

WINGET

OPERATION, MAINTENANCE & SPARE PARTS MANUAL

TU.107 HIGH SPEED PORTABLE PAN MIXER

**PUBLICATION No S55
PRINTED 1981
REPRINTED JUNE 2003**

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HIGH SPEED PORTABLE PAN MIXER

TU.107

**FROM M/C No 128
ONWARDS**

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Description & Operation

DESCRIPTION AND OPERATING INSTRUCTIONS

- MAINFRAME AND PORTABILITY** This consists of a rigid fabrication of 5" x 2½" (127 mm x 63.5 mm) channels to which two reinforced folded plate pedestals are attached, to support the mixing pan.
- Ackermann type steering is fitted, with screw down type sprags provided on the front axle to ensure a working stability. Four 22" (55.9 mm) diameter pressed steel road wheels are fitted to standard models.
- On pneumatic portability models four pneumatic tyred road wheels are fitted, with stabilisers attached to the front and rear axles, these are used in conjunction with the screw type sprags to ensure a working stability.
- MIXING PAN** Fabricated from steel plate to form an inner and outer cylinder, the annular trough between, forming the mixing pan. Replaceable inner, outer and bottom wearing plates are used. A detachable pan cover is fitted, with provision for a separate cement entry. The mixing elements consist of an inner, outer and double plough type blade on trailing arms with rubber suspension.
- The arms are attached to a fabricated rotor housing that is, in turn, bolted to a flange on the top of the output shaft of the worm reduction gearbox.
- Rotor speed is 39 r.p.m. (at an engine speed of 1800 r.p.m.) the gearbox having a reduction ratio of 24.5 to 1.
- A single hydraulically operated door is fitted to the rear of the mixing pan for the discharge of concrete.
- TRANSMISSION** The drive to the reduction gearbox is by multiple vee belt from the power unit via a mechanically operated multi-plate dry clutch mounted on the input shaft of the gearbox.
- To reduce wear in allowing the rotor drive to be disengaged during idle periods, (only when pan is empty).
 - To disengage the rotor for engine starting.
 - To allow independent operation of the hydraulic services and dragline winch unit.

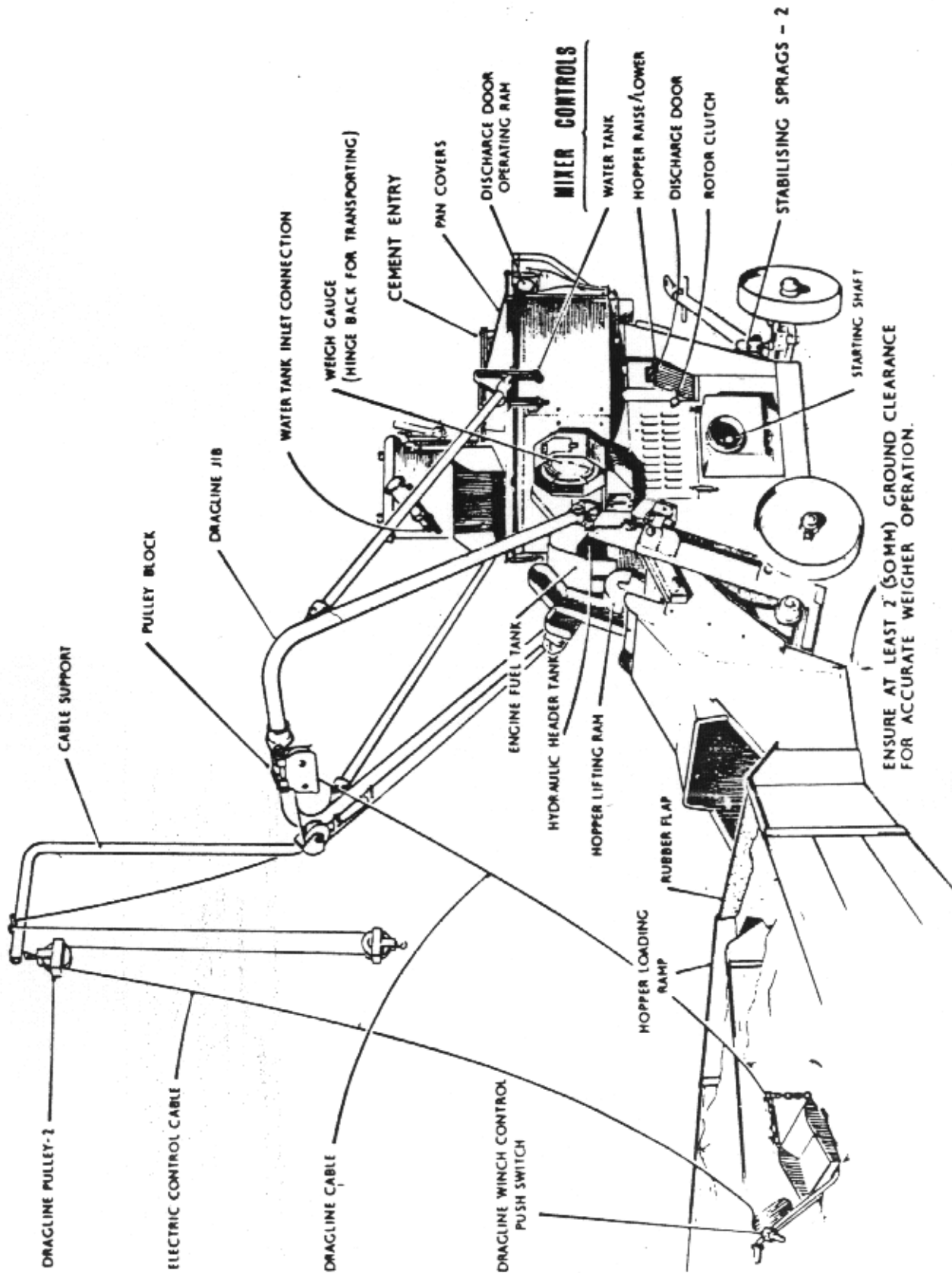


FIG.1 GENERAL ARRANGEMENT

LOADING
HOPPER

This is fitted with guide rollers and a lifting strut. Operating on a short runway, the hopper is elevated using a double strand of 7/16" (11.0 mm) diameter rope passing over a pulley attached to the top of a single acting hydraulic ram to give 2 : 1 velocity ratio. The hopper has a discharge angle of 55° and a raising time of nine seconds.

Ropes to be adjusted equally, such that with the hopper fully down, there is approx. $\frac{1}{4}$ " of free movement on the ram; i.e. when raising the hopper, there is $\frac{1}{4}$ " of movement on the ram before the empty hopper begins to lift.

HYDRAULIC
SYSTEM

A gear type pump, mounted direct to the engine, supplies power for hopper and discharge door ram operation. In the case of electric drive mixers the pump is driven through a flexible coupling from the back of the motor. The oil in the system is continually filtered by a strainer built into the 3 gallon (13.64 litre) capacity tank, this strainer also serving as a filling filter. Control of the rams is by a double unit constructed valve with relief valve pressure set at 2,000 p.s.i. (140.614 kgs./cm²).

WATER
SYSTEM

A two compartment semi-automatic measuring tank is fitted. The upper compartment receives water from the mains throughout the mixing cycle, thereby taking full advantage of the supply available and permitting rapid refilling of the lower section of the tank.

Amounts of water from 1.5 - 8 gallons (6.82 - 36.37 litres) and in half gallon (2.27 litres) increments, can be accurately measured, the total discharge time being 8 gallons/8 seconds (36.37 litres/8 seconds.).

Operation of the tank is simple; with the control lever in the 'FILL' position, set pointer on side of tank to the amount of water required, then tighten clamp nut.

Connect mains supply to tank and allow tank to fill. A coloured indicator float in the sight glass tube will begin to rise when sufficient water has been admitted to the tank to allow the pre-set amount of water to be discharged.

This is done by moving the control lever to 'DISCHARGE' where it will be held in position. When discharge is complete, return lever to the 'FILL' position to allow the cycle to be repeated.

SEQUENCE OF OPERATION

1) Set pointer on scale to volume of water required, lock in position. Connect mains supply and set control lever in FILL position..

Filling

- 2) Water enters the upper compartment A via the inlet valve and strainer unit B, runs down the upper valve seat tube C to flood the lower compartment D until the water level covers the end of the air vent pipe E; preventing any further water entering the lower compartment.
- 3) The upper valve seat tube C floods, the water then filling the upper compartment A until the float lifts and cuts off the mains supply. As soon as an indicator float in the sight glass tube G begins to rise, sufficient water is available for a measured amount to be discharged.

Discharging

- 1) Move control lever smartly into 'DISCHARGE' position - it will hold in position. The two-way valve F lifts from its lower seat and closes the end of the upper seat tube C. The required amount of water will now quickly be discharged into the pan (8 gallons/8 seconds - 36.37L/8Sec).
- 2) When discharge is complete, return control lever to 'FILL' position, the two-way valve F will again close the discharge opening, allowing the water from the upper tank to flood the lower compartment up to the level of air vent tube. At the same time the inlet valve will fall, opening the inlet valve B and restarting the filling cycle.

NOTE:

WHEN ONCE THE POINTER HAS BEEN SET AND THE TANK FILLED ONLY AN INCREASE IN THE AMOUNT TO BE DISCHARGED CAN BE MADE. FOR A REDUCED AMOUNT THE POINTER SHOULD BE RE-ADJUSTED AFTER THE TANK HAS BEEN DISCHARGED AND BEFORE THE CONTROL IS RETURNED TO THE FILL POSITION.

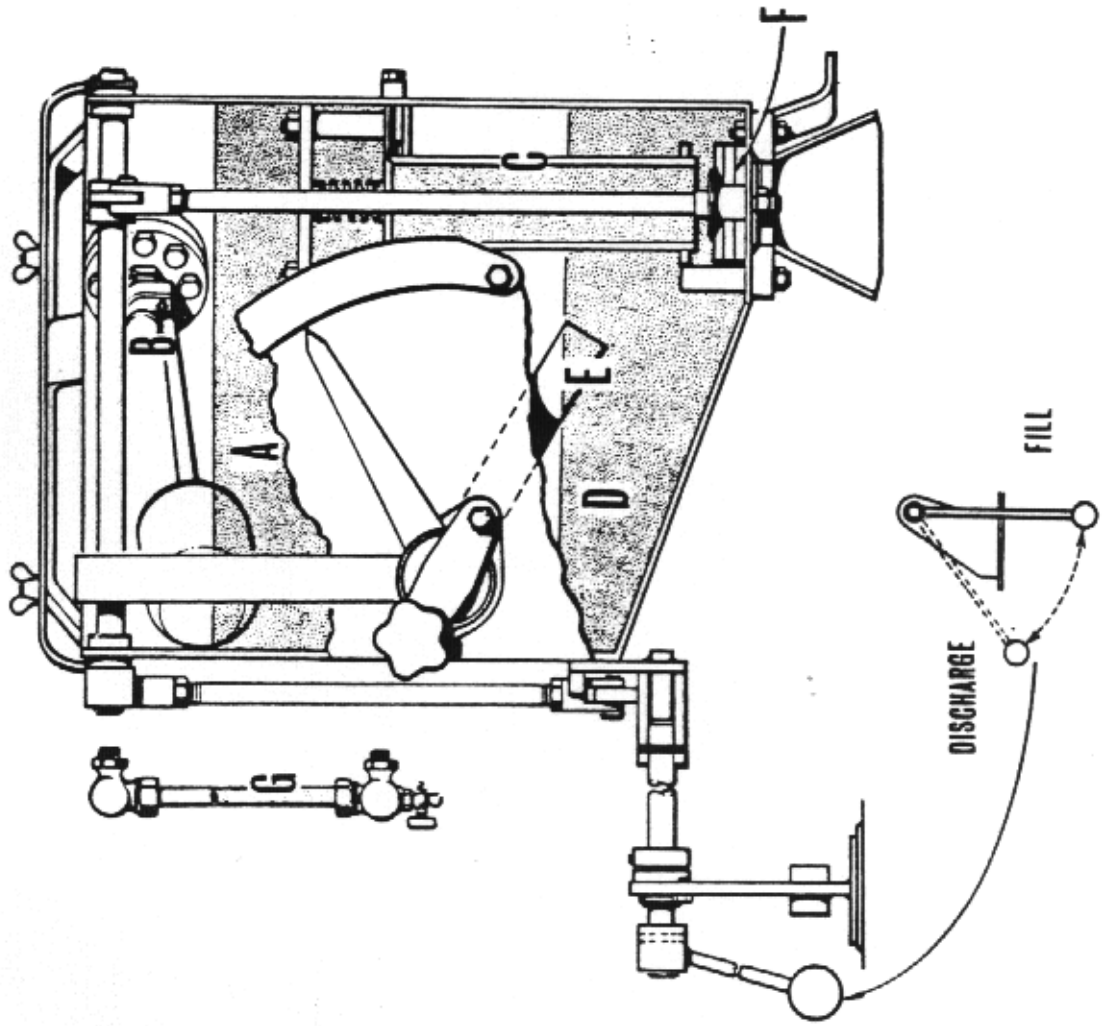


FIG 2 WATER TANK

Draining the Tank:

During periods of frosty weather it is advisable to drain the tank at end of each day's working. To do this, disconnect the mains supply and move the control lever midway between 'FILL' and 'DISCHARGE'. Hold in this position until the water has completely drained.

BATCH WEIGHER

This is of the split runway type with the lower section supported on parallel links, fitted with nylon bushes and hard-chrome plated pins. The free load of the hopper is carried on 9.4 sq. in. (60.54 cm²) loadcell which is connected by nylon tubing to the weigh dial calibrated 0-1100 lb. (498.95 Kgs.).

THE LOADCELL HYDRAULIC CIRCUIT IS PRIMED AND SEALED ON LEAVING THE WORKS AND ON NO ACCOUNT SHOULD IT BE TAMPERED WITH.

The gauge is mounted in a protective box conveniently placed adjacent to the mixer controls. Provision is made to hinge the box for transporting.

It is important that the mixer is standing firm and level and that there is at least two inches (50.0 mm) clearance between the ground and base of the hopper at all times. If aggregate is allowed to build up, inaccurate gauge readings will be obtained.

Normal Operation

Set the pointer on the gauge to the aggregate proportions you require. With the engine running, lower the hopper slowly on to the loadcell. Hold the hopper control lever fully down for a few seconds until the gauge needle begins to move up to 'ZERO' then release. The hopper is then ready to load. If you cannot get a 'ZERO' reading adjust the gauge as described in the following paragraph.

To 'ZERO' Weighing Gauge

With the mixer engine running proceed as follows:

- a) Lower the hopper on to the loadcell as described.
- b) Check that the hopper is clear of the ground.
- c) Taking care not to stand on any part of the hopper, adjust the knurled knob on the side of the gauge to set the pointer to 'ZERO'.

- d) Repeat, lowering the hopper three to four times to check that you obtain a consistent 'ZERO' reading.

DRAGLINE FEEDER

The drag-feeder winch unit has a built-in reduction gear and a totally enclosed dry multi-plate type electro-magnetic clutch. The winch unit is mounted on the mainframe and driven from the power unit by double vee belts. A 12 volt dynamo, belt driven from the input shaft vee-belt pulley of the reduction gearbox, supplies the electrical power for clutch operation, which is controlled from a push switch on the shovel handle.

Operation

Rig to mixer as shown in Fig. 1 and with the engine running pull the shovel back over the aggregate away from the mixer. Depressing the push-switch on the shovel handle will operate the winch clutch and start to drag the shovel towards the mixer. To stop the loaded shovel when it has reached the hopper, simply release the push switch and tip the contents of the shovel into the hopper.

After rigging the electric control cable, a trial run of the shovel may show that the slack of the electric cable is not taken up by the bottom free pulley as the shovel moves into the mixer. To prevent this, increase the size of the weight on the bottom free pulley; if the pulley then comes too close to the ground wind a couple of turns of cable on to the stowage arm on the shovel.

HOPPER LOADING ARRANGEMENT

It will be advisable to use a portable feeding apron or erect a barrier of boards so that materials may be conveniently tipped into the hopper.

If a portable feed apron is to be used, place it squarely in front of the mixer so that hopper does not foul it when being raised or lowered. The verticle rubber flap is pushed forward by the dragline shovel when charging the hopper, the flap preventing material from falling between the hopper and ramp. Finally, stake the apron securely in position, using four picketing lugs on the sides. Extend the centre position of the ramp to separate the aggregate by fitting boards.

INSTALLING
THE MIXER
ON SITE

The working site should be carefully selected for accessibility. If the ground is loose or made up the mixer should be stood on stout timbers in a position as level as possible.

The two stabilising sprags should be screwed down onto the front axle and the mixer finally chocked in position.

Remove and stow the towing bar replacing the drop-end pin in the steering bracket.

A minimum clearance of 2" (50.0 mm) must be maintained between the base of hopper and ground to ensure accurate batch weigher operation. Erect the dragline jib cable and support associated cable as illustrated in Fig. 1.

PRE-RUNNING
CHECKS

- a) Read carefully the engine manual supplied before any attempt is made to use the mixer. Check the level of fuel in tank and especially the level of lubricating oil in engine sump. The covers on this mixer provide ample ventilation so keep them in position during operation.
- b) If an electric drive is used, after the circuit has been connected or re-connected, ensure correct direction of rotation of motor. This should be in a clockwise direction when viewed from the winch side of mixer.
- c) Check the level of hydraulic oil in header tank with hopper fully down. A combined filling cap and dipstick is provided.
- d) Connect the water supply to the tank inlet - read instructions on page 2.
- e) Check that the rotor clutch is disengaged before starting the engine.
- f) Check 1/16" (1.6 mm) clearance between mixing blades and pan; adjust as necessary as described on page 15.
- g) Check level of oil in reduction gearbox, a sight glass tube is provided. For access instructions see page 10.

CONTROLS

All main controls are conveniently grouped on one side of the machine, these are clearly identified on Fig. 1 and serve the following functions:

a) Hopper Control

To raise the hopper, move lever upwards from mid position hold until it is fully up. DO NOT hold lever in 'RAISE' position with the hopper fully up for more than a few

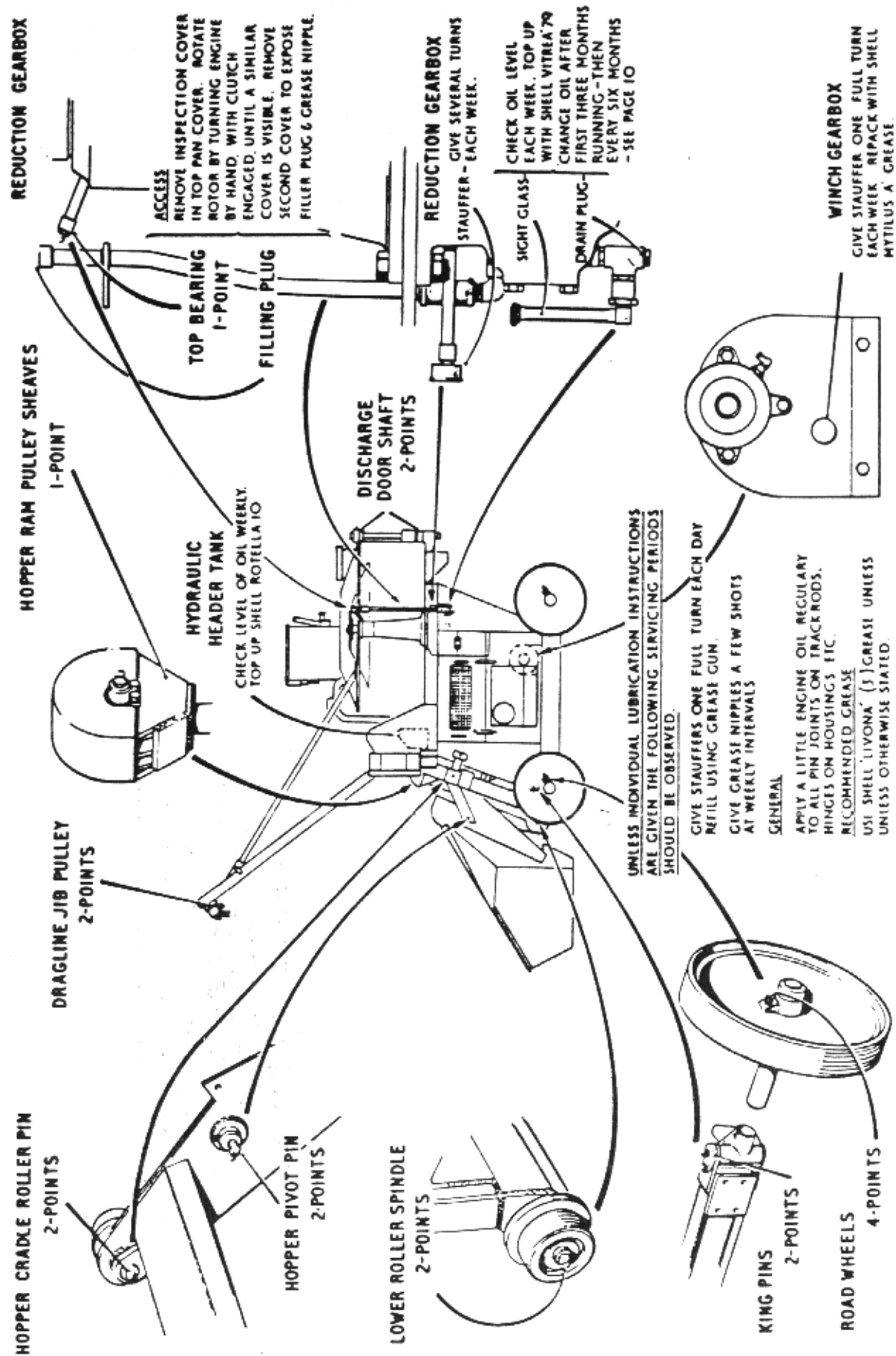


FIG 3. LUBRICATION DIAGRAM

seconds, or overheating and loss of efficiency will result.

