

The following information is to help you make a selection of axles and running gear from our wide range of possible choices; or call Twin Grove Trailers salespeople assist you in choosing the right products.

How to Select Axles and Running Gear

1. How to Determine the Gross Vehicle Weight (GVW)

When building a trailer, the total Gross Vehicle Weight (GVW) must be determined in order to select the right axle or axles for the application. GVW includes the weight of the empty trailer and the weight of the intended cargo. (Example: 2,000 lb. empty trailer weight + 8,000 lbs. cargo = GVW of 10,000 lbs.)

2. How Many Axles?

After determining the GVW, the number and capacity of the axles must be selected. For example, if you want 10,000 lb. GVW and want tandem axles, the minimum required capacity is 6,000 lbs. per axle.

3. Brakes?

First, determine if you want brakes on each axle. Most states require by law that at least one axle has brakes. Some states require that all axles have brakes. To determine how many brakes are necessary in a state, contact the local Department of Motor Vehicles. Second, determine what type of brake you prefer: Electric, Hydraulic Single-Serve, Hydraulic Free-Backing, Hydraulic Duo-Serve, Hydraulic Disc or Air "S" Cam Brakes.

4. Which Type of Spindles Are Going To Be Required?

Straight spindles are used mostly when the bed is over the tires or when low ground clearance is not required. Examples are flat beds, pull-type utility trailers, etc.

Drop spindles are used when the lowest possible ground clearance is desired. Examples are Livestock and Horse Trailers, Car Haulers, Enclosed Cargo Van Trailers, etc.

5. What Are the Spring Centers?

Spring Centers are the CL (centerline) measurement of the Spring Mounting Pads on the axle. Spring centers are usually matched to the approximate frame width of the trailer.

6. Which Bolt Pattern?

The Bolt Pattern of the axles can vary depending on the capacity of the axle. The Bolt Pattern also determines what type tire and wheel can be used. If there is a specific tire and wheel you would like to use, please relay that information so we can help you to determine the proper bolt pattern and axle.

7. What is the Length of the Axle?

The next step is to determine the length of the axle. Of the several ways and industry terms to describe this procedure, the most popular term is "Hub Face," which is the measurement from the base of the wheel stud to the base of the wheel stud on the opposite end of the axle. Another term frequently used is "Track". Track is the center of the tire to the center of the opposite tire. This measurement varies depending on what type of wheel is used, because each type of wheel (White Spoke, O.E.M., Custom) could have a different offset, changing the tire center.

8. Which Type of Springs?

There are two basic types of springs to choose from: **Double Eye** or **Slipper Springs**. **Double Eye Springs** are used with the shackle-type suspensions. **Slipper Springs** are the heavy duty springs used with slippertype suspensions. Complete sets of springs and u-bolt kits can be ordered with axles.

9. Which Hanger Kit?

There are several Hanger Kits to choose from - single, tandem or triple for both double eye and slipper springs. Hanger Kits consist of Spring Hangers that attach to the frame, Equalizers (tandem or triple Hanger Kits), Shackle Straps (if double eye springs) and all the necessary hardware.

How To Order Tubular Axle Assemblies

Our part numbers for axles are assigned in accordance to the capacity, bolt pattern, type of brakes (if any) and type of spindle used. When ordering axles, the following information should be helpful to you.

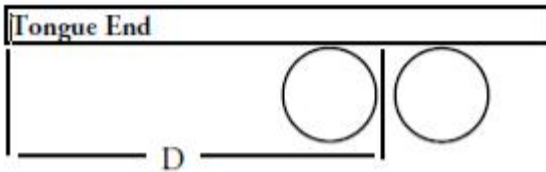
EX: 20545I-ST-EZ 2,000 lb., 5 on 4 1/2" Idler Straight with E-Z Lube

