

TIMKEN

THE INDUSTRY LEADER

It's about Quality
and Consistency

TIMKEN
Where You Turn

Presentation by Changeover Solutions

TIMKEN: THE MANUFACTURER

UNMATCHED QUALITY

TIMKEN Product OR OEM Supplier	PRODUCT	Mostly Off Shore Suppliers
Timken Tapered Bearings Or OEM Bearing Design	BEARINGS	Ball Bearings Used In Place Of Tapered Bearing Design
Only OEM Rings and Sensors	ABS SENSOR	Non OEM Design Can Lead to False Readings
Highest Quality Grease For Maximum Bearing Protection	GREASE	Inferior Quality Grease Can Lead To Premature Failure
OEM Seal Assembly Maintains Protection From Environment	SEALS	Non OEM Seals Can Lead To Grease Contamination And Hub Failure
OEM Stud Per Specification	WHEEL STUDS	Non-OEM Studs

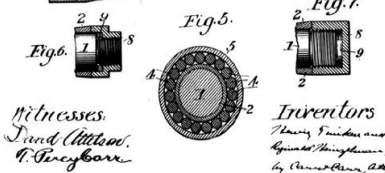
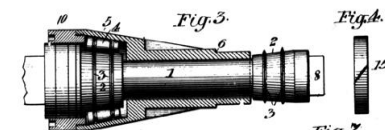
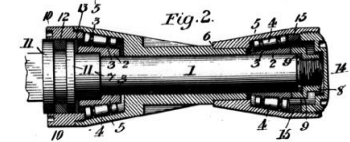
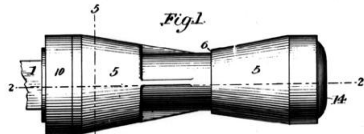


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TIMKEN: THE MANUFACTURER

Where It All Begins!

(No Model.)
H. TIMKEN & R. HEINZELMAN.
ROLLER BEARING FOR VEHICLES.
No. 606,635. Patented June 28, 1898.



**First Tapered
Roller Bearing
Patent - 1898**

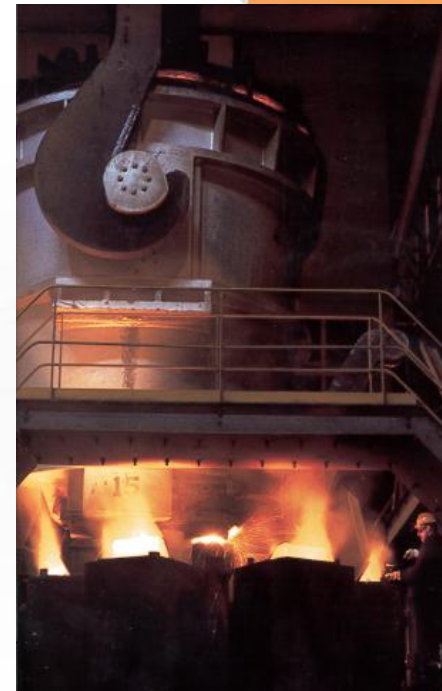
– Highest Quality Steel

- 1916...First Steel Produced
- 5 Plants -1.5 million tons output
- Invented Roller Bearing Technology
- Over \$50m Annual R & D

– Timken Steel

- Denser Steel
 - Longer Bearing Life
- Lower Carbon
 - Less Brittle

Steel Quality = Bearing Quality



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Partial Listing of OE Manufacturers Who Depend on Timken Bearings

