TIMKEN

Timken® Fafnir®
Farm Line Interchange

TIMKEN®

Fafnir®

1 Introduction

Since introducing the wide inner ring bearing design in the early 1900's, Fafnir has been a leading name in ball bearings. Today, the Timken® Fafnir® brands can be found on a wide array of ball bearings. Each design is developed with the same idea in mind – to maximize performance.

The original Fafnir wide inner ring ball bearing design was provided to users who needed ball bearings which could be mounted easily on straight shafts and positioned without shoulders, locknuts or adapters. Later, this same design was used in farm equipment applications, allowing Fafnir to establish itself as a major supplier of ball bearings and ball bearing units in this industry.

Through the years, Fafnir has introduced many bearing innovations to improve performance and give longer life. Some of these advances include:

- a complete line of prelubricated and relubricatable bearings
- flangette pressed steel housing units for light-duty, moderate-speed applications
- tri-ply seals for effective protection against loss of lubricant and entrance of contaminants
- ductile iron units for compact, high strength versatility
- shroud seals for positive sealing against abrasives and fiber wrap
- molded nylon retainer for extra strength, and better bearing performance under misalignment
- a Thin Dense Chrome (TDC®) plate which eliminates the concern of chemical attack on bearing steel
- gothic race bearings which provide superior stiffness for the toughest of tillage applications

The performance advantages of these designs have led to their quick adoption by farm implement manufacturers. Other special units developed by Timken for serving the needs of the agriculture bearing field include idler pulleys, idler sprockets, hex and square bore bearings, plus many varieties of special bearings and pressed steel units.

For more than 100 years, customers have turned to Timken for friction management solutions. During that time, our knowledge has grown far beyond bearings. To learn more, contact your Timken salesperson or visit www.timken.com.

WARNING

Failure to observe the following warnings could create a risk of death or serious injury.

Never spin a bearing with compressed air.
The rollers may be forcefully expelled, creating a risk of serious bodily harm.
Proper maintenance amd handling practices are critical. Failure to follow installation intructions and to maintain proper lubrication can result in equipment failure, creating a risk of serious bodily harm.

From the original design through the many manufacturing processes, every Timken® Fafnir® bearing is produced to strict standards of high quality. The precision built into these bearings guarantees maximum performance in load carrying ability and running accuracies. **Fafnir bearings are precision-grade**, meeting ABMA, ABEC-1 specifications, and are not to be confused with hardware grade or semi-precision bearings of the pressed metal or machined-only variety.

DESIGN

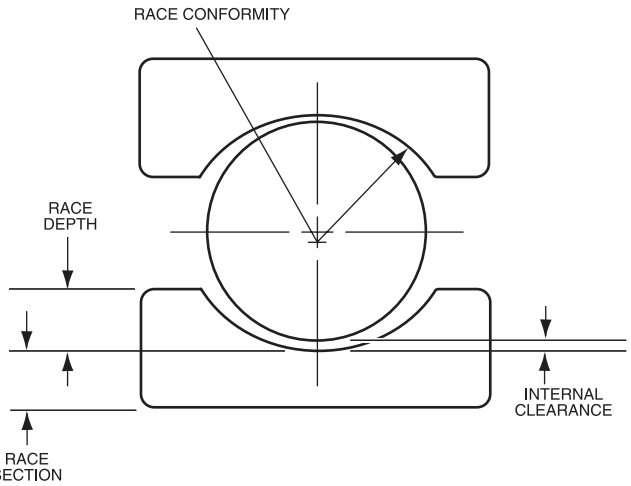
Timken Fafnir's agricultural line of bearings are **designed specifically for farm equipment applications**. These designs have been adapted to suit the particular needs of farm machinery where conditions emphasize the need for better bearing seals and economical, easily-mounted housings that provide for alignment.

Fafnir bearings incorporate balanced design between the ball complements and race sections to give maximum capacity without sacrifice in ring sections. Other factors such as race depth, race conformity to the ball, internal clearance, etc., are tailored for maximum performance in agricultural applications.

Working closely with farm equipment manufacturers, Fafnir bearings are tested and proven on both the farm and in dust and mud simulated test conditions.

The **Buna-N material** selected for the Fafnir seals combine excellent chemical resistance with an effective barrier against the entrance of contamination and loss of lubricant. The heat stabilized moisture conditioned, **molded 6/6 nylon retainer** has proven to be superior to two piece riveted steel under conditions of operating misalignment.

Fafnir seals and retainer innovations, along with advanced manufacturing techniques, improve the bearing's performance and reliability in tough agricultural applications.



Timken® Fafnir®'s "Balanced Design" gives maximum capacity without ring section sacrifice.

MATERIAL

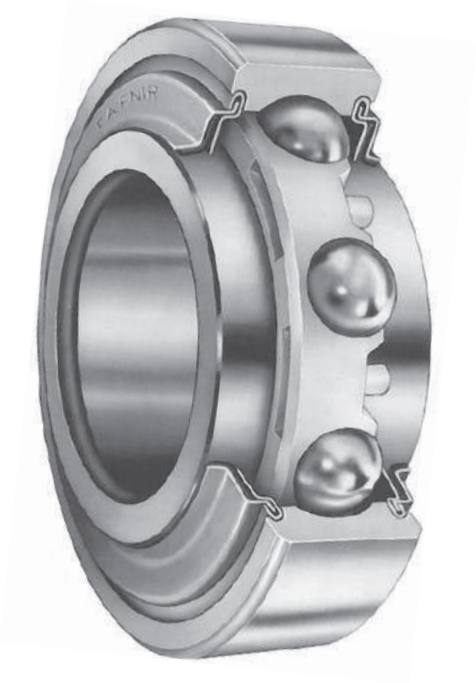
Fafnir ball bearings are made of the finest materials available. Carefully processed bearing quality chromium-alloy, high carbon steels and other specialized steels are used in the manufacturing process.

Though specific applications may require **carburized steels**, the large majority of bearings are **through-hardened steel**. This combination of high quality bearing steel and heat treatment results in optimum bearing performance.

MANUFACTURING

Design and bearing specifications are built into every bearing during the manufacturing process. The most advanced precision grinding and processing equipment guarantee exact conformance to the highest tolerance requirements demanded. Advantages with this precision grinding is evident in Fafnir wide inner ring farm bearings where **superfinished raceways** yield quieter, smoother and cooler operating bearings. These benefits result in longer bearing life for the application.

This recognized manufacturing excellence is also carried through to machining of housed units and stamping of pressed metal housings, assuring accurate fit and proper ring support.



The molded nylon retainer offers improved performance and reliability.

