

WINGET

OPERATING INSTRUCTIONS & SPARE PARTS LIST

2ST DIESEL DUMPER

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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
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 2ST 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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www.winget.co.uk

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

The safe working recommendations for specific tasks are found with the instructions for the relevant operation in this Handbook.

MACHINE MODIFICATION

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 O11 8836935. Another useful publication is British Standard number BS 6264, "Procedure for Operator Training For Earth Moving Machinery" available from the British Standard Institution.

RUNNING-IN

WARNING While a gradual 'running-in' of a new engine is not necessary, it is extremely important that the instructions given in *Section 2 "Operation"* on "Running-in a new engine" should be followed very closely during the first fifty hours of operation.



DRIVING

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.

Ensure that the seat is securely fixed to the machine. Where seat belt restraints are fitted as part of Rops/Fops protection they must be worn. 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.

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.

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.

TOWING

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



Dumpers are not designed as towing vehicles. However, trailers may be towed provided that:

- 1 The combined weight of the trailer and its load does not exceed the dumper "drawbar pull of 250kg (2500N)" and dumper "drawbar load of 50kg (500N)".
- 2 Trailers may be towed in first gear on level dry ground, provided a purpose made towing pin is used.
- 3 The dumper skip must be loaded with half the rated payload to ensure tyre adhesion when braking.

NEVER tow loads up, down or across gradients.

GRADIENTS

WARNING 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.

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 Service - Hydraulic system**).

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.

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.

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

ALWAYS ensure that when using a starting handle that it 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*).

PREPARATION FOR USE

BEFORE THE 2ST DUMPER IS PUT INTO SERVICE ALWAYS CHECK THE FOLLOWING POINTS:—

(See Fig. 1)

1. Engine

Check the oil level on the dipstick (A), topping up if necessary to the full mark. See also 'Recommended Lubricating Oils', page 16.

2. Gearbox

Check the oil level on the dipstick (B), topping up if necessary to the full mark. See also 'Recommended Lubricating Oils', page 16.

3. Drive Axle

Remove level plug (C) and check that oil is up to bottom of hole. Top up if necessary through filler plug (D). See also 'Recommended Lubricating Oils', Page 16.

4. Steering Box

Remove oil level/filler plug (E) (accessible through bracket) and top up if necessary. See also 'Recommended Lubricating Oils' Page 16.

5. Fuel Tank

Remove filler cap (F) and fill with diesel oil until approximately 1" from the top.

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

6. Hydraulic Tank

Fill the hydraulic tank (G). Before removing the cap, clean the surrounding area, to prevent the possible entry of foreign matter. DO NOT MIX OILS. See 'Recommended Lubricating Oils', page 16.

7. Hydraulic Brake System (if fitted)

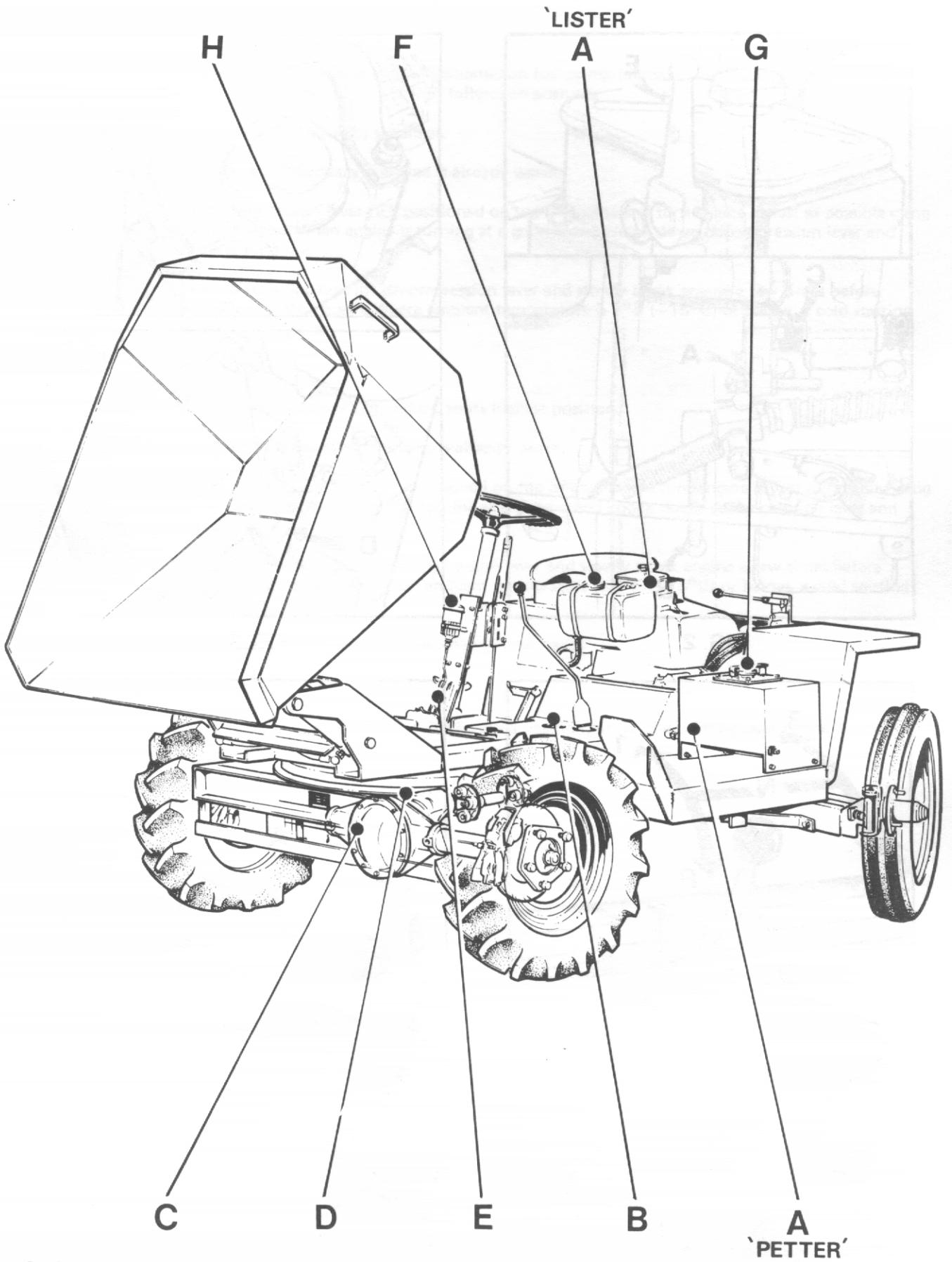
Ensure the brake master cylinder reservoir (H) is full of brake fluid. Top up if necessary to within 1/4" of the top of the reservoir. Use only brake fluid that conforms to SAE. J 1703.

8. 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.

N.B. For further Lubrication information see Fig. 6 and corresponding text (pages 8 & 9)



TP 124

FIG. 1

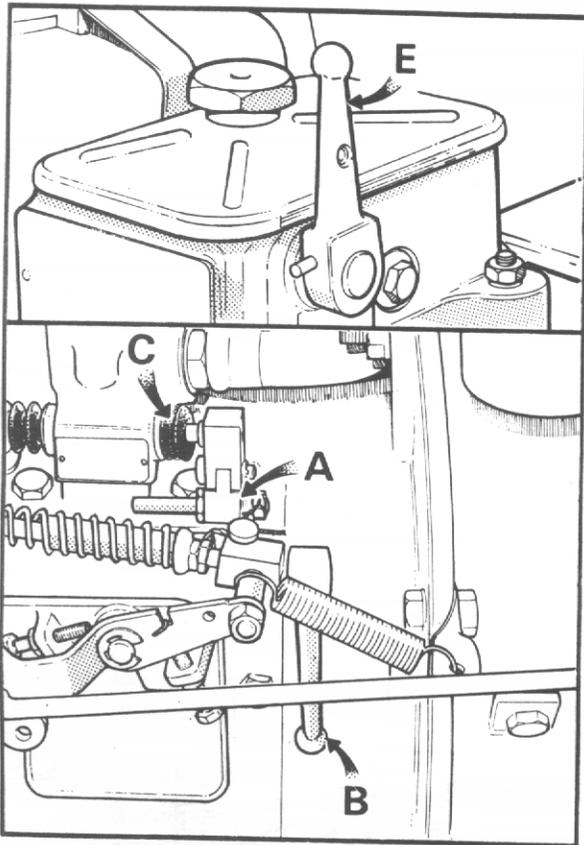


FIG. 2

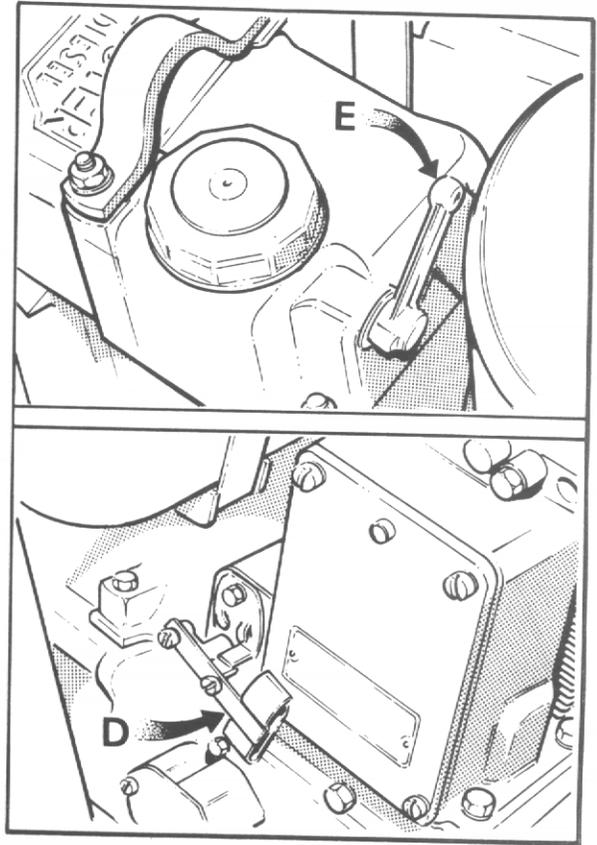
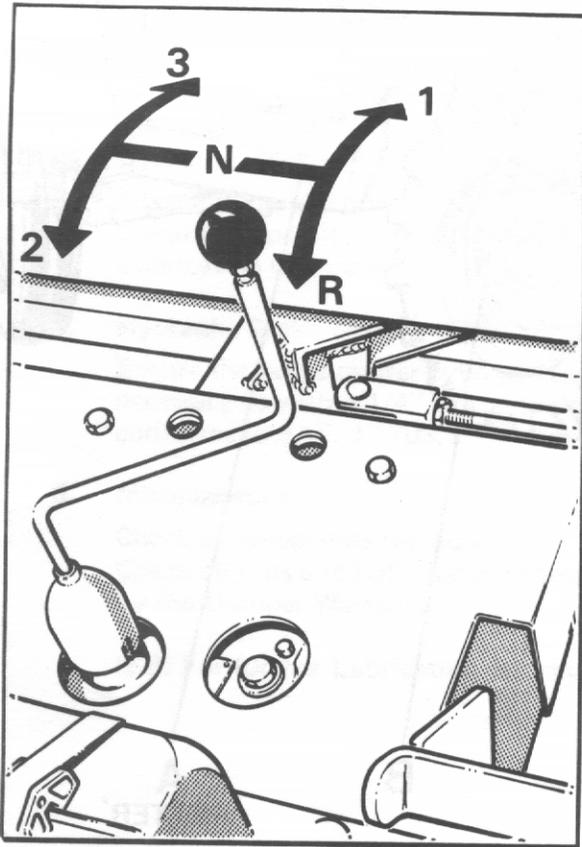


FIG. 3



TP 107

FIG. 4

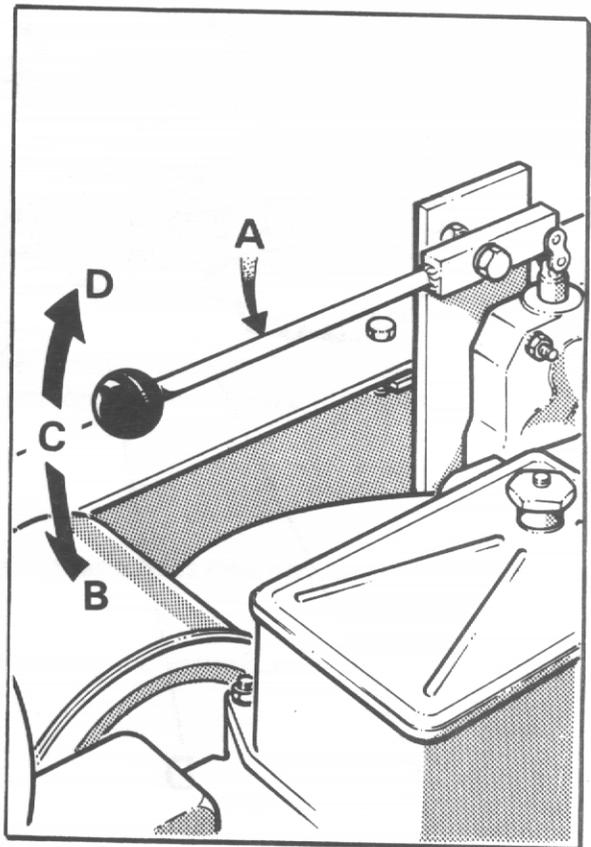


FIG. 5

OPERATION

Starting

PETTER ENGINE

(See fig. 2)

1. Lift red-painted overload stop (A) situated on fuel pump immediately above priming lever (B), and move fuel pump racks (C) into fully-open position.
2. Operate priming lever (B) six times.

NOTE: This is unnecessary if engine is already warm.

3. Lift decompression lever (E), positioned on top of engine and turn engine as fast as possible using starting handle. When engine is turning at a good speed knock down decompression lever and engine should fire.
4. If engine does not fire, lift decompression lever and slowly crank engine a few times before attempting to start again. Where ambient temperature is 5^oF (-15^oC) or below, a cold starting aid should be fitted.

LISTER ENGINE

(See fig. 3)

1. Pull out overload lever (D) and lift to its highest position.

NOTE: This is unnecessary if engine is already warm.

2. Lift decompression lever (E), positioned on top of engine and turn engine as fast as possible using starting handle. When engine is turning at a good speed knock down decompression lever and engine should fire.
3. If engine does not fire, lift decompression lever and slowly crank engine a few times before attempting to start again. When ambient temperature is 5^oF (-15^oC) or below, a cold starting aid should be fitted.
4. Set overload lever (D) horizontal when engine starts.

Stopping

PETTER ENGINE

(See fig. 2)

Hold the fuel pump rack (C) in the fully forward position, or lift the priming lever to the horizontal, until engine stops, then release.

LISTER ENGINE

(See fig. 3)

Push overload lever (D) to its lowest position.

IMPORTANT:

1. DO NOT stop engine by means of decompression levers, this will lead to damaged valve seats and cylinder head joints.
2. DO NOT stop engine by closing fuel tap or by allowing fuel tank to run dry. This will allow air into fuel lines and necessitate bleeding and priming system.

NOTE: LISTER ENGINE has a self-bleeding fuel system.

Gear shift lever

(See fig. 4)

The 2ST Dumper is fitted with three forward gears (1), (2), (3) and one reverse gear (R). When changing gear, the clutch pedal is used in the normal manner.

Skip Control lever

(See fig. 5)

1. Control lever (A) has three positions DUMP (B), HOLD (C) and RETURN (D).
2. Push lever DOWN to DUMP (B) to deposit load.
3. Pull lever UP to RETURN (D) to return skip to carrying position.

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

Turntable Release lever

To release turntable, lift locking lever (which is situated on top of the chassis directly behind the right hand Drive wheel). Revolve skip to required position and lock it by pushing lever down, ensuring the locking lug locates in turntable locking plate.

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 approximately 1" of top. Never allow there to be a depth of less than 2" of fuel in tank.
3. WEEKLY check oil level in gearbox and fill to full mark on dipstick, if necessary.
4. WEEKLY remove oil level plug from drive axle, oil level should be to bottom of hole. Top up, if necessary through filler plug.
5. WEEKLY check oil level in hydraulic tank. Always clean the surrounding area before removing cap to prevent possible entry of foreign matter. Fill tank, if necessary, to within 1" of top.
6. WEEKLY check brake fluid level in master cylinder reservoir (if hydraulic brakes are fitted). Top up, if necessary to within 1/4" of top.
7. WEEKLY apply grease to all grease nipples.
8. WEEKLY check all wheel nuts and tighten, if necessary.
9. WEEKLY check tyre pressures 35 lb/sq. in:
10. OCCASIONALLY check all nuts and bolts, and tighten if necessary.

Lubrication

(See fig. 6)

Period	Key	Description	Lubrication	No. of Points
Daily	1	Engine	Engine Oil	1
	2	Fuel tank	Diesel Oil	1
Weekly	3	Gearbox	Gearbox Oil	1
	4	Drive Axle	Axle Oil	1
	5	Steering box	Axle Oil	1
	6	King Pins	Grease Gun	4
	7	Track rod ball ends	Grease Gun	2
	8	Drag link ball ends	Grease Gun	2
	9	Accelerator Pedal	Grease Gun	1
	10	Footbrake Pedal	Grease Gun	1
	11	Clutch Pedal	Grease Gun	1
	12	Clutch Transfer lever	Grease Gun	1
	13	Clutch Cross shaft	Grease Gun	2
	14	Drive Axle Hub bearings	Grease Gun	2
	15	Skip Pivot	Grease Gun	2
	16	Turntable bearing ring	Grease Gun	2
	17	Hydraulic Tank	Hydraulic Fluid	1
	18	Brake Master Cylinder Reservoir (if fitted)	Brake fluid	1

NB. FOR RECOMMENDED LUBRICATING OILS SEE CHART ON PAGE 16.

Oil Capacities

Engine (Petter) 5 pts. (2.86 litres)	Drive Axle 8 pts. (4.57 litres)
(Lister) 3½ pts. (2 litres)	Gearbox 1½pts (.86 litres)

- NOTES: 1. The rear steering axle and stabilizer assembly articulation points consist of bearings that require no lubrication.
2. The drive from gearbox to axle is through flexible couplings that require no lubrication.
3. For full details of the lubrication and maintenance of the engine refer to Manufacturers Manual.

