

WINGET

OPERATING INSTRUCTIONS & SPARE PARTS LIST

FOUR/60 DUMPER C/W HAMWORTHY 1700 AXLE (CAPACITY 60 CWT)

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**WINGET LIMITED
PO BOX 41
EDGEFOLD INDUSTRIAL ESTATE
PLODDER LANE
BOLTON
LANCS
BL4 OLS**

**TEL: ++ 44 (0) 1204 854650
FAX: ++ 44 (0) 1204 854663
service@winget.co.uk
parts@winget.co.uk
www.winget.co.uk**

INTRODUCTION

This Parts & Operators Manual is a re-print of the manual last published in 1974 and contains some amended part numbers.

Health & Safety legislation and working practices applicable to Site Dumpers, both 2 and 4 wheel Drive, Rigid Chassis and Articulated Chassis have changed considerably in the years since this manual was last published and immediately following this Introduction are notes on the Safe Use of Site Dumpers. These notes supersede and replace all previous 'Dumper Safety' notes issued with Winget FOUR/60 Four Wheel Drive Dumpers.

Reference is made on a number of pages to 'bolt c/w nut and washer', this no longer the case, fixings such as nuts, bolts, screws and washers should be ordered as individual items. A number of Whitworth and B.S.F fixings are now no longer available, in these cases the nearest metric equivalent size will be supplied.

The contents of this manual although correct at the time of publication, may be subject to alteration by the manufacturers without notice and Winget Limited can accept no responsibility for any errors or omissions contained within the following pages. Nor can we accept any liability whatsoever arising from the use of this manual howsoever caused.

Winget Limited operate a policy of continuous product development. Therefore, some illustrations or text within this publication may differ from your machine.

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DUMPER SAFETY

Safety is the responsibility of all persons working with this machine. Think "safety" at all times. Read and remember the contents of this handbook.

MACHINE MODIFICATIONS

WARNING Any modifications to the machine will affect its working parameters and safety factors. Refer to the Manufacturers before fitting any non-standard equipment or parts.



The Manufacturers accept no responsibility for any modifications made after the machine has left the factory, unless previously agreed by the Manufacturers in writing; the Manufacturers will accept no liability for damage to property, personnel or the machine if failure is brought about due to such modifications, or fitment of spurious parts.

TRAINING

WARNING Only trained operators should use this machine.



Operators should hold an appropriate full motor vehicle driving licence and undergo both a safety awareness course and a driver training course for Site dumpers run by the C.ITB or equivalent body leading to the award of a CTA.

It is strongly recommended that operators read the H.S.E. publication "Safe Working with Small Dumpers" which is available from government bookshops (HMSO) or from other bookshops quoting the following number ISBN 011 8836935. Another useful publication is British Standard number BS 6264, "Procedure for Operator Training For Earth Moving Machinery" available from the British Standard Institution.

OPERATION

WARNING NEVER use the machine for purposes other than those for which it was designed. This machine was designed to carry loads such as soil, clay, sand, wet concrete, stone or other similar materials. It was not designed to carry loads which may move around in the skip uncontrollably, nor to carry any loads or materials which overhang the skip in any way. If in any doubt as to the suitability of this machine for a particular task, contact your nearest Distributor or the Manufacturer for advice.



ALWAYS be aware of local and national regulations governing the use of the machine.

NEVER commence work with the machine until the "Daily (or every ten hours)" service checks have been made. (See Service Section for details)

ALWAYS check wheel nut tightness daily.

NEVER carry passengers.

Where seat belt restraints are fitted as part of Rops/Fops Protection they must be worn. Ensure that the seat and seat belt are securely fixed to the machine. Check that the seat belt is in good condition, free from cuts and frayed edges.

ALWAYS remain in the driving seat whenever the engine is running. Never attempt to operate any controls unless seated.

ALWAYS apply the parking brake before leaving the driver's seat.

DUMPER SAFETY

NEVER dismount with the engine running, and never leave the machine unattended with the key in the starter switch.

When Battery Isolators are fitted they must be activated only when the engine is turned off except in cases of emergency.

Activating a Battery Isolator when the engine is running can result in damage to the electrical components and circuits.

NEVER fill the fuel or hydraulic tanks with the engine running.

ALWAYS drive only on surfaces that are known to be stable.

ALWAYS keep the floor plates and walkways clean.

NEVER drive the machine close to the edge of any excavation. Always use effective wheel stops to prevent the machine running close to the edge. Make sure that the stops are in proportion to the size of the wheels and are set sufficiently far enough back from the edge of any excavation to prevent the weight of the load causing a collapse.

NEVER adjust the tyre pressures in an attempt to improve traction on soft ground or obtain a softer ride on hard ground. Incorrectly adjusted tyres can affect the steering and handling characteristics.

NEVER attempt to free a machine which is 'bogged down' by pushing with the bucket of a backhoe loader, tracked excavator or other similar machine.

NEVER make unnecessary "crash stops" when travelling at speed, especially in forward direction.

NEVER work under an unpropped skip. *If the dumper was supplied with a special Skip Support always ensure that it is used.*

Some articulating dumpers are manufactured with an articulation lock. If your machine has this feature proceed as follows:

ALWAYS fit the articulation lock when working within the articulation point crush zone.

NEVER attempt to lift the machine unless the articulation lock is engaged.

SKIPS AND LOADING

WARNING *NEVER* exceed the rated payload. The weights of all loads above skip water level must be checked.



NEVER remain on the machine when loading the skip with excavators or loaders. Stop the engine, apply the parking brake, dismount, and stand well clear.

ALWAYS ensure that the load is evenly distributed in the skip.

NEVER carry loads or heap materials in such a manner as to affect the forward vision.

ALWAYS take extra care when tipping non free running loads.

NEVER use the skip in a tipped position to bulldoze heaped materials level or to backfill material into excavations.

DUMPER SAFETY

TOWING

WARNING NEVER attempt to start the engine of a dumper by towing or pushing.



Dumpers are not designed as towing vehicles, but loads (including weight of trailer) not exceeding the rated payload of the dumper may be towed on dry level ground in first gear, providing the dumper skip is loaded with half the rated payload to ensure tyre adhesion when braking.

ALWAYS use a purpose made towing pin.

NEVER tow loads up, down or across gradients.

GRADIENTS

WARNING NEVER operate *Four Wheel Drive articulated steer dumpers* on any gradients which exceed 25% (1 in 4), or across gradients which exceed 16% (1 in 6).



NEVER operate *Two Wheel Drive rigid chassis dumpers* on any gradients which exceed 10% (1 in 10), or across gradients which exceed 10% (1 in 10).

ALWAYS remember that slippery or loose surface conditions can adversely affect safe machine operation, including braking, particularly on gradients.

ALWAYS choose routes that avoid steep, slippery or loose gradients.

NEVER coast down gradients. Always negotiate gradients in first gear.

ALWAYS drive forwards up gradients when loaded.

ALWAYS reverse down gradients when loaded.

ALWAYS keep the load facing uphill.

NEVER park on a gradient. If this is unavoidable, ALWAYS chock the wheels.

NEVER attempt to turn on a gradient.

NEVER tow up, down or across a gradient.

NEVER operate high discharge or rotating skips on gradients.

HYDRAULICS

WARNING ALWAYS "Dump" residual pressure from the system before leaving the machine or before carrying out any maintenance or adjustments.



If maintenance work requires the skip to be in the raised position, then it must be raised and supported before dumping the pressure.

Dump pressure by switching off the engine, then moving the hydraulic control lever several times in each direction.

NEVER leave the machine unattended with pressure in the system.

ALWAYS purge hydraulic rams before commencing work. With the engine running operate the hydraulic control to fully extend and retract the rams.

ALWAYS practise the greatest cleanliness in maintaining hydraulic components.

DUMPER SAFETY

SERVICING

WARNING ALWAYS report any defect at once, before an accident or consequential damage can occur.



ALWAYS conform to service schedules except where:

- 1 Warning lights or warning indicators call for immediate attention.
- 2 Adverse conditions necessitate more frequent servicing.

ALWAYS wear correctly fitting protective clothing. Loose or baggy clothing can be extremely dangerous when working on running engines or machinery.

ALWAYS, where possible, work on or close to engines or machinery only when they are stopped. If this is not practical, remember to keep tools, test equipment and all parts of your body well away from the moving parts.

ALWAYS dump pressure from the hydraulic system before carrying out any kind of maintenance or adjustment. (*see Hydraulics Warnings*).

ALWAYS avoid contact with exhaust pipes, exhaust manifolds and silencers when the engine is running; these can be very hot.

ALWAYS work out of doors, or in a well-ventilated area.

NEVER run an engine in an enclosed space. Exhaust fumes in enclosed areas can kill.

ALWAYS disconnect battery cables and remove battery before using an external charger, carrying out welding repairs or to prevent unauthorised usage when unattended or during a repair.

NEVER allow unqualified personnel to attempt to repair, remove or replace any part of the machine, or anyone to remove large or heavy components without adequate lifting tackle.

NEVER attempt to modify or repair Rops Frames or Fops Canopies by welding, drilling or any other means. Attempts to do so will invalidate Rops/Fops Certification.

ALWAYS obtain advice before mixing oils; some are incompatible. If in doubt drain and refill.

NEVER allow oils and fuels to come into regular contact with skin. This can lead to serious skin diseases including, medical evidence suggests, skin cancer. ALWAYS wear protective gloves when handling oils and fuels whether topping up, draining or refilling. ALWAYS wash hands if oils or fuels come into contact with the skin.

Many liquids used in this machine are harmful if taken internally or splashed into the eyes. In the event of accidentally swallowing oils, fuels, anti-freeze, battery acid etc, DO NOT encourage vomiting, seek qualified medical assistance immediately.

ALWAYS dispose of waste oils and fuels into waste oil storage tanks. If storage tanks are not available consult your distributor or local authority for addresses of local designated disposal points. It is illegal to dispose of waste oil into drains or water courses or to bury it.

DUMPER SAFETY

Equipment which includes friction materials will sometimes contain asbestos. When removing friction material dust from components, such as when servicing brakes or clutches, do not blow out with an airline; it could be harmful to inhale the dust. Remove the dust with a vacuum cleaner or wipe clean with a damp rag. Waste should be placed in a sealed container, marked, and disposed of in accordance with local or national regulations.

The accumulated dust found in clutch housings may contain lead/antimony. No food should be eaten at a work place contaminated by this dust. Hands must be washed before eating. Do not blow out dust with an airline.

ALWAYS ensure that the starting handle is clean and in good condition. Keep the engine starting dog, and the part of the starting handle that mates with it, lightly lubricated (*Refer to the Engine Handbook*).

NEVER work under an unpropped skip. ***If the dumper was supplied with a special Skip Support always ensure that it is used.***

Some articulating dumpers are manufactured with an articulation lock. If your machine has this feature, ALWAYS fit the articulation lock when servicing or working on the machine.

PREPARATION FOR USE

(See Fig. 1)

BEFORE THE FOUR/60 DUMPER IS PUT INTO SERVICE, ALWAYS CHECK THE FOLLOWING POINTS:—

1. **Engine**
Check the oil level on the dipstick (A), topping up if necessary to the full mark. (See also 'Recommended Lubricating Oils',
2. **Gearbox**
Check the oil level on the dipstick (B), topping up if necessary to the full mark. (See also 'Recommended Lubricating Oils',
3. **Drive Axles**
Remove filler/level plugs (C) on front and rear Axles and check that oil is up to bottom of hole, top up if necessary (See also 'Recommended Lubricating Oils', page 14.)
4. **Transfer Case**
Remove filler/level plug (D) and check oil is up to bottom of hole, top up if necessary. (See also 'Recommended Lubricating Oils',
5. **Fuel Tank**
Fill tank (E) with diesel oil until approximately 1" from the top.

NOTE: Never allow fuel level to fall to below 2" deep in the bottom of the tank.

Hydraulic Tank

Fill the hydraulic tank (F). Before removing the cap, clean the surrounding area, to prevent the possible entry of foreign matter. DO NOT MIX OILS. See also 'Recommended Lubricating Oils', page 14.

Brake System

Ensure that both brake master cylinder reservoirs (G) are full of brake fluid. Top up if necessary, to within ¼" of the top of the reservoirs. Use only Brake fluid that conforms to B.S. SAE J 1703

Miscellaneous

Check all wheel nuts for tightness.

Check all nuts and bolts for tightness. Loose nuts and bolts may lead to damage not covered by the Dumper Warranty.

For further information on Lubrication See Fig. 4 and corresponding text

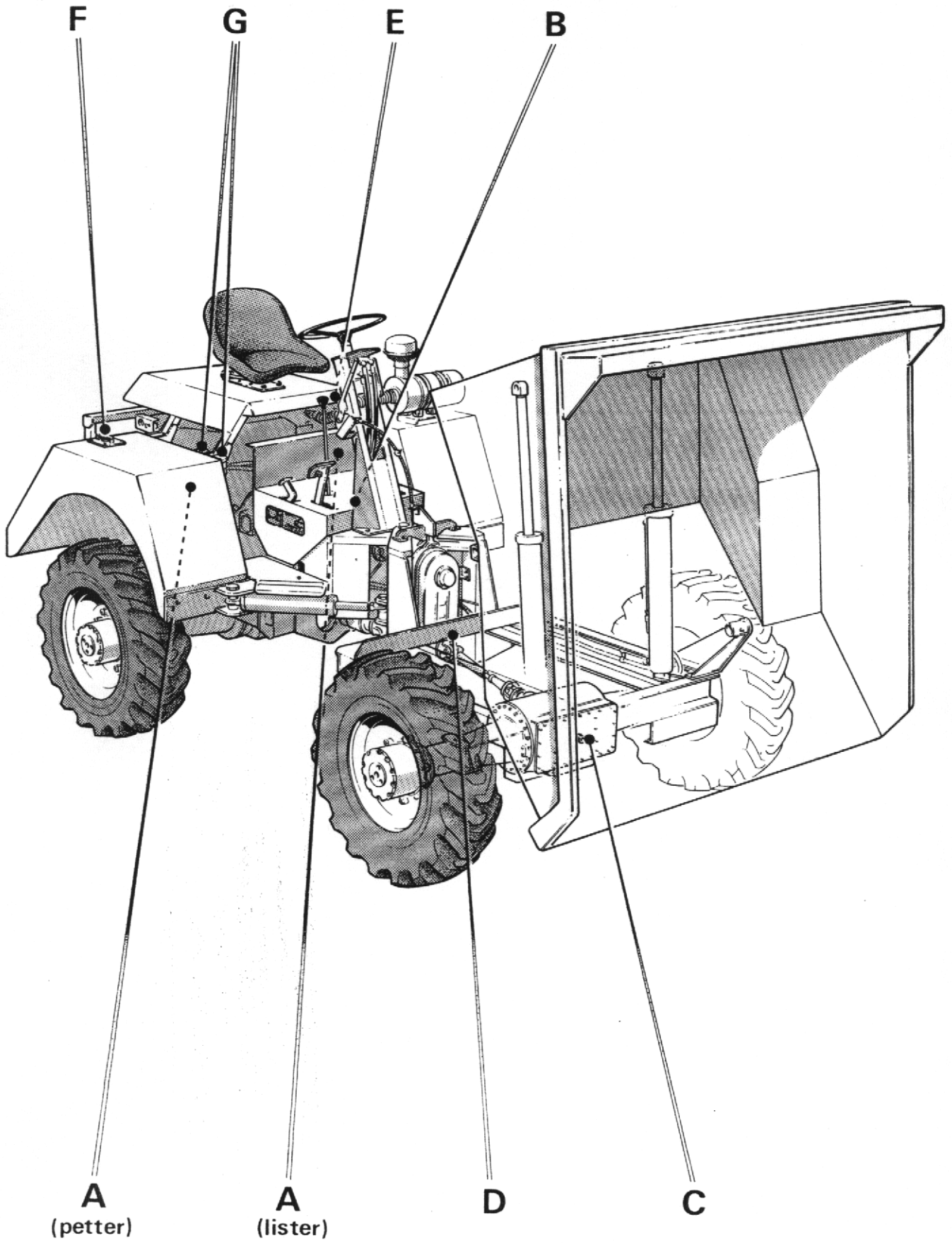


FIG. 1

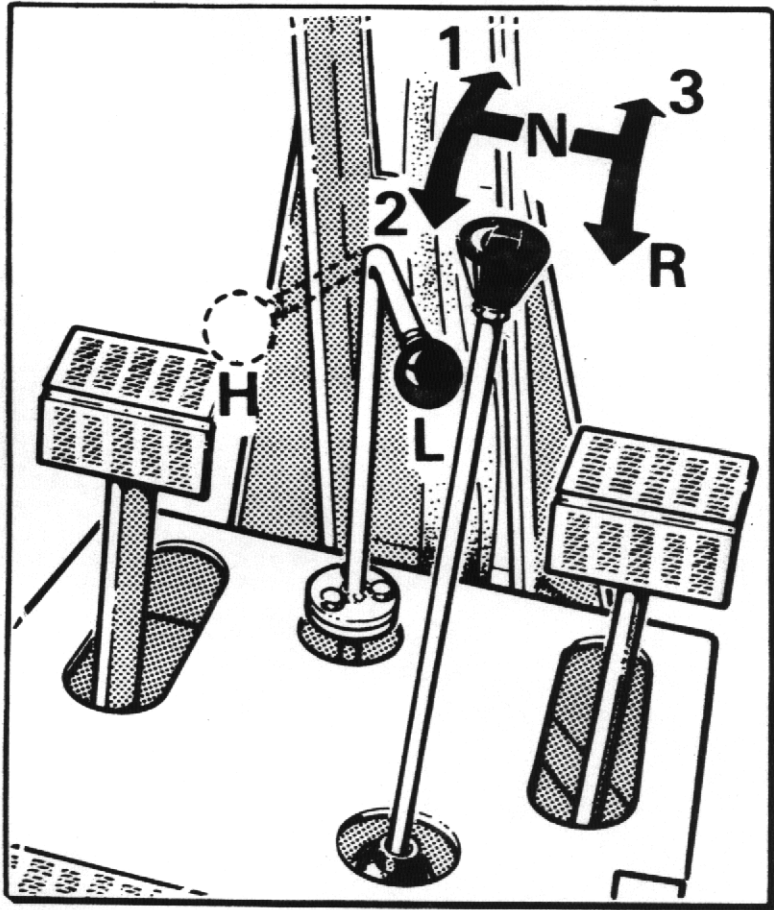
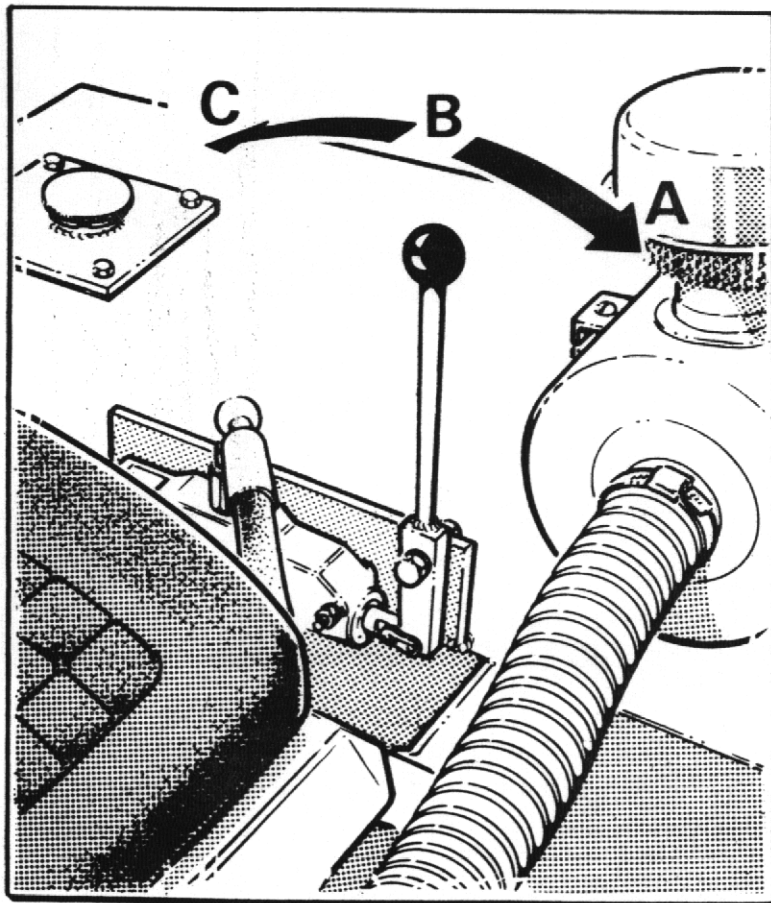


FIG. 2



TP 046

FIG. 3

OPERATION

Starting

1. Insert the ignition key in the isolating switch and turn clockwise.
Lister Engine — switch is below front of operator's seat, towards left of operator.
Petter Engine — switch is below right-hand side of operator's seat, towards rear.
2. Press the start button alongside the switch. DO NOT operate starter motor for more than 20 seconds at a time.
3. Where the ambient temperature is 5° F (–15° C) or below, a cold starting aid should be fitted, after consultation with the Engine Manufacturer or Agent.

Stopping

Pull the engine stop control knob, positioned below the front and to the left of the operator's seat, until the engine stops.

Gear Shift and High-Low Range Levers

(See Fig. 2)

1. The Four/60 Dumper is fitted with three forward (1) (2) (3) and one reverse (R) gear in each range, giving a total of six forward and two reverse gears.
2. When changing gear in either the high (H) or the low (L) range the clutch pedal is used in the normal manner.
3. When changing from the high range to the low range or vice versa always bring the dumper to a stop.
 - a) Bring the dumper to a stop using the brake.
 - b) Set the gear shift lever in neutral (N) and apply parking brake.
 - c) Move the range selector lever to the required range.
Note: It is not necessary to depress the clutch pedal.
 - d) Proceed in the new range.

Skip Control Lever

(See Fig. 3)

1. The control lever has three positions, DUMP (A), HOLD (B) and RETURN (C).
2. Push the lever forward to DUMP (A) to deposit the load.
3. Pull the lever back to RETURN (C) to return the skip to the carrying position.

NOTE: If the handle is released when in the DUMP or RETURN position it will automatically return to the HOLD position and the motion of the skip will cease. In this way the speed at which the load is deposited can be finely controlled.

