



2009

COMMERCIAL VEHICLE WHEEL CATALOG

APPLICATION GUIDE FOR COMMERCIAL VEHICLES

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HISTORICAL PERSPECTIVE

Originally founded in 1908, Hayes Lemmerz International, Inc is a leading worldwide producer of aluminum and steel wheels for passenger cars and light trucks, and of steel wheels for commercial trucks and trailers. The Company has global operation with business, sales offices and manufacturing facilities located in 13 countries around the world. Hayes Lemmerz sells its products to every major manufacturer of passenger cars and light trucks and to commercial highway vehicle customers throughout the world. The Company manufactures nearly 1 out of every 4 wheels in the world, including products for motorcycle, fork truck, passenger car, light truck, commercial truck, military, etc.

Hayes Lemmerz is the **ONLY** global supplier of steel wheels for commercial vehicles with manufacturing facilities in North America, South America, Europe, Turkey and India. Hayes Lemmerz serves a wide range of customers and offers a variety of sizes up to 24.5" (tubeless) and up to 24" (tube-type) in diameter. Each of Hayes Lemmerz' facilities is a full product line supplier in its home market, but is also capable of supplying international markets and/or supporting other regions. **Hayes Lemmerz supplies nearly all major truck and trailer OEMs around the world.**

Hayes Lemmerz has a tradition of innovation and new product development. The Company's engineers take pride in being technical leaders in the global arena in developing new technologies and processes, and bringing them to market.

HIGHLIGHTS

The Company name has evolved over its 100 years in business.



INNOVATIONS

1990's
LOW POINT MARKINGS

1980's
POWDER PAINT

1930's
HUB-PILOTED WHEELS

1920's
STUD-PILOTED WHEELS

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SAFETY MESSAGE

CAUTION!!!

Be sure to read, understand, and follow all mounting, demounting, maintenance, inspection, and operational procedures, as well as all safety instructions and practices in accordance with OSHA 29 CFR Part 1910.177 rules and regulations for "Servicing Single-Piece and Multi-Piece Rims / Wheels", as well as any other applicable rules, regulations, procedures, or guidelines.

Do not work on wheels or rims without proper training. Carefully read all safety information provided by the manufacturer, industry organizations, and/or shown in this catalog before taking any action to service wheels and rims. Failure to follow proper safety precautions could result in serious injury or death.

Use a safety cage and a clip-on air chuck for tire inflation. A safety cage can help reduce risk of injury or death if the assembly should separate under inflation pressure. Stand on one side of the cage during inflation, never directly in front. Keep hands out of the cage during the inflation process.

Always wear eye protection. Failure to do so may result in serious injury.

WARNING!!!

The load-carrying requirements of each vehicle should be determined before selecting the proper tire / wheel combination. Always remember that the weakest weight-carrying component of the vehicle (i.e. tire, wheel, axle, bearings, etc.) determines its overall maximum and safe load-carrying capacity for the vehicle. The load and cold inflation pressure should not exceed the wheel or rim capacity as specified in this catalog or as stamped on the components even though the tire may be approved for a higher load or inflation. To request wheels with increased load-carrying capacities and allocations for deviated service conditions, please contact us.

IMPORTANT!!!

Use only the specified sizes and types of studs, nuts, and clamps. Follow recommended torquing procedures before placing new trucks into service, during the vehicle's regular scheduled maintenance, and after each tire change.

Attachment hardware is not designed for steel and aluminum wheels to be interchangeable. They are not designed to work together. Arbitrarily interchanging may result in loss of clamp load, broken studs, cracked wheels, or possible wheel loss.

For complete information or questions, please call (800) 337-0457 or (800) 337-0458.

GENERAL NOTES

Introduction

The purpose of this catalog is to convey various technical / design information about our latest disc wheel and demountable rim product offerings to the Commercial Highway market. This catalog (form F-150) supercedes the previous version catalog (#4-103). You will see in this most recent edition that there have been many changes.

With the divesture of the hub and drum products, the new catalog contains only wheel and rim products. For question regarding hub and drum products, please contact Motor Wheel Commercial Vehicle Systems Inc. at (888) 909-4335.

The content and detail of information shown within the catalog has been expanded in order to provide a means for improved communication. Such examples include additions for nomenclature, schematics, inspection / installation instructions, etc. This way we can speak the same language. There have also been revisions to specific product information. For example, there are newer part numbers for Wide Base and *CentruStyle™* steel wheels. In 2007, the wheel load rating was increased up to 8,000 lbs on most heavy duty 22.5" and 24.5" steel disc wheels. Also implemented was a reduction in the weight on most standard duty 22.5" and 24.5" steel wheels. Moving through 2008 and into 2009, there are even more developments within engineering and manufacturing on this front that will bring forth even lighter steel wheels.

Scope

The wheel and rim products identified in this catalog are intended for use on medium / heavy duty commercial truck (upper class 6, 7, and 8), tractor trailer, bus, and off-mobile motor vehicle applications. These products are not approved for use on passenger car, light truck, off-the-road, or other unintended applications. The information contained here within is subject to change at any time at the discretion of Hayes Lemmerz International without the need for notification.

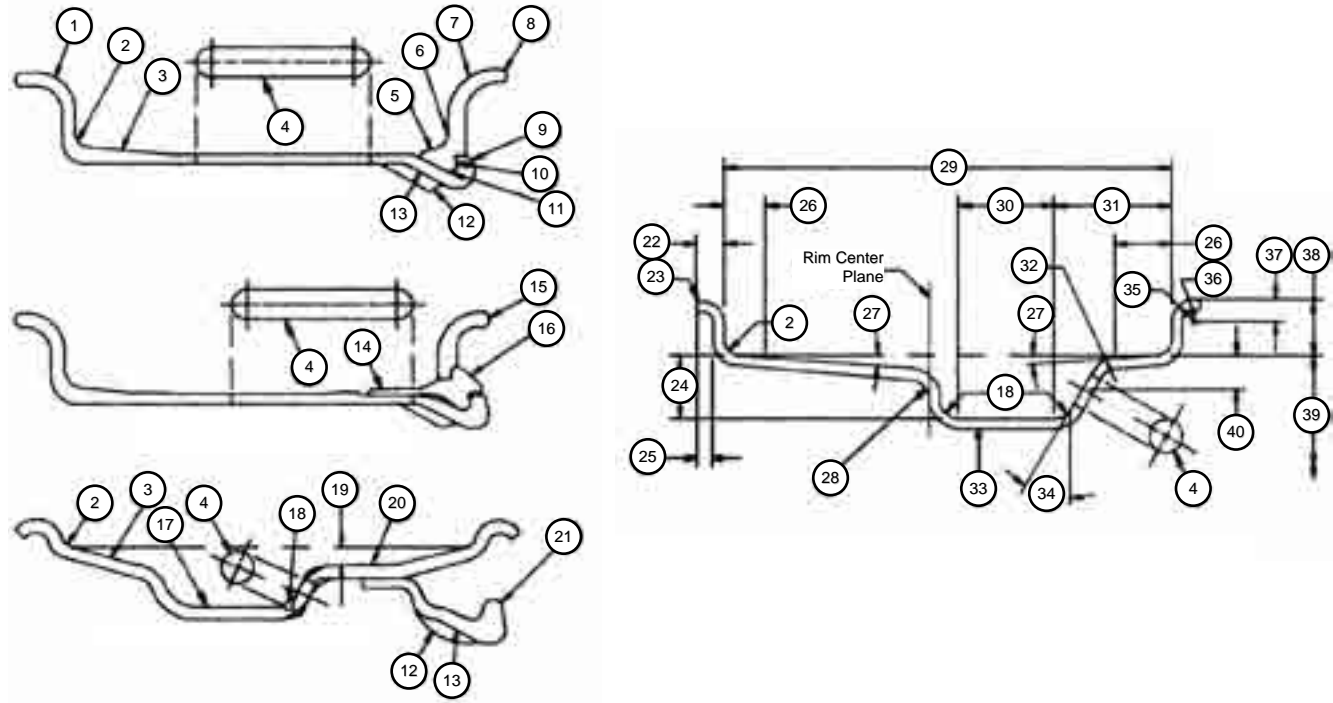
Acknowledgments

Our engineers actively participate in many technical organizations within the automotive industry working towards the standardization of the design, testing, and maintenance of wheel / rim products. Some of these organizations include SAE, T&RA, ETRTO, TMC, AISI, and ISO, among others. Most of the information provided in this catalog is recognized as "industry standard" to be consistent with these industry organizations.

Portions of TMC recommended practices mentioned herein are presented with permission from the Technology & Maintenance Council (TMC) of American Trucking Associations. For more information on TMC products, practices and services, contact TMC/ATA, 950 N. Glebe Road, Arlington, VA 22203 (703) 838-1763; <http://tmc.truckline.com>. The Technology & Maintenance Council's (TMC) Recommended Practices Manual and related resources may be ordered online at <http://atabusinesssolutions.com> or by calling toll-free (866) 821-3468.

NOMENCLATURE

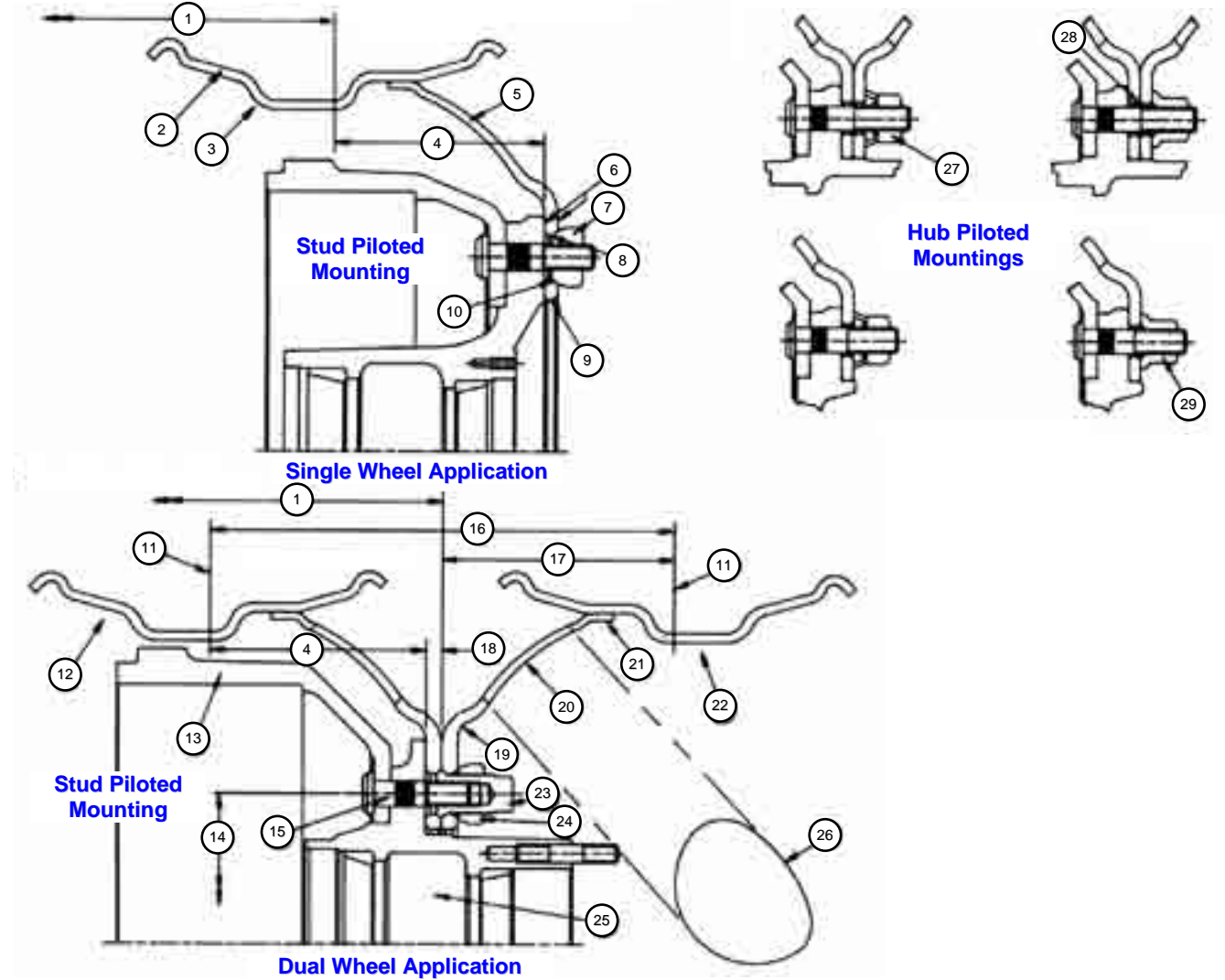
Nomenclature for Rims



- | | | | |
|-------------------------------|--|-----------------------------|--------------------------------|
| 1 Rim Flange (Fixed) | 11 Gutter Groove | 21 Adaptor | 32 Well Top Radius |
| 2 Bead Seat Radius | 12 Valve Locators (Protectors / Drivers) | 22 Flange Width | 33 Rim Inside Diameter |
| 3 Bead / Tire Seat | 13 28° Bevel | 23 Flange Tip / Edge Radius | 34 Well Wall Angle |
| 4 Valve Hole or Slot | 14 Lock Ring Toe | 24 Well Depth | 35 Flange Radius |
| 5 Side Ring Toe | 15 Removable (Solid) Flange | 25 Flange Offset | 36 Flange Compound Radius |
| 6 Side Ring Bead Seat Radius | 16 Removable (Split) Lock Ring | 26 Bead Seat Width | 37 Flange Radius Location |
| 7 Side Ring Flange Radius | 17 Rim Well | 27 Bead / Tire Seat Angle | 38 Flange Height |
| 8 Removable (Split) Side Ring | 18 Well Bottom Radius | 28 Well Wall Radius | 39 Specified Rim Diameter |
| 9 Gutter Tip | 19 Ledge Depth | 29 Nominal Rim Width | 40 Valve Hole or Slot Location |
| 10 Rim Gutter Hook | 20 Mounting Ledge | 30 Well Width | |
| | | 31 Well Position | |

