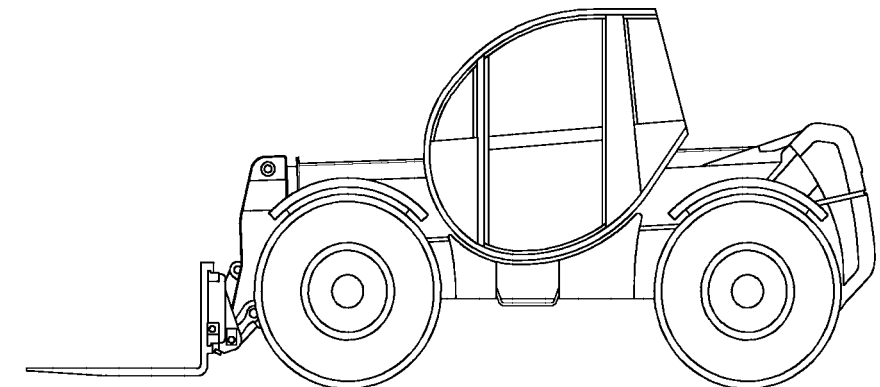


CLAAS



LH70010

CLAAS TARGO K50 K60 K70

The machines in this handbook are designed essentially for agricultural and associated applications. This is their intended use.

Any modifications made to the machine without prior written approval from CLAAS or if the machine is used in any way contrary to the intended use or if the machine is not properly driven or maintained then the Company will not accept any liability whatsoever for any damage or injury (whether direct or consequential).

The method of operation and maintenance specified in this handbook should be strictly adhered to.

For your parts requirements, it is essential that only genuine CLAAS parts are fitted. Any resultant damage from non-genuine parts will invalidate your machine warranty.

CLAAS operates a policy of continuous improvement to its products and reserve the right to change specifications and equipment without notice. Therefore some information within this handbook may differ from your machine.

This manual is designed to service machines:

**from Serial No. 51200011
up to Serial No. 51200727.**

**from Serial No. K5D00100
from Serial No. K6D00100
from Serial No. K7D00100**

General

The contents of this Repair Manual, although correct at the time of publication, may be subject to alteration by the manufacturer without notice.

This manual assumes that maintenance personnel have a sound knowledge of workshop practices and safety procedures associated with the repairs of this type of machine. This manual is designed to assist with the more specialised information required for removal and strip-down of major components.

It is recommended that the relevant part of this Repair Manual is studied carefully before proceeding with any maintenance.

Machine identification

To make sure that the correct parts are obtained, always quote the machine Serial Number when ordering parts.

Health and Safety

To prevent injury to personnel and damage to equipment and machinery, care must be taken to operate in a safe manner. Read the Safety Warnings that follow and always work in a safe manner and obey the relevant Warnings.

Throughout this manual and on the machine there are safety notes. Each note starts with a single word. The meaning of these single words is as follows:

WARNING *Identifies a hazard exists. If proper precautions are not taken, it is highly probable that the operator (or others) could be killed or seriously injured.*



CAUTION *Identifies a reminder of safety practices. Failure to observe these safety practices could result in injury to the operator (or others) or damage to the machine.*



In general these notes are used to indicate that the procedures being described in the manual must be followed to avoid serious injury or death to yourself or others. The notes are also used to protect the machine from unsafe maintenance practices.

SAFETY WARNINGS

- WARNING**  Always wear correct fitting protective clothing. Loose or baggy clothing can be extremely dangerous when operating or maintaining a machine.
- WARNING**  Where possible, only work on or close to engines or machinery when they are stopped. If this is not practical, remember to keep tools, test equipment and all parts of your body well away from moving parts.
- WARNING**  Avoid contact with exhaust pipes and exhaust manifolds when the engine is running; these can be very hot.
- WARNING**  Many liquids used on this machine are harmful if taken internally or splashed into the eyes. In the event of accidentally swallowing oil, diesel fuel, anti-freeze, battery acid etc., **DO NOT** induce vomiting, but **OBTAIN QUALIFIED MEDICAL ASSISTANCE IMMEDIATELY**.
- WARNING**  Always obtain advice before mixing oils; some are incompatible.
- WARNING**  Never run an engine in an enclosed space unless an exhaust extraction system is used.
- WARNING**  Always disconnect battery cables before working on the electrical system to prevent injury caused by electric shock.
- WARNING**  When it is necessary to work on the electrical system with power on, for fault diagnosis, always have a safety man in attendance
- WARNING**  Any dust found on the machine or produced during work on the machine should be removed by extraction, not by blowing. Dust waste should be dampened, placed in a sealed container and marked for safe disposal.
- WARNING**  Always dump pressure from the hydraulic system before carrying out any maintenance or adjustment (**refer to Hydraulic Repair Manual**).
- WARNING**  Never leave the machine unattended with pressure in the system.
- WARNING**  Fine jets of hydraulic fluid at high pressure can penetrate the skin. Do not use your fingers to check for hydraulic fluid leaks. Do not put your face close to suspected leaks. If hydraulic fluid penetrates your skin **OBTAIN QUALIFIED MEDICAL ASSISTANCE IMMEDIATELY**.
- WARNING**  Never allow unqualified personnel to attempt to remove or replace any part of the machine.
- WARNING**  Always use the correct lifting equipment to remove large or heavy components.
- WARNING**  Never attempt to lift or hold up the machine using the lash-down points.

