



OPERATING INSTRUCTIONS

BMT LIQUID INJECTION KIT

SG 0015-04 APRIL 2021

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BMT BOM

// Controller	1
// Controller Faceplate	1
// Faceplate Mounting Screws	4
// In-line fuse holder with 1-amp fuse	1
// Temperature Sensor	1
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Items Necessary for Installation

- // BMT Valve Kit (1 for each compressor)
- // Wire for Electrical Connections
- // Safety Glasses and Gloves
- // Refrigerant Service Manifold
- // Electronic Thermometer
- // Leak Detector
- // Refrigerant Recovery Unit
- // Proper Recovery Cylinders
- // Proper Recovery Containers for Refrigeration Oil
- // Replacement Liquid Line Filter Drier
- // Replacement Suction Filter, if needed

SEE PAGE 10 FOR CONTROL MODULE ONLY PART NUMBER



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SG-0015-04

PRE-INSTALLATION CONSIDERATIONS

The refrigeration system should be thoroughly leak tested and all leaks should be repaired BEFORE installation.

For Retrofit applications, it is advisable that System Operating Conditions be recorded prior to the BMT installation. This will provide base line data and future troubleshooting information, if needed, after the BMT kit is installed.

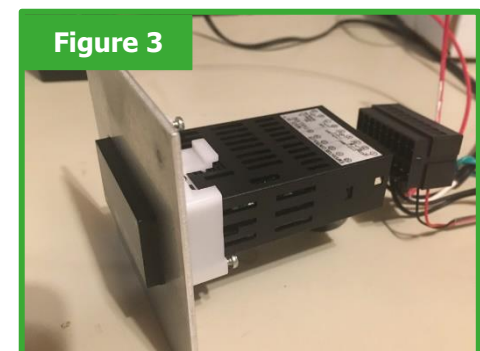
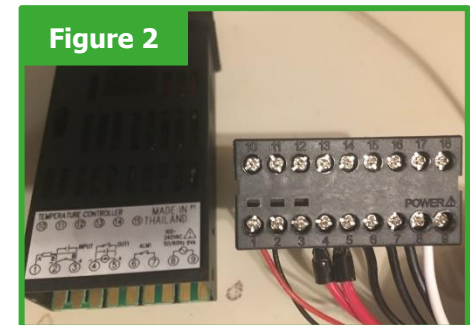
BEST WIRING PRACTICE FOR PANEL MOUNT

Carefully slide small flat blade under lock bridge on each side of controller to release the rear terminal connection panel.

Secure all wiring connections using the appropriate screw terminals. See next section "Wiring the Controller" for wire landings.

Note: Terminals 1 thru 9 are the only connections used on back of controller. [Terminals 10 – 18 are N/A.]

Install the Controller into panel mount faceplate opening and secure with the white locking bracket. See Section "Installing the Controller Panel Mount".



CONTROLLER WIRING

Connect the Thermistor Temperature Sensor Leads To Terminals 1 & 2.

Note: Leave Jumper installed across Terminals 2 & 3 for proper thermistor operation

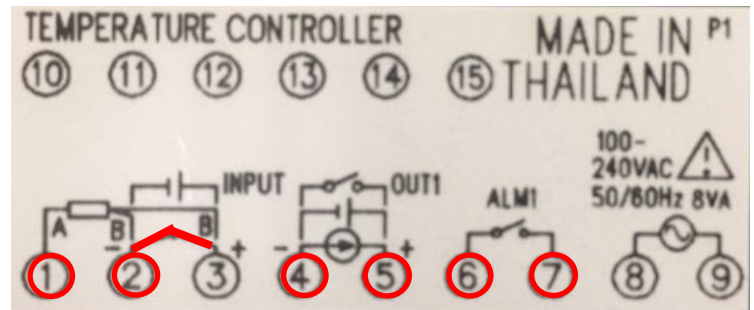


Figure 4

Connect Refrigeration Injection Valve Coil to Terminals 4 & 5.

Connect Over-Temp. Safety – ALM1 - (optional) to Terminals 6 & 7.

Connect Controller Power 100 to 240 Vac to Terminals 8 & 9.

Note: K1 relay contact and coil must be accounted for in safety chain as a run proof.