NOMENCLATURE

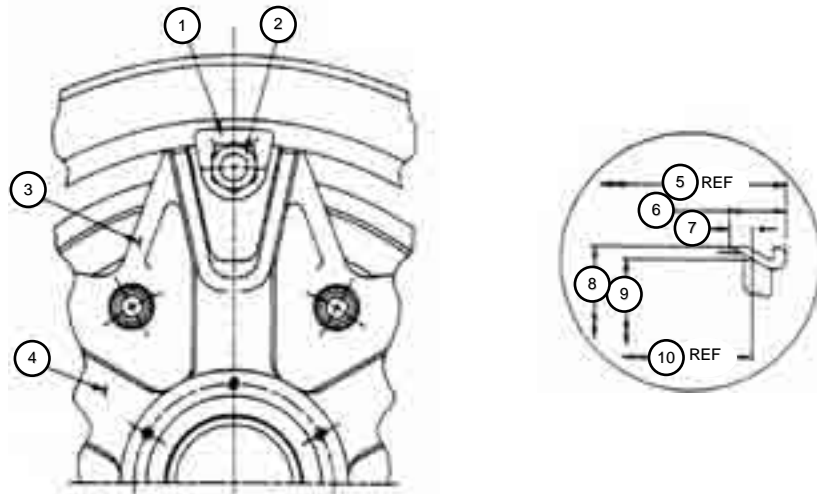
Nomenclature for Disc Wheels



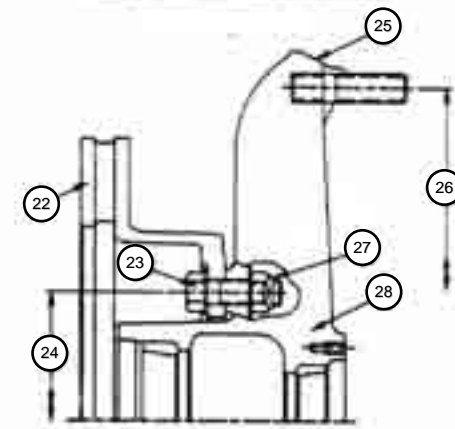
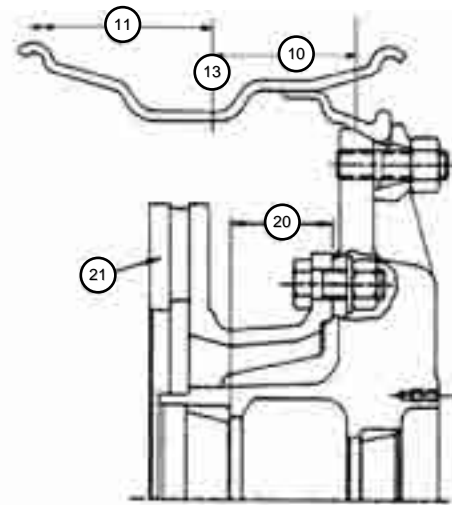
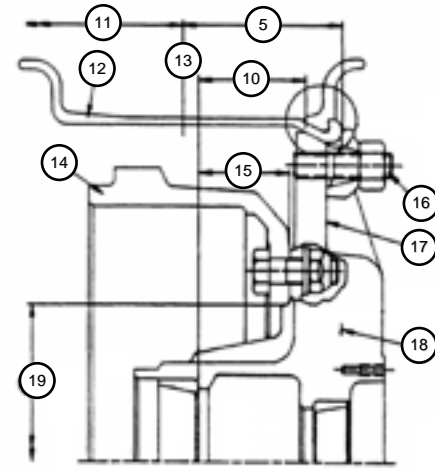
- | | | | |
|---|---|--------------------------------|-----------------------------|
| 1 Axle Track | 9 Wheel Center (Pilot) Hole | 17 Offset or Half Dual Spacing | 25 Hub |
| 2 Rim Base | 10 Ball Seat | 18 Disc Thickness | 26 Hand-Hole (Window) |
| 3 Single Wheel Position | 11 Rim Center Plane | 19 Disc Nave | 27 Two-Piece Flange Nut |
| 4 Inset | 12 Inner Dual Wheel Position | 20 Disc Tapered Section | 28 Stud (Bolt) Hole Chamfer |
| 5 Disc | 13 Brake Drum | 21 Disc Skirt | 29 One-Piece Flange Nut |
| 6 Wheel Mounting Face (Attachment Face) | 14 Bolt Circle Diameter (Pitch Circle Diameter) | 22 Outer Dual Wheel Position | |
| 7 Single Ball Seat Nut | 15 Stud (Bolt) | 23 Inner Cap (Ball Seat) Nut | |
| 8 Stud (Bolt) Hole | 16 Dual Spacing | 24 Outer Cap (Ball Seat) Nut | |

NOMENCLATURE

Nomenclature for Demountable Rims (Front)

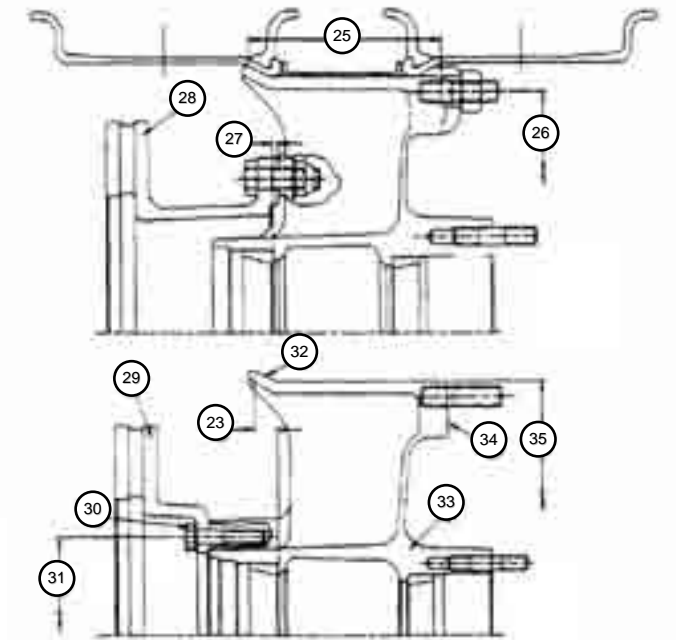
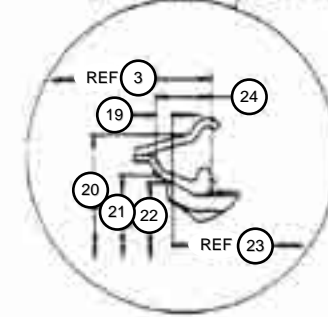
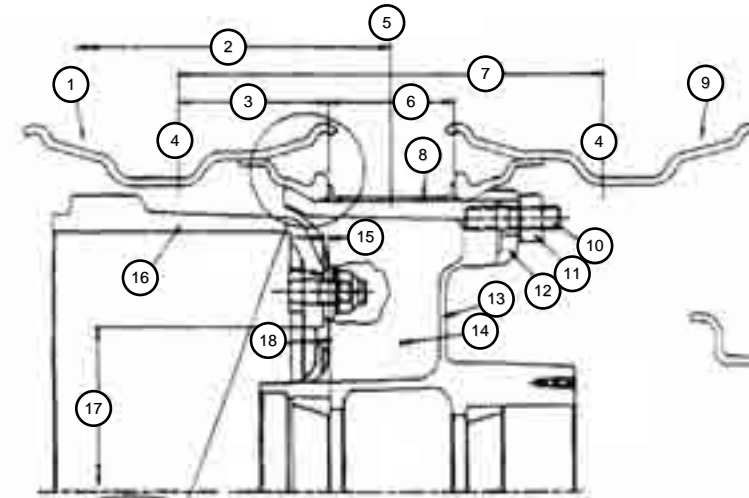


- | | |
|---|--|
| 1 Rim Clamp (Clamp) | 16 Rim Clamp Stud |
| 2 Rim Clamp Nut | 17 Clamp Face |
| 3 Web | 18 Spoke Cavity |
| 4 Spoke | 19 Brake Drum Pilot Diameter |
| 5 Rim Offset (Rim Base Offset) | 20 Rotor Mounting Offset |
| 6 Rim Bevel Intersection (Rim Bevel Location) | 21 Brake Rotor ("U" Shaped) |
| 7 Wheel Bevel Location | 22 Brake Rotor (Hat Shaped) |
| 8 Specified Rim Diameter | 23 Rotor Stud or Bolt |
| 9 Wheel Outside Diameter | 24 Rotor / Drum Bolt Circle Diameter |
| 10 Wheel Bevel Offset | 25 28° Bevel |
| 11 Axle Track | 26 Rim Clamp Stud / Bolt Circle Diameter |
| 12 Rim Base | 27 Nut |
| 13 Rim Center Plane | 28 Wheel for Demountable Rim (Cast Wheel Body) |
| 14 Brake Drum | |
| 15 Brake Drum Mounting Offset | |



NOMENCLATURE

Nomenclature for Demountable Rims (Rear)



- | | | | |
|--------------------------------|-------------------------------|--|--|
| 1 Inner Dual Rim Position | 10 Rim Clamp Stud | 19 Wheel Bevel Location | 27 Rotor Mounting Offset |
| 2 Axle Track | 11 Rim Clamp Nut | 20 Specified Rim Diameter | 28 Brake Rotor ("U" Shaped) |
| 3 Rim Offset (Rim Base Offset) | 12 Rim Clamp (Clamp) | 21 Specified Rim Diameter minus 2.5" | 29 Brake Rotor (Hat Shaped) |
| 4 Rim Center Plane | 13 Spoke | 22 Wheel Outside Diameter | 30 Rotor Stud or Bolt |
| 5 Dual Centerline | 14 Spoke Cavity | 23 Wheel Bevel Offset | 31 Rotor / Drum Bolt Circle Diameter |
| 6 Spacer Band Width | 15 Brake Drum Mounting Offset | 24 Rim Bevel Intersection / 28° Layout Line (Rim Bevel Location) | 32 28° Bevel |
| 7 Dual Spacing | 16 Brake Drum | 25 Spoke Length | 33 Wheel for Demountable Rim (Cast Wheel Body) |
| 8 Spacer Band | 17 Brake Drum Pilot Diameter | 26 Rim Clamp Stud / Bolt Circle Diameter | 34 Clamp Face |
| 9 Outer Dual Rim Position | 18 Web | | 35 Rim Mounting Diameter |

WHEEL / RIM SELECTION

IMPORTANT NOTE!!!

The wheels in this catalog have been designed for specific original equipment vehicle applications. In some cases, a wheel designed for a specific vehicle can be satisfactorily used on other vehicles but there are relatively few such acceptable applications. We urge you to follow the wheel applications listed and not experiment in the use of a wheel for a vehicle application that is not shown. Despite apparent suitability of rim size and mounting, there may be hazards in the use of a wheel on a vehicle for which it is not recommended. Among these hazards are overload wheels, excess stress on steering and/or suspension components, and inadequate clearance with brake, suspension, and wheel house components.

Procedure for Selecting Wheels / Rims

- Determine the intended use and operating conditions of the wheel or rim, including:
 - single or dual application
 - type of vehicle
 - maximum speed
 - maximum load
 - road environment and service conditions
- Determine the intended tire usage, including:
 - size
 - type / construction (tubeless or tube-type)
 - load limit / index / range, ply rating, and speed symbol
 - inflation pressure
- Select the appropriate rim size designation (nominal rim diameter and nominal rim width) for the tire.
 - refer to *Tire / Rim Size Selection* chart for approved rim widths of various tubeless and tube-type tires
- Check offset or dual spacing on *Dual Wheel / Rim Spacing* or *Dual Spacing for Demountable Rims on Cast Spoke Wheels* pages, as applicable.
 - verify vehicle clearance in single and dual applications
 - verify tire clearance in dual applications
- Determine the applicable mounting system and connecting dimensions, including:
 - type of mounting (disc wheel hub piloted, disc wheel stud piloted, demountable rim)
 - axle and brake dimensions
 - center hole diameter
 - bolt circle / pitch circle diameter
 - number of studs
 - type of stud holes (cylindrical, spherical)
 - avoid mixing wheels or hub and bolt assemblies of different mounting systems with common bolt patterns
 - for disc wheel and hub / drum interface dimensions refer to SAE J694 (JUN2007)
- Select the appropriate wheel or rim part number for load and pressure rating, type of mounting, offset, rim width, and tire diameter (refer to Disc Wheel or Rim specification pages).
- Select the applicable valve number and attaching hardware / fasteners.
 - determine spacer width for demountable rims, then select the appropriate spacer

Load and Inflation Ratings

The strength of each disc wheel or rim is designed for a specific loading capacity. Tire and rim combinations were designated to assure proper mounting, fit, and retention of the tire to the rim. The load and cold inflation pressure shall not exceed the recommendations as specified in this catalog or marked on the wheel / rim even though the tire may be approved for a higher load or inflation. Tire allocations and load carrying capacities for normal traffic are indicated in the catalog for the intended service and sizes. For request of increased load carrying capacities and allocations for deviated service conditions, please contact us.

TIRE / RIM SIZE SELECTION

Matching of Tubeless and Tube-Type Rims to Tires

The chart as shown below shall be used to properly match wheels / rims to a specified tire. It is applicable to only those tires used on trucks, buses, or trailers in normal highway service. The information / notes shown below were obtained from the 2008 Tire and Rim Association Yearbook. This chart shows the approved rim WIDTHS, not approved rim CONTOURS.

Approved Tire Size ⁽¹⁾	Design Rim Width	Approved Rim Widths	Tire Section Width	Minimum Dual Spacing	Tubeless	Tube-Type	Wide Base
7.50*15TR	6.00	5.50, 6.00, 6.50	8.45	9.60		x	
8.25*15TR	6.50	6.00, 6.50, 7.00	9.30	10.60		x	
9.00*15TR	7.00	6.50, 7.00, 7.50	10.20	11.60		x	
10.00*15TR	7.50	7.00, 7.50, 8.00	10.95	12.50		x	
11.00*15TR	8.00	7.50, 8.00, 8.50	11.55	13.20		x	
7.50*20	6.00	5.50, 6.00, 6.50	8.45	9.60		x	
8.25*20	6.50	6.00, 6.50, 7.00	9.30	10.60		x	
9.00*20	7.00	6.50, 7.00, 7.50	10.20	11.60		x	
10.00*20, 10.00*22	7.50	7.00, 7.50, 8.00	10.95	12.50		x	
11.0*20, 11*22, 11*24	8.00	7.50, 8.00, 8.50	11.55	13.20		x	
12.00*20, 12.00*24	8.50	8.00, 8.50, 9.00	12.40	14.10		x	
13.00*20 ⁽²⁾	9.00	9.0, 10.00	13.40	16.20		x	
14.00*20, 14.00*24 ⁽²⁾	10.00	10.00	14.75	17.70		x	
365/85R20	10.50	10.00	14.25	N/A		x	
395/85R20	11.00	10.00	15.59	N/A		x	
9R17.5HC	6.75	6.75HC	9.00	10.30	x		
10R17.5HC	7.50	6.75HC, 7.50HC	10.00	11.40	x		
8*19.5, 8*22.5	6.00	5.25, 6.00, 6.75	8.00	9.10	x		
9*22.5	6.75	6.00, 6.75, 7.50	9.00	10.30	x		
10*22.5	7.50	6.75, 7.50	10.00	11.40	x		
11*22.5, 11*24.5	8.25	7.50, 8.25	11.00	12.50	x		
12*22.5, 12*24.5	9.00	8.25, 9.00	11.80	13.50	x		
225/70R19.5	6.75	6.00, 6.75	8.90	10.00	x		
245/70R19.5	7.50	6.75, 7.50	9.76	10.98	x		
265/70R19.5	7.50	7.50, 8.25	10.31	11.61	x		
235/80R22.5	6.75	6.75, 7.50	9.17	10.31	x		
245/75R22.5	7.50	6.75, 7.50	9.76	10.98	x		
255/70R22.5	7.50	7.50, 8.25	10.04	11.30	x		
255/80R22.5	7.50	7.50, 8.25	10.04	11.30	x		
265/75R22.5	7.50	7.50, 8.25	10.31	11.61	x		
275/80R22.5	8.25	7.50, 8.25	10.87	12.24	x		
295/60R22.5	9.00	8.25, 9.00	11.50	N/A	x		
295/75R22.5	9.00	8.25, 9.00	11.73	13.19	x		
305/75R22.5	9.00	8.25, 9.00	12.01	13.50	x		
305/85R22.5	9.00	8.25, 9.00	12.01	13.50	x		
315/80R22.5	9.00	9.00, 9.75	12.28	13.82	x		
335/65R22.5	9.75	9.00, 9.75, 10.00	13.15	N/A	x		
275/80R24.5	8.25	7.50, 8.25	10.87	12.24	x		
285/75R24.5	8.25	8.25	11.14	12.52	x		
15*22.5	11.75	11.75, 12.25	15.30	N/A			x
18*22.5	14.00	13.00, 14.00	18.00	N/A			x
385/65R22.5	11.75	11.75, 12.25	15.31	N/A			x
425/65R22.5	12.25	11.75, 12.25, 13.00	16.61	N/A			x
445/50R22.5	14.00	14.00	17.52	N/A			x
445/65R22.5	13.00	12.25, 13.00, 14.00	17.48	N/A			x
455/55R22.5	14.00	14.00	17.80	N/A			x

For additional sources of information or on tire sizes not shown you may refer to the T&RA, ETRTO, or tire manufacturer manuals.

The tire section width and minimum dual spacing values shown are based upon the specified design rim width. For the other rim contours, the tire section width and minimum dual spacing will change by 0.1" for each 1/4" change in rim width.

When chains are used on tires, additional spacing beyond the minimum dual spacing values shown may be required.

