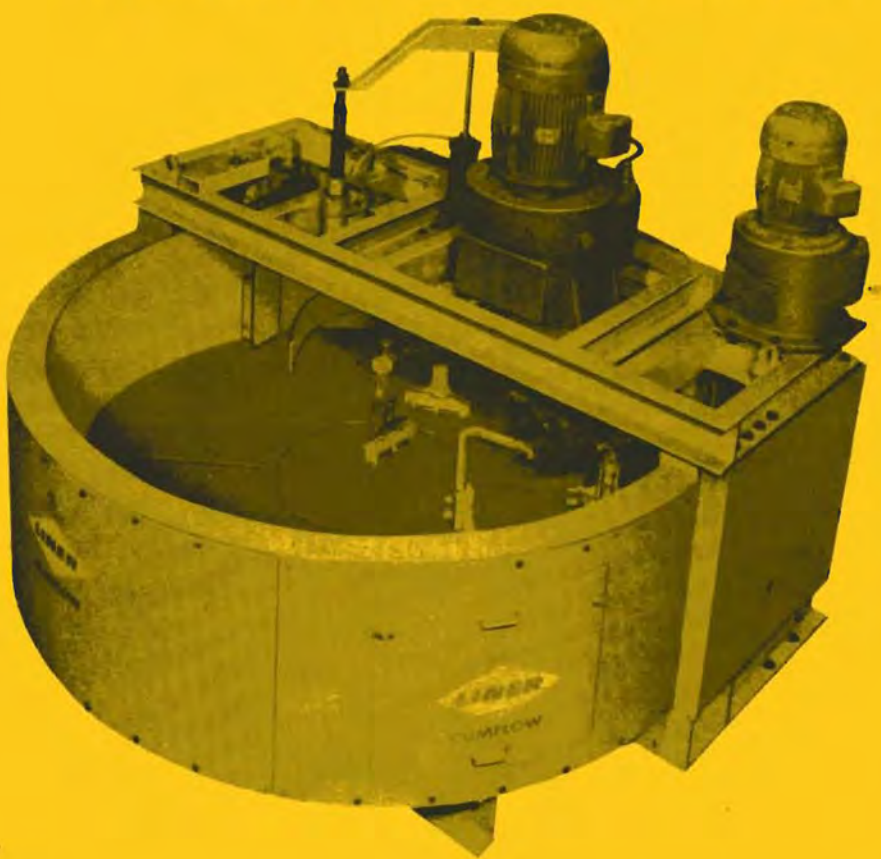
LINER

CUMFLOW

RP 1250

ROTATING PAN CONCRETE MIXER



INSTRUCTION AND SPARE PARTS MANUAL

IMPORTANT

The CUMFLOW is a high performance Mixer

The following precautions are necessary to obtain the best results and to avoid damage to the Mixing Star and Drive.

AGGREGATES:

Strict control of graded aggregates must be maintained.
Maximum size $1\frac{1}{2}$" (38 mm)

Oversize lumps of aggregate or rogue material must be prevented from entering the Pan.

MIXING STAR BLADES:

They are of a special shape and material to prolong wear life. They should not be modified in any way and only replaced by genuine 'LINERPART' spares.

A Daily check is advised to ensure that the Blades/Wearing Pieces are securely bolted and undamaged.

PAN RIM & BASE WEARING PLATES:

They must be replaced before excessive wear causes distortion.

MAXIMUM BATCH LOADS:

Under no circumstances should the Maximum Batch Loads quoted be exceeded nor should the Mixer be stopped and re-started when there is a mix in the Pan.

WARNING

THE MANUFACTURER ACCEPTS NO RESPONSIBILITY FOR ANY DAMAGE OR FAILURE RESULTING FROM OPERATIONAL MIS-USE OR MALPRACTICE.

Capacities:

Maximum batch capacity (in):	by volume:	1250 litres	44 cu.ft
	by weight:	1840 kg.	4050 lbs
Maximum batch capacity (out):		.76 cu.m	1 cu.yd
Maximum aggregate size:		38 mm	1½ ins

Mixer Frame:

Strongly constructed from welded steel channel.

Mixing Pan:

Steel base pan with central discharge door mounted on three wide track rollers and with 4 side centralising rollers. Pan rim, base and discharge door fitted with renewable heavy duty abrasion-resistant steel wearing plates.

Mixing Star:

Six blades positioned for two level mixing and also fitted with patented cast chromium carbide mixing blades to give long life.

Fixed Blade:

Heavy duty abrasion-resistant steel, spring loaded and positioned to scrape the pan side. Reversible when worn.

Discharge Blade:

Heavy duty abrasion-resistant steel, pneumatically operated in conjunction with the discharge door. The speed of descent is set on leaving the factory, but alternative settings can be obtained.

Power Units:

	50 Cycles		60 Cycles	
Geared Mixer Motor	103 r.p.m.	10 h.p.	103 r.p.m.	10 h.p.
Geared Star Motor	43 r.p.m.	20 h.p.	43 r.p.m.	20 h.p.
Loader Motor	1000 r.p.m.	15 h.p.	1200 r.p.m.	15 h.p.

Drives:

Pan: Geared electric motor with steel pinion driving a cast rack on the side of the mixing pan.

Star: Mounted directly onto geared electric motor

Speeds:

Speed of Pan	8.2 r.p.m.	
Speed of Mixing Star	44 r.p.m.	
Speed of Loading Hopper (50 cycles)	18.7 metres/min	61 ft/min
Speed of Loading Hopper (60 cycles)	22.3 metres/min	73 ft/min

Free Air Consumption (per batch at 80 p.s.i.) 126.5 litres 4.5 cu.ft

Weights (Unladen):

Without Loader	4840 kg.	10640 lbs
With Loader	6870 kg.	15120 lbs

Factories Act:

All gears are suitably guarded to comply with the relevant Factories Act.

INSTALLATION AND OPERATING INSTRUCTIONS

INSTALLATION:

On the arrival of the machine it is advisable to check that all the packages listed on the consignment note have been received.

An outline drawing and bolt hole plan is normally sent prior to the despatch of the machine and will enable preparations to be made for its installation. With the 'picture' of what the machine will look like when it is assembled, the ancillary equipment dismantled for transport can easily be identified. The individual parts are also marked and corresponding marks will be found on the machine as a further guide.

It is recommended that a concrete foundation of at least 2'0" square by 1'0" thick (to take 3/4" dia. foundation bolts - not supplied) should be provided for each leg of the support structure and runway when fitted. When the machine is supplied without a supporting structure it should be mounted on supports of sufficient strength and rigidity to prevent undue vibration when the machine is working. When making provision for a loading hopper pit it is strongly recommended that the pit is concreted out so that it can easily be kept clean and free from any build up which could prevent the bottom limit switch from operating correctly.

Before completing the installation check that the main mixer frame is level, with a spirit level. Packings should be inserted as required under the structure legs or main frame. The packings under the mixing pan roller brackets are set during manufacture and must not be disturbed under any circumstances.

Check that the pan is seated on the rollers and that the gear drive is in mesh. Also check that all the blade clearances are in line with the maintenance instructions.

On connecting to the power supply the wiring diagram must be referred to. A check that the wiring is correct is the mixing pan, mixing star and loader winch rotations. The mixing pan and mixing star rotate anti-clockwise when looking from the top and the loader winch rotates clockwise when looking from the rope drum end opposite the gearbox and when the 'RAISE' button is pressed. It is advisable to mount the starters away from the machine on supports free from vibration. The loader push-button control station can be fitted in any convenient position.

The 40 gallon 'Invarac' Water Tank is fitted with a $1\frac{1}{2}$" bore hose inlet connection. This will operate at all pressures up to 100 p.s.i. Alternative inlet valves to suit very low pressures are available if required.

A supply of compressed air at 80 p.s.i. is required when the discharge door and water tank (when fitted) are controlled by pneumatic cylinders. The inlet for the connection from the air line is tapped 1/2" B.S.P. A drop in pressure will cause incorrect operation of the door and water tank ram.

When wiring the air control valves refer to the wiring diagram in the control panel and make sure that the door control valve solenoid is energised only when the control switch is in the 'DOOR OPEN' position.

OPERATING THE MACHINE:

Before starting production the following points should be checked :-

(1) that there is oil in (a) the Pan Drive Gearbox
(b) the Star Drive Gearbox
(c) the Loader Winch Gearbox (when fitted)
(d) the Air Line Lubricator (situated in the control valve box).

(2) the Mixing Pan should be clear of loose nuts, bolts, spanners etc. as these will damage the fingers and blades.

(3) check that the Discharge Door and Discharge Blade are operating correctly.

(4) check that the blade clearances are correct and if necessary adjust, in line with the maintenance instructions.

(5) check that the limit switches on the loader stop the Loading Hopper in the required positions at the top and bottom of the runway.

(6) check that the Water Tank is set to the required amount and is filling up to this level. (see later page for further information on Water Tank operation).

(7) when Weigh Gear is fitted check that the setting arrangements and lubrication requirements have been carried out. (See the Salter List for details).

LOADING:

NEVER EXCEED THE MAXIMUM CAPACITIES QUOTED IN THE SPECIFICATION

IMPORTANT:

After each mix the contents of the pan must be completely discharged before attempting to close the discharge door. At the end of each period of operation the mixing pan, mixing blades, discharge blades and fingers, discharge chute, discharge door and seating must be washed down to prevent concrete setting on them and so impairing the efficiency of the machine.

SALTER WEIGHER

(1) Ensure the dashpot is filled with S.A.E. 140 Oil.

(2) Ensure the pit is free from obstructions that may result in the Hopper not reaching the bottom limit switch.

(3) Setting the Weigher to Zero:

The Hopper should be lowered until the limit switch operates (i.e. above the Hopper stops), then lowered onto the Hopper stops by means of the rope tension release switch until the Hopper rope is slack, if not, the Weigher will not register a true reading. The dial should read zero when this has been done, if not, adjust the pointer by means of the zero adjusting nut on the top of the dial head. (i.e. Item 1).

(4) Daily:

Before weighing, check the pointer of the dial head for zero position. If the pointer isn't exactly on zero, check to see if the Hopper and Weighbridge have got free play and, if necessary, clean the Hopper or Weighbridge. If zero cannot be obtained, adjust by means of the zero adjusting nut on top of the dial head. (i.e. Item 1).

(5) If the dial reads heavy or light at full load, adjustments can be made by moving the adjustable knife edge. N.B. ! ! THIS ADJUSTABLE KNIFE EDGE IS SET IN OUR WORKS AND SHOULD ONLY BE MOVED IF THE ABOVE INSTRUCTIONS (i.e. 1 - 4) HAVE BEEN CARRIED OUT WITHOUT RESULT.

(6) Monthly:

Clean the knife edge abutements by means of a brush and grease them thoroughly with Mobilex No. 2 Grease.

(7) Every Three Months:

Free the dashpot cylinder securing nuts at the bottom of the cylinder and remove the dashpot cylinder cap (Item 12). Remove the dashpot cylinder (Item 15), clean out the old oil and refill with new oil S.A.E. 140. Take care when removing the dashpot cylinder (Item 15) from its position, as it must be replaced in the same position.

WORKING INSTRUCTIONS FOR
'INVARAC' 40 GALLON WATER TANK

TO DISCHARGE IN STAGES: When tank is used for part discharge (i.e. not a complete discharge in one) slacken the wing nut so that release lever (Item 51) is slack, then use discharge lever (Item 47) for releasing water. When tank has emptied, release lever must be depressed before any water can enter tank. (Just a touch is necessary).

N.B. It is necessary to pull discharge lever (Item 47) right down for first discharge. This locks the inlet valve in the 'shut off' position and thereafter the lever can be operated without pulling it to its full extent, i.e. the lever controls the amount of water released.

COMPLETE DISCHARGE: Lock release lever (Item 51) in down position by means of wing nut.

METHOD OF OPERATION: Set indicator to quantity of water required and discharge by means of lever (Item 47) at tank base. The lever must be pulled right down and held until the water is discharged. This action shuts off the inlet valve and stops water from entering the tank.

For accurate quantities, measure the water discharged and adjust by means of handle (Item 12) (10 turns of handle are equal to 1 Gall. $1\frac{1}{4}$ turns to 1 Pint). Once set, each batch of water will be the same.

This tank is especially designed for accurate water measurements and will operate satisfactorily on water mains pressure up to 100 p.s.i.

INDICATOR:	10 Turns	1 Gall	(4.54 Litres)
	$1\frac{1}{4}$ Turns	1 Pint	(0.568 Litres)
	1 Turn	1 Pound	(0.454 Kilos)
CAPACITY:	40 Gall	(182 Litres)	Maximum
	4 Gall	(18 Litres)	Maximum

THE ABOVE INFORMATION APPLIES TO IMPERIAL GALLONS ONLY

INSTALLATION INSTRUCTIONS AND SETTING OF THE MULTI HYDROBOT

INSTALLATION:

The HYDROBOT is connected up as shown in the diagram. A cable with plug attached is taken from the water valve solenoid and plugged into the socket marked valve. A cable is then led from the probe fitted inside the pan, to the terminal marked ELECT. An earth wire is then taken from the earth terminal on the box to a suitable earthing point on mixer. Finally, connect the HYDROBOT to a mains supply of 200/250 volts, the consumption of the unit is only 10 WATT and should be left on continuously.

SETTING:

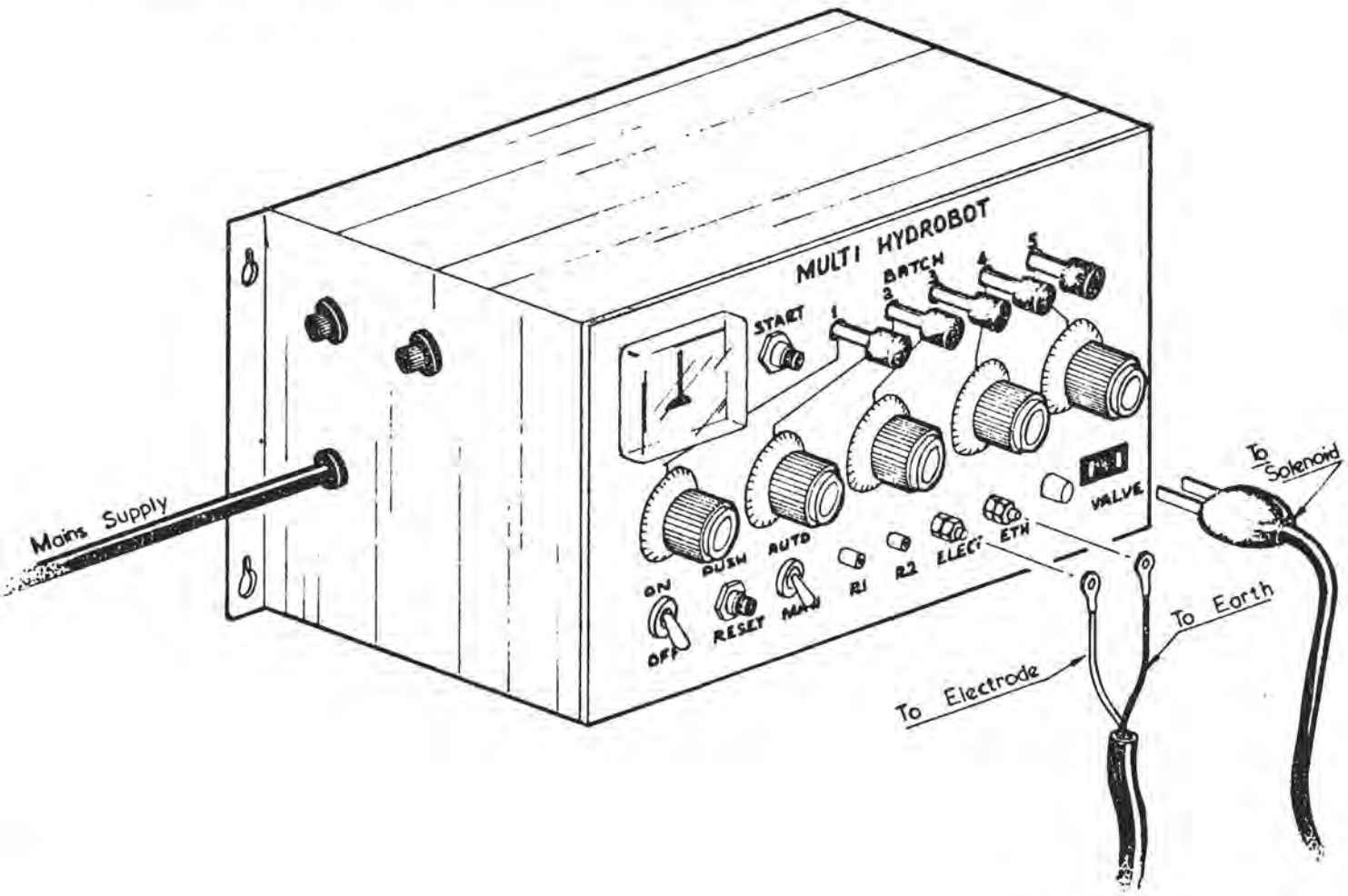
Make the first batch by manually wetting the mix. When the mix is correct adjust the dial marked BATCH 1 until the indicator needle is in the centre of the 'MIX RIGHT' zone. Each dial is set in the same way for different water cement mixes on subsequent batches. Put the relevant switch to the AUTO position in order to duplicate batches.

When mixing lightweight aggregates, it may be desirable to add pre-wetting water manually through a larger valve, or if full automatic pre-wetting is required, a second Hydrobot will do this.

The Hydrobot can be remotely controlled by joining terminals R_1 and R_2 with an ordinary door bell button.

All exposed terminals on the face of the Hydrobot are at a very low voltage and there is no danger of electric shock.

The Hydrobot is fully transistorized and there are no valves to replace. Servicing of the unit will rarely, if ever, be needed.



MAINTENANCE AND LUBRICATION:

NOTE ! ALWAYS MAKE SURE THAT THE APPARATUS IS 'DEAD' BEFORE COMMENCING MAINTENANCE.

DAILY: Using Shell Alvania Grease 2 (or equivalent) grease the following points -

Pan Locating Rollers	4 Points)
Pan Supporting Roller Spindles	3 Points) On Panel
Discharge Door Cylinder Trunnion	1 Point)
Discharge Blade Lifting Gear Brackets	2 Points
Mixing Blade Finger Bearings	3 Points
Fixed Blade Finger Bearings	1 Point
Loading Hopper Rollers	2 Points

Inspect and top-up if necessary -

Air Line Lubricator. Use Shell Tellus 27 (or equivalent)

WEEKLY: Inspect and top-up if necessary -

(1) 50 cycle Star Gearbox. Use Shell Macoma 275/S.A.E. 140 E.P.
60 cycle Star Gearbox. Use Shell Type H Special Gear Grease

(2) 50 cycle Pan Drive Gearbox. Use Shell Macoma 275/S.A.E. 140 E.P.
60 cycle Pan Drive Gearbox. Use Shell Type H Special Gear Grease

(3) Loader Winch Gearbox. Use Shell Vitrea 70 or Macoma 75

Inspect and Adjust -

(1) Pan Gear and Pinion - Grease with Shell Cardium Compound F (or equivalent) as required.

(2) Adjust Star Blades, Fixed Blades and Discharge Blade to the following settings, also make sure that Blade Fingers are free in their bearings and that the springs are clear of obstructions.

Mixing Blade: 1/8" (3 mm) clear of pan base. Adjust by moving the blade down its finger.

Discharge Blade: Just touching pan base when finger bridge is resting on stop sleeves. Adjust by moving bridge up or down fingers.

Fixed Blade: 1/8" (3 mm) clear of pan base and just touching pan rim. Adjust by moving hinge brackets along its slots and blade up or down its fingers. Re-set spring to 4" overall length after setting blade.

(3) Loading Hopper Wire Rope - clean off grit etc. and inspect for broken strands. Clean and apply a suitable rope dressing as British Ropes P.J.S. Lubrication.

(4) 'Invarac' Water Tank. Clean and grease the indicator screw spindle. Adjust and grease the chain. Grease the centre spindle square at the top of the tank.

MONTHLY: Inspect:

(1) All blades for wear replace when worn.

(2) Pan rim, base and door wear plates - replace when worn.

(3) Pan Roller Bearings - replace if necessary

(4) Pan Door Bearings - replace if necessary

(5) Pneumatic system for leaks - repair or replace damaged parts.