SECTION 1

AXLES AND STEERING

Axles

Description

The front and rear axles are both double reduction by bevel set and planetary hub reduction gears, both have limited slip differentials. The front axle incorporates a parking brake.

Steering is available to both axles, depending on the steering mode selected. The axle hubs are steered by the operation of a double acting hydraulic cylinder attached to the axle.

Front axle

Removal

1. Park the machine on firm level ground and set the wheels straight ahead, in line with the chassis. Fit chocks to the front and rear of the rear wheels.
2. Raise the boom and fit the boom safety stop.
3. Stop the engine and apply the parking brake.
4. Refer to page 1.53 and dump hydraulic pressure from the brake systems, then disconnect the battery.

CAUTION



Support the drive shaft clear of the axle to make sure it is not damaged during axle removal.

5. Disconnect the drive shaft from the axle flange and support clear of axle.
6. Disconnect the inductive magnetic steering sensor electrical lead.
7. Slacken front axle wheel nuts.
8. Support the chassis at a sufficient height to allow the wheels to be removed.
9. Support axle with a fork-lift or trolley jacks.
10. Remove front wheels.
11. Disconnect brake pipes (2) and (3) from left and right brake unit, fit blanks to open pipes and brake unit connections.

12. Disconnect steering pipes (1) from steering cylinder, fit blanks to open pipes and steering cylinder connections.

WARNING



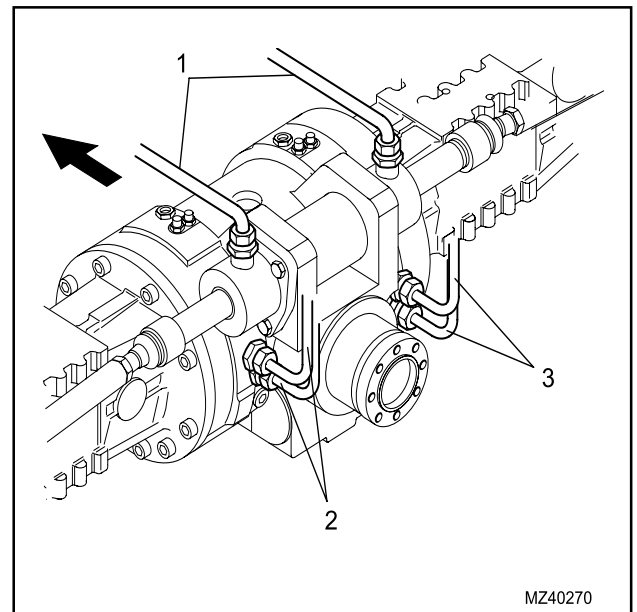
Secure the axle to the fork-lift/trolley jacks to prevent axle tipping on removal.

The axle weighs 443 kg, take care when removing and transporting.

13. Remove the eight attachment bolts/nuts securing axle to chassis (four each side) and remove support plates.

14. Lower axle on fork-lift/trolley jacks.

15. Move axle clear of machine and place on a suitable support.



1. Steering pipes
2. Left brake pipes
3. Right brake pipes

Installation

1. Installation is the reverse of the removal procedure.
2. Torque load components as follows:

Axle to chassis nuts	640 Nm (472 lbf ft.)
Drive shaft bolts	70-85 Nm (52-63 lbf ft.)
Wheel nuts	300 Nm (221 lbf ft.).
3. Check axle and wheel hub oil levels are correct.
4. When the axle has been dismantled and reassembled, refer to the Axle Assembly section and test the differential operation.
5. Refer to Page 1.52 and bleed then check brake function.
6. Start engine, make sure front wheel steering is selected and operate steering through full range several times to bleed air from steering system.
7. Test machine operation.

REAR AXLE

Removal

1. Park the machine on firm level ground and set the wheels straight ahead, in line with the chassis. Fit chocks to the front and rear of the rear wheels.

2. Raise the boom and fit the boom safety stop.

3. Stop the engine and apply the parking brake.

4. Refer to page 1.53 and dump hydraulic pressure from the brake systems, then disconnect the battery.

CAUTION



Support the drive shaft clear of the axle to make sure it is not damaged during axle removal.

5. Disconnect the drive shaft from the axle flange and support clear of axle.

6. Disconnect the load sensor electrical lead.

7. Disconnect the inductive magnetic steering sensor electrical lead.

8. Slacken rear axle wheel nuts.

9. Support the chassis at a sufficient height to allow the wheels to be removed.

10. Support axle with a fork-lift or trolley jacks.

11. Remove the bolts attaching the axle front support to the chassis.

12. Remove the bolts attaching the axle rear support to the chassis.

13. Remove rear wheels.

14. Disconnect brake pipes (2) and (3) from left and right brake units, fit blanks to open pipes and brake unit connections.

