

40

Medium Duty Spring-Loaded Casters

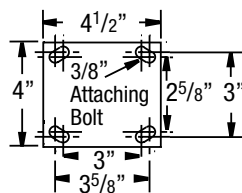


Designed with the load in mind, the 40 series protects from damaging shocks or unwanted vibration and movement. Noise levels are reduced through the dampening effect of these casters.

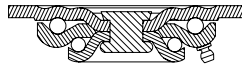
TYPICAL APPLICATIONS

- Aircraft tripod jacks
- Portable medical equipment
- Computer equipment
- Shock sensitive loads

MOUNTING

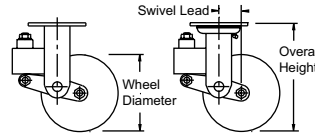


Swivel Cross Section



FEATURES

- **Load Springs:** Maximum rated capacity loads will deflect wheel approximately 3/8" (50%). Different load springs for each series permits wide variation in ride "softness." They can be preloaded to obtain various degrees of deflection
- **Top Plate & Yoke Base:** Made from 1/4" steel plate and unnotched
- **Swivel Section:** Cold formed, hardened double ball bearing raceways minimize ball indentation and wear
- **Legs:** 1/4" steel cold formed to increase strength and welded to the yoke base
- **King Bolt:** 5/8" diameter orbitally spun steel rivet
- **Axle:** 1/2" diameter hollow axle complete with lock nut. Axle is solid for 28 & 29 ball bearings
- **Wheel Seals:** Nylon seal retaining/thrust washers
- Alternate or custom caster configurations available



RIG OPTIONS

- Neoprene sealed swivel section specify **SS02**
- Hollow axle specify **ZF07**

BRAKE OPTIONS

Single Side and **Double Sided** Brakes available. Consult Factory.

Swivel Lock available (welded). Consult Factory.

BEARING OPTIONS



Note: Wheel capacities can change with each bearing type.

| Wheel Diameter (Inches) | Tread Width (Inches) | Capacity (Lbs) (Based on manual operation) | Overall Height (Inches) | Swivel Lead (Inches) | Approx. Wt. (Lbs) | Caster Number |
|-------------------------|----------------------|---|-------------------------|----------------------|-------------------|---------------|
| 5 | 2 | 450 | 8 | 13/4 | 10 1/2 | 40MR05201 |
| 6 | 2 | 500 | 8 1/2 | 13/4 | 11 | 40MR06201 |
| 8 | 2 | 500 | 10 1/2 | 13/4 | 13 1/4 | 40MR08201 |

For swivel models add "S" to end of caster number.
For rigid models add "R" to end of caster number.

Mold-on Rubber on Cast Iron (01 Roller Bearing)*



MR

| | | | | | | |
|---|---|-----|--------|------|--------|-----------|
| 5 | 2 | 450 | 8 | 13/4 | 10 1/2 | 40MR05201 |
| 6 | 2 | 500 | 8 1/2 | 13/4 | 11 | 40MR06201 |
| 8 | 2 | 500 | 10 1/2 | 13/4 | 13 1/4 | 40MR08201 |

*Industrial Ball (27), Annular Ball (31) available. Change "01" bearing code. Industrial Ball example: 40MR05227

Heavy Duty Mold-on Rubber on Cast Iron (01 Roller Bearing)*



MH

| | | | | | | |
|---|---|-----|--------|------|--------|-----------|
| 5 | 2 | 500 | 8 | 13/4 | 10 1/2 | 40MH05201 |
| 6 | 2 | 500 | 8 1/2 | 13/4 | 11 | 40MH06201 |
| 8 | 2 | 500 | 10 1/2 | 13/4 | 13 1/4 | 40MH08201 |

*Industrial Ball (27), Annular Ball (31) available. Change "01" bearing code. Industrial Ball example: 40MH05227

Mold-on Rubber on Aluminum (01 Roller Bearing)*



MD

| | | | | | | |
|---|---|-----|--------|------|--------|-----------|
| 5 | 2 | 500 | 8 | 13/4 | 8 | 40MD05201 |
| 6 | 2 | 500 | 8 1/2 | 13/4 | 9 | 40MD06201 |
| 8 | 2 | 500 | 10 1/2 | 13/4 | 10 1/2 | 40MD08201 |

*Industrial Ball (27), Annular Ball (31) available. Change "01" bearing code. Industrial Ball example: 40MD05227

X-tra Soft Flat Tread (01 Roller Bearing)*



XS

| | | | | | | |
|---|---|-----|--------|------|-------|-----------|
| 5 | 2 | 375 | 8 | 13/4 | 8 | 40XS05201 |
| 6 | 2 | 500 | 8 1/2 | 13/4 | 8 1/2 | 40XS06201 |
| 8 | 2 | 500 | 10 1/2 | 13/4 | 9 1/2 | 40XS08201 |

Prevenz™ antimicrobial models available.
Add PREV to end of caster number.
*Industrial Ball (27), Annular Ball (31) available. Change "01" bearing code. Industrial Ball example: 40XS05227

X-tra Soft Round Tread (01 Roller Bearing)*



XR

| | | | | | | |
|---|---|-----|--------|------|-------|-----------|
| 6 | 2 | 450 | 8 1/2 | 13/4 | 8 1/2 | 40XR06201 |
| 8 | 2 | 500 | 10 1/2 | 13/4 | 9 1/2 | 40XR08201 |

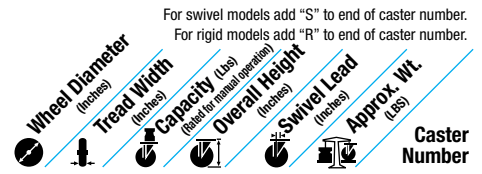
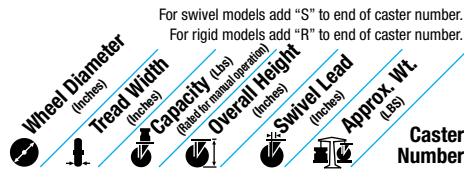
Prevenz™ antimicrobial models available.
Add PREV to end of caster number.
*Industrial Ball (27), Annular Ball (31) available. Change "01" bearing code. Industrial Ball example: 40XR05227