⁽¹⁾ An "*" in the tire size denotes both radial and bias tires are available while an "R" denotes radial tires only.
⁽²⁾ For 13.00*20, 14.00*20, and 14.00*24 tires: These tires have restricted speed usage.
 Refer to the 2008 T&RA Yearbook for tires used on special bus, mobile home, or mining / logging applications.

WHEEL AND RIM MARKINGS

Identification Required by FMVSS 120

Since 1977, Federal Motor Vehicle Safety Standard FMVSS 120 has been used to specify the tire / rim selection and rim marking requirements. This standard requires the following markings for single-piece and multi-piece rim constructions:

- a designation which indicates the source of the rim's published nominal dimensions (T = T&RA, E = ETRTO)
- rim size designation (22.5x8.25)
- DOT symbol
- a designation that identifies the manufacturer
- date of manufacture

Tubeless Rims

Beginning in January 1989, Hayes Lemmerz identification stamps are located primarily on the weather-side of the rim under the tire bead seat. In addition to the markings specified in FMVSS 120, the following stamps may be present:

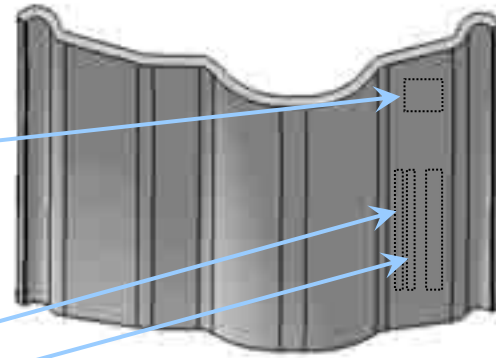
- rim part number
- country of manufacture
- shift of manufacture

Pre-1989 production, the stamps were on multiple lines positioned perpendicular to the rim circumference.

1989 and newer, the stamps are on two lines positioned parallel to the rim circumference.

Example

USA T DOT B 070108 12029
22.5X8.25 DVL HAYES LEMMERZ



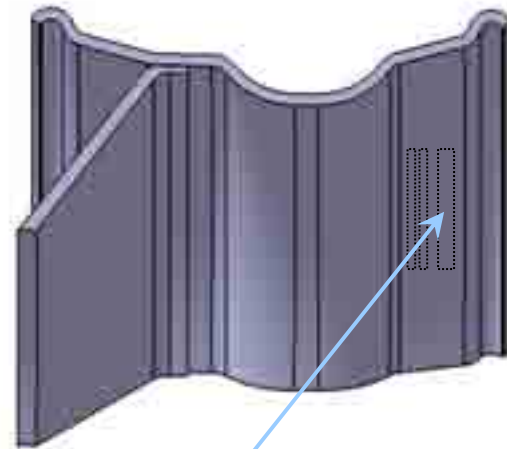
Tubeless Disc Wheels

In specific cases for disc wheels, some stamps maybe located on either side of the disc mounting surface. In addition to the rim markings, the following stamps may be present:

- wheel part number
- country of manufacture
- shift and date of assembly
- maximum load rating (lbs)
- maximum inflation (psi)

Example

1A 070108 MAX LOAD 7400 LBS 120 PSI MAX COLD 90262 CENTRUMOUNT



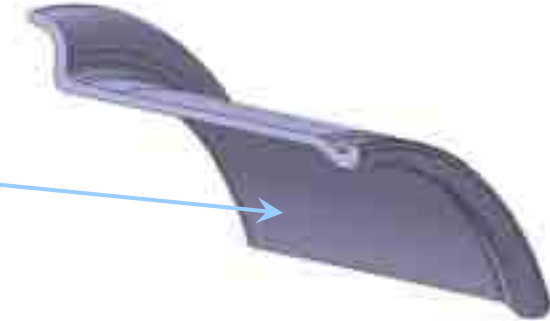
WHEEL AND RIM MARKINGS

Tube-Type Rims

The markings for tube-type rims are stamped on the inside diameter (weather-side) of the rim base.

Example

COUNTRY T DOT
070108
24x9.0 LW
24x8.5 M
HL

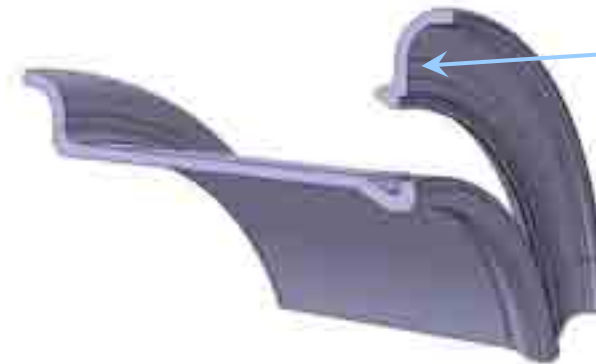


Two-Piece Rims

The stamps for the split side ring are located on the outside (weather-side) of the side ring.

Example

HL 070108 COUNTRY R 24x-7.5-8.0-9.0 LB LW



Three-Piece Rims

The stamps for the solid flange are located on the outside (weather-side) of the flange.

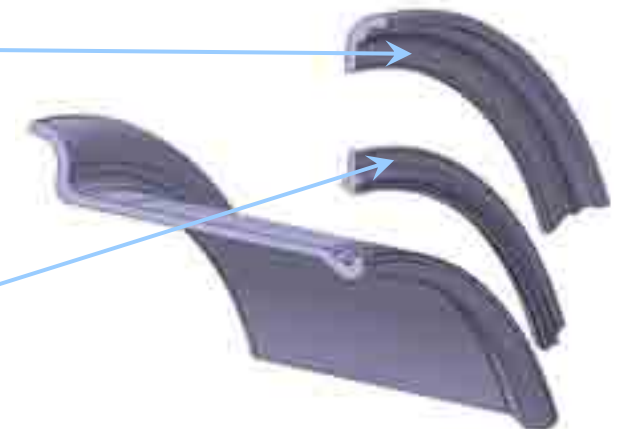
Example

HL 070108 COUNTRY F 24x-7.5-8.0 M

The stamps on the split lock ring are located on the outside (weather-side) of the ring.

Example

HL 070108 COUNTRY LR 24x-7.5-8.5-10.0 M



Also on the split lock ring, there is a stamp located on the inside (tire-side) of the ring that reads "**Danger Wrong Side Out**" and "**Do Not Inflate**". On some types, the split lock ring has the size and type stamped inside of the ring, which cannot be seen when mounted.

WHEEL AND RIM FINISHES

Standard Finishes

Wheels and demountable rims (both tubeless and tube-type) are supplied with Electro-Deposition Primer (EDP). It is a glossy, uniform finish, which provides excellent basic corrosion protection. Corrosion resistance performance in salt spray tests (ASTM B117) for our EDP finish exceeds 336 hours protection.

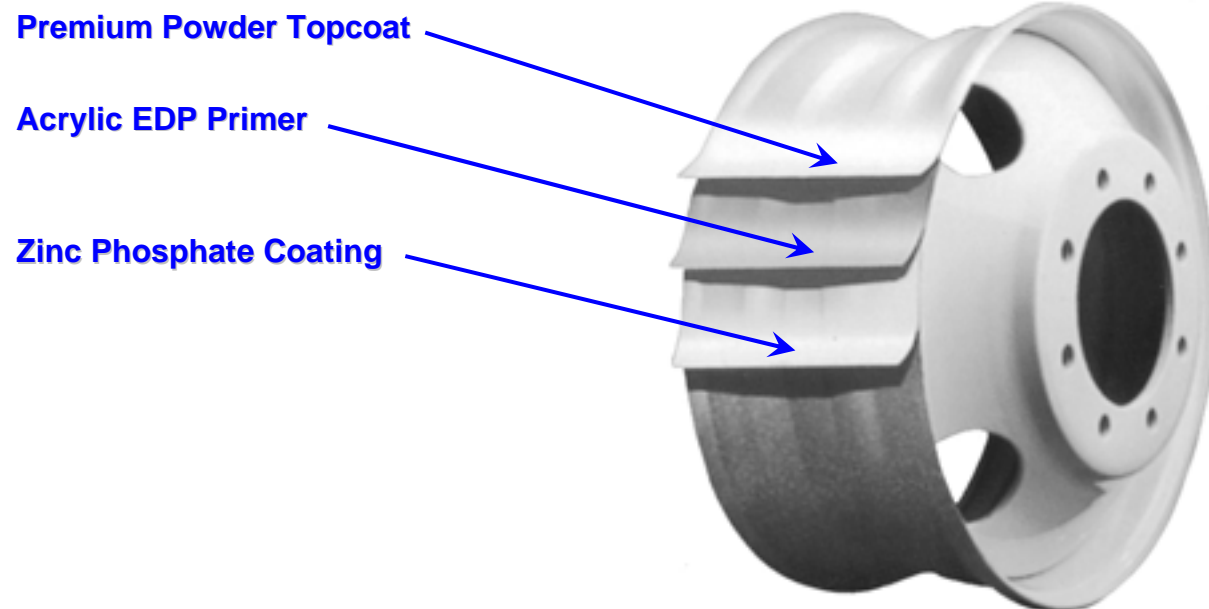
Primer-coated wheels are designated by suffix "E" applied to the wheel part number (example 90541E).

Color	Suffix	
White Primer *	E	* Topcoat paint not required
Black Primer **	EBK	** Must be topcoat painted (customer)
Topcoat White ***	TW	*** Do NOT re-topcoat
Topcoat Silver ***	TS	**** Offered on selected products only
Topcoat Gray ****	TG	

Premium Finishes

Get spectacular appearance while saving money on cleaning and repainting with our **Premium Powder Topcoat** painted wheels and rims. Colors available include white, gray, black, and custom colors.

Triple protected with a phosphate coating, EDP primer and powder paint, topcoat painted wheels and rims have a durable baked-on finish that provides superior corrosion protection. In salt spray tests (ASTM B117) our powder topcoat finish exceeds 2,000 hours of corrosion protection. That's over five times longer than the standard EDP finish.



WHEEL AND RIM FINISHES

Premium Finishes

To order, specify **Premium Powder Topcoat** by replacing part number "E" suffix with one of the following (example 90541E becomes 90541W):

Color	Suffix	
White	W	
Gray	G	
Black	BK	
Silver	SG	
Custom *	Inquire	* Available with liquid enamel topcoat

Contact your sales representative for information or a quotation. Additional colors available upon request.

Recommendations for Topcoat Paint on Standard Finish Wheels and Rims

Hayes Lemmerz standard primed truck wheels and rims are coated with cathodic acrylic Electro-Deposition Primer (EDP). Though resistant to corrosion and sunlight, the EDP may be successfully topcoat painted to enhance protection and appearance, if you follow these practices:

- Make sure that the topcoat is fully cured before mounting the wheel or rim on a vehicle. Uncured paint causes wheel or rim fasteners to lose torque which causes wheels or rims to break, or even separate from the vehicle. Loose fasteners can also lead to damaged hubs and/or brake drums. Since paint curing times vary, see your paint supplier's instructions for the proper curing time.
- Hayes Lemmerz cannot assure success for every variation of paint applied over our primer, but lab testing shows excellent adhesion for:
 - Vinyl air-dry paints
 - Conventional alkyd / acrylic with an isocyanate hardener
 - Nitrocellulose alkyd lacquers
- Do not apply too much paint to wheel mounting areas. The maximum allowable thickness (primer and topcoat combined) is 3 mils. You can measure it with a paint gauge, available from paint and paint equipment suppliers. Thicker coatings compress under the fasteners, which causes lost torque, leading to broken or damaged components.
- On tube-type rim assemblies, we recommend that the base and side ring be assembled before top-coating. This helps assure proper rim component seating, without paint interference.

**For the Ultimate Finish and Performance ...
specify our Premium Powder Topcoat**

WHEEL MOUNTING SYSTEMS

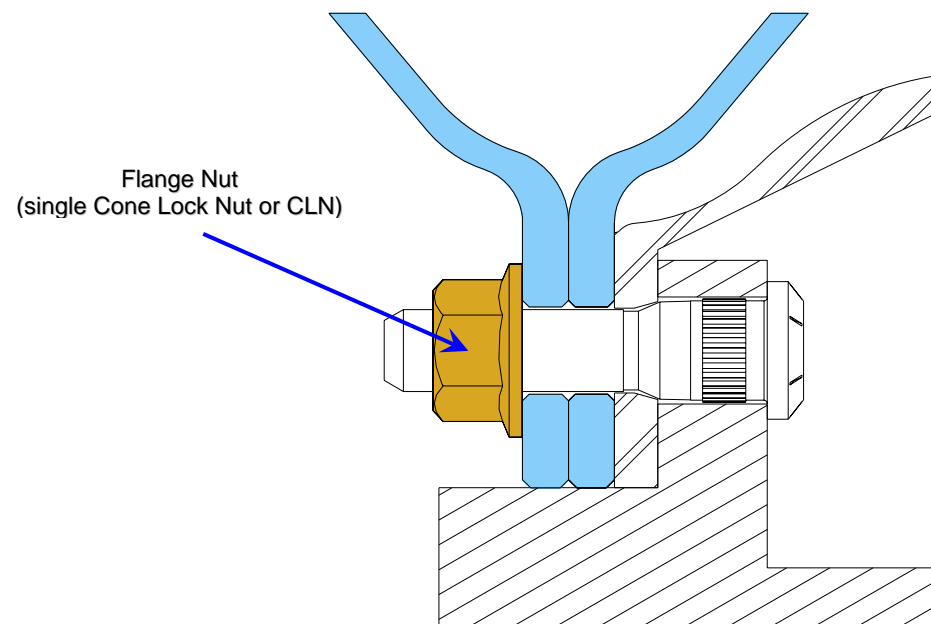
Types of Wheel Mounting Systems

There are three basic types of wheel mounting systems commonly used on commercial trucks, trailers, and buses in North America. These consist of (1) hub piloted, (2) stud piloted, and (3) spokes wheels / demountable rims.

It is important to understand which mounting system is applicable for the vehicle when ordering and servicing the wheel, rim, or mating components.

CentruMount® Hub Piloted Wheels

Hub piloted disc wheels are designed to center on the hub at the center hole (bore) of the wheel. The center hole locates the wheel on pilots built into the hub. Hub piloted wheels are used with flange nuts (one-piece or two-piece) which contact the disc face around the bolt hole. Only one nut on each stud is used to fasten single or dual wheels to a vehicle. All stud and nut threads are right-hand. Hub piloted wheels have straight-through bolt holes (no ball seat or spherical countersink), which provides a visual way of identifying them.



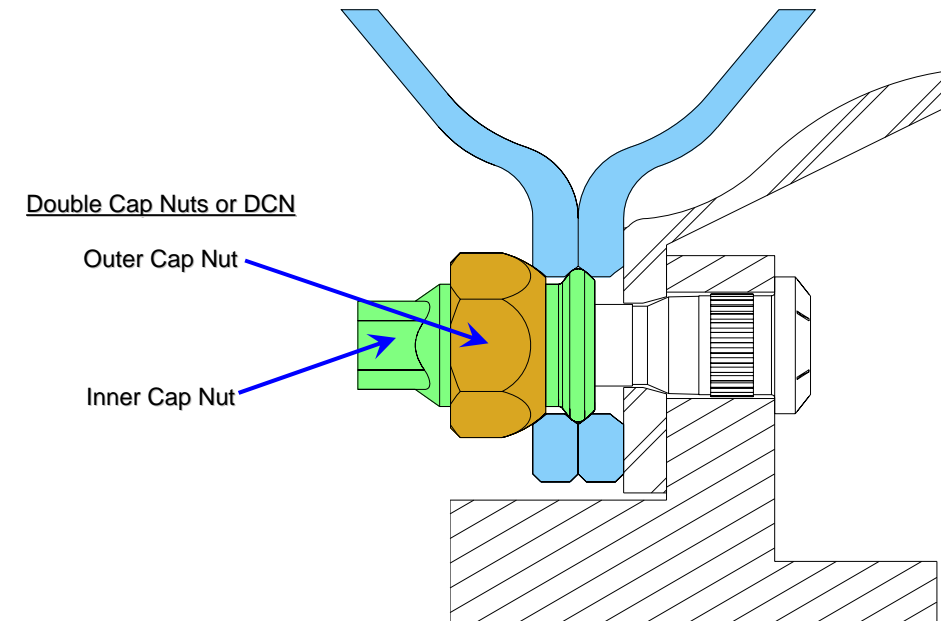
Usage of hub-piloted mounting may provide potential for cost reduction through maintenance savings and superior performance. Positive hub piloting and cone lock clamping leads to improved wheel life. There are no inner wheel nuts to freeze on or to complicate retorquing. Eight nuts per wheel, dual or single, all with right hand threads. Distinctive four hand-hole design makes *CentruMount*® 8-bolt wheels easy to identify.

