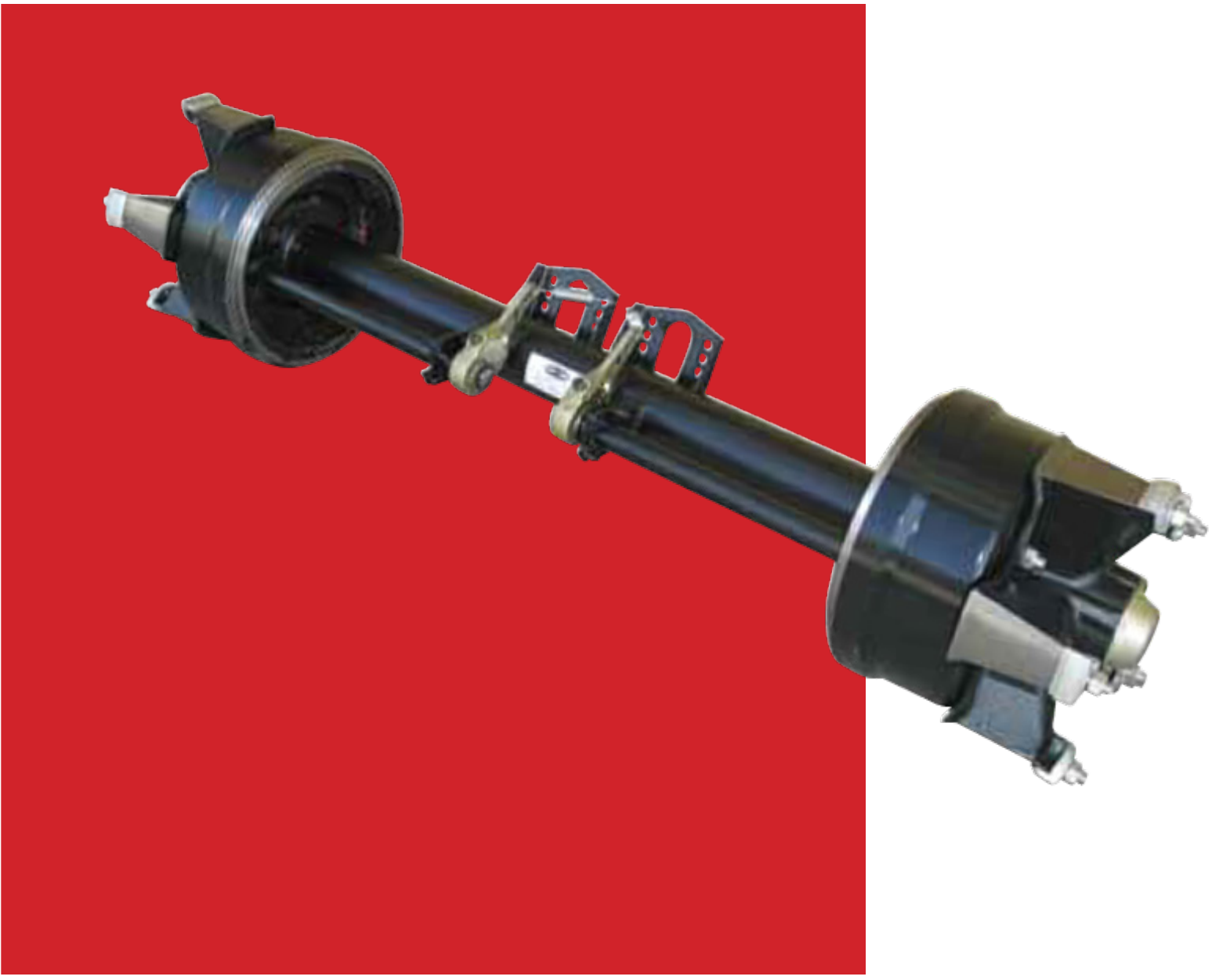
MAXUS

Axle Maintenance Manual



MaxiPARTS

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1. SAFETY NOTICE

The authors and publisher are not liable for any physical damage or personal injury resulting from errors or omissions in this manual.

This manual does not replace the manual provided by the vehicle manufacturer.
Maintenance must be carried out by suitably qualified personnel using appropriate tools.
This manual describes everyday maintenance operations and does not cover major repairs.
We recommend that maintenance should be carried out by a specialised workshop.

Carrying out repairs and maintenance work may be dangerous. This safety notice describes only some of the potential hazards and is intended to make users aware of the risks and encourage them to take care.

Personal protection:

Wear appropriate personal protection equipment: goggles, mask, gloves, helmet, safety shoes, overalls, etc. Work in the presence of another person.

Unstable vehicles:

Never work underneath or near a vehicle that has been raised using only a jack.

When working underneath or near a vehicle that has been jacked up, always make sure that the jack is used in conjunction with stands or other effective supports and that the jack and stands used can bear the weight. Check that the vehicle is perfectly stable and that the forces applied to the vehicle while carrying out maintenance will not cause it to shift. Also check that the ground is firm.

Hot parts:

Some parts, such as brake drums, for example, may become extremely hot in use.

Pressurized hydraulic or pneumatic systems:

NOTE: Before carrying out maintenance on hydraulic or pneumatic systems, which may be pressurized, take all necessary precautions to avoid accidental pressure release.

Risk of fire, risks from fumes, toxic gases and irritant substances:

All fuel is highly flammable and petroleum vapor is explosive.

For cleaning and degreasing parts, use only appropriate, recognized cleaning fluids and follow the instructions on the packaging.

Avoid contact with the skin and avoid inhaling vapor, fumes or toxic gases.

Do not smoke, use a naked flame or create sparks, etc. if there is a risk of explosion or fire owing to the presence of flammable vapors, fuel, oil, paint, solvents, dust, straw, etc.

A fire extinguisher appropriate for the type of risk should always be to hand.

Asbestos:

The brake linings of our axles do not contain asbestos.

Environment:

We have carefully studied the harmful effects of our products on the environment.

Respect the environment and do not dump oil, grease and used chemical products. They should be disposed of in accordance with the regulations at a waste collection point, waste disposal centre or recycling centre.

2. GENERAL INTRODUCTION

The purpose of this manual is to familiarise yourself with a MAXUS axle. Topics included will cover:

- Installation
- Adjustments
- Maintenance
- Inspections

This manual also contains information in chronological order to get your axle working as soon as possible. Tables, diagrams, and charts for a common sense approach are included to make this package as complete possible.

Your MAXUS nameplate on any axle is located on the centre of the beam. It contains the model and serial number. Your invoice number will also help to identify your axle,

Axle Type Identification

Axle Type for MAXUS trailer axles are composed of letters and digits. For example, AP0230MG730AF557, these letters and digits indicate the weight capacity, track and type of components installed on the axle.

3. WELDING

Before installation can begin, now is the time to inspect your MAXUS axle for any flaws or damage that has occurred at the factory or during shipping.

To prevent serious eye injury, always wear safe eye protection when you perform welding.

3.1 Methods

Four methods may be used to weld hardware to trailer axles:

- Shielded metal arc (stick electrodes)
- Gas metal arc (MIG, solid wire)
- Gas tungsten arc (TIG)
- Flux cored arc (tubular wire)

American Welding Society (AWS) classifications and specifications for these four methods are shown in Table 1.

TABLE 1.

Methods for Welding Carbon & Low Alloy Steels	AWS Electrode Classification	AWS Specifications
Shield Metal Arc	E70XX	A5.1/A5.5
Gas Metal Arc	ER70S-X	A5.18
Gas Tungsten Arc	ER70S-X	A5.18
Flux Cored Arc	E70T-X	A5.20

The weld tensile strength must be 70,000 psi as per AWS specifications. Weld tensile strengths which are either higher or lower than this rating is not acceptable.

The best fusion and strength will be obtained using the voltage, current and shielding medium recommended by the electrode manufacturer.

If the shielded metal arc method is used, electrodes must be clean, dry and have been stored per AWS specifications

3.2 Axle Preparation

The area to be welded must be free of grease, dirt, paint, slag and other contaminants. These contaminants may affect weld quality.

The axle tube and the hardware to be welded to the axle must be at a temperature of at least 60°F (15°C).

Welds made with the axle components at the correct temperature will perform better, since there is less of a tendency to form an area of brittle material next to the weld.

Never bring an axle into a factory or repair facility from the cold and immediately weld. Rather, the axle and brackets to be welded should be stored overnight in a correctly heated room.

If temperature requirements are not met, pre-heat the weld area to a temperature of at least 200°F (93°C) using a "rosebud torch". Do not concentrate heat in one area. Rather, slowly heat a wide area around the joint to be welded. Verify the temperature with a temperature-sensitive crayon or other appropriate means.

3.3 Hardware Fit

Hardware at the weld site should fit as close as possible to the axle (maximum 3mm, see **Fig. 3)**. This will prevent the necessity for excessive welding.

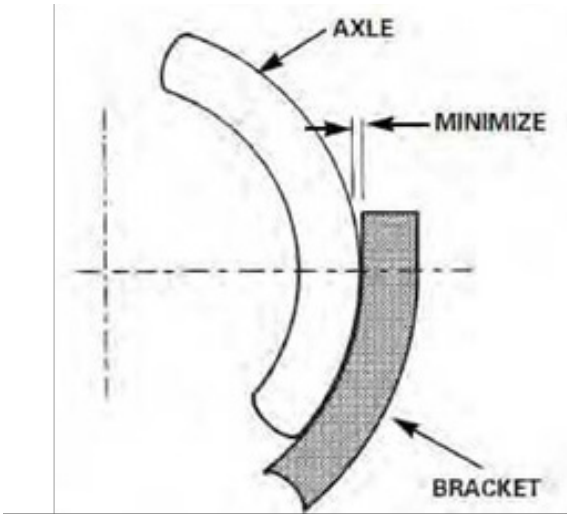
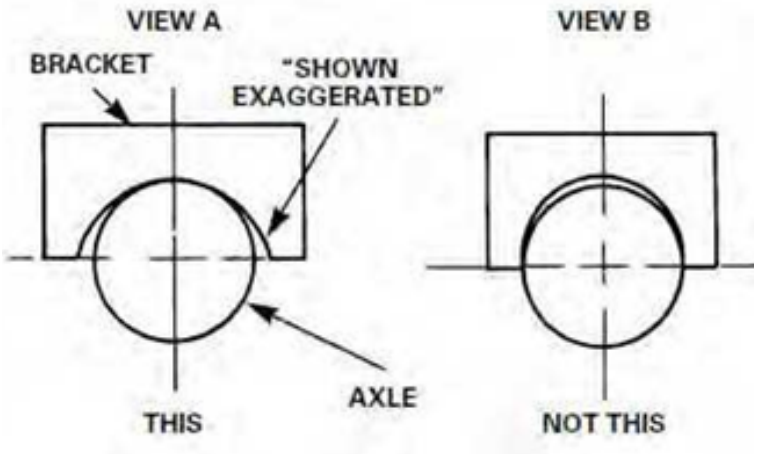


Fig. 3

Hardware, such as suspension spring seats and trailing arms, must be accurately positioned parallel to each other. Use the axle top-centre hole, when available, for reference in locating this hardware, then C-clamp components in position prior to welding.

