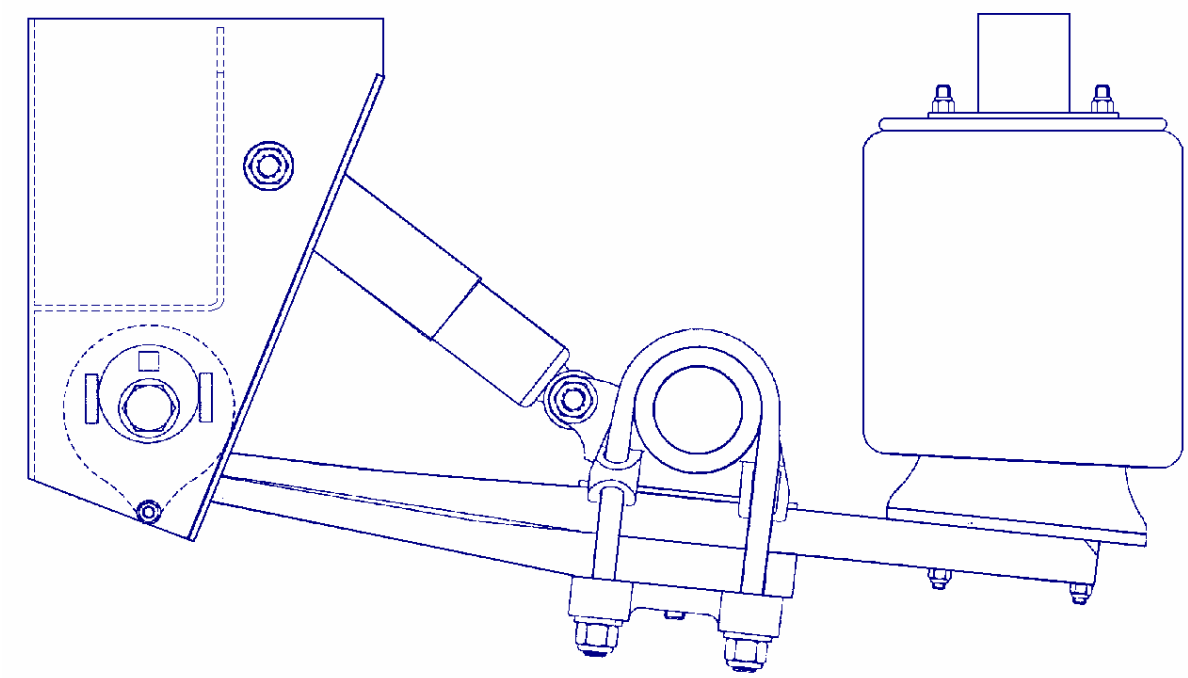
THE MULTIPLE CHOICE

TMC 11T Air Suspension Service Manual



The Trumas Group

Disclaimer

The author and publisher have made their best efforts to prepare this manual, and the information contained in this manual is current at time of printing (as specific at the later section of this sheet). However, TMC's policy is one of continuous development. We therefore reserve the right to change or modify the specifications without prior notification.

Versioning

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TMC 11T Air Suspension Installation Instructions

The TMC 11T air suspension can be installed using normal workshop equipment, no specialised tools or equipment are required for the air suspension's installation.

The air suspension is supplied normally as an assembly with the suspension hangers fitted to the trailing leaf springs, the suspension pivot bushes installed, the trailing leaf spring axle seats fully welded to the trailer axle and with the trailing leaf springs and U bolts installed onto the axle. Although the U bolts will be tensioned during assembly it is recommended that they be re tensioned before final delivery as per the torque settings chart.

The order of assembly of the air suspension onto the trailer frame is not critical, but positioning the various suspension hangers and other air suspension brackets correctly is very important. A general arrangement layout drawing is supplied with every air suspension kit; additional copies are available on request from nearest TMC branches.