(6) Pneumatic Cylinders. Make sure that the door cylinder piston rod is at the end of its travel when the discharge door is just home in its seating.

CAUTION: BEFORE WORKING UNDER LOADING HOPPER, REST HOPPER ON SAFETY BOLTS. DO NOT FORGET TO REMOVE THESE BOLTS BEFORE RE-STARTING THE MACHINE

(Item 11 on arrangement of Runway Page 36).

LOADER MAGNETIC BRAKE:

Adjust if necessary, to the following instructions :-

Mounting:

Set the brake so that the horizontal centre-line of the shoe corresponds with the centre-line of the brake wheel shaft and the shoe pivots are equally spaced from the vertical centre-line.

Installing:

Slacken back equalising screw (Item 40) Slack nut (Item 31) and adjust screw (Item 29) to give required braking torque.

WARNING : The end of the adjusting screw (Item 29) must always be visible in the hole at the end of the adjusting nut (Item 32).

Set nuts (Item 31) so that contact is made with the load spring block in the shoe lever when solenoid plunger has moved through half its stroke. Once properly set, this setting should not be altered. With solenoid plunger right down, set equalising screw (Item 40) to give equal friction lining clearances.

Tighten locknuts (Item 31 & Item 40) and be sure that the load spring bracket is in place.

Check adjustments frequently and lubricate brake shoe pivots. To adjust for wear, screw in adjusting screw (Item 29) until the adjusting nuts are clear and only touch lever (Item 27) when plunger is depressed through half its stroke.

When new linings are fitted, repeat all adjustments.

Orders and enquiries should always state full description of parts required. The serial number on the brake should always be quoted.

ANNUALLY:

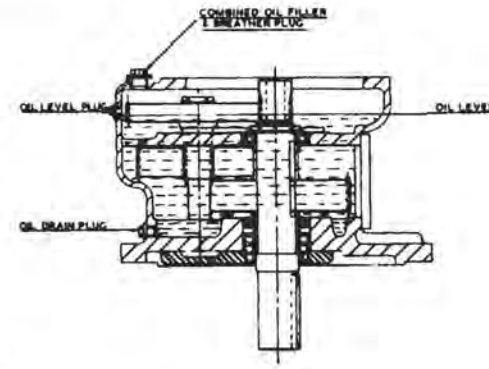
Air Line Lubricator:

1. Depressurise the unit, drain oil from reservoir.
2. Remove top cover and gasket (12).
3. Inspect poppet valve '0' ring (13) and replace if badly worn.
4. Replace top cover and renew gasket (12).
5. Release adaptor and remove bottom cover, reservoir and '0' rings.
6. As it is impossible to ensure the correct setting of the jet screw without calibration, we recommend that the jet screw is not removed and a clean high pressure air line is connected to the bottom of the oil pick up tube to ensure that the jet is clear.
7. Clean filter (11) with paraffin oil after removal from pick-up tube. Before replacing filter make sure that the bore of the pick-up tube is clean. This is very important.
8. Clean reservoir with paraffin oil or weak detergent. DO NOT CLEAN WITH ANY TYPE OF DEGREASING FLUID OR WITH CARBON TETRACHLORIDE.
9. Replace reservoir and bottom cover using new '0' rings (10).
10. Tighten adaptor.

Worm Reduction Gear Unit:

Drain and clean out the gear case and refill with Shell Vitrea Oil 55 or Macoma 75 ~~75~~ 90 When running conditions are severe this procedure should be adopted more frequently. (Capacities - 15 Imperial Pints : 8.6 Litres).

SPECIAL MAINTENANCE INSTRUCTIONS FOR PAN AND STAR DRIVE MOTOR UNITS



50 cycles: After 500 running hours thoroughly drain and clean out gearbox and refill with new oil (Shell Macoma 275/S.A.E. 140 E.P.) approximately 17.6 Litres (3.7/8 Gallons) for the Pan Motor and 24.75 Litres (5.1/2 Gallons) for the Star Motor. Maintain the correct oil level and it is advisable to drain, clean and refill with fresh oil every twelve months, or more often if running conditions are particularly severe.

60 cycles: Under normal service conditions, the grease should be changed after approximately 8,000 operating hours but after not more than two to three years. The grease can be easily changed after removing the mounting bolts of the gearbox.

The old grease can be easily removed either by flushing with hot water or by washing with kerosene or some other grease solvent. All traces of grease solvent must be thoroughly removed before the unit is reassembled.

Gear units are provided with grease filler and drain plugs to facilitate inspection and changing of the grease during operation without dismantling the gear motor. First, a suitable non-corrosive flushing oil (for example SHELL Carnea Oil 25 or TEXACO (CALTEX) Regal Oil AZ R + O, but not kerosene or trichlorethylene) should be poured into the gearbox, the ratio of grease to oil being approximately 1 : 1 (see also greasing instructions). Then operate the unit under no-load conditions until mixing and heating render the lubricant sufficiently fluid to be drained or removed by a suitable lubricant pump. The residue of old grease should then be removed by flushing, most conveniently by alternating the directing of rotation and by once again operating the gear drive under no-load conditions. All traces of the flushing oil must be drained off or removed by pumping before the new grease is filled into the gearbox.

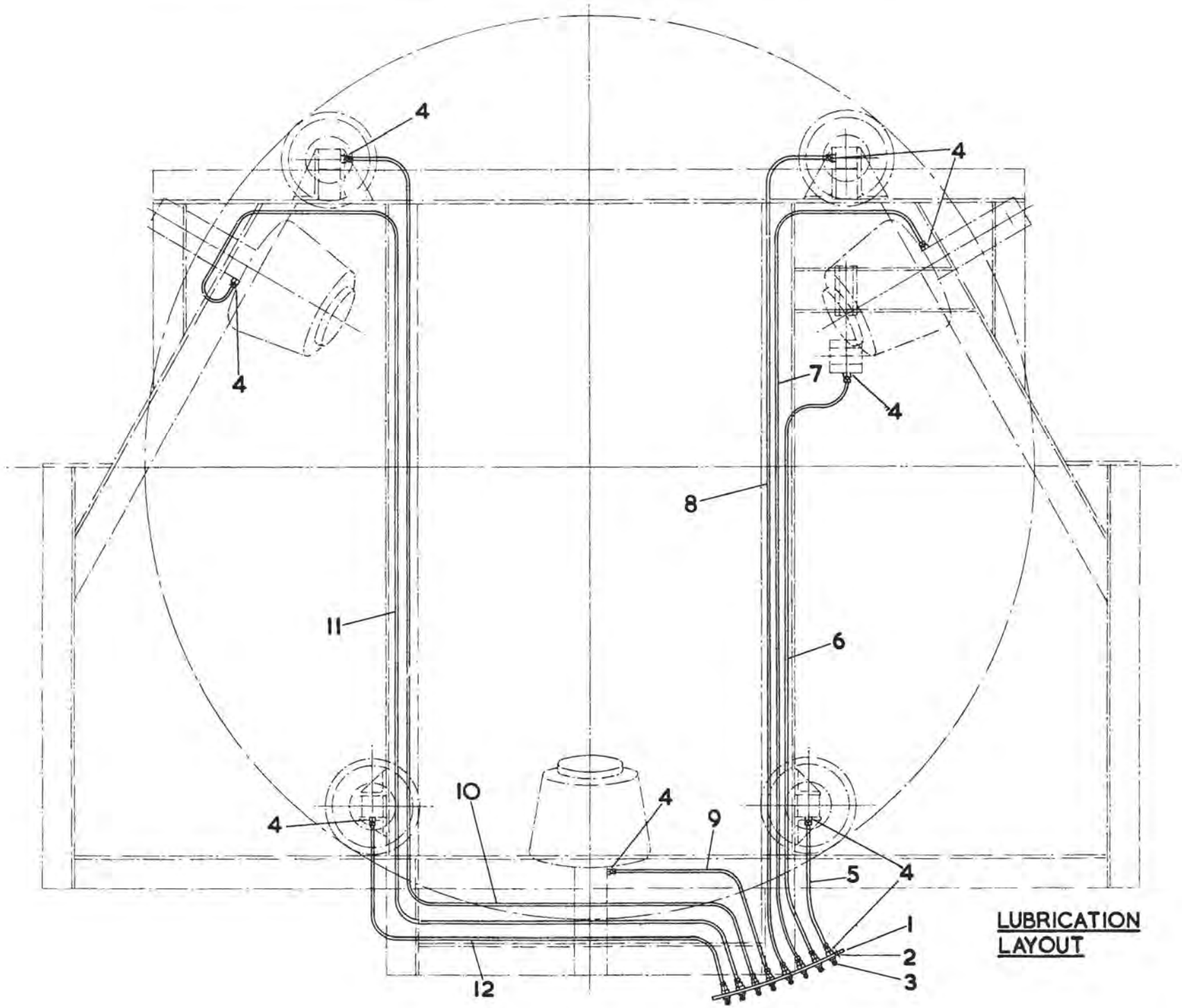
The SHELL Type H special gear grease has been found most suitable for lubricating the gear unit.

If the SHELL Type H special gear grease is not available, other semi-fluid gear greases such as specified in a separate instruction sheet can be used.

Untried grease should not be used as this involves the danger of the gears running dry or causing other defects.

When changing the grease, it is essential that the amount of grease recommended below be maintained for the particular type of gear motor. Ensure adequate lubrication of the upper gears by manually turning the output shaft a few times when you fill the gearbox.

NOTE: FOR QUANTITIES SEE INSTRUCTION PLATE ON MOTOR.

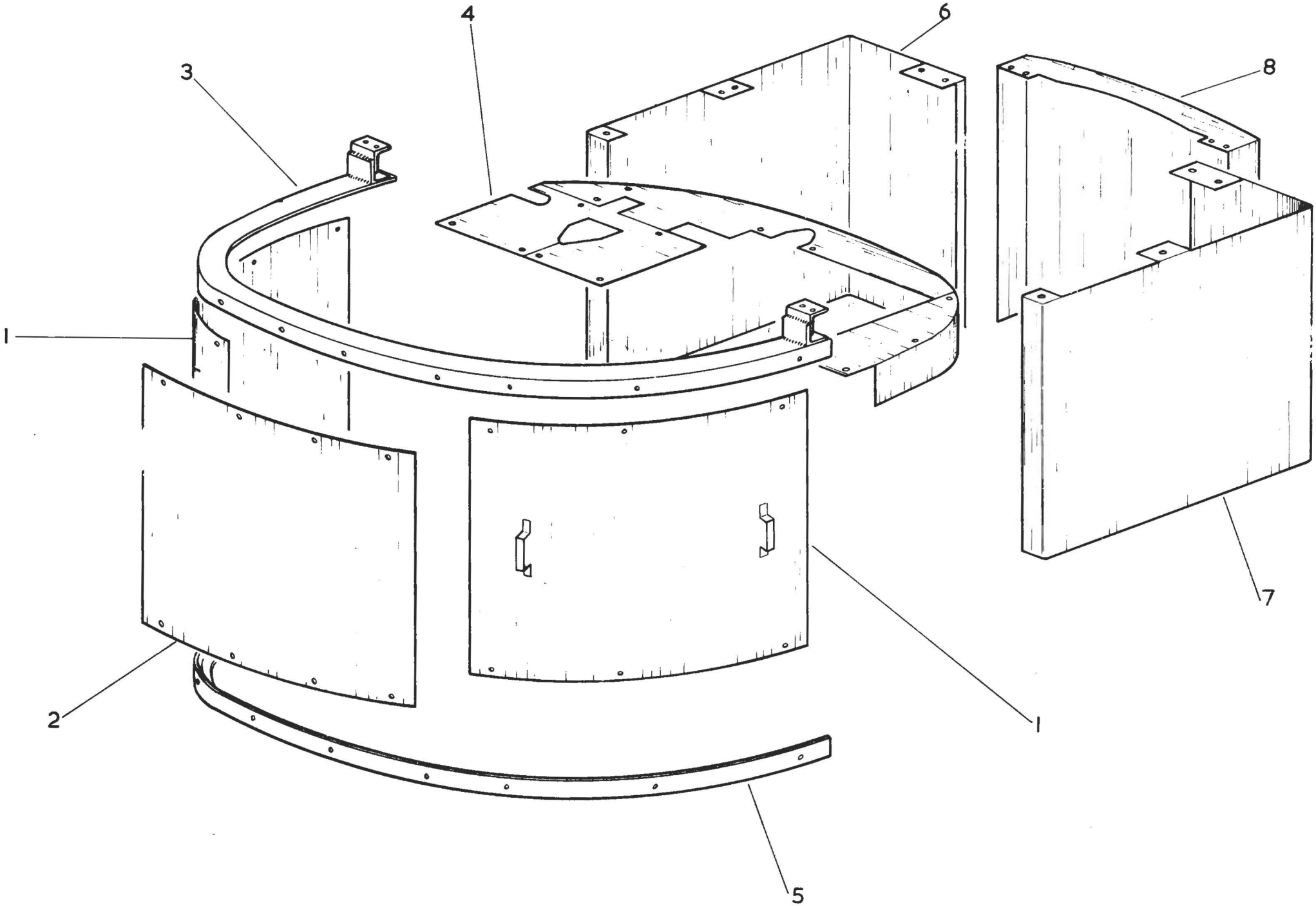


LUBRICATION
LAYOUT

I 31/0057

Item No.	Part No.	Description	Item No.	Part No.	Description
1	3-54-0328	Lubrication Panel	7	2-51-0415	Bundy Tube) *
2	1-24-0045	Bolt/Aerotight Nut/Spring Washer	8	2-51-0415	Bundy Tube) *
3	1-28-0007	Grease Nipple	9	2-51-0415	Bundy Tube) *
4	1-51-0012	Straight Connector	10	2-51-0415	Bundy Tube) *
5	2-51-0415	Bundy Tube) *	11	2-51-0415	Bundy Tube) *
6	2-51-0415	Bundy Tube) *	12	2-51-0415	Bundy Tube) *

* Bundy Tube supplied in 10'0" lengths - order fittings as required.

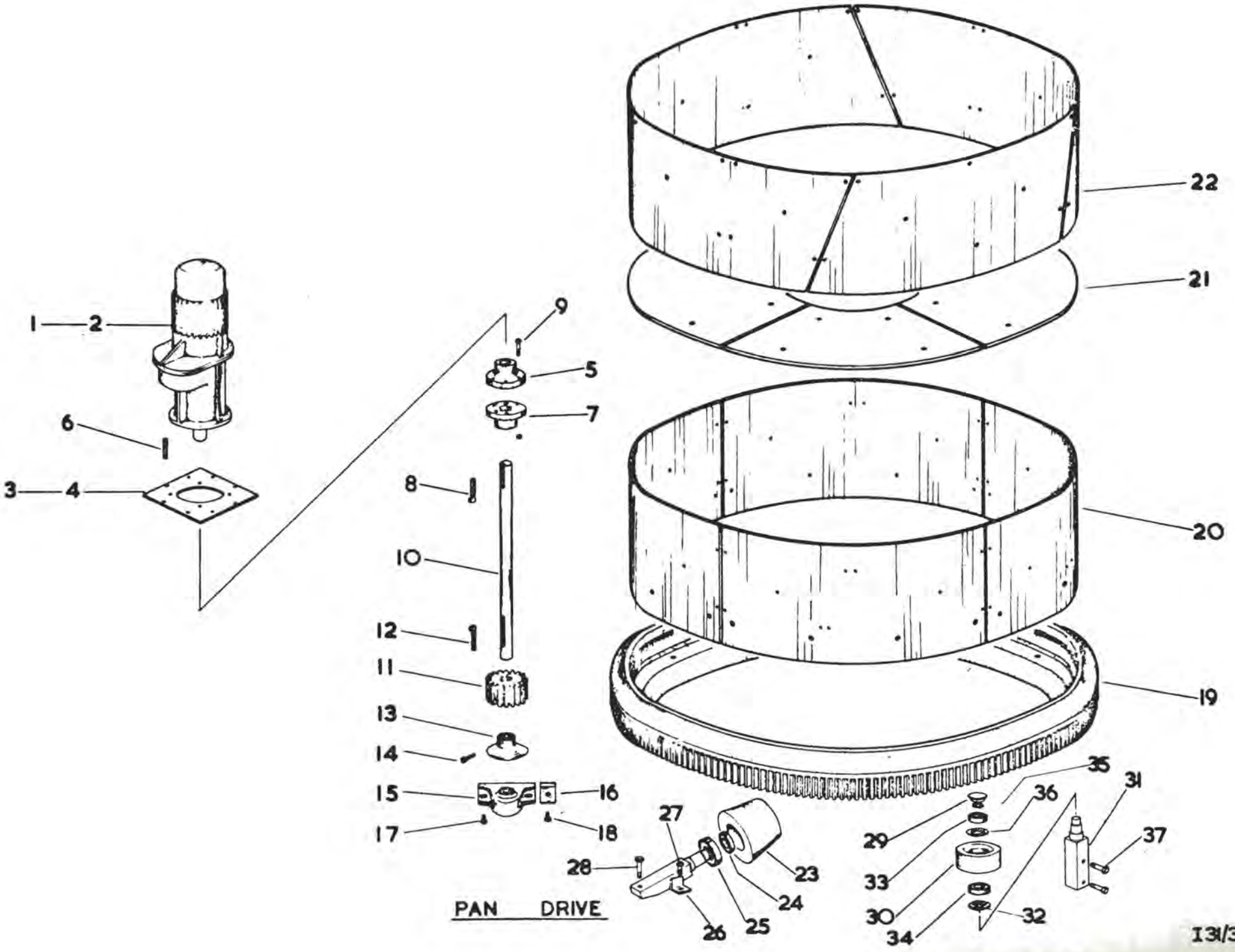


ARRANGEMENT OF GUARDS

I31/32/0064

Item No.	Part No.	Description	Item No.	Part No.	Description
1	3-54 0329	Pan Guard	*	1-24-0086	Securing Bolts
*	1-24-0285	Securing Bolts	6	3-54-0216	Pan Rear Guard (Air Gear Side)
2	3-54-0330	Pan Guard (Centre)	*	1-24-0084	Securing Bolts
3	3-54-0213	Pan Guard Top Rim	7	3-54-0215	Pan Rear Guard (Motor Side)
*	1-24-0085	Securing Bolts	*	1-24-0084	Securing Bolts
4	3-54-0212	Splash Guard Complete	8	3-54-0021	Pan Rear Guard (Centre)
*	1-24-0085	Securing Bolts	*	1-24-0084	$\frac{1}{2}$" BSW x $1\frac{1}{4}$" long Bolts
5	3-54-0020	Pan Guard Bottom Rim	*	1-24-0085	$\frac{1}{2}$" BSW x $1\frac{1}{2}$" long Bolts

* Not Illustrated.