CATERPILLAR®

TRW

VOLVO



JOHN DEERE

BOSCH



It's about Quality and Consistency

HYUNDAI

TOYOTA



DELPHI
Driving Tomorrow's Technology



ArvinMeritor™

CASE III

ISUZU

Timken Aftermarket Program

94% OEM Content

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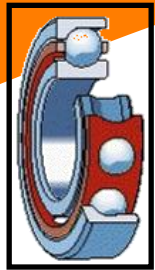
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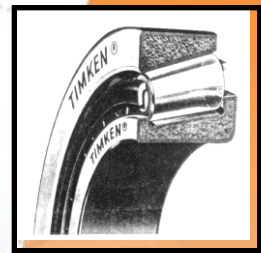
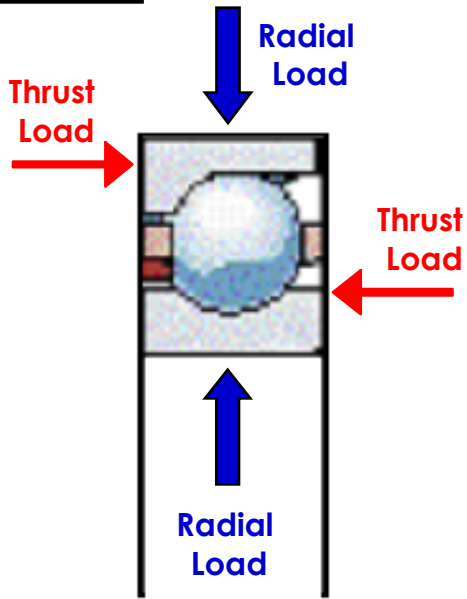
TIMKEN: TECHNOLOGY LEADER

Ball versus Taper Roller Bearings

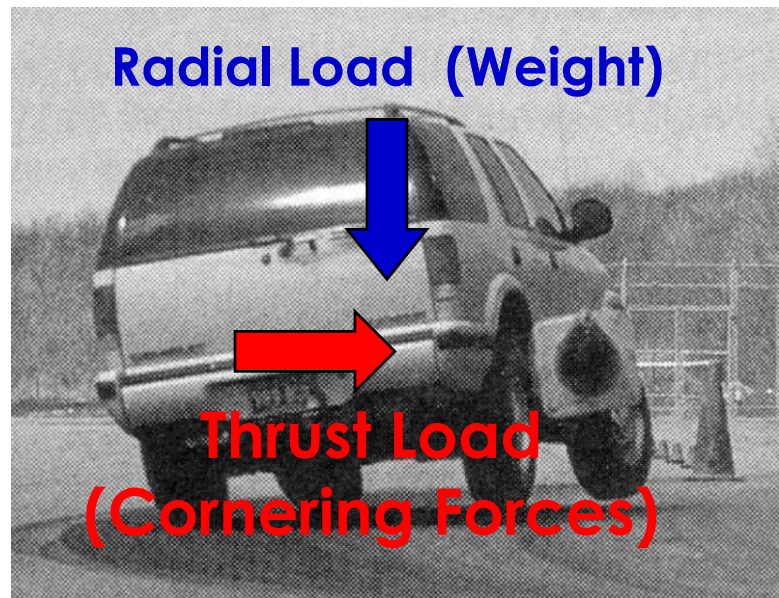
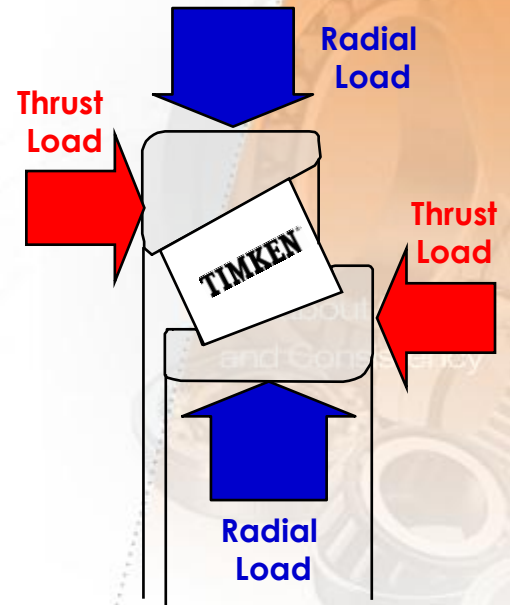
USE OF TAPER ROLLER BEARING INCREASES LIFE AND PERFORMANCE OF TIMKEN HUB APPLICATIONS



Ball Bearing



Tapered Roller Bearing

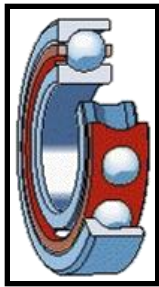


Minivan, SUV & Truck Benefit From Taper Technology

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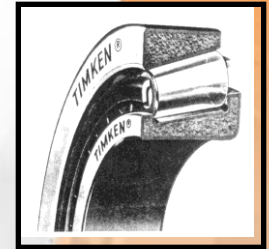
Ball versus Taper Roller Bearings



