



Pipe-Insert Immersion heaters Type MX

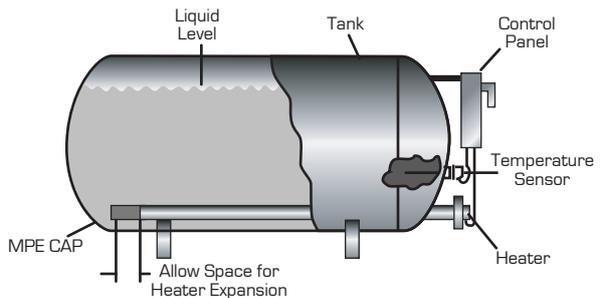
Application

For heating asphalt, molasses, tar, paint, glue or any viscous fluids. When heating corrosive liquids the pipe enclosing the heater must be resistant to corrosion. Tank fabricator to supply and install pipes. Heater can be removed without draining the liquid.

Heat is transferred safely from the heating element to the inner wall of the pipe by a combination of convection and radiation. Note that filling the pipe with a heat transfer fluid is neither required nor recommended.



Typical application of pipe-insert immersion heater for viscous fluids



Construction

Standard heaters have heavy duty alloy sheathed element(s) fitted to either a 3" 150 lb. steel flange or a 2"NPT screwplug. The terminal box is moisture resistant for outdoor applications. One 1" NPT conduit fitting is provided on units without thermocouple, and an additional 1/2" NPT conduit fitting is provided on units with built-in thermocouples.

Heaters with Type K thermocouples (one per tank) are used for detecting low liquid levels. If the level drops below the uppermost heater, the temperature inside the heaterpipe will rise. The thermocouple will detect this temperature rise, and, when this signal is fed through an electronic temperature limit control, it will automatically trip the system off. We can provide a packaged control panel or ship the control components individually.

Installation

Install heaters in a suitable metal pipe with a 2" minimum inside diameter. Fit 3" standard pipe flanges or 2" couplings where pipes extend outside the tank wall and cap the pipe ends inside the vessel. It is best to leave one pipe a few inches higher than the others. This pipe will receive the heater with the built-in thermocouple or limit device to provide fast response under low liquid level conditions.

Selection and Sizing

Use the graphs and the explanation on the following page to determine the kilowatts necessary to maintain the tank at the required temperature. Next, select the required number of heaters with an insert length long enough to provide good heat distribution. Normally the one element and two element style heaters are used in groups of three so that they can be wired in a three phase balanced system. When the application entails heating an extremely viscous liquid from a cold start, the one element heater should be selected since the lower resulting watt density on the pipe surface will prevent coking (see Table).

TABLE - Watt Density On Pipe Surface vs. Heater Type

PIPE1 SIZE	WATTS/SQ.CM. ON PIPE		
	ELEM.2 TYPE	ELEM.3 TYPE	ELEM. TYPE
2"	1.0	1.3	1.2
2 1/2"	0.8	1.1	1.0
3"	0.7	0.9	0.8
4"	0.5	0.7	0.6