SPECIAL APPLICATIONS

Introduction

Barden innovations in special bearings range from nearly
standard bearings with slightly modified dimensions, to
intricate assemblies which integrate the bearing function
into a complete mechanism. Our engineers work closely
with customers to develop unique bearing designs with
specialised features to meet application requirements
and solve functional problems.

In many cases the overall cost of a piece of
equipment can be reduced by incorporating special or
customised bearings particularly when mating components
are integrated into the bearing such as mounting flanges,
gear teeth, spring carriers and integral O-ring grooves.
The performance and installation benefits to be gained
from using bearings specifically designed for individual
applications are as follows:

• Improved assembly reliability
• Enhanced rigidity or stability of the system
• Better location control through proper
  bearing orientation
• Reduction in handling operations and contamination
• Improved alignment of the rotating assembly
• Weight reduction
• Improved resistance to temperature extremes
• Reduction in tolerance stack-up
SPECIAL APPLICATIONS

Auto Sport and Formula 1 Racing

Formula 1 Precision Bearings
Through its Formula 1 Precision range, Barden has engineered a series of extreme high-performance bearing systems for race-critical applications such as clutch release, gearbox, wheel and suspension.

Elements of Barden’s Formula 1 Precision range are used by the major race teams, and new designs are created and race-proven every season. The quest, as ever, is to extract maximum performance from the smallest design envelope with the highest reliability factor.

Clutch Release
The pedigree of Barden’s clutch release bearing systems is well established, with full race-qualification at a number of major race teams. The trend is to develop smaller, more efficient clutch systems, offering optimum performance with reduced mass. In response, Barden has introduced a range of new advanced clutch release bearing designs incorporating special features such as integral metal shields, labyrinth-style architectures and high-temperature bespoke lubricants.

Gearbox
Barden’s gearbox bearings are “tailored” to interface directly with the transmission designs of individual race teams. Incorporating bespoke features such as flanges, splines and thread forms as integral parts of the bearing, together with direct oil feed systems all help to keep mass to a minimum and ensure the optimum continuity of lubricant supply throughout the race.

Suspension
Barden offers a range of drop link suspension unit bearings and bearing systems for control and steering operations. These specialised bearings utilise super-precision rolling elements which offer low-friction and high-reliability.

Wheel
Barden’s Formula 1 Precision wheel bearings are designed to accommodate the excessive radial, axial and moment loading experienced during high-speed cornering and hard acceleration or braking conditions. Available as duplex paired angular contact bearings, and utilising state of the art “race-age” technologies, the bearings have been designed to meet the demands of the toughest race circuits.

The X-life Ultra advantage
Barden’s X-life Ultra bearings bring together the elements of advanced high-nitrogen Cronidur 30 steel, high-performance engineering ceramics, superior raceway finish and proven application experience into a world-leading design philosophy. For Formula 1 applications, this not only means improved operation in marginal lubrication conditions, but the option to “down-size” components due to the increased material load capacity.

As new design innovations are race-qualified by Formula 1, then existing proven designs are transferred over to other auto sport areas.

Performance vehicles
Increasing demand for compact, high-efficiency performance automobiles has brought forced-induction passenger vehicles to a position of prominence. Barden-powered ball bearing turbo- and super-chargers extract maximum power and driveability with design synergies that virtually eliminate turbo lag and compressor whine. Reduced compressor clearance, lower rotating inertia and maximum speed-ability can be achieved with the super accuracy of Barden bearings. In this way, drivers of performance vehicles are also able to benefit from the flow-down of Barden’s Formula 1 Precision advanced bearing technologies.

Barden precision bearings are used in a wide range of racing applications where reliable performance is critical.
Formula 1 Bearings

CLUTCH RELEASE BEARINGS

SUSPENSION BEARINGS

WHEEL BEARINGS

GEARBOX BEARINGS

TURBO CHARGER BEARING

All dimensions in millimeters.