To lower hopper push control lever downwards from mid position; releasing lever will check the descent as necessary.

b) Discharge Door

To open or close door, move control lever up or down from mid position as indicated. DO NOT hold lever in open or close position when door is at the end of its travel in either direction.

Intermediate positions of the door may be obtained by releasing the lever when the door is in the desired position.

c) Rotor Clutch

A push/pull control is used to operate the clutch unit, coupling the drive unit to the mixing blades. The IN/OUT position disengages or engages the clutch respectively. It should be noted that the use of the clutch be restricted to engine starting and during idle periods when rotation of the mixing blades are not required.

THE PRACTICE OF ENGAGING THE CLUTCH WHEN THE PAN IS CHARGED WITH MATERIAL MUST BE AVOIDED, EXCEPT IN AN EMERGENCY, AS THIS WILL SERIOUSLY OVERLOAD THE TRANSMISSION SYSTEM.

d) Water Tank Control

A two position control lever is used, spring loaded to remain in the 'DISCHARGE' position.

A mid position can be obtained, where it must be held, to open the valve when draining the upper and lower compartments of the tank. (See tank description - Page 2.)

OPERATION

Mixing

It is important that the mixing blades are rotating at their full working speed before material is fed into the pan.

It is recommended that to reduce the mixing time cycle to a minimum, the cement water and aggregate be added to the pan simultaneously.

Maintenance

The actual mixing time will vary depending on the type of mix, but should NEVER be less than thirty seconds, the average time being thirty to forty-five seconds.

THE MIX SHOULD NEVER BE ALLOWED TO REMAIN IN THE PAN FOR MORE THAN TWICE THE MIXING TIME REQUIRED FOR ANY PARTICULAR MIX.

The action of mixing blades and aggregate generates a small amount of heat which will cause the water content to drop and consequently stiffen the mix.

In the event of the mixer stalling, the clutch should be disengaged and the power unit re-started to restore hydraulic power to open the discharge door.

Stop power unit as a safety precaution, add water to the mix and shovel out as much concrete as possible before attempting to restart mixer.

Discharging

Normal discharge is by opening the door and allowing the rotating mixing blades to discharge the concrete.

CLEANING THE MIXER

At the end of each day's working, or if standing idle for a period of more than two hours, the mixer should be thoroughly washed out to prevent concrete setting in the pan or on mixing blades.

A CLEAN MIXER IS MORE EFFICIENT, REDUCING CONSIDERABLY THE WEAR ON THE PAN AND MIXING BLADES.

Washing down should be carried out as follows:

Remove top covers, and with the mixing blades rotating, rinse the inside of the pan using a high pressure hose pipe. A quantity of gravel added to the pan will assist in a more intensive action.

After some minutes, open the discharge door and completely empty the pan.

Stop engine and thoroughly hose down the paddle arms to remove all traces of concrete.

Check the setting of each of the mixing and scraper blades, adjust if necessary as described on page 15.

MAINTENANCE INSTRUCTIONS

SERVICING FREQUENCY

The times quoted in this section, i.e. weekly, monthly, etc., are based on the following table of running hours:

Daily	-	8 Running Hours
Weekly	-	50 Running Hours
Monthly	-	200 Running Hours
Three Monthly	-	600 Running Hours
Six Monthly	-	1200 Running Hours

LUBRICATION General

The lubrication diagram Fig. 3 shows the location of all greasing and oil filling points on the machine.

With the exception of the stauffers fitted to the reduction gearbox and dragline winch unit, one full turn each day should be given to stauffer/nipple type lubricators which, when empty, should be refilled with a grease gun charged with SHELL LIVONA (3) grease.

The grease nipple lubricator should, at weekly intervals, be given several shots, using a grease gun charged with grease as quoted above.

At frequent intervals a little engine oil should be applied to all pin joints on clutch lever linkage, trackrods, hinges on housing, etc.

REDUCTION GEARBOX

Topping Up

An oil sight glass is fitted to enable oil level to be checked at weekly intervals.

Access is obtained by removing the louvered panel located on the left hand side of mixer below the discharge door.

Top up as necessary with SHELL VITREA 79. Access to filler plug is obtained by removing the inspection plate in top pan cover and turning the engine by hand (with clutch engaged) until a similar cover is visible. Remove this second cover to expose the filler plug.

Stauffer Lubrication

At weekly intervals the stauffer protruding through the main-

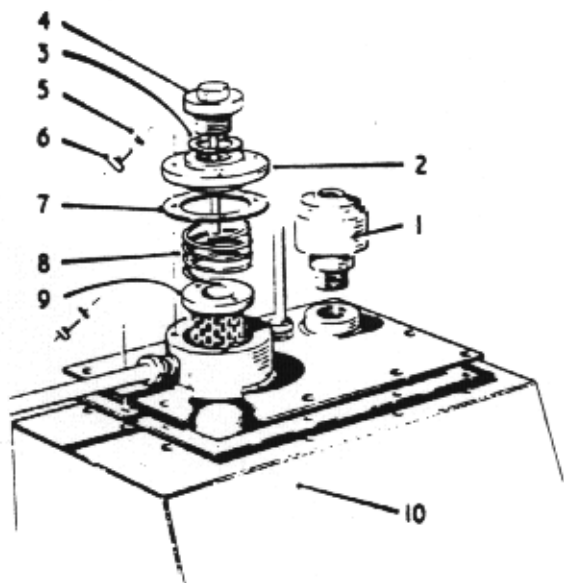
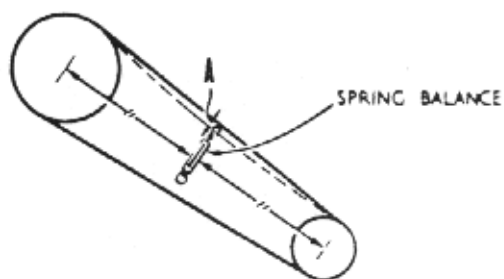


FIG 4 BREATHER & FILLING FILTER REMOVAL

MAIN DRIVE

USING A SPRING BALANCE APPLY
 A 5-6 lb (23-27 Kgs) PULL, ADJUST AS NECESSARY
 TO OBTAIN A $\frac{13}{32}$ (10mm) BELT DEFLECTION
 AT 'A' SEE PAGE 13



WINCH DRIVE

USING A SPRING BALANCE APPLY
 A 3-4 lb PULL, (14-18Kgs) ADJUST AS NECESSARY
 TO OBTAIN A $\frac{5}{32}$ (40mm) BELT DEFLECTION
 AT 'A' SEE PAGE 13

FIG 5 BELT TENSIONING

frame adjacent to the discharge door chute should be given several turns. Refill with SHELL LIVONA (3) grease when empty.

Oil Change

The oil in the gearbox should be changed after the first three months running and subsequently every six months. This is best carried out at the end of a day's working when the oil is warm.

1. Remove drain plug adjacent to sight glass tube and collect oil in a suitable container - capacity 9 pints approx. (5.12 litres).
2. Refill with SHELL VITREA 79 or equivalent to level on sight glass tube.

DRAGLINE WINCH UNIT

Give the gearbox staffer one full turn each week, repack with SHELL MYTILUS 'A' grease.

HYDRAULIC SYSTEM

Header Tank

Access is obtained by removing the right hand panel located between the upper runway. Check level of oil at weekly intervals with engine stopped and the hopper fully down. A combined filling plug and dipstick is fitted, top up with SHELL ROTELLA 10, clean area around filler plug before removing.

Filling Filter Removal (Fig. 4)

The tank is provided with a cylindrical filter which filters hydraulic oil continuously and also serves as a filling filter. The filter should be removed once every three months for inspection, this can be carried out without draining the tank as follows:

- a) Clean the top of the tank and remove the combined filler cap and dipstick (4) and sealing washer (3).
- b) Unscrew the three setbolts (6) securing the filter carrier cap (2) taking care not to lose the copper washers (5).
- c) Remove the cap (2) and gasket (7), lift out the retaining spring (8) and finally the filter (9). Cover the opening with a clean rag while the filter is removed.
- d) Thoroughly clean the filter in petrol only and air dry well before re-assembly.
- e) Replace filter (9) spring (8) gasket (7) and cap (2)

- in that order. Tighten cap fixing bolts (b), not forgetting to replace the copper washers (5).
- f) Top up with oil if necessary and replace filler cap (4) and seal (3).

Cleaning Breather Filter (Fig. 4)

The breather (1), mounted on the top of the hydraulic header tank (10) should be removed every month, washed in petrol and air dried thoroughly before fitting to tank. Keep opening on tank covered with a clean rag while cleaning the filter.

Dismantling System

Do not remove or expose any part of the internal hydraulic gear in the event of a breakdown unless instructed to do so. If you do, this may lead to further complications in correcting the fault. Remember that you have a 'WINGET' Service Depot near which is always ready and willing to help.

Recommended Oils

Generally, if a diesel engine is fitted, any lubricating oil suitable for this, is suitable for the hydraulic system. Do not mix different brands of oil, in case of doubt use:

SAE 10 Oil for temperatures up to 60°F. (15.6°C).

SAE 20 Oil for temperatures between 60°F. (15.6°C.) and 90°F. (32.2°C).

SAE 30 Oil for temperatures above 90°F. (32.2°C).

The capacity of the system is approximately four gallons (18.2 litres) filled with SHELL ROTELLA 10 at the works, the particular grade being shown on a label attached to the top of the header tank.

VEE BELT ADJUSTMENT

It is important that the tension of vee-belts be checked at weekly intervals to ensure efficient power transmission. The method that should be used is shown in Fig. 5; detailed procedure for the various drive belts as follows:

Main Drive Belts

In the case of either type of drive unit, the adjustment is identical:

- a) Unscrew winch unit fixing bolts to allow the unit to be moved sufficiently to slacken drive belts.

- b) Slacken off idler jockey pulley, so it has no contact with main drive belts.
- c) Slacken drive unit fixing bolts.
- d) Release lock nut on each of the two adjusters and screw the bolts in an equal amount (to maintain drive unit alignment) until with a 5 lb. pull, (2.3 Kgs.) using a spring balance, a belt deflection of $\frac{3}{16}$ " (9.5 mm) is obtained. (See fig: 5). Retighten locknuts.
- e) Tighten drive unit fixing bolts, replace jockey pulley in contact with main drive belts, and adjust winch unit belt tension as described in next paragraph.

Winch Drive Belts

Slacken the unit fixing bolts and slide it bodily along the mainframe until with a 5 lb. pull (2.3 Kgs.) using a spring balance a belt deflection of $\frac{3}{16}$ " (4.8 mm) is obtained (see fig: 5.)

Dynamo Belt Drive

Slacken the two fixing bolts and pivot the unit until with a 5 lb. pull (2.3 Kgs.) using a spring balance a belt deflection of $\frac{3}{16}$ " (4.8 mm) is obtained, afterwards retighten fixing bolts.

BATCH
WEIGHER

To ensure maximum efficiency keep the weighing mechanism as clean as possible, avoid build-up of material around link pivots. Do not allow aggregate to accumulate on the ground under the hopper. The lower link pivots need no lubrication, in fact deterioration of nylon bushes will occur if they are lubricated.

SPECIAL NOTE:

ON NO ACCOUNT MUST THE LOAD CELLS BE DISCONNECTED FROM THE WEIGHING DIAL. NO RESPONSIBILITY WILL BE TAKEN IF THE LEAD SEALS ATTACHED TO THE PIPE UNIONS ARE BROKEN.

ROTOR
CLUTCH
UNIT

During the running in period, the clutch should be frequently checked, if excessive slipping and overheating are to be avoided. (see Fig:6) Any adjustment made should be done when the clutch is cold, the procedure being as follows :

1. Disengage clutch and slide back knurled ring.
2. Make initial COARSE setting by inserting an 0.057" (1.5 mm) feeler gauge behind the splined plate. Rotate knurled ring forward to locate nearest spline in advance of setting.
3. Make FINE setting by attaching a spring balance to the

operating knob and check the pull necessary to engage the clutch. This should be 20-22 lbs. (9.1-10.0 Kgs.). To adjust a high or low reading, slide back the knurled ring and rotate same, one spline at a time, clockwise to increase and anti-clockwise to reduce the pull necessary, until the correct reading is obtained.

The operating linkage ensures that very little effort is required to operate the clutch. It is, therefore, essential that the clutch be accurately adjusted at all times to prevent the mechanism being strained.

Friction Plate Replacement

1. Disengage clutch and remove operating collar (2) slacken the locking screws (3) and slide clutch assembly from the shaft (9).
2. Place assembly on bench with friction plates uppermost, extract the circlip (6) using circlip pliers, remove end flange (5).
3. Remove stack of friction plates (13).
Replace worn plates as required, commencing with steel counterplate (4). Assemble remaining stack alternating friction and counterplate, finishing with a steel counterplate before replacing end flange (5) and circlip (6).
4. Refit clutch assembly to shaft and connect up operating linkage in reverse order of dismantling.
Adjust gap as described above.

MIXING AND SCRAPER BLADES

Adjustment

Blades should be inspected daily for wear and adjusted if necessary to 1/16" (1.6 mm) clearance between blade and bottom or side of pan as follows:

1. Open discharge door and stop engine. Turn engine by hand with rotor clutch engaged, until the blade to be checked is adjacent to the door opening.
2. Slacken blade fixing bolts and slide them together with blade, down the slotted holes in the mounting bracket until correct clearance is obtained.
Retighten fixing bolts securely.

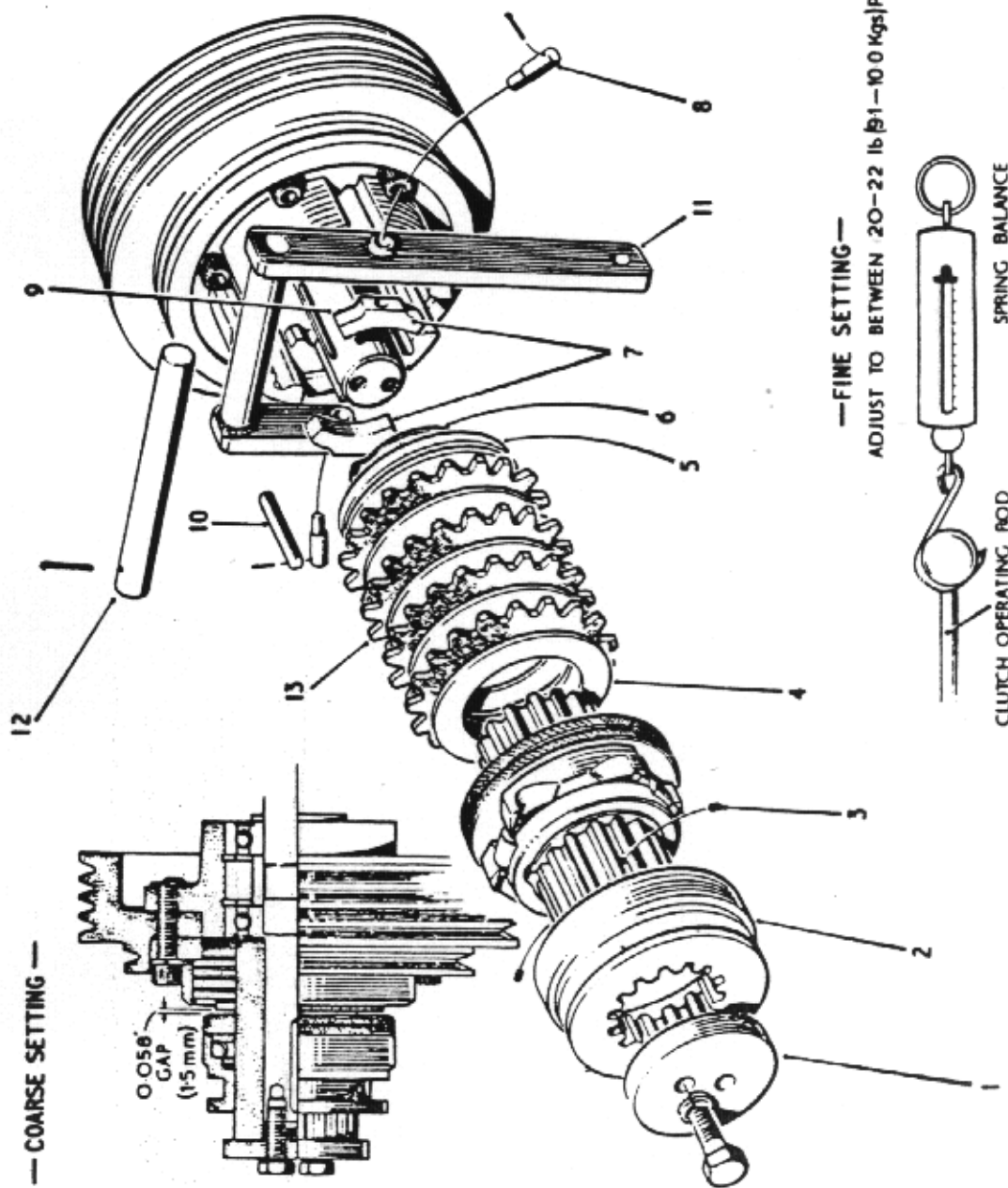


FIG. 6 REPLACEMENT OF CLUTCH FRICTION PLATES

3. After adjustment, it is recommended that as a final check before running the drive unit, that the rotor housing be rotated several times to ensure that the blades do not foul the pan.

NOTE:

FAILURE TO MAINTAIN BLADES IN CORRECT ALIGNMENT WILL RESULT IN CONSIDERABLE WEAR TO BOTH BLADES AND WEARING PLATES.

It is essential that mixing blade adjustment is only done in the manner described above NOT by altering the blade tensioning screw at the top end of each mixing arm. Failure to observe this instruction will result in incorrect settings of both suspension unit tension and mixing blade angle.

Fitting New Blades

Badly worn blades should be renewed as follows:

1. Open discharge door and stop engine. Turn engine by hand, with rotor clutch engaged, until the worn blade is over door opening.
2. Detach worn blade by removing the two fixing bolts, securing it to the arm.
3. Fit new blade and tighten up after adjusting to give 1/16" (1.6 mm) clearance between blade and pan.
4. Turn rotor to check that blade does not foul pan.

REPLACEMENT
OF WEARING
PLATES

To assist in the replacement of either the inner, outer or bottom wearing plates, they have been divided into easily removable sections.

A limited amount of preparatory dismantling is necessary to obtain access to the wearing plates, this is described first and followed by instructions for fitting a specific type of plate.

Any reference numbers appearing in text can be located in the relevant group of the spares section.

Water Tank and Pan Cover Removal

1. Remove self-lock pin from the lower lever (F.38).
2. Slacken grub screw (F.3) securing collar (F.40) and withdraw control shaft assembly (F.39) from the bearing bracket (F.41).

3. Remove the three bolts securing tank to pan cover support. Lift tank clear of machine.
4. Remove section of pan covers and pan support bracket.

Bottom and Inner Plates

1. To obtain easy access the rotor must be removed as follows:
Unscrew the six nuts attaching the rotor to the gearbox output shaft flange.
Insert two bolts into the tapped extraction holes provided between the fixing bolts of the rotor.
Screw down the bolts to separate the mating surfaces.
Lift rotor assembly clear of machine.
2. If bottom wearing plates are to be removed, remove engine side panels on either side of mixer to obtain access to fixing bolts.
Slacken the fixing bolts of the discharge door sealing strip clamps and move strip up to allow ample initial clearance of new wearing plates.
3. Remove countersunk fixing screws and remove worn plates from machine. Refit new plates ensuring good seating by scraping any deposit of concrete that will have built up locally around the edges of the area covered by the old wearing plate.
4. Reassemble rotor and mixing blades assembly to machine, adjust mixing blade clearance if bottom or discharge door wearing plates have been replaced.
Check all round clearance of blades by turning rotor.
5. Replace water tank, pan and engine cover in reverse order of dismantling.
6. Operate discharge door and adjust sealing strip - lock in position.

Outer Wearing Plates

1. Remove discharge door guard, and the centre support tank covers from between the runway.
2. Turn rotor to clear outer scraper blades from the section of wearing plates to be renewed.

3. Remove countersunk fixing bolts and wearing plates. Fit new plates ensuring good seating by scraping around the edges of the area covered by the old wearing plate - repeat operation (2) and (3) on other section of wearing plate if necessary.
4. Adjust outer scraper blade - check all round clearance by turning rotor.
5. Refit guards, pan cover and water tank.