PERFORMANCE

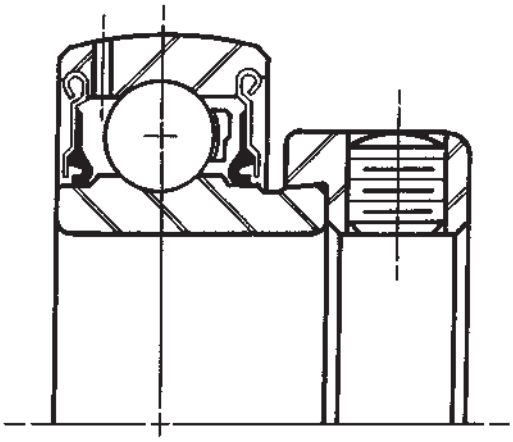
Bearing performance is largely dependent on precision and proper design for the application. Because of the special care Timken takes in design, material selection, manufacturing and working closely with farm equipment engineers extra precision is built into these bearings. This extra precision allows Timken Fafnir bearings to achieve maximum performance through high load carrying capacity and precise running accuracies which are essential for efficient sealing.

3 Seals

Timken offers a variety of integral seals on both wide inner ring and radial ball bearings for virtually all farm implement applications.

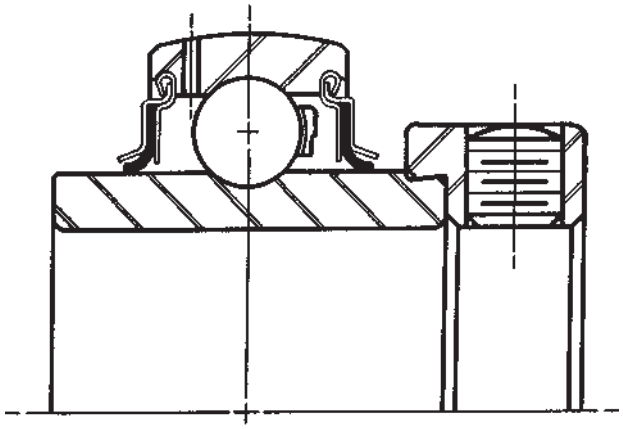
R-SEAL – RA-RR SERIES EXTENDED INNER RING AND RADIAL BEARINGS

The RA-RR series bearings feature Fafnir's positive contact, land-riding seal developed especially for agricultural applications. The nitrile rubber seal lip is molded to a close clearance heavy metal shroud cap This shroud design prevents injury to the seal lip and provides improved protection from dirt, dust, fibre wrap and abrasion. Seal back-up is provided by a ground shoulder on the inner outside diameter (O.D.), inboard of the seal to eliminate seal lip inversion. The sealing surface is crush-ground simultaneously with the ball race to provide excellent surface finish and concentricity.



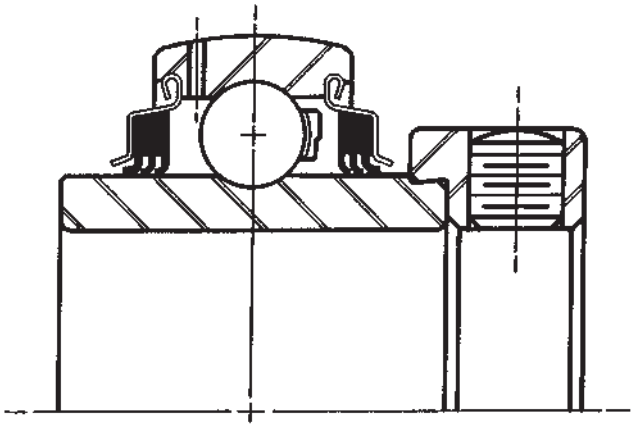
R-SEAL – RR SERIES WIDE INNER RING AND RADIAL BEARINGS

These bearings incorporate Fafnir's advanced sealing design, the Shroud Seal, which locks-in the lubricant and gives unsurpassed protection from dirt, dust and abrasion. In this design the Buna N synthetic rubberized fabric seal is completely protected by a tight-fitting crimped-in metal cap. The external shroud cap conforms closely to the contours of the seal and helps prevent injury to the seal lip. The seal lip flare guarantees all-around contact between the seal lip and the ground O.D. of the inner ring. A steel backup plate which supports the seal rubber and prevents the seal lip from inverting completes the assembly. These bearings are effective in extremely dirty applications at moderate speeds.



TRI-PLY SHROUD SEAL - TRI-PLY SERIES WIDE INNER RING AND RADIAL BEARINGS

Tri-Ply Seal units solve the most difficult sealing problems because they are capable of withstanding the toughest environments of abrasive dirt and moisture. Tri-Ply seals come in one-piece molded and seven-piece sandwich design. The molded type features a triple lip nitrile seal molded to a heavy metal shroud cap. The shroud design protects the seal lip from dirt, dust, fibre wrap and abrasion. The seven-piece design consists of three positive contact rubberized fabric seals, separated by steel spacers and retained by "crimped-in" steel caps. This design incorporates the contoured shroud cap for maximum protection of the seals. Bearings supplied with Tri-Ply seals will provide superior performance in applications operating at slow speeds and in the harshest of environments.



Ball bearings must be lubricated to minimize friction between balls and raceways and balls and retainers; to protect the bearings from corrosion; to protect the bearings from foreign matter and to dissipate some of the heat of operation. Generally, grease is the lubricant most often used in all agricultural applications.

PRELUBRICATION

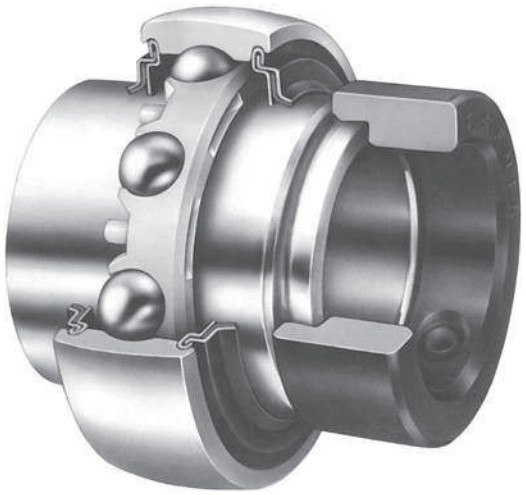
Fafnir prelubricated ball bearings provide the farmer marked savings in time, labor, cost of greasing equipment and bearing replacement. These bearings cannot be contaminated by careless relubrication practices.

