TRANTOR

Handbook

TRANTOR

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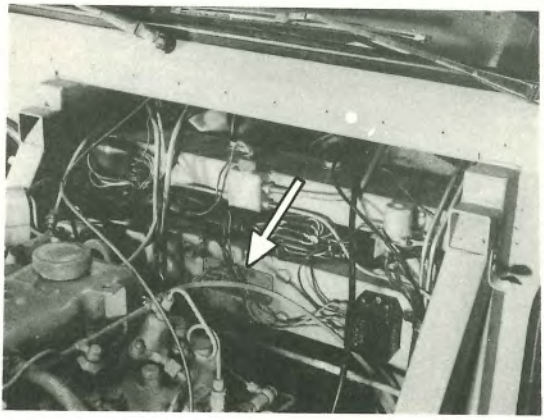


When ordering parts or with any query, always quote the full Engine number or Trantor chassis number as shown on the identification plate.

Trantor chassis number can also be found on the top side of the front member.

The engine number is stamped on a vertical flat on the off-side of the engine block behind the alternator.

TRANTOR Chassis No.....

Engine number .....

TRANTOR Registration No.....

TRANTOR policy is one of continuous development and improvement and therefore the specification details may have been altered since this book went to press.
Moreover, as the TRANTOR is offered in a variety of forms to cover a large number of markets and applications, this handbook may contain details of items not applicable to the particular Trantor for which it has been supplied.

WARNING

Improper operation of this vehicle may result in serious injury. Before using the vehicle study the following SAFETY POINTS then read the remainder of this book thoroughly.

NEVER – carry passengers on the linkage or directly on the rear axle.

NEVER – drill or weld the safety frame.

NEVER – use the independent braking facilities on a public highway or when travelling at speed.

NEVER – attempt to alter the P.T.O. gear ratios while the P.T.O. is engaged or in motion. STOP the engine first.

NEVER – wear loose clothing when working near moving parts of the Trantor, engine and implements.

NEVER – work with damaged parts. Bent parts should not be straightened but replaced. Bolts, when replaced must be of the correct tensile strength. After any accident involving a safety frame, it is advisable to report this to your local safety officer and get the frame checked.

ALWAYS – ensure that the P.T.O. is set to low ratio for implements designed to run at 540 rev/min. Running them faster may cause dangerous mechanical failure.

ALWAYS – remove the ignition/starter key from the vehicle when leaving it unattended, especially where children have access.

ALWAYS – take care to drive the Trantor within its capabilities. Don't turn sharply at speed. Don't let the clutch in suddenly going up hill. Don't brake fiercely, especially on the highway.

ALWAYS – take extra care on steeply sloping ground. The sudden swing of an implement or pull of a trailer could cause trouble.

ALWAYS – make sure before turning that there is room for any mounted implement which will swing outwards at the rear.

ALWAYS – hitch trailers to the approved pick-up hitch or drawbar which is below the centre line of the rear axle. Never hitch above this centre line.

ALWAYS – exercise extreme care when towing the Trantor. Remember that the brakes have to be "wound off" manually if there is less than 70 psi in the air reservoirs and having "wound off" there are no brakes whatsoever.

INTRODUCTION

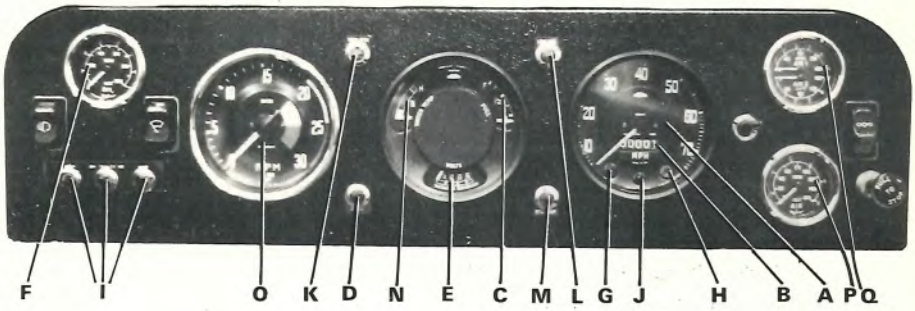
The Trantor agricultural transport and work vehicle is the result of a carefully conducted study of the transport requirements in the agricultural industry. It is far from being just another tractor'.

As a general purpose vehicle, it has a top road speed of 60 mph with superb cross-country performance. It can take a driver and two passengers and up to half ton of pay load on its load platform or four additional passengers.

Trantors have been designed to work with conventional agricultural suspended rear-wheel trailers and the independently suspended pick-up hitch can be used for work with all unbalanced trailers. The air assisted dual line brakes on all four wheels conform to full commercial vehicle braking standards.

Most agricultural trailers with cable brake systems can lock into the two line air system on the Trantor with the aid of a simple conversion kit available. Because of these facilities, Trantors are capable of much higher safe speeds for transporting up to ten tons.

As a two-wheel drive tractor, the machine offers a two-speed power take-off, differential lock, and three point linkage which is unaffected by the vehicle suspension with varying loads. It has a high capacity hydraulic pump for external services and consequently can perform all the tasks of a medium agricultural tractor with all the PTO power of a medium to large vehicle.



A	Speedometer	J	Main beam W. Light
B	Mileometer	K	Open hitch catch W. Light
C	Fuel gauge	L	Low fuel W. light
D	Charge warning light	M	Hyd. pump engaged W. light
E	Volt meter	N	Water temp. gauge
F	Oil pressure gauge	O	Tachometer
G	Oil pressure W. Light	P	Single air pressure gauge
H	Cold start W. Light	Q	Double air pressure gauge
I	Direction indicator W. Lights		

INSTRUMENTS AND CONTROLS.

These are conveniently situated in a central position on the bulkhead of the vehicle making it eminently suitable for either right or left hand operation. Familiarise yourself fully with these instruments and controls so that their interpretation and operation becomes automatic.

Seated behind the steering wheel in the central adjustable seat, the following instruments are available for instant reference.

INSTRUMENTS AND WARNING LIGHTS

SPEEDOMETER – indicates vehicles forward speed and includes a MILEOMETER recording total distance.

FUEL GAUGE – indicates the amount of diesel fuel in the two 10 gallon (45.7 litre) tanks.
Gauge registers when ignition is switched on.

CHARGE WARNING LIGHT – coloured red, this light should glow when the heat start switch is turned to 'run' position and should be extinguished indicating that the alternator is charging the battery when engine speed rises above a fast idle. If the light remains on while driving stop the vehicle and investigate the cause immediately.

VOLT METER (or Battery Condition Meter) – indicates the state of charge of the battery. When alternator is charging the battery the meter should read between 12 – 15 volts.

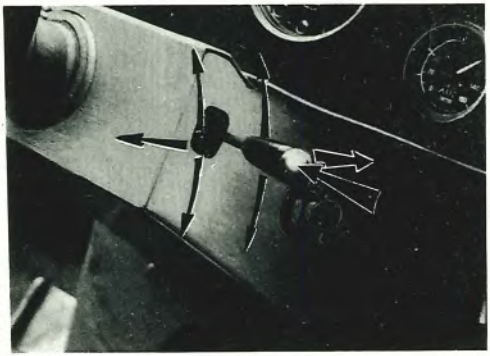
OIL PRESSURE GAUGE – indicates oil pressure within the engine. The oil pressure relief valve is set to return oil to the sump at a pressure of 60 lbs f/in^2 (4.2 Kgf/cm^2) at maximum speed and normal operating temperature.

OIL PRESSURE WARNING LIGHT – coloured green, should illuminate when heat-start switch is turned to 'run' position, but be extinguished when engine runs in excess of idling speed. Whilst the light may flicker at idling speed or even remain on, should it remain on at normal running speeds first check the engine oil level and if this is satisfactory examine the engine lubrication system immediately. Under no circumstances should the engine be run until the cause is rectified.

COLD START WARNING LIGHT – coloured orange, indicates when pre-heater unit is in operation. It is controlled by a circuit incorporated in the heat-start switch. See paragraph on heat start switch.

HORN – (audible warning device) depress button located on the end of indicator stem to operate.

DIRECTION INDICATOR WARNING LIGHTS – the warning lights flash regularly when the selected set of indicator lights are operating. An audible warning will be heard as a 'tick' while lights are flashing. The centre indicator warning light will operate when a trailer with separate indicators is fitted via the 7 point electrical bayonet connection.



MAIN BEAM WARNING LIGHT – coloured blue, this light is only illuminated when the headlight high beams are on. The high beam switch is located on Direction Indicator stem.

OPEN HITCH-CATCH WARNING LIGHT – this light will be extinguished by closing locking catch on the pick-up hitch. If it remains on after closing the catch in the cab, check that the locking pin on the hook has not been obstructed before moving off.

LOW FUEL WARNING LIGHT – coloured blue, comes into operation when the amount of fuel in both combined tanks falls below 5 gallons approx. (22½ litres).

HYDRAULIC PUMP ENGAGED WARNING LIGHT – coloured orange, this light operates when the hydraulic pump is switched on.

WATER TEMPERATURE GAUGE – the normal operating temperature is reached when the needle registers in the centre sector.

TACHOMETER c/w P.T.O. SETTINGS (see Operation Section).

AIR PRESSURE GAUGES - the double-needle gauge registers pressure, in those tanks supplying air to the front and rear sections of the servo, which activates the tandem hydraulic master cylinder for the front and rear brakes.

AIR 1 indicates pressure in tank controlling front brakes.
AIR 2 indicates pressure for rear brakes.
These tanks are automatically charged as the engine runs.
A warning buzzer will sound if tank pressure falls below 60 psi and a relief valve will come into operation at 120 psi.
The lower single gauge registers air pressure to auxiliary systems i.e. handbrake, air switches, air-braked trailer.

