
Stainless Motors, Inc.

design innovation • stainless performance

Motor Operating & Maintenance Manual

Date: 2/15/2011



Instructions

- Operating and Maintenance Instructions
 - Wiring Instructions
 - Maintenance
 - Warranty
 - Wiring Diagrams
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Table of Contents

Operating and Maintenance Instructions.....	2 - 3
Wiring Instructions.....	3 - 5
General Maintenance.....	6 - 7
Warranty.....	8 - 9
Wiring Diagrams.....	10 - 14

Stainless Motors would like to thank you for your business. We appreciate the opportunity to keep servicing your toughest wash-down duty power transmission challenges.

Thank You!



For information call (505) 867 - 0224

Operating and Maintenance Instructions For Stainless Electric Motors

INSTALLATION

Only qualified, trained personnel should install the motor/gearmotor. Electrical rotating equipment can result in property damage, serious injury or death when improperly installed. Equipment should be installed in accordance with the National Electric Code, local codes and with NEMA MG2.

MOUNTING

Foot mounted motors should be mounted to a rigid foundation to prevent excessive vibration. Flange mounted motors should be properly seated and aligned. Periodically verify that all mounting bolts are firmly tightened.

NOTE: If improper direction of rotation is detrimental to the load, check rotation prior to connecting the motor to the load.

ENVIRONMENT

Stainless motors are suitable for extreme washdown environments such as those in food processing or pharmaceutical manufacturing. They are not intended for submersion service. Outdoor installations in direct, intense sunlight should be carefully reviewed as a precaution to motor overheating.

INSTALLATION OF MOTORS

- The motor *must* be grounded in accordance with the National Electrical Code and any local codes.
- Shaft key must be secured before starting motor.
- The motor must match the line voltage, line frequency and be suitably sized for the equipment load.
- Remove all power sources and allow motor to reach standstill prior to servicing.
- Do not bypass or render inoperative safeguard or protective devices.

WIRING INSTRUCTIONS

Connect the motor in accordance with the connection diagram based on the motor casing. For wiring diagrams refer to pages 10 - 14.

When the motor is connected to the load and started, it should start quickly and run smoothly. If not, immediately disconnect the motor from the power source and investigate the cause. Verify line voltage (all three legs in a three-phase motor), motor connection matched to line voltage, excessive load, etc.

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All three-phase Stainless Motors are suitable for use on variable frequency drives and are phase/phase insulated. Consult Stainless Motors, Inc. Engineering if turn-down below 4:1 is expected for extended periods. Thermostats, when supplied, are suitable for control circuits only and must not be connected in series with the motor. Wire lengths of more than 100' between the motor and inverter should be reviewed for potentially damaging high voltage harmonic spikes resulting from inverter/wire/motor combination. In such cases, line reactors or other filtering may be necessary.

TEAO motors (Totally Enclosed Air Over) rely on being placed in an air stream, such as from a large fan for adequate cooling. It is the customer's responsibility to ensure compatibility of a TEAO motor and its application.

TEBC motors are fitted with a constant speed fan which will provide adequate cooling of the main motor to at least a 10:1 turn-down ratio. This cooling fan is powered by a second independent motor attached to the main motor and requires its own control circuit hardware. Leads for the blower motor are conveniently brought out through the main motor junction box.

TECAC motors (Totally Enclosed Compressed Air Cooled) are compressed air cooled and rely on the customer's plant compressed air for proper cooling. They are often fitted with

thermostats, thermocouples or both. Refer to the etched nameplate on the motor for the exact configuration supplied.

TEFCAC motors (Totally Enclosed Fan Cooled/Compressed Air Cooled) are cooled with a combination of compressed air and a standard external fan. They are often fitted with thermostats, thermocouples or both. Refer to the etched nameplate on the motor for the exact configuration supplied.

TELC motors (Totally Enclosed Liquid Cooled) are generally water cooled units with an external water jacket surrounding the motor casing. TELC motors rely on an adequate flow of cooling water for proper operation.