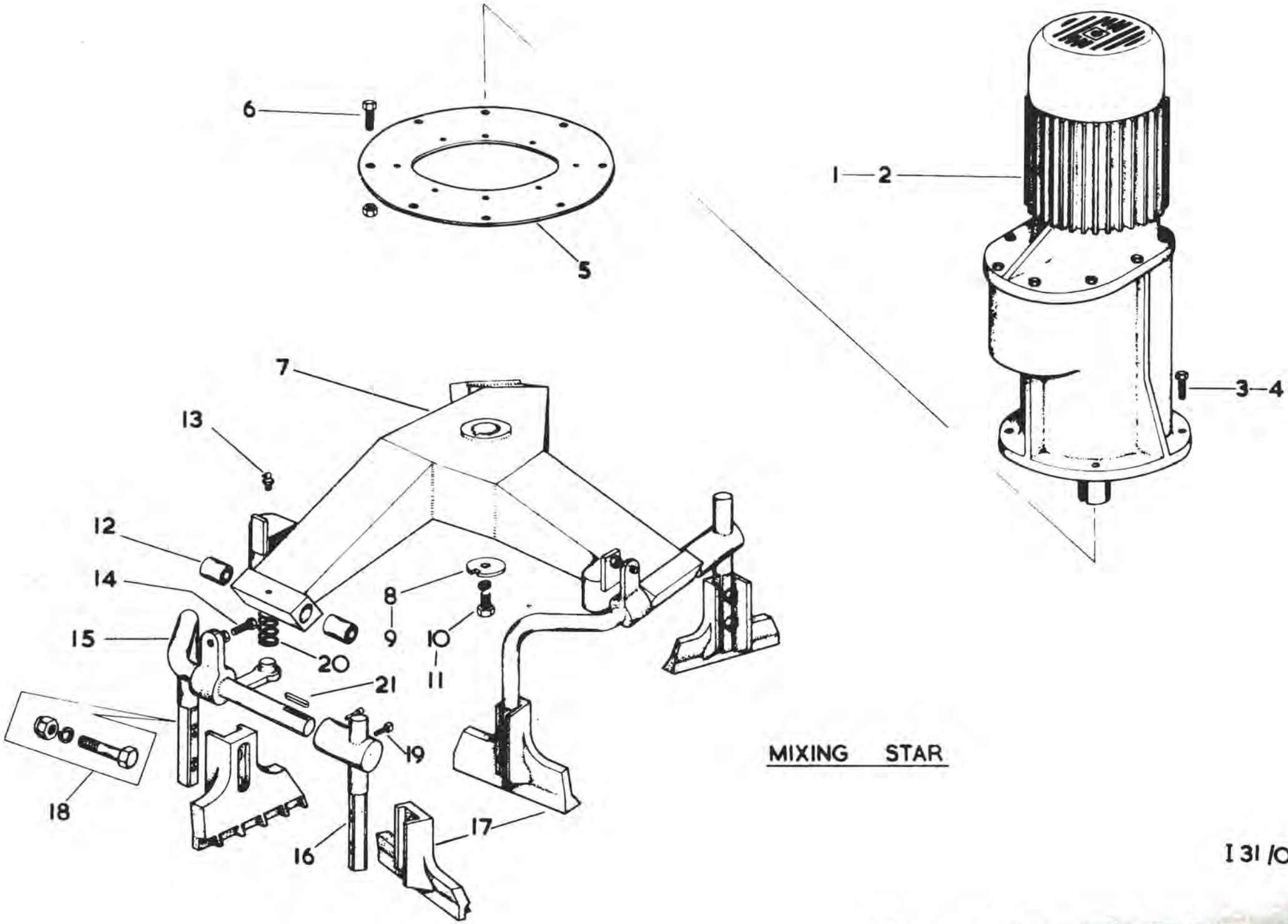


PAN DRIVE

I31/32/0045

Item No.	Part No.	Description	Item No.	Part No.	Description
1	1-67-0003	Geared Motor (10 H.P. 50 Cycle)	21	3-53-0047	Pan Base Wear Plate
2	1-67-0001	Geared Motor (10 H.P. 60 Cycle)	*	3-53-0044	Pan Base
*	1-24-0118	Motor Fixing Bolts (50 Cycle)	*	1-24-0442	Pan Base Fixing Bolts
3	3-53-0040	Motor Packing (50 Cycle)	*	1-24-0439	Pan Base Wear Plate Bolts
*	1-24-0086	Motor Fixing Bolts (60 Cycle)	22	3-53-0048	Pan Rim Wear Plate
4	3-53-0041	Motor Adaptor Plates (60 Cycle)	*	1-24-0432	Pan Rim Wear Plate Bolts
*	1-24-0112	Adaptor Plate Bolts (60 Cycle)	*	1-24-0440	Pan Rim Fixing Bolts
5	2-21-0004	Motor Coupling	23	2-21-0002	Pan Supporting Roller
6	1-32-0061	Motor Coupling Key	24	1-15-0026	Pan Roller Bearing (Small)
7	2-21-0005	Drive Shaft Coupling	25	1-15-0131	Pan Roller Bearing (Large)
8	1-32-0028	Drive Shaft Coupling Key	26	3-26-0062	Pan Roller Spindle
9	1-24-0577	Coupling Bolts	27	1-24-0113	Bolt
10	3-52-0007	Drive Shaft	28	1-24-0149	Bolt
11	1-46-0004	Drive Pinion	29	1-58-0001	Cover
12	1-32-0030	Drive Pinion Key	30	2-21-0003	Pan Locating Roller
13	3-26-0031	Drive Shaft Bearing Cover	31	3-52-0006	Pan Locating Roller Spindle
14	1-24-1179	Cover Bolt	32	3-49-0073	Washer
15	1-15-0936	Drive Shaft Bearing	33	1-15-0125	Bearing (Small)
16	3-53-0039	Drive Shaft Bearing Stop	34	1-15-0126	Bearing (Large)
17	1-24-0114	Bearing Fixing Bolts	35	1-24-0007	Retainer
18	1-24-0113	Stop Fixing Bolts	36	1-24-0006	Retainer
19	2-21-0009	Spur Gear Rim	37	1-24-0122	Bolt
20	3-53-0045	Pan Rim			

* Not Illustrated.

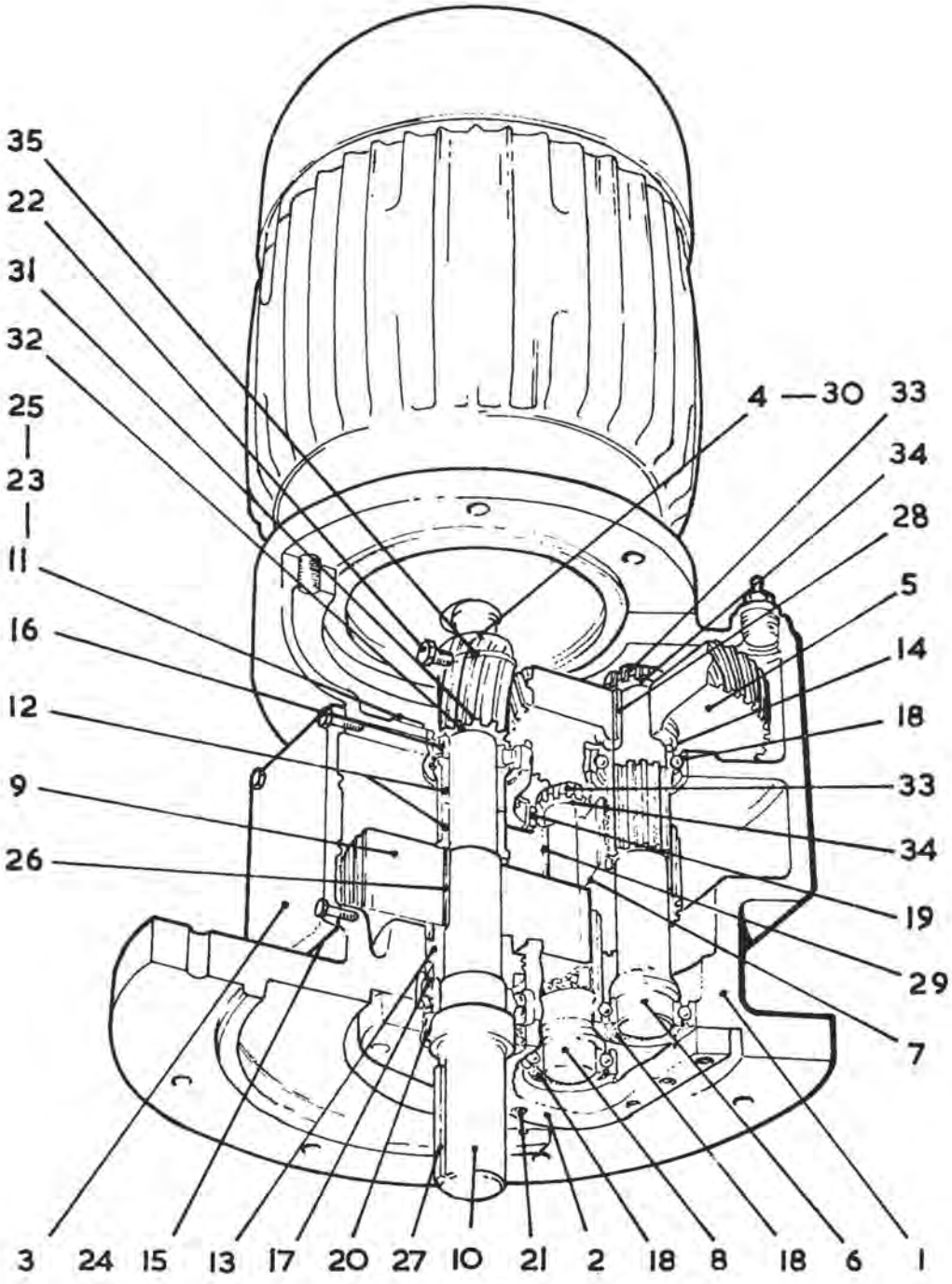


MIXING STAR

I 31 /0046

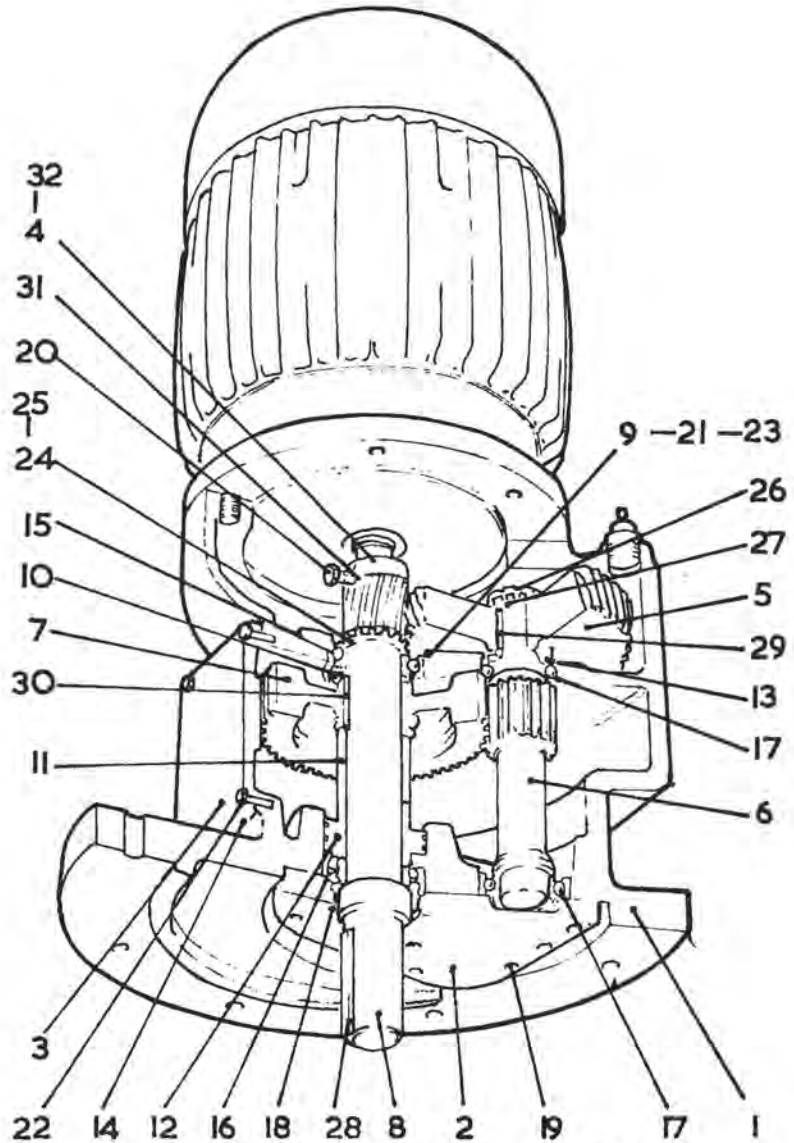
Item No.	Part No.	Description	Item No.	Part No.	Description
1	1-67-0004	Geared Motor 20 H.P. (50 Cycle)	11	1-24-1353	Retaining Washer Bolt (60 Cycle)
2	1-67-0002	Geared Motor 20 H.P. (60 Cycle)	12	1-18-0013	Star Finger Bush
3	1-24-0629	Motor Fixing Bolts (50 Cycle)	13	1-28-0007	Grease Nipple
4	1-24-0608	Motor Fixing Bolts (60 Cycle)	14	1-24-0435	Adjusting Bolt and Nut
5	3-53-0043	Motor Adaptor Plate (60 Cycle)	15	3-26-0044	Star Finger (Long)
6	1-24-0625	Adaptor Plate Fixing Bolts	16	3-26-0034	Star Finger (Short)
7	3-26-0033	Star	17	1-21-0035	Star Blade
*	1-32-0060	Star Key	18	1-24-0118	Star Blade Fixing Bolts
8	3-63 0046	Star Retaining Washer (50 Cycle)	19	1-24-1182	Star Finger Lock Screws
9	3-49-0074	Star Retaining Washer (60 Cycle)	20	1 33-0070	Compression Spring
10	1-24-0717	Retaining Washer Bolt (50 Cycle)	21	1-32-0021	Star Finger Key

* Not Illustrated.



STAR DRIVE MOTOR

(50 CYCLES)



PAN DRIVE MOTOR

I 31/32/0065

STAR DRIVE AND PAN DRIVE MOTORS - 50 CYCLES

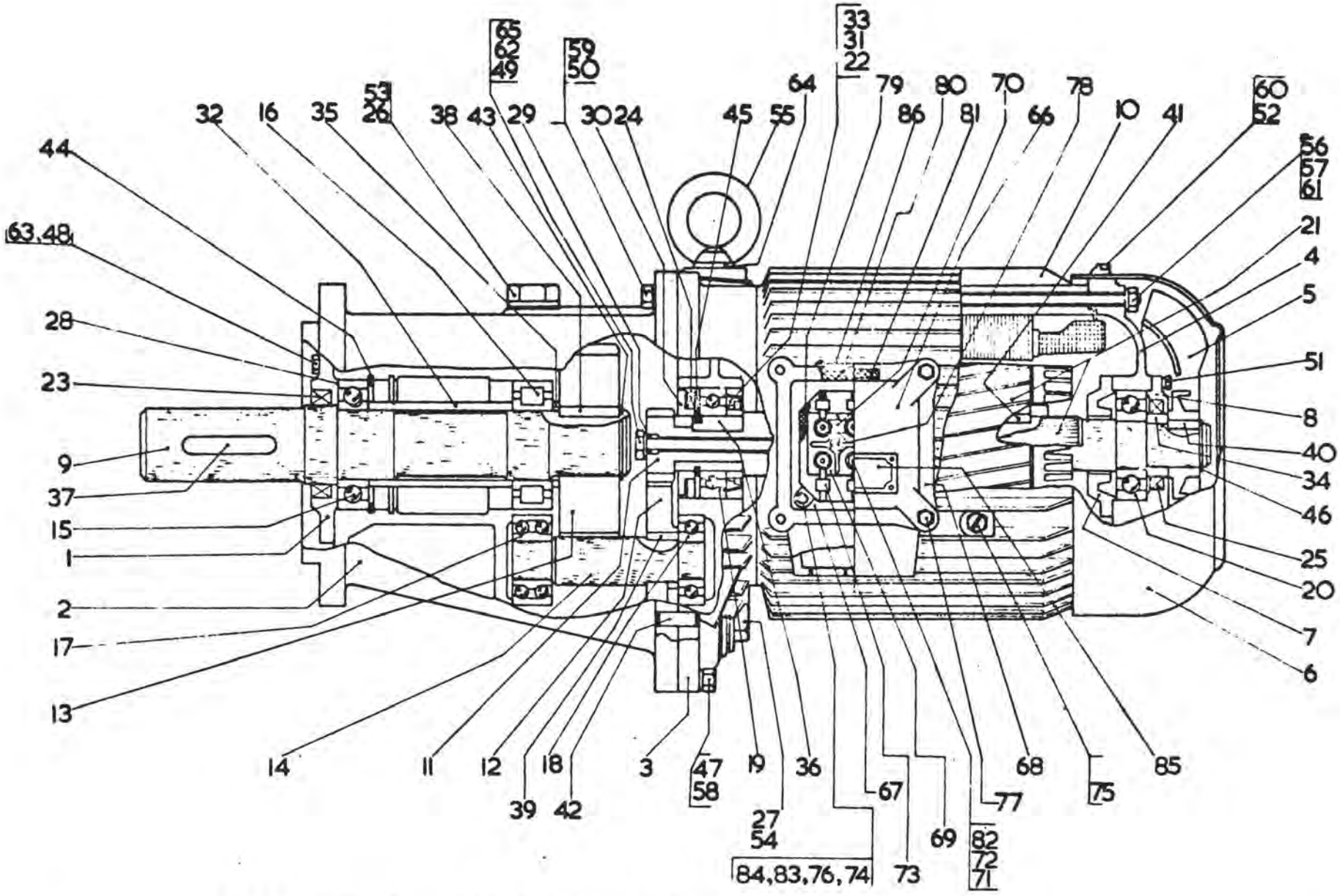
STAR DRIVE AND MOTOR (COMPLETE) 1-67-0004

Item No.	Part No.	Description
1	1-29-0105	Gearcase
2	1-29-0106	Oil Seal Housing and Front Plate
3	1-29-0107	Top Cover Plate
4	1-29-0074	Motor Pinion
5	1-29-0075	First Gear
6	1-29-0076	Second Pinion and Shaft
7	1-29-0078	Second Gear
8	1-29-0080	Third Pinion and Shaft
9	1-29-0082	Output Gear
10	1-29-0086	Output Shaft
11	1-29-0108	Abutment Plate
12	1-29-0109	Inner Output Bearing Spacer
13	1-29-0110	Output Spacer/Oil Baffle
14	1-29-0111	First Gear Spacer
15	1-29-0087	Top Cover Gasket
16	1-29-0088	Inner Output Bearing
17	1-29-0089	Outer Output Bearing
18	1-29-0090	Intermediate Bearing
19	1-29-0091	Intermediate Bearing
20	1-29-0092	Oil Seal
21	1-29-0112	Front Plate Screw Socket Head Cap
22	1-29-0093	Motor Pinion Screw Drilled Hexagon Head
23	1-29-0113	Abutment Plate Screw Hexagon Head
24	1-29-0114	Top Cover Screw Hexagon Head
25	1-29-0115	Lockwasher Abutment Plate
26	1-29-0094	Output Gear Key
27	1-29-0116	Output Shaft Key
28	1-29-0095	First Gear Key
29	1-29-0096	Second Gear Key
30		Motor Pinion Key (Size as required)
31	1-29-0097	Output Shaft Locknut
32	1-29-0099	Output Shaft Lockwashe
33	1-29-0100	Intermediate Shaft Locknut
34	1-29-0101	Intermediate Shaft Lockwasher
35	1-29-0102	Motor Pinion Lockwire

PAN DRIVE MOTOR (COMPLETE) 1-67-0003

Item No.	Part No.	Description
1	1-29-0117	Gearcase
2	1-29-0118	Oil Seal Housing and Front Plate
3	1-29-0119	Top Cover Plate
4	1-29-1184	Motor Pinion
5	1-29-1185	First Gear
6	1-29-1186	Second Pinion and Shaft
7	1-29-1187	Output Gear
8	1-29-1190	Output Shaft
9	1-29-0120	Abutment Plate
10	1-29-0121	Inner Output Bearing Spacer
11	1-29-0122	Output Gear Spacer
12	1-29-0123	Output Spacer Oil Baffle
13	1-29-0124	First Gear Spacer
14	1-29-1191	Top Cover Gasket
15	1-29-1192	Inner Output Bearing
16	1-29-1193	Outer Output Bearing
17	1-29-1194	Intermediate Bearing
18	1-29-1195	Oil Seal
19	1-29-0125	Front Plate Screw
20	1-29-1196	Motor Pinion Screw Drilled Hexagon Head
21	1-29-0126	Abutment Plate Screw Hexagon Head
22	1-29-0127	Top Cover Screw Hexagon Head
23	1-29-0128	Lockwasher Abutment Plate
24	1-29-1197	Output Shaft Locknut
25	1-29-1198	Output Shaft Lockwashe
26	1-29-1199	Intermediate Shaft Locknut
27	1-29-1200	Intermediate Shaft Lockwasher
28	1-29-1201	Output Shaft Key
29	1-29-1202	First Gear Key
30	1-29-1201	Output Gear Key
31	1-29-1204	Motor Pinion Lockwire
32		Motor Pinion Key (Size as required)

When ordering spares, please quote type and serial number of Motor.