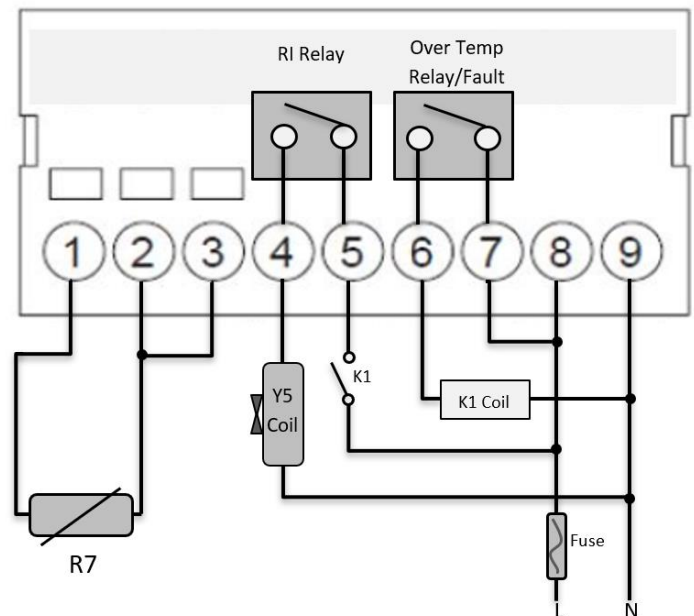


Figure 5

COMPRESSOR SAFETY CHAIN WIRING RECOMMENDATIONS

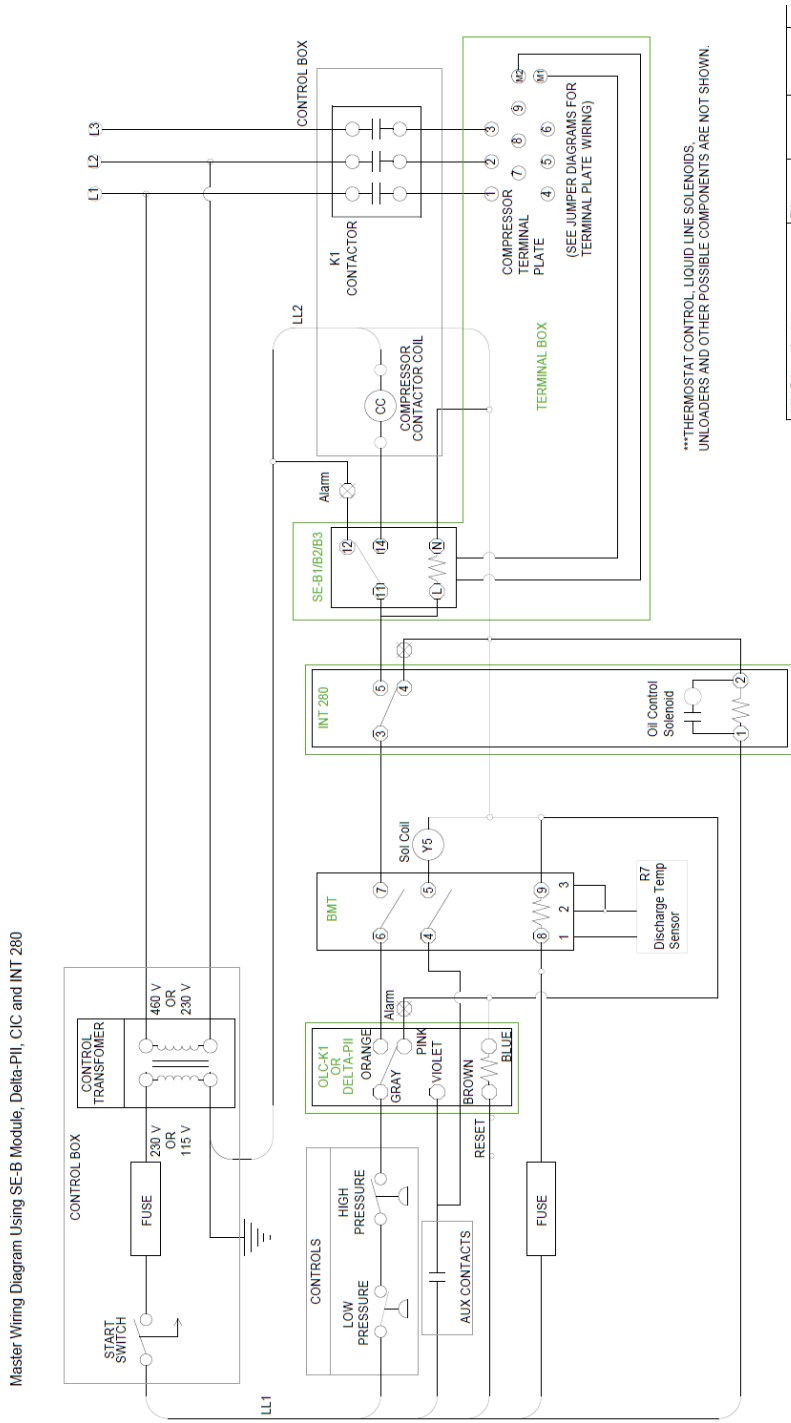


Figure 6

CONTROLLER PANEL MOUNT INSTALLATION

1. Turn electrical power off to the compressor.
2. Locate an area on the compressor control panel appropriate for the BMT controller.
3. Using a 2- ¼" hole saw, cut a hole in the panel.
4. Please review **Best Wiring Practice** before proceeding.
5. Slide controller into the faceplate and insert the controller into the panel cutout.
6. Slide on and lock the white mounting clamp then gently tighten the screws.
DO NOT OVER-TIGHTEN MOUNTING SCREWS.
7. Reattach the prewired back panel to the controller.

Note: The faceplate, when properly mounted, provides an NEMA 4/IP65 rating.

Dimensions (Unit: inches)

