

# **WINGET**

## **OPERATING INSTRUCTIONS & SPARE PARTS LIST**

### **FOUR A 40S DIESEL DUMPER (CAPACITY 40 CWT)**

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## **INTRODUCTION**

This Parts & Operators Manual is a re-print of the manual last published in 1980 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 A 40S 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

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**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

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*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

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## 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

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## 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

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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

Before the Dumper is put into service, always check the following points:-

### ENGINE

Check the oil level on the dipstick, topping up if necessary to the full mark.

### GEARBOX

Check the oil level on the dipstick, topping up if necessary to the full mark.

### DRIVE AXLES AND TRANSFER CASE

Remove filler/level plugs from drive axles and filler/level plug from transfer case and check that oil is up to bottom of holes. Top up if necessary, through filler/level plugs.

### FUEL TANK

Fill tank 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.

### HYDRAULIC TANK

Fill the hydraulic tank, Before removing the cap, clean the surrounding area to prevent the possible entry of foreign matter.

### BRAKE SYSTEM

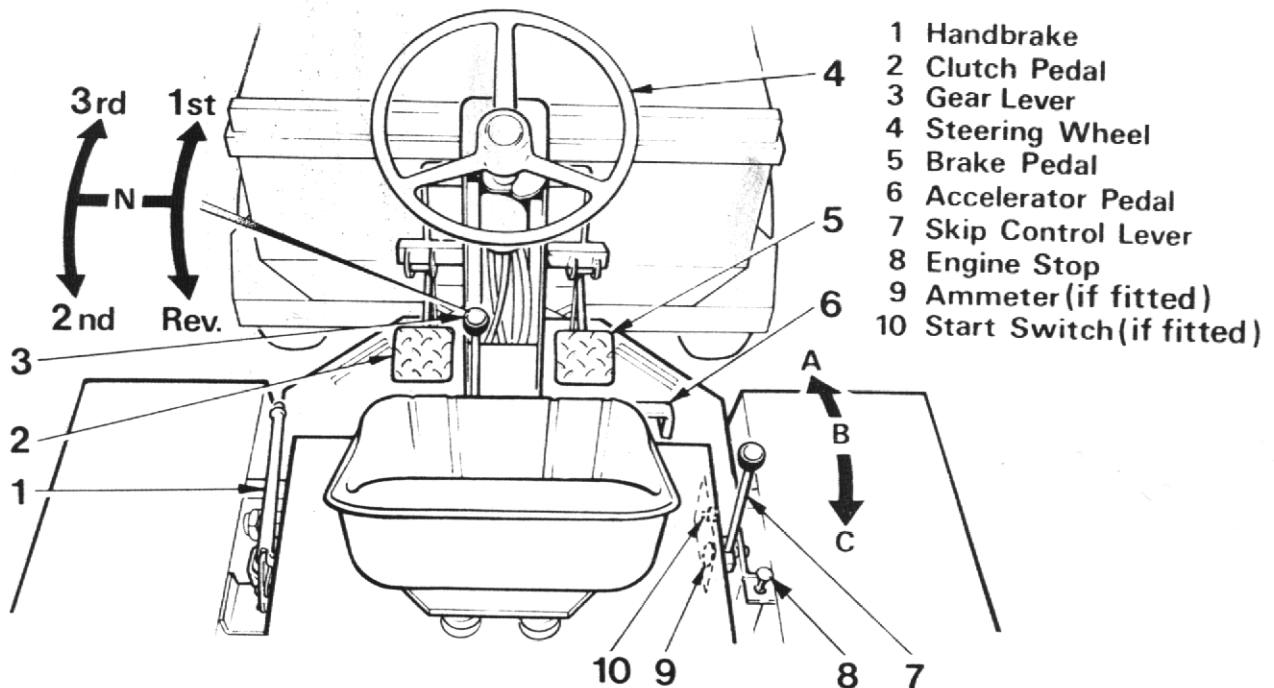
Ensure that the fittings are tight on both hoses supplying the brake master cylinder from the main hydraulic tank.

### 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 Warranty.

N.B. FOR FURTHER INFORMATION ABOUT LUBRICATION AND RECOMMENDED OILS SEE RECOMMENDED LUBRICANT CHART & GENERAL MAINTENANCE SECTION.





## SPECIFICATION FOR MACHINES WITH FORWARD TIP SKIP

A	Overall Height	1910 mm	(6' 3½")
B	Skip Loading Height	1285 mm	(4' 2,5/8")
C	Wheelbase	1790 mm	(5' 10½")
D	Overall Length	3465 mm	(11' 4½")
E	Ground Clearance	230 mm	(9,1/16")
F	Overall Width	1680 mm	(5' 6½")
G	Skip Ground Clearance when Tipped	468 mm	(1' 6½")
H	Overall Height Tipped	2140 mm	(7' 0½")
J	Discharge Forward of Tyre	606 mm	(1' 11,7/8")
K	Overhang	910 mm	(2' 11,7/8")
L	Wheeltrack	1390 mm	(4' 6¾")
M	Prow Width	1292 mm	(4' 2,7/8")

Skip		Turning Circle	7450 mm	(24' 5½")
Water Level	0.96 m <sup>3</sup> (34 cu.ft.)	Unladen Weight	1880 Kgs.	(4144 lbs.)
Struck Level	1.22 m <sup>3</sup> (43 cu.ft.)	Hyd. Relief Valve	123 Kg/cm <sup>2</sup>	(1750 psi)
Heaped Level	1.5 m <sup>3</sup> (53 cu.ft.)	Rear Axle Artic.	300 mm	(0.11½")
Maximum Payload	2030 Kgs. (4480 lbs.)	Tank Capacities		
Oil Capacities		Hydraulic	45.5 Ltrs.	(10 galls.)
Transfer Box	.85 Ltrs. (1½ pts.)	Diesel	45.5 Ltrs.	(10 galls.)
Gearbox	.85 Ltrs. (1½ pts.)	Tyre Pressure	35 p.s.i.	
Drive Axle(Rear)	4.6 Ltrs. (8 pts.)			
Engine Lister	7.5 Ltrs. (13.2 pts.)			
Engine Petter	6.8 Ltrs. (12 pts.)			

### Road Speeds

	Petter		Lister	
	m.p.h.	k.p.h.	m.p.h.	k.p.h.
1st ....	2.2	( 3.5)	2.5	( 4.0)
2nd ....	5.2	( 8.4)	5.9	( 9.5)
3rd ....	9.6	(15.5)	10.9	(17.5)
Rev ....	2.5	( 4.0)	2.8	( 4.5)

### Engine Specification

Petter PH2 S & E Specification Schedule 1079	(Hand Start)
Petter PH2 S & E Specification Schedule 1083	(Elect.Start)
Lister ST2 S & E Specification Schedule 1081	(Hand Start)
Lister ST2 S & E Specification Schedule 1082	(Elect.Start)

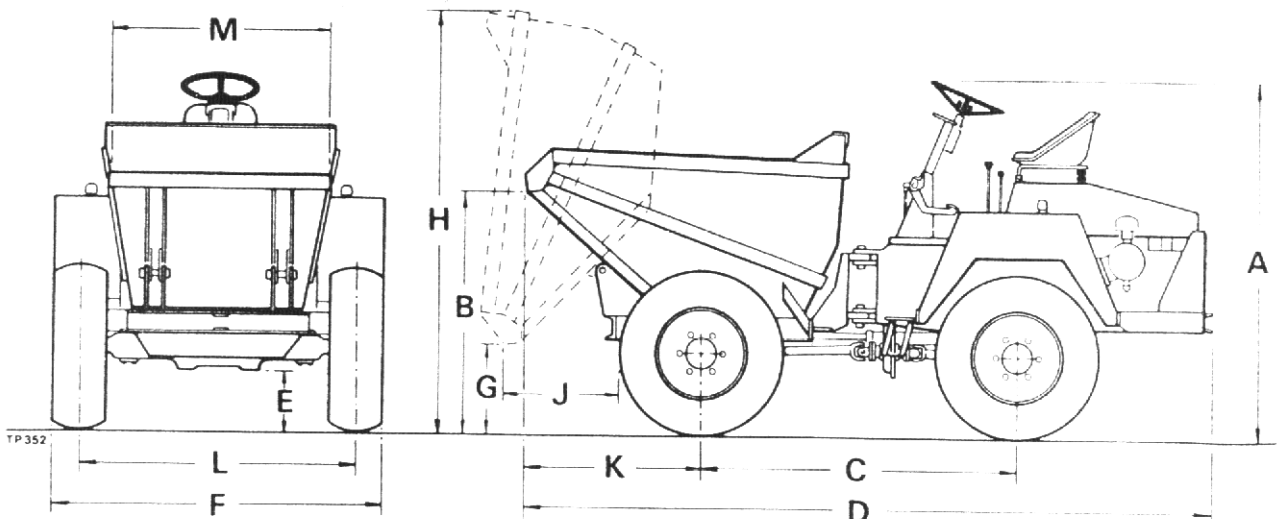


FIG. 2

## RECOMMENDED LUBRICATING OILS

COMPANY	ENGINE	DRIVE AXLE TRANSFER BOX & STEERING 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	GEAR OIL GP 85W/140  GEAR OIL GP 85W/140 GEAR OIL GP 85W/140 GEAR OIL GP 80W	ESSOLUBE HDX 30  ESSOLUBE HDX 30	BEACON 2  BEACON 2	NUTO H32  NUTO H68 NUTO H32 NUTO H22
(U.K.) CASTROL	DEUSOL CRI 20  DEUSOL CRI 30 DEUSOL CRI 20 DEUSOL CRI 10	DEUSOL GEAR 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	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 37
(U.K.) BP (Overseas)	VANELLUS M20W  VANELLUS M30 VANELLUS M20W VANELLUS M10W	GEAR OIL SAE 90 EP  GEAR OIL SAE 140 EP GEAR OIL SAE 90 EP GEAR OIL SAE 80 EP	VANELLUS M30  VANELLUS M30	ENERGREASE L2  ENERGREASE L2	ENERGOL HLP 65
(U.K.) MOBIL (Overseas)	DELVAC 1220  DELVAC 1230  DELVAC 1220 DELVAC 1210 DELVAC SPECIAL 10W-30	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)	CENTURY ROIL 20W 20  CENTURY ROIL 30 CENTURY ROIL 20W 20 CENTURY ROIL 10W	CENTURY EP 90  CENTURY EP 140 CENTURY EP 90 CENTURY EP 80	CENTURY ROIL 30  CENTURY ROIL 30	REGULUS A2  REGULUS A2	CENTURY PWLA HYD OIL  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

## OPERATING INSTRUCTIONS

### ELECTRIC STARTING MACHINES

#### STARTING

1. Check that the Engine Stop Control knob is fully down.
2. Insert the ignition key in the isolating switch and turn clockwise.
3. Turn key further clockwise against spring load. DO NOT operate starter motor for more than 20 seconds at a time.
4. When engine is cold, "overload" may be required to facilitate starting and is set and returned to normal position as described in "Manual Starting" - see below.

#### STOPPING

Pull out stop control knob and hold fully out until engine stops. Release stop control knob when engine has ceased to turn. Turn key switch to OFF position.

### MANUAL STARTING MACHINES

#### STARTING

##### (LISTER)

1. Pull out overload lever (situated on R.H. side of engine, above speed control arm) and lift to its highest position.

##### (PETTER)

1. Lift red-painted overload stop situated on the fuel pump rack above and to the rear of the priming levers and move fuel pump rack into fully open position. Operate priming levers six times. NOTE: This is unnecessary if engine is already warm.
2. Lift decompression lever(s) (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 levers and engine should fire.
3. If engine does not fire, lift decompression levers and slowly crank engine a few times before attempting to start again. Where ambient temperature is  $-15^{\circ}\text{C}$  ( $5^{\circ}\text{F}$ ) or below, a cold starting aid should be fitted.
4. Set overload lever horizontal when engine starts. (LISTER)

#### STOPPING

Pull out stop control knob and hold fully out until engine stops. Release stop control knob when engine has ceased to turn.

#### 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.

#### GEAR CHANGING - (FOUR A 50 & FOUR A 60)

The Dumper is fitted with a four speed gearbox with a Forward and Reverse Selector. Ensure the machine is brought to a standstill before changing direction of drive.

#### GEAR CHANGING - (FOUR A 30, FOUR A 30E, FOUR A 40, FOUR A 40E, FOUR A 50E & FOUR A 80)

The Dumper is fitted with three Forward and one Reverse gear. When changing gear, the clutch pedal is used in the normal way.

#### SKIP CONTROL LEVER (See Fig.1)

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

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

#### ROTATING SKIP (IF FITTED)

Pull cranked release lever on turntable catch fully back to release turntable. Revolve skip to required position. To lock in position lift release lock lever and ensure that locking lug locates in turntable locking plate. Cranked release lever will return to its former position.

## 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. DAILY check tyre pressures and condition of tyres (refer to specification page).
4. WEEKLY check oil level in gearbox and fill to full mark on dipstick if necessary.
5. WEEKLY remove filler/level plugs from drive axles and transfer case. Oil level should be to bottom of holes. Top up, if necessary through filler/level plugs.
6. 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.
7. WEEKLY check that fittings are tight on feed pipe from hydraulic tank to master cylinder. Check for leaks.
8. WEEKLY apply grease to all grease nipples.
9. WEEKLY check all wheel nuts and tighten if necessary.
10. WEEKLY check all nuts and bolts and tighten if necessary.
11. EVERY SIX MONTHS repack steering column with water repellent grease.

**IMPORTANT: CHANGE HYDRAULIC OIL FILTER ELEMENT AFTER FIRST 100 HOURS AND THEREAFTER EVERY 300 HOURS.**

Lubrication  
(See Fig.6)

Period	Key	Description	Lubrication	No. of Points
Daily	1	Engine	Engine Oil	1
	2	Fuel Tank	Diesel Fuel	1
Weekly	3	Gearbox	Gearbox Oil	1
	4	Drive Axles	Axle Oil	2
	5	Hydraulic Tank	Hydraulic Oil	1
	6	Footbrake Pedal	Grease Gun	1
	7	Accelerator Pedal	Grease Gun	1
	8	Clutch Pedal	Grease Gun	1
	9	Clutch Cross Shaft	Grease Gun	2
	10	Skip Pivot	Grease Gun	2
	11	Handbrake Cable	Grease Gun	1
	12	Chassis Centre Pivot	Grease Gun	2
	13	Prop Shafts & Universal Joints	Grease Gun	10
	14	Transfer Case	Axle Oil	1
	15	Rear Axle Pivot	Grease Gun	1
△ 6 Monthly	16	Steering Column	Water Repellent Grease	1

NOTE For full details of the lubrication and maintenance of the engine refer to Manufacturers Manual.

# LUBRICATION POINTS

REFER TO KEY AND RECOMMENDED LUBRICANTS

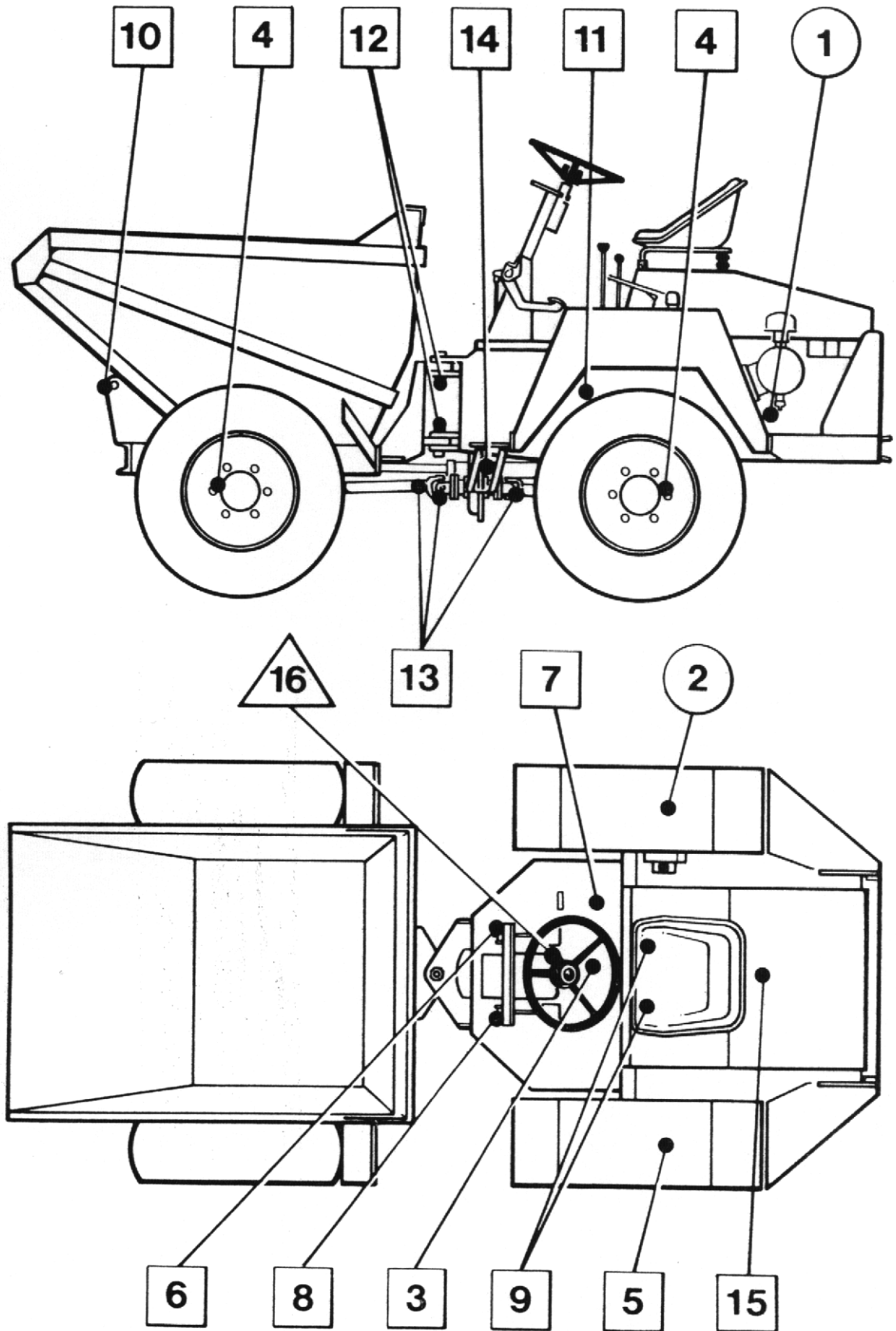


FIG. 6

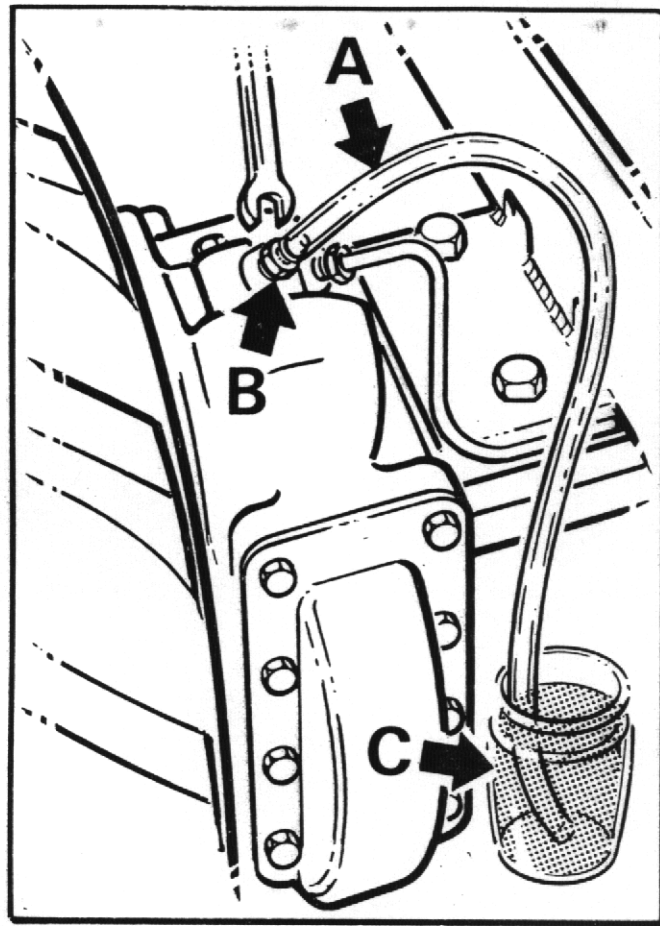


FIG. 7

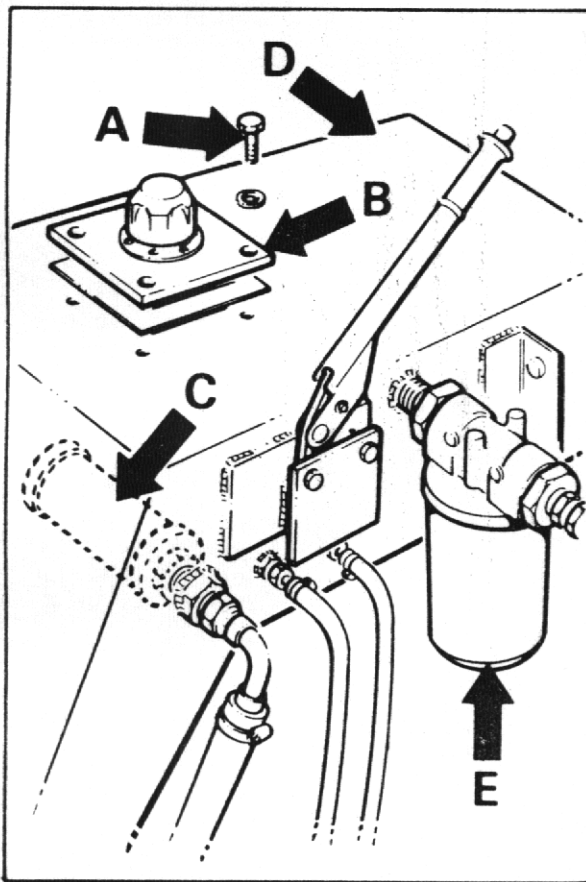


FIG. 8

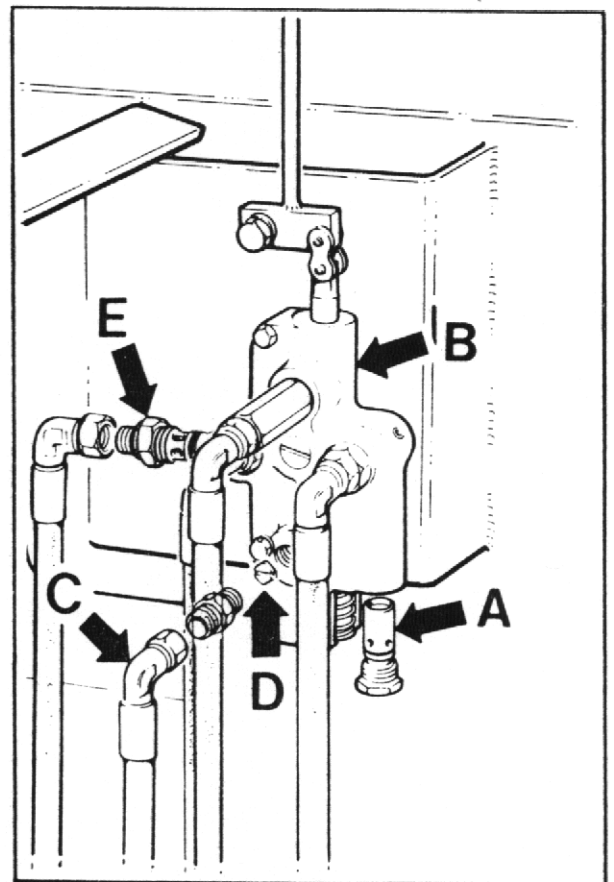


FIG. 9

### BRAKE SYSTEM

The brake system is designed to require the minimum of maintenance and no defects should normally occur. 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. Any 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 the bleed screw is closed.
2. Check that there is sufficient oil in main hydraulic tank.
3. Attach bleeder tube (A) (See fig. 7) to the bleed screw (B) on the L.H. side of the front axle and immerse other end in a small quantity of hydraulic oil contained in a glass jar (C). Slacken bleed screw and operate brake pedal up and down to its full stroke, until oil pumped into the jar contains no air bubbles. Hold down pedal and close bleed screw. Remove bleeder tube and release pedal.
4. Lock the bleed screw.
5. Apply normal working load on brake pedal for two or three minutes and examine the entire system for leaks.

NOTE:- ALWAYS ENSURE THAT FREE PLAY EXISTS BETWEEN BRAKE PEDAL AND MASTER CYLINDERS. UNLESS THE PISTONS IN BOTH MASTER CYLINDERS ARE ALLOWED TO FULL RETURN, BRAKE PRESSURE WILL BUILD UP AND THE BRAKES WILL REMAIN ON.

### HYDRAULIC SYSTEM

The single hydraulic pump provides power for both the skip operation and steering. The main hydraulic valve splits the pump output into two circuits with controlled rate priority flow to steering circuit. If the hydraulic system fails to operate completely or does so extremely slowly carry out the following procedure.

1. Check that hydraulic tank is full of oil.
2. Check that hydraulic suction filter is not blocked. (See fig.8).
  - 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.

Check that the return line filter element has been regularly changed in accordance with the maintenance schedule. If not, change filter element. (E).

3. Check that the hydraulic pressures are correct.

Tip circuit.

  - a) Fit a 2000 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 1750 lb/sq.in. when ram is fully extended and relief valve is "blowing."

### STEERING CIRCUIT

- a) Fit a 2000 lb/sq.in. gauge into the hydraulic system at the base of the steering ram.
- b) Turn steering wheel with machine on "full lock" and check that the reading on the gauge is 1750 lb/sq.in.

NOTE:- If correct pressure is not attained-

Tip circuit.

4. Remove relief valve cartridge (A) (hexagon head) from the bottom of the control valve (B) (See fig.9) and replace with a new one.
5. Remove hose adaptor (C) from control valve (See fig.9), 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.

STEERING CIRCUIT

6. Remove relief valve cartridge (A) (hexagon head) from the bottom of the control valve (B) (See fig.9) 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.