PAN DRIVE MOTOR — 60 CYCLES

I 31/32/0067

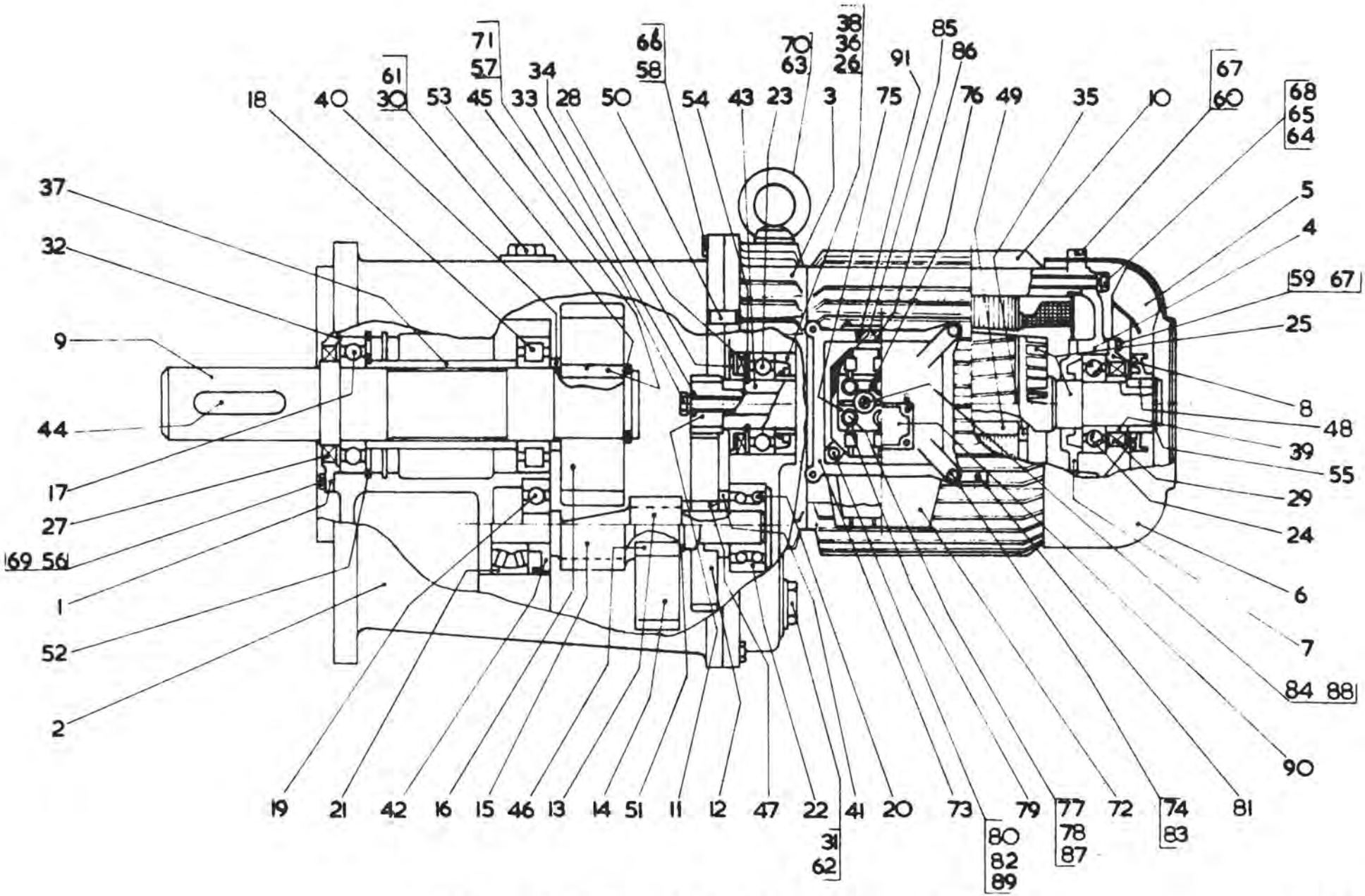
PAN DRIVE MOTOR - 60 CYCLES

131/32/0067

Item No.	Part No.	Description	Item No.	Part No.	Description	Item No.	Part No.	Description
*	1-67-0001	Pan Drive Motor	29	1-67-0232	Packing	58	1-67-0261	Spring Washer
1	1-67-0204	Bearing Flange	30	1-67-0233	Labyrinth Seal	59	1-67-0262	Spring Washer
2	1-67-0205	Gearbox Flange	31	1-67-0234	Grease Container	60	1-67-0263	Spring Washer
3	1-67-0206	Intermediate Cover	32	1-67-0235	Spacer	61	1-67-0264	Spring Washer
4	1-67-0207	Endshield	33	1-67-0236	Spacer	62	1-67-0265	Spring Washer
5	1-67-0208	Fan	34	1-67-0237	Spacer	63	1-67-0266	Lock Washer
6	1-67-0209	Fan Cowl	35	1-67-0238	Spacer	64	1-67-0267	Washer
7	1-67-0210	Bearing Flange	36	1-67-0239	Key	65	1-67-0268	Locking Washer
8	1-67-0211	Bearing Flange	37	1-67-0240	Key	66	1-67-0269	Terminal Box Complete
9	1-67-0212	Output Shaft	38	1-67-0241	Key	67	1-67-0270	Terminal Box
10	1-67-0213	Stator Complete	39	1-67-0242	Key	68	1-67-0271	Terminal Box Cover
11	1-67-0214	Gear) Supplied in	40	1-67-0243	Key	69	1-67-0272	Terminal Board
12	1-67-0215	Gear) Pairs Only	41	1-67-0244	Key	70	1-67-0273	Terminal Board Link
13	1-67-0216	Gear) Supplied in	42	1-67-0245	Dowel Pin	71	1-67-0274	Hexagon Nut
14	1-67-0217	Gear) Pairs Only	43	1-67-0246	Retainer Ring	72	1-67-0275	Washer
15	1-67-0218	Bearing	44	1-67-0247	Retainer Ring	73	1-67-0276	Cable Lug
16	1-67-0219	Bearing	45	1-67-0248	Retainer Ring	74	1-67-0277	Earth Washer
17	1-67-0220	Bearing	46	1-67-0249	Retainer Ring	75	1-67-0278	Hexagon Bolt
18	1-67-0221	Bearing	47	1-67-0250	Hexagon Bolt	76	1-67-0279	Hexagon Bolt
19	1-67-0222	Bearing	48	1-67-0251	Hexagon Bolt	77	1-67-0280	Hexagon Bolt
20	1-67-0223	Bearing	49	1-67-0252	Hexagon Bolt	78	1-67-0281	Cylinder Bolt
21	1-67-0224	Rotor Shaft with Rotor	50	1-67-0253	Hexagon Bolt	79	1-67-0282	Packing
22	1-67-0225	Felt Ring	51	1-67-0254	Hexagon Bolt	80	1-67-0283	Packing
23	1-67-0226	Shaft Seal with Lip	52	1-67-0255	Hexagon Bolt	81	1-67-0284	Cord Seal
24	1-67-0227	Shaft Seal	53	1-67-0256	Cover Screw	82	1-67-0285	Spring Washer
25	1-67-0228	Shaft Seal	54	1-67-0257	Cover Screw	83	1-67-0286	Spring Washer
26	1-67-0229	Packing	55	1-67-0258	Eye Bolt	84	1-67-0287	Spring Washer
27	1-67-0230	Packing	56	1-67-0259	Hexagon Nut	85	1-67-0288	Nameplate
28	1-67-0231	Packing	57	1-67-0260	Stud	86	1-67-0289	Serial number plate

Items 19, 22, 31 and 33 are supplied as a unit.

When ordering spares, please quote type and serial number of Motor.



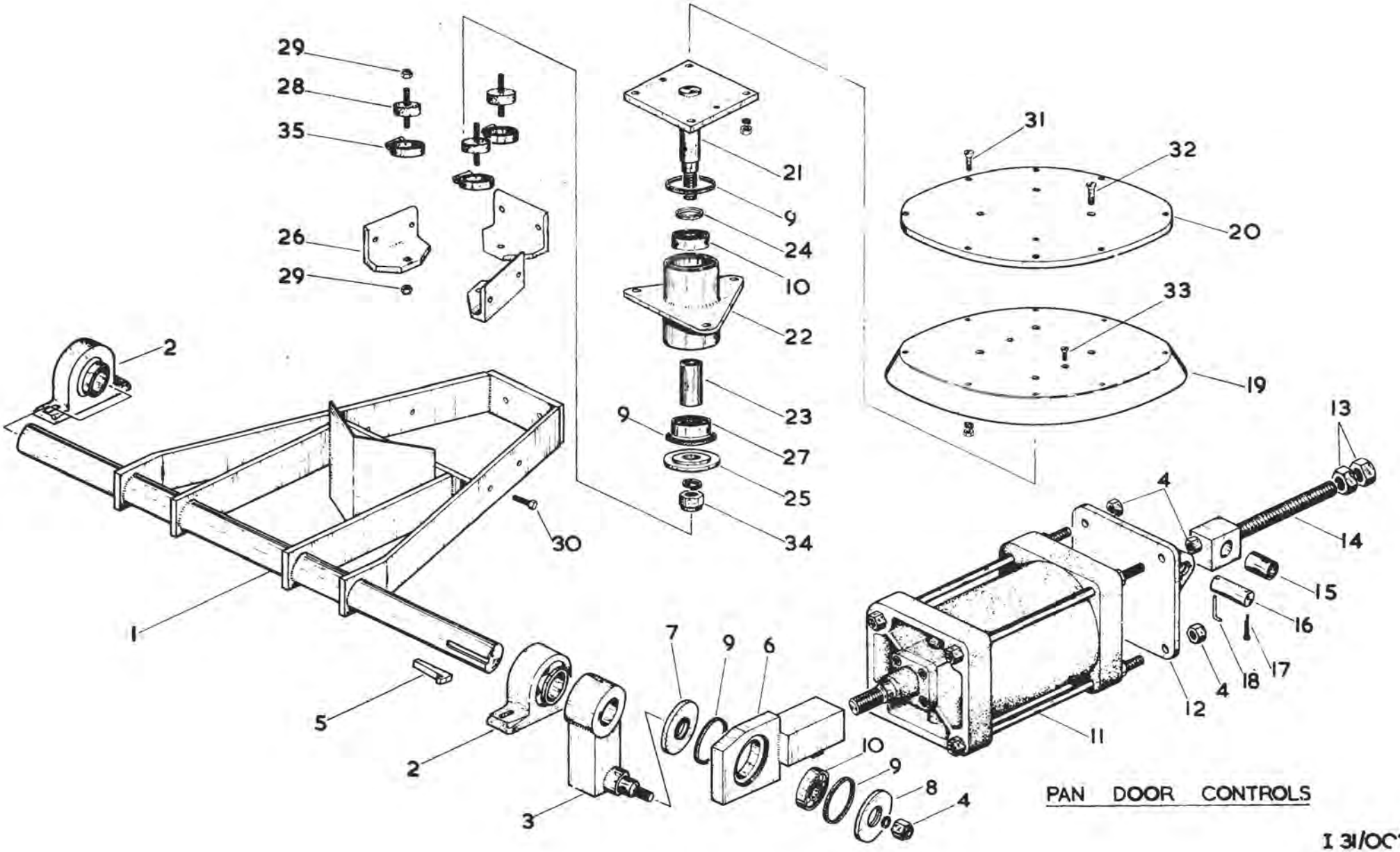
STAR DRIVE MOTOR (60 CYCLES)

I 31/32/0068

Item No.	Part No.	Description	Item No.	Part No.	Description	Item No.	Part No.	Description
*	1-67-0002	Star Drive Motor	31	1-67-0144	Packing	61	1-67-0174	Cover Screw
1	1-67-0114	Bearing Flange	32	1-67-0145	Packing	62	1-67-0175	Cover Screw
2	1-67-0115	Gearbox Flange	33	1-67-0146	Packing	63	1-67-0176	Eye Bolt
3	1-67-0116	Intermediate Cover	34	1-67-0147	Labyrinth Seal	64	1-67-0177	Hexagon Nut
4	1-67-0117	Endshield	35	1-67-0148	Shrink Ring	65	1-67-0178	Stud
5	1-67-0118	Fan	36	1-67-0149	Grease Container	66	1-67-0179	Spring Washer
6	1-67-0119	Fan Cowl	37	1-67-0150	Spacer	67	1-67-0180	Spring Washer
7	1-67-0120	Bearing Flange	38	1-67-0151	Spacer	68	1-67-0181	Spring Washer
8	1-67-0121	Bearing Flange	39	1-67-0152	Spacer	69	1-67-0182	Lock Washer
9	1-67-0122	Output Shaft	40	1-67-0153	Spacer	70	1-67-0183	Washer
10	1-67-0123	Stator Complete	41	1-67-0154	Spacer	71	1-67-0184	Locking Plate
11	1-67-0124	Gear) Supplied in	42	1-67-0155	Spacer	72	1-67-0185	Terminal Box Complete
12	1-67-0125	Gear) pairs only	43	1-67-0156	Key	73	1-67-0186	Terminal Box
13	1-67-0126	Gear) Supplied in	44	1-67-0157	Key	74	1-67-0187	Terminal Box Cover
14	1-67-0127	Gear) pairs only	45	1-67-0158	Key	75	1-67-0188	Terminal Board
15	1-67-0128	Gear) Supplied in	46	1-67-0159	Key	76	1-67-0189	Terminal Board Link
16	1-67-0129	Gear) pairs only	47	1-67-0160	Key	77	1-67-0190	Hexagon Nut
17	1-67-0130	Bearing	48	1-67-0161	Key	78	1-67-0191	Washer
18	1-67-0131	Bearing	49	1-67-0162	Key	79	1-67-0192	Cable Lug
19	1-67-0132	Bearing	50	1-67-0163	Dowel Pin	80	1-67-0193	Earth Washer
20	1-67-0133	Bearing	51	1-67-0164	Retainer Ring	81	1-67-0194	Hexagon Bolt
21	1-67-0134	Bearing	52	1-67-0165	Retainer Ring	82	1-67-0195	Hexagon Bolt
22	1-67-0135	Bearing	53	1-67-0166	Retainer Ring	83	1-67-0196	Hexagon Bolt
23	1-67-0136	Bearing	54	1-67-0167	Retainer Ring	84	1-67-0197	Cylinder Bolt
24	1-67-0137	Bearing	55	1-67-0168	Retainer Ring	85	1-67-0198	Packing
25	1-67-0138	Rotor Shaft with Rotor	56	1-67-0169	Hexagon Bolt	86	1-67-0199	Packing
26	1-67-0139	Felt Ring	57	1-67-0170	Hexagon Bolt	87	1-67-0200	Spring Washer
27	1-67-0140	Shaft Seal with Lip	58	1-67-0171	Hexagon Bolt	88	1-67-0201	Spring Washer
28	1-67-0141	Shaft Seal	59	1-67-0172	Hexagon Bolt	89	1-67-0202	Spring Washer
29	1-67-0142	Shaft Seal	60	1-67-0173	Hexagon Bolt	90	1-67-0203	Nameplate
30	1-67-0143	Packing						

Items 23, 26, 36 and 38 are supplied as a unit.

When ordering spares, please quote type and serial number of Motor.

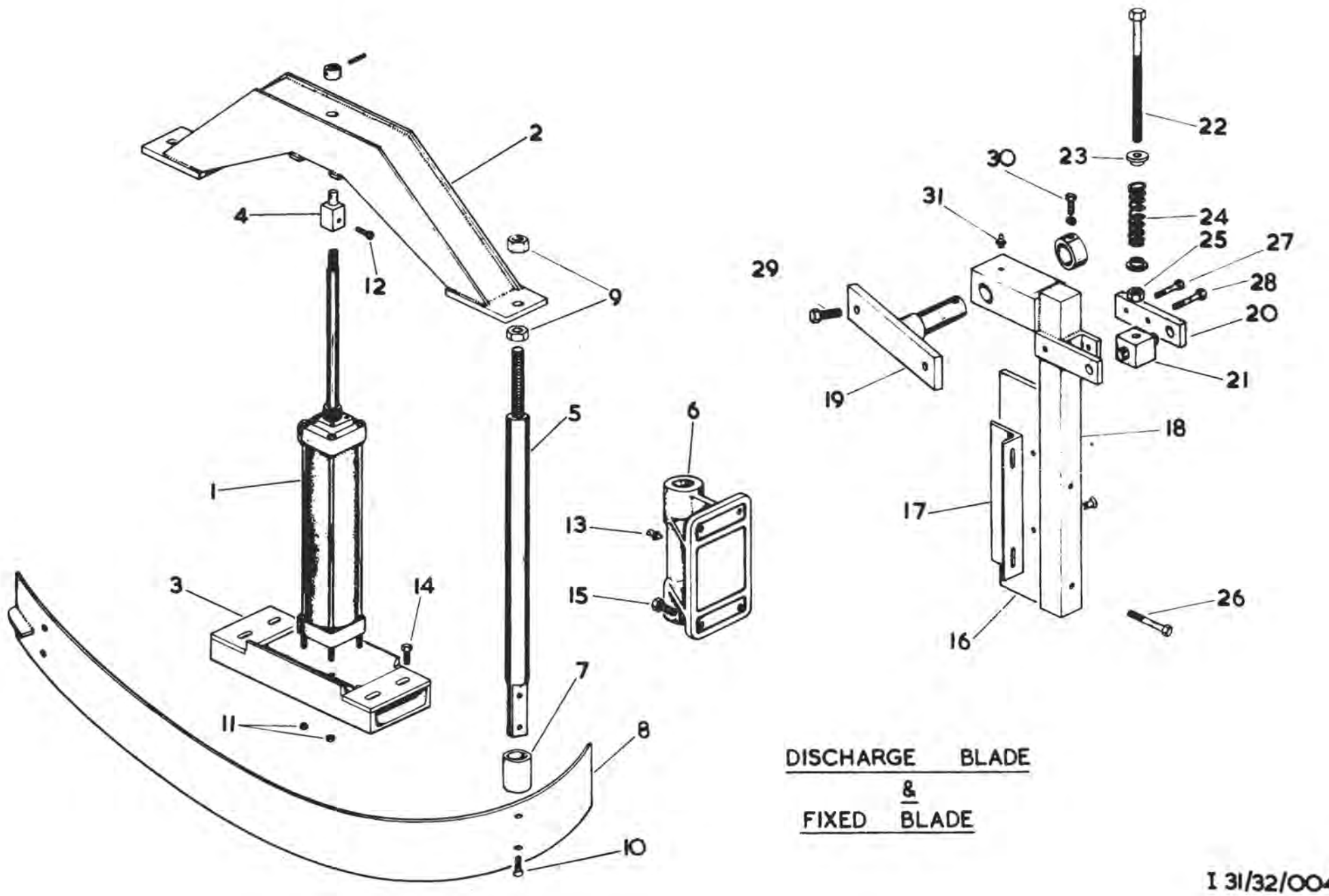


PAN DOOR CONTROLS

I 31/0035

Item No	Part No	Description
1	3-26-0161	Door Arm
2	1-15-1005	Door Arm Bearing
*	1-24-0116	Bearing Bolt complete with Aerotight Nut and Spring Washer
*	3-53-0039	Bearing Stop
*	1-24-0113	Stop Bolt complete with Aerotight Nut and Spring Washer
3	3-26-0013	Door Arm Lever
4	1-24-1599	Aerotight Nut
5	1-32-0029	Door Arm Lever Key
6	3-26-0014	Piston Rod End
7	3-49-0056	Piston Rod End Seal Washer (Inner)
8	3-49-0057	Piston Rod End Seal Washer (Outer)
9	1-56-0001	Felt
10	1-15-0850	Bearing
11	1-11-0001	Air Cylinder
12	3-26-0015	Air Cylinder Trunnion
13	1-24-1554	Full Nut
14	3-26-0016	Air Cylinder Trunnion Adjuster
15	1-18-0008	Bearing
16	3-53-0025	Air Cylinder Trunnion Pin
17	1-48-0161	Split Pin
18	3-53-0026	Locking Pin
19	1-53-0027	Door
20	3-53-0028	Door Wear Plate
21	3-26-0017	Door Pin
22	3-26-0018	Door Bearing Housing
23	3-66-0002	Door Spacer Sleeve
24	3-49-0058	Door Spacer Washer
25	3-49-0061	Door Spindle Seal Washer
26	3-53-0029	Door Bearing Support Angle
27	1-15-0849	Bearing
28	1-12-0003	Rubber Mounting
29	1-24-1548	Full Nut
30	1-24-0085	Bolt complete with Aerotight Nut and Spring Washer
31	1-24-0432	Bolt complete with Aerotight Nut and Spring Washer
32	1-24-0441	Bolt complete with Aerotight Nut and Spring Washer
33	1-24-1087	Bolt
34	1-24-1600	Aerotight Nut
35	3-63-0359	Rubber Mounting Sleeve
*	3-54-0374	Safety Retainer for Item 28 fitted from 4/5/72
*	3-53-0046	Pan Door Seating
*	3-54-0076	Discharge Chute