Pneumatic (27 Industrial Ball Bearing)



SF

| | | | | | | |
|---|---|-----|--------|------|-------|-----------|
| 6 | 2 | 200 | 8 1/2 | 13/4 | 8 1/2 | 40SF06227 |
| 8 | 2 | 210 | 10 1/2 | 13/4 | 9 1/2 | 40SF08227 |



Fiberglass Filled Polypropylene (01 Roller Bearing)*

| | | | | | | |
|---|---|-----|--------|------|--|------------------|
| 5 | 2 | 500 | 8 | 13/4 | | 40GP05201 |
| 6 | 2 | 500 | 8 1/2 | 13/4 | | 40GP06201 |
| 8 | 2 | 500 | 10 1/2 | 13/4 | | 40GP08201 |

GP

Polyurethane on Aluminum Flat Tread (01 Roller Bearing)*

| | | | | | | |
|---|---|-----|--------|------|-------|------------------|
| 5 | 2 | 500 | 8 | 13/4 | 9 | 40PD05201 |
| 6 | 2 | 500 | 8 1/2 | 13/4 | 8 3/4 | 40PD06201 |
| 8 | 2 | 500 | 10 1/2 | 13/4 | 10 | 40PD08201 |

*Industrial Ball (27), Annular Ball (31) available. Change "01" bearing code. Industrial Ball example: 40PD05227

PD

Polyurethane on Cast Iron (01 Roller Bearing)*

| | | | | | | |
|---|---|-----|--------|------|--------|------------------|
| 5 | 2 | 500 | 8 | 13/4 | 12 1/4 | 40PI05201 |
| 6 | 2 | 500 | 8 1/2 | 13/4 | 12 3/4 | 40PI06201 |
| 8 | 2 | 500 | 10 1/2 | 13/4 | 15 1/4 | 40PI08201 |

*Industrial Ball (27), Annular Ball (31) available. Change "01" bearing code. Industrial Ball example: 40PI05227

PI

Polyurethane on Aluminum Round Tread (28 Precision Ball Bearing)

| | | | | | | |
|---|---|-----|--------|------|--------|------------------|
| 5 | 2 | 500 | 8 | 13/4 | 11 | 40PM05228 |
| 6 | 2 | 500 | 8 1/2 | 13/4 | 12 1/2 | 40PM06228 |
| 8 | 2 | 500 | 10 1/2 | 13/4 | 13 | 40PM08228 |

PM

Polyurethane on Polypropylene (01 Roller Bearing)*

| | | | | | | |
|---|---|-----|--------|------|-------|------------------|
| 5 | 2 | 500 | 8 | 13/4 | 8 | 40XA05201 |
| 6 | 2 | 500 | 8 1/2 | 13/4 | 8 3/4 | 40XA06201 |
| 8 | 2 | 500 | 10 1/2 | 13/4 | 9 1/2 | 40XA08201 |

Prevenz™ antimicrobial models available.
Add PREV to end of model.

*Industrial Ball (27), Annular Ball (31) available. Change "01" bearing code. Industrial Ball example: 40XA05227

XA

X-Treme™ Solid Polyurethane (01 Roller Bearing)*

| | | | | | | |
|---|---|-----|--------|------|-------|------------------|
| 5 | 2 | 500 | 8 | 13/4 | 7 1/4 | 40XI05201 |
| 6 | 2 | 500 | 8 1/2 | 13/4 | 7 3/4 | 40XI06201 |
| 8 | 2 | 500 | 10 1/2 | 13/4 | 9 1/4 | 40XI08201 |

*Industrial Ball (27), Precision Ball (28), Annular Ball (31) available.
Change "01" bearing code. Industrial Ball example: 40XI05227

XI

X-Treme™ Plus Solid Polyurethane (01 Roller Bearing)*

| | | | | | | |
|---|---|-----|--------|------|-------|------------------|
| 5 | 2 | 500 | 8 | 13/4 | 7 1/4 | 40XP05201 |
| 6 | 2 | 500 | 8 1/2 | 13/4 | 7 3/4 | 40XP06201 |
| 8 | 2 | 500 | 10 1/2 | 13/4 | 9 1/4 | 40XP08201 |

Prevenz™ antimicrobial models available.
Add PREV to end of caster number.

*Industrial Ball (27), Precision Ball (28), Annular Ball (31) available.
Change "01" bearing code. Industrial Ball example: 40XP05227

XP

Maxim® (01 Roller Bearing)*

| | | | | | | |
|---|---|-----|--------|------|--------|------------------|
| 5 | 2 | 500 | 8 | 13/4 | 9 | 40NG05201 |
| 6 | 2 | 500 | 8 1/2 | 13/4 | 9 1/2 | 40NG06201 |
| 8 | 2 | 500 | 10 1/2 | 13/4 | 11 1/4 | 40NG08201 |

Prevenz™ antimicrobial models available.
Add PREV to end of caster number.