DO NOT ATTEMPT TO DRIVE THE VEHICLE WHILE THE WARNING BUZZER IS SOUNDING AS THERE IS INSUFFICIENT AIR PRESSURE TO OPERATE THE BRAKES. WAIT UNTIL THIS BUZZER STOPS.

Air pressure is required for the following services.

1. To operate footbrakes. (60 psi)
2. To lift off hand-brake. (60 psi)
3. To lift off trailer air brakes. (60 psi.
4. To activate air switch that engages hydraulic pump. (80 psi)
5. To activate air switch that engages differential lock. (80 psi)

PANEL CONTROLS

ENGINE-STOP KNOB - simply pull out the stop-knob to the end of its travel to cut fuel supply to engine.

LIGHTING ROCKER SWITCH - has three positions - the 'off' position when the face of the rocker switch lies upwards, the 'centre' position switching on side, tail lights and dashboard lights, and the 'full' position when head lights come into operation in addition to the side and tail lights.

2 SPEED WINDSCREEN WIPER SWITCH - the wipers are operated in the slow speed when the rocker switch is pressed into the intermediate position and at full speed when the switch is pressed fully down. Wipers are only operational with heat-start switch in 'run' position. The wipers are self-parking when switched off.

WINDSCREEN WASHER CONTROL - water is pumped through from a reservoir bottle and ejected at the windscreen from the small nozzles situated on the bonnet of the vehicle when the sprung switch is depressed. The pump will stop working automatically as pressure on the switch is released. The windscreen washer control is only operated with the heat-start switch in 'run' position.

DE-MISTER FAN ROCKER SWITCH - the fan can be brought into operation by depressing this one stage rocker switch. The fan then forces air to the screen and to circulate within the cab. Two vents are situated in the bulkhead for additional fresh air ventilation.

A Engine stop knob

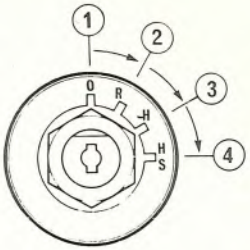
B Lighting rocker switch

C Windscreen wiper switch

D Windscreen washer control

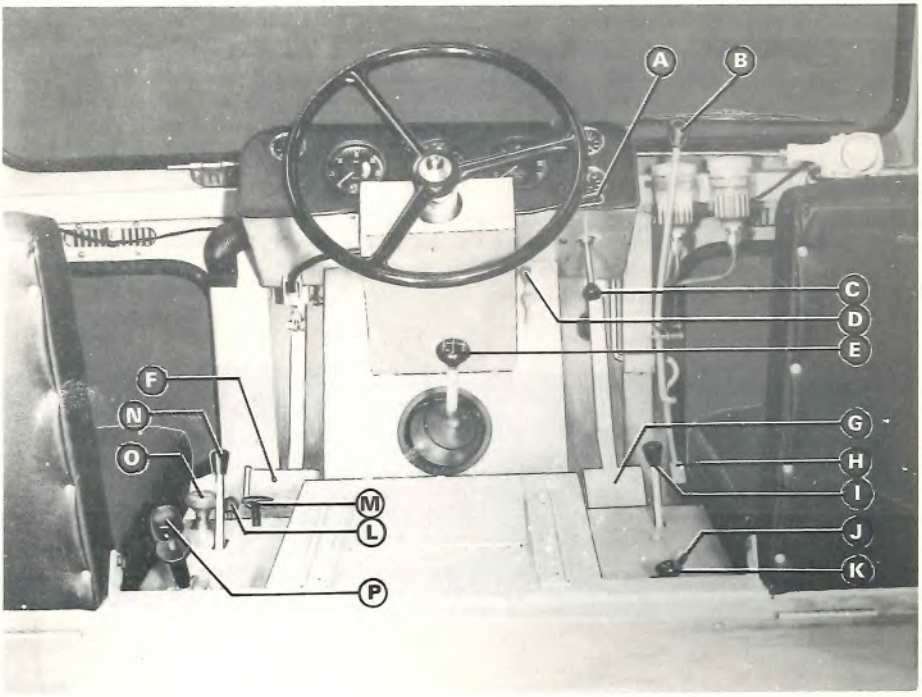
E De-mister fan

HEAT-START SWITCH - this ignition-type switch operates in the conventional way except for the addition of a 'heat' position governing the 'thermostart'. Both 'heat' and 'heat start' positions are spring-loaded to return to the 'run' position.



1. Off Position
2. Run Position
3. Heat Position
4. Heat & Start Position

CONTROLS-ACCELERATOR, CLUTCH and BRAKE PEDAL - although you may be familiar with the DRIVING CONTROLS in general, a few minutes spent examining those of the Trantor will be worthwhile.



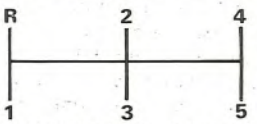
A Direction Indicator
B Hand Throttle
C Independent Braking Lever
D Heat-Start Switch
E Gear Lever
F Clutch Pedal
G Brake Pedal
H Accelerator
I 3 Point Linkage or Trailer Hitch Control
J Hydraulic Pump Switch
K Differential Lock
L Hydraulic Flow Selector
M Hitch Catch
N Auxiliary Services
O PTO Engagement
P Handbrake

HANDBRAKE locks rear wheels only - see Brakes.

INDEPENDENT BRAKING LEVER for rear brakes. See Brakes.

HAND THROTTLE - is directly linked to the accelerator pedal and provides an alternative control of engine speed.

GEAR SHIFT LEVER - operates in the conventional manner with gear positions as illustrated.

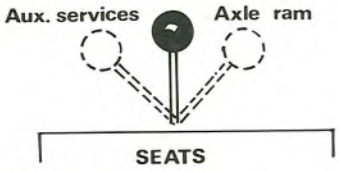


CLUTCH PEDAL - disengages drive from engine to gearbox when pedal is depressed.

PTO ENGAGEMENT KNOB (with clutch depressed). Pull red knob upwards to the end of its travel; this will engage PTO in whatever ratio has been selected. Should PTO prove difficult to engage, release clutch momentarily to facilitate meshing of gears (see paragraph - PTO speed selection).

HYDRAULIC PUMP SWITCH - engages the hydraulic pump when the switch is directed towards the driver's seat. Engage at engine idling revs only. Ensure that the hydraulic flow selector is in neutral position before engagement.

HYDRAULIC FLOW SELECTOR - is operated by pushing the handle from the central 'off' position either to the right for operation of the rear ram controlling 3 point linkage or hitch, or to the left, for auxiliary services.



3 POINT LINKAGE OR TRAILER HITCH CONTROL LEVER
This double acting valve controls the hydraulic oil flow to the axle ram. The double acting axle ram operates a mechanical linkage to raise and lower the pick-up hitch and/or the 3 point linkage. This control valve is spring centred and returns to the neutral position when not in operation.

AUXILIARY SERVICES LEVER
A double acting valve controlling the flow of hydraulic oil to the auxiliary services outlets. This is not a spring centred valve and the lever requires returning to the central neutral position after operation.

HITCH CATCH (Cable operated spring-loaded locking device). This is opened by pulling up the 'T' handle. Being spring-loaded, the hitch lock will return itself automatically upon release of the handle. It is not locked fully however until the hitch catch warning light is extinguished.

DIFFERENTIAL LOCK - depress the black knob to engage the rear axle differential drive. Both wheels will now rotate at the same speed thus one wheel cannot slip unless the other does. The spring-loaded knob will disengage automatically when the torque on the rear wheels is equalised ie. when both wheels are able to grip the ground with equal pressure. The differential lock can be engaged at any time when needed without stopping the vehicle. Do not delay engagement until the 'slip' has got out of control and the wheels are "digging in".

WARNING: THE DIFFERENTIAL LOCK MUST NOT BE USED AT HIGH SPEEDS OR ON THE HIGHWAY.

SEATING ADJUSTMENTS – the driver's seat is adjustable for forward–rearward movement by disengaging seat rail locking lever (move to right) – the seat will then move along rails.
Behind the zipped cover on driver's seat is situated a seat suspension adjustment which can be altered to suit the driver's weight.
Having removed driver's seat rearwards from rails completely, access will be gained to an inspection cover for the area around the rod end of the axle ram and gearbox.
Please note that there is no adjustment of the two passenger seats.

OPERATION

COLD STARTING THE VEHICLE - with the gear lever in the neutral position, turn the heat-start switch towards windscreen in a clockwise direction through 'run' position until the COLD START WARNING LIGHT comes on. Hold in this position for 15 seconds before turning the key further in the clockwise direction to engage the starter motor. Hold in start position until engine is running properly then release pressure on the key which will then return to 'run' position.

WARM STARTING THE VEHICLE - is achieved by turning the key clockwise straight to 'heat start' position and engaging the starter motor until the engine fires. To stop the engine, PULL the ENGINE STOP KNOB to the end of its travel - the knob will then stay in the 'out' position. Premature depression of this knob can cause the engine revolutions to pick-up again.

ENGAGING GEAR - is achieved in the conventional way by depressing the clutch and moving the gear lever to engage the desired gear. Although a first gear exists, generally an unladen vehicle on a good surface can move off from a standing start in second gear, picking up speed as progressive gears are engaged. A loaded vehicle will only respond satisfactorily when pulling away in 1st gear.
The five forward and one reverse gear positions can be duplicated in low ratio. On-the-move synchromesh gear changes can be made into 2nd, 3rd, 4th and 5th gears in either high or low ratios.

