

SUBMERSIBLE MOTOR COOLING

Water Temperature and Flow

All Franklin Electric submersible motors, except for the 8" SEVERE DUTY models, are designed to operate at maximum service factor horsepower in water temperatures up to 86°F (30°C). A flow of 0.25 ft/sec for 4" motors and 0.5 ft/sec for 6 and 8 inch motors is required for proper cooling.

If the motor is operated in water over 86°F (30°C), water flow past the motor must be increased to maintain safe motor operating temperatures. See Page 7 of the Franklin AIM manual for more information.

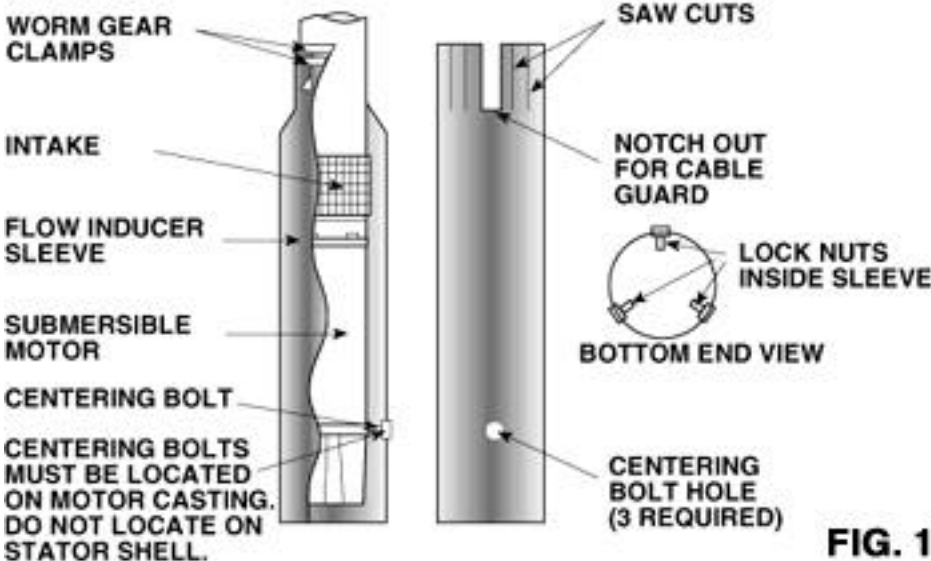
Note: 8" SEVERE DUTY motors are designed to operate with loading up to maximum service factor horsepower in water up to 90°C (195°F) with water flow past motor of 0.5 ft/sec (0.15 m/sec).

The table below shows the minimum GPM required for motor cooling in water up to 86°F (30°C). If the appropriate flow rate cannot be attained, a flow inducer must be installed on the pump and motor.

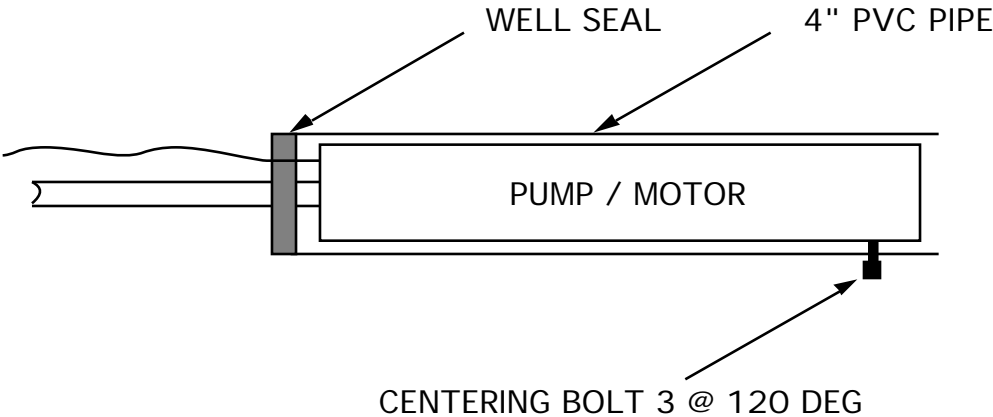
Casing or Sleeve I.D. Inches	4" Motor 0.25 ft/sec. GPM	6" Motor 0.50 ft/sec. GPM	8" Motor 0.50 ft/sec. GPM
4	1.2	--	--
5	7	--	--
6	13	9	--
7	20	25	--
8	30	45	10
10	50	90	55
12	80	140	110
14	110	200	170
16	150	280	245

When a submersible pump is installed in a casing with a diameter that is far greater than that of the motor, water enters the suction from all directions. This results in stagnation of the water around the motor and a corresponding rise in temperature. Operation at elevated temperatures for extended periods will shorten motor life. A simple flow inducer uses a PVC sleeve to force the water to flow around the motor in route to the pump suction. Flow inducers may be used in both the horizontal and vertical

position. The Figure 1 below shows one method of flow inducer construction.



An alternative method of construction is shown below. In this case a standard shallow well, well seal is used to attach the PVC sleeve to the discharge pipe.



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