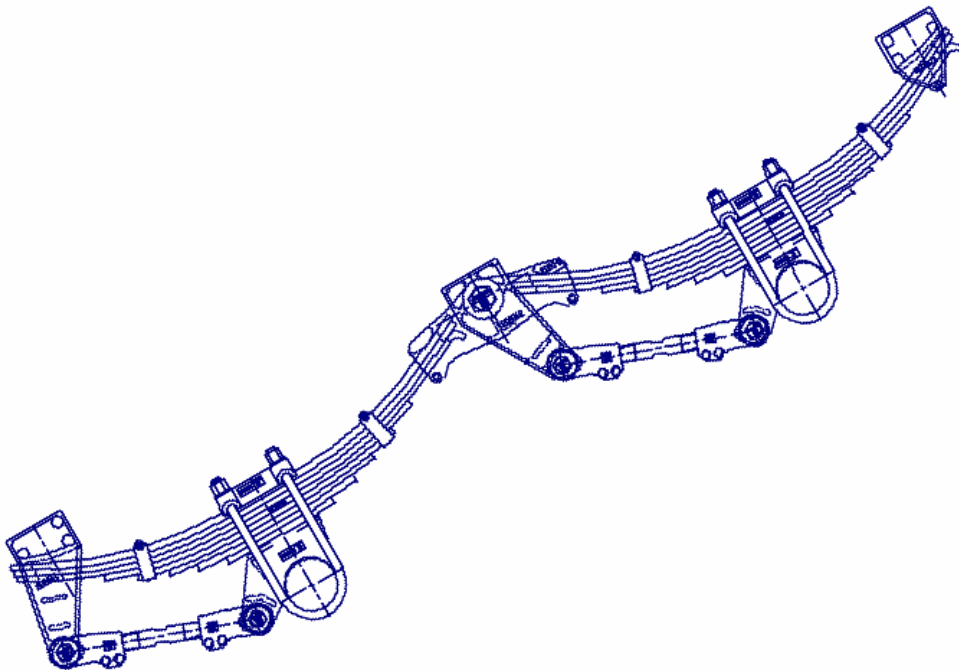


# TMC CS Mechanical Suspension Service Manual



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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.

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## Versioning

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## Installation of Suspension Hangers

Position the two front suspension hangers onto the trailer frame. Ensure that they are square to the frame and located in line longitudinally and transversely. All dimensions longitudinal, transverse and diagonal are to be within 2mm maximum variation. Position all the other suspension hangers onto the trailer frame, ensuring all the dimensions are held to within 2mm maximum variation. A suspension dimensional layout drawing is supplied with each suspension kit; extra copies of the dimensional drawing can be obtained by contacting our nearest TMC branches.

Tack welds all the suspension hangers in position; recheck the positioning of all the suspension hangers to comply with the 2mm maximum variation before final welding 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.

**Weld all around the top of each suspension hanger in 10mm continuous fillet weld.**

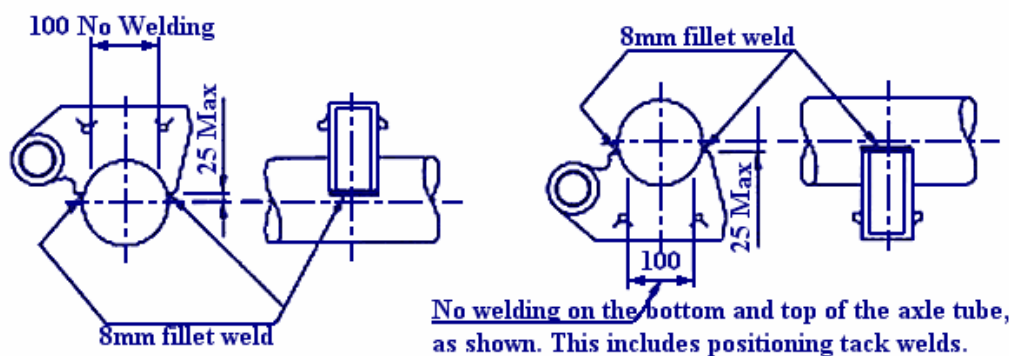
After installation of all the suspension hangers, it is recommended that between all pairs of front hangers and equalisers hangers either a pipe or channel type cross bracing is fitted. Fully weld around the ends of the cross bracing to each suspension hanger.

## Installation of Axle Seats, (Spring Seats)

Position the axle seats on the axle tube at the correct spring centres, the spring centres and suspension hanger centres must be the same dimension. The axle seats must be located equally either side of the axle centre. The axle seats are to be located on top of the axle for overslung suspensions and under the axle for underslung suspensions. For cambered axle installations, care must be taken to ensure the correct positioning of the axle seats relative to the top centre mark of the axle. The axle seats must be aligned flat and parallel to each other. Tacks weld each axle seat in position and recheck the positioning of the axle seats before final welding.

