H P In Reliability

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Identifying electric motor bearings

Manufacturers of standard NEMA frame electric motors usually identify the bearings on the motor nameplate. The method used is taken from

ABMA standard 20. This standard describes a method of identifying the basic bearing size together with other features such as seals, shields, radial clearance and cage type, for radial bearings of ball, cylindrical roller and spherical types. Each bearing manufacturer has a specific identification code. The code used by SKLF reflects the basic bearing boundary dimensions identified in ABMA standard 20, however, the nomenclature used by SKF and other bearing manufacturers to describe bearing features such as seals and shields differs from that of ABMA standard 20.

Example nomenclature. As an example, a typical SKF electric motor ball bearing nomenclature consists of the following:

1. Basic size (conforming to ABMA standards)
2. Seal or shield identification
3. Radial clearance value (generally C3 for electric motors)
4. Noise requirements (not shown unless special low noise levels are required
5. Grease/preservative code

Other bearing manufacturers often use their own nomenclature and identification system. It is, therefore, appropriate for your purchase specification to contain a clause requiring the electric motor supplier to furnish data allowing your reliability engineering group to understand what bearing types and features have been incorporated in a given motor.

Check bearings. Not long ago, a major motor manufacturer supplied motors with sealed, nonregreasable bearings. Unfortunately, he also furnished the bearing housings with grease fittings, leading the user's maintenance staff to assume that greasing was appropriate every few months. Needless to say, bearing life proved very unsatisfactory with high-pressure grease forcing one of the seals into rubbing contact with the rolling elements. A good specification and a little training would have saved the user grief, embarrassment and lots of money.

Note: Our August "HP In Reliability" could be misunderstood unless the reader consults NEMA SM-23 and API 610 for more detailed explanations on actual allowable nozzle loads. In general, the allowable API load exceeds that of NEMA.

Example identification code and explanations

1.	2.	3.	4.	5.
6210-	2Z	C3		HT51

1
Basic bearing size
example: 6210
Code and description
6 = Deep groove ball bearing
02 = Dimension series ABMA
10 = 50 mm bore size (10 x 5)

2
Enclosures
Code and description
RS1 = Single contact rubber seal
Z = Single metal shield
RZ = Single rubber noncontact seal
No code = Open bearing

3
Radial clearance
Code and description
C2 = Less than normal
CN = Normal clearance (not marked)
C3 = Greater than normal
C4 = Greater than C3

4
Noise requirements
Code and description
QE6 = Standard quality (not marked)
QE5 = Low noise quality
EM = Electric motor quality

5
Lubrication/preservation
Code and description
HT51 = Chevron SR#2 (SKF standard grease)
BF = Bearing preserved (open bearings)

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