LHD
50 Tonne Roof Support Trailer

OPERATOR'S MANUAL

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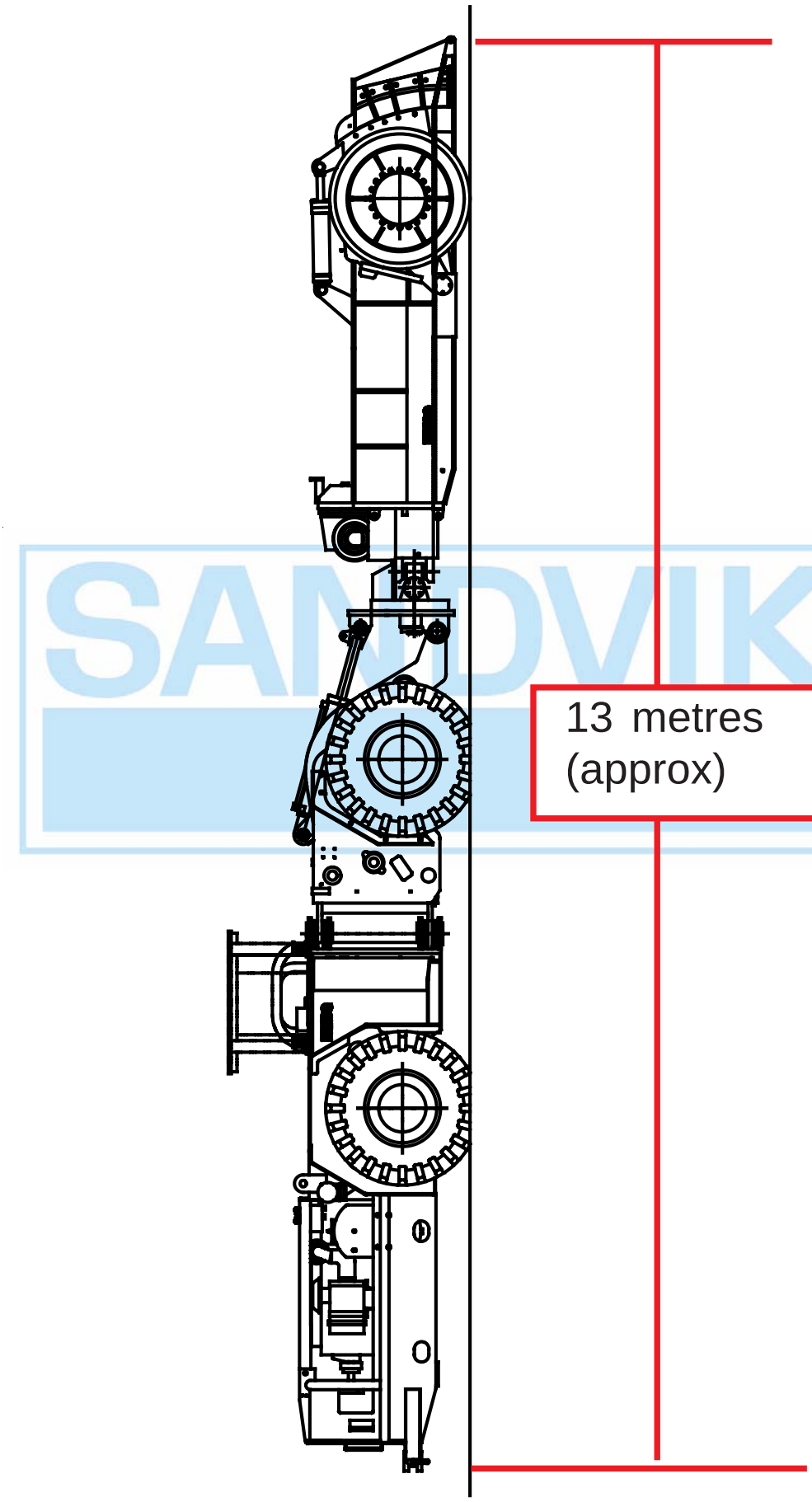
13 metres
(approx)

Section

Machine Description

INTRODUCTION

The LHD 50 tonne trailer is a machine for transporting longwall chocks.

It must be attached to a LHD, which has been suitably modified. This is to ensure that it is fully compatible with the trailer, so that it is capable of supplying, all trailers power and control functions.

Before operating the machine for the first time, all personnel who are to be involved in the operation of the machine must be fully trained in the operation and the incorporated safety requirements of the machine and must have read and fully understood the operating instructions.

You **must not** use this machine for any purpose that may put yourself or others at risk or in danger.

The machine **must not** be used for any purpose other than that for which it is intended, i.e. for transporting longwall chocks.

You **must not** operate this machine unless you have been fully trained and have been authorised to do so.

The machine **must** be maintained and operated in a safe and functional condition only.

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MACHINE DESCRIPTION

This manual contains the basic instructions for operation and operator maintenance of the 50 Tonne Roof Support Trailer. Procedures for the connection and disconnection of the Roof Support Trailer to the LHD ED 10, can befound in Sections 3 and 4. This information must be carefully reviewed and clearly understood before attempting to operate this equipment

Safe and efficient operation requires skill and alertness on the part of the operator. He must be familiar with the make up of the equipment, understand it's capabilities, and follow the operating procedures and safety instructions recommended in this manual.

Safe and efficient operation also depends on proper maintenance. The operator should make certain that the Roof Support Trailer is properly maintained and is in good mechanical condition at all times, even though he may not perfom all service work himself. Trailer Maintenance includes reporting any mechanical damage or failure immediately for correction. Otherwise, even minor damage or failures may result in costly repairs, or create unsafe operating conditions.

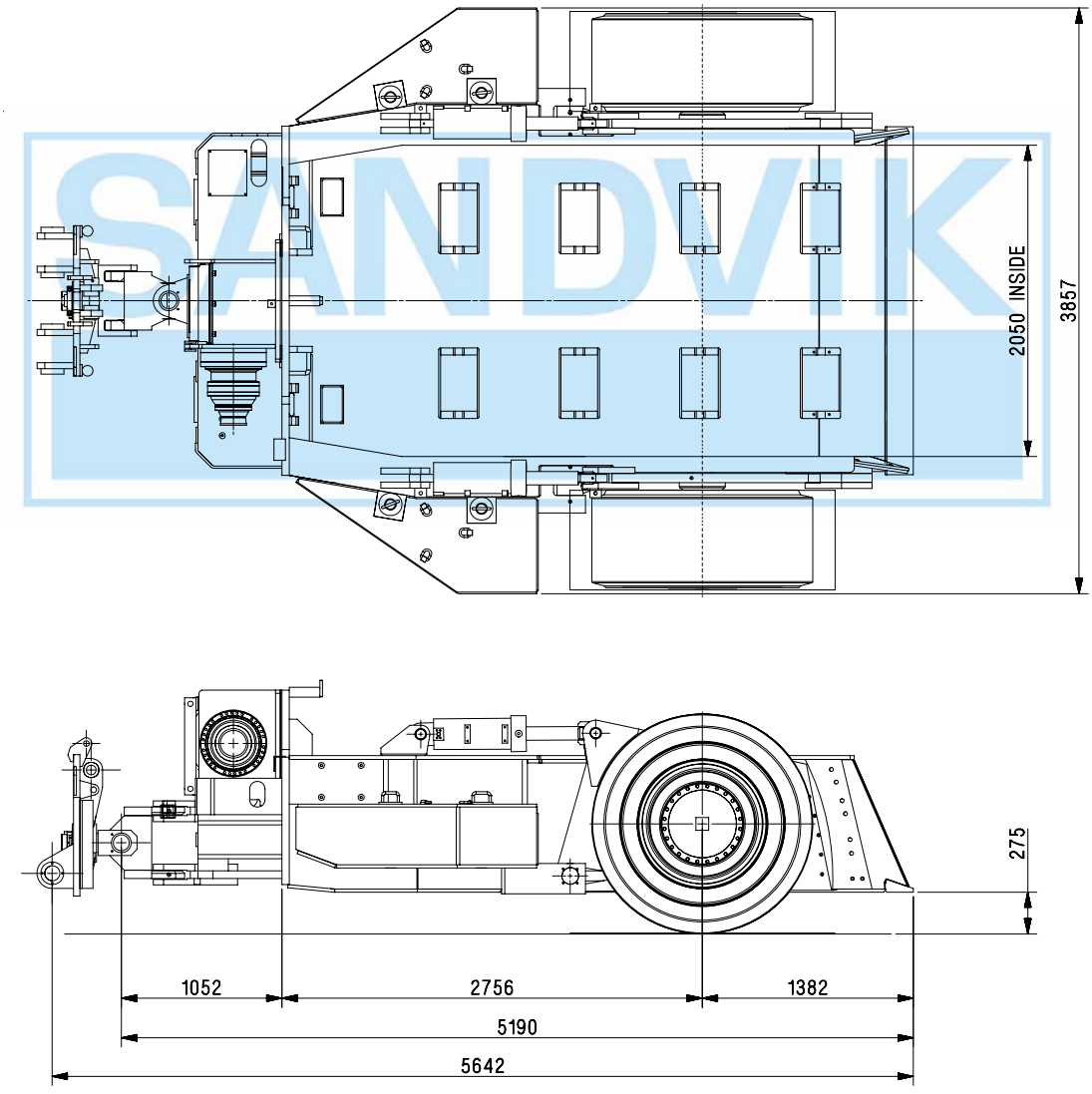
The Roof Support Trailer is a 50 tonne capacity trailer designed to lift and haul roof supports. Parking and service brakes are provided to ensure these operations are carried out with maximum safety. A horn is also fitted to provide warning for personnel safety. This trailer is designed to be connected to the LHD ED 10 only after the machine has been modified to suit the new trailers capabilities.