*Industrial Ball (27), Annular Ball (31) available. Change "01" bearing code. Industrial Ball example: 40NG05227

NG

Maxim® NR Noise Reduction (01 Roller Bearing)*

| | | | | | | |
|---|---|-----|--------|------|--------|------------------|
| 5 | 2 | 500 | 8 | 13/4 | 9 | 40NR05201 |
| 6 | 2 | 500 | 8 1/2 | 13/4 | 9 1/2 | 40NR06201 |
| 8 | 2 | 500 | 10 1/2 | 13/4 | 11 1/4 | 40NR08201 |

*Industrial Ball (27), Annular Ball (31) available. Change "01" bearing code. Industrial Ball example: 40NR05227

NR

Trionix™ High Impact Polymer (28 Precision Ball Bearing)

| | | | | | | |
|---|---|-----|--------|------|-------|------------------|
| 8 | 2 | 500 | 10 1/2 | 13/4 | 9 1/4 | 40NY08228 |
|---|---|-----|--------|------|-------|------------------|

NY

Trionix™ NX High Impact Polymer (28 Precision Ball Bearing)

| | | | | | | |
|---|---|-----|--------|------|--------|------------------|
| 5 | 2 | 500 | 8 | 13/4 | 12 1/4 | 40NX05228 |
| 6 | 2 | 500 | 8 1/2 | 13/4 | 12 3/4 | 40NX06228 |
| 8 | 2 | 500 | 10 1/2 | 13/4 | 15 1/4 | 40NX08228 |

NX

White Nylon (01 Roller Bearing)*

| | | | | | | |
|---|---|-----|--------|------|--|------------------|
| 5 | 2 | 500 | 8 | 13/4 | | 40NW05201 |
| 6 | 2 | 500 | 8 1/2 | 13/4 | | 40NW06201 |
| 8 | 2 | 500 | 10 1/2 | 13/4 | | 40NW08201 |

NW

Prevenz™ Antimicrobial Wheels

The EPA registered and FDA compliant antimicrobial additive used in Prevenz™ wheels is designed to suppress the growth of a variety of destructive and odor causing microbes including bacteria, molds, mildew and fungi. To order add "PREV" to end of caster number.



Wheel Bearing Selection Guide



Roller (01,05,07)

Roller bearings are the standard bearing in most caster applications. 1-1/2 and 2 inch width wheels feature a cage separating hardened steel rollers and a hardened steel split outer race. These bearings must be used on a hardened bushing or shaft. Maximum temperature range is 350°F. All Casters and wheels are rated up to 2.5 mph operation per the Institute of Caster & Wheel Manufacturers Guidelines.



Precision Sealed Ball (28)

Completely sealed, these precision ground ball bearings are held in a metal spacer ring between two hardened raceways. This bearing never needs to be lubricated, and with the lowest rolling resistance of all bearings offers the most ergonomic situation available. Maximum temperature range is 250°F.



Drawn Cup Roller (02)

These are roller bearings as described above except they have metal cages holding the precision ground rollers. The outer race is a one-piece construction, giving added rigidity to the wheel bore. These bearings must be used on a hardened bushing or shaft. Maximum temperature range is 400°F.



Pedestal Precision Ball (29)

These sealed precision ball bearings include an integral spanner which eliminates need for separate spanner. Maximum temperature range is 250°F.



Precision Tapered Roller (09)

The tapered roller is the most effective bearing for heavy or towed loads. The taper allows for some thrust loading, while the heat-treated inner and outer race allow for maximum load capacity. Maximum temperature range is 400°F.



Annular Ball (31)

A precision type bearing where the machined outer race and inner race are held together by the bearings. This option offers easy rolling and quiet operation for light to medium duty loads. This bearing must be factory installed in the wheel. Maximum temperature range is 250°F.



Bronze (22)

Excellent for wash-down or steam cleaning applications. Bearings is designed for temperatures up to 525°F.



Plain Bore (41)

In this option, no bearing material is used. The wheel runs directly on the axle or spanner bushing. This is the least expensive bearing option, but also results in a higher rolling resistance.



Oilex (23)

These bearings are made of oil-impregnated sintered iron. Completely self-lubricating, these are ideal for situations where rolling force is less critical and accessibility for lubrication is difficult. Maximum temperature range is 450°F.



Two Piece Delrin (51)

A DuPont™ engineered material, Delrin is designed for use in situations in which a self-lubricating material is optimal and corrosion cannot be tolerated. Ideal for wash-down or steam-cleaning applications as well as total immersion. Maximum temperature range is 160°F.



Radial Ball (Industrial Ball) (27)

Shielded ball bearings are often referred to as "industrial grade" bearings. Pressed into the hub of lower capacity wheels, these low cost bearings decrease the effort required to move a load. Maximum temperature range is 250°F.



One Piece Delrin (52)

This is a one-piece version of the Delrin bearing listed above. Good for use where thrust washers are needed or to add rigidity to a soft wheel which might cause the two piece bearing to be ejected from the bore of the wheel. Maximum temperature range is 160°F.

Optional Features

We carry top plates with optional dimensions and bolt hole patterns. As shown in the chart, these will interchange with standard top plates. For an optional top plate not listed please consult factory. To order, begin with ST (swivel) or RT (Rigid) followed by the caster series number (i.e. 16) then end with the alpha designation (i.e. J).

Example: 16TM0620IS

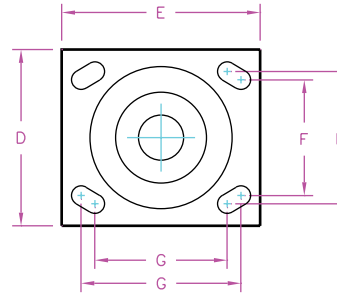
ST16J

Swivel top(ST), 16 series (16), bolt hole center (J)

Example: 272PD0620IR

RT272D

Rigid top (RT), dual wheel (2), 72 series (72), bolt hole center (D)