* Not Illustrated

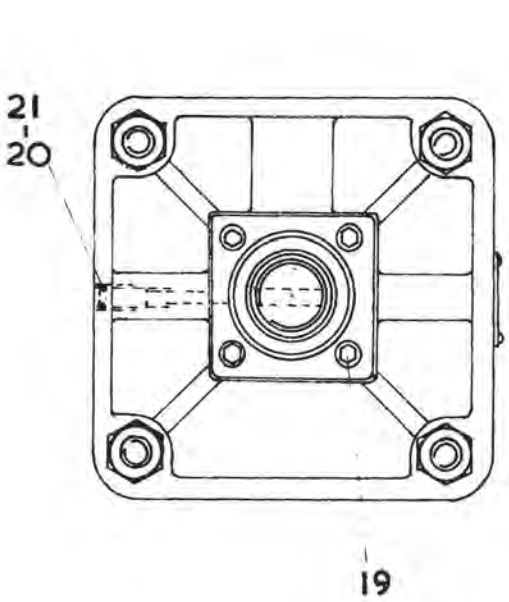


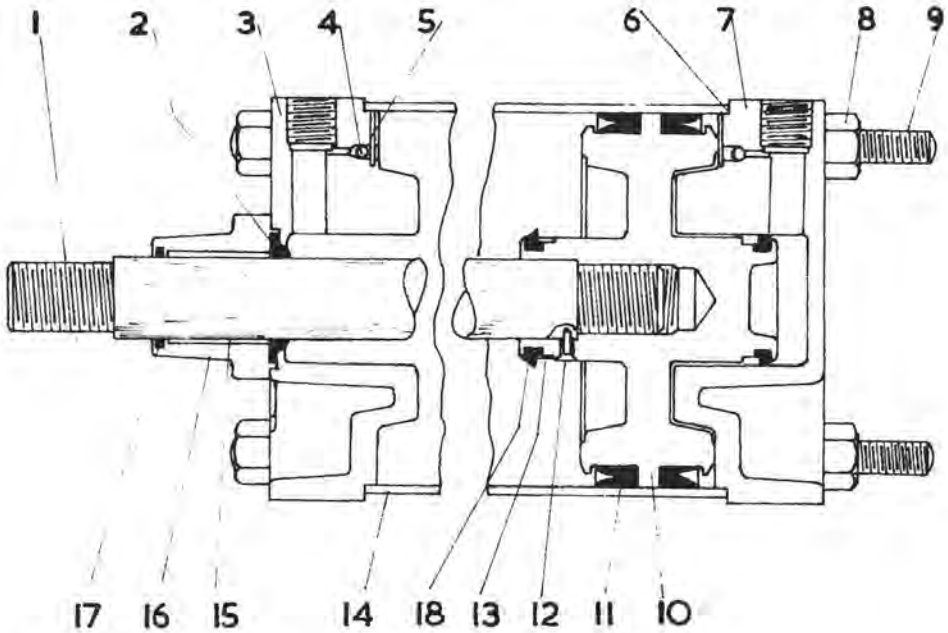
DISCHARGE BLADE
&
FIXED BLADE

I 31/32/0047

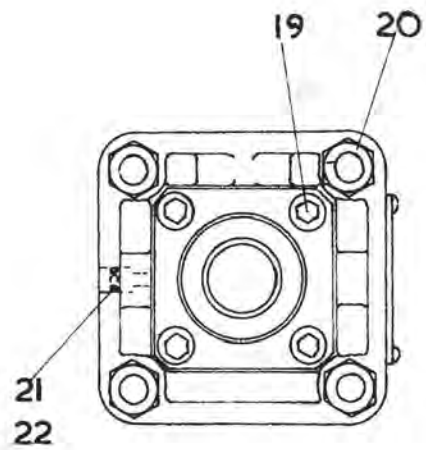
Item No	Part No	Description
1	1-11-0002	Air Cylinder
2	3-26-0316	Air Cylinder Bridge
3	3-26-0164	Air Cylinder Support
4	3-53-0207	Piston Rod End (Complete)
5	3-52-0005	Discharge Blade Finger
6	2-21-0001	Discharge Blade Finger Bracket
7	3-66-0003	Discharge Blade Finger Stop Pipe
8	3-54-0017	Discharge Blade
9	1-24-1508	Full Nut
10	1-24-0443	Discharge Blade Fixing bolts
11	1-24-1547	Full Nut
12	1-24-1290	Grub Screw
13	1-28-0007	Grease Nipple
14	1-24-0112	Air Cylinder Support Fixing Bolt
15	1-24-0114	Finger Bracket Fixing Bolts
16	3-53-0034	Fixed Blade
17	3-53-0035	Fixed Blade Angle
18	3-26-0024	Fixed Blade Finger
19	3-26-0025	Fixed Blade Finger Pivot
20	3-53-0036	Adjusting Rod Trunnion Plate
21	3-53-0037	Adjusting Rod Trunnion
22	3-53-0038	Adjusting Rod
23	3-49-0062	Adjusting Rod Washers
24	1-33-0062	Compression Spring
25	1-24-1507	Full Nut
26	1-24-0091	Blade Angle Fixing Bolt
27	1-24-0093	Bolt, Aerotight Nut and Spring Washer
28	1-24-0085	Bolt, Aerotight Nut and Spring Washer
29	1-24-0115	Finger Pivot Fixing Bolt
30	1-24-0093	Finger Pivot Collar Bolt
*	3-53-0647	Pivot Fixing Bolt Washer Square (Fitted After 17/5/72)

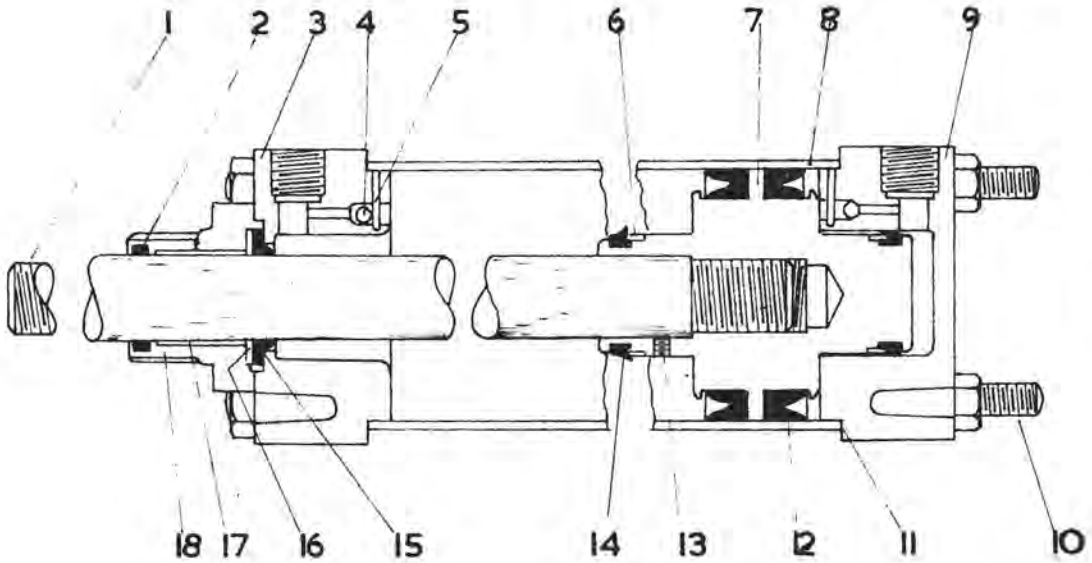
* Not Illustrated





DISCHARGE DOOR
AIR CYLINDER



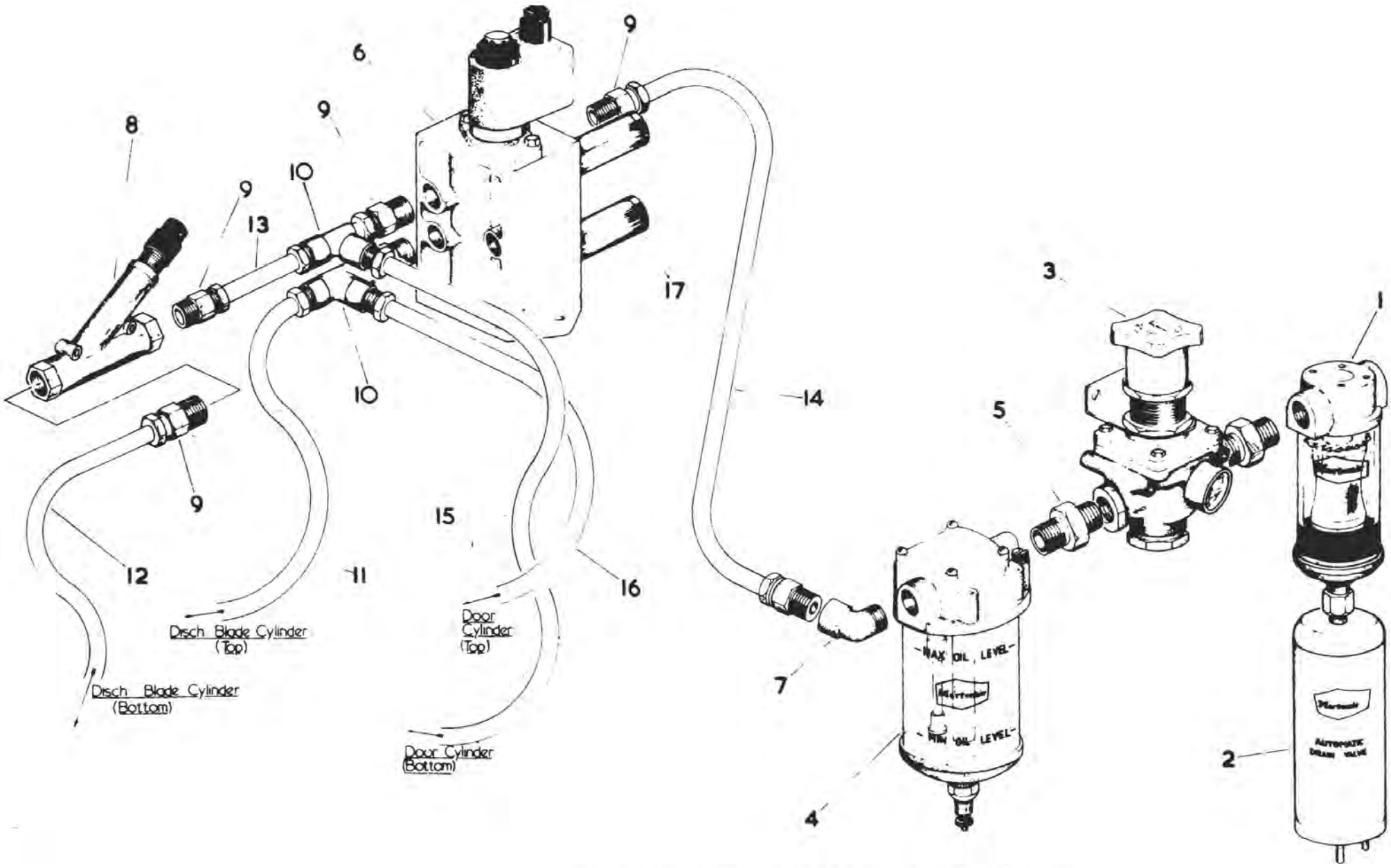


DISCHARGE BLADE
AIR CYLINDER

I 31/0074

Item No.	Part No.	Description	Item No.	Part No.	Description
*	1-11-0001	Discharge Door Air Cylinder (Complete)	11	1-11-0163	Piston Seal
1	1-11-0162	Piston Rod	12	1-11-0145	Screw
2	1-11-0158	Packing	13	1-11-0169	Cushion Seal Retainer
3	1-11-0153	Front End Cover	14	1-11-0159	Cylinder Barrel
4	1-11-0166	Ball	15	1-11-0157	Bearing Bush
5	1-11-0167	Pin	16	1-11-0156	Piston Rod Bearing
6	1-11-0172	Cylinder Joint	17	1-11-0168	Wiper Seal
7	1-11-0154	Rear End Cover	18	1-11-0165	Cushion Seal
8	1-11-0161	Tie Rod Nuts	19	1-11-0171	Bearing Screws
9	1-11-0160	Tie Rod	20	1-11-0164	Cushion Adjusting Seals
10	1-11-0155	Piston	21	1-11-0170	Cushion Adjusting Screws

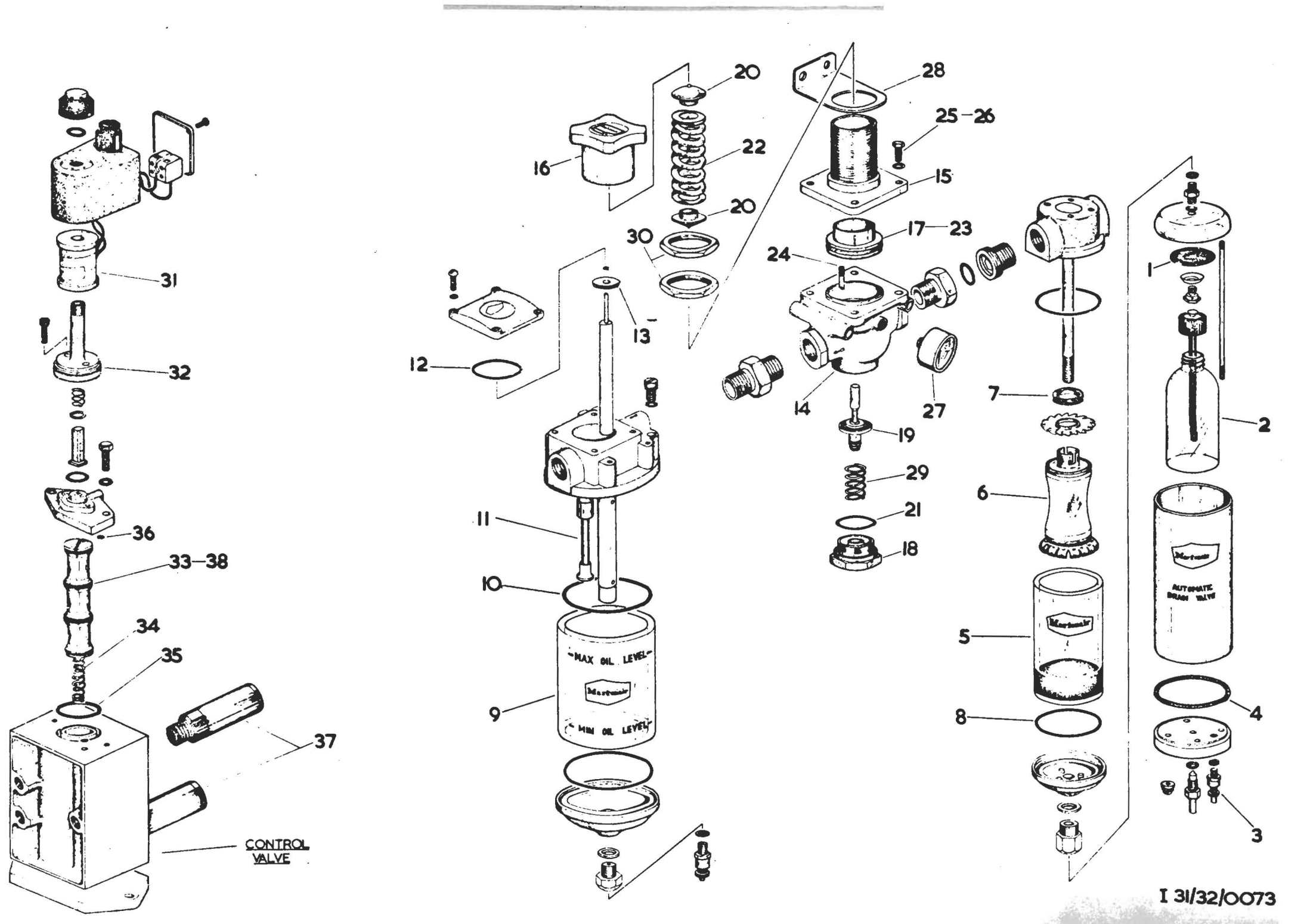
Item No.	Part No.	Description	Item No.	Part No.	Description
*	1-11-0002	Discharge Blade Air Cylinder (Complete)	12	1-11-0132	Piston Seal
1	1-11-0152	Piston Rod	13	1-11-0251	Screw
2	1-11-0138	Wiper Seal	14	1-11-0135	Cushion Seal
3	1-11-0121	Front End Cover	15	1-11-0127	Packing
4	1-11-0136	Ball	16	1-11-0133	Retaining Ring
5	1-11-0137	Pin	17	1-11-0125	Bearing Bush
6	1-11-0139	Cushion Seal Retainer	18	1-11-0124	Piston Rod Bearing
7	1-11-0123	Piston	19	1-11-0068	Bearing Screws
8	1-11-0150	Cylinder Barrel	20	1-11-0063	Tie Rod Nuts
9	1-11-0122	Rear End Cover	21	1-11-0134	Cushion Adjusting Seals
10	1-11-0151	Tie Rod	22	1-11-0140	Cushion Adjusting Screws
11	1-11-0142	Cylinder Joint			



PIPING DETAILS FOR AIR OPERATED DISCHARGE DOOR

I 31/005

Item No.	Part No.	Description		Item No.	Part No.	Description
1	1-11-0215	Filter	) Complete	10	1-51-0134	Side Stem Connector
2	1-11-0211	Drain	) Unit	11	2-51-0446	Nylon Tube (Connector to Cylinder Top)
3	1-11-0226	Pressure Regulator	) Part Number	12	2-51-0447	Nylon Tube (Regulator to Cylinder Bottom)
4	1-11-0220	Lubricator	) 1-11-0005	13	2-51-0448	Nylon Tube (Connector to Regulator)
5	1-51-0479	Flat Union		14	2-51-0449	Nylon Tube (Lubricator to Control Valve)
6	1-11-0003	Control Valve		15	2-51-0445	Nylon Tube (Connector to Door Cylinder Top)
7	1-51-0133	Elbow		16	2-51-0444	Nylon Tube (Connector to Door Cylinder Bottom
8	1-11-0004	Air Flow Regulator		17	1-11-0011	Silencers
9	1-51-0115	Straight Connector				


