

elcom[®]

PITTMAN[®]
BRUSHLESS
D-C
SERVOMOTORS

Series 5100 - 50mm square cross section

PITTMAN[®] ELCOM[®] motor designs provide significant advances in high performance brushless servo motors. Notable features include:

1. Negligible magnetic cogging
2. Optional patented Lo-Cog[®] 12-step drive for minimal commutation torque ripple
3. Very high thermal efficiency
4. High torque to inertia ratio
5. Low winding inductance
6. Low mechanical time constant

Although both 4-phase delta and 3-phase wye versions of these motors are available, the 3-phase motors are recommended for all new applications because they provide better over-all performance. The Lo-Cog[®] drive option for 3-phase motors, which requires use of compatible servo amplifiers, offers theoretical commutation torque ripple as low as 3.4% by comparison with

13.4% for conventional 6-step drives.

Thermal characteristics are extremely impressive when compared to those of brush-commutated servo motors. Safe operating area curves are published as guideline information.

A novel combination of coil winding and lamination design achieves a significant reduction in inductance from the values associated with the more familiar approach of inserting coils in lamination stack slots. For comparable torque ranges of motors, the ELCOM[®] series stators have inductances on the order of 7 times less than those of conventional designs. The unusual stator lamination design also virtually eliminates reluctance torque.

All motors can be supplied optionally with optical encoders and/or planetary gearheads. Consult your local Pittman representative or the factory for specific recommendations for your application.

Standard Design Features of Series 5100 Motors

SHAFT MATERIAL

Stainless steel Type 416 is standard. Types 303 and 316 are available at additional cost for lowest residual magnetic stray field.

BEARINGS

ABEC-3 are standard. ABEC-5 and 7 may be specified at additional cost.

STATOR WINDINGS

Epoxy impregnated film insulated (class 200°C) magnet wire. Terminations are encapsulated for strain relief and environmental protection.

END BELLS

Zinc die casting with zinc plating and chromate conversion coat after machining for maximum corrosion resistance.

HOUSINGS

Black anodized aluminum extrusions for maximum thermal dissipation.

ROTOR STRUCTURE

A mechanical assembly consisting of samarium cobalt magnets secured to a soft iron core and constrained mechanically. This technique allows rotational speeds up to 25,000 RPM.



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