20 / 545 / I / ST / EZ

- 20:** The first group of digits represent the capacity (20 = 2,000 lb. capacity).
- 545:** The next group represents the number of studs and the bolt pattern of the studs (545 = 5 on 4 1/2", 655 = 6 on 5 1/2", 865 = 8 on 6 1/2", etc.).
- I:** This tells you which type of brakes are used, if any:
(I = Idler, E = Electric, H = Hydraulic, HFB = Hydraulic Free-Backing, DS = Disc, A = Air).
- ST:** This tells you which type of spindles are used (ST = Straight, 4D = 4" Drop).
- EZ:** Any other options: (EZ = E-Z Lube Spindle, SPR = Springs Mounted)

How to Determine Correct Axle Position

1. Weigh the trailer (under wheels) "Wheel Weight".
2. Obtain "Tongue Weight" (actual).
3. Measure distance from tongue to axle, or to center between Dual Axle Set (D).
4. Determine Total Weight: Total Weight = Tongue Weight + Wheel Weight.



IF TONGUE WEIGHT IS GREATER THAN 10% OF TOTAL WEIGHT

If tongue weight is greater than 10% of Total Weight, decrease distance "D" by "X" where

$$X = \frac{(\text{Tongue Weight} - 10\% \text{ Total})}{\text{Total Weight}} \text{ Times } D$$

Example #1 - Tongue greater than 10% of Total Weight

Tongue Weight = 1025#
 Wheel Weight = 7200#
 D = 264"
 Total Weight = 8225#
 % Tongue Weight = $\frac{1025}{8225} = 0.1246$ or 12 1/2%
 "X" = $\frac{1025 - 822.5}{8225} \text{ Times } 264 = 6.499"$

Move the Axle(s) toward the Tongue of the trailer approximately 6 1/2"

$$\text{New D} = D - 6 \frac{1}{2} = 264 - 6 \frac{1}{2} = 257.5"$$

IF TONGUE WEIGHT IS LESS THAN 10% OF TOTAL WEIGHT

If tongue weight is less than 10% of Total Weight, increase distance "D" by "X" where

$$X = \frac{(10\% \text{ Total} - \text{Tongue Weight})}{\text{Total Weight}} \text{ Times } D$$

Example #2 - Tongue less than 10% of Total Weight

Tongue Weight = 300#
 Wheel Weight = 8200#
 D = 264"
 Total Weight = 8500#
 % Tongue Weight = $\frac{300}{8500} = 0.035$ or 3 1/2%
 "X" = $\frac{850 - 300}{8500} \text{ Times } 264 = 17"$

Move the Axle(s) toward the Rear of the trailer approximately 17"

$$\text{New D} = D + 17 = 264 + 17 = 281"$$

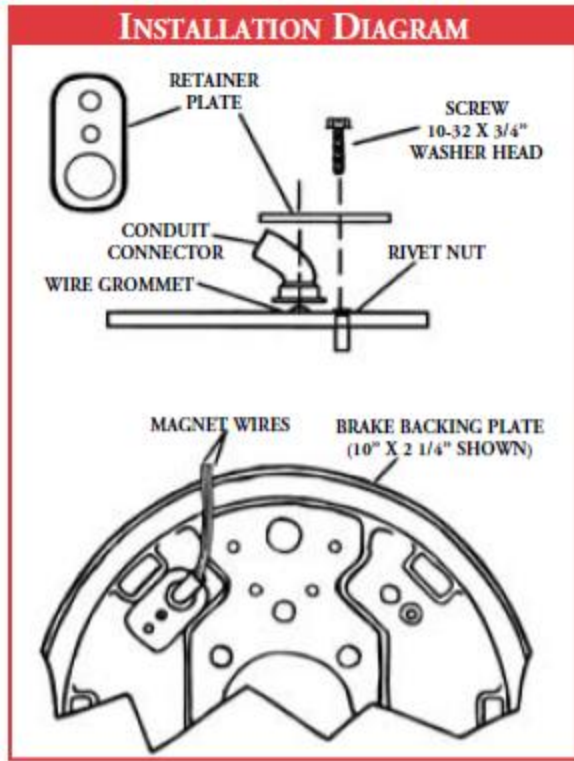
The Protective Wiring Connector!

