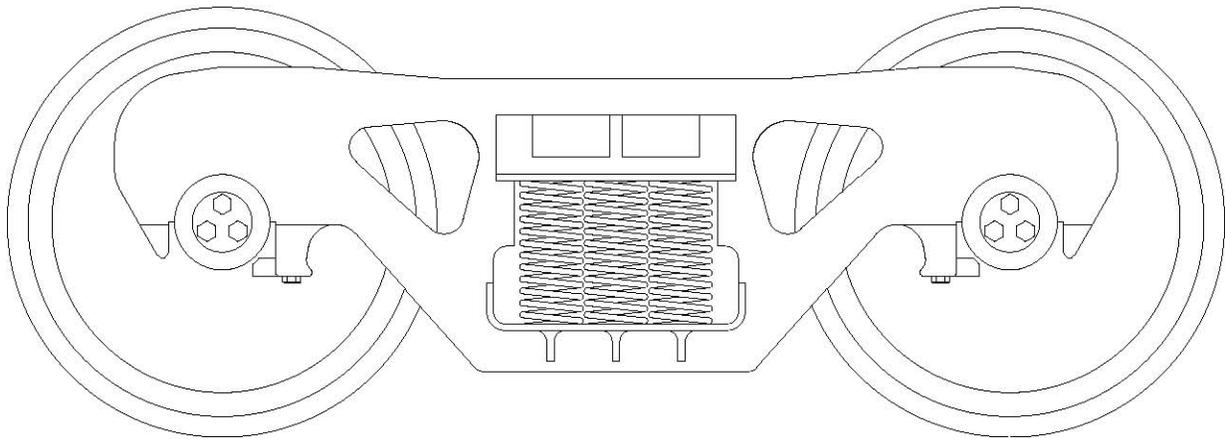


Owners Manual and Parts List

Modern 70-100 Ton 33" Wheel Roller Bearing Freight Car Truck, 1 1/2" Scale

Catalog Number 15T1A or 15T1B



Features

- True Roller Bearing Design - Same as Prototype - Double Sealed Caged Roller Bearings
- Steel Wheels - IBLs Profile - Scale 33" (4 1/8" diameter) - Dished Both Sides
- More Than 1/2" Wheel Travel Prevents Derailments - Progressive Multi-Length Spring Design (12 springs per truck) - Full Flexibility From Empty to Maximum Load
- Tool Steel Axles - Hardened to 60 Rc for Long Wear
- Bearing Support of High Strength 4130 Chrome Moly Steel
- Side Frame and Bolster CNC Machined from Heat Treated Aluminum Bar
- Detailed Aluminum Axle End Caps Turn With Wheels
- All Aluminum Parts Bead Blasted to Simulate Prototype Look - Finished In Hard (type III) Black Anodize for Maximum Wear
- All Steel Parts Black Zinc Plated - Much Tougher Than Paint and Prevents Corrosion Even if Scratched
- All Bolts are Stainless Steel

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Overview

This manual is provided to help you understand and better use your trucks. Like anything mechanical, they require care in handling and proper maintenance to work correctly. By reading and following the information presented here you will be better able to safely enjoy these trucks. The remainder of this manual is divided into the following sections:

- Installation
- Maintenance
- Parts Diagram and List

Installation

If you are installing these trucks on a car purchased from Real Trains, or built from our plans, or are using our body bolster or center pivot, please follow the directions for mounting provided with that product.

If you are designing a car yourself, we hope you will consider the use of our body bolster or center pivot to make mounting easier. You may find that converting an existing design is much easier if the current mounting is replaced with one of our products.

It is important to realize that the mounting of the trucks must not only be designed to support the weight of the car while pivoting, but must also provide correct coupler height. The standard in most areas for 1 1/2" scale is 4 3/8" (108mm) from the top of the rail to the center of the coupler. If a different standard exists in your area, please use that value. In designing your mounting method you must add spacers or machine away material to obtain this height. Because of the hard anodizing used as a finish on the trucks, we do not recommend that you try to modify them. Please always consider strength and safety when making any modifications to the mounting.

To mount the trucks on a existing design, use the dimensions shown on the next page. As can be seen from the figure, the height to the top of the truck bolster changes under load. We recommend that you use the "Typical Load" value (based on 350 pounds or 160kg for car including payload, less trucks) unless you know that the car will always be lighter or heavier than this value. Be aware that uneven distribution of loads in the car, passenger movement, and incorrect coupler height in the adjacent car can still cause problems even if all these guidelines are followed.

