

# FACTORY MODIFICATION DESCRIPTIONS

Effective 08-01-11  
Supercedes 12-01-09

## **M1. Nameplate Change:**

Add new nameplate displaying approved data changes such as new voltage and frequency, revised hp and service factor, higher or lower ambient temperature, etc. Information should be clearly stamped on P.O.

## **M1A. Additional Nameplate:**

Add second data plate with customer part number, order number, or other data.

## **M1B. 304 Stainless Steel Hardware:**

Add for 304 Stainless Steel Hardware - Bolts, Nameplate.

## **M2. Space Heater:**

Add wrap around space heaters with leads brought out to main terminal box. Standard voltage is 115V, however other voltages are available. Please specify voltage when ordering. All heaters are single phase.

## **M2A. Space Heater w/ Auxiliary Box:**

Same as M2, except an auxiliary terminal box is added to the side of the main terminal box and the space heater leads are brought out to the auxiliary terminal box.

## **M2X. Space Heater "Explosion Proof":**

Add wrap around space heaters with leads brought out to main terminal box. Standard voltage is 115V, however other voltages are available. Please specify voltages when ordering. All heaters are single phase. This applies to TWMC's explosion proof line of motors.

## **M3C. Installation of C-Face:**

Remove drive-end bracket and replace with C-Face: Modification Price includes the C-Face.

## **M3C841. Installation of C-Face w/ INPRO™ Seal (MAX-E2/841® only):**

Remove drive-end bracket and replace with C-Face and INPRO™ Seal: Only Available on MAX-E2/841® Line.

## **M3D. Installation of D-Flange:**

Remove drive-end bracket and replace with D-Flange: Modification Price includes the D-Flange.

## **M3D841. Installation of D-Flange w/ INPRO™ Seal (MAX-E2/841® only):**

Remove drive-end bracket and replace with D-Flange and INPRO™ Seal: Only Available on MAX-E2/841® Line

## **M4. Stator Winding RTD's, 100 Ohm Platinum (1/ phase):**

Provide 100 Ohm platinum resistant temperature detectors (RTD's), two per phase, on the winding end turns with leads brought out to main terminal box. Note TWMC's medium voltage line of products come standard with 100 Ohm platinum RTD's, two per phase.

## **M4A. Stator Winding RTD's w/ Auxiliary Box (1/ Phase):**

Provide 100 Ohm platinum resistant temperature detectors (RTD's) one per phase on the winding end turns with leads terminated in an auxiliary terminal box.

**Note:** On motors 360T - 449T, the auxiliary box will be located on the same side as the main lead box. On 5000 frames and larger, the auxiliary box will be located on the F2 side, or on the opposite side of the main lead box.

## **M4B. Stator Winding RTD's, 100 Ohm Platinum w/ Auxiliary Box (2/ Phase):**

Provide 100 Ohm platinum resistant temperature detectors (RTD's) two per phase on the winding end turns with leads terminated in an auxiliary terminal box.

**Note:** On motors 360T - 449T, the auxiliary box will be located on the same side as the main lead box. On 5000 frames and larger, the auxiliary box will be located on the F2 side, or on the opposite side of the main lead box.

## **M5. Thermistors (1/ Phase):**

Provide (3) PTC thermistors (140°C) on the winding end turns with leads brought out to main terminal box.

Note: these are standard on Metric motors with frames 160L and larger.

## **M5A. Thermistors (1/ Phase) w/ Auxiliary Box:**

Provide (3) PTC thermistors (140°C) on the winding end turns with leads brought out to an auxiliary terminal box. The auxiliary box will be located on the side of the main terminal box.

## **M6. Thermostats (1/ Phase):**

Addition of (3) normally closed thermostats (140°C) to the winding end turns, connected in series with the leads brought out to the main terminal box. This is standard on Explosion Proof Motors.

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## **M6A. Thermostats (1/ Phase) w/ Auxiliary Box:**

Addition of (3) normally closed thermostats (140°C) to the winding end turns, connected in series with the leads brought out to an auxiliary terminal box. The auxiliary box will be located off the side of the main terminal box.

## **M7. Bearing RTD's, 100 Ohm Platinum (2/ motor):**

Add 100 Ohm platinum bearing resistance temperature detectors, on both the drive and non-drive end bearing. Specify if alternate type is required.

## **M8. Bearing Conversion - Roller to Ball or Ball to Roller:**

Convert from Roller Bearings to Ball Bearings or Ball Bearings to Roller Bearings. The Roller to Ball conversion requires some machining on bearing caps to allow for thermal growth.

## **M8A. Convert to Ceramic Bearings:**

Replace existing bearing(s) with ceramic ball bearings. This would be to reduce/ eliminate shaft currents. TWMC's standard is on the Non-Drive End bearing only.

## **M8B. Convert to Insulated Bearings:**

Replace existing bearing(s) with either ceramic coat bearings, or outer race insulated bearings. This would be to reduce/ eliminate shaft currents. TWMC's standard is on the Non-Drive End bearing only.

## **M9. Change Rotation (2 Pole Motors Only):**

This modification only applies to 2-Pole (3600/ 3000 RPM) motors in 5000 frames and larger. Standard direction of rotation is counter clockwise, facing the drive-end of the motor. This modification will change either the internal or external fans for operation in the clockwise direction, facing the drive-end.