Hub-piloting technology also is available in a ten bolt hole version, offering similar advantages in simplified maintenance, longer wheel life, and reduced parts inventory. *CentruMount*® 10-bolt is built in compliance with ISO standards for universal OEM truck and trailer applications.

WHEEL MOUNTING SYSTEMS

CentruSteel® Stud Piloted Wheels

Stud piloted disc wheels are designed to be centered by the nuts on the studs. The seating action of the ball seat nuts in the ball seat bolt holes (spherical chamfers) centers the wheels. Stud piloted dual wheels require inner and outer cap nuts. For a front or single wheel, single cap nuts are used. Dual wheels use Double Cap Nuts (DCN). Fasteners with left-hand threads are used on the left side of the vehicle and those with right-hand threads are used on the right side of the vehicle.



CAUTION - CORRECT COMPONENTS MUST BE USED!!!

It is important to note that some hub piloted and stud piloted wheels may have the same bolt circle pattern. Therefore, they could mistakenly be interchanged. Each mounting system requires its correcting mating parts. It is important that the proper components are used for each type of mounting, and that the wheels are fitted to the proper hubs.



If hub-piloted wheel components (hubs, wheels, fasteners) are mixed with stud piloted wheel components, loss of torque, broken studs, cracked wheels and possible wheel loss can occur since these parts are not designed to work together.

Mixing hub piloted and stud piloted wheels will not allow the inner cap nut to fit into the inner wheel and will result in the inner cap nut interfering with the outer wheel.

Ball seat, stud piloted wheels should not be used with flange nuts because they have larger bolt holes and do not have sufficient area near the bolt hole to support the flange nut. Slippage may occur. Also, the center hole is too large to center the wheel.

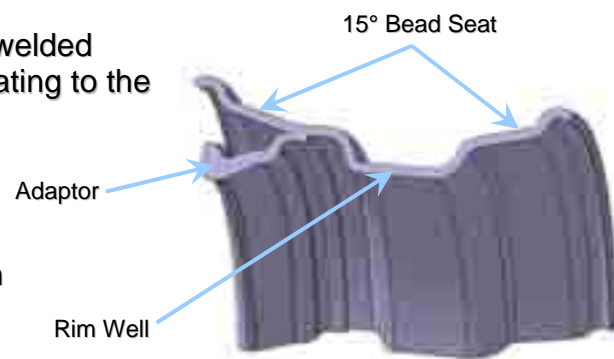
RIM MOUNTING SYSTEMS

Spoke Wheels / Demountable Rims

These types of mounting systems use rim clamps to secure rims (which have no center disc) to a hub or cast spoke wheel which may have 3, 5, or 6 spokes. The rim clamps, fastened by hex nuts, wedge the rim onto the cast spoke wheel. There are wheel designs with different numbers of rim clamps and various shapes. Each spoke wheel requires rim clamps designed for the specific spoke wheel rim and spacer combination. Dual rims are mounted using a spacer band which holds the two rims apart and provides proper dual spacing for the tires.

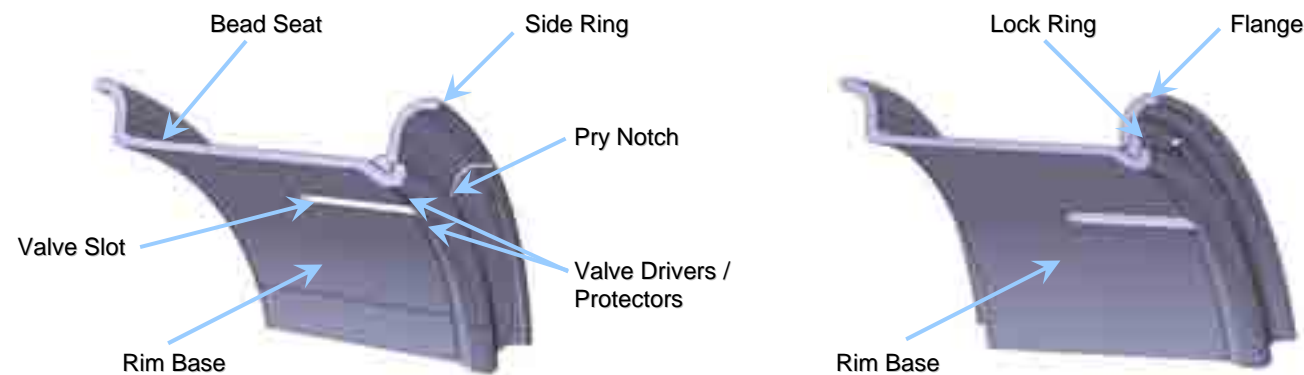
Demountable Rim Features (Tubeless)

- Standard 15° tapered bead seats tubeless rim welded with an adaptor which provides a surface for mating to the bevel of a cast spoke wheel.
- Heavy-duty adaptor benefits:
 - Interchange with tube-type rim
 - Increases rim life
 - Reduces adaptor chording and distortion
 - Improves clamp / nut retention
 - Reduces wheel / rim slippage



Demountable Rim Features (Tube-Type)

- Two-piece rims (LW-type, LB-type, or FL-type) consist of a rim base and side ring.
 - One split side ring is used for ease of tire mounting.
 - LW rims are recommended for heavy-duty operating conditions, accepts higher load-range tires and are interchangeable with short (S) offset tubeless demountable rims.
- Three-piece rims (M-type) consist of a rim base, flange, and lock ring.
 - One solid M-flange and one split lock ring allow higher air pressure capability and continuous tire side wall support.
 - M-type rims are designed for heavier duty tires and use in on/off highway or mixed service applications.



CAUTION!!! The safety tab on the lock ring must face outward when assembling an M-type rim. Otherwise, the parts will not fit tightly together and may separate under inflation which could result in serious injury or death. If the warning stamp **“Danger Wrong Side Out”** and **“Do Not Inflate”** can be read on rims manufactured after 01/01/91, the lock ring is installed backward.



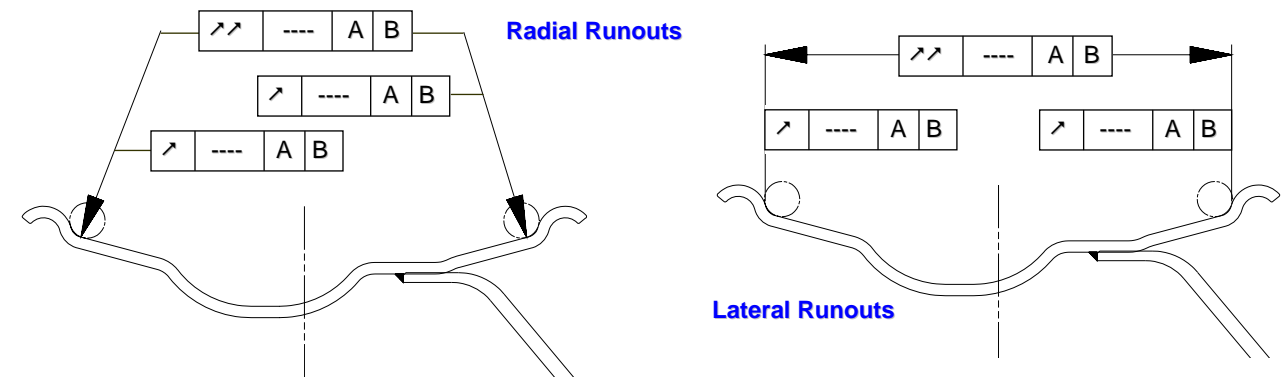
UNIFORMITY AND LOW POINT MARKING

Ride Quality

One of the most important aspects of a vehicle (truck, bus, etc.) for a customer is the degree of “ride quality.” A truck with a high degree of ride quality will be smooth and comfortable, despite the condition of the driving surface. The term “ride” is associated with the wide range of vibrations felt by the driver either physically, visually, or audibly (noise). There are three main contributors to vibration in a vehicle: road conditions, non-uniformities in the rotating suspension components, and the vehicle design attributes. These non-uniformities in the tire / wheel assembly and wheel end components (brakes, hubs, etc.) may include mass imbalance, radial force variation, tire stiffness variation, or component uniformity / runout.

Wheel Uniformity

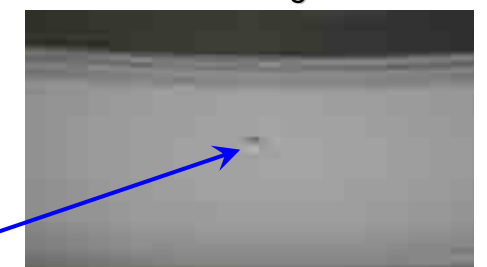
There are three main characteristics in a wheel associated with uniformity: radial, lateral, and harmonic runouts. The effects of each can affect the vibration in a vehicle. Radial runout is the deviation from a perfect circle. Lateral runout is the sideways variation of the rim. Both rim bead seats are measured simultaneously with the resultant typically reported as an average. The first harmonic runout is that component of the total average radial runout which repeats itself in a sinusoidal curve once per revolution. This is the runout one would get by mounting a wheel off center with a perfectly uniform tire. The diagrams below show the respective locations for correctly measuring radial / lateral runouts referenced in SAE J393 (JUL2001).



As part of a multi-million dollar modernization at Hayes Lemmerz, an advanced uniformity gauging system has been installed to measure wheel uniformity (runout) on steel disc wheels. The computerized system measures the individual and average radial / lateral runouts as well as average radial first harmonic to determine compliance to print and customer requirements. We measure 100% of the wheels prior to finish and shipment.

Low Point Marking

Matching a wheel's low point with a tire's high point of the first harmonic of radial force variation minimizes the force of road impact at the tire's footprint. Match mounting minimizes vehicle vibration and wear, results in improved drive, ride and comfort, and less damage to equipment, cargo, and vehicle components. As introduced by Hayes Lemmerz, the low point of the first harmonic radial runout is marked on all tubeless disc wheels with a “dimple” stamped into the visual side of the rim bead seat for ease of identification. Low point marking is also referenced in SAE J2133 (JUN2001).



DUAL WHEEL / RIM SPACING

CAUTION!!!

It is necessary in selecting wheel / rim offsets to insure proper tire spacing, body and chassis clearance, and overall width. If dualing is involved, minimum dual spacing must be provided as shown to give proper clearance between tires. Minimum dual spacing data is shown with approved rim and tire combinations.

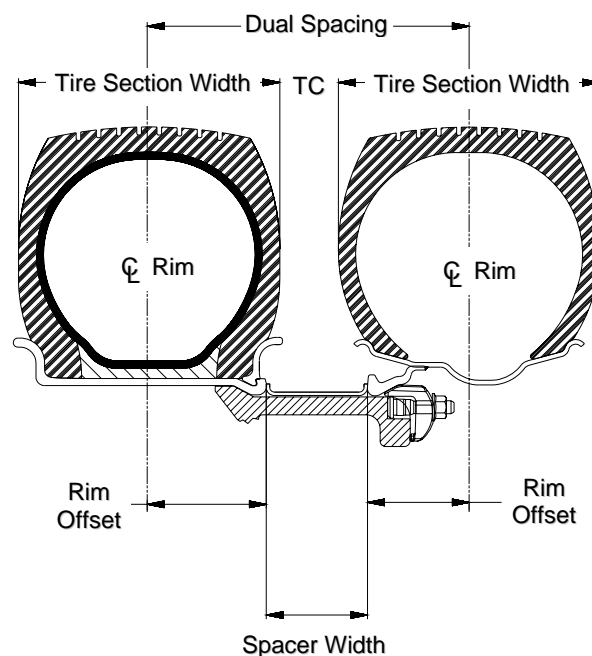


For disc wheels, to determine the dual spacing dimension simply add the two wheel offsets. The wheel offset dimensions for specific wheels are given in the application tables.

For demountable rims, to determine the dual spacing dimension simply add the two rim offsets and the spacer width (see diagram below). The table shown below gives the standard rim offsets for demountable rims (tubeless and tube-type).

For both disc wheels and demountable rims, refer to the *Tire / Rim Size Selection* page for minimum dual spacing recommendations as per T&RA standards.

Tubeless		Tube-Type	
Rim Width	Rim Offset	Rim Width	Rim Offset
6.75"	3.90"	6.50"	3.715"
7.50"	4.26"	7.50"	4.258"
8.25" L	4.75"	7.50" M	4.750"
		8.00"	4.496"
		8.50" M	5.375"
		9.00"	5.123"
		10.00" M	6.312"



The clearance between tires (TC = tire clearance) may be calculated by subtracting the width of one tire section from the dual spacing dimension. The tire section width dimension may be obtained by referring to the tire manufacturer's data book.

Note: demountable rims are not all the same offset. Use the proper size tires, rims, and spacers, and clamps to provide dual tire and vehicle clearance. Vehicle clearances shall be determined at the vehicle manufacturer level.

The outside dual wheel offset and rim width directly affects the overall width of the vehicle's running gear (one side to the other). The maximum overall width is set by state and federal law. Inboard clearance to the vehicle is directly affected by the inner dual wheel rim width and offset. See *Tire / Rim Size Selection* page for design rim width, approved rim widths, tire section width, and minimum dual spacing information for selected tire sizes.

STEEL DISC WHEELS



STEEL DISC WHEELS TUBELESS 15° DROP CENTER

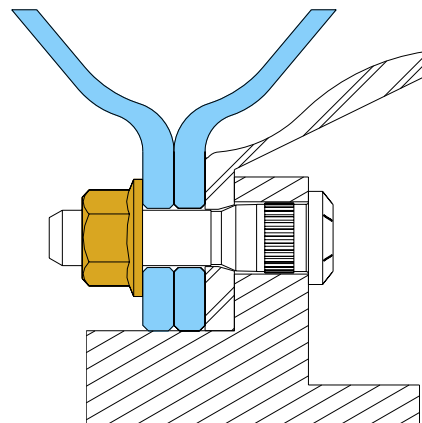
CentruMount® - 8 Bolt - HUB PILOTED Mountings

8 bolt hole • 165.10mm (6.500") bolt circle • 121.11mm (4.768") center hole

Part Number	Size	Wheel Offset	Disc Thickness	Approximate Weight	Hand Holes	Maximum Load Rating	Maximum Inflation	Recommended Valve
10008EBK	17.5" x 6.75"	-0.50"	0.505"	65 lbs.	0	6,005 lbs.	125 psi	TR-500
91816EBK	17.5" x 6.75"	-0.31"	0.374"	49 lbs.	0	4,805 lbs.	125 psi	TR-500
91818EBK	17.5" x 6.75"	0.19"	0.374"	49 lbs.	0	4,805 lbs.	125 psi	TR-500

8 bolt hole • 275.00mm (10.827") bolt circle • 221.11mm (8.705") center hole

Part Number	Size	Wheel Offset	Disc Thickness	Approximate Weight	Hand Holes	Maximum Load Rating	Maximum Inflation	Recommended Valve
10013TW ⁽¹⁾	17.5" x 6.75"	5.60"	0.438"	65 lbs.	4	6,500 lbs.	125 psi	TR-574-G29
91831TW ⁽¹⁾	19.5" x 6.75"	5.60"	0.432"	58 lbs.	4	5,000 lbs.	115 psi	TR-570-E14
90614E	22.5" x 7.50"	6.50"	0.425"	76 lbs.	4	6,610 lbs.	120 psi	TR-572
88884E	22.5" x 8.25"	6.62"	0.425"	77 lbs.	4	7,400 lbs.	120 psi	TR-573
89920E	22.5" x 8.25"	6.62"	0.495"	90 lbs.	4	8,000 lbs.	120 psi	TR-573
88790E	24.5" x 8.25"	6.62"	0.432"	85 lbs.	4	7,400 lbs.	120 psi	TR-573
89851E	24.5" x 8.25"	6.62"	0.495"	94 lbs.	4	8,000 lbs.	120 psi	TR-573



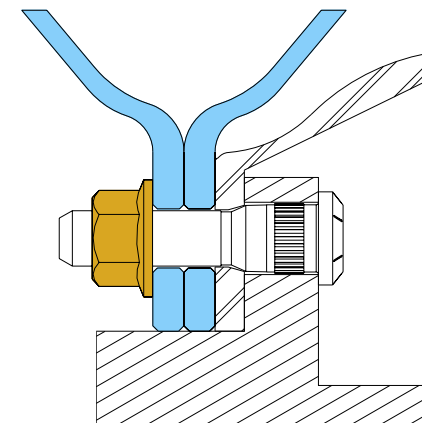
The standard tolerance for the center hole diameter of the wheels shown above is $\pm 0.10\text{mm}$ ($\pm 0.004"$).
⁽¹⁾ For 10013TW and 91831TW: Fits on ISO hub backup diameter for 8-hole 275mm systems. Do not use with CentruMount®-8 brake drums.