The New South Wales and Queensland Mines Department have approved the ED 10 for use in underground coal mines. Although approvals differ from state to state, a copy of the appropriate machine approvals are provided with each machine. To maintain this approval, the machine must be maintained and operated in accordance with the conditions set therein.

The machine approval number is stamped to the machine serial number plate. This plate also gives the LHD model number and date of manufacture.

NOTE: The appropriate Mines Department approvals must be consulted if the original conguration of the machine is altered by either damage or modifications.

ROOF SUPPORT TRAILER, 50 tonne CAPACITY
TO SUIT ED10 LHD
DATA SHEET: A2U900-850119 Rev.: 0



DIMENSIONS ARE APPROXIMATE AND APPLY ONLY TO STANDARD MACHINES

TRAILER:

Weight unladed	18,000 kg
Carrying Capacity	50,000 kg
Wheels & Tyres	Alpha – 1448 dia. 635 wide (57" dia. x 25" wide)
Brakes	Spring Applied Hydraulic Release Kessler
Brake torque (new)	39.0 kNm/wheel
Brake Torque (at service point)	29.8 kNm/wheel

CHOCK LOADING:

33 TONNE HAULAGE

Type	Winch
Winch Drive	Hydraulic motor & reduction box
Line Pull	327 kN
Rope	Superflex Ten-0 42mm diameter
Rope Breaking Capacity	76.5 tonnes
Rope Factor of Safety	2.3

LIFT CYLINDER:

Bore	178 mm
Rod Diameter	89 mm
Hydraulic Pressure	17.2MPa (2500 psi)

FLOOR DIMENSIONS:

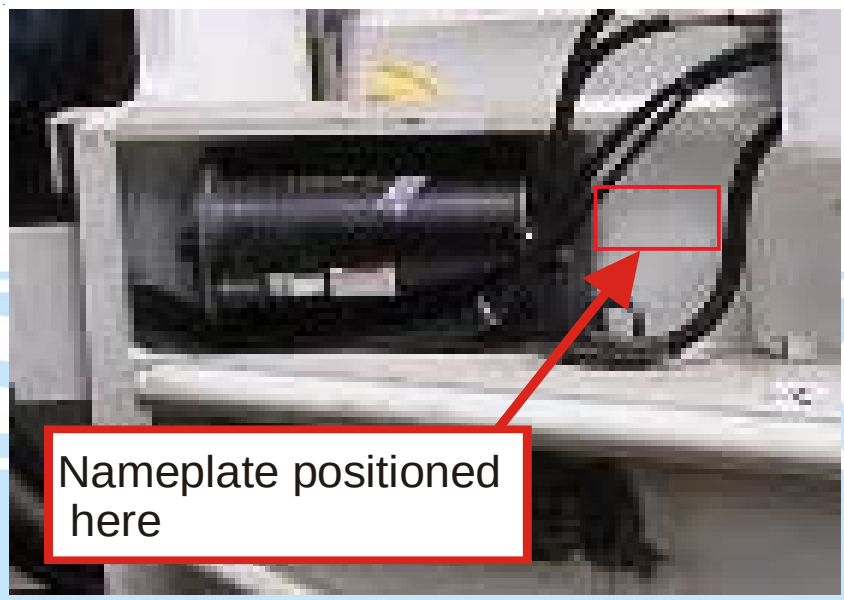
Min. Ground Clearance	0 mm
Max. Ground Clearance	275 mm

HYDRAULIC ASSIST (OPTIONAL):

Tractive Effort	77 kN maximum
Drive Mechanism	Hydraulic motor and planetary

Accumulator Precharge Pressure Nameplate

This nameplate is affixed to the machine frame adjacent to each accumulator.

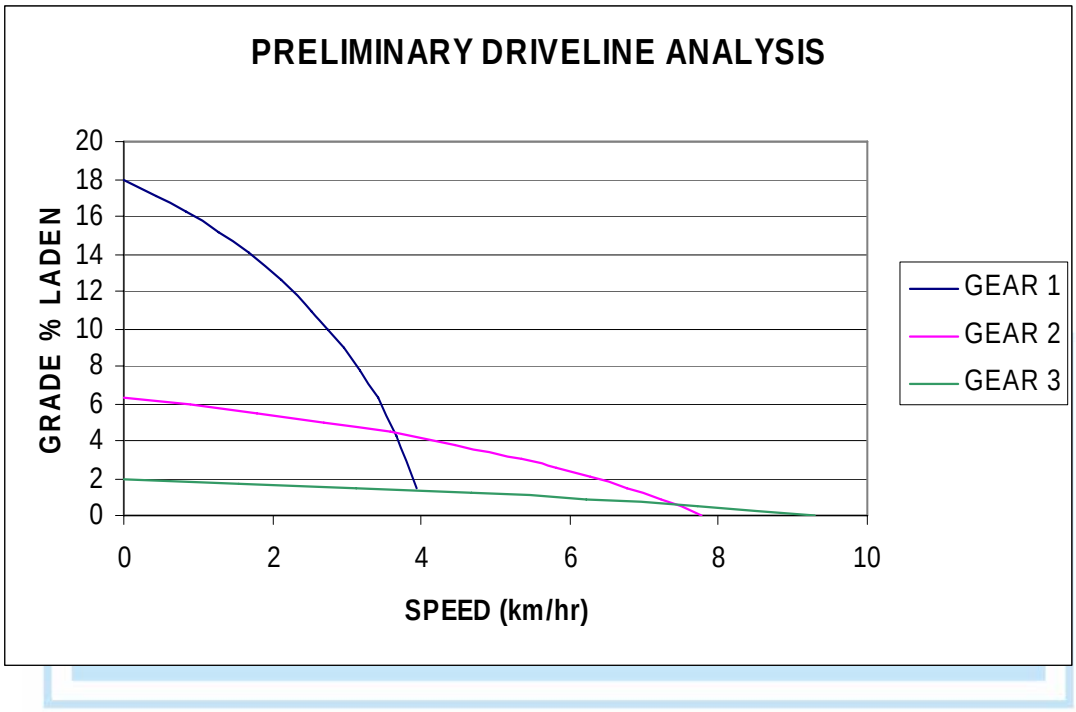


ACCUMULATOR PRECHARGE PRESSURE
DEPENDENT ON PAYLOAD

PAYLOAD TONNE	PRECHARGE PRESSURE bar
30	39
40	52
50	65

A2U900-1711129

GRADEABILITY CHART WHEN TOWED WITH 10t LHD (no hydraulic assist)



WARNING

Overloading of lifting equipment may cause personal injury, death or property damage.
Due to configuration changes or options requested, weights stated above can vary by up to 20%.

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Section

Safety Precautions

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Safety Precautions

This section contains a list of safety precautions to be followed while operating or servicing the 50 tonne Roof Support Trailer.

This list is not all inclusive. All procedures outlined in this manual must be complied with as well as the application of good common sense.

NOTE: When maintenance procedures are required other than those outlined in this manual for the operator, refer to the LHD Service Manual.

1 Only trained and authorised operators should operate this vehicle or trainees under an appointed trainer.

2 Disconnect the centre pivot safety link before operating the vehicle.

3 Do not use the steering control lever or steering wheel as a hand hold when climbing onto or off the machine. The hydraulic steering system accumulator may still have oil pressure in the circuit even with the engine shut-off.

4 Do not start the vehicle unless:
- the area around the vehicle is clear of personnel.
- all covers are installed.
- the park brake is applied.
- transmission is in Neutral.
- all water and oil levels are checked.
- personal protective equipment is worn.

5 Always sound the horn before starting the engine to alert anyone who may be around the vehicle.

6 Keep hands, head, arms inside the operators compartment at all times.

7 Travel at low speeds in congested areas. Slow down while travelling around corners and sound the horn frequently in areas of limited visibility.

8 Do not allow anyone to ride on any other part of the vehicle whilst operating.

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Safety Precautions (cont.)

9 Do not use the vehicle for anything other than it's intended purpose.

10 Drive carefully, observing all traffic rules and regulations at your colliery and be in full control of the vehicle at all times.

11 Use extreme caution when operating the vehicle with the load raised. Whenever possible lower the load to the "carry" position before moving the vehicle.

12 Do not leave the operators seat unless:
- the vehicle is parked in a safe place.
- the transmission is in Neutral.
- the park brake is applied.
- the bucket or attachment is flat on the ground.
- the engine is stopped.

CAUTION: Do not leave the engine idling for extended periods of time as this may be harmful to machinery and personnel.

13 When parking on a grade, lower the load to the ground and turn the machine into the rib or block the wheels. This will prevent the vehicle from moving should the parking brakes fail.

14 Do not operate the vehicle unless all daily checks and scheduled maintenance has been performed. Report any damage or faulty operation immediately. Do not operate the vehicle until corrected.

15 Do not service or make adjustments to the vehicle while it is moving.

16 Do not stand or allow anyone to stand in the centre pivot area unless the centre pivot safety link is in place and the hydraulic pressure is zero at the steering pressure gauge. When working in this area, or the vehicle is being lifted or transported the steering pivot safety link must be connected.

17 Always ensure that the operators cab door is closed and made secure before operating the vehicle.

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Safety Precautions (cont.)

18 Prevent potential fire hazards at all times by:
- keeping the fire extinguisher in good working order.
- keeping the vehicle clean of excessive dirt, oils and greases.
- keeping all electrical components and wiring in good working order.
- check for hydraulic leaks and repair as necessary.
- ensuring the engine air intake, fuel, exhaust scrubber and radiator systems are properly maintained.

19 Always tag the steering wheel anytime any vehicle component has been disconnected to alert other personal.

WARNING: Always follow the correct isolation tagging procedure before maintenance is being performed.