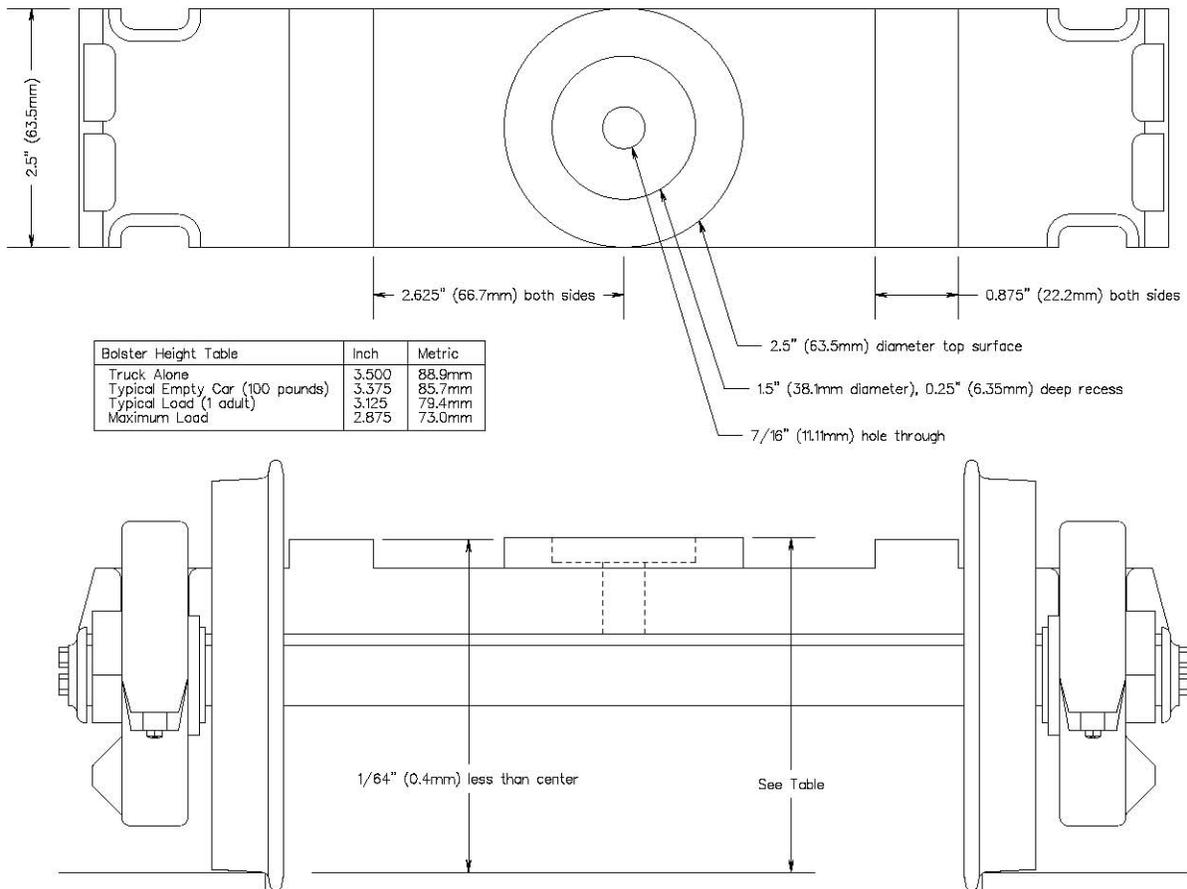
As also shown in the figure, our trucks use a circular recess in the top of the bolster. We have used this design in order to provide the most flexibility to adapt to other companies products. You will typically find that an existing cars body bolster is of one of three designs:

Flat Bottom - If the bottom mounting surface at the truck location is flat, the design is one that uses the center bolt as the pivot. You should use a 7/16" bolt that is long enough to allow free movement of the truck. The car will ride on the 2.5" diameter flat surface at the top of the truck bolster. If the cars mounting surface is much smaller than the 2.5" diameter it may be necessary to make a plug to fill the recess on the top of the truck flush with the upper surface.

Recess Upwards - If the car has a circular recess upwards it is recommended that you use a two diameter plug that has one end the correct diameter for the car and the other end to fit the 1.5" diameter recess in the truck. Use of a center bolt is optional, but allows the car to be lifted without the truck falling off. A 3/8" bolt is recommended since the pivoting is on the recess surfaces.