15. Disconnect steering pipes (1) from steering cylinder, fit blanks to open pipes and steering cylinder connections.

WARNING

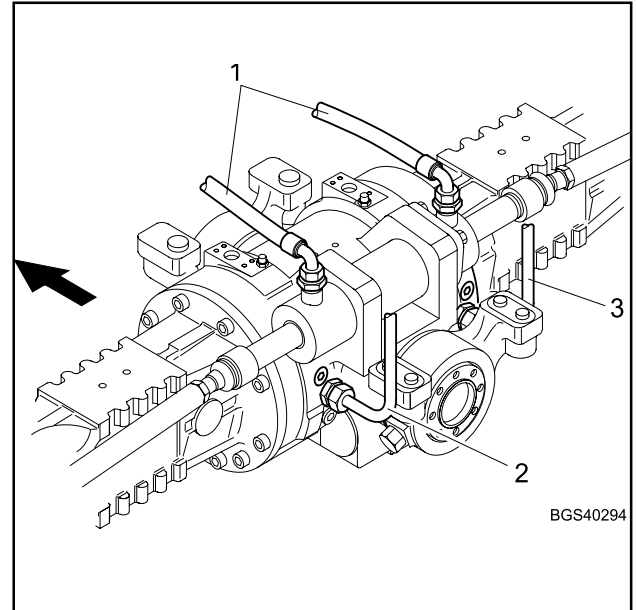


Secure the axle to the fork-lift/trolley jacks to prevent axle tipping on removal.

The axle weighs 443 kg, take care when removing and transporting.

16. Lower axle on fork-lift/trolley jacks.

17. Move axle clear of machine and place on a suitable support.



1. Steering pipes

2. Right brake pipes

3. Left brake pipes

Installation

1. Installation is the reverse of the removal procedure.

2. Torque load components as follows:

Axle to chassis nuts	640 Nm (472 lbf ft.)
Drive shaft bolts	70-85 Nm (52-63 lbf ft.)
Wheel nuts	300 Nm (221 lbf ft.)
Axle support bolts	370 Nm (273 lbf ft.)

3. Check axle and wheel hub oil levels are correct.

4. When the axle has been dismantled and reassembled, refer to the Axle Assembly section and test the differential operation.

5. Refer to Page 1.52 and bleed then check brake function.

6. Start engine, make sure rear wheel steering is selected and operate steering through full range several times to bleed air from steering system.

7. Test machine operation.

Servicing

Dismantling and assembly (General)

WARNING *Dispose of used axle oil in accordance with local regulations.*



NOTES:

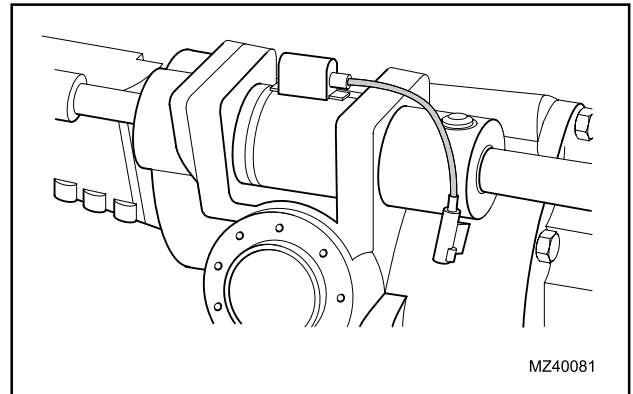
- (1) **Sealing Compound.** Ensure both surfaces to be sealed are clean, dry and free from grease.
- (2) **O-ring seals.** Lubricate seals before fitting to prevent twisting when inserting the shaft
- (3) **Bearings.** It is recommended (but not mandatory) that bearings are heated to 80°C - 90°C before fitting to shaft, or cooling with dry ice before inserting them into an outer housing.
- (4) **Shims.** Measure shims before use, do not rely on measurement marked on shim.
- (5) **Torque loading.** Torque load all components to the recommended figure.
- (6) **Oil seals.** To assist with the correct installation of oil seals carry out the following:
 - Ensure the shaft is clean and not damaged
 - Assemble with lip side towards the oil side
 - Lubricate seal with oil and fill $\frac{3}{4}$ of seal cavity with grease
 - Use special tools to install seals, where available. Do not hammer directly on the seal
 - Do not damage seals while assembling the shaft.
- (7) **Special tools.** Use the special tools to dismantle and assemble the axle.

Dismantling

Steering cylinder

Removal

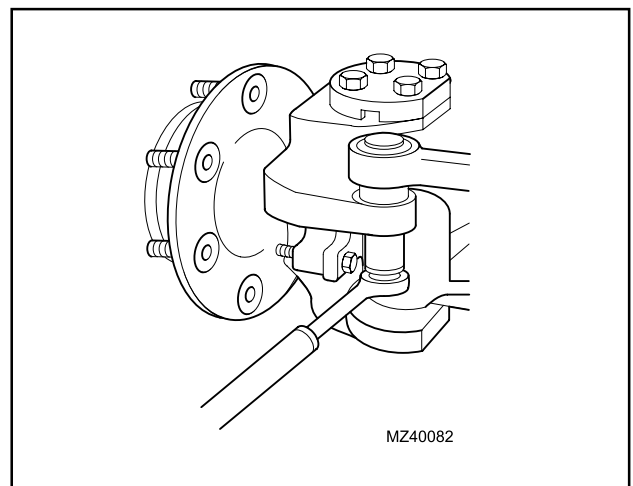
1. Remove the inductive magnetic steering sensor, by loosening the locking clamp screws.