20 When working on trailers, always ensure you isolate from unplanned movements by fitting supports and chocking the wheels. Isolate hydraulic pressure by turning the steering wheel. Isolate against un-intentional starting by turning OFF the ball valve on the air receiver or by draining the air receiver before beginning work.

WARNING: When operating the LHD, travel with your helmet lower than the protection devices.

21 Ensure that no person stands at the front of a LHD, with a loose or lightened load unless it is chained down, to stop the load shifting and causing a protentual injury.

22 When carrying heavy loads always ensure you travel at low speeds, when cornering, articulating and travelling on cross grades, (refer to page 10).

23 When the vehicle is not in use, close the main air tank isolation valve to prevent air pressure leakage through the air system. The air tank isolation valve is located at the air tank.

24 The two x 15 tonne front Rud links may be used for lifting the trailer. There are two cutouts in the back of the trailer & may be used in conjunction with the front 15 tonne rud links for tie down.

25 The 50 Tonne trailer has been designed for good road conditions.

26 The 50 Tonne trailer is not designed for multiple trailer attachments.

27 Follow all NOTES, CAUTIONS, and WARNINGS found in this manual.

NOTE: Indicates a procedure or condition that is essential for the operator to know.

CAUTION: Indicates an action or condition that, if not followed, could cause damage to the vehicle or other equipment.

WARNING: Indicates an action or condition that, if not followed, could cause injury to the operator or other personnel.

WARNING: The Operator and Personnel assissting with loading / unloading the roof support are to be in visual contact at all times.

WARNING: Exercise caution when unloading the roof support on a side grade. If the side grade is too steep the roof support may be unstable or fall. Ensure all personnel are well clear of roof support when unloading .

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Section

Isolation

ISOLATION PROCEDURES

The relevant Manager's Rules, Safety Policy, Isolation Procedures and Safe Working Procedures of the individual mine site must be strictly adhered to.

The purpose of isolating machinery or equipment is to allow work to be undertaken safely by ensuring that there is no danger to life, or injury to people or possibility of damage.

Isolation requirements for individual items of machinery or equipment vary and specific requirements are listed in the Colliery's Isolation Procedures. Check the isolation requirements and ensure compliance before starting the job.

The following Isolation procedures are only a guide:

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Mobile Diesel Fleet

Isolation Procedures

1 Before the commencement of any work other than testing or setting up, the machine must be isolated, supported, chocked, packed and or pins in place. This is done to stop any unplanned movements while working on a specific part of the machine.

2 The vehicle air tank must be isolated, by turning the ball valve off and, if possible, attach a lock.

3 Fit a danger or out of service tag to the vehicle as necessary.

4 Drain all stored hydraulic pressures.

5 If unsure, attempt to start vehicle to test isolation.

WARNING: Only after all these procedures have been done, can work commence.

Testing of Mobile Diesel Fleet.

If any hydraulic testing is to be carried out, select a suitable work area.

If the machine is to affect other personnel, you must barricade or rope off and or use protective tape.
NOTE: If this does not suit your Location, conduct your own Risk Assessment.

WARNING: Do not adjust any pressures which will put you at risk. (Eg, around any moving parts.)

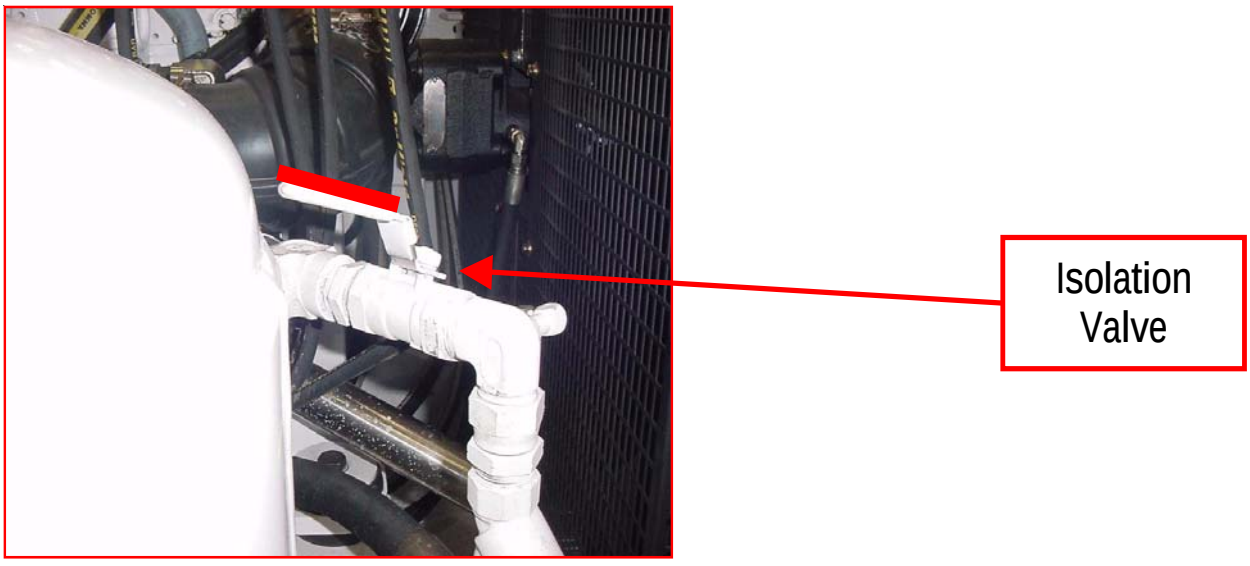
Operational testing of Mobile Diesel Fleet.

Select a suitable work area, preferable out of the way from other personnel.

WARNING: Deviation from these procedures is not permitted and the correct use of Danger and Out of Service Tags is essential.

Isolation Valve

To Isolate the LHD turn the isolation valve or (ballvalve) to the off position and attach a Danger Tag.



Fitting the centre pivot safety link.

1 Stop the machine. Apply the park brake.

2 Located on the left side front guard of the machine is the centre pivot safety link. Loosen the retaining bolt and remove the link.

3 Located on top of the articulation area, are the two pins and clevises for the centre pivot safety link to be fitted. Remove the “R” clips from the locating pins, line up the safety link and install the pins into the clevises.

4 With the centre pivot safety link in place, install the two ‘R’ clips through the retaining holes in the locating pins.

Disconnecting the centre pivot safety link

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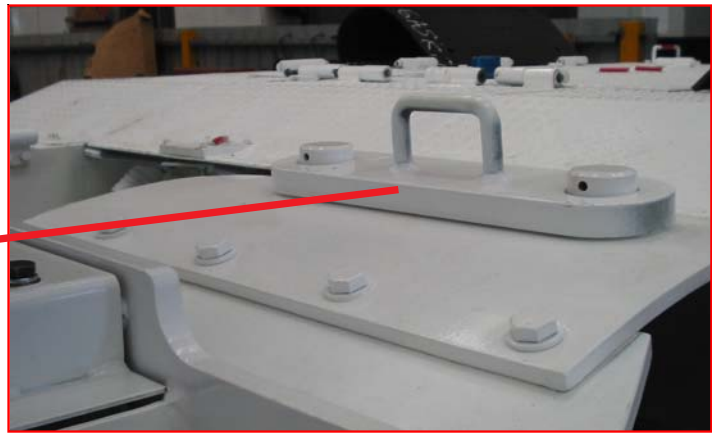
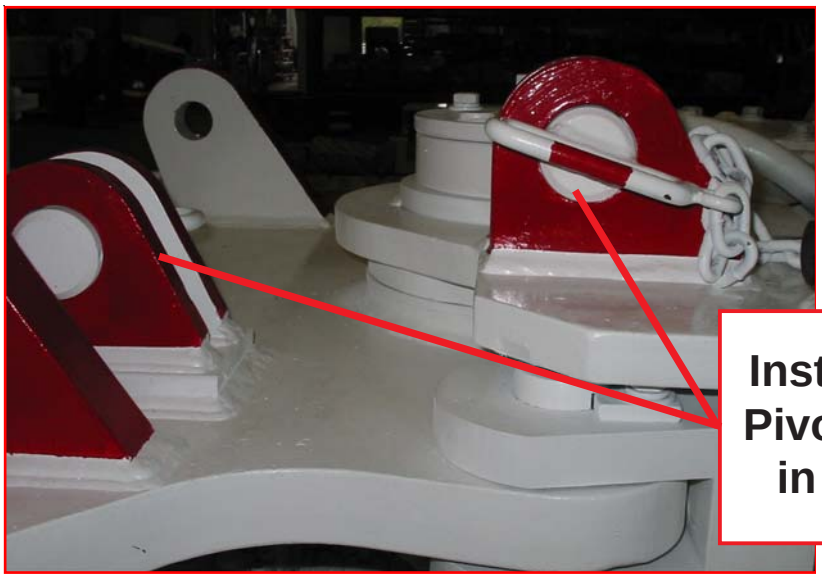
1 With the engine stopped, remove the two ‘R’ clips from the locating pins.

2. Remove the centre pivot safety link from the locating pins and replace it in the bracket on the front guard. Tighten the retaining bolt.