RECOMMENDED TORQUE FIGURES FOR FASTENERS

DESCRIPTION	TIGHTENING TORQUE	
	lb/ft.	Kg/m
Prop-Shaft Bolts 3/8" UNF .....	29	( 4.32)
Prop-Shaft Bolts 7/16" UNF .....	46	( 6.85)
Engine Bolts/Nuts M12 .....	72	( 10.7 )
Wheel Nuts 5/8" BSF .....	180	( 25 )
Wheel Nuts 7/8" BSF .....	300	( 42 )
Wheel Nuts M18 .....	200	( 28 )
Axle Bolts/Nuts M16 .....	180	( 26.8 )
Steer Ram Nuts/Bolts 1½" UNF/BSF .....	1080	(161.0 )
Centre Pivot Nuts/Bolts 1½" UNF .....	1880	(279.7 )



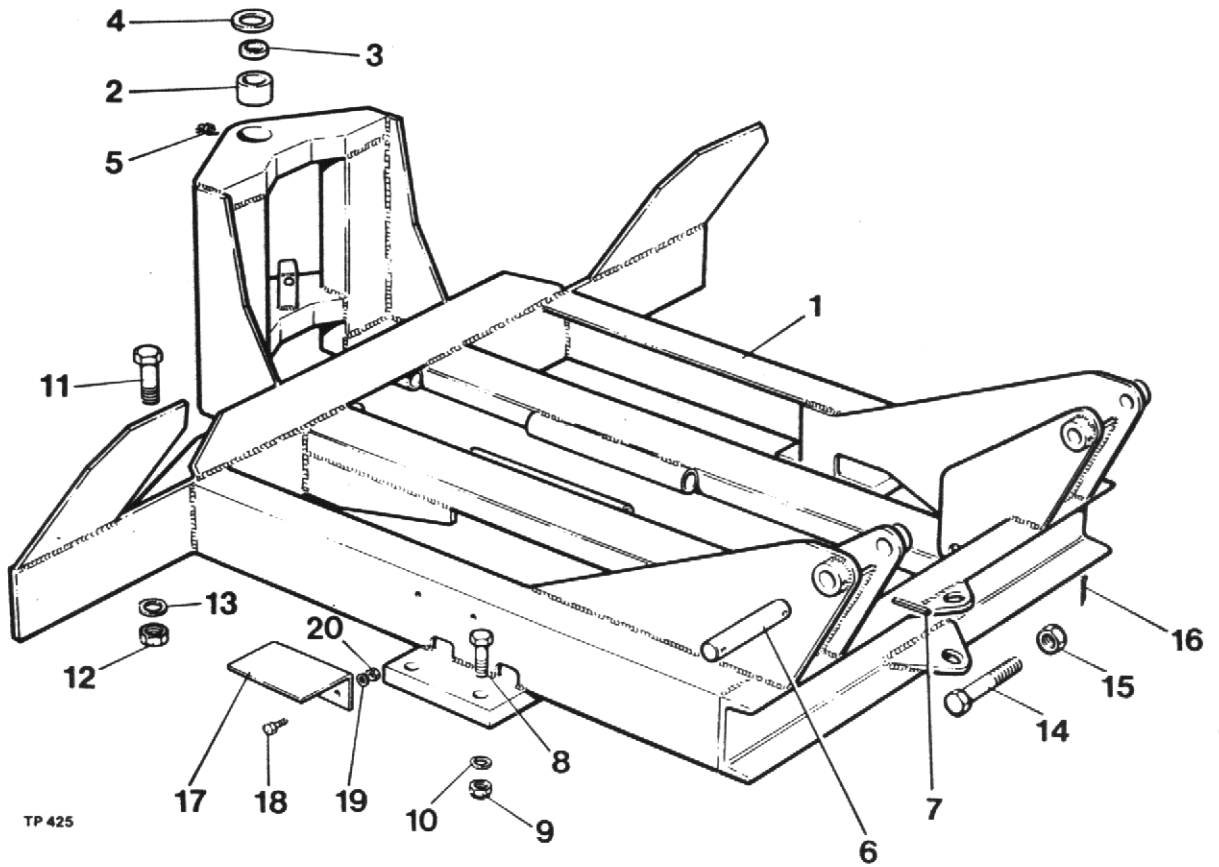
# SPARE PARTS SECTION

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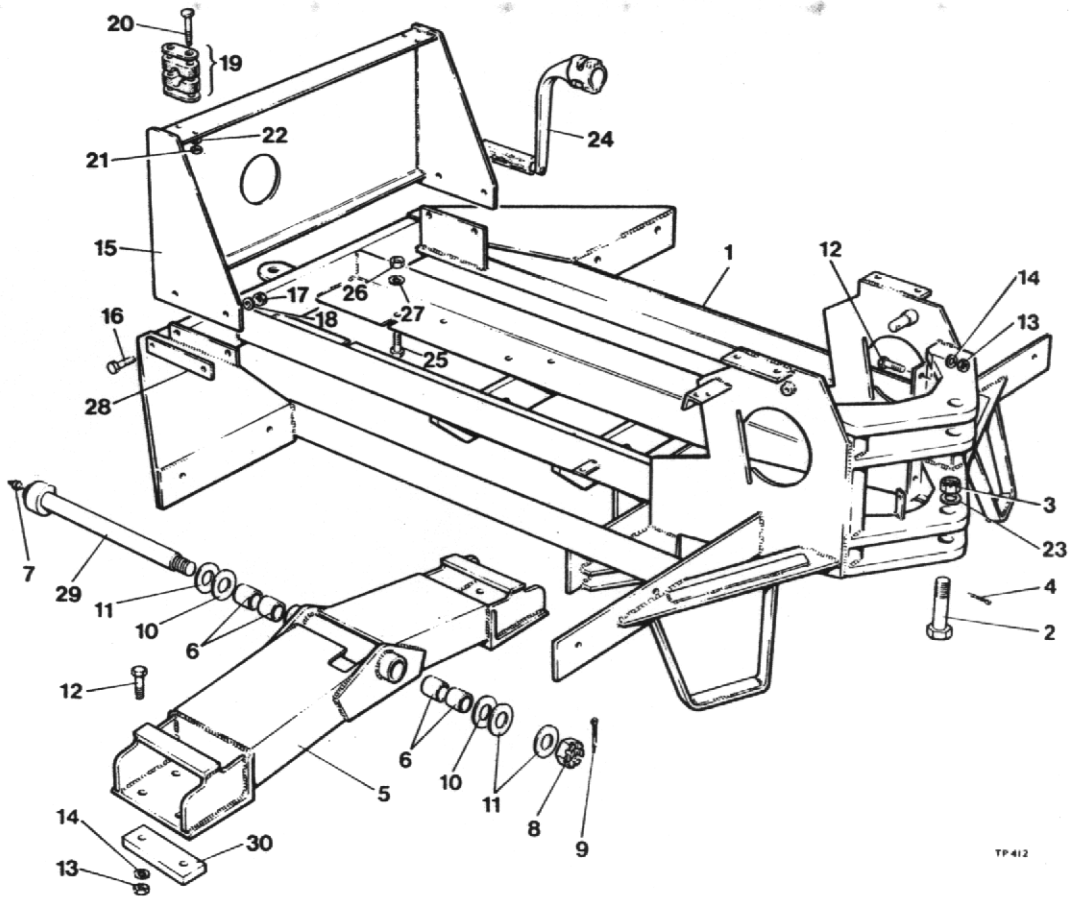
## FRONT CHASSIS



TP 425

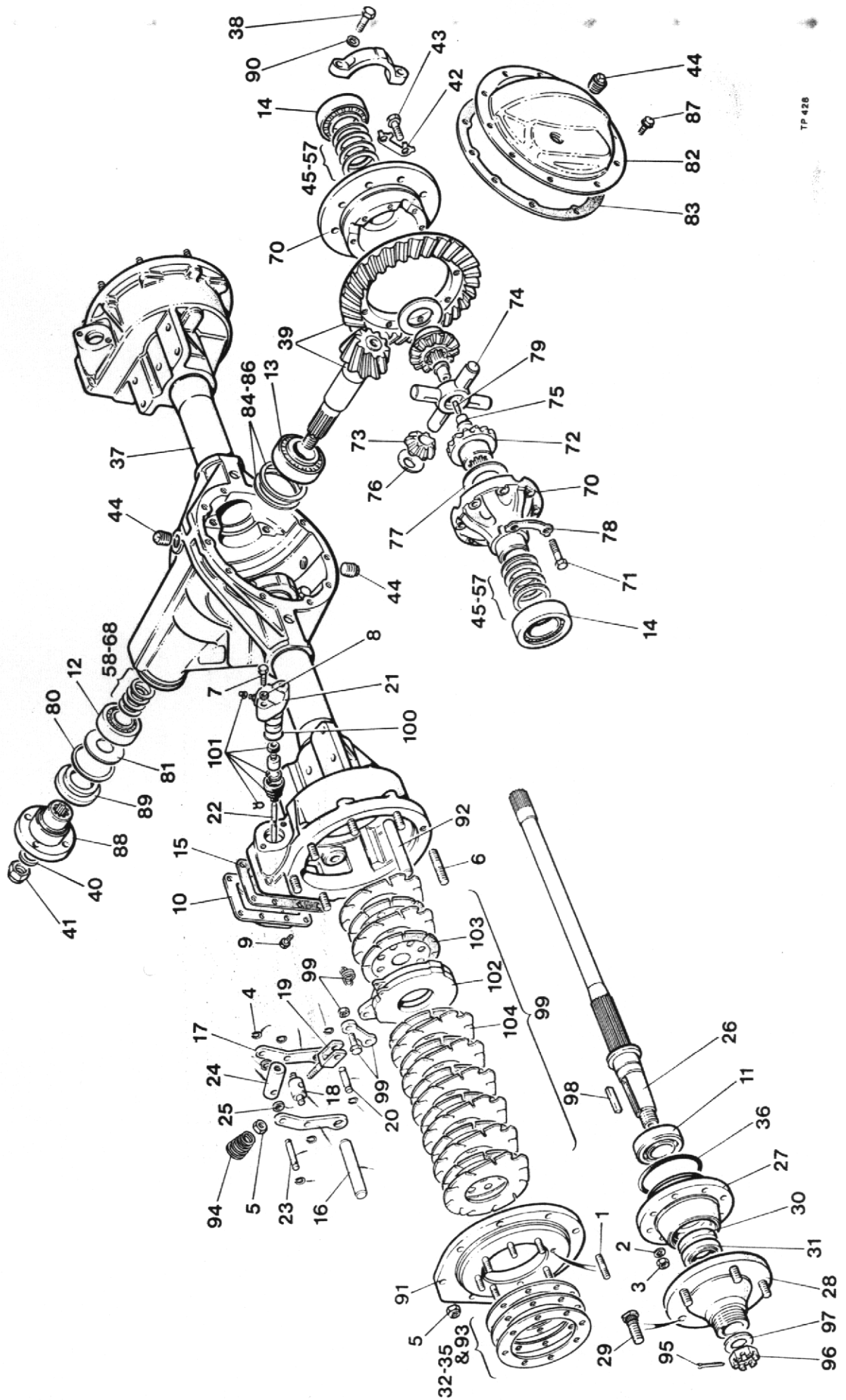
Item No.	Part No.	Description	Qty.
1	40100.A06	Front Chassis (Fwd. Tip Skip)	1
	40100.A07	Front Chassis (Rotating Skip)	1
	40100.A08	Front Chassis (High Discharge Skip)	1
2	4-60-214	Pivot Bush	2
3	ESE 199	Pivot Spacer	4
4	4-60-240	Washer	2
5	131S.2	Grease Nipple	2
6	10522.A01	Skip Pivot (Fwd. Tip Skip only)	2
7	54S.8S	Tension Pin (Fwd. Tip Skip only)	2
8	6S.5H	Bolt 1/2" UNF x 2 1/2" Long	8
9	132S.5	Nut 1/2" UNF	8
10	10S.4	Washer 1/2" I.D.	8
11	10599.A01	Steering Ram Bolt 1 1/2" UNF x 4, 3/8" Long	2
12	10600.A01	Steering Ram Nut 1 1/2" UNF	2
13	67S.13	Shakeproof Washer 1 1/2" Dia.	2
14	10352.A01	Skip Ram Pivot Bolt (Fwd. Tip Skip only)	2
15	4-60-172	Skip Ram Pivot Nut (Fwd. Tip Skip only)	2
16	44S.5H	Split Pin 3/16" (Fwd. Tip Skip only)	2
17	40100.A0606	Brake Pipe Guard	2
18	8S.2A	Bolt, Hex. Hd. M6 x 25mm Long	4
19	13S.2	Washer - Shakeproof 6mm Dia.	4
20	7S.2	Nut M6	4

## REAR CHASSIS & ARTICULATING FRAME



TP 412

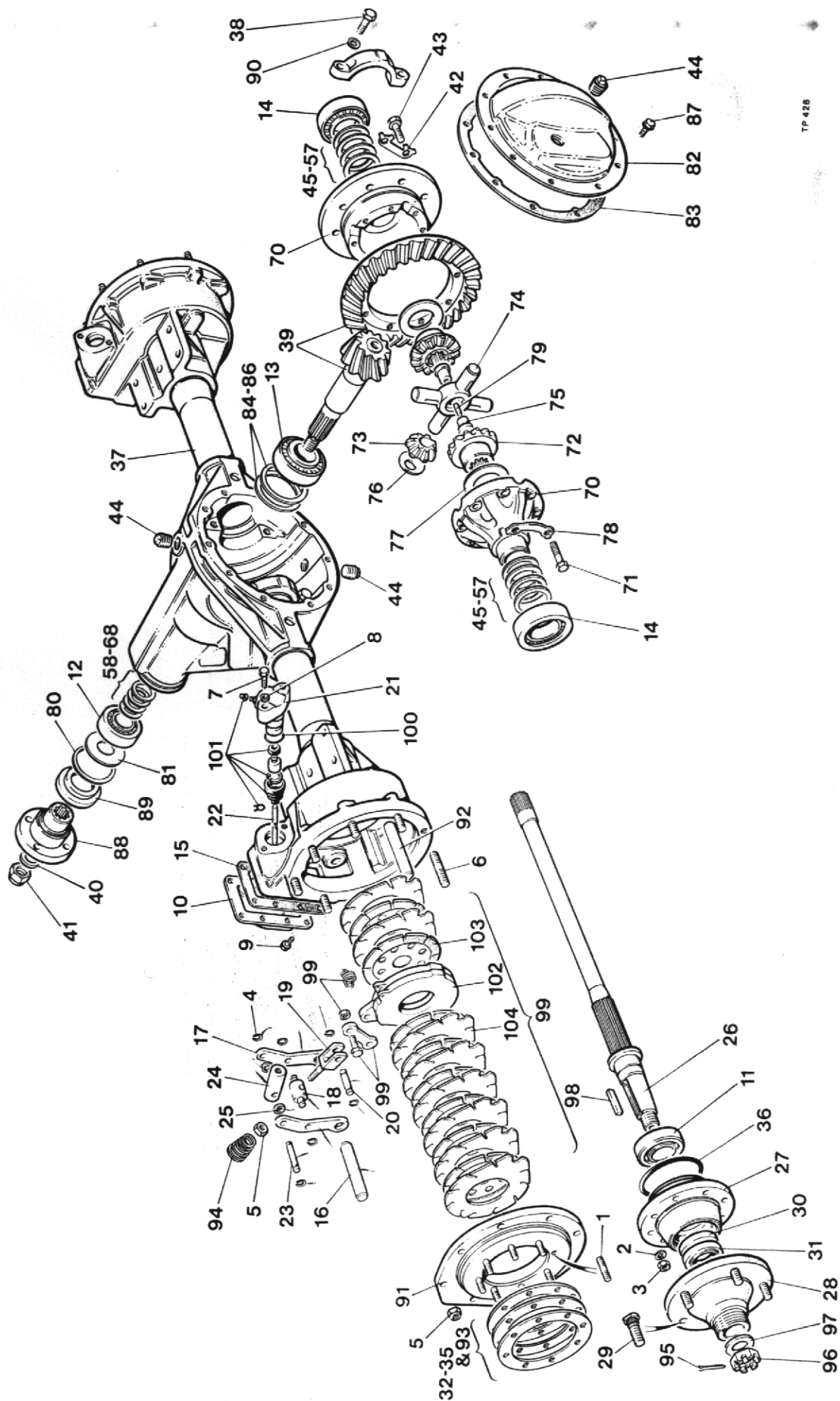
Item No.	Part No.	Description	Qty.
1	40101.A03	Rear Chassis .....	1
2	10375.A01	Bolt 1½" UNF x 110mm Long .....	2
3	4-60-171	Nut 1½" UNF Castle .....	2
4	44S.5L	Split Pin 3/16" Dia. x 3" Long .....	2
5	30188.A02	Axle Pivot Beam .....	1
6	4-35-29B	Bush .....	4
7	131S.3	Grease Nipple .....	1
8	4-60-171	Castle Nut .....	1
9	44S.5L	Split Pin .....	1
10	4-35-29C	Thrust Washer .....	2
11	ASE 178	Washer .....	3
12	6S.5C	Bolt ½" UNF x 1½" Long .....	4
13	132S.5	Nut ½" UNF .....	4
14	10S.4	Plain Washer ½" I.D. ....	4
15	40105.A01	Rear Frame (Petter) .....	1
	40095.A01	Rear Frame (Lister) .....	1
16	11S.4C	Setscrew Hex. Hd. M10 x 25 Long .....	4
17	61S.4	Nut M10 .....	4
18	12S.5	Washer M10 .....	4
19	10364.A01	Pivot Block .....	2
20	8S.2F	Bolt Hex. Hd. M6 x 50 Long .....	4
21	61S.2	Nut M6 .....	4
22	12S.2	Washer M6 .....	4
23	4-60-240	Washer .....	2
24	100A	Starting Handle .....	1
25	6S. 5D	Bolt Hex. Hd. ½" UNF x 1,5/8" Long .....	4
26	132S.5	Locknut ½" UNF .....	4
27	10S.4	Washer ½" Dia. ....	4
28	10623.A01	Packer .....	2
29	20161.A01	Pivot Pin .....	1
30	10623.A02	Packing Piece (Salisbury Axle) .....	2



TP 428

## DRIVE AXLE

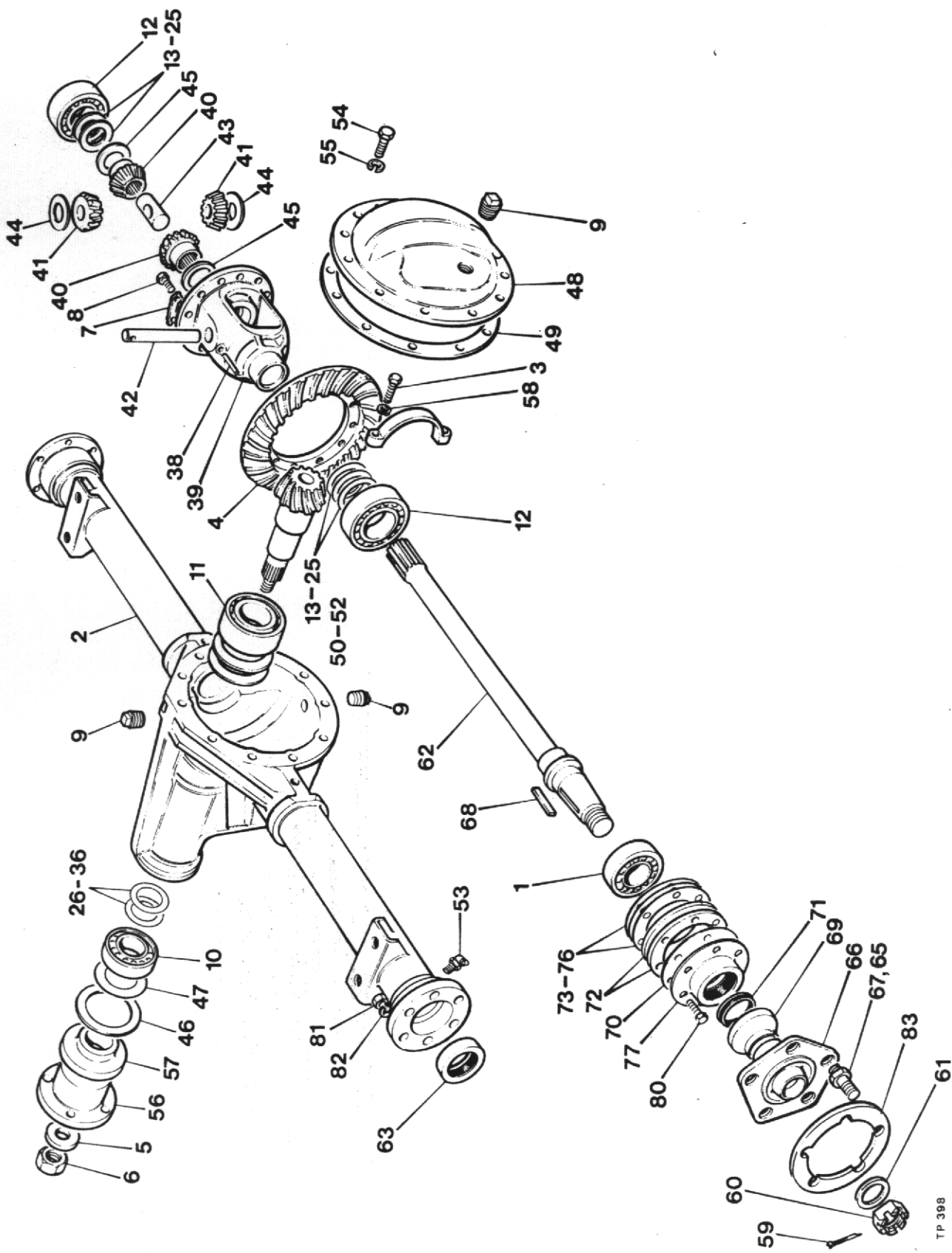
Item No.	Part No.	Description	Qty. per Axle
	30242.A01	Drive Axle complete .....	1
1	30242.A0101	Stud - Nylon Patch Locking .....	16
2	30242.A0102	Lockwasher .....	16
3	30242.A0103	Nut .....	16
4	30242.A0104	Circlip .....	12
5	30242.A0105	Locknut .....	18
6	30242.A0106	Stud .....	16
7	30242.A0107	Bolt .....	4
8	30242.A0108	Lockwasher .....	4
9	30242.A0109	Washer Bolt .....	16
10	30242.A0110	Cover - Brake Link Access .....	2
11	30242.A0111	Bearing .....	2
12	30166.A0110	Bearing .....	1
13	30166.A0111	Bearing .....	1
14	30166.A0112	Bearing .....	2
15	30242.A0112	Gasket - Brake Housing Cover .....	2
16	30242.A0113	Brake Pin .....	2
17	30242.A0114	Lever - Brake Operating .....	4
18	30242.A0115	Trunion .....	2
19	30242.A0116	Clevis .....	2
20	30242.A0117	Clevis Pin .....	2
21	30242.A0118	Slave Cylinder (Complete with item 22) .	2
22	30242.A0119	Push Rod .....	1
23	30242.A0120	Trunion .....	2
24	30242.A0121	Push Rod - Sleeve .....	2
25	30242.A0122	Pivot Spacer .....	4
26	30242.A0123	Axle Shaft .....	2
27	30242.A0124	Bearing Housing .....	2
28	30242.A0125	Hub & Stud Assy (Complete with item 29)	2
29	30166.A0166	Wheel Stud .....	5
30	30242.A0127	Oil Seal (Rubber) .....	2
31	30242.A0153	Oil Seal (Leather) .....	2
32	30242.A0128	Shim - Wheel Bearing 0.08U .....	2
33	30242.A0129	Shim - Wheel Bearing 0.125U .....	2
34	30242.A0130	Shim - Wheel Bearing 0.25U .....	2
35	30242.A0131	Shim - Wheel Bearing 0.8U .....	2
36	30242.A0132	'O' Ring .....	2
37	30242.A0133	Carrier & Tube Brake Housing Assy. (Complete with items 38 & 90).....	1
38	30166.A0103	Bolt - Diff. Brg. Cap .....	4
39	30166.A0104	Gear Assy. U/L 6.38/1 (Complete with items 40-43)	1
40	30166.A0105	Washer .....	1
41	30166.A0106	Locknut - Pinion .....	1
42	30166.A0107	Lock Strap - Drive Gear .....	6
43	30166.A0108	Bolt - Drive Gear .....	12
44	30166.A0109	Plug - Level Filler .....	3
45	30166.A0113	Shim - Diff. Brg. .028" .....	2
46	30166.A0114	Shim - Diff. Brg. .030" .....	2
47	30166.A0115	Shim - Diff. Brg. .031" .....	2
48	30166.A0116	Shim - Diff. Brg. .032" .....	2
49	30166.A0117	Shim - Diff. Brg. .033" .....	2
50	30166.A0118	Shim - Diff. Brg. .034" .....	2
51	30166.A0119	Shim - Diff. Brg. .035" .....	2
52	30166.A0120	Shim - Diff. Brg. .036" .....	2
53	30166.A0121	Shim - Diff. Brg. .037" .....	2
54	30166.A0122	Shim - Diff. Brg. .038" .....	2
55	30166.A0123	Shim - Diff. Brg. .039" .....	2
56	30166.A0124	Shim - Diff. Brg. .040" .....	2
57	30166.A0125	Shim - Diff. Brg. .045" .....	2