31
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33–38
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37
CONTROL VALVE
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12
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MAX OIL LEVEL
MIN OIL LEVEL
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25–26
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17–23
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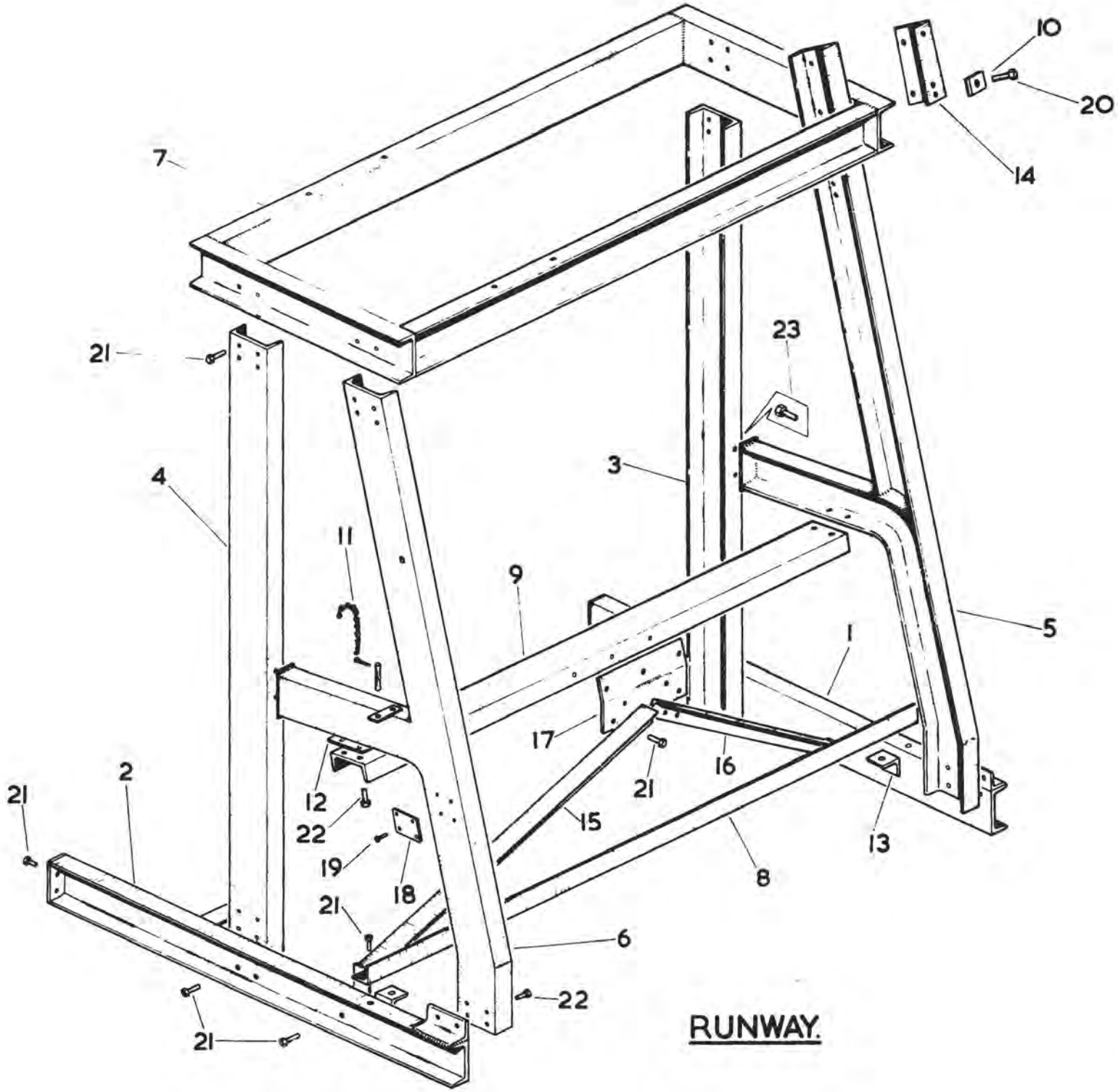
I 31/32/0073

Item No.	Part No.	Description	Item No.	Part No.	Description
*	1-11-0211	Automatic Drain Valve Complete	19	1-11-0232	Top and Bottom Seat Assembly
1	1-11-0212	Filter	20	1-11-0233	Spring Carrier
2	1-11-0213	Float	21	1-11-0234	'O' Ring
3	1-11-0018	Drain Tap	22	1-11-0235	Spring
4	1-11-0214	Gasket	23	1-11-0236	'O' Ring
*	1-11-0215	Filter (Complete)	24	1-11-0237	Venturi Tube
5	1-11-0216	Makrolon Barrel	25	1-11-0238	Washer
6	1-11-0217	Filter Element	26	1-11-0239	Bolt
7	1-11-0218	Heart Seal	27	1-11-0240	Pressure Gauge
8	1-11-0219	Barrel Seal	28	1-11-0241	Bracket
*	1-11-0220	Lubricator (Complete)	29	1-11-0242	Spring
9	1-11-0221	Makrolon Barrel	30	1-11-0243	Lock Nut
10	1-11-0222	Barrel Seal	*	1-11-0003	Control Valve (Complete)
11	1-11-0223	Filter	31	1-11-0244	Coil
12	1-11-0224	Top Gasket	32	1-11-0245	Valve Seating
13	1-11-0225	Poppet Valve 'O' Ring	33	1-11-0246	Piston
*	1-11-0226	Pressure Regulator (Complete)	34	1-11-0247	Piston Spring
14	1-11-0227	Regulator Body	35	1-11-0248	'O' Ring
15	1-11-0228	Top Cover	36	1-11-0249	'O' Ring
16	1-11-0229	Adjusting Handle	37	1-11-0011	Silencer
17	1-11-0230	Piston	38	1-11-0250	Piston Seal
18	1-11-0231	Plug			

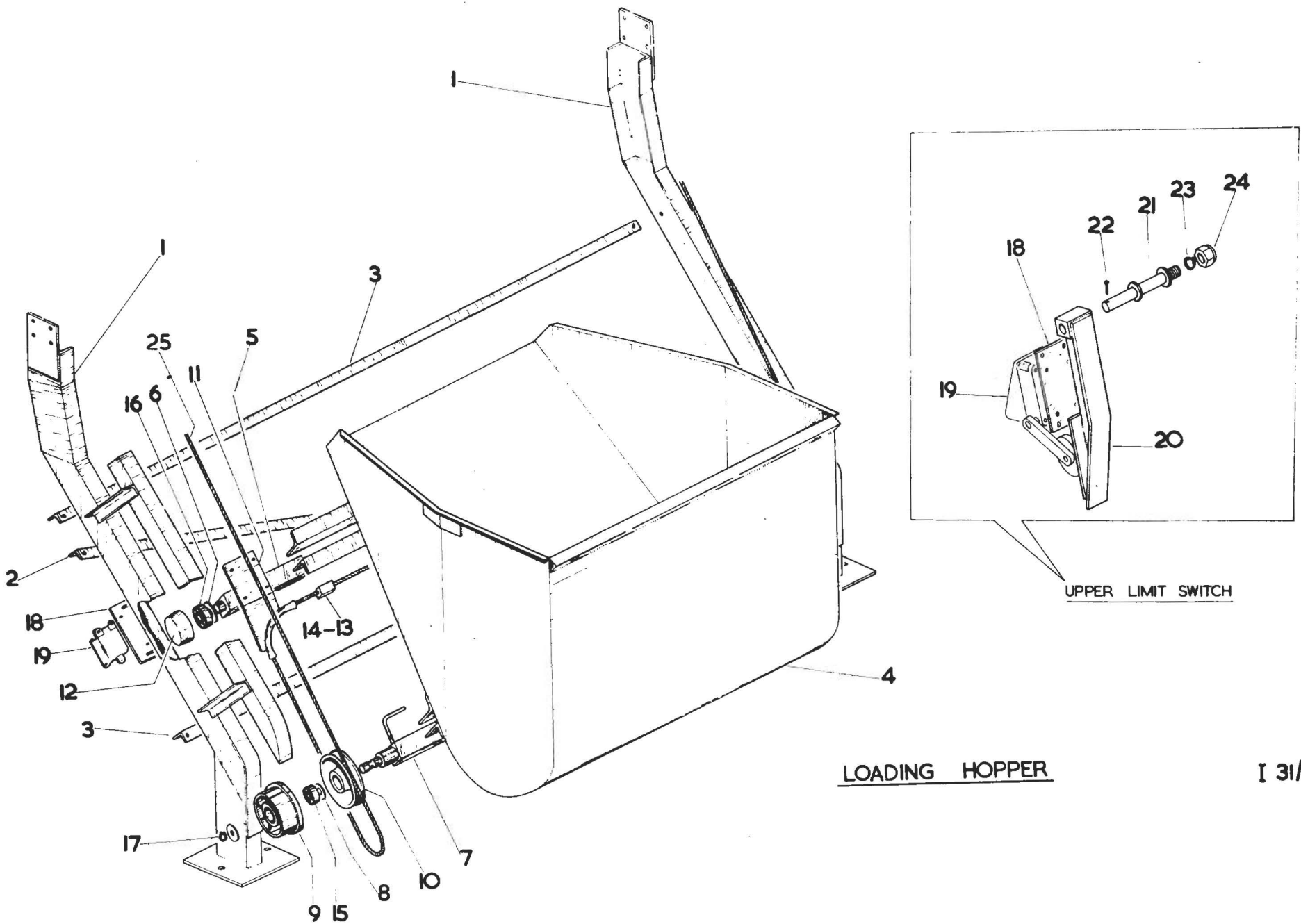
* Not Illustrated.



RUNWAY.

I 31/32/0028

m No.	Part No.	Description	Item No.	Part No.	Description
1	3-26-0046	Chassis Extension Opposite Winch Side	13	3-53-0057	Bracing Cleat
2	3-26-0045	Chassis Extension Winch Side	14	3-53-0553	Bearing Support
3	3-53-0051	Main Upright Opposite Winch Side	15	3-26-0050	Bracing
4	3-53-0052	Main Upright Winch Side	16	3-26-0049	Bracing
5	3-26-0038	Runway Opposite Winch Side	17	3-53-0066	Bracing Support
6	3-26-0039	Runway Winch Side	18	1-62-0006	Caution Plate
7	3-26-0040	Winch Support Frame	19	1-24-1101	Caution Plate Bolts
8	3-53-0056	Tie Angle	20	1-24-0792	Bolt complete with Aerotight Nut and Spring Washer
9	3-53-0058	Tie Channel	21	1-24-0112	Bolt complete with Aerotight Nut and Spring Washer
10	3-53-0022	Bearing Stop	22	1-24-0607	Bolt complete with Aerotight Nut and Spring Washer
11	3-53-0062	Safety Bolt and Chain	23	1-24-0113	Bolt complete with Aerotight Nut and Spring Washer
12	3-53-0059	Tie Channel Packing			

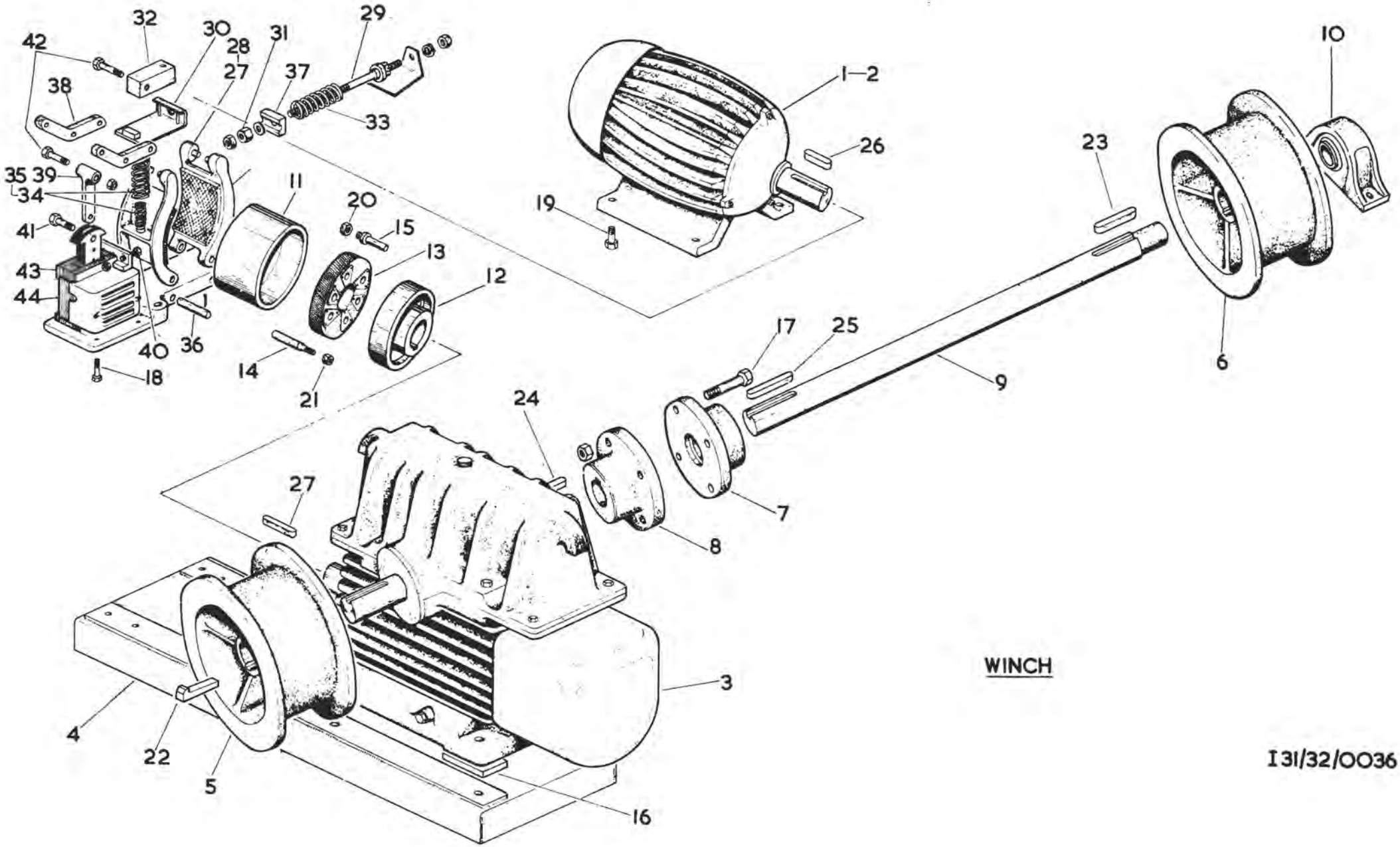


LOADING HOPPER

I 31/32/0072

Item No.	Part No.	Description	Item No.	Part No.	Description
1	3-26-0085	Angle Runway (L.H./R.H.)	13	3-53-0063	Rope Retainer Block
2	3-53-0111	Bracing	14	3-53-0064	Rope Anchor Bolts
3	3-53-0110	Bracing	15	1-15-0060	Rear Roller Bearing
4	3-54-0029	Loading Hopper	16	1-15-0127	Front Roller Bearing
5	3-13-0007	Front Axle	17	1-24-0008	Circlip
6	3-49-0075	Front Axle Washer	18	3-53-0068	Limit Switch Plate
7	3-13-0008	Rear Axle (L.H.)	19	1-22-0005	Limit Switch
*	3-13-0009	Rear Axle (R.H.)	20	3-26-0047	Striker Arm
8	3-49-0076	Rear Axle Washer	21	3-26-0052	Striker Arm Pin
9	2-21-0014	Rear Rollers	22	1-48-0096	Split Pin
10	2-21-0016	Rope Pulleys	23	1-43-0012	Spring Washer
11	3-26-0048	Rope Guide (L.H./R.H.)	24	1-24-1890	Nut
12	2-21-0015	Front Rollers	25	1-35-0010	Wire Rope

* Not Illustrated.

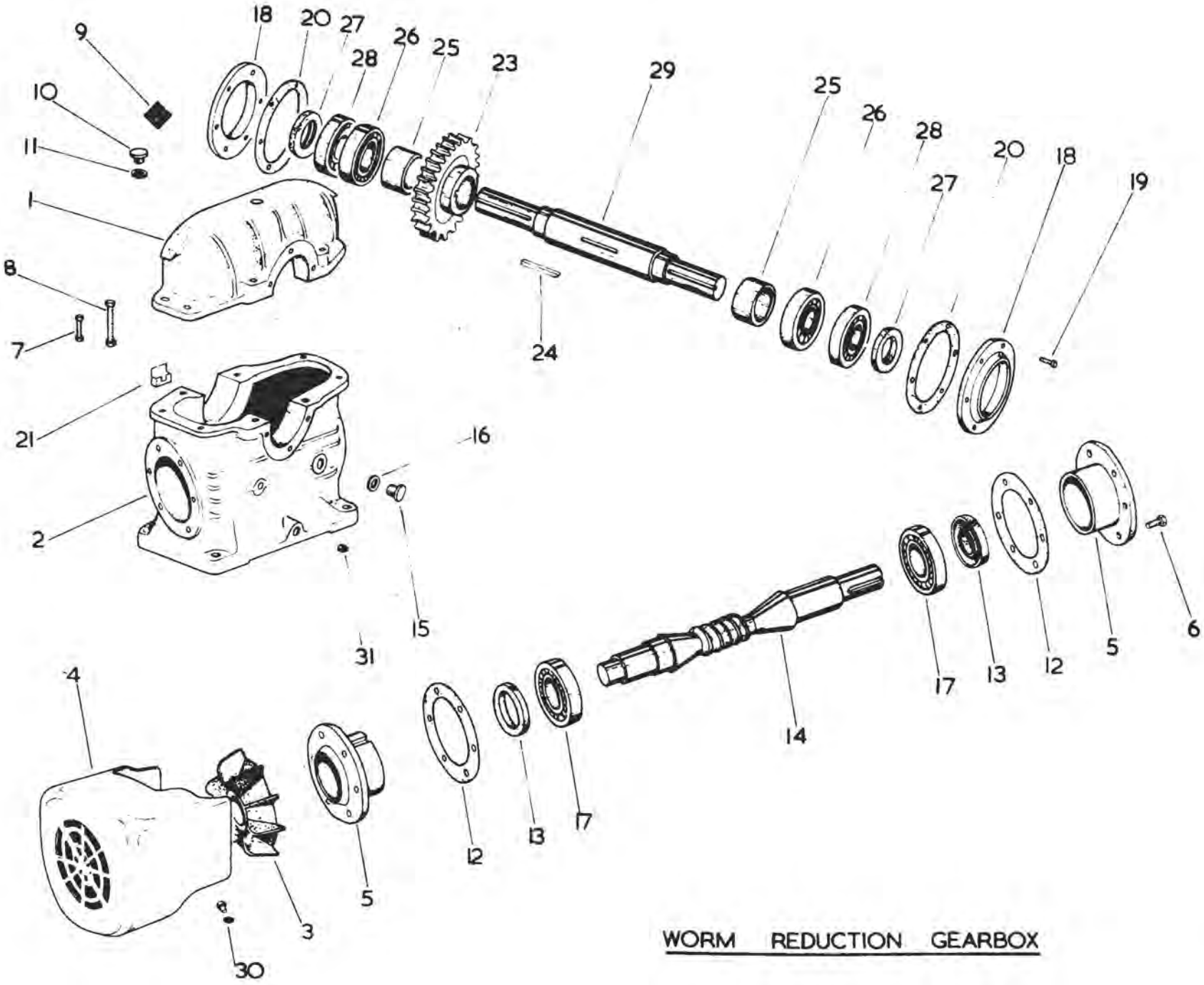


WINCH

I31/32/0036

Item No.	Part No.	Description	Item No.	Part No.	Description
1	1-22-0003	Electric Motor (50 Cycle)	24	1-32-0063	Gear Box Winch Coupling Key
2	1-22-0002	Electric Motor (60 Cycle)	25	1-32-0040	Winch Coupling Key
3	1-67-0005	Reduction Gear Box	26	1-32-0053	Brake Drum Key
4	3-26-0037	Bedplate	*	3-54-0025	Magnetic Brake Guard
*	1-24-0113	Bedplate Fixing Bolts	*	3-53-0049	Magnetic Brake Guard Packing
*	1-24-1344	Gearbox Fixing Bolts	*	1-24-0085	Magnetic Brake Guard Bolts
5	2-21-0010	Gearbox Rope Drum	*	1-22-0004	Magnetic Brake (Complete)
6	2-21-0010	Rope Drum	27	1-55-0042	Brake Shoes (Complete with Linings)
*	3-53-0064	Rope Drum Anchor Bolt	28	1-55-0043	Brake Linings and Rivets
7	2-21-0012	Winch Coupling	29	1-55-0044	Adjuster Screw
8	2-21-0011	Gear Box Winch Coupling	30	1-55-0045	Spring Gland
9	3-52-0009	Rope Drum Shaft	31	1-55-0046	Adjusting Screw Nuts
10	1-15-0941	Rope Drum Shaft Bearing	32	1-55-0047	Adjusting Nut
*	1-24-0140	Bearing Fixing Bolts	33	1-55-0048	Load Spring
11	2-21-0013	Brake Drum	34	1-55-0049	Solenoid Spring (Large)
12	2-23-0051	Half Coupling	35	1-55-0050	Solenoid Spring (Small)
13	1-23-0048	Flexible Coupling	36	1-55-0051	Shoe Lever Hinge Pins
14	1-23-0049	Flexible Coupling Pin	37	1-55-0052	Load Spring Block
15	3-52-0008	Brake Drum Pin	38	1-55-0053	Operating Levers
16	3-53-0050	Reduction Gear Box Packing	39	1-55-0054	Plunger Link
17	1-24-0629	Coupling Bolt	40	1-55-0055	Equalising Screw and Nut
18	1-24-0579	Brake Fixing Bolts	41	1-55-0056	Plunger Hinge Bolt and Nut
19	1-24-0575	Electric Motor Fixing Bolts	42	1-55-0057	Lever Hinge Bolt, Nut and Collar
20	1-24-1549	Full Nut	43	1-55-0058	Solenoid
21	1-24-1547	Full Nut	44	1-55-0059	Solenoid Coils (Both Coils should be replaced together)
22	1-32-0062	Gear Box Rope Drum Key			
23	1-32-0039	Rope Drum Key	45	1-32-0059	Half Coupling Key

* Not Illustrated.