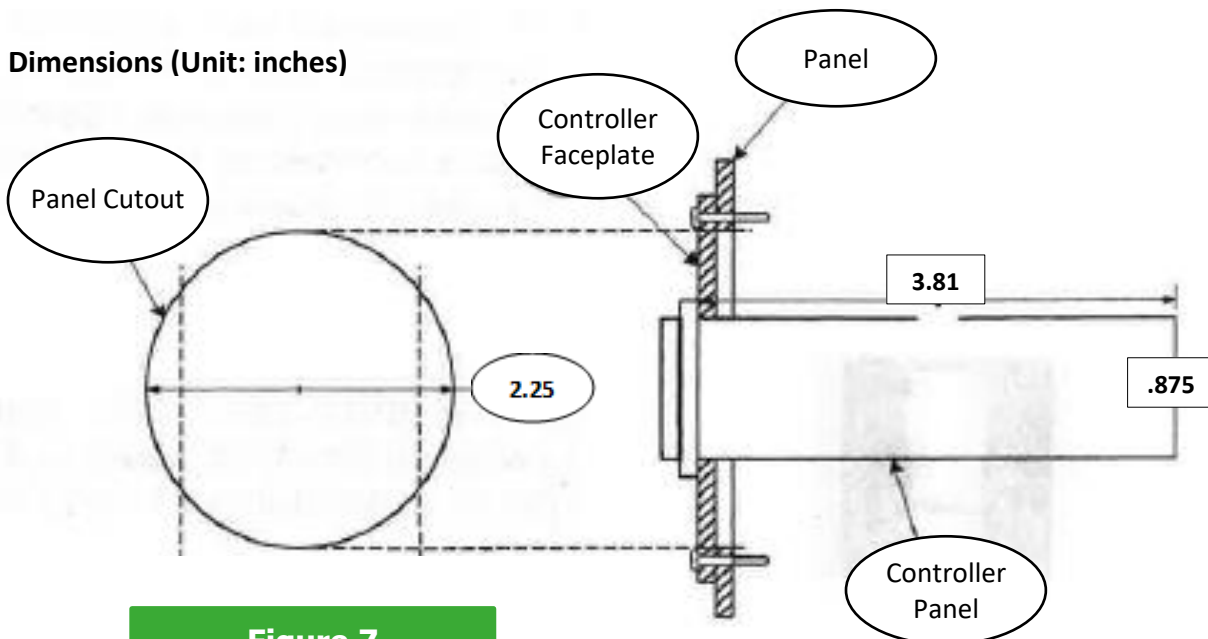


Figure 7

NOZZLE AND SENSOR LOCATIONS

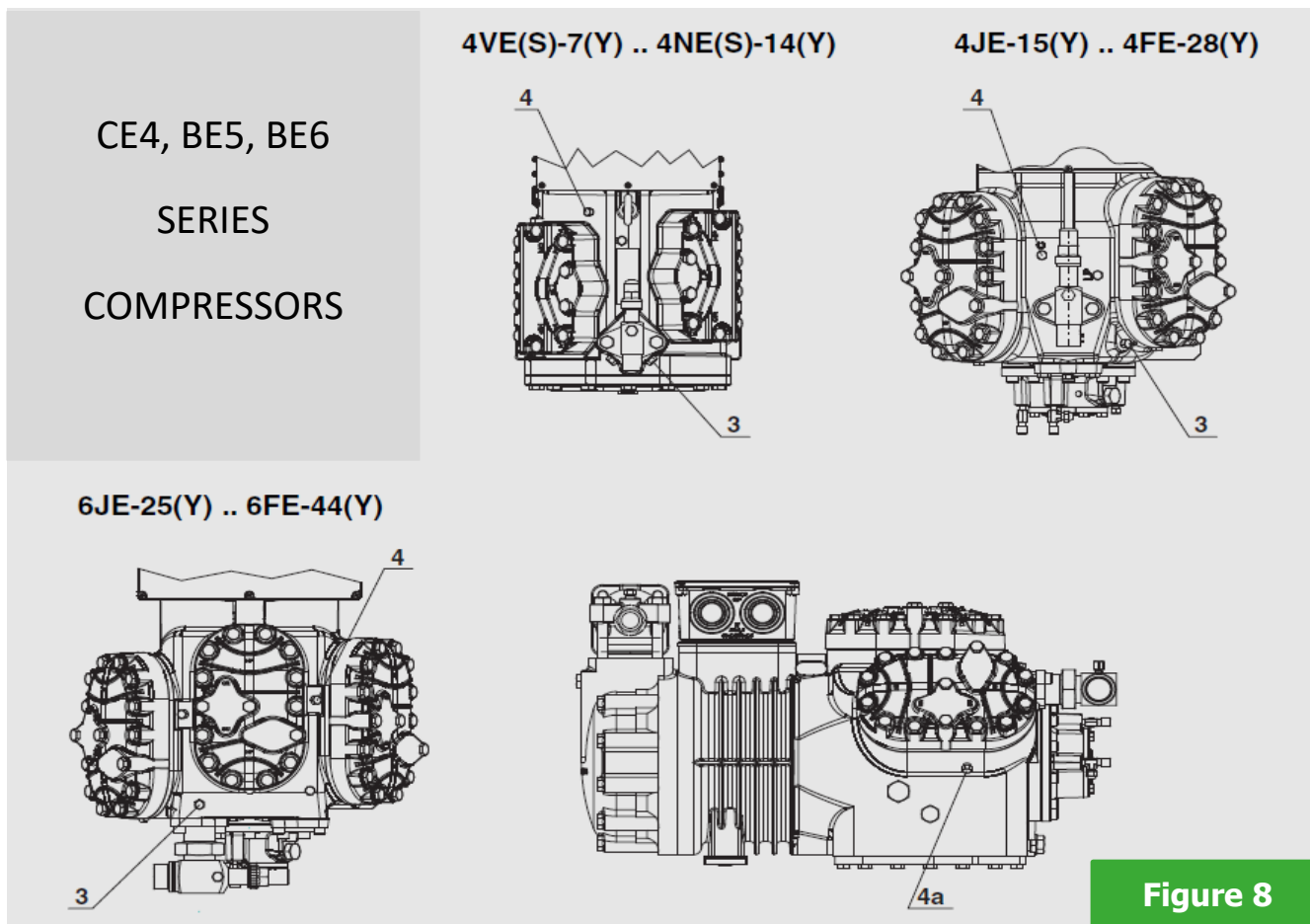


Figure 8

Connecting Positions

- 3 Discharge Gas Temperature sensor
- 4 Injection Nozzle
- 4a Second Injection nozzle (6JE ... 6FE)

1. Remove the sealing plug (1/8" NPTF) and replace it with the discharge gas temperature sensor. (tightening torque: 35-40 Nm or 25 to 29 ft. lbs.)
2. Guide the sensor cable to the control device.
3. Before installation, make sure that the injection nozzle area is clean.
4. Remove the (1/8" NPTF) sealing plug, then wrap Teflon tape around 1/8" NPTF conical injection nozzle threads and screw the injection nozzle into place. (torque: 10 – 13 Nm or 7 to 9 ft. lbs.)
5. Mount the injection solenoid valve to the injector.
6. To avoid undefined vibrations and tensions in the connecting line, secure the injection valve with the included mounting bracket to cylinder head. (See BITZER Technical Bulletin TB-0060)