GENERAL MAINTENANCE

Periodic Maintenance

1. DAILY check engine oil level and fill to full mark on dipstick, if necessary.
2. DAILY FILL FUEL TANK, or as often as proves necessary, to within approximately 1" of the top. Never allow there to be a depth of less than 2" of fuel in the tank.
3. WEEKLY check oil level in the gearbox and fill to full mark on the dipstick if necessary.
4. WEEKLY remove oil level/filler plugs from drive axles and transfer case. Oil levels should be to bottom of holes. Top up if necessary.
5. WEEKLY check oil level in the hydraulic tank. Always clean the surrounding area before removing the cap to prevent the possible entry of foreign matter. Fill tank, if necessary to within 1" of the top.
6. WEEKLY check brake fluid level in the master cylinder reservoirs and top up if necessary, to within ¼" of the top.
7. WEEKLY apply grease to all grease nipples.
8. WEEKLY check all wheel nuts and tighten, if necessary.
9. WEEKLY check tyre pressures (40 lb/sq.in)
10. OCCASIONALLY check all nuts and bolts and tighten, if necessary.

Lubrication (See Fig. 4)

<i>Period</i>	<i>Key</i>	<i>Description</i>	<i>Lubrication</i>	<i>No. of points</i>
Daily	1	Engine	Engine Oil	1
	2	Fuel Tank	Diesel Fuel	1
Weekly	3	Gearbox	Gear Oil	1
	4	Drive Axles	Axle Oil	2
	5	Hydraulic Tank	Hydraulic Oil	1
	6	Brake Master Cylinder Reservoirs	Brake Fluid	2
	7	Ram Bearings	Grease Gun	4
	8	Footbrake Pedal	Grease Gun	1
	9	Clutch Pedal	Grease Gun	1
	10	Clutch Cross Shaft	Grease Gun	2
	11	Skip Pivot	Grease Gun	2
	12	Transmission Brake Cable	Grease Gun	1
	13	Chassis Centre Pivot	Grease Gun	2
	14	Propeller Shafts	Grease Gun	12
	15	Trunnion Assembly	Grease Gun	1
	16	Transfer Box	Axle Oil	1

NB. FOR RECOMMENDED LUBRICATING OILS SEE CHART

Oil Capacities

Lister 22 pints (12.5 litres)	
Engine Petter . . . 13 pints (7.4 litres)	Gearbox 4 pints (2.27 litres)
Drive Axle 17½ pints (9.85 litres)	Transfer Case 1 pint (.57 litres)

- NOTES: 1. Rear Axle Articulation Points consist of Silentbloc bushes and do not require lubrication.
2. For full details on the lubrication and maintenance of the engine, refer to the appropriate manufacturer's manual.

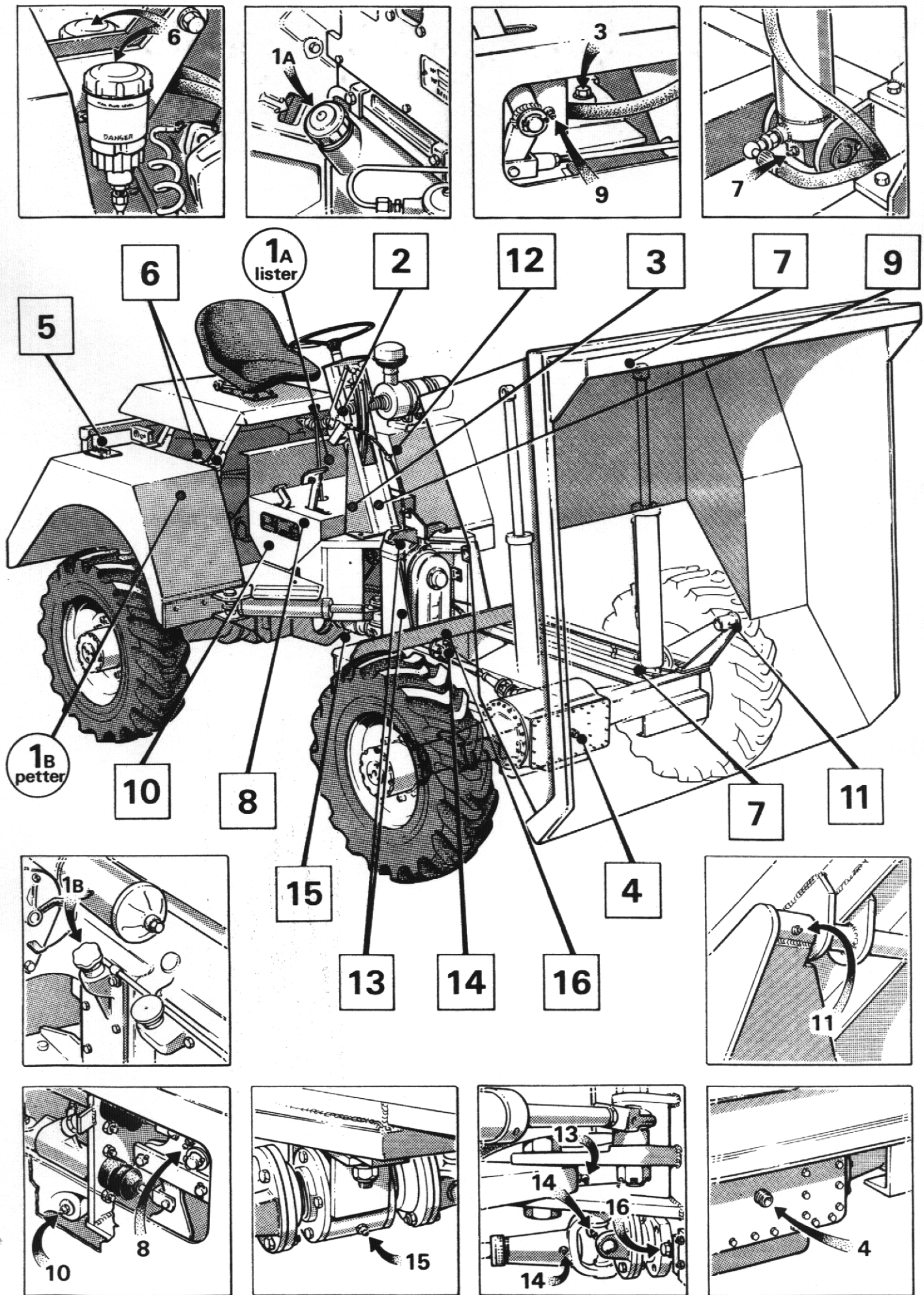


FIG.4

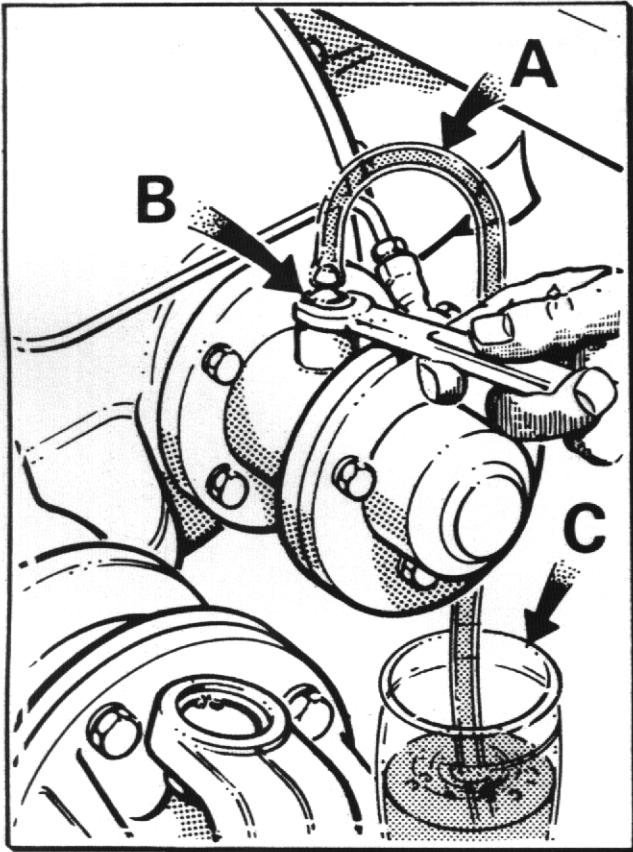


FIG. 5

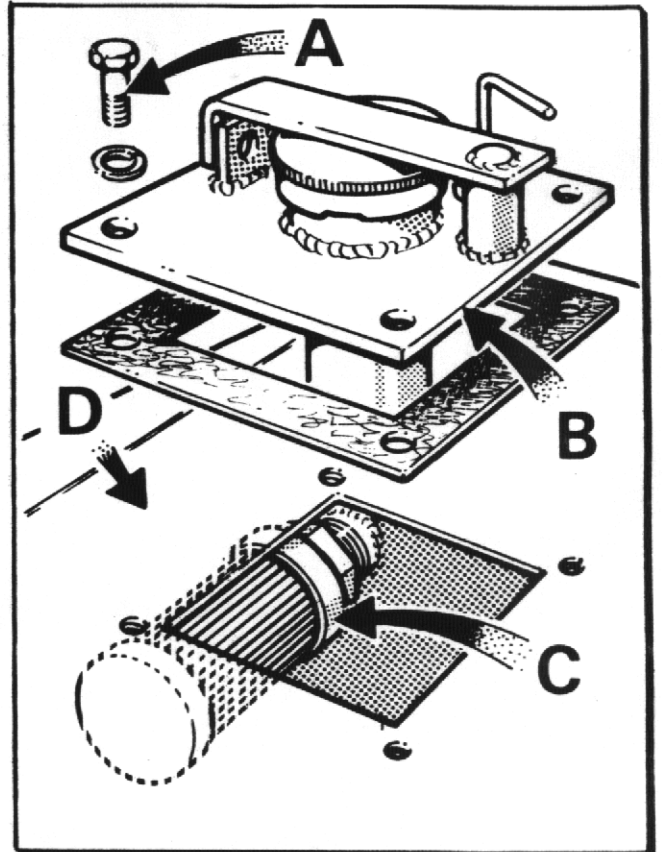
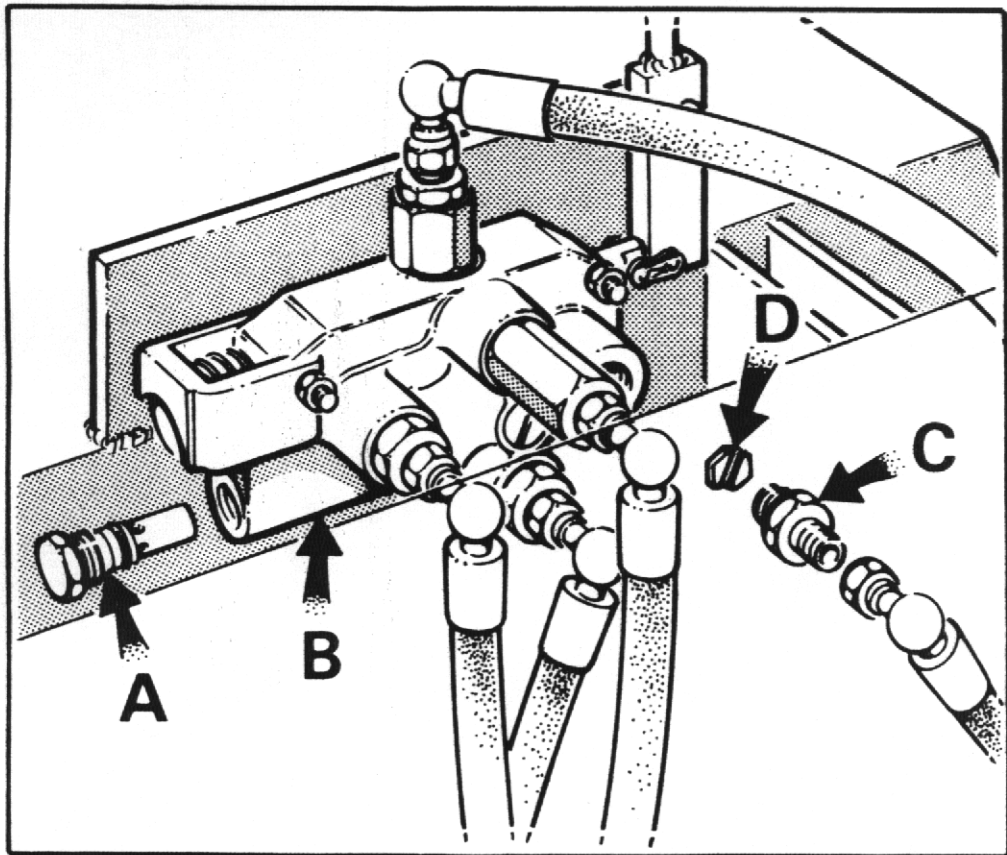


FIG. 6



TP 045

FIG. 7

Brake System

The brake system is designed to require the minimum of maintenance, and, providing hydraulic fluid in the reservoirs is not allowed to fall below the recommended level, no defects should normally occur. Fluid loss must be supplemented by topping up the reservoirs with Brake fluid that conforms to B.S. SAE J 1703. If air is present in the system, it will be indicated by sluggish response of the brakes and by spongy action of the brake pedal. This may be due to air being introduced at a loose joint or by the reservoir fluid not being maintained at the correct level. These defects must be remedied immediately and the complete system bled.

To bleed the system proceed as follows:—

(See Fig. 5)

1. Check that all connections are tight and all bleed screws are closed.
2. Fill the reservoirs with Brake fluid.
3. Attach bleeder tube (A) to one of the bleed screws (B) and immerse the other end in a small quantity of brake fluid contained in a glass jar (C). Slacken the bleed screw and operate the brake pedal up and down through its full stroke until the fluid pumped into the jar contains no air bubbles. Hold down the pedal and close the bleed screw. Remove bleeder tube and release the pedal.
4. Repeat on other three bleed screws, completing one axle and then passing on to the other.
5. Continue until all air has been bled from the system.
6. Lock all bleed screws and top up the reservoirs to the correct level.
7. Apply normal working load on the brake pedal for two or three minutes and examine the entire system for leaks.

- NOTES: 1. It is advisable to bleed the system in this order — Right hand front, Left hand front, Left hand rear then Right hand rear. This ensures the longest line is bled first.
2. During the entire operation it is essential that the reservoir levels are kept topped up to prevent further air from being drawn into the system. Only use new fluid for topping up.

Main Hydraulic System

The main hydraulic system controls the dumper steering and the dumping and return of the skip. If the skip fails to operate or does so extremely slowly, carry out the following procedures until the fault is rectified.

1. Check that the hydraulic tank is full of oil.

(See Fig. 6)

2. a) Remove four setscrews (A) securing filler cap assembly and remove assembly.
b) Unscrew suction filter (C) from inside tank (D) and wash in white spirit. Dry with moisture-free compressed air.
c) Replace suction filter and filler cap assembly.
Note:— If suction filter cannot be thoroughly cleaned, fit a new one.
3. Check that hydraulic pressure is correct.
a) Fit a 2000 p.s.i. gauge into the hydraulic line to the base of the rams.
b) Operate control lever to dump skip and check that the pressure reading on the gauge is 1750 p.s.i. when the ram is fully extended and the relief valve is 'blowing'.

(See Fig. 7)

4. Remove relief valve cartridge (A) (hexagon head) from end of control valve (B) opposite to control lever and replace with a new one.
5. Remove hose adaptor (C) from control valve, remove hexagonal orifice plate (D) and wash in white spirit. Dry using moisture-free compressed air. DO NOT poke wire etc. into the orifice. Re-fit plate and hose adaptor with slot of orifice plate facing outwards.

If all of these procedures fail to correct the fault contact your local Winget agent.

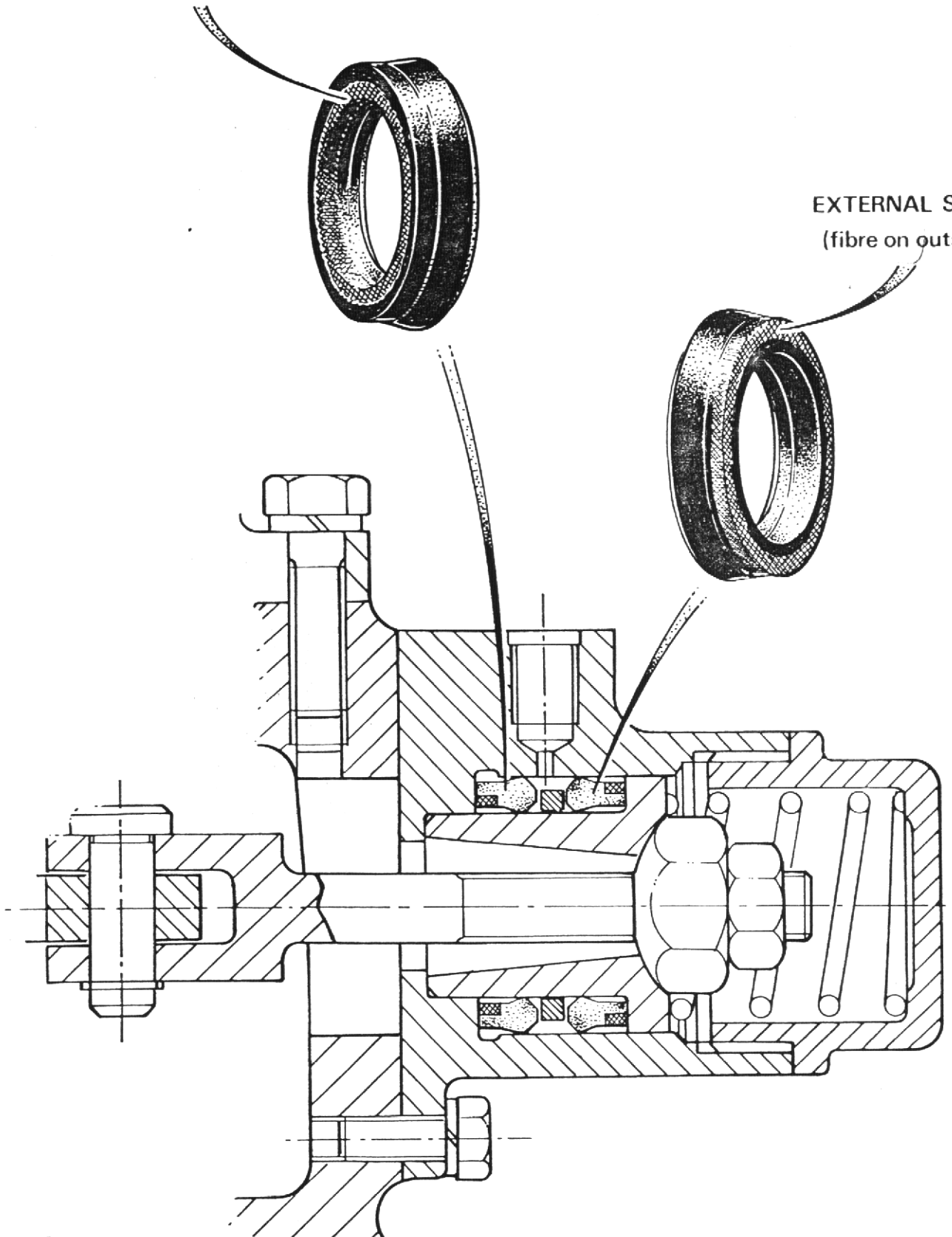
Periodically check the hose between the pump and the tank to ensure that it is not deformed. Any deformation in the hose may result in a restricted flow and damage to the pump.

IMPORTANT: On no account should the steering valve be dismantled. Should it require attention, remove it complete and return to the factory.

RELAVENT TO 4/45 C.D.P., FL2500 & 4/60 M/c's FITTED WITH
HAMWORTHY AXLES.
TO ENSURE CORRECT BRAKE OPERATION ASSEMBLE SLAVE CYLINDER
SEALS AS SHOWN BELOW ~

INTERNAL SEAL
(fibre on inside)

EXTERNAL SEAL
(fibre on outside)



SPECIFICATION Fig. 8

Dimensions:

A. Overall height	6' 6"	(1.98m)
B. Skip loading height	4' 5"	(1.34m)
C. Wheelbase	7' 0"	(2.13m)
D. Overall length	13' 9"	(3.96m)
E. Ground clearance	11"	(0.28m)
F. Overall Width	6' 7"	(2.01m)
G. Skip ground clearance when tipped	1' 5"	(0.43m)
H. Overall height tipped	7' 7"	(2.31m)
J. Discharge forward of tyre	1' 7"	(0.48m)
K. Overhang	3' 4"	(1.02m)
L. Wheel track	5' 6"	(1.68m)
M. Prow width	6' 4"	(1.93m)

Skip Capacities

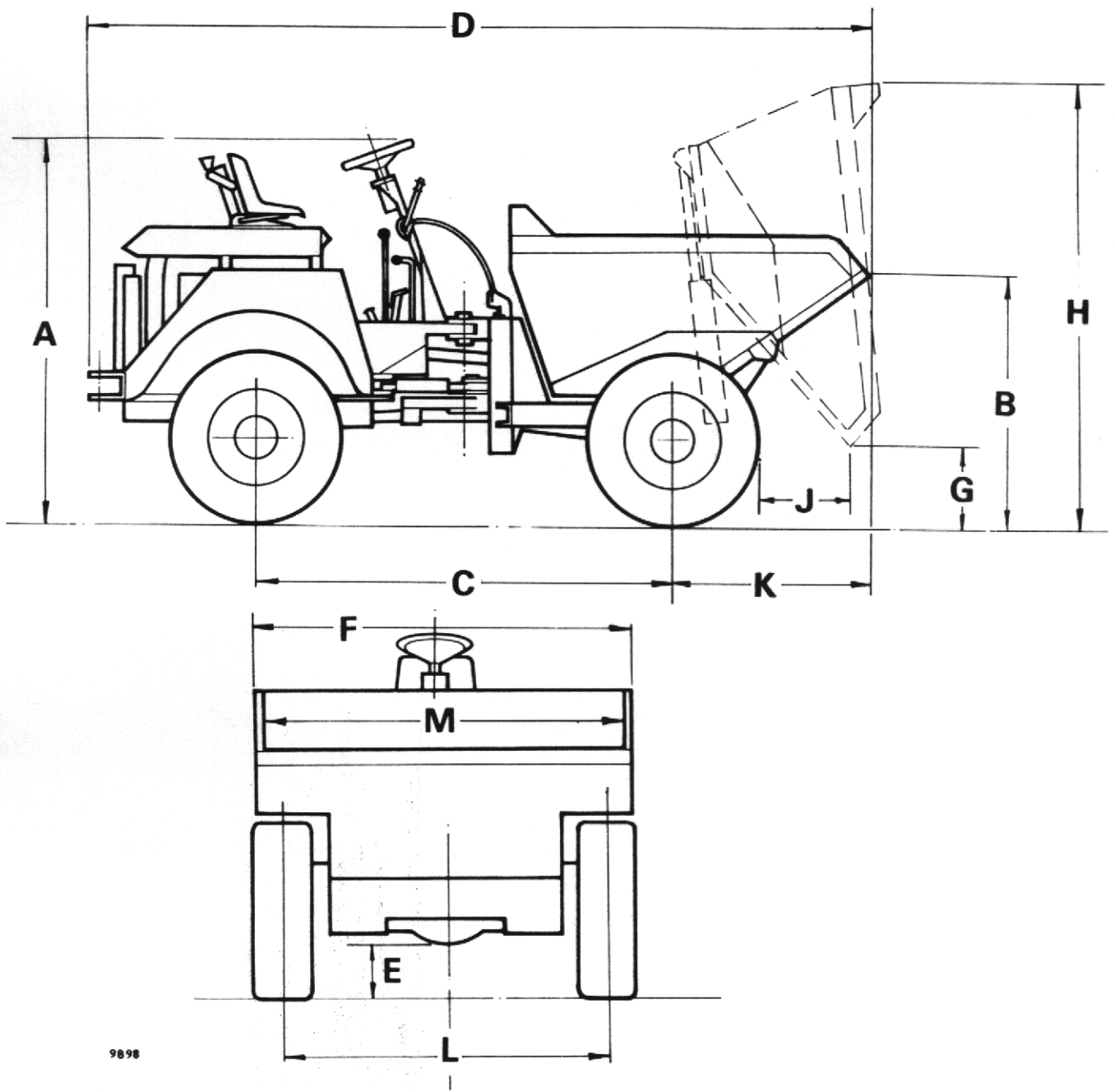
Water Level	50ft ³	(1416 litres)
Struck Level	69ft ³	(1954 litres)
Heaped	89ft ³	(2520 litres)
Maximum Payload	6720lb.	(3048 kg.)