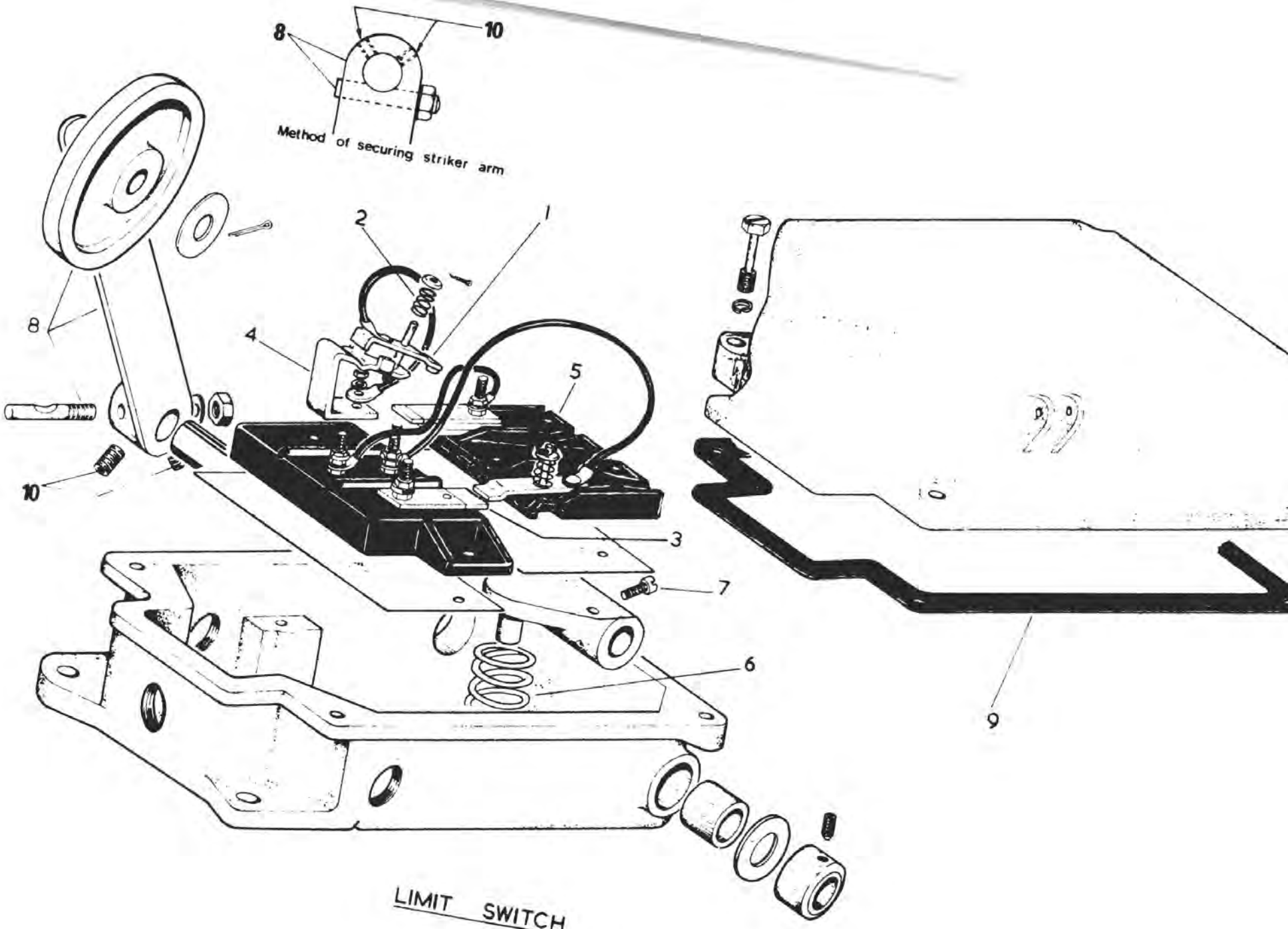
WORM REDUCTION GEARBOX

I 31/32/0066

Item No.	Part No.	Description	Item No.	Part No.	Description
*	1-67-0005	Gear Case Complete	16	1-67-0102	Oil Plug Packing Washer
1	1-67-0088	Gear Case Top Half	17	1-67-0082	Wormshaft Dual Purpose Ball Bearings
2	1-67-0089	Gear Case Bottom Half	18	1-67-0103	Wheel Shaft End Cover
3	1-67-0090	Fan	19	1-67-0104	Wheel Shaft End Cover Bolts
4	1-67-0091	Fan Cowl	20	1-67-0105	Wheel Shaft Shims
5	1-67-0092	Worm Shaft End Cover	21	1-67-0106	Oil Collector Boxes
6	1-67-0093	Worm Shaft End Cover Set Screws	* 22	1-67-0107	Oil Collector Boxes Bolts
7	1-67-0094	Joint Flange Bolts	23	1-67-0108	Worm Wheel
8	1-67-0095	Joint Boss Bolts	24	1-67-0109	Wheel Shaft Feather
9	1-67-0096	Data Plate	25	1-67-0110	Wheel Shaft Distance Piece
10	1-67-0097	Oil Filler/Breather Plug	26	1-67-0083	Wheel Shaft Dual Purpose Ball Bearings
11	1-67-0098	Plug Packing Washer	27	1-67-0086	Wheel Shaft Oil Seal
12	1-67-0099	Worm Shaft Shims	28	1-67-0084	Wheel Shaft Extra Roller Bearing
13	1-67-0085	Worm Shaft Oil Seals	29	1-67-0111	Wheel Shaft
14	1-67-0100	Worm Shaft	30	1-67-0112	Fan Cowl Set Screws
15	1-67-0101	Oil Lever Plug	31	1-67-0113	Oil Drain Plug

* Not Illustrated.

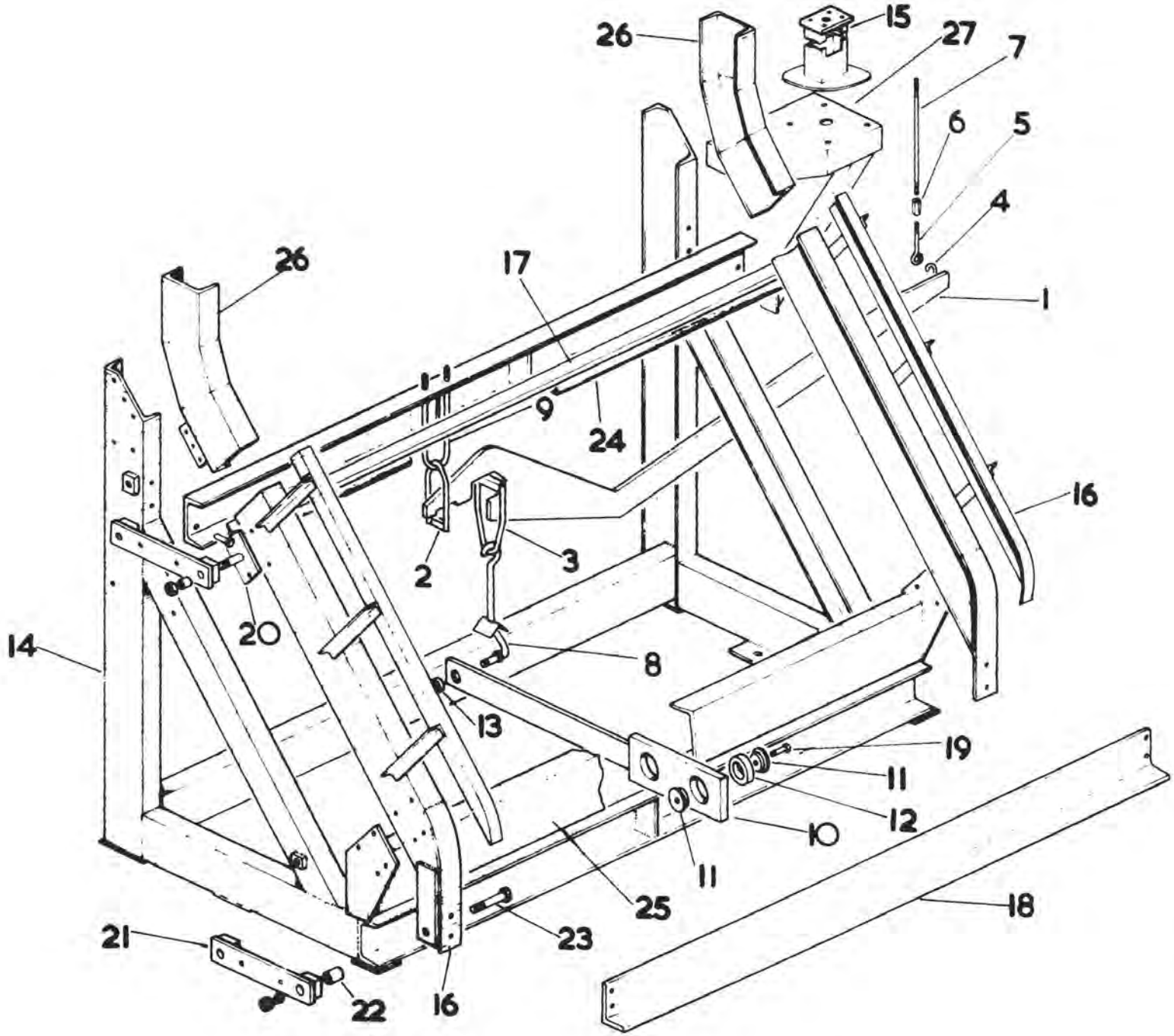
When ordering spares, please state part number and, also serial number and size of gear (stamped on Data Plate).



LIMIT SWITCH

Item No.	Part No.	Description
*	1-22-0005	Limit Switch Complete
1	1-22-0118	Contact Finger with Braid
2	1-22-0119	Contact Finger Spring
*	1-22-0120	Contact Finger with Spring, Spring Pin etc.
3	1-22-0121	Fixed Contact Strip
4	1-22-0122	Normally closed Contact Bracket
5	1-22-0123	Moulded Contact Board
6	1-22-0124	Main Spring
7	1-22-0125	Cheese Head Screw
8	1-22-0126	Roller Operating Lever (Complete)
9	1-22-0127	Lid Gasket
10	1-24-1396	5/16" BSF x 3/8" Long Knurled End Hollow Set Scre

* Not Illustrated.

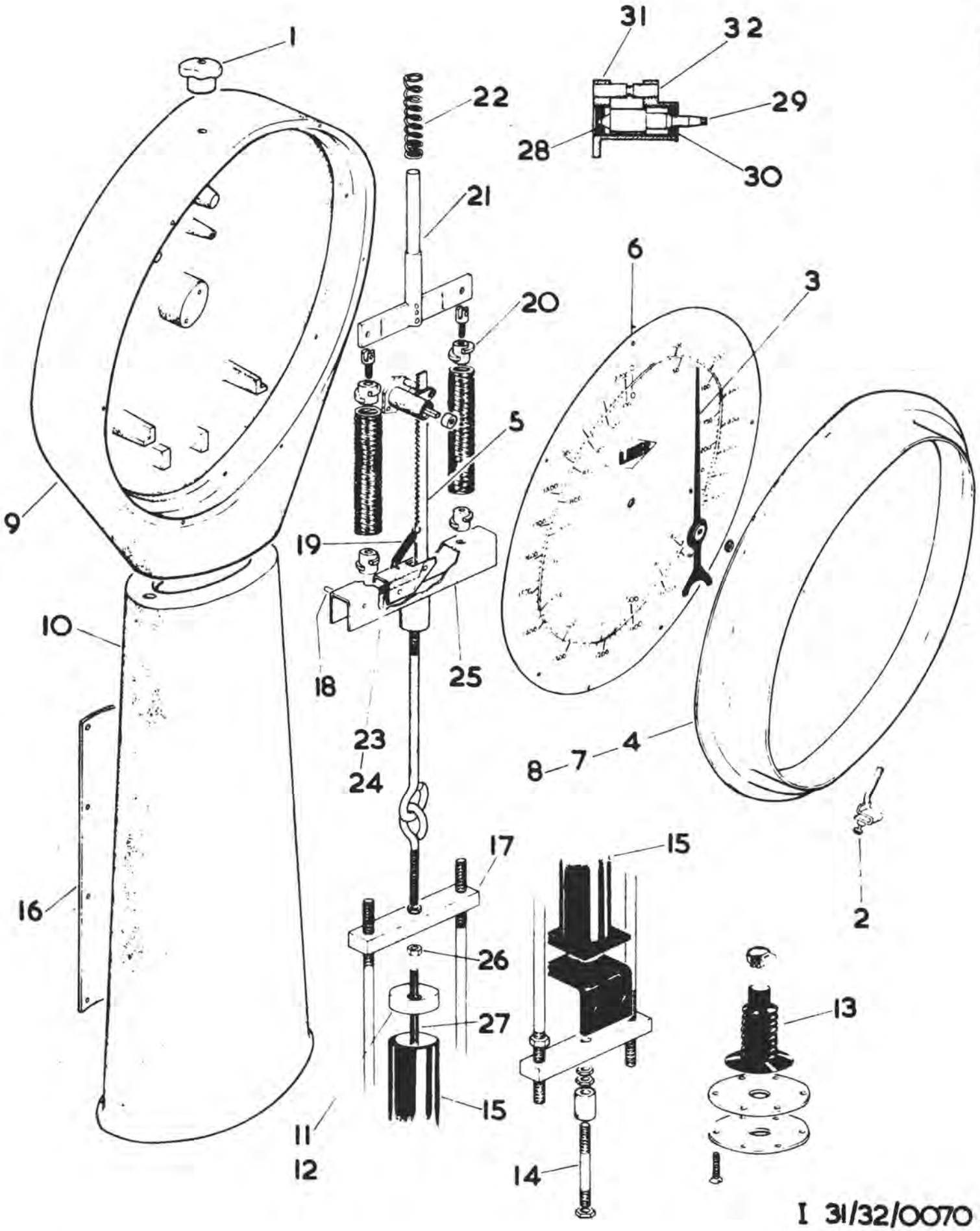


ARRANGEMENT
LEVER TYPE
WEIGHER
(SALTER)

I31/32/0056

Item No.	Part No.	Description	Item No.	Part No.	Description
1	1-17-0132	Balance Arm	*	3-54-0068	Pedestal Cover Plate
2	1-17-0080	Knife Edge Adjuster	16	3-26-0067	Runway
3	1-17-0014	Supporting Link	17	3-26-0059	Top Runway Brace
4	1-17-0075	Knife Edge Hook 'C' Link	*	1-24-0439	Top Runway Brace Fixing Bolts
5	1-17-0078	Dial Pull Link (To 'C' Link)	18	3-26-0058	Bottom Runway Brace
6	1-17-0076	Connecting Rod Nuts	*	1-24-0113	Bottom Runway Brace Fixing Bolts
7	3-53-0074	Connecting Rod	19	1-24-1344	Bearing Bolt
*	3-54-0070	Knife Edge Cover (Front)	20	3-26-0062	Hinge Pins
*	3-54-0071	Knife Edge Cover (Rear)	*	1-24-1335	Hinge Pin Fixing Bolts
8	3-53-0072	Centre Link	21	3-26-0063	Links
9	3-53-0071	'U' Bolt	22	1-18-0014	Rubber Bearing
10	3-26-0057	Bottom Lever	23	1-24-1302	Hinge Bolts
11	3-53-0073	Bearing Bush	24	3-26-0064	Torque Tube
12	1-15-0851	Bearing	*	3-26-0065	Hopper Stops
13	1-15-0846	Bearing	25	3-26-0061	Bridge
14	3-26-0573	Weigher Frame	*	1-24-0606	Bridge Fixing Bolts
15	3-26-0056	Pedestal	26	3-53-0077	Angle Runway
*	1-24-0606	Pedestal Fixing Bolts	27	3-26-0060	Pedestal Support

* Not Illustrated.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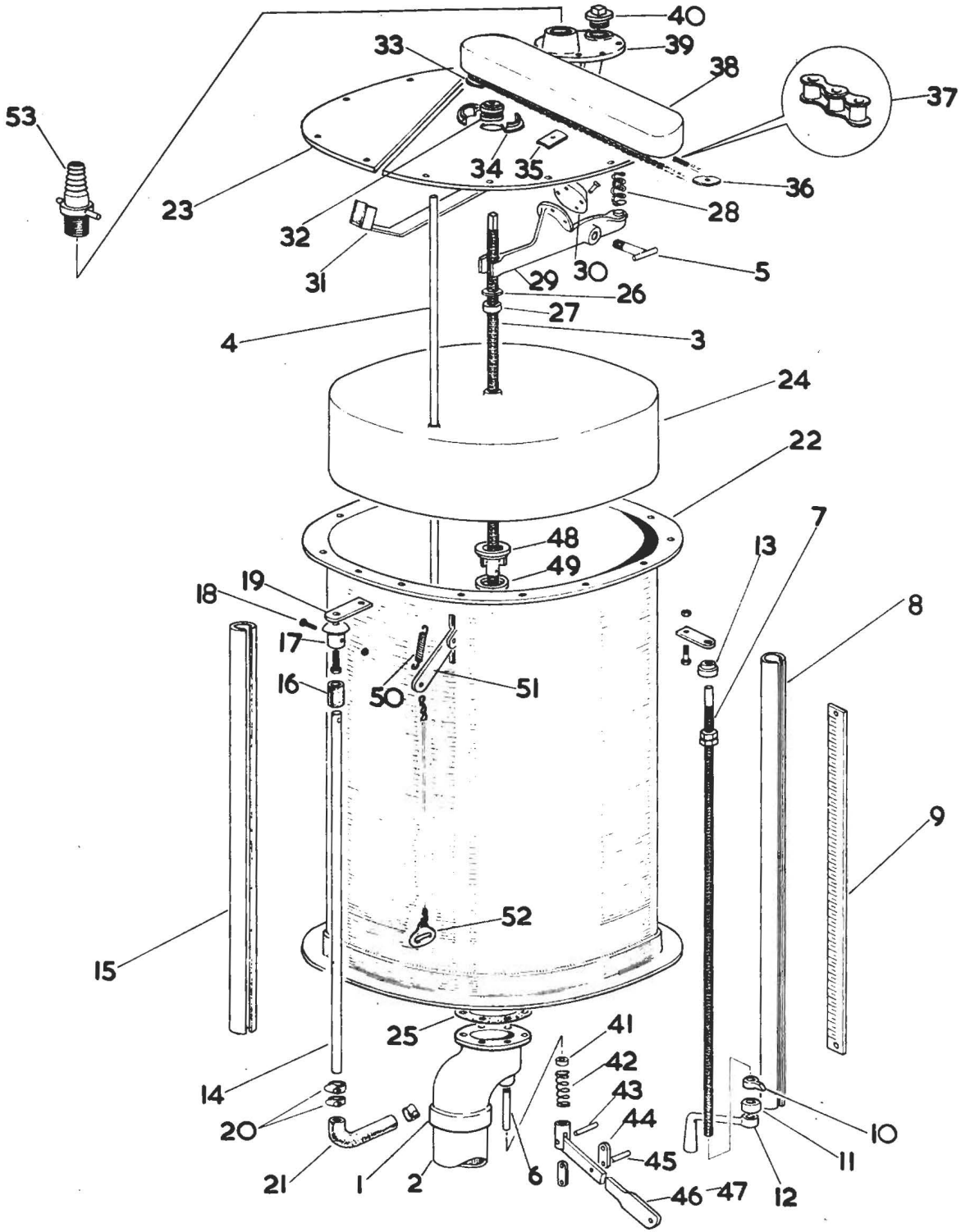
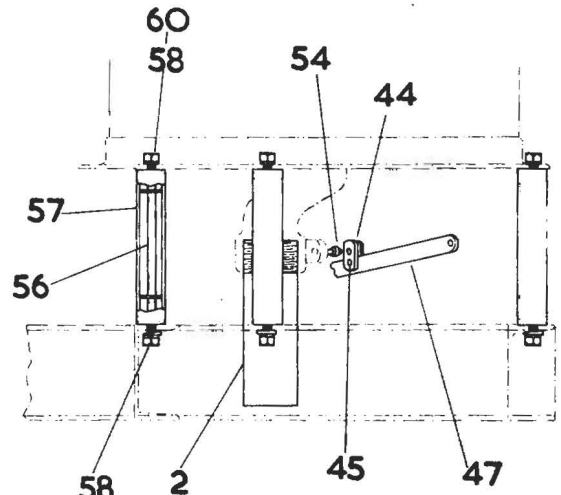
I 31/32/0070