Projection Downwards - If the car has a circular projection downwards that is similar in size to the recess in the truck it may be used directly. If the projection is smaller than the recess, a sleeve may be made to increase its size. Where the projection is larger than the truck it must be machined smaller to fit. Use of a center bolt is optional but allows the car to be lifted without the truck falling off. A 3/8" bolt is recommended since the pivoting is on the recess surfaces.

A spacer may also be required either separately, or as part of the plug or sleeve discussed above, for coupler height adjustment. You can make these yourself, have them made locally, or contact us to custom make them for you. Lubrication in the form of heavy grease or a self-lubricating bearing material (such as Teflon®) in a cup or washer shape must be used at the center pivot.



We cannot over stress how important a correct mounting is to both the safety and enjoyment of your car. Please consider that a common industrial standard is that any part should be able to withstand three times the total load it normally carries. If you feel your mounting is this strong, you will be much more comfortable when enjoying your trains operation.

Maintenance

This section discusses both normal or periodic maintenance, and the major repairs that will typically only be necessary after many years of use. It is important to carefully inspect your new trucks both to make sure they were not damaged in shipping, and to become familiar with their design for future reference.

When used as part of a hobby your trucks should be inspected for anything that looks worn, damaged, broken, or otherwise unusual at certain times:

- On a periodic basis depending on how much they are used (perhaps monthly for club usage, annually for home usage, trucks stored outside would naturally require more maintenance, if submerged in water they should be immediately disassembled and completely serviced)
- Whenever they have not been used for a while
- If they have been in a derailment or accident

Trucks used in commercial service should be part of a complete scheduled preventative maintenance program

In each of the following maintenance sections the parts are referred to by name. The parts section includes a table that gives this name, a part number for replacement parts, and a key letter for the parts diagrams that show the location of each part.

Finish Care

The anodized finish on the aluminum parts is very hard. Do not try to sand, file or machine these surfaces. If the finish is damaged it may be touched up with aluminum blackening solution available at sporting goods, firearms and large hardware stores.

The black zinc used on most steel parts is actually two layers. Below the black surface is bright zinc. If scratched, even completely through to the steel, the zinc will still protect against most rust and corrosion. Repairs can be made with paint. You should expect the treads of the wheels to become shiny (the same as the prototype) fairly quickly. If you desire some color other than black, both the anodizing and black zinc function as good primers for paint.

Your trucks should be kept clean and dry. In some cases a thin oily film (such as from washing the equipment down with kerosene) will help protect the finish and provide lubrication for the sliding surfaces. But this oil may also attract and hold dirt, and increase wear.

Disassembly/Reassembly

There are two method of overall disassembly. Either may be used depending on personal preference and what work is planned to be done following disassembly.

The side frames may be disassembled from the bolster and wheels by removal of the springs. The springs are held in a recess at their top. Pushing outward (from the center line of the car) at the bottom of the spring will cause it to move beyond the side frame. It can then be pulled from the

recess. With all of the springs removed the bolster can be moved to the bottom of its opening in the side frame allowing the side frame to be pulled off the end of the bolster and away from the bearing supports, wheels and axles. Reassembly uses the same steps in reverse.

Danger - Notice that each outer spring contains an inner spring. The center of the three outer springs on each side of a truck contains an inner spring that is longer than the inner spring on either side of it. Do not operate the truck unless all springs are installed and in their correct location.

The other method of disassembly removes the wheels, axle and related items while leaving the bolster, side frame and springs together. To do this, remove the retainer bolts using a 3/16" wrench, and then remove the retainers. This allows the bearing supports, wheels and axles to be lifted away from the side frame. Reassembly uses the same steps in reverse. When reinstalling the retainer bolts do not over tighten them. The trucks are furnished with these bolts coated with a "small screw" (low strength) retaining compound. This is available from our parts list or local suppliers and is recommended for use.

Bearing Lubrication

With the wheels, axles and related hardware removed from the side frames the bearings may be removed and lubricated.

Note - Be sure to do only one bearing at a time because each roller bearing should be reinstalled in the same location as it was removed from. Moving the roller bearings around to different axles will shorten their life because each will establish a wear pattern that matches the bearing to a specific axle.

To service the bearings, slide the bearing support (with roller bearing inside) outwards against the back side of the axle cap. Holding both the bearing support and axle cap together pull outwards while twisting and the entire assembly will pull free from the axle. The thrust bearing may then be removed from the axle.