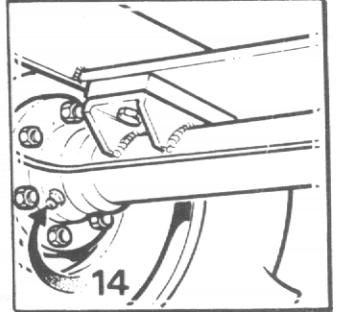
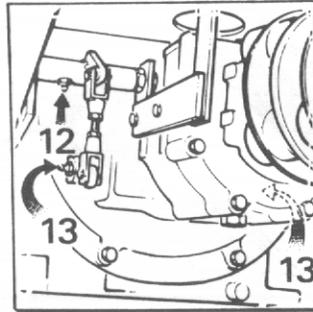
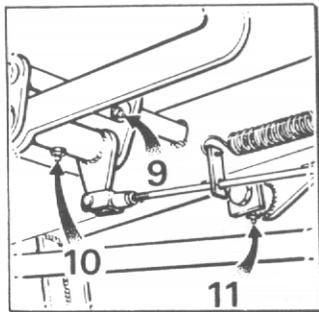
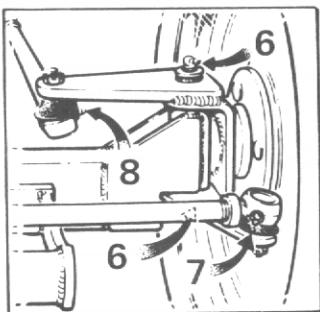
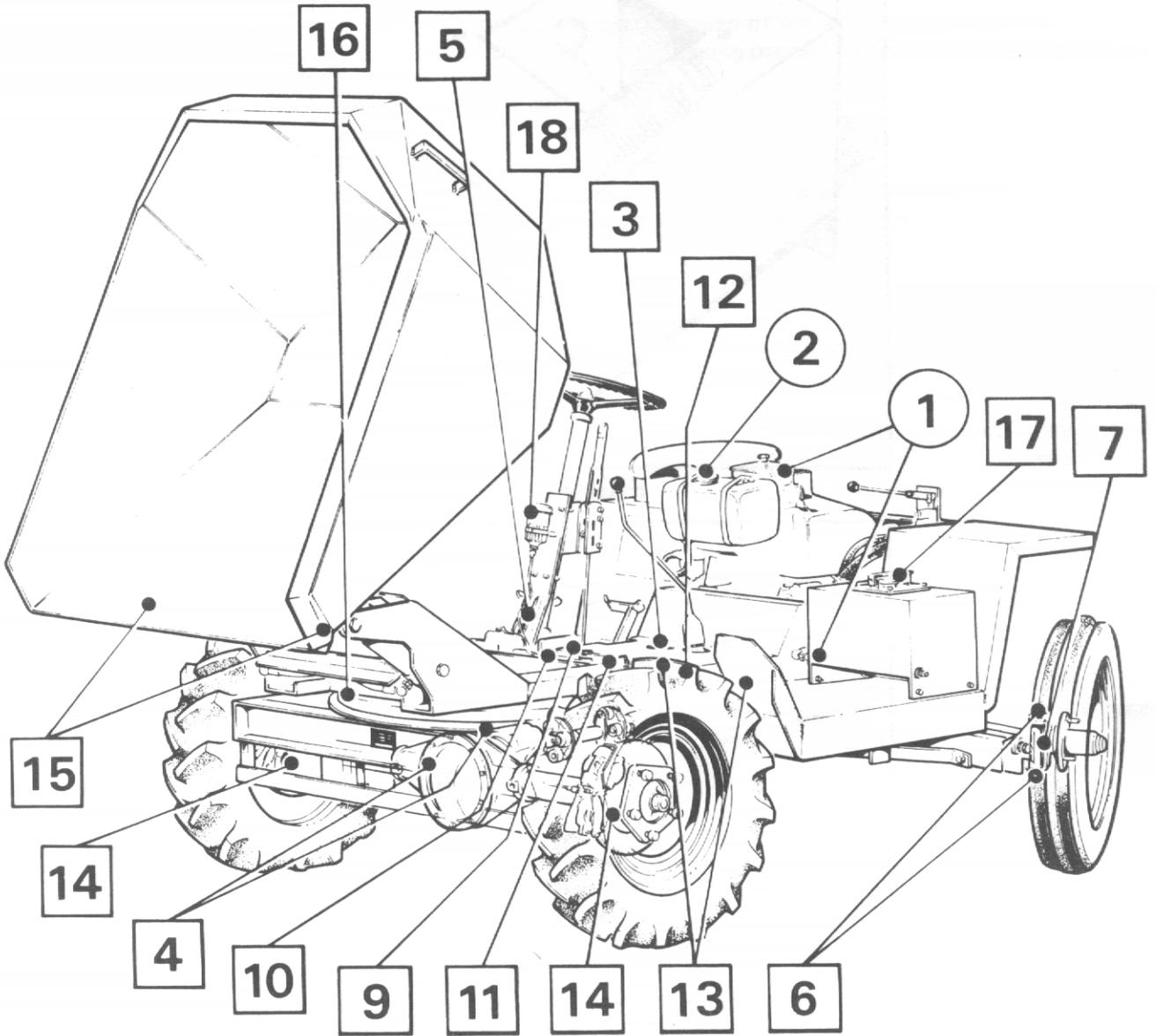
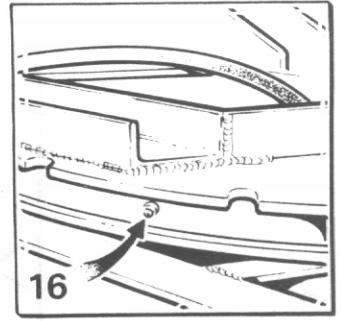
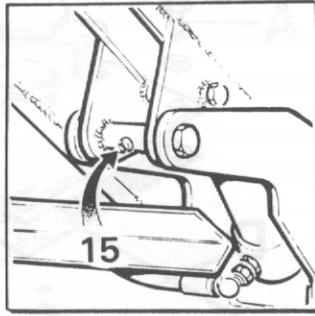
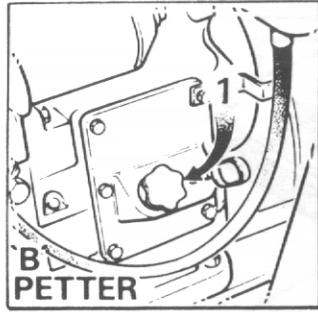
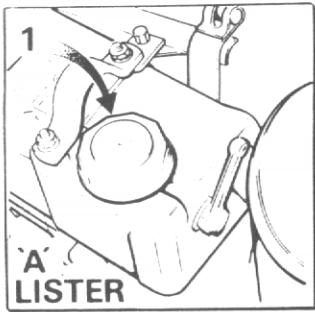


FIG. 6

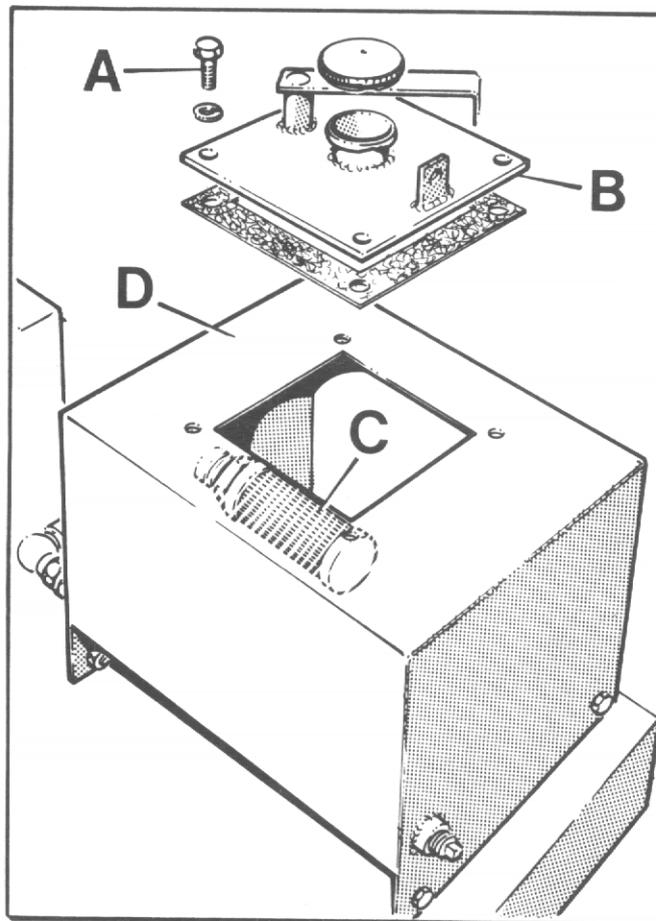


FIG. 7

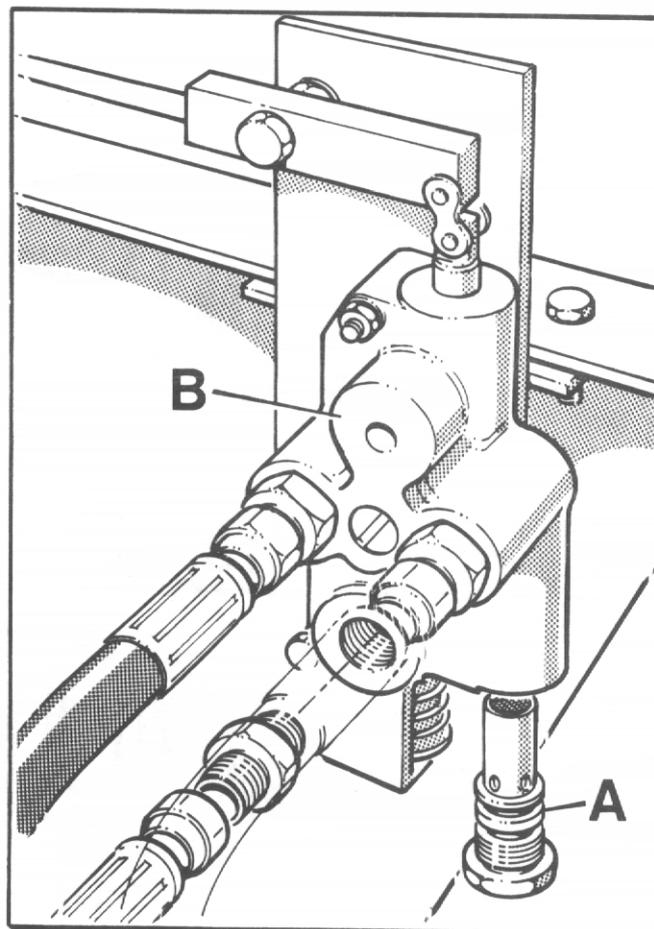


FIG. 8

TP 108

Main Hydraulic System

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

1. Check that hydraulic tank is full of oil.
2. Check the hydraulic filter is not blocked (See Fig. 7)
 - a) Remove the four setscrews (A) that secure the filler cap assembly (B) 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 3000 lb/sq.in. gauge into the hydraulic system at the base of the skip ram.
 - b) Operate control lever to dump skip and check that pressure reading on gauge is 2000 lb/sq.in. when ram is fully extended and relief valve is 'blowing'.

NOTE: If correct pressure is not attained—

4. Remove relief valve cartridge (A) (hexagon head) from the bottom of the control valve (B) (See Fig. 8) and replace with a new one.

IF none of these procedures correct the fault contact your Winget agent. Periodically check the hose between the pump and the tank to ensure it is not deformed. Any deformation in the hose may result in a restricted flow of fluid and damage to the pump.

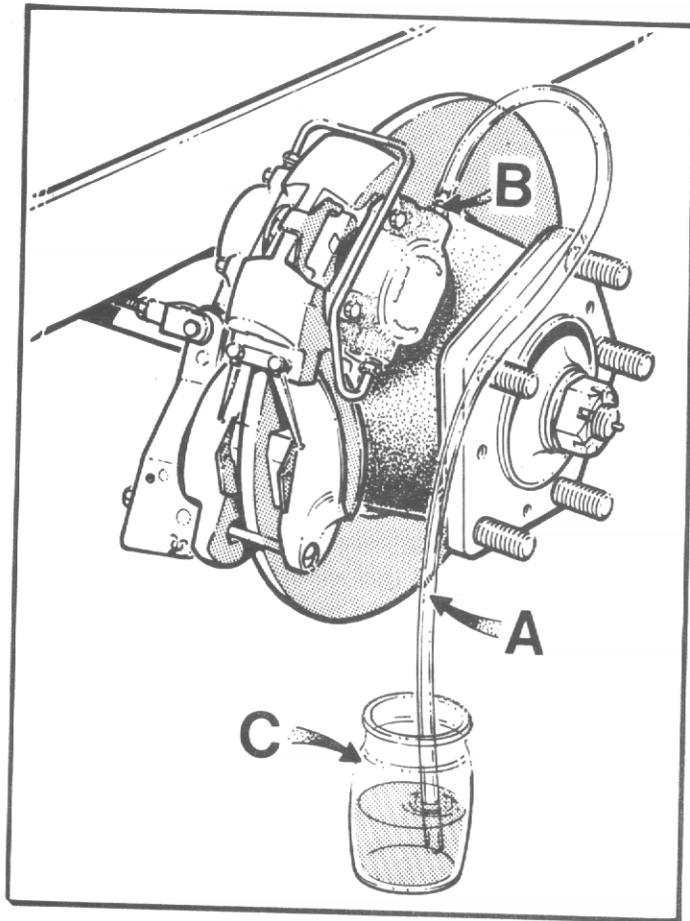
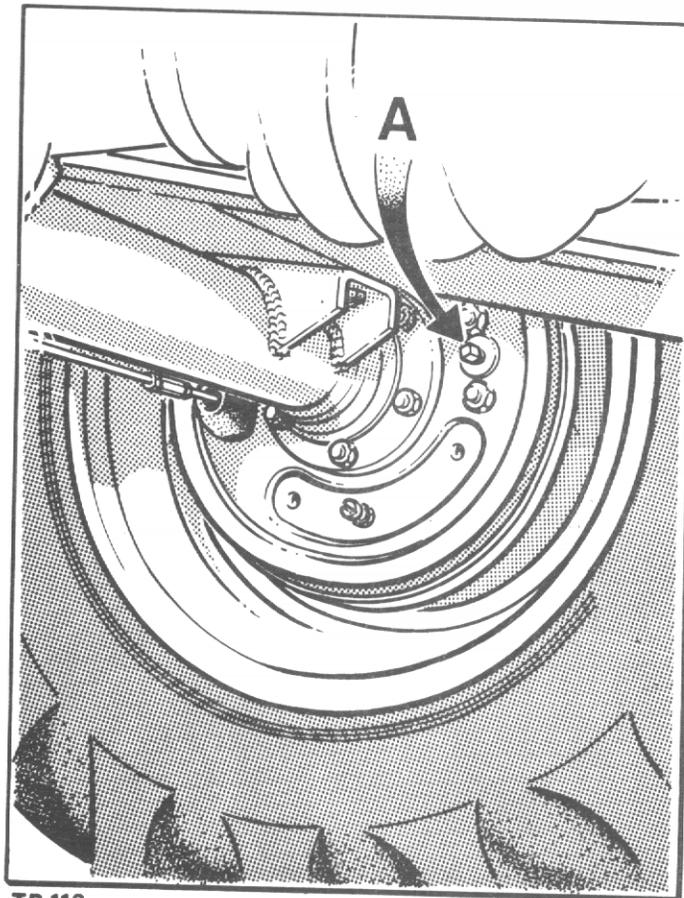


FIG. 9



TP 112

FIG. 10

Hydraulic Brake System

The brake system is designed to require the minimum of maintenance, and providing the hydraulic fluid in the reservoir is not allowed to fall below the recommended level, no defects should normally occur. Fluid loss must be supplemented by topping up the reservoir with brake fluid that conforms to SAE J 1703. No other fluid may be used. 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 level being allowed to fall very low. These defects must be remedied immediately and the complete system bled.

To bleed the system, proceed as follows:—

1. Check that all connections are tight and all bleed screws are closed.
2. Fill reservoir with brake fluid.
3. Attach bleeder tube (A) (See fig. 9) to one of the bleed screws (B) and immerse other end in a small quantity of brake fluid contained in a glass jar (C). Slacken bleed screw and operate brake pedal up and down to its full stroke, until fluid pumped into the jar contains no air bubbles. Hold down pedal and close bleed screw. Remove bleeder tube and release pedal.
4. Repeat on the other bleed screw.
5. Continue until all air has been bled from the system.
6. Lock both the bleed screws and top up the reservoir to the correct level.
7. Apply normal working load on brake pedal for two or three minutes and examine the entire system for leaks.

NOTE: DURING THE OPERATION IT IS ESSENTIAL THAT THE RESERVOIR LEVEL IS KEPT TOPPED UP TO PREVENT FURTHER AIR BEING DRAWN INTO THE SYSTEM. ONLY USE NEW FLUID FOR TOPPING UP.

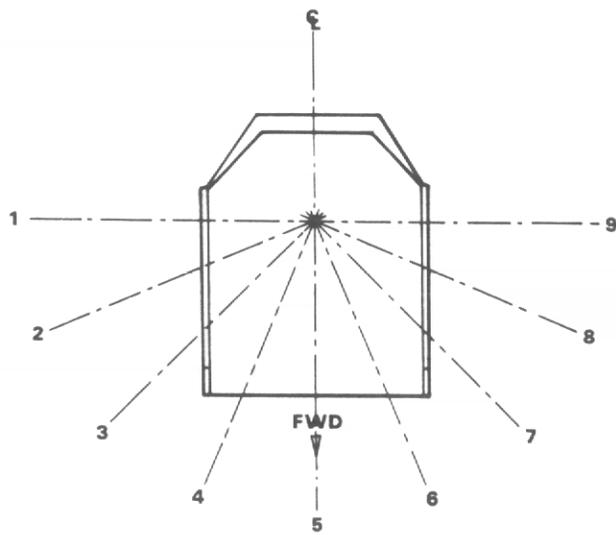
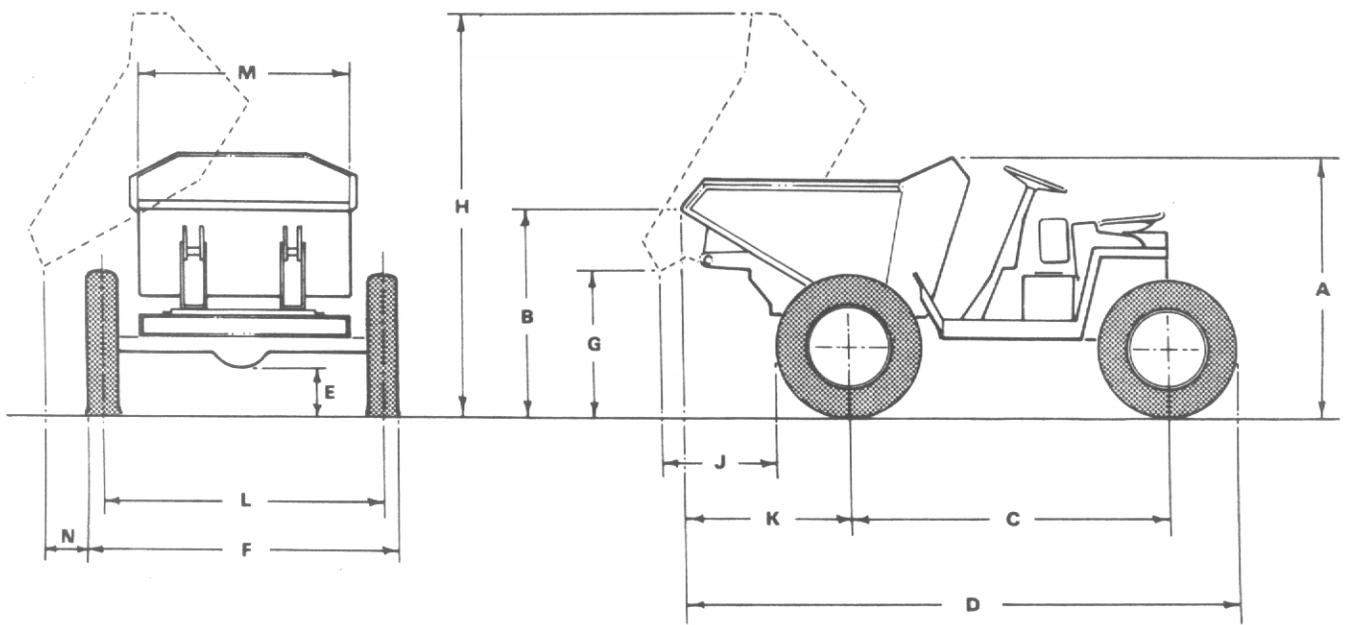
Brake Adjustment (Drum Brakes)

(See fig. 10)

1. Ensure handbrake is fully off.
2. Pull off rubber cover from brake adjuster (A).
3. Screw adjuster clockwise until brakes are fully on.
4. Slacken adjuster anti-clockwise until brake shoes are just clear of drum. This will cause shoes to be centralised on drums and ensure that whole brake lining area is used,

SPECIFICATION

A	Overall height		4'-6"	(137 cm)		
B	Skip loading height		3'-8½"	(112 cm)		
C	Wheelbase		5'-1"	(155 cm)		
D	Overall length		8'-8½"	(265 cm)		
E	Ground clearance		8½"	(21 cm)		
F	Overall width		5'-1"	(155 cm)		
G	Skip ground clearance when tipped		2'-7"	(79 cm)		
H	Overall height tipped		6'-11"	(211 cm)		
J	Discharge forward of tyre		1'-10½"	(57 cm)		
K	Overhang		2'-7"	(79 cm)		
L	Wheeltrack		4'-6"	(137 cm)		
M	Prow width (wide mouth)		3'-6"	(106 cm)		
	Prow width (narrow mouth)		2'-0"	(61 cm)		
N	Side discharge distance		9"	(23 cm)		
Skip					Rear axle articulation	1'-2" (36 cm)
Water level	15 cu.ft	(425 Litres)			Road Speeds at 2000 r.p.m	
Struck level	21 cu.ft.	(595 Litres)				m.p.h. km.p.h.
Heaped level	26 cu.ft.	(736 Litres)		1st	2.5	4
Maximum payload	1 ton	(1016 kgms)		2nd	5.8	9.3
Hydraulic relief valve set at				3rd	10.8	17.4
	2000 p.s.i.	(140.6 kgm/cm ²)		Rev.	2.8	4.5
Hydraulic tank capacity						
	4 gallons	(18.2 Litres)		Unladen Weight		
Turning Circle	22'-6"	(686 cm)		1 ton		(1016 Kgms).