Prelubricated Fafnir ball bearings are prepacked with a water resistant grease chosen for chemical and mechanical stability. The grease is thoroughly tested in Timken's research facility to prove its effective lubricating value. All greases are passed through multi-filters before being-accurately metered into the bearings.

Non-relubricatable, sealed ball bearings do not require on-the-job greasing and offer the advantage of preventing bearing failure which might be caused by the following conditions;

1. Contamination of bearing grease by the entrance of foreign matter such as dust, dirt, lint, grit and metal particles, due to careless relubricating procedures.
2. Lubrication of the bearing with the wrong grease.
3. Over lubrication.

Because of their proven advantages, Fafnir non-relubricatable ball bearings are used on virtually all major makes of farm machinery, including balers, blowers, choppers and cutters, combines, disk implements, elevators, loaders, mills of all types, rakes, spreaders, etc.

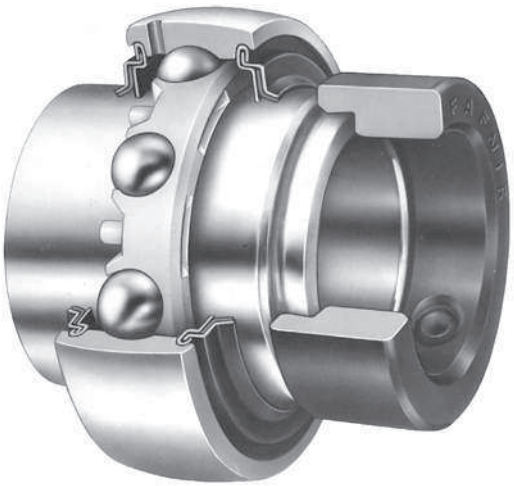


RELUBRICATION

While non-relubricatable bearings are successful in a majority of farm machinery applications, certain conditions where extreme moisture prevails may require relubrication.

It is recommended that for purposes of relubricating ball bearings the lubricant or grease have the following characteristics;

1. Temperature range; -30°F (-34°C) to 200°F (93°C) or higher.
2. Water resistance; lithium soap or polyurea thickened grease which is water resistant. Relubricate with a grease having the same thickener as that originally supplied within the bearing.
3. Consistency; NLGI #2 or #3.
4. Oil viscosity; 500 S.U.S. minimum at 100°F (38°C).



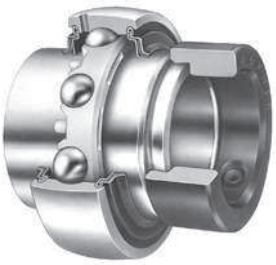
5 *Wide Inner Ring Bearings*

The wide inner ring, locking collar type bearing's basic design has been expanded to offer a wide selection of seals and other features. There is a design ideally suited for every agricultural machinery application requiring this type of bearing.

BEARINGS WITH THE ECCENTRIC SELF-LOCKING COLLAR

RR SERIES

Available in both a standard and heavy duty series, the wide inner ring offers maximum shaft support while the positive contact, shroud-cap R Seals (described in detail on page 5) provide positive protection against contaminants. These features, plus the economy and ease of assembly offered by the self-locking collar, make this series ideal for many farm machinery applications.



Types Available

1 Standard or Heavy Series
2 Spherical or Cylindrical O.D.
3 Relubricatable or Non-Relubricatable
4 Double or Single Sealed

RA-RR SERIES

The RA-RR series features an extended inner ring and self-locking collar for simple effective shaft retention in a standard series bearing. The positive contact, land-riding R-seal (described in detail on page 5) provides improved protection against the heavy contamination normally encountered in agricultural applications. A heat stabilized, moisture conditioned 6/6 nylon retainer has proven extremely effective under conditions of misalignment. Economical RA-RR series bearings are ideally suited for moderately loaded, moderate speed applications.

Types Available

1 Standard Series
2 Spherical or Cylindrical O.D.
3 Relubricatable or Non-Relubricatable
4 Double Sealed

TRI-PLY SERIES

Similar in design to the RR series, the Tri-Ply series (described in detail on page 5) features the most effective integral bearing seals ever developed. The combined advantages of the self-locking collar and highly effective seals make this series ideal for applications involving severe contamination, such as in seed-bed preparation and root crop harvesting machinery.

Types Available

1 Standard Series
2 Spherical O.D.
3 Relubricatable or Non-Relubricatable
4 Double Sealed

BEARINGS WITH THE CONCENTRIC LOCKING COLLAR

RR SERIES

The concentric collar, RR series utilizes positive contact, shroud cap RR seals (described in detail on page 5). The holding power of the double set screw concentric collar is unaffected by the direction of shaft rotation and therefore offers an advantage in applications involving reversing shaft rotation. The concentric collar type bearing requires less shaft length for mounting than the eccentric type and can be used where space limitations exist.

Types Available

1 Standard Series
2 Spherical O.D.
3 Relubricatable
4 Double Sealed

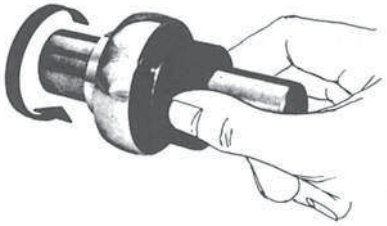
Since 1925, the self-locking collar has been used to facilitate the mounting of wide inner ring ball bearings by eliminating the need for locknuts, washers, shoulders, sleeves and adapters.

The inside of the locking collar has a counter-bored recess which is made eccentric with the bore. The collar and the end of the bearing inner ring with which it engages are both machined to act as mating cams on the shaft.

When the collar is engaged to the inner ring, it grips the shaft tightly with a positive binding action that increases with use. No adjustments of any kind are necessary and it is impossible to cramp or overload the bearing in mounting.

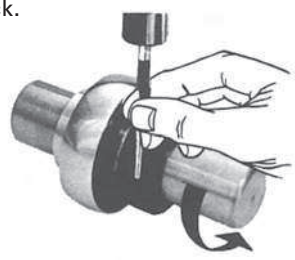
1. Observe cam design of wide inner ring and self-locking collar.