MIXING ARM

The adjustment of the mixing arm should never be interfered with, they are set at a torque loading and never alter.

REPLACEMENT OF MIXING ARM

If at any time an arm is damaged and a new one is to be fitted proceed as follows:

1. Assemble blade (1) to mixing arm (2) and set at highest position that slots in arm will allow.
2. With the blade resting on the pan bottom, fit mixing arm (2) on to serrated shaft of the suspension unit (3).
3. Scribe line across face of mounting bracket and end of suspension unit shaft - see detail A.
4. Withdraw mixing arm and remove suspension unit from rotor housing (4).
5. Assemble mixing arm to suspension unit misaligning the scribe line 3 - 4 serrations, see detail B.
(This is done to provide working tension of final assembly.)
Secure in position with bolt, nut and spring washer (5).
6. Bolt complete assembly to rotor housing (4).
7. Fix bolt, nut and dome nut (6) through mixing arm and plate on rotor housing. Adjust tension until 1/16" (1.6 mm) remains between mixing blade and bottom of pan - lock securely in position.
8. Rotate mixing blades by turning engine by hand with clutch engaged, to check all round clearance between blades and bottom of pan.

IMPORTANT NOTE

HAVING TENSIONED THE MIXING ARM AS DESCRIBED ABOVE, ANY

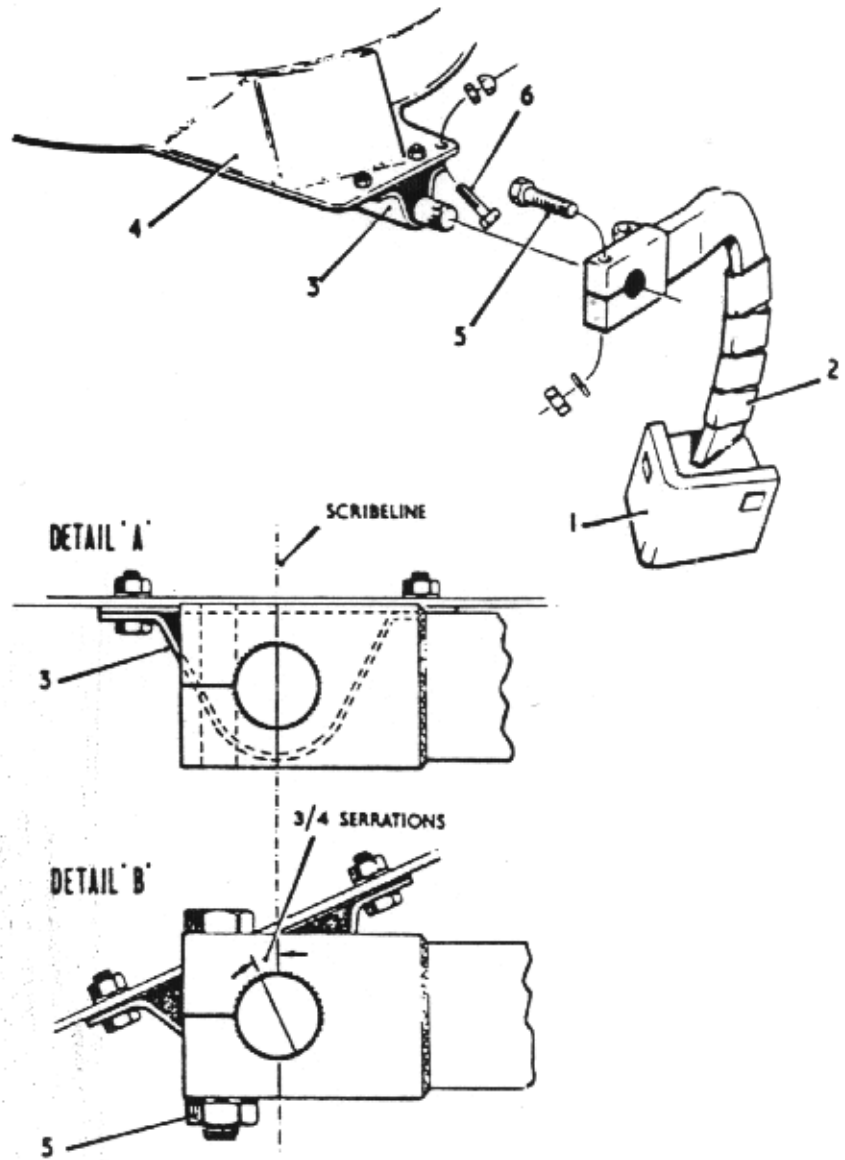


FIG.7 REPLACEMENT OF MIXING ARM

AIRGAP ADJUSTMENT

AS THE CLUTCH PLATES WEAR, THE AIRGAP DECREASES AND SHOULD BE CHECKED PERIODICALLY AS FOLLOWS :-
DISCONNECT DRIVE TO WINCH AND REMOVE CLUTCH COVER PLATE. SWITCH ON CLUTCH. INSERT .010" FEELER GAUGE THROUGH ALL THREE MEASURING SLOTS AND CHECK GAP. IF ADJUSTMENT IS NECESSARY SWITCH OFF CLUTCH AND UNSCREW ITEM 1 WITH AN ALLEN KEY. INSERT TOMMY BAR IN HOLE PROVIDED AND ROTATE UNTIL THE GAP IS .010" TIGHTEN ITEM 1 SECURELY. RECHECK GAP. REPLACE COVER PLATE.

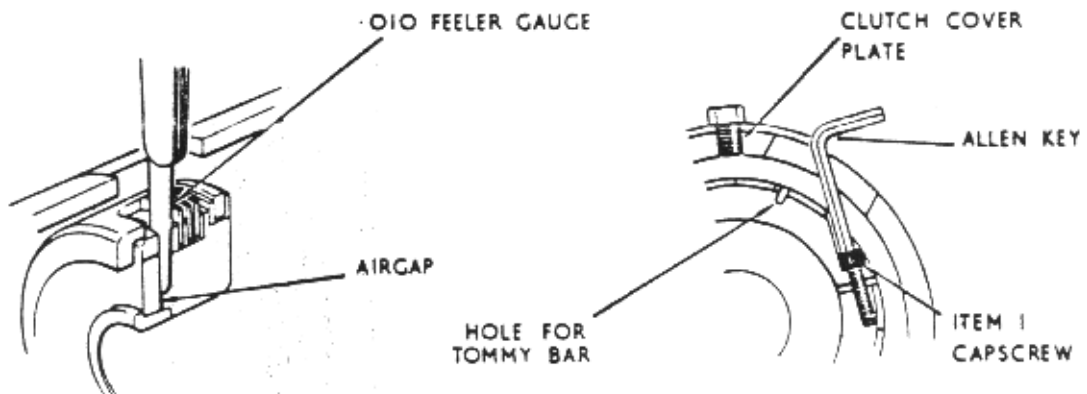


FIG 8 ADJUSTMENT TO DRAGLINE WINCH CLUTCH

FURTHER ADJUSTMENT OF BLADE CLEARANCE MUST ONLY BE MADE BY RAISING OR LOWERING THE BLADE USING THE SLOTTED FIXING HOLES ON THE MIXING ARM AND NOT BY ALTERING THE SETTING OF TENSIONING BOLT (6).

AS PREVIOUSLY STATED, FAILURE TO OBSERVE THIS INSTRUCTION WILL RESULT IN INCORRECT SETTINGS OF BOTH SUSPENSION UNIT TENSION AND MIXING BLADE ANGLE.

AIRGAP ADJUSTMENT

AS THE CLUTCH PLATES WEAR, THE AIRGAP DECREASES AND SHOULD BE CHECKED PERIODICALLY AS FOLLOWS :-
DISCONNECT DRIVE TO WINCH AND REMOVE CLUTCH COVER PLATE. SWITCH ON CLUTCH. INSERT $.010''$ FEELER GAUGE THROUGH ALL THREE MEASURING SLOTS AND CHECK GAP. IF ADJUSTMENT IS NECESSARY SWITCH OFF CLUTCH AND UNSCREW ITEM 1 WITH AN ALLEN KEY. INSERT TOMMY BAR IN HOLE PROVIDED AND ROTATE UNTIL THE GAP IS $.010''$ TIGHTEN ITEM 1 SECURELY. RECHECK GAP. REPLACE COVER PLATE.

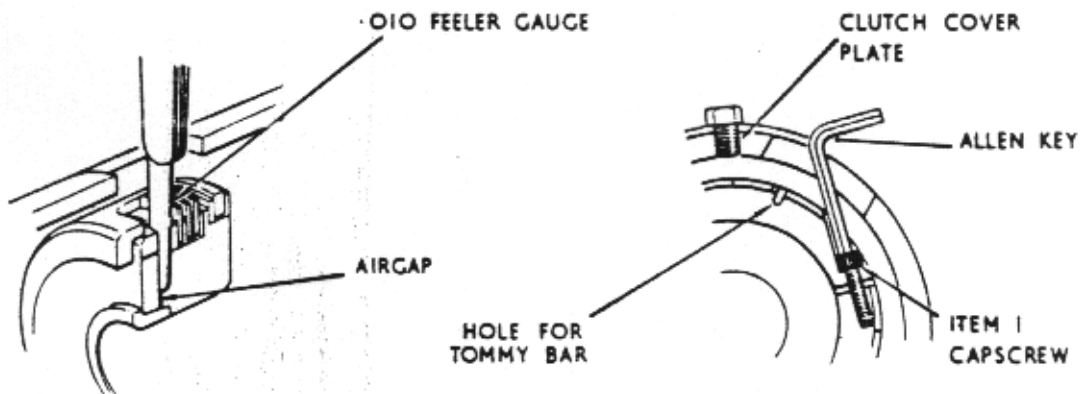


FIG 8 ADJUSTMENT TO DRAGLINE WINCH CLUTCH

SERVICING SCHEDULE

DAILY (8 HOURS RUNNING)

<p>MIXING AND SCRAPER BLADES</p>	<p>Inspect for wear and adjust to give 1/16" (1.6 mm) clearance between bottom and side of pan, see page 15.</p>
<p>MIXER</p>	<p>Thoroughly clean the inside and outside of mixer.</p>
<p>GENERAL LUBRICATION</p>	<p>Apply engine oil to all pin joints on clutch linkage, track rods, hinges on housings, etc.</p>

WEEKLY (50 HOURS RUNNING)

<p>NIPPLES</p>	<p>Give several shots using a grease gun. For location see Fig. 3.</p>
<p>REDUCTION GEARBOX</p>	<p>Check oil level, for location see Fig. 3.</p>
<p>HYDRAULIC HEADER TANK</p>	<p>Check level, a combined filling plug and dipstick is provided, see Fig. 4.</p>
<p>VEE BELT ADJUSTMENT</p>	<p>Check tension of main winch and synchro drive belts, see Page 10.</p>
<p>ROTOR CLUTCH</p>	<p>Grease operating gluts. Attach a spring balance to the operating knob and check pull necessary to engage clutch, this should be between 20-22 lb. (9.1-10.0 Kgs.). For adjustment see page 11.</p>
<p>DRACLINE WINCH</p>	<p>Give stauffer one full turn.</p>

MONTHLY (200 HOURS RUNNING)

HYDRAULIC HEADER TANK BREATHING FILTER	Clean filter see Page 10.
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THREE MONTHLY (600 HOURS RUNNING)

REDUCTION GEARBOX	Change oil after FIRST three months operation and subsequently every six months - see below.
HYDRAULIC HEADER TANK FILLING FILTER	Remove, clean and inspect filter, for instruction, see Page 9.

SIX MONTHLY (1200 HOURS RUNNING)

REDUCTION: GEARBOX	Change oil, for instructions see Page 8.
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Spares

Please note that a number of components are described as being c/w screws, nuts and washers, this is no longer the case and all fixings should be ordered separately if required. Imperial fixings may no longer be available and the nearest metric equivalent will be supplied.

TO FIND A SPARE PART

The assemblies have been divided into groups and given identification A, B, C, etc. To identify a component, first find the relevant assembly in the list given on this page, this will give you a group letter and page number to turn to. On turning to this group, the illustrations will enable you to identify the part you require and give you a reference number. Against this number in the parts list will be found the DESCRIPTION and PART NUMBER information which we require.

SPARES ASSEMBLY GROUPS

GROUP 'A'	- PORTABILITY MAINFRAME PAN GUARDS AND WEARING PLATES PORTABILITY PNEUMATIC ROAD WHEELS	Page 22
GROUP 'B'	- ROTOP AND MIXING BLADES	Page 26
GROUP 'C'	- HOPPER AND LIFTING GEAR ASSEMBLY	Page 27
GROUP 'D'	- UPPER AND LOWER RUNWAY	Page 29
GROUP 'E'	- DISCHARGE DOOR ASSEMBLY	Page 30
GROUP 'F'	- WATER TANK ASSEMBLY WATER TANK CONTROLS WATER TANK VALVE ASSEMBLY	Page 31
GROUP 'G'	- WINCH UNIT DRACLINE ASSEMBLY	Page 34
GROUP 'H'	- REDUCTION GEARBOX	Page 37
GROUP 'J'	- PETER PH2 DRIVE ASSEMBLY	Page 40
GROUP 'K'	- HYDRAULIC SYSTEM HYDRAULIC RAM	Page 42
GROUP 'L'	- HIGGS ELECTRIC DRIVE ASSEMBLY	Page 45
GROUP 'M'	- THREE SIDED LOADING HOPPER	Page 46
GROUP 'N'	- JOCKEY PULLEY	Page 47

List compiled to LS16851 and LS16813 - October, 1966

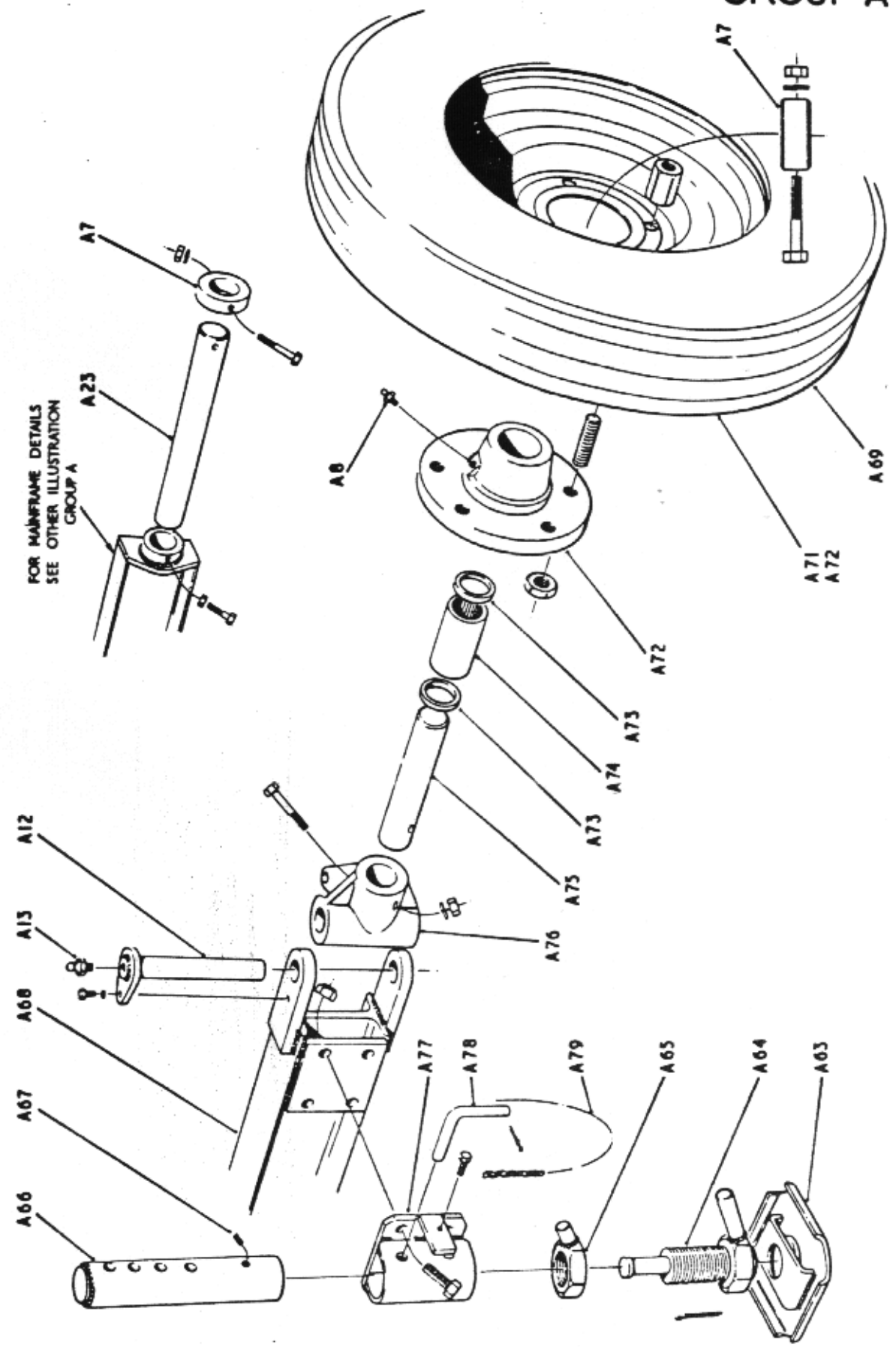
Ref. No.	No. per Machine	Description	Part No.
A 1	1	Tow Bar	N27755
A 2	1	Tow Bar Pin	N27818
A 3	1	Steering Bracket	N27799
A 4	1	Front Axle	GK1142
A 5	2	Front Stub Axle Bolt Nut and Spring Washer	N27756
A 6	2	Stub Axle Pin	N27757
A 7	4	Collar with Bolt, Nut and Spring Washer	STD14D
A 8	4	Nipple	ND104/G
A 9	4	Road Wheel (Pressed steel) with Nuts, Bolts and Spring Washers	G01422
A 10	1	Near Side Track Rod	N27762
A 11	2	Pin for Track Rod with Split Pin and Washer	N27816
A 12	2	King Pin with Setscrew and Spring Washer	N27761
A 13	2	Nipple	ND102/G
A 14	2	Stabilizer Bolt	N28181
A 15	1 l.h. 1 r.h.	Screwed Sprag Cylinder with Bolts, Nuts and Spring washers	GK1141
A 16	2	Backing Strip with Bolts, Nuts and Spring Washers	GK1143
A 17	1	Front Axle Pivot Bracket with Bolts, Nuts, Spring and Taper Washers	GK1139
A 18	1	Axle Pivot with Washers and Split Pin	GK1144
A 19	1	Off Side Track Rod	N27763
A 20	1	Centre Track Pin with washer and Split Pin	N27817
A 21	1	Steering Bracket Pin with Washers and Split Pins	N27815
A 22	1	Main Frame Complete	GK1316
A 23	2	Stub Axle (Rear) with Bolts, Nuts, Spring Washers, Setscrews and Locknut	GK1145
A 24	1	Lower Guard (Starting Side) with Bolts, Nuts and Spring Washers Petter PH2 Electric Drive	GK1158 GK1153

Ref. No.	No. per Machine	Description	Part No.
A 25	1	Tool Box with Bolts Nuts and Spring Washers	N28360
A 26	-	-	-
A 27	12	Spring Bonnet Clip	FB101
A 28	1	Hinged Guard with Bolts	GK1161
A 29	1	Control Valve Guard with Bolts, Nuts and Spring washers	GK1160
A 30	1	Discharge Chute	GK1066
A 31	1	Upper Guard (Starting Side) Petter P.H.2.	GK1322
		Upper Guard (Starting Side) Higgs Electric	GK1285
A 32	1 set	Assembly of Pan Bottom Wearing Plates with Countersunk Head Screws, Nuts and Spring Washers	GK1010
A 33	4	Pan Outer Wearing Plates with Countersunk Head Screws, Nuts and Spring Washers	GK1012
A 34	1	Support for Pan Covers with Setscrews, Nuts and Spring Washers: Early Machines	XP8773
		Later Machines	GK1104
A 35	1	Pan Cover (Starting Side)	GK1156
A 36	1	Silo Chute Cover with Wing Nuts	XP8777
		Early Machines	
		Silo Chute Cover with Bolts, Nuts and Spring Washers	
		Later Machines	GK1106
A 37	1	Inspection Cover with Setscrews and Spring Washers	GK1057
A 38	2	Pan Inner wearing Plates with Countersunk Head Screws, Nuts and Spring Washers	GK1013
A 39	1	Fuel Tank Guard	GK1150
A 40	1 r.h. 1 l.h.	Upper Runway with Bolts and Countersunk Bolts, Nyloc Nuts and Spring Washers	GK1100
A 41	1	Hydraulic Tank Guard	GK1149
A 42	1	Cover Centre Support with Bolts, Nuts, Spring and Tapered Washers	GK1148
A 43	1	Upper Runway Backplate	GK1099
A 44	1	Mixing Pan with Bolts, Nuts, Spring and Tapered Washers	GK1000

