

# FACTORY MODIFICATION DESCRIPTIONS

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

## **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.

## **M1A. Additional Nameplate:**

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

## **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™ Seals:**

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™ Seals:**

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

## **M4. Stator Winding RTD's:**

Provide 100 Ohm platinum resistant temperature detectors (RTD's), one 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:**

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 for frames 360T and larger. 1/phase only available for 320T and smaller. Note: On motors 449T Frame and Smaller, the auxiliary box will be located on the same side as the main terminal box. On 5000 Frames and larger, the auxiliary box will be located on the F-2 side, or on the opposite side as the main lead box.

## **M5. Thermistors:**

Provide (3) PTC thermistors (140°C) on the winding end turns with leads brought out to main terminal box.  
Note: these are standard on the Metric motors with frames 160L and larger.

## **M5A. Thermistors 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:**

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.

## **M6A. Thermostats 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:**

Add 100 Ohm platinum bearing resistance temperature detectors, one per bearing. Specify if alternate type is required.

## **M8. Convert Bearings:**

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.

# FACTORY MODIFICATION DESCRIPTIONS

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

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

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

## **M8B. Convert to Angular Contact Bearing:**

Replace one bearing with angular contact bearing to account for thrust imposed on motor.

## **M9. Change Rotation:**

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 Non-Sparking Fan:**

Replace existing fan with a non-sparking fan. This is for motors that will be located in Class 1, Division II environments.

## **M10. Shorten Shaft:**

Machine shafts to TS Dimensional length per NEMA MG1 or customer required length. If requirement is to change the diameter of the shaft extension, then TWMC will have to approve new diameter based on the motor application, horsepower, and speed. Any other extension requirements will also have to be approved by TWMC. End result may produce a step key configuration. Note, this does not include new bearings.

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

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 as 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.

## **M11A. Supply oversized Main Conduit Box:**

Replace existing conduit box with an oversized main conduit box. This would be done if TWMC standard box does not meet customer's requirement.

## **M11B. Supply 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.

## **M12. Stainless Steel Breather Drains:**

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

## **M13. Tropicalization/ Fungus Protection:**

Involves disassembling the motor and spraying the internal windings.

## **M14. Provisions for Vertical Jack Screws:**

Drill and tap 2 holes per motor.

## **M15. Alternate Grease:**

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

## **M16. Chico Motors Leads**

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

## **M17. Epoxy Paint Finish:**

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

## **M18. 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.

## **M19. 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 5000 frames and larger. All motors have a grounding lug inside the main lead box as a standard.

## **M20. Drip Cover Rolled Steel:**

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

## **M20A. Drip Cover Cast Iron:**

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

# FACTORY MODIFICATION DESCRIPTIONS

Effective 12-01-09  
Supersedes 12-01-08

## **M21A. Extend Leads - Connection Behind Conduit Box:**

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

## **M21B. Extend Leads - Connection in Conduit Box:**

Extend existing leads to the length specified by customer. The splice will be made in the conduit box.

## **M22. 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.

## **M23. 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.

## **M23A. Provide and Install Vibration Switch (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.

## **M24. Mill Motor Feet Off:**

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

## **M25. 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" for 440TS/T frames and larger.

## **M26. Installation of Encoder:**

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

## **M27. Installation of Brake:**

Please Contact TWMC for pricing and delivery.

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

## **M29. Provisions for Oil Mist:**

TWMC to prepare motors for future Oil Mist Lubrication. Must use 841 motors if applicable.

## **M29A. Oil Mist Ready:**

TWMC to prepare motors for immediate Oil Mist Lubrication. Must use 841 if applicable.

## **M30. Convert TEAO from TEFC**

TWMC to convert TEFC enclosure to a TEAO enclosure when motor is installed in airstream.

## **M31. CE Mark Modification**

For any LV TEFC motor with a cast iron fan cover TWMC will add CE compliant screen to inside of fan cover and add CE mark auxiliary nameplate.

## **M32. CSA Division 2 Medium Voltage TEFC Modification**

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 temp code as it depends on S.F. and hp.

## **M33. Class 2, Div. 2 Self Cert Mod**

TWMC to take IEEE 841 motor, perform M6 & M16 Mods and add a Self Certified aux. nameplate.

## **M34. Convert to IP56 or IP65**

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