Brackets that wrap around the axle should fit the axle so that the point of contact is at the base of the bracket as shown in View A (see **Fig. 4**). Here the fit is such that loads imposed on the bracket are transferred directly to the axle. A fit as shown in View B is such that both vehicle loads or loads imposed by tightening U-bolts are transferred through the weld. This may cause the weld to crack.

Fig. 4



Brackets on rectangular axles should fit the axle so that the point of contact is at the tangent point of the axle radius, see **Fig. 5**

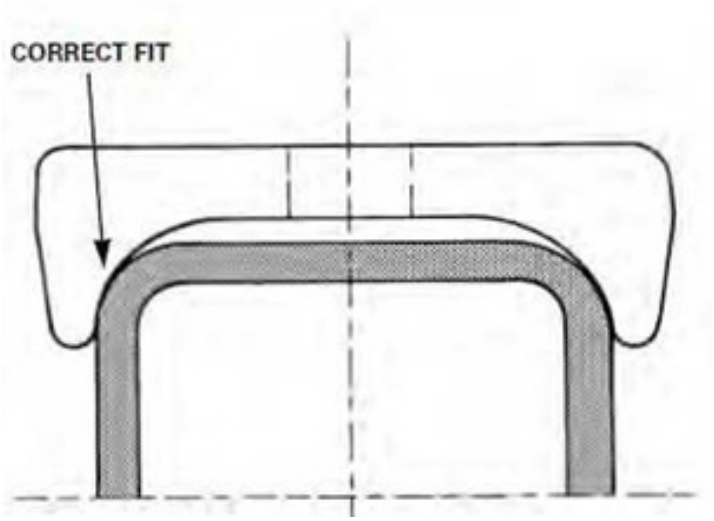


Fig. 5

3.4 Tack Welding Location

Welding equipment should be grounded to the axle through a cable connection that is both clean and tight. The connection should be located at one of the parts welded to the axle such as the camshaft bracket, air chamber bracket or brake spider. It should not be located at a suspension spring, a U-bolt or a point that will place a wheel bearing between the ground connection and weld area, see **Fig. 6**.

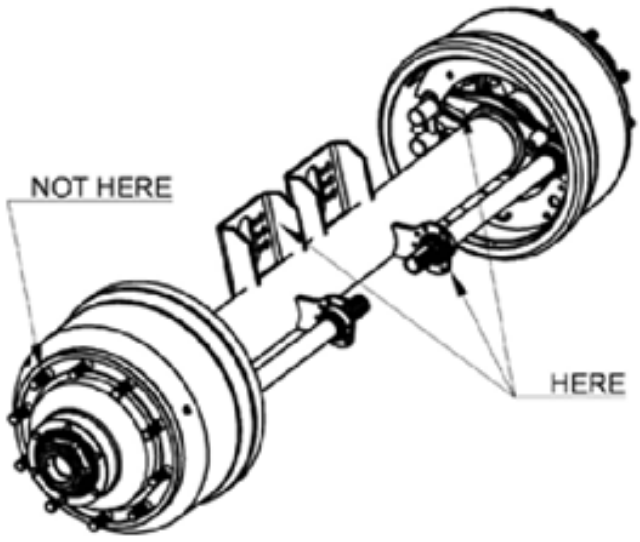


Fig. 6

A connection that places a wheel bearing between the ground cable connection and the weld area can damage the bearing by electric arcing.

Prior to applying final welds, hardware should be tack welded to the axle following recommendations provided by the component manufacturer. This will help minimize both axle distortion and residual stresses caused by final welds. After tack welding, clean up any weld slag, then fuse the tack welds into the final welds.

The position of tack weld see **Fig. 7.**

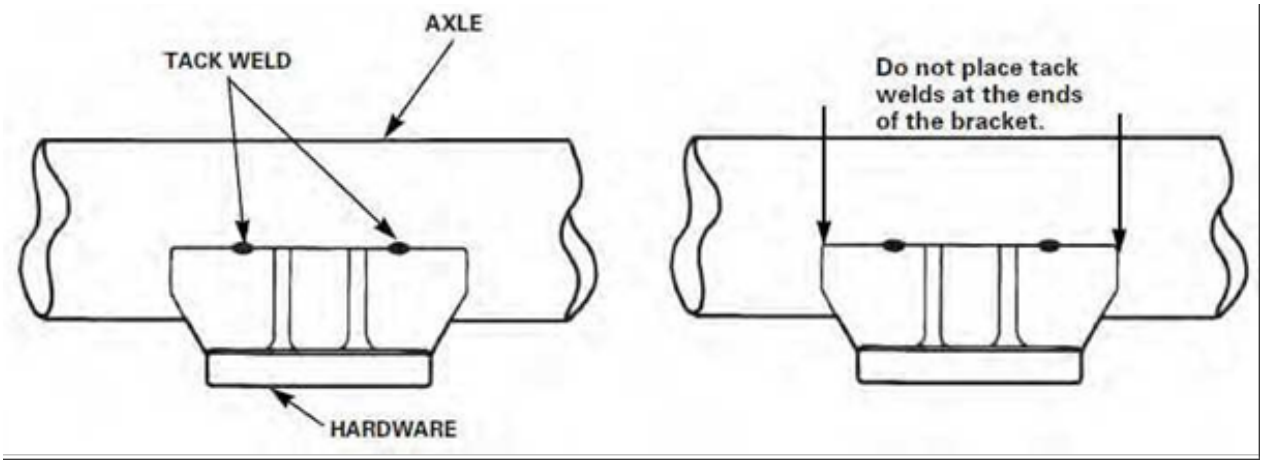


Fig. 7

3.5 Final Welding Location

Axles are more likely to crack at a weld location, since welds lower the strength of the axle material adjacent to the weld and set up a stress riser at the weld site. You must confine welding to areas of relatively low stress near the centre or neutral axis of the beam, see F**ig. 8.**

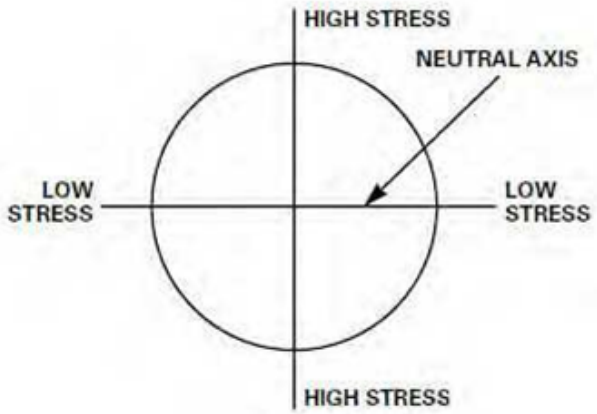


Fig. 8.

An incorrect weld location will void the axle warranty and can result in reduced fatigue life of the trailer axle beam. Serious personal injury and damage to components can result.

The following guidelines are for welding locations on axles.

Welding is not allowed within 1.50-inches (38.1 mm) for round, one-inch(25.4mm) for rectangular, of the top-centre of the axle, see **Fig. 9.**

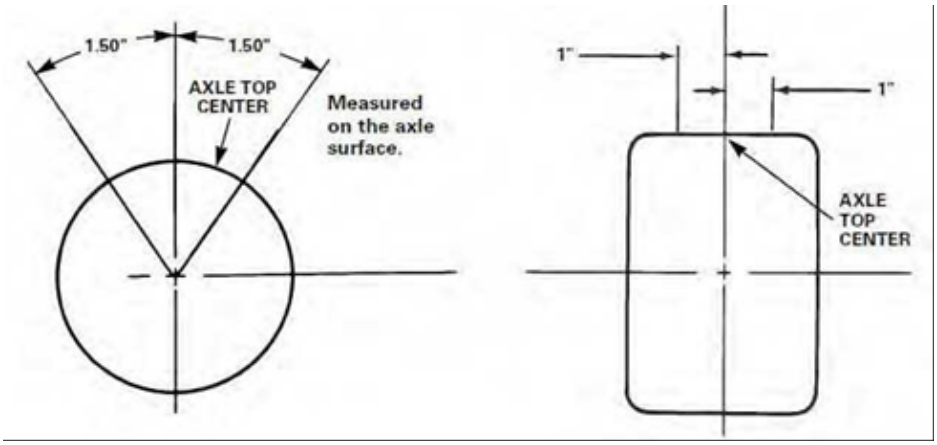


Fig. 9

Horizontal welding is not allowed more than 1.50-inches (38.1 mm) below the axle horizontal centreline, see **Fig. 10**