Top Plate and Bolt Hole Center Chart

| F & G Bolt Hole Centers (Inches) | D & E Top Plate Size (Inches) | Attaching Bolt (Inches) | Series 12, 16 | Series 71 | Series 72 | Series 81 | Series 94 | Series 95 | Series 18, 100, 110 | Series 310, 410 | Series 400 |
|---|---------------------------------|-------------------------|---------------|-----------|-----------|-----------|-----------|-----------|---------------------|-----------------|------------|
| Slotted for 3 x 4 to 2-5/8 x 3-5/8 | 4 x 5 | 3/8 | J | J | | | | | | | |
| Slotted for 3-3/8 x 5-1/4 to 2-7/16 x 4-15/16 | 4-1/2 x 6-1/4 | 1/2 | K | | | | | | K | | |
| 2-1/8 x 4 | 4 x 5 | 3/8 | | G | | | | | | | |
| 3 x 3 | 4 x 4 | 3/8 | | H | | | | | | | |
| 3-1/4 x 6 | 4-1/2 x 7-1/4 | 1/2 | | | W | W | | | | | |
| 4-1/8 x 4-1/2 | 5 x 5-1/2 | 3/8 | D | | D | D | | | D (110 only) | | |
| 4-7/8 x 6-3/4 | Swivel 6-1/2 x 8 Rigid 6 x 8 | 5/8 | | | | | C | | | | |
| 7 x 9-3/4 | 8-1/2 x 11 | 5/8 | | | | | | T | | | |
| Slotted for 4-5/8 x 5-1/2 to 4-3/8 x 5-5/8 | 6 x 7 | 1/2 | | | | | | | | S | N |

Optional Overall Heights

| Series | Wheel Diameter (Inches) | Optional Height (Inches) | Swivel Lead (Inches) | Swivel Option Number | Rigid Option Number |
|------------|-------------------------|--------------------------|----------------------|----------------------|---------------------|
| 12, 16, 33 | 3-1/4 | 5-1/4 | 1-11/16 | HS42 | HR42 |
| 12, 16, 33 | 4 | 5-1/4 | 1-11/16 | HS86 | HR86 |
| 12, 16, 33 | 5 | 6-1/8 | 1-11/16 | HS-50 | HR50 |
| 12, 16, 33 | 5 | 6-3/4 | 1-3/4 | HS54 | HR54 |
| 12, 16, 33 | 6 | 6-7/8 | 2-1/2 | HS56 | HR56 |
| 12 | 6 | 7-1/4 | 1-3/4 | HS82 | HR82 |
| 16 | 6 | 7-3/8 | 1-3/4 | HS59 | HR59 |
| 16 | 6 | 7-1/2 | 1-7/8 | HS60 | HR60 |
| 62 | 6 | 7-3/4 | 1-3/4 | HS85 | HR85 |
| 12, 16 | 8 | 10 | 1-3/4 | HS81 | HR81 |
| 34, 62 | 8 | 9-1/2 | 2-1/4 | HS76 | HR76 |
| 34, 62 | 8 | 9-3/4 | 1-3/4 | HS83 | HR83 |
| 63 | 8 | 9-1/2 | 2-1/4 | HS84 | HR84 |
| 100 | 8 | 9-1/2 | 2-1/2 | HS89 | HR89 |

Replacement Parts

Axle and Bearing Components for Standard Models (Consult factory for parts not in this chart)

| Caster Series | Wheel Hub Length (Inches) | Axle Hollow | Axle Solid | NUT | Spanner Bushing | Lock Washer | Roller Bearing | Plain Retaining Washer | Sealed Retaining Washer | Nylon sealed combo-washer | Metal combo-washer | Thrust Washer |
|------------------------------------|---------------------------|--------------------|------------|----------|----------------------|-------------|--------------------|------------------------|-------------------------|---------------------------|--------------------|--------------------|
| DC, PC, P2, 02 Series | 1.25" | ZJ063502, ZJ063504 | | NL061600 | ZF060824, ZF060826 | | ZB081718 | WA081703 | | | | WA082400, WA082406 |
| 04 Series | 1.25" | ZJ063510 | | NJ061600 | ZF06082401 | | | | | | | |
| 05 Series | 2.188" | ZJ085600 | ZJ085603 | NJ081311 | ZF081240 | WA081401 | ZB12193001 | WA121904 | WA121990 | WA121905 | | WA122603 |
| 12,16,18,40, 61,62,71,72 110,100 | 2.188" | ZJ085400 | ZJ085403 | NL082000 | ZF081239 | | ZB121930 | WA121900 | WA121990 | WA121905 | WA121999 | WA122600 |
| 42,61,62,72, 78 Series | 2.75" | ZJ086400 | ZJ086403 | NL082000 | ZF081248 | | ZB121940 | WA121900 | WA121990 | WA121905 | WA121999 | WA122600 |
| 63 Series | 2.75" | ZJ126800 | | NL121001 | ZF121648 | | ZB163140 | WA163103 | WA163190 | | WA163199 | WA163900 |
| 44,81,84,90, 92, 300,310, 400, 410 | 3.25" | ZJ127600 | | NL121001 | ZF121657, ZF12162057 | | ZB163148, ZB203948 | WA163103, WA203103 | WA163190, WA203190 | | WA163199, | WA163900, WA204800 |
| 330 Series | 3.25" | ZJ12760009 | ZJ128010 | NJ121000 | ZF12165703 | WA122006 | ZB16314803 | WA16310304 | WA16319001 | | WA163199 | WA16390001 |
| 600 Series | 3.25" | | ZJ161496 | NL161403 | ZF162057 | | ZB203148, ZB203948 | WA203103, WA203903 | WA203190, WA203950 | | WA163199, | WA163900, WA204800 |
| 90,92, 600 Series | 4.25" | ZJ169601 | ZJ161496 | NL161403 | ZF162073 | | ZB203964 | WA203903 | WA203990 | | | WA204800 |

Axle and Bearing Components for Standard Models (Consult factory for parts not in this chart) (Continued)

| Caster Series | Wheel Hub Length (Inches) | Precision Ball Bearing | Delrin Bearing (2 pieces) | Delrin Bearing (1 piece) | Bronze Bearing | Oilex Bearing | Drawn Cup Roller Bearing | Top Hat Spacer |
|--------------------------------------|---------------------------|------------------------|---------------------------|--------------------------|----------------|---------------|--------------------------|----------------|
| DC, PC, P2, 02 Series | 1.25" | | | | | | | |
| 04 Series | 1.25" | | | | | | | |
| 05 Series | 2.188" | | TF121912 | TF121934 | 0I121908 | Z0121935 | | |
| 12,16,18,40, 61,62,71,72, 78,110,100 | 2.188" | ZA081903, ZA081904, | TF121912 | TF121934 | 0I121908 | Z0121935 | ZX121930 | ZY0812001 |
| 42,61,62,72, 78 Series | 2.75" | | TF121912 | | 0I121908 | | | |