## DRIVE AXLE (Contd.)

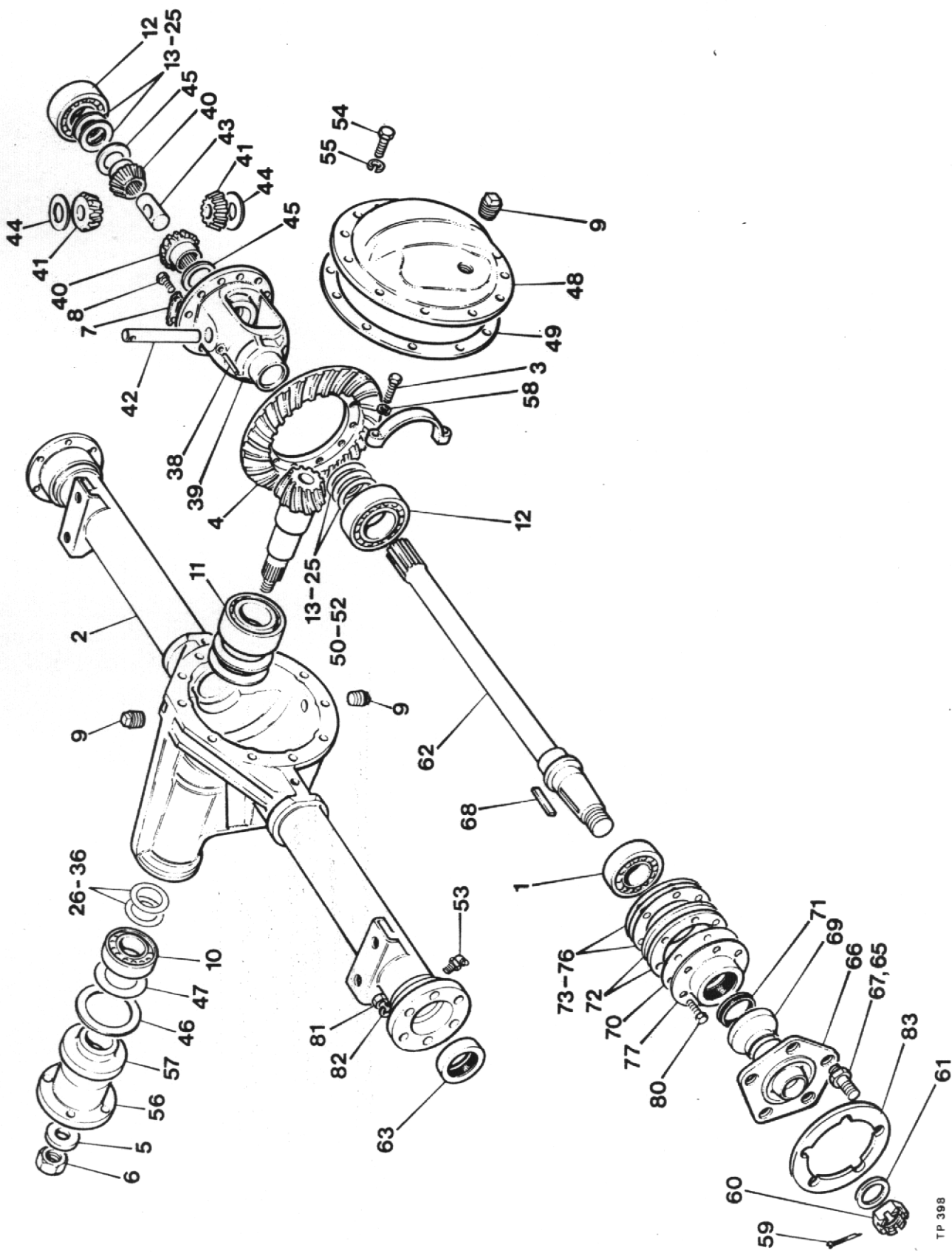
Item No.	Part No.	Description	Qty. per Axle
58	30166.A0126	Shim - Outer Pinion Bearing .030" .....	2
59	30166.A0127	Shim - Outer Pinion Bearing .031" .....	2
60	30166.A0128	Shim - Outer Pinion Bearing .032" .....	2
61	30166.A0129	Shim - Outer Pinion Bearing .033" .....	2
62	30166.A0130	Shim - Outer Pinion Bearing .034" .....	2
63	30166.A0131	Shim - Outer Pinion Bearing .035" .....	2
64	30166.A0132	Shim - Outer Pinion Bearing .036" .....	2
65	30166.A0133	Shim - Outer Pinion Bearing .037" .....	2
66	30166.A0134	Shim - Outer Pinion Bearing .038" .....	2
67	30166.A0135	Shim - Outer Pinion Bearing .039" .....	2
68	30166.A0136	Shim - Outer Pinion Bearing .040" .....	2
69	30242.A0134	Diff. Case Assy. 4P Spacer (Complete with items 70-79)	1
70	30242.A0135	Diff. Case Sub Assy. ....	1
71	30242.A0136	Bolt - Diff. Case .....	8
72	30242.A0137	Side Gear .....	2
73	30242.A0138	Pinion Mate .....	4
74	30242.A0139	Cross Shaft - Pinion Mate .....	1
75	30242.A0140	Split Spacer - Axle Shaft .....	2
76	30242.A0141	Thrust Washer - Diff. Pinion Mate .....	4
77	30242.A0142	Thrust Washer - Diff. Side Gear .....	2
78	30242.A0143	Lock Strap - Diff. Case .....	4
79	30242.A0144	Roll Pin .....	1
80	30166.A0146	Gasket - Pinion Oil Seal .....	1
81	30166.A0147	Oil Slinger - Pinion .....	1
82	30242.A0145	Cover - Gear Carrier .....	1
83	30166.A0149	Gasket - Carrier Cover .....	1
84	30166.A0150	Shim - Pinion Bearing - Inner .003" ...	2
85	30166.A0151	Shim - Pinion Bearing - Inner .005" ...	2
86	30166.A0152	Shim - Pinion Bearing - Inner .010" ...	2
87	30242.A0146	Bolt & Washer Assy. ....	10
88	30166.A0155	Companion Flange .....	1
89	30166.A0156	Pinion Oil Seal .....	1
90	30166.A0157	Lockwasher - Diff. Brg. Cap .....	4
91	30242.A0147	Brake Cover & Spindle Housing .....	2
92	30242.A0148	Brake Anchor Pin .....	2
93	30242.A0149	Shim Spacer 2.5U .....	2
94	30242.A0150	Conical Return Spring .....	2
95	30166.A0158	Cotter - Shaft .....	2
96	30166.A0159	Nut - Shaft .....	2
97	30166.A0160	Washer - Shaft .....	2
98	30166.A0169	Key - Shaft .....	2
99	30242.A0152	Brake Assy. & Disc (8 Plate) .....	2
100	30242.A0154	'O' Ring - Slave Cylinder Seal .....	2
101	30242.A0155	Seal Kit - Slave Cylinder .....	A/R
102	30242.A0156	Actuator .....	2
103	30242.A0157	Brake Middle Plate .....	16
104	30242.A0158	Brake Intermediate Plate .....	16





DRIVE AXLE

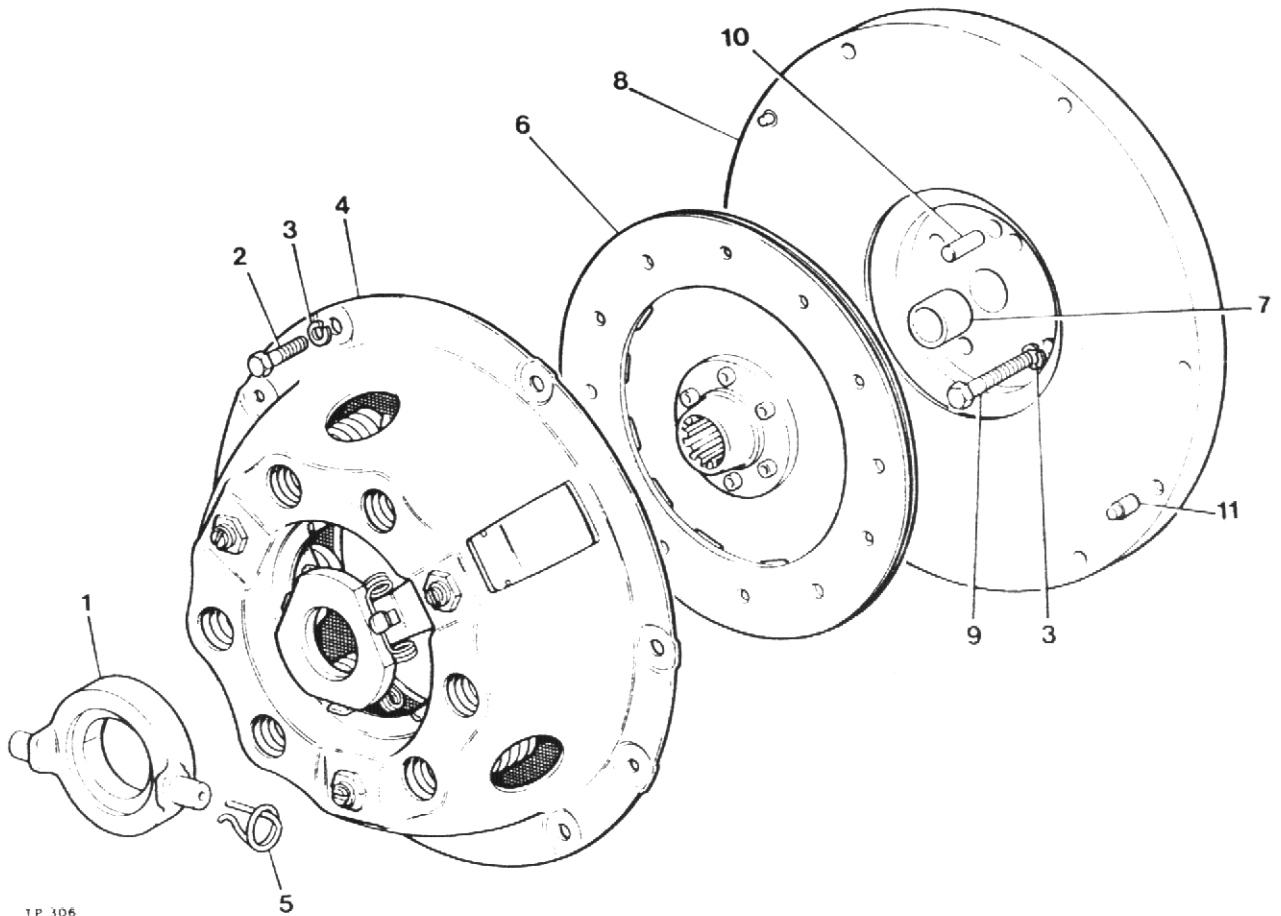
Item No.	Part No.	Description	Qty. per axle
	30171.A01	Drive Axle complete .....	1
1	30166.A0101	Bearing .....	2
2	30171.A0101	Carrier & Tube Assy.(Incl. item 3) .....	1
3	30166.A0103	Bolt - Diff. Bearing Cap .....	4
4	30166.A0104	Gear Assembly (including items 5-8) .....	1
5	30166.A0105	Washer .....	1
6	30166.A0106	Locknut - Pinion .....	1
7	30166.A0107	Drive Gear L Strap .....	6
8	30166.A0108	Drive Gear Bolt .....	12
9	30166.A0109	Level Filler Plug .....	3
10	30166.A0110	Bearing .....	1
11	30166.A0111	Bearing .....	1
12	30166.A0112	Bearing .....	2
13	30166.A0113	Shim Diff. Bearing .028" .....	A/R
14	30166.A0114	Shim Diff. Bearing .030" .....	A/R
15	30166.A0115	Shim Diff. Bearing .031" .....	A/R
16	30166.A0116	Shim Diff. Bearing .032" .....	A/R
17	30166.A0117	Shim Diff. Bearing .033" .....	A/R
18	30166.A0118	Shim Diff. Bearing .034" .....	A/R
19	30166.A0119	Shim Diff. Bearing .035" .....	A/R
20	30166.A0120	Shim Diff. Bearing .036" .....	A/R
21	30166.A0121	Shim Diff. Bearing .037" .....	A/R
22	30166.A0122	Shim Diff. Bearing .038" .....	A/R
23	30166.A0123	Shim Diff. Bearing .039" .....	A/R
24	30166.A0124	Shim Diff. Bearing .040" .....	A/R
25	30166.A0125	Shim Diff. Bearing .045" .....	A/R
26	30166.A0126	Shim Pinion Bearing Out .030" .....	A/R
27	30166.A0127	Shim Pinion Bearing Out .031" .....	A/R
28	30166.A0128	Shim Pinion Bearing Out .032" .....	A/R
29	30166.A0129	Shim Pinion Bearing Out .033" .....	A/R
30	30166.A0130	Shim Pinion Bearing Out .034" .....	A/R
31	30166.A0131	Shim Pinion Bearing Out .035" .....	A/R
32	30166.A0132	Shim Pinion Bearing Out .036" .....	A/R
33	30166.A0133	Shim Pinion Bearing Out .037" .....	A/R
34	30166.A0134	Shim Pinion Bearing Out .038" .....	A/R
35	30166.A0135	Shim Pinion Bearing Out .039" .....	A/R
36	30166.A0136	Shim Pinion Bearing Out .040" .....	A/R
37	30166.A0137	Diff. Case Assy. 2P Spacer (Incl. items 38-45)...	1
38	30166.A0138	Roll Pin .....	1
39	30166.A0139	Diff. Case 2 Pin .....	1
40	30166.A0140	Diff. Side Gear .....	2
41	30166.A0141	Diff. Pinion Mate .....	2
42	30166.A0142	Diff. Pinion Mate Shaft .....	1
43	30166.A0143	Axle Shaft Spacer .....	1
44	30166.A0144	Diff. Pinion Mate T Washer .....	2
45	30166.A0145	Diff. Side Gear T Washer .....	2
46	30166.A0146	Pinion Oil Seal Gasket .....	1
47	30166.A0147	Pinion Oil Slinger .....	1
48	30166.A0148	Gear Carrier Cover .....	1
49	30166.A0149	Carrier Cover Gasket .....	1
50	30166.A0150	Pin Bearing Shim In. .003" .....	A/R
51	30166.A0151	Pin Bearing Shim In. .005" .....	A/R
52	30166.A0152	Pin Bearing Shim In. .010" .....	A/R
53	30166.A0176	Grease Nipple .....	2
54	30166.A0153	Carrier Cover Bolt .....	10
55	30166.A0154	Lockwasher .....	10
56	30166.A0155	Companion Flange.....	1



DRIVE AXLE (Cont'd)

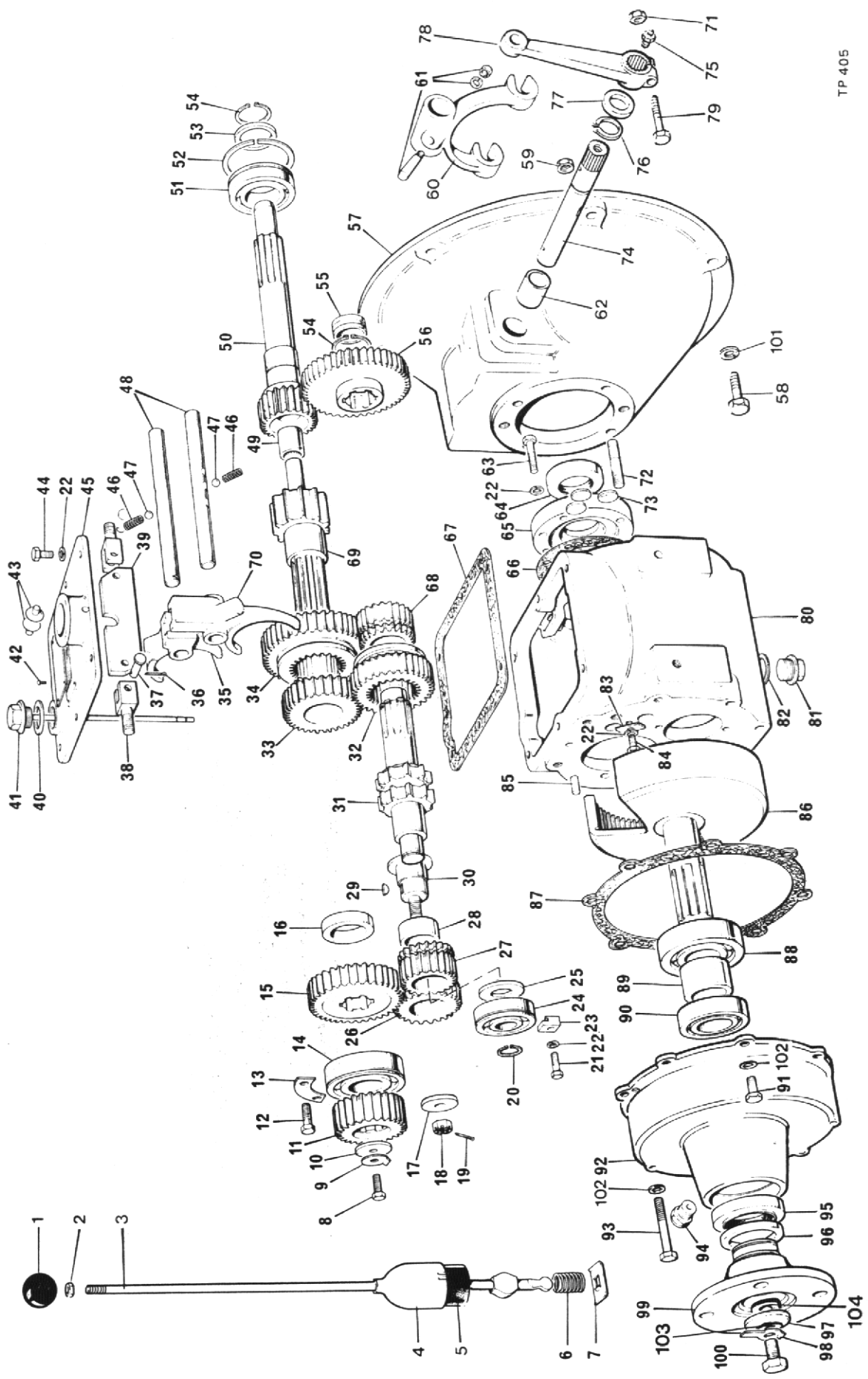
Item No.	Part No.	Description	Qty. per axle
57	30166.A0156	Pinion Oil Seal .....	1
58	30166.A0157	Lockwasher - Diff. Bearing Cap .....	4
59	30166.A0158	Cotter - Shaft .....	2
60	30166.A0159	Shaft Nut .....	2
61	30166.A0160	Washer - Shaft .....	2
62	30166.A0180	Axle Shaft .....	2
63	30166.A0161	Axle Shaft Oil Seal .....	2
64	30171.A0102	Wheel Hub Assy.(Incl. items 65-67) .....	2
65	30171.A0103	Stud Locking Dowel .....	10
66	30171.A0104	Wheel Hub .....	2
67	30171.A0105	Wheel Stud .....	10
68	30166.A0169	Axle Shaft Key .....	2
69	30171.A0106	V-Ring Housing .....	2
70	30166.A0170	Hub Oil Seal Gasket .....	2
71	30171.A0107	V-Ring .....	2
72	30171.A0108	Retainer Plate .....	4
73	30166.A0172	Wheel Bearing Shim .003" .....	A/R
74	30166.A0173	Wheel Bearing Shim .005" .....	A/R
75	30166.A0174	Wheel Bearing Shim .010" .....	A/R
76	30166.A0175	Wheel Bearing Shim .030" .....	A/R
77	30166.A0177	Hub Oil Seal Assembly (Incl. items 78 & 79) .....	2
78		Hub Oil Seal Container . Only available .....	2
79		Hub Oil Seal .....	2
80	30166.A0167	Brake Back Plate Bolt .....	12
81	30171.A0109	Brake Backplate Locknut .....	12
82	30171.A0110	Brake Backplate Washer .....	12
83	ASE 127	Spacer .....	2

## FLYWHEEL AND CLUTCH



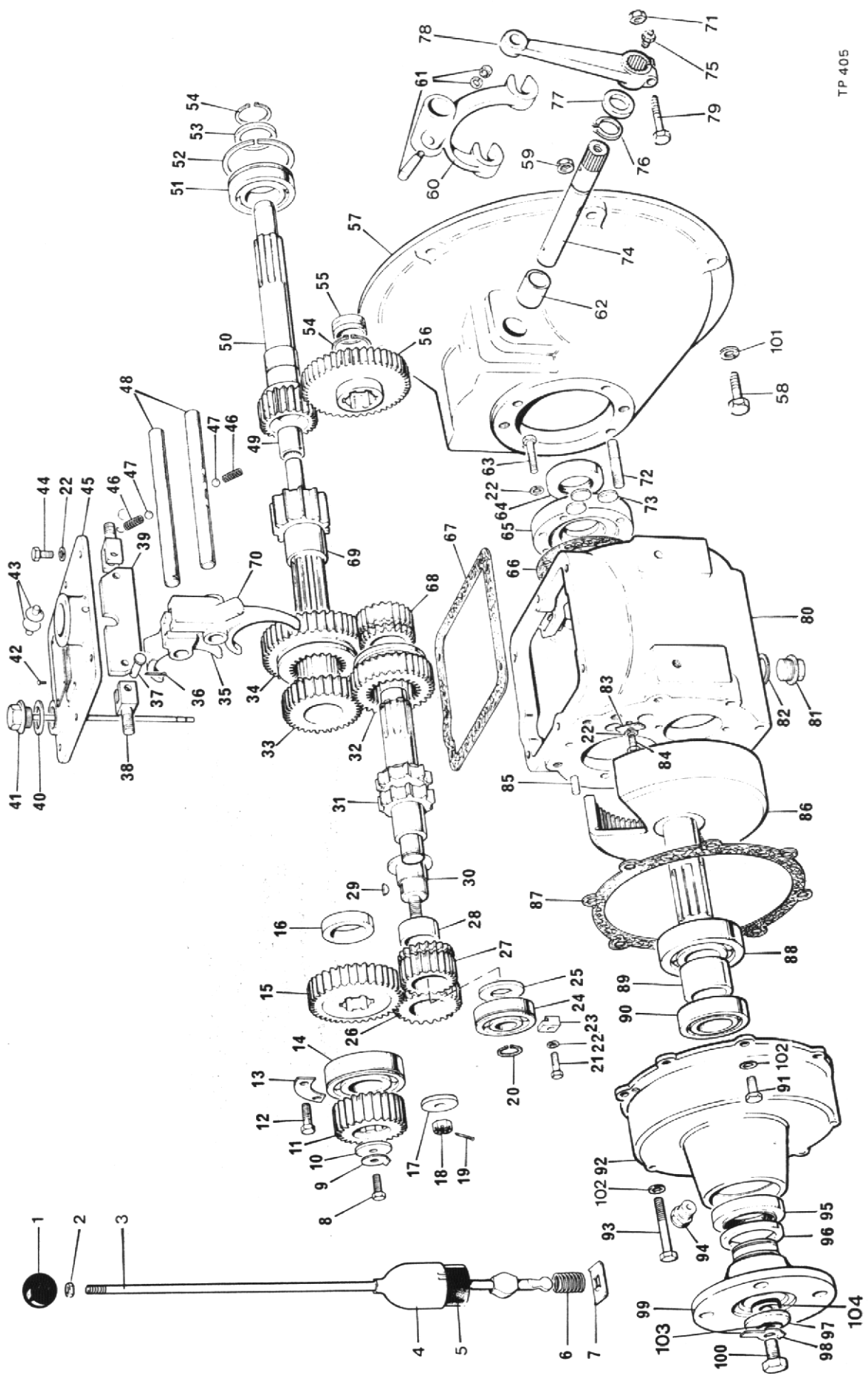
Item No.	Part No.	Description	Qty.
1	10579A01	Clutch Release Bearing	1
2	28S02D	Screw Set	6
3	41S04	Washer Spring	10
4	10597A01	Cover Assembly	1
5	10579A0101	Retainer Spring	2
6	10598A02	Drive Plate	1
7	10580A0101	Bush	1
8	10580A02	Flywheel Assembly (comprises of items 7, 8, & 11)	1
9	1S02C	Bolt, Petter 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.



## GEARBOX

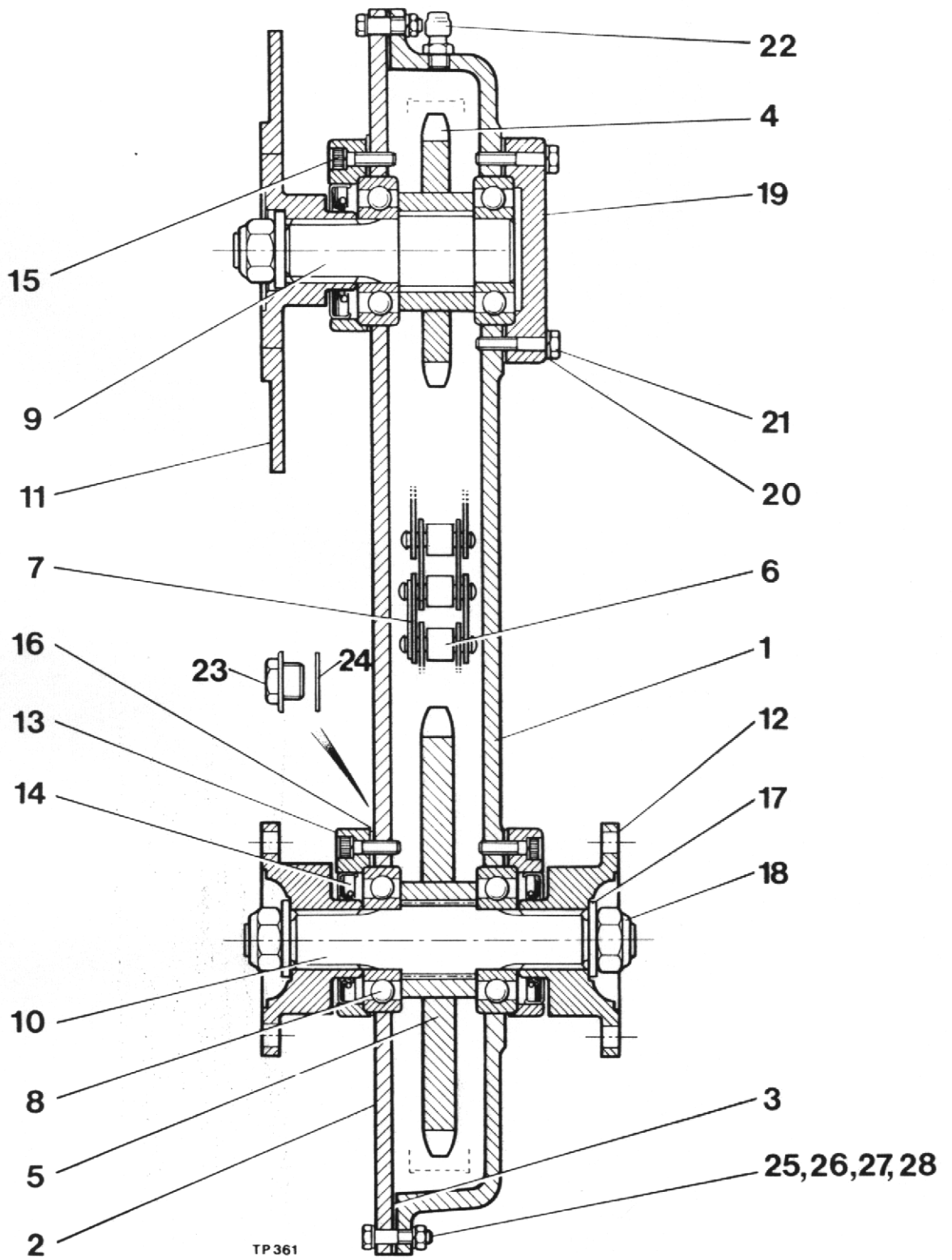
Item No.	Pt. No.	Description	Qty.
	30190.A01	Gearbox Complete .....	1
1	30101.A0201	Knob, Gear Lever .....	1
2	95S.3	Locknut, Gear Lever 3/8" UNF Half Nut ..	1
3	30101.A0202	Gear Lever .....	1
4	30101.A0203	Cap, Gear Lever .....	1
5	30101.A0204	Cover, Gear Lever .....	1
6	30101.A0205	Spring, Gear Lever .....	1
7	30101.A0206	Retaining Plate, Gear Lever .....	1
8	28S.3E	Screw, Mainshaft 3/8" UNF x 1" Long ....	1
9	30190.A0101	Lockwasher - Tab .....	1
10	30190.A0102	Washer, Reduction Pinion .....	1
11	30190.A0103	Reduction Pinion .....	1
12	28S.1B	Screw Bearing Retainer 1/4" UNF x 1/2" Lg.	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 Shaft .....	1
18	102S.4	Nut, Reverse Spindle 7/16" UNF Castle ..	1
19	44S.2C	Split Pin 3/32" dia., x 1" Long .....	1
20	30101.A0215	Circlip .....	1
21	28S.1D	Screw 1/2" UNF x 3/4" Long .....	2
22	67S.1	Shakeproof Washer 1/4" Dia. ....	12
23	30190.A0105	Clip Layshaft Bearing .....	2
24	30101.A0216	Layshaft Bearing .....	2
25	30101.A0217	Bearing Spacer .....	1
26	30101.A0218	Reverse Pinion .....	1
27	30101.A0219	Reverse Speed Gear .....	2
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	Second Speed Gear .....	1
34	30101.A0226	1st Speed Gear .....	1
35	30101.A0227	Selector Fork, 2nd & 3rd.....	1
36	44S.1C	Split Pin Interlock 1/16" dia., x 1" Lg.	2
37	30101.A0228	Clevis Pin, Interlock .....	2
38	30101.A0229	Stud, Interlock .....	2
39	30101.A0230	Interlock Plate .....	1
40	42S.5	Seal, Dipstick .....	1
41	30101.A0232	Dipstick .....	1
42	30101.A0233	Drive Screw .....	4
43	30101.A0234	Pad, Gear Lever .....	2
44	28S.1C	Screw, Top Cover 1/4" UNF x 5/8" Long ....	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
51	30101.A0240	Input Bearing .....	1
52	30101.A0241	Snap Ring .....	1
53	30101.A0242	Bearing Spacer .....	1
54	30101.A0243	Circlip .....	2