Ref. No.	No. per Machine	Description	Part No.
A 45	2	Louvre for Engine Guard with Bolts, Nuts and Spring washers	GK1163
A 46	1	Lower Guard (Dragline Side) with Bolts, Nuts and Spring Washers	GK1320
	1	Lower Guard (Non Start Side) for Machines fitted less Dragline	GK1321
A 47	1	Upper Guard (Dragline Side) Petter P.H.2	GK1324
	1	Upper Guard (Dragline Side) Higgs Electric	GK1326
A 48	2	Inspection Cover	GK1162
A 49	2	Lifting Eye	GK1121
A 50	6	H.T. Bolt with Nuts and Spring Washers	WA308/14
A 51	1	Pan Cover (Feed End)	GK1154
A 52	1	Pan Cover (Dragline Side)	GK1155
A 53	2	Wooden Buffer with Coach Bolts, Nuts and Spring Washers	GK1334
A 54	1	Rubber Cord - 24" long	RS 110
A 55	1	Hopper Pin with Jackchain and Tag	GK1304
A 56	1	Striker Plate with Countersunk Screws	GK1055
A 57	-	-	-
A 58	2	Core Plug	GC1204
A 59	1	Cement Chute Gasket	GK1105
A 60	4	Wheel Hub (Pressed Steel Road Wheels only)	G01423
A 61	4	Wheel Backing Plate (Pressed Steel Road wheels only)	GC1654
A 62	1	Baffle for Cyclopac Air Cleaner with Bolts, Nuts and Spring Washers	GK1323
A 63	4	Base for Stabiliser	N8695/1
A 64	4	Lifting Screw for Stabiliser with Washer and Split Pin	N11505
A 65	4	Locking Nut	N8695/3
A 66	4	Tube for Stabiliser	N8696
A 67	8	Grubscrew	SB305/10
A 68	1	Front Axle for Pneumatic wheels with Bolts, Nuts and Spring Washers	GK1297

Ref. No.	No. per Machine	Description	Part No.
A 69	4	Wheel Hub with Stud and Nuts	WP300/16
A 70	4	Tyre	WP300/16/C
A 71	4	Tube	WP300/16/T
A 72	4	Hub Adaptor	N18219
A 73	8	Distance Washers	N18564
A 74	4	Bearing	SBB101
A 75	2	Stub Axle Pin	N27757
A 76	2	Front Stub Axle with Bolt, Nut and Spring Washer	N27756
A 77	4	Stabiliser Bracket with Bolt, Nut and Spring Washer	N28703
A 78	4	Locking Pin for Stabiliser with Split Pin	N11783
A 79	4	Dog Chain 10" long with Nut and Spring Washer	CF100
A 80	2	Adjusting Screw with Nuts, Lock-nuts and Spring Washers	SS107/20

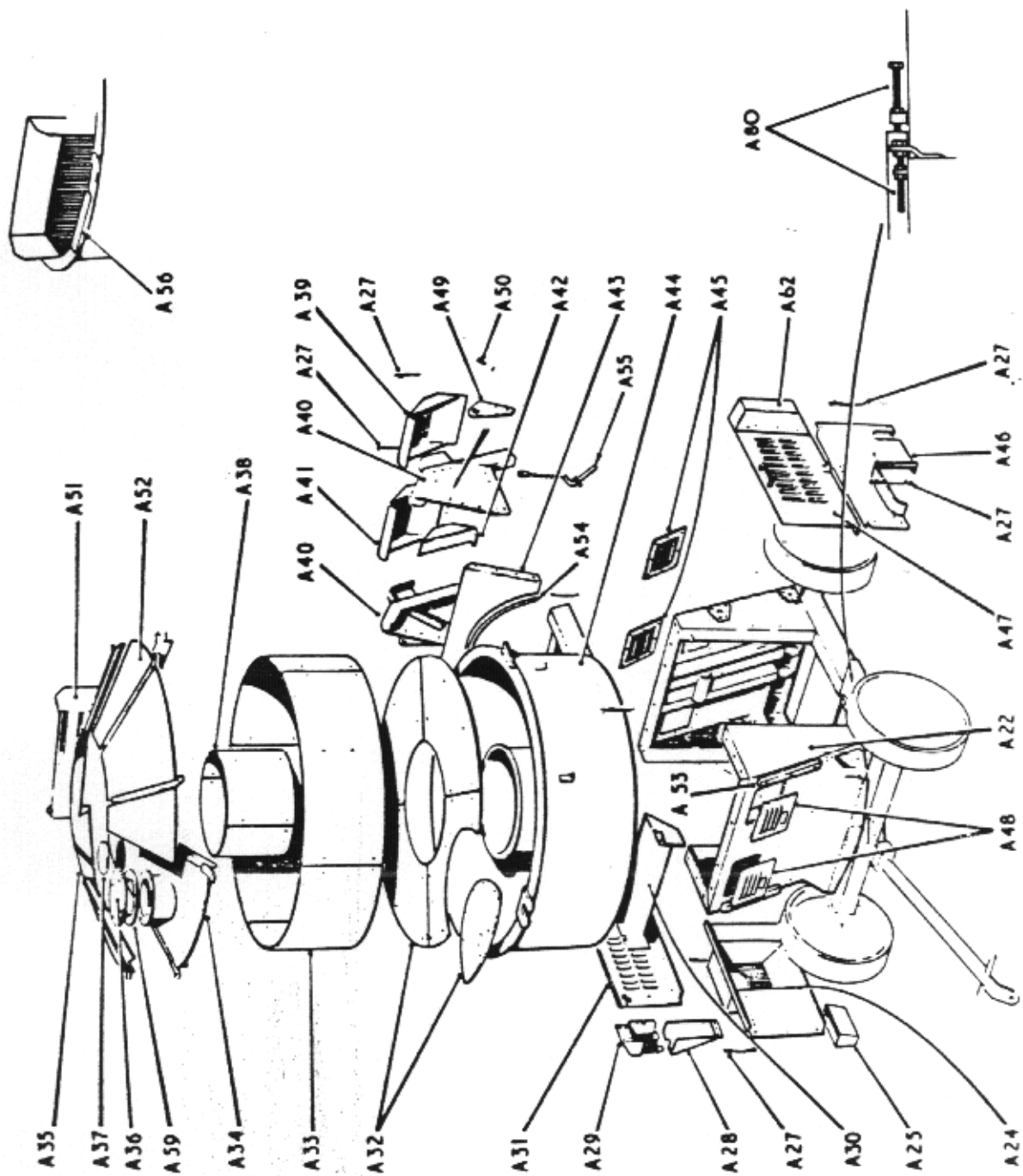
GROUP A



FOR MAINFRAME DETAILS
SEE OTHER ILLUSTRATION
GROUP A

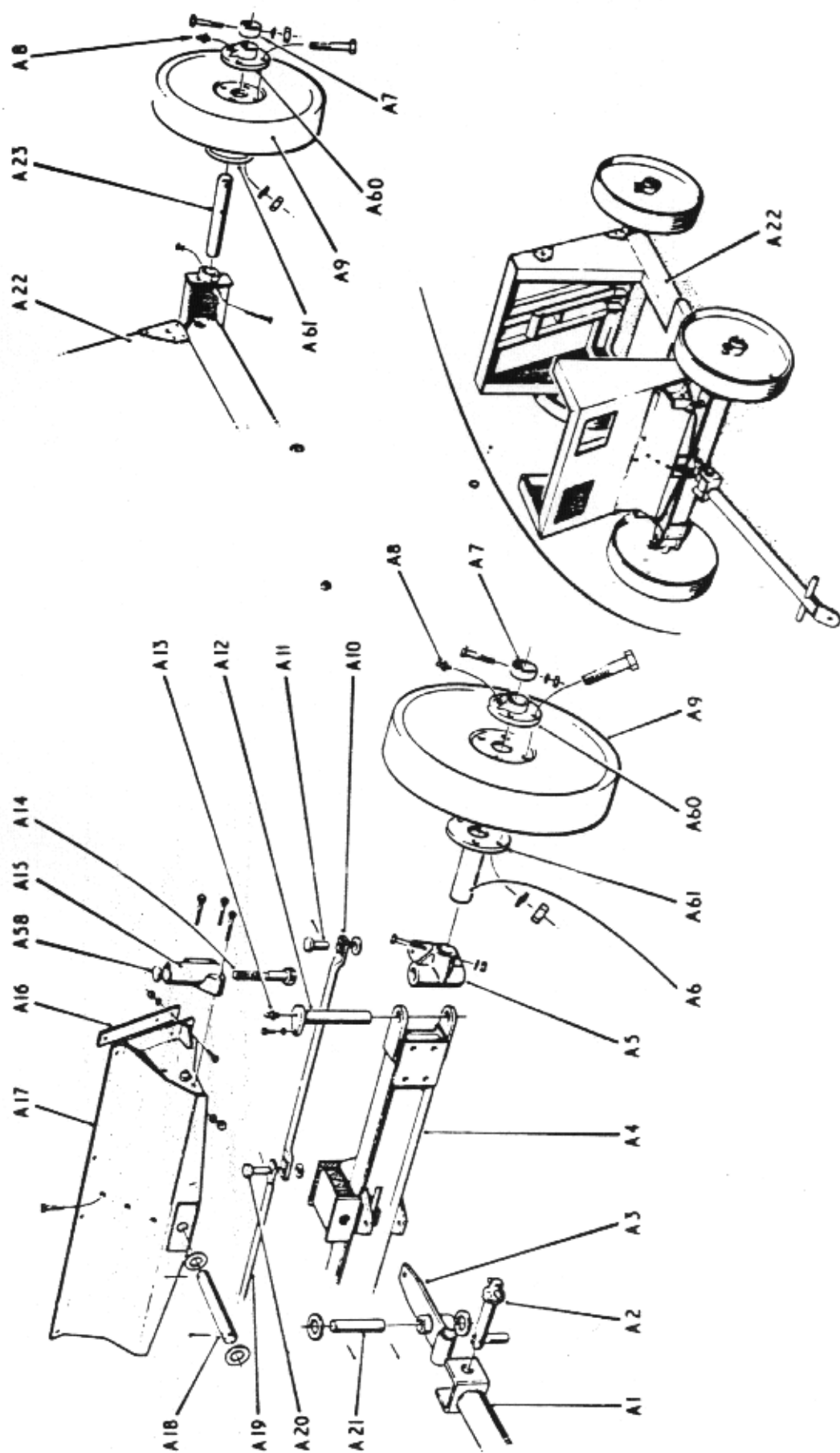
PORTABILITY FOR PNEUMATIC WHEELS

GROUP A



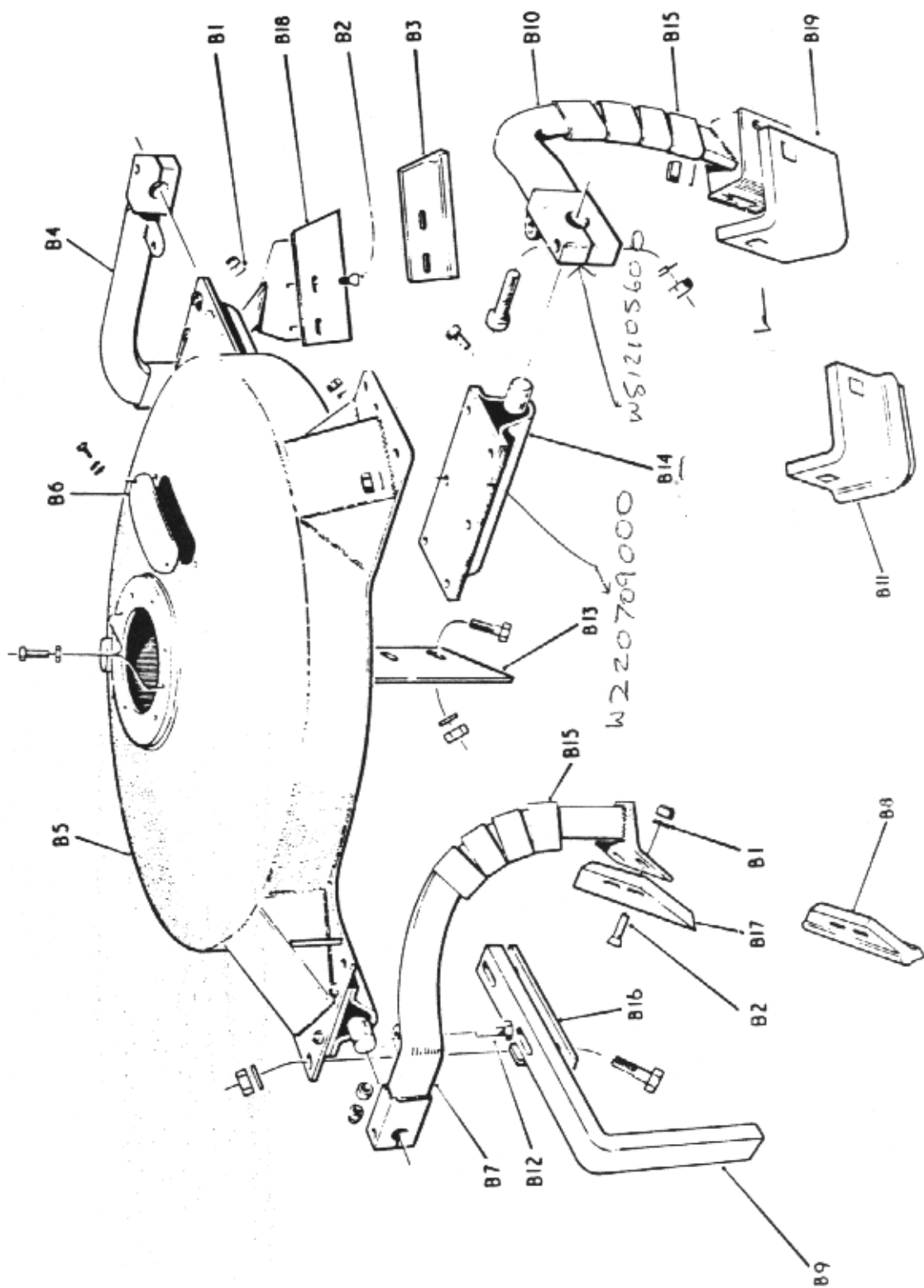
MAINFRAME PAN GUARD & WEARING PLATES

GROUP A



PORTABILITY

REF.NO.	NO.PER MACHINE.	DESCRIPTION.	PART NO.
B 1	8	Paddle Blade Washer.	GT1625
B 2	8	Bolt for Paddle Blade with Binx Nut.	GT1624
B 3	1	Inner Paddle Blade (Optional).	GK1028
B 4	1	Outer Mixing Blade Arm with Bolt, Nut and Spring Washer.	GK1068
B 5	1	Assembly of Rotor.	GH1003
B 6	1	Inspection Cover with Setscrew and Spring Washer.	GH1005/5
B 7	1	Inner Mixing Blade Arm with Bolt, Nut and Spring Washer.	GH1067
B 8	1	Inner Paddle Blade (Optional).	GK1027
B 9	1	Outer Scraper Blade with Bolt, Binx Nut and Flat Washer.	GK1032
B 10	2	Plough Blade Arm with Bolt, Nut and Spring Washer.	GH1065
B 11	2	Plough Blade (Optional).	GK1026
B 12	4	Bolts with Nut, Capnut and Plain Washers.	WB108/26
B 13	1	Inner Scraper Blade with Bolt, Binx Nut and Flat Washer.	GH1042
B 14	4	Suspension Unit with Bolts, Nuts and Spring Washers.	GH1056
B 15	16	Garter for Paddle Blade Arm.	GK1040
B 16	1	Locking Tab.	GK1054
B 17	1	Inner Paddle Blade.	512-1393
B 18	1	Outer Paddle Blade.	512-1394
B 19	1	Plough Blade.	512-1392



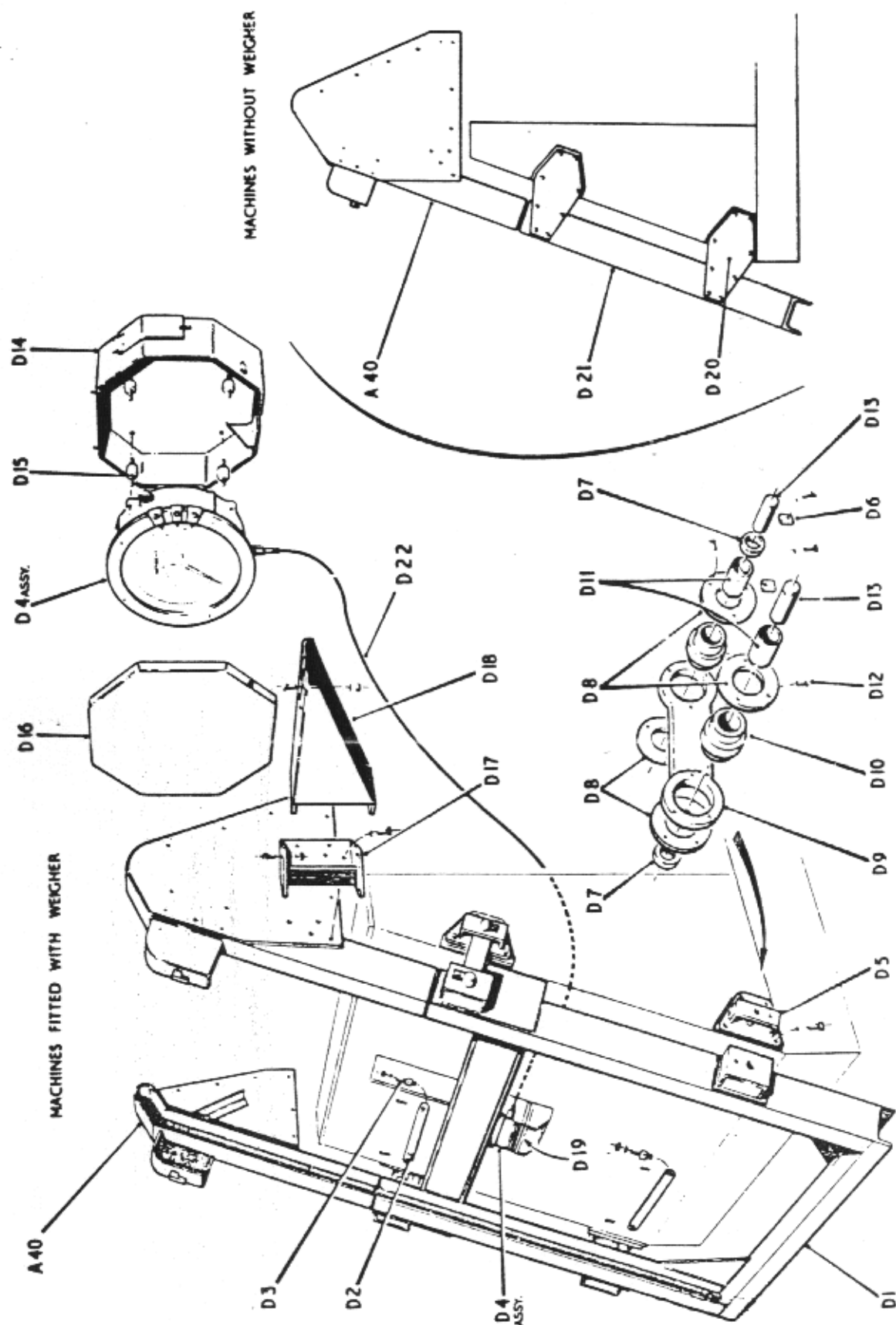
ROTOR & MIXING BLADES

Ref. No.	No. per Machine	Description	Part No.
C 1	1	Lower Rope Bracket with Bolts, Nuts and Spring Washers	GK1098
C 2	1	Pin for Rope Thimble with Split Pins and Plain Washers	GK1115
C 3	2	Spacer for Lower Rope Bracket	GK1114
C 4	2	Special Locknut	NP512
C 5	2	Special Washer for item C.4	WE806
C 6	1	5/16" Hopper Hoist Rope	GK1122
C 7	1	Rope Clamp with Bolt, Nut and Spring Washer	GK1110
C 8	2	Bearing	BN135
C 9	2	Seal	A5S364
C 10	1	Ram Pulley	GK1095
C 11	1	Ram Pulley Shaft	GK1107
C 12	1	Ram Pulley Guard with Set Screw and Spring Washer	GK1103
C 13	1	Pulley Shaft Keep Plate	GK1108
C 14	2	Pulley Shaft Keep Plate Bolt and Lockwire	GK1109
C 15	2	Cone Point Grub Screw	SD505/8/1
C 16	1	Packer for Ram Mounting Bracket	GK1111
C 17	1	Ram Mounting Bracket with Bolts, Nuts, Spring and Tapered Washers	GK1117
C 18	1	Rope Thimble	GK1113
C 19	1	Lower Ram Pin with Plain washers and Split Pins	GK1118
C 20	8	Countersunk Head H.T. Bolts with Nuts and Locknuts	WA208/10
C 21	1	Ram Mounting Clip with Bolts and Spring Washers	GK1112
C 22	2	Bush	N13343
C 23	2	Cradle Pivot Pin with Countersunk Head Set Screws	GK1120
C 24	4	Bush	BF112
C 25	2	Cradle Roller	GK1097
C 26	2	Cradle Roller Pin with Set Screws and Spring Washers	N29208
C 27	5	Grease Nipple	CND202/G