Roller Bearing
ZB121930
Shown



Spanner Bushing
ZF081239
Shown



Metal Step Retaining Thrust Washer



Nylon Sealed Retaining Thrust Washer
WA121905
Shown



Sealed Retaining Thrust Washer



Solid Axle & Nut
ZJ085409
Shown



Hollow Axle & Nut
ZJ085408
Shown

Replacement Parts



Tapered Roller Bearing

Tapered Roller Bearings and Spacers

| Kit Number | Cup Only Part Number* | Cone Only Part Number* | Bearing ID (Inches) | Bearing OD (Inches) | Notes | Spacer Number | Spacer ID (Inches) | Spacer OD (Inches) | Spacer Length (Inches) |
|------------|-----------------------|------------------------|---------------------|---------------------|----------|---------------|--------------------|--------------------|------------------------|
| ZT082200 | ZT082201 | ZT082202 | 0.500 | 1.375 | | ZM082800 | 0.500 | 1.750 | 0.000 |
| ZT122800 | ZT122801 | ZT122802 | 0.750 | 1.780 | | ZY121600 | 0.750 | 1.000 | 0.231 |
| ZT123100 | ZT123101 | ZT123102 | 0.750 | 1.938 | | ZY121600 | 0.750 | 1.000 | 0.231 |
| ZT163200 | ZT163202 | ZT163101 | 1.000 | 1.979 | | ZY162004 | 1.000 | 1.250 | 0.281 |
| ZT163900 | ZT163901 | ZT163902 | 1.000 | 2.438 | | ZY162005 | 1.000 | 1.250 | 0.313 |
| ZT203900 | ZT163901 | ZT203911 | 1.250 | 2.438 | Wider | ZY202406 | 1.250 | 1.500 | 0.348 |
| ZT203920 | ZT203901 | ZT203902 | 1.250 | 2.438 | Narrower | ZY202404 | 1.250 | 1.500 | 0.281 |
| ZT203940 | ZT203901 | ZT203802 | 1.250 | 2.438 | Sealed | SD203013 | 1.250 | 1.875 | 0.000 |
| ZT205000 | ZT205001 | ZT205002 | 1.250 | 3.125 | | ZY202606 | 1.250 | 1.625 | 0.375 |
| ZT244100 | ZT244102 | ZT244101 | 1.500 | 2.563 | | ZY242806 | 1.500 | 1.750 | 0.375 |
| ZT245000 | ZT205001 | ZT245001 | 1.500 | 3.125 | | ZY242806 | 1.500 | 1.750 | 0.375 |

* Purchased as kit only.

Other Bearing Types

| Bearing Part Number | Description of Bearing | Bearing ID (Inches) | Bearing OD (Inches) | Bearing Length (Inches) | Notes/Suggestions | Requires Part Number |
|---------------------|-------------------------|---------------------|---------------------|-------------------------|--------------------|----------------------|
| ZA081900 | Industrial Ball | 0.500 | 1.188 | 1.875 | | |
| ZA081902 | Industrial Ball | 0.500 | 1.188 | 2.438 | Butt Bearing | |
| ZA081903 | Pedestal Precision Ball | 0.500 | 1.188 | 2.438 | Pedestal Bearing | |
| ZA081904 | Precision Ball | 0.500 | 1.188 | 2.438 | Pedestal Bearing | |
| ZA122500 | Precision Ball | 20mm | 40mm | Any | 6203-2RS | ZY0812001 |
| TF121912 | Delrin | 0.750 | 1.188 | Any | Not with Cam Brake | |
| TF121934 | Delrin | 0.750 | 1.188 | 2.438 | | WA122600 or WA122603 |
| OI121912 | Bronze | 0.750 | 1.188 | Any | | |
| ZO081722 | Oil impregnated iron | 0.500 | 1.063 | 1.250 | | |
| ZO081926 | Oil impregnated iron | 0.500 | 1.188 | 1.875 | | |
| ZO081935 | Oil impregnated iron | 0.500 | 1.188 | 2.438 | | |
| ZO101926 | Oil impregnated iron | 0.625 | 1.188 | 1.875 | | |
| ZO101935 | Oil impregnated iron | 0.625 | 1.188 | 2.438 | | |
| ZO121926 | Oil impregnated iron | 0.750 | 1.188 | 1.875 | | |
| ZO121935 | Oil impregnated iron | 0.750 | 1.188 | 2.438 | | |



Oilex Bearing
(Oil impregnated iron)

Replacement Parts

Straight Roller Bearing and Retaining Washers



Roller Bearing

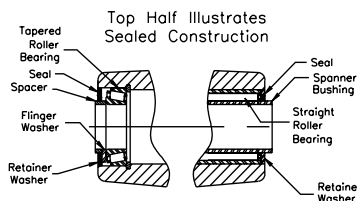


Nylon Sealed Retaining Thrust Washer



Powdered Iron Step Retaining Thrust Washer

Line drawing (below) section view shows typical wheel hub construction with sealed straight and tapered roller bearings. Note spacer tubes are used with tapered roller bearings which increases hub length 1/4" and facilitates proper loading of cup to cone. For non-sealed construction, seal is replaced with retainer and flinger washers.