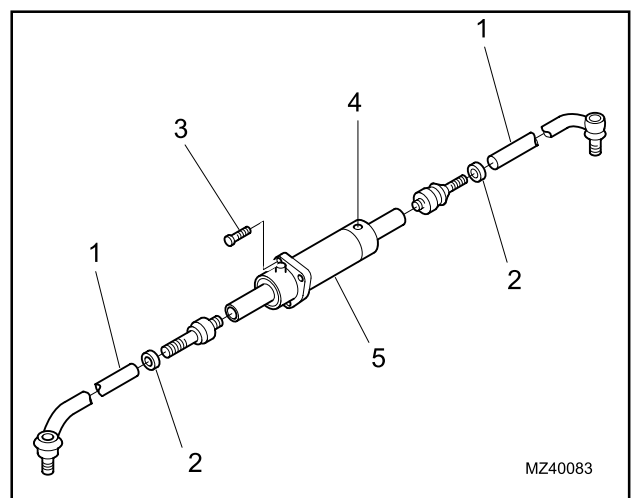
2. Loosen the track rod end nut until it covers end of threaded pin.

3. Use a suitable tool and break the track rod joint.

NOTE: This may damage the nut, use a new nut on assembly.



4. Remove both the track rods (1) by loosening the lock nut (2) and unscrewing track rod from ball joint. Remove the three cylinder attachment bolts (3) and hydraulic adapter (4) from steering cylinder (5). Remove cylinder from axle mounting brackets, if necessary use a rubber hammer.



Cylinder overhaul

Refer to Hydraulic Manual for cylinder Dismantling and Assembly.

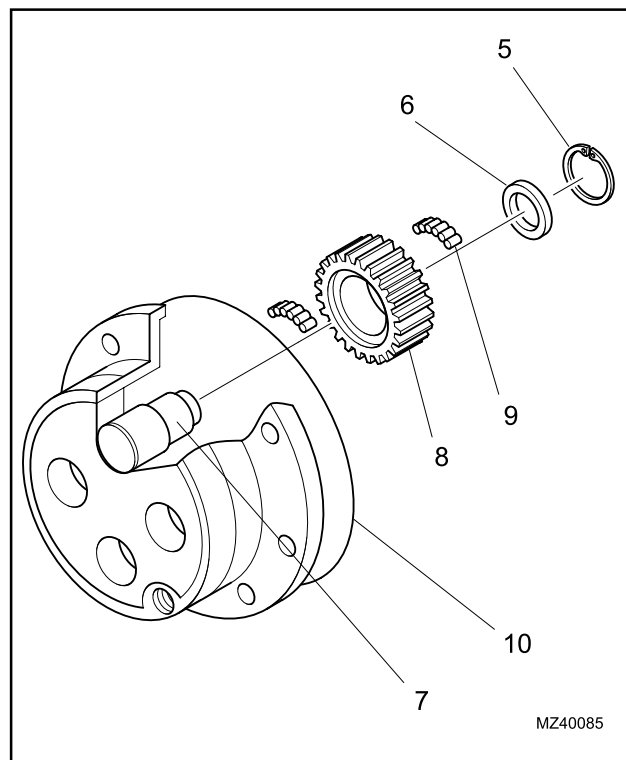
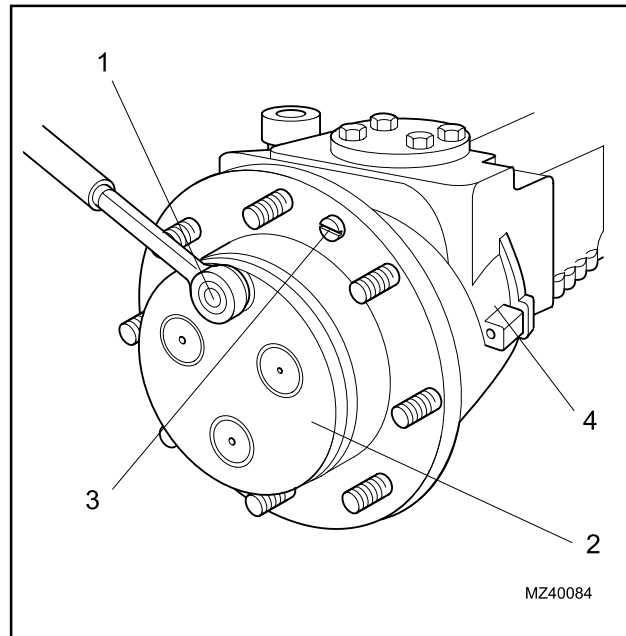
1. Track rod
2. Nut
3. Bolt
4. Hydraulic adapter
5. Steering cylinder

Epicyclic reduction gear

NOTE: This procedure is for the left or right hand epicyclic reduction gear.

1. Position drain plug (1) at highest position and loosen, to dissipate any pressure in axle.
2. Rotate planetary carrier (2) until drain plug is at lowest position, remove drain plug and drain oil into a suitable container.
3. Remove the planetary carrier retaining screws (3) and remove carrier from wheel hub (4).
4. Position the planetary carrier on a clean workbench and check components for wear and condition.
5. Remove O-ring (10) and check condition.
6. If necessary, replace components in planetary carrier as follows:
7. Remove the lock rings (5) and washers (6) from pins (7).
8. Remove planetary gears (8) from pins.
9. Remove the needle roller bearings (9) from the gears.

NOTE: When a new planetary gear is fitted, it is recommended that new needle roller bearings are fitted.