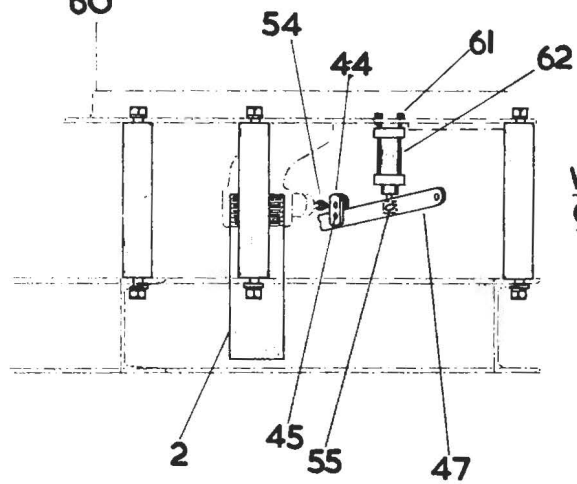
Item No.	Part No.	Description	Item No.	Part No.	Description
*	1-17-0130	Weigh Dial Head and Pedestal Complete	17	1-17-0103	Dashpot Cylinder Assembly
1	1-17-0087	Tare Adjuster	18	1-17-0104	Spring Rivet
2	1-17-0088	Indicator	19	1-17-0105	Rack Spring
3	1-17-0089	Finger Assembly	20	1-17-0106	Main Spring Assembly
4	1-17-0090	Glass	21	1-17-0107	Hangar Bar Assembly
5	1-17-0091	Rack	22	1-17-0108	Adjuster Compression Spring
6	1-17-0124	Dial	23	1-17-0109	Tension Spring
7	1-17-0093	Bezel	24	1-17-0110	Tension Spring Rivet
8	1-17-0094	Indicator Rim Assembly	25	1-17-0111	Shock Absorber Mechanism Assembly
9	1-17-0095	Dial Head	26	1-17-0112	Cross Bar Nuts
10	1-17-0096	Dial Pedestal	27	1-17-0113	Dashpot Plunger Rod Assembly
11	1-17-0097	Dashpot Cylinder Cap	28	1-17-0114	Bearing Bush
* 12	1-17-0098	Dashpot Cylinder Cap Screw	29	1-17-0115	Pinion
13	1-17-0099	Corrugator	30	1-17-0116	Bearing Bush
14	1-17-0100	Connecting Rod	31	1-17-0117	Pinion Housing Assembly
15	1-17-0101	Dashpot Cylinder	32	1-17-0118	Guide Rack Pillar
16	1-17-0102	Pedestal Door			

* Not Illustrated.





WITH HAND CONTROLS.



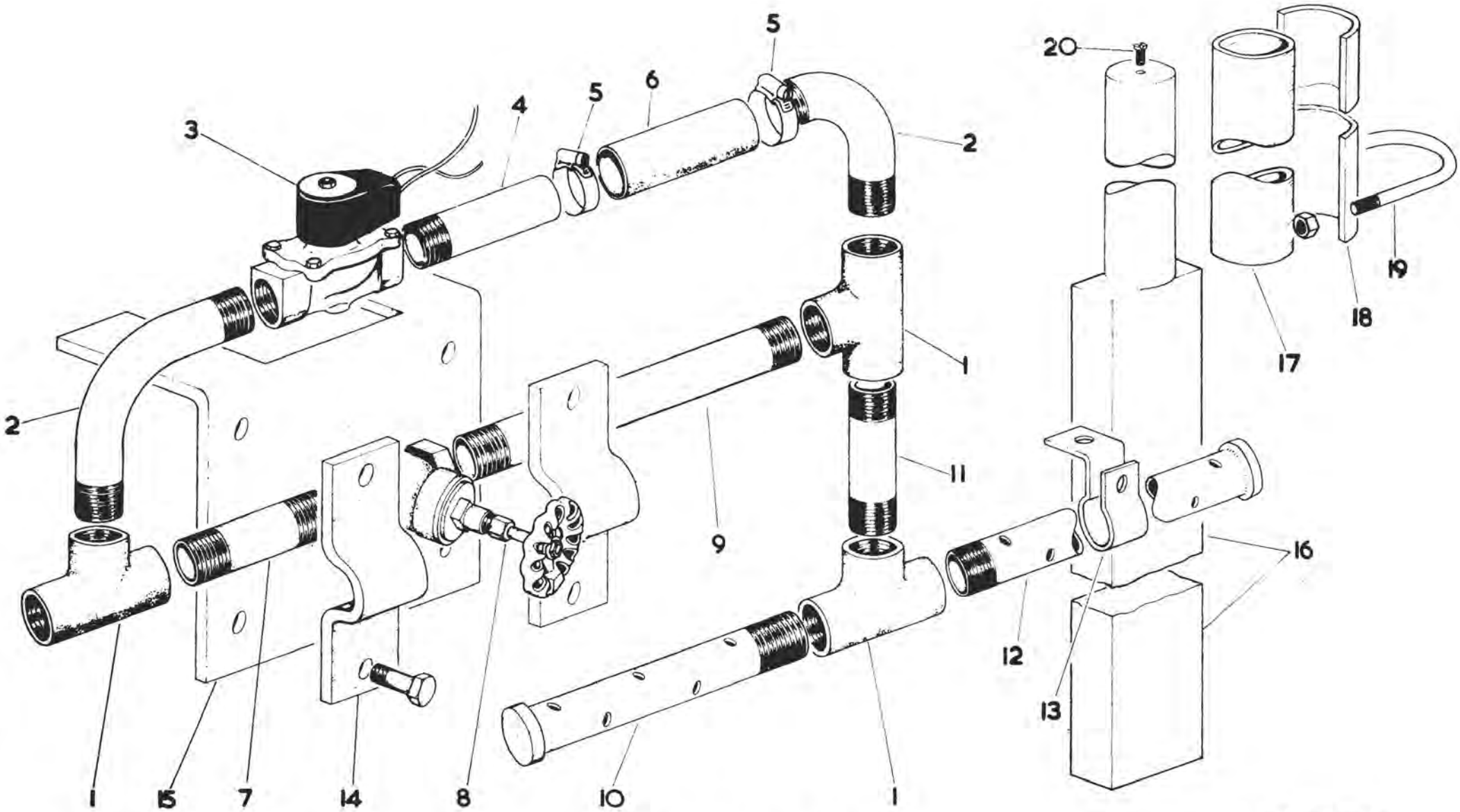
WITH AIR CONTROLS

ARRANGEMENT 40G WATER TANK

I 31/32/0059

Item No.	Part No.	Description	Item No.	Part No.	Description
1	2-21-0153	Outlet Pipe	32	2-21-0029	Centre Bearing
2	3-53-0103	Outlet Pipe Extension	33	2-20-0005	Centre Bearing Chain Pinion
3	3-52-0205	Float Centre Spindle	34	2-21-0022	Centre Bearing Housing
4	3-52-0206	Float Guide Rod	35	3-54-0147	Chain Guide
5	3-52-0207	Fulcrum Pin	36	2-20-0031	Adjusting Rod Chain Pinion
6	3-52-0202	Outlet Valve Spindle	37	1-20-0058	Chain
7	3-52-0203	Indicator Adjusting Rod	38	3-54-0497	Chain Guard
8	3-53-0545	Indicator Guide Tube	39	2-21-0148	Inlet Valve Body
9	1-47-0010	Indicator Scale	40	1-45-0039	Inlet Valve Lever Spring Adjuster
*	3-53-0546	Indicator Scale Stiffener	41	1-56-0019	Outlet Valve Spindle Seal
*	3-54-0502	Indicator Scale Support	*	1-49-0031	Outlet Valve Spindle Washer
10	2-21-0150	Indicator	42	1-33-0028	Outlet Valve Spring
11	3-66-0015	Guide Tube Bush	43	3-52-0058	Outlet Valve Spindle Pin
12	2-21-0149	Indicator Adjusting Rod Handle	44	3-53-0118	Link
13	3-63-0304	Collar	45	3-52-0049	Link Pin
14	1-45-0026	Gauge Glass	46	3-53-0095	Outlet Valve Spindle End
15	3-54-0498	Gauge Glass Guard	47	3-54-0006	Operating Handle
16	2-51-0475	Gauge Glass Cover Rubber	48	2-21-0154	Outlet Valve
17	3-26-0112	Gauge Glass Cover	49	1-57-0016	Outlet Valve Rubber
18	1-24-0269	Gauge Glass Guard Bolt	50	1-33-0016	Release Lever Spring
19	3-54-0141	Gauge Glass Cover Support	51	3-54-0137	Release Lever
20	1-25-3005	Connecting Clips	52		Release Lever Pull Chain (Length to suit customers requirements)
21	2-51-0476	Gauge Glass Connecting Pipe			
22	3-45-0003	Tank Body			Operating Lever Pull Chain (Length to suit customers requirements)
23	3-45-0037	Tank Body Lid			
24	3-45-0038	Float	53	1-51-0058	Hose Connection
25	2-56-0118	Outlet Pipe Joint	54	3-52-0056	Fulcrum Bolt
26	1-49-0025	Washers	55	3-53-0119	Operating Lever Pivot (Air Control)
27	3-63-0138	Locating Collars	56	3-26-0086	Tank Support Pipe Bolt
28	1-33-0058	Inlet Valve Lever Spring	57	3-53-0113	Tank Support Pipe
29	2-21-0151	Inlet Valve Lever Spring	58	1-24-1587	Nut
30	2-21-0152	Inlet Valve	59	1-49-0067	Taper Washer
*	1-57-0015	Inlet Valve Rubber	60	1-43-0007	Spring Washer
31	3-26-0445	Locking Plate	61	1-24-1594	Nut (Air Control)
			62	1-11-0041	Air Cylinder

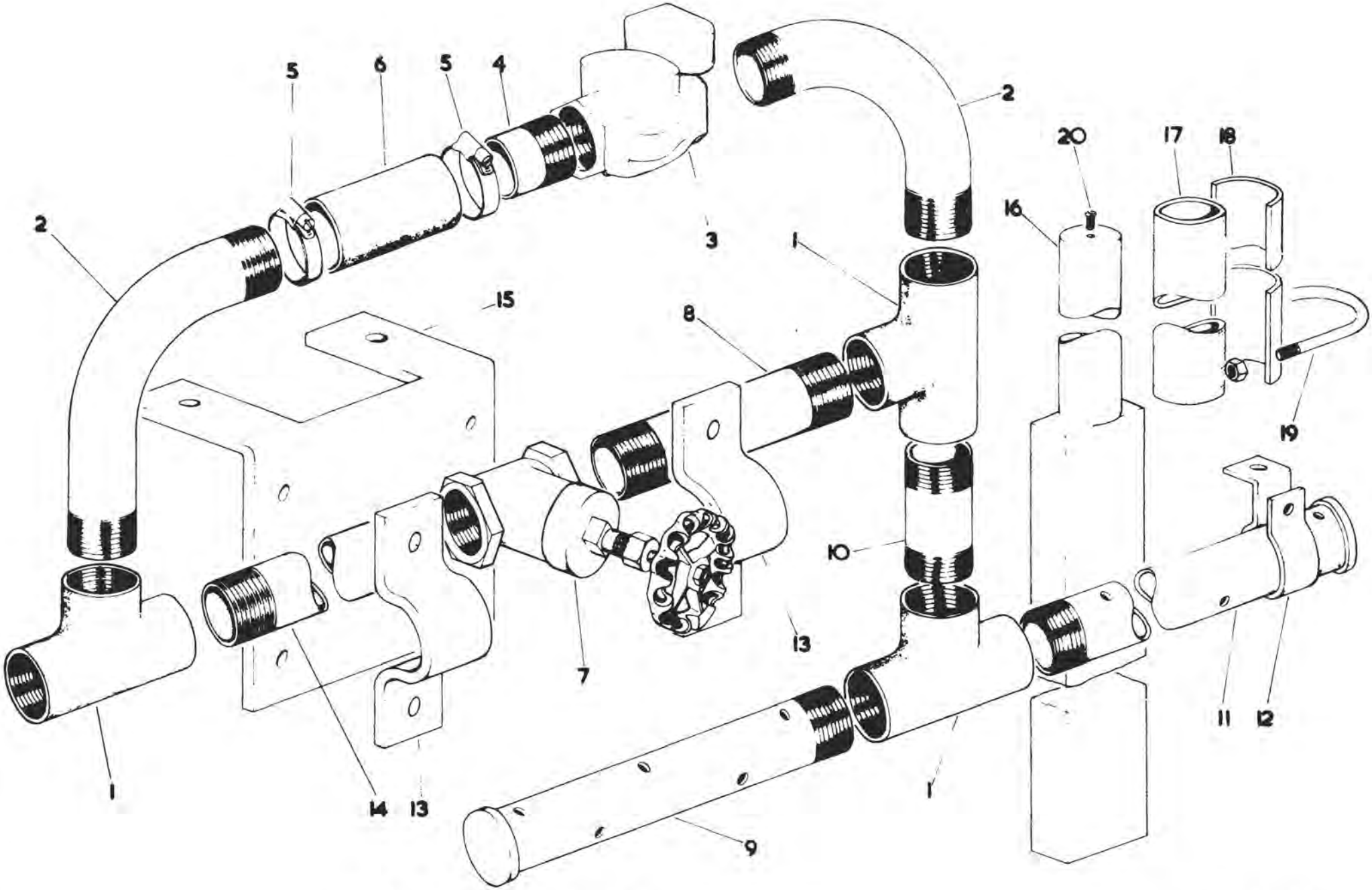
* Not Illustrated.



3/4 B.S.P HYDROBOT.

I 31/32/0061

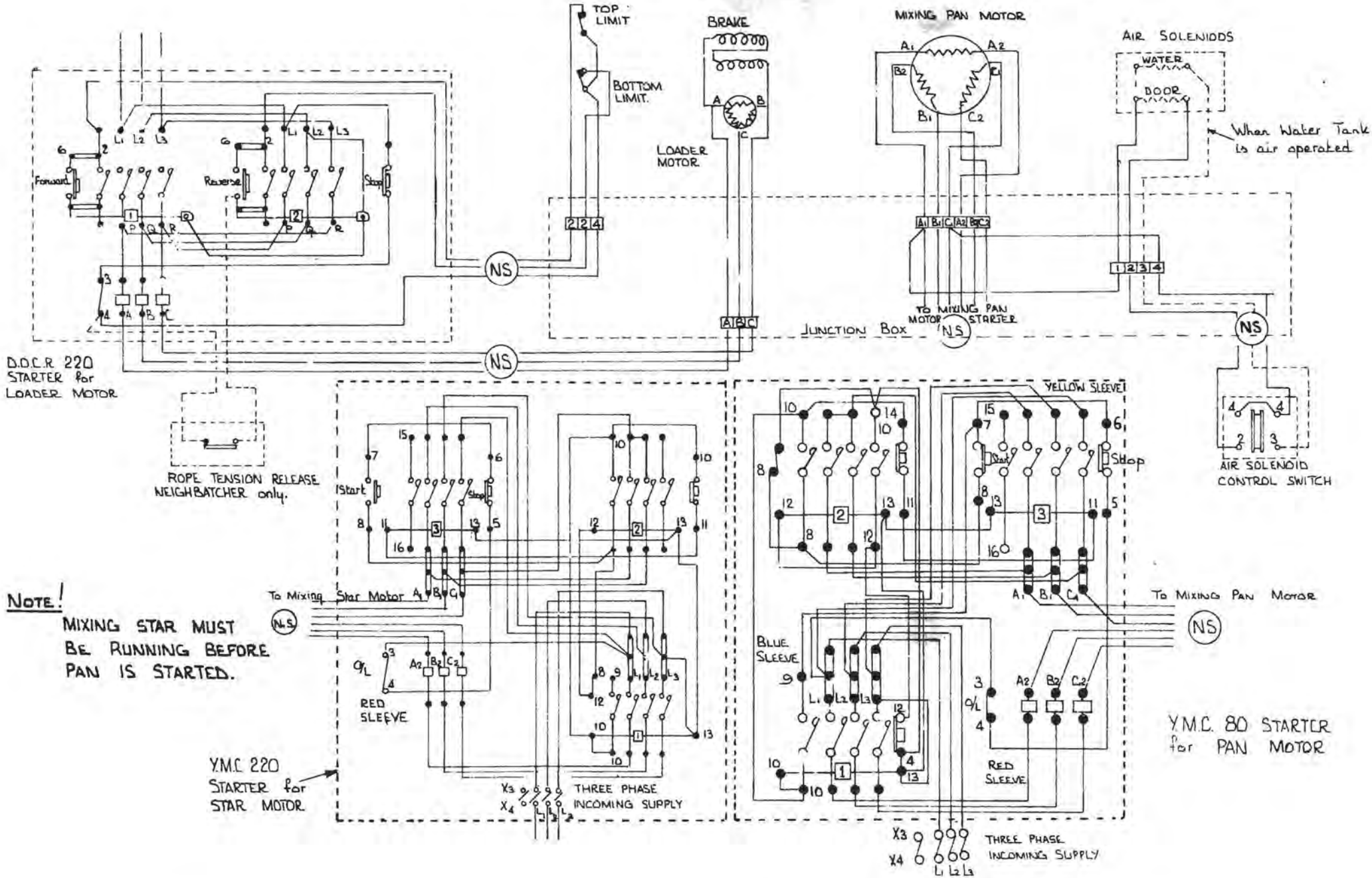
Item No.	Part No.	Description	Item No.	Part No.	Description
1	1-51-0092	Tee Piece	11	3-45-0027	Hydrobot Pipe
2	1-51-0091	Pipe Bend	12	3-45-0005	Spray Pipe (Long)
3	1-45-0024	Asco Solenoid Valve	13	3-24-3002	Pipe Clamp
4	3-53-0341	Hydrobot Pipe	14	3-24-3016	Pipe Clamp
5	1-24-3005	Hose Clip	15	3-54-0092	Valve Support Plate
6	2-51-0455	Rubber Pipe	16	3-26-0185	Hydrobot Probe
7	3-53-0340	Hydrobot Pipe	17	2-51-0004	Green Convoluted Hose
8	1-45-0028	Stop Valve	18	3-53-0120	Hydrobot Clamp
9	3-53-0338	Hydrobot Pipe	19	3-53-0121	U-Bolts
10	3-45-0004	Spray Pipe (Short)	20	1-24-1273	Bolt and Washer



1¼" BSP HYDROBOT

I 31/32/0062

Item No.	Part No.	Description	Item No.	Part No.	Description
1	1-51-0087	Tee Piece	11	3-45-0002	Spray Pipe (Long)
2	1-51-0450	Pipe Bend	12	3-24-3003	Pipe Clamp
3	1-45-0022	Solenoid Valve	13	3-24-3006	Pipe Clamp
4	3-53-0125	Hydrobot Pipe	14	3-53-0124	Hydrobot Pipe
5	1-24-3017	Hose Clip	15	3-54-0092	Valve Support Plate
6	2-51-0088	Rubber Pipe	16	3-26-0185	Hydrobot Probe
7	1-45-0023	Stop Valve	17	2-51-0004	Green Convoluted Hose
8	3-53-0123	Hydrobot Pipe	18	3-53-0120	Hydrobot Clamp
9	3-45-0001	Spray Pipe (Short)	19	3-53-0121	U-Bolts
10	3-53-0122	Hydrobot Pipe	20	1-24-1273	Bolt and Washer



NOTE!

MIXING STAR MUST BE RUNNING BEFORE PAN IS STARTED.

WIRING DIAGRAM FOR MIXERS WITH LOADER AIR OPERATED DISCHARGE GEAR & WATER TANK FOR USE WITH A.E.I. STARTERS & MOTORS. RP 1250 ONLY

I31/0098

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