2. Mate cam of collar with cam of bearing inner ring.

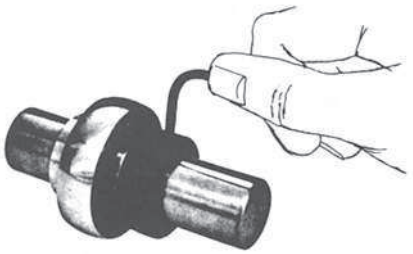


3. Pressing collar lightly against inner ring turn collar **in direction of shaft rotation** until engaged.

4. With drift pin in collar hole, strike **in direction of shaft rotation** to lock.



5. Tighten set screw in collar.

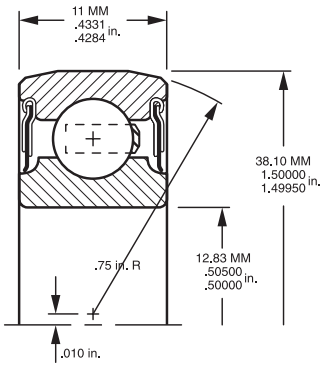


RADIAL SPECIALS

Bearing Number 202NPP9

Special Features
- 1/2 in. Machined Bore
- O.D. corner turned to a 3/4 in. radius
- Buna-N rubber seals

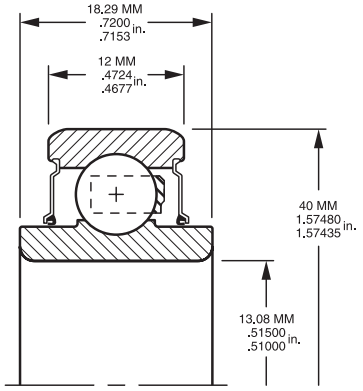
Typical Applications
Baler Cam Follower



Bearing Number 203RR5

Special Features
- 1/2 in. Machined Bore
- Heavy contact seal with steel shroud

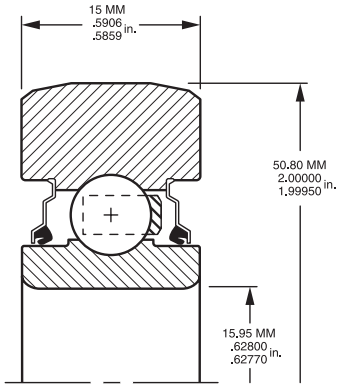
Typical Applications
Combine feeder house chain drive



Bearing Number 203RR3

Special Features
- 5/8 in. Ground Bore
- 2 in. O.D.
- Thick outer ring

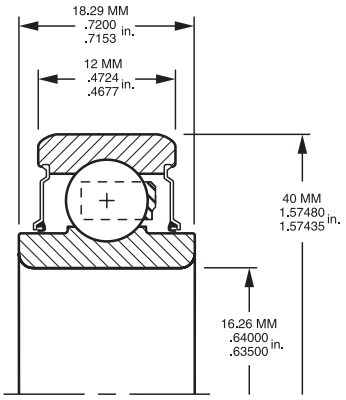
Typical Applications
Mower Conditioner Pick-up
Baler Plunger Guide Rolls



Bearing Number 203RR2

Special Features
- 5/8 in. Machined bore
- Heavy contact seals with steel shroud cap
- Extended Inner Ring

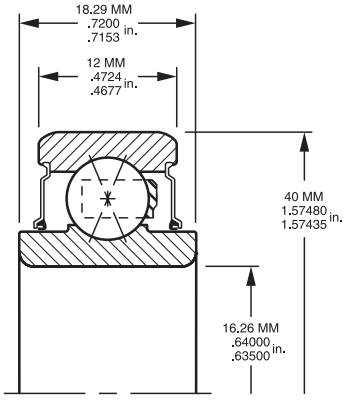
Typical Applications
Planter coulter attachment
Windrower



Bearing Number BB203RR2

Special Features
- 5/8 in. Machined bore
- Gothic Arch Races for maximum stiffness
- Heavy contact seals with steel shroud

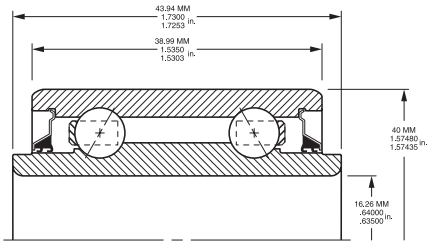
Typical Applications
Press wheel for No-Till Drill
Planter wheels



Bearing Number 5203KYY2

Special Features
- 5/8 in. Machined Bore
- Wide ball spacing for maximum stability
- Double lip seals with steel shroud

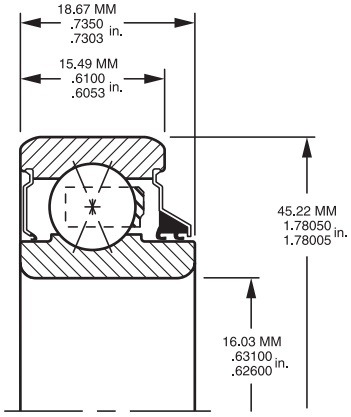
Typical Applications
Planter gauge and closing wheel



Bearing Number 204PY2

Special Features
- Replaces Fafnir 204RY2
- 5/8 in. Machined Bore
- Gothic Arch Races for maximum stiffness
- Double lip outboard seal

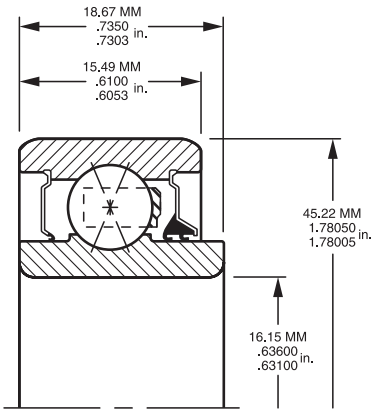
Typical Applications
Cultivator
Planter Shank Assembly



Bearing Number 204PY3

Special Features
- 16mm Machined bore
- Gothic Arch Races for maximum stiffness
- Double lip outboard seal
- Designed with greater internal looseness

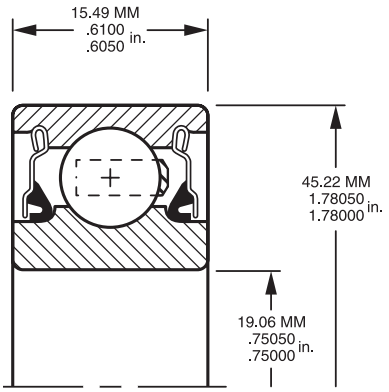
Typical Applications
Planter Shank Assembly and Opener Disk



Bearing Number P204RR6

Special Features
- 3/4 in. Ground Bore
- 1.7805 in. O.D.
- Single lip molded seals