LOW RATIO GEARS - are engaged by depressing the gear ratio knob to the fullest extent of its travel. Should it not go in, release clutch momentarily and try again. Choose the appropriate range of gears for the task in hand before moving off. Changing ratio while the Trantor is moving should not be attempted and should not really be necessary.

ROAD RUNNING (with high ratio gears engaged) - the Trantor behaves as would any large and heavy vehicle on the road. Extreme care and a high degree of anticipation must be exercised at all times, particularly when cornering and when travelling at high speeds, as conventional tractor tread tyres cannot give road tyre performance on wet and smooth surfaces. Gauge the width of your vehicle by the two front mudguards.

CROSS COUNTRY TRAVEL - because of its low centre of gravity, the Trantor is an extremely stable vehicle when travelling over steep gradients. Its large rear wheels give the torque needed in pulling loads over undulating countryside and the independently sprung hitch takes most of the stresses and strains normally transmitted to a tractor or truck cab in cross-country towing. The three point linkage too, is able to suspend implements independently of the vehicle suspension and this also cuts down on the jolts normally associated with travelling overland to any job.

BRAKES – the brake pedal gives full braking power to all four wheels through two independent air assisted braking circuits. Independent braking control on the rear brakes is incorporated to assist steering in confined spaces and is operated by use of the INDEPENDENT BRAKING LEVER in conjunction with the foot brake pedal. Whilst in the driving position, simply direct this lever to left or right for the desired rear brake operation and depress the footbrake pedal.

The balance of the braking system should be checked each week and also each time the TRANTOR is taken on the road or driven at higher speeds. This check is particularly necessary when one brake has been used much more than the other – for turning the vehicle at headlands etc. If this basic check is ignored an unexpected and dangerous swerve may occur.

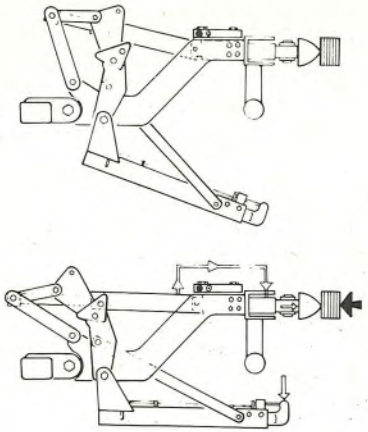
Before attempting to drive the vehicle having just started the engine, ensure that the warning buzzer stops and that there is a minimum of 60 psi registering on the dials of the double air gauge. If there is a registered pressure of 60 psi on both dials, all brakes will be operational. The warning buzzer will sound until the air pressure reaches 60 psi. Run the engine until this buzzer stops.

Coupling an air braked trailer to the Trantor will rob the vehicle air system of air pressure until the trailer system is fully pressurised. Check that the buzzer has stopped and that there is a minimum of 60 psi registered on the single dial air pressure gauge before moving off.

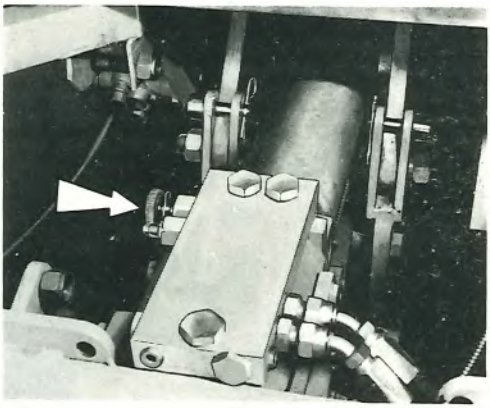
HANDBRAKE – lift sprung collar, and press forward to release the handbrake – the collar locks the handbrake in the 'on' position when lever is returned to the rear. The handbrake is sprung-loaded, locking the brake shoes against the drums until released by air pressure against these springs. If there is insufficient air pressure, the handbrake will remain applied and the rear wheels locked.

TOW-STARTING – the vehicle can be towstarted – but only if there is adequate air pressure (70 psi) in the tanks. Check the air pressure double dial and then check that the handbrake frees the rear wheels when operated. If the air pressure is not sufficient to free the brakes then either the engine will have to be started in order to pump up the system or the brakes can be 'wound off' manually. REMEMBER – once 'wound off', there are NO BRAKES whatsoever!

SUSPENDED HITCH CONTROL
The Trantor patented independently sprung self levelling hitch mechanism is controlled by the rectangular valve block attached to the top side of the rear axle ram. The vertical movement of the hitch or drawbar under load can be transferred via the axle ram and buffer ram to the large leaf spring positioned across the rear axle. This spring, in turn, supplies the suspension transferred back to the hitch.
This suspension system can be applied to either the 3 point linkage or hitch or to both simultaneously.

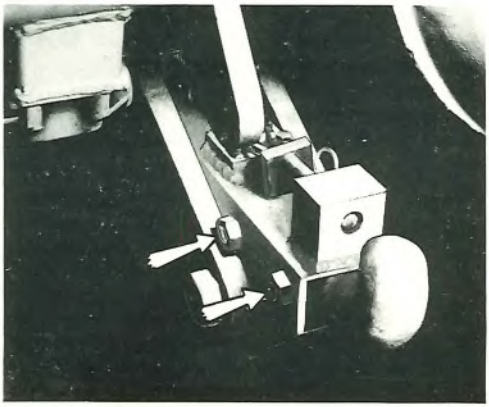


The hitch or 3 point linkage facilities will remain independently suspended until the black knob on the valve block is pushed in as shown. This movement isolates the oil flow to the buffer ram, in turn cancelling out and locking the independent suspension. The vehicle is now ready for all unsprung 3 point linkage work.

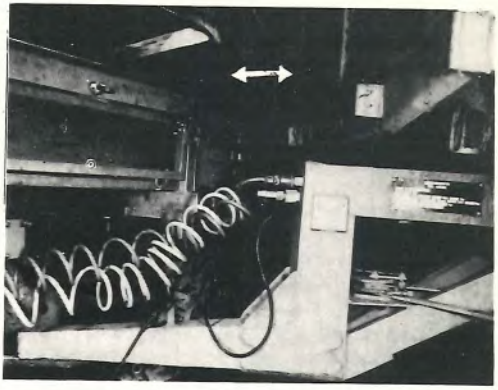


The hitch hook can be replaced with a swinging drawbar by removing the two securing pins and clips shown, sliding the hitch hook free from the hitch arm and replacing it with the drawbar. Relocate the pins and secure.
It must be noted that the open-hitch catch warning light will now be illuminated.

TO RAISE HITCH. Start engine and idle. Wait for warning buzzer to stop (air pressure 90 psi). Switch on hydraulic pump (towards driver's seat). Select hydraulic flow to axle ram (towards driver's seat). Direct the trailer hitch control lever (on right of driver's seat) rearwards to raise the hitch and forwards to lower.



TRAILER TOWING



Before towing any trailer, always ensure that there is adequate clearance between the Trantor and the trailer body at the fullest extent of trailer articulation.

Ensure that the control lines to the trailer are long enough to prevent any tension upon them at full trailer articulation and check that they are secured in some way so as not to hang dangerously near the road surface. (Most trailers have provision for line security).

Ensure black knob on valve block is OUT to allow suspension to hitch.

Engaging trailer. Reverse the Trantor until the pick up hitch can be engaged. Raise the hitch so that the trailer weight is transferred from the parking jack (if fitted). Connect up the air lines to the trailer then to the Trantor. Connect up the 7 pin electrical auxiliary services plug to its socket on the Trantor then check that all the lights and indicators on both trailer and Trantor are in operation. Release trailer handbrake (if fitted).

Note: On some types of trailer the wheels may remain locked if the airline is not properly connected.

Disengaging trailer. Insert parking jack and pin, and lower the pick up hitch until the weight of the trailer is transferred to its parking jack. Apply the trailer parking brake and disengage the 7 pin electrical auxiliary plug.

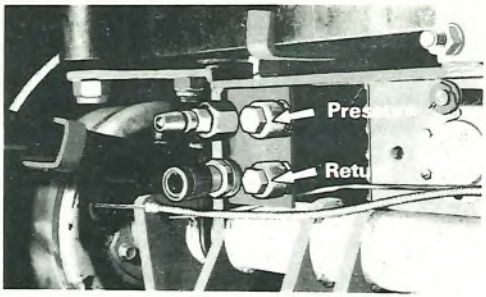
Disengage both "service" and "emergency" brakes lines by pulling back the sleeve of the union and withdrawing from the vehicle. Always withdraw the air lines from the vehicle first in order to close the pressure valves. The lines can then be detached from the trailer if desired.

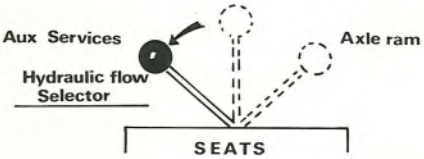
EXTERNAL HYDRAULIC SERVICES

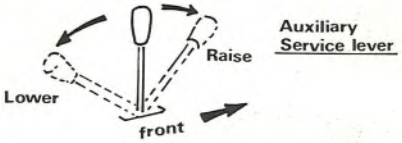
The Trantor external hydraulic services can deliver up to 7 gallons of oil per minute at a pressure of 2850 psi..

Both these services are fitted with self sealing couplings which act as automatic taps to cut off the oil flow and prevent dirt entering the system each time the unions are uncoupled. The back pressure generated at these couplings does not usually affect the performance of implements although a certain slight 'stiffening' of implement controls can be experienced in some instances. With PTO driven hydraulic pumps however, the back pressure is enough to blow pump seals and advice on changing couplings must be sought from your dealer before fitting such a pump.