Tank Capacities:

Diesel fuel tank	12 imp. galls.	(54.5 litres)
Hydraulic oil tank	12 imp. galls.	(54.5 litres)
Turning circle	27'6"	(8.36m)
Vehicle weight	2 Ton 19 cwt 1 qtr.	(3010 Kg)
Hydraulic relief valve	1750 p.s.i.	(123.1 kg/cm ²)
Rear axle articulation	12°	
Maximum steering angle	35°	
Tyre pressure	40 p.s.i.	(2.8 kg/cm ²)

Road Speeds:

	<i>low</i>		<i>high</i>	
	<i>m.p.h.</i>	<i>k.p.h.</i>	<i>m.p.h.</i>	<i>k.p.h.</i>
1st forward	2.5	(4.02)	5	(8.05)
2nd forward	4.75	(7.64)	10	(16.09)
3rd forward	8	(12.87)	16.75	(26.96)
Reverse	2.25	(3.62)	4.75	(7.64)



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FIG 8

**FOUR/60 DIESEL DUMPER
RECOMMENDED LUBRICATING OILS**

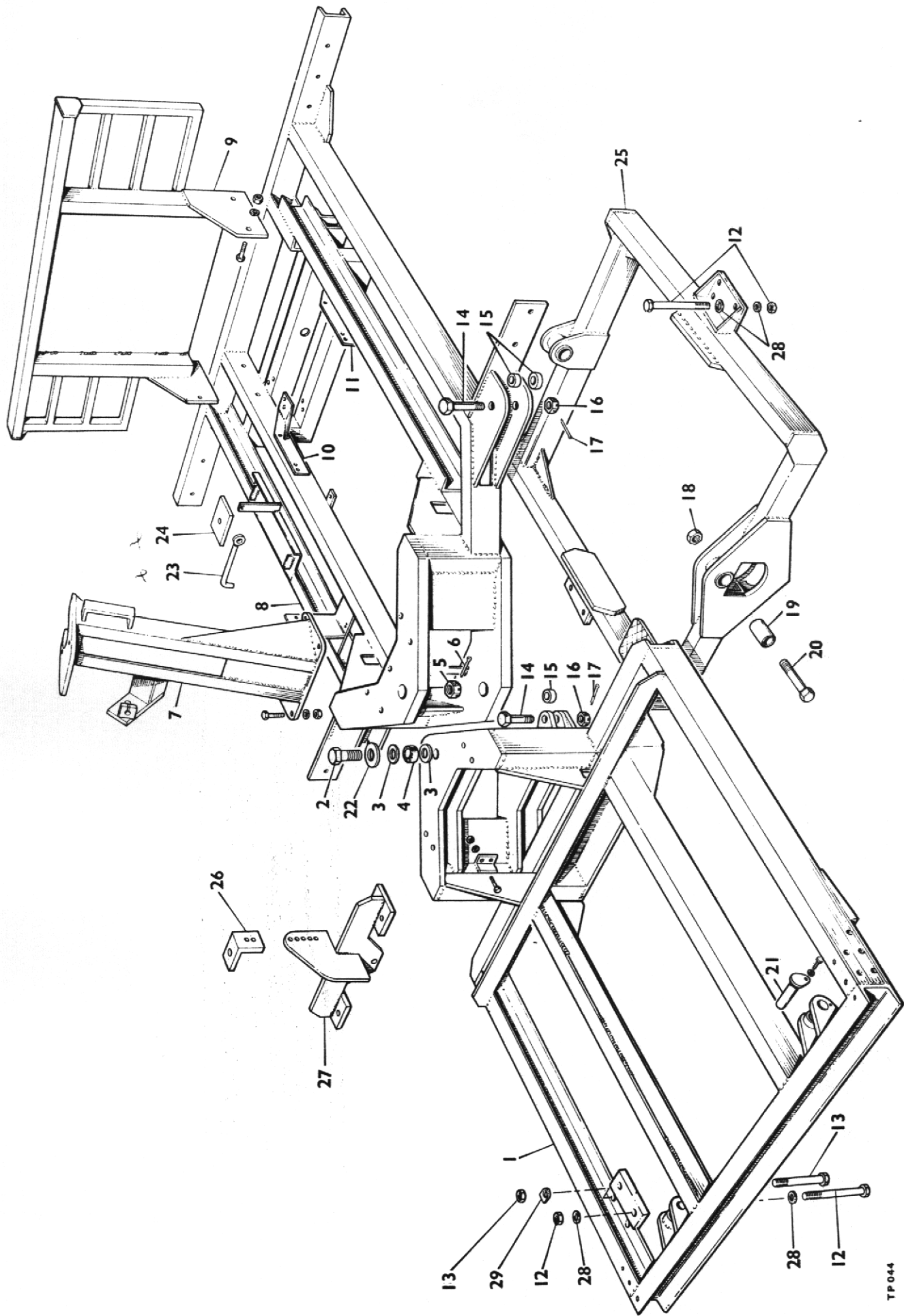
COMPANY	ENGINE PETTER LISTER PJ HR	DRIVE AXLE	TRANSFER BOX	GEARBOX	WHEEL BEARINGS & OTHER GREASE POINTS	HYDRAULIC SYSTEM
(U.K.) ESSO (Overseas)	ESSOLUBE HDX 20W ESSOLUBE HDX 30 ESSOLUBE HDX 20W ESSOLUBE HDX 10W	IL 2082 IL 2082 IL 2082	GEAR OIL GP 90/140 GEAR OIL GP 140 GEAR OIL GP 90/140 GEAR OIL GP 80	ESSOLUBE HDX 30 ESSOLUBE HDX 30	BEACON 2 BEACON 2	NUTO H 44 NUTO H 54 NUTO H 44 NUTO H 40
(U.K.) CASTROL (Overseas)	DEUSOL CRI 20 DEUSOL CRI 30 DEUSOL CRI 20 DEUSOL CRI 10	AGRICASTROL AS AGRICASTROL AS AGRICASTROL MD	DEUSOL EP 90 DEUSOL GEAR EP 140 DEUSOL GEAR EP 90 DEUSOL GEAR EP 80	DEUSOL CRI 30 DEUSOL CRI 30	CASTROL SPHEEROL APT 2 CASTROL SPHEEROL APT 2	CASTROL HYSPIN AWS 32
(U.K.) SHELL (Overseas)	ROTELLA SX OIL 20/20W ROTELLA SX OIL 30 ROTELLA SX OIL 20/20W ROTELLA SX OIL 10W	S.7142 (INITIAL FILL) SPIRAX EP 80 (Top up only) S.7142 (INITIAL FILL) SPIRAX EP 80 (Top up only) S.7224 (INITIAL FILL) SPIRAX HD 75 (Top up only)	SPIRAX 90 EP SPIRAX 140 EP SPIRAX 90 EP SPIRAX 80 EP	ROTELLA SX OIL 30 ROTELLA SX OIL 30	RETINAX A RETINAX A	TELLUS OIL 27
(U.K.) BP (Overseas)	VANELLUS 20 VANELLUS 30 VANELLUS 20 VANELLUS 10W	B.P. HYDRAULIC TF-8 B.P. HYDRAULIC TF-8 B.P. TRACTRAN (Top up only)	GEAR OIL SAE 90 EP GEAR OIL SAE 140 EP GEAR OIL SAE 90 EP GEAR OIL SAE 80 EP	VANELLUS 30 VANELLUS 30	ENERGREASE L2 ENERGREASE L2	ENERGOL HLP 65
(U.K.) MOBIL (Overseas)	DELVAC 1220 DELVAC 1230 DELVAC 1220 DELVAC 1210 DELVAC SPECIAL 10W-30	MOBIL FLUID 422 MOBIL FLUID 422 MOBIL FLUID 427	MOBILUBE HD 90 MOBILUBE GX 90 MOBILUBE HD 140 MOBILUBE GX 140 MOBILUBE HD 90 MOBILUBE GX 90 MOBILUBE HD 80 MOBILUBE GX 80	DELVAC 1230 DELVAC 1230	MOBILGREASE MP MOBILGREASE SUPER	DTE 24
(U.K.) WALKERS CENTURY (Overseas)	CENTLUBE HD 20 CENTLUBE HD 30 CENTLUBE HD 20 CENTLUBE HD 10	CENTLUBE F.76 COMPOUND CENTLUBE F.76 COMPOUND CENTLUBE E.76 COMPOUND	CENTURY EP 90 CENTURY EP 140 CENTURY EP 90 CENTURY EP 80	CENTLUBE HD 30 CENTLUBE HD 30	REGULUS A2 REGULUS A2	CENTURY PWL A HYD. OIL CENTURY PWL A HYD. OIL

IN THE UNLIKELY EVENT OF THE ABOVE OILS NOT BEING AVAILABLE
EQUIVALENT OILS SUPPLIED BY A REPUTABLE MANUFACTURER MAY BE USED

SPARE PARTS SECTION

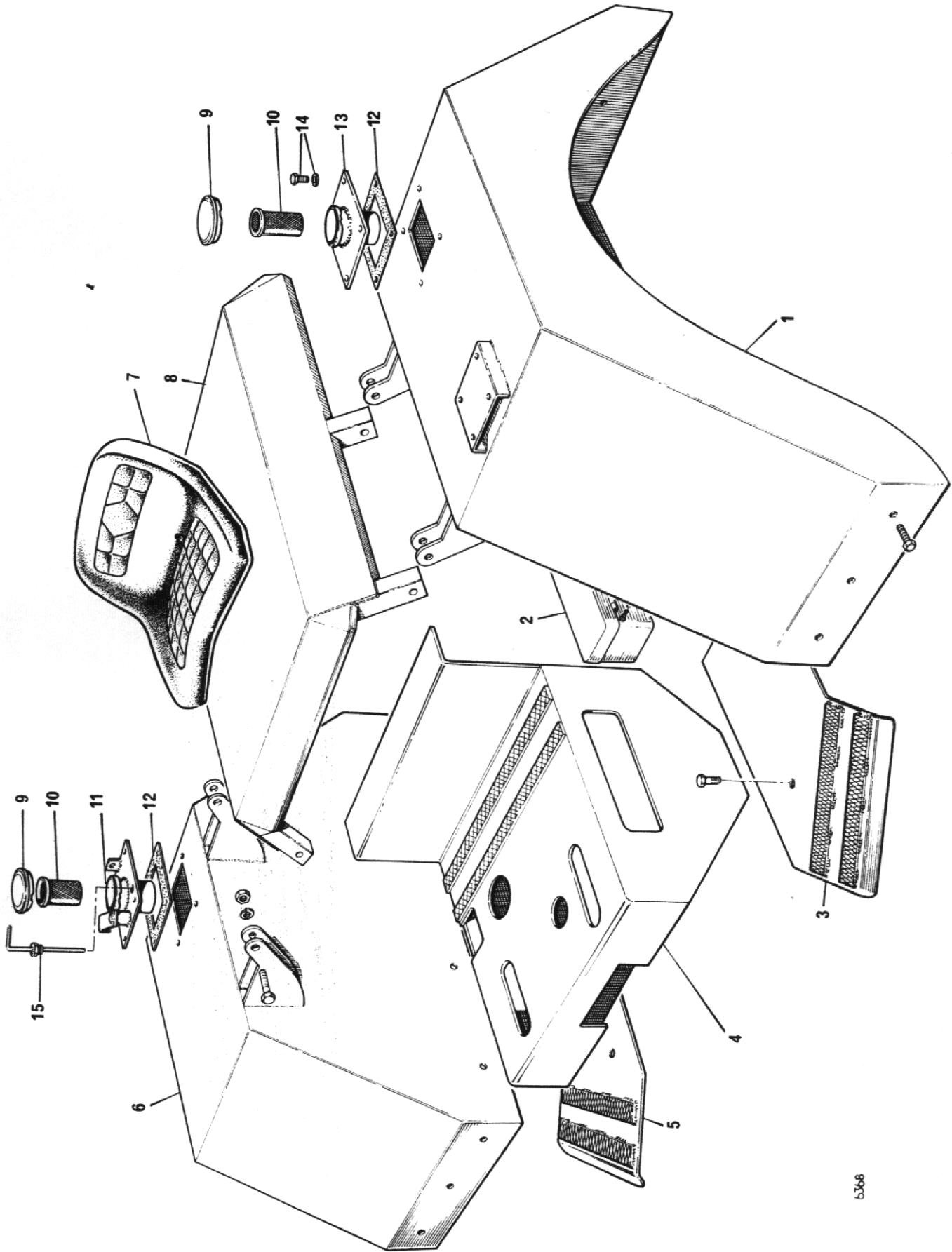
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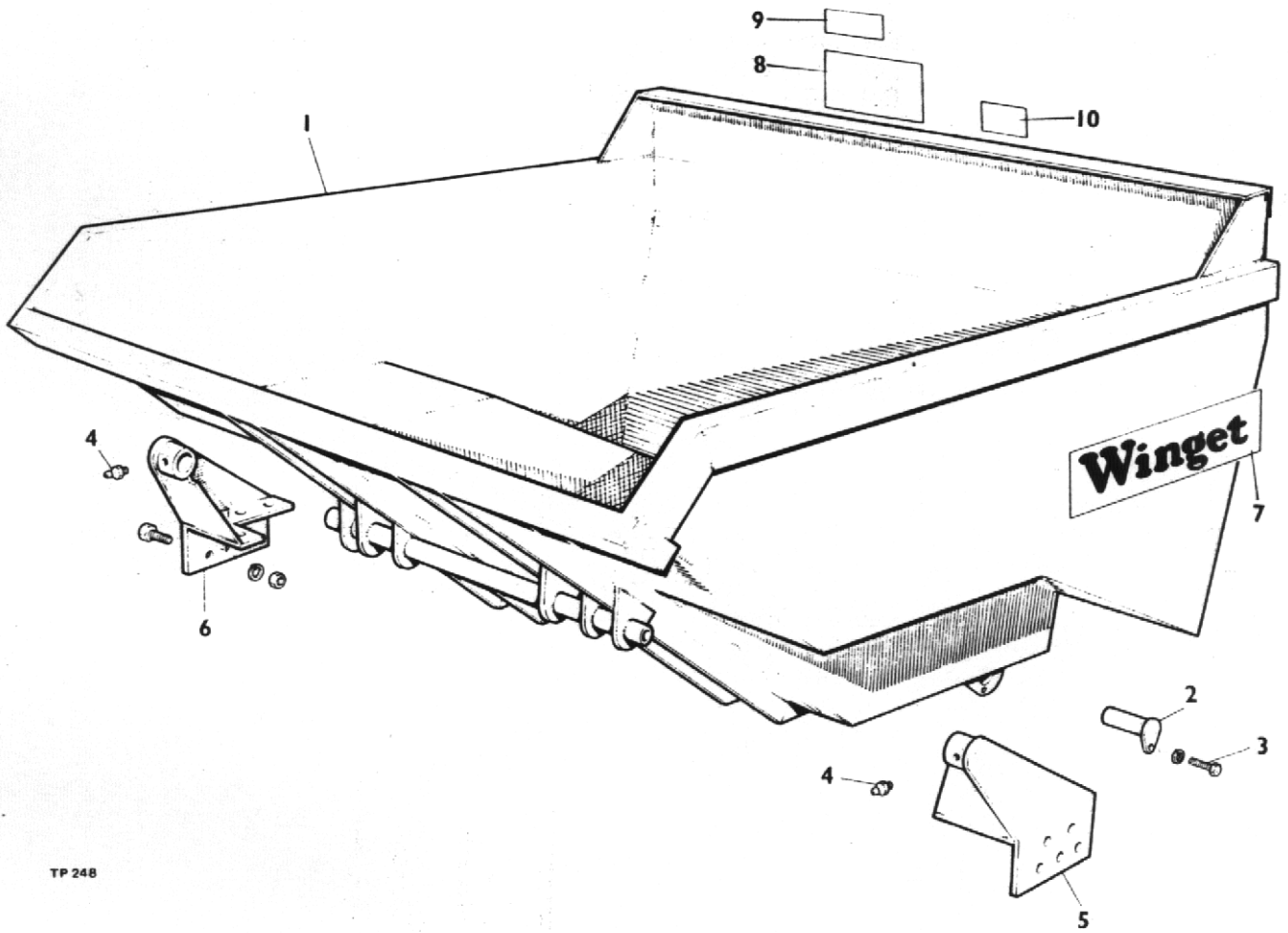
CHASSIS

<i>Item No.</i>	<i>Part No.</i>	<i>Description</i>	<i>Qty</i>
1	4-60-288	Front Chassis	1
2	4-60-103	Centre Pivot Bolts	2
3	4-60-102	Centre Pivot Spacer	2
4	4-60-214	Centre Pivot Bearing	2
5	4-60-171	Centre Pivot Nut	2
6		Split Pin 3/16" x 3" Long	2
7	4-60-120	Steering Column	1
8	4-60-186	Rear Chassis	1
9	4-60-131	Rear Frame	1
10	4-60-187	R.H. Rear Engine Mounting Bracket (Petter)	1
11	4-60-188	L.H. Rear Engine Mounting Bracket (Petter)	1
12		Bolt 3/4" UNF. x 7" Long & Nut	14
13		Bolt 3/4" UNF. x 6 1/2" Long & Nut	2
14	4-60-104	Steering Ram Bolt	4
15	4-60-112	Steering Ram Bolt Spacer	6
16	4-60-172	Steering Ram Bolt Nut	4
17		Split Pin 3/16" x 2 1/2" Long	4
18		Nut 7/8" UNF or BSF	2
19	E.2236	Silentbloc Bush	2
20		Bolt, 7/8" UNF or BSF x 5" Long	2
21	4-35-178	Ram Pin	2
22	4-60-240	Washer	4
23	4-60-224-1	Battery Lock Bar	1
24	4-60-224-2	Battery Clamps	2
25	4-60-289	Articulating Frame	1
26	4-60-256-4	Transmission Brake Cable Bracket	1
27	4-60-256	Transmission Brake Bracket	1
28		Washer 3/4" dia.	28
29		Taper Washer 3/4" dia.	4