STEEL DISC WHEELS TUBELESS 15° DROP CENTER

CentruMount® - 10 Bolt - HUB PILOTED Mountings

10 bolt hole • 285.75mm (11.250") bolt circle • 220.09mm (8.665") center hole

Part Number	Size	Wheel Offset	Disc Thickness	Approximate Weight	Hand Holes	Maximum Load Rating	Maximum Inflation	Recommended Valve
91840TW	19.5" x 7.50"	6.40"	0.432"	65 lbs.	5	6,700 lbs.	120 psi	TR-546 ⁽¹⁾
10038E	22.5" x 7.50"	6.50"	0.425"	76 lbs.	5	7,100 lbs.	120 psi	TR-573
90631E	22.5" x 7.50"	6.50"	0.425"	78 lbs.	2	7,100 lbs.	120 psi	TR-573
10049E	22.5" x 8.25"	6.62"	0.495"	82 lbs.	5	8,000 lbs.	120 psi	TR-573
90541E	22.5" x 8.25"	6.62"	0.425"	78 lbs.	2	7,400 lbs.	120 psi	TR-573
90273E	22.5" x 8.25"	6.62"	0.425"	77 lbs.	4	7,400 lbs.	120 psi	TR-573
90262E	22.5" x 8.25"	6.62"	0.425"	76 lbs.	5	7,400 lbs.	120 psi	TR-573
90260E	22.5" x 8.25"	6.62"	0.495"	84 lbs.	2	8,000 lbs.	120 psi	TR-573
10041TW	22.5" x 9.00"	⁽²⁾ 5.77"	0.517"	94 lbs.	5	10,000 lbs.	130 psi	TR-573-E17
10047TW	22.5" x 9.00"	7.00"	0.588"	104 lbs.	5	10,000 lbs.	130 psi	TR-573-E17
90542E	24.5" x 8.25"	6.62"	0.432"	86 lbs.	2	7,400 lbs.	120 psi	TR-573
90275E	24.5" x 8.25"	6.62"	0.432"	85 lbs.	4	7,400 lbs.	120 psi	TR-573
90263E	24.5" x 8.25"	6.62"	0.432"	84 lbs.	5	7,400 lbs.	120 psi	TR-573
90261E	24.5" x 8.25"	6.62"	0.495"	97 lbs.	2	8,000 lbs.	120 psi	TR-573



The standard tolerance for the center hole diameter of the wheels shown above is $\pm 0.10\text{mm}$ ($\pm 0.004"$).

⁽¹⁾ For 91840: Bend valve to fit for valve chuck accessibility.
⁽²⁾ For 10041: The corresponding WHEEL INSET is 5.25".

STEEL DISC WHEELS TUBELESS 15° DROP CENTER

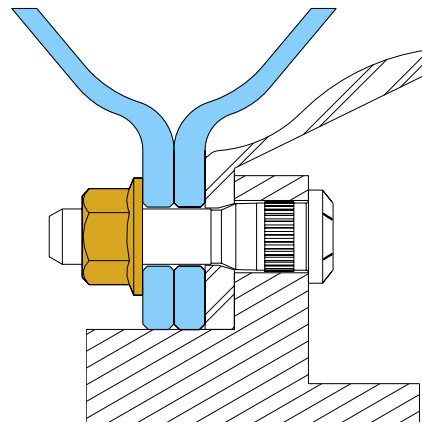
CentruMount® - 10 Bolt - HUB PILOTED Mountings

10 bolt hole • 285.75mm (11.250") bolt circle • 220.09mm (8.665") center hole

Part Number	Size	Wheel Offset	Disc Thickness	Approximate Weight	Hand Holes	Maximum Load Rating	Maximum Inflation	Recommended Valve
10073SG ⁽¹⁾	22.5" x 8.25"	6.62"	0.425"	74 lbs.	10	7,400 lbs.	120 psi	TR-573
10076SG ⁽¹⁾	24.5" x 8.25"	6.62"	0.432"	82 lbs.	10	7,400 lbs.	120 psi	TR-573

10 bolt hole • 335.00mm (13.189") bolt circle • 281.10mm (11.067") center hole

Part Number	Size	Wheel Offset	Disc Thickness	Approximate Weight	Hand Holes	Maximum Load Rating	Maximum Inflation	Recommended Valve ⁽²⁾
2920086TW	22.5" x 7.50"	6.49"	0.458"	78 lbs.	10	6,930 lbs.	120 psi	V3-20-4
2920072TW	22.5" x 8.25"	6.69"	0.497"	84 lbs.	10	7,810 lbs.	120 psi	V3-20-4

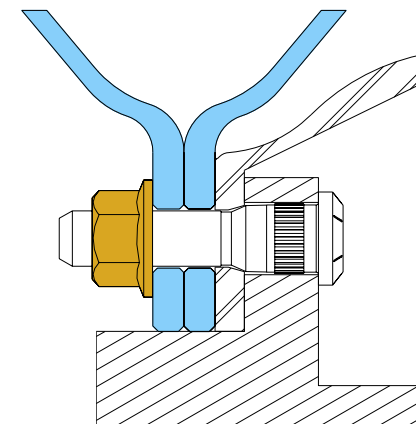


STEEL DISC WHEELS TUBELESS 15° DROP CENTER

CentruMount® - 10 Bolt - SPECIAL BUS Mountings

10 bolt hole • 285.75mm (11.250") bolt circle • 220.19mm (8.669") center hole

Part Number	Size	Wheel Offset	Disc Thickness	Approximate Weight	Hand Holes	Maximum Load Rating	Maximum Inflation	Recommended Valve
87934E	22.5" x 8.25"	6.62"	0.425"	79 lbs.	5	7,400 lbs.	120 psi	TR-573
91720E	24.5" x 8.25"	6.62"	0.432"	88 lbs.	5	7,400 lbs.	120 psi	TR-573



New Stylized Wheels

CentruStyle™

Increased Vent Area for Improved Brake Cooling

Distinctive Styling

Weight Reduction → Improved Fuel Economy

The standard tolerance for the center hole diameter of the wheels shown above is $\pm 0.10\text{mm}$ ($\pm 0.004"$).

⁽¹⁾ For 10073SG and 10076SG: These wheels are powder topcoat silver (SG).

⁽²⁾ For 2920072TW and 2920086TW: These wheels require a specific valve per ETRTO. There is no T&RA equivalent.

The standard tolerance for the center hole diameter of the wheels shown above is $\pm 0.13\text{mm}$ ($\pm 0.005"$).

STEEL DISC WHEELS TUBELESS 15° DROP CENTER

CentruSteel® - 10 Bolt - STUD PILOTED Mountings

10 bolt hole • 285.75mm (11.250") bolt circle • 221.87mm (8.735") center hole

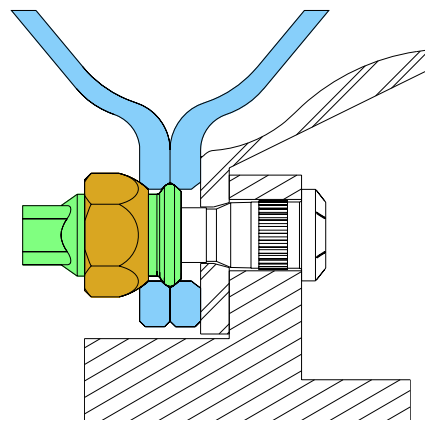
Part Number	Size	Wheel Offset	Disc Thickness	Approximate Weight	Hand Holes	Maximum Load Rating	Maximum Inflation	Recommended Valve
87892E	22.5" x 7.50"	6.50"	0.425"	76 lbs.	5	7,100 lbs.	120 psi	TR-572
87893E	22.5" x 7.50"	6.50"	0.425"	78 lbs.	2	7,100 lbs.	120 psi	TR-572
87904E	22.5" x 8.25"	6.62"	0.425"	76 lbs.	5	7,400 lbs.	120 psi	TR-573
87905E	22.5" x 8.25"	6.62"	0.425"	78 lbs.	2	7,400 lbs.	120 psi	TR-573
89921E	22.5" x 8.25"	6.62"	0.495"	90 lbs.	2	8,000 lbs.	120 psi	TR-573
87896E	24.5" x 8.25"	6.62"	0.432"	84 lbs.	5	7,400 lbs.	120 psi	TR-573
87897E	24.5" x 8.25"	6.62"	0.432"	86 lbs.	2	7,400 lbs.	120 psi	TR-573
89922E	24.5" x 8.25"	6.62"	0.495"	97 lbs.	2	8,000 lbs.	120 psi	TR-573

10 bolt hole • 285.75mm (11.250") bolt circle • 221.89mm (8.736") center hole

Part Number	Size	Wheel Offset	Disc Thickness	Approximate Weight	Hand Holes	Maximum Load Rating	Maximum Inflation	Recommended Valve
10048TW	22.5" x 9.00"	7.00"	0.588"	107 lbs.	2	10,000 lbs.	130 psi	TR-573-E17

10 bolt hole • 222.25mm (8.750") bolt circle • 165.35mm (6.510") center hole

Part Number	Size	Wheel Offset	Disc Thickness	Approximate Weight	Hand Holes	Maximum Load Rating	Maximum Inflation	Recommended Valve
91834TW	17.5" x 6.75"	6.19"	0.418"	62 lbs.	2	6,500 lbs.	125 psi	TR-574-E26



STEEL WIDE BASE WHEELS



The standard tolerance for the center hole diameter of the wheels shown above is $\pm 0.25\text{mm}$ ($\pm 0.010"$).

STEEL WIDE BASE WHEELS

HUB PILOTED Mountings

10 bolt hole • 285.75mm (11.250") bolt circle • 220.09mm (8.665") center hole

Part Number	Size	Outset (pos.)	Inset (neg.)	Approximate Weight	Hand Holes	Disc Position	Maximum Load Rating	Maximum Inflation	Recommended Valve ⁽¹⁾
10034TW	22.5" x 12.25"	4.54"	4.00"	111 lbs.	5	1	11,400 lbs.	125 psi	TR-500
10035TW	22.5" x 12.25"	5.29"	4.75"	111 lbs.	5	1	11,400 lbs.	125 psi	TR-574-E26
10039TW	22.5" x 13.00"	0.50"	0"	119 lbs.	5	2	11,000 lbs.	110 psi	TR-574-E26
10043TW	22.5" x 13.00"	3.12"	2.62"	119 lbs.	5	2	11,000 lbs.	110 psi	TR-500
10059TW	22.5" x 13.00"	4.84"	4.32"	121 lbs.	5	1	11,700 lbs.	130 psi	TR-574-E26
10056TW	22.5" x 13.00"	5.80"	5.25"	117 lbs.	5	1	11,400 lbs.	125 psi	TR-574-E26
10027TW ⁽²⁾	22.5" x 14.00"	2.00"	⁽³⁾ ---	125 lbs.	0	3	11,000 lbs.	125 psi	TR-575 or TR-570-E14
10057TW	22.5" x 14.00"	2.00"	⁽³⁾ ---	125 lbs.	0	3	11,000 lbs.	125 psi	TR-575 or TR-570-E14
10031TW	22.5" x 14.00"	⁽³⁾ ---	0"	125 lbs.	0	3	12,300 lbs.	120 psi	TR-575 or TR-570-E14

STUD PILOTED Mountings

10 bolt hole • 285.75mm (11.250") bolt circle • 221.87mm (8.735") center hole

Part Number	Size	Outset (pos.)	Inset (neg.)	Approximate Weight	Hand Holes	Disc Position	Maximum Load Rating	Maximum Inflation	Recommended Valve ⁽¹⁾
10032TW	22.5" x 12.25"	4.54"	4.00"	112 lbs.	2	1	11,400 lbs.	125 psi	TR-500
10033TW	22.5" x 12.25"	5.29"	4.75"	112 lbs.	2	1	11,400 lbs.	125 psi	TR-574-E26
10042TW	22.5" x 13.00"	0.50"	0"	120 lbs.	2	2	11,000 lbs.	110 psi	TR-574-E26
10036TW	22.5" x 13.00"	3.12"	2.62"	120 lbs.	2	2	11,000 lbs.	110 psi	TR-500
10060TW	22.5" x 13.00"	4.83"	4.32"	121 lbs.	5	1	11,000 lbs.	130 psi	TR-574-E26
10070TW	22.5" x 14.00"	2.00"	⁽³⁾ ---	125 lbs.	0	3	11,000 lbs.	125 psi	TR-575 or TR-570-E14

HEAVY DUTY STUD Mountings

10 bolt hole • 335.00mm (13.189") bolt circle • 270.51mm (10.650") center hole

Part Number	Size	Outset (pos.)	Inset (neg.)	Approximate Weight	Hand Holes	Disc Position	Maximum Load Rating	Maximum Inflation	Recommended Valve ⁽¹⁾
10044TW	22.5" x 13.00"	⁽³⁾ ---	6.12"	122 lbs.	0	4	10,210 lbs.	110 psi	TR-570
10045TW	22.5" x 13.00"	⁽³⁾ ---	6.12"	123 lbs.	0	4	12,500 lbs.	125 psi	TR-570

All Wide Base steel wheels are topcoat painted white. Customer colors are available upon request.

⁽¹⁾ The recommended valves listed for the 12.25" and 13.00" rim sizes are for the INSET position.

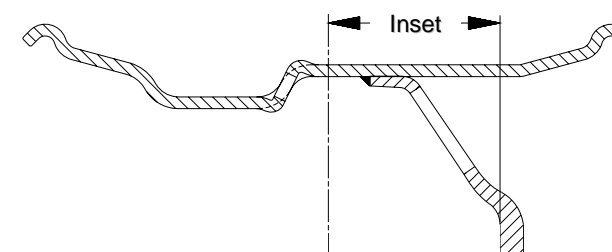
⁽²⁾ For 10027TW: Cautionary stamp provided for N-spindle applications.

⁽³⁾ Wheel not intended to be used in this position.