The **primary cause of electric brake failure** is a loose or corroded connection in the brake wiring. The weakest point of the wiring connection is located under the trailer, at the axle, where the magnet wires exit the brake. Over time, the outer covering of the wires will become brittle and crack/break, exposing the wires, allowing the wires to short circuit against the trailer frame, axle, or against each other.

What is a protective wiring connector?

It is an adjustable connector that attaches directly to the brake backing plate and allows you to attach most types of 1/2" I.D. conduit or loom to protect against rocks, dirt, snow, brush, etc.

This protective wiring connector may be ordered as a kit to retrofit existing axles (part # PWC1012), or may be preinstalled at the factory on new Dexter Axle assemblies for a minimal charge.



(Note: Axles ordered with the PWC option factory installed will not have the internal brake wiring inside the axle tube.)
Protective Wiring Connector fits only Dexter Electric Brakes.

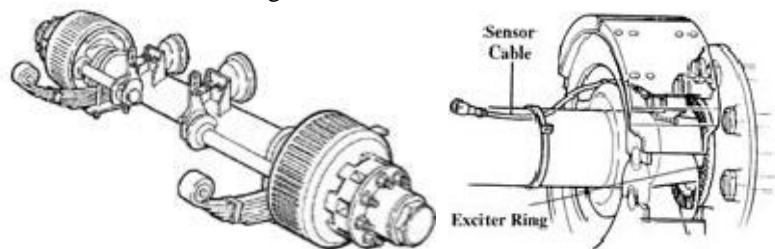
**8,000 lb thru 25,000 lb Axles can be supplied ABS equipped,
with sensors and exciter rings pre-installed.**

Regulation

All trailers with air brakes, manufactured after March 1, 1998, must have ABS in order to comply with FMVSS 571.121. This standard also applies to air-over-hydraulic brake systems.

Required Equipment

An ABS system consists of wheel sensors that send electric impulses to an Electronic Control Unit (ECU) which pulses the service brakes in the event of wheel lockup. The minimum ABS configuration for a tandem axle trailer is a 2S/1M. This indicates two wheel sensors will be connected to and monitored by the ECU, and one modulator valve will control the service brakes. 4S/2M ABS configuration is also available from Redneck.



Nev-R-Lube

No need to pull the hubs to repack the bearings!
No need to replace seals when you check the brakes!
No more inner and outer bearings!

Pre-set Adjustments.

Ease of installation. Human error is virtually eliminated in bearing adjustment.

Pre-Lubricated at the Bearing Factory.

Resistant to contamination.

Sealed for Life.

No bearing maintenance. Increased durability and reliability.

Lower maintenance cost.

5-year or 100,000 miles warranty against defects in material or workmanship.

Available in 35mm cartridge, 42mm cartridge and 50mm cartridge.



Lubricate the E-Z Lube Way!

Keep bearings protected the easy way. Use the E-Z Lube Axle from Dexter.

The E-Z Lube design allows grease to flow with EASE to both outer and inner bearings for a complete repack. It's E-Z because all you need to do is attach a grease gun at the end and insert the grease. No disassembly required! E-Z Lube's end cap allows for easy access, extra protection and no mess.

With such complete lubrication, your running gear is protected from corrosion and water entry. E-Z Lube protection and maintenance features make it ideal for almost any towable axle, whether it's for work or play. Give your running gear the ultimate in protection and maintenance ease with E-Z Lube from Dexter!



*Available on Dexter 2K-7K Axles using 1/2"-20 Wheel Studs. (See Section B-45.)

Standard Wheel Nuts vs. Torq-N-Go Wheel Nuts

THE PROBLEM: When using standard wheel nuts, 90% of all torque applied is used up in overcoming the friction generated between the nut, stud and wheel during installation.

THE RESULT: Only 10% of the torque applied actually provides clamp load between the hub & wheel.

THE SOLUTION: Torq-N-Go™ two piece wheel nut significantly reduces friction between the wheel and nut by maintaining the cone stationary in the wheel while allowing the nut to slide effortlessly on a controlled surface.

THE BENEFIT: More of the torque goes to providing clamp load rather than being wasted on friction.