TIPPING TRAILERS with a single acting ram should be connected to the upper hydraulic coupling. With the engine running, the hydraulic flow selector lever should be directed away from gear lever as shown and the hydraulic pump switched on. The "Auxiliary services" lever can then be directed forwards to raise the trailer body and backwards to lower.

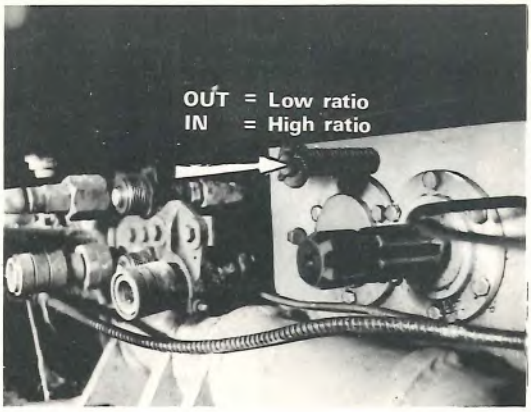






HYDRAULICALLY OPERATED IMPLEMENTS with their own control box can be coupled to the Trantor, fitting the pressure hose to the upper self seal coupling and the return hose to the lower self seal coupling. The hydraulic flow selector should be directed away from the gear lever and the hydraulic pump switched on. The "Auxiliary Services" lever should then be directed forwards so that oil flow commences. The implement can then be operated via its own control box.

(If the auxiliary services lever directions are reversed then the oil flow, and consequently, operation will also be reversed).

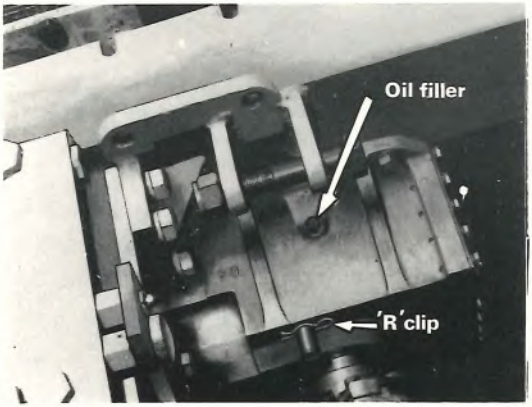


PTO SPEED SELECTION - the PTO is driven via a 2 - speed reduction gearbox on the back axle. A spring loaded push-pull rod situated through the reduction gearbox is moved to select PTO speed.
The photograph opposite shows the rod and positions for high or low ratio. The 'R' clip through the 'fore'end of the rod must be properly secured for high ratio work.

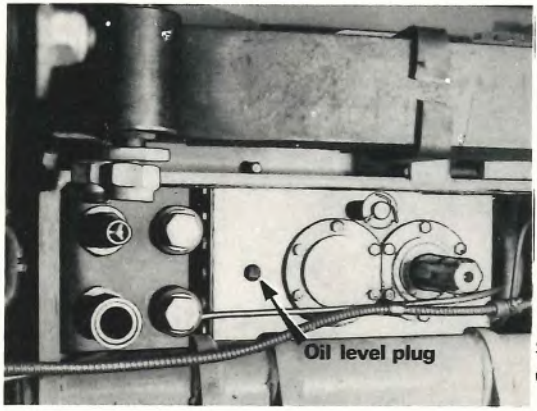
CAUTION - DO NOT ATTEMPT TO ALTER PTO RATIOS WHILE THE ENGINE IS RUNNING.

LOW RATIO: PTO AT 540 RPM - ratio selector rod pulled out rearward. 'R' clip removed - engine revs 2200 for 540 rpm on PTO.

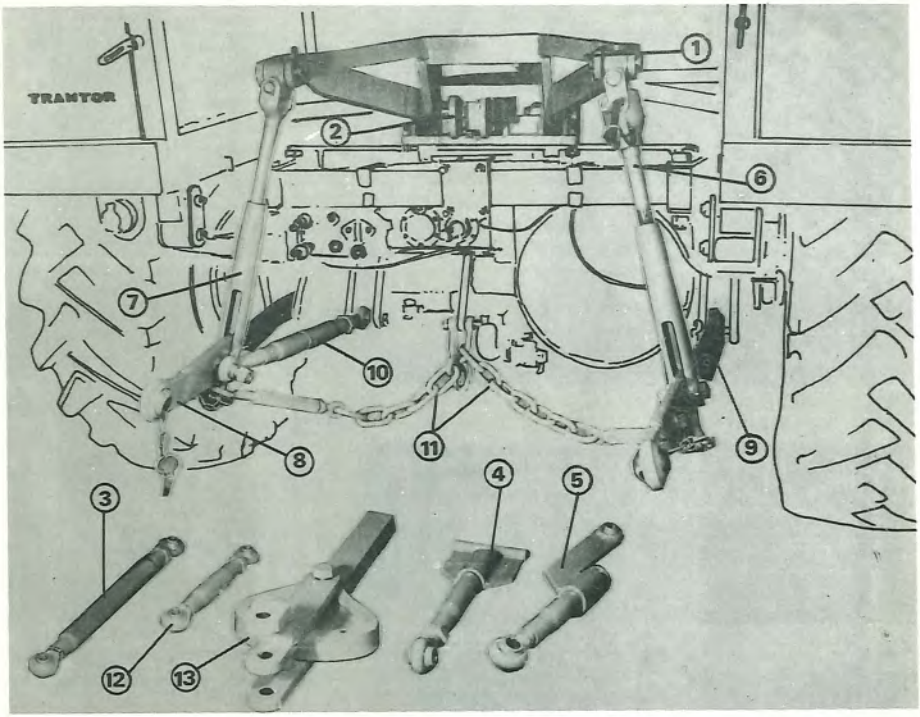
HIGH RATIO: PTO AT 1000 RPM ratio selector rod pushed forward into gearbox and secured at fore-end with 'R'clip. 540 RPM on PTO at 1260 engine revs - fast idle. 1000 RPM on PTO at 2450 engine revs.



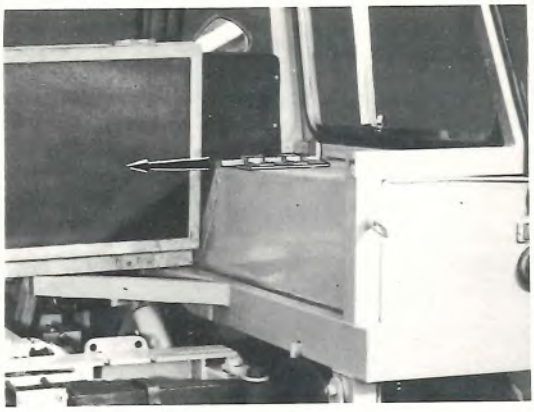
TO ENGAGE PTO- having selected PTO ratio and with engine running, depress the clutch and pull up the RED knob to the top of its travel. Release pressure on the clutch momentarily if difficulty is experienced in engaging PTO gears. Select low ratio forward gear for the desired operating speed at the engine RPM for selected PTO setting. Set the hand throttle and slowly release clutch, the PTO will start to rotate as the vehicle moves forward and will stop as the clutch is depressed.
Disengage the PTO by pushing back knob slowly with clutch depressed.
DO NOT RELEASE UNDER LOAD.
It is important to check the oil level in the PTO gearbox regularly.



STATIC RUNNING - the pto may be used in all gears and in neutral.



1. Lift arm assembly
2. Top link anchor bracket
3. Adjustable top link
4. Upper adjustable link
5. Lower adjuster link
6. Levelling box assembly
7. Lift rod assembly
8. Lower link (left)
9. Lower link (right)
10. Stabilizer
11. Check chains
12. Axle locking strut
13. Drawbar assembly



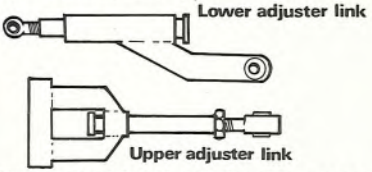
TO ASSEMBLE 3 POINT LINKAGE.

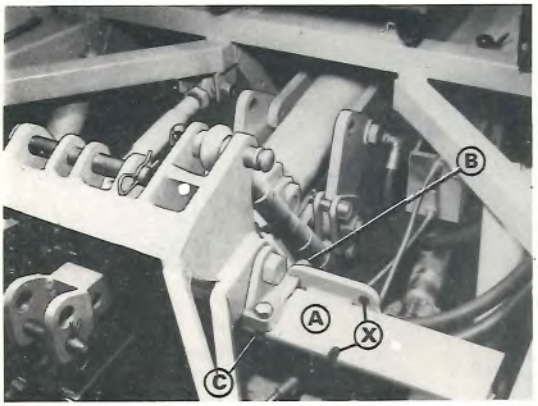
Fold up the floor (or remove completely) and stow behind the two bolts situated inside the cab on the mudguards.

Before working with 3 point linkage, attach the axle locking strut as detailed overleaf.

Position the lift arm assembly on the top flat of the rear axle (A) and secure with nuts (B) (C) through the axle brackets.

(The lift arm assembly can be offset by securing in holes (x) the upper adjuster link will then require relocating in new pin positions on the lift arm assembly.)