## GEARBOX (Cont'd.)

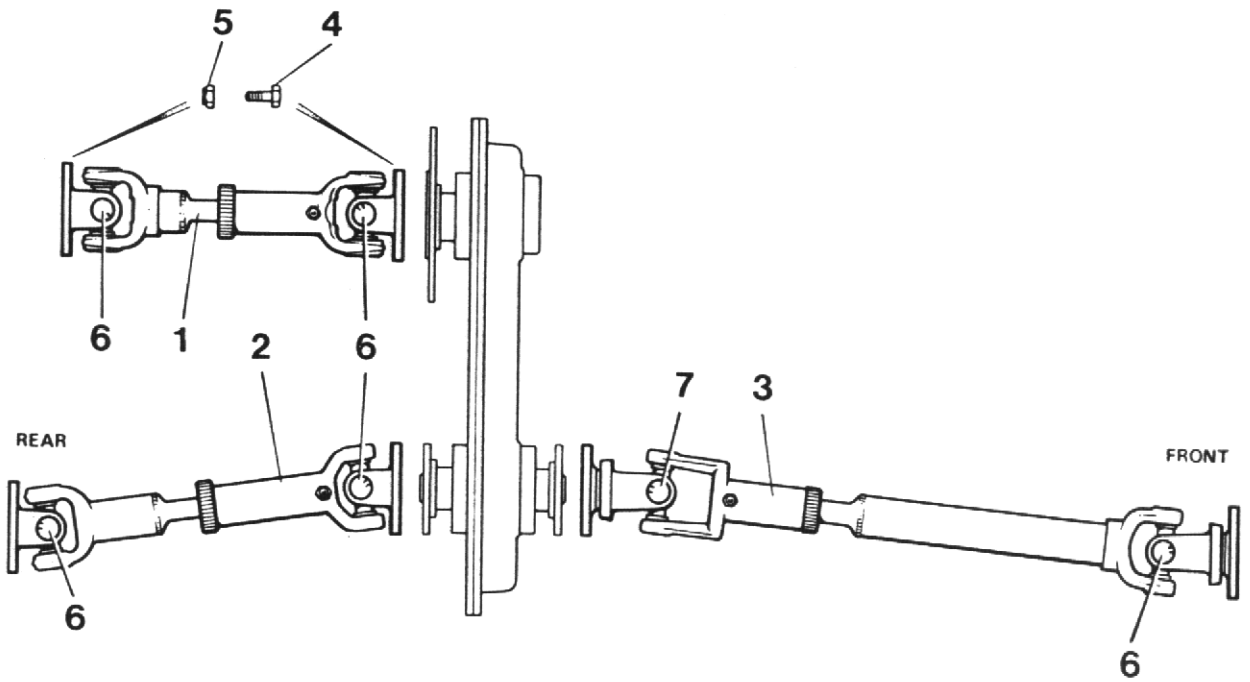
Item No.	Pt. No.	Description	Qty.
55	30101.A0244	Bush, Layshaft .....	1
56	30101.A0245	1st. Reduction Gear .....	1
57	30101.A0246	Clutch Housing .....	1
58	3S.3E	Setscrew-Clutch Housing 3/8" BSF x 1" Lg. (Petter)	6
	69S.3E	Setscrew-Clutch Housing 3/8" UNC x 1" Lg. (Lister)	6
59	30190.A0116	Nut Nyloc 3/8" UNF .....	6
60	30097.A0110	Clutch Release Fork .....	1
61	30097.A0111	Cotter, Nut and Washer S/A .....	1
62	30097.A0114	Bush, Cross Shaft .....	2
63	6S.1B	Bolt, Front Cover 1/2" UNF x 1 1/2" Lg. ....	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 .....	2
69	30190.A0106	Mainshaft .....	1
70	30101.A0252	Selector Fork, 1st. and Reverse .....	1
71	9S.1	Nut Clutch Lever 1/2" UNF .....	1
72	30101.A0253	Stud, Clutch Housing .....	6
73	30101.A0254	Sealing Disc, Selector Shaft .....	3
74	30101.A0255	Clutch Cross Shaft .....	1
75	131S.6	Grease Nipple .....	2
76	30101.A0256	Circlip .....	1
77	30101.A0257	Washer, Cross Shaft .....	1
78	30097.A0109	Clutch Release Lever .....	1
79	6S.1C	Bolt, Clutch Lever 1/2" UNF x 1 1/2" Long ....	1
80	30190.A0107	Casing .....	1
81	30190.A0108	Drain Plug .....	1
82	42S.5	Seal, Drain Plug .....	1
83	30101.A0259	Selector Locking Strip .....	1
84	28S.1C	Setscrew 1/2" UNF x 5/8" Long .....	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.2D	Hex. Head Screw 5/16" UNF x 3/4" Long .....	4
92	30190.A0114	Reduction Housing .....	1
93	6S.2J	Hex. Head Bolt 5/16" UNF x 2 3/4" Long .....	4
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.A0264	Coupling .....	1
100	28S.5E	Screw, Coupling 1/2" UNF x 1" Long .....	1
101	41S.5	Spring Washer 3/8" .....	6
102	41S.4	Spring Washer 5/16" .....	8
103	30143.A0111	Fibre Washer .....	1
104	30143.A0101	Fibre Washer .....	1



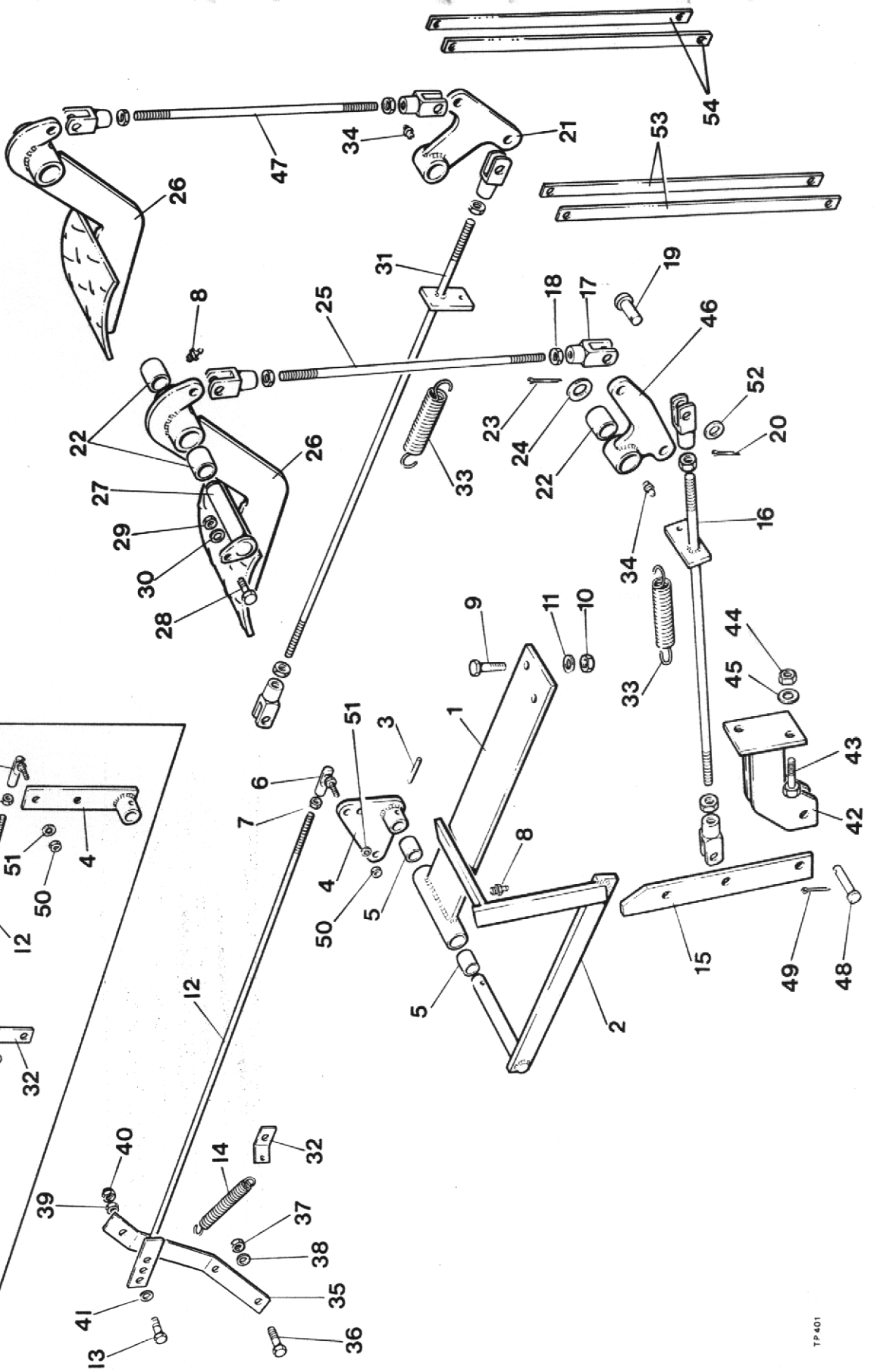
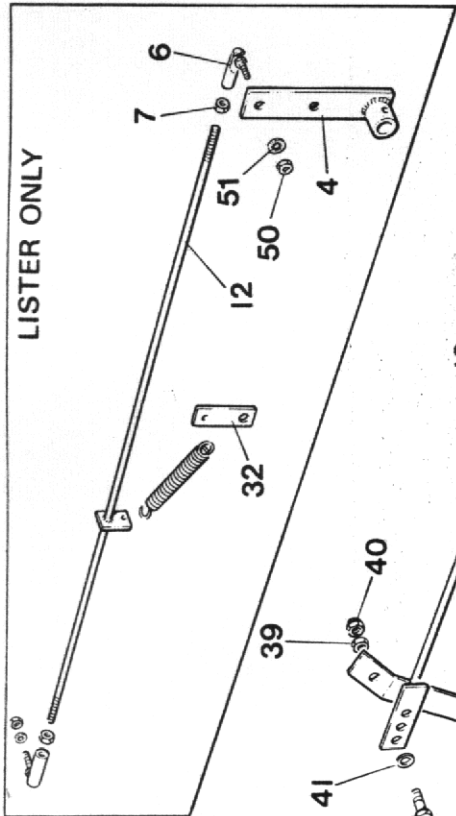
## TRANSFER BOX

Item No.	Part No.	Description	Qty.
	40098.A01	Transfer Box complete (when fitted) 1" Pitch Chain	1
	40098.A02	Transfer Box complete (when fitted) 3/4" Pitch Chain	1
1	4-35-96	Case .....	1
2	40097.A01	Cover .....	1
3	4-35-20	Gasket .....	1
4	10294.A01	Chain Wheel 15T (when fitted) 1" Pitch Chain ...	1
	10294.A02	Chain Wheel 19T (when fitted) 3/4" Pitch Chain ...	1
5	4-35-17	Chain Wheel 19T (when fitted) 1" Pitch Chain ...	1
	10294.A03	Chain Wheel 25T (when fitted) 3/4" Pitch Chain ..	1
6	4-35-353	Roller Chain (when fitted) 1" Pitch Chain ..	1
	80S.3	Roller Chain (when fitted) 3/4" Pitch Chain ..	1
7	81S.1	Connecting Link (when fitted) 1" Pitch Chain ..	1
	81S.2	Connecting Link (when fitted) 3/4" Pitch Chain ..	1
8	88S.6	Ball Bearing .....	4
9	10299.A01	Input Shaft .....	1
10	10300.A01	Output Shaft.....	1
11	20109.A01	Input Flange (c/w Brake Disc) .....	1
12	10384.A01	Output Flange .....	2
13	4/35-102	Oil Seal Housing .....	3
14	89S.1	Oil Seal .....	3
15	90S.2H	Capscrew .....	12
16	10293.A01	Gasket .....	4
17	10S.6	Washer 3/4" Dia.....	3
18	87S.8	Locknut 3/4" UNF .....	3
19	10298.A01	End Cover .....	1
20	10S.1	Washer 1/4" Dia.....	4
21	6S.1A	Hex. Hd. Bolt 1/4" UNF x 1,1/8" Long .....	1
22	10305.A01	Breather .....	1
23	10301.A01	Level/Filler Plug .....	1
24	42S.5	Fibre Washer .....	1
25	8S.2C	Hex. Hd. Bolt M6 x 35 Long .....	24
26	12S.2A	Washer M6 .....	24
27	17S.3A	Spring Washer M6 .....	24
28	7S.2A	Nut M6 .....	24

# PROP. SHAFTS



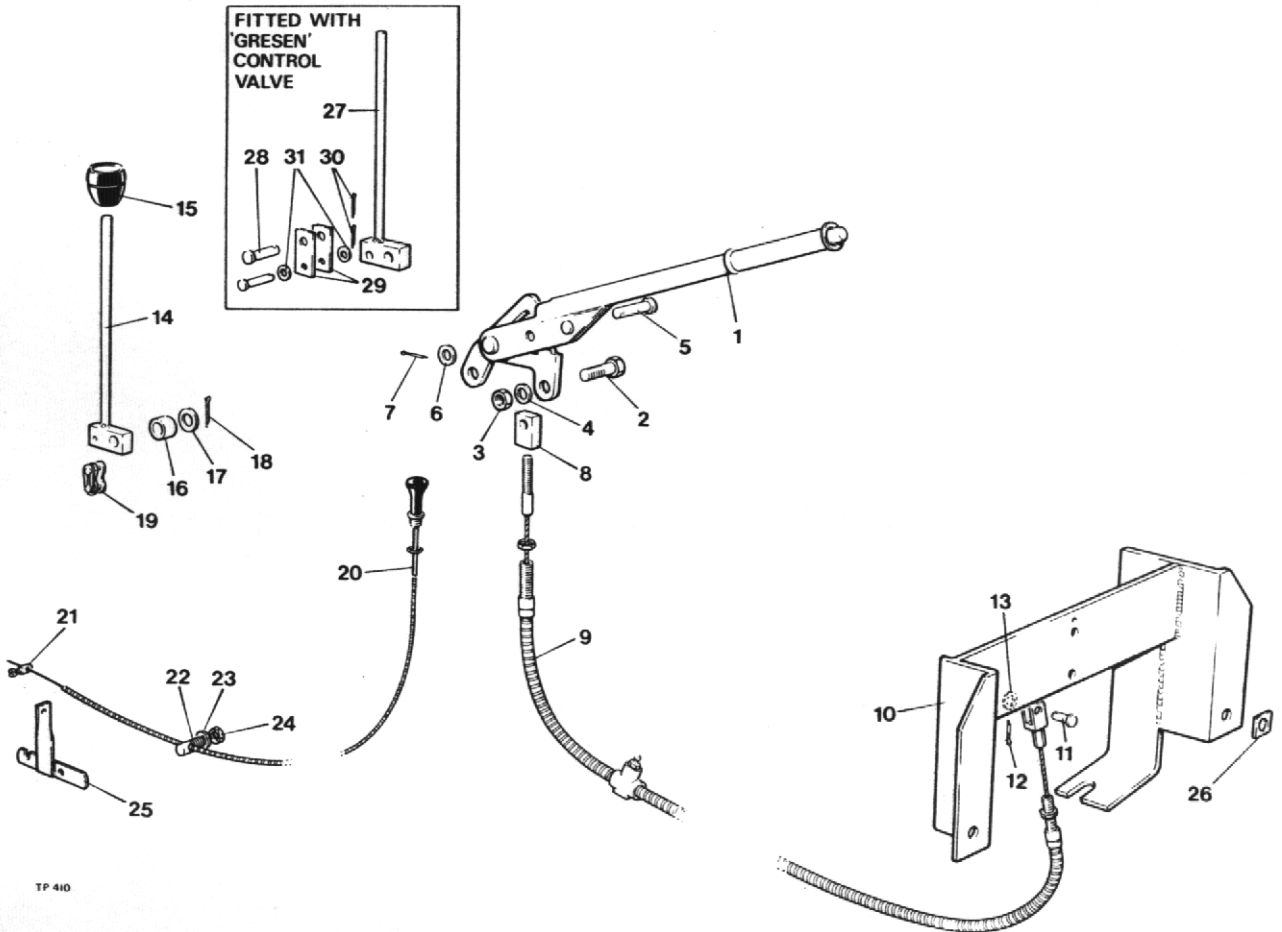
Item No.	Part No.	Description	Qty.
1	20086.A01	Prop Shaft .....	1
2	20089.A01	Prop Shaft .....	1
3	30096.A01	Prop Shaft .....	1
4	<i>6203A</i>	Prop Shaft Bolt .....	24
5	<i>87503</i>	Nut 3/8" UNF .....	24
6	10568.A01	Repair Kit (Std. Angle) .....	A/R
7	10568.A02	Repair Kit (Wide Angle) .....	A/R



## PEDAL CONTROLS

Item No.	Part No.	Description	Qty.
1	20118.A01	Mounting Plate .....	1
2	20104.A01	Accelerator Pedal .....	1
3	54S.1A	Tension Pin .....	1
4	10552.A01	Accelerator Lever (Petter) .....	1
	10312.A01	Accelerator Lever (Lister) .....	1
5	WB 0808	Bush .....	2
6	C160B	Rod Ball End (Petter) .....	1
	C160B	Rod Ball End (Lister) .....	2
7	2S.2	Nut (Petter) .....	1
	2S.2	Nut (Lister) .....	2
8	131S.1	Grease Nipple .....	3
9	11S.4E	Setscrew Hex. Hd. M10 x 35 Long .....	2
10	7S.4	Nut M10 .....	2
11	17S.5	Washer M10 .....	2
12	20166.A01	Accelerator Rod (Petter) .....	1
	20116.A01	Accelerator Rod (Lister) .....	1
13	6S.1B	Bolt-Hex. Hd. ½" UNF x 1½" Long .....	1
14	C173D	Spring .....	1
15	20117.A05	Brake Compensator .....	1
16	10518.A01	Compensator Rod 335mm Long .....	1
17	C174A	Clevis .....	8
18	74S.4	Nut 3/8" BSF .....	8
19	10650.A17	Clevis Pin .....	8
20	44S.2C	Split Pin 3/32" x 1" Long .....	8
21	20111.A01	Bell Crank .....	1
22	WB 1212	Bush .....	6
23	44S.3C	Split Pin .....	2
24	10S.6	Washer .....	2
25	38S.C30	Rod 3/8" x 11, 3/8" Long .....	1
26	20096.A03	Pedal .....	2
27	10368.A01	Pedal Pivot Pin .....	2
28	64S.2B	Setscrew Hex. Hd. M6 x 15 Long .....	2
29	65S.2	Nut M6 .....	2
30	17S.3	Spring Washer M6 .....	2
31	10481.A02	Clutch Rod 473mm Long .....	1
32	C163	Bracket .....	1
33	C173B	Spring .....	2
34	131S.3	Grease Nipple .....	2
35	10311.A01	Speed Control Arm (Petter) .....	1
36	11S.2A	Setscrew Hex. Hd. M6 x 16 Long .....	2
37	61S.2	Nut Self Locking M6 .....	2
38	12S.2	Washer .....	2
39	9S.1	Nut .....	1
40	87S.1	Nut-Self Locking .....	1
41	10S.1	Washer .....	2
42	20151.A01	Brake Compensator Pivot .....	1
43	8S.3A	Bolt M8 x 25mm Long .....	2
44	61S.3	Selflock Nut M8 .....	2
45	12S.3	Plain Washer .....	2
46	20111.A02	Bell Crank .....	1
47	38S.C29	Rod 3/8" x 12½" Long .....	1
48	10650.A18	Clevis Pin .....	1
49	44S.2B	Split Pin 3/32" Dia. x 3/4" Long .....	1
50	74S.2	Nut 1/4" BSF (Petter) .....	1
	74S.2	Nut 1/4" BSF (Lister) .....	2
51	67S.1	Washer (Petter) .....	1
	67S.1	Washer (Lister) .....	2
52	10S.3	Washer 3/8" I.D. .....	8
53	10436.A01	Link - Brake (Alternative to items 25, 18 & 17)..	2
54	10437.A01	Link - Clutch (Alternative to items 47,18 & 17)..	2

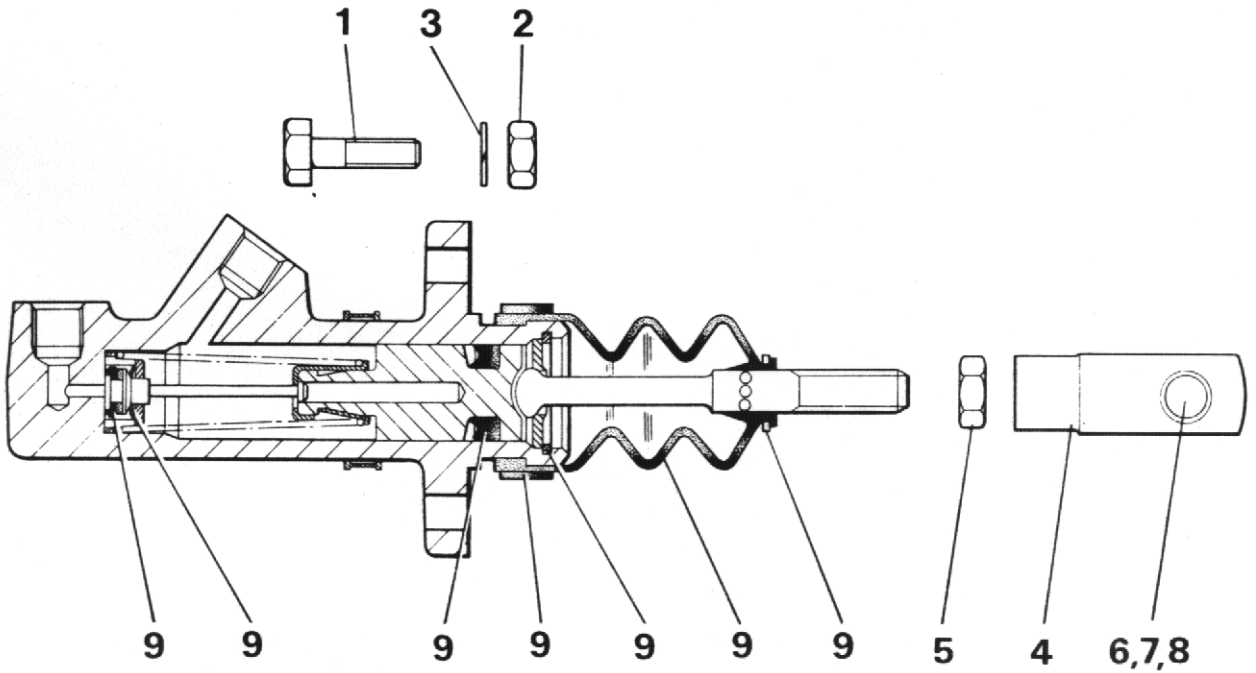
## VALVE CONTROL, HANDBRAKE AND ENGINE STOP



TP 410

Item No.	Part No.	Description	Qty.
1	10596.A01	Handbrake Lever.....	1
2	11S.4C	Setscrew M10 x 25 Long.....	2
3	7S.4	Nut M10.....	2
4	17S.5	Washer-Spring M10.....	2
5	10650.A19	Pin.....	1
6	10S.3	Washer-Plain 3/8" Dia.....	1
7	44S.2B	Split Pin 3/32" x 3/4" Long .....	1
8	L.309	Block-Brake Cable .....	1
9	10367.A01	Handbrake Cable .....	1
10	30124.A01	Brake Caliper Bracket .....	1
11	10650.A13	Clevis Pin Brake Cable .....	1
12	44S.1C	Split Pin .....	1
13	10S.1	Washer-Plain - Brake Cable Clevis Pin .....	1
14	10520.A01	Control Valve Lever (Cessna Valve) .....	1
15	10211.A01	Knob - Valve Lever .....	1
16	10647.A01	Spacer .....	1
17	10S.3	Washer Plain 3/8" dia. ....	1
18	44S.2C	Split Pin 3/32" x 3/4" .....	1
19	4-60-178	Connecting Link (Cessna Valve) .....	1
20	4-60-239	Engine Stop Control Cable .....	1
21	4-35-196	Solderless Nipple & Screw .....	1
22	4-60-242	Clamp Screw .....	1
23	67S.4	Washer - Shakeproof Int. ....	1
24	9S.3	Nut 3/8" UNF .....	1
25	10346.A01	Overload/Stop Control Lever (Lister) .....	1
26	10604.A01	Spacer (if fitted).....	A/R
27	10520.A02	Control Valve Lever Assy.(Gresen)(when fitted) ...	1
28	10650.A18	Clevis Pin (when fitted) .....	1
29	30180.A0103	Link (when fitted) .....	2
30	44S.2B	Split Pin (when fitted) .....	2
31	10S.1	Washer - Plain (when fitted) .....	2