3 Replace the ‘R’ clips in the locating pins.

Location of the Centre Pivot Safety Link





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To Isolate The Hydraulics

1 Connect the centre pivot safety link. Chock the wheels.

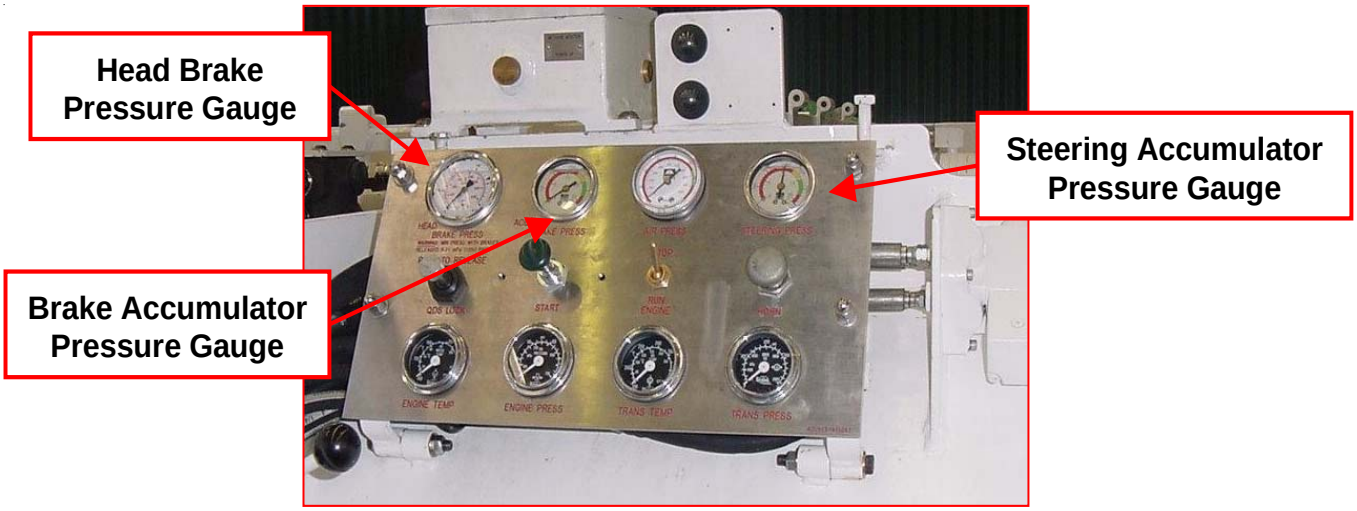
2 Lower the bucket or attachment completely. Shut down the engine. Move the Tilt, Lift and Eject levers forward and back several times to relieve any pressure in the bucket circuit.

3 With the engine stopped, check the steering and brake accumulator gauges for any indication of pressure.

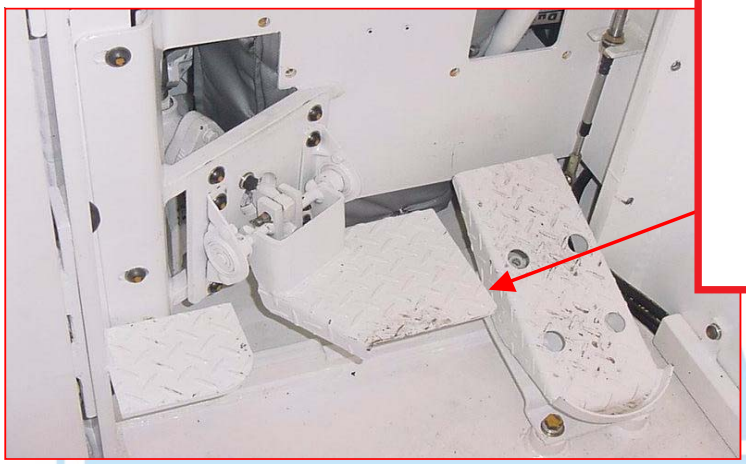
WARNING: Do not remove any hydraulic hose that may appear to be under pressure. If a hose does exhibit signs of being pressurised, check the following:

4 Check the bucket or attachment is lowered completely or supported with adequate supports. If not, the induced loads due to the weight of an empty bucket can pressurise the bucket circuit.

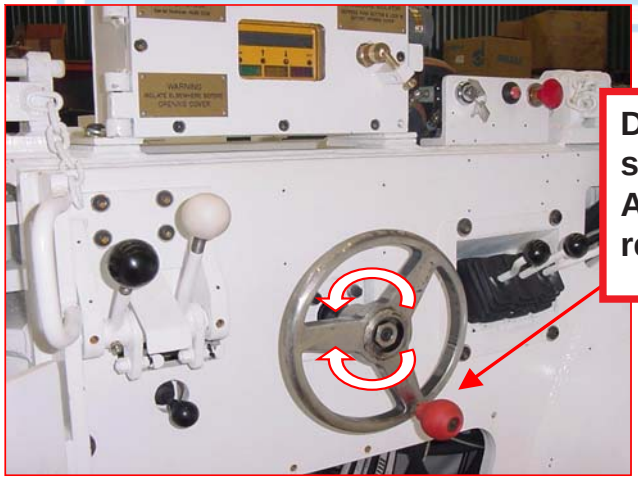
5 Close and latch the door. Release the park brake. The brake head gauge will indicate the pressure in the braking circuit. This is normally drained when the engine is shut down.



6 Attempt to steer the vehicle or open the Steering Accumulator Pump Valve. If any pressure is evident in the steering and brake circuits, the machine will attempt to articulate against the centre pivot safety link. If the machine moves, continue to operate the steering lever until the steering pressure is dissipated and the machine will not move further.



Brakes dump to ZERO automatically when engine shuts down. If they fail to dump, the machine is FAULTY and must NOT be used until faults are rectified.



Drain Steering Accumulator by steering back and forth until Accumulator Gauge reads ZERO, or release Accumulator Dump Valve.

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Section

Attaching Procedures

Attaching Procedures

Attaching the LHD ODS Cradle

1 Ensure all parts are clean.

2 Shutdown the engine. Connect the centre pivot safety arm and drain the steering pressure to zero.

3 Lift the QDS cradle into position and align the lift arm pin bores.

4 Coat the lift arm pins with a suitable anti-seize product and install. Install the covers over the pins. Roll the QDS cradle back onto the stop.

WARNING: Use soft dollies when driving hardened pins. Do not strike the pins directly with a hammer.

5 Lift the tilt cylinder into position and align the pin bore. Coat the pin with a suitable anti-seize product and install. Install the bolt through the pin.

WARNING: It may be necessary to use the hydraulics to align the tilt cylinder. Use caution when positioning the tilt cylinder with the hydraulics. Shutdown the engine and drain the steering pressure when completed.

6 Connect the hoses to the quick connect couplings on the lift arm.

WARNING: Whenever changing damaged quick connect couplings on the Roof Support Trailer, or any LHD equipment, do not change the gender of the couplings. To do so may allow the incorrect connection of the hoses and affect the safe operation of the Roof Support Trailer.

7 Grease the front end of the LHD.

Roof Support Trailer Operator's Manual

The following procedures outline the steps necessary to attach the Roof Support Trailer to the modified LHD ED10 .
This section is divided into several headings:

Removal of the QDS cradle attaching the Roof Support Trailer

WARNING: Clean the machine and the Roof Support Trailer before work commences.

WARNING: Wear safety glasses and safety boots during these procedures. Follow safe working practices.

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Removal Of The QDS Cradle

1 Remove the bucket or implement from the QDS cradle.

(See the LHD ED10 Operator's Manual)

2 Apply the park brake and select neutral. Stop the engine. Isolate the starter motor by closing the air receiver isolation valve, located on the air receiver.

3 Connect the centre pivot safety link and dump the Steering Accumulator or drain the steering pressure by turning the steering wheel left and right until the steering pressure gauge indicates zero pressure.

4 Disconnect the hoses from the QDS cradle quick connect couplings, located on the lift arm.

5 Ensure the QDS cradle is rolled back and resting on the stop.

Removal Of The QDS Cradle

6 Remove the bolt and nut from the front tilt cylinder pin.

7 Support the tilt cylinder with suitable lifting equipment and remove the front pin. Do not allow the tilt cylinder to drop when the pin is removed.

8 Lower the tilt cylinder down onto the lift arm cross support and place a block of timber under the contact point.

WARNING: Use soft dollies when driving hardened pins. Do not strike the pins directly with a hammer.

NOTE: Lash the tilt cylinder down to prevent movement while the machine is moved about during the attachment procedures.

9 Remove the four bolts from each of the cover plates over the lift arm pins. Support the QDS cradle with a crane or other suitable lifting equipment and remove the two pins from the QDS cradle. Do not allow the QDS cradle to fall. Remove the QDS cradle from the machine.

10 Remove the QDS cradle and store in a safe manner and location.

WARNING: Use soft dollies when driving hardened pins. Do not strike the pins directly with a hammmer.

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Attaching the Roof Support Trailer

NOTE: Make sure vertical support bars are in place and the front of the roof support trailer is packed to a height for the lift arm bores to align with.

1 Ensure all bores, pins and other parts are clean.

2 Drive the modified LHD ED10 up to the Roof Support Trailer and allgn the lift arm pin bores.

WARNING: Do not stand between the Roof Support Trailer and the LHD to align the bores. Stand to the side and remain clearly visible to the operator.

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3 Coat the two lift arm pins with a suitable anti-seize product and install the pins.

WARNING: Ensure the park brake is applied and the transmission is in neutral before working in this area.

4 Shut down the machine. Install the centre pivot safety link and drain the steering pressure to zero before continuing, using correct isolaton proceedures as per section 3.