✓ **200% More Clamp Load**

✓ **Increased Design Margin**

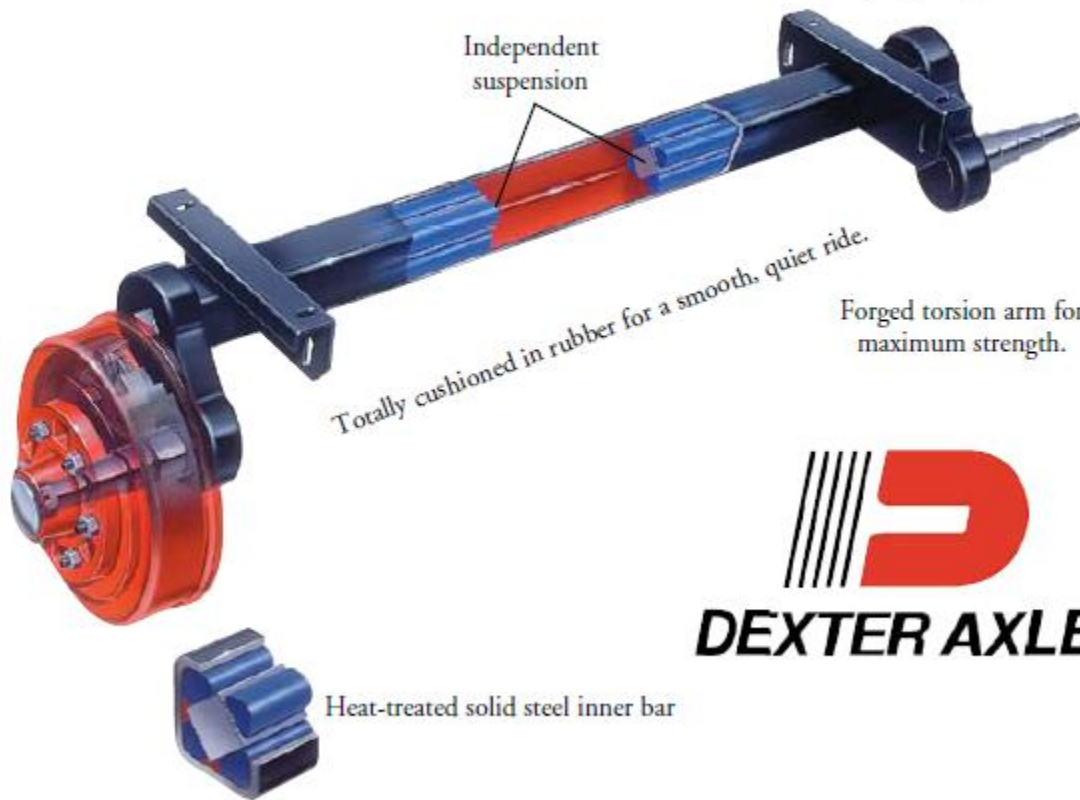
✓ **Easy Installation**

STEEL WHEEL WARNING: Manufacturers should verify that their wheels can withstand the increased clamp load produced by Torq-N-Go™ wheel nuts.

PATENT NO.
7,252,471



100% inspected for proper alignment



Independent suspension

Totally cushioned in rubber for a smooth, quiet ride.

Forged torsion arm for maximum strength.



Heat-treated solid steel inner bar

- Independent wheel suspension
- Maximum stability
- Low profile with maximum road clearance
- Installs easily
- Components with high resistance to wear
- Five year warranty on suspension systems
- 600 lb. - 10,000 lb. capacities, tailored for your requirements
- Axle can be used as a cross member
- Bearing lubrication options: Standard grease, E-Z Lube™, Nev-R-Lube™ or Oil (7,000# and above)

How to Select Torflex Axles:

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4. What is the Length of the Axle?

Of the several ways and industry terms to describe this procedure, the most popular term is "Hub Face" which is the measurement from the base of the wheel stud to the base of the wheel stud on the opposite end of the axle.