TP 126

FIG.12

RECOMMENDED LUBRICATING OILS

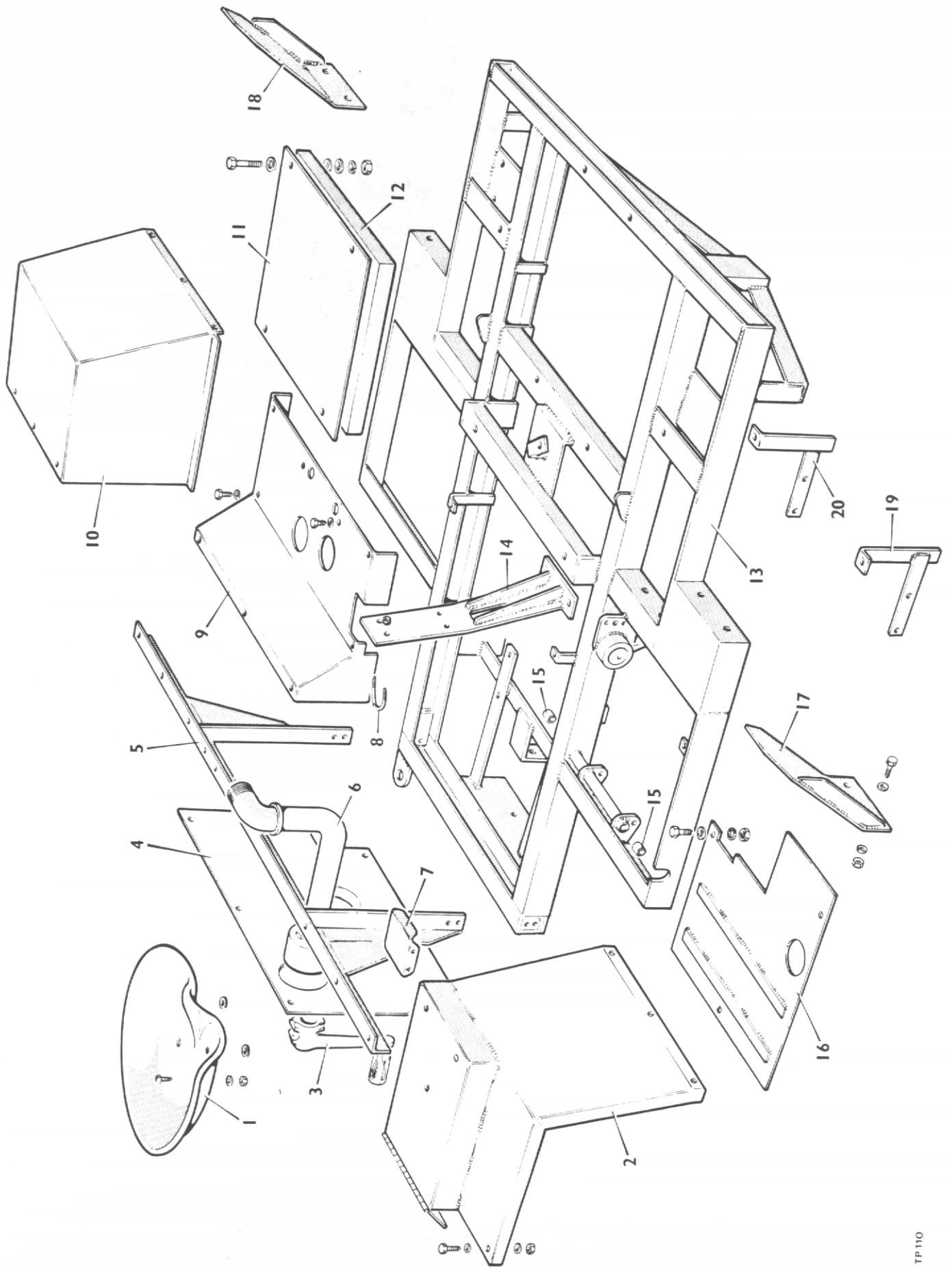
COMPANY	ENGINE	TRANSFER BOX & DRIVE AXLE	GEARBOX	WHEEL BEARINGS & OTHER GREASE POINTS	HYDRAULIC SYSTEM
(U.K.) SUMMER WINTER	ESSOLUBE HDX 20W	GEAR OIL GP 85W/140	ESSOLUBE HDX 30	BEACON 2	NUTO H44
ESSO ABOVE 32°C 0-32°C BELOW 0°C (Overseas)	ESSOLUBE HDX 30 ESSOLUBE HDX 20W ESSOLUBE HDX 10W	GEAR OIL GP 85/140 GEAR OIL GP 85/W/140 GEAR OIL GP 80W	ESSOLUBE HDX 30	BEACON 2	NUTO H54 NUTO H44 NUTO H40
(U.K.) SUMMER WINTER	DEUSOL CRI 20	DEUSOL GEAR EP 90	DEUSOL CRI 30	CASTROL SPHEEROL APT 2	CASTROL HYSPIN AWS 32
CASTROL ABOVE 32°C 0-32°C BELOW 0°C	DEUSOL CRI 30 DEUSOL CRI 20 DEUSOL CRI 10	DEUSOL GEAR EP 140 DEUSOL GEAR EP 90 DEUSOL GEAR EP 80	DEUSOL CRI 30	CASTROL SPHEEROL APT2	
(U.K.) SUMMER WINTER	ROTELLA SX OIL 20/20W	SPIRAX 90 EP	ROTELLA SX OIL 30	RETINAX A	TELLUS OIL 37
SHELL ABOVE 32°C 0-32°C BELOW 0°C (Overseas)	ROTELLA SX OIL 30 ROTELLA SX OIL 20/20W ROTELLA SX OIL 10W	SPIRAX 140 EP SPIRAX 90 EP SPIRAX 80 EP	ROTELLA SX OIL 30	RETINAX A	
(U.K.) SUMMER WINTER	VANELLUS M20W	GEAR OIL SAE 90 EP	VANELLUS M30	ENERGREASE L2	ENERGOL HLP 65
BP ABOVE 32°C 0-32°C BELOW 0°C (Overseas)	VANELLUS M30 VANELLUS M20W VANELLUS M10W	GEAR OIL SAE 140 EP GEAR OIL SAE 90 EP GEAR OIL SAE 80 EP	VANELLUS M30	ENERGREASE L2	
(U.K.) SUMMER WINTER	DELVAC 1220	MOBILUBE HD 90 MOBILUBE GX 90	DELVAC 1230	MOBILGREASE MP MOBILGREASE SUPER	DTE 24
MOBIL ABOVE 32°C 0-32°C	DELVAC 1230 DELVAC 1220	MOBILUBE HD 140 MOBILUBE GX 140 MOBILUBE HD 90 MOBILUBE GX 90	DELVAC 1230		
(Overseas) ALL TEMPERATURES	DELVAC 1210 DELVAC SPECIAL 10W-30	MOBILUBE HD 80 MOBILUBE GX 80	DELVAC 1230		
(U.K.) SUMMER WINTER	CENTURYROIL 20W20	CENTURY EP 90	CENTURYROIL 30	REGULUS A2	CENTURY PWLA HYD OIL
WALKERS CENTURY ABOVE 32°C 0°C-32°C BELOW 0°C (Overseas)	CENTURYROIL 30 CENTURYROIL 20W20 CENTURYROIL 10W	CENTURY EP 140 CENTURY EP 90 CENTURY EP 80	CENTURYROIL 30	REGULUS A2	CENTURY PWLA 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

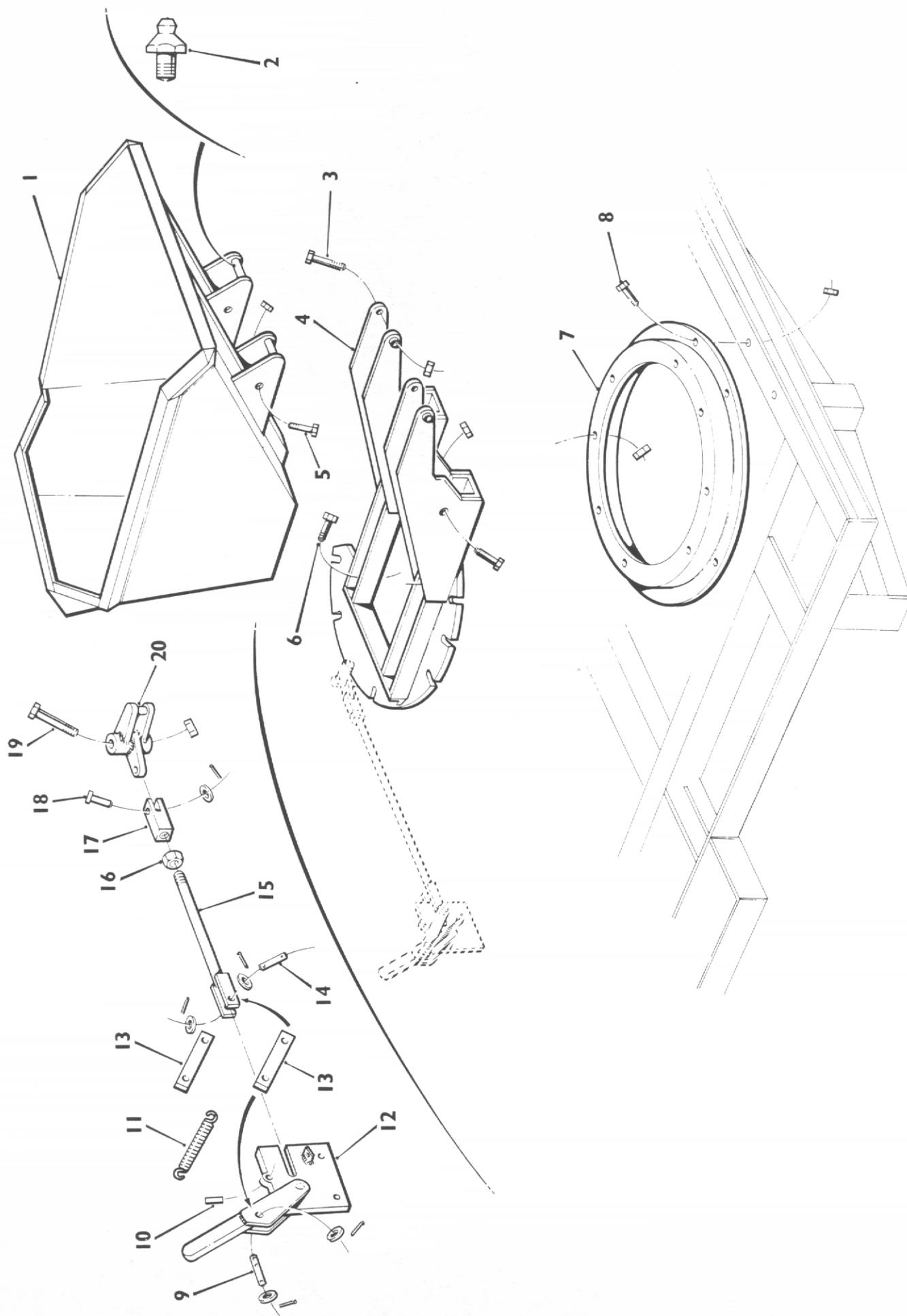
LIST OF CONTENTS

Title	Page No.
CHASSIS, MUDWINGS & COVERS	18,19
SKIP, TURNTABLE & CATCH ASSEMBLY	20,21
GEARBOX	22–25
DRIVE AXLE	26–29
FLYWHEEL & CLUTCH ASSEMBLY	30
PROP SHAFT	31
DRUM BRAKE ASSEMBLY	32,33
BRAKE PIPES & FITTINGS	34
MASTER CYLINDER ASSEMBLY	35
BRAKE CALIPER ASSEMBLY	36
HANDBRAKE ASSEMBLY	37
PEDALS & CONTROLS	38,39
STEERING ASSEMBLY	40,41
STEERING GEAR	42,43
HYDRAULIC PIPES & FITTINGS	44,45
HYDRAULIC PUMP & DRIVE	46,47
HYDRAULIC CONTROL VALVE, LEVER & MOUNTING BRACKET	48,49
HYDRAULIC CYLINDER	50
AIR CLEANER	51
DRIVE WHEELS & TYRES	52
STEERING WHEELS & TYRES	53



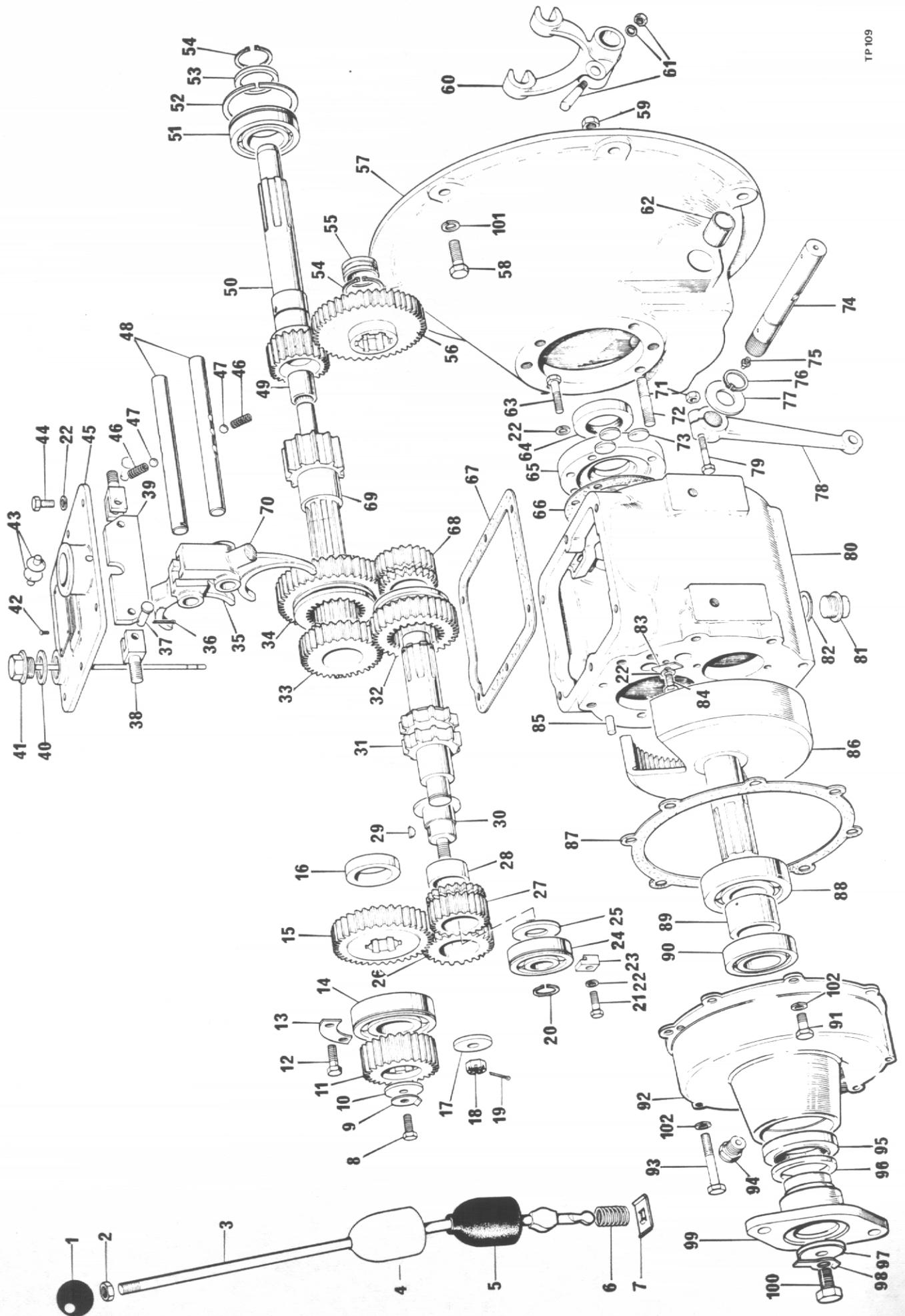
CHASSIS, MUDWINGS & COVERS

Item No.	Part No.	Description	Qty
1	C 182	Pan Seat	1
2	C 141	Mudwing R.H.	1
3	C 188	Starting Handle (PETTER)	1
3A	CT 188 201-13320	Starting Handle (LISTER)	1
4	2ST 82	Rear Cover Plate (PETTER)	1
4A	2ST 83	Rear Cover Plate (LISTER)	1
5	2ST 71	Rear Cover Support & Wing Frame	1
6	C 165	Exhaust Pipe (PETTER)	1
6A	C 265	Exhaust Pipe (LISTER)	1
7	C 152	Exhaust Shroud (PETTER)	1
8	C 125	U Bolt	2
9	C 131	Gearbox Cover (PETTER)	1
9A	C 242	Gearbox Cover (LISTER)	1
10	C 135	Mudwing L.H.	1
11	2ST 84	Footplate L.H.	1
12	C 181	Side Ballast Weight	1
13	2ST 51	Chassis (PETTER)	1
13A	2ST 79	Chassis (LISTER)	1
14	2ST 62	Steering Column Support	1
15	WB 0808	Accelerator Holder Bush	2
16	C 134	Footplate Drivers Side (Drum)	1
16A	C 221	Footplate Drivers Side (Disc)	1
17	2ST 77	Mudflap R.H.	1
18	2ST 78	Mudflap L.H.	1
19	C 1460	Gearbox Support R.H.	1
20	C 146N	Gearbox Support L.H.	1



SKIP, TURNTABLE & CATCH ASSEMBLY

Item No.	Part No.	Description	Qty
1	2ST 101	Skip	1
2	TS	Grease Nipple	2
3		Bolt 3/4" BSF x 6" Long & Nut	4
4	2ST 68	Turntable Frame.	1
5		Bolt 5/8" BSF x 5 1/2" Long & Nut	2
6		Bolt 1/2" BSF x 1 1/2" Long & Nut	8
7	2ST 76	Turntable Bearing Ring	1
8		Bolt 1/2" BSF x 1 1/2" Long & Nut	6
9	2ST 114	Pin	1
10	6 R.P.16	Tension Pin	1
11	C 173B	Spring	1
12	2ST 112A	Lever Assembly	1
13	2ST 112-5	Link	2
14	2ST 115	Pin	1
15	2ST 113	Rod Assembly	1
16		Nut 1/2" BSF	1
17	C174 H	Clevis	1
18	WT 178-7	Clevis Pin	1
19		Bolt 5/8" UNF x 3" Long & Locknut	1
20	2ST 112-B	Bell Crank Assembly	1