TEOT motors (Totally Enclosed Oil Through) utilize transformer oil, such as Shell DIALA AX, circulating through the motor and an external heat exchanger for proper operation.

It is the customer's responsibility to ensure that adequate and compatible cooling apparatus are employed when utilizing TEAO, TEBC, TECAC, TEFCAC, TELC or TEOT motors. After start-up, it is recommended that the motor current be checked and compared against the nameplate rating.

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MAINTENANCE

Motors

Stainless motors are fitted with double sealed “lubed for life” ball bearings. When replacing bearings be sure to select double sealed bearings lubricated with Polyrex EM moisture resistant high temperature grease.

Standard Bearings Sizes

<u>NEMA Frame</u>	<u>Enclosure</u>	<u>Shaft End Bearing</u>	<u>Opposite Shaft End Bearing</u>
48	TENV	6204	6203
48	TEFC	6204	6204
56	TENV	6205	6203
56	TEFC	6205	6204
143T, 145T	TENV	6205	6203
143T, 145T	TEFC	6205	6204
182, 182T	All Types	6206	6205
184, 184T	All Types	6206	6205
213, 213T	All Types	6307	6206
215, 215T	All Types	6307	6206
254T, 256T	All Types	6309	6208
284T, 286T	All Types	6311	6309

***Please contact Stainless Motors for bearing sizes for custom motors.**

All stainless motors feature a locked shaft-end bearing which is secured to the endbell with an internal retaining ring. The bearing is locked to the shaft with an external retaining ring. One of the retaining rings **MUST** be removed before attempting to disassemble the shaft/bearing/endbell assembly. Attempting to press the shaft through the bearing with both

retaining rings in place will likely destroy both the shaft and the endbell.

External to the bearings are shaft seals to further protect the bearings and motor windings from the entrance of water or contaminants. Pharmaceutical Processing motors are normally sealed with mechanical seals. Food Processing motors are normally sealed with lip seals.

Verify that both endbell O-rings and the four small thru-bolt O-rings are in good, serviceable condition. There must be no visible cracks or tears, and the Nitrile must be flexible.

Due to the unique construction of our products and to prevent unnecessary damage, we strongly advise repair technicians to contact Stainless Motors, Inc. at (505) 867-0224 for disassembly and rewinding instructions prior to servicing our motors. Our products may also be repaired by a qualified motor rewind shop or may be returned to Stainless Motors, Inc. for a complete rebuild.

For information call (505) 867 - 0224

STAINLESS MOTORS, INC. LIMITED WARRANTY

Stainless Motors, Inc. manufactured products are manufactured and sold to industrial distributors, OEMs and significant industrial end-users and are not intended for household, family or personal use. All product specifications, applications or other information provided in Stainless Motors, Inc. sales literature are subject to change without notice, and should be confirmed prior to order placement.

All motors, gearmotors, and gear reducers are warranted against defects in Stainless Motors, Inc. workmanship and materials. The warranty period is one year from the date of shipment from Stainless Motors, Inc. All warranty claims must be received by Stainless Motors, Inc. prior to the expiration of the warranty period.

If a Stainless Motors, Inc. manufactured product is thought to be defective, Stainless Motors, Inc. must be contacted with a full description of the apparent problem with the product. If it is deemed necessary, a Returned Goods Authorization number will be given. The product shall be shipped, freight prepaid, to Stainless Motors, Inc. for evaluation and repair. Stainless Motors, Inc. is not responsible for the removal, shipping, re-installation of the product upon its return to the customer, or any incidental or consequential damages resulting from the defect, removal, re-installation, shipment or otherwise.

Performance problems can be due to a variety of causes not covered by this warranty such as improper maintenance,

faulty installation, non-Stainless Motors, Inc. additions or modifications, etc. If the problem is determined not to be due to defects in materials or workmanship, then the customer will be responsible for the cost of any necessary repairs or testing.

In situations where the customer is unable to ship the product back to the Stainless Motors, Inc. factory, Stainless Motors, Inc. at its sole discretion, may authorize the evaluation and possible repair be accomplished at a qualified EASA repair center.