MUDWING AND COVERS

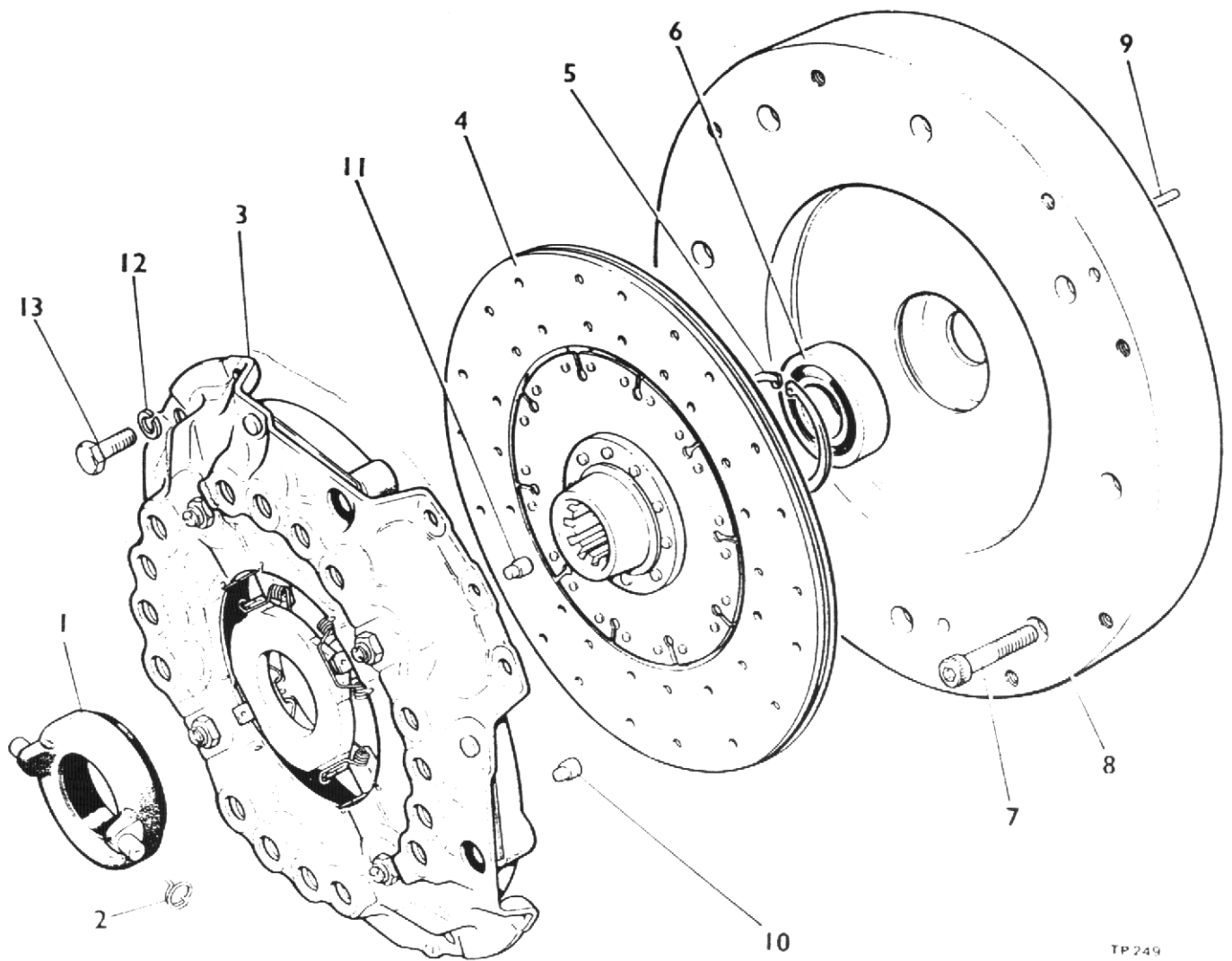
<i>Item No.</i>	<i>Part No.</i>	<i>Description</i>	<i>Qty</i>
1	4-60-121	L.H. Tank & Mudwing	1
2	4-60-157	Tool Box	1
3	4-60-118	L.H. Footplate	1
4	4-60-196	Gearbox Cover & Footplate	1
5	4-60-117	R.H. Footplate	1
6	4-60-122	R.H. Tank & Mudwing	1
7	S.2000	Seat	1
8	4-60-195	Engine Cover	1
9	P.2792	Tank Cap	2
10	P.1263-3	Filter	2
11	4-60-206	Tank Filler Assembly (RH)	1
12	5ST.18B	Gasket	2
13	4-60-200	Tank Filler Assembly (LH)	1
14		$\frac{5}{16}$ " UNF Bolt x $\frac{3}{4}$ " Long	8
15	4-60-226	Dipstick (Hyd. Tank)	1



TP 248

SKIP

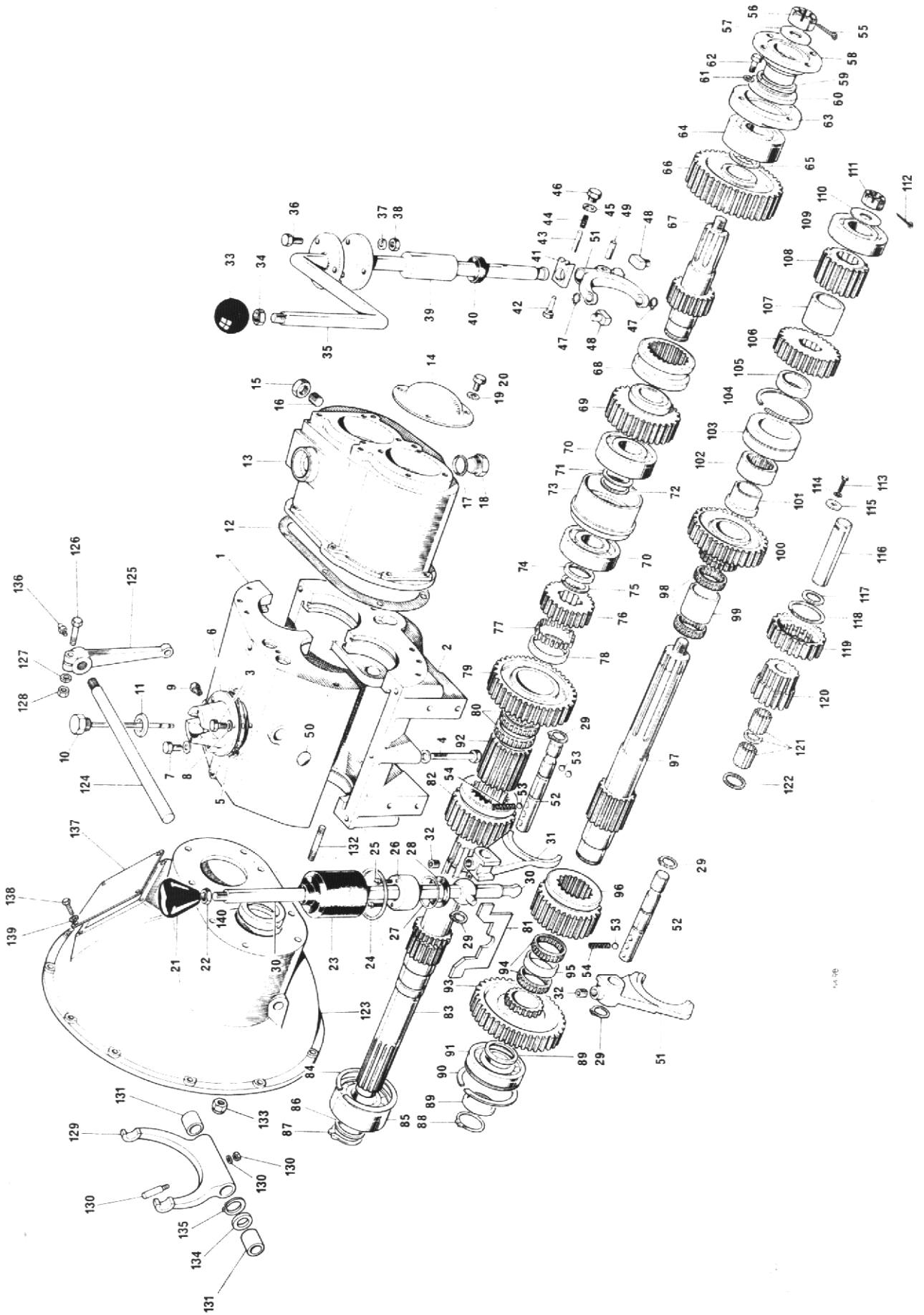
Item No.	Part No.	Description	Qty.
1	4-60-108	Skip Assembly	1
2	4-35-226	Ram Pin	2
3		5/16" UNF Bolt x 3/4" Long	2
4	5ST.100	Grease Nipple	2
5	4-60-106	Skip Mounting Bracket (L.H.)	1
6	4-60-105	Skip Mounting Bracket (R.H.)	1
7	DM 154	Label - Winget	2
8	DM 180	Label - Dumper Safety	1
9	DM 157	Label - Warning	1
10	DM 106	Label - Handbrake	1



TP249

CLUTCH ASSEMBLY 12"

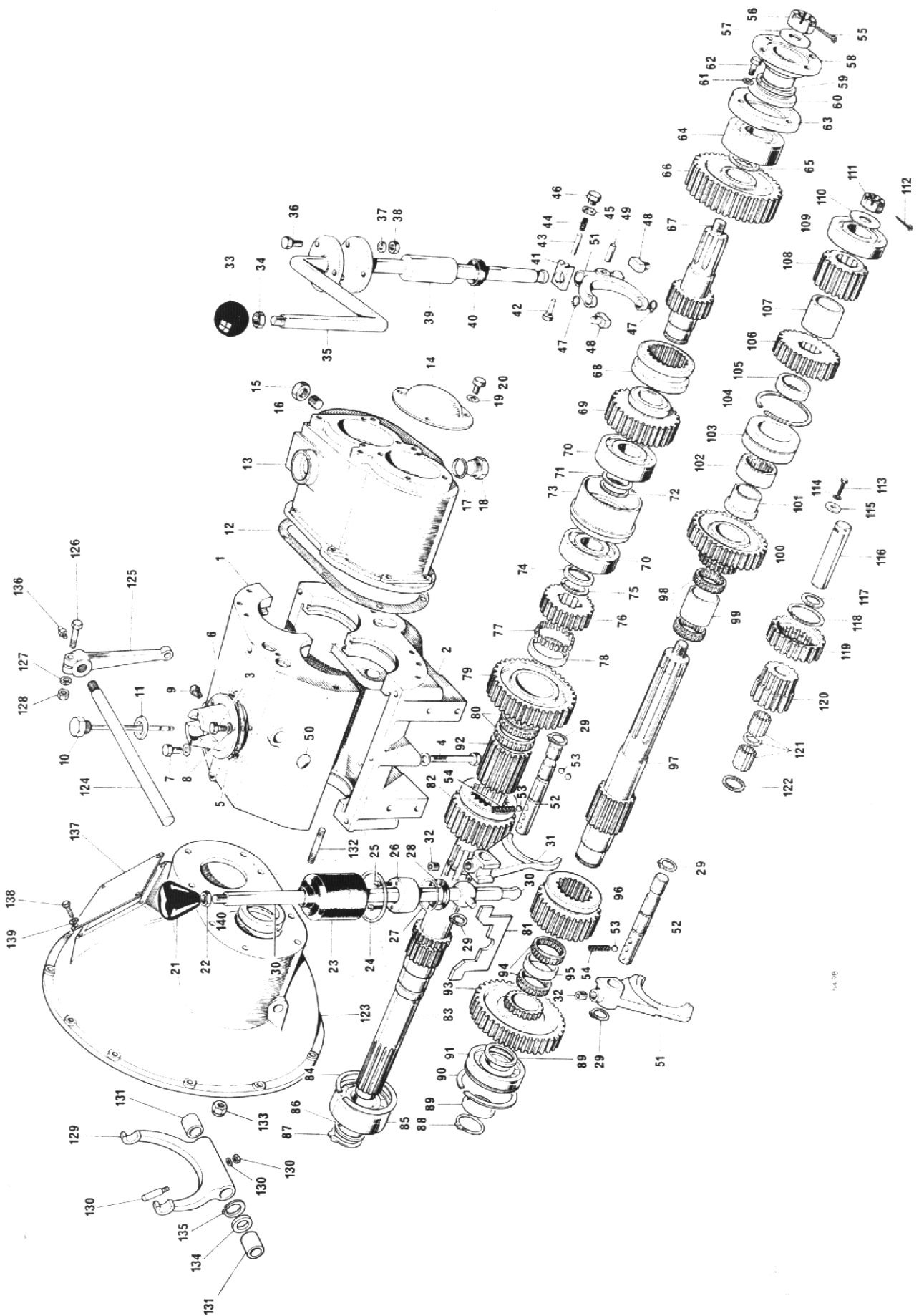
Item No.	Part No.	Description	Qty.
1	10579A02	Clutch Release Bearing	1
2	10579A0101	Retainer Spring	2
3	10597A03	Cover Assembly	1
4	10598A04	Drive Plate	1
5	130052MM	Circlip	1
6	88S15D	Bearing	1
7	287S04H	Capscrew (Petter) 3/8"x2"	8
8	CM2514	Flywheel Assembly (Petter)	1
9		Dowel 3/8" Dia (Petter)	1
10	CM2529	Dowel 3/8"x5/16" Dia (Petter)	1
11	CM2530	Dowel 3/8"x1/4" Dia (Petter)	1
12	41S05	Washer Spring 3/8"	8
13	28S03D	Screw Set 3/8"UNFx3/4"	8
	10948A06	Clutch Kit (comprises of items 1, 2, 3 & 4)	1



CM15-6 GEARBOX



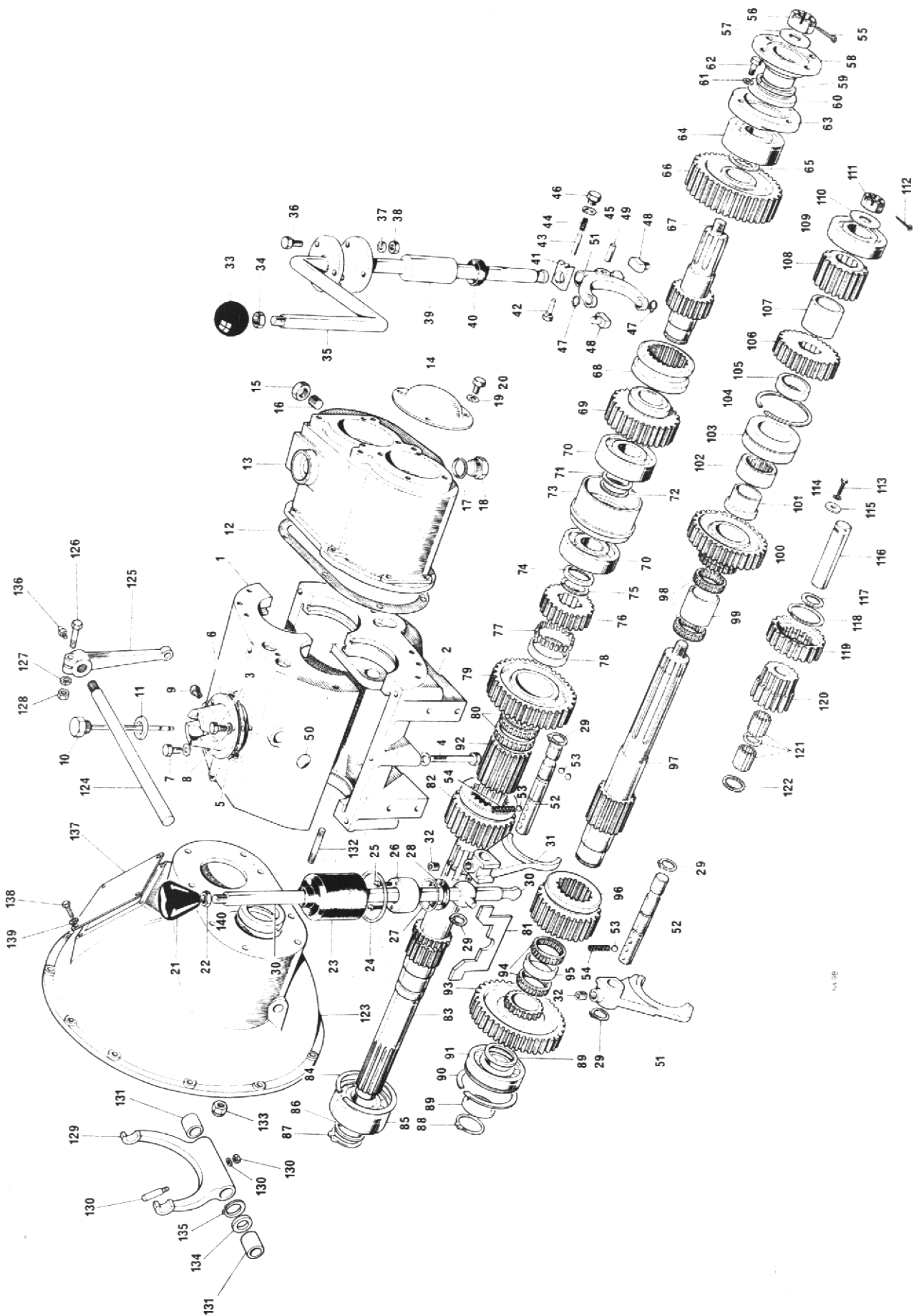
Item No.	Part No.	Description	No. Off
1	CM.2481	Gearcase - Upper Half	1
2	CM.2480	Gearcase - Lower Half	1
3	USF.31	Bolt	2
4	UBF.153	Bolt - Gearcase	6
5	CM.2074	Joint - Top Cover	1
6	CM.2098	Top Cover	1
7	CM.2056	Dowel Bolt - Top Cover	1
8	W.104	Shakeproof Washer	15
9	CM.2106	Breather	1
10	CM.2510	Dipstick	1
11	CP.1068	Washer	3
12	CM.2508	Joint	1
13	CM.2496	Transfer Case	1
14	CM.2328	End Cover	1
15	N.113	Lock Nut - Thin	1
16	CP.1081	Setscrew	1
17	CP.1068	Washer	15
18	CP.1002	Drain Plug	2
19	W.105	Washer	3
20	USF.31	Bolt	3
21	CM.2108	Knob	1
22	UN.512	Lock Nut	
23	CM.2197	Rubber Cover - Gear Lever	1
24	CM.2198	Clip	1
25	CM.2177	Screw - Cheese Head	3
26	CM.2163	Felt Washer Retainer	1
27	CM.2196	Spring	1
28	CM.2162	Felt Washer	1
29	CP.1138	Circlip	4
30	CM.2513S/A	Gear Lever	1
31	CM.2288	Sel Fork 3rd. and Reverse	1
32	UFG.8	Grub Screw	2
33	40M.645	Knob	1
34	UN.512	Lock Nut	2
35	4/60/148	Auxiliary Gear Lever Extension	1
36		Bolt $\frac{5}{16}$ " BSF x $\frac{7}{8}$ " Long	3
37		Lockwasher $\frac{5}{16}$ " Dia.	3
38		Nut $\frac{5}{16}$ " BSF	3
39	CM.2512S/A	Auxiliary Gear Lever	1
40	40M.620	Oil Seal	1
41	40M.617	Detent Plate	1
42	CP.1062	Bolt Selector	1
43	CM.2509	Plunger	1
44	CM.2103	Spring	1
45	HB.129	Shakeproof Washer	1
46	USF.3	Setscrew	1
47	CP.1061	Circlip	2
48	CP.1060	Trunnion Gear Change	2
49	CP.1092	Spiral Pin	1
50	CM.2113	Sealing Disc	1
51	CM.2287	Sel Fork - 1st. and 2nd.	1
52	CM.2483	Selector Shaft	2



CM15-6 GEARBOX Cont'd.

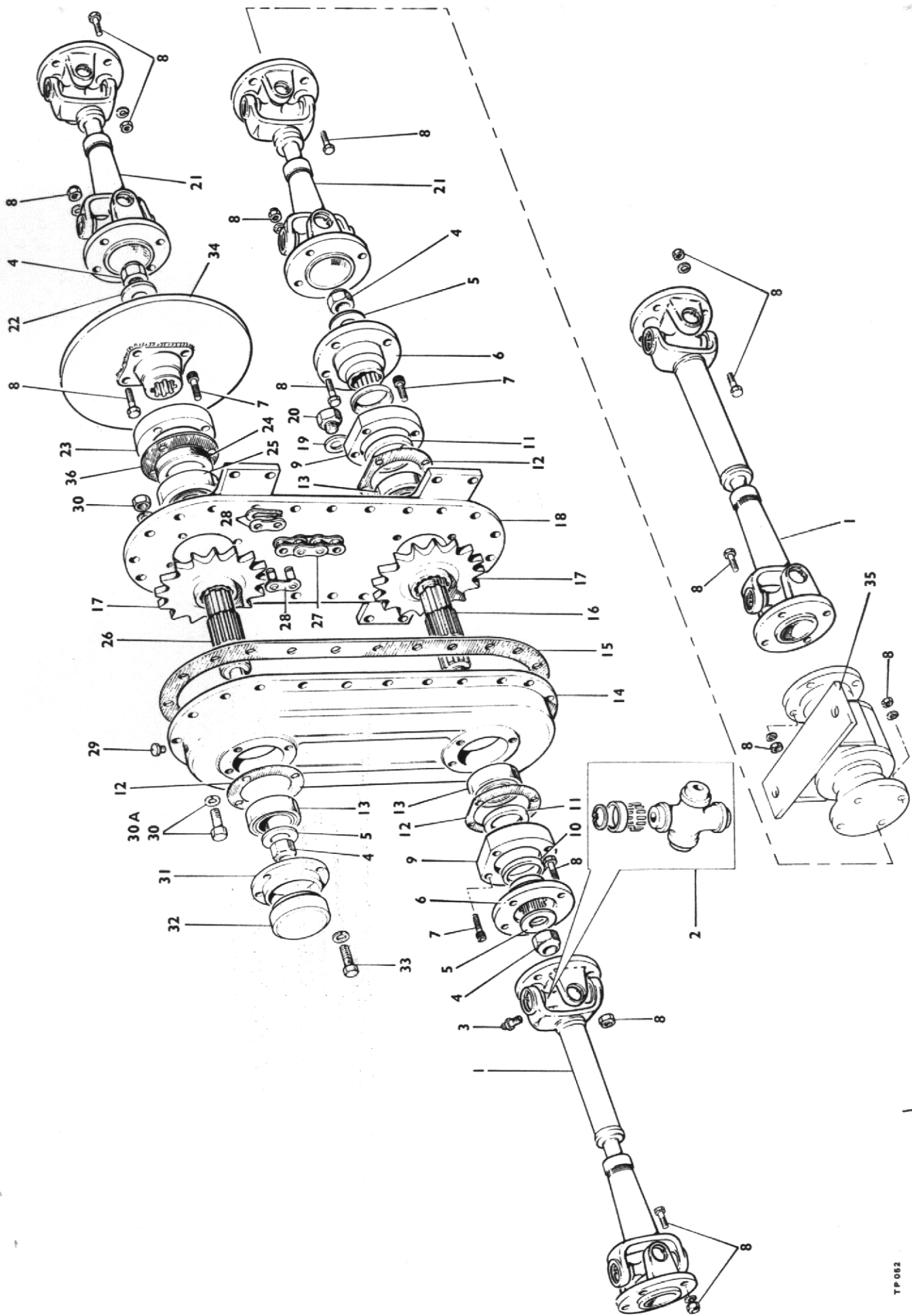


Item No.	Part No.	Description	No. Off
53	CP.1077	Detent Ball	4
54	CM.2103	Detent Spring	3
55	CP.1106	Split Pin	1
56	UN.503	Slotted Nut	1
57	CM.2488	Washer - Coupling	1
58	40M.589	Coupling c/w Dust Shield	1
59	CM.2537	Dust Shield	1
60	40M.167	Oil Seal	1
61	W.104	Shakeproof Washer	4
62	UBF.71	Bolt	4
63	CM.2331	Bearing Cap	1
64	CM.2325	Bearing - Output Shaft	1
65	CM.2100	Bearing Spacer	3
66	CM.2333	Low Ratio Driven Gear	1
67	CM.2493	Selector Shaft	2
68	CM.2334	Operating Sleeve	1
69	CM.2335	High Ratio Driven Gear	1
70	CM.2068	Bearing - Layshaft	2
71	CM.2258	Bearing Spacer	1
72	CM.2053	Circlip - Layshaft	2
73	CM.2246	Bearing Housing	1
74	CM.2487	Spacer - Primary Shaft	1
75	CM.2025	Circlip	1
76	CM.2024	2nd. Speed Wheel - Main Shaft	1
77	CM.2556	Bearing <i>USE 30102A0154 BUSH.</i>	30
78	CM.2555	Spacer - Rev. Wheel Main Shaft	1
79	CM.2554	Rev. Wheel - Main Shaft	1
80	CM.2579	Bearing	2
81	CM.2285	Baulk Plate	1
82	CM.2586	Sliding Gear	1
83	CM.2553	Primary Shaft	1
84	CM.2077	Circlip	1
85	CM.2383	Bearing - Input	1
86	CM.2016	Spacer - Input	1
87	CM.2067	Circlip	1
88	CM.2053	Circlip - Layshaft	2
89	CM.2100	Bearing Spacer	3
90	CM.2060	Snap Ring	2
91	CM.2052	Bearing - Layshaft Front	1
92	CM.2453	Sliding Gear	2
93	CM.2129	1st. Speed Wheel	1
94	CM.2315	Bearing	2
95	CM.2213	Spacer - 1st. Speed Wheel	1
96	CM.2586	Sliding Gear	1
97	CM.2450	Layshaft	1
98	CM.2315	Bearing	2
99	CM.2312	Spacer - 2nd. Speed Wheel	1
100	CM.2097	2nd. Speed Wheel - Layshaft	1
101	CM.2248	Bearing Inner Race	1
102	CM.2256	Needle Bearing	1
103	CM.2249	Bearing Housing	1
104	CM.2060	Snap Ring	2