REF.NO.	N .PER MACHINE.	DESCRIPTION.	PART NO.
C 28	1	Hopper Cradle.	GK 1317
C 29	2	Grease Nipple.	RD702/G
C 30	4	External Circlip.	CC424
C 31	1	Hopper Cradle Buffer Bracket with Nuts, Bolts and Spring Washers.	GA1093
C 32	2	Pad Retaining Plate with Countersunk Screws and Nyloc Nut.	GK1093/2
C 33	2	Rubber Pad.	N25116
C 34	2	Lower Roller.	GK1096
C 35	2	Washer for Lower Roller.	GK1119
C 36	2	Bush.	BF212
C 37	2	Lower Roller Spindle.	GK1116
C 38	2	Socket Head Cone Point Grubscrew.	SD508/8
C 39	1	Lower Roller Support Frame.	GK 1318
C 40	1	Loading Hopper.	GK1092
C 41	1	Ram Pulley Carrier.	GK1101
C 42	1 set	Buffer Bracket Packers.	512-139

Ref. No.	No. per Machine	Description	Part No.
D 1	1	Weighgear Frame	GK1014
D 2	2	Tie Bar	GK1175
D 3	2	Inner Tie Bar Pin with Nuts and Spring and Flat Washers	GK1178
D 4	1	Load Cell and Gauge Assembly complete	GK1294
D 5	4	Weighgear Link Bracket with Set Screws, Nuts and Spring Washers	GK1174
D 6	8	Link Pin Keep Plate with Set Screws and Spring Washers	GK1182
D 7	8	Weighgear Link Washer	GK1176
D 8	16	weighgear Link Bush Plate	GK1180
D 9	4	Weighgear Link	GK1179
D 10	8	Weighgear Link Bush	GK1181
D 11	8	Weighgear Nylatron Bush	GK1185
D 12	24	Rivet	RR206/8
D 13	8	Weighgear Link Pin	GK1177
D 14	1	Gauge Mounting Box Complete	GK1169
D 15	4	Anti-Vibration Mounting with Nuts and Spring Washers	AD202
D 16	1	Gauge Cover	GK1170
D 17	1	Gauge Bracket (Fixed Section) with Bolts, Nuts and Spring washers	GK1172
D 18	1	Gauge Bracket (Folding Section) with Bolts, Nuts and Spring washers	GK1171
D 19	1 set	Loadcell Packers	GK1183
D 20	4	Lower Runway Attachment Plate with Countersunk Head Screws, Bolts, Nuts and Spring Washers	GK1102
D 21	1 r.h. 1 l.h.	Lower Runway	GK1019
D 22	1	Flex Covering 4' 8" long	CB702

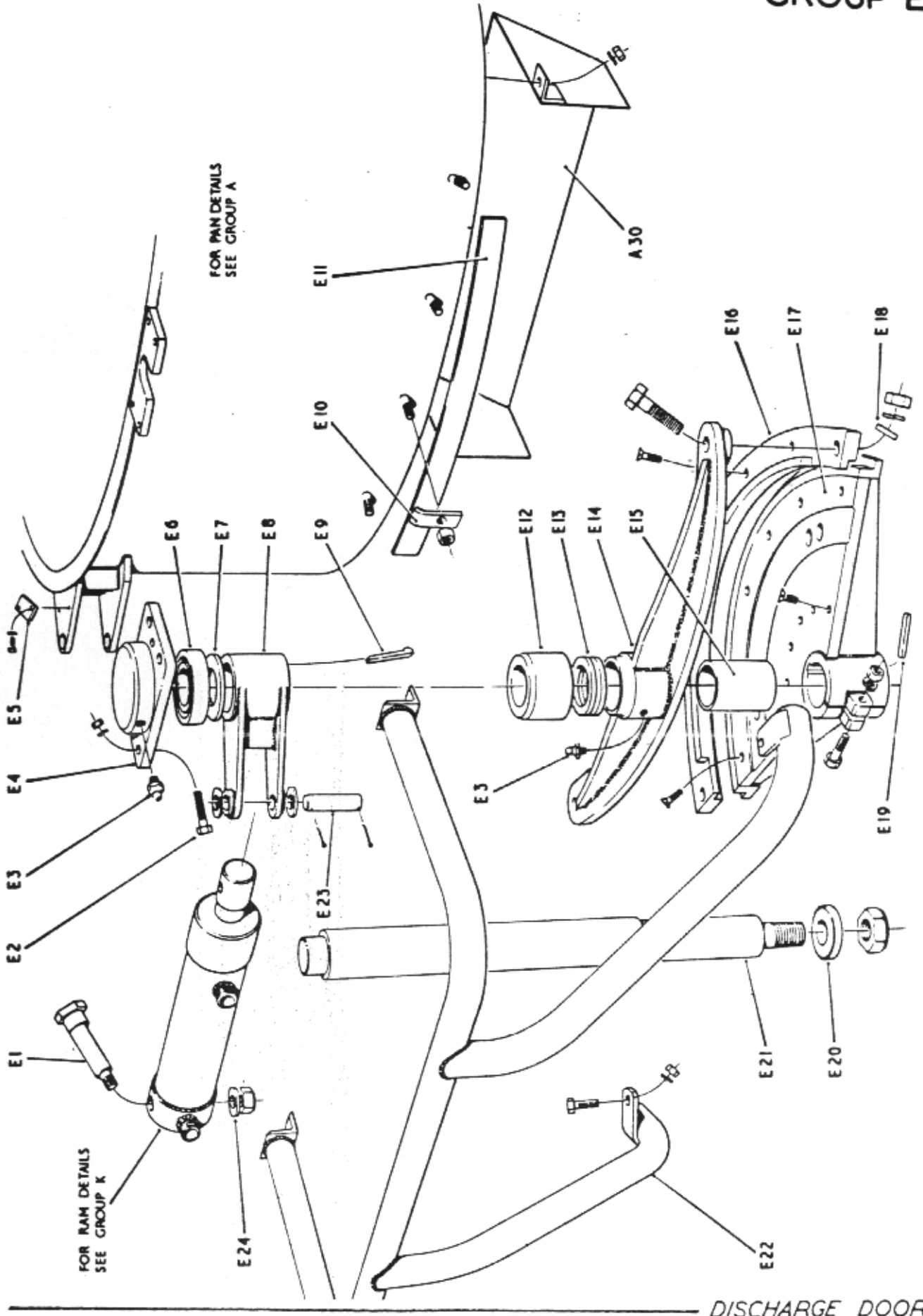
GROUP D



UPPER AND LOWER RUNWAY

Ref. No.	No. per Machine	Description	Part No.
E 1	1	Ram Cylinder Bracket Shaft with Nyloc Nut	GK1339
E 2	4	H.T. Bolt Bright, with Nut and Spring Washer	WA258/10
E 3	2	Grease Nipple	ND102/G
E 4	1	Bearing Bracket	GK1031
E 5	1	Bracket Shaft Retaining Plate with Setscrews and Spring washers	GK1340
E 6	1	Bearing	BE112
E 7	1	Thrust Washer	GK1046
E 8	1	Ram Piston Bracket	GK1330
E 9	1	Key	KA106/28
E 10	4	Door Sealing Strip Clamp with Nut and Spring Washer	GK1041
E 11	1	Door Sealing Strip	GK1029
E 12	1	Thrust Bearing Housing	GK1045
E 13	1	Bearing	BD112
E 14	1	Lower Steady for Shaft with Bolt Bright, Nut, Plain and Spring Washer	GK1062
E 15	1	Bush	GK1044
E 16	1	Discharge Door Sealing Ring with Countersunk Head Screw, Nut and Spring Washer	GK1063
E 17	1	Discharge Door with Bolt Nut and Spring Washer	GK1069
E 18	2	Special Washer	GK1361
E 19	1	Key	KKX506/22
E 20	1	Washer	GK1047
E 21	1	Door Operating Shaft with Nyloc Nut	GK1329
E 22	1	Discharge Fender	GK1303
E 23	1	Ram Piston Retaining Pin with washer and Split Pin	GK1048
E 24	1	Bush for Ram Cylinder Bracket	GK1338

GROUP E

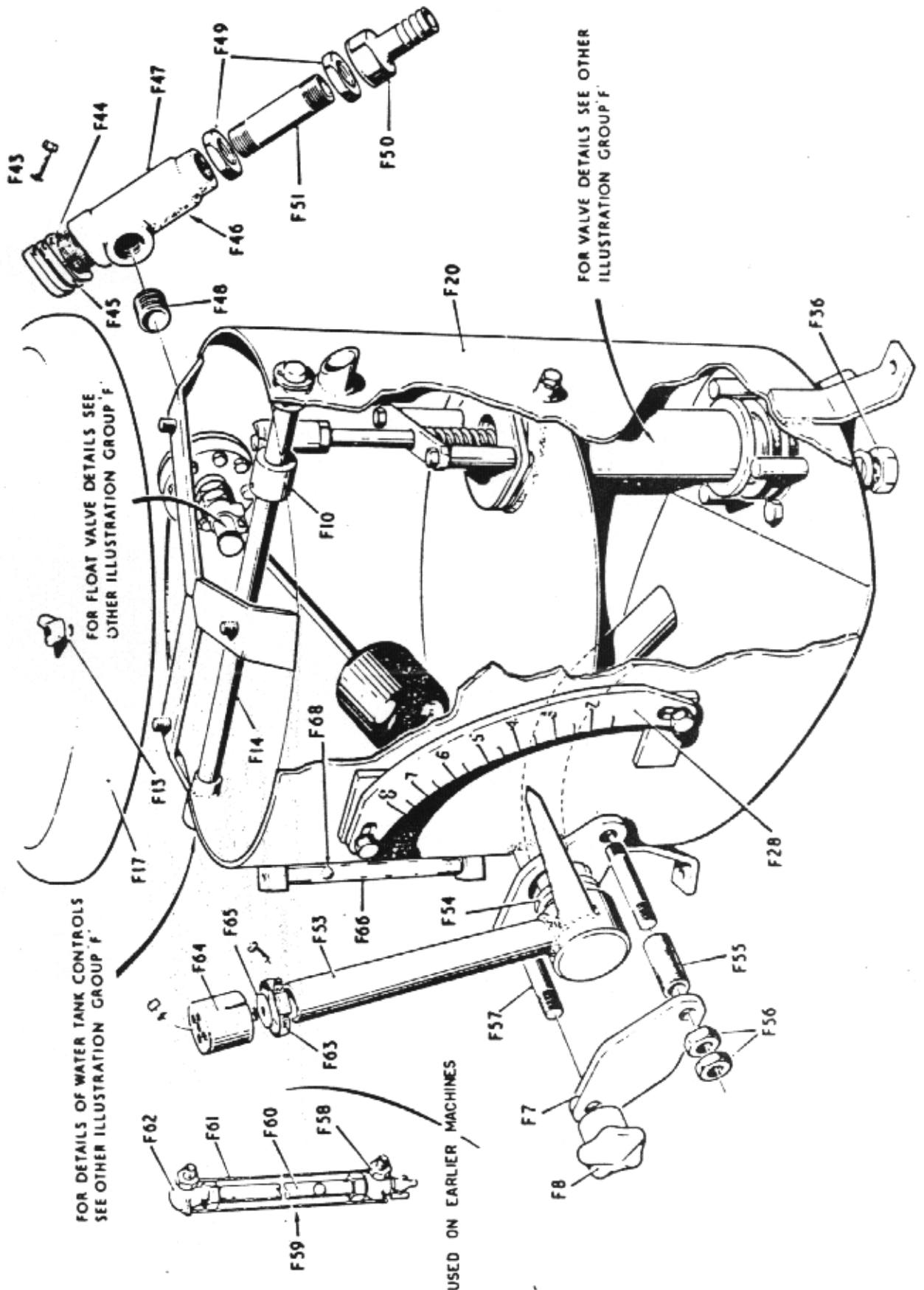


Ref. No.	No. per Machine	Description	Part No.
F 1	1	Plastic Knob	KN109
F 2	1	Water Tank Control Lever with Sel-Lock Pin	GK1218
F 3	1	Socket Head Cup Point Grub Screw	SD505/8
F 4	3	Clevis Pin with Split Pin and Washer	GK1266
F 5	3	Clevis	GK1265
F 6	3	Locknut	NA208
F 7	1	Clamp Stirrup	GK1259
F 8	1	Locking Handle	N28105
F 9	1	Operating Rod	GK1267
F 10	2	Lever	GK1257
F 11	2	Taper Pin	PC108/12
F 12	1	Float	FA300
F 13	3	Wing Nut	NF106
F 14	1	Operating Shaft with Split Pin and Washer	GK1264
F 15	1	Float Valve	GK1255
F 16	1	Float Valve Cover with Bolts and Spring Washers	GK1256
F 17	1	Tank Lid	GK1254
F 18	2	Bush	BF412/16
F 19	1	Valve Rod with Split Pin	GK1252
F 20	1	Water Tank Body with Fixing Bolts (up to Machine No.)	XP8719
	1	Water Tank Body with Fixing Bolts (From Machine No.)	GK1247
F 21	2	Stud with Nut and Spring Washer	SL106/32
F 22	2	Spring Collar	GK1268
F 23	1	Spring Plate	GK1258
F 24	2	Distance Piece	GK1261
F 25	1	Valve Spring	GK1273
F 26	1	Gasket for Upper Valve Seat	GK1270
F 27	1	Upper Valve Seat	GK1253
F 28	1	Tank Scale with Bolts and Spring Washers	GK1249
F 29	1	Valve Backing Plate with Brass Split Pin	GK1260

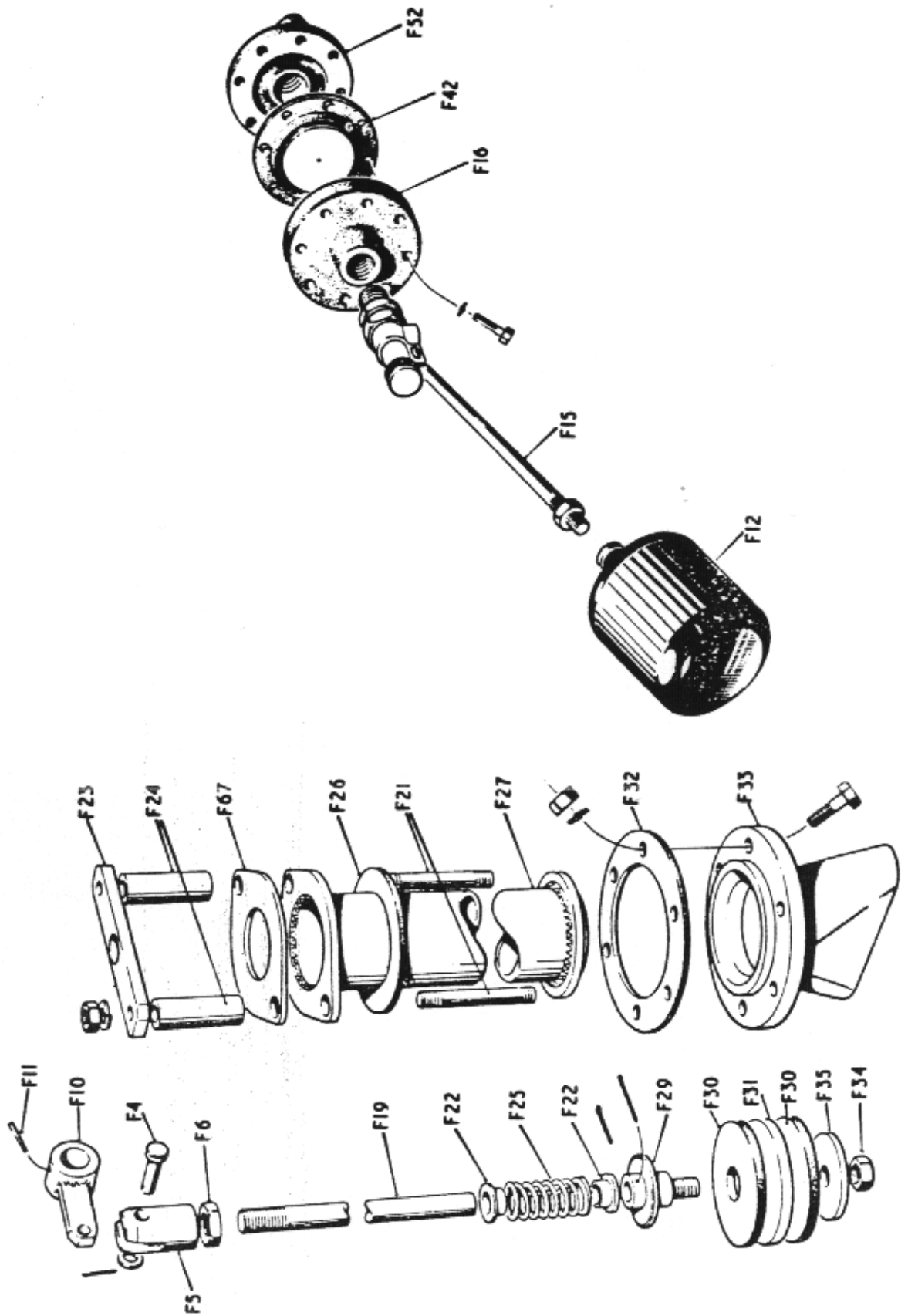
Ref. No.	No. per Machine	Description	Part No.
F 30	2	Valve Sealing Rubber	GK1272
F 31	1	Centre Plate	GK1262
F 32	1	Gasket for Water Fishtail	GK1271
F 33	1	Water Fishtail with Bolts and Copper Washers	GK1250
F 34	1	Lock Nut	NP508
F 35	1	Valve Washer	GK1263
F 36	3	Nut and Copper Washer	NA106
F 37	2	Bush	BF412/10
F 38	1	Lower Lever with Sel-Lock Pin	GK1219
F 39	1	Control Shaft	GK1220
F 40	1	Control Shaft Collar	GK1222
F 41	1	Control Shaft Bearing with Set Screw and Spring Washer	GK1221
F 42	1	Diaphragm	G01220
F 43	1	Strainer Body Cap with Setscrews and Spring Washers	N29175
F 44	1	Strainer Element Complete	N29174
F 45	1	Strainer Cap Gasket	N29177
F 46	1	Strainer Assembly Complete	N29176
F 47	1	Strainer Body	N29172
F 48	1	Nipple	GB506
F 49	2	Backnut	GA106
F 50	1	Hose Connector	CA306
F 51	1	Water Supply Pipe	N28583
F 52	1	Float Valve Body with Bolts and Spring Washers	G01116
F 53	1	Water Controller	GK1251
F 54	1	Sealing Ring	N28107
F 55	1	Rubber Distance Piece	GK1269
F 56	1	Nut and Locknut	NA108
F 57	2	Stud	SL108/32
F 58	1	(Gauge Glass End Fitting (Bottom)	GC803
F 59	1	(Syphon Tank Gauge Assembly	GC1257
F 60	1	(Gauge Glass	GC610/9/A
F 61	1	(Gauge Glass Rod	GG722

Ref. No.	No. per Machine	Description	Part No.
F 62	1	Gauge Glass End Fitting (Top) Up to Machine No.	G-802
F 63	1	Jubilee Clip	OC102
F 64	1	Breather Body with Cheese Head Screw, Nut, Spring and Flat Washers	CK1279
F 65	1	Rubber Baffle	GK1283
F 66	1	Plastic Tube (Sight Glass)	HA504/6
F 67	1	Spacer	G01276
F 68	1	Ball	BB256