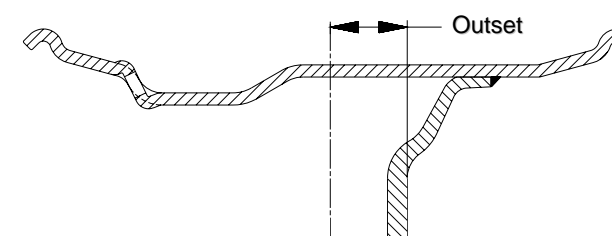
STEEL WIDE BASE WHEELS



Disc Position 1



Disc Position 3



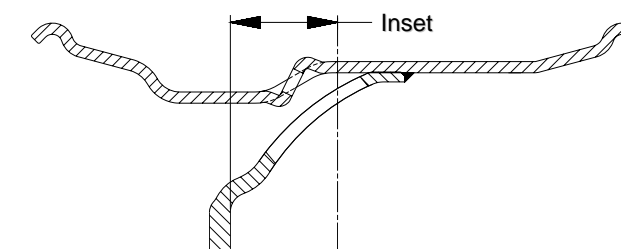
Special Note

When the centerline of the rim is **inboard** of the mounting surface, the distance between the rim centerline and the mounting surface is defined as the **INSET**.

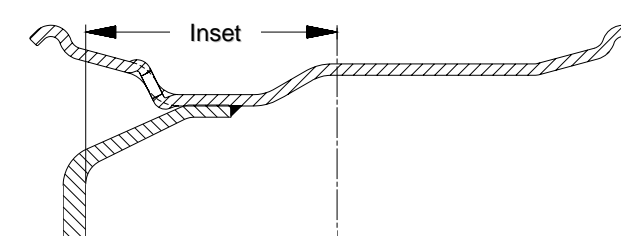
When the centerline of the rim is **outboard** of the mounting surface, the distance between the rim centerline and the mounting surface is defined as the **OUTSET**.



Disc Position 2



Disc Position 4



WIDE BASE Steel Wheels offer these Advantages and More...!!!

WEIGHT SAVINGS

Ideal for weight sensitive applications (up to 166 lbs. per axle for tubeless dual replacement applications).

MORE PAYLOAD and BETTER FUEL ECONOMY

Less weight = more revenue producing payload and better fuel economy!!

LESS TIRE WEAR

For dual replacement applications, there is better road contact with the wider tire, resulting in less tire wear!!

HIGHER LOAD APPLICATIONS

With load ratings reaching up to 12,500 pounds, you can be sure these wheels will carry the load!!

ECONOMICAL

Less expensive than comparable aluminum wide base wheels

STEEL DEMOUNTABLE RIMS



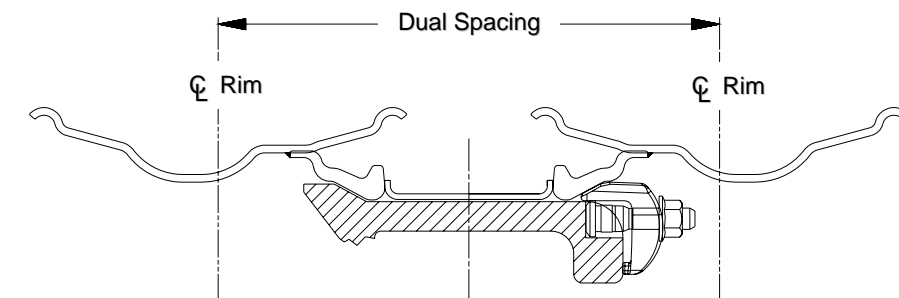
DUAL SPACING FOR DEMOUNTABLE RIMS ON CAST SPOKE WHEELS

Dual Spacing for Tubeless and Tube-Type Rims

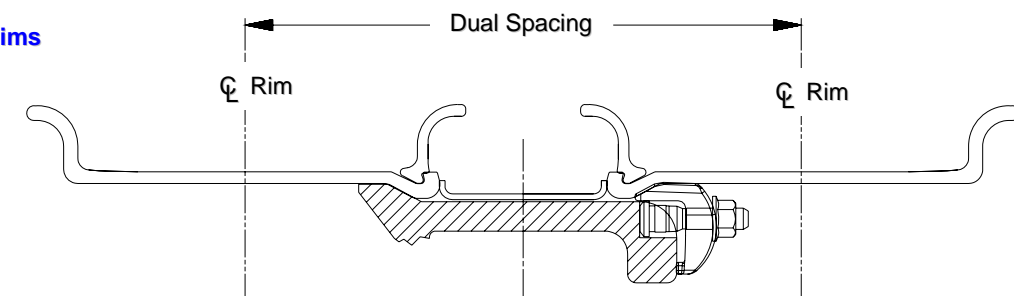
Rim Width and Type	Dual Spacing with Spacer Band Width								
	3.000	3.375	3.625	4.000	4.250	4.500	4.750	5.125	5.625
⁽¹⁾ 5.50" LW	9.33"	9.71"	9.96"	10.33"	10.58"	10.83"	11.08"		
6.50" LW		10.81"	11.06"	11.43"	11.68"	11.93"	12.18"		
7.00" RW		11.31"	11.56"	11.93"	12.18"	12.43"	12.68"		
7.50" LW		11.90"	12.15"	12.52"	12.77"	13.02"	13.27"		
8.00" LW			12.62"	12.99"	13.24"	13.49"	13.74"		15.87"
9.00" LW						14.75"	15.00"	15.38"	
⁽¹⁾ 7.50" FL	12.50"	12.88"	13.13"	13.50"	13.75"	14.00"	14.25"		
⁽¹⁾ 7.50" LB	11.50"	11.88"	12.13"	12.50"	12.75"	13.00"	13.25"		
7.50" M						14.00"	14.25"		
8.50" M						15.25"		15.88"	16.38"
10.00" M						17.12"		17.75"	18.25"
7.50" DVS	11.52"	11.90"	12.15"	12.52"	12.77"	13.02"	13.27"		
⁽¹⁾ 8.25" DVS			12.43"	12.80"	13.05"	13.30"	13.55"		
8.25" DVL	12.50"	12.88"	13.13"	13.50"	13.75"	14.00"	14.25"		

8.50M, 9.00LW, and 10.00M wide rims have a **SMALLER INSIDE DIAMETER**. They may be used **ONLY** on Cast Spoke Wheels with corresponding smaller spoke wheel diameter. Use M-type spacers.

Tubeless Rims



Tube-Type Rims



⁽¹⁾ For 5.50LW, 7.50FL, 7.50LB, 8.25DVS: These components are no longer available and shown for information purposes only.

STEEL DEMOUNTABLE RIMS FOR CAST SPOKE WHEELS

On-Highway Tubeless Rims

Part Number	Size	Rim Offset	Approximate Weight	Maximum Load Rating	Maximum Inflation	Recommended Valve
675175ERSE	17.5" x 6.75"	3.90"	47 lbs.	4,805 lbs.	120 psi	TR-572
750225DVSE	22.5" x 7.50"	4.26"	64 lbs.	7,030 lbs.	120 psi	TR-572
825225DVLSE	22.5" x 8.25"	4.75"	68 lbs.	7,400 lbs.	120 psi	TR-573
825245DVLSE	24.5" x 8.25"	4.75"	70 lbs.	7,400 lbs.	120 psi	TR-573

17.5" diameter rims fit with 15" cast spoke wheels - 15" diameter spacer bands in dually applications.
 22.5" diameter rims fit with 20" cast spoke wheels - 20" diameter spacer bands in dually applications.
 24.5" diameter rims fit with 22" cast spoke wheels - 22" diameter spacer bands in dually applications.

"E" = white primer (see *Wheel & Rim Finishes* for other available finishes)

On-Highway Tube-Type Rims ⁽¹⁾

Assembly Part Number	Size / Type	Rim Offset	Approximate Weight	Maximum Load Rating	Maximum Inflation	Rim Base	Side Ring
6515LWDE	6.50" - 15" T	3.715"	74 lbs.	4,290 lbs.	105 psi	B6515LWDE	R6515LWE
6520LWDE	6.50" - 20" T	3.715"	98 lbs.	4,610 lbs.	105 psi	B6520LWDE	R6520LWE
7515LWDE	7.50" - 15" T	4.258"	104 lbs.	5,520 lbs.	105 psi	B7515LWDE	R8015LWE
7520LWDE	7.50" - 20" T	4.258"	140 lbs.	6,400 lbs.	105 psi	B7520LWDE	R8020LWE
8020LWDE	8.00" - 20" V	4.496"	146 lbs.	7,600 lbs.	105 psi	B8020LWDE	R8020LWE
8022LWDE	8.00" - 22" V	4.496"	162 lbs.	7,600 lbs.	105 psi	B8022LWDE	R8022LWE
8024LWDE	8.00" - 24" V	4.496"	174 lbs.	7,600 lbs.	105 psi	B8024LWDE	R8024LWE
9020LWDE	9.00" - 20" V	5.123"	184 lbs.	9,230 lbs.	120 psi	B9020LWDE	R8020LWE
9024LWDE	9.00" - 24" V	5.123"	220 lbs.	9,230 lbs.	120 psi	B9024LWDE	R8024LWE

Heavy Duty On / Off-Highway Type M Rims

Assembly Part Number	Size / Type	Rim Offset	Approximate Weight	Maximum Load Rating	Maximum Inflation	Rim Base	Flange	Lock Ring
7520MDE	7.50" - 20" VM	4.750"	160 lbs.	7,600 lbs.	120 psi	B8020LWDE	F7520ME	LR20ME
7524MDE	7.50" - 24" VM	4.750"	193 lbs.	7,600 lbs.	120 psi	B8024LWDE	F7524ME	LR24ME
8520MDE	8.50" - 20" VM	5.375"	198 lbs.	9,230 lbs.	120 psi	B9020LWDE	F7520ME	LR20ME
8524MDE	8.50" - 24" VM	5.375"	238 lbs.	9,230 lbs.	120 psi	B9024LWDE	F7524ME	LR24ME
1020MDE	10.00" - 20" W	6.312"	232 lbs.	9,610 lbs.	120 psi	B1020MDE	F1020ME	LR20ME
				11,250 lbs. ⁽²⁾	120 psi			
1024MDE	10.00" - 24" W	6.312"	282 lbs.	9,740 lbs.	120 psi	B1024MDE	F1024ME	LR24ME
				11,500 lbs. ⁽²⁾	120 psi			

⁽¹⁾ LW type rims are designed for On-Highway applications.

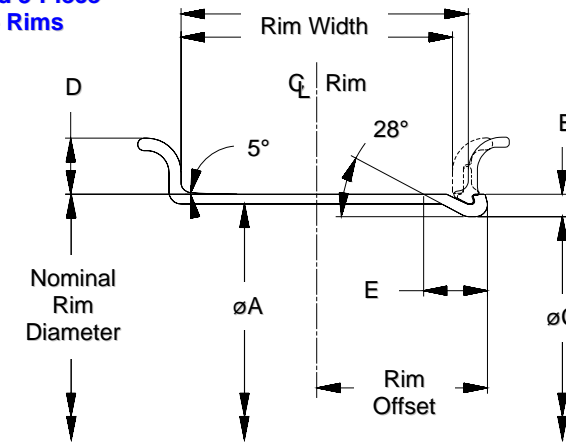
⁽²⁾ For 1020MDE and 1024MDE: Load rating is restricted to highway speeds of 50 miles per hour maximum.

DEMOUNTABLE RIM DIMENSIONS FOR TUBE-TYPE RIMS

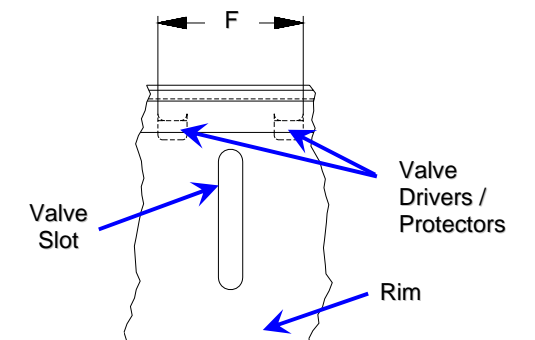
Rim Dimensions

Part Number	Size		Rim Offset	Inside Diameter A	Hook Height B	Hook Diameter C	Flange Height D	Bevel Location E	Driver Width F
	Diameter	Width							
6515LWDE	15"	6.50"	3.715"	14.626"	0.686"	13.588"	1.500"	1.742"	3.75"
6520LWDE	20"	6.50"	3.715"	19.626"	0.686"	18.628"	1.500"	1.742"	3.75"
7515LWDE	15"	7.50"	4.258"	14.500"	0.686"	13.588"	1.750"	1.742"	3.75"
7520LWDE	20"	7.50"	4.258"	19.500"	0.686"	18.628"	1.750"	1.742"	3.75"
7522LWDE	22"	7.50"	4.258"	21.500"	0.686"	20.628"	1.750"	1.742"	4.50"
8020LWDE	20"	8.00"	4.496"	19.500"	0.686"	18.628"	1.781"	1.781"	3.75"
8022LWDE	22"	8.00"	4.496"	21.500"	0.686"	20.628"	1.781"	1.781"	4.50"
8024LWDE	24"	8.00"	4.496"	23.500"	0.686"	22.628"	1.781"	1.781"	5.25"
9020LWDE	20"	9.00"	5.123"	19.392"	0.750"	18.500"	1.750"	2.000"	3.75"
9024LWDE	24"	9.00"	5.123"	23.392"	0.750"	22.500"	1.750"	2.000"	5.25"
7520FLDE	20"	7.50"	4.750"	19.592"	0.686"	18.628"	1.600"	1.782"	3.75"
7520MDE	20"	7.50"	4.750"	19.500"	0.686"	18.628"	1.750"	1.781"	3.75"
7524MDE	24"	7.50"	4.750"	23.500"	0.686"	22.628"	1.750"	1.781"	5.25"
8520MDE	20"	8.50"	5.375"	19.392"	0.750"	18.500"	1.750"	2.000"	3.75"
8524MDE	24"	8.50"	5.375"	23.392"	0.750"	22.500"	1.750"	2.000"	5.25"
1020MDE	20"	10.00"	6.312"	19.392"	0.696"	18.500"	2.000"	2.000"	3.75"
1024MDE	24"	10.00"	6.312"	23.392"	0.696"	22.500"	2.000"	2.000"	5.25"

2-Piece and 3-Piece Tube-Type Rims



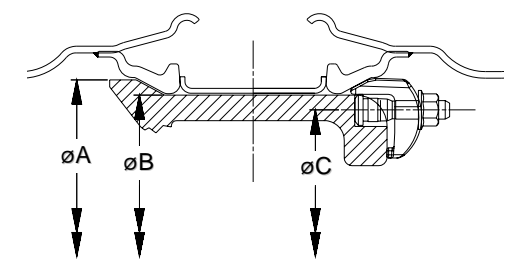
Valve Driver / Protectors Diagram



Cast Spoke Wheel Dimensions

Wheel Width	Rim Diameter	A	B	C (Front)	C (Rear)
8.25" and Narrower	15"	14.365"	13.550"	12.500"	12.500"
	17"	16.365"	15.550"	14.500"	14.500"
	17.5"	14.365"	13.550"	12.500"	12.500"
	18"	17.365"	16.550"	15.500"	15.500"
	20"	19.365"	18.550"	17.500"	17.500"
	22"	21.365"	20.550"	19.500"	19.500"
	22.5"	19.365"	18.550"	17.500"	17.500"
	24"	23.365"	22.550"	21.500"	21.500"
8.50" and Wider	24.5"	21.365"	20.550"	19.500"	19.500"
	20"	19.281"	18.422"	17.500"	17.375"
	22"	21.281"	20.422"	19.500"	19.375"
	24"	23.281"	22.422"	21.500"	21.375"

Suggested Reference SAE J851 (SEP2007)



Spoke Wheel in Dual Application Shown

SPACER BANDS FOR CAST SPOKE WHEELS

K-Type Channel Spacer Bands for 6.50 through 8.25 Tubeless and Tube-Type Rims

Width	Nominal Diameter	Part Number	Stock Thickness	Approximate Weight	Inside Diameter
3.000"	15"	SB3015K ⁽¹⁾	0.156"	7 lbs.	13.578"
3.375"	15"	SB3315K	0.156"	7 lbs.	13.578"
	20"	SB3320K	0.109"	7 lbs.	18.578"
3.625"	20"	SB3520K	0.109"	7 lbs.	18.578"
	22"	SB3522K	0.109"	8 lbs.	20.578"
4.000"	15"	SB4015K	0.156"	8 lbs.	13.578"
	20"	SB4020K	0.109"	8 lbs.	18.578"
	22"	SB4022K	0.109"	9 lbs.	20.578"
	24"	SB4024K	0.109"	10 lbs.	22.578"
4.250"	20"	SB4220K	0.109"	8 lbs.	18.578"
	22"	SB4222K	0.109"	9 lbs.	20.578"
	24"	SB4224K	0.109"	10 lbs.	22.578"
4.500"	20"	SB4420K	0.109"	9 lbs.	18.578"
	22"	SB4422K	0.109"	10 lbs.	20.578"
	24"	SB4424K	0.109"	11 lbs.	22.578"
4.750"	20"	SB4620K	0.109"	9 lbs.	18.578"
	24"	SB4624K ⁽¹⁾	0.109"	11 lbs.	22.578"



Tubeless Rims:

For 17.5" diameter rims, use 15" diameter spacer bands.
 For 22.5" diameter rims, use 20" diameter spacer bands.
 For 24.5" diameter rims, use 22" diameter spacer bands.