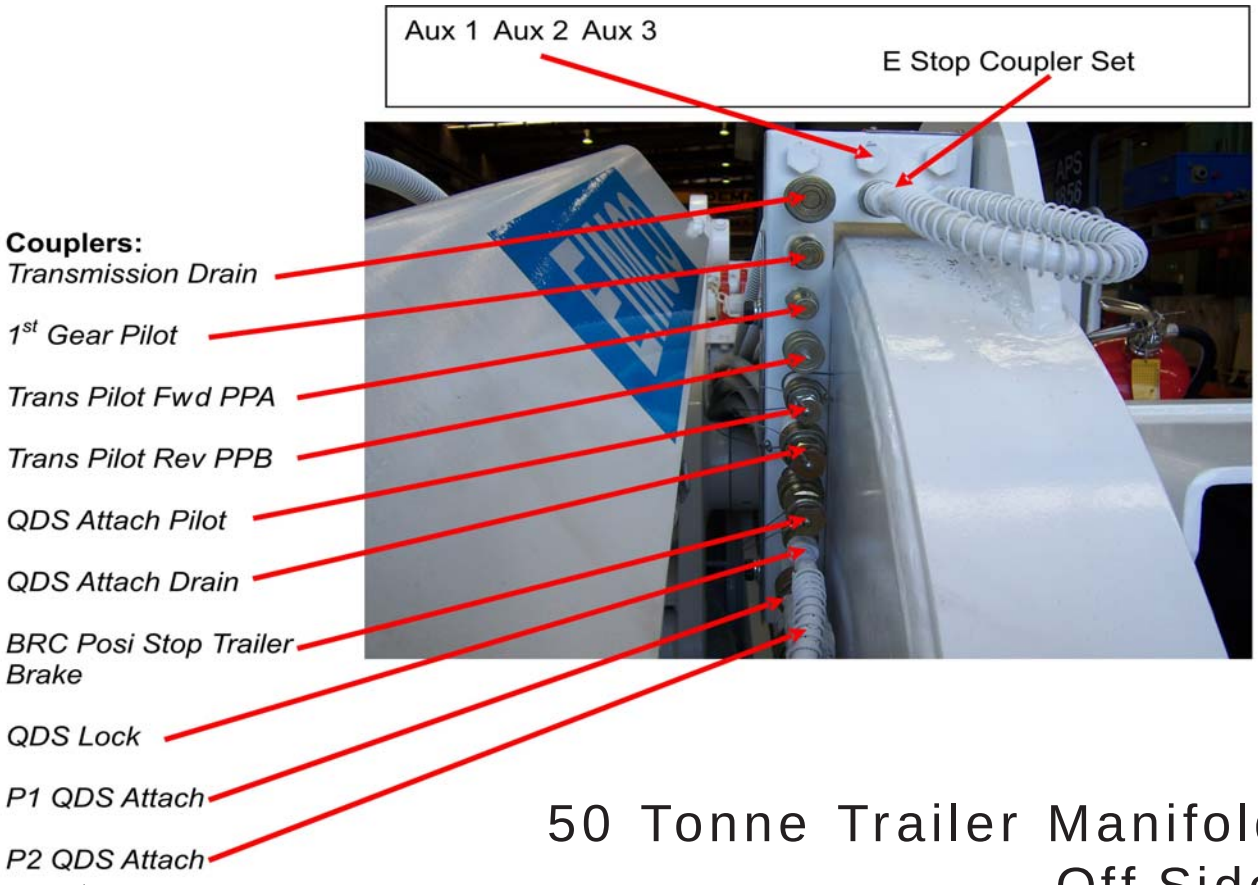
5 Install the four cover plates over the lift arm pins.

6 Restart the machine and extend the tilt cylinder into position and align the pin bores. Coat the pin with a suitable anti-seize product and install. Install the bolt and nut in the pin boss.

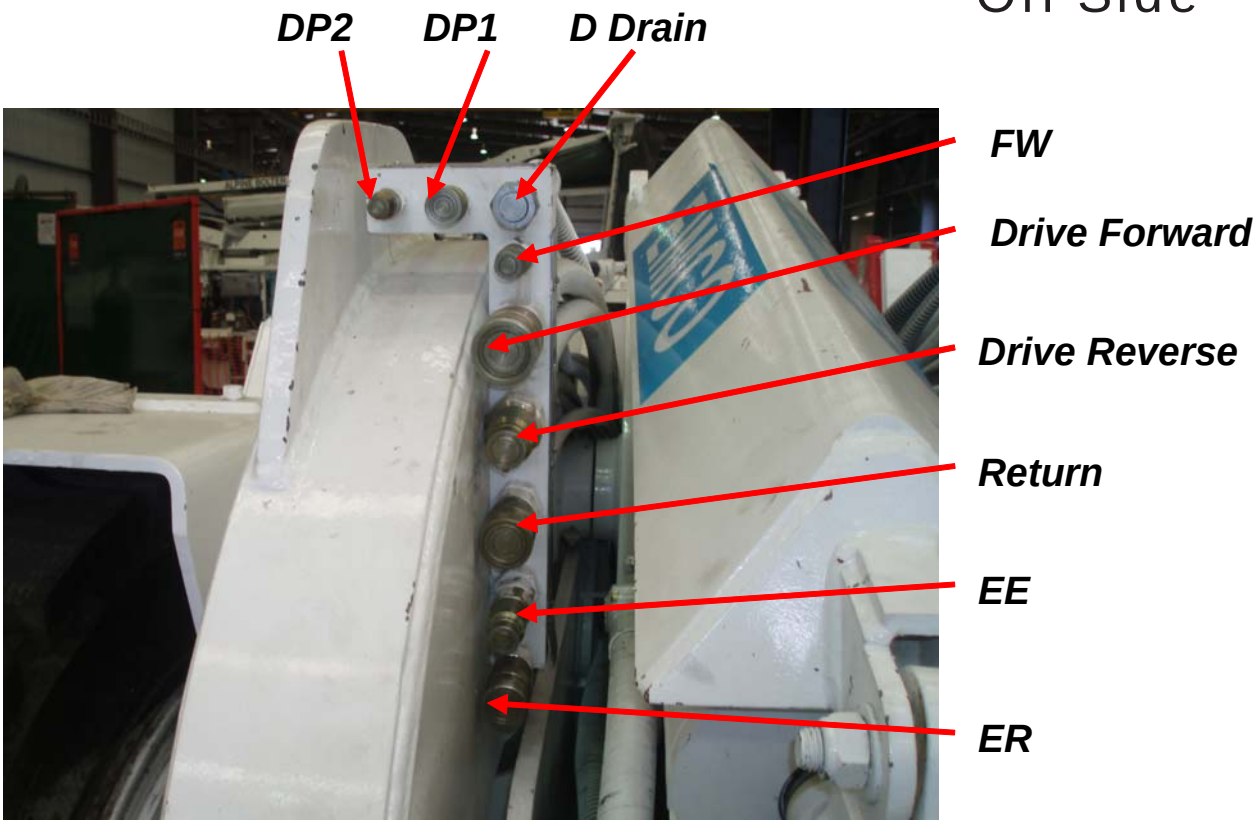
NOTE: Need to have a LHD Hydraulic Schematic and 50T Roof Support Trailer Schematic drawings available.

7 Connect the Roof Support Trailer hoses to the quick connect couplings on the lift arm manifold (Refer Picture on pages 32) and others to the correct fittings (check drawings).