GEARBOX 40M/42 - NEWAGE 30106.A01

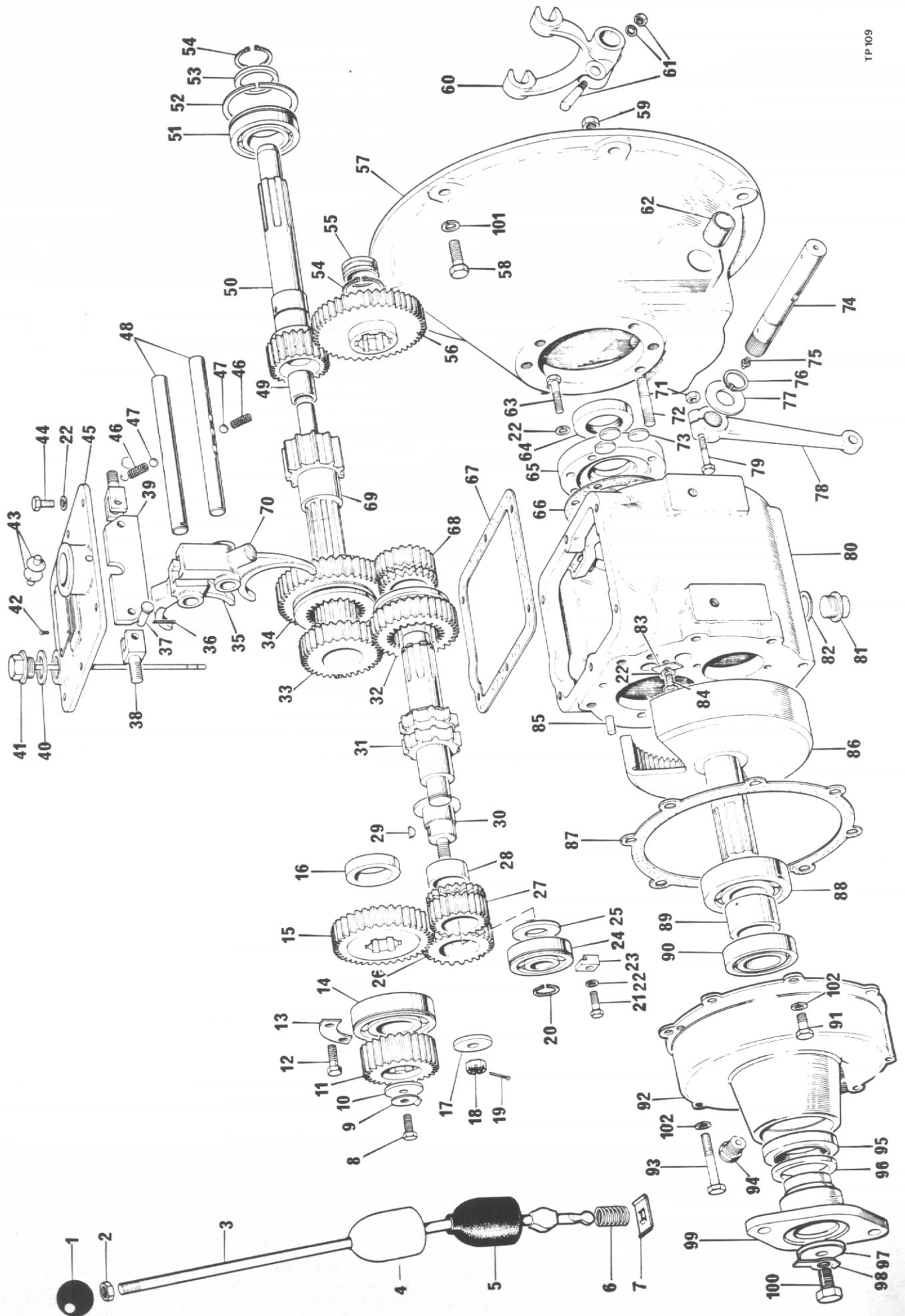


Item No.	Part No.	Description	Qty.
1	30101.A0201	Knob	1
2	95S 03	Locknut - Gear Lever	1
3	30106.A0102	Gear Lever,	1
4	30101.A0203	Cap - Gear Lever	1
5	30101.A0204	Cover - Gear Lever	1
6	30101.A0205	Spring - Gear Lever	1
7	30101.A0206	Retaining Plate - Gear Lever	1
8	28S.03E	Screw - Mainshaft	1
9	30190.A0101	Lock Washer - Tab	1
10	30190.A0102	Washer - Reduction Pinion	1
11	30190.A0103	Reduction Pinion	1
12	28S.01B	Screw - Bearing Retainers	2
13	30190.A0104	Bearing Retainer - Small	1
14	30101.A0210	Bearing - Mainshaft Rear	1
15	30101.A0211	Output Gear	1
16	30101.A0212	Spacer - Output Gear	1
17	30101.A0213	Washer - Reverse Pinion Gear	1
18	102S.04	Nut - Reverse Spindle	1
19	44S.02C	Split Pin	1
20	30101.A0215	Circlip	1
21	28S.01D	Screw	2
22	67S.01	Washer	A/R
23	30190.A0105	Clip, Layshaft Bearing	2
24	30101.A0216	Layshaft Bearing	1
25	30101.A0217	Bearing Spacer	1
26	30101.A0218	Reverse Pinion	1
27	30101.A0219	Reverse Speed Gear	1
28	30101.A0220	Bush - Reverse Pinion	1
29	30101.A0221	Key, Reverse Pinion Shaft	1
30	30101.A0222	Shaft, - Reverse Pinion	1
31	30101.A0223	Layshaft	1
32	30101.A0224	2nd Speed Sliding Gear	1
33	30101.A0225	2nd Speed Gear	1
34	30101.A0226	1st Speed Gear	1
35	30101.A0227	Selector Fork 2nd & 3rd	1
36	44S.01C	Split Pin, Interlock	2
37	30101.A0228	Clevis Pin, Interlock	2
38	30101.A0229	Stud, Interlock	2
39	30101.A0230	Interlock Plate	1
40	42S.05	Seal, Dipstick	1
41	30101.A0232	Dipstick	1
42	30101.A0233	Drive Screw	4
43	30101.A0234	Pad - Gear Lever	2
44	28S.01C	Screw - Top Cover	6
45	30101.A0235	Top Cover	1
46	30097.A0185	Detent Spring	2
47	30101.A0236	Detent Ball	2
48	30101.A0237	Selector Shaft	2
49	30101.A0238	Bearing, Primary Shaft	1
50	30101.A0239	Primary Shaft	1

IMPORTANT: With effect from G/Box Batch No.B 1238 the following changes will take place:-

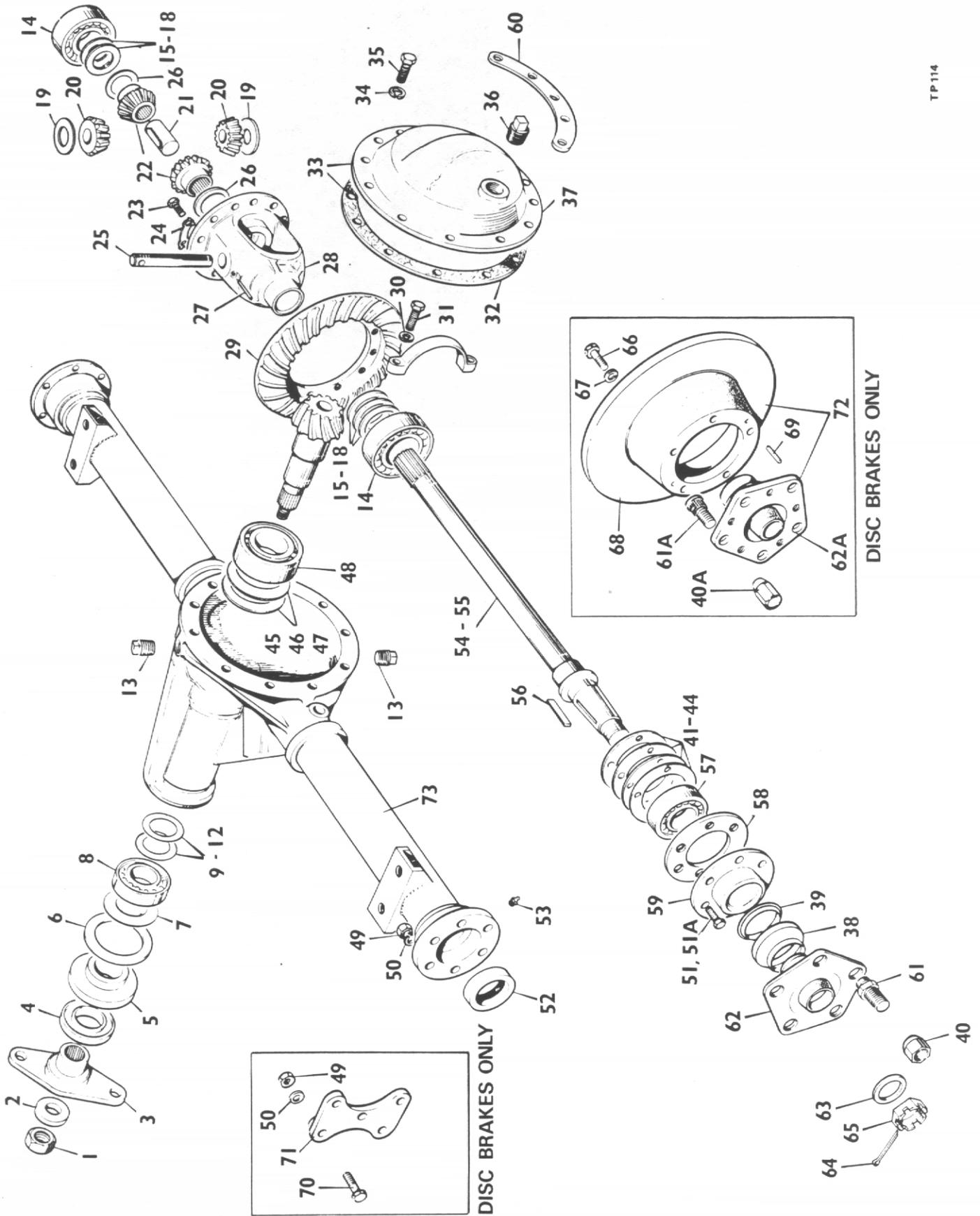
Item	Old Part No.	Description	New Part No.
41	30101.A0232	Dipstick	30218.A0223
31	30101.A0223	Layshaft	30101.A0266
55	30101.A0244	Bearing - Layshaft	30101.A0267

The layshaft will only be supplied complete with bearing as a replacement under part no. 30101.A0268 and will be totally interchangeable with current layshaft. (New Oil Capacity now 2 Litres previously .85 Litres)



GEARBOX 40M/42 - NEWAGE 30106.A01

Item No.	Part No.	Description	Qty.
51	30101.A0240	Input Bearing	1
52	30101.A0241	Snap Ring	1
53	30101.A0242	Bearing Spacer	1
54	30101.A0243	Circlip	2
55	30101.A0244	Bush - Layshaft	1
56	30101.A0245	1st Reduction Gear	1
57	30101.A0246	Clutch Housing	1
58	3S.03E	Bolt - 3/8" B.S.F. x 1" (Petter) (G/Box - Eng.).	8
	69S.03E	Bolt - 3/8" U.N.C. x 1" (Lister) (" " ").	8
59	9S.03	Nut 3/8" U.N.F.	6
60	30097.A0110	Clutch Release Fork	1
61	30097.A0111	Cotter, Nut & Washer S/A	1
62	30097.A0114	Bush, Cross Shaft	2
63	6S.01B	Bolt, Front Cover	4
64	30101.A0247	Oil Seal - Input	1
65	30101.A0248	Front Cover	1
66	30101.A0249	Joint, Front Cover	1
67	30101.A0250	Joint, Top Cover	1
68	30101.A0219	Reverse Speed Gear	1
69	30190.A0106	Mainshaft	1
70	30101.A0252	Selector Fork 1st & Rev	1
71	9S.01	Nut, Clutch Lever	1
72	30101.A0253	Stud, Clutch Housing	6
73	30101.A0254	Sealing Disc, Selector Shaft	3
74	30101.A0255	Clutch Cross Shaft	1
75	30103.A0102	Grease Nipple	2
76	30101.A0256	Circlip	1
77	30097.A0133	Washer - Cross Shaft	1
78	30097.A0109	Clutch Release Lever	1
79	6S.01C	Bolt - Clutch Lever	1
80	30101.A0262	Casing	1
81	30190.A0108	Drain Plug	1
82	42S.05	Seal, Drain Plug	1
83	30101.A0259	Selector Locking Strip	1
84	28S.01C	Setscrew	2
85	30097.A0155	Dowel	2
86	30190.A0110	Internal Gear	1
87	30190.A0112	Joint - Reduction Housing	1
88	30190.A0111	Bearing - Internal Gear Front	1
89	30101.A0260	Spacer	1
90	30190.A0113	Bearing - Internal Gear Rear	1
91	28S.02D	Screw - Hex. Hd.	5
92	30190.A0114	Reduction - Housing	1
93	6S.02J	Bolt - Hex. Hd.	1
94	30097.A0171	Breather	1
95	30097.A0132	Oil Seal - Rear	1
96	30101.A0265	Dust Shield	1
97	30101.A0208	Washer - Coupling	1
98	30101.A0207	Lock Washer 	1
99	30101.A0103	Coupling	1
100	28S.05E	Screw - Coupling	1
101	41S.05	Spring Washer	8
102	30143.A0111	Fibre Washer	1
103	30143.A0101	Fibre Washer	1

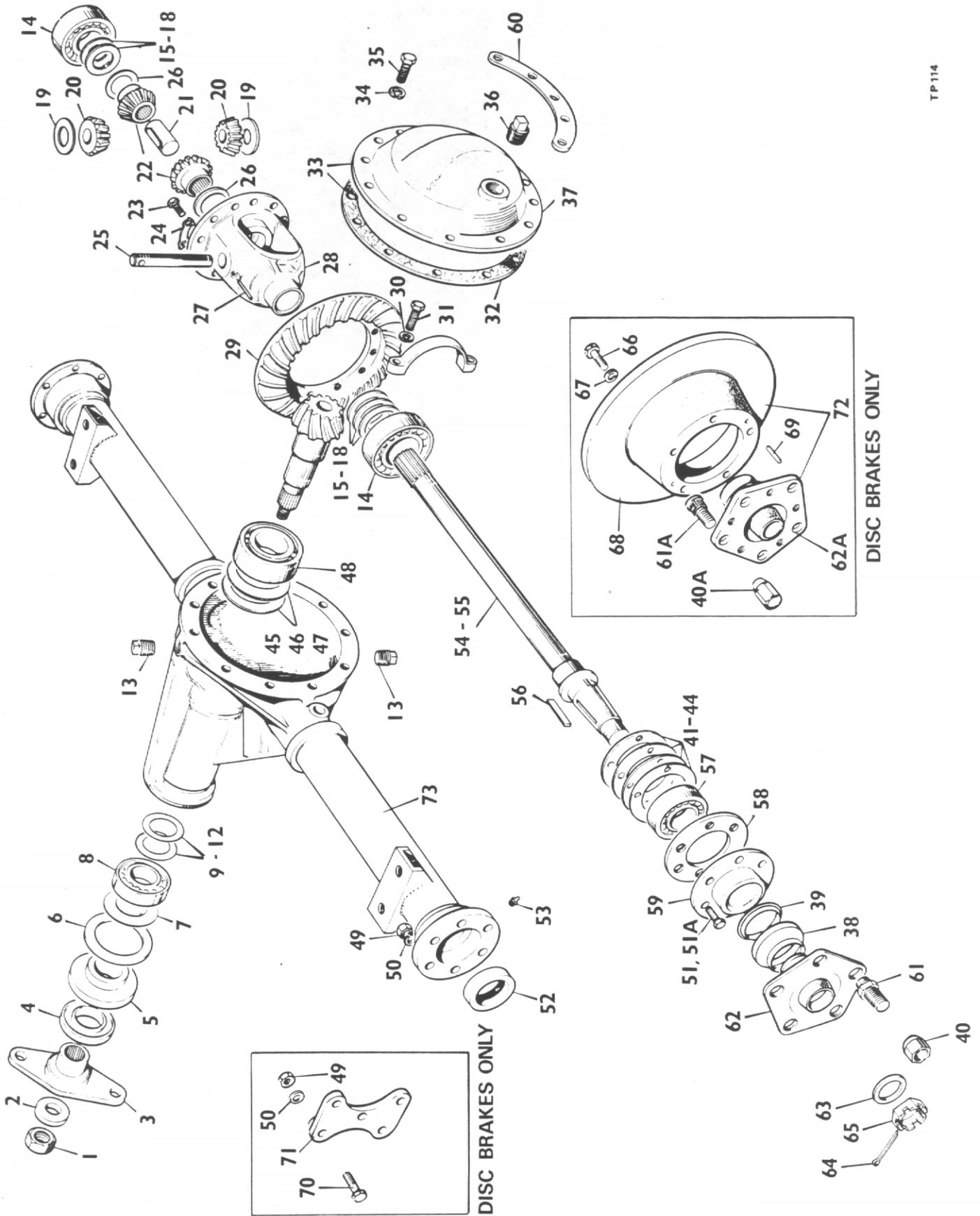


DISC BRAKES ONLY

DISC BRAKES ONLY

DRIVE AXLE

Item No.	Part No.	Description	Qty.
	5HA-001-274	Drive Axle Complete with drum brakes (1 per m/c)	
	5HA-001-174	Drive Axle Complete with disc brakes (1 per m/c)	
1	12 LN-NF9B	Pinion Nut	1
2	12W-24	Pinion Nut Washer ¾" dia std. heavy pattern	1
3	3HA-102-10	Companion Flange Assembly	1
4	2HA-021	Companion Flange Dust Shield	1
5	8HA-019-3	Pinion Oil Seal	1
6	2HA-020	Pinion Oil Seal Gasket	1
7	2HA-036	Pinion Oil Slinger	1
8	5HA-022	Pinion Bearing, Outer	1
9	5HA-039	Pinion Bearing Adjusting Shim Outer .003"	A/R
10	5HA-040	Pinion Bearing Adjusting Shim Outer .005"	A/R
11	5HA-041	Pinion Bearing Adjusting Shim Outer .010"	A/R
12	5HA-042	Pinion Bearing Adjusting Shim Outer .030"	A/R
13	HA-059	Filler and Drain Plug (each)	1
14	5HA-024/1	Differential Bearing	2
15	5HA-046	Differential Bearing Shim .003"	A/R
16	5HA-047	Differential Bearing Shim .005"	A/R
17	5HA-048	Differential Bearing Shim .010"	A/R
18	5HA-049	Differential Bearing Shim .030"	A/R
19	5HA-037	Differential Pinion Mate Thrustwasher	2
20	5HA-008-1	Differential Pinion Mate	2
21	5HA-033-3	Axle Shaft Spacer	1
22	5HA-007-2	Differential Side Gear	2
23	5HA-075-2	Drive Gear Screw	12
24	5HA-074-1	Drive Gear Tabwasher	6
25	5HA-012	Differential Pinion Mate Shaft	1
26	5HA-038	Differential Side Gear Thrustwasher	2
27	5HA-013	Differential Pinion Mate Shaft Lock Pin	1
28	5HA-006	Differential Case	1
29	5HA-105 15	Drive Gear and Pinion Assembly Complete	1
30	8 LW-115	Differential Bearing Cap Springwasher ½" dia	4
31	8 B-NC-36	Differential Bearing Cap Bolt	4
32	5HA-026	Gear Carrier Cover Gasket	1
33	5HA-064-17	Gear Carrier Cover Assembly	1
34	6LW-105	Cover Screw Springwasher	10
35	6B-NC10	Cover Screw	10
36	HA-059	Level Plug	1
37	5HA-064-1	Gear Carrier Cover	1
38	5HA-030-4	Shroud	2
39	5HA-032-14	Seal	2
40	C 177	Wheel Nut (Drum brakes only)	10
40A	R340	Wheel Nut (Disc brakes only)	10
41	5HA-050-3	Axle Shaft Bearing Shim .003"	A/R
42	5HA-051-3	Axle Shaft Bearing Shim .005"	A/R
43	5HA-052-3	Axle Shaft Bearing Shim .010"	A/R
44	5HA-053-3	Axle Shaft Bearing Shim .030"	A/R
45	5HA-043	Pinion Adjusting Shim, Inner .003"	A/R
46	5HA-044	Pinion Adjusting Shim, Inner .005"	A/R
47	5HA-045	Pinion Adjusting Shim, Inner .010"	A/R
48	5HA-023	Pinion Bearing Inner	1
49	6N-NF5	Bearing Retainer Nut 3/8" UNF	12
50	6W-12	Spring Washer	12
51	6B-NF 18/B	Bearing retainer bolt (drum brakes only)	12
51A	6B NF 21	Bearing retainer bolt (disc brakes only)	6
52	5HA-027	Axle Shaft Oil Seal	2
53	5HA-056-1	Axle Shaft Bearing Grease Nipple	2
54	5HA-005-51	Axle Shaft RH. (complete with Nut)	1
55	5HA-005-51	Axle Shaft LH. (complete with Nut)	1
56	5HA-029	Axle Shaft Key	2
57	5HA-025	Axle Shaft Bearing	2
58	5HA-035-5	Axle Shaft Bearing Retainer	2
59	5HA-057-3	Hub oil seal assembly	2
60	4-35-235	Differential cover support	1



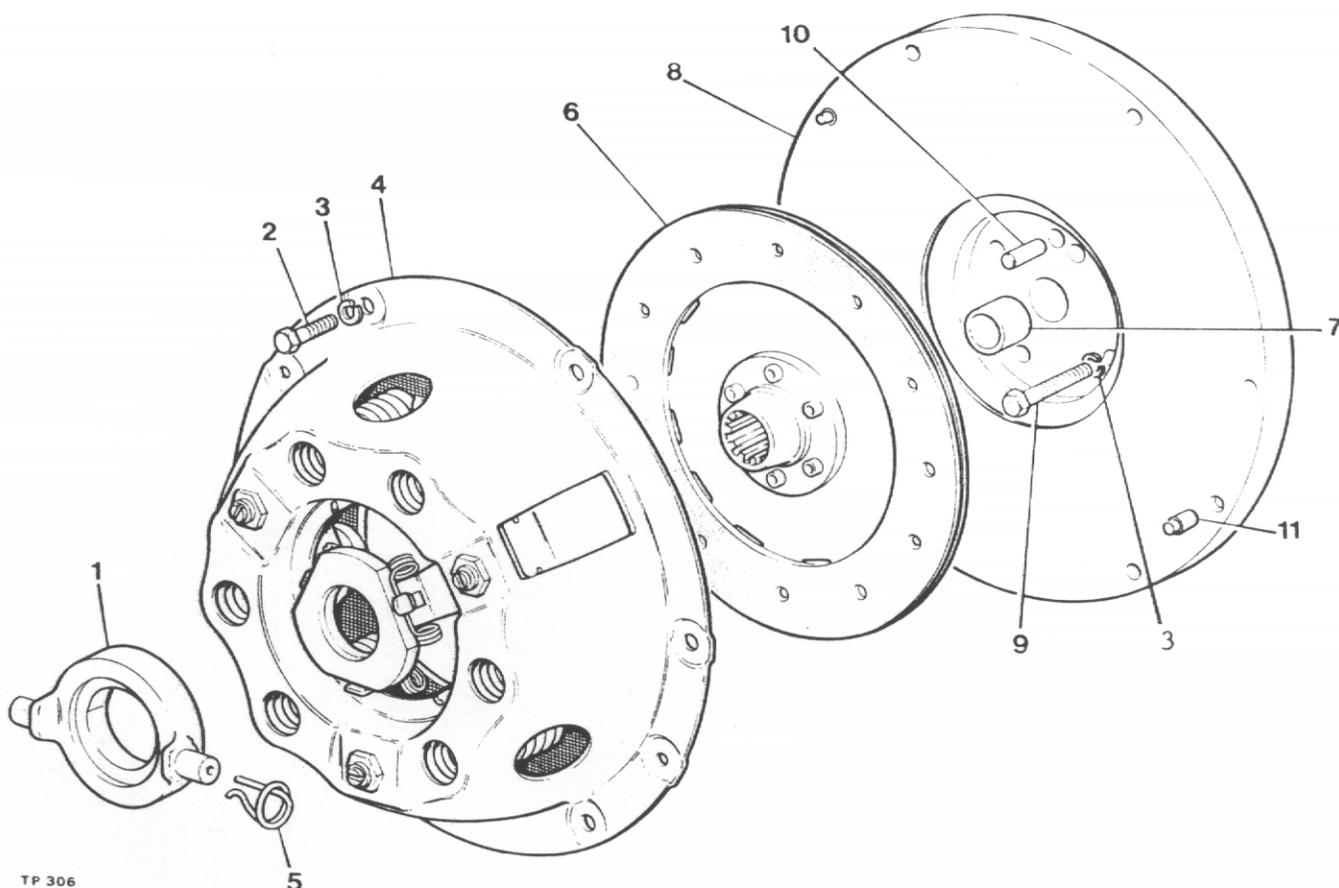
DISC BRAKES ONLY

DISC BRAKES ONLY

DRIVE AXLE (Cont'd.)

