Automotive TechTips

TIMKEN
Where You Turn

Volume 5 • Issue 5 Part 2 of a 2-Part Series

TAPERED HUB UNIT BEARINGS GENERATIONS OF SOLUTIONS

Some confusion exists in the marketplace because several non-manufacturers of hub unit bearings are marketing them as Generation 3. This issue of *TechTips* is designed to educate distributors and end-users as to the features and benefits associated with tapered roller type hub unit bearings – Generations 1, 2 and 3 – which are recognized by leading bearing manufacturers.

A tapered roller bearing is primarily designed to handle combinations of radial and thrust loads. The roller bodies are designed for uniform stress distribution across the entire roller length, which increases load-carrying capabilities. Tapered roller bearings tend to be used in the wheel ends of light and medium-duty vehicles.

A hub unit bearing is pre-set, pre-lubricated, sealed and requires no maintenance. The progressive levels of integration into a wheel end result in 'generations' of hub unit bearings. Current model applications feature three generations of tapered roller hub unit bearings. Timken, as a manufacturer, was instrumental in the development of these generations and is a leader in the development of future generations.

Timken is one of the few bearing manufacturers who has the knowledge and capabilities to design and produce the increasingly complex hub unit bearings being designed into vehicles. The same Timken quality products available to the OEMs are also available to the aftermarket. Timken offers one of the most extensive lines of hub unit bearings in the industry.

Additional information regarding Timken hub unit bearings is available at www.timken.com, or by contacting your Timken sales representative or e-mailing auto.am@timken.com.

GEN 1

Double Row Tapered Bearing

Features:

- Pre-set internal clearance / pre-load
- Pre-lubricated
- Integrated seal – sealed for life
- **Integral double cup**

Benefits:

- Eliminates pre-load adjustment at installation
- Minimizes axial space requirements
- Compact / reduced envelope dimension
- Maintenance free – self-contained
- Optimizes bearing life and rigidity within the available space
- Greater load & capacity ratings than ball versions

GEN 2

Double Flange Tapered Bearing

Features:

- Pre-set internal clearance / pre-load
- Pre-lubricated
- Integrated seal – sealed for life
- **Integral raceways in flanged cup**

Benefits:

- Ease of installation – bolts direct to knuckle
- Eliminates pre-load adjustment at assembly
- Minimizes axial space requirements
- Compact / reduced space
- Maintenance free – self-contained
- Optimizes bearing life and rigidity within the available space
- Greater load & capacity ratings than ball versions

GEN 2.5

Double Flange Tapered Bearing

Features:

- Pre-set internal clearance / pre-load
- Pre-lubricated
- Integrated seal – sealed for life
- **Integral raceways in flanged cup**
- FORMED HUB™ – patented technology

Benefits:

- Ease of installation – bolts direct to knuckle
- Eliminates pre-load adjustment at assembly
- Minimizes axial space requirements
- Compact / reduced space
- Pre-clamped / self-retained
- Maintenance free – self-contained
- Optimizes bearing life and rigidity within the available space
- Greater load & capacity ratings than ball versions

GEN 3

Double Flange Tapered Bearing

Features:

- Pre-set internal clearance / pre-load
- Pre-lubricated
- Integrated seal – sealed for life
- **Integral raceways in flanged cup**
- **Integral outboard raceway on hub**
- Flanged inner and outer ring
- FORMED HUB™ – patented technology

Benefits:

- Ease of installation – bolts direct to knuckle
- Eliminates pre-load adjustment at assembly
- Minimizes axial space requirements
- Pre-clamped / self-retained
- Compact / reduced space
- Maintenance free – self-contained
- Optimizes bearing life and rigidity within the available space
- Greater load & capacity ratings than ball versions

⚠ WARNING ***Failure to observe the following warning could create a risk of serious injury.***

Proper maintenance and handling procedures are critical. Always follow installation instructions and maintain proper lubrication.

TechTips is not intended to substitute for the specific recommendations of your equipment suppliers.

Every reasonable effort has been made to ensure the accuracy of the information contained in this writing, but no liability is accepted for errors, omissions or for any other reason.

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BALL HUB UNIT BEARINGS GENERATIONS OF SOLUTIONS

Some confusion exists in the marketplace because several non-manufacturers of hub unit bearings are marketing them as Generation 3. This issue of *TechTips* is designed to educate distributors and end-users as to the features and benefits associated with ball type hub unit bearings – Generations 1, 2 and 3 – which are recognized by leading bearing manufacturers.

Based on their load-carrying capabilities, ball bearings tend to be used in the wheel ends of light-duty vehicles. The contact between the balls and the raceways in a ball bearing is considered a point contact. This allows less friction to develop between the contact surfaces and also allows for high-speed applications.

A hub unit bearing is pre-set, pre-lubricated, sealed and requires no maintenance. The progressive levels of integration design within a wheel end result in 'generations' of hub unit bearings. Current model applications feature three generations of ball hub unit bearings. Timken, as a manufacturer, has provided solutions for integrating ball, tapered, cylindrical and needle bearings into wheel ends and will continue to lead in the future.

Timken is one of the few bearing manufacturers who has the knowledge and capabilities to design and produce the increasingly complex hub unit bearings being designed into vehicles. The same Timken quality products available to the OEMs are also available to the aftermarket. Timken offers one of the most extensive lines of hub unit bearings in the industry.

Additional information regarding Timken hub unit bearings is available at www.timken.com, or by contacting your Timken sales representative or e-mailing auto.am@timken.com.

GEN 1

Double Row Angular Contact Bearing

Features:

- Pre-set internal clearance / pre-load
- Pre-lubricated
- Integrated seal – sealed for life
- **Integral double outer race**

Benefits:

- Eliminates pre-load adjustment at installation
- Minimizes axial space requirements
- Compact / reduced envelope dimension
- Maintenance free – self-contained
- Optimizes bearing life and rigidity within the available space

GEN 2

Single Flange Angular Contact Bearing

Features:

- Pre-set internal clearance / pre-load
- Pre-lubricated
- Integrated seal – sealed for life
- **Integral raceways in outer ring**
- Flanged outer ring

Benefits:

- Easier installation
- Eliminates pre-load adjustment at assembly
- Minimizes axial space requirements
- Compact / reduced space
- Maintenance free – self-contained
- Optimizes bearing life and rigidity within the available space

GEN 2

Double Flange Angular Contact Bearing

Features:

- Pre-set internal clearance / pre-load
- Pre-lubricated
- Integrated seal – sealed for life
- **Integral outer ring / raceways**
- Flanged inner and outer rings

Benefits:

- Easier installation
- Eliminates pre-load adjustment at assembly
- Minimizes axial space requirements
- Compact / reduced space
- Maintenance free – self-contained
- Optimizes bearing life and rigidity within the available space

GEN 3

Double Flange Angular Contact Bearing

Features:

- Pre-set internal clearance / pre-load
- Pre-lubricated
- Integrated seal – sealed for life
- **Integral inner ring / outboard raceway**
- Flanged inner and outer rings

Benefits:

- Easier installation
- Eliminates pre-load adjustment at assembly
- Minimizes axial space requirements
- Compact / reduced space
- Maintenance free – self-contained
- Optimizes bearing life and rigidity within the available space

⚠ WARNING ***Failure to observe the following warning could create a risk of serious injury.***

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