50 Tonne Trailer Manifold Driver's Side



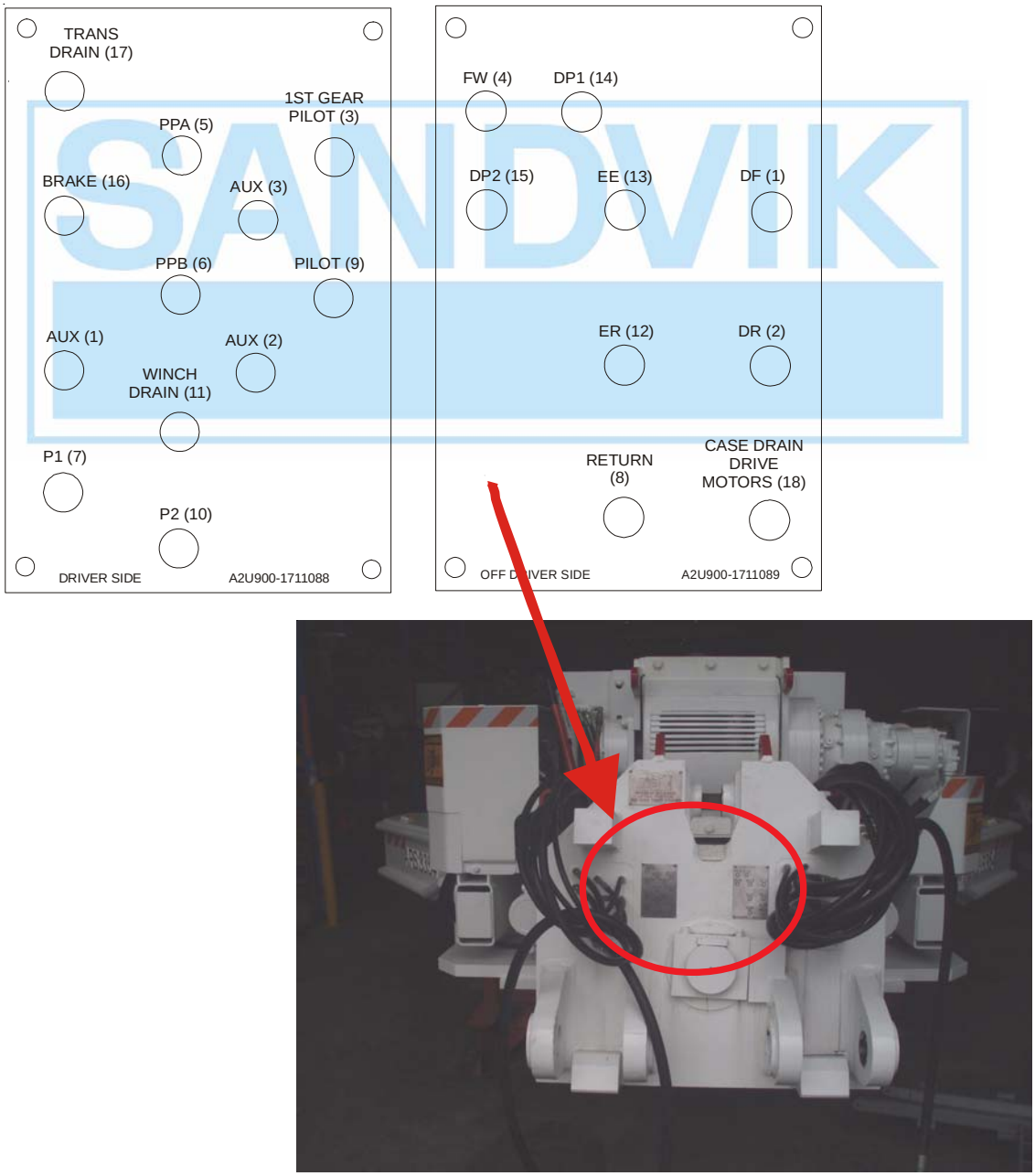
50 Tonne Trailer Manifold Off Side



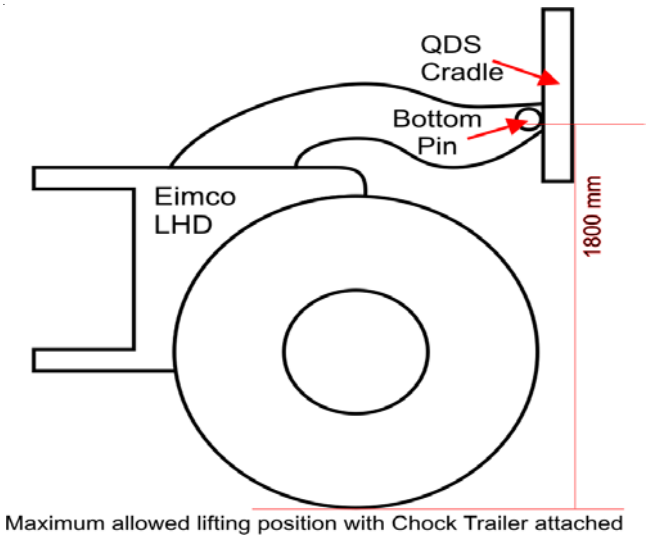
WARNING: Whenever changing damaged quick connect couplings on the Roof Support Trailer, or any LHD equipment, do not change the gender of the couplings. To do so may allow the incorrect connection of the hoses and affect the safe operation of the Roof Support Trailer.

8 Remember to remove the vertical support bars from the tow plate and secure them with the supplied pins before putting the machine into service.

50 Tonne Trailer Hose Attachment Plates



WARNING: Maximum allowable lifting height from the ground to bottom QDS Pin, with trailer attached is 1800mm.



Maximum allowed lifting position with Chock Trailer attached

Section

Detaching Procedures

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Detaching Procedures

This section outlines the procedures to follow to detach the Roof Support Trailer from the modified LHD ED10.
There are several headings:
Detaching the Roof Support Trailerfrom the modified LHD ED10.
Attaching the LHDQDS cradle.

WARNING: Clean the machine and the Roof Support Trailer before work commences.

WARNING: Wear safety glasses and safety boots during these procedures. Follow safe working practices.

Detaching the Roof Support Trailer

1 Park the Roof Support Trailer in a suitable place to facilitate removal and lower completely. Pack the front of the Roof Support Trailer to support it.

2 Wind in the winch rope and connect the rope to the hook provided.

WARNING: Use heavy gloves whenever handling the winch rope. Exercise caution when guiding the winch rope through the guide rollers.

3 Shutdown the engine. Connect the centre pivot safety link and drain the steering pressure to zero.

4 Disconnect the quick connect couplings from the LHD lift arm.

NOTE: Fit the vertical support bars before removing the pin from the tilt cylinder.

5 Support the tilt cylinder and remove the front tilt cylinder pin. Do not let the tilt cylinder fall when the pin is removed. Lower the tilt cylinder down onto the lift arm cross support and place a block of timber under the contact point.

Detaching Procedures (cont)

6 Pack or support the front of the Roof Support Trailer. Remove the two lift arm pins. Move the LHD away from the Roof Support Trailer.

WARNING: Use soft dollies when driving hardened pins. Do not strike the pins directly with a hammer.

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Section

Operator Prestart Checks


EIMCO

Prestart Checks

This section contains a check list outlining items to be checked and serviced each time the Roof Support Trailer is put into operation.

Incorporated in the check list is a basic explanation of the procedures to be followed.

WARNING: Report damage or faulty operation immediately.

WARNING: DO NOT operate the Roof Support Trailer until corrected.

WARNING: CONNECT the centre pivot safety link before working in the centre pivot area of the LHD, or the swivel coupling area of the Roof Support Trailer.

WARNING: NEVER service or make adjustments to the Roof Support Trailer while it is moving.

1 Winch Rope and Chains

Check the wire rope and chains for damage, inspect the wire rope for the presence of broken wires, surface wear, distortion due to mechanical damage, extreme reduction in diameter or corrosion. All these factors may affect the rope's safe service life. Check the chain links and hooks for deformation, which will indicate overloading, and ensure any hammerlocks are firmly fixed in place.

WARNING: Avoid "shock" loads on the wire rope.

2 Tyres

The Roof Support Trailer is equipped with foam filled rubber tyres. Check the condition of the tyres for damage. Visually check the wheel nuts for loose or missing nuts or wheel studs.

Prestart Checks

WARNING: There are Foam filled rubber tyres used on the 50 tonne Roof Support Trailer. Exercise caution when handling the heavy tyres.

3 Hydraulics

Check the hydraulic lift cylinders for leaks or other damage. Extend and retract the cylinders and check for correct operation. Check the hydraulic hoses and couplings for damage and leaks. Ensure they do not foul any moving parts.

4 Winch

Inspect the winch and visually check the mounting bolts for tension. Ensure the winch Rope is secure, and the wire rope strands have not deteriorated to more than 10% of its wear.

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5 Safety Chains

Check the safety chains are in place and in good condition. Deformation may indicate overloading.

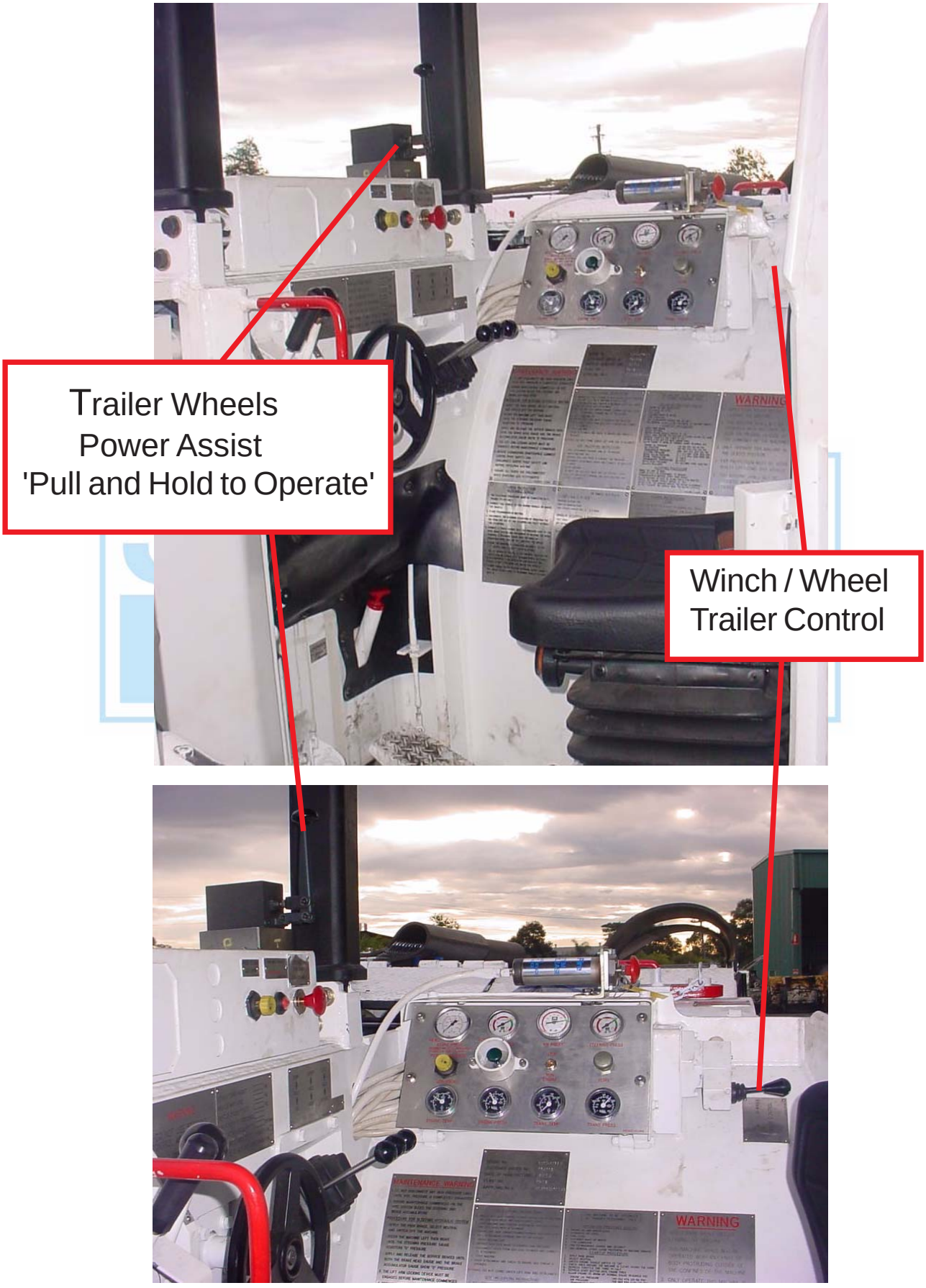
WARNING: Do not operate the Roof Support Trailer with damaged or missing support chains.