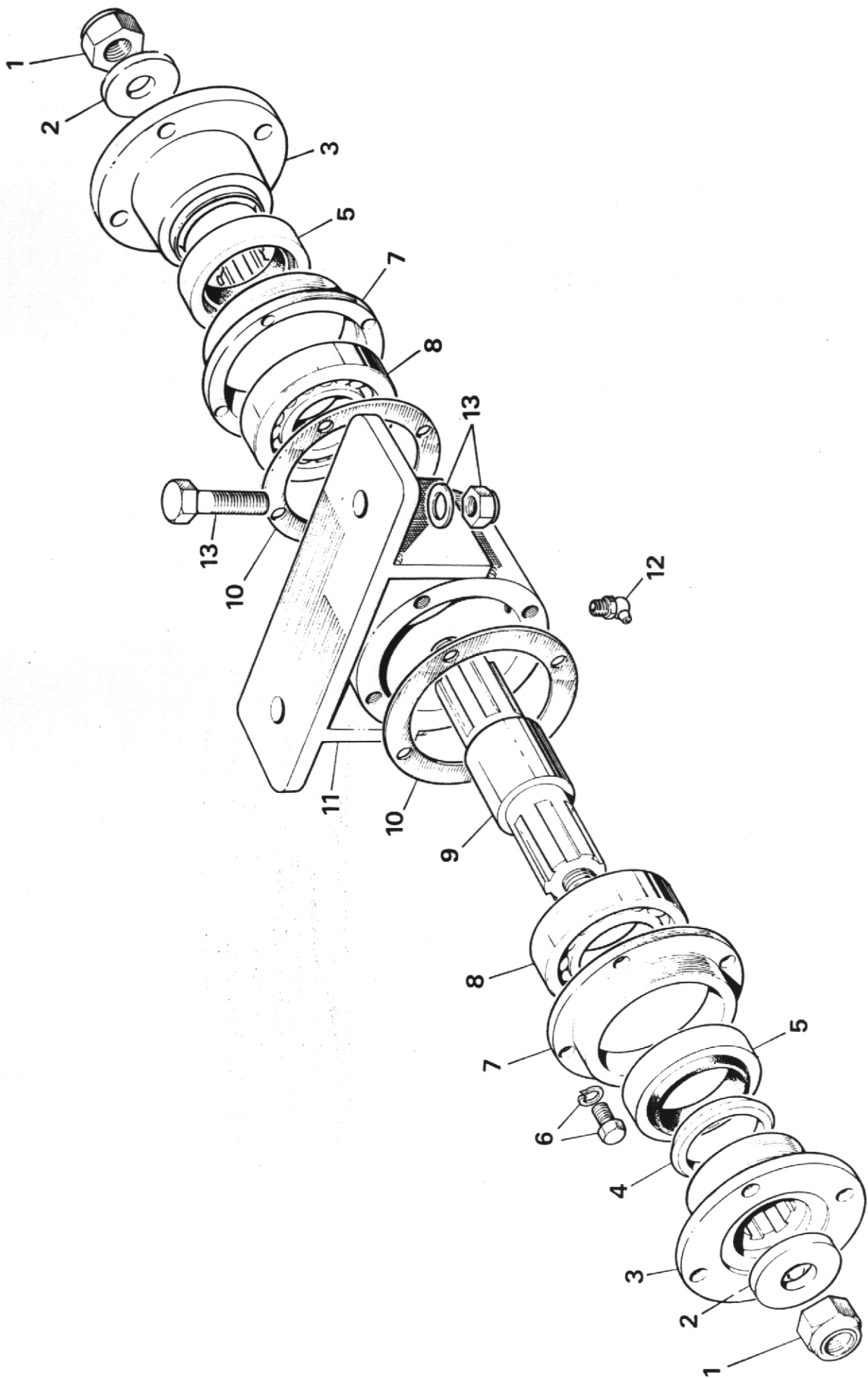
<i>Item No.</i>	<i>Part No.</i>	<i>Description</i>	<i>No. Off</i>
105	CM.2252	Spacer - Layshaft	1
106	CM.2250	High Ratio Drive Gear	1
107	CM.2253	Spacer Layshaft	1
108	CM.2251	Low Ratio Drive Gear	1
109	BK.195	Roller Bearing	1
110	CM.2123	Washer	1
111	UN.502	Slotted Nut	1
112	CP.1004	Split Pin	1
113	CM.2177	Screw - Cheese Head	3
114	W.111	Washer	
115	CM.2124	Washer - Rev. Spindle	1
116	CM.2349	Reverse Pinion Shaft	1
117	CM.2582	Thrust Washer	1
118	CM.2359	Circlip	1
119	CM.2344	Reverse Cluster Wheel	1
120	CM.2583	Reverse Cluster Pinion	1
121	CM.2580	Rollers - Reverse Cluster	46
	CM.2581	Spacer - Reverse Cluster	1
122	CM.2582	Thrust Washer	1
123	CM.2360	Clutch Housing	1
124	CM.2386	Clutch Cross Shaft	1
125	CM.2090	Clutch Op. Lever	1
126	UBF.71	Bolt	5
127	W.112	Spring Washer	1
128	UN.501	Nut	
129	CM.2407	Clutch Op. Fork	1
130	CM.2084S/A	Cotter, Nut and Washer S/A	1
131	CM.2387	Bush, Cross Shaft	2
132	CM.2382	Stud, Clutch Housing	6
133	UN.518	Nyloc Nut	6
134	CM.2417	Washer, Cross Shaft	2
135	CP.1099	Circlip	1
136	CP.1069	Grease Nipple	2
137	CM.2474	Inspection Cover	1
138	USF.11	Set Screw - Insp. Cover	4
139	W.104	Shakeproof Washer	15
140	CM.2465	Input Shaft Seal	1



TRANSFER BOX & PROP SHAFTS

Item No.	Part No.	Description	Qty
	4-60-272	Transfer Box Complete (with brake disc)	1
1	4-60-277	Prop Shafts to Drive Axles	2
2	K.5.GB.18	Repair Kit	As req'd.
3	94GB.2459	Grease Nipple	8
4	UN.580	Nut	4
5	CP.1264	Washer	3
6	40M.589	Flange (with Dust Shield)	2
7		Capscrew ¼" UNF x 1" Long	12
8		Prop Shaft Bolt 7/16" BSF x 1 1/8" Long & Nut	32
9	CM.2206	Oil Seal Housing	2
10	CM.2537	Dust Shield	2
11	40M.167	Oil Seal	2
12	CM.2073	Gasket	3
13	CM.2068	Bearing	3
14	4-35-96	Main Case	1
15	4-35-20	Joint	1
16	4-60-253	Output Shaft	1
17	4-35-17	19 Tooth Sprocket (Sub Assy)	2
18	4-60-269	Main Cover	1
19	CP.1068	Fibre Washer	1
20	CP.1189	Filler Plug	1
21	1350.YSA	Prop Shafts	2
22	4-60-265	Washer	1
23	4-60-264	Oil Seal Housing	1
24	SP.193	Oil Seal	1
25	40M.713	Bearing	1
26	4-60-262	Input Shaft	1
27	4-35-18	Chain	1
28	4-35-18A	Chain Connecting Link	1
29	CM.2106	Breather	1
30	UBF.71	Housing Screw ¼" UNF x 1¼" Long, two Spring Washers & Nut	16
30A		Housing Screw ¼" UNF x 1½" Long, two Spring Washers & Nut	8
31	40M.622	Bearing Housing	1
32	4-60-263	Bearing Housing Cap	1
33	UBF.31	Bearing Housing Screw ¼" UNF x ¾" Long & Spring Washer	4
34	4-60-266	Flange & Brake Disc Assy	1
35	4-60-261	Trunnion (See Page 31)	1
36	40M.712	Gasket	1

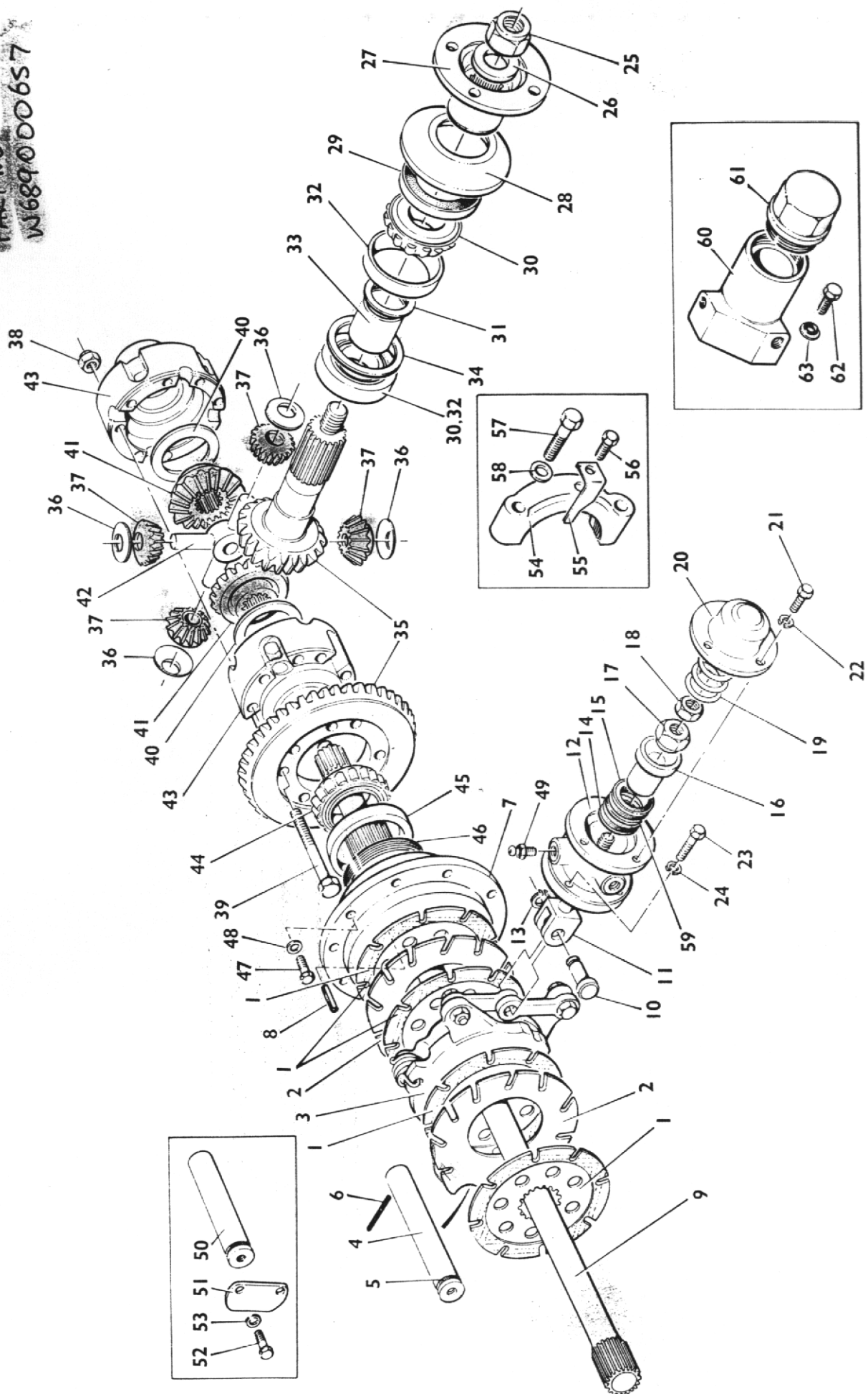
2716-113



TRUNNION ASSEMBLY

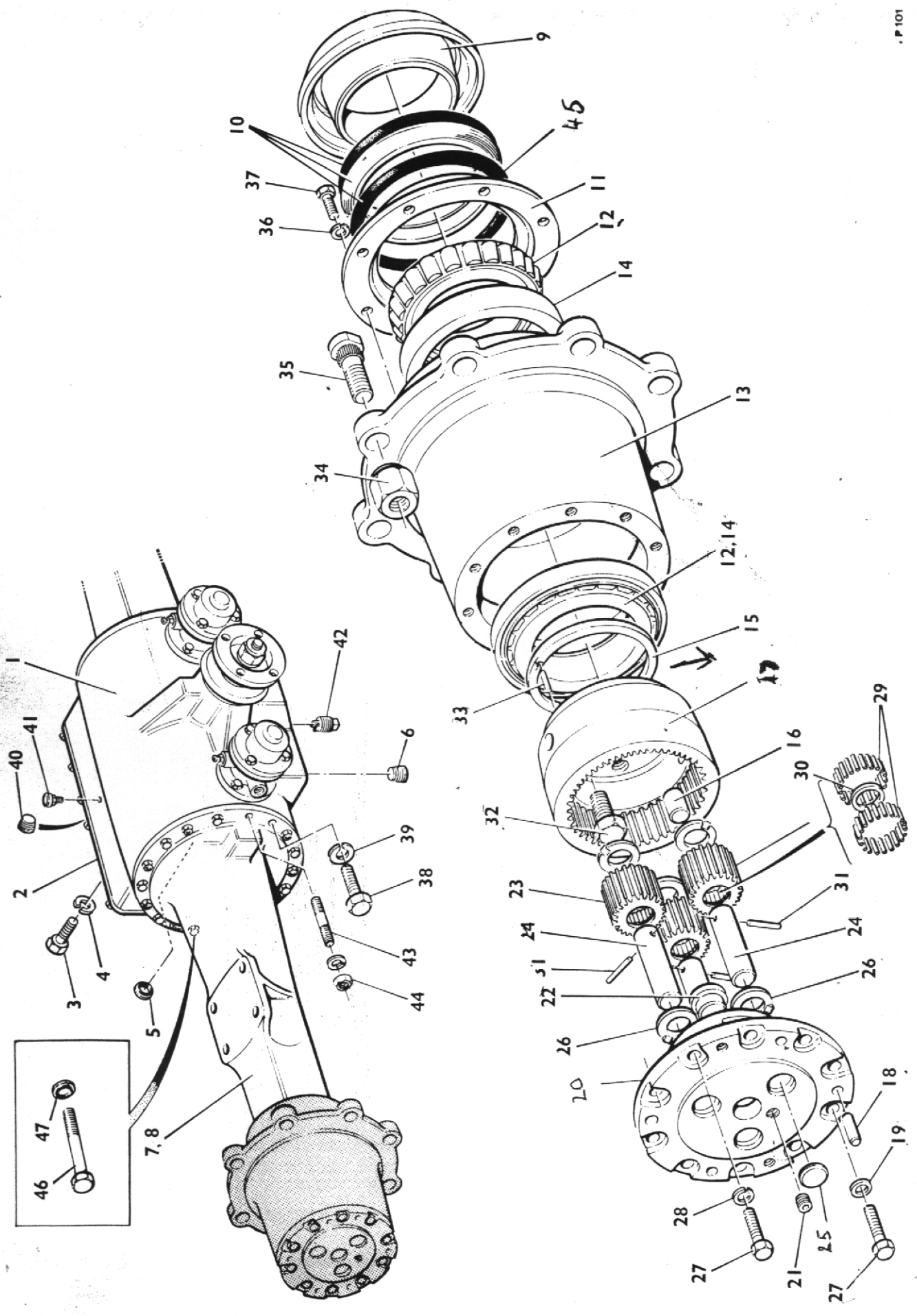
Item No.	Part No.	Description	Qty.
	4-60-261	Trunnion Assembly Complete	1
1	UN.580	Companion Flange Nut, 3/4" UNF Self Locking	2
2	CP.1264	Thick Washer, 3/4" Dia.	2
3	40M.589	Companion Flange C/W Dust Shield	2
4	CM.2537	Dust Shield	2
5	40M.167	Oil Seal	2
6		Housing Bolt 1/4" UNF. x 3/4" Long	8
7	40M.622	Oil Seal Housing	2
8	CM.2068	Bearing	2
9	4-60-251	Shaft	1
10	4-35-20A	Gasket	2
11	4-35-143	Housing	1
12	T.90	Grease Nipple	1
13		Mounting Bolt 5/8" BSF. x 2" Long & Nut	2