Item No.	Part No.	Description	Qty.
61	5HA-055-6	Wheel stud (drum brakes only)	10
61A	5HA-055-17	Wheel stud (disc brakes only)	10
62	5HA-028-37	Wheel hub complete	2
62A	5HA-028-56	Wheel hub c/w studs (Disc brakes only)	2
63	18W-32	Axle shaft washer	2
64	12SP-18	Axle shaft cotter 3/16" x 2"	2
65	18-SN-NF-12	Axle shaft Nut	2
66	6B-NF-21	Brake disc bolt (disc brakes only)	10
67	6LW-105	Brake disc bolt lockwasher (disc brakes only)	10
68	10HA-136	Brake disc (disc brakes only)	2
69	6D-16	Brake disc dowel (disc brakes only)	4
70	6B-NF24A	Caliper bracket bolt (disc brakes only)	6
71	5HA-137	Caliper bracket (disc brakes only)	2
72	5HA-028-52	Hub & Disc Assembly (disc brakes only)	2
	5HA-082-5	Differential case Assembly (comprising items 19, 20, 21, 22, 25, 26, 27 & 28)	
73	5HA-101-73	Service Carrier & Tube Assembly	1

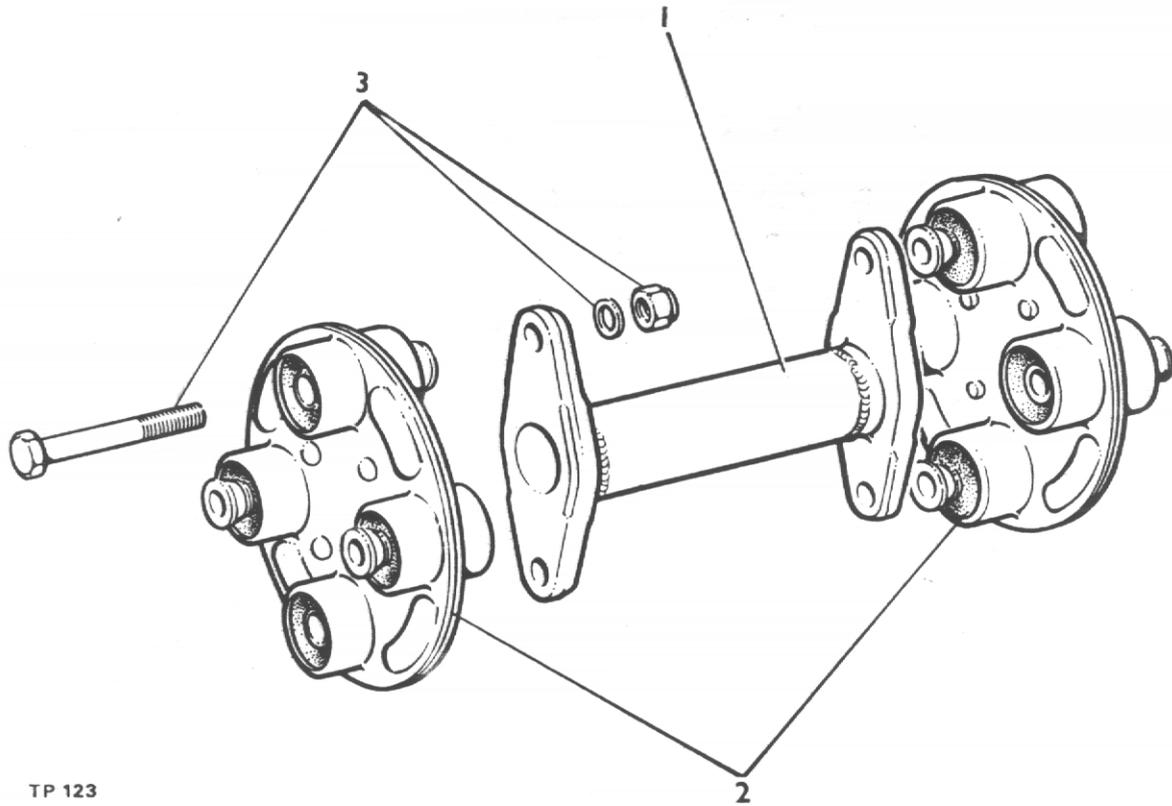
FLYWHEEL AND CLUTCH ASSEMBLY



TP 306

Item No.	Part No.	Description	Qty.
1	10579A01	Clutch Release Bearing	1
2	28S02D	Screw Set	6
3	41S04	Washer Spring	10
4	10597A01	Cover Assembly	1
5	10579A101	Retainer Spring	2
6	10598A02	Drive Plate	1
7	10580A0101	Bush	1
8	10580A02	Flywheel Assembly (comprises of items 7, 8, & 11)	1
9	1S02C	Bolt, Petter PH Engine (drill for locking wire)	4
9A	6S02B	Bolt, Lister Engine (drill for locking wire)	4
10	C321	Dowel	1
11	10580A0102	Dowel	2
	10948A02	Clutch Kit (comprises of items 1, 4, 5 & 6)	1

It is recommended that instead of drilling the head of the bolts (item 9) for locking wire that one of each of tabwashers part no's 10531A02 and 10531A03 are used to prevent the bolts working loose.

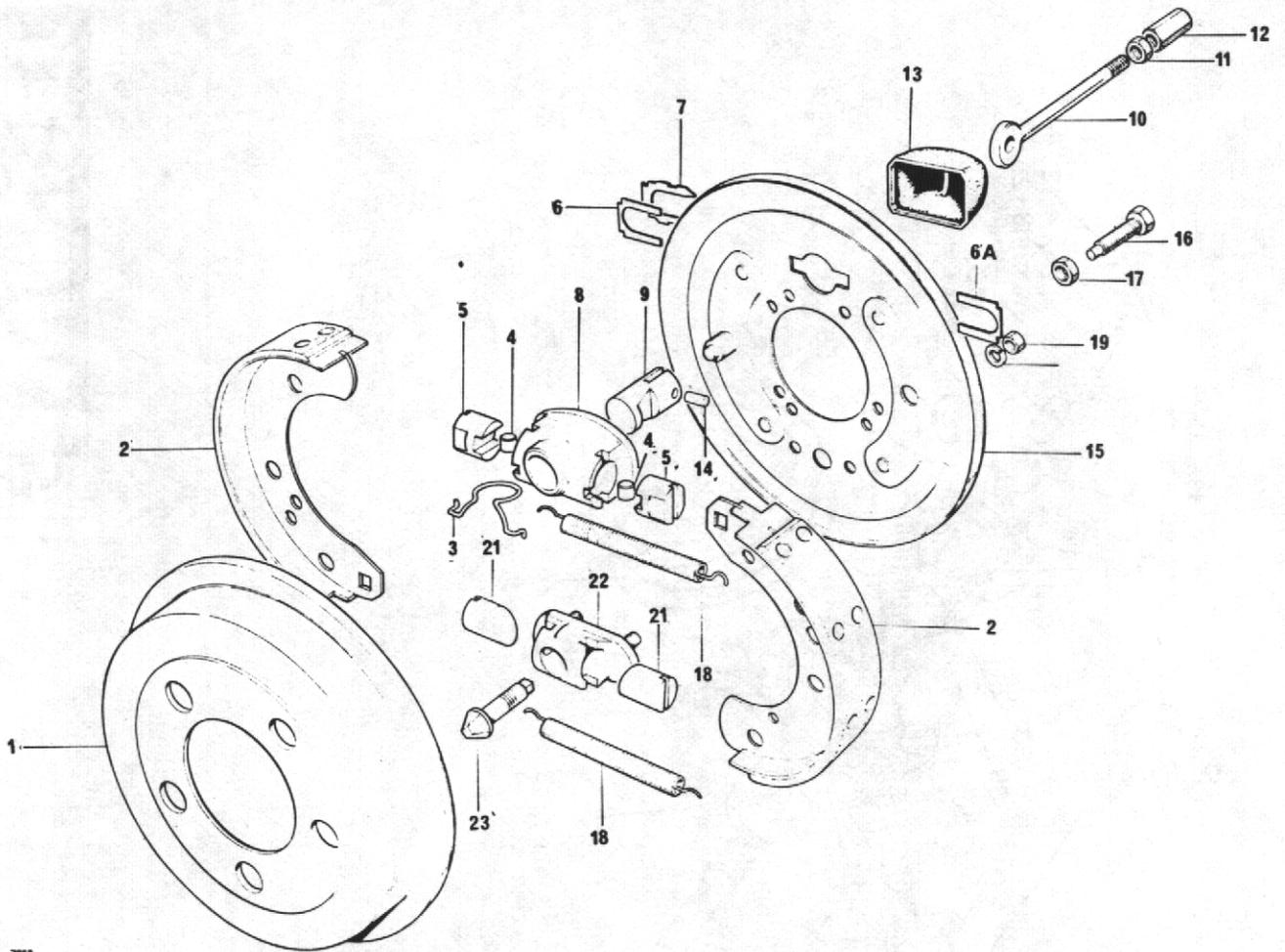


PROPSHAFT

Item No.	Part No.	Description	Qty.
1	79834	Prop shaft assembly complete	1
1A	79835	Prop shaft tube	1
2	10325A01	Coupling	2
3	10326A01	Coupling bolt, washer and nut	8

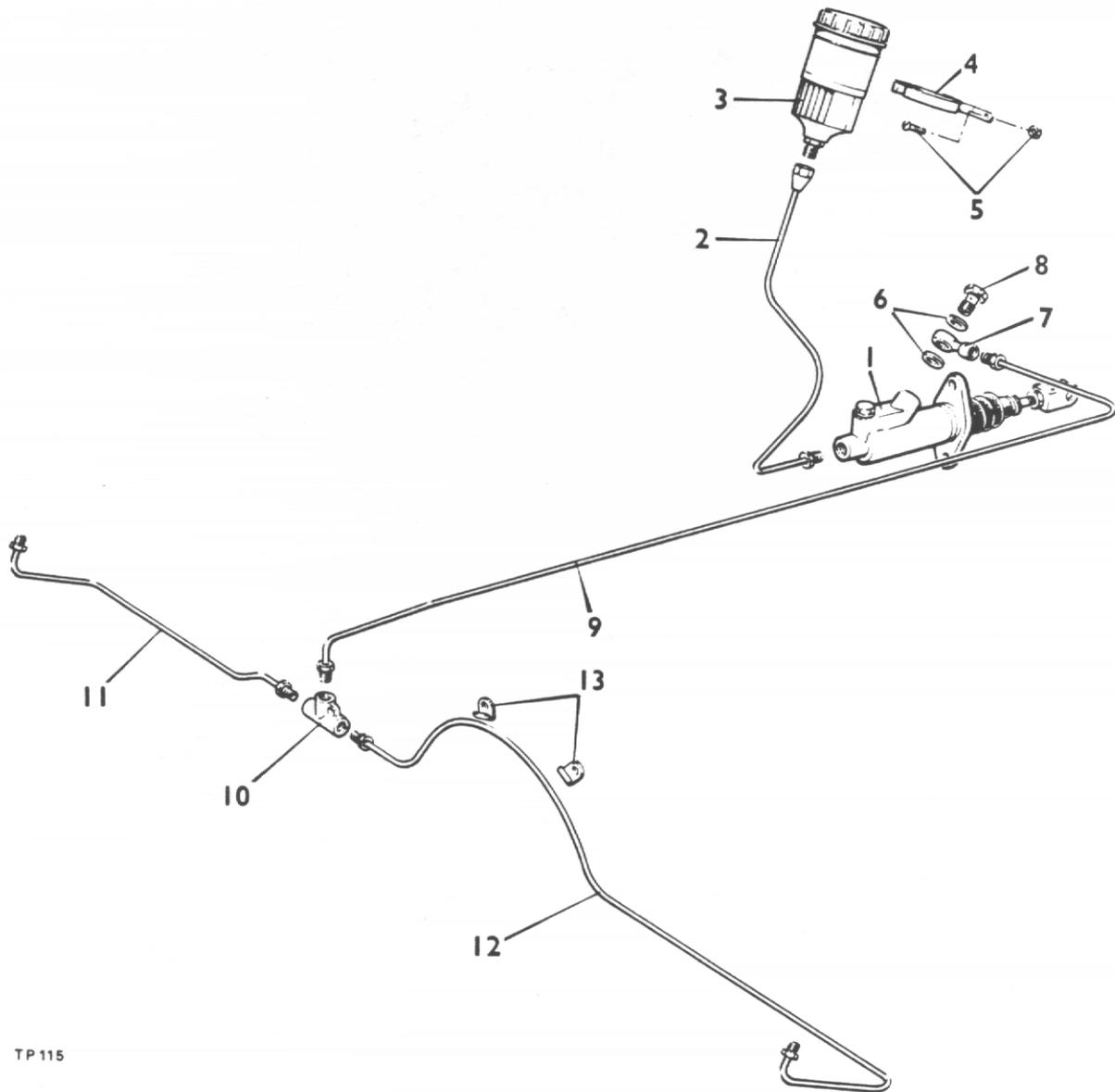
Item 3 consists of bolt 8S05L, flat washer 267S19 and binx nut 61S05

DRUM BRAKE ASSEMBLY



7818

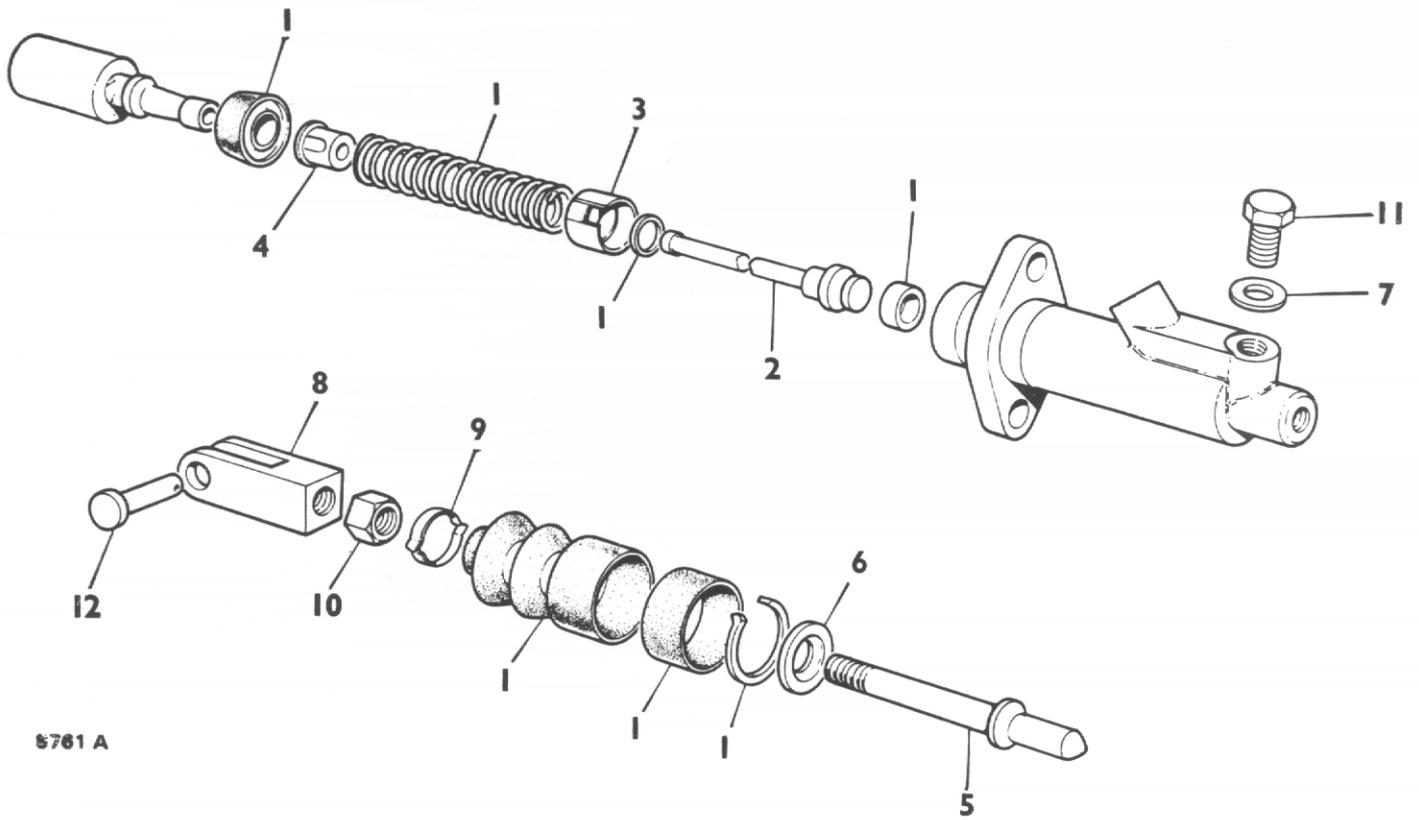
Item	Part No.	Description	Qty.
1	30088.A0128	Brake Drum	1
2	20298.A0101	Lined Shoe	2
3	20298.A0102	Spring	1
4	20298.A0103	Roller	2
5	20298.A0104	Tappet Expander	2
6	20298.A0105	Plate	1
6A	20298.A0106	Plate	1
7	20298.A0107	Locking Plate	1
8	20298.A0108	Expander Housing	1
9	20298.A0109	Plunger	1
10	20298.A0110	Drawlink	1
11	20298.A0111	Locknut	1
12	20298.A0112	Barrel Nut	1
13	20298.A0113	Dust Cover	1
14	20298.A0114	Pin	1
15	20298.A0115	Brake Back Plate	1
16	1S.02C	Setscrew 5/16" BSF	2
17	1S.03	Nut 5/16" BSF	2
18	20298.A0116	Spring	2
19	20298.A0117	Nut	2
20	20298.A0118	Washer	2
21	20298.A0119	Tappet Adjuster	2
22	20298.A0120	Adjuster Housing	1
23	20298.A0121	Wedge	2
24	20298.A0122	Service Kit (Adjuster) (N.I.)	A/R
25	20298.A0123	Adjuster Assy. (Compr: 19-25)	A/R
26	20298.A0124	Expr. Assy. (Compr: items 3,4,5,8,9,10,11,12,& 14	A/R