Recommended Installation Procedure

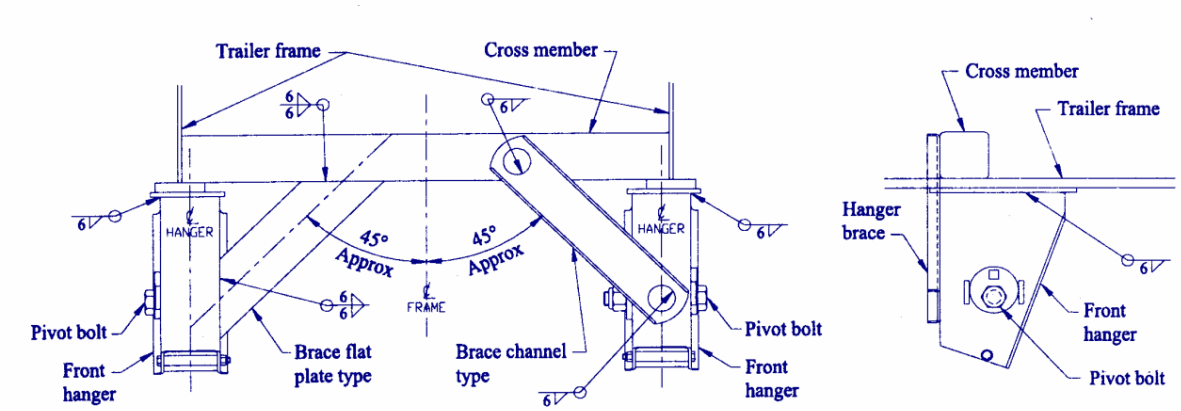
Position two of the suspension hangers onto the trailer frame. It is important to check with the air suspension's general arrangement drawing for the suspension's correct dimensional layout to ensure that the trailer axle's required location in the trailer is correct. Ensure that the hangers are fitted square to the frame and located in line longitudinally and transversely. All dimensions longitudinal, transverse and diagonal are to be within 2mm maximum variation. Then position the other suspension hangers onto the trailer frame (in the case of tandem and tri-axle suspension installations), ensuring that all the dimensions are held to within the 2mm maximum variation.

Tack weld all the suspension hangers and brackets in position. It is important to re check the positioning of all the suspension hangers and brackets to comply with the suspension's general arrangement drawing's dimensions for the suspension and that they are held to within the 2mm maximum variation before final welding of any of the suspension hangers.

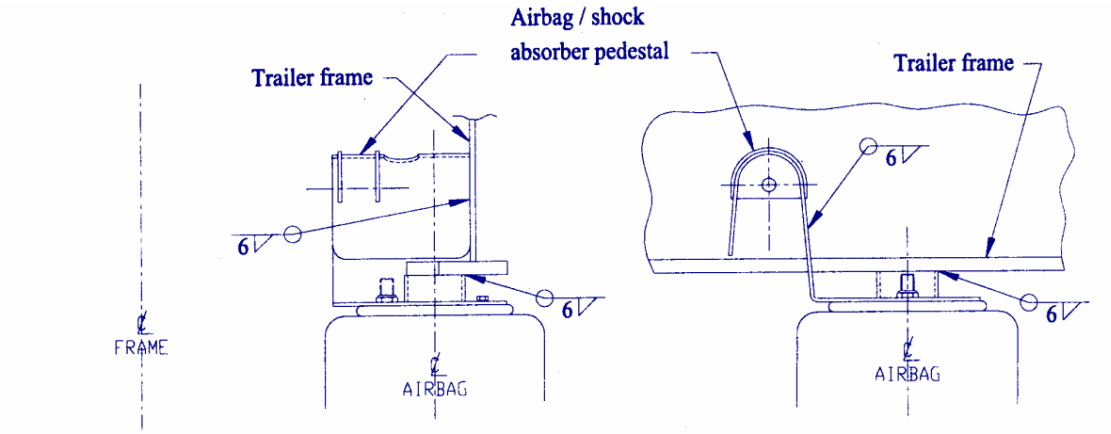
All welding between the suspension hangers and the trailer frame is to be done using either low hydrogen electrodes or an approved equivalent MIG process.

Fully weld all around the top of each suspension hanger in a 6mm continuous fillet weld.

After installation of all the air suspension hangers it is recommended that all the hangers are fitted with either a channel; angle or flat plate type of cross bracing between the suspension hanger and a chassis cross-member. Fully weld around the ends of the cross bracing onto the suspension hanger and onto the trailer's cross-member. The air bag pedestals should also be supported by either a full cross-member brace or angled plate gussets back onto the trailer frame.



