

## **B STYLE PRECISION ROLLED BALL SCREWS & NUTS**

### **Technical Information**

**LEAD:** The linear distance the ball nut or screw will travel in one revolution.

**LEAD ACCURACY:** The maximum variation of lead measured in inches per foot. The standard grade of accuracy is .007" per foot cumulative. The premium grade is .003" per foot cumulative.

**BACKLASH (AXIAL LASH):** The axial-free movement between the ball nut and ball screw. It determines the amount of lost motion between the ball nut and screw on a horizontal application. Backlash on standard nuts range from .004 to .018 inches, depending on size of screw.

**PRELOAD:** The use of two groups of ball bearings, loaded in opposite directions, to eliminate backlash in a ball screw assembly. Preloading increases screw stiffness and provides for accurate positioning with very little increase in applied torque.

**EFFICIENCY:** The ratio of work output divided by work input. Generally this is greater than 90 percent.

**THRUST LOAD:** A load parallel to and concentric with the center line of the ball screw, which acts continuously in the same direction. Thrust loading is the recommended method of attaching the load to the ball screw.

**COMPRESSION (COLUMN) LOAD:** A load that tends to buckle or compress the screw shaft.

**TENSION LOAD:** A load that tends to stretch the screw shaft. A greater selection of screw sizes are available when tension loading is present because there are no column load limitations.

**OFF-CENTER LOAD:** A load that tends to "cock" the ball nut on the screw. This type of loading will reduce ball screw life.

**SIDE LOAD:** A load that is applied perpendicular to the screw shaft. This type will also reduce the life of a ball screw assembly.

**Dynamic Load (Operating) Rating:** The maximum thrust load under which a ball screw assembly will achieve a minimum of 1,000,000 inches of travel life.

**STATIC LOAD:** The maximum load (including shock loads) that can be applied to a stationary ball screw assembly before there is permanent deformation of the ball track in the ball nut or screw.

**BALL SCREW LIFE (Life Expectancy):** Is expressed as total revolutions or inches of travel an assembly will operate under a rated load in a clean environment with proper lubrication. About 90 percent of all ball screws operated at rated loads will meet or exceed a million inches of life before evidence of fatigue appears. Although 10 percent may not reach a million inches, 50 percent could exceed 5 million inches.

**TEMPERATURE:** Ball screws operate with normal efficiency between temperatures of -65° F to 300° F, with suitable lubricants.

**LUBRICATION:** Ball screws should not be operated without proper lubrication. A spindle or 10-weight oil is recommended. For applications with infrequent cycles, a light lithium grease is recommended.

**FINISH ON BALL SCREW ASSEMBLY:** Ball screw assemblies are supplied with Black Oxide-type finish.

**BRUSH WIPERS:** Brush wipers help to prohibit contaminants from entering the ball screw assembly. Brush wipers are recommended for any application where contaminants might be deposited on the ball screw.