M-Type Channel Spacer Bands for 8.50 and Wider Tube-Type Rims

Width	Nominal Diameter	Part Number	Stock Thickness	Approximate Weight	Inside Diameter
4.500"	20"	SB4420M	0.156"	13 lbs.	18.469"
	24"	SB4424M	0.156"	16 lbs.	22.469"
5.125"	20"	SB5120M	0.156"	15 lbs.	18.469"
	24"	SB5124M	0.156"	18 lbs.	22.469"

8.5" and wider tube-type rims require M-type spacer bands to fit smaller diameter cast spoke wheels.

⁽¹⁾ For SB3015K and SB4624K: Check for availability.

WHEELS / RIMS

INSPECTION AND INSTALLATION



INSPECTION AND INSTALLATION

SAFETY MESSAGE!!!

A wheel or rim is a highly stressed component of the vehicle that may be subjected in service to extreme forces. Therefore, it is absolutely necessary to handle these parts with care and to pay particular attention to the mounting, removal, and maintenance in order to ensure safe operations and prevent possible accidents. Never use parts of wheels which cannot be identified, even if they seem to have the correct functions and the identical dimensions.



New Installations

Components of different mounting systems with common bolt circle patterns could be mis-assembled together and cause service problems. It is important to note that each mounting system should be treated individually and their components not intermixed.

Prior to any installation make sure all components are clean and free of corrosion. Check to see that parts are not bent or cracked. Replace all worn, bent, broken, cracked, or corroded parts. Failure to do so could cause wheel failure and possibly injury during assembly or disassembly of tires. Before replacing components determine and correct the cause of the damage to avoid further problems.

For any surface preparation or cleaning, use a wire brush to remove excessive paint or foreign material on the mating surfaces of the disc and hub. If repainting of the wheel is desired, limit paint thickness to no more than 3 mils (0.003") in the areas of contact between the hub and wheel, as well as between wheels in a dual wheel setup. Measurement devices for paint thickness are available commercially to measure this thickness. Make sure that the topcoat is fully cured before mounting the wheel or rim on a vehicle. Uncured paint causes wheel or rim fasteners to lose torque which causes wheels or rims to break, or even separate from the vehicle. Loose fasteners can also lead to damaged hubs and/or brake drums. Since paint curing times vary, see your paint supplier's instructions for the proper curing time.

Refer to TMC RP 222B, *User's Guide to Wheels and Rims* for detailed information about attaching hardware, inspection, and installation of disc wheels and spoke wheel / demountable rim systems.

When air wrenches are used, they must be periodically calibrated for proper torque output. Use a torque wrench to check the air wrench output. If the output is not correct, take the necessary steps to adjust.

INSPECTION AND INSTALLATION

Scheduled Vehicle and Maintenance Inspections

Wheels and mating components must be properly maintained throughout their useful life. Improper maintenance can adversely affect the life of the tire, wheel, or vehicle. **Refer to TMC RP 222B, *User's Guide to Wheels and Rims* for detailed information on maintenance and inspection of disc wheels and spoke wheel / demountable rim systems.**

Inflate the tires to only the recommended air pressure, being sure not to exceed the wheel inflation rating in accordance with OSHA standard No. 29 CFR, Part 1910.177 "Servicing Single-Piece and Multi-Piece Rims / Wheels" and TMC RP 209C, *Tire and Rim Safety Procedures*. An inflated tire is potentially very destructive. Accidents are caused by careless handling or inexperience.

It is recommended that a torque check be made as part of a vehicle's scheduled maintenance program or at 10,000 mile intervals, whichever comes first. Individual fleet experience may dictate shorter intervals or allow longer intervals. On disc wheels, low torque can cause broken studs, cracked disc, loss of wheel, enlarged bolt holes, excessive wear on wheel disc face and hub face. Excessive torque can cause broken bolts, broken nuts, disc damage (ball seat breakdown, burr on edge of countersink hole), and distorted brake drum or rotor. Even when the crisscross method is used, nuts might still lose torque when the vehicle is operated. This is caused by the "seating in" of the components.

Refer to TMC RP 222B, *User's Guide to Wheels and Rims* for detailed information about vehicle jacking and tire removal procedures, maintenance of wheels and rims during tire changes, wheel reconditioning, and air system and impact wrench maintenance.

Out-of-Service Conditions

Listed below are typical out-of-service conditions that may exist for wheels or rims. This list is not all inclusive. **Refer to RP 222B, *User's Guide to Wheels and Rims* for detailed information about out-service conditions.**

- Cracks in disc (bolt holes, center hole, disc nave, hand holes, stamps)
- Cracks in rims (stamps, welds, drop center, valve hole / slot, mounting ledge, flange, gutter, wheel spoke contact)
- Irregular contact pattern on the disc face
- Wallowed or elongated bolt holes
- Worn or distorted ball seat or rim bead seat
- Burrs around bolt holes or on tire side of rims
- Excessive wear or corrosion
- Excessive runout
- Excessive damage (separation, bent flange, worn mating parts, crushed / distorted spacer band)
- Air leak at valve or butt welds
- Sprung, bent, cracked, or distorted rings
- Sheared, missing, cracked, or distorted valve locators
- Distorted or cracked adaptors

INSPECTION AND INSTALLATION

Inspection of CentruMount® Hub Piloted Wheels

It is important to check **all components** for damage on a regular basis to ensure proper fit, form, and function. Check all metal surfaces thoroughly including both sides of the wheels and between duals.

Hub - The hub mounting face must be cleaned and kept flat. Look for worn or damaged mounting faces by using a straight edge. Clean hub mounting surface and hub pilots with a wire brush if rust, dirt, paint, grease, or debris is present. Note the conduction of the hub and the hub pilots. Replace the hub if a worn hub face is evident or if the hub pilots are worn or broken.

Drum - The drum mounting face must be cleaned, free of dirt, paint, and grease, and kept flat. Look for worn or damaged mounting faces by using a straight edge. Clean the drum surface with wire brush if rust or debris is present. Ensure the brake drum is positioned on the raised step of the hub pilots and is seated fully against the hub. Replace the drum if it exhibits a worn mounting face or cracked bolt holes.

Hub Piloted Wheels - Ensure the wheel mounting faces are free of dirt and grease. Be sure the wheels are hub piloted with bolt holes drilled straight through without ball seats. Stud piloted wheels must NOT be used as substitutes for hub piloted wheels under any circumstances. Never try to use a hub piloted wheel with a stud piloted hub or stud piloted nuts. The result could be torque loss, a cracked wheel, or possible wheel loss. Make sure the center hole of the wheel is clean so it will fit easily on the hub pilots. Look for worn or damaged mounting faces by using a straight edge. Replace any wheel that exhibits wear or damage. Look for damaged metal at bolt and center holes.

Studs and Nuts - Ensure that studs and nuts are free of dirt and grease. Wire brush the base of each stud and threads to remove any rust or foreign material that could bind up the wheel nuts. Check for damaged studs and stripped stud threads as evidenced by shining threads. Replace any parts that exhibit wear or damage. Ensure replacement studs are the proper ones for the system used. Stud breakage can occur if the wrong studs are used. If a stud is broken, replace it and the stud on each side of the broken one. If two or more studs are broken, replace them all. Use a press to install the studs and be sure the hub flange is supported. Stud heads can be bent from hammer blows, which will prevent the stud from seating properly, and can result in stud failure. Aluminum hubs require different stud installation procedures. Consult the manufacturer for recommendations. Use the correct nuts. Nuts used for stud piloted systems cannot be used in hub piloted systems. Hub piloted wheels use flange nuts for both single and dual wheel application. No inner cap nuts are required. Check the wheel nuts and ensure that multi-piece nuts turn smoothly on their flanges. Discard all nuts with damaged threads and those that fail to turn smoothly.

INSPECTION AND INSTALLATION

CAUTION!!!

Do not work on wheels or rims without proper training. Follow correct procedures and safety instruction in accordance with OSHA 29 CFR Part 1910.177 rules and regulations. Personnel must also carefully read all safety information provided by the manufacturer, industry organizations, and/or shown in this catalog before taking any action to service wheels and rims. Failure to follow proper safety precautions could result in serious injury or death.



Use only the specified sizes and types of studs and nuts. Follow recommended torquing procedures before placing new trucks into service, during the vehicle's regular scheduled maintenance, and after each tire change.

Installation Procedure for CentruMount® Hub Piloted Wheels

1. Apply two drops of 30 weight oil to a point between the nuts and nut flanges, and two drops to the last 2 to 3 threads at the end of each stud. Also lightly lubricate the pilots on the hub to ease wheel installation and removal. **Do not get lubricant on the mounting face of the drum or wheel.** Note: the use of anti-seize compounds is not recommended for this application.
2. Rotate the hub so that one pilot is at the 12 o'clock position. Place the single wheel or the inner dual wheel onto the hub, being careful not to damage the stud threads. Make sure the wheel is fully seated against the drum.
3. For dual wheels, place the outer wheel onto the hub making sure the hand holes are lined up for easy access to the tire valves. Make sure the outer wheel is pushed fully up against the inner wheel. Install nuts finger-tight at the 12 o'clock position and then at the 6 o'clock position, then apply nuts finger-tight to the remaining studs. Snug to about 50 lbf-ft, following a crisscross sequence (see Figure 1). Finally tighten all the nuts to the recommended torque (see Figure 2) using the same crisscross sequence.
4. After the wheels are installed, check to see that both wheels are still seated on the pilots and are flat against the drum. This can be done by inspecting the seating of the wheels on all four pilots and by turning the wheels and checking for wheel assembly irregularity.
5. After a wheel assembly has been installed, recheck the torque level between 50 and 100 miles of operation and retighten if necessary to the recommended torque using the proper sequence.

In addition, refer to TMC RP 222B, *User's Guide to Wheels and Rims* for detailed information on inspection and installation of disc wheels.

INSPECTION AND INSTALLATION

Inspection of CentruSteel® Stud Piloted Wheels

It is important to check **all components** for damage on a regular basis to ensure proper fit, form, and function. Check all metal surfaces thoroughly including both sides of the wheels and between duals.

Hub - The hub mounting face must be cleaned and kept flat. Look for worn or damaged mounting faces by using a straight edge. Clean hub mounting surface with a wire brush if rust, dirt, paint, grease, or debris is present. Note the conduction of the hub. Replace the hub if a worn hub face is evident.

Drum - The drum mounting face must be cleaned, free of dirt, paint, and grease, and kept flat. Look for worn or damaged mounting faces by using a straight edge. Clean the drum surface with wire brush if rust or debris is present. Replace the drum if it exhibits a worn mounting face or cracked bolt holes.

Stud Piloted Wheels - If a heavy-duty ball seat (1-3/16" spherical radius) system is used, make sure the wheels are proper for the vehicle. Never mix hub piloted disc wheels and hubs with ball seat disc wheels and hubs. The result could be loss of torque, a cracked wheel, or possible wheel loss. Ensure the wheel mounting faces are free of dirt and grease. Check the wheels for damage, elongated bolt holes, wear, corrosion, cracks around bolt holes or center hole, or torch cuts, and replace as necessary. If slight burrs have been raised around the ball seats, use a file to remove them. Be sure not to cut into the flat surface of the wheel mounting face. Replace any wheel that exhibits wear or damage.

Studs and Nuts - Ensure that studs and nuts are free of dirt and grease. Wire brush the base of each stud and threads to remove any rust or foreign material that could bind up the wheel nuts. Check for damaged studs and stripped stud threads as evidenced by shining threads. Replace any parts that exhibit wear or damage. Ensure replacement studs are the proper ones for the system used. Stud breakage can occur if the wrong studs are used. If a stud is broken, replace it and the stud on each side of the broken one. If two or more studs are broken, replace them all. Use a press to install the studs and be sure the hub flange is supported. Stud heads can be bent from hammer blows, which will prevent the stud from seating properly, and can result in stud failure. Aluminum hubs require different stud installation procedures. Consult the manufacturer for recommendations. Wire brush the inner and outer cap nuts if rust accumulation is evident. If threads are damaged or corrosion is heavy, discard nuts. Also discard nuts that show damage or wear to ball seats or hex areas. Be certain you have correct fasteners. Nuts used in the hub piloted system cannot be used in the stud piloted system. Single aluminum wheels on 3/4" studs are different nuts than steel wheels. Dual aluminum wheels require special inner nuts with greater strength and length than steel wheel inner nuts. Separate all frozen cap nuts and discard them prior to reinstalling the wheel. Do not attempt to reinstall wheels that come off with the inner cap nut frozen to the outer cap nut. Each nut must be reinstalled properly with each nut tightened to the proper torque level.

INSPECTION AND INSTALLATION

CAUTION!!!

Do not work on wheels or rims without proper training. Follow correct procedures and safety instruction in accordance with OSHA 29 CFR Part 1910.177 rules and regulations. Personnel must also carefully read all safety information provided by the manufacturer, industry organizations, and/or shown in this catalog before taking any action to service wheels and rims. Failure to follow proper safety precautions could cause serious injury or death.



Use only the specified sizes and types of studs and nuts. Follow recommended torquing procedures before placing new trucks into service, during the vehicle's regular scheduled maintenance, and after each tire change.

Installation Procedure for CentruSteel® Stud Piloted Wheels

1. When replacing an outer wheel, be sure to properly retighten the inner wheel nuts first before installing the outer wheel.
2. **Never lubricate wheel, nut ball seats, or mounting faces.** If lubrication is desired to prevent frozen cap nuts, it should be used sparingly only on the threads of the studs and/or nuts. If lubrication is used, consult Hayes Lemmerz for torque recommendations.
3. Slide the front wheel or inner dual wheel over the studs being careful not to damage the stud threads. Lift the wheel to center one stud within its bolt hole while installing an inner nut finger-tight. Repeat with another nut about 180° away from the first. Install the remaining nuts. Snug up nuts to about 50 lbf-ft until all have been seated in the sequence shown in Figure 1. This procedure will permit the uniform seating of nuts and ensure even, face to face contact of the wheels against the hub or drum. Tighten the nuts to the recommended mounting torque (see Figure 2) using the same crisscross tightening sequence.
4. Place the outer dual wheel over the ends of the inner nuts and install two outer nuts 180° apart finger-tight to locate the wheel. Install the remaining nuts and tighten to about 50 lbf-ft using a crisscross sequence (see Figure 1). Finally tighten the outer nuts to the recommended torque (see Figure 2) using the same sequence.
5. After a wheel assembly has been installed, recheck the torque level between 50 and 100 miles of operation and retighten if necessary to the recommended torque using the proper sequence. To check and retorquing an inner nut, it is necessary to loosen the outer nut first then tighten the inner nut. Finally, the outer nuts must be retightened to the proper level.