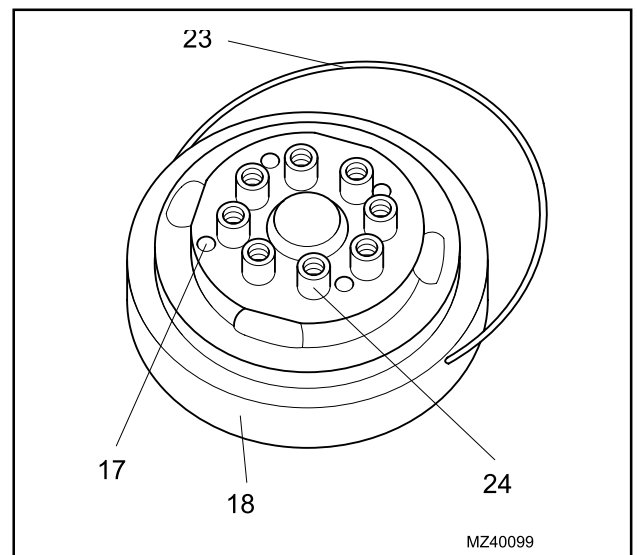
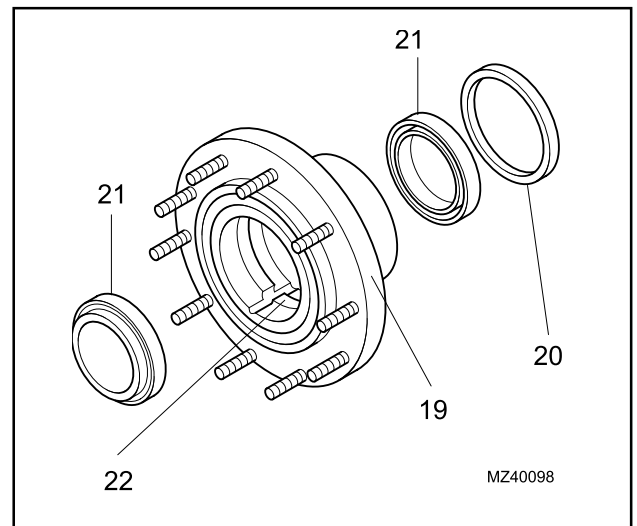
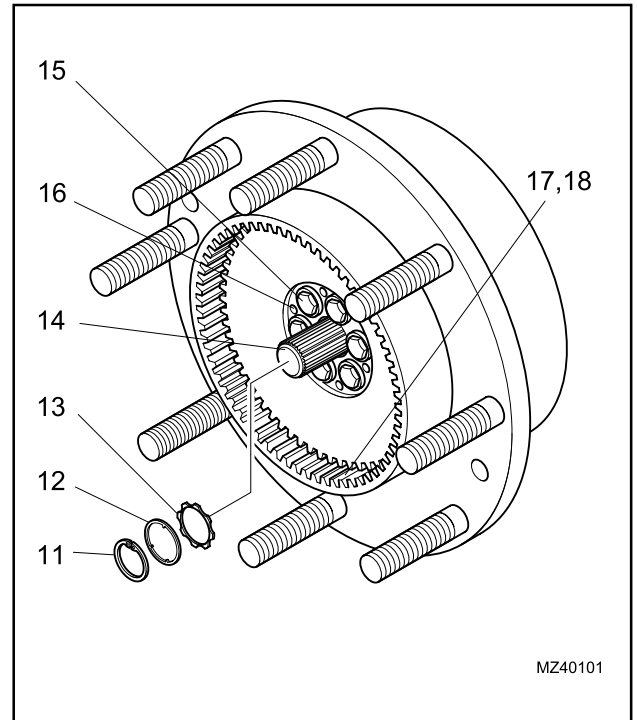


1. Drain plug
2. Planetary carrier
3. Retaining screws
4. Wheel hub
5. Lock ring
6. Washer
7. Pin
8. Planetary gear
9. Needle roller bearings
10. O-ring

Wheel hub

NOTE: This procedure is for the left or right hand wheel hub.

1. Remove the circlip (11) and washers (12 & 13) from the U/J shaft (14).
2. Remove the hub lock ring gear attachment bolts (15).
3. Fit at least two of the hub lock ring gear attachment bolts (15) into the threaded extraction holes (16) and tighten evenly to push the carrier off the hub.
4. Remove the hub lock ring gear (17) and the epicyclic ring gear (18) from the wheel hub (19).
5. Remove the wheel hub from the axle, careful use of hammers and levers may be necessary.
6. Position the wheel hub on a suitable workbench and remove the bearing seal (20) with a lever.
7. Remove the inner and outer bearings cups (21) from the housing using a hammer and drift.
8. Remove the bearing cone (22) from the swivel housing side of the hub using a suitable extractor.
9. Remove the lock ring (23) securing the hub lock ring gear (17) to the epicyclic ring gear (18) and separate the units.
10. Examine the hub lock ring gear (17) and the epicyclic ring gear (18) for wear. If necessary, remove the centring bushes (24) of the hub lock ring gear with a hammer and special tool Part No, CA715027.