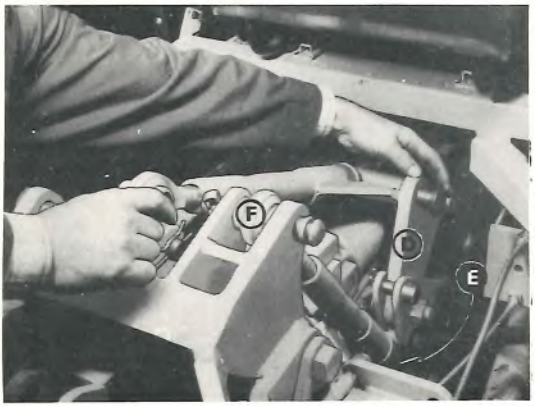




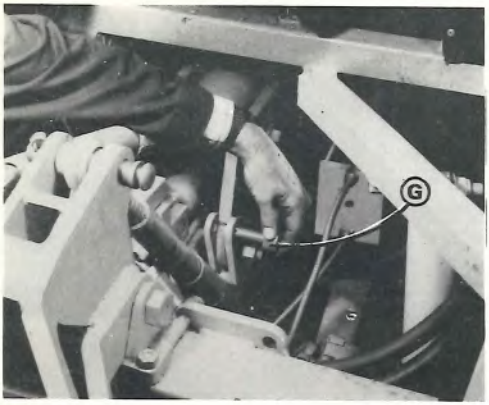
Power the hitch hook down to end of its travel.

Insert the UPPER ADJUSTER LINK between the Jaws of bracket (D) and in central position of lift arm assembly.

The securing frame of the upper adjuster link is offset against the barrels of the link to give maximum clearance between it and the axle ram. Ensure that this link is located with the barrels uppermost as shown.



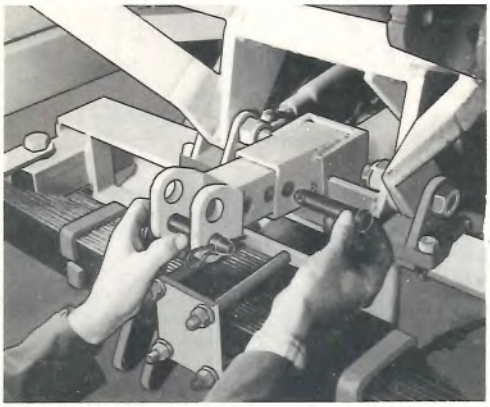
Slide LOWER ADJUSTER LINK onto the pin attached to the lower axle assembly (the base of this link should now cover the head of the PIN in hole (E) and between the jaws of bracket (F).



REMOVE PINS (G)

Start engine. Select hydraulic flow (point hydraulic flow selector towards gear lever), switch on hydraulic pump (towards gear lever) then raise & lower the lift arm by directing the 3 point linkage control lever to ensure that there are no obstructions to the movement.

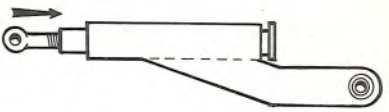
Assemble the draft links and drop arms. Please note that the levelling box is on the right when viewed from the rear of the vehicle.

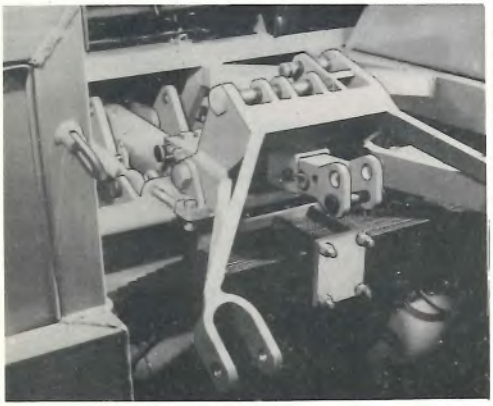


The top link anchor bracket can be locked in 2 positions (in or out) with pin provided or alternatively left to 'float' between stops.

The bracket may be removed and turned upside down to enable either category 1 or category 2 holes to be located in the lower position.

Screw fully in for the highest depth position

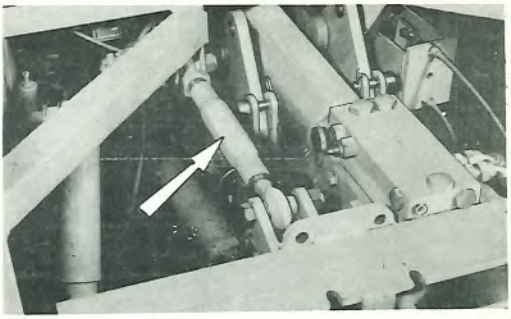




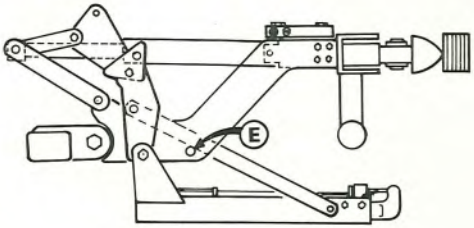
To convert from 3 point linkage to hitch, replace pins (G).
Remove UPPER ADJUSTER LINK. Set lower adjuster link to highest depth position ie. screwed fully in. Remove hitch locking bolt from hole (E). Draft links and drop arms can be left in position if unobstructive. Lift arm assembly can also be left in position on the rear axle when fully insulated from the movements of the hydraulic ram. CAUTION. Check that the lift arm assembly is isolated before operating hitch to the extremes of its travel.

AXLE LOCKING STRUT

Before attempting to fit any implement to the 3 point linkage, it is important to attach the axle locking strut otherwise severe strain will be transmitted to the vehicle leaf springs. This strut effectively prevents any tendency of the rear axle to rotate. (The axle locking strut is detailed on the list of 3 point linkage components).



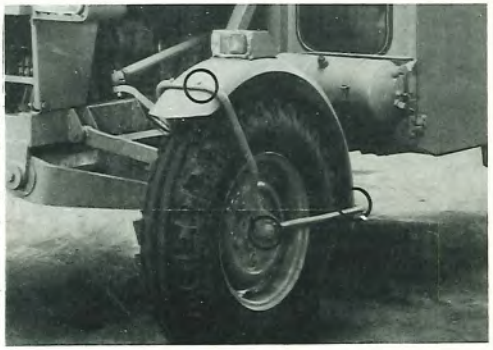
Insert a PIN through the hole (E) in the axle assembly to secure the hitch arm in an elevated position off the ground. It will probably be necessary to lift the hitch arm by hand slightly to gain alignment. Secure the PIN with an "R" clip.



CHANGING FRONT WHEELS

Remove the nut in the centre of the wheel hub and the two nuts, bolts and washers on the outer sides of the mudguard; the mudguard stays can now be removed. Remove the wheel by removing the five wheel nuts. It may be worthwhile to apply some grease to the nuts, bolts and to the inner side of the mudguard stay before re-assembly.

The REAR WHEELS are removed by removing the 8 wheelnuts.



FUELLING

The two fuel tanks situated under each passenger seat should be filled independently as there is no compensator pipe between the two. The tanks are, in fact, connected via a pipe but this is only to allow one tank to service the other with a small flow of fuel. Always use clean filtered diesel fuel.

JACKING UP

There are no specific jacking points incorporated on the Trantor but, standing the vehicle on firm flat ground, with the handbrake applied and the wheels properly chocked, any of the main chassis members or the rear axle casing will take the weight of the vehicle to a point where any specified wheel will be free of the ground.

TRACK WIDTHS are measured to the centres of the tyres at a point as near as possible to the ground. The "toe out" is 1/8". Adjustments can be made at the outer end of each track rod arm.

DAILY MAINTENANCE

Your vehicle will have been thoroughly checked before delivery and your Trantor dealer will advise you of the arrangements for the first service. Subsequently, regular routine maintenance is essential. The importance of carrying this out regularly cannot be over-emphasised. A properly maintained vehicle retains its efficiency longer and remains reliable and ready for use at any time. Failure to carry out maintenance properly can lead to unnecessary repairs, usually at unexpected and awkward times and in the long run is much more expensive than the cost of regular attention. THE FIRST SERVICE MUST BE CARRIED OUT ON TIME.

Please note that attention to cleanliness is very important. All grease points must be wiped clean before applying the grease gun. Sump plugs and filler caps must also be wiped clean before removing and any containers used when filling the engine, gearboxes or fuel tanks must be kept perfectly clean. It is recommended that servicing be carried out under cover wherever possible.

Please refer to the engine manufacturers handbook regarding all servicing and maintenance details of the engine unit.

DO'S AND DON'TS WITH ALTERNATORS

ALTERNATORS are fitted to all Perkins engines used in the Trantor. These incorporate a rectifier and regulator.
No lubrication is required as the alternator bearings are sealed but the following precautions should always be observed.

1) The engine must not be run with the battery disconnected unless the alternator socket is removed.

2) Ensure that no part of the charging circuit, including the battery, in connected or disconnected while the engine is running.

3) When connecting an alternator, slave battery or battery charger to the vehicle, always observe the correct polarity (positive to positive - negative to negative).

4) If the charge warning light bulb fails (check when heat start switch is switched on but engine not started) it must be replaced at once otherwise the alternator will not commence generating current until its speed reaches approximately 3000 revs/min (ie approximately 1500 revs/min engine speed).

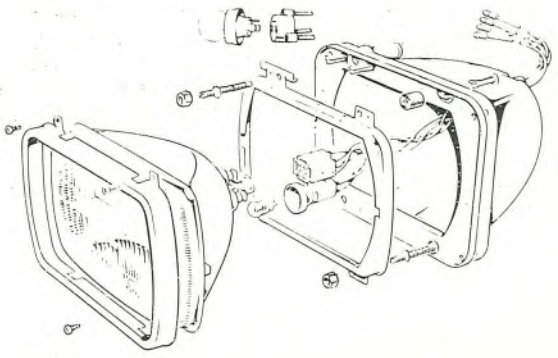
Isolate the alternator and battery before any arc welding is carried out anywhere on the vehicle. Failure to do this could result in a burnt out alternator and /or battery.

DRIVING LIGHTS

The driving lights are so wired that the burning out or removal of any one bulb will not affect the others.