Assy
Part No
W689000657



**DRIVE AXLE
DIFFERENTIAL, HALF SHAFTS & BRAKE ASSEMBLY**

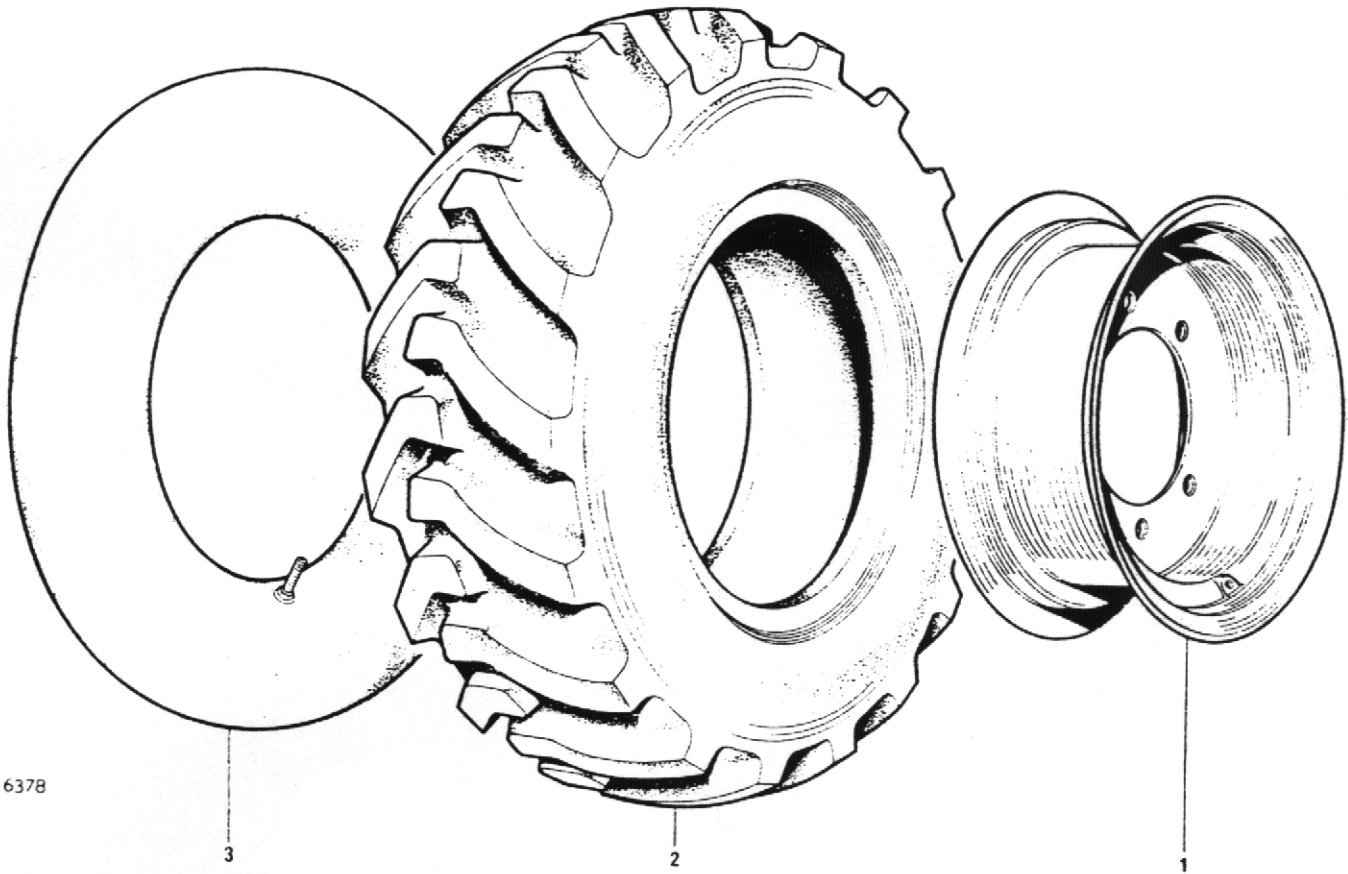
Item No.	Part No.	Description	Qty
	693000412	Drive Axle (complete)	1
	693000610	Drive Axle (complete)	1
	693000776	Drive Axle (complete)	1
	693000818	Drive Axle (complete)	1
1	660020500	Middle Plate	8
2	660020492	Intermediate Plate	4
3	660020484	Actuator	2
4	630096283	Torque Pin	2
5	660300175	Torque Pin 'O' Ring	2
6	660170149	Tension Pin	2
7	630143143	Differential bearing housing	2
8	660170172	Tension Pin	4
9	30045363	Drive Shaft	2
10	630096200	Brake Link Pin	2
11	630066070	Brake Pull Rod	2
12	630062178	Brake Cylinder (Not applicable on -818 axle)	2
13	660060217	Brake Link Pin Circlip	2
14	660300167	Brake Piston Seal (Internal)	2
15	660300159	Brake Piston Seal (External)	2
16	630064190	Brake Piston	2
17	630183040	Brake Pull Rod Nut	2
18	748440085	Brake Pull Rod Locknut	2
19	630069066	Brake Piston Spring	2
20	630036297	Brake Cylinder Cap (Not Applicable on -818 axle)	2
21	748210751	Brake Cylinder Cap Setscrew (Not applicable on -818 axle)	6
22	660240108	Brake Cylinder Cap Setscrew Spring Washer (Not applicable on -818 axle)	6
23	74821077	Brake Cylinder Setscrew (Qty only 4 on -818 axle)	8
24	660240108	Brake Cylinder Setscrew Spring Washer (Qty only 4 on 818 axle)	8
25	630183065	Coupling Flange Nut	1
26	630189070	Coupling Flange Washer	1
27	670130117	Coupling Flange (C/W Dustcover)	1
28	630131130	Coupling Flange Dustcover	1
29	660300142	Coupling Flange Oil Seal	1
30	660100658	Bevel Pinion Bearing Cone	2
31	630040141	Bevel Pinion Bearing Spacer Shim .002 (.051 mm)	4
	630040158	Bevel Pinion Bearing Spacer Shim .003 (.076 mm)	4
	630040166	Bevel Pinion Bearing Spacer Shim .005 (.127 mm)	4
32	660100666	Bevel Pinion Bearing Cup	2
33	630075097	Bevel Pinion Bearing Cone Spacer	1
34	630040638	Bevel Pinion Bearing Shim .002 (.051 mm)	4
	630040646	Bevel Pinion Bearing Shim .003 (.076 mm)	4
	630040653	Bevel Pinion Bearing Shim .010 (.254 mm)	4
35	630127567	Bevel Pinion	1
	630128565	Bevel Wheel	1
36	630031165	Differential Pinion Thrust Washer	4
37	630125058	Differential Pinion <i>USE 689.000657 KIT</i>	4
38	748415061	Differential Cage Bolt	8
39	630179600	Differential Cage Bolt	8
40	630031173	Differential Bevel Wheel Thrust Washer	2
41	630124051	Differential Bevel Wheel <i>USE 689.000657 KIT</i>	2
42	630126056	Differential Trunnion	1
43	630123111	Differential Cage (Bossed)	1
	630123129	Differential Cage (Recessed) <i>USE 670123328</i>	1
44	660100435	Differential Bearing Cone	2
45	660100443	Differential Bearing Cup	2
46	630033260	Differential Bearing Nut (only on -412 axle)	2
	630033120	Differential Bearing Nut	2
47	748211023	Differential Bearing Housing Setscrew	18
48	660240116	Differential Bearing Housing Setscrew springwasher	18
49	660500055	Brake Cylinder Bleed Valve	2
50	630096184	Torque Pin (only on -412 axle)	2
51	630131049	Torque Pin Cover (only on -412 axle)	2
52	748130744	Torque Pin Cover Setscrew (only on -412 axle)	4
53	660240090	Torque Pin Cover Setscrew springwasher (only on -412 axle)	4
54	630122055	Differential Bearing strap (only on -412 axle)	2
55	630023170	Differential Bearing Nut locking strap (only on -412 axle)	2
56	748210520	Differential Bearing Nut locking strap lockscrew (only on 412 axle)	2
57	630179634	Differential Bearing Strap Bolt (only on -412 axle)	4
58	740157125	Differential Bearing Strap washer (only on -412 axle)	4
59	630075774	Spacer	2
60	630062244	Brake cylinder (only on -818 axle)	2
61	630036552	Brake cylinder End Cap (only on -818 axle)	2
62	748210736	Blanking Setscrew (only on -818 axle or when item 60 is fitted)	4
63	742171033	Dowty washer (only on -818 axle or when item 60 is fitted).	4



**DRIVE AXLE
CASING AND HUB ASSEMBLY**

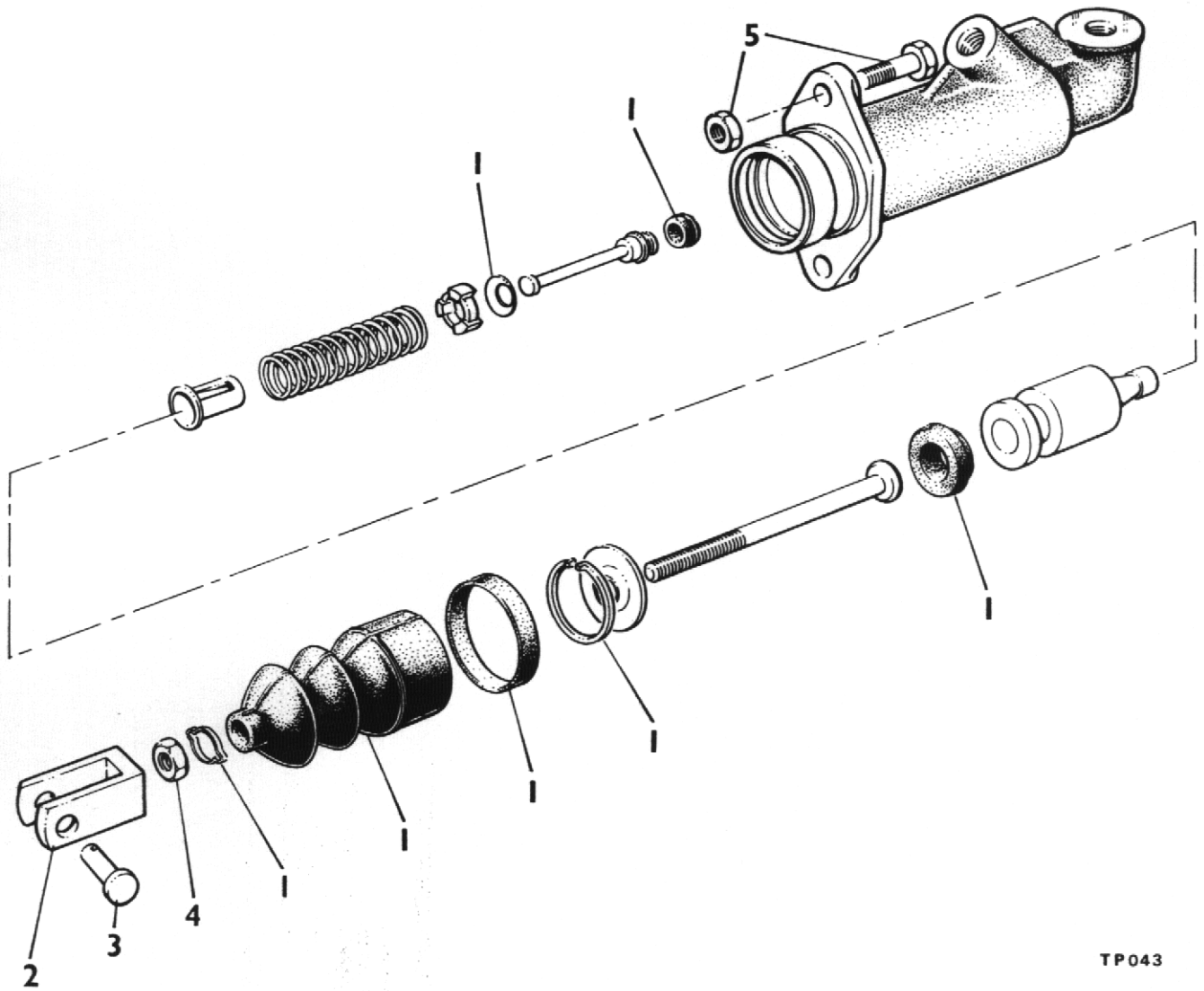
Item No	Part No.	Description	Qty
	693000412	Drive Axle (complete)	1
	693000610	Drive Axle (complete)	1
	693000776	Drive Axle (complete)	1
	693000818	Drive Axle (complete)	1
1	630001291	Axle Casing (only on - 412 axle)	1
	630001457	Axle Casing	1
2	630036289	Axle Casing Cover (only on - 412 axle)	1
	630036503	Axle Casing Cover	1
3	748210777	Casing Cover Setscrew	24
4	660240108	Casing Cover Setscrew Spring Washer	20
5	742171033	Casing Cover Dowty Washer	4
6	742222034	Plug (Should not normally be removed from Casing)	1
7	630006167	Mounting Arm (LH) (only on - 412 & -610 axles)	1
	630006274	Mounting Arm (LH)	1
8	630006175	Mounting Arm (RH) (only on -412 & -610 axles)	1
	630006282	Mounting Arm (RH)	1
9	630016315	Oil Seal Distance Piece	2
10	660300076	Oil Seal Assembly	2
11	630016307	Oil Seal Housing	2
12	660100047	Hub bearing Cone	4
13	680300205	Hub Assembly (including items 14, 34 & 35)	2
14	660100039	Hub Bearing Cup	4
15	630075089	Bearing Spacer	2
16	630048078	Annulus Dowel	6
17	630026298	Annulus	2
18	630048110	Planet Carrier Dowel	8
19	660330057	Planet Carrier Setscrew Seloc Washer	2
20	630029300	Planet Carrier	2
21	742223016	Planet Carrier Oil Plug 1/8" BSP	2
	742222018	Planet Carrier Oil Plug 1/4" BSP	2
22	630035018	Planet Carrier Thrust Button	2
23	630027189	Planet Wheel	6
24	630030209	Planet Pin	6
25	630184055	Planet Carrier Core Plug	6
26	630031181	Planet Wheel Side Washer	12
27	748211023	Planet Carrier Setscrew	20
28	660240116	Planet Carrier Setscrew Spring Washer	18
29	660200136	Planet Wheel Needle Rollers	240
30	630032767	Planet Wheel Needle Roller Spacer	6
31	660390010	Planet Pin Retaining Pin	6
32	630180145	Annulus Setscrew	6
33	660170081	Bearing Spacer Pin	2
34	630021091	Wheel Nut <i>WCSE197</i>	16
35	630020127	Wheel Stud <i>W10099A01</i>	16
36	660240108	Seal Housing Setscrew Spring Washer	16
37	748210777	Seal Housing Setscrew	16
38	748211023	Mounting Arm Setscrew	18
39	660240116	Mounting Arm Setscrew Spring Washer	18
40	742222059	Axle Casing Oil Level Plug	1
41	660500014	Axle Casing Breather	1
42	660190097	Axle Casing Magnetic Oil Drain Plug	1
43	630173447	Mounting Arm Studs	18
44	748440077	Mounting Arm Stud Nuts	18
45	660310091	Hub Oil Seal Ring	4
46	748230841	Mounting arm bolt (only used on -412 & 610 axles)	2
47	742171041	Mounting arm bolt Dowty washer (only used on -412 & -610 axles)	2
	680500085	Planet Carrier Assembly (Comprising items 20,23,24,25,26, 29,30 & 31)	2

ANNULUS SHIM PACK 630041735



WHEELS AND TYRES

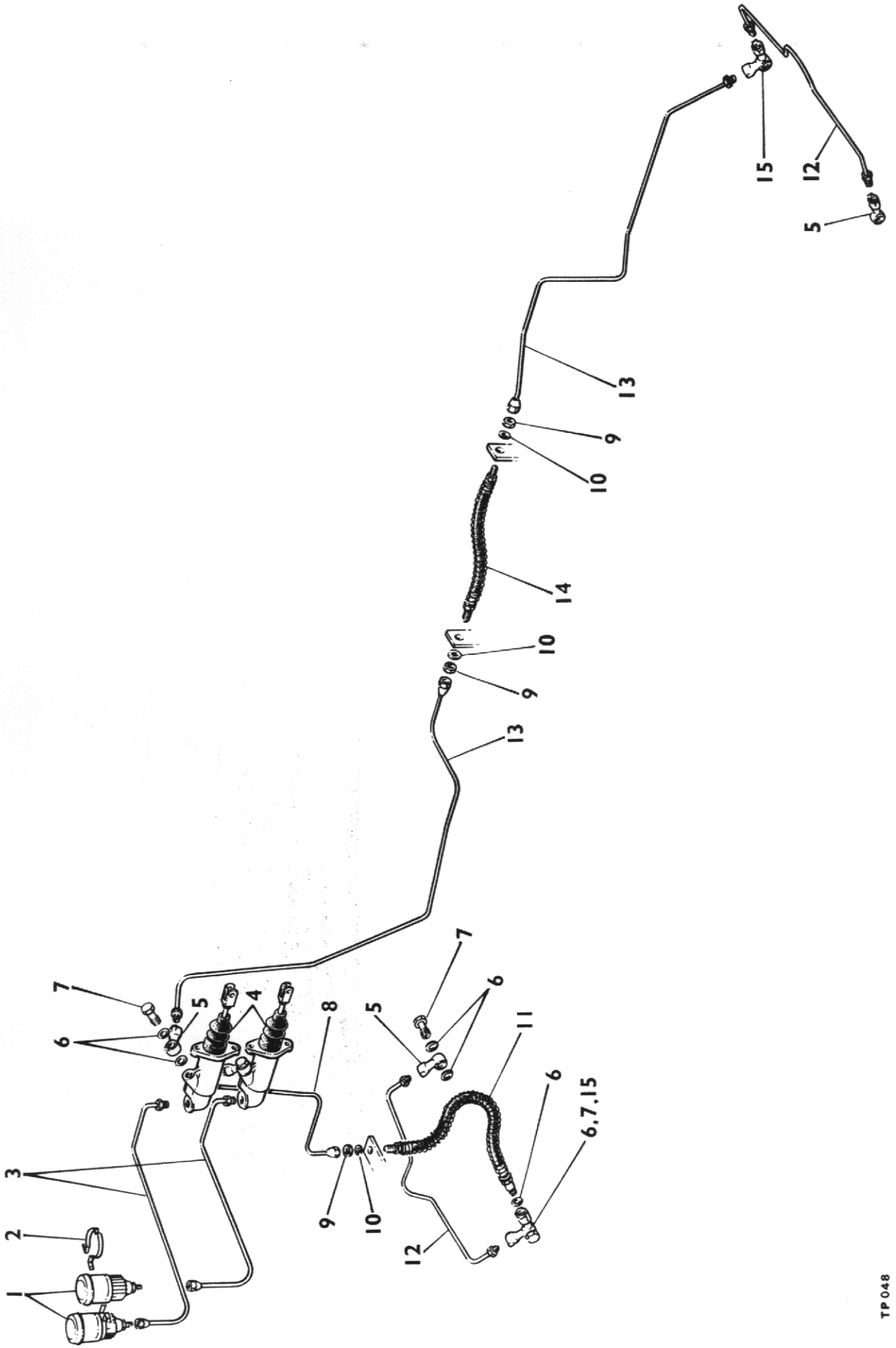
Item No.	Part No.	Description	Qty.
1	24S09 24S10	L/H Wheel Assembly R/H Wheel Assembly	2 2
2	30181A01	Wheel rim 11 x 18	4
3	20S14	Tyre 12.5 x 18-10 ply	4
	23S05	Tube 12.5 x 18	4



TP043

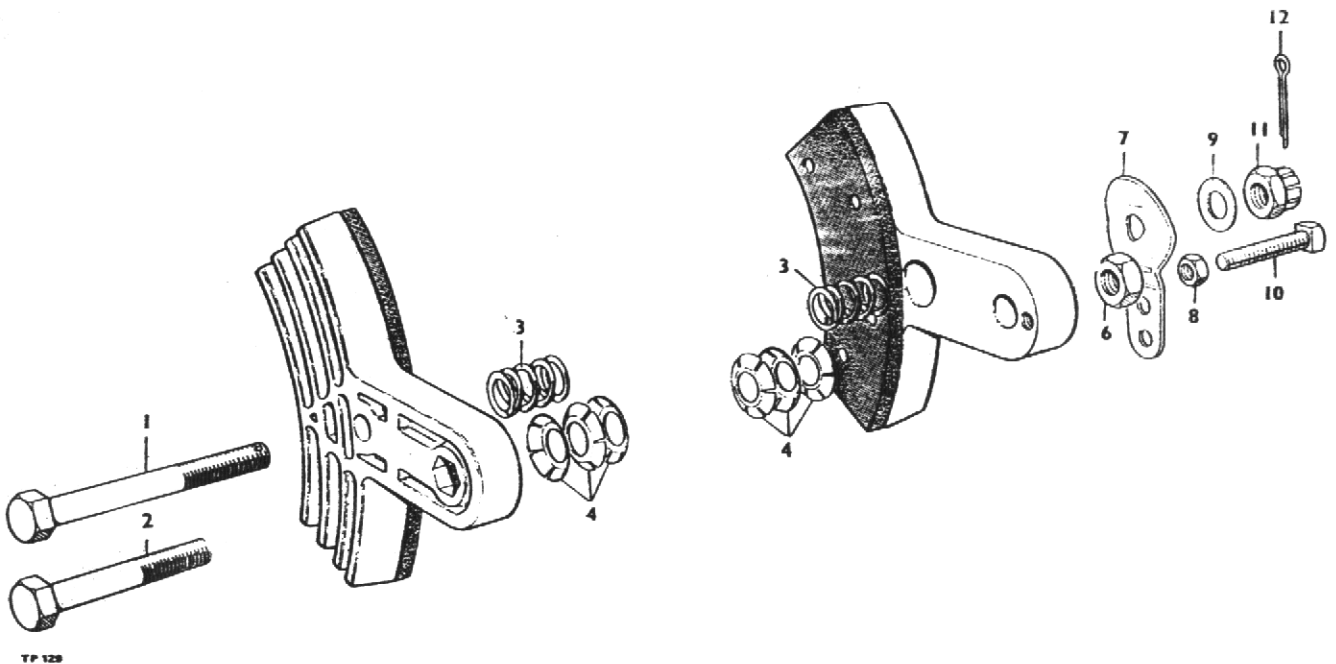
BRAKE MASTER CYLINDER

Item No.	Part No.	Description	Qty
	64066004	Master Cylinder Complete	2
1	SP.2636	Service Kit	A/R
2	64671286	Clevis	1
3	C174Y	Clevis Pin	1
4	64100052	Locknut	1
5		Bolt 3/8" BSF x 1 1/2" Long & Nut	2



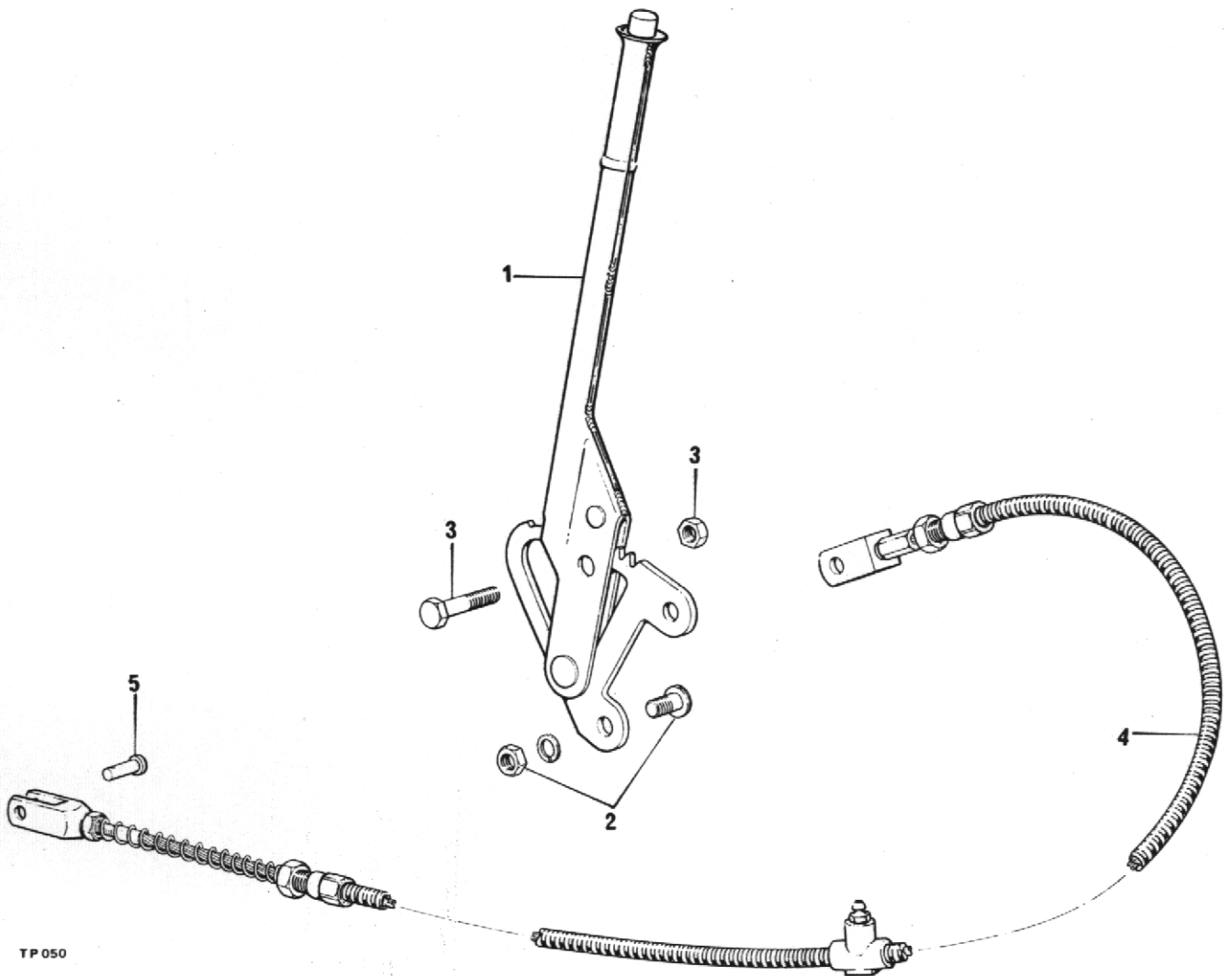
BRAKE PIPES AND FITTINGS

<i>Item No.</i>	<i>Part No.</i>	<i>Description</i>	<i>Qty</i>
1	64047211	Header Tank	2
2	378620	Header Tank Clip C/W Bolt & Nut	2
3	3424240W	Pipe ¼" Dia. x 21" Long	2
4	6406604	Master Cylinder (See Page 37)	2
5	64474287	Banjo	4
6	378700	Banjo Washer	13
7	64473063	Banjo Bolt	6
8	DM.79-2	Pipe 3/16" Dia. x 19" Long	1
9	64100050	Locknut	3
10	64140087	Shakeproof Washer 3/8" Dia.	3
11	64047903	Flex Pipe 11" Long	1
12	64473383	Pipe 3/16" x 21" Long	2
13	64473434	Pipe 3/16" x 38" Long	2
14	64046115	Flex Pipe 9½" Long	1
15	64474289	Double Banjo	2