6 General Inspection

Check for any loose nuts or bolts and any damage to the Roof Support Trailer. Check the swivel coupling of the Roof Support Trailer. Check the rollers in the floor of the Roof Support Trailer turn freely, these assist the winch in loading the chock.

Section

Operating Procedures


Trailer Wheels
Power Assist
'Pull and Hold to Operate'
Winch / Wheel
Trailer Control
WARNING
WARNING

Operating Procedures

This section contains operating procedures for the Roof Support Trailer. There are several headings:

* Loading the Roof Support Trailer
* Unloading the Roof Support Trailer
* Transporting a Chock

WARNING: Ensure the winch rope and shackle are in good condition before continuing.

WARNING: Check the area around the machine is clear of personnel before loading and unloading.

WARNING: When parking the vehicle always apply the park brake, select neutral and lower the Roof Support Trailer completely before shutting down the engine. Never leave the operator's cab with the engine running.

Loading The Roof Support Trailer

1 Drive up to the roof support and centre the Roof Support Trailer.

NOTE: The LHD also requires the Trailer Control lever to be placed in the WHEELS position to enable the Roof Support Trailer to be raised and lowered, and in the WINCH position to operate the winch.

Operating Procedures

2 Lower the Roof Support Trailer to 20-30mm above the floor by pulling the Eject PTO lever back and or changing the Trailer Control lever.

3 Feed the winch rope out and connect the chains to the roof support.

NOTE: It is advisable to pack the front of the chock to allow an easier pull onto the front of the chock trailer.

WARNING: Use heavy gloves whenever handling the winch rope.

WARNING: Ensure the chains are in good condition and securely fastened before continuing.

4 When loading a chock onto trailer have the lift arm as low as possible (ON THE STOPS) then lower the rear end of the trailer to just above ground level with the Eject lever and the Winch / Wheels in the Wheels.

5 Wind the winch in to pull the roof support into the Roof Support Trailer.

WARNING: The Operator and Personnel assisting with loading the roof support are to be in visual contact at all times.

NOTE: Drive toward the roof support or place the machine in neutral and allow machine to be pulled back towards the support, to assist the winch in pulling the roof support over the toe of the Roof Support Trailer floor and onto the first row of rollers.

6 Continue to pull the roof support in until the pontoon meets the front plate, or spacer if fitted, of the Roof Support Trailer.

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Operating Procedures

7 Connect the safety chains to the holes in the pontoon on the chock, making sure the safety chains used are the correct length.

8 Ensure the lift arms are resting on the stops.

9 Raise the Roof Support Trailer off the ground by pushing the Eject PTO lever forward.

10 Check the raised height of the roof support and Roof Support Trailer for roof clearance in the drift.

11 Adjust the tilt cylinder to set the backing plate and the Roof Support Trailer parallel to one another.

Unloading the Roof Support Trailer

1 When in position apply the park brake and select neutral.

2 Lower the Roof Support Trailer completely.

3 Shut down the machine and disconnect the safety chains from the roof support.

4 Start the engine and raise the Roof Support Trailer approximately 100mm (4ins) above the floor.

5 Raise the lift cylinder sufficiently to assist the roof support to run out of the Roof Support Trailer.

WARNING: Exercise caution when unloading the roof support on a side grade. If the side grade is too steep the roof support may be unstable or fall. Ensure all personnel are well clear of roof support when unloading .

6 Release the winch and allow the roof support to run out of the Roof Support Trailer with the use of the push rams fitted to the 50 Tonne trailer.

7 Once the rear of the support is on the ground and whilst still running out the winch, slowly drive away from the roof support until clear of the trailer. Making sure the spool out speed of the winch is comparable to the motion of the LHD.

8 Drive away from the roof support sufficiently to clear the Roof Support Trailer.

9 Lower the Roof Support Trailer completely and shutdown the machine.

10 Disconnect the winch rope from the roof support and coil the winch rope on the trailer floor.

WARNING: Use heavy gloves whenever handling the winch rope.

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11 Raise the Roof Support Trailer before driving away.

Transporting a Roof Support

1 Check the roof support is loaded correctly and the safety chains are in place.

2 Check the operator's cab door is closed and secured. Operate the machine in the seated position only.

3 Check the machine is clear of personnel and sound the horn before starting the engine.

4 Be aware of the increased size and mass of the machine when fully loaded.

5 The engine must be at idle and the machine stopped when changing direction of travel.

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6 Always tow the trailer with the lift arm lowered, resting on the front frame stops of the LHD.

7 Always start in first gear and shift into a higher gear as the machine accelerates and as conditions permit.

8 Never coast the machine in neutral.

9 Use the transmission to slow down the machine whenever possible, as this avoids excess service brake wear.

10 Do not down shift the transmission unless the machine is travelling at a speed suitable for the lower gear.

11 When towing on a steep decline, use the transmission low gears to allow the engine to slow the machine. Use the brakes only when necessary and avoid pumping the pedal.

12 When parking the Roof Support Trailer, apply the park brake, select neutral, lower the Roof Support Trailer completely and shut the engine down before leaving the operator's cab.

13 Follow any site rules and regulations pertaining to the speeds of the vehicles operations.


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Section

Servicing

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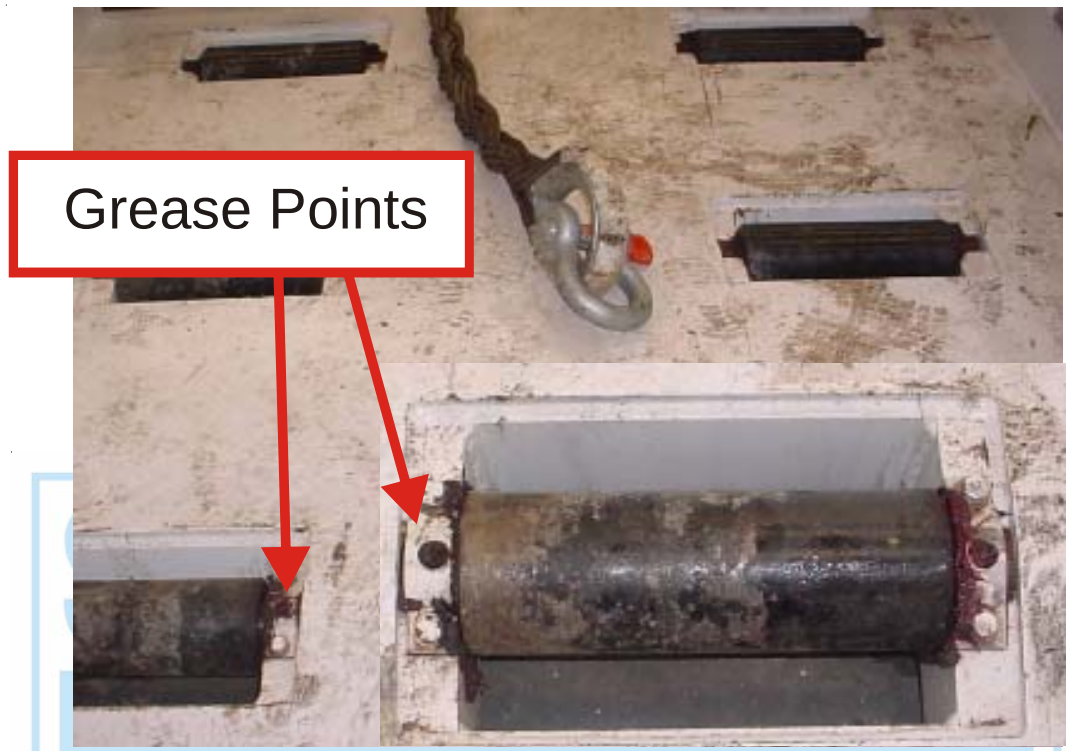
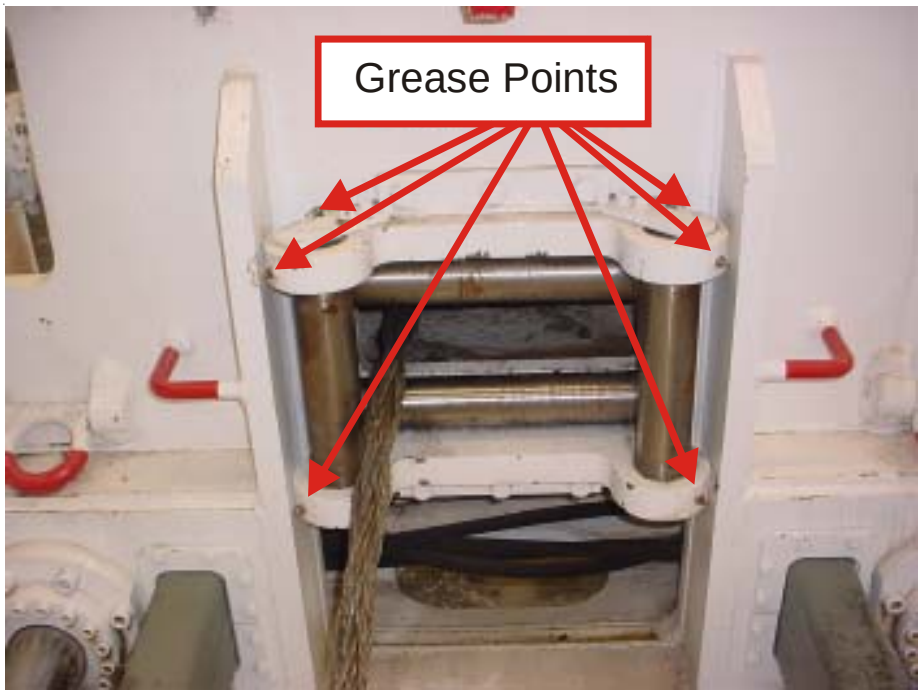
1 Grease the Roof Support Trailer

Grease all the lubrication points with multipurpose grease.