Top Half Illustrates Sealed Construction
Bottom Half Illustrates UnSealed Construction

| Part Number | Roller Bearing ID (Inches) | Roller Bearing OD (Inches) | Roller Bearing Length (Inches) | Plain Retaining Washer Number | Rubber Sealed Retaining Washer | Nylon Combo Washer Number | Sintered Iron Combo Washer Number | Washer ID (inches) | Washer OD (inches) |
|-------------|----------------------------|----------------------------|--------------------------------|-------------------------------|--------------------------------|---------------------------|-----------------------------------|--------------------|--------------------|
| ZB081718 | 0.500 | 1.063 | 1.125 | WA081703 | WA081790 | | | 0.500 | 1.063 |
| ZB081922 | 0.500 | 1.188 | 1.375 | WA121900 | | | | 0.500 | 1.188 |
| ZB081930 | 0.500 | 1.188 | 1.875 | WA121900 | | | | 0.500 | 1.188 |
| ZB081932 | 0.500 | 1.188 | 2.000 | WA121900 | | | | 0.500 | 1.188 |
| ZB101922 | 0.625 | 1.188 | 1.375 | WA121900 | WA101990 | | | 0.625 | 1.188 |
| ZB101930 | 0.625 | 1.188 | 1.875 | WA121900 | WA101990 | | | 0.625 | 1.188 |
| ZB101932 | 0.625 | 1.188 | 2.000 | WA121900 | WA101990 | | | 0.625 | 1.188 |
| ZB101940 | 0.625 | 1.188 | 2.500 | WA121900 | WA101990 | | | 0.625 | 1.188 |
| ZB121920 | 0.750 | 1.188 | 1.250 | WA121900 | WA121990 | WA121905 | WA121999 | 0.750 | 1.188 |
| ZB121930 | 0.750 | 1.188 | 1.875 | WA121900 | WA121990 | WA121905 | WA121999 | 0.750 | 1.188 |
| ZB12193001* | 0.750 | 1.188 | 1.875 | WA121904 | | WA121905 | | 0.750 | 1.188 |
| ZX121930 | 0.750 | 1.188 | 1.875 | WA121900 | WA121990 | WA121905 | WA121999 | 0.750 | 1.188 |
| ZB121940 | 0.750 | 1.188 | 2.438 | WA121900 | WA121990 | WA121905 | WA121999 | 0.750 | 1.188 |
| ZB142332 | 0.875 | 1.438 | 2.000 | WA162303 | WA142390 | | | 0.875 | 1.438 |
| ZB162328 | 1.000 | 1.438 | 1.750 | WA162303 | WA162390 | | | 1.000 | 1.438 |
| ZB162332 | 1.000 | 1.438 | 2.000 | WA162303 | WA162390 | | | 1.000 | 1.438 |
| ZB163136 | 1.000 | 1.938 | 2.250 | WA163103 | WA163190 | | WA163199 | 1.000 | 1.938 |
| ZB163140 | 1.000 | 1.938 | 2.500 | WA163103 | WA163190 | | WA163199 | 1.000 | 1.938 |
| ZB163148 | 1.000 | 1.938 | 3.000 | WA163103 | WA163190 | | WA163199 | 1.000 | 1.938 |
| ZB163164 | 1.000 | 1.938 | 4.000 | WA163103 | WA163190 | | WA163199 | 1.000 | 1.938 |
| ZB183148 | 1.125 | 1.938 | 3.000 | WA203103 | | | WA203199 | 1.250 | 1.938 |
| ZB203140 | 1.250 | 1.938 | 2.500 | WA203103 | WA203190 | | WA203199 | 1.250 | 1.938 |
| ZB203148 | 1.250 | 1.938 | 3.000 | WA203103 | WA203190 | | WA203199 | 1.250 | 1.938 |
| ZB203164 | 1.250 | 1.938 | 4.000 | WA203103 | WA203190 | | WA203199 | 1.250 | 1.938 |
| ZB203948 | 1.250 | 2.438 | 3.000 | WA203903 | WA203990 | | | 1.250 | 2.438 |
| ZB203964 | 1.250 | 2.438 | 4.000 | WA203903 | WA203990 | | | 1.250 | 2.438 |
| ZB203980 | 1.250 | 2.438 | 5.000 | WA203903 | WA203990 | | | 1.250 | 2.438 |
| ZB243948 | 1.500 | 2.438 | 3.000 | WA243903 | WA243990 | | | 1.500 | 2.438 |
| ZB243964 | 1.500 | 2.438 | 4.000 | WA243903 | WA243990 | | | 1.500 | 2.438 |
| ZB243980 | 1.500 | 2.438 | 5.000 | WA243903 | WA243990 | | | 1.500 | 2.438 |
| ZB284964 | 1.625 | 3.063 | 4.000 | WA284903 | | | | 1.750 | 3.063 |
| ZB284980 | 1.625 | 3.063 | 5.000 | WA284903 | | | | 1.750 | 3.063 |
| ZB325264 | 2.000 | 3.250 | 4.000 | WA325203 | | | | 2.000 | 3.250 |
| ZB325280 | 2.000 | 3.250 | 5.000 | WA325203 | | | | 2.000 | 3.250 |

* Stainless Steel

Note: Straight roller bearings include roller assembly with split outer race but does not include the retaining washers. Retaining washers are ordered separately in quantities of 2 per wheel.