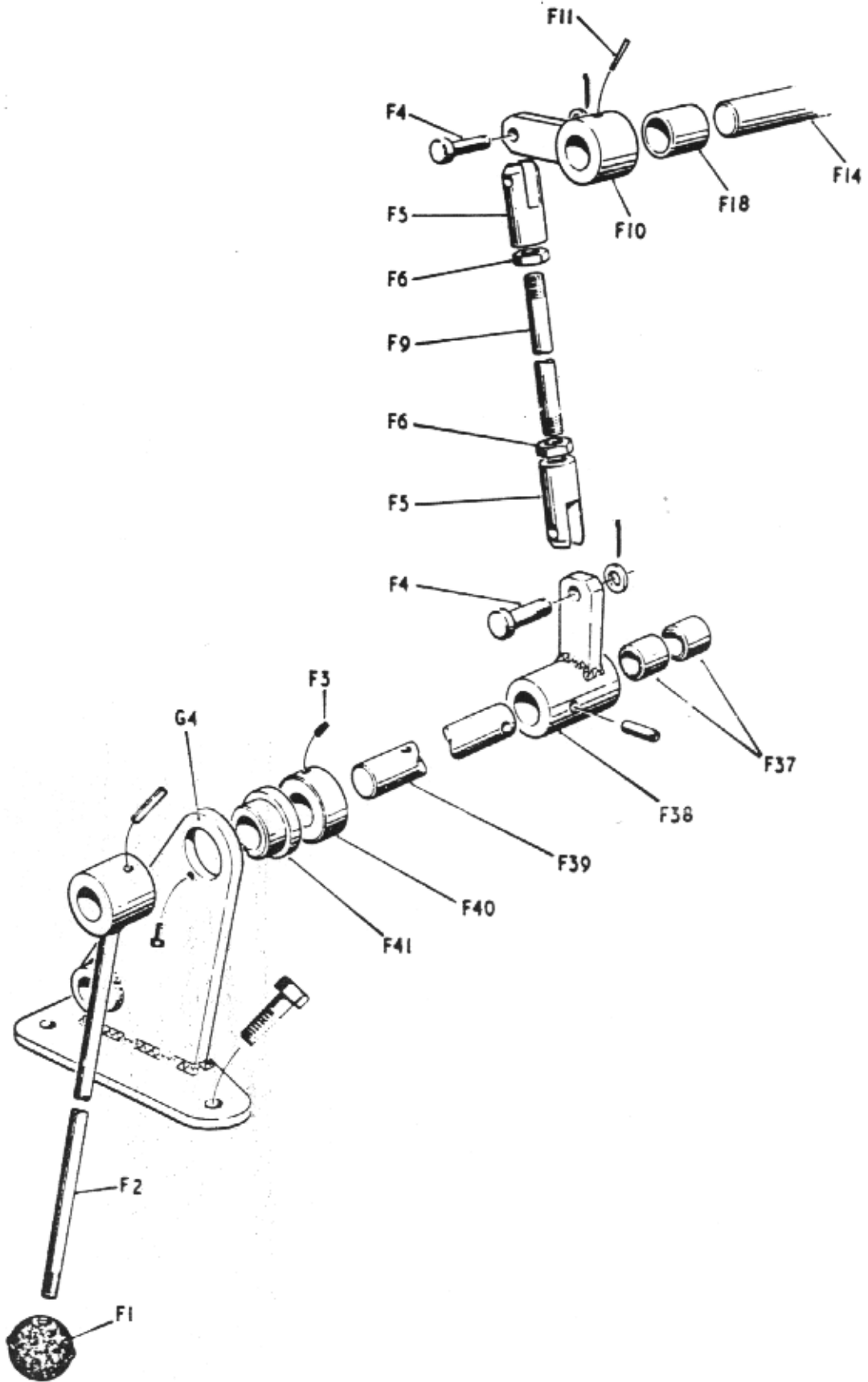
GROUP F



WATER TANK ASSEMBLY



WATER TANK VALVE ASSEMBLY

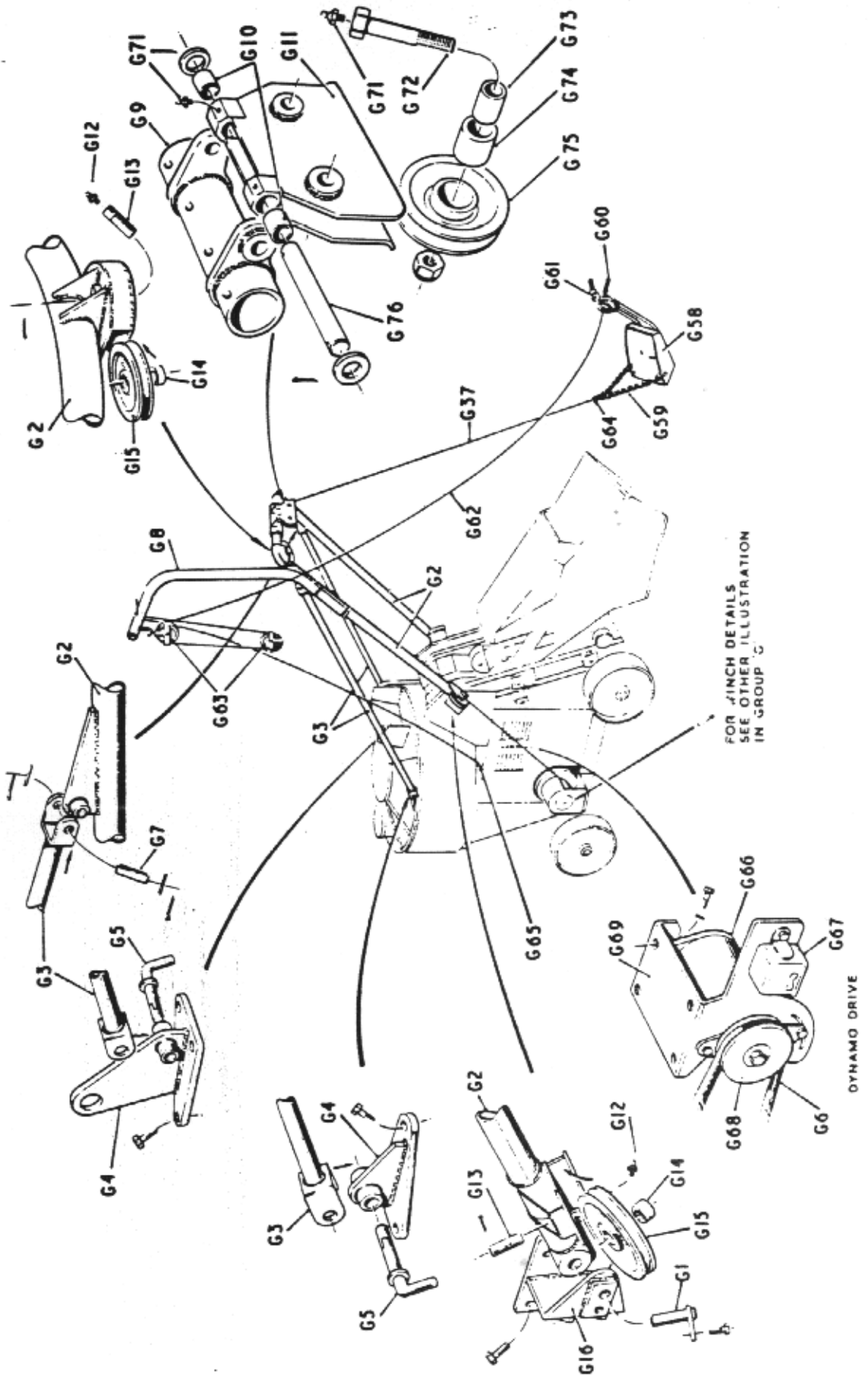


Ref. No.	No. per Machine	Description	Part No.
G 1	2	Dragline Jib Pivot Pin with Set Screw and Spring washer	GK1197
G 2	1	Dragline Jib	GK1187
G 3	2	Dragline Jib Tie	GK1191
G 4	1	Dragline Jib Tie Bracket (Winch Side) with Bolts, Nuts and Spring Washers	GK1195
	1	Dragline Jib Tie Bracket (Start Side) with Bolts, Nuts and Spring Washers	GK1194
G 5	2	Drop End Pin	GK1192
G 6	1	Dynamo Drive Belt	R355/A
G 7	2	Upper Pin for Dragline Jib Tie with Split Pins and Washers	GK1196
G 8	1	Cable Support	GK1189
G 9	1	Connecting Tube with Grub Screw	GK1343
G 10	2	Bush	GK1346
G 11	1	Fairlead Pulley Block	GK1344
G 12	2	Nipple	ND102/C
G 13	2	Pulley Pin with Split Pin	301034
G 14	2	Dragline Pulley Bush	GK1198
G 15	2	Top Rope Sheave	381152
G 16	1	Dragline Jib Pivot Bracket with Nuts, Bolts, Screws and Spring Washers	GK1190
G 17	1	Bearing Retainer Plate with Rd. Head Screws	378/2
G 18	3	Cone Point Socket Head Grub Screws	381/8
G 19	1	Distance Piece	229/7
G 20	1	Felt Washer	381/7
G 21	1	Clutch H2 6V	381/32
G 22	1	Key	381/6
G 23	1	Bearing	381/10
G 24	6	Countersunk Head Socket Screw	381/9
G 25	1	Bearing Housing	390
G 26	2	Ball Bearing	381/33

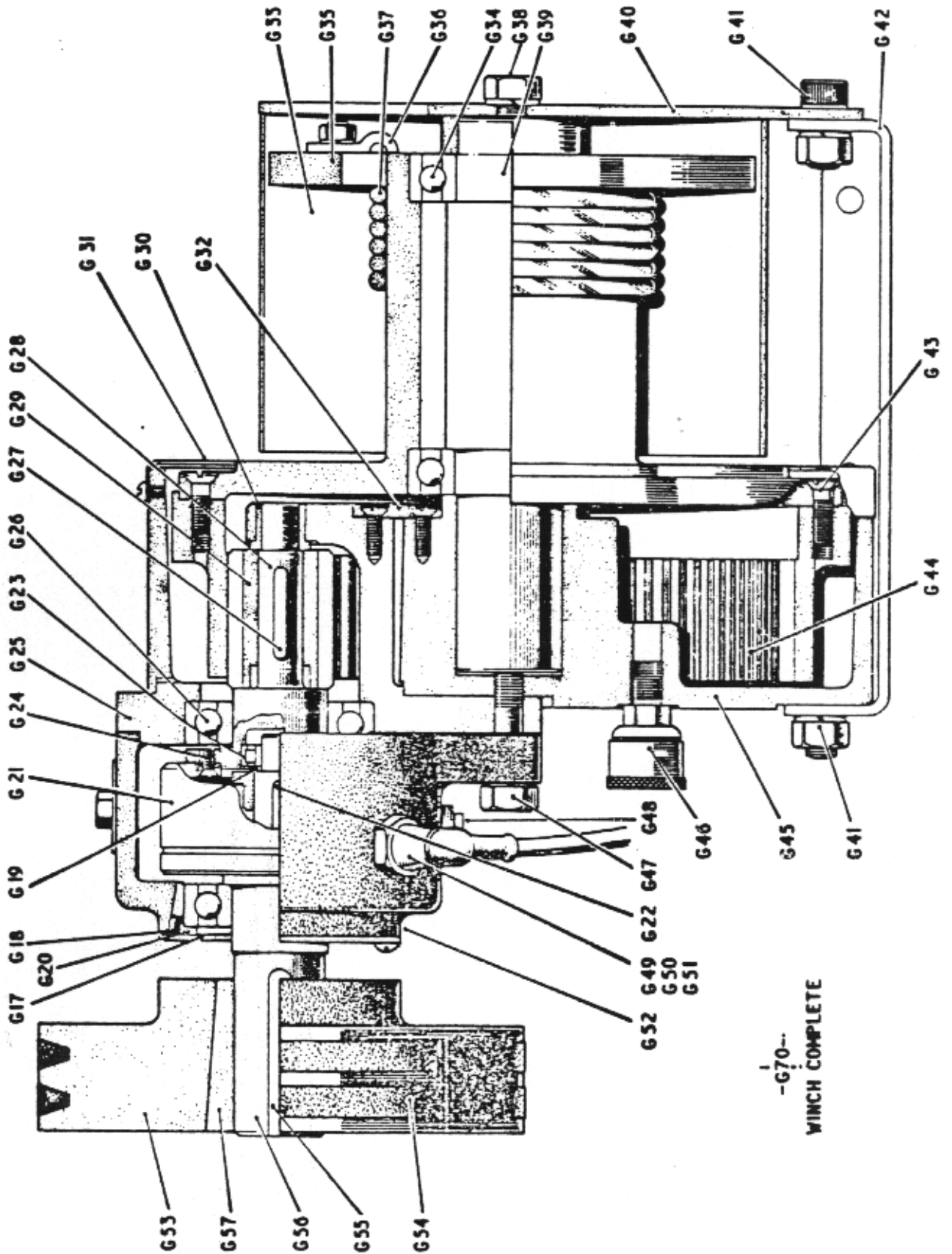
Ref. No.	No. per Machine	Description	Part No.
G 27	1	Key	381/12
G 28	1	Armature Shaft	350/2
G 29	1	Pinion	229/2
G 30	1	Bush Bearing	229/5
G 31	1	Dust Guard with Round Head Screws and Washers	229/1
G 32	1	Support Bracket with Countersunk Head Screws	229/6
G 33	1	Rope Guard	200/5
G 34	2	Ball Bearing	381/19
G 35	1	Rope Drum	204/2
G 36	1	Rope Clip with Stud, Nut and Spring Washer	229/4
G 37	1 length	Wire Rope 70' long	381/16
G 38	1	Bolt with Spring Washer	381/20
G 39	1	Main Shaft	200/4
G 40	1	Backplate	200/3
G 41	2	Socket Head Capscrew with Nut and Spring washer	381/24
G 42	1	Base Plate with Adjusting Bolts, Nuts, Screws and Spring washer	202
G 43	2	Countersunk Socket Head Screw	381/26
G 44	1	Gear Ring	204/1
G 45	1	Front Plate	199
G 46	1	Stauffer	381/28
G 47	1	Bolt with Spring Washer	381/30
G 48	1	Drain Plug	381/31
G 49	1	Brush Holder	381/3
G 50	1	Carbon Brush	381/4
G 51	1	Nut	381/5
G 52	1	Bearing Housing	378/1
G 53	1	Winch Pulley	PV708
G 54	2	Vee Belt	RV400/A
G 55	1	Key	381/40
G 56	1	Drive shaft	350/1

Ref. No.	No. per Machine	Description	Part No.
G 57	1	Taper Lock Bush	-
G 58	1	Shovel Body	906A
G 59	1	Shovel, Chain and Ring	906C
G 60	2	Handle Grips	906D
G 61	1	Push Button Switch	ASS227
G 62	1 length	Electric Cable to shovel, 75' long	906G
G 63	2	Cable Control Block Complete	929
G 64	1	Shackle and Pin	906/E
G 65	1	Plug and Socket	981/B
G 66	1	Dynamo (Clockwise rotation)	ASS205
G 67	1	Regulator	DS801/B
G 68	1	Dynamo Pulley	GK1077
G 69	1	Dynamo Bracket with Bolts, Set-screws, Nuts, Spring and Plain Washers	GK1076
G 70	1	Winch Unit Complete $\phi 20384000$	ASS384
G 71	4	Nipple	ND102/G
G 72	2	Pulley Bolt with Nyloc Nut	CK1349
G 73	2	Distance Piece	GK1348
G 74	2	Pulley Bush	GR1494
G 75	2	Fairlead Pulley	GK1345
G 76	1	Pivot Pin with Washer and Split Pin	GK1347

GROUP G



DRAGLINE ASSEMBLY



-G70-
WINCH COMPLETE

W254109000
 ASSY Box

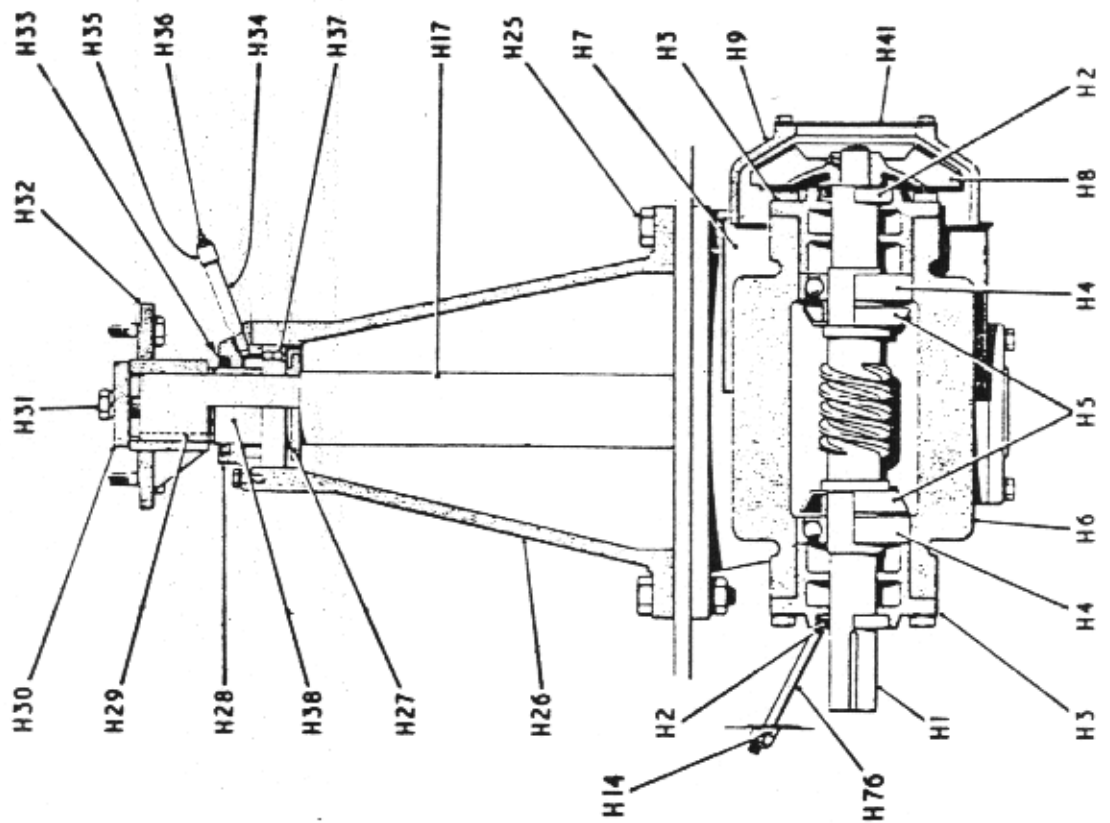
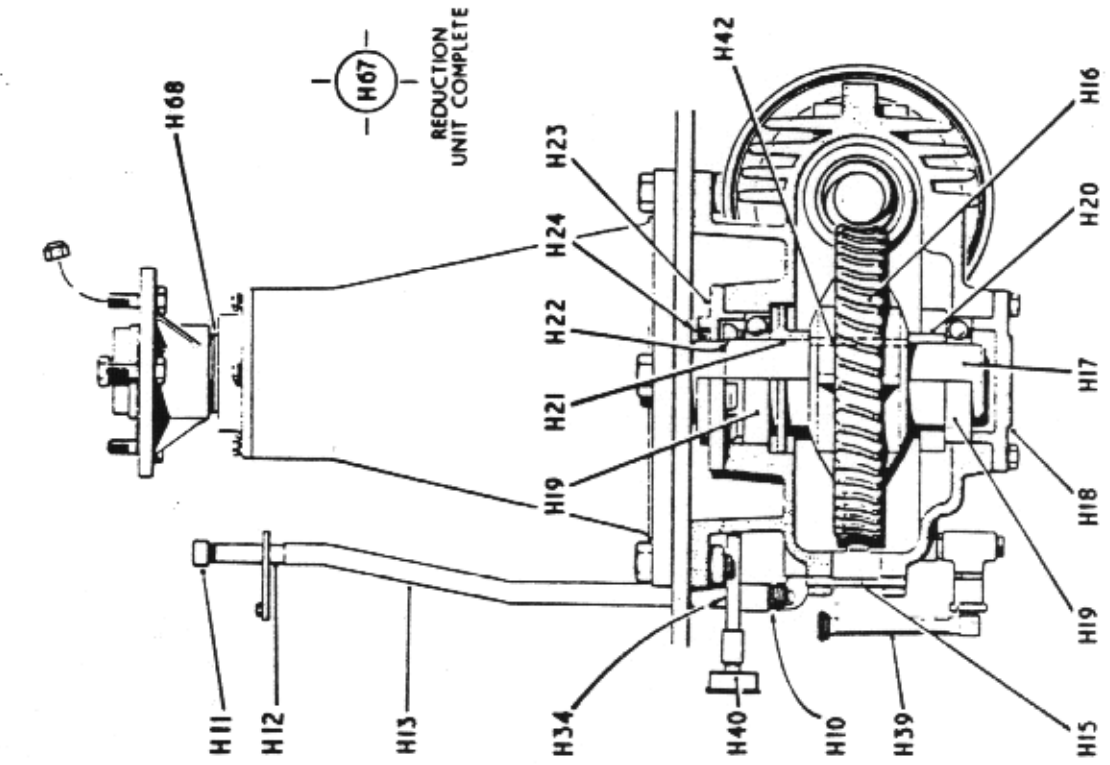
GROUP 'H'

Ref. No.	No. per Machine	Description	Part No.
H 1	1	Worm Shaft 2 ST 254109014	C35581
H 2	2	HSS Oil Seal 254109011	275124
H 3	2	W.S. Open Cover with Bolts 254109006	B21607
H 4	2	W.S. Bearing 254109019	MS-15-ACD
H 5	2	W.S. Oil Flinger 254109004	B4814
H 6	1	Gearcase 254109025	F35284
H 7	1	Deflector with Bolts	C14020
H 8	1	Fan with Allen Screw 254109021	37604
H 9	1	Fan Cowl 254109012	C14019
H 10	1	Adaptor for Reduction Box Oil Filler Pipe	GK1308
H 11	1	Plastic Cap	GK1309
H 12	1	Filler Pipe	GK1307
H 13	1	Filler Tube $\frac{7}{8}$ " O/D x 1/16" Wall x 20" long Acrylic	-
H 14	1	Taper Washer	GK1341
H 15	1	Inspection Cover with Set Screws	B2854(254109000)
H 16	1	Worm Wheel 49T W254109010	B26131
H 17	1	Slow Speed Shaft 254109015	C35282
H 18	1	SSS Blank Cover with Bolts 254109011	B32553
H 19	2	SSS Bearing 254109018	175ACD
H 20	1	SSS Spacer, wide Type 254109002	B4809
H 21	1	Grease Retaining Plate 254109020	B35283
H 22	1	Bearing Locking Nut with Grub Screw 254109003	B4813
H 23	1	SSS Open Cover with Bolts 254109005	B14782
H 24	1	SSS Oil Seal 254109016 ?	400228
H 25	4	Bolt with Nyloc Nut and Plain Washer	WB214/28
H 26	1	Reduction Shaft Housing	GK1025
H 27	1	Short Spacer	GK1035
H 28	1	Oil Seal Housing with Bolt and Spring Washer	GK1033
H 29	1	Parallel Key (Round Ends)	KKX110/24