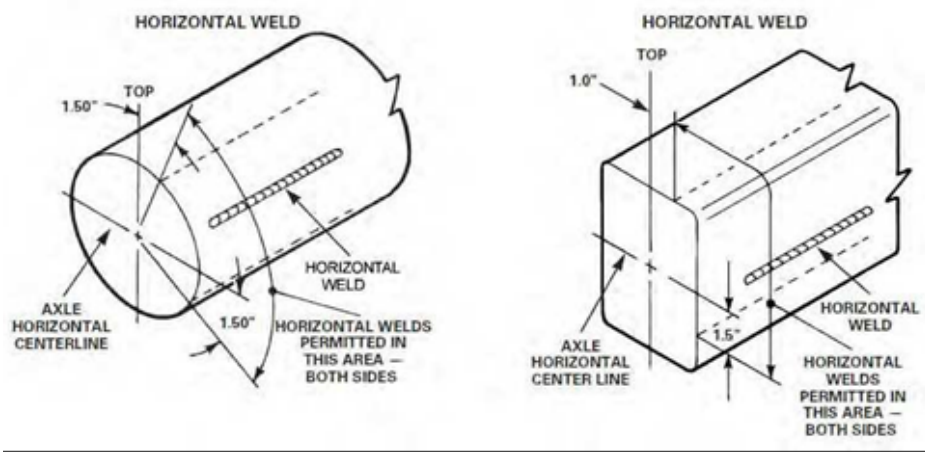


Fig. 10

Vertical welding is not allowed more than one-inch (25.4 mm) below the axle horizontal centreline, see **Fig. 11**

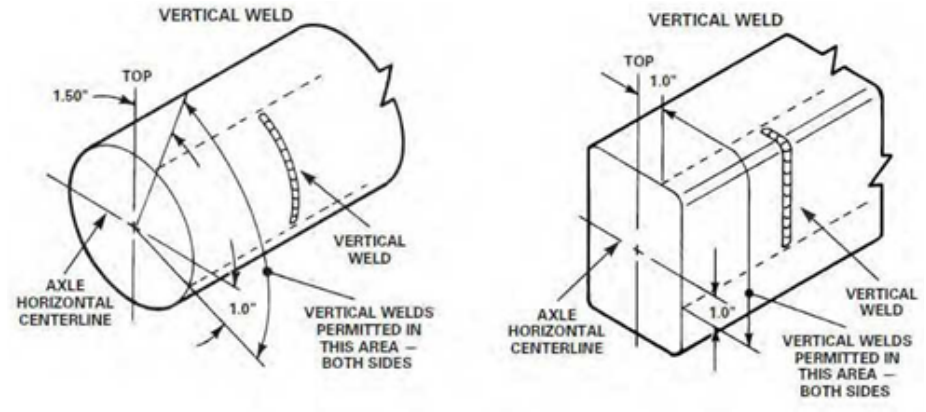


Fig. 11

The round axle welding locations are in reference to their position when installed onto the vehicle.

NOTE: Axles can be rotated up to 20 degrees. Do not install the brackets with the correct welds, then rotate them out of the correct positions.

3.6 Welding Procedure

Axles are more likely to crack at the end of the bracket attachment welds. It is critical to avoid welding imperfections such as craters, undercuts and poor fusion at these locations. Some methods of avoiding these imperfections include using correct welding parameters, starting and stopping the arc a short distance away from the ends of the weld pass and maintaining correct arc position and length.

welds should not be started or stopped at the end of the weld pass. Rather, they should be started and stopped away from the ends as shown in **Fig. 12.**

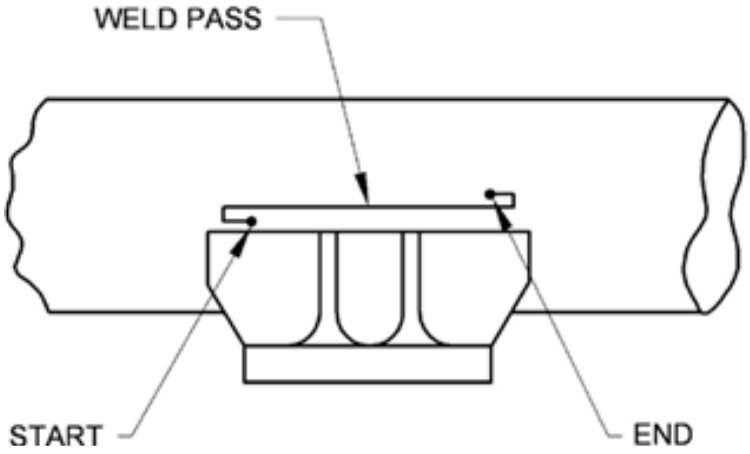


Fig. 12

3.7 Bead Size

The maximum weld bead size allowed, regardless of whether the weld is achieved with a single or multiple passes, is 3/8-inch (9.5 mm) on rectangular axles and 1/2-inch (12.7 mm) on round axles.

4. ALIGNMENT

4.1 Orientation

Because of the many variations of MAXUS axles, orientation is important. A good rule of thumb is to align cam rotation with wheel rotation in the forward direction. (See **Fig. 13**). If cam/wheel rotation is opposite, natural frequencies can cause brake squealing and vibrations.

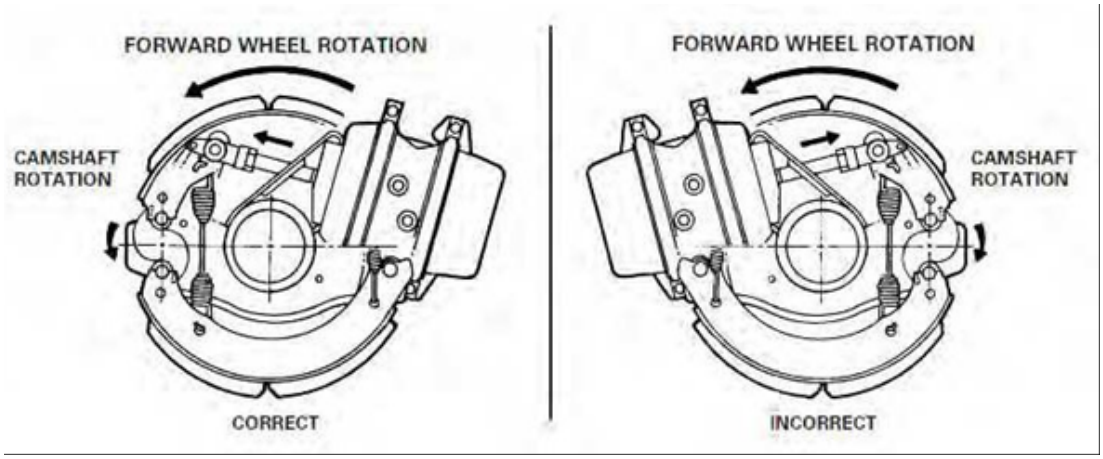


Fig. 13

4.2 Alignment

Alignment should be checked whenever major axle or suspension components are replaced or if vehicle tracking or excessive tire wear problems exist.

Note, however, that these problems can also be caused by other factors such as:

– An axle that is installed with its centreline located more than 0.25-inch (6.3 mm) from the trailer centreline. See **Fig. 14**.

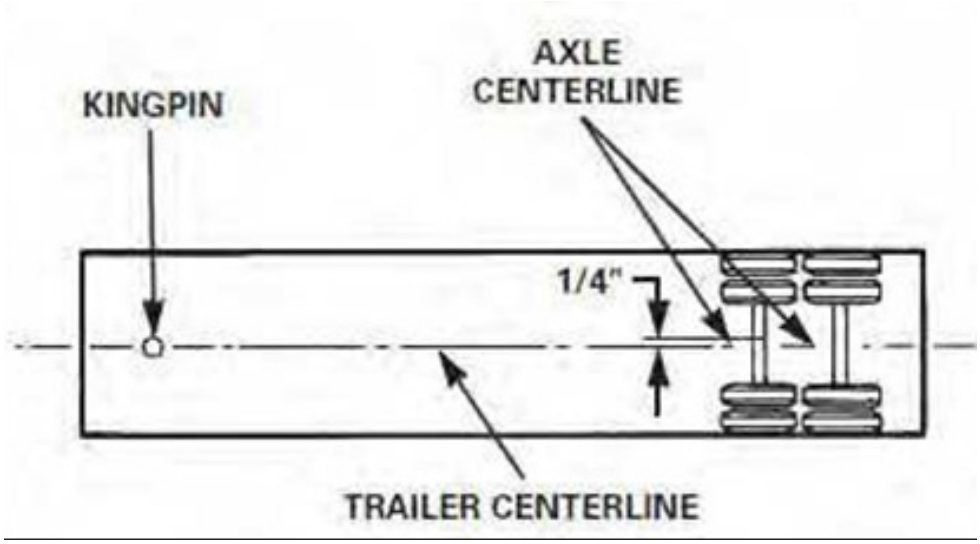


Fig. 14

- Incorrect tire inflation pressure.
- The rolling radii of a set of dual tires on a wheel end not matching within 0.125-inch (3.1 mm). See **Fig. 15**.

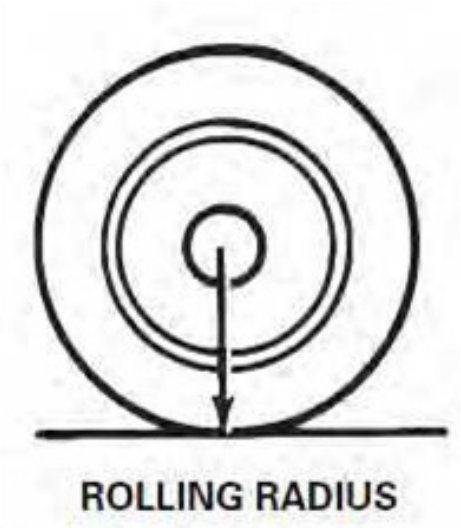


Fig. 15

- Damaged or worn suspension components or incorrectly tightened suspension fasteners.
- Incorrect chassis angle.

Before performing an alignment, replace damaged or worn components with the parts that match the manufacturer specifications and tighten the fasteners to specifications.

NOTE: Alignment should be performed with the vehicle empty and the brakes released.

When moving forward, the trailer axles must remain parallel with main axle. Therefore, the king pin must be consistent with the centre of axle. (See **Fig. 16**)

For two-axle trailer, ensure A=B, C=D. The maximum allowable error between A and B, C and D are 1.6mm.