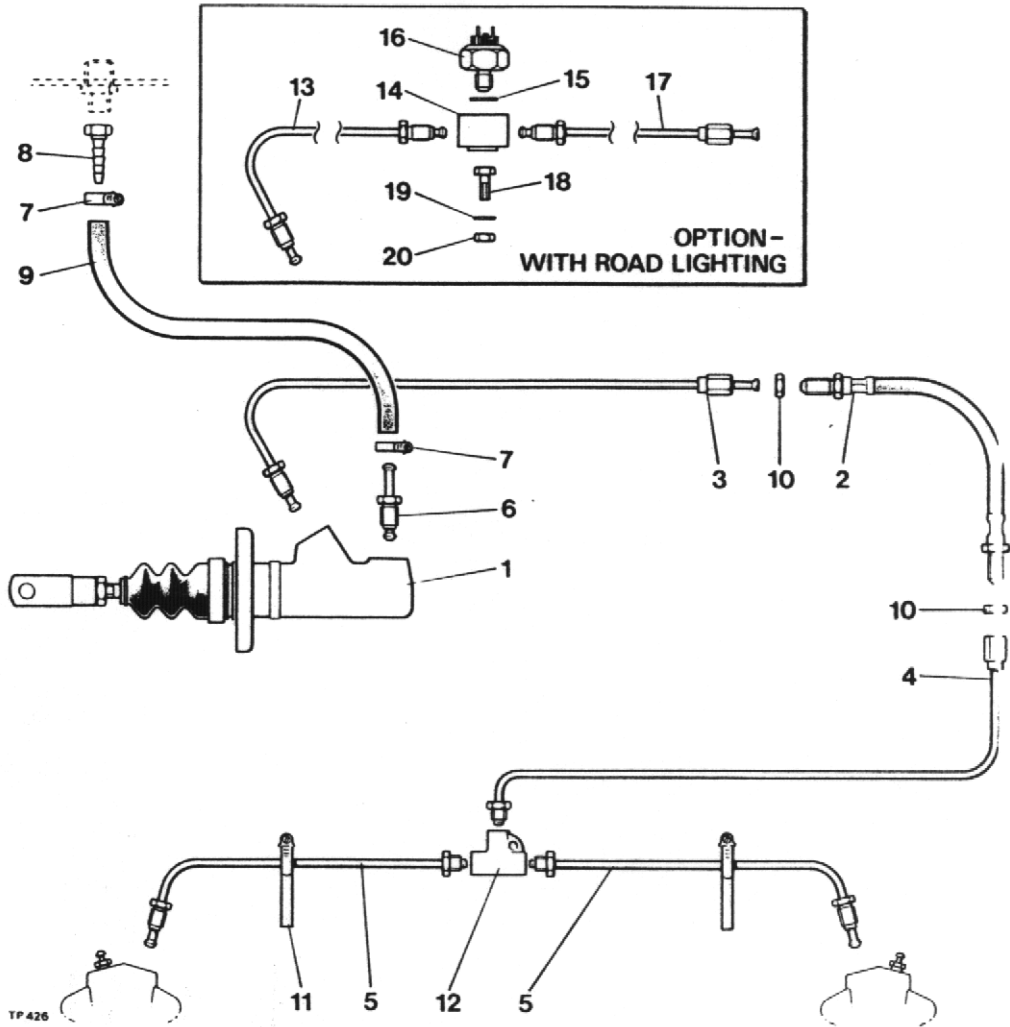
# BRAKE MASTER CYLINDER



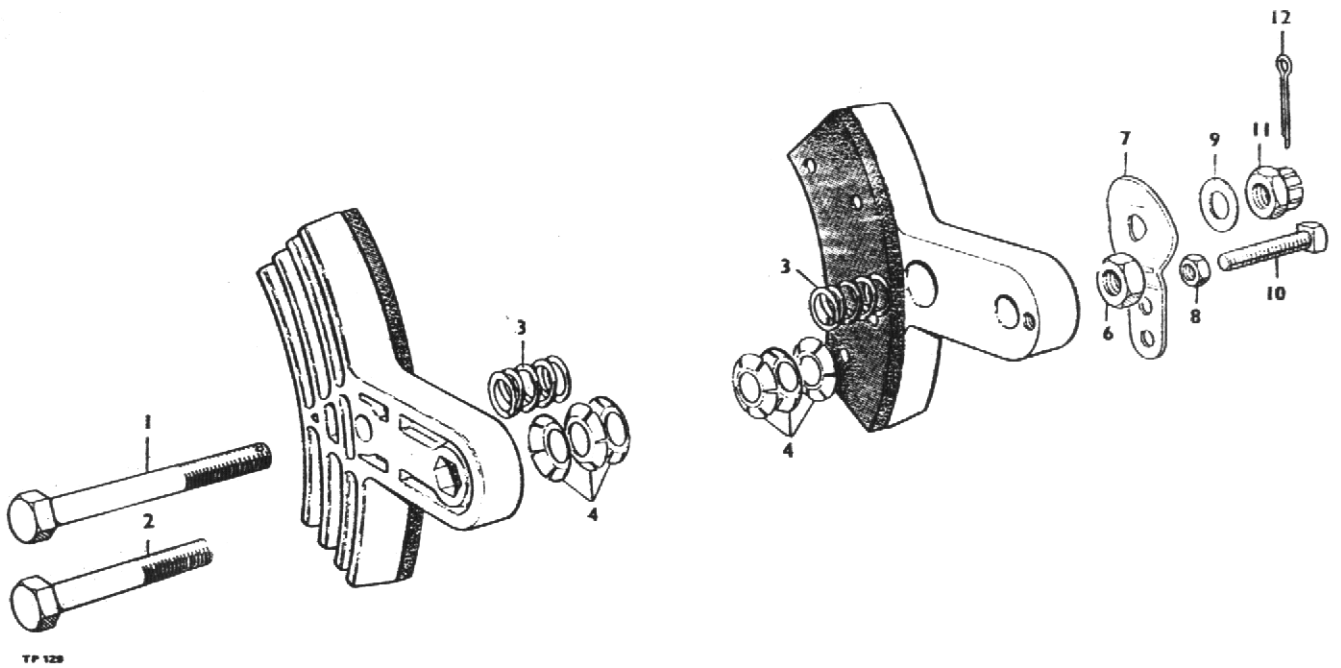
Item No.	Part No.	Description	Qty.
	20102.A02	Master Cylinder .....	2
1	11S.3E	Bolts Hex. Hd. M8 x 35 Long .....	4
2	7S.3	Nuts M8 .....	4
3	17S.4	Spring Washer .....	4
4	C174J	Clevis .....	2
5	95S.3	Nut 3/8" UNF Thin Nut .....	2
6	C174Y	Clevis Pin .....	2
7	10S.2	Washer 5/16" .....	2
8	44S.2C	Split Pin 3/32" x 1" Long .....	2
9	10570.A01	Service Kit .....	A/R



## BRAKE PIPES AND FITTINGS

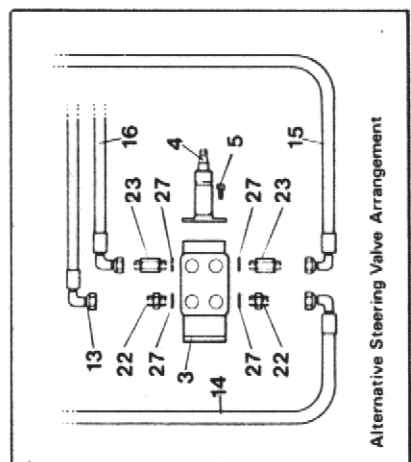
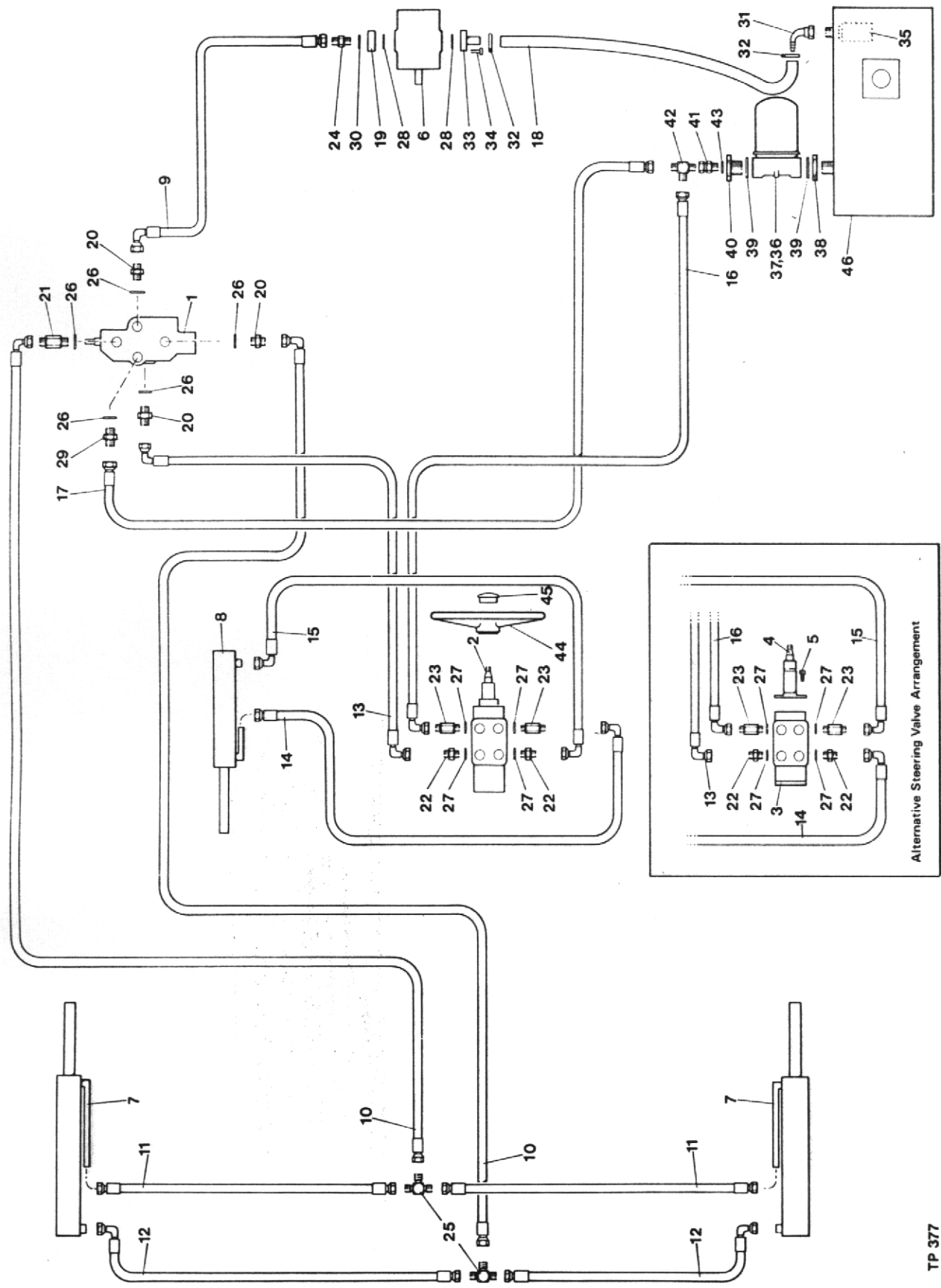


Item No.	Part No.	Description	Qty.
1	20102.A02	Master Cylinder .....	1
2	10517.A02	Flexible Hose .....	1
3	10577.A0101	Pipe M12 x 770mm Long Male/Female .....	1
4	10577.A0110	Pipe M12 x 1085mm Long Male/Female .....	1
5	10577.A0206	Pipe M12 x 740mm Long Male/Male .....	2
6	10542.A01	Stub Pipe .....	1
7	97S.1	Pipe Clip .....	2
8	110S.1	Nozzle .....	1
9	29S.7	Hose ¼" Bore 700mm Long .....	1
10	10582.A01	Half Nut M12 .....	2
11	97S.15	Pipe Clip .....	2
12	152S.3	Adaptor 3 way .....	1
13	10577.A0203	Pipe M12 x 500mm Long Male/Male (when fitted)....	1
14	10387.A01	Brake Switch Adaptor (when fitted) .....	1
15	116S.2	Copper Washer 7/16" I.D. (when fitted) .....	1
16	10744.A01	Brake Switch (when fitted) .....	1
17	10577.A0106	Pipe M12 x 465mm Long Male/Female (when fitted)..	1
18	8S.2A	Bolt M6 x 25mm Long (when fitted) .....	1
19	12S.14	Washer 6mm I.D. (when fitted) .....	1
20	7S.2	Nut M6 (when fitted) .....	1



## CALIPER, parking brake

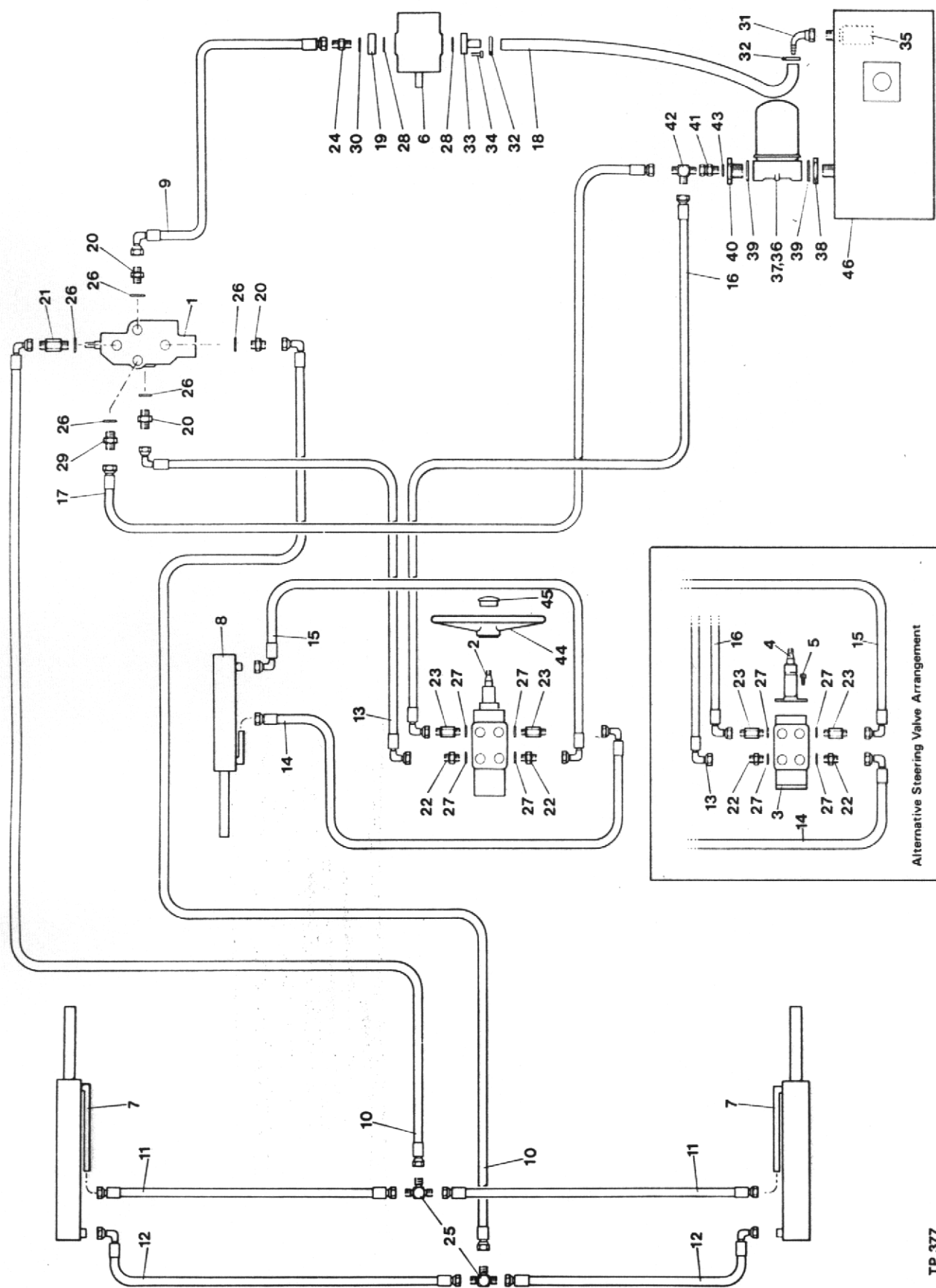
Item	Part no	Description	Qty
1A	10578A01	CALIPER, one pair, assembly	1
1	28S02T	SCREW	1
2	28S02P	SCREW	1
3	10578A0101	SPRING, centring	2
4	10578A0102	WASHER, tension	6
6	9S02	NUT	1
7	10578A0104	CAM	1
8	230S01	NUT, locking	1
9	10578A0105	WASHER	1
10	66S01H	SCREW, set	1
11	227S02	NUT, castle	1
12	44S01C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



Alternative Steering Valve Arrangement

## HYDRAULICS

Item No.	Part No.	Description	Qty.
1	30057.A01	Control Valve (Cessna)-(When Fitted) .....	1
	30180.A01	Control Valve (Gresen)-(When Fitted) .....	1
2	20110.A01	Steering Valve (Gemmer) (c/w Steering Wheel Nut).	1
	8S.4A	Bolt Hex. Hd. M10 x 25 Lg. (Steering Valve Fixing- Gemmer)	3
	13S.4	Shakeproof Washer (Steering valve Fixing - Gemmer)	3
	CSE 182	Steering Valve Spacer (Steering Valve Fixing - Gemmer)	3
	CSE 178	Steering Valve complete (Danfoss) .....	1
3	CSE 178-2	Steering Valve (Danfoss) .....	1
4	CSE 178-1	Steering Column (Danfoss)(c/w Steering Wheel Nut)	1
5	103S.4B	Capscrew 3/8" UNC x 3/4" Long .....	2
	69S.3G	Bolt 3/8" UNC x 1½" Long (Steering Valve Fixing- Danfoss)	2
	67S.4	Shakeproof Washer 3/8" dia. (Steering Valve Fixing- Danfoss)	2
	CSE 182	Steering Valve Spacer (Steering Valve Fixing - Danfoss)	2
6	10535.A01	Pump (Petter) .....	1
	10539.A01	Pump (Lister) .....	1
7	30161.A01	Hydraulic Cylinder (Skip) .....	2
8	30121.A01	Hydraulic Cylinder (Steering) .....	1
9	31S.2EE	Hose 3/8" x 410 Long ST x 90° .....	1
10	31S.2D	Hose 3/8" x 112 Long ST x 90° .....	2
11	35S.2I	Hose 3/8" x 25 Long ST x ST .....	2
12	31S.2AA	Hose 3/8" x 20 Long ST x 90° .....	2
13	36S.2II	Hose 3/8" x 89 Long 90°x 90° @ 270° .....	1
14	31S.2G	Hose 3/8" x 77 Long ST x 90° .....	1
15	36S.2HH	Hose 3/8" x 77 Long 90°x 90° @ 135° .....	1
16	31S.2E	Hose 3/8" x 99 Long ST x 90° .....	1
17	35S.3U	Hose ½" x 790mm Long ST x ST .....	1
18	37S.1G	Hose 3/4" Cotton Braid x 30" Long .....	1
19	4-35-261	Adaptor Plate .....	1
20	CSE 186	Adaptor, Short 7/8" JIC. x 3/8" BSP .....	3
21	4-60-158	Adaptor, Long 7/8" JIC. x 3/8" BSP .....	1
22	4-35-40K	Adaptor, Short 3/4" UNF x 3/8" BSP .....	2
23	4-60-115	Adaptor, Long 3/4" UNF x 3/8" BSP .....	2
24	T.14J	Adaptor, 3/8" BSP x 3/8" BSP .....	1
25	4-35-388	Tee and Bracket .....	1
26	49S.1	"O" Ring .....	5
27	49S.2	"O" Ring .....	4
28	49S.11	"O" Ring .....	2
29	DSE 115	Adaptor 7/8" JIC. x ½" BSP .....	1
30	100S.3	Seal 3/8" BSP .....	1
31	BSE 109	Elbow 3/4" BSP 90° .....	1
32	97S.7	Hose Clip 1"-1,3/8" .....	2
33	10475.A01	Adaptor Plate .....	1
34	103S.3C	Capscrew 5/16" UNC x 1" Long .....	4
35	108S.1	Suction Strainer .....	1
36	10363.A01	Return Line Filter .....	1
37	10363.A02	Filter Element .....	1
38	72S.7	Back Nut 1,1/4" BSP .....	1



## HYDRAULICS (Cont'd)

Item No.	Part No.	Description	Qty.
39	100S.9	Seal, 1,1/4" BSP .....	2
40	111S.1	Reducing Bush 1,1/4" Male x 1/2" Female BSP .....	1
41	112S.1	Adaptor Male/Female 1/2" BSP .....	1
42	113S.1	Unequal Male Tee 1/2" x 3/8" x 1/2" BSP .....	1
43	100S.4	Seal 1/2" BSP .....	1
44	40064.A01	Steering Wheel .....	1
45	10314.A01	Steering Wheel Cap .....	1
46	40074.A03	Hydraulic Tank including Mudwing .....	1
	177	Cable Tie (Not illustrated) .....	3

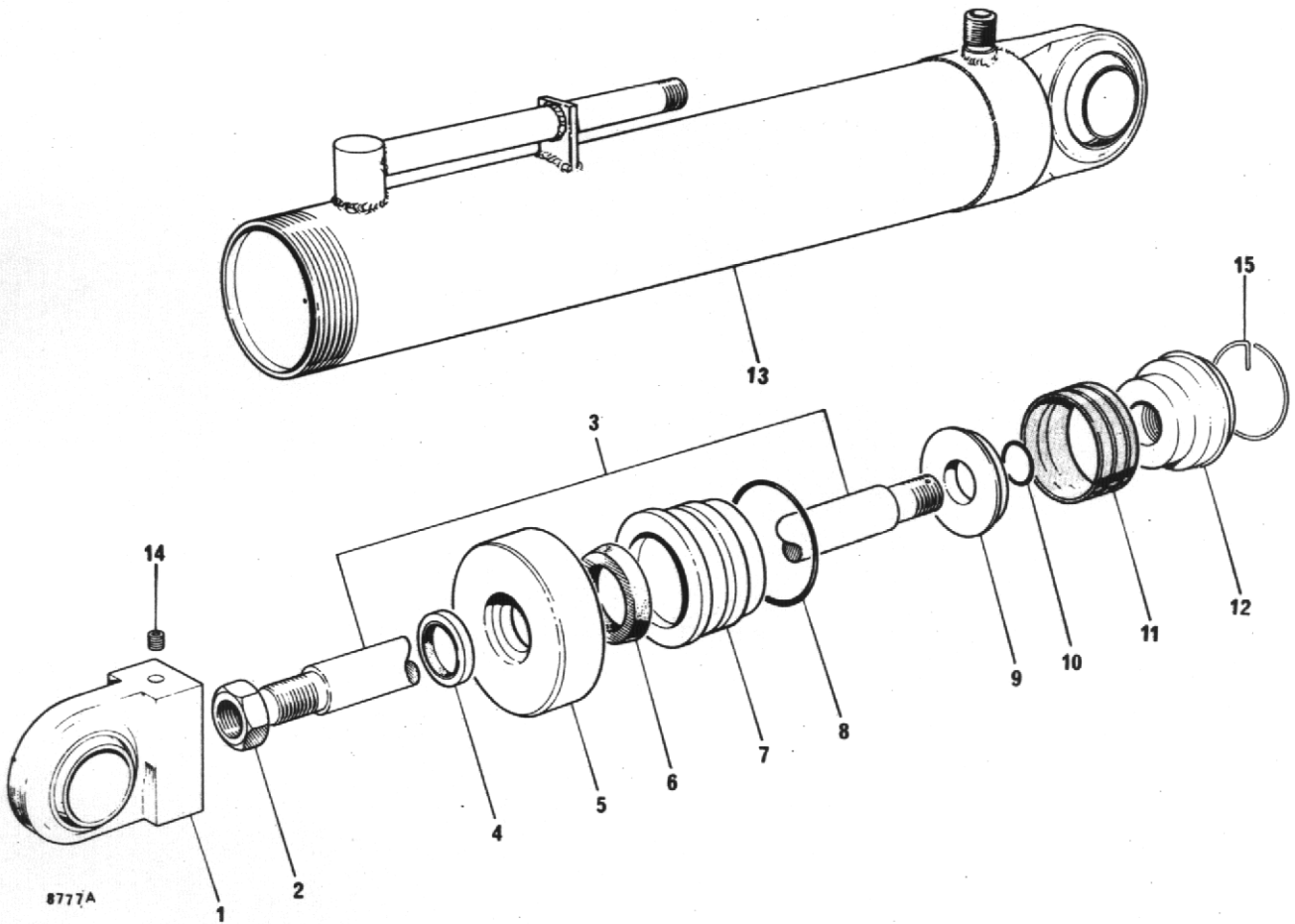
IT IS RECOMMENDED THAT DANFOSS OSPB STEERING UNITS ARE ONLY SERVICED IN DANFOSS AUTHORISED SERVICE SHOPS.

FOR U.K. - contact - Danfoss (London) Ltd., Perivale Industrial Estate, Horsenden Lane South, Greenford, Middlesex. Tel: 01 998 2041 Telex:24223.