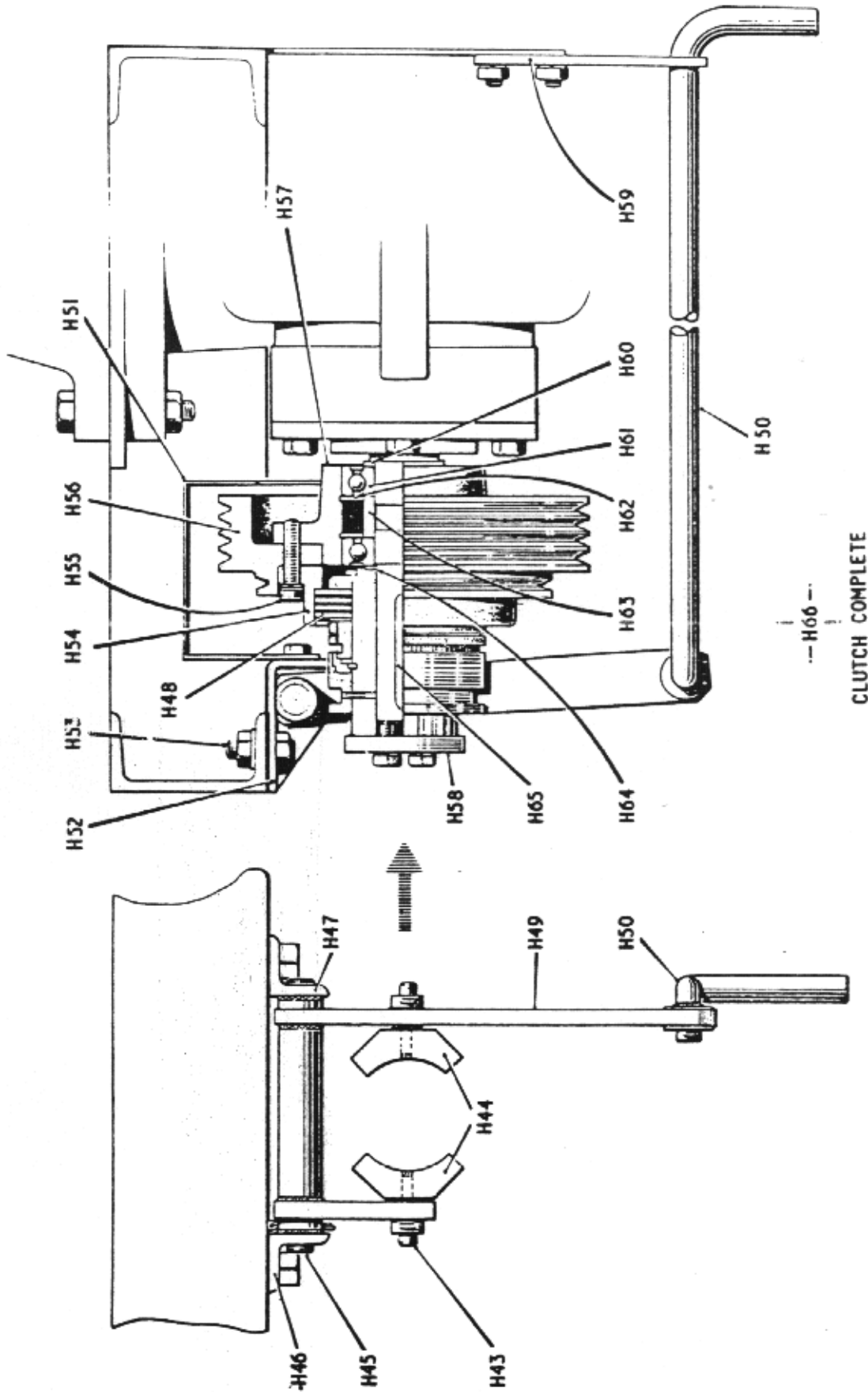
Ref. No.	No. per Machine	Description	Part No.
H 30	1	Reduction Shaft Retaining Collar	GK1051
H 31	1	Set Screw with Spring Washer	SS410/18
H 32	1	Rotor Carrier with Nyloc Nut	GK1064
H 33	1	Oil Seal	CSR148/64
H 34	2	Grease Tube	GK1038
H 35	1	Socket for Grease Tube	GB902
H 36	1	Grease Nipple for Grease Tube	ND104/G
H 37	1	Ball Race	BE12C
H 38	1	Long Spacer	GK1050
H 39	1	Oil Change Assembly Complete	C35717
H 40	1	Stauffer	CC104
H 41	1	Wire Mesh Guard with Set Screws ²⁵⁴¹⁰⁹⁰¹⁷	LO1580
H 42	1	Parallel Key (Round Ends)	KK111/30
H 43	2	Clutch Glut Pin with Split Pin	GK1213
H 44	2	Operating Glut ¹³⁰⁹²²⁰¹⁵	ZC40
H 45	1	Clutch Fork Pivot Pin with Split Pin	GK1206
H 46	1	Clutch Fork Support (Drilled)	GK1205
H 47	1	Clutch Fork Support (Plain)	GK1204
H 48	1 set	Fibre Clutch Plates } ^{4 x 130922003} ^{5 x 130922004}	^{SET} ZC40/5
H 49	1	Clutch Fork	GK1201
H 50	1	Clutch Operating Rod with Washer and Split Pin	GK1207
H 51	1	Clutch Guard with Set Screws, Nuts and Spring Washers	GK1202
H 52	1	Clutch Guard Stay with Bolts, Nuts and Spring Washers	GK1209
H 53	2	Bolt with Nut, Spring and Tapered Washers	WB108/11
H 54	1	Modified Matrix Clutch	GK1203
H 55	6	Socket Head Cap Screw with Spring Washers	SE206/22
H 56	1	Clutch Drive Pulley	GK1200
H 57	1	Clutch Drive Pulley Spigot	GK1199
H 58	1	Clutch Shaft Cap with Bolts and Spring Washers	GK1214
H 59	1	Clutch Rod Support with Countersunk Head Bolts, Nuts and Spring Washers	GK1208
H 60	1	Clutch Bearing Facker	GK1210

Ref. No.	No. per Machine	Description	GROUP 'H' Part No.
H 61	2	Bearing	BJ440/RS
H 62	2	Internal Circlip	CC380
H 63	1	Clutch Bearing Spacer	GK1211
H 64	1	Clutch Bearing Retainer	GK1119
H 65	1	Parallel Key (Round Ends)	KKX106/24
H 66	1	Modified Clutch Complete	GK1216
H 67	1	Worm Reduction Unit Complete	Q3343 25410900
H 68	2	Packer	GK1278
H 69	1	Plastic Knob	KN109
H 70	3	Bearing Assembly	ZC40/15
H 71	-	-	-
H 72	-	-	-
H 73	-	-	-
H 74	-	-	-
H 75	-	-	-
H 76	1	Tie Bar with Nyloc Nut, Bolt, Nut and Spring Washer	GK1337

GROUP H



REDUCTION GEARBOX

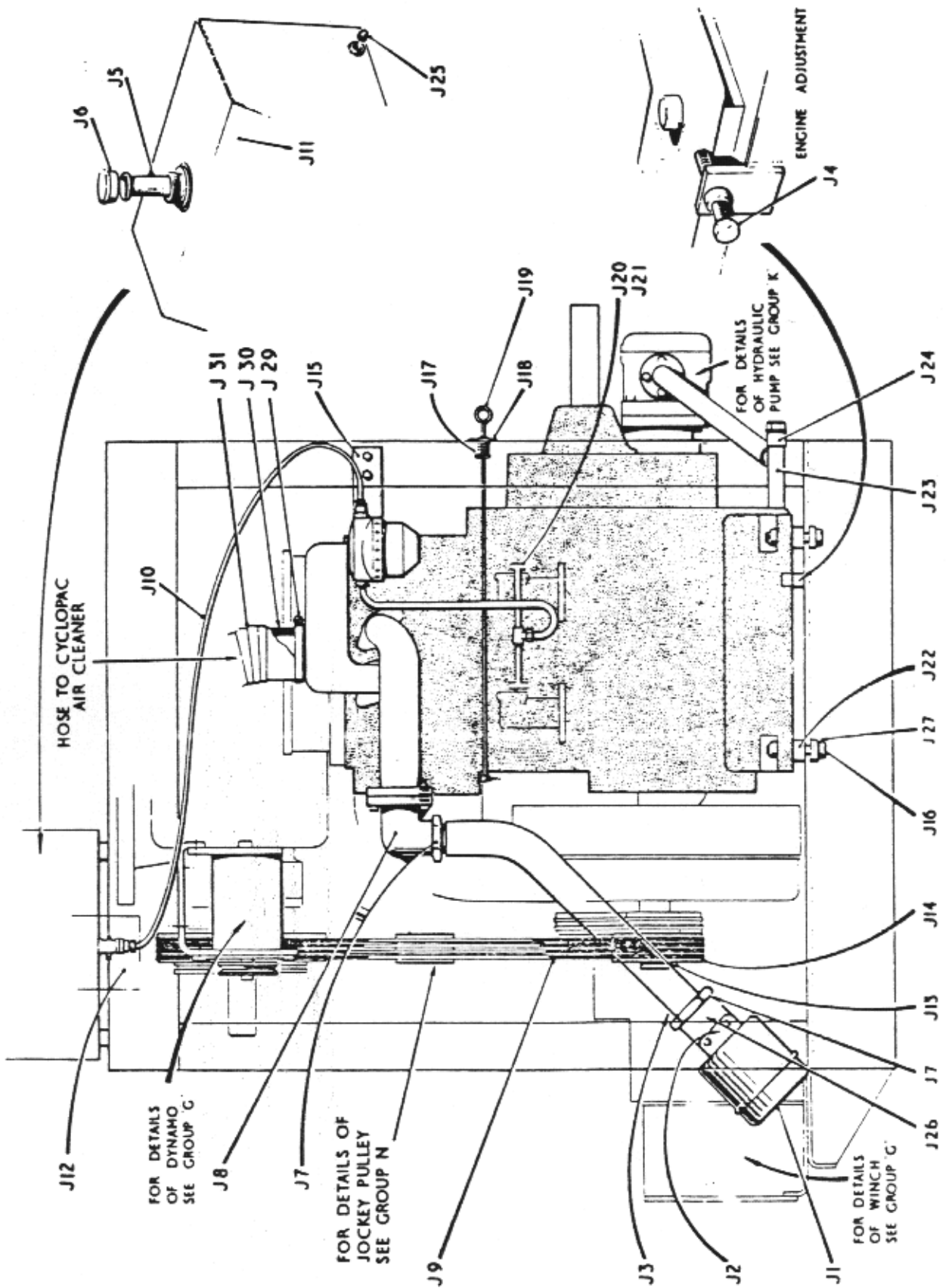


CLUTCH & OPERATING LINKAGE

Ref. No.	No. per Machine	Description	Part No.
J 1	1	Exhaust Pipe Assembly	GK1314
J 2	1	Exhaust Pipe Clip with Bolts and Spring Washers	GK1313
J 3	1	Exhaust Pipe	GK1312
J 4	3	Setscrew with Nut	SS410/40
J 5	1	Strainer to suit Filler No. 4	SJ204/B
J 6	1	Filler Cap	FU101/1
J 7	2	Backnut	GA112
J 8	1	Elbow M/F	GA712
J 9	1 set	Drive Belts (supplied only in matched sets)	Rb750/A
J 10	1	Fuel Pipe Assembly	253873
J 11	1	Fuel Tank with Setscrews, Nuts, Spring and Tapered washers	GK1137
J 12	1	Fuel Spill Deflector with Set Screws and Spring Washers	GK1225
J 13	1	Gib. Head Key	KAX106/30
J 14	1	Engine Pulley	GK1074
J 15	1	Engine Fuel Filter Support with Bolts, Nuts and Spring Washers	GK1030
J 16	4	H.T. Bolt with Nyloc Nut	HA308/26
J 17	1	Stop Control Spring	CK1230
J 18	1	Engine Stop Plate with Kalon Drive Screws	GK1229
J 19	1	Engine Stop Control Rod with Phillips Lock Nut, Plain Washer and Split Pin	GK1228
J 20	1	Fuel Pipe (Connector to Pump)	HJE/33
J 21	2	Benjo Bolt with Joint Washer	JA12
J 22	2	Engine Packer	GK1078
J 23	1	Drain Pipe	GK1284
J 24	1	Socket	G8908
J 25	1	Drain Plug	GB702
J 26	1	Socket	G8904

Ref. No.	No. per Machine	Description	Part No.
J 27	2	Engine Bolt Retaining Bar	GK1333
J 28	1	Cyclopac Air Cleaner (not illustrated) with Fixing Clamps, Bolt, Nut and Spring Washer	FA229
J 29	2	Jubilee Clip	CC103/X
J 30	1	Rubber Hose $1\frac{1}{2}$ " bore x 2" O/D x $1\frac{1}{2}$ " long	HA312
J 31	1	Convolute Neoprene Hose 30" long x 2" bore	HA516/30

GROUP J

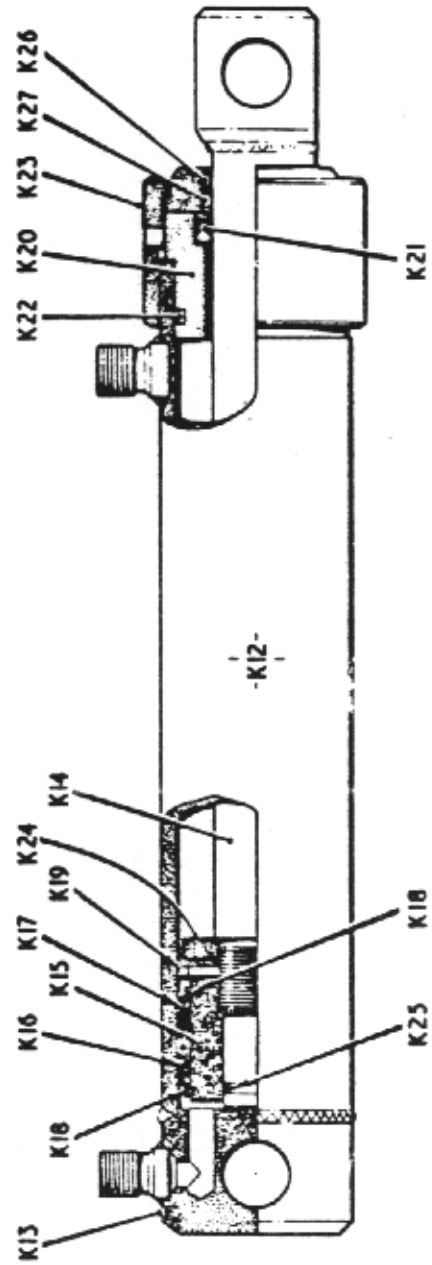
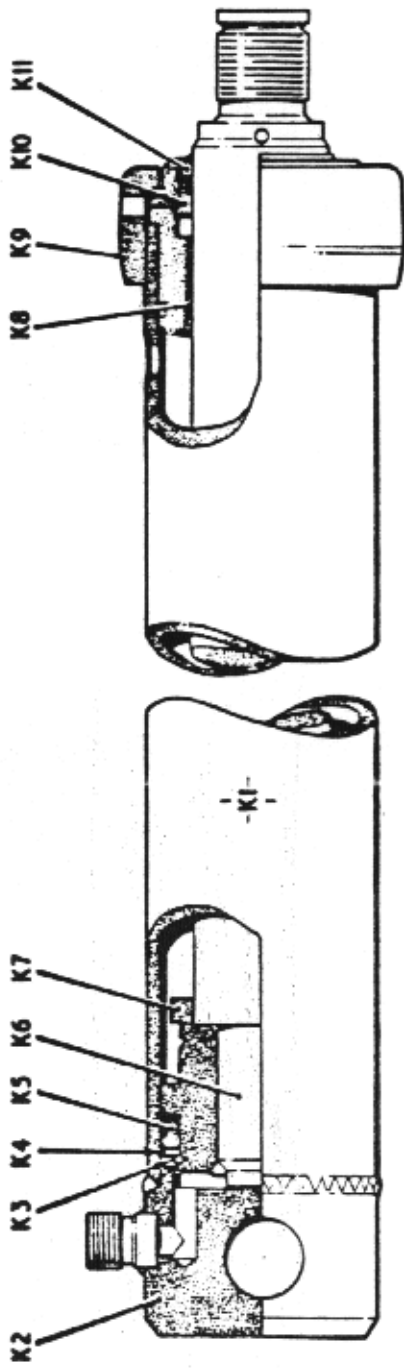


Ref. No.	No. per Machine	Description	Part No.
K 1	1	Hoist Ram Complete	192-3020
K 2	1	Cylinder Assembly	192-3020-1A
K 3	1	Spring Ring W020160008.	WS108/20
K 4	1	Seal Retainer W020160011.	WS111/8
K 5	1 ✓	Fluid Seal W020160007 -	WS104/58
K 6	1	Piston Rod Assembly	24-3020-5A/26
K 7	1	Spacer	SD3020-14
K 8	1	End Bearing Assembly	SD3020/9A
K 9	1	End Cap	SD24-3020-13
K 10	1	Housing	SD3020/11A
K 11	1 ✓	Wiper Seal W020160009	WS107/20
K 12	272106000 1	Discharge Door Ram Complete	DA289-2312-GA
K 13	1	Cylinder Assembly	289-2312-1A
K 14	1	Piston Rod Assembly	SD2312/5A/F/13
K 15	1	Piston Head Assembly	SD2312/3A
K 16	2	'O' Seal 020160104	WS105/9
K 17	2	Spacer 020160107	WS110/5
K 18	2	Spring Ring 020160106	WS108/13A
K 19	1	Split Pin	WS109/5/24
K 20	1	End Bearing Assembly W020160109	SD2312/9A
K 21	1	Rod Seal 020160103	WS104/8
K 22	1	'O' Seal 020160105 W020160102 →	WS103/158
K 23	1	End Cap	SD2312/13
K 24	1	Thrust Collar	SD2312/10
K 25	1	'O' Seal W020160101	WS103/128
K 26	1	Wiper Seal 020160105	WS106/12
K 27	1	Housing	SD2312/11A
K 28	1	Header Tank Gasket	GK1133
K 29	1	Tank Cover with Set screws and Copper Washers	GK112b
K 30	1	Breather	FA226
K 31	1	Filter Carrier Cap Gasket	N30646
K 32	1	Filter Carrier Cap with Set Screws and Copper Washers	N30509
K 33	1	Nylon Sealing Washer	SR717