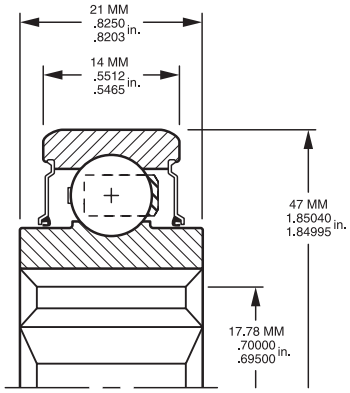
Typical Applications
Mower Spindle



Bearing Number 204KRR2

Special Features
- 11/16 in. Hex Bore
- Heavy contact seals with steel shroud

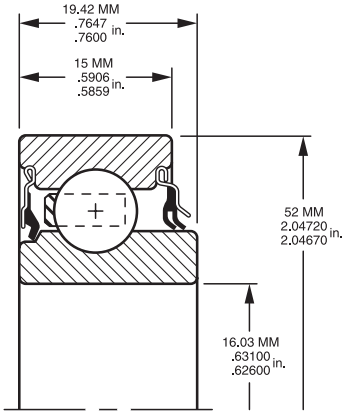
Typical Applications
Combine cross auger



Bearing Number 205RY2

Special Features
- 5/8 in. Machined Bore
- Single and double lip seals

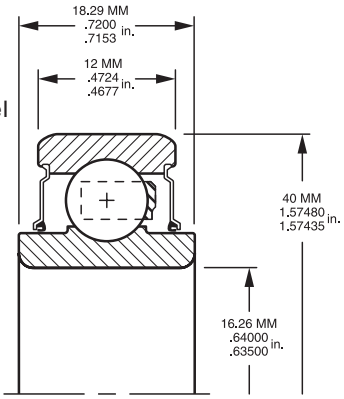
Typical Applications
Tillage Disk



Bearing Number 205KR3

Special Features
- 3/4 in. Ground Bore
- Heavy contact seal with steel shroud and backup

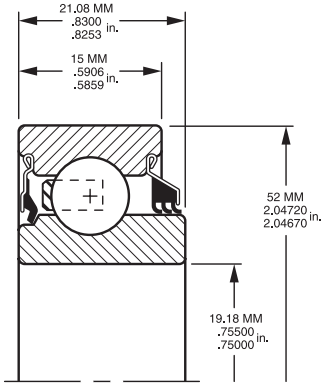
Typical Applications
Cotton Picker Doffer Shaft



Bearing Number 205KRP2

Special Features
- 3/4 in. Machined Bore
- Single lip and Tri-Ply seals
- Extra wide inner ring

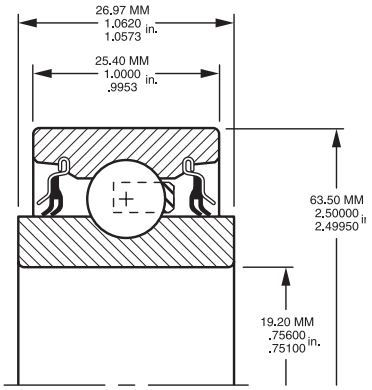
Typical Applications
Tillage Disk
Planter Marker



Bearing Number 205KYY3

Special Features
- 3/4 in. Machined Bore
- 2 1/2 in. O.D.
- Extra wide inner and outer rings
- Double lip seals

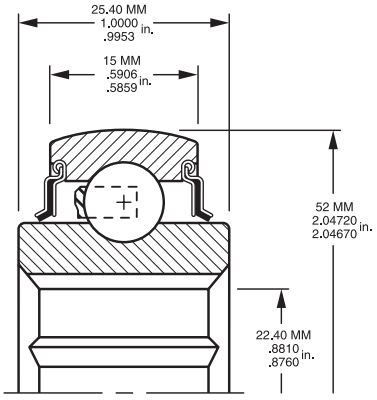
Typical Applications
Baler Plunger



Bearing Number 205KRRB2

Special Features
- 7/8 in. Hex Bore
- Spherical O.D.
- 1 inch wide inner ring

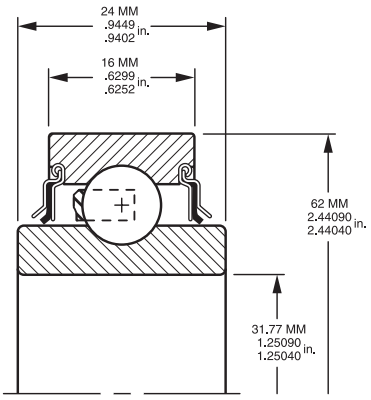
Typical Applications
Combine Straw Spreader and Auger Bed



Bearing Number 206KRR14

Special Features
- 1 1/4 in. Ground Bore
- Heavy contact seals with steel shroud and back up

Typical Applications
Combine Row Crop Head

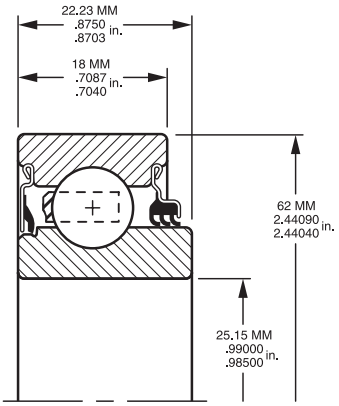


RADIAL SPECIALS *(continued)*

Bearing Number 206KPR4

Special Features
- 25mm Machined Bore
- Single lip and Tri-Ply seals

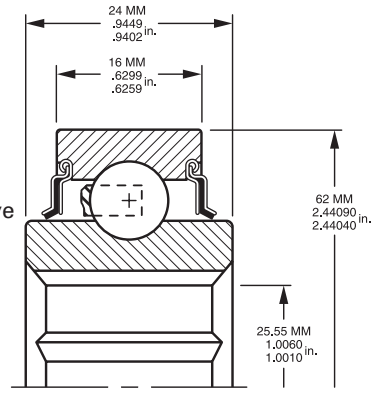
Typical Applications
Planter Off-Set Furrower



Bearing Number 206KRR6

Special Features
- 1 in. Hex Bore
- Heavy contact seals with steel shroud and backup

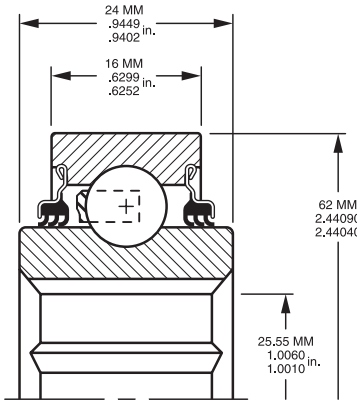
Typical Applications
Baler Auger and Pickup Drive
Combine Straw Chopper