Axles and Nuts



Solid Axle & Nut
ZJ085409
Shown



Hollow Axle & Nut
ZJ085408
Shown

| Axle Part Number | Type | Matching Nut | Matching Lock Washer | Diameter (Inches) | Length (Inches) | Threads (Per Inch) | Notes |
|------------------|--------|--------------|----------------------|-------------------|-----------------|--------------------|-----------------|
| ZJ063502 | Hollow | NL061600 | | 0.375 | 2.188 | 16 | No Grease Zerk |
| ZJ063504 | Hollow | NL061600 | | 0.375 | 2.188 | 16 | |
| ZJ083510 | Solid | NJ061600 | | 0.375 | 2.188 | 16 | Stainless Steel |
| ZJ084500 | Hollow | NL082000 | | 0.500 | 2.813 | 20 | |
| ZJ085400 | Hollow | NL082000 | | 0.500 | 3.375 | 20 | |
| ZJ085403 | Solid | NL082000 | | 0.500 | 3.375 | 20 | |
| ZJ085600 | Hollow | NJ081311 | WA081401 | 0.500 | 3.500 | 13 | Stainless Steel |
| ZJ085603 | Solid | NJ081311 | WA081401 | 0.500 | 3.500 | 13 | Stainless Steel |
| ZJ086400 | Hollow | NL082000 | | 0.500 | 4.000 | 20 | |
| ZJ086403 | Solid | NL082000 | | 0.500 | 4.000 | 20 | |
| ZJ087200 | Solid | NL082000 | | 0.500 | 4.500 | 20 | |
| ZJ105610 | Hollow | NL101800 | | 0.625 | 3.500 | 18 | |
| ZJ126802 | Hollow | NL121001 | | 0.750 | 4.250 | 12 | |
| ZJ127600 | Hollow | NL121001 | | 0.750 | 4.750 | 12 | |
| ZJ127603 | Solid | NL121001 | | 0.750 | 4.750 | 12 | |
| ZJ168000 | Solid | NL161403 | | 1.000 | 5.000 | 14 | |
| ZJ169601 | Hollow | NL161403 | | 1.000 | 6.000 | 14 | |
| ZJ169602 | Solid | NL161403 | | 1.000 | 6.000 | 14 | |

Hollow axles have zerk fitting for lubrication and solid axles are without lubrication fitting. All axles come complete with lock nut. Consult factory for optional slotted nuts and lock pins.

Replacement Parts

Spanner Bushings & Thrust Washers



Spanner Bushing



Nylon Sealed Retaining Thrust Washer



Powdered Iron Step Retaining Thrust Washer

| Part Number | Spanner Bushing ID (Inches) | Spanner Bushing OD (Inches) | Spanner Bushing Length (Inches) | Spanner Material | Lubrication Holes | Matching Thrust Washers | Washer I.D. (Inches) | Washer O.D. (Inches) |
|-------------|-----------------------------|-----------------------------|---------------------------------|------------------|-------------------|-------------------------|----------------------|----------------------|
| ZF060824 | 0.375 | 0.500 | 1.500 | Stainless | 1 | WA082406 | 0.500 | 1.500 |
| ZF06082401 | 0.375 | 0.500 | 1.500 | | 1 | | | |
| ZF060826 | 0.375 | 0.500 | 1.625 | | 1 | WA082400 | 0.500 | 1.500 |
| ZF081030 | 0.500 | 0.625 | 1.875 | | 2 | WA102400 | 0.625 | 1.500 |
| ZF081033 | 0.500 | 0.625 | 2.063 | | 2 | WA102400 | 0.625 | 1.500 |
| ZF081036 | 0.500 | 0.625 | 2.250 | | 2 | WA102400 | 0.625 | 1.500 |
| ZF081038 | 0.500 | 0.625 | 2.375 | | 2 | WA102400 | 0.625 | 1.500 |
| ZF081039 | 0.500 | 0.625 | 2.438 | | 2 | WA102400 | 0.625 | 1.500 |
| ZF081046 | 0.500 | 0.625 | 2.875 | | 2 | WA102400 | 0.625 | 1.500 |
| ZF081230 | 0.500 | 0.750 | 1.875 | | Stainless | 2 | WA122600 | 0.750 |
| ZF081236 | 0.500 | 0.750 | 2.250 | 2 | | WA122600 | 0.750 | 1.625 |
| ZF081238 | 0.500 | 0.750 | 2.375 | 2 | | WA122600 | 0.750 | 1.625 |
| ZF081239 | 0.500 | 0.750 | 2.438 | 2 | | WA122600 | 0.750 | 1.625 |
| ZF081240 | 0.500 | 0.750 | 2.438 | 2 | | WA122603 | 0.750 | 1.625 |
| ZF081248 | 0.500 | 0.750 | 3.000 | 2 | | WA122600 | 0.750 | 1.625 |
| ZF081264 | 0.500 | 0.750 | 4.000 | none | | WA122600 | 0.750 | 1.625 |
| ZF101239 | 0.625 | 0.750 | 2.438 | 2 | | WA122600 | 0.750 | 1.625 |
| ZF121648 | 0.750 | 1.000 | 3.000 | 2 | | WA163900 | 1.000 | 2.438 |
| ZF121657 | 0.750 | 1.000 | 3.500 | 2 | | WA163900 | 1.000 | 2.438 |
| ZF121664 | 0.750 | 1.000 | 4.000 | none | | WA163900 | 1.000 | 2.438 |
| ZF121677 | 0.750 | 1.000 | 4.812 | none | | WA163900 | 1.000 | 2.438 |
| ZF162057 | 1.000 | 1.250 | 3.563 | none | | WA203903 | 1.250 | 2.438 |
| ZF162073 | 1.000 | 1.250 | 4.563 | none | | WA204800 | 1.250 | 3.000 |
| ZF162089 | 1.000 | 1.250 | 5.563 | none | | WA204800 | 1.250 | 3.000 |
| ZF202458 | 1.250 | 1.500 | 3.563 | none | | WA245600 | 1.500 | 3.500 |
| ZF202473 | 1.250 | 1.500 | 4.563 | none | | WA245600 | 1.500 | 3.500 |
| ZF202489 | 1.250 | 1.500 | 5.563 | none | | WA245600 | 1.500 | 3.500 |

All spanner bushings are hardened to form precision inner race for roller bearings. Except as noted by "none", all spanner bushings are cross drilled for lubrication through hollow axle. Thrust washers are hardened. They are not part of the spanner bushing assembly and must be ordered separately. Thrust washers are not required with ball bearings, 2 piece delrin bearings, or with combo washers.