TP 115

BRAKE PIPES AND FITTINGS

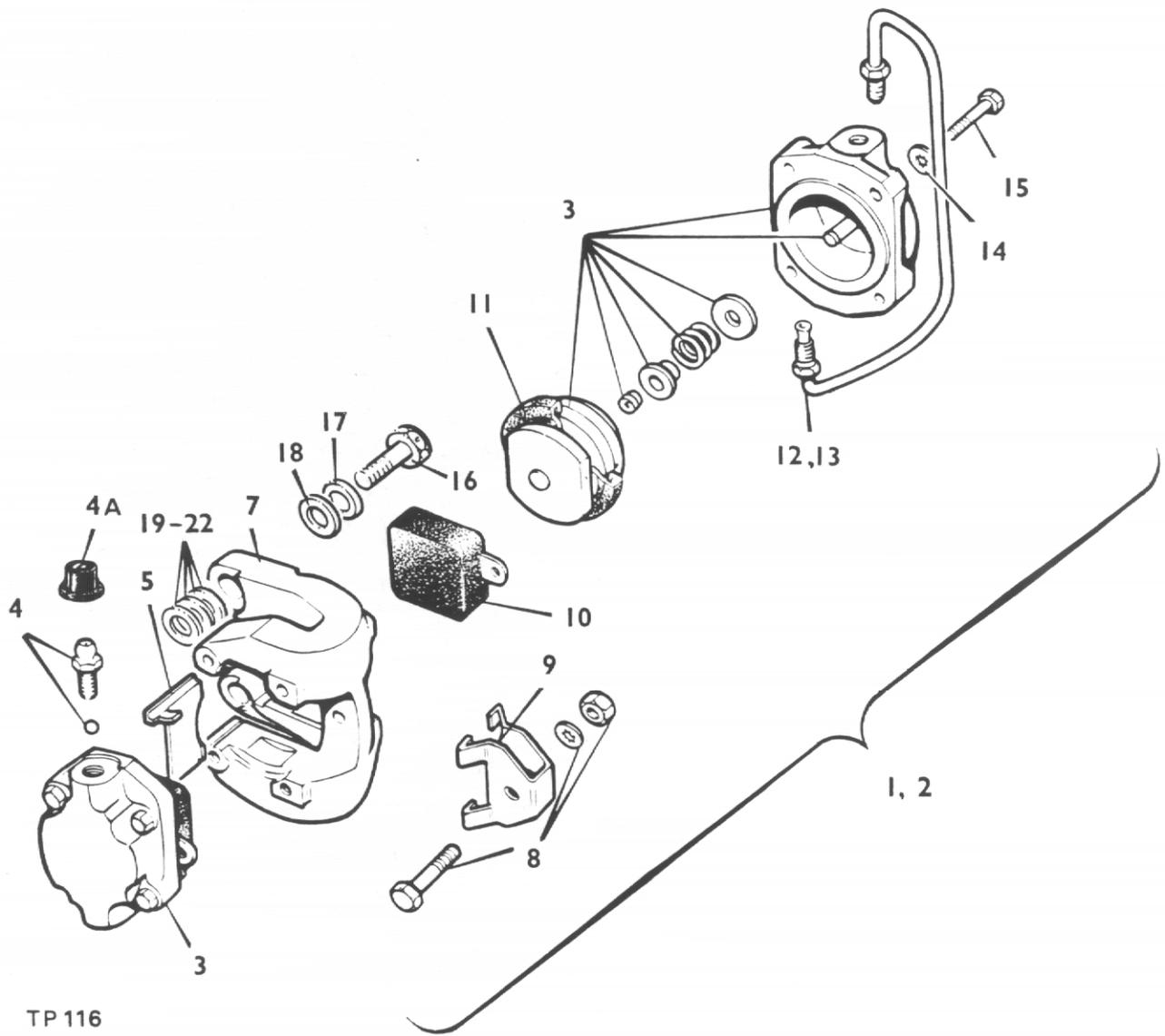
Item No.	Part No.	Description	Qty
1	64067970	Master Cylinder (complete)	1
2	DM 89-1	Pipe 1/4" dia x 21" long (master cylinder to reservoir)	1
3	64047211	Reservoir	1
4	64477544	Reservoir clip	1
5		Screw 2BA x 1/2" long & locknut	2
6	378700	Copper washer	2
7	64474287	Banjo	1
8	64473063	Banjo Bolt	1
9	DM78-3	Pipe 3/16" dia x 43" long (master cylinder to tee)	1
10	64474341	Tee piece	1
11	DM78-2	Pipe 3/16" dia x 21" long (tee to RH brake caliper)	1
12	DM78-1	Pipe 3/16" dia x 38" long (tee to LH brake caliper)	1
13	4S132	Clip	2



6761 A

MASTER CYLINDER ASSEMBLY

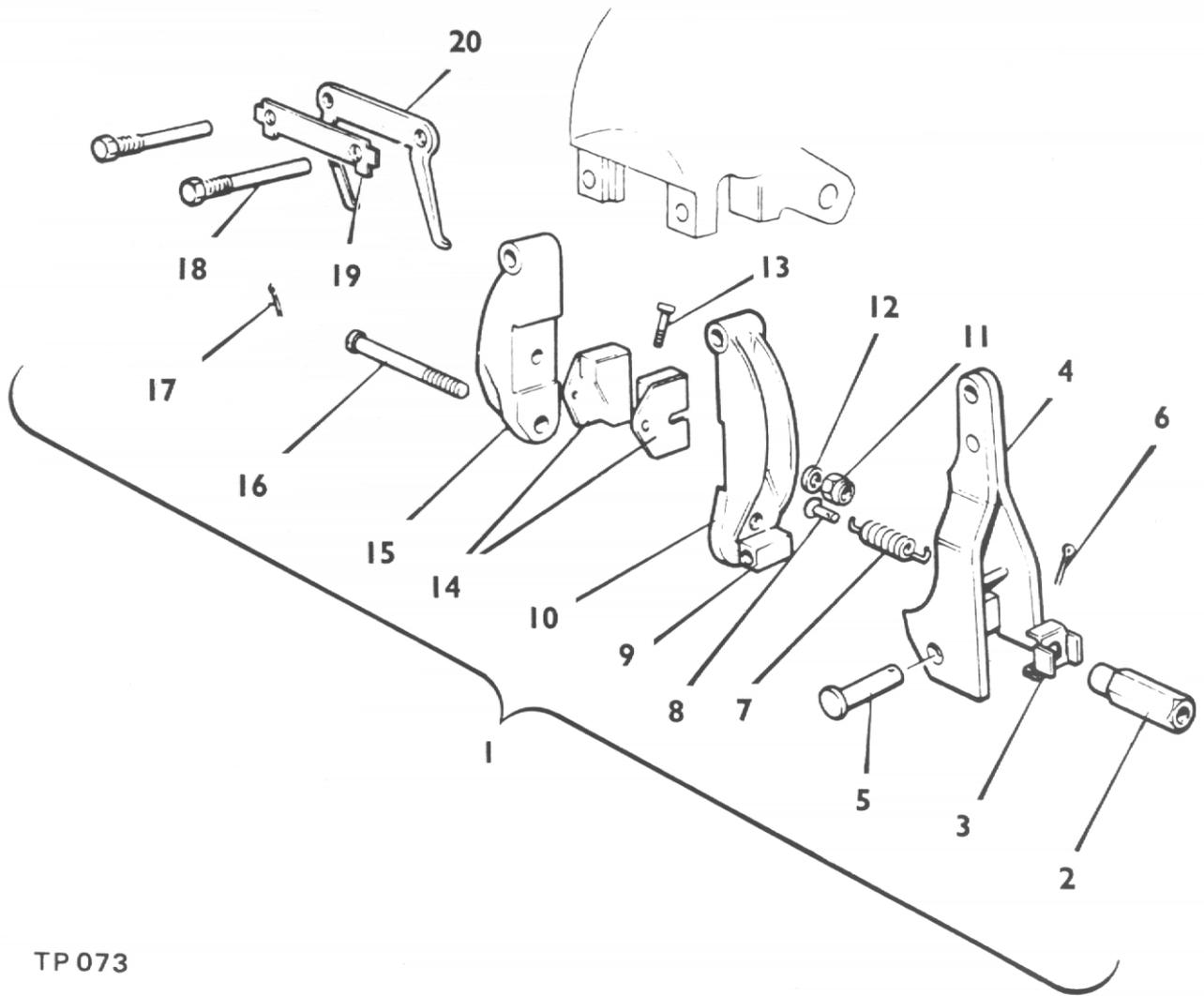
Item No.	Part No.	Description	Qty.
	64067970	Master Cylinder (Complete)	1
1	SP 1996/2	Seal Kit	1
2	378641	Valve Stem	1
3	318001	Valve Spacer	1
4	64673391	Valve Spring Retainer	1
5	351257 W	Push Rod	1
6	378242	Retaining Washer	1
7	378700	Washer	1
8	64671286	Clevis	1
9	378312	Dust Cover Retainer	1
10	64100052	Locknut	1
11	64110348	Plug	1
12	C174 Y	Clevis Pin	1



TP 116

BRAKE CALIPER ASSEMBLY

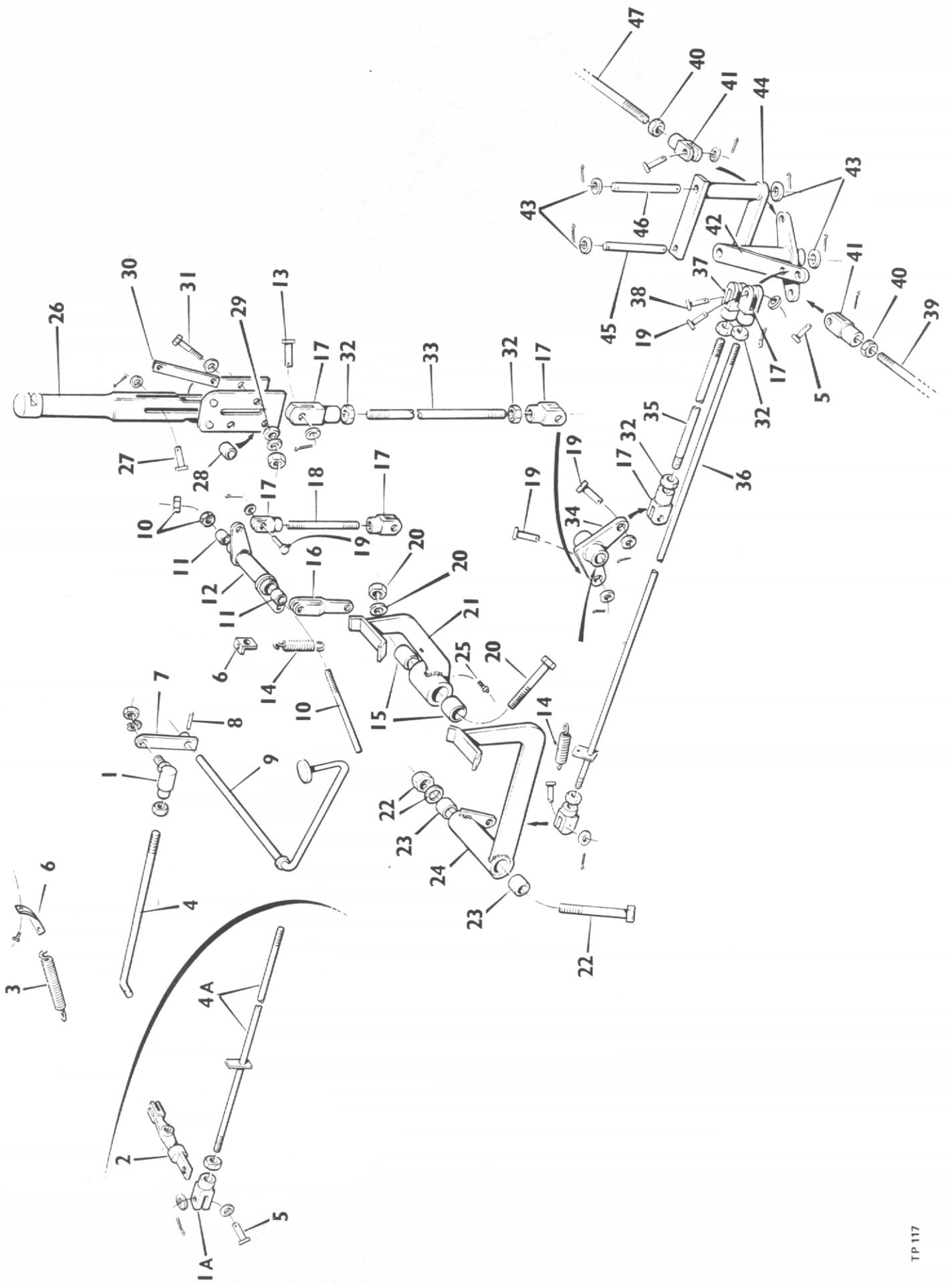
Item No.	Part No.	Description	Qty
1	CB 90262	Capliper Assembly Complete (RH)	1
2	CB 90263	Capliper Assembly Complete (LH)	1
3	VBO 5505	Piston and Cylinder Assembly	2
4	VBO 8378	Bleed Screw and Ball Assembly	1
4A	CBO 849	Dust Cover (Bleedscrew)	1
5	VBO 5133	Plate, Support	1
6	CB 60253	Body, Caliper (LH)	1
7	64033114	Body, Caliper (RH)	1
8	VBO 8491	Nut, Bolt and Washer (Keep Plate)	1
9	VBO 5123	Keep Plate	1
10	VBO 8360Y	Friction Pad Complete (Set of 4)	1 set
11	VBO 8210A	Seal Kit (Dust & Piston)	2
12	VBO 3927	Bridge Pipe Assembly (LH)	1
13	VBO 3926	Bridge Pipe Assembly (RH)	1
14	VBO 6101L	Washer, Shakeproof	8
15	VBO 5100	Bolt, Retaining (Cylinder)	8
16	7BNF22B	Caliper mounting bolt	4
17	7W16	Washer	4
18	7W14	Washer	4
19	5HA138	Shim .003"	A/R
20	5HA139	Shim .005"	A/R
21	5HA140	Shim .010"	A/R
22	5HA141	Shim .030"	A/R



TP 073

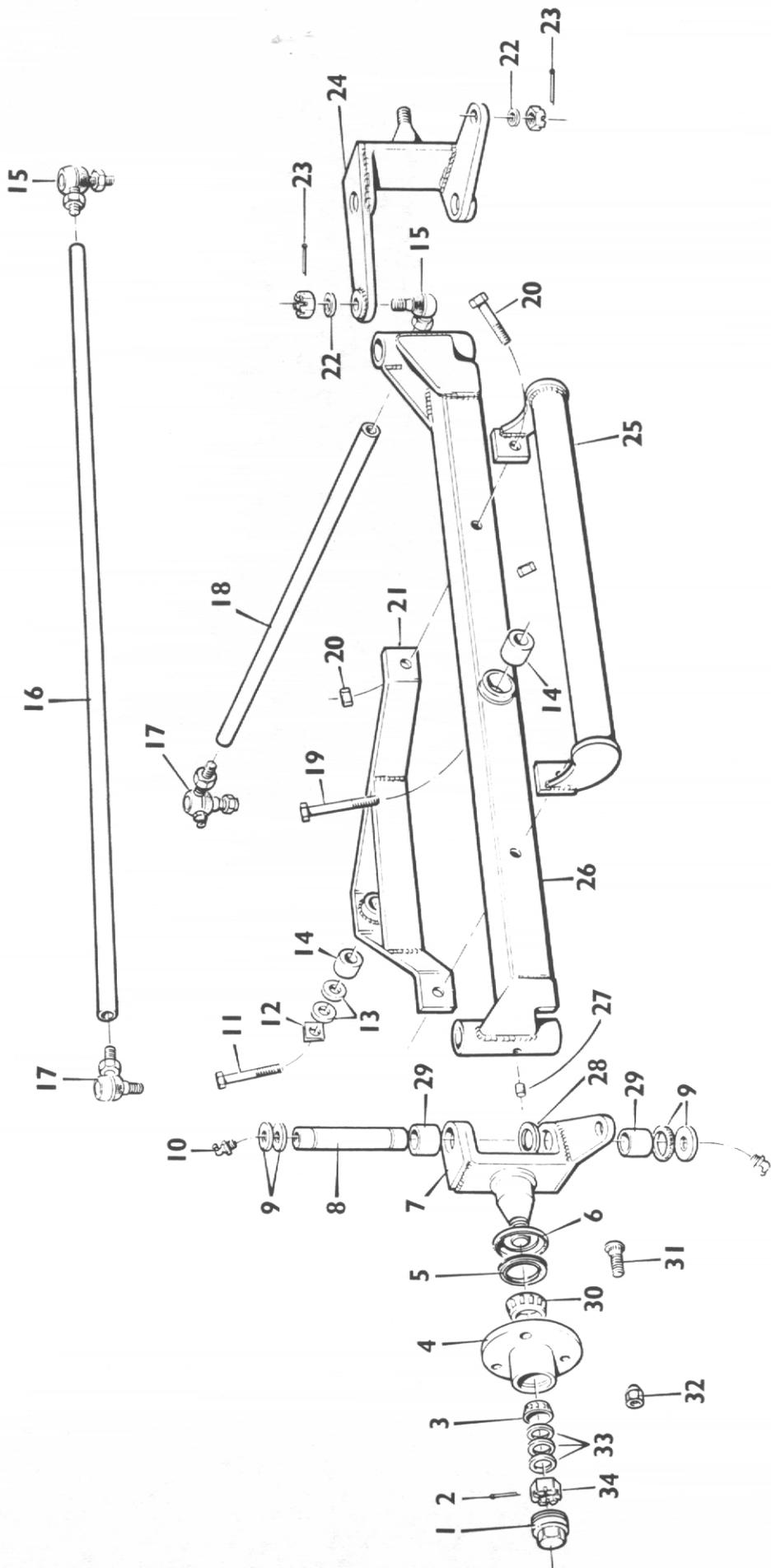
HANDBRAKE ASSEMBLY

Item No.	Part No.	Description	Qty
1	CB 90256	Handbrake Assembly complete RH	1
	CB 90257	Handbrake Assembly complete LH	1
2	CB 20258	Adjustment Nut	1
3	VBO 8307	Friction Spring	1
4	CB 20562	Lever Assembly	1
5	VBO 8315	Hinge Pin	1
6	VBO 6135 D	Split Pin	1
7	VBO 7329	Return Spring	1
8	VBO 7330	Spring Anchor	1
9	VBO 8308	Pivot Seat	1
10	CB 60249 8308	Pad Carrier Assembly Inner Complete with Pivot Seat	1
11	VBO 6050	Nut 2 B.A.	2
12	VBO 6101F	Washer	2
13	VBO 4124	Bolt	2
14	CB 20311Y	Friction Pad	2
15	VBM 4573	Pad Carrier Outer	1
16	CB 20289	Bolt	1
17	VBO 6158G	Split Pin	1
18	VBO 4190	Bolt	2
19	VBO 4226	Tab Washer	1
20	VBM 4635/1	Retraction Plate	1