11. Circlip
12. Washer
13. Washer
14. U/J shaft
15. Bolt
16. Threaded hole
17. Hub lock ring gear
18. Epicyclic gear
19. Hub
20. Bearing seal
21. Bearing cups
22. Bearing cone
23. Lock ring
24. Bush

WARNING *The swivel housing is heavy and must be supported with suitable equipment before the king pins are removed.*



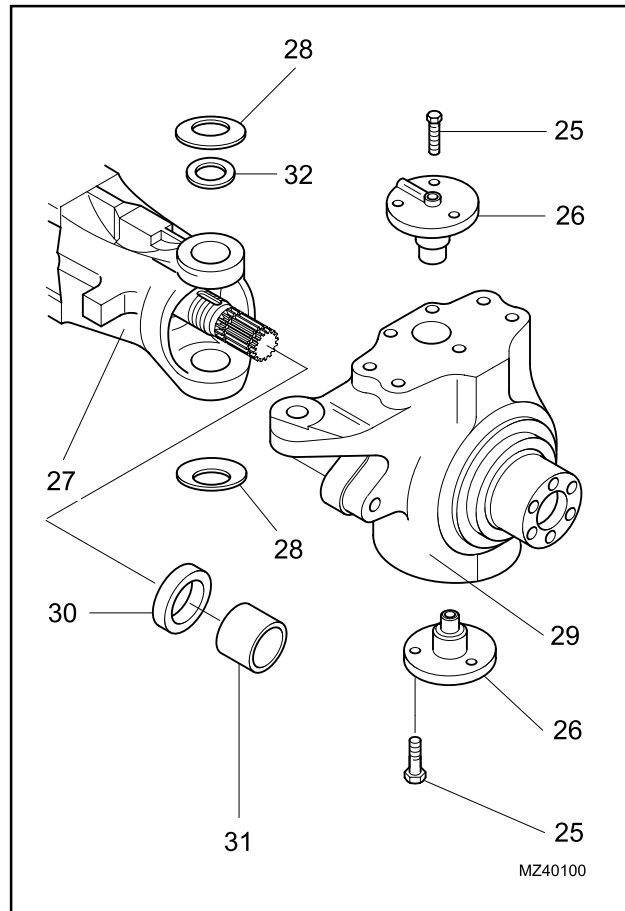
11. Remove the bolts (25) securing the upper king pin (26) to the axle beam (27), remove the king pin, the belleville washers (28) and shim (32).

12. Remove the bolts (25) securing the lower king pin (26) to the axle beam (27), remove the king pin and the belleville washers (28).

13. Remove the swivel housing (29) from the axle beam and position on a suitable workbench.

14. Remove the sealing ring (30) from the swivel housing.

15. Invert the housing and remove the bush (31) using a hammer and drift.



- 25. Bolt
- 26. King pin
- 27. Axle beam
- 28. Belleville washer
- 29. Swivel housing
- 30. Sealing ring
- 31. Bush
- 32. Shim

Axle beam trumpet and brake group

NOTE: This procedure is for the left or right hand axle beam trumpet and brake group.

1. Remove the drive shaft (1) from the axle beam (2).

NOTE: The removal procedure for sealing ring (3) will destroy the sealing ring.

2. Remove the sealing ring (3) with a lever and examine the bush (4) for wear.

NOTE: Only remove bush (4) if worn or damaged, the removal procedure will destroy the bush.

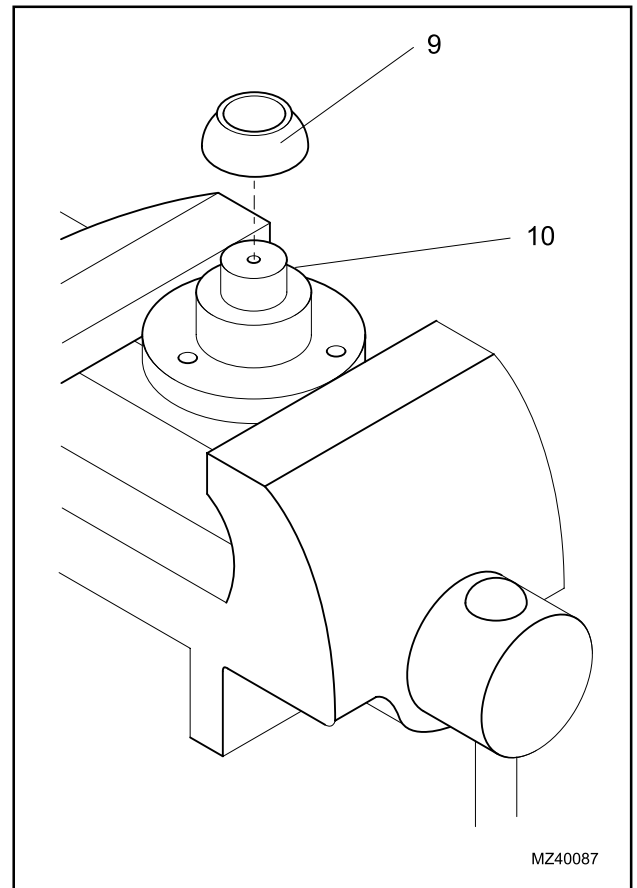
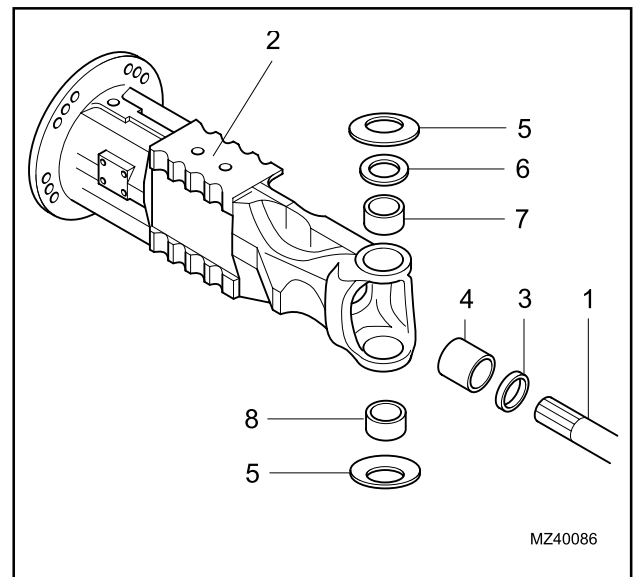
3. Remove bush (4), if worn or damaged, by carefully cutting the bush with a chisel before extraction.

