sensor retrofit kits with instructions for easy field installation are available from Franklin Electric for 6", 8", and Severe Duty motors. In addition, Severe Duty motors can be ordered with the PT100 sensor already installed. The surface control unit, however, is not available from Franklin Electric but can be purchased through most outlets for electrical controls. For your convenience, part numbers and specifications for the PT100 sensors available from Franklin are listed below.



6" Motor  
PT100  
Sensor

8" Motor  
PT100  
Sensor

Severe Duty  
Motor  
PT100  
Sensor

### PT100 Specifications

Kit Number	Franklin Part Number	For Use With Motor Types	Lead Insulation	Maximum Temperature Ratings	Wire Size	Lead Length Ft (m)
305 327 901	165 608 901	6" (All Hp Ratings)	PVC	60°C	#20 AWG	26 (8)
305 326 902	165 624 902	8" Type 2.1 (40 to 100 Hp)	PVC	60°C	#20 AWG	26 (8)
305 236 901	165 624 901	8" Type 1 (125 to 200 Hp)	PVC	60°C	#20 AWG	26 (8)
305 331 901	165 635 901	8" Severe Duty	Teflon	200°C	#20 AWG	26 (8)

Installation and monitoring information on reverse side.

## Worldwide Field Service Guide

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## PT100 Installation

To install the sensor bolt, remove the top end bell bolt that is opposite the lead and replace it with the PT100 sensor. Do not loosen or remove the other three bolts in the end bell. Tighten the sensor bolt to the torque specifications listed below.

Motor Size	Torque Specification
6" Motors (All Hp Ratings)	54 - 61 Newtons/meter (40 - 45 ft-lbs.)
8" Motors (40 - 100 Hp, incl. Severe Duty)	54 - 61 Newtons/meter (40 - 45 ft-lbs.)
8" Motors (125 - 250 Hp, incl. Severe Duty)	115 - 122 Newtons/meter (85 - 90 ft-lbs.)

## Surface Control Unit

As noted earlier, surface control monitoring units are not available from Franklin Electric and must be purchased separately. When programming these units with respect to a Franklin submersible motor, however, Franklin does require the trip settings be programmed as listed in the table below.

### Surface Control Monitoring Unit Settings

Conditions	Normal Temperature of Water Without Motor Operating	Maximum Trip Temperature Setting
Motor operating at nameplate output with 0.15 m/sec (0.5 ft/sec) flow past the motor	10°C (50°F)	40°C (104°F)
	15°C (59°F)	44°C (111°F)
	20°C (68°F)	48°C (118°F)
	25°C (77°F)	51°C (124°F)
	30°C (86°F)	55°C (131°F)
Motor that has been derated with 0.9 m/sec (3 ft/sec) flow past the motor	35°C (95°F)	59°C (138°F)
	40°C (104°F)	63°C (145°F)
	45°C (113°F)	66°C (151°F)
	50°C (122°F)	70°C (158°F)
	55°C (131°F)	74°C (165°F)
	60°C (140°F)	78°C (172°F)

Additional information about PT100 temperature sensors is available by calling our Submersible Service Hotline at **800-348-2420**. You may also submit questions via e-mail to [hotline@fele.com](mailto:hotline@fele.com).

## 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)



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