CALIPER, parking brake

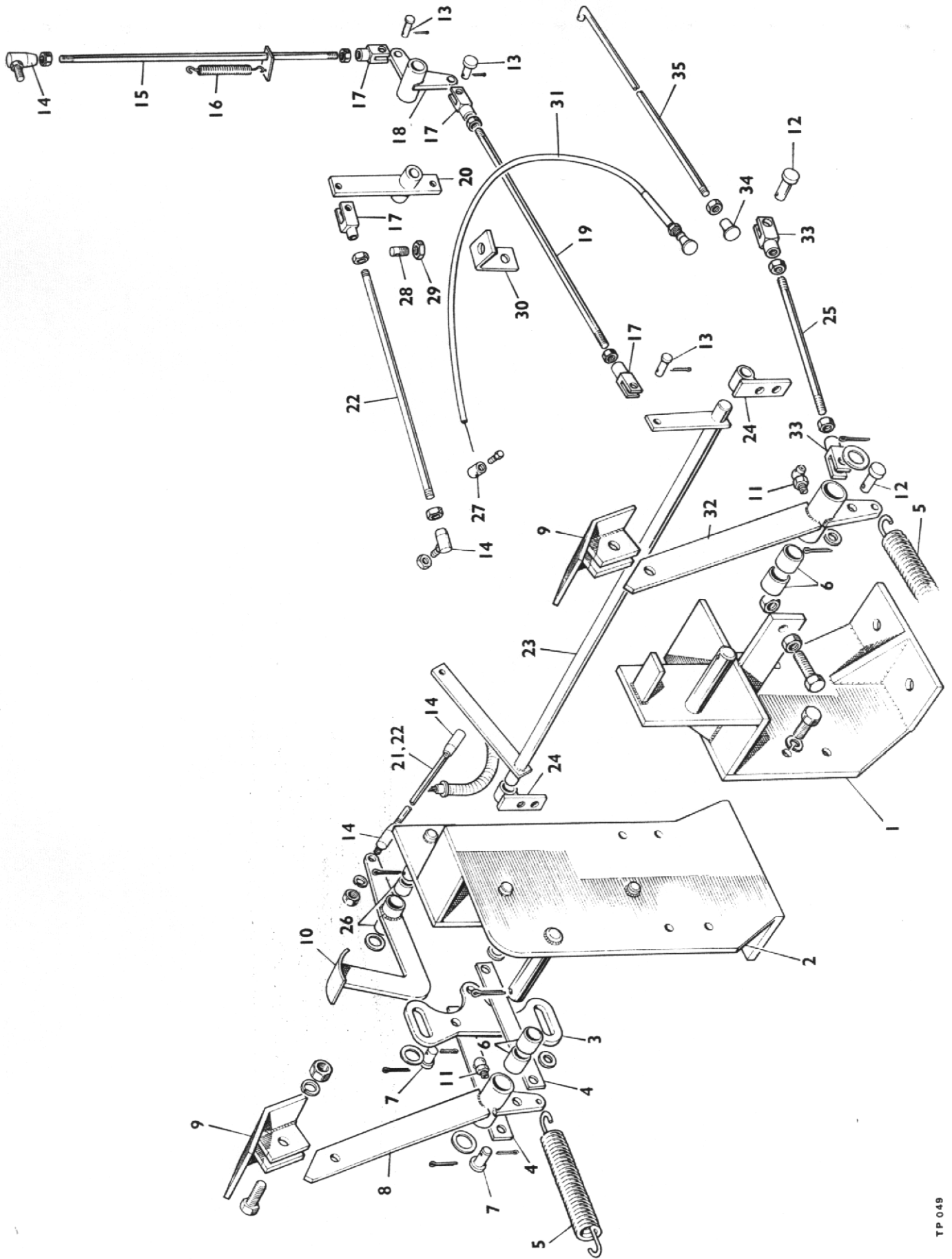
Item	Part no	Description	Qty
1A	10578A01	CALIPER, one pair, assembly	1
1	28S02T	SCREW	1
2	28S02P	SCREW	1
3	10578A0101	SPRING, centring	2
4	10578A0102	WASHER, tension	6
6	9S02	NUT	1
7	10578A0104	CAM	1
8	230S01	NUT, locking	1
9	10578A0105	WASHER	1
10	66S01H	SCREW, set	1
11	227S02	NUT, castle	1
12	44S01C	PIN, cotter	1
13	1072A4	PAD c/w rivets	2



TP050

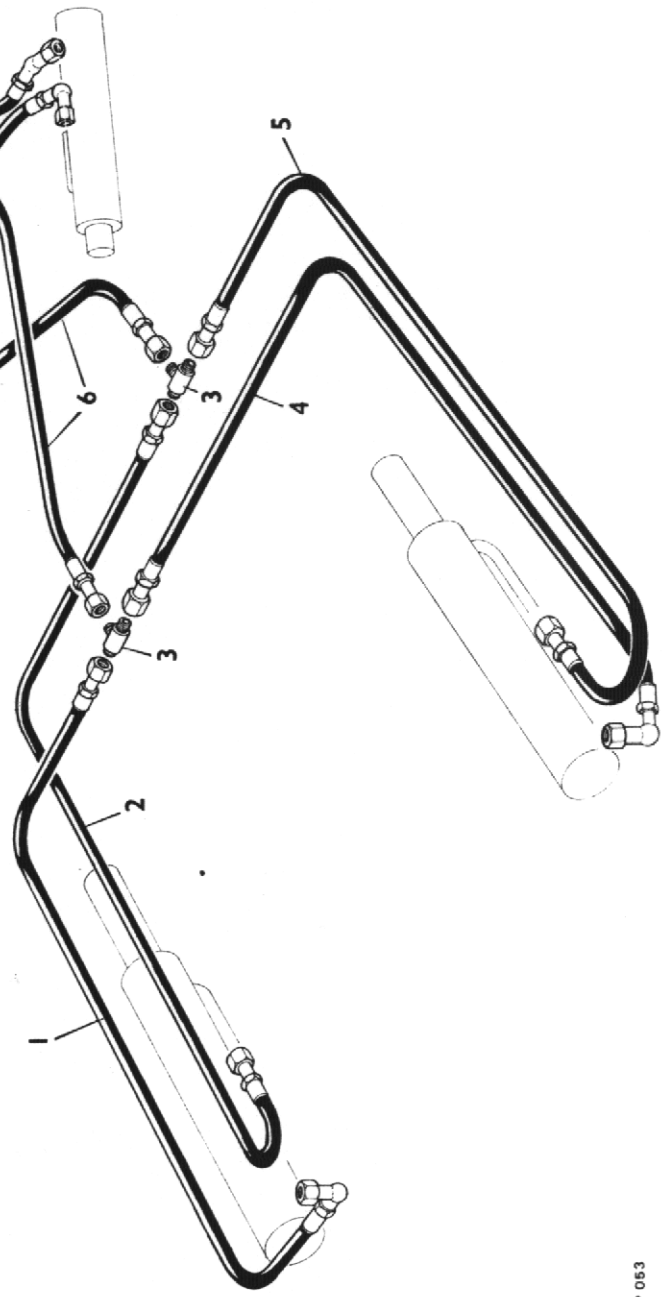
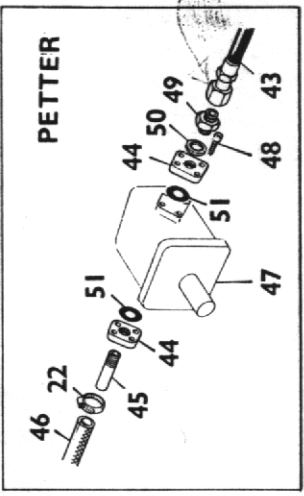
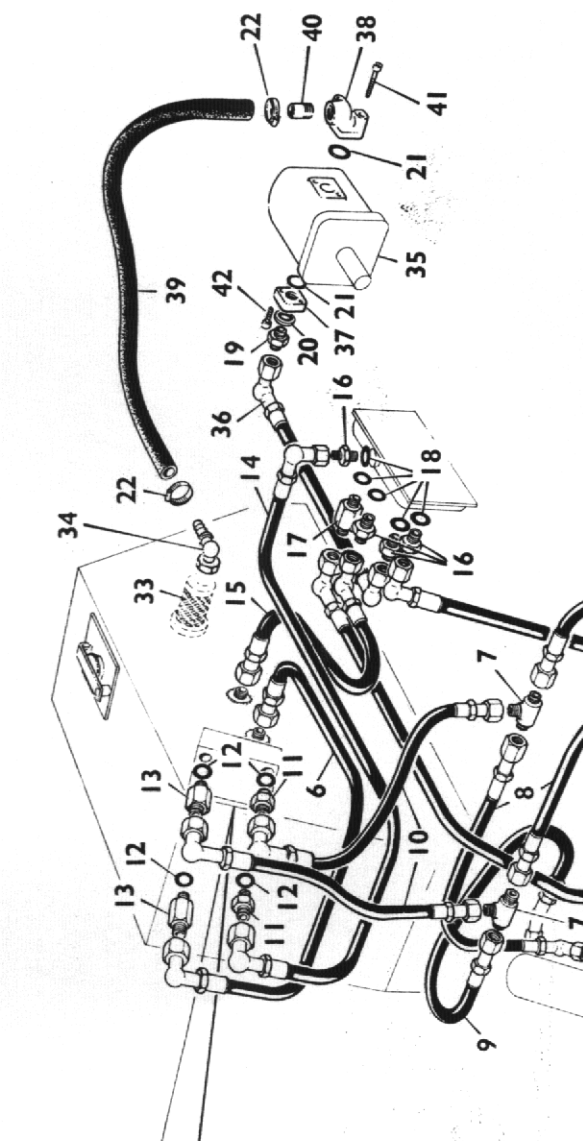
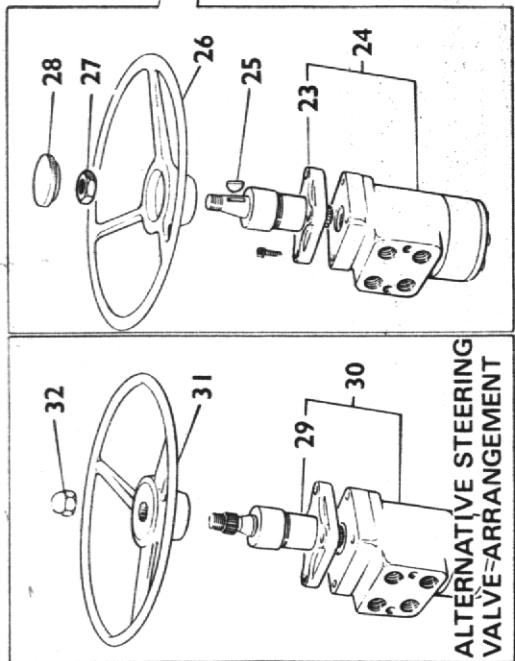
TRANSMISSION HANDBRAKE ASSEMBLY

Item No.	Part No.	Description	Qty.
1	303	Handbrake Assembly	1
2		Mushroom Hd. Bolt, 3/8" BSF x 1" Long & Nut	2
3		Hex. Hd. Bolt, 3/8" BSF x 1 3/4" Long & Nut	1
4	4-60-254	Brake Cable	1
5	4-35-264	Clevis Pin	1



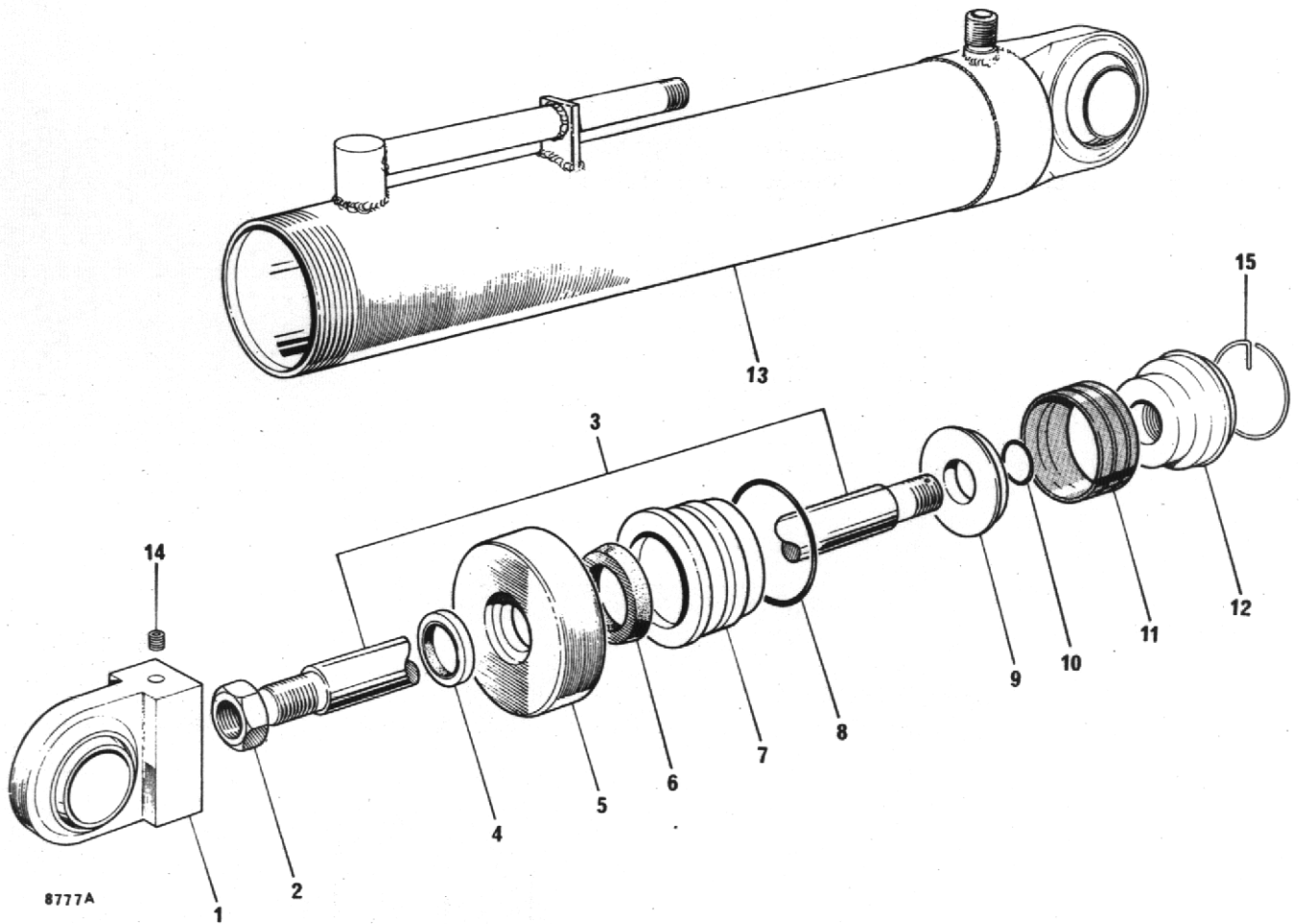
PEDALS AND CONTROLS

<i>Item No.</i>	<i>Part No.</i>	<i>Description</i>	<i>Qty</i>
1	4-60-169	Gearbox Bracket — L.H.	1
2	4-60-290	Gearbox & Brake Cylinder Bracket — R.H.	1
3	4-60-119	Footbrake Balance Arm	1
4	4-60-193	Footbrake Balance Arm Link	2
5	C173-B	Return Spring	2
6	WB1212	Pedal Bush	4
7	C174XL	Clevis Pin	2
8	4-60-129	Brake Pedal	1
9	4-60-130	Pedal Pad	2
10	4-60-127	Accelerator Pedal	1
11	T90	Grease Nipple — (90°)	2
12	C174X	Clevis Pin	2
13	C174Y	Clevis Pin	3
14	C160B	Accelerator Rod Ball Ends	3
15	C240	Accelerator Rod (Lister)	1
16	C173D	Spring (Lister)	1
17	C174D	Clevis	3
18	4-60-164	Bell Crank (Lister)	1
19	4-60-165	Accelerator Rod	1
20	4-60-237	Accelerator Transfer Lever (Petter)	1
21	4-60-167	Accelerator Rod (Lister)	1
22	4-60-167	Accelerator Rod (Petter)	2
23	4-60-221	Accelerator Transfer Shaft	1
24	4-60-162	Accelerator Transfer Shaft Bracket	2
25	F506B	Clutch Rod	1
26	WB0808	Bush	2
27	4-35-196	Solderless Nipple (Petter)	1
28	4-60-242	Clamp Screw (Petter)	1
29	4-60-241	Hex. Nut 3/8" UNF (Petter)	1
30	4-60-236	Cable Bracket (Petter)	1
31	4-60-239	Engine Stop Control Cable (Petter)	1
32	4-60-128	Clutch Pedal	1
33	C174	Clevis	2
34	4-60-243	Knob 1/4" UNF (Lister)	1
35	4-60-225	Engine Stop Control Rod (Lister)	1



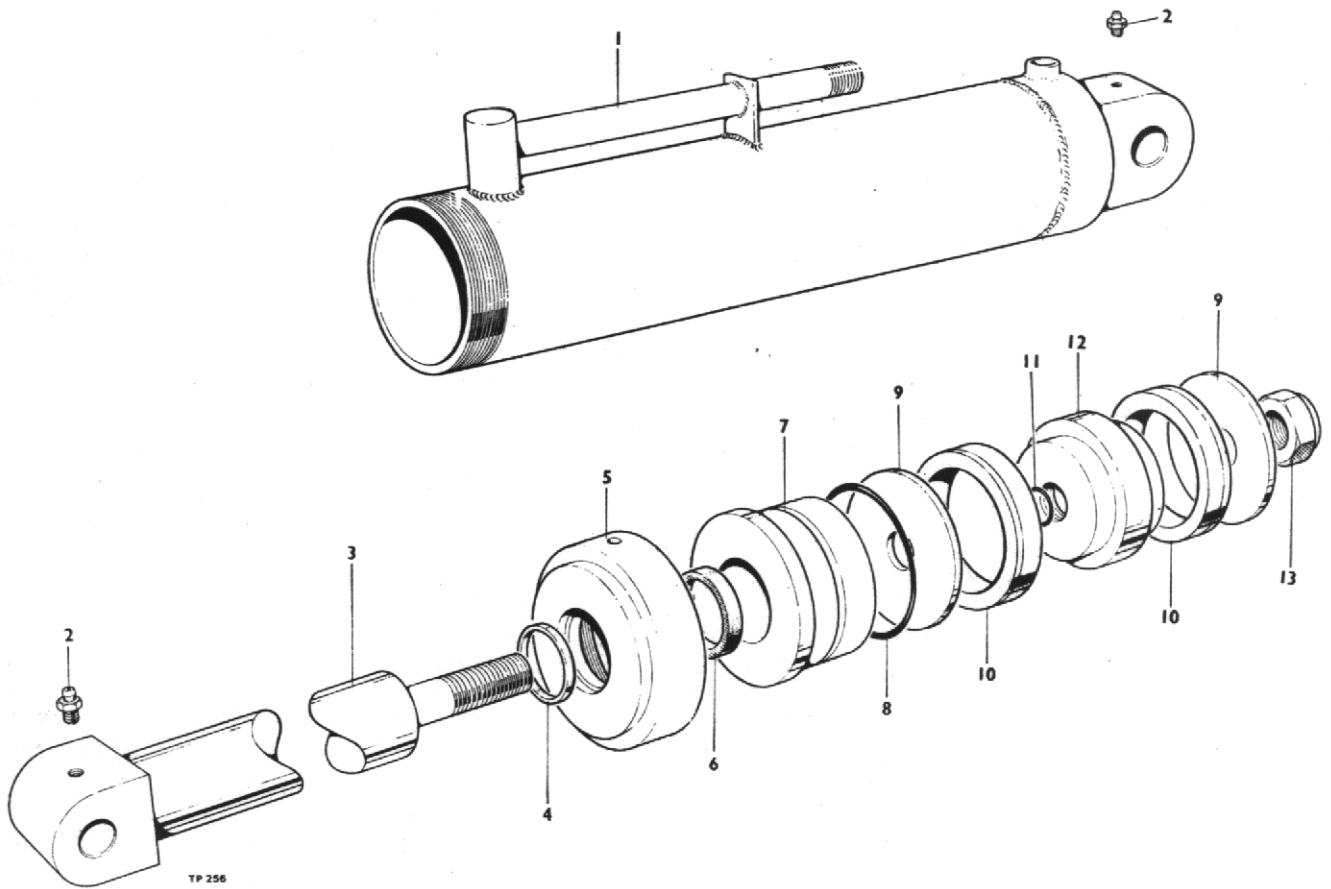
HYDRAULIC SYSTEM

Item No.	Part No.	Description	Qty
1	4-60-135	Hose 77" Long ST. - 90°	1
2	4-60-136	Hose 71" Long ST. - ST	1
3	2ST-72-M	Tee	2
4	4-60-137	Hose 61" Long ST. - 90°	1
5	4-60-138	Hose 80" Long ST. - ST	1
6	T63-E	Hose 73" Long ST. - 90°	3
7	4-60-207	Tee	2
8	4-35-108-H	Hose 33½" Long ST. - 90°	2
9	4-60-134	Hose 15" Long ST. - 135°	2
10	4-60-133	Hose 48" Long ST. - 90°	2
11	4-35-40K	Adaptor (Short) 3/8" BSP x ¾" UNF	2
12	2ST-72J	'O' Ring	4
13	4-60-115	Adaptor (Long) 3/8" BSP x ¾" UNF	2
14	4-60-132	Hose 73" Long 90° - 90°	1
15	3SH-60	Hose 51" Long ST. - 90°	1
16	4-60-159	Adaptor 3/8" BSP x 7/8" J.I.C.	4
17	4-60-158	Adaptor (Long) 3/8" BSP x 7/8" J.I.C.	1
18	S9698	'O' Ring	5
19	T14J	Adaptor 3/8" x 3/8" BSP (Lister)	1
20	T14I	Sealing Washer (Lister)	1
21	DH 69 AS DH 69 AS	'O' Ring (Lister)	2
22	T63M	Clip	2
23	SCA315	Steering Column (Taper/Key Type)	1
24	4-60-292	Steering Valve Complete (Taper/Key Type) - (OSP315)	1
25		Woodruff Key No. 11	1
26	153	Steering Wheel (Taper/Key Type)	1
27	4-60-247	Steering Wheel Nut	1
28	153A	Steering Wheel Cap	1
29	D-15-2099	Steering Column (Taper/Serration Type)	1
30	4-60-293	Steering Valve Complete (Taper/Serration Type) - (OSP315)	1
31	347K	Steering Wheel (Taper/Serration Type)	1
32	C304	Domed Nut 5/8" UNF	1
33	UC1457	Suction Filter	1
34	BSE109	90° Hose Fitting ¾" BSP	1
4/60 LISTER			
35	IP3072 ATDFB	Hydraulic Pump	1
36	3SH62	Hose 47" Long 90° - 90°	1
37	4-35-261	Outlet Adaptor	1
38	IPE4	Elbow Adaptor	1
39	4-60-160	Hose ¾" Dia. Cotton Braid	1
40	T48	Tube	1
41		Capscrew 5/16" UNC x 2¼" Long	2
42		Capscrew 5/16" UNC x 1" Long	2
4/60 PETTER			
43	4-60-132	Hose 73" Long 90° - 90°	1
44	PD4352-21A	Adaptor	2
45	T48	Tube	1
46	4-60-161	Hose ¾" Dia. Cotton Braid	1
47	IP 3060 AF	Hydraulic Pump	1
48		Capscrew 5/16" UNF x 1" Long	8
49	T63K	Adaptor 3/8" x ½" BSP	1
50	T14H	Sealing Washer	1
51	DH-25-19	'O' Ring	2
52	X 14	P'cup (not illustrated)	1