Note - Do not attempt to pry, or otherwise use tools to remove the axle cap. Such operations will result in damage. The cap is held in place by a rubber o-ring and simply pulls off. The bolt heads are decorative details only.

Flush the old grease from the roller bearing with solvent. Wipe the thrust bearing with a clean cloth, or if very dirty, a cloth dampened with solvent. Do not soak the thrust bearing in solvent. Inspect both bearings for damage or unusual wear patterns. Do not spin the roller bearing or blow it out with compressed air. If the bearings appear damaged or badly worn they should be replaced as discussed in the next section.

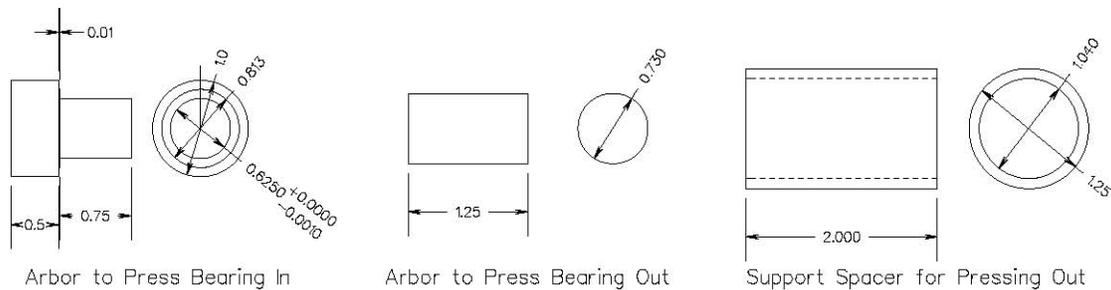
When the roller bearing is clean and dry, re-pack it with a high quality grease suited for bearing use. Shell Alvania number 2 grease is what is originally provided and is available from our parts list. Automotive wheel bearing grease is an acceptable substitute. Be sure to work grease below the surface of the rollers to completely fill the housing. The thrust bearings may be soaked in oil (automotive motor oil is acceptable) overnight to refill the porous bronze and then wiped to remove excess oil.

Inspect the o-ring for cutting or tearing. If it is damaged it should be replaced. Do not attempt to pry or cut it off, it is too easy to slip and hurt yourself. We have found that very small cutters such as electronics wire cutters or nail clippers will fit into the groove and grab the o-ring allowing its removal. Replace the o-ring by first catching the new one in the groove on one side and then working it over the end using your finger nails. Do not use tools or damage to the o-ring will result.

Reassembly of the bearings is done by placing the thrust bearing on the axle followed by the roller bearing and bearing support assembly. Install the axle cap with a twisting motion. Some lubrication of the o-ring with WD-40® or oil will help it slide and snap into place. Be sure the back of the axle cap is flush against the end of the axle. If it will not seat completely there may be dirt in the end of the axle or the o-ring is damaged.

Bearing Replacement

If during the bearing lubrication process described above, damage or extreme wear is found, the bearing should be replaced. The thrust bearing must be replaced as a unit. The roller bearing may be ordered already installed in the bearing support as a replacement part. Removal of the roller bearing from the bearing support requires three special tools as shown below:



You may make these tools yourself, have them made locally, or order them from our parts list. They must be used with a press (arbor or hydraulic). To remove the roller bearing, place the bearing support in the support tool, flange side upwards. Place the removal arbor in the bearing support against the roller bearing and press it out. Carefully clean and inspect the bearing support. If undamaged it may be reused. Coat the inside of the bearing support with grease. Place the roller bearing on the installation arbor with the end having the stamped lettering upwards, towards the rest of the installation arbor. Align the roller bearing and installation arbor assembly with the bearing support. Press them into place until the installation arbor lightly contacts the end of the bearing support. Remove the installation arbor. Check the roller bearing to make sure it is clean and undamaged. Add grease if necessary.