HEADLIGHTS

The headlights have separate bulbs which incorporate both high and low beam filaments. To replace a bulb, remove the three 'Philips' head self-tapping screws securing the anodised lens cowl. Remove the cowl and extract the lens from the headlight body taking care to retain the four rubber lens buffers. Remove wiring socket from the rear of the lens then remove rubber dust cover. Remove the bulb securing spring (taking note of its original position). Bulb can now be extracted.



SIDE LIGHTS AND DIRECTION INDICATOR LIGHTS FRONT

Both the side lights and direction indicator lights have separate bulbs which can be removed as follows. Remove 'Philips' head screws securing chrome facing frame. Remove lens to gain access to bulbs

TAIL LIGHTS, BRAKE LIGHTS AND DIRECTION INDICATOR LIGHTS REAR

Access can be gained to replace bulbs in these lights merely be unscrewing the 'Philips' head screws securing the Perspex light covers. All bulbs are of the bayonet connection type and will have to be rotated slightly before extraction.

REAR NO. PLATE LIGHT

The rear number plate is illuminated by means of a clear panel set into the side of the tail light.

7 PIN PLUG (ELECTRICAL AUXILIARY SERVICES)

When using this plug for servicing trailers etc., check that the trailer wiring system conforms to the 'International Standards Organisation' as the plug on the Trantor is wired to their recommendations.

Code	Cable Colour	Trantor Colour	Circuit
1 L	Yellow	Green/Red	LH indicator lamps
2 S4G	Blue	-	Auxiliary
3 31	White	Black	Earth
4 R	Green	Green/white	RH indicator lamps
5 58R	Brown	Red*	RH tail/no plate
6 54	Red	Green/purple	Stop lamps
7 58L	Black	Red*	LH side/tail lamps

*Live wire connection. Two red wires connected.

FUSES

2 x 50 amp.

These fuses should not be replaced until the cause of blowing has been traced and the fault corrected. (See technical data)

WIRING

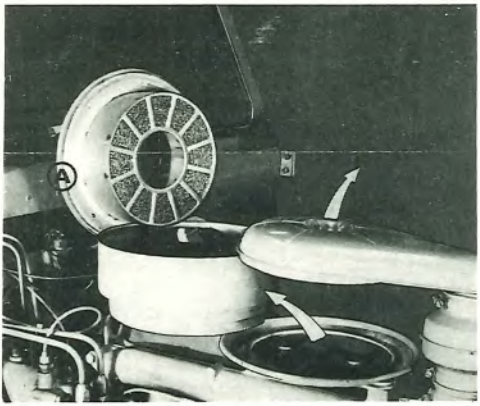
Most connections are made with blade or bullet connectors which pull apart for the disconnection of the part concerned. All wires are colour coded. Maintenance consists only of visual checking for loose or dirty terminals, frayed, burnt or broken wires. If touching the frame, a frayed or broken wire will rapidly run down the battery and is the commonest cause of vehicle fires.

STARTER

This is a twelve volt pre-engaged type incorporating a relay switch. Maintenance consists of periodical lubrication only. Failure of the starter motor to operate may be due to the discharged condition of the battery. Check that the fan belt is correctly set and sufficient running is done to charge the battery. If the starter fails to operate and the battery is not discharged do not keep trying or damage will result to the starter or battery. Consult an authorised agent.

BODYWORK

Wash the Trantor frequently with a mild detergent or soap, and water. Wash more frequently if caustic fertilizers have been carried in the vehicle. If a pressure hose is used, do not direct the water at the body with full force. The Trantor bodywork is designed to keep accumulative mud etc to a minimum but it is advisable to hose down the underside of the body mudguards and wheel arches frequently to prevent any possible corrosion. Special attention should be given to all windows in order to prevent grit scratching the glass whilst being washed off.

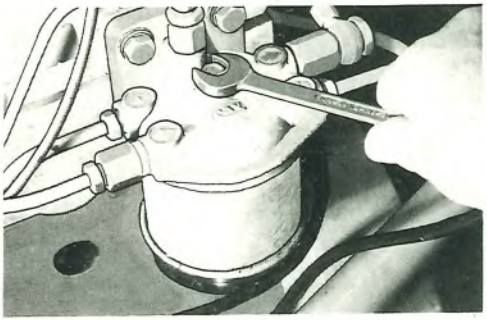


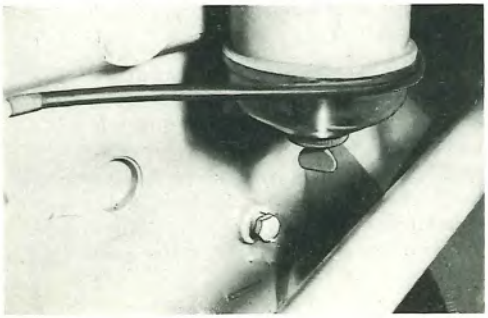
AIR FILTER

Remove the setscrew situated through the top of the air filter assembly.
Remove the three spring clips. (Note which way and where they came off).
Slacken off hose clip then remove filter bowl by raising the assembly top as shown.
Remove the gauze filter by tapping the outer rim of the filter case (A)
Wash the filter thoroughly in a kerosene bath. DO NOT USE DIESEL.
Blow dry with compressed air if available but before replacing, make sure the filter is dry.

Clean the filter bowl with kerosene then fill with clean engine oil (SAE 20-50) to correct level as indicated on the inside of the bowl. Replace the cleaned filter element and re-assemble the filter assembly.

In dry and dusty conditions, cleaning and refilling may be required several times a day. In clean and in damp conditions the cleaner will remain efficient for several weeks. Inspect frequently to begin with and clean when there is ¼" (6mm) of solid sediment, the oil is very dirty, or the detachable wire mesh is thick with oily dust. Let experience then guide future inspection periods. Don't forget to inspect more frequently if conditions become worse.

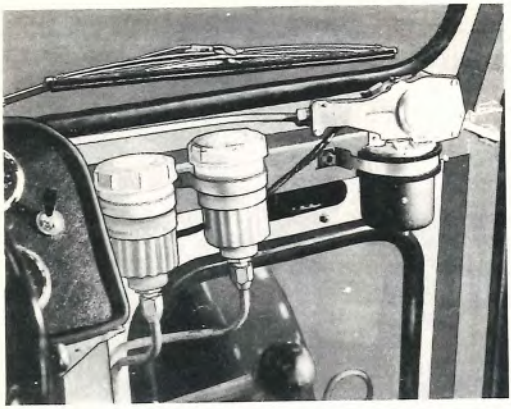




FUEL FILTER

The fuel filter assembly should be cleaned and the filter replaced during every service (6000 miles). The filter should be changed more frequenty if operated under adverse conditions.
The instructions for the renewal of the fuel filter element can be found in the engine manufacturers handbook.
Remember that it may well be necessary to de-aerate the fuel system once any union, filter bowl etc, has been moved. Instructions for this operation are also in the engine manufacturers handbook.

The filter element situated under the top cover of the fuel lift pump should also be cleaned and/or replaced at the same time as the others.



RESERVOIRS

Top up both reservoirs with clean Castrol or Girling Universal Brake Fluid only. Ensure that the fluid level stays between the DANGER line and the MAXIMUM line on each reservoir and that no fluid whatsoever comes into contact with paintwork.

If the fluid level drops noticeably then carry out an inspection of all brake pipes and drums immediately.

Failure to trace even a small leak could lead to sudden brake failure.

FRONT BRAKE ADJUSTMENT

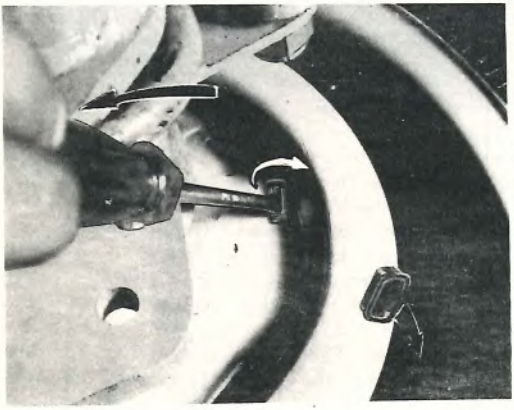
Brake adjusting nuts are situated opposite each other on the inside face of the front wheel hubs as shown.

With the tyre clear of the ground, wind on the brakes until the shoes contact the inside of the drum. Wind off by one click or until the wheel is just free to rotate. Adjust the opposite brake shoe in the same way. Re-check the first shoe adjustment.

Adjusting the brakes requires no de-aeration of the brake hydraulic system.

REAR BRAKE ADJUSTMENT

With handbrake off and both rear wheels clear of the ground and the vehicle secured on blocks, access can then be gained to the brake backplate forward of the axle 'REMEMBER TO CHOCK FRONT WHEELS.



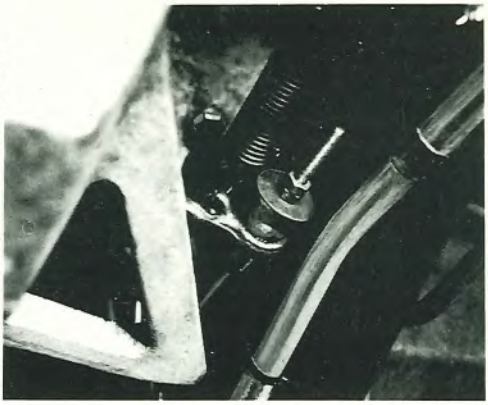
Remove the rubber dust cover from its hole in the backplate and insert a screwdriver blade into the hole The blade should slide between the teeth in the screw adjuster. The adjuster is situated on the 'floating' end of both shoes allowing equal movement to be transmitted to each. Wind on until the drum locks then wind off slightly until the wheel is just free to rotate.