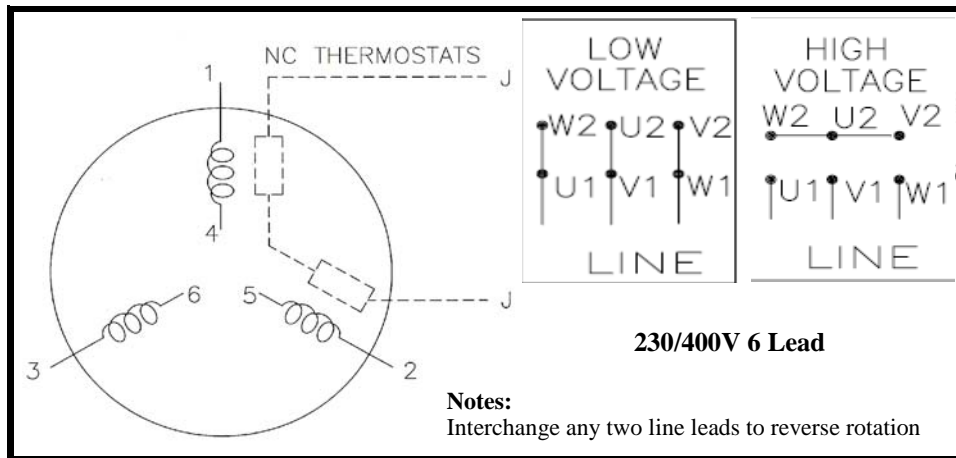
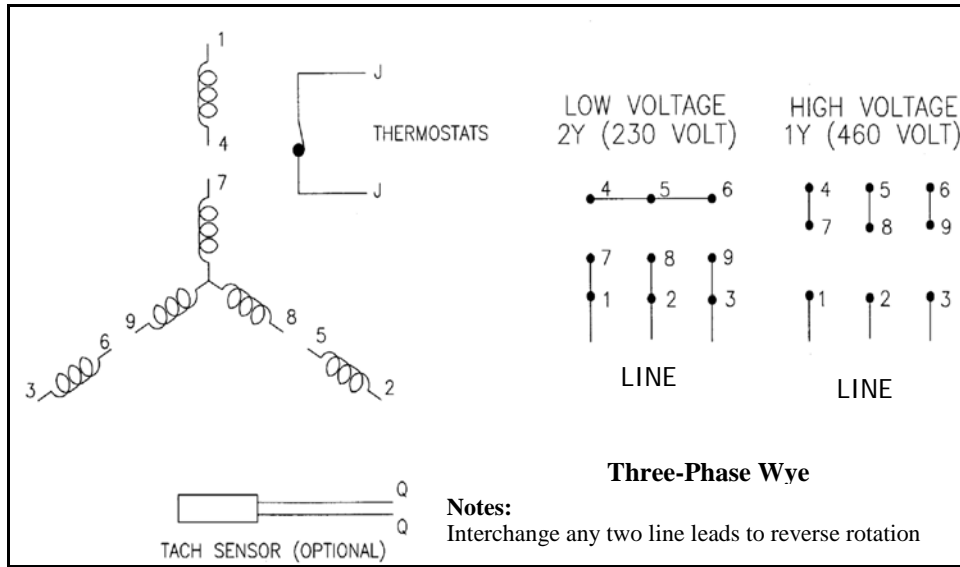
This limited warranty and service policy represents Stainless Motors, Inc. sole and exclusive warranty obligation with respect to Stainless Motors, Inc. produced products. Stainless Motors, Inc. responsibility to a customer or any other person shall not exceed Stainless Motors, Inc. sales price of the product. Stainless Motors, Inc. disclaims all other express and implied warranties, including the implied warranties of fitness for a particular purpose and merchantability.