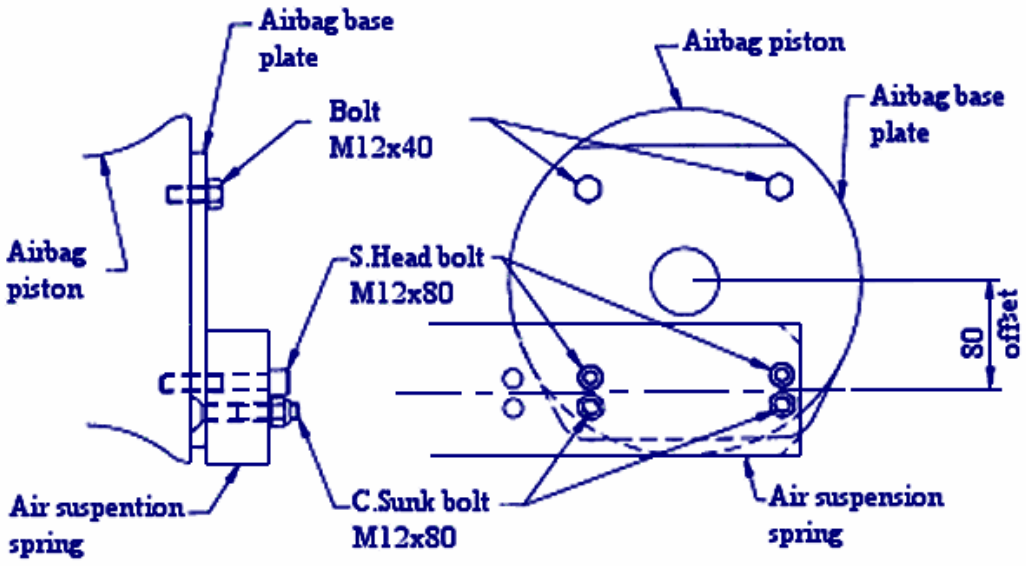
Typical Suspension Hanger Brace Arrangement



Mounting of Airbag Pedestal to Frame

Final Assembly

The suspension's airbags are to be bolted onto the ends of the air suspension's trailing leaf springs and onto the air suspension's top airbag pedestals. The airbag base plate has to be fitted first to the trailing leaf spring. It is secured to the spring end first using the countersunk M 12x80 bolts and nyloc nuts, the airbag is then bolted onto the end of the trailing spring using the MI 2x80 cap screws and MI 2x40 hex bolts. The top of the airbag can then be attached to the top pedestal bracket using the M12 nyloc nuts. Ensure all the bolts and fasteners are correctly tightened as per the recommended torque settings chart.



Assembly of Airbag to Air Suspension Spring

If the orientation of the top and bottom bolts/fasteners on the airbag does not align with the bolt holes in the trailing leaf spring and top airbag pedestal, then the orientation can be changed by using the following procedure:-

In the base of the airbag loosen the lock nut, it may be necessary to break the seal between the rubber bellows and the airbag piston so that the airbag's base can be rotated to achieve alignment between the top and bottom airbag attachment bolt holes. Once the two sets of bolt holes are correctly aligned retighten the lock nut in the airbag's piston. The airbag can then be installed into the air suspension.