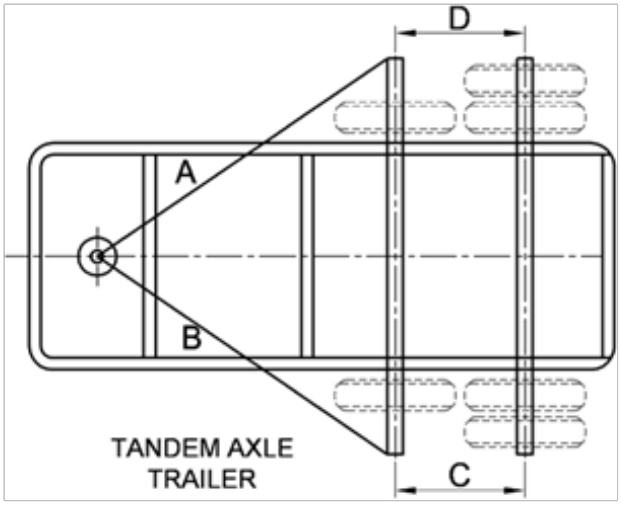


Fig. 16

An acceptable gauge point for measuring “C” and “D” is the dimple in the spindle end plug located on most trailer axles. To reach this plug, remove the rubber hubcap oil filler plugs. Other acceptable gauge points are the edges of the wheel rims as noted earlier.

On trailers equipped with more than two axles, measure and adjust each additional axle. To ensure that these additional axles are accurately adjusted, measurements should be made from the front axle to each additional axle.

4.3 Axle Top-Centre Location

Some trailer axle models are built with some type of mark, such as a drilled hole or a punch mark, which locates the top centre of the beam. These markers can be used to orient the axle assembly on the suspension and identify the centre of the beam so the suspension brackets can be located from a central reference point. (See **Fig. 17)**

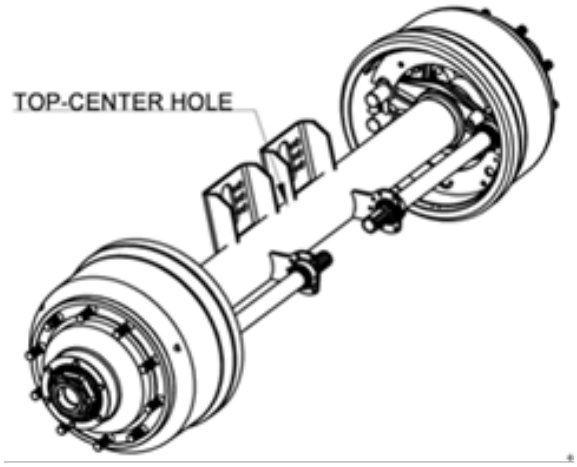
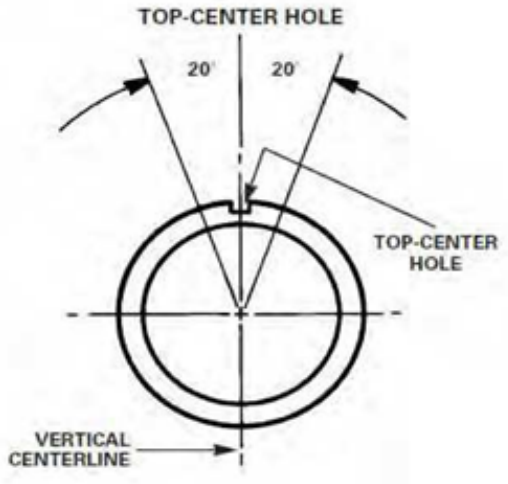


Fig. 17

Cambered trailer axles must be installed so that the top-centre mark is located at the exact top of the axle. Non-cambered trailer axles can be installed so that the top-centre mark is not located at the exact top of the axle. If rotation of the axle is allowed, the top-centre mark can be rotated 20 degrees away from the exact top position. (See **Fig. 18)**

Fig. 18



NOTE: The centreline of the camshaft bracket must be located within 20 degrees of the axle horizontal centreline. See **Fig. 19.**

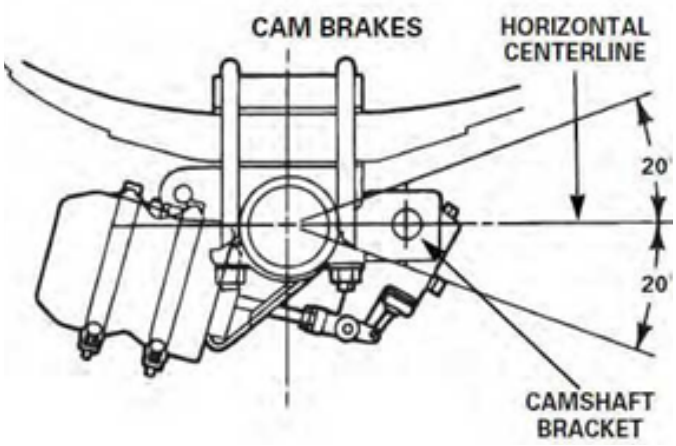


Fig. 19

4.4 Toe-In, Toe-Out Verification
(see Fig. 20)

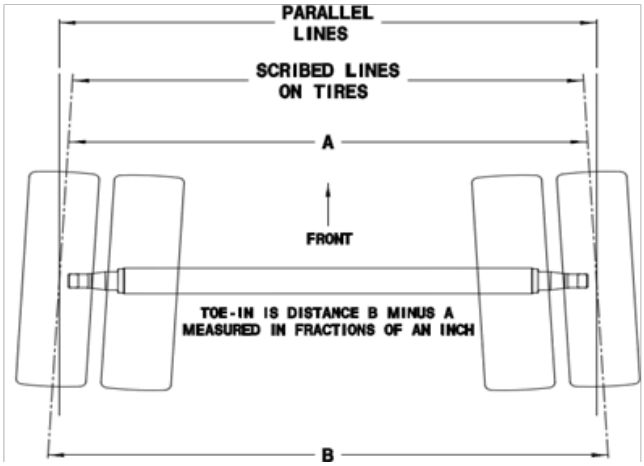


Fig. 20 WHEEL TOE-IN
(TOP VIEW OF AXLE WITH DUALS)

NOTE: With wheels off the ground, scribe a fine line on the tire tread all around the tire to aid in the measurement of "A" and "B".

Toe-in: "A" is smaller than "B".
Toe-out "A" is larger than "B".

To be correctly aligned, wheel toe-in or toe-out must be within the limits of 0.25 " 6.35mm , 0.358 degree toe-in, and 0.063"(1.59mm), 0.09degree toe-out. Toe-in or Toe-out which exceeds these limits will cause increased tire wear.

Measurement should be performed with an unloaded axle.

5. BEARINGS MAINTENANCE AND ADJUSTMENT

5.1 The Bearing Play Inspection

- After the first 1,000 km.
- Before intensive use, every 6 months or 25,000 km.

Wheel bearings are subject to wear, their lifetime depends on the operating conditions, the load, the speed, the adjustment and lubrication, etc.

If the bearing is damaged or worn, the bearing and seals should all be replaced (see paragraph 5.2 Replacing The Bearings).

To check the wheel bearings:
- Lift the wheel off the ground.
- Turn in both directions slowly to check for any rough points or friction.
- Turn it at high speed to check for unusual noises, such as grating or knocking.

In order to check the wheel bearing play, raise the axle until the wheels is no longer resting on the ground *(ensure that the vehicle cannot move)*. Release the brake, grip the wheel at the top and the bottom and check the play by trying to tilt it.

The play can also be detected by using a lever between the tyre and the ground (see **Fig.21**). If you can feel any play, adjust the wheel bearing (see paragraph 5.3 Adjusting The Bearings).

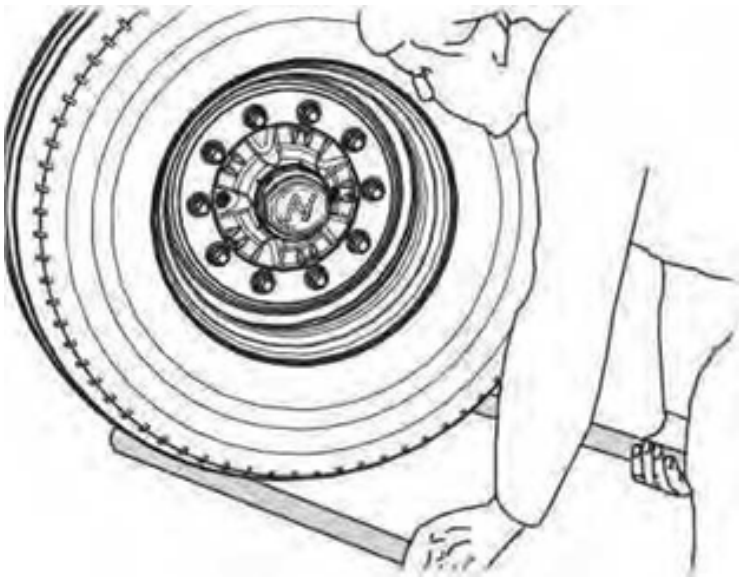


Fig. 21

Make sure that the play does not come from the suspension or a steering axle kingpin.

5.2 Replacing The Bearing

To replace the wheel bearings, follow the instructions for disassembling and assembling bearings, removing and fitting the bearing cups as follows.

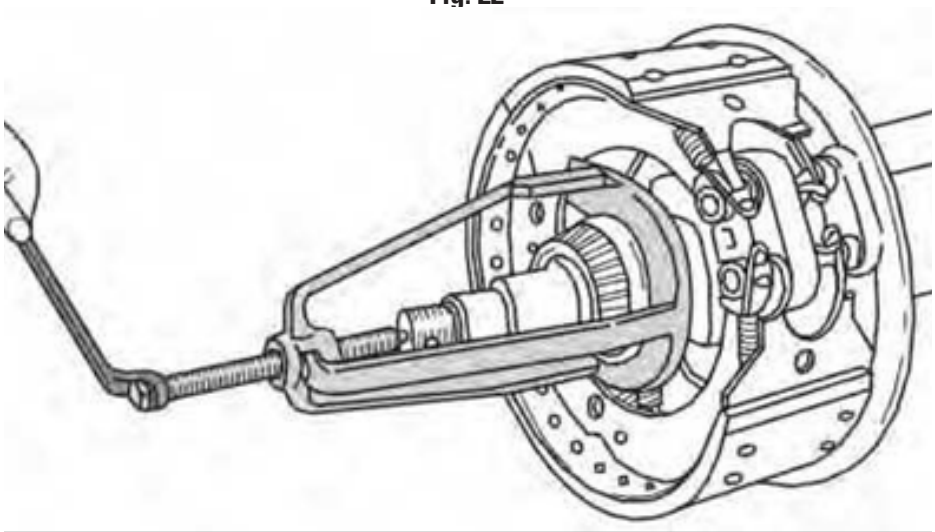
New grease retaining plates should be fitted to hubs with grease retaining plates as the plates will be damaged while removing the bearing cups.