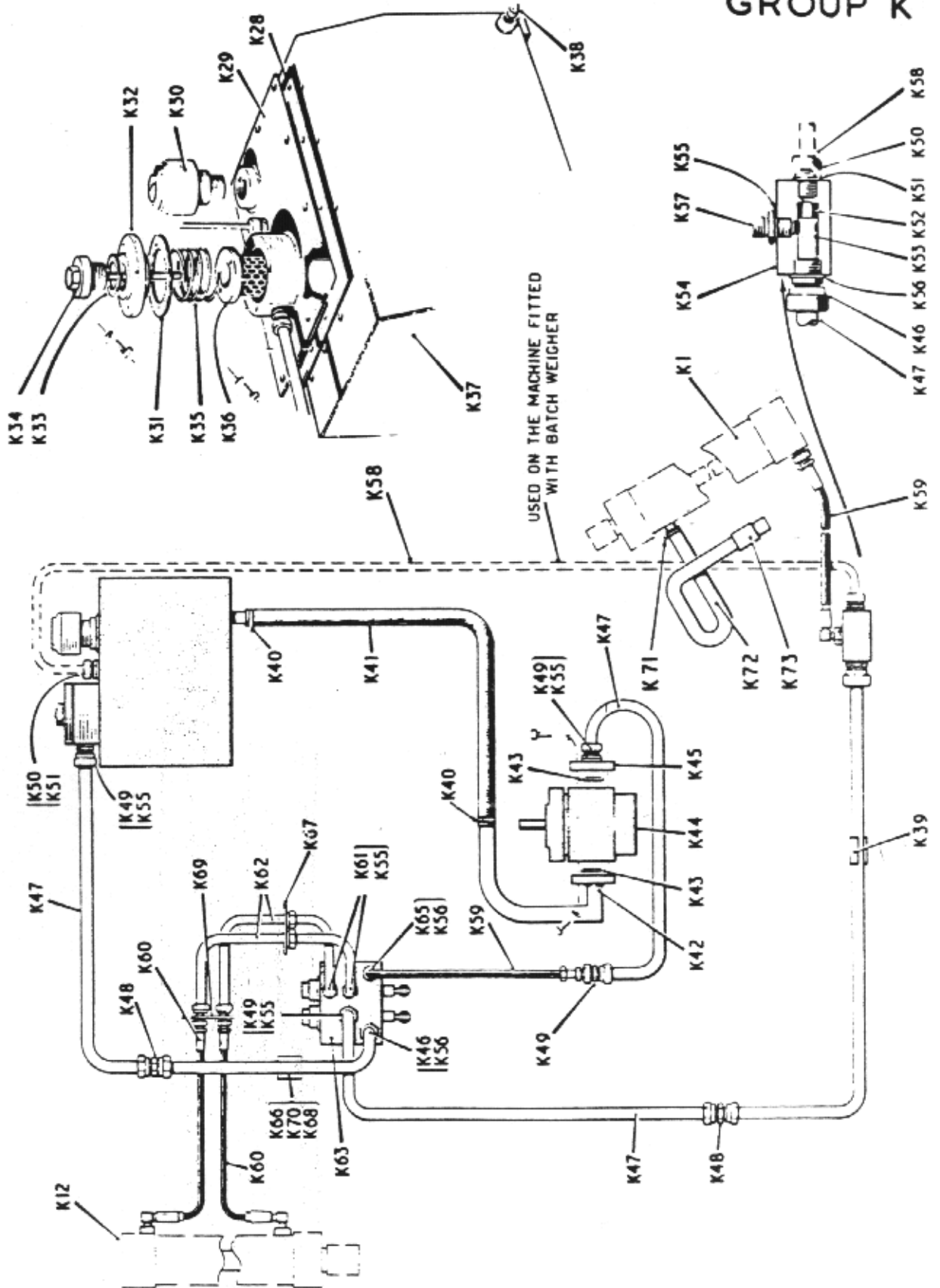
Ref. No.	No. per Machine	Description	Part No.
K 34	1	Header Tank Dipstick	N30561
K 35	1	Compression Spring	SX334/12
K 36	1	Filter Assembly Complete	N30513
K 37	1	Hydraulic Oil Tank with Sat Screws Spring and Tapered Washers	GK1125
K 38	1	Plug	GB702
K 39	1	Pipe Clip with Bolts, Nuts and Spring Washers	GK1282
K 40	2	Jubilee Clip	OC101
K 41	1	Reeling Hose	HA416/2
K 42	1	Pump Inlet Connector with Cap Screws	GK1083
K 43	2	'O' Rings	FO117
K 44	1	Hydraulic Pump with Socket Head Capscrews and Spring Washers (Petter PH2 Diesel)	PL109
	1	Hydraulic Pump with Socket Head Capscrews and Spring Washers (Electric Drive)	PL110
K 45	1	Pump Delivery Flange with Cap Screws and Spring Washers	N30502
K 46	2	Coupling	UA309
K 47	1 length	Steel Pipe 5/8" O.D. x 16G	-
K 48	2	Coupling	UA308
K 49	4	Coupling	GK1135
K 50	2	Coupling fitted with Olive to suit Nylon Pipe	CL106/4/11
K 51	2	Bonded Seal	SF802
K 52	1	Compression Spring	SX203/28
K 53	1	Bleed Valve Plunger	N31395
K 54	1	Bleed Valve Body	N31394
K 55	6	Bonded Seals	SF803
K 56	3	Bonded Seals	SF804
K 57	1	Male Adaptor	AD106/6
K 58	1	Nylon Pipe 3/8" O.D. x 6' long	BH955/1
K 59	2	Hose Assembly Complete	HA405/24
K 60	2	Hose Assembly Complete	HA405/21

Ref. No.	No. per Machine	Description	Part No.
K 61	2	Coupling	G01195
K 62	1 length	Steel Pipe $\frac{1}{2}$ " O.D. x 13G	-
K 63	1	Valve Unit Complete	ASS382
K 64	1	Gasket Kit for Valve (Not Illustrated) Quote Machine No. when ordering	922761
K 65	1	Male Adaptor	AD106/B/M
K 66	1	Pipe Clip Support, Bolt, Nut Spring and Tapered washers	GK1130
K 67	1	Pipe Header Pan Channel with Bolt, Nut and Spring Washer	GK1129
K 68	1	Pipe Clip Packer	GK1132
K 69	1	Pipe Header Pan Bottom	GK1128
K 70	1	Pipe Clip with Bolt, Nut and Spring Washer	GR1284
K 71	1	Jubilee Clip	CC100X
K 72	1	Hose 23" long	HA504/1
K 73	1	Breather Tube Clip	GK1291

GROUP K

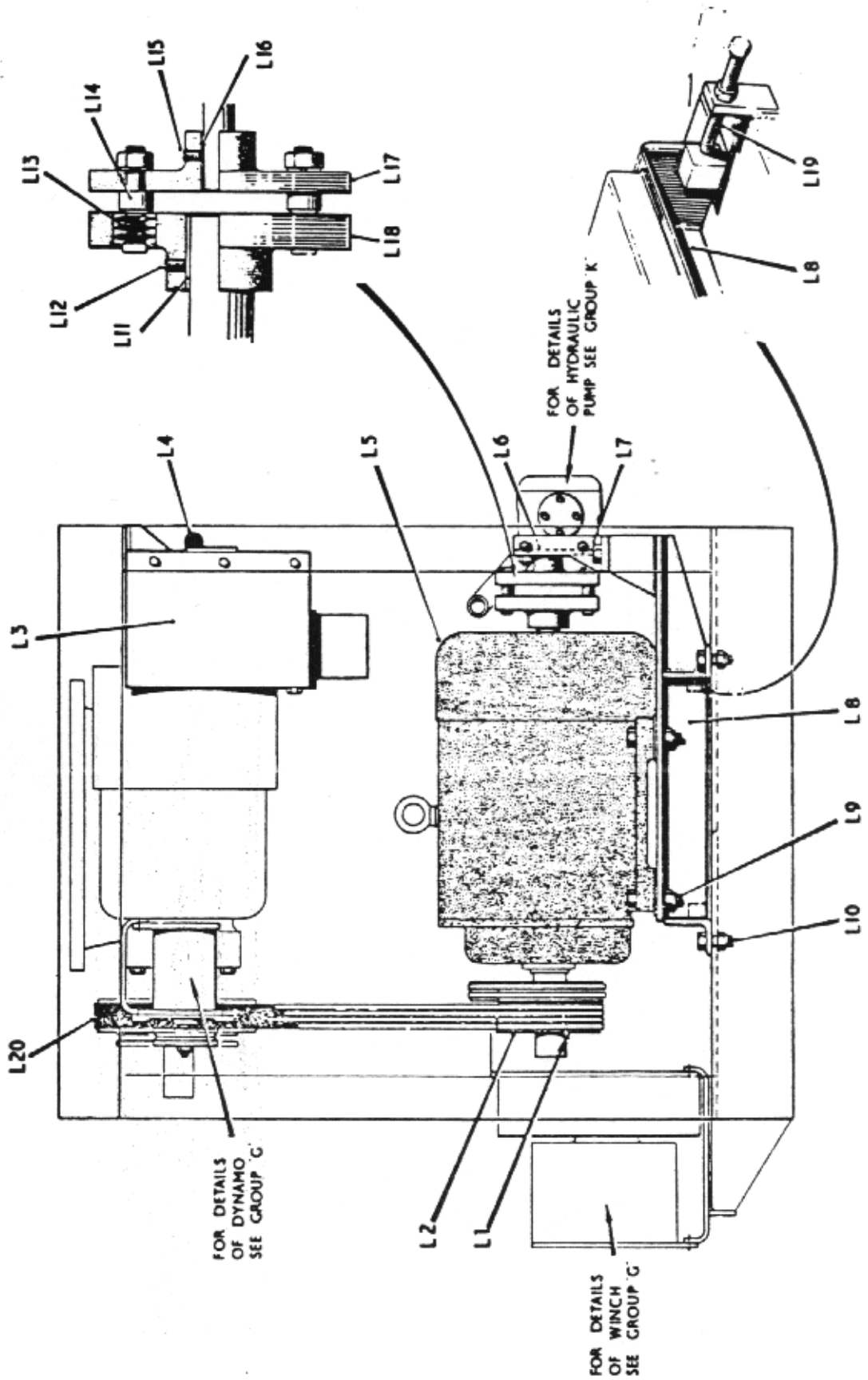


GROUP K



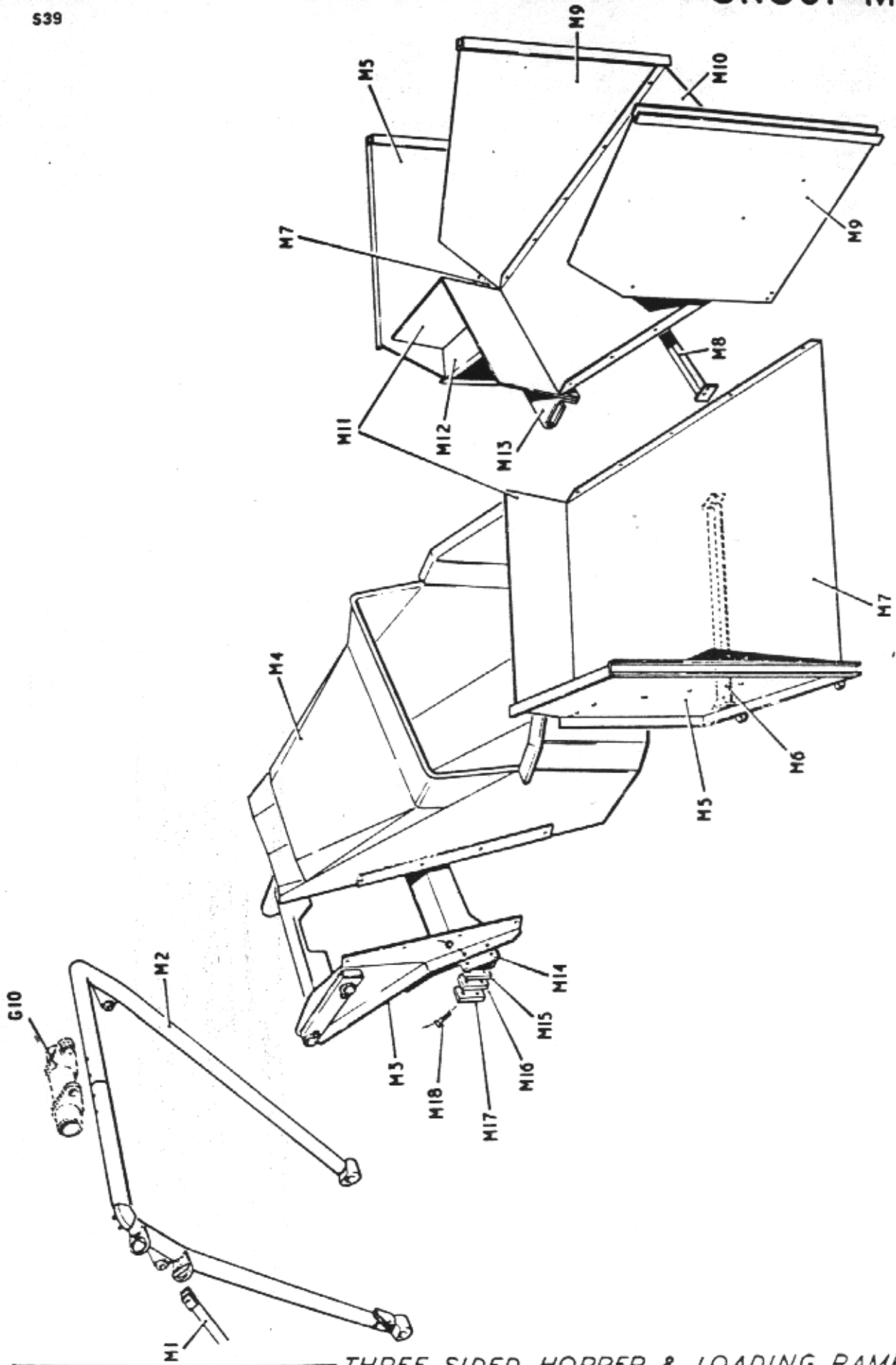
Ref. No.	No. per Machine	Description	Part No.
L 1	1	Gib. Head Key	KA307/30
L 2	1	Electrical Motor Pulley	GK1083
L 3	1	Starter Bracket with Bolt, Nut, Taper and Spring washer	GK1087
L 4	1	Starter with Bolts, Nuts and Spring Washers	SD2N
L 5	1	Electric Motor 15 h.p. 1440 r.p.m.	
L 6	1	Hydraulic Pump Bracket with Bolt, Nut and Spring washer	GK1089
L 7	1 l.h. 1 r.h.	Hydraulic Pump Bracket Side Plate with Bolts, Nuts and Spring Washers	GK1082
L 8	1	Electric Motor Mounting Frame	GK1081
L 9	4	H.T. Bolt with Nyloc Nut	KA309/20
L 10	4	H.T. Bolt with Nyloc Nut	KA308/10
L 11	1	Parallel Key (Round Ends)	KK905/13
L 12	1	Grub Screw, Cone Point	SD505/8/1
L 13	12	Rubber Washer	WG700
L 14	4	Hydraulic Pump Drive Pin with Nut and Spring Washer	GK1086
L 15	1	Grub Screw, Cone Point	SD505/8/1
L 16	1	Parallel Key	KKX103/12
L 17	1	Hydraulic Pump Drive	GK1085
L 18	1	Hydraulic Pump Driver	GR1084
L 19	2	Set Screw with Nut	SS410/40
L 20	1 set	Drive Belts (supplied in matched sets only)	RV750/A

GROUP L



Ref. No.	No. per Machine	Description	Part No.
M 1	2	Dragline Jib Tie	GK1246
M 2	1	Dragline Jib	GK1245
M 3	1	Hopper Cradle with Bolts, Nuts and Spring washers	GK1243
M 4	1	Fabricated Hopper	GK1242
M 5	1 l.h. 1 r.h.	Side Plate	GK1241/4
M 6	1 l.h. 1 r.h.	Outer Support Channels	GK1241/13
M 7	1 l.h. 1 r.h.	Outer Ramp with Bolts, Nuts and Spring Washers	GK1241/1
M 8	1	Centre Support Channel	GK1241/9
M 9	1 l.h. 1 r.h.	Centre Partition	GK1241/3
M 10	1	Centre Ramp	GK1241/2
M 11	3	Rubber Flap	GK1241/7
M 12	1 l.h. 1 r.h.	Outer Retaining Channel with Bolts, Nuts and Spring Washers	GK1241/6
M 13	1	Centre Retaining Channel with Bolts, Nuts and Spring Washers	GK1241/5
M 14	1	Hopper Cradle Buffer Bracket with Bolts, Nuts and Spring washers	GK1244/1
M 15	2	Buffer Plate Inner	GK1244/3
M 16	2	Rubber Pad	N25116
M 17	2	Buffer Plate Outer	GK1244/4
M 18	4	Countersunk Screws with Nyloc Nuts	

Ref. No.	No. per Machine	Description	Part No.
M 1	2	Dragline Jib Tie	GK1246
M 2	1	Dragline Jib	GK1245
M 3	1	Hopper Cradle with Bolts, Nuts and Spring washers	GK1243
M 4	1	Fabricated Hopper	GK1242
M 5	1 l.h. 1 r.h.	Side Plate	GK1241/4
M 6	1 l.h. 1 r.h.	Outer Support Channels	GK1241/13
M 7	1 l.h. 1 r.h.	Outer Ramp with Bolts, Nuts and Spring Washers	GK1241/1
M 8	1	Centre Support Channel	GK1241/9
M 9	1 l.h. 1 r.h.	Centre Partition	GK1241/3
M 10	1	Centre Ramp	GK1241/2
M 11	3	Rubber Flap	GK1241/7
M 12	1 l.h. 1 r.h.	Outer Retaining Channel with Bolts, Nuts and Spring Washers	GK1241/6
M 13	1	Centre Retaining Channel with Bolts, Nuts and Spring Washers	GK1241/5
M 14	1	Hopper Cradle Buffer Bracket with Bolts, Nuts and Spring washers	GK1244/1
M 15	2	Buffer Plate Inner	GK1244/3
M 16	2	Rubber Pad	N25116
M 17	2	Buffer Plate Outer	GK1244/4
M 18	4	Countersunk Screws with Nyloc Nuts	

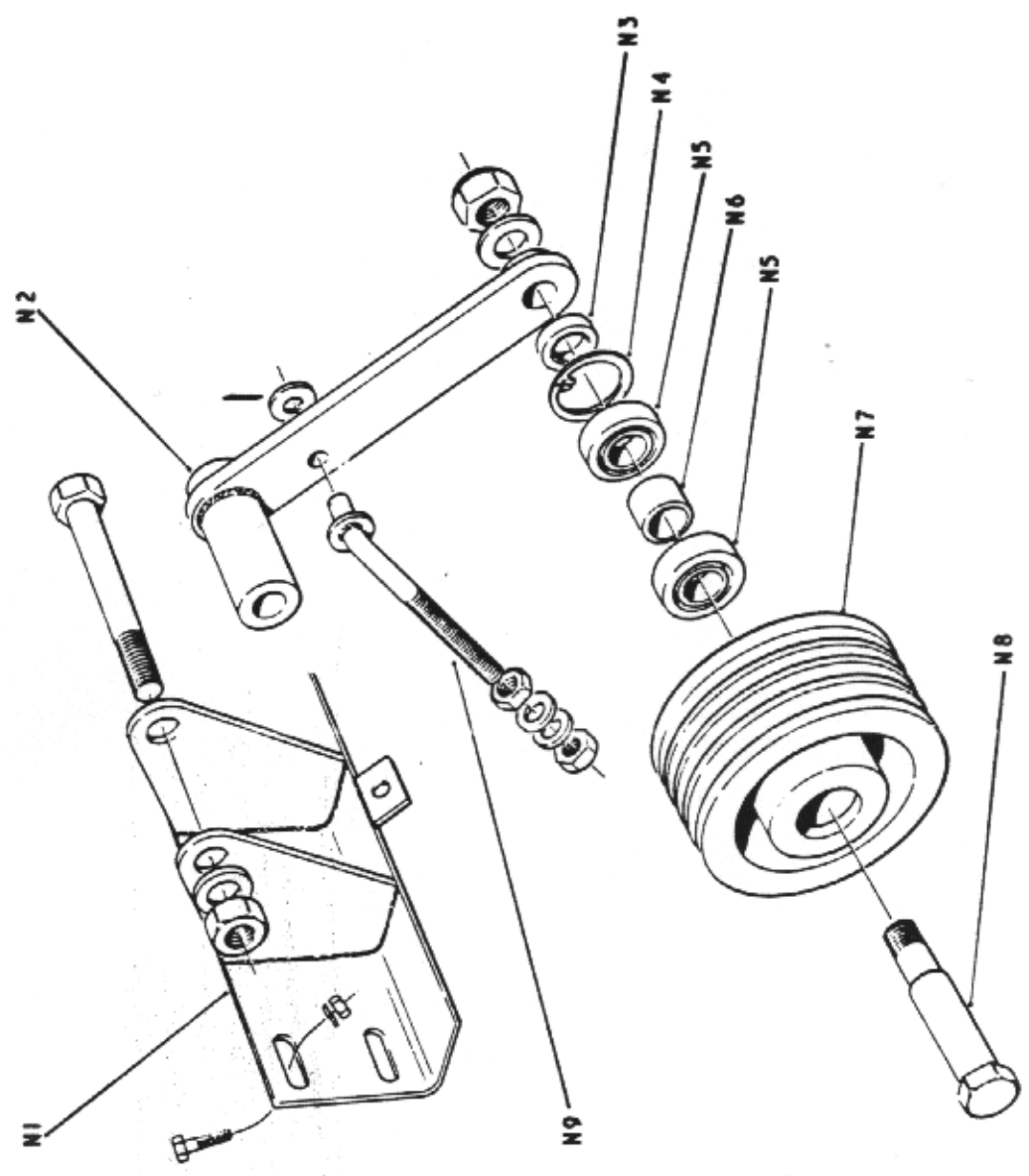


THREE SIDED HOPPER & LOADING RAMP

Ref. No.	No. per Machine	Description	Part No.
N 1	1	Belt Tension Idler Support Bracket with Bolts, Nuts and Spring washers	GK1353
N 2	1	Jockey Pulley Arm	GK1352
N 3	1	Short Bearing Spacer	GK1356
N 4	1	Circlip	CC352
N 5	2	Bearing	BB825
N 6	1	Long Bearing Spacer	GK1355
N 7	1	Idler Pulley	GK1342
N 8	1	Jockey Pulley Pin with Phillides Nut and Plain Washer	GK1354
N 9	1	Adjusting Rod with Nuts, washers and Split Pin	GK1357

882/150

GROUP N



JOCKEY PULLEY ASSEMBLY