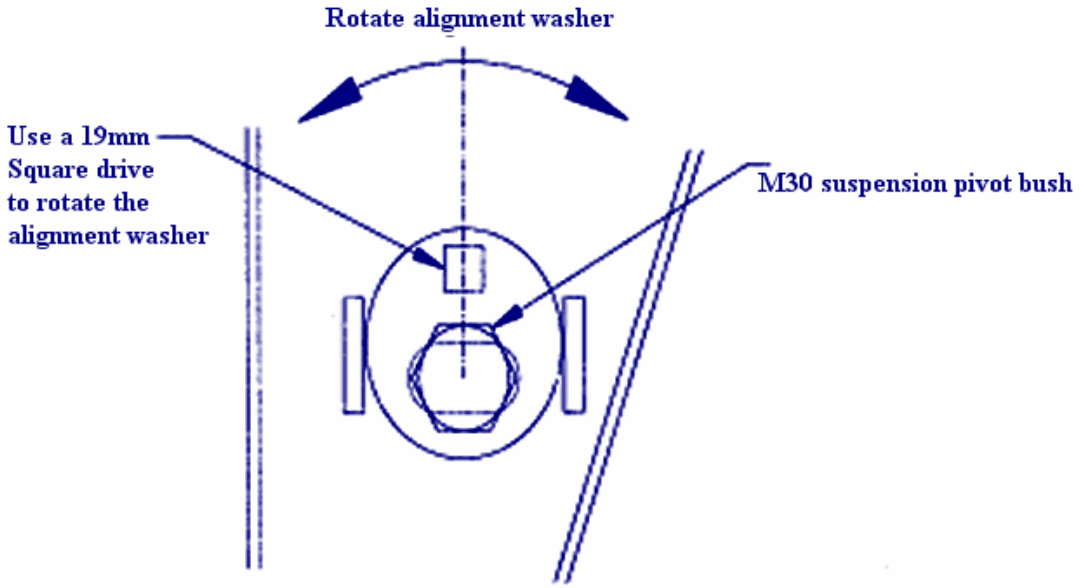
Suspension catch straps must be installed generally as shown on the general arrangement drawing for the air suspension kit supplied, the catch strap and mounting bolts are supplied with the suspension kit, a suitable chassis bracket is to be installed in the trailer's frame to support the catch straps. Care must be taken to position the top catch strap mounting bolt in the correct position, and that the catch straps will not interfere with the operation of the air suspension or trailer axle in service.

Axle Alignment and Adjustment Procedure

The alignment is measure from the centre of the kingpin to a centre point on each end of the front trailer axle. Adjust the alignment as needed by rotating the collars on the front hanger on the air suspension's front pivot bolt to achieve the correct alignment. The front pivot bolts must be loosened off so that the front pivot bolt can move backwards or forwards in the front suspension hanger when the alignment collars are rotated. It is recommended that the alignment collars are rotated equally on each side of the suspension forwards or backwards to achieve the correct axle alignment.

Then align the remaining axles off the front trailer axle by rotating the alignment collars as described above on each axle until the axle centres on both sides of the trailer are equal. It is also possible to do the axle alignment using a laser or optical aligning device designed for axle alignment if available.

After the axle alignment is completed, tighten the front pivot bolt (M30) and then tighten the front hanger wear plate retaining bolts (M12) according to the torque settings chart.