Bearing Number 206KPP3

Special Features
- 1 in. Hex Bore
- Molded Tri-Ply seals with steel shroud

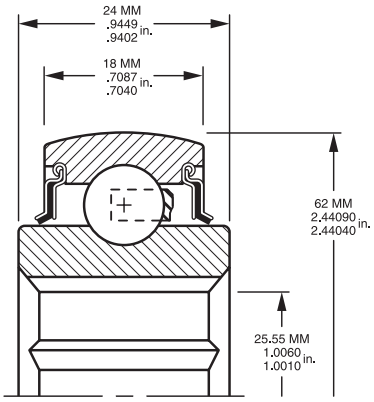
Typical Applications
Combine Auger
Cultivator



Bearing Number 206KRRB6

Special Features
- 1 in. Hex Bore
- Extra wide spherical O.D.
- Heavy contact seals with steel shroud and back up

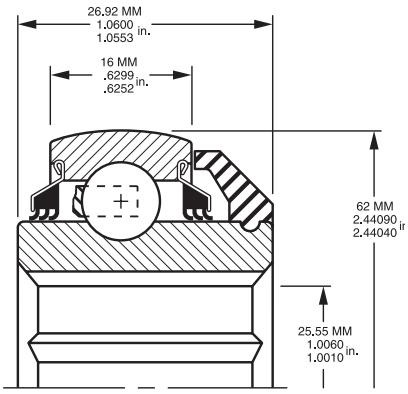
Typical Applications
Cotton Picker Strip Roll Brushes and Augers
Baler Pickup Frame



Bearing Number 206KPPB5

Special Features
- 1 in. Hex Bore
- Spherical O.D.
- Anti-Wrap Polymer Flinger

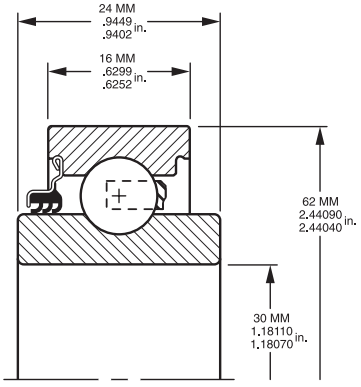
Typical Applications
Cotton Picker Auger and Idlers



Bearing Number 206KP2

Special Features
- Molded Tri-Ply seals with steel shroud
- Extended Inner Ring

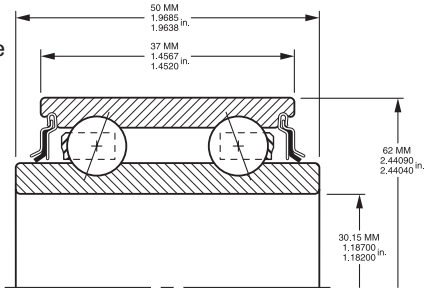
Typical Applications
Combine Loading Auger



Bearing Number 5206RR2

Special Features
- 30mm Machined Bore
- Wide ball spacing for maximum stability
- Heavy contact seals with steel shroud

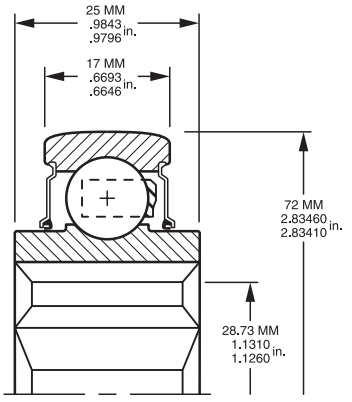
Typical Applications
Grain Drill Hub Assembly



Bearing Number 207RRB12

Special Features
- 1⅛ in. Hex Bore
- Spherical O.D.
- Heavy contact seals with steel shroud

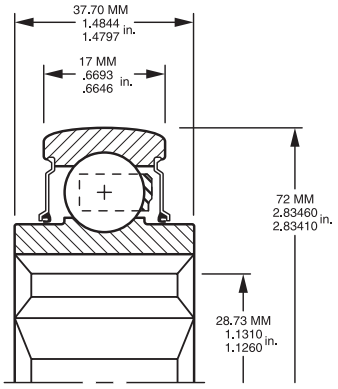
Typical Applications
Baler Pickup Support
Combine Discharge Beater



Bearing Number 207RRB9

Special Features
- 1 1/8 in. Hex Bore
- Spherical O.D.
- Extended Inner ring

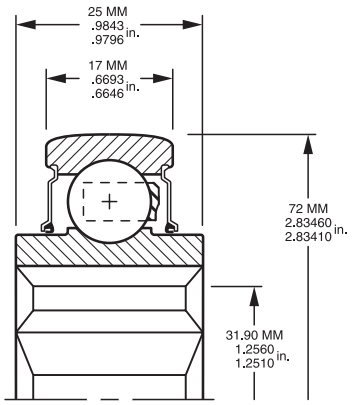
Typical Applications
Forage Harvester Heads



Bearing Number 207RRB17

Special Features
- 1 1/4 in. Hex Bore
- Spherical O.D.
- Heavy contact seals with steel shroud

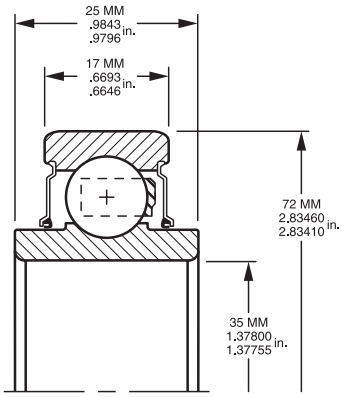
Typical Applications
Baler Rolls



Bearing Number 207RR3

Special Features
- Extended Inner Ring
- Heavy contact seals with steel shroud
- Bore corner clears .090 in. radius

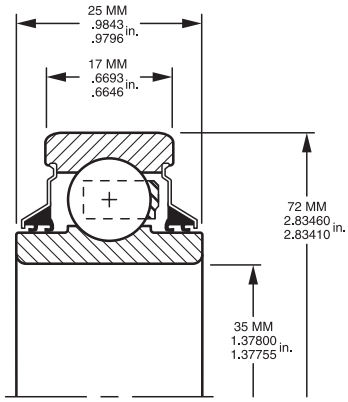
Typical Applications
Combine Countershafts



Bearing Number 207KYY

Special Features
- Extended Inner Ring
- Molded double lip seals with steel shroud

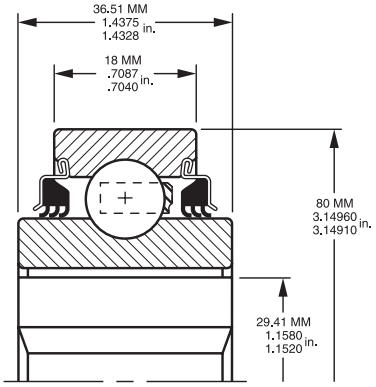
Typical Applications
Combine Fan Sheave
Disk Hub and Wheel Spindle