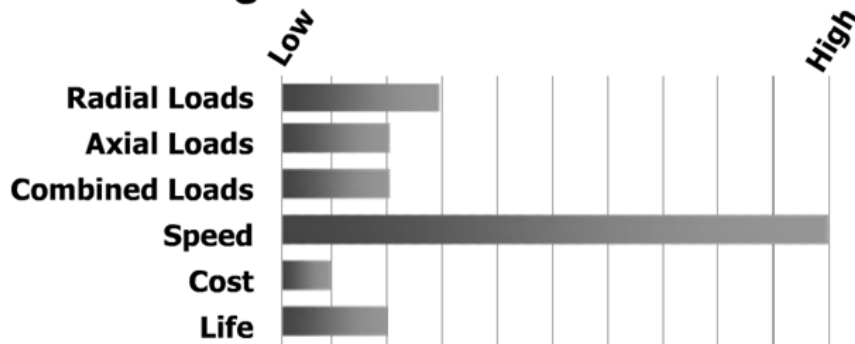
Ball Bearing

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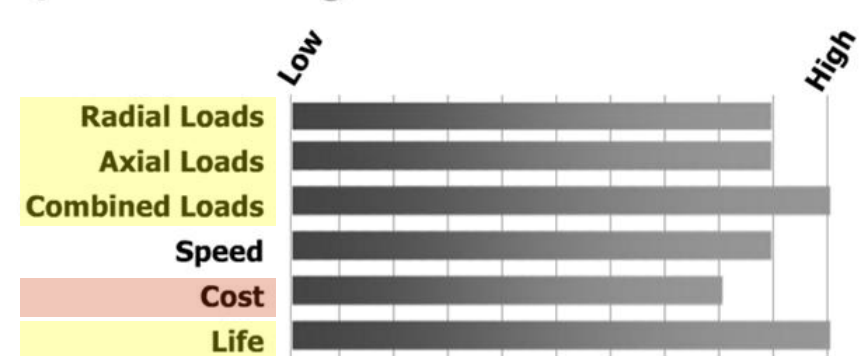
Tapered Roller Bearing



Ball Bearing Performance



Tapered Bearing Performance



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Timken Case-Carburized Tapered Roller Bearings:
#1 In Comparison Test

Timken product life was more than **7 TIMES LONGER**
than that of the closest competitor.



CASE-CARBURIZED

**Low Carbon Content Steel =
More Resilient Bearing**



THROUGH-HARDENED

Higher Carbon = More Brittle

Special Profiles

Special profiles reduce stress on Timken bearing races and rollers by providing more even distribution of loads across contact surfaces, increasing load-carrying capacity.



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Hub Unit Bearing Terminology

Generation 1 (GEN1)



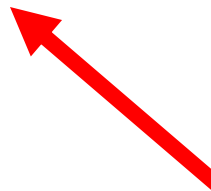
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Taper Roller Bearings

Integral Double Cup

ADVANTAGE: TIMKEN

**Greater Load &
Capacity Ratings
Than Ball Versions**



COMPETITORS

Ball Bearings

Integral Double Outer Race

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Hub Unit Bearing Terminology

Generation 3 (GEN3)



ADVANTAGE: TIMKEN

**Greater Load &
Capacity Ratings
Than Ball Versions**

NOTE: Inductive Heating required for Gen 3 units to harden bearing surfaces. Lower quality unit do not receive treatment or receive inadequate treatment.