Unpack the bearings at the last moment and never mix them up.

Disassembly:

- Slacken the wheel nuts.
- Lift the axle until the wheel is off the ground.
- Remove the wheel.
- Release the brakes (make sure that the vehicle cannot move).
- Remove the hubcap.
- Remove the split pin or pin from the spindle.
- Remove the castle nut.
- Remove the drum/hub assembly. using a hub puller if necessary: the outer ring, the grease retaining plates inside the hub (depending on the model), the small bearing cone and cage come with the hub. Check these parts.
- The bearing cups and grease retaining plates (if has) can be left inside the hub for cleaning.
- Remove the large bearing cage and cone from the spindle using a bearing puller if necessary (such as, shown in **Fig. 22**).

Fig. 22



- Check the oil seal between the spindle and the large bearing (or the wheel bearing seal depending on the model), and replace these parts if necessary. A puller may be required to remove the wheel bearing seal. Note the orientation of the oil seal for reassembly.
- Check the contact surfaces on the spindle for the bearing and seal and the threaded end of the spindle and remove any bumps or asperities.
- Check the hub surfaces in the same way.
- Check the bearing face of the castle nut.

Clean and degrease all parts with a suitable cleaning fluid.

Reassembly:

- Clean and Grease the spindle lightly.
- Refit the oil seal or wheel bearing seal (ensure that the seal is the right way round), a punch makes it easier to fit the wheel bearing seal and avoids damaging the seal.
- Apply a generous coating of grease to the large bearing cage and rollers, making sure that the grease penetrates all-round the rollers and under the cage.
- Fit at bottom the interior ring (cone) of the large bearing on the rocket, it is important to take care not to damage the cage of the bearing, to go up the cone unit, rollers and cage (See **Fig.23**) on fixed to use if necessary tools as shown in the **Fig.24** the effort to push must apply only to the cone, in no case on the cage or the rollers what involves a deterioration of the bearing.

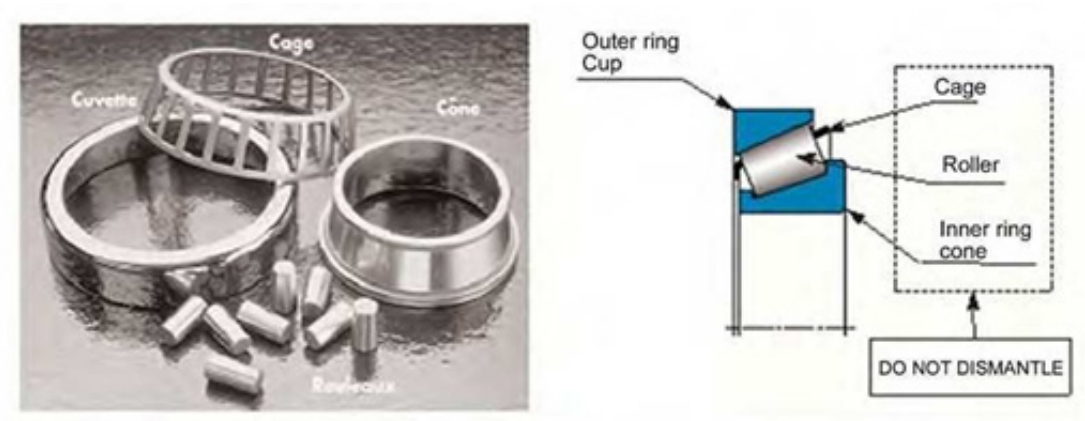


Fig. 23

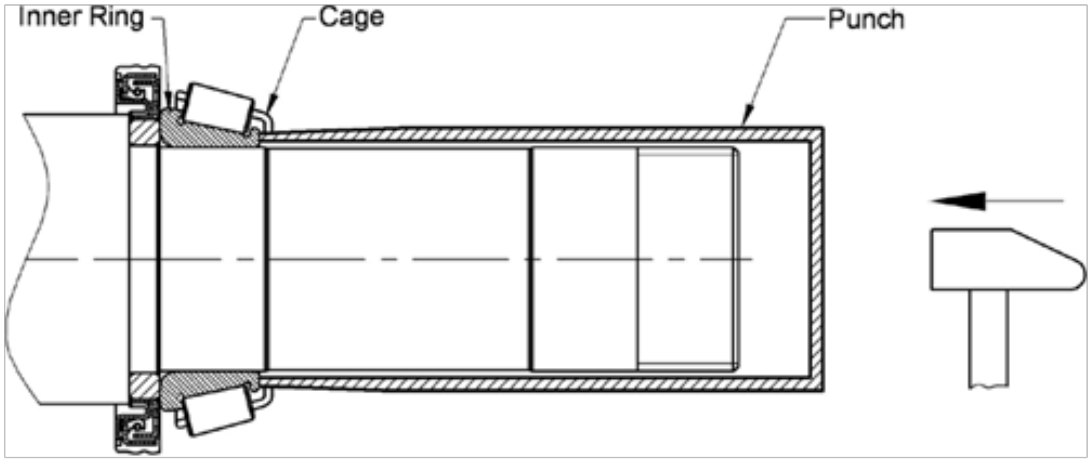


Fig. 24

- Apply a 15 mm (small axles) or 20 mm (large axles) layer of grease all around and right across the large and small bearing cups that are still in the hub.
- If the hub does not have grease retaining plates, put a large amount of grease in the centre of the hub to act as a reservoir.

— Slide the hub/drum assembly over the spindle and the brake shoes keeping the hub perfectly straight and aligned until it is in contact with the oil seal at the back of the spindle (see **Fig. 25**)

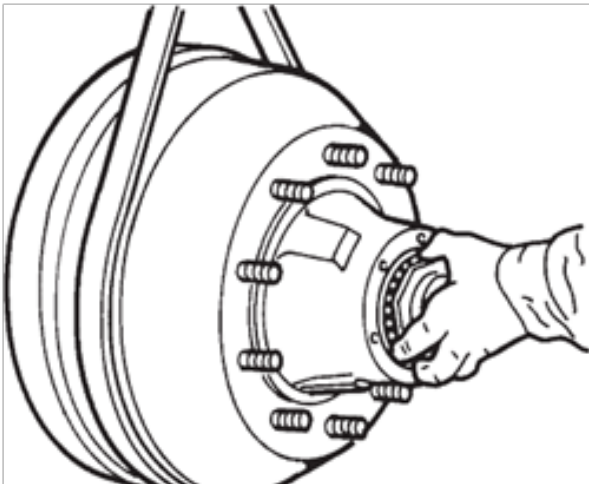


Fig. 25

— Apply a generous layer of grease to the small bearing cage and rollers and fit the assembly to the spindle.
— Fit the castle nut and adjust it as described flowing (See paragraph 5.3 Adjusting The Bearings).
— Lock the castle nut with a hair-pin clip or new split cotter pin as appropriate.
— For hubs without grease retaining plates, fill the hubcap with grease.
— Refit the hubcap.

Removing the bearing cups from the hub

— The bearing cups are an interference fit and must be punched out using a hammer and a mild steel punch (See **Fig.26**.)
— If the hub has grease retaining plates, these will be punched out at the same time as the bearing cups and will, therefore, be damaged.

Note the orientation of the bearing cups and grease retaining plates for reassembly.

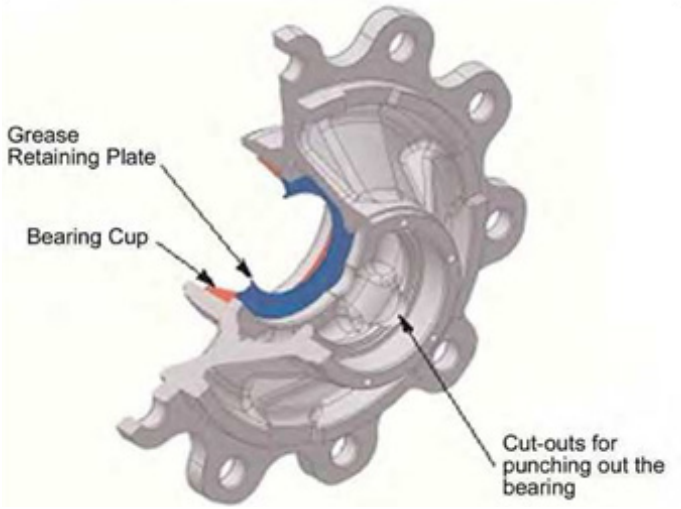


Fig. 26

Fitting new bearing cups into the hub:

- If the hub has grease retaining plates, first put the grease retaining plate in its seating (the right way round) and ensure that it remains well centreed and in place while the bearing cup is being fitted. Re-check when the operation is complete.
- Fit the bearing cups and punch into place using a mild steel punch as shown in **Fig. 27**

NOTE: Make sure that the bearing cups and grease retaining plates are the right way round.
Never fit the bearing cup with the bearing cone and rollers in place

Take care that the bearing cups are straight and that they are firmly against the seating in the hub.