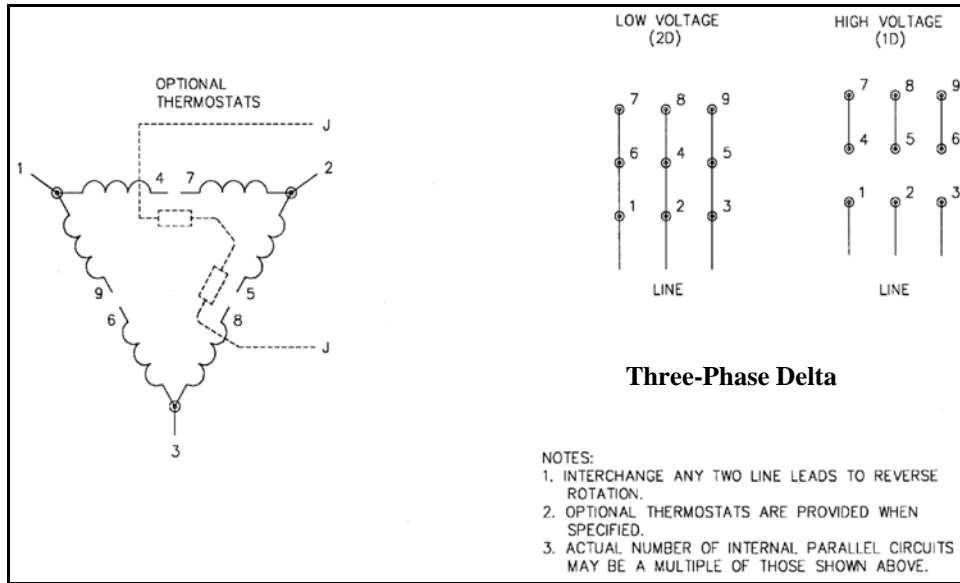
For information call (505) 867-0224

Wiring Diagrams for Single-Phase and Three-Phase Motors

Note: Please contact Stainless Motors, Inc. if you are unsure of which wiring diagram to refer to for our three-phase and single-phase motors. Thank you.
(505) 867-0224

THREE-PHASE MOTORS

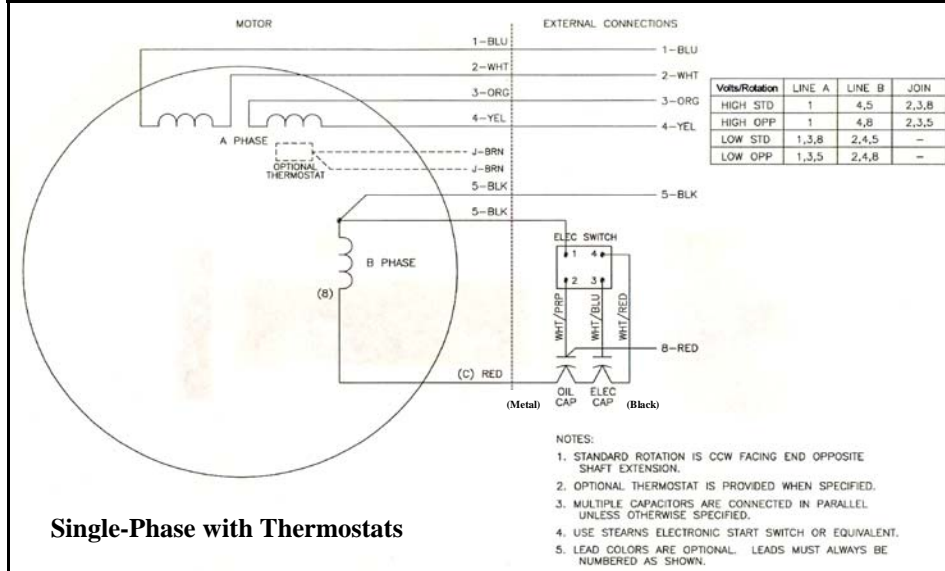
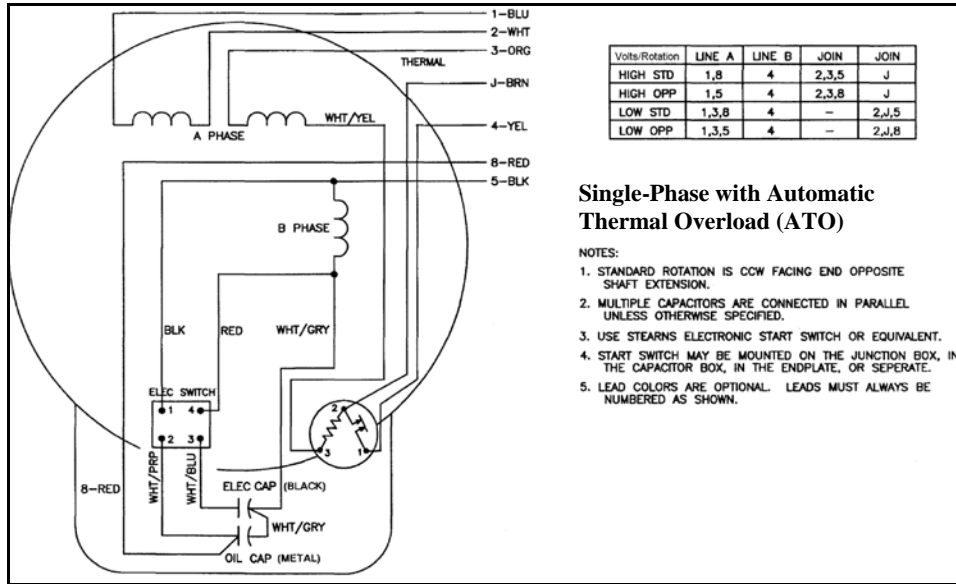