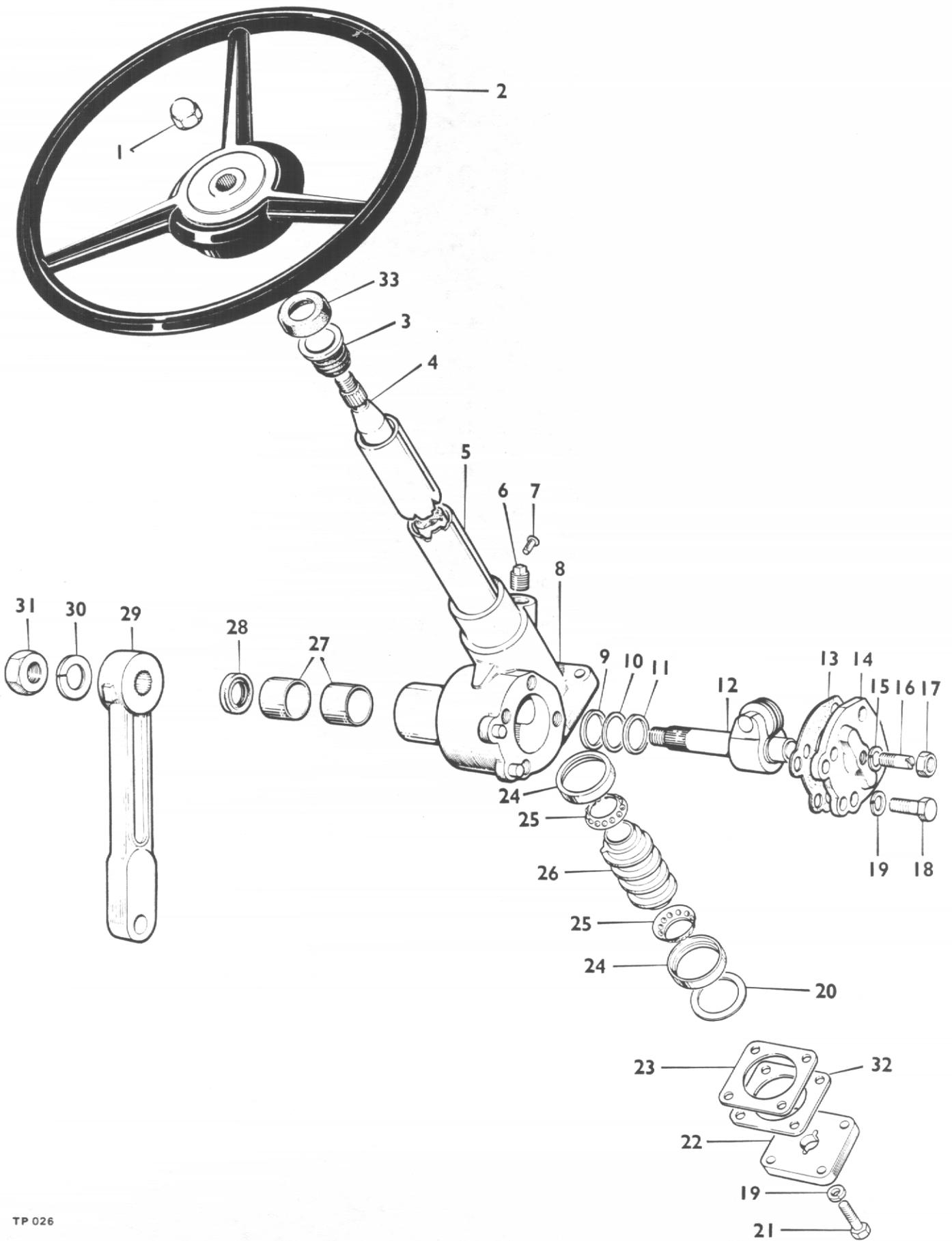
PEDALS AND CONTROLS

Item No.	Part No.	Description	Qty
1	C160B	Accelerator Rod Ball End (PETTER)	1
1A	C174D	Accelerator Rod Fork End (LISTER)	1
2	CT194	Accelerator Lever Engine (LISTER)	1
3	C173D	Accelerator Rod Return Spring	1
4	C299	Accelerator Rod (PETTER)	1
4A	C240	Accelerator Rod (LISTER)	1
5	C174Y	Clevis Pin	5
6	C163	Spring Anchor	2
7	C129	Accelerator Lever	1
8	C129-A	Tension Pin 3/16" dia x 1 1/4" long	1
9	C137	Accelerator Pedal (PETTER)	1
9A	CT.137	Accelerator Pedal (LISTER)	1
10		Clutch Transfer Lever Pivot Pin & Nuts	1
11	WB0808	Clutch Transfer Lever Bush	2
12	C121	Clutch Transfer Lever	1
13	708-C-6942	Clevis Pin	1
14	C173-B	Clutch & Brake Return Spring	2
15	WB1010	Clutch Pedal Bush	2
16	C127	Clutch Connecting Fork	1
17	C174-A	Fork End 3/8" BSF (Drum) -Qty 5 when disc brakes fitted	7
18	C184	Clutch Adjusting Rod 3/8" BSF x 2 3/4" long	1
19	C174X	Clevis Pin 3/8"	1
20	C126A	Clutch Pedal Bolt & Nut	1
21	C126	Clutch Pedal	1
22	C122A	Footbrake Pedal Bolt & Nut	1
23	WB1212	Footbrake Pedal Bush	2
24	C122	Footbrake Pedal (Drum)	1
24A	C258	Footbrake Pedal (Disc)	1
25	TS	Grease Nipple	3
26	715-C-11605	Handbrake Assembly	1
27	715-C-11527	Clevis Pin	1
28	823-C-8570	Handbrake Spacer	2
29	C179	Handbrake Mounting Washer	3
30	181 B	Link	1
31		Bolt 3/8" BSF x 2 1/2" long & Nut	2
32		Locknut 3/8" BSF	6
33	F525	Handbrake Rod 3/8" BSF x 14 1/2" long	1
34	2ST 53	Bell Crank Lever	1
35	2ST 73	Handbrake Rod 3/8" BSF x 31 1/4" long (Drum)	1
35A	2ST 105	Handbrake Rod 3/8" BSF x 34 1/2" long (Disc)	1
36	LT277B	Footbrake Rod 3/8" BSF x 46" long (Drum)	1
37	C174B	Slotted Fork End 3/8" BSF (Drum)	1
37A	C174A	Fork End 3/8" BSF (Disc)	1
38	C174XL	Clevis Pin 3/8" dia (Drum)	1
38A	C174X	Clevis Pin 3/8" dia (Disc)	1
39	C171A	Brake Rod 1/4" UNF x 11 1/4" long (Drum)	1
39A	2ST 106	Brake Rod 1/4" UNF x 9 3/4" long (Disc)	1
40		Locknut 1/4" UNF	4
41	C174C	Fork End 1/4" UNF	4
42	2ST 54	Compensator Arm (Drum)	1
42A	2ST 103	Compensator Arm (Disc)	1
43		Flat Washer 1/2" dia.	4
44	2ST 55	Compensator Link Assembly (Drum)	1
44A	2ST 104	Compensator Link Assembly (Disc)	1
45		Bolt 1/2" BSF x 5" long & Nut	1
46		Bolt 1/2" BSF x 5 1/2" long & Nut	1
47	C218-2	Brake Rod 1/4" UNF x 28" long (Drum)	1
47A	2ST 107	Brake Rod 1/4" UNF x 27" long (Disc)	1



STEERING ASSEMBLY

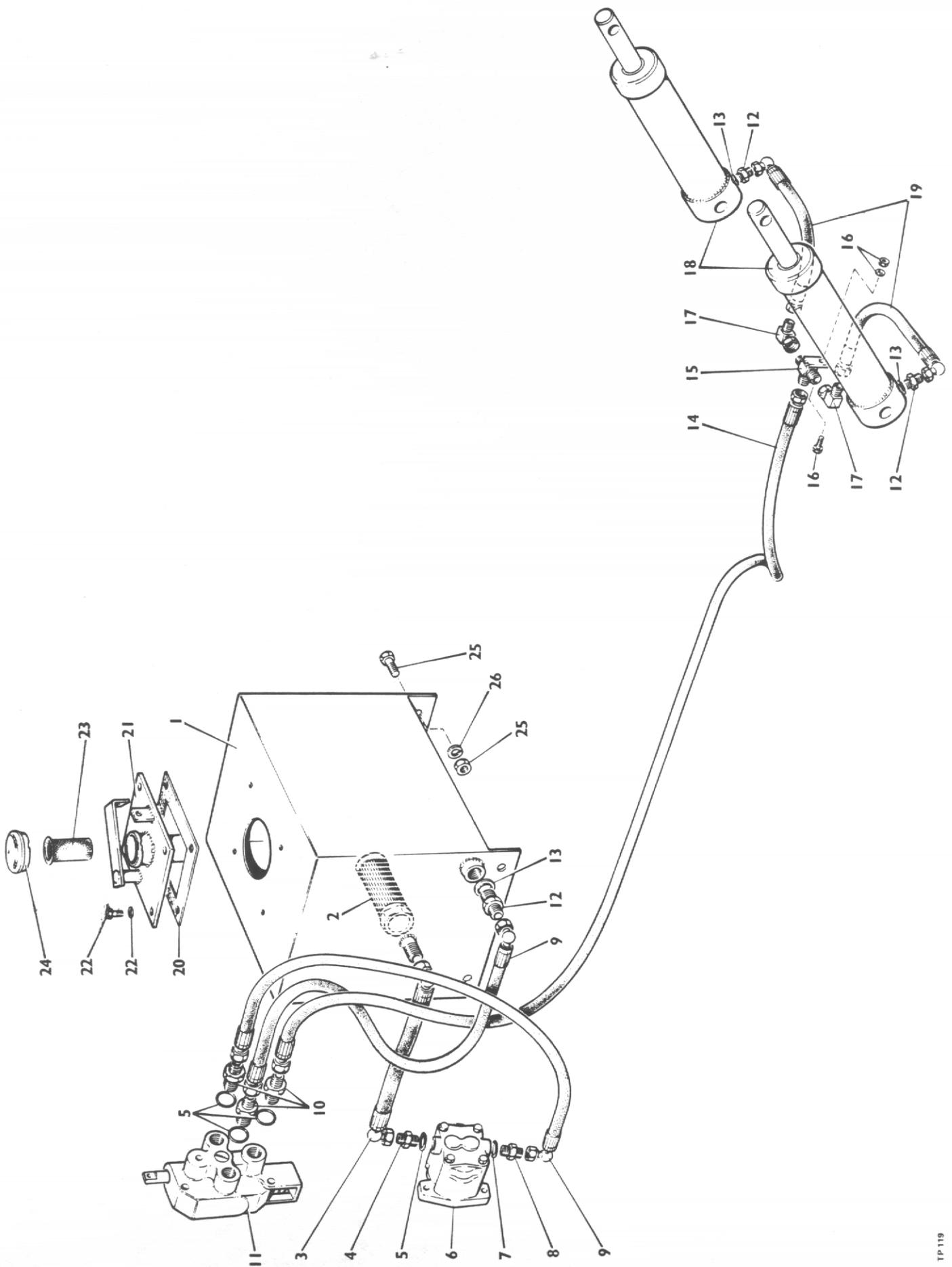
Item No.	Part No.	Description	Qty
1	C186-A	Hub Cap	2
2		Hub Split Pin 3/32" dia x 1" long	2
3	K09074	Hub Bearing Outer	2
4	C186	Hub Assembly Complete (including items 1,3,5,6,29, 31 & 32	2
5	C186 C	Hub Bearing Oil Seal	2
6	EC2752	Dust Cover	2
7	L267-N	Stub Axle Assembly & Nut L.H.	1
8	L264	King Pin	2
9	C180-A-B	King Pin Washer	4
10	T90	Grease Nipple 90° 1/8" BSP	4
11	C103 A	Stabiliser bolt 5/8" BSF x 4½" long & Nut	1
12	C162	Stabiliser Washer Tapered 6½°	1
13		Stabiliser Bolt Washer 7/8" dia.	2
14	E2135	Steering Axle & Stabiliser Bush	2
15	C159/RH	Steering Ball Joint R.H.	2
16	C159 A	Track Rod Intermediate	1
17	C159-LH	Steering Ball Joint L.H.	2
18	C159-B	Drag Link Intermediate	1
19	C107-A	Steering Axle Bolt 5/8" BSF x 3½" long & Nut	1
20		Bumper to Axle Bolt 5/8" BSF x 3½" long & Nut	2
21	C103	Steering Axle Stabiliser	1
22		Drag Link & Track Rod Washer	2
23		Drag Link & Track Rod Split Pin 1/8" dia x 1" long	4
24	C226	Stub Axle Assembly & Nut R.H.	1
25	C113	Bumper	1
26	C225	Steering Axle Beam	1
27	C111-A	King Pin Retaining Screw 7/16" whit x 7/16" long	2
28	C175	Thrust Washer	2
29	C190	King Pin Bush	4
30	K14138-1	Hub Bearing Inner	2
31	0156	Wheel Stud	6
32	C177	Wheel Nut	6
33		Hub Washer 5/8" dia. Bright.	A/R
34		Hub Nut 5/8" BSF Slotted	2



TP 026

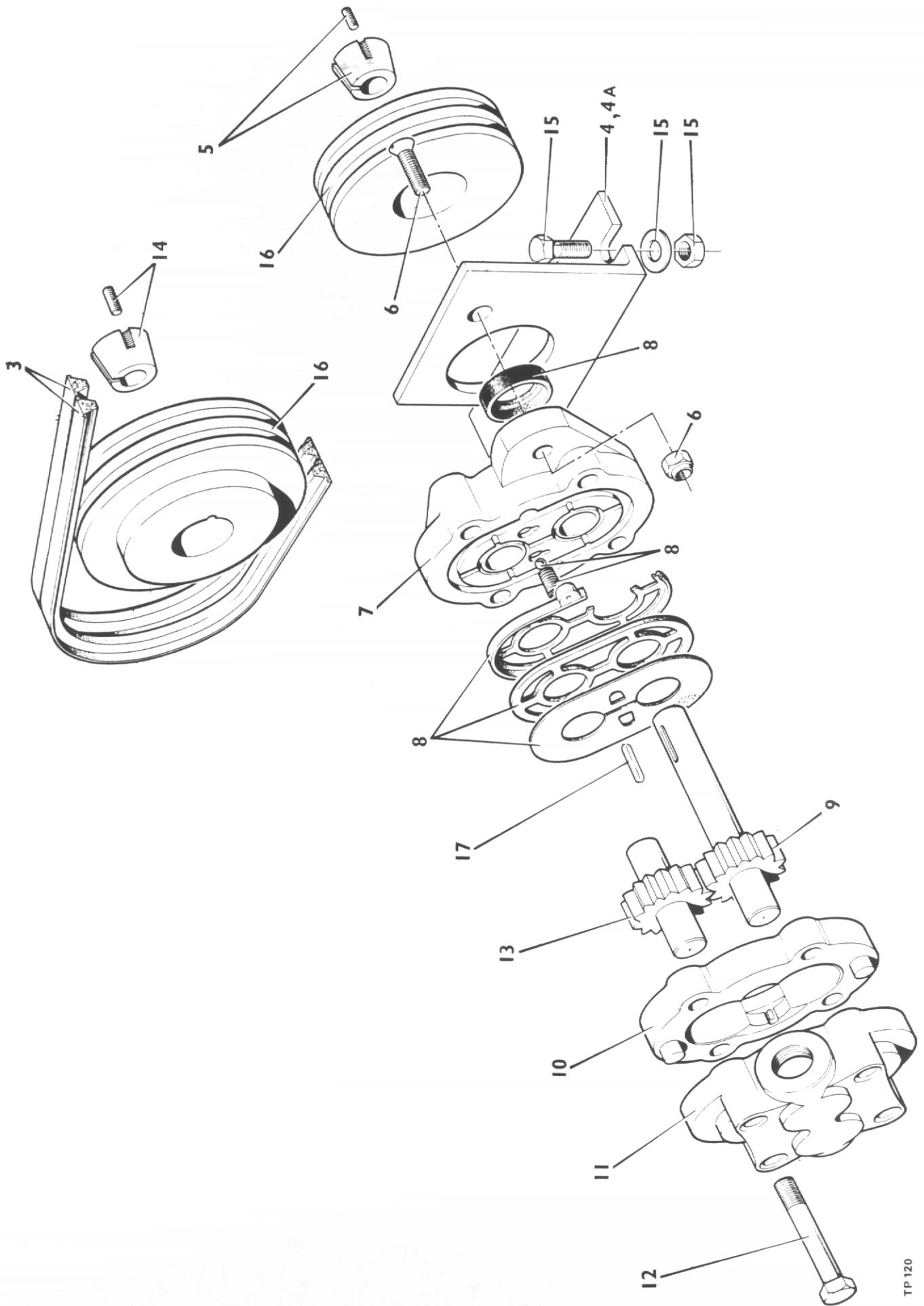
STEERING GEAR (CAM AND ROLLER TYPE)

Item No.	Part No.	Description	Qty.
	MGA 34849 	Steering column assy. complete less items, 1,2 & 29	1
1	C 304	Steering wheel nut	1
2	347 K	Steering wheel	1
3	PA3904A	Column top bush	1
4	P5244/30"	Inner shaft	1
5	P3911/24"	Outer tube	1
6	S 9033	Oil plug	1
7	S 9166	Pin	1
8	PA4426	Steering box c/w item 14	1
9	P4151	Thrust washer	2
10	P 3308	Shim	A/R
11	P 4150	Thrust washer	2
12	PA5229/4¼"	Rocker shaft c/w roller	1
13	P3306A	Cover plate gasket	A/R
14	PA4257	Cover plate and bush	1
15	S 999	Spring washer	1
16	P 4222	Adjuster screw	1
17	P 4221	Nut	1
18	S 9240	Setscrew	4
19	S 902	Spring washer	8
20	P3342	Washer	1
21	S 9300	Setscrew	4
22	P 3907	Bottom cap	1
23	P 3301/.005"	Shim	A/R
24	P 3341	Outer race	2
25	PA2733	Cage and balls	2
26	P 3340	Cam	1
27	P 3309	Bush	2
28	S 9242	Oil seal	1
29	M 29629	Drop arm	1
30	S 955	Spring washer	1
31	S 9332	Nut	1
32	P 3301G	Bottom cap liner	2
33	M33418	Inner column shroud	1



HYDRAULIC PIPES & FITTINGS

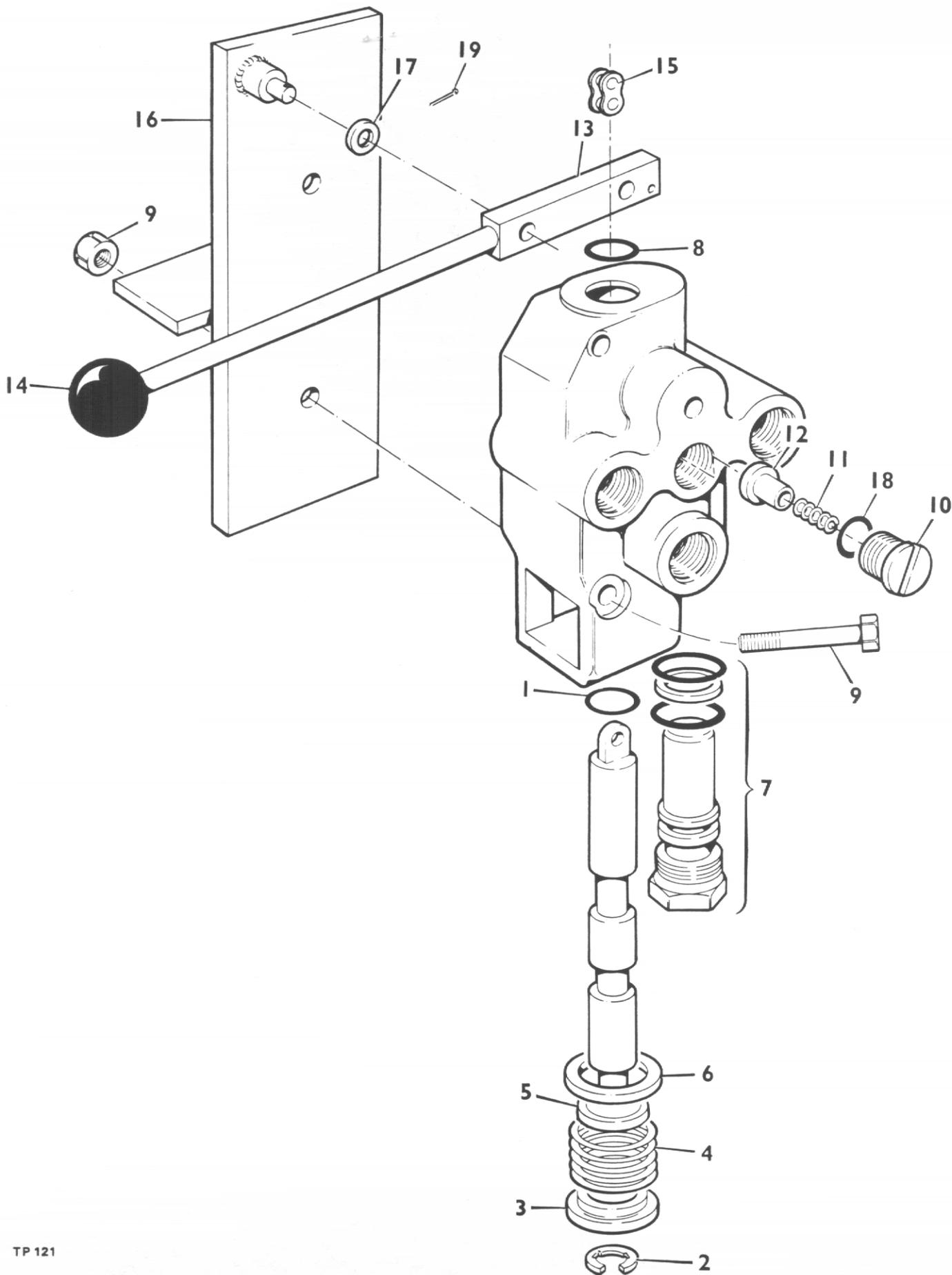
Item No.	Part No.	Description	Qty
1	2ST 118	Hydraulic Tank	1
2	UC1457	Suction Filter	1
3	2ST 72E	Hose 1/2" x 16" long 90-90 (tank to pump) (PETTER)	1
	2ST 97A	Hose 1/2" x 31" long 90-90 (tank to pump) (LISTER)	1
4	2ST72F	Adaptor 3/4" JIC x 1/2" BSP	1
5	2ST 72J	'O' Ring 3/4" dia.	4
6	H20210-OAEA	Pump Complete (PETTER) (See Page 47)	1
	H20210-1AEA	Pump Complete (LISTER) (See Page 47)	1
7	2ST 72K	'O' Ring 9/16" dia	1
8	2ST 72G	Adaptor 9/16" JIC x 3/8" BSP	1
9	2ST 72D	Hose 3/8" x 34 1/4" long ST-90 Valve to pump & tank	2
10	4-35-40K	Adaptor 3/4" JIC x 3/8" BSP	3
11	300-023-AAD	Valve Complete (See page 49)	1
12	T14J	Adaptor 3/8" BSP x 3/8" BSP	3
13	T14I	Bonded Seal 3/8" BSP	3
14	2ST72B	Hose 3/8" x 85" long ST-ST (valve to tee)	1
15	2ST 126	Tee Piece	1
16		Bolt 1/4" BSF x 1" long, Nut & Spring Washer	1
17	2ST 72N	Elbow 90°	2
18	3500-60	Hydraulic Cylinder Complete (See Page 50)	2
19	2ST 72C	Hose 3/8" x 13 1/4" long ST-90 (tee to cylinder)	2
20	T18B	Cover plate gasket	1
21	4-35-187	Cover Plate Assembly	1
22		Screw 5/16" UNF x 3/4" long & springwasher	4
23	P1145	Strainer	1
24	P2578-2	Filler Cap	1
25		Bolt 3/8" BSF x 1" long & Nut	4
26		Spring Washer 3/8" dia.	4