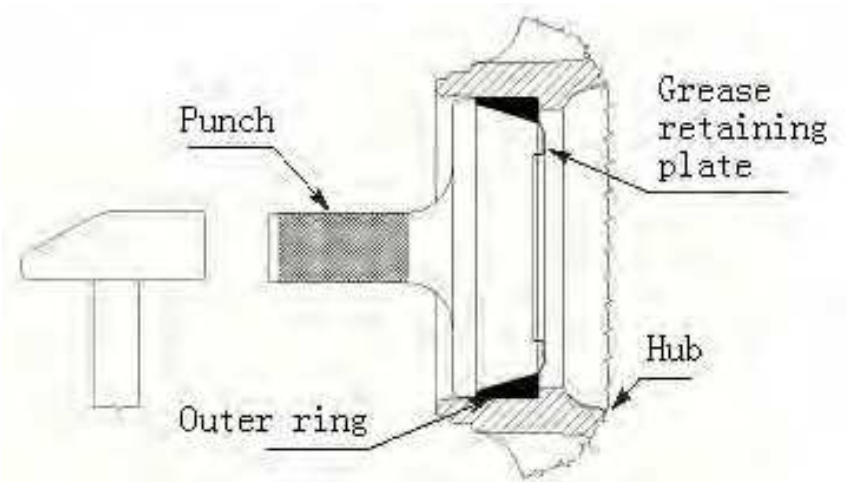


Fig. 27

5.3 Adjusting The Bearings

To help ensure that a correct bearing adjustment can be achieved, be sure to do the following prior to performing this adjustment:

- Lift the axle until the wheel is no longer resting on the ground. Large wheels should be removed so that the play is easier to feel and to make it easier to adjust the bearings.
- Release the brakes.
- Inspect the wheel-end equipment, especially the axle and wheel retention hardware threads.
- Repair or replace any damaged parts.

Wheel-end components can wear, causing correctly adjusted bearings to loosen. Wheel bearing end play should therefore be periodically checked and re-adjusted if necessary.
The procedures detailed in this section apply to both grease and oil lubricated wheel ends.

The goal of Wheel bearing adjustment is to obtain a wheel bearing end play of 0.001-0.005-inch (0.025-0.127 mm). This is achieved according the following procedures. it is necessary to use a torque spanner not a impact driver.

Double adjusting nut system (see Fig. 28)

- Tighten the adjusting nut(A) to a torque of 200 ft-lbs (271 Nm) while rotating the hub.
- Back off adjusting nut(A) one full turn.
- Tighten the adjusting nut(A) to a final torque of 50 ft-lbs (68N·m.) while rotating the hub.
- Back off the adjusting nut(A) 1/4 to 1/3 turn and install lock washer (B and C) to nearest hole.
- Install outer jam nut(D) and torque to 300-400 ft-lbs (407-542 Nm).

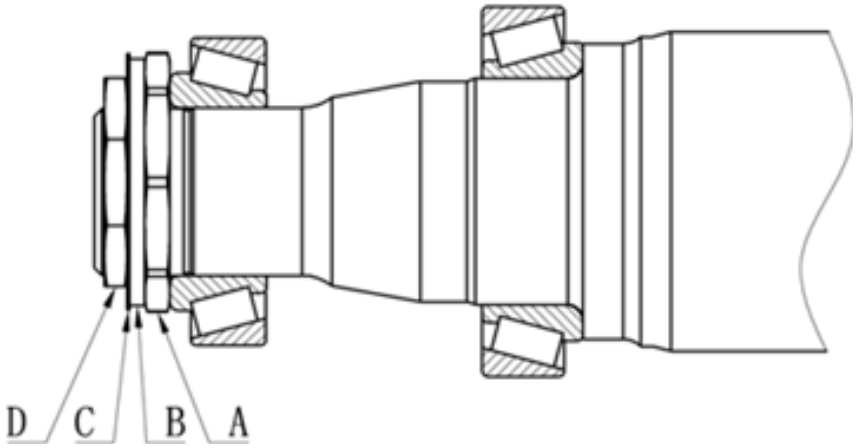


Fig. 28

Single Adjusting Nut System (See Fig. 29)

- Install lock washer(B)
- Tighten the adjusting nut(A) to a torque of 200 ft-lbs (271 N·m) while rotating the hub.
- Back off adjusting nut(A) one full turn.
- Tighten the adjusting nut(A) to a final torque of 50 ft-lbs (68N·m.) while rotating the hub.
- Back off the adjusting nut(A) 1/6 to 1/4 turn to nearest hole.
- Install cotter pin.

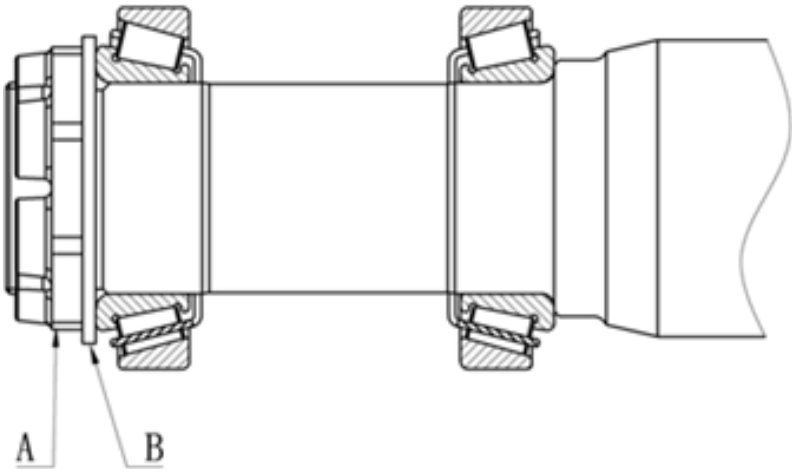


Fig. 29

NOTE: verify that the wheel rotates freely when adjustment is complete. Acceptable end play is 0.025mm to 0.13mm with a dial indicator.

Auxiliary Solution Adjustment

If a nominal axle nut spanner is used (vehicle tool kit), tighten the axle nut until the drum/hub unit drags slightly. The rotation of the hub or wheel feels to be slightly stiff.

6. BRAKE MAINTENANCE

6.1 Initial Checks

The brakes should be tested before using for the first time and after the first laden journey:

- Check the actuator and return spring mountings, check the actuator stroke and return travel and check that the road and parking brakes operate and release correctly.
- Tighten the screws and nuts (covers, fulcrum, etc), check the cotter pins, pins, circlips, etc.
- Check for hydraulic fluid and air leaks.

6.2 Checking Brake Clearance and Wear

- Check and test the brakes before intensive use and every 3 months:
- Check the brake wear and the clearance between the brake linings and the drum visually (See **Fig. 30**). It is probable that the linings are worn when the actuator travel has increased significantly.
- Check the thickness of the brake linings

The brake shoes should be replaced as soon as the minimum lining thickness (5mm) is reached.

- Check that the brakes are clean and clean them if necessary.
- Lubricate brake cam shaft bearings with grease nipples lightly to avoid grease deposits on the brake linings and drums.
- Carry out the initial checks described above (See paragraph **6.1 Initial Checks**).

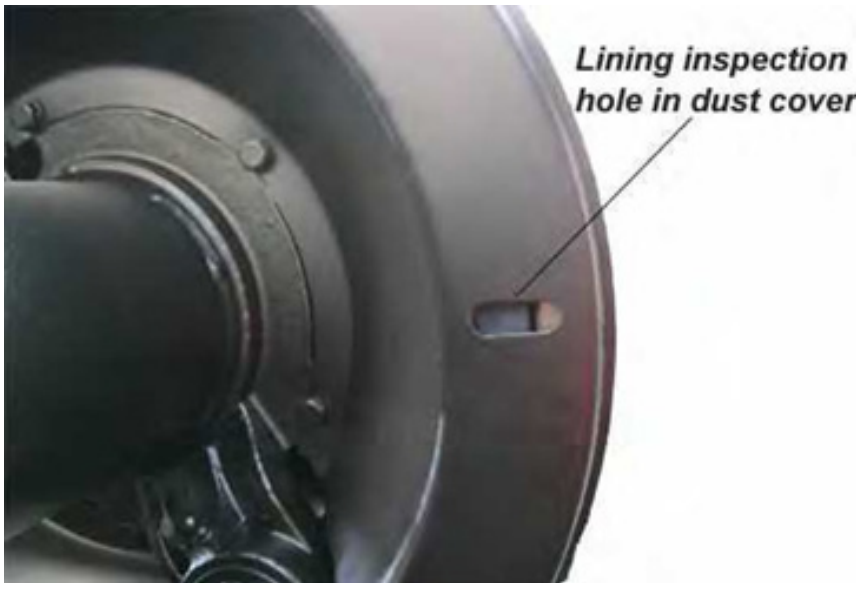


Fig. 30

The brake shoes should be replaced as soon as the minimum lining thickness (see **Fig. 31**) is reached. When replacing the brake shoes, repack the wheel bearings with grease (See paragraph **8.2 Lubricating The Wheel Bearings**).