## **M9A. Change to Low Noise Fan/ Fan Cover:**

Low noise fan/ fan cover designed to reduce noise to below 85 dB at 1m.

## **M10. Shorten Shaft to NEMA TS Dimensions; Non-NEMA Dim Requires TWMC Drawing:**

Machine shafts to TS dimensional length per NEMA MG1 or customer required length. Any other extension requirements will have to be approved by TWMC and require a shaft drawing. End result may produce a step key configuration. Note, this does not include new bearings.

## **M10A. Special Keyless 4140 Shaft Extension for 5000 Frames and above:**

Extension is for 5000 frames and above, where torsional stress in the application is high, such as reciprocating gas compressors. Requires TWMC approval, quote, and drawing.

## **M11. F1 to F2 Mounting Conversion:**

Convert terminal box location from standard F1 to F2, or F2 to F1, depending on the product line. On medium voltage motors, the auxiliary terminal boxes will be on the opposite side of the main terminal box as standard. If the requirement is to have all terminal boxes on either the F1 side or the F2 side, please specify.

## **M12. Oversized Main Conduit Box:**

Replace existing conduit box with an oversized main conduit box. This would be done if the TWMC standard box does not meet customer's requirement. Mount and extend leads if necessary.

## **M12A. Fully Loaded Main Lead Box:**

Replace existing conduit box with a fully loaded box. The box will be TWMC standard size and will contain TWMC standard lightning arrestors, surge capacitors and current transformers (50:5). Box is not self supporting and will require the customer to support.

## **M13. Stainless Steel Breather Drains:**

Drill and tap the existing drain holes to accommodate a Crouse-Hinds stainless steel breather drain. Note, this is standard on MAX-E2®, MAX-E2/841® and Explosion Proof motors.

## **M14. Tropicalization/ Fungus Protection:**

Involves disassembling the motor and spraying the internal windings.

## **M15. Provisions for Vertical Jack Screws:**

Drill and tap (2) holes per motor.

## **M16. Alternate Grease:**

Purge and repack lubricant in end brackets with TWMC standard high temp. or low temp. grease. Please contact TWMC for alternates.

## **M17. Chico Motor Leads**

Apply a compound between terminal box and frame of motor. This feature is standard for explosion proof motors.

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## **M18. Epoxy Paint Finish:**

Standard paint finish will be changed to Epoxy paint (e.g. MAX-E2® Epoxy Paint (Blue)).

## **M19. Shaft INPRO™ Seals:**

Add INPRO™ seals to drive-end only of MAX-E2® motors 140T~449T/TS frames. This modification is only available for frames 440T and larger. The price reflects drive-end only.

## **M20. Grounding Provisions on Frame:**

Drill and tap the motor frame. This is standard on MAX-E2®, MAX-E2/841®, Oil Well Pump motors, and motors on 5000 frames and larger. All motors have a grounding lug inside the main lead box as a standard.

## **M21. Drip Cover (TEFC) Rolled Steel:**

Replace the existing fan cover with a rolled steel drip cover. This is only for motors mounted vertically.

## **M21A. Drip Cover (TEFC) Cast Iron:**

Replace the existing fan cover with a cast iron drip cover. This is only for motors mounted vertically.

## **M22. Extend Leads - Connection Behind Conduit Box; Price Based on 4' leads:**

Extend existing leads to the length specified by customer. The splice will be made behind the conduit box so it is not seen.

## **M23. Supply Shaft Grounding Ring:**

Install AEGIS shaft grounding ring as made by ELECTRO STATIC TECHNOLOGY. This would be to reduce or eliminate shaft currents. For other methods of shaft grounding, please contact TWMC.

## **M24. Provisions for Vibration Sensor:**

Drill, tap and machine end bracket(s) to accommodate vibration sensor. Customer is required to submit specifications of vibration sensor. Price is per bracket.

## **M24A. Provide and Install Vibration Sensor (Does Not Include Cabling or Terminations):**

Drill, tap and machine end bracket(s) to accommodate vibration sensor. TWMC standard switch will be provided as made by METRIX, ROBERTSHAW, PREDICTECH, or STI. For details or pricing to provide another brand, please contact TWMC. Price is per bracket.

## **M25. Mill Off Motor Feet:**

TWMC will cut off the feet of a footed motor to create a round body type motor. Second lifting lug available for an additional price adder.

## **M26. Inline Blower for 1000:1 Speed Range:**

Remove existing fan and fan cover and replace with TWMC standard inline blower/ fan cover configuration. Blower motor will require a separate power source. This modification will also require an "M8A" modification for 440TS/T frames and larger.

## **M27. Installation of Encoder:**

Install TWMC standard Encoder as made by Dynapar. Other brands available upon request for an additional price adder

## **M28. Lock Nut and Washer for Mounting the Motor Vertical Shaft Down.**

## **M29. Oil Mist Ready:**

TWMC to prepare motors for immediate Oil Mist Lubrication on 400 frames and above. Must use MAX-E2/841® if applicable.

## **M30. CSA Div. 2 Medium Voltage TEFC Mod.**

Modify TEFC medium voltage motors such that a CSA Div. 2 nameplate can be affixed. Can only be performed on motors used on sine wave power. Please check with TWMC on temperature code as it depends on service factor and hp.

## **M31. Convert to IP56 or IP65**

TWMC to take IEEE 841 motor, perform M16 modification and add extra sealant to end-brackets.