5. Which Bolt Pattern?

The Bolt Pattern of the axles can vary depending on the capacity of the axle. The Bolt Pattern also determines what type tire and wheel can be used. If there is a specific tire and wheel you would like to use, please relay that information so we can help you to determine the proper bolt pattern and axle.

6. What is the Outside Frame Dimension?

Since the mounting brackets of the Torflex axles mount directly to the frame of your trailer, it is necessary to know the outside frame measurement in order to install them on the axle correctly.

7. How to Determine the Trailing Arm Starting Angle

The starting angle is the position of the spindle in reference to the trailer frame. In order to make it simpler to select the starting angle for your Torflex axle, consult the tables which appear at the bottom of each Torflex axle page.

How to Install Torflex Axles

Step 1:

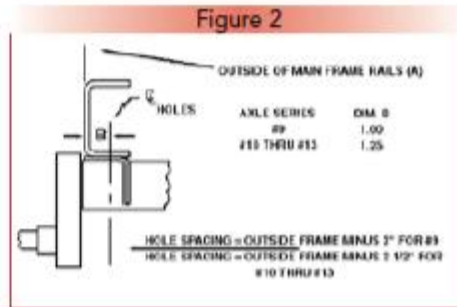
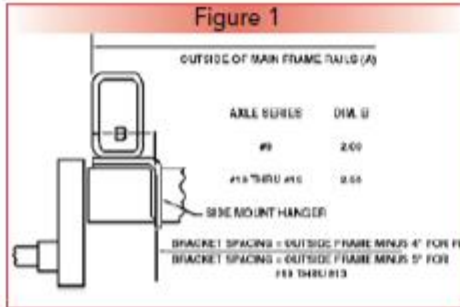
First decide where to place the centerline of the axle(s) on the trailer. This position will determine the final axle loading as well as the hitch load.



Step 2:

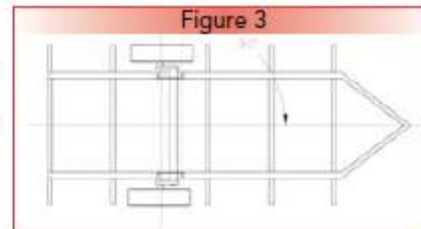
Determine the method of attachment you wish to use.

- A. For structural tube frame rails, refer to Figure 1 for recommended attachment.
- B. For "C" channel or "I" beam type frame, refer to Figure 2.



Step 3:

Once the method of attachment is decided, the axle(s) must be carefully aligned on the trailer frame. The axle centerline must be perpendicular to the longitudinal centerline of the trailer. (See figure 3)



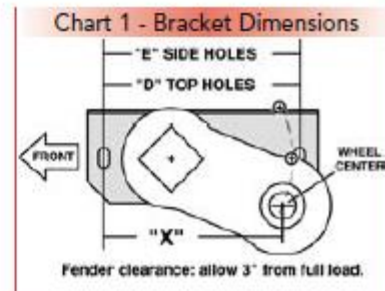
Caution:

Misalignment of the axle(s) can cause poor tracking and accelerated tire wear.

Step 4: Attachment to Structural Tube Type Frames

Dexter Axle recommends the use of side mounting hangers when attaching axles to tubular type frames. These hangers are included in the side mount AP kits listed in Chart 2.

- A. Refer to Chart 1 to find the mounting bracket dimensions of your axle(s). This chart shows the dimensions from the wheel center to the bolt holes of the brackets.



