

January 8, 2001
Al Sartorius 1 of 2
(973) 831-9573

VECTOR DUTY MOTOR - BRIDGE DUTY SPECIFICATION

The drive motors shall be vector duty motors. They shall be built in strict accordance with NEMA publication MG-1 and designed for use with an IGBT AC closed loop vector control . They shall be 3 phase 60 hertz, with moisture resistance insulation, 50 degree C temperature rise, and capable of reversing. Motor frame shall be constructed of cast Aluminum

1. Horsepower: _____ HP
2. Nominal Voltage: _____ VAC primary
3. Nominal speed: _____ RPM
4. Duty: 60 minute
5. Frame size: _____
6. Insulation: HHH
7. Service Factor: 1.0

The motors shall be totally enclosed non-ventilated construction, with re-greaseable ball bearings, moisture resistant insulation and internal space heater sized by manufacturer. The motor shall have a special extended shaft as shown on the mechanical contract drawings to accommodate the motor coupling on one end and a rear mounted encoder on the other. The motor shafts shall be Cadmium plated. A drain hole of not less than 1/2 inch diameter shall be provided at the bottom of the motor.

All winding shall be copper. The motor shall be capable of having a minimum breakdown torque of 300%. Motor must have a speed range of 1000: 1 and be capable of having full torque at zero speed. Motor design shall be low inertia and slip design. A N/O temperature sensor in the windings.

Motor encoder shall be an industrial type (aluminum and glass encoder wheels are not acceptable). The encoder shall have a resolution of 1024 ppr with 12 volt DC power and be compatible with the Safronics VG5 vector control. Separate terminal box with terminal strip for feedback unit.

The conduit boxes shall be liberally sized and located to avoid interference with the machinery. The conduit boxes shall be sized in accordance with the requirements of the NEMA MG 1-1987 PART 11.

The motors shall be designed and manufactured in the United States of America. All motors must be hand wound and assembled.

All motors must be manufactured to the following standards:

1. IEEE Marine Standards No. 45.
2. American Bureau of Shipping (A.B.S.).
3. U.S. Coast Guard Inspection Service.

Modifications needed to meet the requirements of these specifications are as follows:

1. All aluminum parts - chemical film (MIL-C-5541) and zinc chromate primer (MIL-P- 8595).
2. Cadmium plate shaft and hardware (FED-QQ-P-416).
3. Double Sealed ball bearings .
4. Screens over all openings - 3 x 3 mesh - galvanized (drip-proof protected only).
5. Seal all joints and eye bolt holes.
6. Sealed leads in terminal box (waterproof - TENV and TEFC only).
7. Shaft seals (waterproof - TENV and TEFC only).
8. Removable drain plugs (waterproof - TENV and TEFC only).
9. Final coat of epoxy paint
10. Corrosion resistant coating - rotor and stator laminations.
11. Stainless steel and/or mylar nameplate.
12. Super 'H' insulation. Includes protection against fungus growth per MIL-V173B.

The motor frame shall be finished with a corrosion-resistant paint or coating. Exposed unpainted metal surfaces shall be of a corrosion-resistant material.

Motor must be designed to operate at carrier frequencies up to 20 kHz.

All motors must be dynamically balanced.

One motor shall be subjected to a full load heat run test and the other to a routine test in accordance with the current requirements of the NEMA MG 1-1987 PART 12, and IEEE STD 112-1984. The data, including that required by the submission section of this specification, shall be certified and submitted to the Engineer on the IEEE forms. The Engineer shall be notified of the time and place of the testing at least three weeks in advance of the testing. The Engineer shall determine if the motors are as specified and in accordance with requirements and if the two motors are substantially identical.

After entire motor, brake and control system installation, the contractor shall perform a speed/current test to demonstrate that the motor functions properly and provides the specified operating characteristics as called out in the testing section of this specification. The data shall be recorded on a chart recorder and include acceleration, deceleration, full speed, reduced speed and creep speed.

Approved Manufacturers:

Motors shall be manufactured by Reuland Electric, GE or Marathon (represented by SDC, Inc. (973-831-9573)).