FOR EUROPEAN COUNTRIES - contact - Department OG-SHT(Denmark) Telex:50599

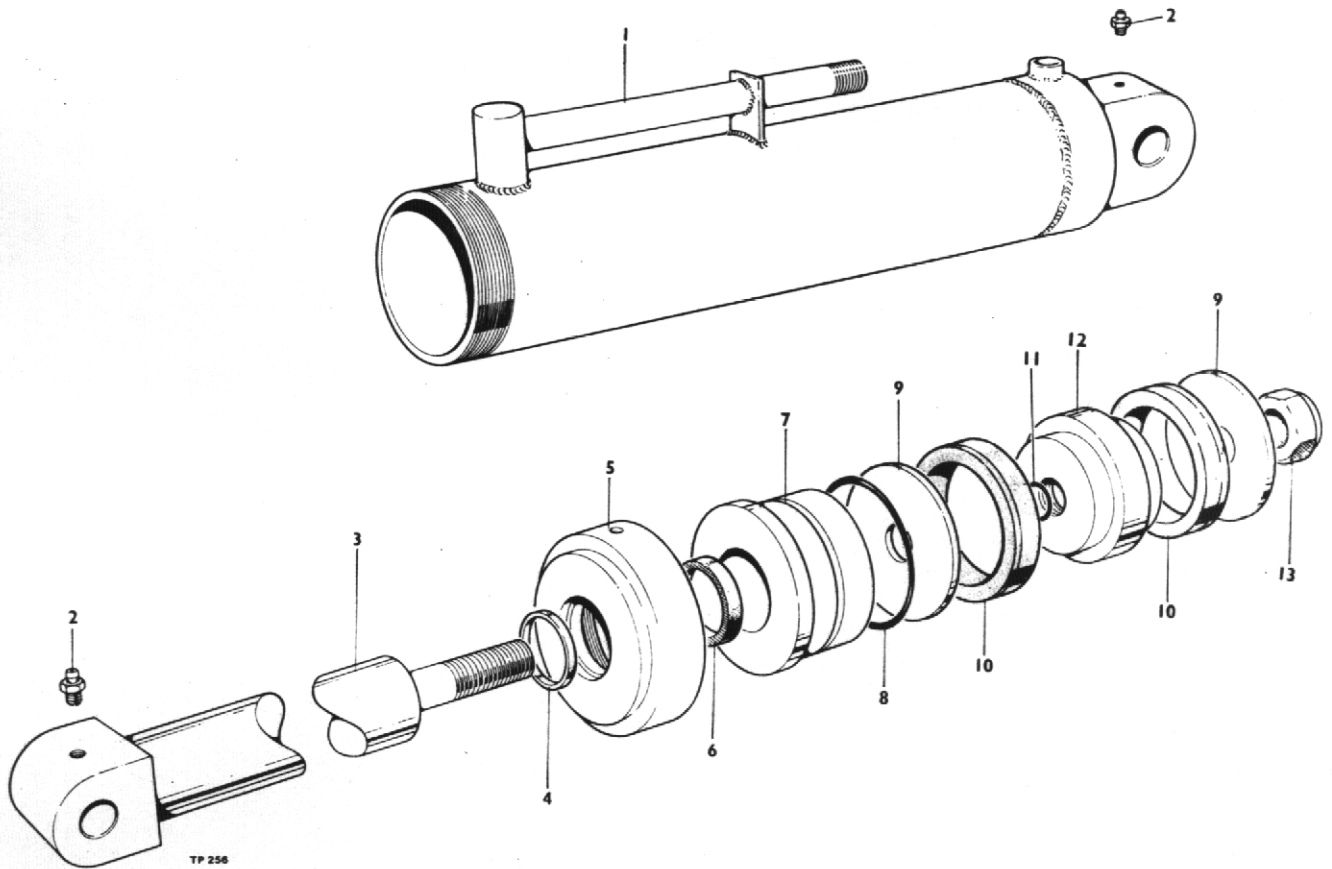
Customers having suitable facilities who wish to service the units themselves are advised to contact Winget Service Department, Winget Ltd., Rochester, Kent, England, who can supply service details.

**HYDRAULIC RAM  
(FWD. TIP & ROTATING SKIP)**



Item No.	Part No.	Description	Qty.
	30161.A01	Ram Complete (2 per M/c except High Discharge M/c's)	
1	30121.A0101	Piston Rod Fitting .....	1
2	30121.A0102	Locknut .....	1
3	30161.A0101	Piston Rod .....	1
4	30121.A0104	Wiper .....	1
5	30121.A0105	Tube Cap .....	1
6	30121.A0106	Sleeve Seal .....	1
7	30121.A0107	Sleeve .....	1
8	30121.A0108	Sleeve 'O' Ring .....	1
9	30121.A0109	Backing Washer .....	1
10	30121.A0110	Piston 'O' Ring .....	1
11	30121.A0111	Piston Seal .....	1
12	30121.A0112	Piston Head .....	1
13	30161.A0102	Cylinder, Bosses & End Cap .....	1
14	30121.A0114	Grub Screw .....	1
15	30121.A0115	Spring Ring .....	1
	CSE 189	Seal Kit (Comprising items 4,6,8,10 & 11) ..	A/R

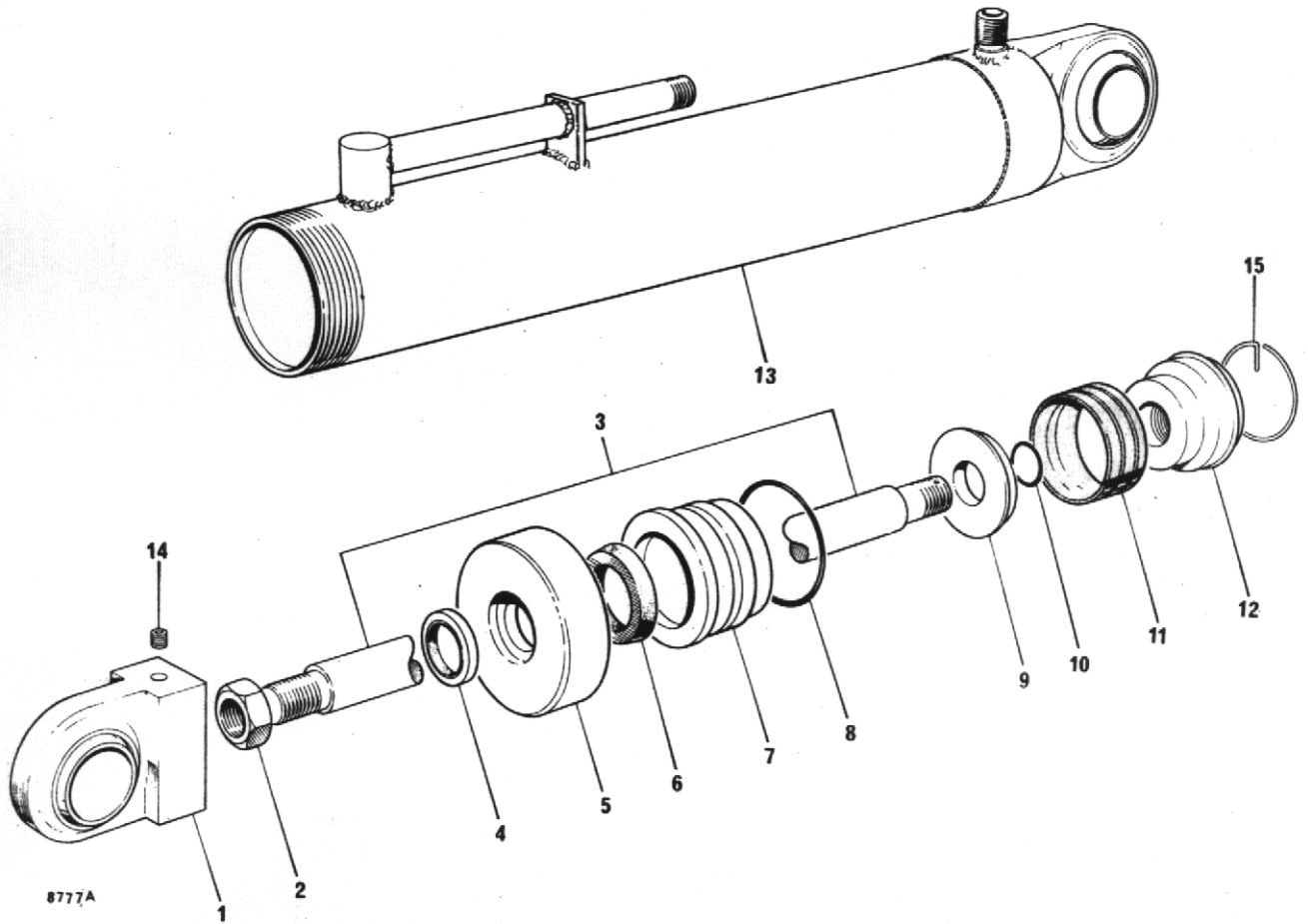
## HYDRAULIC RAM (HIGH DISCHARGE SKIP)



Item No.	Part No.	Description	Qty.
	30162.A01	Ram Assembly Complete (Two per high discharge m/c's only)	
1	30162.A0101	Ram Body .....	1
2	30162.A0102	Grease Nipple .....	2
3	30162.A0103	Piston Rod Assembly .....	1
4	30162.A0104	Wiper .....	1
5	30162.A0105	Tube Cap .....	1
6	30162.AC106	Sleeve Seal .....	1
7	30162.A0107	Sleeve .....	1
8	30162.A0108	Sleeve "O" Ring .....	1
9	30162.A0109	Backing Washer .....	2
10	30162.A0110	Piston Seal .....	2
11	30162.A0111	Piston "O" Ring .....	1
12	30162.A0112	Piston Head .....	1
13	30162.A0113	Lock Nut .....	1
	CSE 190	Seal Kit (comprising items 4,6,8,10 & 11) .....	A/R



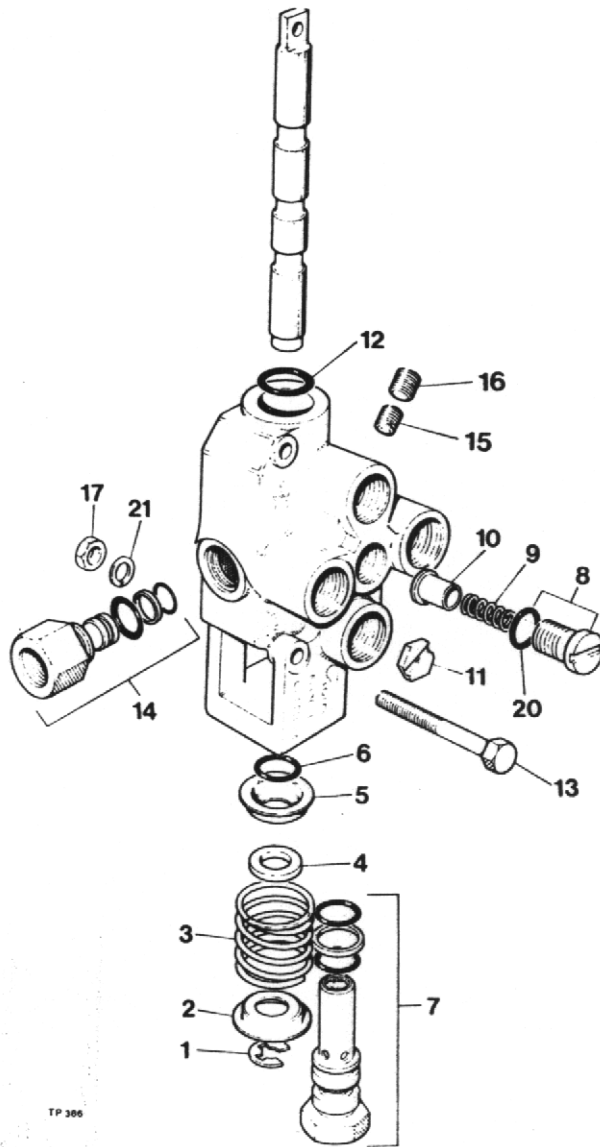
## HYDRAULIC RAM (STEERING)



Item No.	Part No.	Description	Qty.
	30121.A01	Ram Complete (1 per Machine)	
1	30121.A0101	Piston Rod Fitting .....	1
2	30121.A0102	Locknut .....	1
3	30121.A0103	Piston Rod .....	1
4	30121.A0104	Wiper .....	1
5	30121.A0105	Tube Cap .....	1
6	30121.A0106	Sleeve Seal .....	1
7	30121.A0107	Sleeve .....	1
8	30121.A0108	Sleeve 'O' Ring .....	1
9	30121.A0109	Backing Washer .....	1
10	30121.A0110	Piston 'O' Ring .....	1
11	30121.A0111	Piston Seal .....	1
12	30121.A0112	Piston Head .....	1
13	30121.A0113	Cylinder, Bosses & End Cap .....	1
14	30121.A0114	Grub Screw .....	1
15	30121.A0115	Spring Ring .....	1
	CSE 189	Seal Kit (comprising items 4,6,8,10 & 11) ..	A/R

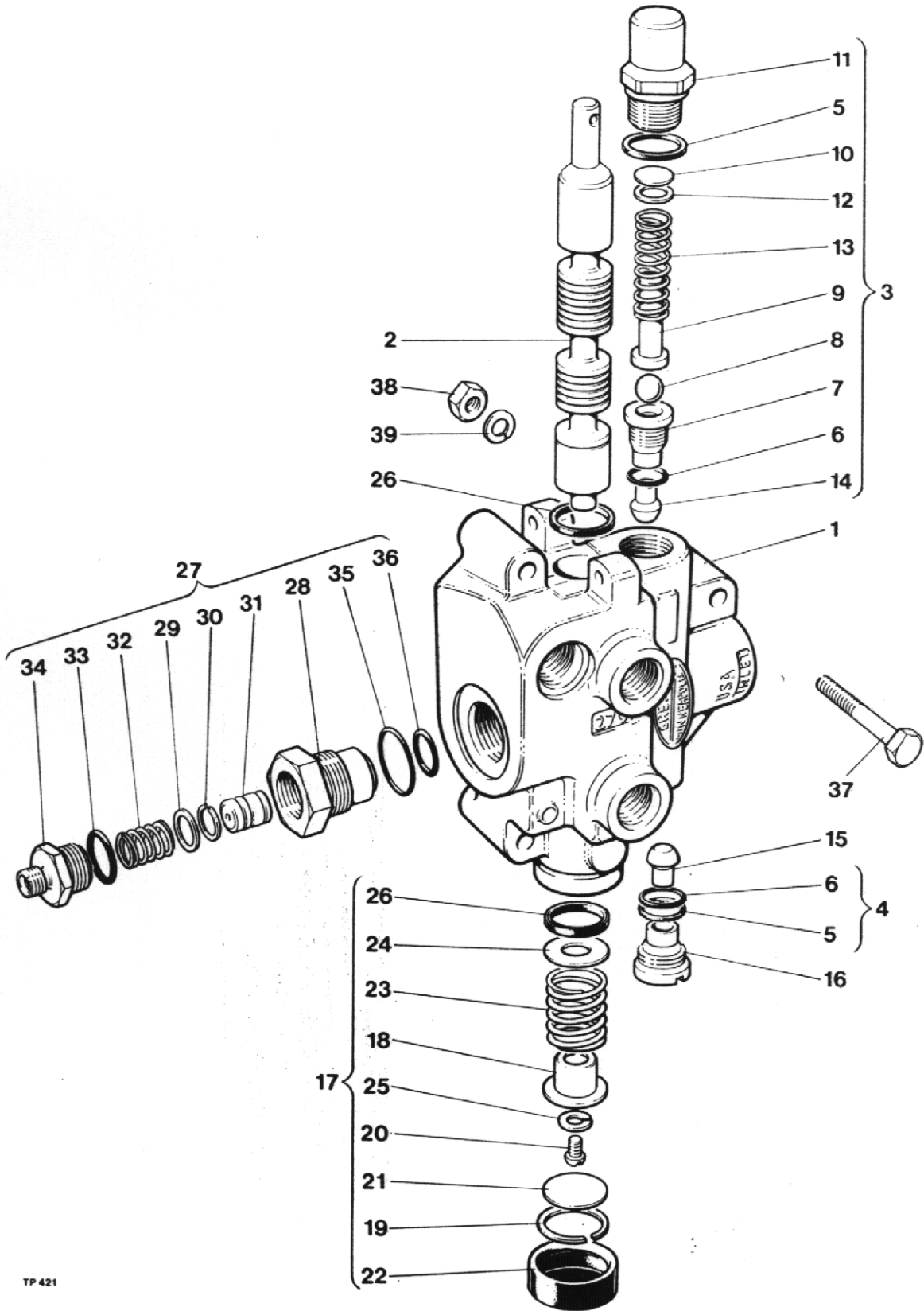
# HYDRAULIC CONTROL VALVE

(CESSNA)



TP 306

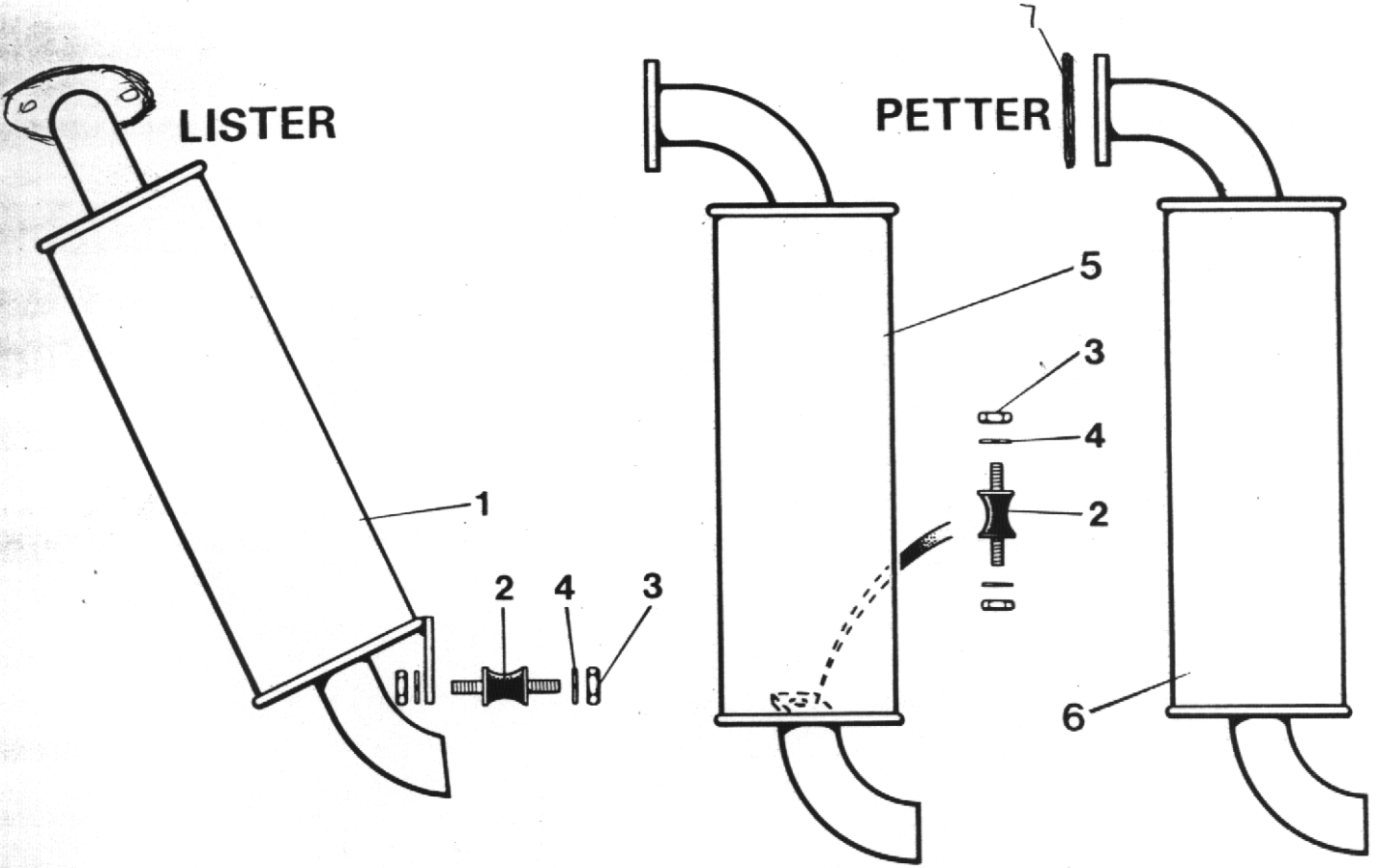
Item No.	Part No.	Description	Qty.
	30057.A01	Control Valve Complete .....	1
1	30131.A0101	Clip Ring .....	1
2	30131.A0102	Shallow Washer .....	1
3	30131.A0103	Spool Spring .....	1
4	30131.A0104	Washer Spacer .....	1
5	30131.A0105	Deep Washer .....	1
6	30057.A0101	"O" Ring .....	1
7	30057.A0102	Relief Valve Assembly .....	1
8	30057.A0103	Lift Check Plug Assembly .....	1
9	30131.A0109	Lift Check Spring .....	1
10	30131.A0110	Lift Check Plunger .....	1
11	30131.A0111	Orifice Plate .....	1
12	30057.A0104	"O" Ring .....	1
13	6S.3H	Bolt 5/16" UNF x 2½" Long .....	2
14	30057.A0105	Pressure Beyond Plug .....	1
15	30131.A0116	Plug 1/16" .....	1
16	30131.A0117	Plug 1/8" .....	1
17	9S.2	Nut 5/16" UNF .....	1
18	30057.A0106	Seal Repair Kit (Relief Valve).....	A/R
19	30057.A0107	Seal Repair Kit .....	A/R
20	30131.A0118	"O" Ring .....	1
21	41S.4	Spring Washer 5/16" Dia.....	2



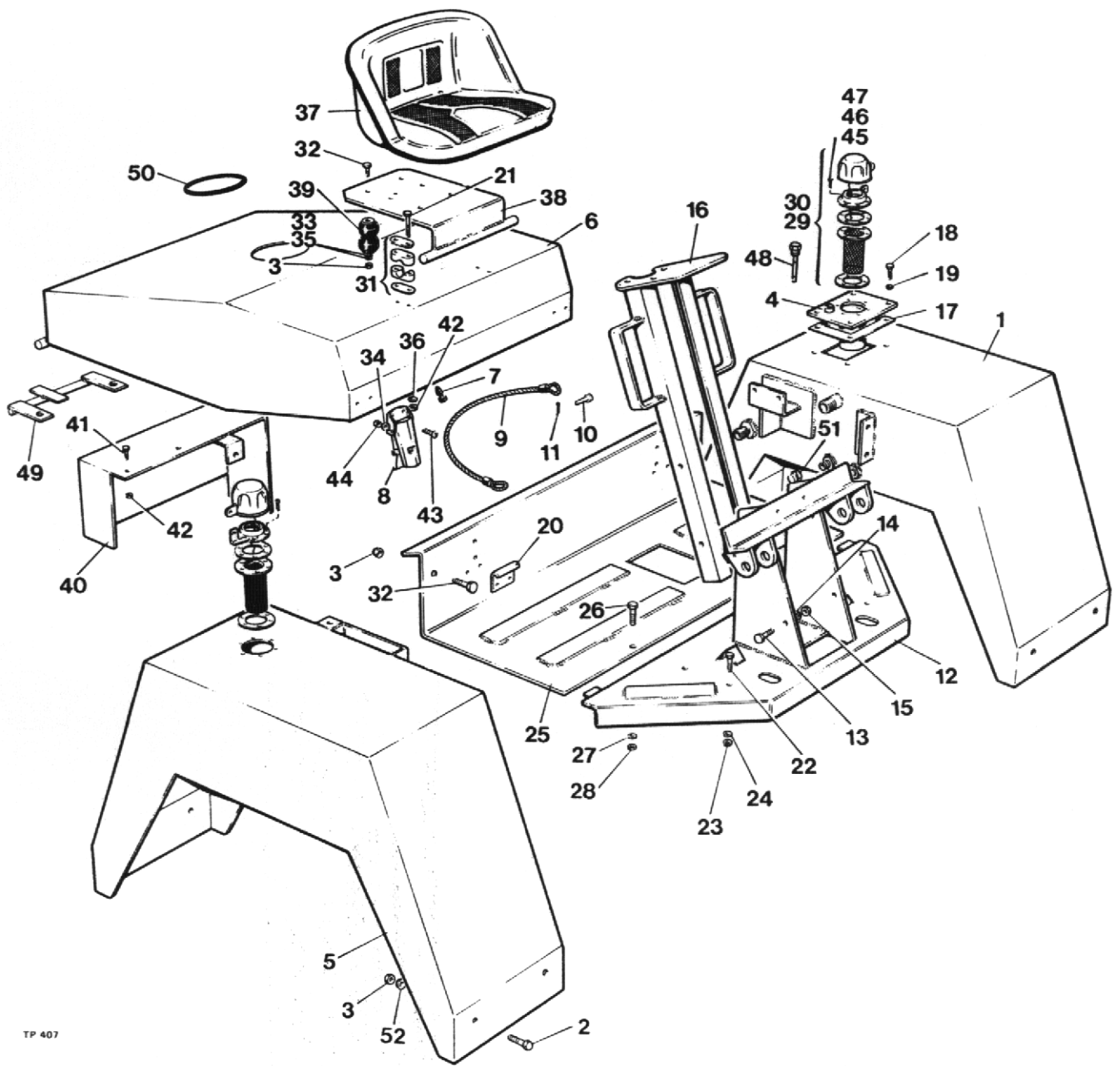
## HYDRAULIC CONTROL VALVE

Item No.	Part No.	Description	Qty.
	30180.A01	Control Valve (Complete) .....	1
1		Housing .....	1
2		Spool - 4 Way - 3 Position } Not supplied as spares-	1
3	30180.A0101	Relief Valve Assembly (comp. items 5-14 inc.) ...	1
4	30180.A0102	Seal Kit (comp. items 5 & 6) .....	A/R
5		Gasket - Relief Body .....	2
6		"O" Ring - Relief Valve Seat } Order 30180.A0102	2
7	30180.A0112	Seat - Relief Valve .....	1
8	30180.A0138	Ball .....	1
9	30180.A0105	Guide - Spring .....	1
10	30180.A0106	Shim .....	A/R
11	30180.A0107	Body .....	1
12	30180.A0108	Washer - Spacer .....	1
13	30180.A0109	Spring .....	1
14	30180.A0110	Poppet - Check .....	1
	30180.A0111	Plug Assembly (comp. Items 5,6,15&16 ).....	1
15	30180.A0110	Poppet .....	1
16	30180.A0114	Guide - Poppet .....	1
17	30180.A0115	Positioner Assembly - Spring Return to Neutral (comp. items 18-26 inc.)...	1
18	30180.A0116	Collar - Stop .....	1
19	30180.A0117	Ring - Retaining .....	1
20	30180.A0118	Screw .....	1
21	30180.A0119	Disc - Stop .....	1
22	30180.A0120	Bonnet - Rubber .....	1
23	30180.A0121	Spring - Centring, Standard .....	1
24	30180.A0122	Washer - Stop .....	1
25	30180.A0123	Lockwasher .....	1
26	30180.A0124	Seal .....	2
27	30180.A0125	Flow Control Valve Assy. (comp. items 28-36 inc.)	1
28	30180.A0126	Sleeve .....	1
29	30180.A0127	Washer .....	1
30	30180.A0128	Ring - Retaining .....	1
31	30180.A0129	Piston .....	1
32	30180.A0130	Spring .....	1
33	30180.A0131	Seal - "O" Ring .....	1
34	30180.A0132	Union .....	1
35	30180.A0133	Seal "O" Ring .....	1
36	30180.A0134	Seal "O" Ring .....	1
37	8S.4R	Bolt - Hex. Hd. M10 x 120 Long .....	3
38	7S.4	Nut M10 .....	3
39	17S.5	Washer - Spring M10 .....	3