COMPETITORS

Ball Bearings
Integral Inner & Outer Ring / Raceway

TIMKEN
Taper Roller Bearings

Integral Raceways In Flanged Cup & On Hub

Formed Hub Bearing™ – Patented Technology

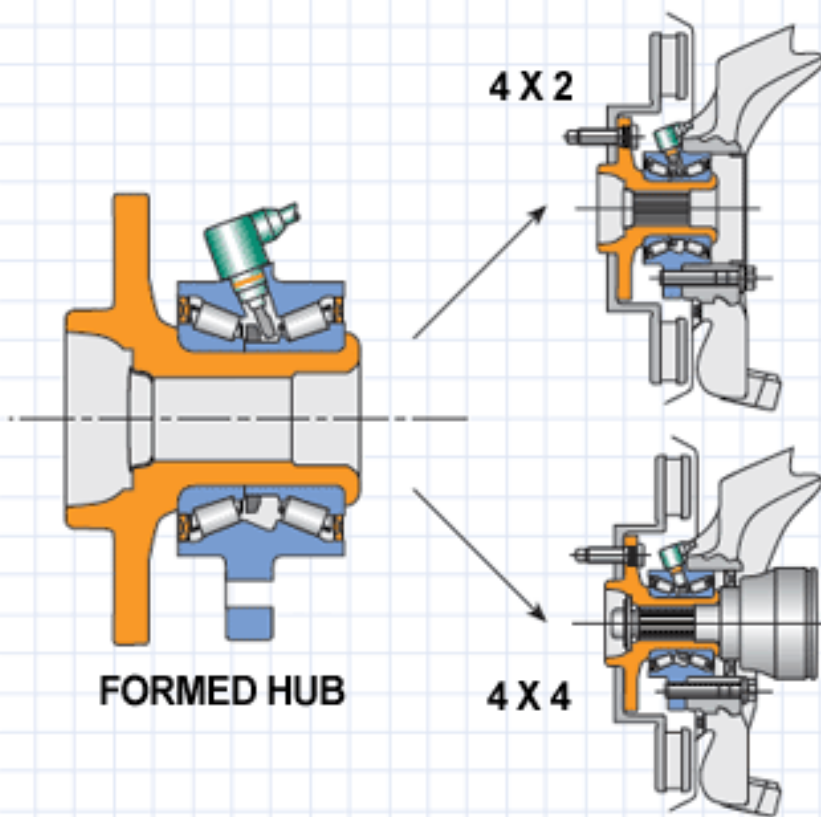
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Formed Hub Bearing

Patented Technology

COMMONIZATION OF 4 X 2 and 4 X 4 DESIGNS



ADVANTAGE: TIMKEN

- Self-clamped design eliminates high stress in the spindle and CV joint.
 - Reduces bearing wear & failure
- Holds bearing setting more consistently than traditional thread and nut designs.
 - Reduces rotor runout & Improves brake performance.
- Allows the same unit to be used on drive and non-drive wheels.

**MORE COVERAGE
LESS INVENTORY**

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#1 Cause Of Bearing Failure

Installation Error

Excessive Torque: Causes excessive bearing preload leading to reduced life, overheating, and possible wheel seizure.

Inadequate Torque: Will permit an loss of clamp in the bearing causing excessive end-play leading to reduce bearing life.

- Always utilize a torque wrench to tighten the axle nut, knuckle to bearing retention bolts, and lug nuts.

ALWAYS REPLACE TORQUE PREVAILING AXLE NUTS WHEN INSTALLING NEW HUB TO ASSURE PROPER CLAMP PRESSURE



TIMKEN
Where You Turn

Torque Specifications

Available on www.Timkeninfo.com

TIMKEN Where You Turn **Parts Catalog** RETURN HOME

Application: Heavy Duty Vehicles | Cross Reference | Part Search | Knowledge Center | Info Request | Distributor Locator

Year: 2002 | Make: CHEVROLET | Model: MALIBU | Product: WHEEL BEARINGS, SEALS | Engine: All

**** Torque Specifications ****

Location	Part Number	Part Type	Qty	Comment	Application
FRONT	513137	Wheel Bearing and Hub Assembly	2	Box includes: hub unit, nut	FWD, 4-Wheel ABS

**** Torque Specifications ****

Drive	Application	Axle	Newton Meters	Foot Pounds	Note	Adjustment
FWD	Wheel Studs	Front	140	100		
FWD	Flange Bolts	Front	95	70		
FWD	Axle Nut	Front	235	173	New style nut.	
FWD	Axle Nut	Front	385	284	Old style nut.	

GM issued a service bulletin (GM Bulletin No.: 03-04-18-001 - Dated 2/2003) that recommends the use of a new axle nut. This new nut will provide more consistent clamp load on the bearing and should prolong the bearing life.

Old Nut

Torque 385 N.m (284 lb ft)



The old style nut shown is black and has a sheet metal cage around the nut.

New Nut

Torque 235 N.m (173 lb ft)



The nut shown is a **Torque Prevailing Nut** and is silver colored.