In addition, refer to TMC RP 222B, *User's Guide to Wheels and Rims* for detailed information on inspection and installation of disc wheels.

INSPECTION AND INSTALLATION

Inspection and Installation Procedure for Spoke Wheels / Demountable Rims

- Note: Demountable rims are not all the same size. It is important to ensure that the correct size tires, rims, spacers, and clamps are being used to provide dual tire and vehicle clearance.
- Check all parts for damage. Replace any damaged or distorted part. Do not weld, heat, or braze. Ensure that studs, nuts, clamps, and 28° bevel surfaces of the cast spoke wheel and rim are sound, clean, and free from grease. Ensure that the correct spacer band, rim, and clamp combinations are being used for the application. Ensure the spacer band is clean and free from distortion.
- Clean the cast spoke wheel with a wire brush if scale is present.
- Install rim after tire is inflated. Multi-piece rims may distort at high inflation and become difficult to slip onto the cast spoke wheel. If this occurs, deflate the tire to not less than 80% of the recommended inflation until the rim is mounted on the truck. If difficulties still exist, contact Hayes Lemmerz for recommendations. Always adhere to OSHA standard No. 29 CFR, Part 1910.177 "Servicing Single-Piece and Multi-Piece Rims / Wheels" and TMC RP 209C, *Tire and Rim Safety Procedures*.
- For front assemblies, align the valve locators between the spokes, then place the rim and inflated tire on the cast spoke wheel.
- For rear assemblies, align the valve locators between the spokes, then place the inner dual rim over the cast spoke wheel as far as possible. Push the spacer band over the cast spoke wheel with a constant pressure on both sides. Avoid cocking the rim on the spokes. The spacer band should fit snugly to the spokes and against the inside rim gutter edge. Place the outer dual rim in position. Note that 8.5" and wider tube-type rims require special size spoke wheels and spacer bands.
- Secure clamps evenly in position and snug nuts to 50 lbf-ft per sequence in Figure 3.
- Do not tighten nuts fully until all have been snugged up. This permits the rims to properly align themselves on the 28° bevel surfaces of the cast spoke wheel. Correct alignment if necessary at this time. Tighten nuts to recommended torque (see Figure 4). Maintain them at that level through planned, periodic checks. Be sure not to exceed recommended torque values. If the heel of the rear clamps bottom out before reaching 80% of the recommended torque levels, check to see that proper clamps and spacers are used. Complete tire inflation to the recommended level.
- After a demountable rim has been installed, recheck the torque on the clamp nuts between 50 and 100 miles of operations and retighten the nuts to the proper torque level using the proper tightening sequence.

In addition, refer to TMC RP 222B, *User's Guide to Wheels and Rims* for detailed information on inspection and installation of spoke wheel / demountable rim systems.

RECOMMENDED MOUNTING TORQUE

Figure 1: Torque Sequence for Disc Wheels

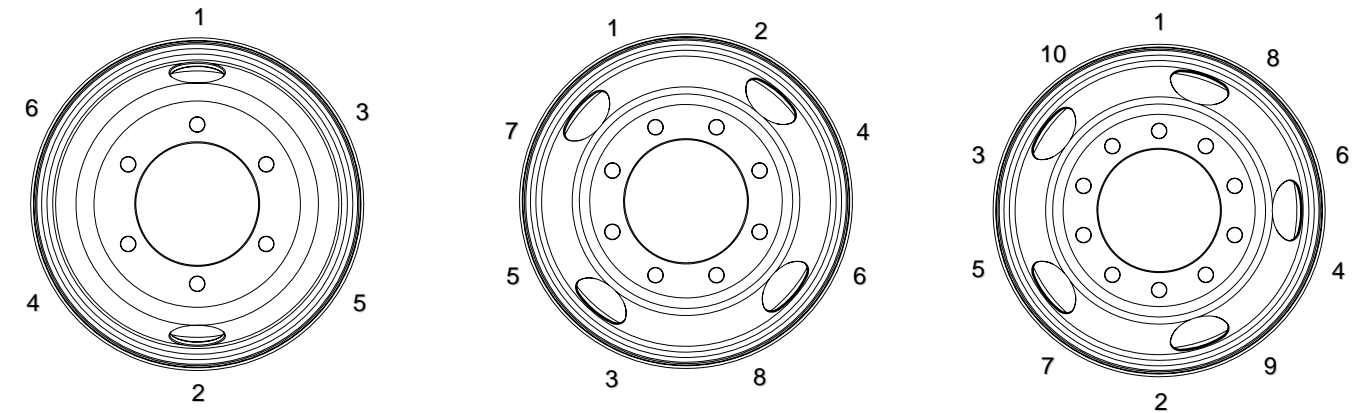


Figure 2: Recommended Mounting Torque for Disc Wheels

Mounting Type	Thread Size *	Torque Level (lbf-ft)	Fastener Condition
Hub Piloted with Flange Nut	11/16" - 16	300 - 400	Oiled **
	M20 x 1.5	280 - 330	Oiled **
	M22 x 1.5	450 - 500	Oiled **
Stud Piloted with Double Cap Nut Standard Duty Type (7/8" Ball Seat Radius)	3/4" - 16	450 - 500	Dry
	1-1/8" - 16	450 - 500	Dry
Stud Piloted with Double Cap Nut Heavy Duty Type (1-3/16" Ball Seat Radius)	15/16" - 12	750 - 900	Dry
	1-1/8" - 16	750 - 900	Dry
	1-5/16" - 12	750 - 900	Dry

* If using specialty fasteners, consult the manufacturer for recommended torque levels.

** See Installation Procedure for *CentruMount*® Hub Piloted Wheels, Step 1.

Figure 3: Torque Sequence for Spoke Wheels / Demountable Rims

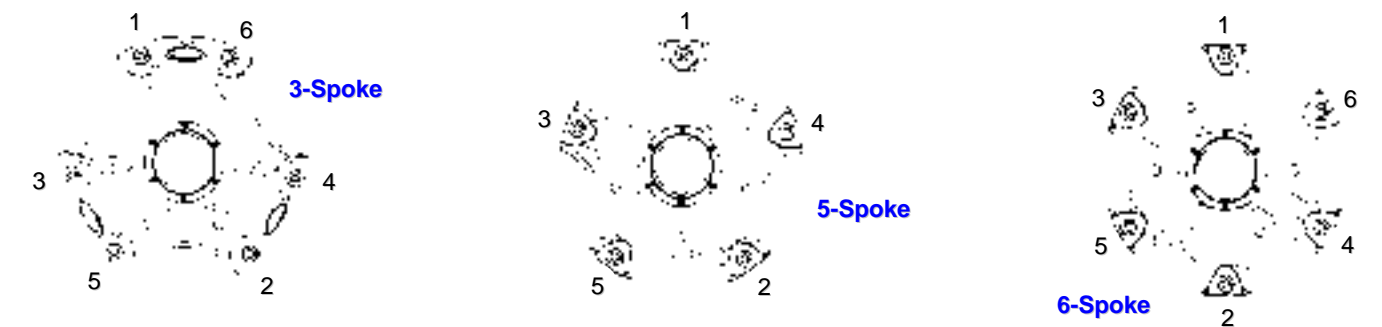


Figure 4: Recommended Mounting Torque for Spoke Wheels / Demountable Rims

Thread Size	Torque Level (lbf-ft)	Fastener Condition
5/8" - 11	160 - 200	Dry
3/4" - 10	200 - 260	Dry

APPENDIX

Abbreviations

AISI	American Iron and Steel Institute	FMVSS	Federal Motor Vehicle Safety Standards
ASTM	American Standard Testing Methods	ISO	International Standards Organization
CLN	Cone Lock Nut	OEM	Original Equipment Manufacturer
DCN	Double Cap Nut	OSHA	Occupational Safety and Health Administration
DOT	Department of Transportation	SAE	Society of Automotive Engineers
EDP	Electro-Deposition Primer	TMC	Technology and Maintenance Council
ETRTO	The European Tyre and Rim Technical Organisation	T&RA	The Tire and Rim Association

Glossary of Terms

Adaptor - The component of a tubeless demountable rim assembly which provides a surface for mating to the bevel (28°) of a cast spoke wheel.

Air Wrench - An air powered tool designed to tighten and loosen fasteners.

Ball Seat - The spherical area around the bolt holes and on the nuts used in the stud piloted mountings to center and clamp the wheel.

Bead Seat (Tire Seat) - The tire seating surface of a rim.

Bolt Circle (Pitch Circle) - The circle diameter through the center point of the bolt holes.

Bolt (Stud) Hole - A hole in a disc wheel for attachment fasteners.

Butt Weld - The weld running across the rim or other component which joins its ends together during manufacturing to make a hoop.

Cast Spoke Wheel - A casting usually with 3, 5, or 6 spokes that provides a means of attaching a demountable rim to a vehicle.

Center Hole (Pilot Hole, Hub Hole) - The large hole in the middle of a disc wheel.

Clamp Load - The resulting force between the hub or drum and/or wheel after torquing the wheel nuts.

Cone Lock Nut (CLN) - See *Flange Nut*.

Demountable Rim - A rim with 28° permanent mountings intended for use on a cast spoke wheel.

Disc (Spider) - The center member of a disc wheel that connects the rim to the hub.

Disc Face - The flat central portion of a disc wheel in which the bolt holes are located and which contacts the drum, hub or mating wheel.

Disc Thickness - The thickness of the disc in the disc face.

Disc Wheel - A permanent combination of a rim and disc.

Double Cap Nuts (DCN) - Two wheels nuts used in stud piloted mountings. They include inner cap nuts used to fasten inner wheels to a vehicle and outer cap nuts used to fasten single wheels and outer wheels to a vehicle. These nuts have both left and right-hand threads, and have ball seats that fit into the wheel ball seat bolt holes to center and clamp the wheels on the hub.

APPENDIX

Glossary of Terms

Dual Spacing - The distance from the center of a tire (rim) to the center of the other tire (rim) in a dual tire arrangement. It is determined by adding the two half dual spacings (disc wheels) or two rim offsets plus the spacer band width (demountable rims).

Fixed Flange - The permanent flange on a rim base designed to support the tire.

Flange - One removable component (split, non-continuous) of a two-piece tube-type rim which provides lateral support for one tire bead. It is sometimes referred to as a "split side ring."

Flange Nut - A nut with a flat face or flange that bears against the wheel (can be one-piece or multi-piece).

Half Dual Spacing - The distance from the outside disc face (surface between the wheels as a dual assembly) to the center of the rim. Also see *Wheel Offset*.

Hand Hole - An opening in the wheel disc are between the disc face and rim.

Hub - The rotating member that represents the attachment face for wheel discs.

Hub Mounting Face - The flat surface of a hub containing the studs and which contacts the wheel or drum.

Hub Piloted Mounting - A wheel mounting system in which location of the wheel is accomplished by positioning the wheel center hole on a machined pilot (continuous or interrupted) on the hub. Fastening is accomplished by flange nuts bearing against the flat face of the wheel disc.

Inner Cap Nut - The ball seat nut used to install the inner stud piloted dual wheel to a vehicle. The outer cap nut screws onto this nut.

Inset - The distance from the center of the rim to the wheel mounting surface when the rim center is inboard of the mounting surface.

Lock Ring - One removable component (split, non-continuous) of a three-piece tube-type rim which locks the side ring to the rim base.

Multi-Piece Wheel / Rim - A rim consisting of more than one part, usually two pieces (rim base and flange) or three pieces (rim base, side ring, and lock ring) for use with tube-type tires.

Outer Cap Nut - The ball seat nut used to install the outer wheel of a stud piloted dual assembly or a single stud piloted wheel to a vehicle. The outer nut screws onto the inner cap nut in a dual assembly.

Outset - The distance from the center of the rim to the wheel mounting surface when the rim center is outboard of the mounting surface.

Rim - The supporting member for the tire or tire and tube assembly.

Rim Base - The major portion of a rim which remains after all removable components have been detached.

Rim Clamp - A device used to hold a demountable rim on a spoke wheel.

Rim Drop Center (Rim Well) - The portion of a single-piece rim that is made to a smaller diameter than the bead seats to allow mounting of the tire.

Rim Flange - The edge of a rim that has a larger diameter than the tire bead designed to support the tire.

APPENDIX

Glossary of Terms

Rim Gutter - The recessed area of a rim base that accepts a locking ring or flange.

Rim Offset - For demountable rims, the distance from the outside of the mounting ring (surface that contacts the spacer band) to the center of the rim.

Rim Size Designation - The characteristic used to describe the rim (nominal diameter, type, nominal width).

Runout - Total indicator reading in the lateral or radial direction, taken at the rim bead seat, for one revolution with the wheel (rim) located on the specified datum.

Side Ring - One removable component (solid, continuous) of a three-piece tube-type rim which provides lateral support for one tire bead.

Spacer / Spacer Band - A metal band which separates two demountable rims on a rear spoke wheel.

Spoke Wheel - See *Cast Spoke Wheel*.

Stud - A threaded bolt that is used with wheel nuts to fasten wheels or rims to a vehicle.

Stud Piloted Mounting - A wheel mounting system in which location and fastening of the wheel are both accomplished by nuts which fit corresponding at each wheel bolt hole.

Torque - The measurement of nut tightness.

Torque Wrench - A tool which measures torque on fasteners.

Tubeless Wheel / Rim - A single-piece wheel or rim with a drop center designed for use with tubeless tires.

Valve Hole - A round hole in a single-piece rim to accommodate the valve stem.

Valve Locators - Embossments located on either side of the rim valve slot or valve hole to properly locate the tire valve stem between the spokes. It is sometimes called "drivers."

Valve Slot - An opening in a multi-piece rim to accommodate the tube valve stem.

Wheel Mounting Surface / Face - See *Disc Face*.

Wheel Offset - For disc wheels, the distance from the center of the rim to the wheel mounting surface (surface between the wheels as a dual assembly) or calculated as inset plus disc thickness. Also see *Half Dual Spacing*.

Wide Base Wheel - A tubeless drop center wheel with rim width of 10.50" or more, for use with wide base tires, typically used either for increased load capacity on steer axles, increased flotation, or to replace dual wheels.

IMPORTANT!!!

The terms "rim" and "wheel" are often confused in colloquial speech. This may cause misunderstanding and lead to improper application or incorrect orders. It is important to use the terms properly.



Five (5) Year Limited Warranty

Disc Wheels - Demountable Rims - Wide Base Wheels Trucks - Trailers - Buses

Hayes Lemmerz International, Inc. ("Hayes Lemmerz") warrants to the user to replace each on-highway disc wheel, demountable rim, or wide base wheel which becomes unserviceable within five (5) years of date of manufacture due to functional defects in workmanship and materials, excluding finish.

All other wheel and rim products are warranted for one year from date of manufacture.

This warranty is void if these products are altered or modified, are not properly installed, or are not operated or maintained in accordance with instructions distributed by OSHA or printed in catalogs current for the year of manufacture. This warranty does not cover defects caused by corrosion, other components, accident, overloading, improper tire size, improper tire inflation, excessive speeds, or other abnormal / severe operating conditions.

Hayes Lemmerz's obligation under this warranty is limited to replacing any product proven to be defective within the application provisions of this warranty (upon inspection of failed parts and, if deemed necessary, associated vehicles and their maintenance records). Replacement products will be shipped FOB our factory.

Parts on which a warranty is claimed must, upon request, be returned to place of manufacture or to our authorized representative with transportation charges prepaid.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, APPLICATION OR USE. IN NO EVENT SHALL HAYES LEMMERZ'S LIABILITY EXCEED THE ORIGINAL PRICE OF THE PRODUCT, NOR SHALL HAYES LEMMERZ BE LIABLE FOR SPECIAL INCIDENTAL OR CONSEQUENTIAL DAMAGES.