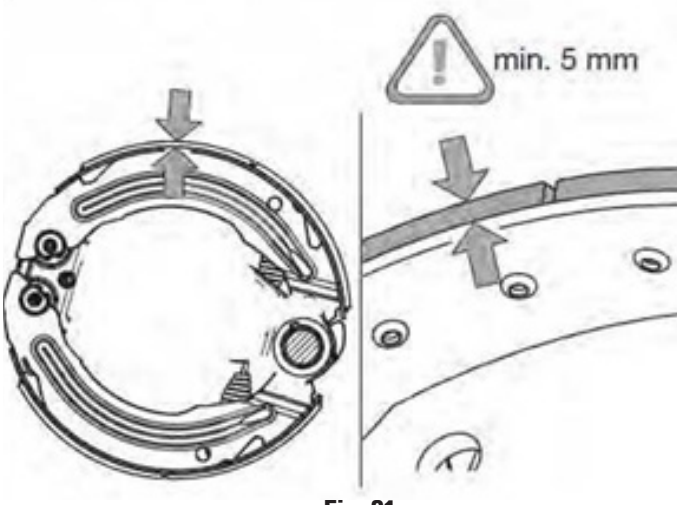


Fig. 31

6.3 Replacing The Brake Shoe

Place the upper brake shoe with rollers on to the S-cam. **Fig. 32**

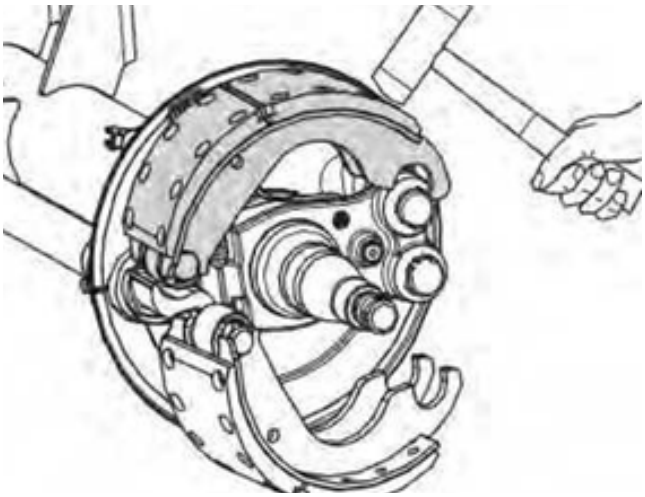


Fig. 32

Assemble lower brake shoe and fix on to the anchor pin by hitting with a soft hammer. Fig. 33, Fig. 34

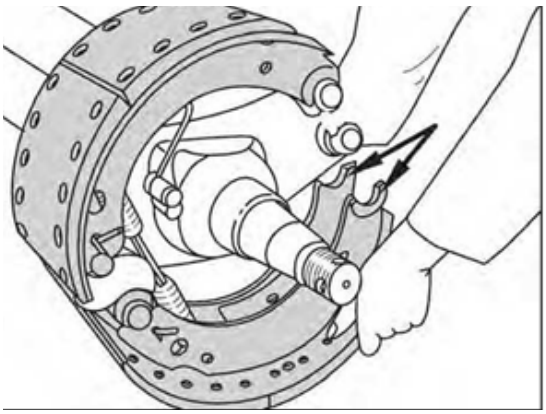


Fig. 33

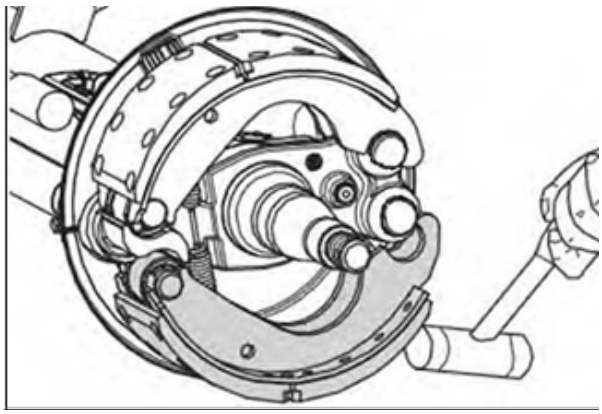


Fig. 34

Fit retainer springs, see **Fig. 35, Fig. 36**

Fig. 35

Fig. 36

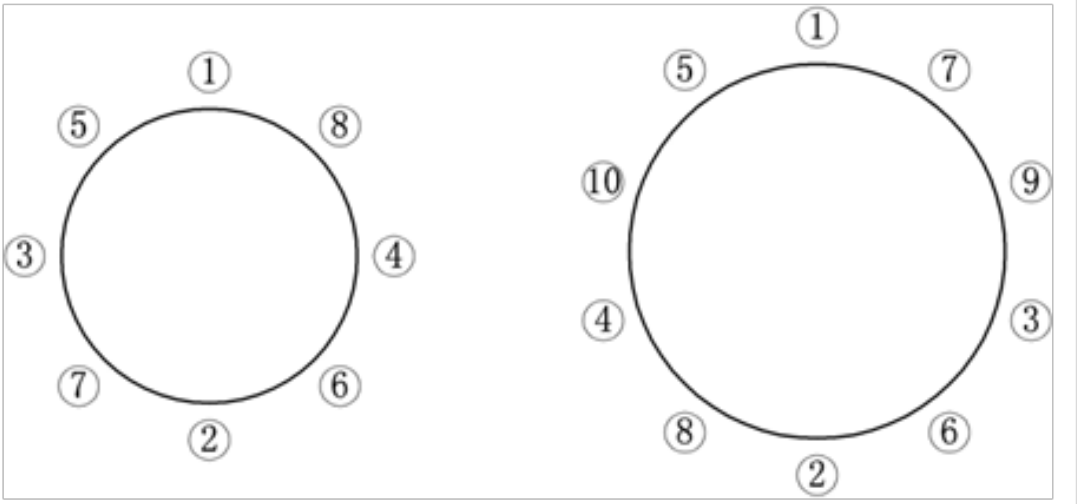
7. WHEEL ASSEMBLY

7.1 Tightening Warning

Never use impact wrenches to tighten the wheel nuts as the impact torque may be excessive. Wheel nuts should be tightened (See **Fig. 37**) diagonally using a torque wrench.

If power tools are used (for example, pneumatic torque wrench) they must be carefully set to the required torque for tightening. Otherwise, the studs and wheel nuts may be overtightened which may damage or break them.

Fig. 37



7.2 Tightening Torques

[See Table 2]

On lately assembled wheels, the nuts can, at the beginning, to loosen itself in consequence of a compressing. It is thus necessary to check the tightening of the nuts after the first course in load. One will proceed in the same way later on after each disassembling of wheels. To tighten the nuts, to use the adapted special spanner. If one uses the machines bolt ones for the nuts of wheel, to regulate the tightening torque well, if not the threading and the metal of the stud and nuts of wheel undergo an overload.

Tightening of the nuts of wheel according to the following recommended torques

TABLE 2

Nut thread mm	Torque N·m	*Pipe length L mm	*Force F Kg
ISO M22×1.5	570-630	1000	57-63
BSF 7/8"-11	450-500	800	56-62
JIS M20×1.5	400-440	700	57-63
Spoke Hubs 3/4" UNC	200-260	400	50-65

(*) The 2 last columns of the table 2 are useful as reference for those which do not have a torque spanner or of pneumatic screw driver (see **Fig. 38**). It is allowed to use an impact spanner for disassembling, but it is

absolutely necessary to avoid the tightening of the nuts with this type of spanner, because the exerted couple is unverifiable.

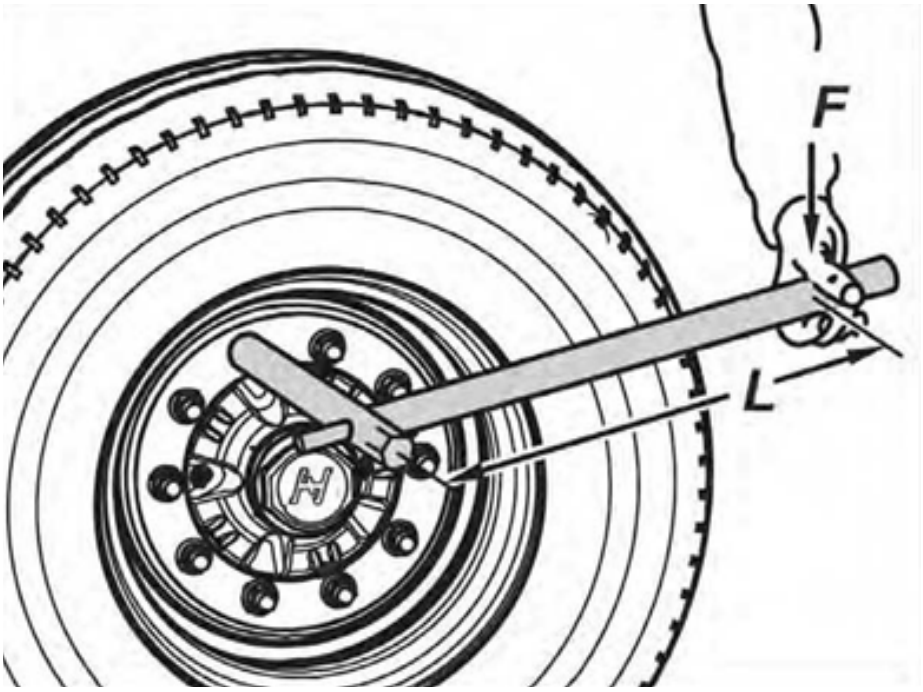


Fig. 38

7.3 Checks Interval

Retighten the wheel nuts after:
- The first time of use.
- The first laden journey.
- The first 1,000 km.
- Every 6 months or 25,000 km.

Repeat every time the wheels are changed or removed.

8. LUBRICATION AND MAINTENANCE

8.1 Lubrication

Lubricants increase the efficiency and extend the life of mechanical components by providing a lubricating film which:

- Reduces friction and wear
- Removes heat
- Inhibits corrosion
- Flushes contaminants away from moving parts

Many service problems can be traced to incorrect lubrication procedures; therefore, it is essential that trailer axle and brake components be filled:

- To the correct capacity
- With the specified lubricants
- At the required maintenance intervals

Seals protect components by keeping lubricants in and contaminants out. Seals should be periodically inspected for wear, damage or leaks. Note that many lubricants are colorless or semi-transparent and are difficult to see. The use of synthetic lubricants is approved, provided they meet MAXUS specification requirements. Note that these lubricants must either be compatible with standard commercial seals or special seals must be used.

Never use different brands lubrication at the same time!

8.2 Lubricating Wheel Bearings

In normal operating conditions, lubricate the bearings every years and when the brake shoes are replaced. In harsh conditions the bearings should be lubricated more frequently.

Use a general purpose grease (EP-2, Lithium base for MAXUS axles) formulated for lubricating plain, ball and roller bearings.

All parts (hub, spindle, bearings, seals, castle nuts, hubcap, cotter pin) should be degreased and perfectly clean before reassembly.

The work should be carried out in a clean environment with appropriate tools as the slightest bit of dirt can damage the bearings or even the spindle.
When carrying out maintenance on the bearings, check the brake linings, drum and return springs, clean the brakes, clean and lubricate the brake cam shaft.

When the bearings need to be replaced, according to the paragraph 5.2 Replacing The Bearings and following Fig. **39, 40, 41** lubricate the wheel bearings.