INSTALLING NOZZLE AND VALVE

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Information

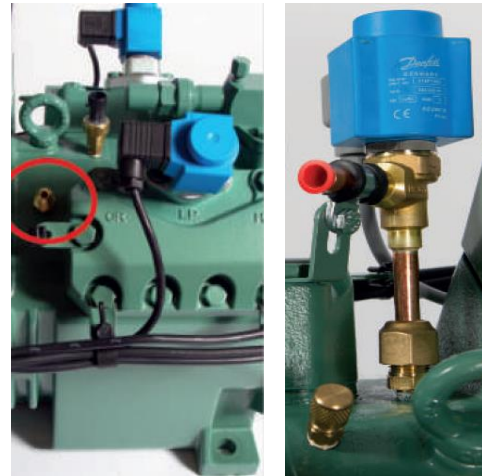
When positioning the fixing plate and the pipe clip on the cylinder head, the direction of the pipe entry into the valve needs to be considered.

// To this end, loosen the respective screw on the cylinder head. If required, add a spacer sleeve.

// Re-attach the support bracket using the enclosed, extended screw (tightening torque 80Nm) and tighten the pipe clip around the liquid line.

// Press the solenoid coil onto the armature until it engages.

// Insert the electric connector of the device with its seal and screw it down (tightening torque 5 Nm).



CE4 Series 4VE(S)-7 ... 4NES-20

Figure 9



BE5 Series 4JE-15 ... 4FE-35

Figure 10



BE6 Series 6JE-25 ... 6FE-50



Figure 11

STARTING THE SYSTEM

1. Turn the electrical power on
2. The BMT controller will turn on and display the temperature of the discharge chamber of the compressor head.
3. The injection kit for semi-hermetic reciprocating compressors is shipped with the control values set as shown in the chart below:


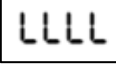

Valve Off	Valve On	High Temp Alarm
235°F	250°F	285°F
HT alarm automatic reset		

EXAMPLE: RI Valve turns on at 250°F, the High Temp (HT) alarm will activate at 285°F and stop the compressor via the K1 relay contactor and solenoid. The compressor will automatically reset when the compressor cools down to 235°F.


ERROR INDICATIONS

This controller has a display function to indicate an error code. If an error code is displayed, please eliminate the cause of the error immediately. After the cause is eliminated, turn off module power, and then restart the controller.

An Open thermocouple or poor connection will generate UUUU display on the display.
A shorted thermocouple **or** missing terminal 2 & 3 jumper will generate LLLL on the display.

Error Code	Possible Cause
UUUU 	1 - Thermocouple burned out 2 - RTD (A) leg burned out 3 - PV value exceeds P-SU by 5% FS
LLLL 	1 - PV value < -1999 Note: In case of RTD input "LLLL" is not displayed, even if the temperature becomes below -150C
FALT 	1 - Fault in the control Note: Replace the controller

CONTROLLER SPECIFICATIONS

Power supply	100 (-15%) V to 240 (+10%) V AC, 50/60 Hz Power consumption: ≤ 6 VA (at 100 V AC), ≤ 8 VA (at 240 V AC),
Operating conditions	Ambient temperature: -10°C to +50°C Ambient humidity: ≤ 90% RH (no condensation)
Mounting	Panel mount, or DIN rail or wall mount when using DIN rail mounting adapter (separate order item)
Dimensions	H24 × W48 × D98 mm
Weight	Approx. 150 g
Case materials	Plastic (equivalent to non-combustibility grade UL94V-0)
IP rating of front panel	IP66 (equivalent to NEMA 4X) When installed with our genuine waterproof packing.
Terminal	Screw clamp terminal
Finish color	Black
Certification	UL, C-UL
EU Directive Compliance 	LVD (2014/35/EU) EN 61010-1 EN 61010-2-030
	EMC (2014/30/EU) EN 61326-1 (Table 2) EN 55011 (Group 1 Class A) EN 61000-3-2 (Class A) EN 61000-3-3
	RoHS (2011/65/EU) EN 50581

ASSISTANCE

For technical assistance, please call or email:

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For pricing, availability and ordering, please call or email:

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Controller Replacement Module (Kit Only) P/N 347707-01



P/N 347707-01-S Thermocouple Only