PARTS FOR EMPIRE 15 AND 60 SERIES RIGS

AXLES AND NUTS



Hollow Axle & Nut

Solid Axle & Nut

| Axle Number | Type | Matching Nut | Diameter (inches) | Length (inches) | Threads (per inch) |
|-------------|--------|--------------|-------------------|-----------------|--------------------|
| ZJ085400 | Hollow | NL082000 | 0.500 | 3.375 | 20 |
| ZJ085403 | Solid | NL082000 | 0.500 | 3.375 | 20 |

SPANNERS AND THRUST WASHERS



Spanner Bushing

| Spanner Number | Spanner ID (inches) | Spanner OD (inches) | Spanner Length (inches) | Lubrication Holes | Matching Thrust Washers | Washer ID (inches) | Washer OD (inches) |
|----------------|---------------------|---------------------|-------------------------|-------------------|-------------------------|--------------------|--------------------|
| ZF081239 | 0.500 | 0.750 | 2.438 | 2 | WA122600 | 0.750 | 1.625 |

ROLLER BEARINGS & RETAINER WASHERS



| Bearing Number | Bearing ID (inches) | Bearing OD (inches) | Bearing Length (inches) | Plain Retaining Washer | Rubber Sealed Retaining Washer | Nylon Combo Washer | Sintered Iron Combo Washer | Washer ID (inches) | Washer OD (inches) |
|----------------|---------------------|---------------------|-------------------------|------------------------|--------------------------------|--------------------|----------------------------|--------------------|--------------------|
| ZB121930 | 0.750 | 1.188 | 1.875 | WA121900 | WA121990 | WA121905 | WA121999 | 0.750 | 1.188 |

DELTRIN BEARINGS (IB POLYPROPYLENE WHEELS ONLY)

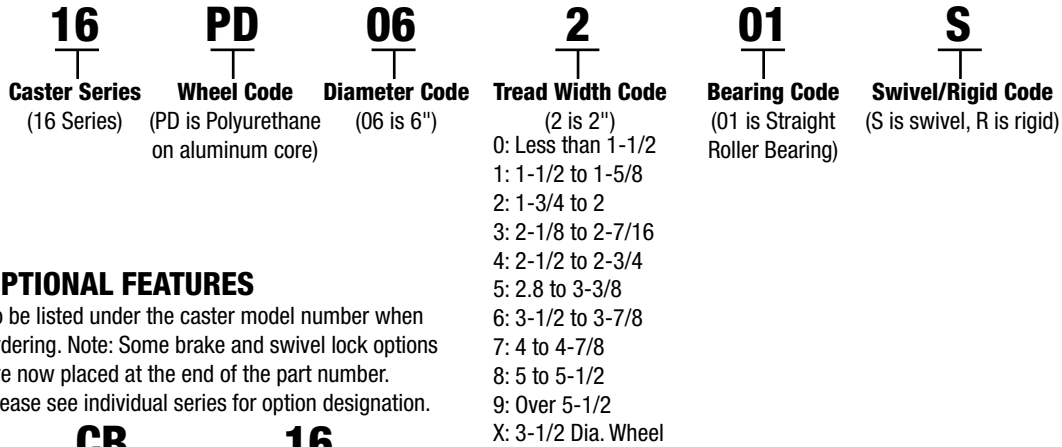


| Bearing Number | Bearing ID (inches) | Bearing OD (inches) | Bearing Length (inches) | NOTE: Two piece Delrin bearing (spanner not included) |
|----------------|---------------------|---------------------|-------------------------|---|
| TF121912 | 0.750 | 1.188 | .75 | |

Product Numbering System

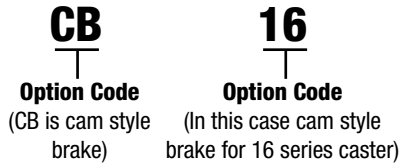
CASTERS

16PD06201S is a 16 Series 6" x 2" swivel top plate caster with Polyurethane/Aluminum core wheel and straight roller bearing. See below for caster number breakdown.



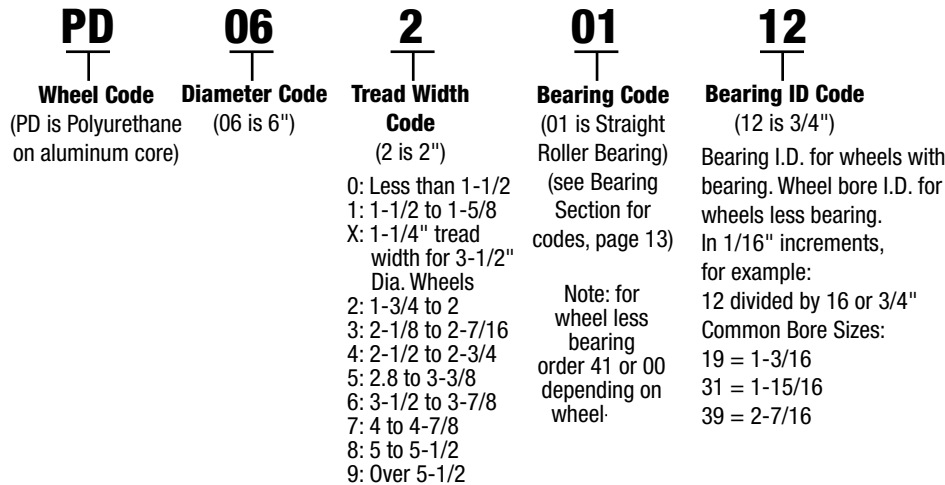
OPTIONAL FEATURES

To be listed under the caster model number when ordering. Note: Some brake and swivel lock options are now placed at the end of the part number. Please see individual series for option designation.



WHEELS

PD0620112 is a 6" x 2" Polyurethane/Aluminum core with 3/4" straight roller bearing.



RIGS

16YA06201S is a Medium-heavy duty swivel rig that would accommodate the above 6" x 2" PD wheel.