Weld the axle seats to the axle tube using either low hydrogen electrodes or an approved equivalent MIG process.

**Weld each axle seat in position using 8mm continuous fillet weld as per the welding diagram below.**



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### Assembly of Torque Arms

Assemble the adjustable torque arms to the same length as the matching fixed length torque arms. It is recommended that the fixed length torque arms are fitted on the near side (kerb) of the trailer and the adjustable torque arms are fitted on the off side of the trailer.

Fit the end of the torque arm into the suspension hanger or axle seat casting; insert the tapered rubber (or poly) torque arm bushes in from either side. Fit the torque arm pin through the rubber bushes (or poly); fit the torque arm washer and lock nut onto the end of the torque arm pin. Check that the torque arms are located centrally in the end of the hanger or axle seat and tighten the torque arm pin nut.

#### Assembly Torque

Torque arm pins:	1" UNF nut	180/220 Nm. (Rubber bush)
	1" UNF nut	250/300 Nm. (Poly bush)

#### Assembly Notes:

1. On two and three axle suspensions, the middle and rear torque arms are longer than the torque arm fitted to the front axle.
2. On all underslung suspensions, the adjustable torque arms are to be fitted with the clamp bolts to the top as shown on the assembly drawings.
3. On installation, lubricate the rubber torque arm bushes with a soapy solution; do not use liquid detergent or rubber grease.
4. On installation, lubricate the poly torque arm bushes with rubber grease only.

### Final Assembly

Fit the springs to the axles ensuring that the hook ends of the springs are to the rear of the axle as installed into the suspension.

#### Assembly Torque

U bolts:	7/8" UNF nut	500/540 Nm
	1" UNF nut	750/800 Nm

After fitting the springs to the axles using the U bolts provided, position the torque arms into the hanger assemblies, ensuring the springs fit up into the hangers and equalisers and locating spring drop out bolts. Tighten the torque arm pins and drop out bolts.

### **Axle Alignment and Adjustment Procedure**

Measure from the centre of the kingpin to a centre point on each end of the front trailer axle; adjust as needed the adjustable torque arm's length to get the two dimensions equal.

Then align the remaining axles off the front trailer axle by adjusting the length of the adjustable torque arm(s) until the axle centres on both sides of the trailer are equal.

It is possible also to do the axle alignment using a laser or optical aligning device designed for axle alignment.

After the axle alignment is completed and re checked, tighten the adjustable torque arm clamp bolts.

### **Assembly Torque**

Torque arm clamp bolts:      1/2"UNF nut      90/100 Nm

### **Recommended Service Schedule**

#### ***First Service 500 km or on Delivery***

- Check all torque settings and re torque.

#### ***Every 10,000km or every 2 Months (Whichever Comes First)***

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

#### ***Every 50,000 km or Annually (Whichever Comes First)***

- Check all torque settings 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 realign as necessary. Axle alignment must be checked whenever severe kerb contact, or accidental damage occurs or the torque arm bushes are replaced.

**Note; These are the minimum recommended service requirements for the suspension, dependant on service conditions more frequent service and maintenance schedules may be required for correct operation of the suspension equipment.**

## Equaliser and Equaliser Bushes - Assembly

Fit the equaliser casting into the suspension hanger casting, insert the tapered rubber (or poly) equaliser bushes in from either side. Fit the equaliser shaft through the rubber bushes (or poly); fit the equaliser shaft washer and lock nut onto the end of the equaliser shaft. Check that the equaliser casting is locate centrally in the hanger casting and tighten the equaliser shaft nut.

### Assembly Torque

Equaliser shaft:	1" UNF nut	290/350 Nm. (Rubber bush).
	1" UNF nut	400/450 Nm. (Poly bush).

After or during when service work or repairs are being done on the suspension or any of its components, a visual inspection of the suspension should be carried out to ensure that all component are correctly located and fitted. The incorrect fitment and installation of any components will greatly reduce the service life of the suspension and its components.

## General Welding and Repair Notes

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. If a suspension hanger must be replaced during repair or service work, weld as follows.

### **Weld all around the top of each suspension hanger in 10mm continuous fillet weld.**

After installation of the suspension hanger, it is recommended that both the pipe and channel type cross bracing, which was fitted, is replaced and re welded to the new hanger. Fully weld around the ends of the cross bracing to each suspension hanger.

When replacing axle seats be sure to re weld the axle seat as follows.