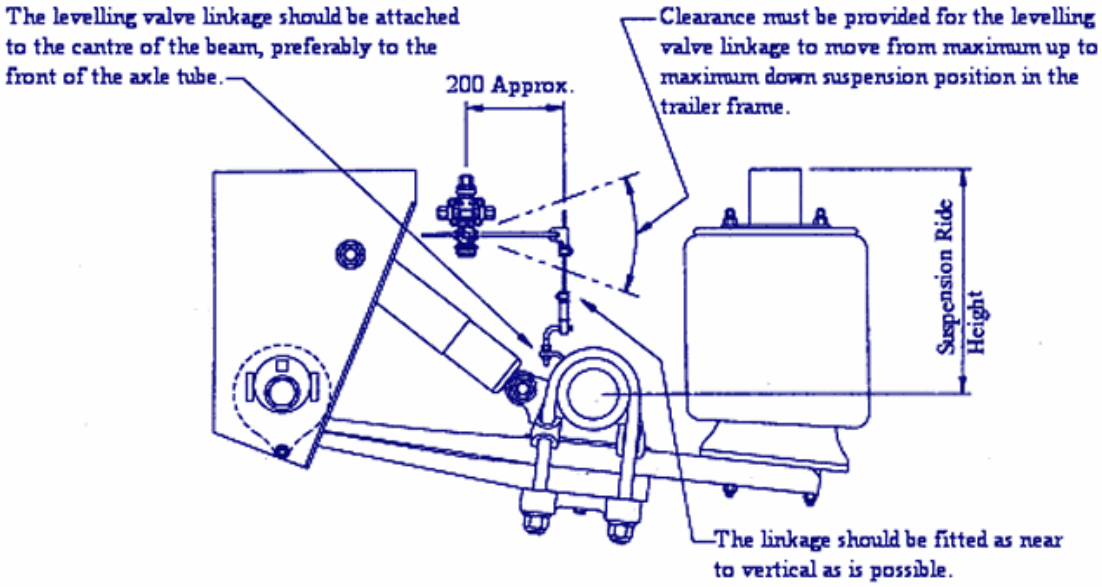
CAUTION

Loosen the M30 suspension pivot bush before attempting to align the suspension. Retighten all bolts after alignment is completed.

Levelling Valve Installation

The suspension's levelling valve should be installed in the trailer frame in a protected position. Care must be taken to ensure that the levelling valves linkage can move from the air suspension's maximum up position to the air suspension maximum down position without any interference from other frame parts or other suspension and brake components.

The levelling valve should be mounted on an adequate chassis bracket and the linkage attached to a bracket mounted centrally on the trailer axles' beam. The levelling valve should be fitted to the centre axle on tri-axle installations and to the rear axle on tandem axle installations.



Recommended Service Schedule

On Delivery or at 500 km:

- Check all torque settings for all fasteners.

Every 25,000km or Quarterly:

- Check all torque settings for all fasteners and inspect for visual damage and wear.
- Repair and replace parts as necessary.

Every 100,000 km or Annually:

- Check all torque settings for all fasteners and inspect for visual damage and wear.
- Check all suspension bushings for wear and deterioration; replace or repair as necessary.
- Check all leaf springs and U bolts for wear and deterioration, replace or repair as necessary.
- Carry out a visual inspection of the suspension for wear and damage, repair or replace any worn or damaged parts as necessary.
- Check the axle alignment and readjust as necessary. Axle alignment must be checked whenever severe kerb contact, accidental damage occurs or the trailing leaf spring pivot bush is replaced.

Note: These are the minimum recommended service requirements, dependant on service conditions more frequent service and maintenance schedules may be required for the correct operation of the trailer axle.

Replacement of Suspension Airbags

The trailer can be driven at reduced speeds (maximum of 40kph) with no air in the airbags. Blocking off of the air supply to a damaged / punctured airbag is possible so that the remaining airbags can be used normally (either by crimping the supply air line or blocking off the air port to the airbag) to travel to a service area where the airbag replacement can be effected.

Note this is a temporary measure only and airbag replacement must be done effected as soon as practicable.

- To replace an airbag the trailer should be parked preferably on a level hard surface with the brakes applied. The trailer must be set at the correct ride height. Suspension airbags cannot be replaced with the air suspension deflated and sitting on its bump stops.
- With the trailer at or near its correct ride height, place either jacks or stands under the trailer's frame to support it. Either block off the air supply to the airbag to be replaced or deflate the whole air suspension. Remove the air supply line to the airbag, and then the airbag can be unbolted from its position in the trailer's air suspension.
- Replacement airbags as approved by the manufacturer must only be used. Bolt the replacement airbag back into its correct position in the trailer, and reconnect the air supply line to the airbag. Torque all the mounting bolts to the correct values as shown on the torque settings chart. Ensure when fitting the airbag that the rubber bellows are not twisted, the top airbag plate and airbag base can be rotated if alignment is not correct.
- Reconnect the air supply to the air suspension and remove the jacks / stands from under the trailer frame, check the air suspension for air leaks and correct as necessary. Recheck the air suspension's ride height and reset as necessary.