Wheel or Axle Replacement

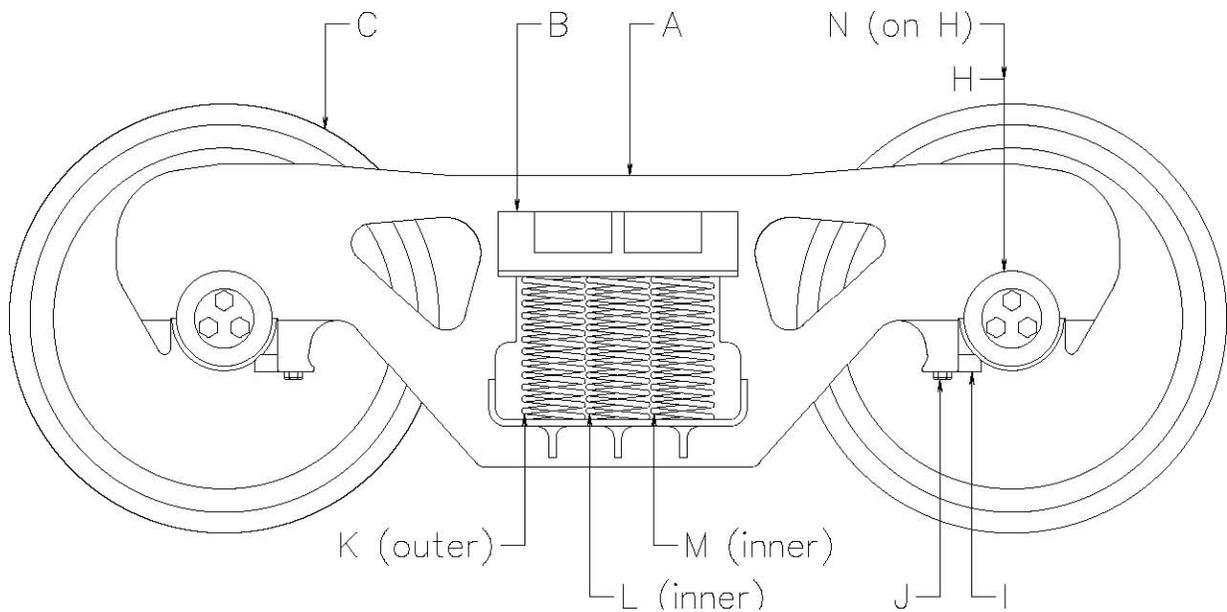
Accident damage or extreme wear may require replacement of wheels or axles. These parts can only be disassembled with a high capacity press. This operation requires skills and proper tooling that should come with the ownership and operation of the press. Wheels that have been pressed on and off more than once may become loose and not hold properly. Complete replacement wheel and axle assemblies are available as parts and this method of repair is recommended for most users.

