

TECHNICALLY SPEAKING

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2014 Issue 1

Mitsubishi M Series Compressor Pre-Heat Control

Mitsubishi Heat Pumps systems are designed to run reliably in low ambient conditions. In order for this to happen, the installing contractor needs to be mindful of a few things. First and foremost, the system must be installed in accordance with manufacturer's specifications listed in the install manual. The outdoor unit needs to be elevated off the ground. If the unit is to be used continuously in low ambient conditions, it is recommended that a base pan heater should be installed. To prevent compressor failure, the contractor may need to activate (depending on the unit model) the compressor Pre-Heat function (essentially the crank case heater) during installation. Failure to do this could prevent the compressor from starting and give a misdiagnosis of a bad compressor.

Let's look at why this happens. First, the refrigerant and oil are miscible. That means that they like to be together. During low ambient conditions with the compressor off, the refrigerant will migrate to the compressor. If the off time is long enough, the compressor crankcase may fill up with liquid refrigerant. Because Mitsubishi compressors utilize a soft start feature there is not enough torque to overcome the liquid refrigerant in the crankcase and the compressor will not start. When this happens all the circuitry knows is that the compressor did not start and drew high amps on startup. This may trigger an over amp condition on the PCB or cause other faults. Upon arriving on site for service, the contractor will read the fault code on the unit and troubleshoot the system accordingly. After troubleshooting the compressor he can come up with a diagnosis that the compressor has failed mechanically.

Before replacing the compressor the contractor needs to verify that the compressor Pre-Heat function has been activated. If the jumper has not been cut, the contractor should power down the system and cut the jumper. Prior to re-energizing the system the contractor can use a heat gun to warm the compressor crankcase, boil off the liquid refrigerant and clear the crankcase. Once the compressor is warmed and the liquid refrigerant boiled off, the contractor can reapply power and cycle the system. If the compressor runs all is fine. If it does not, well that is a topic for another discussion.

A list of models and their initial Pre-Heat control state

(For reference only- list is subject to change. Refer to service manual for information on exact unit)

Model	Initial State From the Factory	How to activate
MUZ GE 09/12/15/18NA	off	Cut JK Jumper on Outdoor Board
MUZ FE 09/12NA	off	Cut JK Jumper on Outdoor Board
MUZ FH 09/12NA	off	Cut JK Jumper on Outdoor Board
MUZ D	off	Turn on Sw1-2 on the outdoor circuit board
MXZ B	on	
MXZ C	on	
MUZ-FE18 NA	Jumper cut at the factory depending on date code	
MUZ-GE24 NA	Jumper cut at the factory depending on date code	
MUZ FH 15NA	Jumper cut at the factory depending on date code	

Some models come from the factory with this jumper already cut. It is advisable to check the state of the jumper during the installation process. For specific unit information, directions, location of the jumper on the circuit board and operation of the Pre-Heat control please refer to the outdoor service manual for the unit you are working on. Service manuals can be found at www.mylinkdrive.com.

Side Note: *When the inverter P.C. board is replaced, check the jumper wires, and cut if necessary.*

As HVAC equipment becomes more sophisticated, it becomes more important for contractors to stay up to date on training. Failure to connect or configure systems correctly can cause undue service calls, repairs and homeowner complaints. Available training in your area can be found at: <http://www.meiersupply.com/content.aspx?file=customerpages/UnivTrain.htm>

*** For additional support contact Meier Supply at any of our locations ***

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