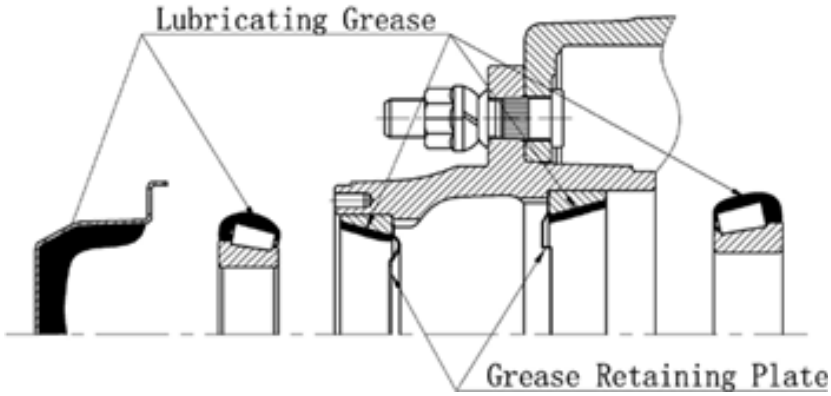


Fig.39

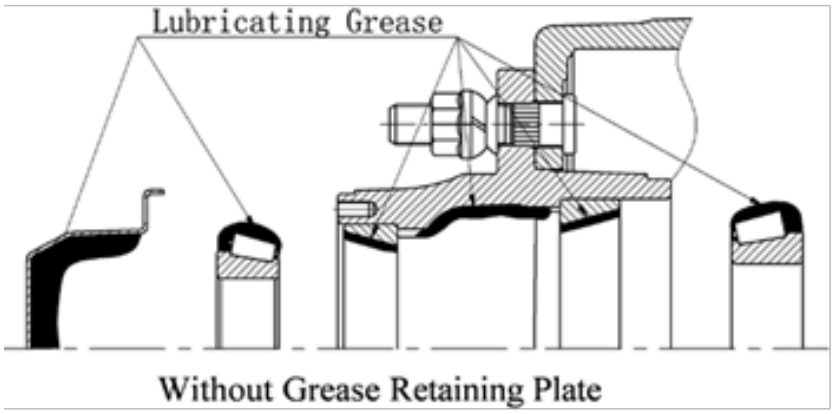


Fig. 40

Fig. 41

Otherwise, missing or damaged hubcaps must be replaced immediately to avoid dirt penetrating into the hub which might result in damage to the bearings.

NOTE: Check that the hub caps are in place and in perfect condition.

For press fit hubcaps, check visually that they are fully home.

For hubcaps attached using screws, fit a new gasket if necessary when the hubcap is removed and retighten the screws regularly (every 6 months).

Please only use the same grease or an equivalent when lubricating any bearings.

8.3 Lubricating Camshaft Bushings

Lubricating the camshaft bushings every 3 months.
Apply the specified grease at the grease fitting on the spider. Apply grease until new grease purges from all the seals. See **Fig. 42**

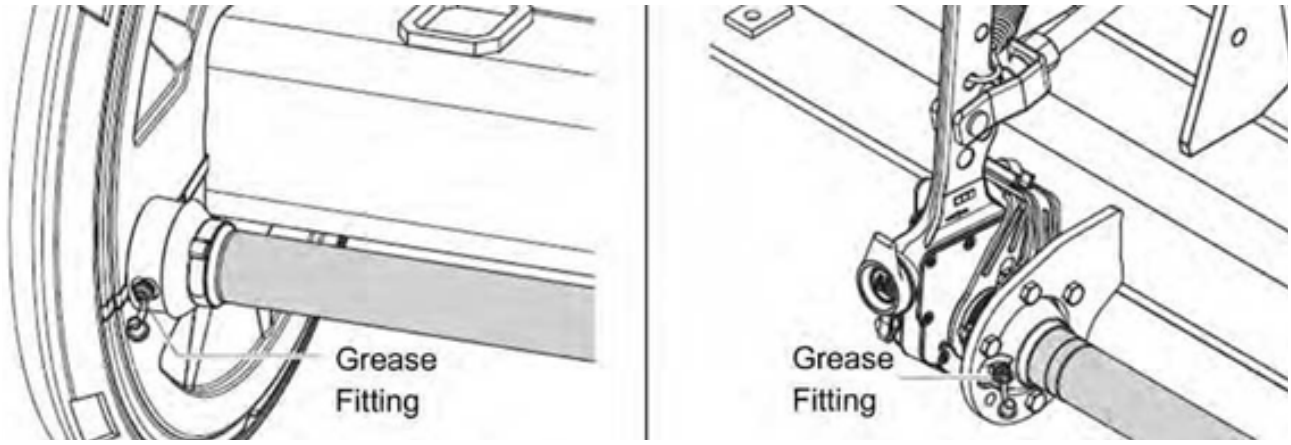


Fig. 42

8.4 Lubricating Slack Adjusters

Lubricating the slack adjusters every 3 months.
Apply the specified grease at the grease fitting on the slack adjusters. Apply grease until new grease purges from all the seals. See **Fig. 43**

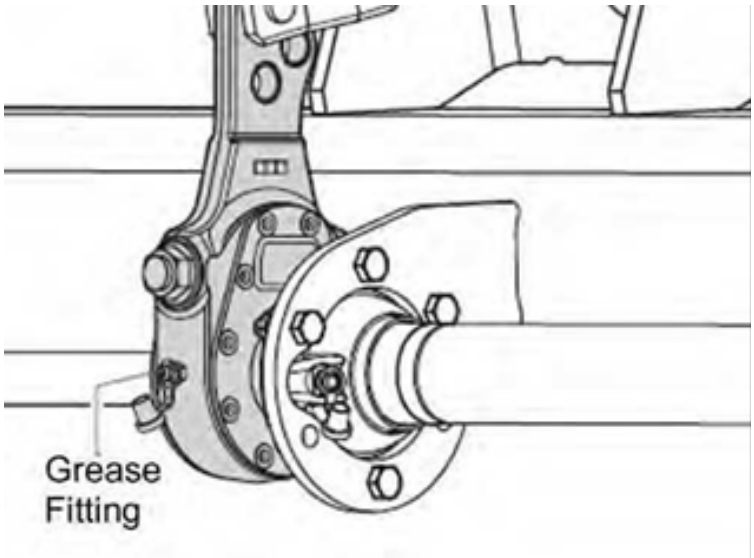
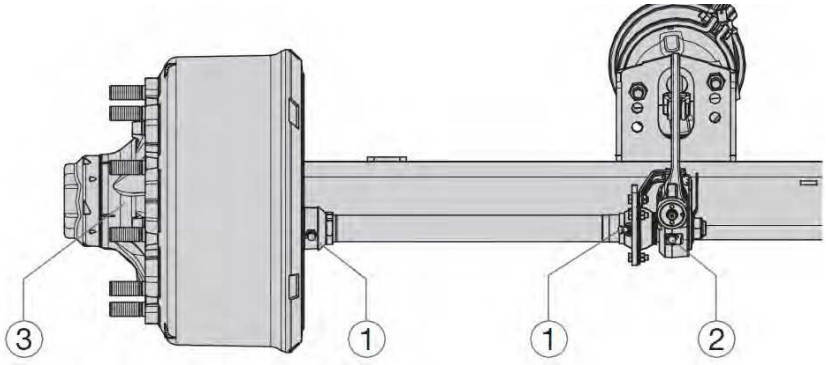


Fig. 43

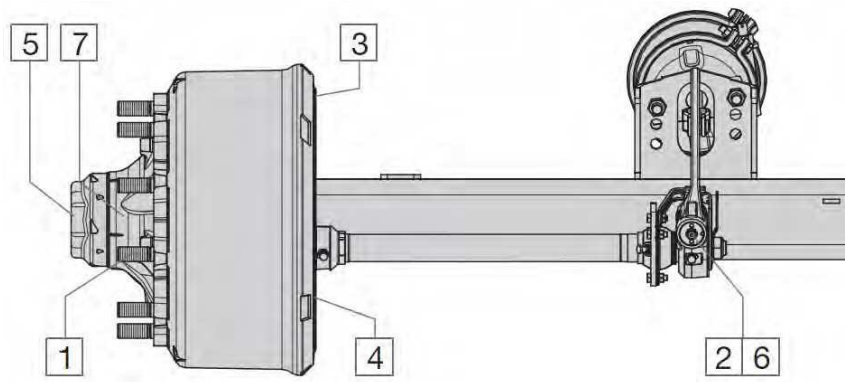
LUBRICATION INTERVAL



Lubrication item \ Frequency	Initially	Every 3 months	Every 6 months	Annually and at every brake lining replacement	Annually	Every 2 years	Latest every 3 years or min. every 500,000km	After 5 y ears, thereafter every 3 years
1 Brake camshaft bearing and bushing, outer and inner	✓		✓	✓				
2 Slack adjuster	✓		✓	✓				
3 Change wheel hub bearing grease, check taper roller bearings and rotary shaft seal for wear				✓	✓	✓	✓	✓

Note: under extreme conditions, lubrication with more frequency(e.g. off-road, impeded braking effort.)

MAINTENANCE INTERVAL



Maintenance item \ Frequency	Initially	Every 3 months	Every 6 months	at every brake lining replacement, latest annually
1 Check wheel nuts for tightness	✓			
2 With manual slack adjuster, check brake play,		✓		
3 Check brake lining thickness is at least 5mm		✓		
4 Check the brake drum for cracks and c heck the internal diameter		✓		
5 Check hub cap for firm seating			✓	
6 Check automatic slack adjusters		✓	✓	
7 Check wheel hub bearing play, adjust if necessary		✓	✓	✓
Check the tyres for uneven wear		✓		
Visual inspection of all component parts for damage and wear			✓	
Note: under extreme conditions, maintenance work with more frequency(e.g. off-road, impeded braking effort.)				

9. QUALITY WARRANTY

Under proper usage and maintenance, the warranty shall be from the date of delivery to the limits or applicable mileage limitation whichever occurs first shown in table 3:

Table 3

Axle assembly	24 months or 200,000 Km
Axle Beam	3 years or 300,000 Km
Brake system	24 months or 200,000 Km
Adjuster	1 years or 100,000Km

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