# EXHAUST SYSTEM



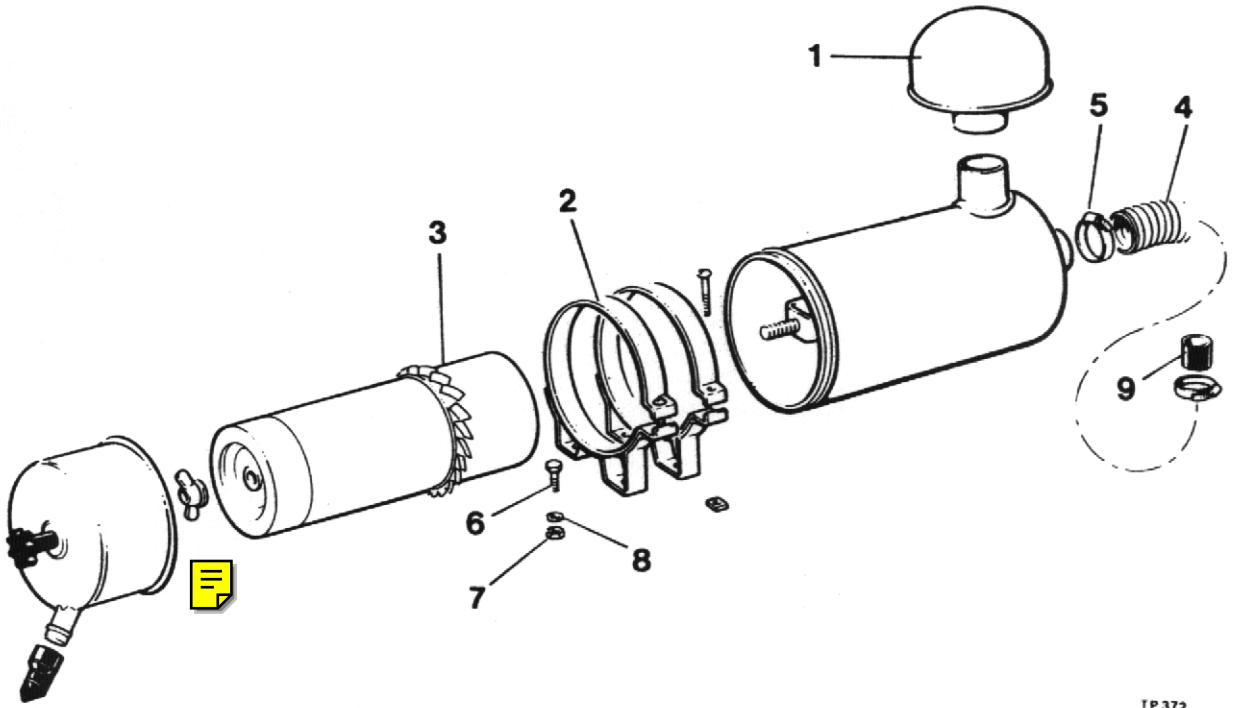
Item No.	Part No.	Description	Qty.
1	30154.A01	Exhaust (Lister)	1
2	10371.A01	Rubber Mounting	1
3	61S.3	Nut M8	2
4	12S.3	Washer 8mm Dia.	2
5	30154.A02	Exhaust (Petter) - (EARLY TYPE FITTING)	1
6	30154.A05	Exhaust (Petter) - (NOW REPLACES ITEM 5)	1
7	10293.A02	" "	"



## MUDWINGS AND COVERS

Item No.	Part No.	Description	Qty.
1	40074.A04	L.H. Mudwing & Hydraulic Tank .....	1
2	11S.4C	Setscrew Hex. Hd. M10 x 25 Long .....	12
3	61S.4	Selflock Nuts M10 .....	14
4	20098.A03	Tank Filler Assembly Mounting Plate .....	1
5	40073.A03	R.H. Mudwing & Fuel Tank .....	1
6	40094.A05	Engine Cover (Non Elec. Start M/c's.)..	1
	40094.A06	Engine Cover (Electric Start M/C's.)...	1
7	10554.A01	Rubber Buffers .....	4
8	10537.A02	Toggle Fasteners .....	2
9	10366.A01	Engine Cover Strap .....	1
10	10650.A19	Clevis Pin .....	1
11	44S.2C	Split Pin 3/32" x 1" Long .....	1
12	40096.A01	Foot Pedal Assembly Mounting Bracket .....	1
13	8S.4A	Bolts Hex. Hd. M10 x 25 Long .....	4
14	17S.5	Spring Washer M10 .....	4
15	7S.4	Nut Hex. M10 .....	4
16	30125.A01	Steering Column .....	1
17	5ST.18B	Gasket .....	1
18	11S.3B	Setscrew Hex. Hd. M8 x 20 Long .....	4
19	17S.4	Spring Washer M8 .....	4
20	10538.A02	Catch Plate .....	2
21	8S.2F	Bolt Hex. Hd. M6 x 50 Long .....	4
22	11S.4D	Setscrew Hex. Hd. M10 x 30 Long .....	4
23	7S.4	Nut M10 .....	4
24	17S.5	Spring Washer M10 .....	4
25	40121.A02	Floor Panel .....	1
26	8S.3A	Bolt Hex. Hd. M8 x 25 Long .....	2
27	12S.3	Plain Washer M8 .....	2
28	61S.3	Nut Self Locking M8 .....	2
29	10565.A01	Filler Cap Assembly .....	2
	10565.A0101	Sealing Washer (Not illustrated) .....	2
30	10565.A02	Breather Filler Cap (Alternative) .....	2
31	10364.A01	Pivot Block.....	2
32	8S.4A	Bolt Hex. Hd. M10 x 25 Long .....	6
33	12S.5	Washer M10 .....	16
34	12S.1	Washer 5mm .....	8
35	C180B	Washer 3/8" .....	2
36	12S.2	Washer M6 .....	4
37	4-35-301	Seat c/w Bolts and Washers .....	1
38	30148.A01	Seat Frame .....	1
39	10519.A01	Rubber Spring .....	2
40	20113.A03	Dynamo Belt Guard (Lister only) .....	1
41	11S.2B	Setscrew Hex. Hd. M6 x 20 Long (Lister only) ...	2
42	61S.2	Selflock Nut M6 (Petter) (Qty. 6 off Lister) ...	4
43	82S.3C	Screw Rd. Hd. Slotted 2BA x 1/2" Long .....	8
44	85S.1	Selflocking Nut 2BA .....	8
45	82S.3E	Round Hd. Screw 2BA x 3/4" Long .....	6
46	85S.1	Self Locking Nut 2BA .....	6
47	12S.1	Plain Washer M5 .....	6
48	10632.A01	Dipstick .....	1
49	10560.A01	Engine Cover Strap Retainer (Petter only) .....	1
50	10566.A01	Grommet .....	1
51	120S.1A	Blanking Cap - Hydraulic Tank .....	2
52	12S.20	Plain Washer 10mm I.D. .....	8
53	4-35-198	Seat Upholstery (not illustrated) .....	1

# AIR CLEANER

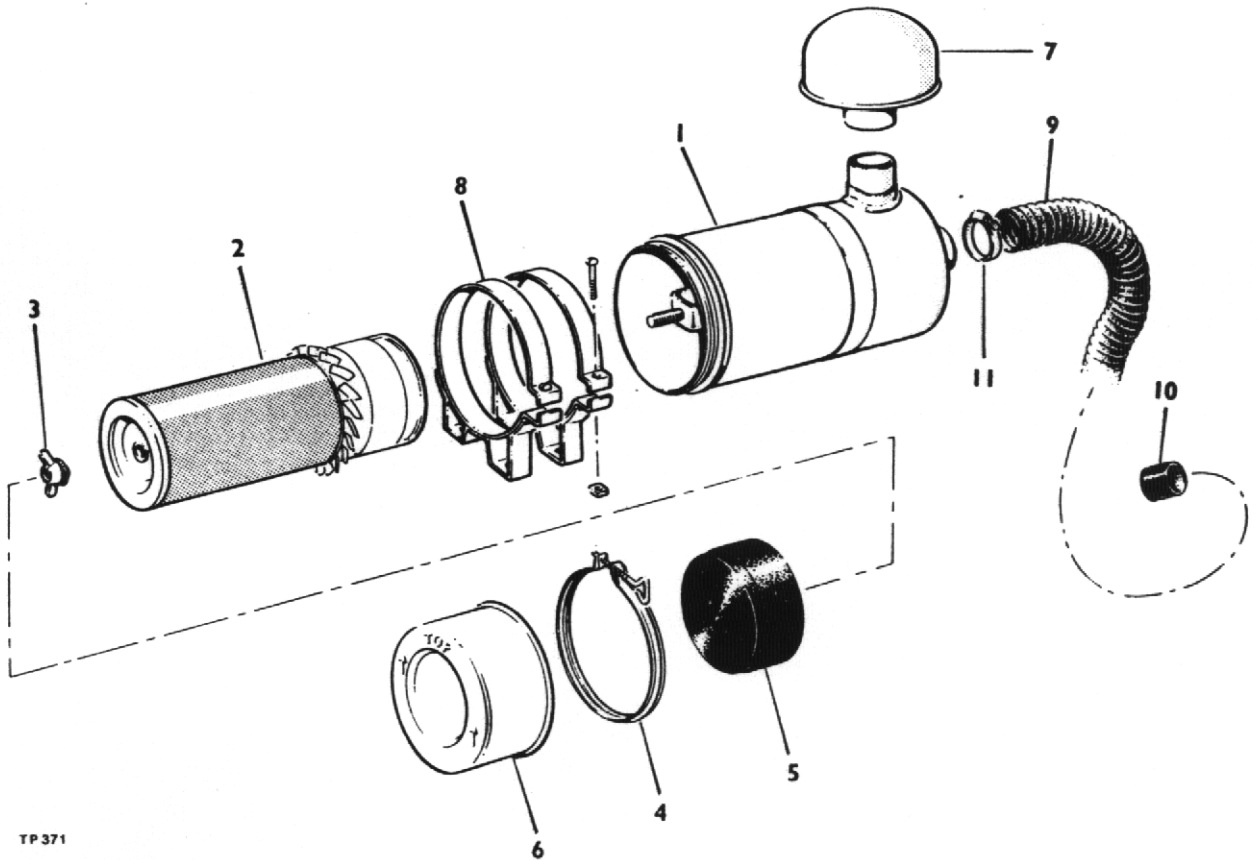


TP 372

Item No.	Part No.	Description	Qty.
	10532.A01	Air Cleaner .....	1
1	10534.A01	Stack Cap .....	1
2	10533.A01	Mounting Bands .....	2
3	10532.A0101	Element .  .....	1
4	10319.A03	Hose .....	1
5	97S.12	Hose Clip .....	2
6	8S.3A	Setscrew Hex. Hd. M8 x 25 Long .....	4
7	61S.3	Nut M8 .....	4
8	12S.3	Washer M8 .....	4
9	10320.A01	Pipe Adaptor .....	1



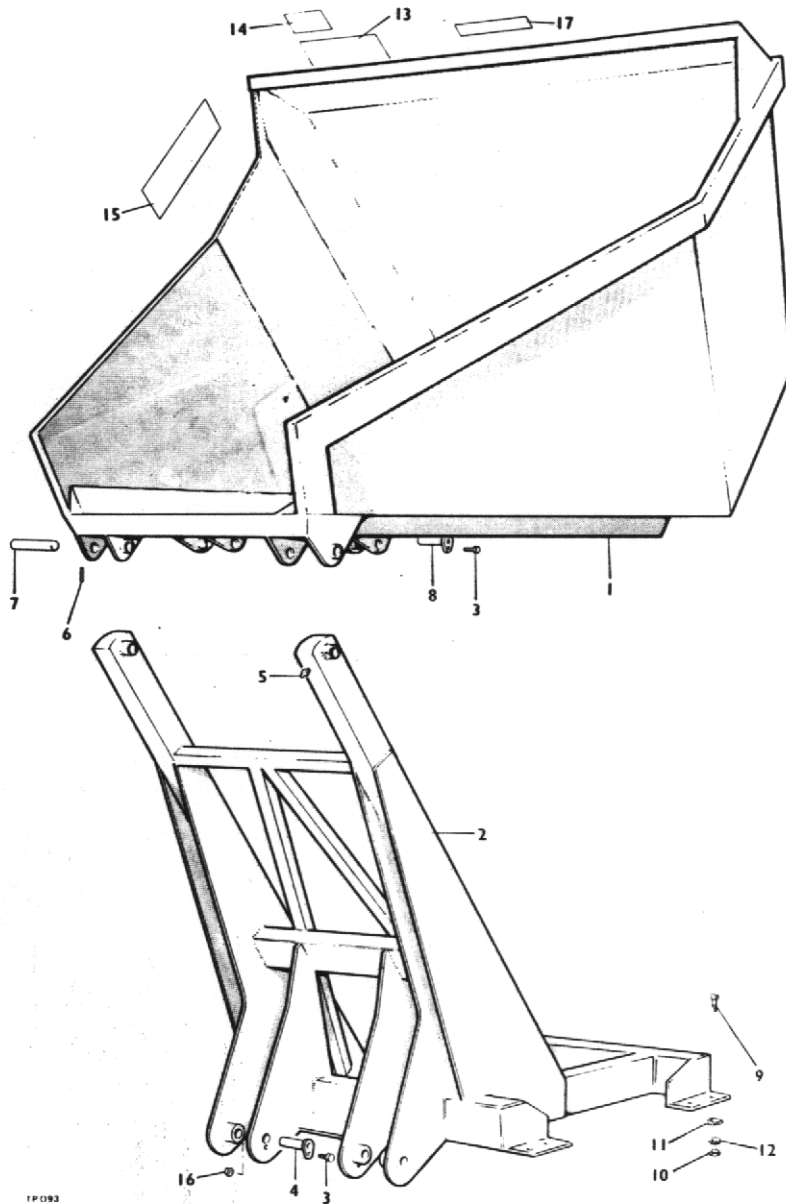
# AIR CLEANER



TP 371

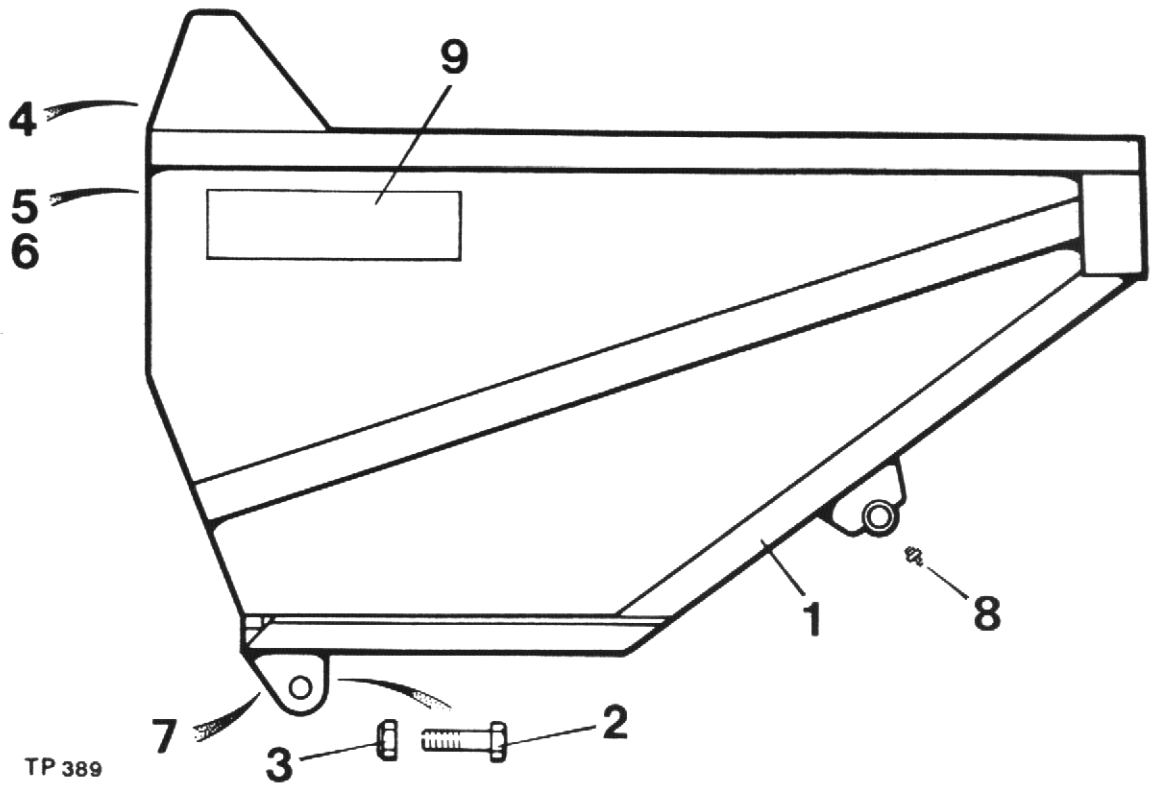
Item No.	Part No.	Description	Qty.
	10532.A02	Air Cleaner complete (items 1-6) .....	1
1	10532.A0201	Body .....	1
2	10532.A0101	Element .....	1
3	10532.A0202	Nut and Gasket .....	1
4	10532.A0203	Clamp .....	1
5	10532.A0204	Skirt, Baffle .....	1
6	10532.A0205	Cup .....	1
7	10534.A02	Stack Cap .....	1
8	10533.A02	Mounting Bracket .....	2
9	10319.A03	Hose .....	1
10	10320.A01	Pipe Adaptor .....	1
11	97S.12	Hose Clip .....	2
12	8S.3A	Setscrew Hex. Hd. M8 x 25mm Long (Not illustrated)	4
13	61S.3	Nut M8 (Not illustrated) .....	4
14	12S.3	Washer 8mm (Not illustrated).....	4

# HIGH DISCHARGE SKIP AND FRAME



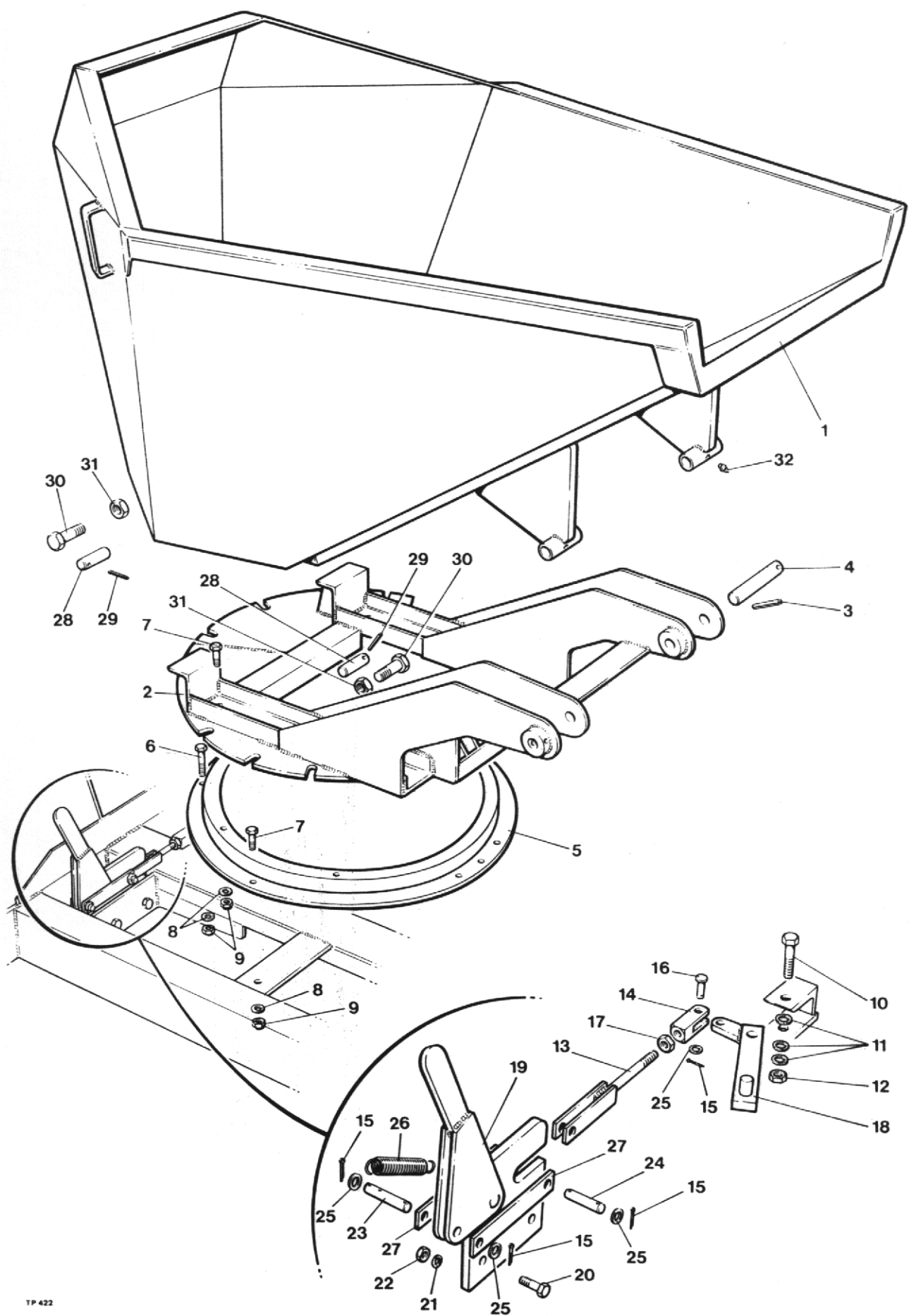
Item No.	Part No.	Description	Qty.
1	4-35-210	Skip .....	1
2	4-35-323	Frame .....	1
3	8S.3A	Bolt M8 x 25mm Long .....	4
4	4-35-226	Lower Ram Pin .....	2
5	5ST 100	Grease Nipple .....	2
6	4-35-29A	Tension Pin 5/16" dia. x 2 1/2" Long .....	2
7	5ST 84	Skip Pivot Pin .....	2
8	4-35-178	Ram Pin .....	2
9	8S.5E	Bolt Hex.Hd. M12 x 45 Long .....	8
10	7S.6	Locknut M12 .....	8
11	105S.5	Taper Washer M12.....	8
12	12S.6	Plain Washer M12 .....	8
13	20132.A01	Label "Dumper Safety" .....	1
14	DM 157	Label "Unropped Skip" .....	1
15	DM 154	Label "Winget" .....	1
16	7S.3	Nut M8 .....	4
17	10541.A01	Label "Payload" .....	1

## FORWARD TIP SKIP



Item No.	Part No.	Description	Qty.
1	40089.A01	Skip .....	1
2	435110A	Skip Ram Bolts } Kit 435110 .....	2
3	435110B	Skip Ram Nuts } .....	2
4	10541.A02	Label - "Payload" .....	1
5	20132.A01	Label - "Dumper Safety & Instruction" .....	1
6	DM 196	Label - "Lubrication" (Newage Axle) .....	1
7	DM 157	Label - "Unpropped Skip" .....	1
8	131S.3	Grease Nipple .....	2
9	DM 154	Label - "Winget" .....	2

Note: Separate skip panels can be supplied - Details on application.

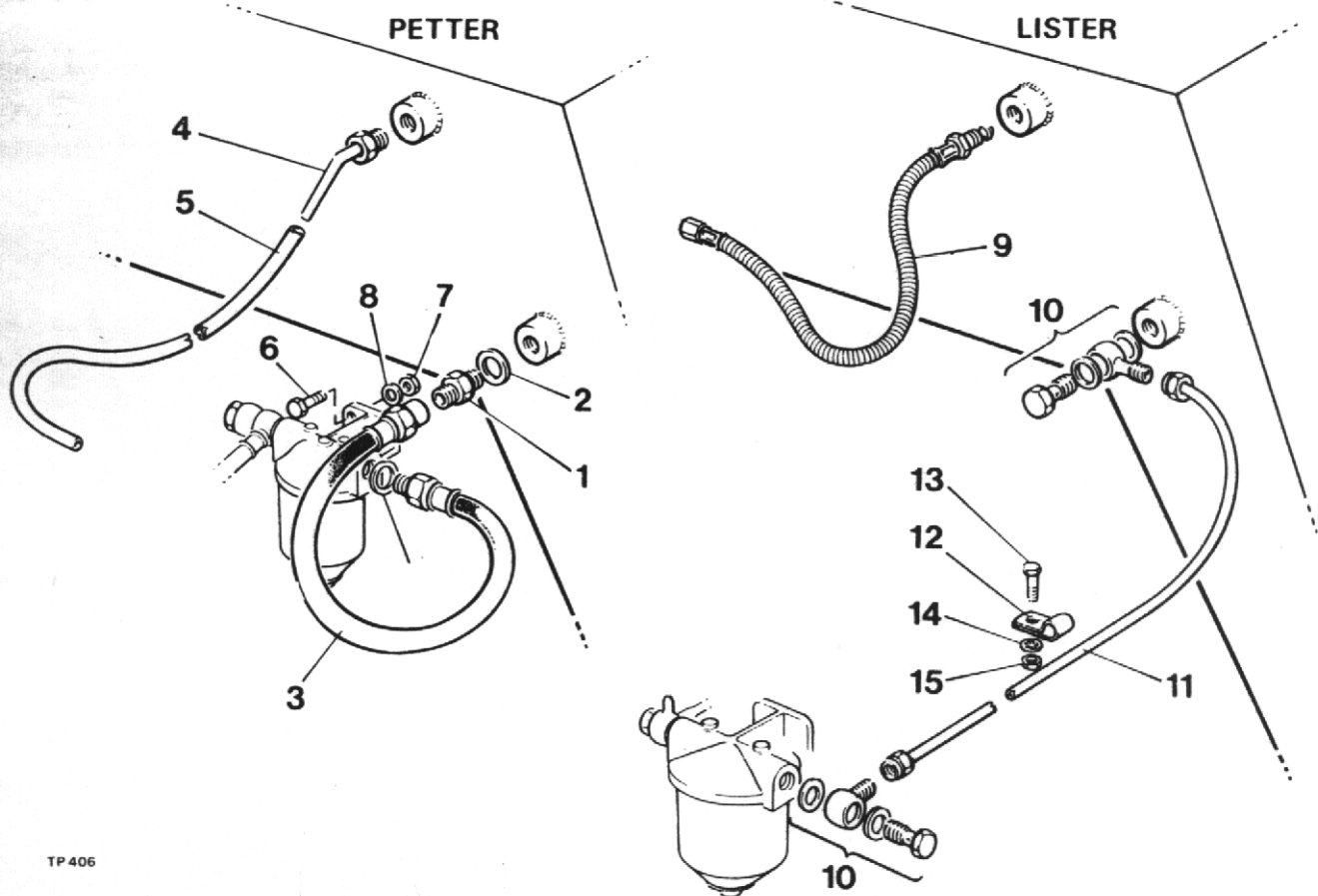


## ROTATING SKIP & FRAME

Item No.	Part No.	Description	Qty.
1	40115.A01	Rotating Skip .....	1
2	40116.A01	Rotating Skip Frame .....	1
3	54S.8S	Pin - Slotted Tubular .....	2
4	10522.A01	Pin - Pivot .....	2
5	ASE 197	Ring-Turtable .....	1
6	8S.5M	Bolt - Hex. Hd. M12 x 80 Long .....	2
7	8S.5D	Bolt - Hex. Hd. M12 x 40 Long .....	7
8	12S.6	Washer - Plain .....	9
9	61S.5	Nut - Self Locking - 'Binx' M12 .....	9
10	8S.6L	Bolt - Hex. Hd. M16 x 75 Long .....	1
11	12S.22	Washer - Plain .....	3
12	61S.6	Nut - Self Locking - 'Binx' M16 .....	1
13	10651.A01	Rod .....	1
14	C174-H	Clevis End .....	1
15	44S.3C	Pin - Split 1/8" dia. x 1" Long .....	5
16	10650.A04	Pin - Clevis .....	1
17	2S.5	Nut - Hex. Full 1/2" BSF .....	1
18	10649.A01	Catch .....	1
19	20214.A01	Lever & Bracket (complete) .....	1
20	8S.5C	Bolt - Hex. Hd. M12 x 35 Long .....	2
21	12S.6	Washer - Plain .....	2
22	61S.5	Nut - Self Locking - 'Binx' M12 .....	2
23	2ST-114	Pin .....	1
24	2ST-115	Pin .....	1
25	10S.4	Washer - Plain .....	5
26	C173B	Spring .....	1
27	2ST-112-5	Link .....	2
28	10739.A02	Pin - Cylinder Pivot (when fitted) .....	4
29	54S.7P	Pin - Slotted Tubular (when fitted) .....	4
30	4/35-110	Bolt-(Skip Ram) Hex. Hd. (when fitted) .....	4
31	74S.10	Nut - Half (Skip Ram) (when fitted) .....	4
32	131S.3	Grease Nipple .....	2

Note: Separate skip panels can be supplied - Details on application.