NOTE: The belleville washers (5) and shim (6) may have been removed during the wheel hub removal procedure.

4. Remove the belleville washers (5) from the upper and lower beam housing and the shim (6) from the upper housing.

5. Using a suitable extractor, remove the upper and lower bushes (7 & 8) from the axle beam (2).

6. Remove bush (9) from upper and lower king pins (10).



1. Drive shaft
2. Axle beam
3. Sealing ring
4. Bush
5. Belleville washer
6. Shim
7. Bush
8. Bush
9. Bush
10. King pin

7. Put identification marks on the differential (11), left/right brake packs (12) and left/right axle beams (2) to aid assembly.

WARNING  The axle beams weighs 80 kg. Take care when removing axle beams from differential and use suitable lifting gear.

8. Position the axle on a suitable workbench and attach lifting gear to the axle beam being removed.

WARNING  The brake discs and fixed discs are loose when the axle beam is removed. Take care not to damage brake discs and fixed discs.

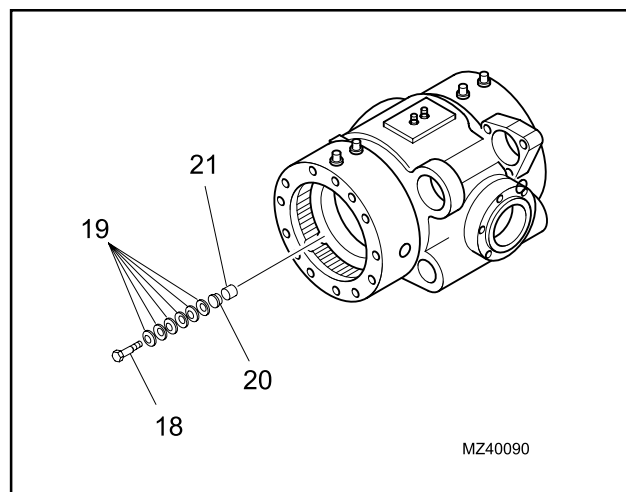
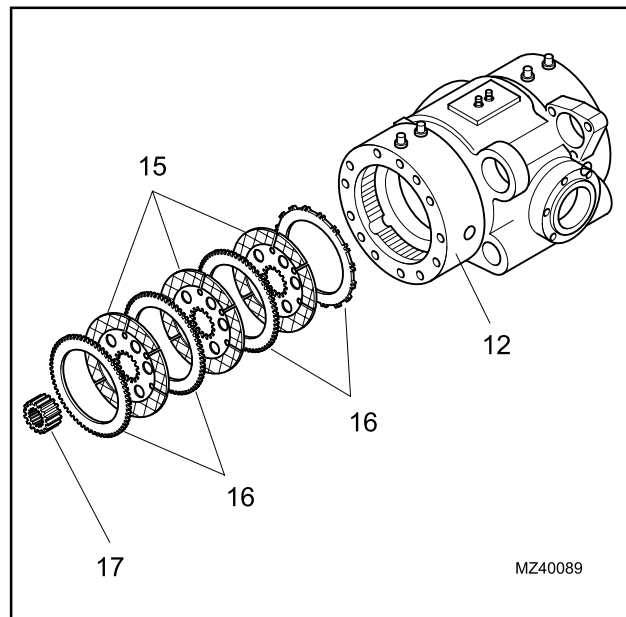
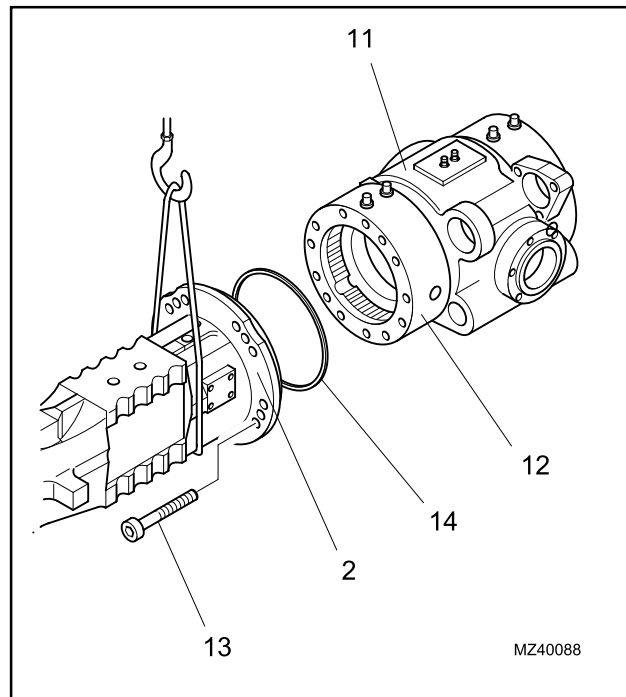
9. Remove the axle beam retaining screws (13) and nut from the lower stud. Remove axle beam (2) from brake pack/differential assembly.