Bearing Number W208PP20

Special Features
- 1 1/8 in. Square Bore
- Tri-Ply seals

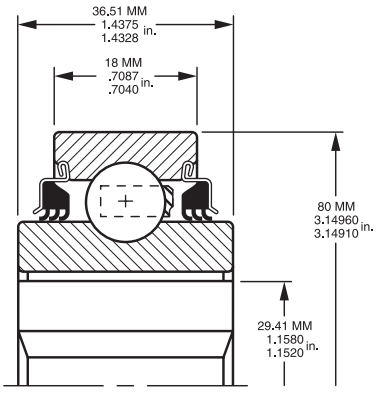
Typical Applications
Trenchers



Bearing Number W208PP5

Special Features
- 1 1/8 in. Square Bore
- Bearing enclosed by Tri-Ply seals

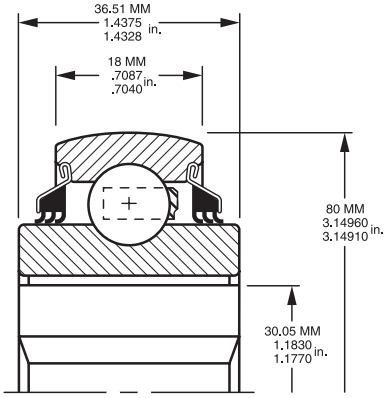
Typical Applications
Tillage Disk



Bearing Number W208PPB5

Special Features
- 1 1/8 in. Square Bore
- Spherical O.D.
- Tri-Ply seals

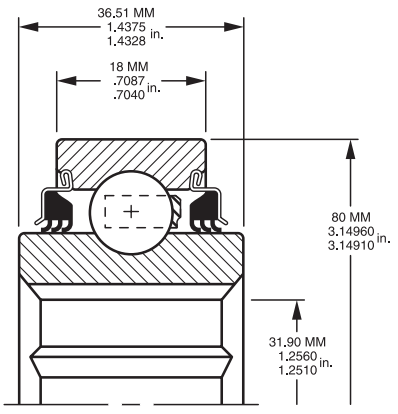
Typical Applications
Baler Follower Roll



Bearing Number W208PP21

Special Features
- 1 1/4 in. Hex Bore
- Bearing enclosed by Tri-Ply seals

Typical Applications
Baler Tension Arms

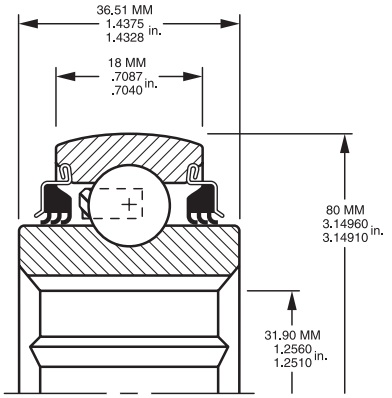


RADIAL SPECIALS *(continued)*

Bearing Number
W208PPB16

Special Features
- 1¼ in. Hex Bore
- Spherical O.D.
- Extra wide inner ring
- Tri-Ply seals

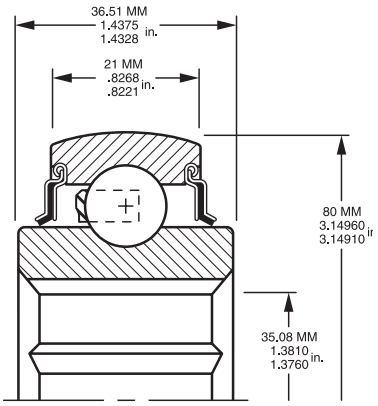
Typical Applications
Combine Unloading Auger



Bearing Number
W208KRRB6

Special Features
- 1⅜ in. Hex Bore
- Spherical O.D.
- Heavy contact seals with steel shroud and backup

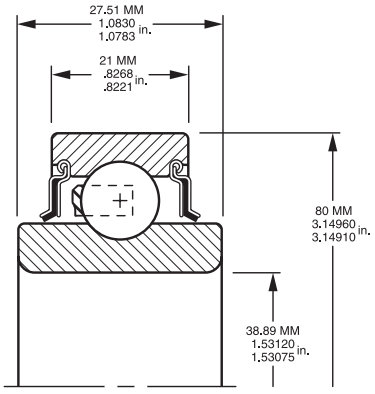
Typical Applications
Combine Main Grain Head Auger Support
Self-Propelled Mower Conditioner



Bearing Number 208KRR4

Special Features
- Designed with greater internal looseness
- Extended inner ring
- Heavy contact seals with steel shroud and backup

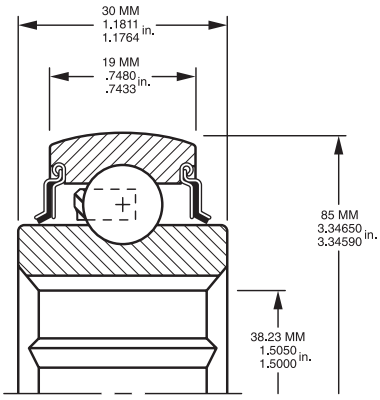
Typical Applications
Cotton Picker Conveying Fan and Doffer Reel
Combine Drive Wheel Shaft



Bearing Number 209KRRB2

Special Features
- 1½ in. Hex Bore
- Spherical O.D.
- Heavy contact seals with steel shroud and backup

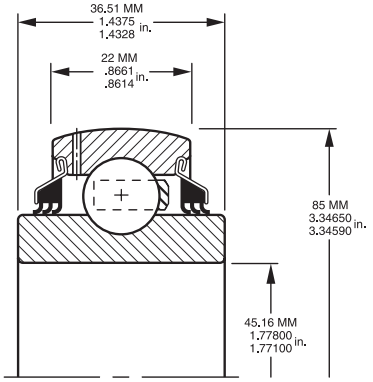
Typical Applications
Baler Rolls
Combine Conveyor Feeder



Bearing Number
GW209PPB11

Special Features
- 1¾ in. Machined Bore
- Relubricatable Bearing
- Spherical O.D.
- Tri-Ply Seals