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Make	Model	Year	App	OEM Torque
CHRYSLER	Cirrus, Sebring	2006-2001	Sebring (Convertible)(Sedan)	01-02 (110); 03-06 (150)
CHRYSLER	Cirrus, Sebring	2000-1996	Sebring (Convertible)	96-99 (180); 2000 (105)
CHRYSLER	Cirrus, Sebring	2000-1995	Cirrus	95-00 (185)
DODGE	Stratus	2006-2001	Stratus (Sedan)	01-02 (110); 03-06 (150)
DODGE	Stratus	2000-1995		95-99 (180); 2000 (105)
PLYMOUTH	Breeze	2000-1996		96-99 (180); 2000 (105)

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SP470200 (Sensor Cable Included)



SP470201 (No Sensor Cable Included)



Timken provides OEM Side Reading ABS Sensor

Competitive Products Used Non-OEM Straight Reading ABS Sensor

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Timken ABS Technology

Two Types of Sensors

Active – 2 wire electronic sensor

Passive – 1 wire mechanical sensor

(needs at least 2.5 mph for reading)

Timken Owns “Magnetic Encoder” Technology

(Note: can be tested with paper clip)



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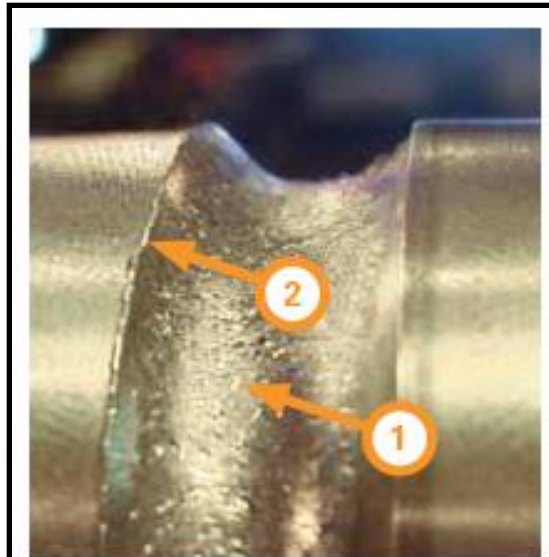


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Inadequate or Inferior Quality Grease Used In Hub Assemblies Can Cause Premature Failure Of Unit



Metal-to-metal contact from lubricant film breakdown resulting in a: 1) polished appearance on the inner race followed by an orange peel texture and, 2) raised edge on the thrust shoulder.

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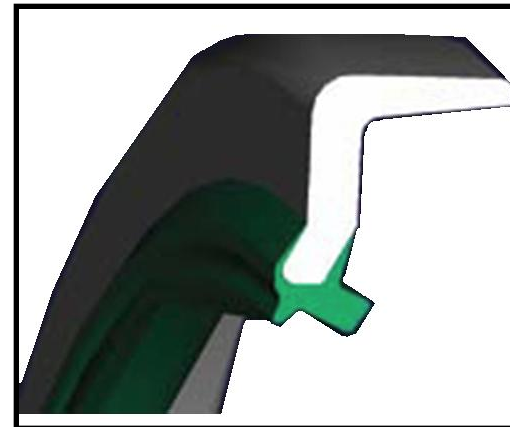
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Seal Issues Cause **OVER 50%** Of Hub Failures
Inferior Seals Expose The Bearing To Water &
Contaminants Leading To Premature Failure



Sample of Premium Seal



Sample of Offshore Seal Design

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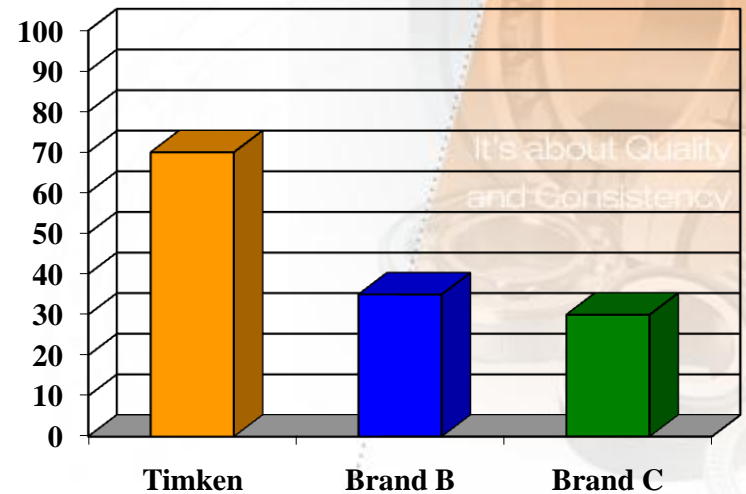
TIMKEN: THE AFTERMARKET'S PREMIUM HUB SUPPLIER