10. Remove O-ring (14) from axle beam.

NOTE: Record the position of the sleeve (17) to aid assembly.

11. Remove the brake discs (15), fixed discs (16) and sleeve (17) from the brake pack (12).

12. Remove the two self-adjust bolts (18), Belleville washers (19), bush (20) and Belleville washer (21) from the brake housing.



- 11. Differential
- 12. Brake pack
- 13. Screw
- 14. O-ring
- 15. Brake disc
- 16. Fixed disc
- 17. Sleeve
- 18. Bolt
- 19. Belleville washers
- 20. Bush
- 21. Belleville washer

WARNING  Hydraulic or air pressure can be used to remove the brake piston. Only use the minimum pressure necessary to move piston.

13. Attach a suitable hydraulic or air supply to the brake inlet connection (22) on the brake pack (12). Apply the minimum pressure to move the piston.

14. Remove piston (23) and O-rings (24).

15. Remove O-rings from piston and inspect for wear. Remove the three self-adjust split bushings (25) from the piston bores.

CAUTION  Unscrew the parking brake adjuster screws one turn at a time alternately to avoid damage to the brake.

16. Remove the three parking brake adjuster screws (26) and O-rings.

WARNING  The next step separates the brake pack from the differential unit. Make sure the brake pack is attached to suitable lifting equipment before removal.

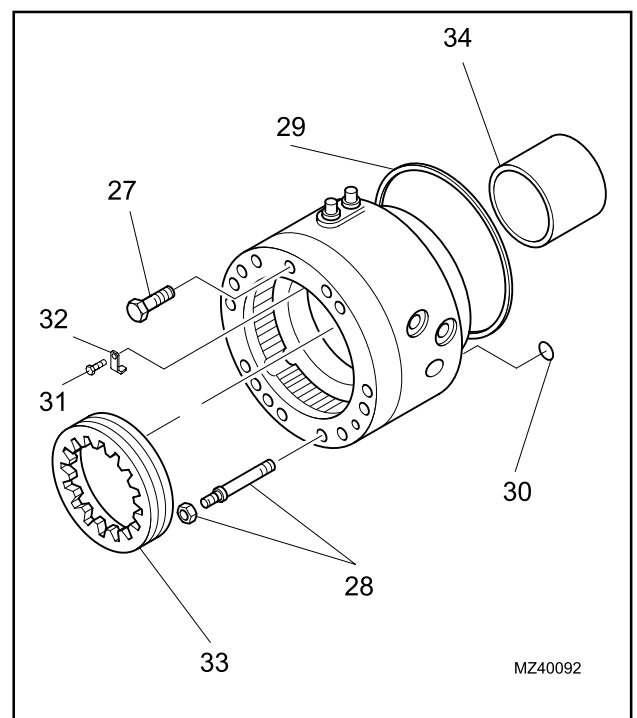
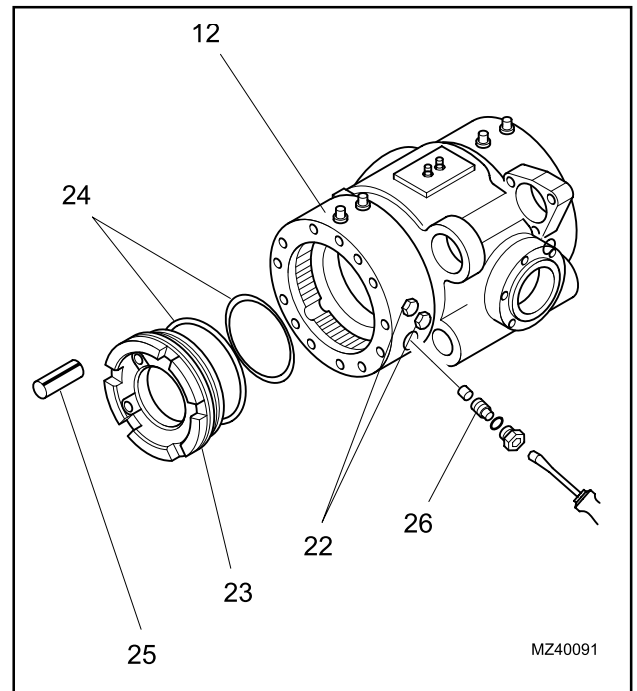
17. Connect the brake pack (12) to suitable lifting equipment .

18. Remove the upper securing screw (27) and the lower stud bolt (28). Remove the brake pack from the differential unit.

19. Remove the housing O-ring (29) and the oil pipe O-ring (30).

20. Remove the bolt (31) and lock nut retainer (32).

21. Remove the lock nut (33) from the brake flange, using special tool Part No, CA119030.



- 22. Brake inlet connection
- 23. Piston
- 24. O-ring
- 25. Bushing
- 26. Adjuster screw
- 27. Screw
- 28. Stud bolt
- 29. O-ring
- 30. O-ring
- 31. Bolt
- 32. Retainer
- 33. Lock nut
- 34. Bearing cup

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