Torflex Axle Model	Mounting Hole to Wheel - Dimension "X" (inches)												Mounting Hole Spacing Inches	
	Start Angle of Trailing Arm												Dim "D" (Top)	Dim "E" (Side)
	45° DN		22.5° DN		10° DN		0°		10° UP		22.5° UP			
No Load	Full Load	No Load	Full Load	No Load	Full Load	No Load	Full Load	No Load	Full Load	No Load	Full Load	No Load	Full Load	
#8 (4" arm)	5.21	6.08	6.08	6.38	6.32	6.29	6.38	6.08	6.32	5.75	6.08	5.21	7.75	8.00
#9 (6" arm)	6.62	7.92	7.92	8.38	8.29	8.24	8.38	7.92	8.29	7.44	7.92	6.62	7.75	8.00
#10 (6" arm)	6.74	8.04	8.04	8.50	8.41	8.36	8.50	8.04	8.41	7.56	8.04	6.74	8.00	8.00
#11 (6" arm)	7.74	9.04	9.04	9.50	9.41	9.36	9.50	9.04	9.41	8.56	9.04	7.74	9.00	9.50
#12 (6" arm)	7.74	9.04	9.04	9.50	9.41	9.36	9.50	9.04	9.41	8.56	9.04	7.74	9.00	9.50
#13 (6" arm)	7.84	9.17	9.17	9.63	9.54	9.49	9.63	9.17	9.54	8.69	9.17	7.87	10.56	10.56

Step 4: Attachment to Structural Tube Type Frames (continued...)

- B. If you wish to pre-weld the side mount hangers to the frame rails, see Figure 1 for the appropriate spacing.
- C. A convenient way to install the side mount hanger is to preassemble the hangers to the axle when using the hardware provided in the AP kit. Make sure the bolts are tightened to the torque specifications shown in Chart 2. Position the axle assembly on the frame rails in the desired location and weld the side mount hangers to the frame.



Axle Size	A/P-Kit Top Mount	A/P-Kit Side Mount	Bolt Size	Torque Lb-Ft
#8	A/P-161-00	A/P-165-00	1/2"	70-90
#9	A/P-161-00	A/P-165-00	1/2"	70-90
#10	A/P-148-00	A/P-166-00	5/8"	120-155
#11	A/P-148-00	A/P-167-00	5/8"	120-155
#12	A/P-148-00	A/P-168-00	5/8"	120-155
#13	A/P-148-00	A/P-169-00	5/8"	120-155

Step 5: Attachment to "C" Channel or "I" Beam Type Frames

- A. Refer to Chart 1 to find the mounting brackets dimensions of your axle(s). This chart shows the dimensions from the wheel center to the bolt holes of the brackets.
- B. Lay-out the bolt hole locations on the bottom flanges of the frame rails. Make sure that the hole pattern matches the mounting brackets of your axles and is properly oriented to allow proper alignment of the axle(s).
- C. An alternate method for determining hole location is to position the axle assembly on the frame rails, align it perpendicular to the trailer centerline, clamp in place and transfer the holes directly from the brackets.
- D. Drill the holes through the frame rails and attach the axle using the hardware provided in the AP kit. Tighten the bolts to the torque specified.

NOTE: In the unlikely event a Torflex Axle must be replaced during the warranty period, Dexter Axle cannot assume responsibility for additional costs incurred for removal and re-installation of axles that have been welded directly to the frame.

Axles will be built with the distance between the brackets equal to bracket spacing as determined by the above equation, (Figure 1), which uses the outside of the frame. The tolerance on this spacing will be 1/8".

Locate the outboard face of the side mounting hanger to the same dimension as bracket spacing, but with a tolerance of 1/8". The "B" dimension must not be exceeded to insure that the arms will not hit the side of the frame rails.

Axles will be built with the distance between the bracket mounting holes equal to the hole spacing as determined by the equation, (Figure 2), which uses the outside of the frame.

Set hole spacings on the trailer to the same dimension. The "B" dimension must not be exceeded to insure that the arms will not hit the side of the frame rails.

Side mount hangers should be welded to frame with three fillet welds 2 1/2" long on both sides of hanger and a fillet weld on each end in accordance with American Welding Society D1.1 Structural Welding Code.

Side mount hangers and fasteners for mounting axle are provided in AP (attaching parts) kits given in Chart 2. Torque fasteners to levels specified. Install fasteners so that bolt head is against side mount hangers with washer and not against mounting bracket which is welded to the axle.

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ARTICULATION DIMENSIONS

ALLOW 3" BUMP CLEARANCE FROM FULL LOAD.
Positive numbers indicate spindle is below the top of the bracket, negative numbers are above.