Brand Strength - "THE POWER OF TIMKEN"

"Black & Orange" ... Recognized as Symbol of Quality

Motor Magazine Wheel Bearing Survey

- Professional Installers That Specify A Brand – **71%**
- Professional Installers That Prefer Timken – **69%**



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TIMKEN: ON LINE RESOURCES

COMPANY WEBSITE

WWW.TIMKEN.COM

On Line Automotive Parts Catalog

WWW.TIMKENINFO.COM

Application: Up To Date Application Listing

Part Information: Product Specifications and Pictures

Cross Reference :Cross Competitive Products to Timken Part #



www2.timken.com/testing

Automotive
TechTips

www.TIMKEN.com/TechTips

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TIMKEN CATALOG

DODGE TRUCK - 1/2 TON - B150, B1500 VANS, D150 PICKUP, Ram 1500 PICKUP, Ram 1500 VAN, Ramcharger, W150 PICKUP

FRONT WHEEL

RWD

2008	RAM 1500 (Rr. Whl. ABS)	
	Hub Unit Bearing (LH)	SP500101 ¹⁰¹ ²⁵
	Hub Unit Bearing (RH)	HA500100
2008-2007	RAM 1500 (4 Whl. ABS)	
	Hub Unit Bearing	SP500101 ²⁵
2008-2006	Ram 1500 (Mega Cab)	
	Hub Unit Bearing	SP550104[2] ²⁵
2007	RAM 1500 (Rr. Whl. ABS)(4.7L)	
	Hub Unit Bearing	HA500100[2]
2007	RAM 1500 (Rr. Whl. ABS)(5.7L,3.7L)	
	Hub Unit Bearing (LH)	SP500101 ¹⁰¹ ²⁵
	Hub Unit Bearing (RH)	HA500100
2006	RAM 1500 (4 Whl. ABS)(Exc. SRT)	
	Hub Unit Bearing	SP500101[2] ²⁵
2006	RAM 1500 (Rr. Whl. ABS)(5.7L)	
	Hub Unit Bearing (LH)	SP500101 ²⁵
	Hub Unit Bearing (RH)	HA500100
2006	RAM 1500 (SRT)	
	Hub Unit Bearing	SP500101[2] ²⁵
2006-2004	RAM 1500 (Rr. Whl. ABS)(4.7L,3.7L)	
	Hub Unit Bearing	HA500100[2]

FRONT WHEEL (cont.)

RWD (cont.)

2005-2004	RAM 1500 (Rr. Whl. ABS)(5.7L)	
	Hub Unit Bearing (LH)	SP500100 ¹⁰¹ ⁴⁰
	Hub Unit Bearing (RH)	HA500100
2005-2002	RAM 1500 Pickup (4 Whl. ABS)	
	Hub Unit Bearing	SP500100[2] ⁴⁰
2003-2002	RAM 1500 Pickup (Rr. Whl. ABS)	
	Hub Unit Bearing	HA500100[2]
2003-1999	RAM 1500 Van	
	Seal (Inner)	3087[2]
	Cone/Cup (Inner)	NP952605-JL69310P[2]
	Set (Outer)	SET16[2]
2001-2000	RAM 1500 Pickup	
	Hub Unit Bearing	HA590001[2]
	Set (Opt. Tapered Unit Brg.)	SET815[2]
1999-1994	RAM 1500 Pickup	
	Seal (Inner)	4739[2]
	Set (Inner)	SET5[2]
	Set (Outer)	SET3[2]

TIMKEN - HUB UPDATE

HA590028 & HA590029



OEM Original With Cover



OEM Approved Without Cover

Ford reviewed the warranty info on this unit and made a decision to remove this inboard cover plate. The units without the cover plate were tested and there were no issues with performance observed. The original units with cover plate had some noise due to contamination between the cover plate and seal. Ford has approval to removal the cover plate.

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