See the photo for adjustment directions on the rear NEARSIDE brake. The adjusting directions for the offside brake would be reversed.

CLUTCH ADJUSTMENT

Clutch adjustment should be checked at each service or sooner if any difference in the 'feel' of the clutch is noticed. Free play at the pedal should be approximately one inch (2.5 cm) yet it should be possible to engage any of the gears easily when the clutch pedal is depressed fully.

Provision for clutch adjustment is made at the engine end of the cable and consists of a ball pivot, washer, and two locknuts through which the threaded end of the inner cable is situated. Ensure that the locknuts are tightened after each adjustment.



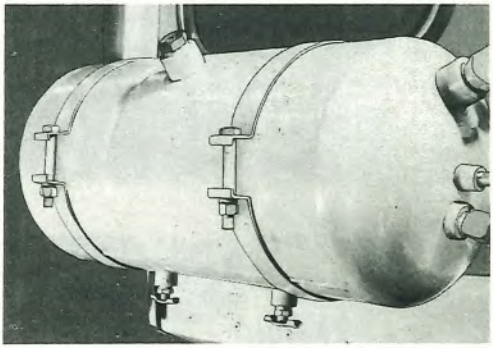
AIR BRAKING COMPONENTS - GENERAL MAINTENANCE GUIDE.

Air Reservoirs. Check daily that there are no leaks in the equipment by charging the system then listening for any leakage, particularly a defective safety valve. Each of the reservoirs should be drained daily of accumulated condensation by operating the drain cocks.

Check monthly for secure mounting and for corrosion and external damage. Corrosion must be removed and the reservoir be paint-protected.

Check the security of the pipes and the condition of all hoses. The valves are normally fitted with protective rubbers or caps. These must be in perfect condition.

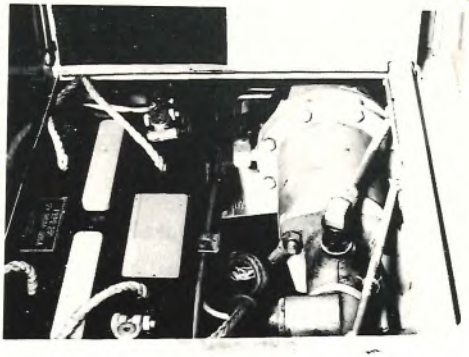
Every twelve months, the reservoirs should be removed from the vehicle and examined, particularly in the inaccessible areas of their mountings, for corrosion or damage. Before removing the reservoirs from the vehicle, note the positions and angle of ports. The Schrader valve and drain cocks should be replaced as these are subjected to adverse conditions and affected by corrosion.



TANDEM AIR DUAL HYDRAULIC ACTUATOR

This component converts the force and motion of compressed air into power displacement to apply the hydraulic brakes. The dual air cylinders receive the compressed air from a dual brake valve which, in turn, is supplied from separate reservoirs. Should either half of the valve or reservoir fail, the brakes will be operated by the remaining cylinder but as the actuator has a compounded output, the brakes will be operated at a reduced hydraulic pressure. Similarly with the hydraulic master cylinder, failure of one half of the cylinder or its fluid supply will not affect the working of the other half of the cylinder. The operation of the brake valve provides no indication of the condition of the hydraulic system or the wheel brakes.

To test daily - apply the brakes fully and hold the application for 30 seconds. Note the readings on the air pressure gauges when the pressure has stablised. The pressure fall indicated during the 30 seconds will give an indication of the state of the piston seals. An excessive drop in one or both gauges indicates a serious leak which must be rectified before driving the vehicle. The fault could also be in the brake valve but in either case, consult maintenance literature or your dealer.



DUAL CONCENTRIC BRAKE VALVE.

Controls the wheel brakes using compressed air from the separate reservoirs simultaneously. This is achieved by having two valves contained within the same body, each able to deliver compressed air according to the degree of brake application. Failure of one half of the system does not prevent the other half functioning normally, but at a slightly reduced pressure.
To test daily - charge the system and stop the engine. Allow a few seconds for the reservoir pressures to settle then note the gauge readings. After a minute, observe the gauges again and note any drop in pressure.
(If excessive - investigate).

Make and hold a maximum application of the brakes and again observe the readings then slightly release the pedal, hold it steady and observe the gauges again. Release the brakes quickly and listen for any delay in the exhausting of air from the brake chambers. A slow release should be investigated.
If one of the needles in the double gauge fails to register a pressure drop following such a brake application with the engine stopped, this must be investigated immediately and the vehicle must not be driven until the fault has been rectified.

HANDBRAKE CONTROL VALVE

Should be checked daily by releasing and applying the brakes once or twice with the vehicle on level ground. With the air system charged, the wheel brakes should free immediately the brake is released and likewise with the vehicle rolling very slowly, the wheel brakes should lock on when the hand brake is applied. Move the lever towards the 'off' position, stopping at several intermediate positions. Each time the lever is moved towards 'off' a portion of delivered compressed air will exhaust from the valve and relay valve, and will cease when the lever is held stationary. If the valve fails to react in this manner, it should be serviced.

A monthly visual inspection of the valve, pipes, hoses, clips and connections is recommended. Check that the operation of the lever is smooth through its operating arc and that the spring release on the lever stem is not sticking or worn.

PRESSURE REGULATOR AND DIVERTER VALVES

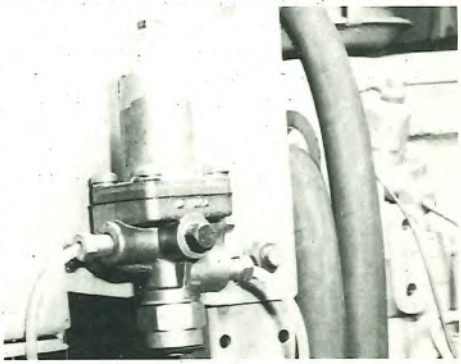
These are fitted to allow the service and secondary braking system to be charged to the setting of the valve before the charging of auxiliary systems can commence. This permits fast charge-up times of braking systems. When the valve setting pressure is reached, the valve is held out of action permitting air flow in either direction. (Pressure settings are factory adjusted and should not be altered).

A monthly check consists of a visual inspection making sure that the adjusting screw locknut is secure; that the breather hole in the cover is clear and clean and that all unions and pipelines are free from corrosion.

GOVERNOR VALVE

Controls the compressed air output from the compressor to the reservoirs by causing the compressor to 'cut out' when the pre-determined pressure is attained.

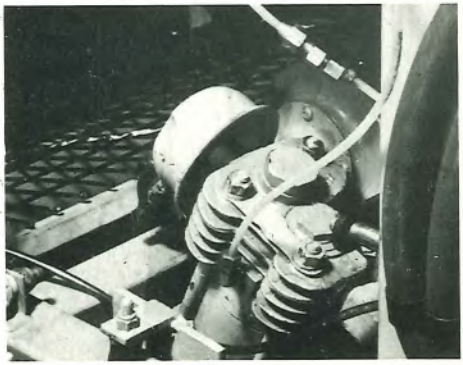
Similarly, when the pressure falls, the governor valve causes the compressor to "cut in" and re-charge the system. (Pressure adjustment is pre-determined at initial installation and should not be altered).
A monthly check consists of a visual inspection of the adjusting screw locknut, all unions and pipes, and making sure that the breather hole is clear and clean.



THE SINGLE CYLINDER AIR COMPRESSOR

Provides the compressed air used for braking and ancillary air services. The compressor is air-cooled and has a single reciprocating piston.
A three monthly check consists of cleaning the air cleaner (when fitted) and visually inspecting all unions, pipes etc., for looseness or leakage. Check cylinder head nuts for correct tightness (torque 11 - 17 ft/lbs (14.9 - 23.0 Joules). Inspect end cover(s) for oil leaks; tighten covers (torque 10 - 13 ft/lbs (13.5 - 17.6 Joules) or replace oil seals as necessary.

Remove the delivery valve cap and take out the seat retaining spring and valve spring. Clean the cap and the passage in the head of excess carbon deposits. Carbon deposits in the delivery line should be removed or the line replaced. Check that the compressor mounting is secure.



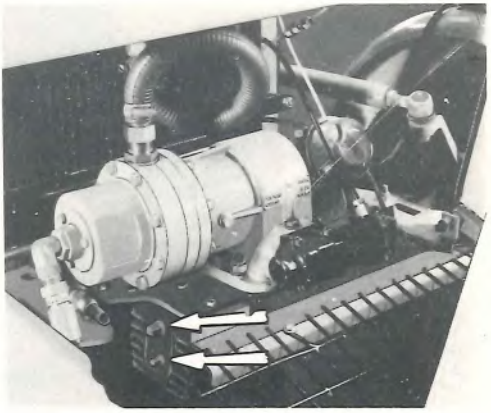
FOLDING FLOOR

The plywood fold-up floor should of course be maintained in a good state of repair. It will be worthwhile to keep the wood sealed by applying a varnish or wood seal at frequent intervals. Loose varnish and dirt or oil should be scrubbed free and the wood allowed to dry before any re-application of varnish. Keep the floor hinges and rear fold-up window hinges well oiled.