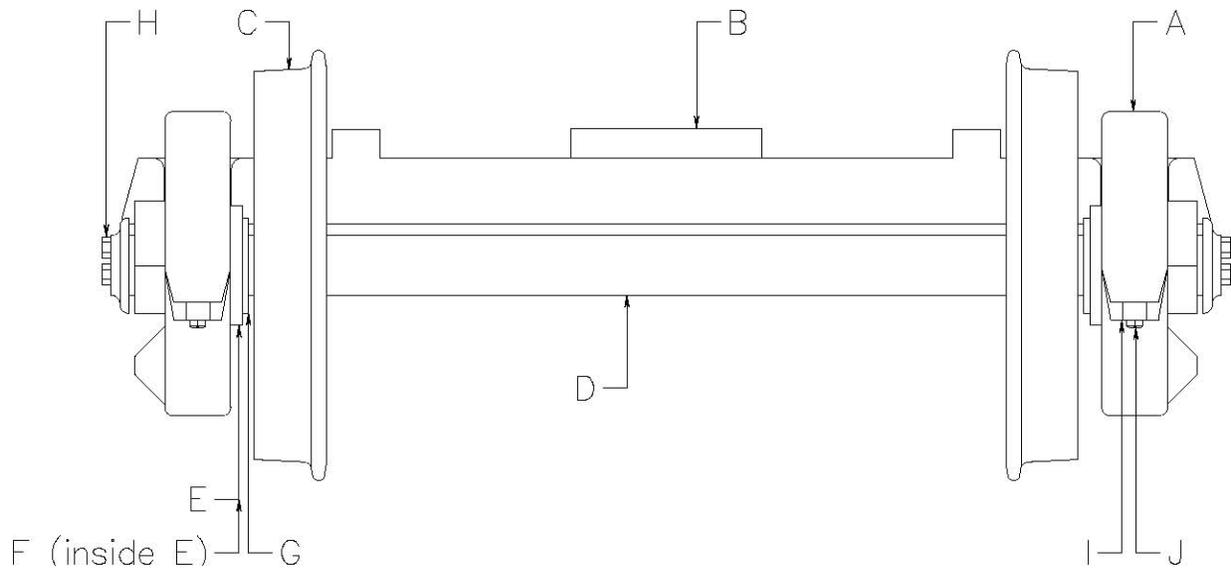
Changing of Gauge

To change the wheels between 7 1/4" gauge and 7 1/2" gauge is a difficult operation requiring skill and the use of a large press. If moving the wheels inward, first remove the black zinc plating from the part of the axle behind the wheel using a fine abrasive. If moving the wheels outward be sure to paint the bare area of the axle to prevent rusting. Both wheels must be moved the same amount (the axle must project the same distance beyond each wheel). Do not damage the axle ends when pressing. This operation is only recommend once as it can result in the wheels becoming loose on the axle. If gauge changes are required periodically you should consider ordering extra wheel and axle sets, including roller bearings and bearing supports, as needed to allow replacement as a unit (do not switch bearings between axles).

Parts Diagram and List

Below and on the next page are side and end views with "key letters" pointing to each specific part. These keys are indexed to the parts list that follows which also gives the part name, part number, and quantity per truck (double quantities for one car, two trucks). Listed separately are assemblies, packages and special tools.





Individual Parts

Key Letter	Part Name	Part Number	Quantity for Model 15T1A 7 1/2" gauge	Quantity for Model 15T1B 7 1/4" gauge
A	Side Frame	15T1-001	2	2
B	Bolster	15T1-002	1	1
C	Wheel (not plated)	15T1-003	4	4
D	Axle (not plated)	15T1-004	2	2
E	Bearing Support	15T1-005	4	4
F	Roller Bearing	15T1-006	4	4
G	Thrust Bearing (7 1/2" gauge)	15T1-007	4	0
G	Thrust Bearing (7 1/4" gauge)	15T1-008	0	4
H	Axle Cap	15T1-009	4	4
I	Retainer	15T1-010	4	4
J	Retainer Bolt	15T1-011	4	4
K	Outer Spring	15T1-012	6	6
L	Center Inner Spring	15T1-013	2	2
M	Side Inner Spring	15T1-014	4	4
N	O-Ring	15T1-015	4	4

Parts Packages, Assemblies, Tools

Description	Part Number	Quantity for Model 15T1A 7 1/2" gauge	Quantity for Model 15T1B 7 1/4" gauge
Bearing Support and Roller Bearing (assembled)	15T1-030	4	4
Bearing Replacement Kit, 7 1/2" gauge (4 each: roller bearings assembled in bearing support, thrust bearings, o-rings)	15T1-031	1	0
Bearing Replacement Kit, 7 1/4" gauge (4 each: roller bearings assembled in bearing support, thrust bearings, o-rings)	15T1-032	0	1
Bearing Replacement Tools (installation arbor, removal arbor, removal support)	15T1-050	as required	as required
Spring Set (6 outer, 2 center inner, 4 side inner)	15T1-033	1	1
Wheel and Axle Set, 7 1/2" gauge (2 wheels, 1 axle, black zinc plated)	15T1-034	2	0
Wheel and Axle Set, 7 1/4" gauge (2 wheels, 1 axle, black zinc plated)	15T1-035	0	2
Complete Wheel Unit, 7 1/2" gauge (2 wheels, 1 axle, 2 bearing supports, 2 roller bearings, 2 thrust bearings, 2 axle caps, 2 o-rings) completely assembled	15T1-036	2	0
Complete Wheel Unit, 7 1/4" gauge (2 wheels, 1 axle, 2 bearing supports, 2 roller bearings, 2 thrust bearings, 2 axle caps, 2 o-rings) completely assembled	15T1-037	0	2
Bearing Grease, 10 ounce cartridge	15T1-051	as required	as required
Retaining Compound (enough for 20 to 50 bolts)	15T1-052	as required	as required

There are certain parts that we do not manufacture. The suppliers of these parts often change their specifications, delete models, and change part numbers without notice. The only way to be sure that you are getting exactly the correct replacement part is to order it by our part number. We do, however, understand that some people will want to know the current manufacturers name and part number. We provide this without warranty for information only. The roller bearings are Torrington JTT-1012, the 7 1/2" gauge thrust bearings are Bunting TT1204, the 7 1/4" gauge thrust bearings are custom made but you may use three Bunting TT1204 stacked together, the o-rings are Parker 02-007 compound N552-90. Each of these should be available from industrial distributors of such products. The springs are available from Century Spring Corp., Los Angeles, California, USA, phone (213)749-5225 The center inner spring is number 3273, the side inner spring is number WW-42, the outer spring is similar to number 71797 but their standard spring is unfinished and must be painted to prevent rusting by the purchaser (ours are zinc plated).

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