TP120

HYDRAULIC PUMP & DRIVE

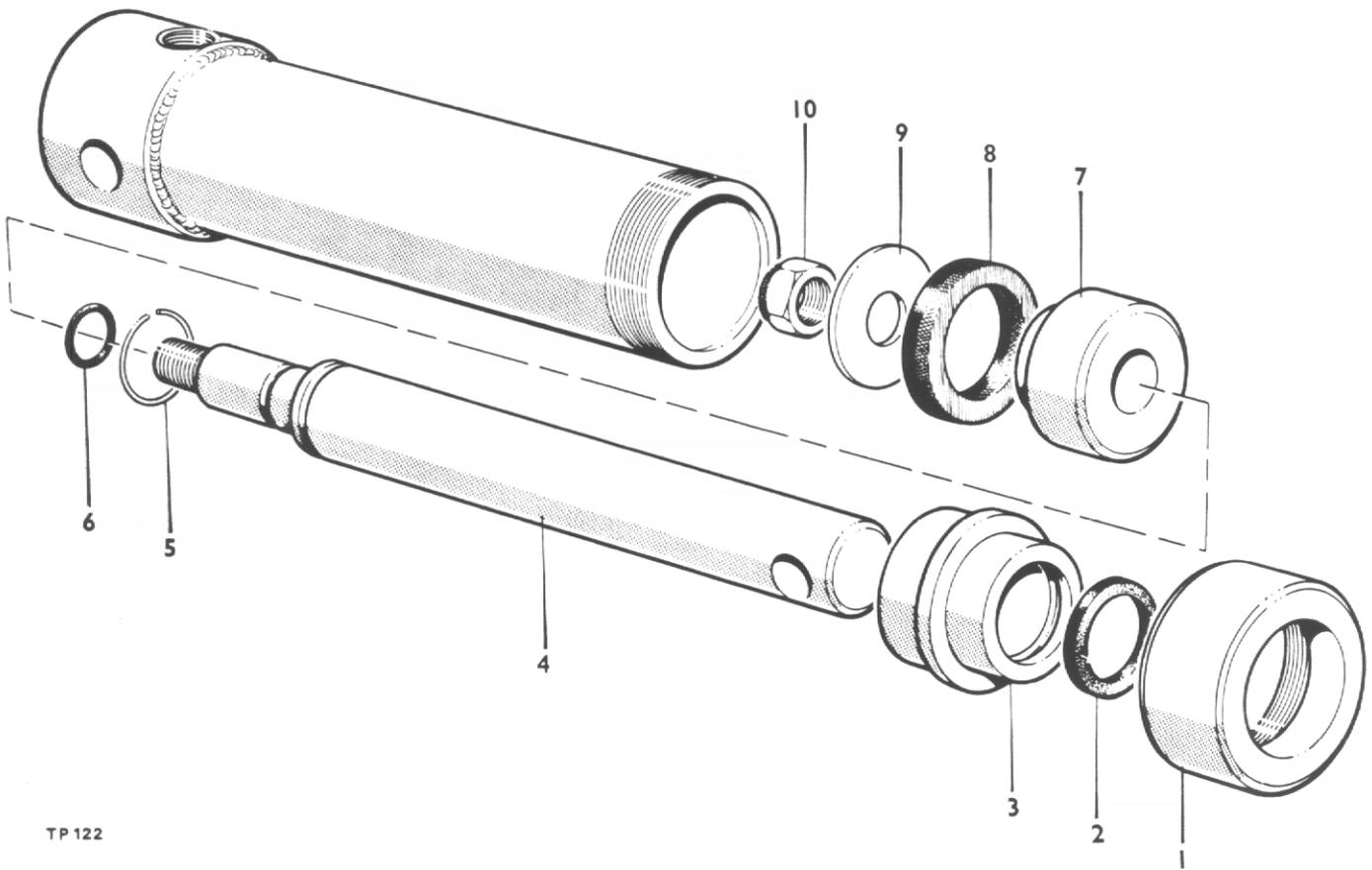
Item No.	Part No.	Description	Qty
1	H 20210-O AEA	Pump Assembly (PETTER)	
2	H 20210-1 AEA	Pump Assembly (LISTER)	
3	2 ST 121	Wedge Belt	2
4	2 ST 119	Pump Mounting Bracket (PETTER)	1
4A	2ST 125	Pump Mounting Bracket (LISTER)	1
5	2ST 124	Taper Lock Bush	1
6		Countersunk Bolt 3/8" UNF x 1 1/4" long & Nut	2
7	20200-20	Front Plate Assembly	1
8	20200-34	Seal Repair Kit	1
9	20210-7	Drive Gear Assembly	1
10	20210-13	Body & Dowel Assembly	1
11	20200-36	Back Plate Assembly	1
12	16032-522	Hex Screw	4
13	20210-8	Idler Gear Assembly	1
14	2 ST 123	Taper Lock Bush	1
15		Bolt 3/8" UNF x 1 1/4" long, Washer & Nut	2
16	2 S 122	Pulley	2
17	20200-25	Key	1



TP 121

HYDRAULIC CONTROL VALVE, LEVER & MOUNTING BRACKET

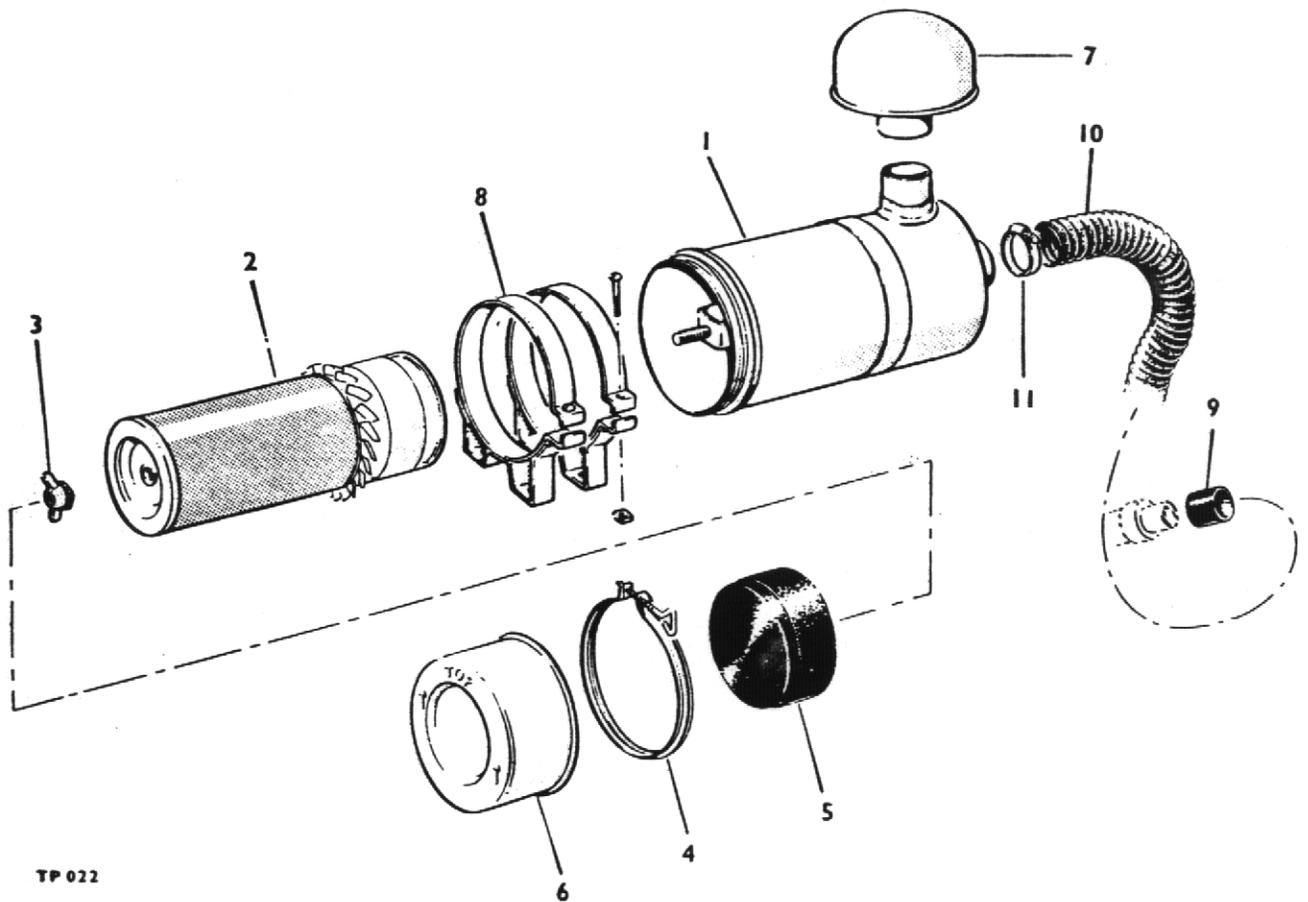
Item No.	Part No.	Description	Qty
	300-023-AAD	Valve Complete	1
1	16003-12	Seal	1
2	16124-50	Circlip	1
3	15546-6	Shallow Washer	1
4	30501-39	Spool Centre Spring	1
5	16048-31	Spool Washer	1
6	30501-10	Deep Washer	1
7	32016-L	Relief Valve with Seals	1
8	16004-63	Seal	1
9		Bolt 5/16" UNF x 2½" long & Nut	2
10	30501-11	Plug	1
11	30501-13	Lift Check Spring	1
12	30501-12	Lift Check Plunger	1
13	4-60-143	Control Lever	1
14	2ST88	Control Knob	1
15	4-60-178	Link	1
16	2ST-131	Bracket	1
17		Flat Washer 5/16" dia.	1
18	16003-10	Seal	1
19		Split Pin 3/32" dia. x 5/8" long	1
	30521-800	Seal Repair Kit Comprising items 1,8 & 18	



TP 122

HYDRAULIC CYLINDER

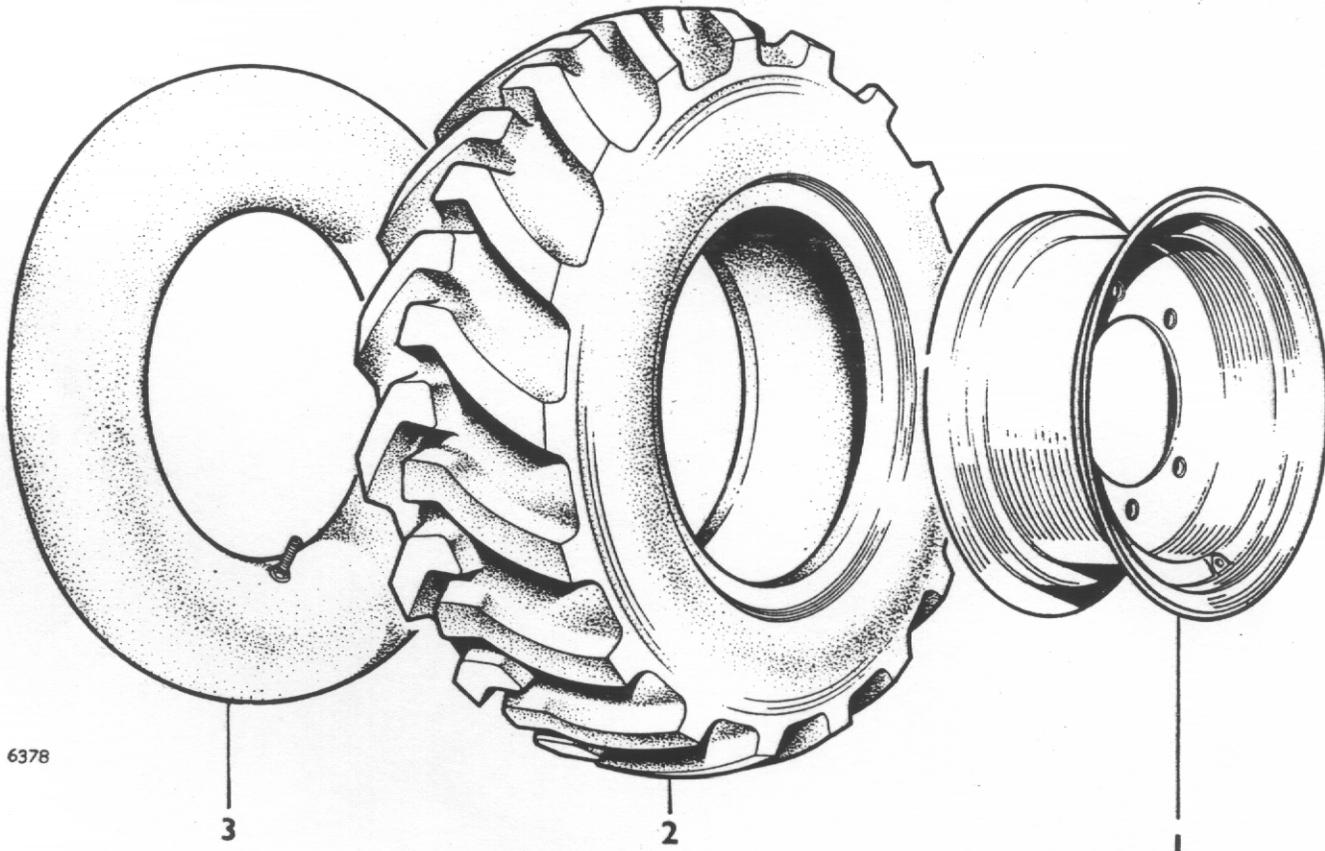
Item No.	Part No.	Description	Qty
	3500-60	Hydraulic Cylinder Complete	2
1	3503-60	Tube Cap	2
2	3510-60	Wiper Seal	2
3	3506-60	Sleeve	2
4	3505-60	Piston Rod.	2
5	3514-60	Snap Ring	2
6	3511-60	Rod 'O' Ring	2
7	3504-60	Piston Head	2
8	3509-60	Piston Seal	2
9	3507-60	Backing Washer	2
10	3508-60	Locknut	2



TP 022

AIR CLEANER

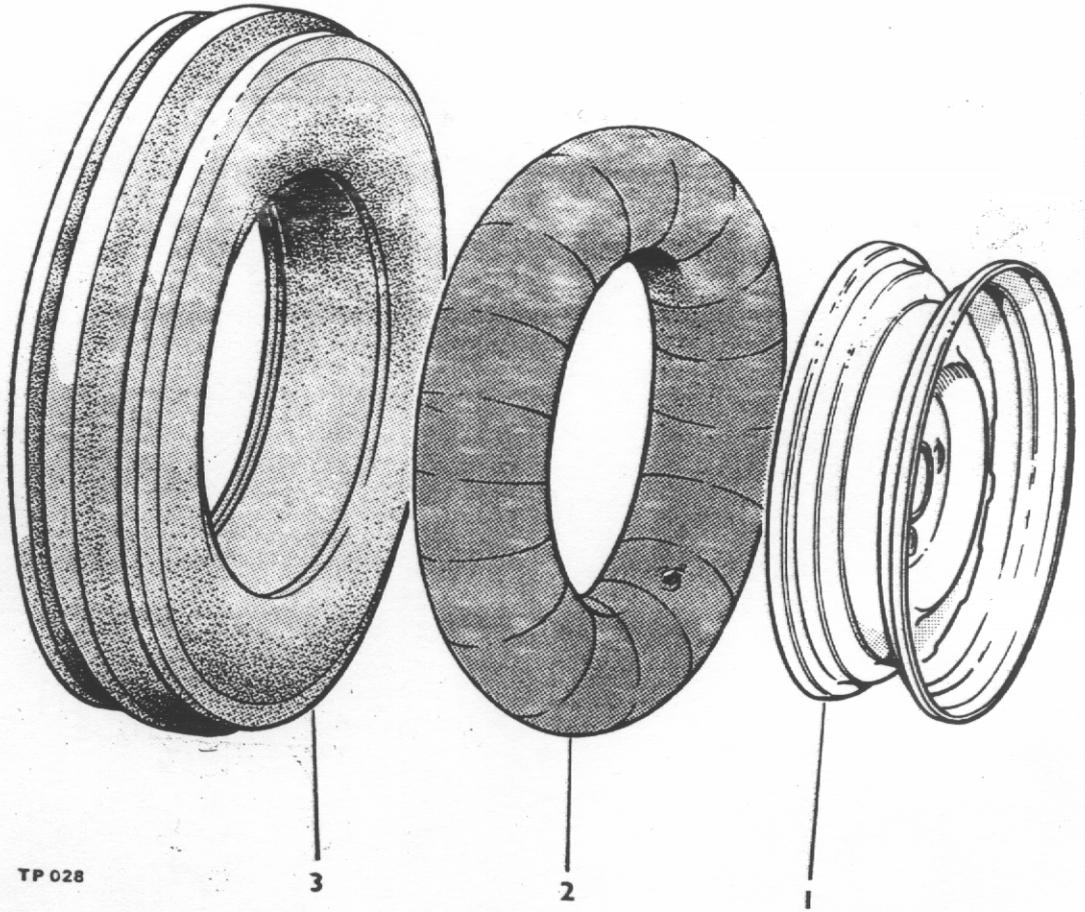
Item No.	Part No.	Description	Qty.
1	10532A02	Air Cleaner Assembly	1
2	10532A0101	Element	1
3	V600487	Nut & Gasket Kit	1
4	220229002	Clamp Body	1
5	220229003	Skirt, baffle	1
6	220229004	Cup	1
7	10534A02	Stack Cap	1
8	10533A02	Bracket	2
9	10320A06	Sleeve Adapter	1
10		Hose Flexible 2" Bore x 35" Long	1
11	97S12	Clip Hose	2



6378

DRIVE WHEELS & TYRES

Item No.	Part No.	Description	Qty.
1	24S20	RH Wheel Assembly Complete	1
2	24S19	LH Wheel Assembly Complete	1
3	30033A01	Wheel Rim 4.00 x 16	2
	20S09	Tyre 600 x 16-4 Ply	2
	23S02	Tube 600 x 16	2



STEERING WHEELS & TYRES

Item No.	Part No.	Description	Qty.
1	24S35	Steering Wheel Complete	2
2	LP598	Wheel Rim 4.00 x 16	2
2	23S01	Tube 5.50 x 16	2
3	21S02	Tyre 5.50 x 16-4 Ply	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	1676.40	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	2260.60
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".

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

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

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

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