### **Weld each axle seat in position using 8mm continuous fillet weld.**

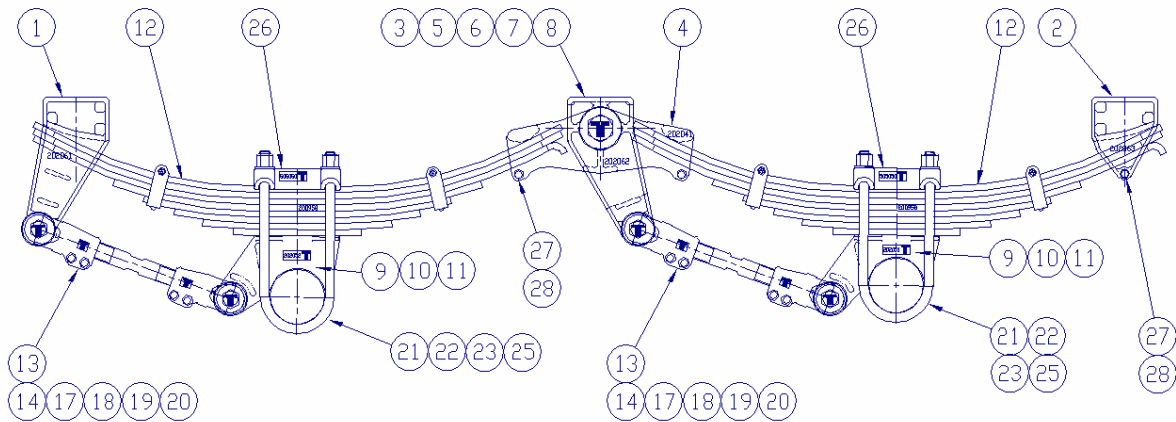
Do not weld circumferentially around the axle. If in doubt, consult the TMC Installation Procedure.

### Torque Settings Chart

U Bolts:	- 500/540 Nm. (7/8" UNF) - 750/800 Nm. (1" UNF)
Equaliser Shaft Locknut:	- 290/350 Nm. (1" UNF) with rubber bushes. - 400/450 Nm. (1" UNF) with poly bushes.
Torque Arm Pin Locknut:	- 180/200 Nm. (1" UNF) with rubber bushes. - 250/300 Nm. (1" UNF) with poly bushes.
Adjustable Torque Arm Eye Bolts:	- 90/100 Nm. (1/2" UNF)
Equaliser Drop Out Bolts:	- 75/85 Nm. (1/2" UNF)

**CS Mechanical Suspension Part List**

**Spare Part List**



ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1	202061	Front Hanger	13	202065/380	Radius Rod - Adjustable 380mm
2	202063	Rear Hanger		202065/390	Radius Rod - Adjustable 390mm
3	202062	Rocker Hanger		202065/464	Radius Rod - Adjustable 464mm
4	202041	Rocker Bracket Std 1360mm	14	202066/380	Radius Rod - Fixed 380mm
	202042	Rocker Bracket Semi-wide 1528mm		202066/390	Radius Rod - Fixed 390mm
5	202043	Rocker Shaft		202066/464	Radius Rod - Fixed 464mm
6	202043N	Rocker Nut	15	202065/547	Radius Rod - Adjustable 547mm
7	202044	Rocker Washer	16	202066/547	Radius Rod - Fixed 547mm
8	202045	Rocker Bush - Rubber	17	202071	Bolt - Radius Rod
	202045P	Rocker Bush - Poly	18	202073N	Nut - Radius Rod
9	202050	Spring Seat - Ultra Low 127mm	19	202072	Washer - Radius Rod
	202051	Spring Seat - Low 127mm	20	202073	Bush - Radius Rod
	202055	Spring Seat - Low 127mm Bogie	21	200972/01	U-Bolt - Round
	202057	Spring Seat - Low 152mm Square		200975/01	U-Bolt - Square
10	202052	Spring Seat - Medium 127mm	22	200972/02	U-Bolt - Round
	202058	Spring Seat - Medium 152mm Square		200975/02	U-Bolt - Square
11	202053	Spring Seat - High 127mm	23	200972/03	U-Bolt - Round
	202056	Spring Seat - High 127mm Bogie		200975/03	U-Bolt - Square
	202059	Spring Seat - High 152mm Square	24	200972/04	U-Bolt - Round
12	200958	Spring - 8 Leaf 75 X 14		200975/04	U-Bolt - Square
	200958/S	Spring - 8 Leaf 75 X 14 Short	25	2000912N	U-Bolt Nut
	200958/16	Spring - 8 Leaf 75 X 16	26	505050	Spring Clamp Plate - Round
	200959	Spring - 9 Leaf 75 X 14		505052	Spring Clamp Plate - Square
	200959/16	Spring - 9 Leaf 75 X 16	27	505039	12mm Bolt X 130mm
	200960	Spring - 10 Leaf 75 X 14	28	505039N	12mm Self Locking Nut
	200960/16	Spring - 10 Leaf 75 X 16			
	323106	Spring - 8 Leaf 75 X 13			

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