Shock absorber replacement

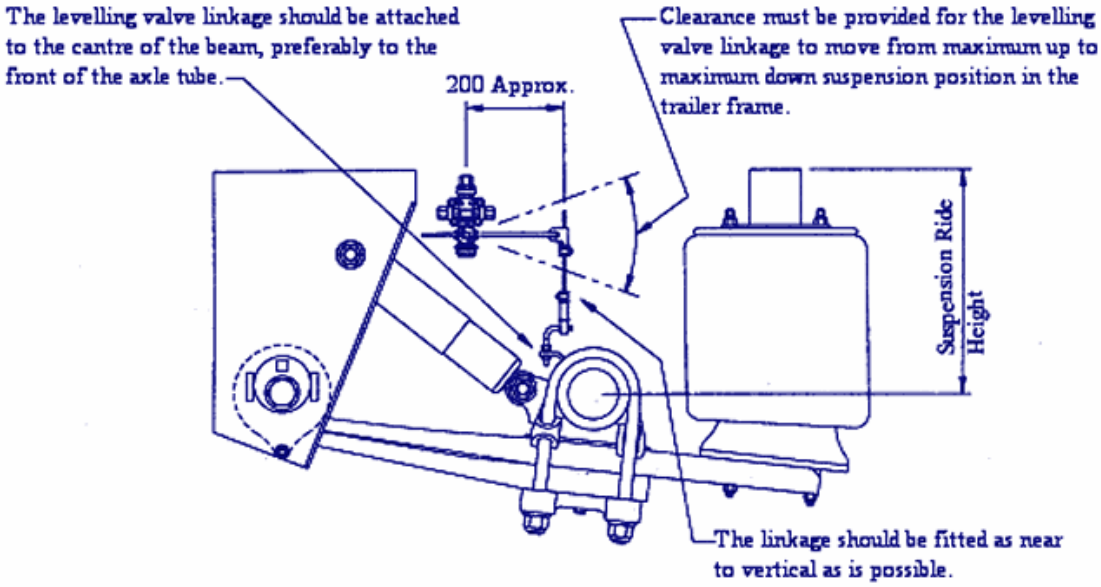
The suspension's shock absorbers only need replacement when they become ineffective or leak oil.

The shock absorbers can be replaced by removing both the top and bottom mounting bolts and removing the shock absorber from the air suspension. When replacing the shock absorber, torque the top and bottom shock absorber mounting bolts to the correct values as per the torque settings chart.

Levelling Valve Adjustment

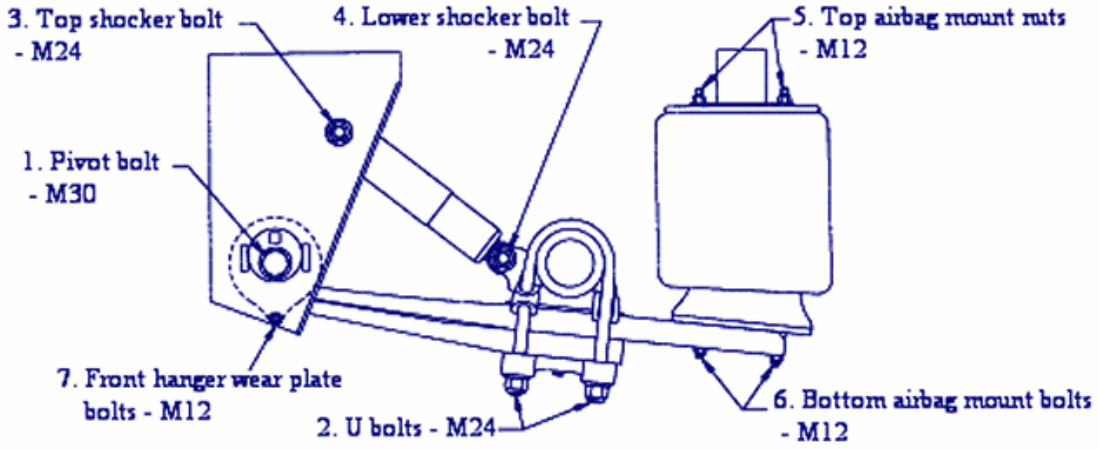
The air suspension's levelling valve should be installed in the trailer frame in a protected position. Care must be taken to ensure that the levelling valves linkage can move from the air suspension's maximum up position to the air suspension's maximum down position without any interference from any frame parts, any suspension parts or any brake components.
The levelling valve linkage must be adjusted to keep the air suspension at its correct ride height.
Once the correct ride height for the air suspension is determined, this height will be known from the air suspension's model number or as marked on the air suspension's nameplate, the ride height can be set. The ride height is the dimension as shown on the diagram below.