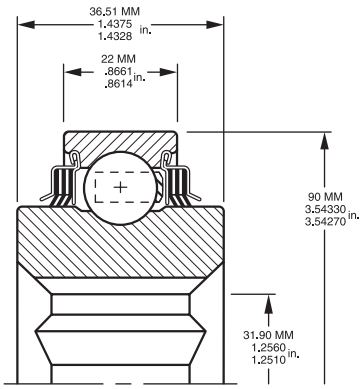
Typical Applications
Disk Harrow



Bearing Number 210PP7

Special Features
- 1¼ in. Hex Bore
- Tri-Ply Seals
- Extra Wide Inner Ring

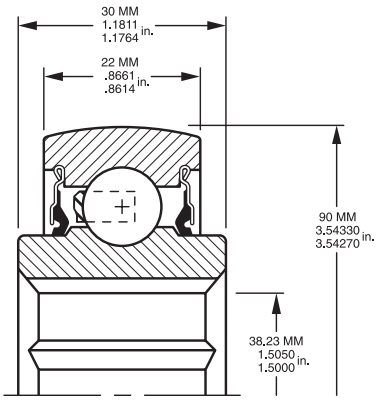
Typical Applications
Baler Tension Arms



Bearing Number 210RRB6

Special Features
- 1½ in. Hex Bore
- Spherical O.D.
- Molded Seals with Steel Shroud

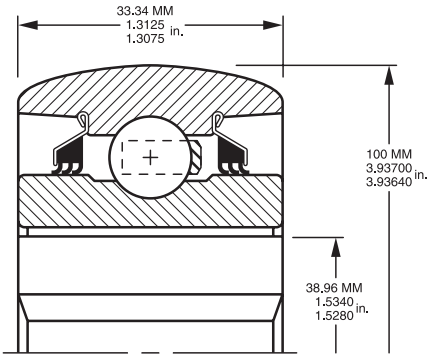
Typical Applications
Baler Drive Roll



Bearing Number W211PPB3

Special Features
- 1½ in. Square Bore
- Heavy Sectioned Spherical O.D.
- Tri-Ply Seals

Typical Applications
Pulverizers and Disk Assemblies



Size	Special Features	Typical Application	Major OEM User
200KRR3	Inner Ring Width .6454" One piece molded seals	Windrower	Lockwood
J202KRR8	Extended Inner Width .880"	Tobacco Harvester	Harrington
P202NPP11	.5669" Inner Width 16mm Bore	Cam Follower	Harrington
202KRR7	.500/.505" Bore 1.50000" O.D. .567" width	Cam Follower	John Deere
202KRR9	.5512" Bore .5509 35mm O.D. 11 mm Wide Outer		
P203RR3	5/8" Bore, 2" O.D. Heavy section Outer Ring	Cam Follower Guide Rolls for Baler Plunger	New Holland
203KRR6	5/8" Bore, 47mm O.D. Heavy section outer Ring	Baler Pick Up	Vermeer
203NPP9	5/8" Bore .510 Width	Disc Grain Drill Opener	John Deere
P203PP10	.6255/.6260" Bore	Light Duty Disc Applications	Kennco
P204KR2	Bore .7505/.7500" Width .610/.605" O.D. 1.7805/1.7800"	Rotary Lawn Tractor Blade Spindle Bearing	Howard
204KRD4	5/8" Bore, extended Inner "R" Seal side .689/.684"	Disc Opener Seed Drill	Tye Co.
204KRNP5	Bore .631/.626" Extended Inner Width 1.125/1.120"	Planter Opener Wheels	Orthman
P204KRRB5	Bore .793/.788" Inner Width .6988/ .6938"	Row Crop Machine	New Holland
204RR6 E8728	Ground Bore .7505/ .7500" O.D. 1.7805" Extra loose radial play Width .610"	Planter Gauge Wheels	John Deere
H204KRNP6	Bore, O.D., Width same as P204KR2	Planter	White
204RR7 E8728	3/4" Bore 1.7805" O.D. .610" Width Extra loose radial play	Rolling Cultivator Disc Sprockets, Pulleys and Disc Opener	Lilliston
204RR8	.631" Bore .626 1.7805" O.D. 1.7800 .610" Width .605	Planter	Great Plains
H204RR11	.631" Bore .626 1.8504" O.D. 1.8499 .6890" Width	Planter	Tru-Part White Farm

Size	Special Features	Typical Application	Major OEM User
205NPP2	Inner Width .6594/ .6544"	Miscellaneous	John Deere
205KP6	3/4" Bore Tri-Ply Seal on one side with Shroud Cap	Rolling Cultivator Coulter Bearing	Lilliston
205KRR6	1/2" Bore, Extended Inner Ring	Windrow Digger	Lockwood
205KRR7	1/2" Bore, 1.500/ 1.495" Extended inner with Offset Race	Cone Roller Beet and Potato Harvester	Lockwood
205PPB7	15/16" Bore Tri-Ply Seals, 1.375/1.370" Inner Width	Rolling Cultivator	Lilliston
G205KPRB11	7/8" Hex Bore One "R" Seal and One Tri-Ply Seal Inner Width 1.000/.9953"	Corn Head Mechanism	Gehl
205PP9	3/4" Bore, Inner Width 1.3750/1.3700" Tri-Ply Seals	Cultivator	Kelley
205PP10	5/8" Bore, Inner Width 1.375/1.370" Tri-Ply Seals	Potato Harvester	FMC
205PP11	1" Bore, Inner Width 1.187/1.185" Tri-Ply Seals	Marker Wheel	Roll-A-Cone
205PP12	5/8" Bore, Inner Width 1.500/1.495" Tri-Ply Seals	Cone Roller Beet and Potato Harvester	Lockwood
205PP13	7/8" Hex Bore, Inner Width 1.000/.9953" Tri-Ply Seals	Corn Head Mechanism	Allis Chalmers
T205TRS2	3/4"-16 UNF-2A Integral Stud Track Roller 2.5" Ground O.D. .888" .883" Outer width overall length, 2 1/4"	Plunger Bearing Baler	New Holland
205PP3	1.0236" Bore 1.0232"	–	Owatonna
206KRD	Offset Rings Inner Width - .7874" Outer Width - .6299" "R" Seal on extended inner side	Combine Mechanism	John Deere
206KPP2	Tri-Ply Seals Wide Inner Ring .9449"	Forage Harvester	Hesston
H206KRP2 A1391	3/4" Bore Wide Inner Ring .9449" Extended on "R" seal side	Disc Hillers and Bedders	Cole
206KPPB3	1" Hex Bore, Tri-Ply Seals, Inner Width .9449/.9402"	Disc Harrow	IHC
206KRR4	Large Inner Ring Bore Corner to clear .090 R Shaft Fillet	Drive Shaft Bearing	Ace Pump
206KRRB3	1 1/8" Bore, "R" Seal with Shroud Cap	Corn Picker Snapping Rolls	John Deere