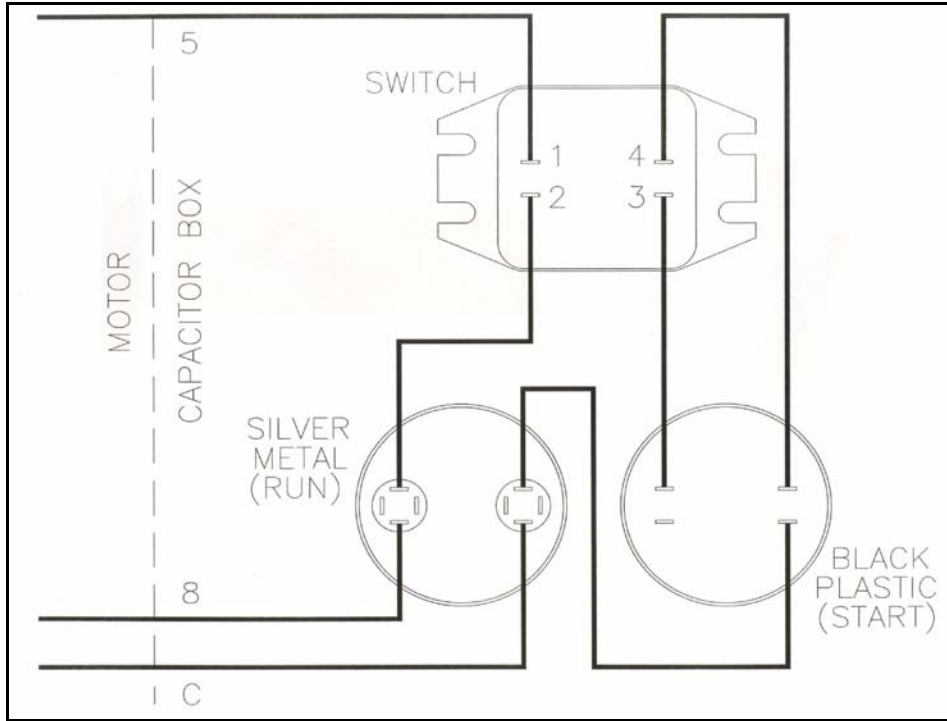
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SINGLE-PHASE MOTORS



CAPACITOR CONNECTIONS FOR SINGLE-PHASE MOTORS



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