- The trailer should be parked on level ground preferably with the trailer loaded or at least partly loaded and with the trailer brakes released.
- All air reservoirs should be fully charged before any suspension adjustments are performed. After final adjustments have been made, recheck all suspension ride heights with the air reservoirs all fully charged.
- To adjust the air suspension ride height loosen the clamps on the vertical linkage rod and slide the rod through the clamp to achieve the correct suspension ride height. Retighten the clamps.

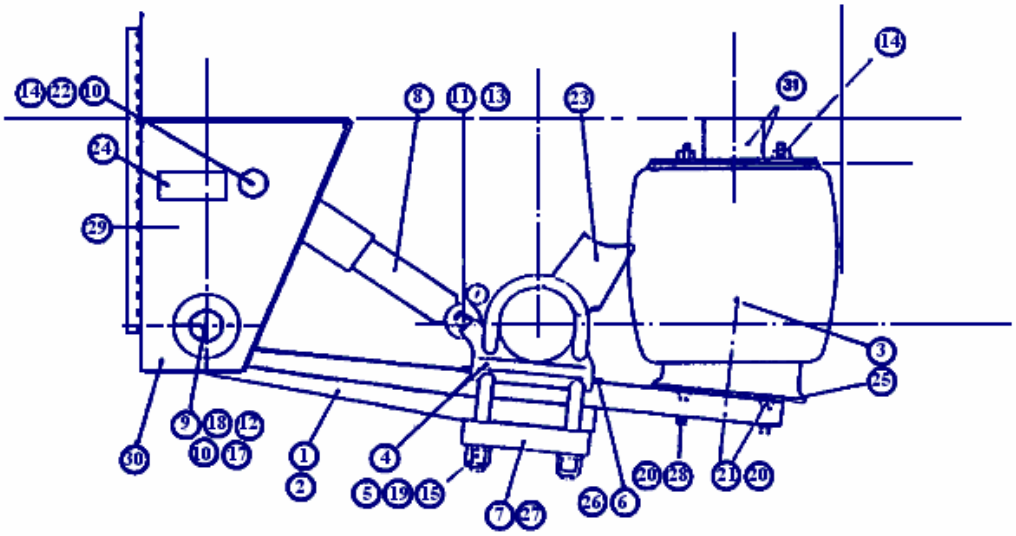


Recommended Torque Settings

1. Pivot bolt: - 1100 Nm (M30)
2. Axle U bolts: - 820 Nm (M24)
3. Top Shock Absorber bolt: - 300 Nm (M24)
4. Lower Shock Absorber bolt: - 300 Nm (M24)
5. Top Airbag stud nyloc nut: - 35 Nm (M12)
6. Bottom Airbag bolts: - 35 Nm (M12)
7. Front hanger wear plate bolts: - 70 Nm (M12)



Spare Part List



ITEM	QTY	PART NO.	DESCRIPTION
1	1	ARS 11-181811	2 Leaf Spring LH
2	1	ARS 11-181812	2 Leaf Spring RH
3	2	ARS 11-181813	Air Spring
4	2	ARS 11-18184	Spring Seat
5	4	200971	U-Bolts
6	2	606060	Tracking Plate
7	2	616161	Spring Clamp Plate
8	2	ARS 11-282811	Shock Absorber
9	2	212170	Pivot Bolt
10	2	211988	Top Bolt Shocker
11	2	211989	Lower Bolt Shocker
12	2	ARS 11-181824	Pivot Bush
13	4	200973	Capscrew
14	8	211922	Self Locknut
15	8	211933	Self Locknut
16	2	211944	Self Locknut
17	2	211955	Self Locknut
18	4	200933	Washer H.D.
19	8	200922	Washer H.D.
20	8	200911	Single Coil Lockwasher
21	4	200974	Setscrew
22	2	-	Plain Washer
23	2	-	Air Chamber Bracket
24	2	-	Serial Number Plate
25	2	ARS 11-181844	Reinforcement Plate
26	2	606061	Upper Shim
27	2	606062	Lower Shim
28	4	-	Bolt
29	2	ARS 11-181826	Pivot Bracket 400mm Ride Height
30	2	-	Pedestal Plate
31	2	-	Cross Brace

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