Floor Rollers (16)

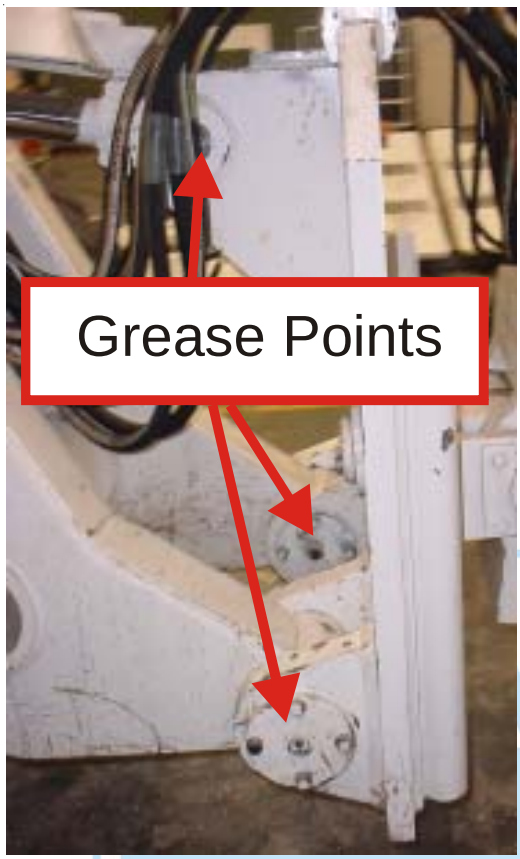


Winch Rope Guide Rollers (6)



2 Greasing (Continued)

Lift Cylinders (4)



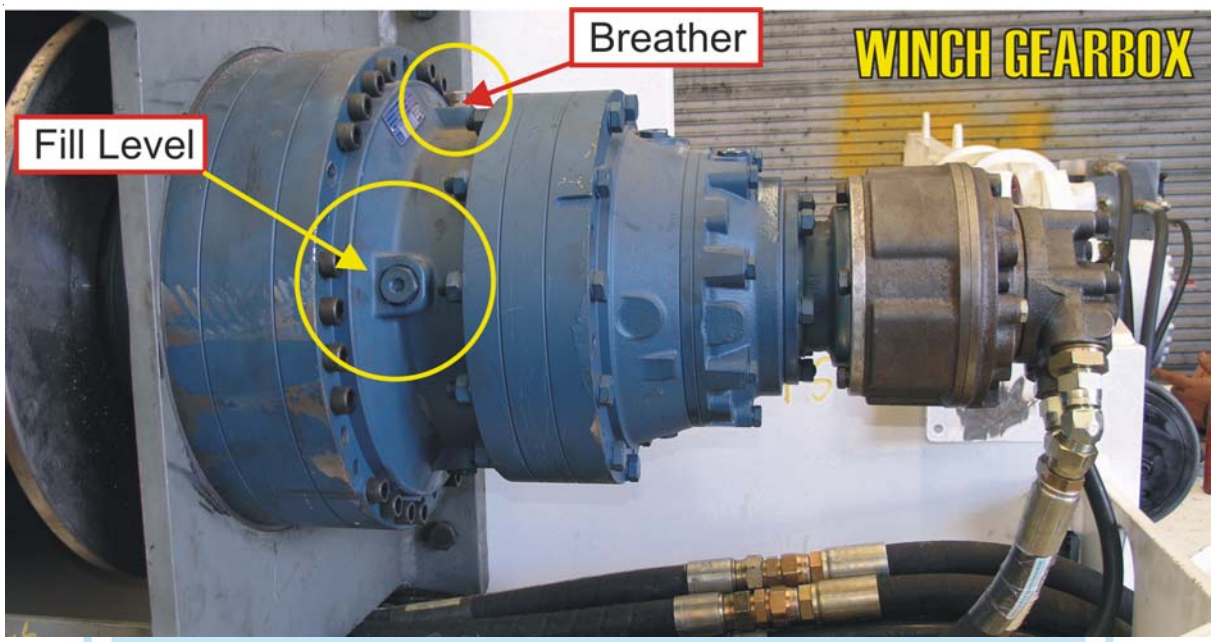
Swivel Coupling (5)

Swing Arm Hinge Pins (4)

Swing Arm Guide Plate (10)

3 Gear box oil

The gearbox oil is 320 gear-oil and should be filled to the side level plug on the gear-box, as shown below.



WARNING: Follow the correct isolation proceedures as outlined in section 3.

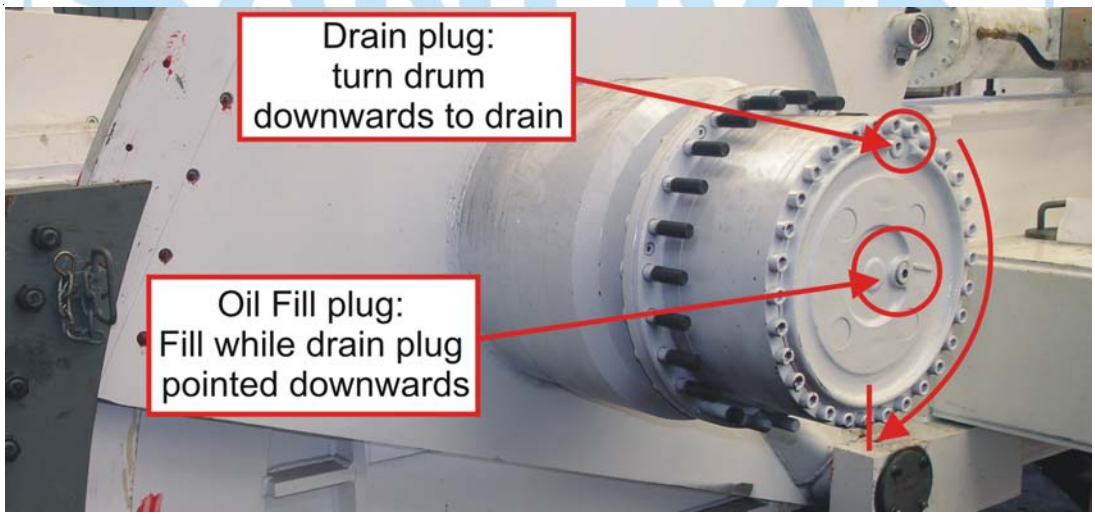
NOTE: Fully lower all components to the ground or onto stops or supports before starting maintanence.

Wheel Assembly

The 50 Tonne Trailer is fitted with Kessler wheel gear axle assemblies.
Each wheel assembly is driven by a 4 speed hydraulically operated variable drive motor.

Some important pre-operating checks are listed below:

1 Wheel nuts
2 Nuts of axle mounting bolts
3 Bolts on the steering components
4 Corrosion on the axle spindle (not acceptable)
5 Seals, oil levels & lubricate at regular intervals



LS90 gear oil can be used in the wheel hubs.

Kessler Wheel Assembly Lube Specifications

KESSLER+CO **Service Manual** **2.3**

Lubricants and lubrication intervals

Lubrication point	Lubricant	Remarks	Lubrication intervals 1.)				
			after 100Bh 1000Km	every 500Bh 5000Km	every 1000Bh 10000Km	min. 1x Year	min. 1x in 2 Years
Drive assembly	Hypoid – gear oil per MIL-L – 2105 B / API GL 5 Hypoid – gear oil in multi – range characteristic per MIL-L – 2105 C / D / API GL 5 SAE 90 or multi grade oils for normal external temperature SAE 75 W – 90 ; SAE 75 W – 85 for external temperature lower – 10° C SAE 140 or multi grade oils for external temperature over + 30° C	Oilchange	⊕		⊕	⊕	
Wheel hub planetary gear drive		Check oil level at control points monthly	⊕		⊕	⊕	
Interaxle differential			⊕		⊕	⊕	
Drop gear / Gear boxes			⊕		⊕	⊕	
Wheel bearing oil lubricated			⊕		⊕	⊕	
Multi disk parking brake	Hydraulicoil ISO VG 32		⊕		⊕	⊕	
Steering knuckle bearing	Multi – use grease lithium saponified groove penetration per NLGI 2 f. e. Fuchs Renolit MP 150		⊕	⊕			
Steering knuckle bearing		maintenance reduced			⊕	⊕	
Universal joint		if provided for	⊕	⊕			
Track rod		if provided for	⊕	⊕			
Steering cylinder -ball head / -spherical plain bearing		if provided for	⊕	⊕			
Cardan shaft intermediate bearing		if provided for			⊕	⊕	
pinion bearing		if grease lubricated	⊕		⊕	⊕	
Brake shaft bearing		Attention ! 2.)	⊕	⊕			
Brake shoe bearing		Attention ! 2.)	Lightly greased at brake shoe new assembly				
Wheel bearing		if grease lubricated	Change grease at wheel hub disassembly				⊕
Wet disk brake	see chapter -7-	**external cooled** oilchange	dependent on tank volume / cooling system / operation conditions				
		not external cooled oilchange	⊕		⊕	⊕	

(Bh = Hours of operation)

1.) Whichever occurs first .
2.) The bearing point is to be lightly lubricated only , to avoid the penetration of grease in the interior of the brake (use only hand operated grease gun and remove surplus grease !) .
Check regularly the brake shafts and if need correct the lubrication intervals (danger of overheating !).

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