# FUEL SYSTEM

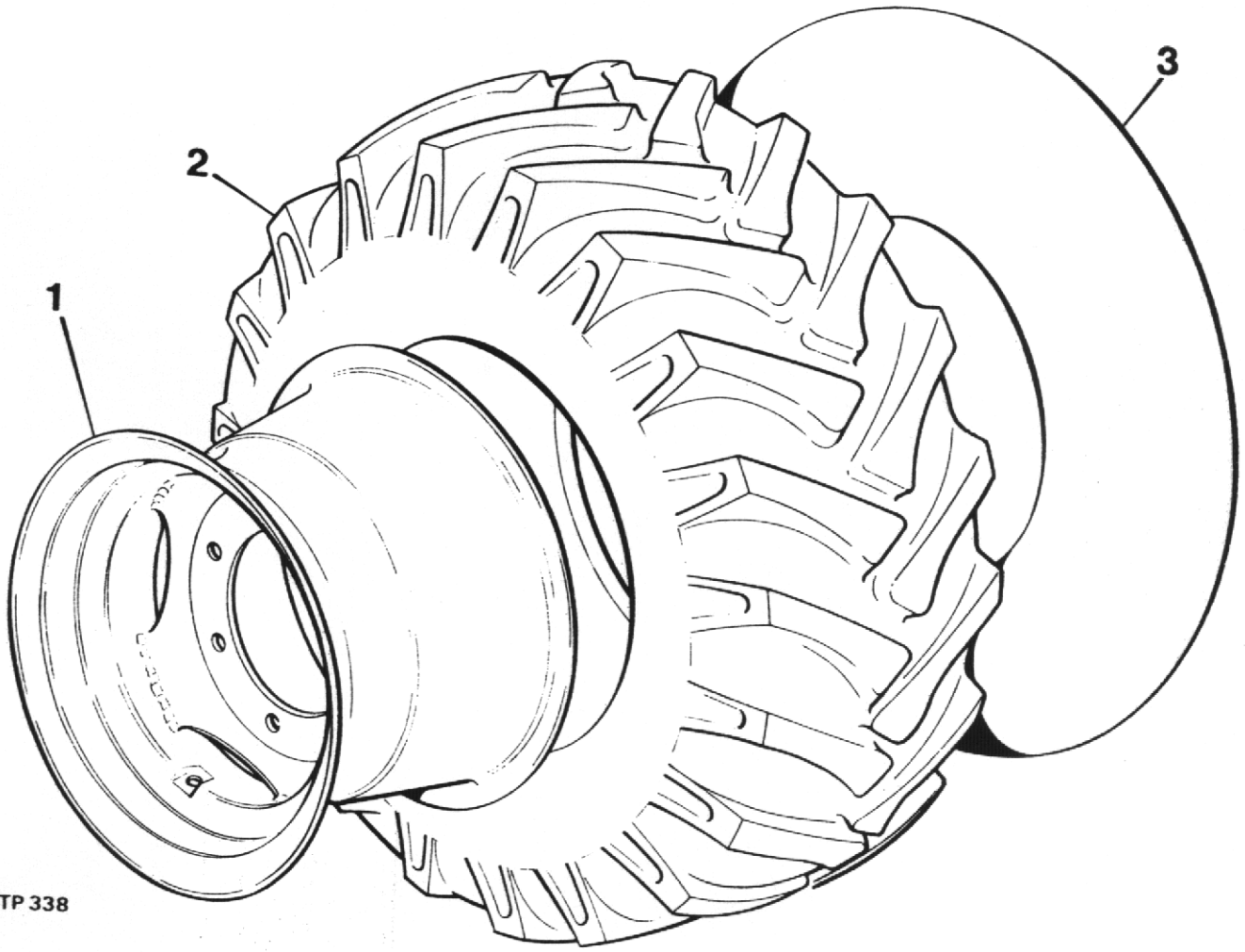


TP 406

Item No.	Part No.	Description	Qty.
1	4-60-189	* Stud Coupling - Flexible Pipe to Tank.....	1
2	4-35-364	* Washer - Flexible Pipe to Tank .....	1
3	10605.A01	* Flexible Pipe - Tank to Filter .....	1
4	10576.A01	* Union - Bleed off Tube to Tank .....	1
5	29S.8	* Bleed off Tube 30" Long.....	1
6	11S.2B	* Setscrew Hex. Hd. M6 x 20 Lg., Filter to Tank ..	2
7	72S.2	* Nut M6 - Filter to Tank .....	2
8	12S.2	* Washer - Plain M6 dia., Filter to Tank .....	2
9	10357.A04	+ Leak Back Flexible Pipe .....	1
10	117S.2	+ Banjo Coupling Assembly .....	2
11	29S.5	+ Pipe - Tank to Filter .....	1
12	10350.A01	+ Pipe Clip.....	1
13	64S.3	+ Setscrew Hex. Hd. M6 x 25 Lg.....	1
14	13S.2	+ Washer - Shakeproof M6 .....	1
15	65S.2	+ Nut Hex M6 .....	1

\* Petter Engines  
+ Lister Engines

## WHEELS AND TYRES

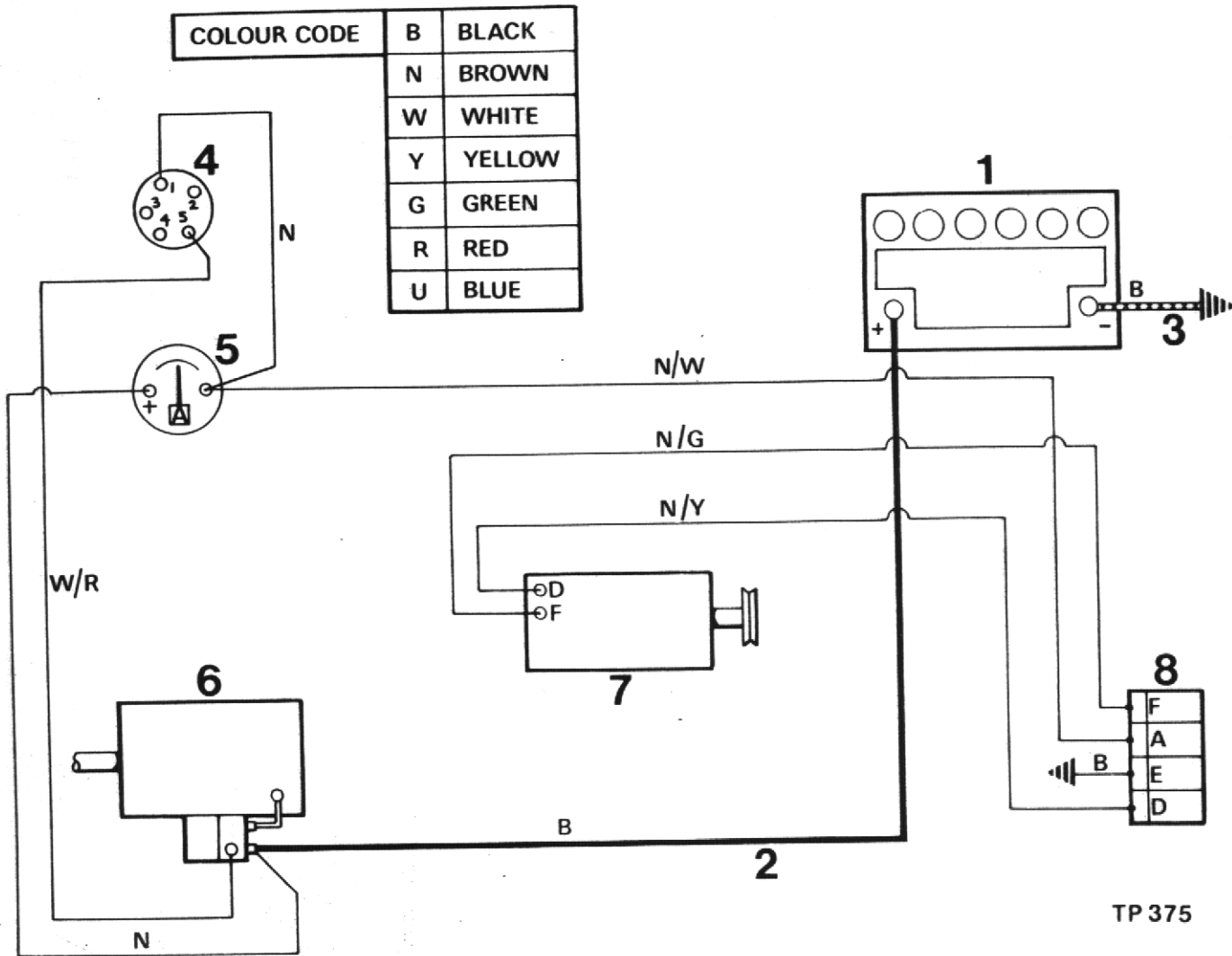


TP 338

Item No.	Part No.	Description	Qty.
	24S.25	L.H. Wheel complete .....	2
	24S.26	R.H. Wheel complete .....	2
1	30192.A03	Wheel .....	4
2	20S.8	Tyre 7.50 x 16 x 6 Ply .....	4
3	23S.3	Tube 7.50 x 16 .....	4
	10668.A01	Nut (not illustrated) .....	20

# WIRING DIAGRAM (ELECTRICAL SYSTEM)

(LISTER)



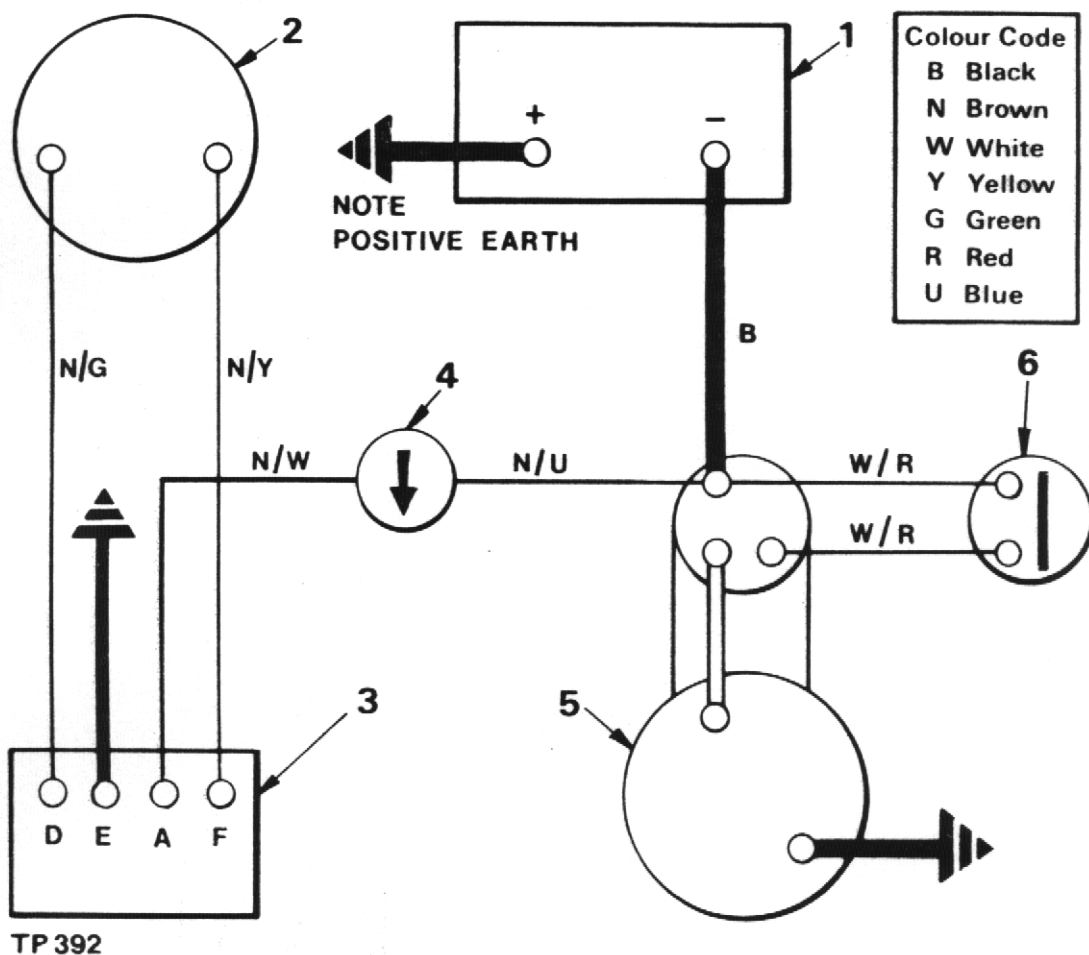
TP 375

Item No.	Part No.	Description	Qty.
1	109S.1	Battery .....	1
	109S.3	Battery (Alternative) .....	1
2	10227.A01	Positive Cable c/w End Fittings .....	1
3	10228.A01	Negative Cable c/w End Fittings .....	1
4	10614.A02	Switch c/w Keys .....	1
5	10612.A02	Ammeter .....	1
6	10613.A02	Starter Motor & Solenoid .....	1
7	10610.A02	Generator .....	1
8	10611.A02	Regulator .....	1
9	20105.A01	Wiring Harness Complete (Not Illustrated) .....	1
10	FSE 448	Adhesive Clip (Large) (Not Illustrated) .....	A/R
11	FSE 449	Adhesive Clip (Small) (Not Illustrated) .....	A/R



# WIRING DIAGRAM (ELECTRICAL SYSTEM)

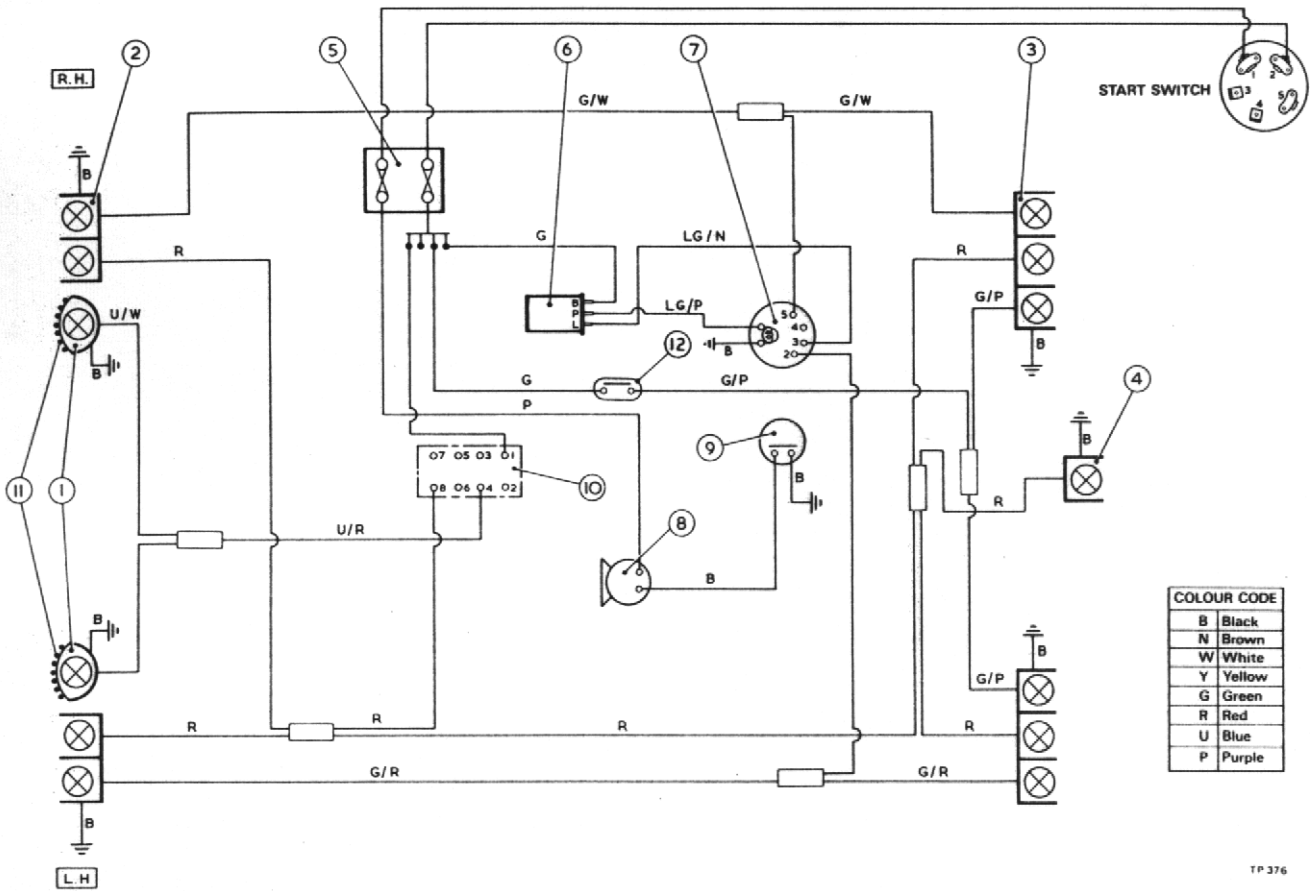
PETTER



Item No.	Part No.	Description	Qty.
	109S.1	Battery .....	1
1	109S.3	Battery (Alternative) .....	1
2	10610.A01	Dynamo .....	1
3	10611.A02	Regulator .....	1
4	10612.A02	Ammeter .....	1
5	10613.A01	Starter c/w Solenoid .....	1
6	10614.A01	Starter Switch .....	1
	201105.A02	Wiring Harness (Not illustrated) .....	1

# WIRING DIAGRAM (FULL ROAD LIGHTING KIT)

(PETER & LISTER)




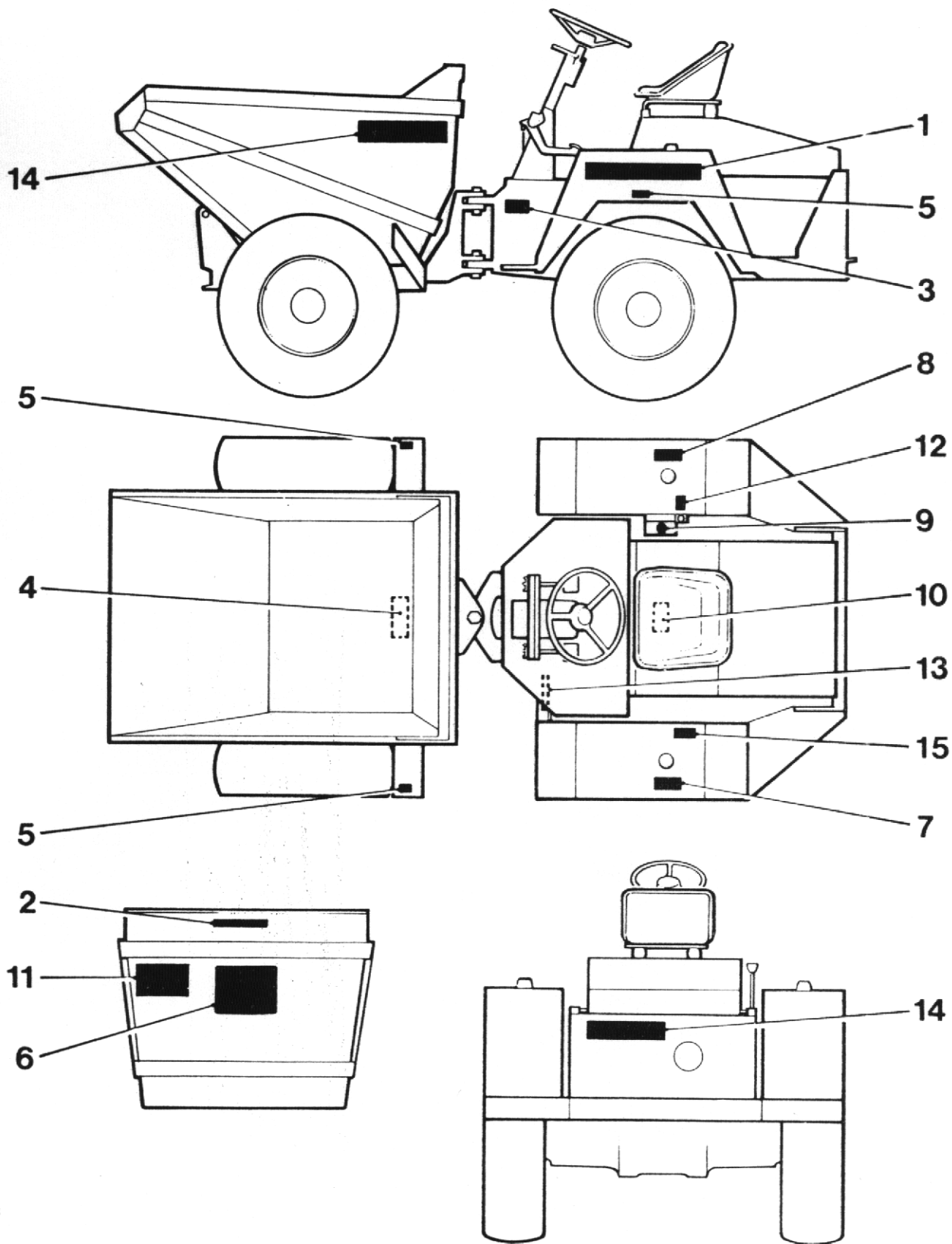
COLOUR CODE	
B	Black
N	Brown
W	White
Y	Yellow
G	Green
R	Red
U	Blue
P	Purple

TP 376

Item No.	Part No.	Description	Qty.
1	20013.A0112	Headlight .....	2
2	FSE 333	Sidelight/Indicator .....	2
	82S.3E	Screw 2BA x 3/4" Long .....	8
	85S.1	Nut, Self Locking 2BA .....	8
	12S.1	Washer .....	8
3	FSE 334	Rear Light/Indicator .....	2
	ESE 176	Rear Light Cowl Assembly .....	1
	82S.3E	Screw 2BA x 3/4" Long .....	8
	85S.1	Nut, Self Locking 2BA .....	8
	12S.1	Washer .....	8
4	10615.A01	Number Plate Light .....	1
5	10644.A01	Fuse Box .....	1
6	10616.A01	Flasher Unit .....	1
	82S.3C	Screw 2BA x 1/2" Long .....	1
	85S.1	Nut, Self Locking 2BA .....	1
	12S.1	Washer .....	1
7	10617.A01	Indicator Switch .....	1
	82S.7C	Screw 6BA x 1/2" Long .....	2
	85S.3	Nut, Self Locking 6BA .....	2
8	10618.A01	Horn complete with Bracket .....	1
9	10619.A01	Horn Button .....	1
	82S.7E	Screw 6BA x 3/4" Long .....	2
	85S.3	Nut, Self Locking 6BA .....	2
10	10620.A01	Light Switch .....	1
11	10216.A01	Stone Guard .....	2
12	10744.A01	Brake Switch .....	1

OPTIONAL EXTRAS

Item No.	Part No.	Description	Qty.
1	ESE.179-4 	Battery Tie Rods .....	2
2	7S.2	Nuts M.6 .....	8
3	ESE.178	Battery Clamp .....	1
4	30122.A01	Engine Cover Assembly .....	1
5	10447.A02	Instrument Panel .....	1
6	61.S9	Nut 'Binx' M.4 .....	4
7	10371.A02	Flexible Mounting .....	4
8	20139.A01	Battery Cover Plate .....	1
9	4-60-233-1	Label 'Negative Earth' .....	1
10	109S.1	Battery .....	1
11	10227.A01	Battery Cable (Positive) .....	1
12	10228.A01	Battery Cable (Negative) .....	1
13	10606.A01	Wheel Brace .....	1
14	10608.A01	Mirror Support Bracket .....	1
15	CSE.200	Horn .....	1
16	10607.A01	Licence Holder .....	1
17	30164.A01	Reversing Siren .....	1
18	10203.A02	Rear View Mirror .....	1



## LABELS

Item No.	Part No.	Description	Qty.
1	20128.A09	M/C Identification & Payload Label .....	2
2	10541.A02	Payload Label .....	1
3	DM 198	Steering Lock Warning .....	2
4	DM 157	Warning Label (Unropped Skip) .....	1
5	10540.A02	Tyre Pressure Label (35 p.s.i.) .....	4
6	20132.A02	Dumper Safety & Instruction Label .....	1
7	10546.A01	Diesel Fuel Label .....	1
8	10546.A02	Hyd. Oil Only Label .....	1
9	10284.A01	Dumper Return Label .....	1
10	10536.A01	Warning Label (Unropped Cover) .....	1
11	DM 197	Lubrication Label (Salisbury Axles) .....	1
12	ESE 236	Engine "Stop" Label .....	1
13	4-60-233-2	Positive Earth Label (Elec. M/c's only)(Petter).	1
	4-60-233-1	Negative Earth Label (Elec. M/c's only)(Lister).	1
14	DM 154	Winget Label - to be replaced by:- .....	3
15	10215.A02	Filter Instruction Label .....	1

## 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**