AIR COMPRESSOR

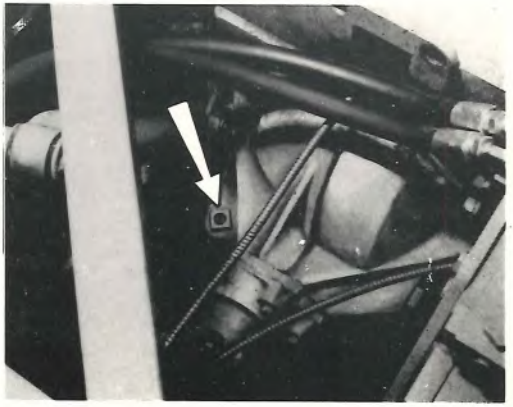
The air compressor is lubricated by a supply of oil from the engine lubrication system and does not need to be drained separately. The hydraulic pump gearbox even though lubricated from the engine pressure lubrication system, should be drained separately and a drain plug (as shown) is provided for this purpose.

When re-filling the engine with oil, it is recommended that this gearbox be primed separately. Fill the gearbox via the filler-plug (as shown) until completely full.



REAR AXLE

The rear axle oil filler plug is situated as shown. The axle should be filled completely with EP90 lubricating oil and the plug replaced. A drain plug is situated on the underside of the axle. A visual check for any oil leaks should be made periodically and the oil changed every 9 months after first service.

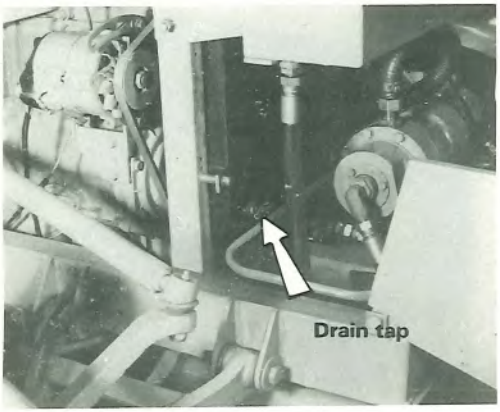


HEATER

When leaving the vehicle exposed to frost,it should be remembered that the heater radiator is not self-draining even when the remainder of the system is empty. Water can be blown out of the radiator with an airline or the whole unit disconnected, cleaned and stored.

Antifreeze already in the engine cooling system will protect the heater radiator.

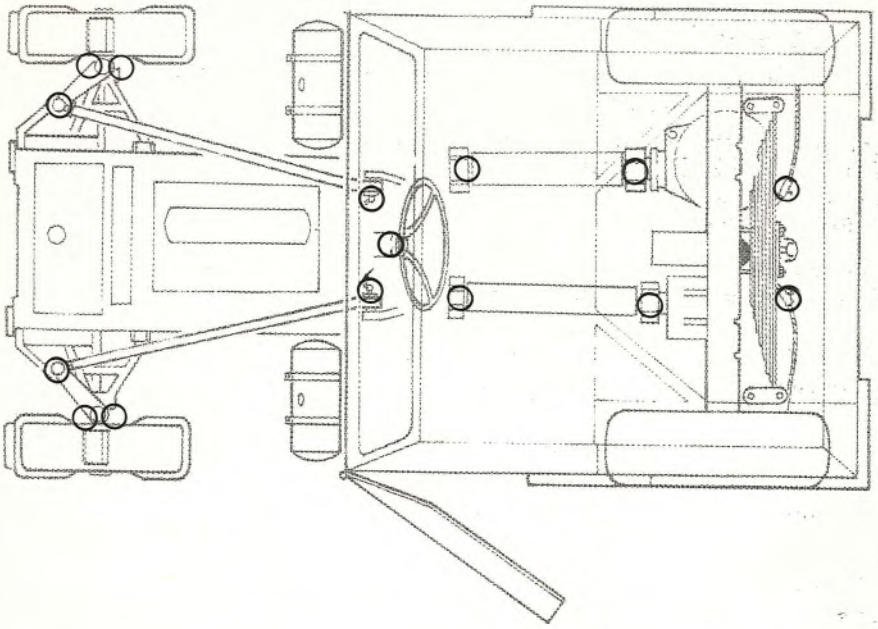
Antifreeze should not be added to the windscreen washer reservoir, although it may be found beneficial to add a small amount of liquid soap or a sachet of proprietary windscreen cleaning fluid.



COOLING SYSTEM

When leaving the vehicle exposed to frost either drain the system (including the heater radiator) by opening the radiator drain plug and loosening the filler cap and opening the engine drain tap on the engine block or use an anti-freeze of reputable make incorporating a corrosion inhibitor.

See engine manufacturer's handbook for further details.



The above diagram illustrates the approximate positions of greasers on the vehicle. These greasing points plus wheel bearings etc., should be checked regularly and lubricated with Castrol LM Multi-purpose grease or equivalent when required.

In extreme conditions, lubrication should be carried out daily.
Make sure that all dirt is wiped from lubrication points before applying the grease gun.

TECHNICAL DATA

ENGINE UNIT. Refer to the engine manufacturer's handbook for specifications of the engine unit.

COOLING SYSTEM. Water circulation through block by means of thermo-syphon and water pump. Thermostat opens at (85°C) System pressurised by a relief valve set at 7 lb pressure (3.5 Kg) and located in the radiator filler cap. CAPACITY - 24 pints (13.7 litres).

CLUTCH Borg & Beck 13" diameter (33 cm) single plate heavy duty clutch operated by cable from foot pedal.

GEARBOX Eaton Model 475 SMA Mk.IV.

Type : Five speed synchromesh.

Lubricant : For UK - SAE 90
Overseas - 0°C - SAE 90
0°C - 32°C - SAE 80 without E.P.Additives.
Below - 32°C - SAE 20 or add 10% Kerosene.

Capacity : 19 pints (10.8 litres)

PTO 6 Spline shaft to British and International Standard.

Diameter : 1.3/8" (35 mm).

Offset : 4" (10.2 cm) to the left of centreline.

Height : 23¼" (59 cm)

Rotation : Clockwise when viewed from the rear of vehicle.

Speeds : 540 rpm 1000 rpm.

PTO GEARBOX.

Type : 2 speed Manual Selection.

Lubricant : EP 90

Capacity : 3 pints (1.7 litres)

REAR AXLE. Trantor patented rear axle. Crown wheel and pinion assembly by Moss Gear - type 600.

Lubricant : EP 90

Capacity : 9 pints (5.1 litres)

REAR SUSPENSION. Eleven leaf springs 2½" x ¼" (5.7 cm x .65 cm) with telescopic shock absorbers. Facility to lock back suspension when using 3 point linkage.

FRONT SUSPENSION. Independent front suspension based on the rubber "Avonride" system. Facility to insert a swingbeam to fix suspension height when operating with a front load.

TYRES. Front 7.50 x 16 6 ply rating
Rear 12.50 x 20 10 ply rating rear incorporating water filler valve.
(Choice of tread available).

PRESSURES 24 psi - front
16-25 psi - rear

WEIGHTS & DIMENSIONS

Weight	:	Approximately 4,600 lbs (2,100 Kg)
Wheelbase	:	8' 7" (262 cm)
Overall length	:	11'6" (351 cm)
Overall width	:	6'6" (198 cm)
Overall height	:	7'0" (214 cm)
Turning circle	:	Without brakes 25 ft (7.6 m)
Ground clearance at front stub axle		14" (36 cm)
Ground clearance at drawbar frame		10½" (26.5 cm)

HYDRAULIC POWER

Hydraulic pump	:	Independent piston pump driven via a small gearbox from front of the engine crankshaft. Facility to disengage via an air switch within the cab.
Standard pump type	:	EDBRO 6 cyl.
Maximum pressure	:	3,000 psi (200 Bars).
Delivery	:	7 galls (32 litres) per min at 2,200 engine revs/min.

HYDRAULIC RESERVOIR

Capacity 6 gallons (27.4 litres).
Self-seal couplings on both flow and return unions.

POWER LIFT

Detachable Category II three point linkage.
Facility to spring suspend implements for fast transport.

Maximum working pressure	:	3000 lbs (1363 Kg) at the end of links.
Relief valve setting at		2,850 psi (194 Bars)

DRAWBAR	:	Movement of 8" (20.4 cm) either side of centre.
Static laden capacity:		3000 lbs (1363 Kg).

PICK-UP HITCH	:	Patented independently sprung self-levelling pick-up hitch, with facilities to replace standard pick-up hook with swinging drawbar.
Static laden capacity:		4,500 lbs (2,045 Kg)
Lifting height	:	16½" (42 cm)

AIR SERVICES

Air switches operational at 80 psi (5.4 Bars) and over.
Brakes operational at 60 psi (4 Bars) and over.
Auxiliary services via male/female self-sealing couplings.

STEERING

Type	:	Recirculatory ball. Twin arm.
Lubricant	:	EP 90.
		Five turns of the steering wheel lock to lock.

BRAKES

Front brakes	:	10½" x 3" (26.6 cm x 7.5 cm)
Rear brakes	:	13½" x 4" (34.3 cm x 10.2 cm)
		Separate hydraulic systems with tandem master cylinder.
		Air assisted servo and dual brake valve.
Handbrake	:	Operational on rear wheels via air servo and cables.
		Facility to lock either rear wheel independently.
Brake fluid	:	Universal Castrol-Girling.

ELECTRICAL 12 volt circuit.

Lights	Qty	Description		Wattage
Headlight	2		3 prong	45/40
Sidelight	2		Bayonet	5
Tail-light/No plate Stop light	2		Bayonet	21/5
Indicator light	4		Bayonet	21
Dash warning lights	10		Bayonet	2
Instrument lights	6		Screw	2.2

HEATER. Integral single speed motor with fan and radiator unit.

BATTERY. OLDHAM Type 252. 12 volt - 96 Ah 385 Amp.

ALTERNATOR. LUCAS 12v - 36 Amps. Rating : 17ACR.

STARTER MOTOR. LUCAS M45G

WINDSCREEN. Wipers.
Blade & Arm - Lucas No. 60250195
length 14¾" (37.5 cm)