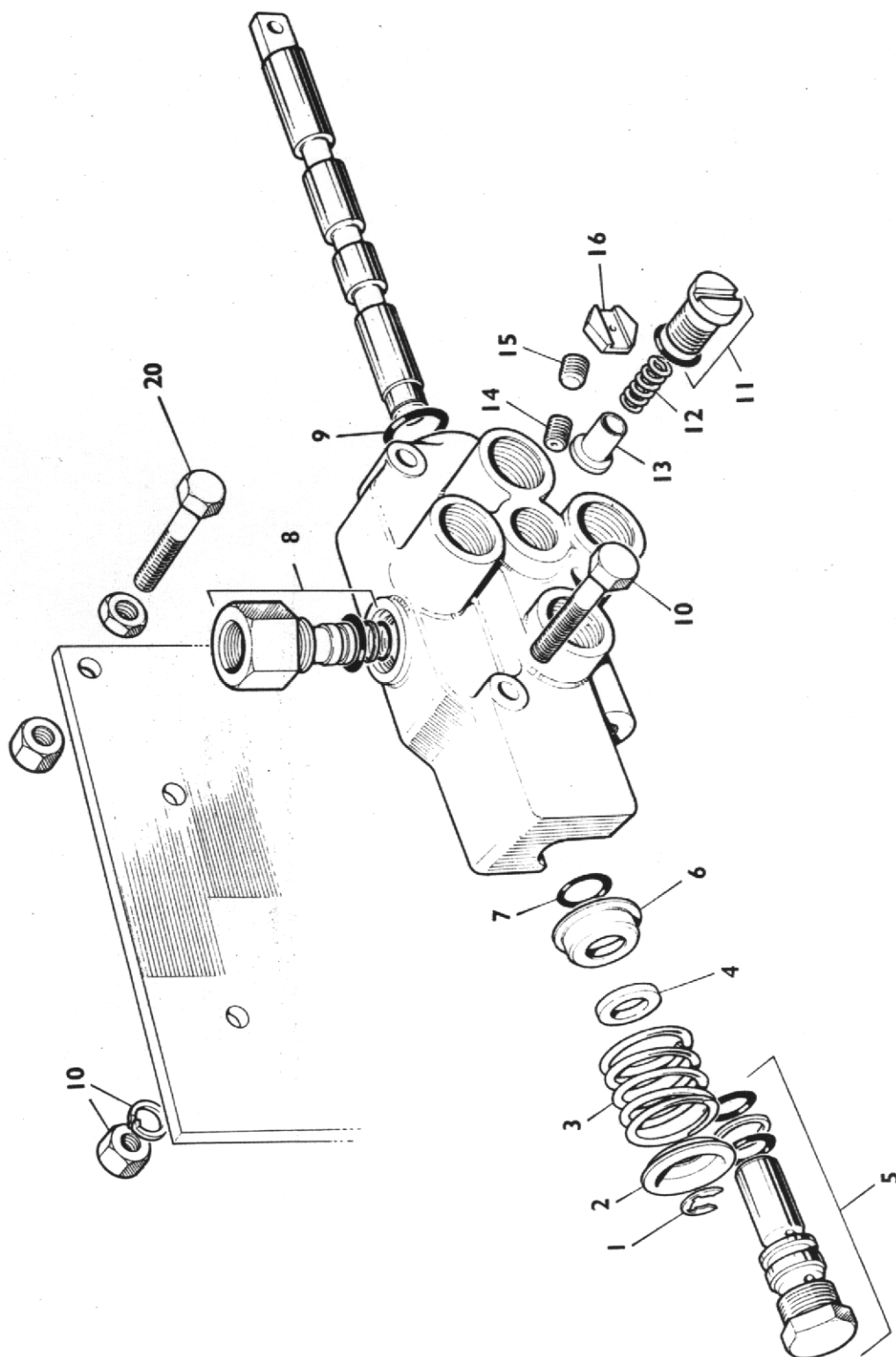
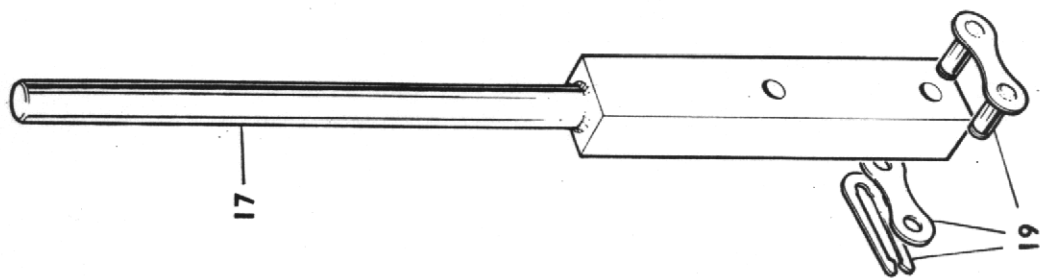
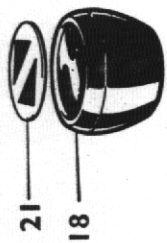
STEERING RAM

Item No.	Part No.	Description	Qty.
	T094	Ram Complete (2 Per Machine)	
1	K1/11	Piston Rod Fitting	1
2	K1/19	Locknut	1
3	K1/2	Piston Rod	1
4	K1/18	Wiper	1
5	K1/4	Tube Cap	1
6	K1/17	Sleeve Seal	1
7	K1/5	Sleeve	1
8	K1/16	Sleeve 'O' Ring	1
9	K1/15	Backing Washer	1
10	K1/13	Piston 'O' Ring	1
11	K1/12	Piston Seal	1
12	K1/14	Piston Head	1
13	K1/20	Cylinder, Bosses & End Cap	1
14	K1/21	Grub Screw	1
15	K1/22	Spring Ring	1
	CSE 189	Seal Kit (comprising Items 4, 6, 8, 10 & 11)	A/R




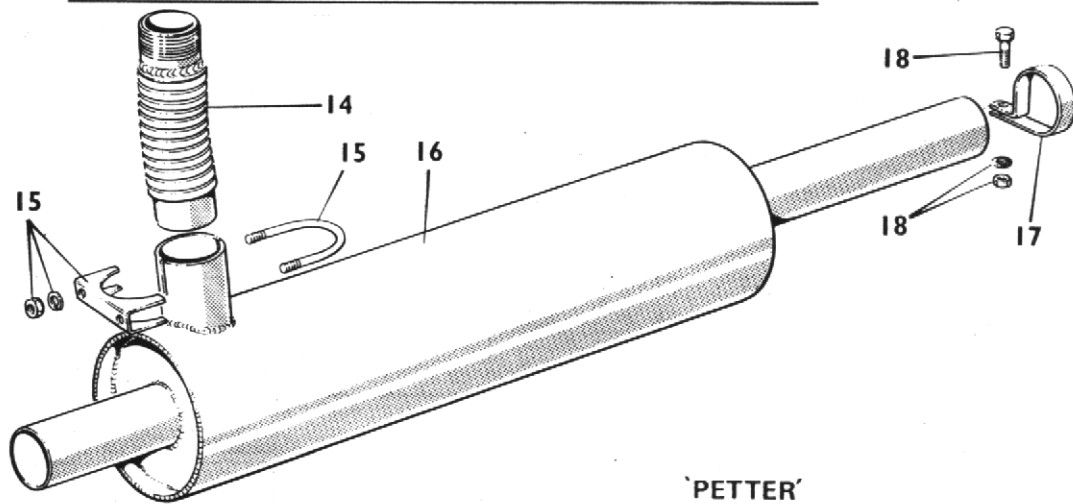
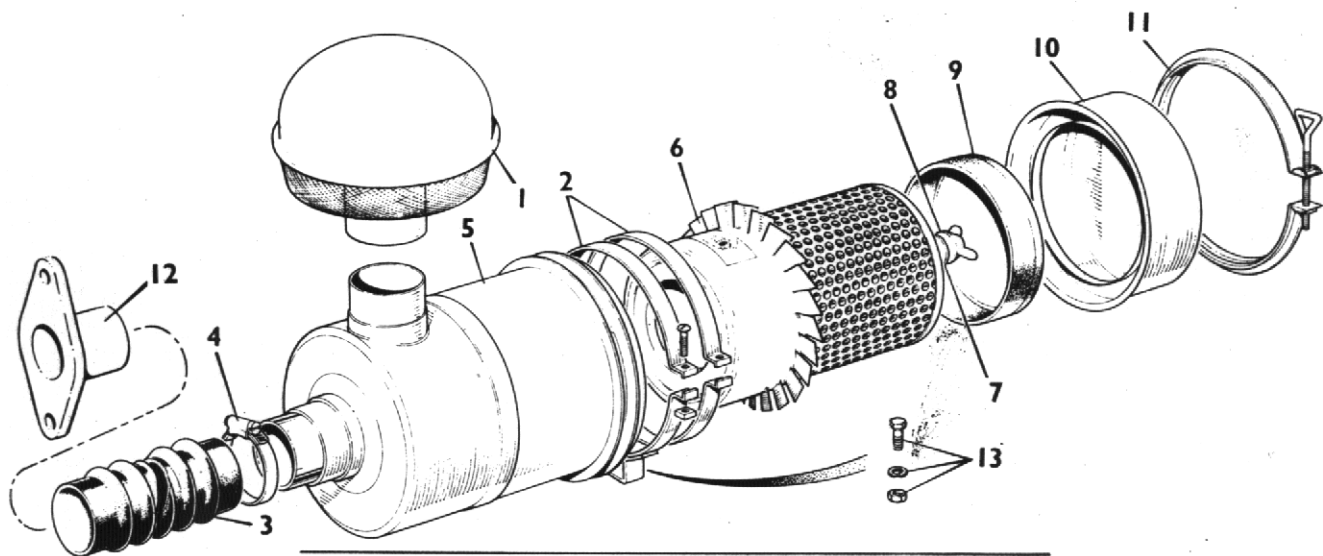
TIPPING RAM

Item No.	Part No.	Description	Qty.
	3	Cylinder Assembly Complete (Two per m/c)	
1	BE3-21	Cylinder Body	1
2	BE3-20	Grease Nipple	2
3	BE3-22	Piston Rod Assembly	1
4	BE3-15	Wiper	1
5	BE3-6	Tube Cap	1
6	BE3-16	Sleeve Seal	1
7	BE3-7	Sleeve	1
8	BE3-13	Sleeve 'O' Ring	1
9	BE3-10	Backing Washer	2
10	BE3-14	Piston Seal	2
11	BE3-12	Piston 'O' Ring	1
12	BE3-9	Piston Head	1
13	BE3-11	Lock Nut	1
	CSE 190	Seal Kit (comprising Items 4, 6, 8, 10 & 11)	A/R

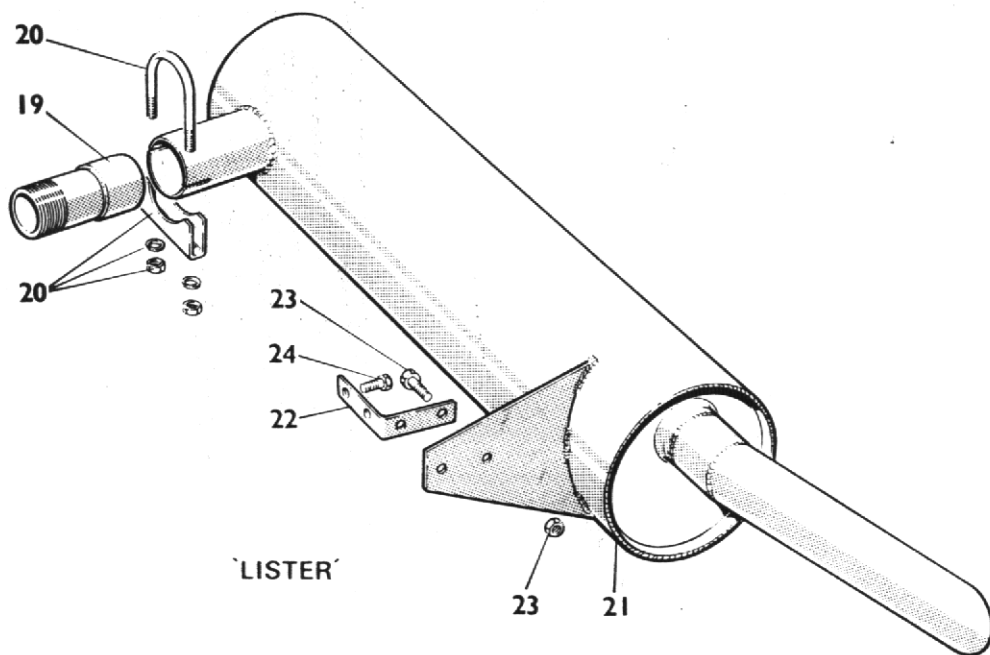


HYDRAULIC CONTROL VALVE

Item No.	Part No.	Description	Qty.
	300-024-GAA	Valve Assembly Only, Complete	1
1	16124-50	Clip Ring	1
2	15546-6	Washer, Shallow	1
3	30501-39	Spring, Spool	1
4	16048-31	Spacer Washer	1
5	32018-J9	Relief Valve Assembly	1
6	30501-10	Washer, Deep	1
7	100-146-012	'O' Ring 3/32" x 5/8" I/D	1
8	30501-15	Pressure Beyond Plug Assembly	1
9	100-147-063	'O' Ring	1
10		Bolt, Nut 5/16" UNF x 2 1/2" Long	2
11	30501-17	Plug Assembly Lift Check	1
12	30501-13	Spring, Lift Check	1
13	30501-12	Plunger, Lift Check	1
14	300024004	1/16" - 27 NPTF Plug (.070")	1
15	16062-1	1/8" - 27 NPTF Plug	1
16	16097-451	Orifice Plate (.0935")	1
17	4-60-316	Actuating Lever	1
18	F4-45-184	Lever Knob	1
19	4-60-178	Chain Link	1
20		Bolt, 3/8" BSF x 2" long and Nuts	1
21	DM 156	Label	1



'PETTER'



'LISTER'

AIR CLEANER AND EXHAUST SYSTEM

Item No.	Part No.	Description	Qty.
	10532A05	Air Cleaner Assembly, comprising of items 5,6,7,8,9,10 & 11	1
1	V2003201	Stack Cap	1
2	V2003271	Bracket	2
3	460190	Hose Connecting-Lister	1
	460191	Hose Connecting-Petter	1
4	97S12	Clip Hose	2
6	V600484	Element Air Filter 8"	1
7/8	V600487	Nut & Gasket Kit	1
9	DU766	Baffle	1
10	DU769	Cup Assembly	1
11	DU420	Clamp Assembly	1
12	460232	Manifold Adaptor-Petter only	1
13	11S02C	Screw Set M6	4
13A	17S03	Washer Spring	4
13B	7S02	Nut M6	4

EXHAUST SYSTEM (PETTER)

14	460147	Flexible Pipe	1
15	153S12	Clamp Exhaust	1
16	460248	Silencer	1
17	460149	Clip	1
18	8S04C	Screw Set M10	1
18A	17S05	Washer Spring M10	1
18B	7S04	Nut M10	1

EXHAUST SYSTEM (LISTER)

19	460296	Adaptor	1
20	153S12	Clamp Exhaust	1
21	460295	Silencer	1
22	460297	Bracket	1
23	11S02C	Screw Set M6	1
23A	61S02	Nut Binx M6	2
24	66S01A	Screw Set ¼ UNC X 1"	2

DECIMAL, FRACTIONAL AND METRIC EQUIVALENTS

Inches		Milli- metres	Inches		Milli- metres	
Fractions	Decimals		Fractions	Decimals		
1/64	0.015625	0.397	33/64	0.515625	13.097	
1/32	0.03125	0.794	17/32	0.53125	13.494	
3/64	0.046875	1.191	35/64	0.546875	13.891	
	1/16 = 0.0625	1.588		9/16 = 0.5625	14.288	
5/64	0.078125	1.984	37/64	0.578125	14.684	
	3/32 = 0.09375	2.381		19/32 = 0.59375	15.081	
7/64	0.109375	2.778	39/64	0.609375	15.478	
	1/8 = 0.125	3.175		5/8 = 0.625	15.875	
9/64	0.140625	3.572	41/64	0.640625	16.272	
	5/32 = 0.15625	3.969		21/32 = 0.65625	16.669	
11/64	0.171875	4.366	43/64	0.671875	17.066	
	3/16 = 0.1875	4.763		11/16 = 0.6875	17.463	
13/64	0.203125	5.159	45/64	0.703125	17.859	
	7/32 = 0.21875	5.556		23/32 = 0.71875	18.256	
15/64	0.234375	5.953	47/64	0.734375	18.653	
	1/4 = 0.250	6.350		3/4 = 0.750	19.050	
17/64	0.265625	6.747	49/64	0.765625	19.447	
	9/32 = 0.28125	7.144		25/32 = 0.78125	19.844	
19/64	0.296875	7.541	51/64	0.796875	20.241	
	5/16 = 0.3125	7.938		13/16 = 0.8125	20.638	
21/64	0.328125	8.334	53/64	0.828125	21.034	
	11/32 = 0.34375	8.731		27/32 = 0.84375	21.431	
23/64	0.359375	9.128	55/64	0.859375	21.828	
	3/8 = 0.375	9.525		7/8 = 0.875	22.225	
25/64	0.390625	9.922	57/64	0.890625	22.622	
	13/32 = 0.40625	10.319		29/32 = 0.90625	23.019	
27/64	0.421875	10.716	59/64	0.921875	23.416	
	7/16 = 0.4375	11.113		15/16 = 0.9375	23.813	
29/64	0.453125	11.509	61/64	0.953125	24.209	
	15/32 = 0.46875	11.906		31/32 = 0.96875	24.606	
31/64	0.484375	12.303	63/64	0.984375	25.003	
	1/2 = 0.500	12.700		1	1.000	25.400

INCHES INTO MILLIMETRES

Inches	0	1	2	3	4	5	6	7	8	9
0	0	25.40	50.80	76.20	101.60	127.00	152.40	177.80	203.20	228.60
10	254.00	279.40	304.80	330.20	355.60	381.00	406.40	431.80	457.20	482.60
20	508.00	533.40	558.80	584.20	609.60	635.00	660.40	685.80	711.20	736.60
30	762.00	787.40	812.80	838.20	863.60	889.00	914.40	939.80	965.20	990.60
40	1016.00	1041.40	1066.80	1092.20	1117.60	1143.00	1168.40	1193.80	1219.20	1244.60
50	1270.00	1295.40	1320.80	1346.20	1371.60	1397.00	1422.40	1447.80	1473.20	1498.60
60	1524.00	1549.40	1574.80	1600.20	1625.60	1651.00	1678.40	1701.80	1727.20	1752.60
70	1778.00	1803.40	1828.80	1854.20	1879.60	1905.00	1930.40	1955.80	1981.20	2006.60
80	2032.00	2057.40	2082.80	2108.20	2133.60	2159.00	2184.40	2209.80	2235.20	2260.00
90	2286.00	2311.40	2336.80	2362.20	2387.60	2413.00	2438.40	2463.80	2489.20	2514.61

Use in conjunction with above table.

Example: Find equivalent mm. for 84 5/8".

$$84'' = 2133.60 \text{ mm.}$$

$$5/8'' = 15.875 \text{ mm.}$$

$$84 \text{ } 5/8'' = 2149.475 \text{ mm.}$$

CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm