

Wadkin

HYDRAULIC CROSS-CUTTING & TRENCHING MACHINES TYPE C.J.

These machines have been specially developed for High Speed Cross-cutting and Trenching. They are capable of handling a wide range of work, and simple to operate, easy to adjust, and all parts are easily accessible. As the machine can be supplied with the saw on the right or left side, the operating and maintenance instructions contained herein are applicable.

PRINCIPAL DIMENSIONS AND CAPACITIES

Standard diameter of Saw	18"	18"	18"
Will cut off	20" x 5" deep	12½" x 5" deep	49" x 5" deep
Speed of Saw Spindle in r.p.m. on 50 cycles	3,000	3,000	3,000
Diameter of Saw Spindle	1½"	1½"	1½"
Rise and fall of Saw Spindle	2"	2"	2"
Standard diameter of Trenching Heads	13"	13"	13"
Horse-power of Saw Motor	5	5	5
Horse-power of Pump Motor	1½	1½	1½
Height of Table from floor	2' 9"	2' 9"	2' 9"
Net Weight (Machine only)	26½ cwt. (2,968 lb.)	18 cwt. (2,016 lb.)	33 cwt. (3,696 lb.)
Pressure on Hydraulic Circuit MAXIMUM	200 lb. per square inch	200 lb. per square inch	200 lb. per square inch
Maximum Forward Speed of Saw Carriage	160 feet per minute	160 feet per minute	160 feet per minute
Return Speed of Saw Carriage	150 feet per minute	150 feet per minute	150 feet per minute

C.J.2 Machine C.J.3 Machine C.J.4 Machine

Wadkin Ltd., Green Lane Works, Leicester.
 Telephone: Leicester 68151 (7 lines)
 London Office: Brookfield House, 62-64 Brook Street, W.1.
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TO OPERATE MACHINE

1. **SET STROKE REQUIRED**
To do this, turn the handle on the front of the saw carriage; this will turn the dial on the top of the saw carriage, which indicates the width of timber that can be cut.

2. **SET SPEED OF CUTTING STROKE**

Move the lever on the front of the machine until the speed required is indicated on the graduated dial, and lock in position by turning the locking handle.

3. **START**

Press start button; this will start both saw and pump motors.

4. **TO BRING SAW CARRIAGE FORWARD**

Press foot pedal and hold it down until the valve mechanism trips, when the saw carriage will automatically return.

NOTE:—The saw carriage will move forward, trip and return, with the foot pedal held down and to repeat this operation, the foot pedal must be released and pressed again.

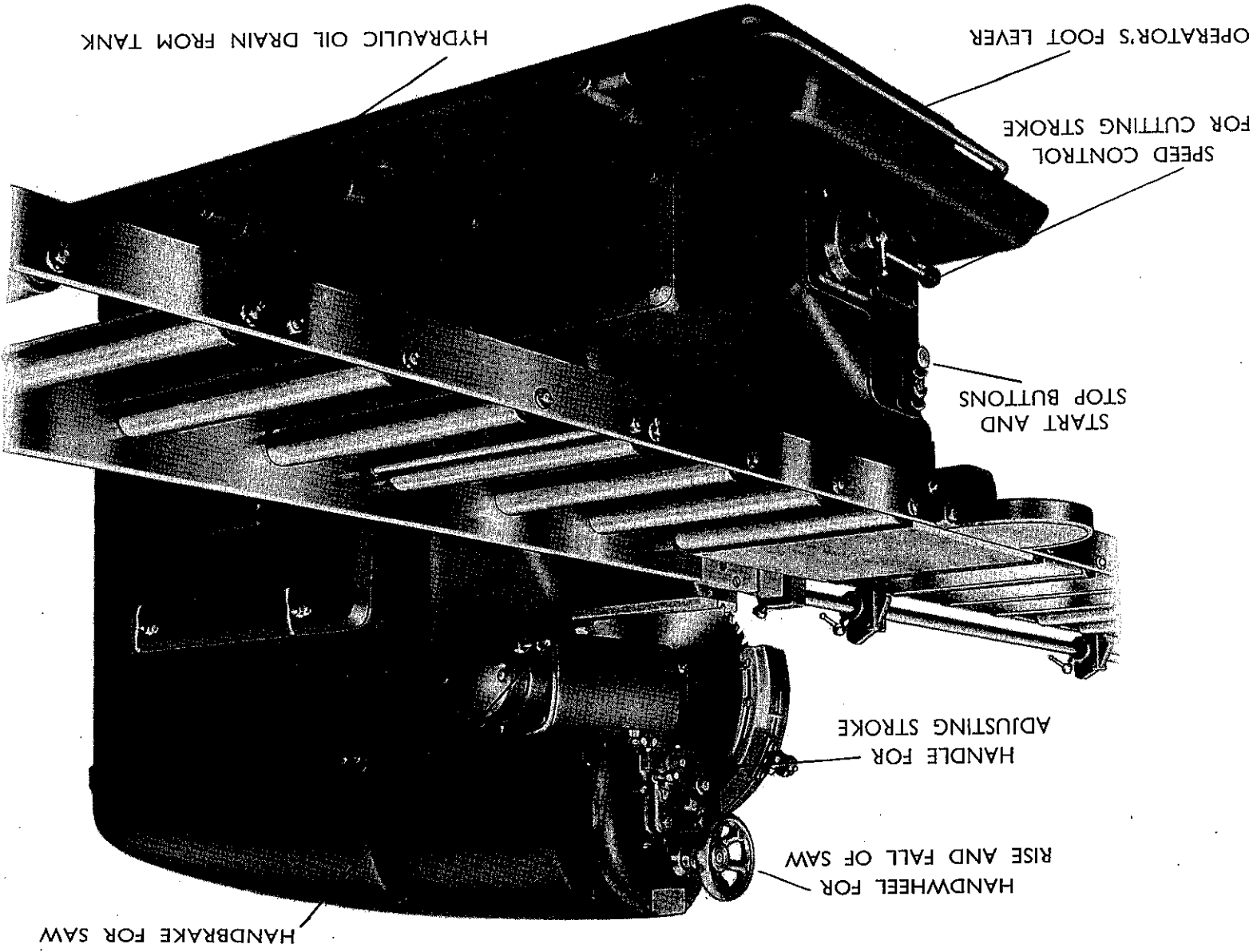
5. **WORKING ON TIMBER OF VARYING WIDTHS**

Set stroke to the maximum required, and to save time on narrow work, release the foot pedal as soon as the saw is through the timber, and the saw carriage will automatically return.

6. **CHANGING SAWS**

Saw should always be changed when the saw carriage is in its normal resting position, that is right back.

The saw guard and saw dust hood are both hinged so that this operation can be easily carried out.



HYDRAULIC OIL DRAIN FROM TANK

OPERATOR'S FOOT LEVER

SPEED CONTROL
FOR CUTTING STROKE

START AND
STOP BUTTONS

HANDLE FOR
ADJUSTING STROKE

HANDWHEEL FOR
RISE AND FALL OF SAW

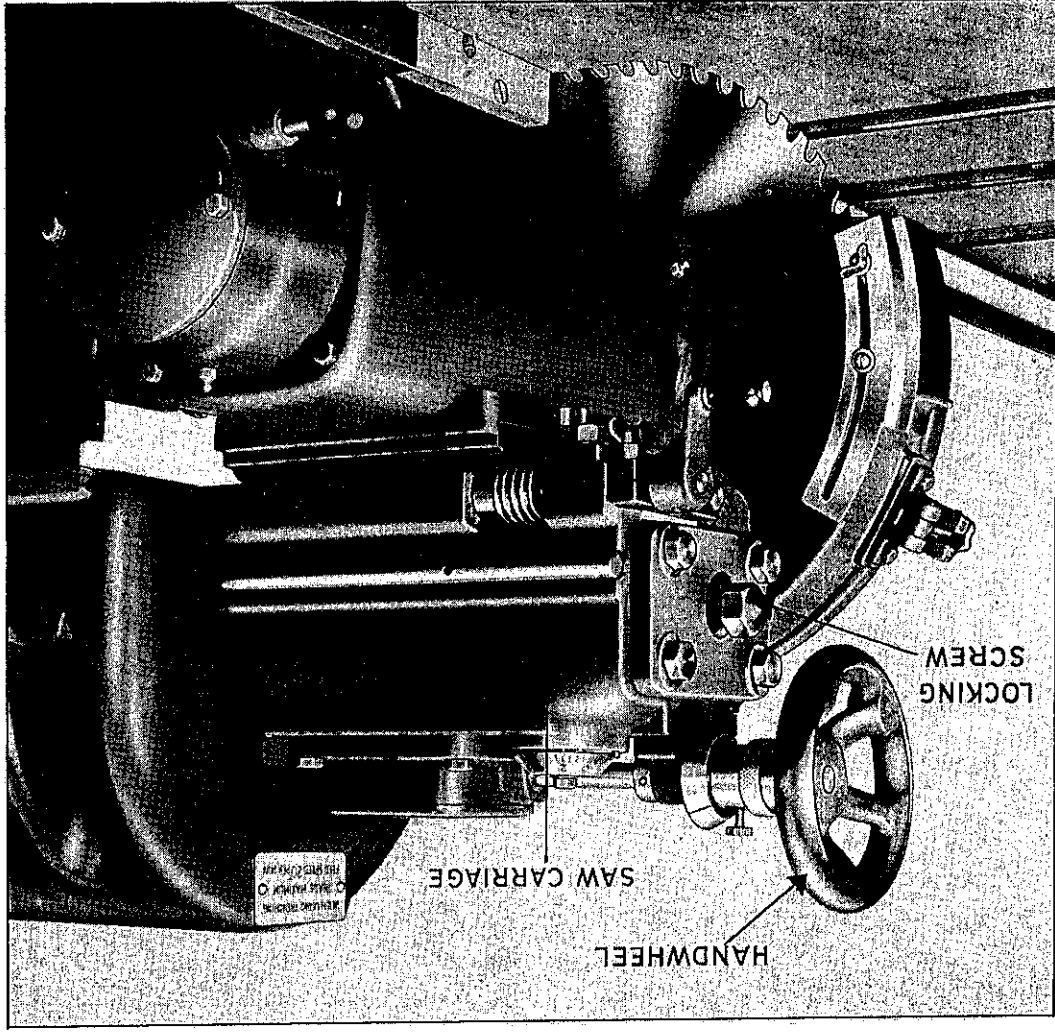
HANDBRAKE FOR SAW

VERTICAL ADJUSTMENT OF SAW (Maximum adjustment 2")

This adjustment is provided or for the use of trenching heads, and should be carried out in the following manner:

Unlock the locking screw on the front end of the saw carriage, and turn handwheel to adjust saw or trenching head up or down.

Re-lock the locking screw on the front of the saw carriage, THIS IS VERY IMPORTANT, as this screw not only locks the vertical slide which carries the saw motor, it also sets the saw in line with the saw carriage.



MAINTENANCE

The machine is sent out ready to run, but the following points should be checked before it is put into use.

1. OIL, for hydraulic unit.

IT IS IMPORTANT THAT THIS OIL OR OIL OF THE SAME QUALITY IS USED.

Check oil level by the Oil Level Indicator fitted to tank. Any oil lost in transit should be replaced.

2. Be sure the Saw Motor runs IN THE CORRECT ROTATION otherwise the pump motor will run backwards, and the pump will not function.

ELECTRICIAN NOTE

The internal wiring of the machine should not be altered. If the saw is running backwards, change any two of the leads in the incoming line leads at L1, L2, or L3 terminals.

FAILURE TO START

1. After checking the above, make sure that electrical connections are correct (fuses, etc., outside the machine).
2. Release the stop button; this button is of the type that can be "locked off," and if turned will spring out.
3. See that speed control lever is not set below 5 feet per minute.

THE HYDRAULIC UNIT

1. **THE PUMP**, which is of the gear type, delivers oil and its maximum working pressure is 250 lb. per square inch. It is driven by chain and chain wheels from a $1\frac{1}{2}$ h.p. motor.

2. **THE PISTON TYPE OPERATING VALVE**, which also carries the relief valve, is connected to the pump by a short pipe, and its functions are as follows :

(a) **NEUTRAL POSITION.** (See page 7.) Oil passes from the pump to the front end of cylinder and also out of the relief valve to exhaust. The pump motor is running on load.

(b) **FORWARD POSITION.** (See page 7.) The valve is now positioned so that oil from the pump is delivered to both ends of the cylinder, under pressure, which is controlled by the RELIEF VALVE.

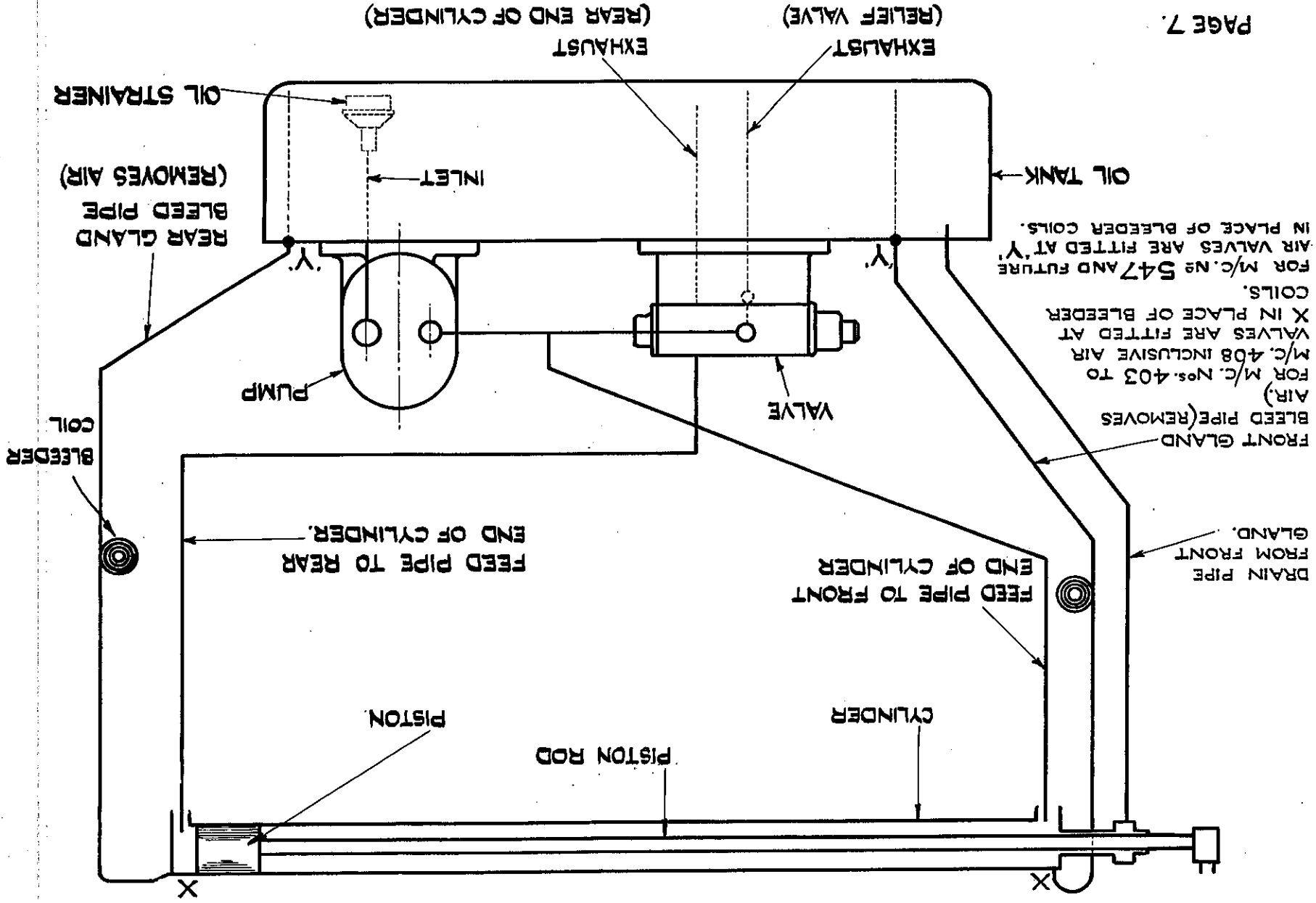
(c) **THE SPEED OF THE FORWARD STROKE.** Speed control lever on the front of machine which increases or decreases the port opening in the valve block.
NOTE : A setting screw in valve block end cap is set to give the correct maximum movement of valve feed position.

(d) **THE RETURN POSITION.** (See page 7.) In this position the valve piston allows oil to pass from the pump to the front end of the cylinder under pressure, and oil from the rear end of the cylinder to pass to exhaust.

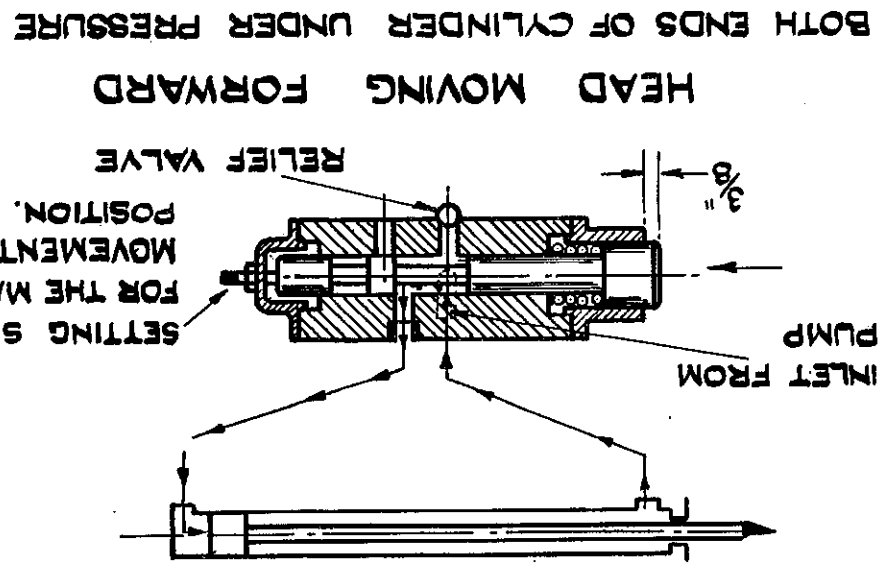
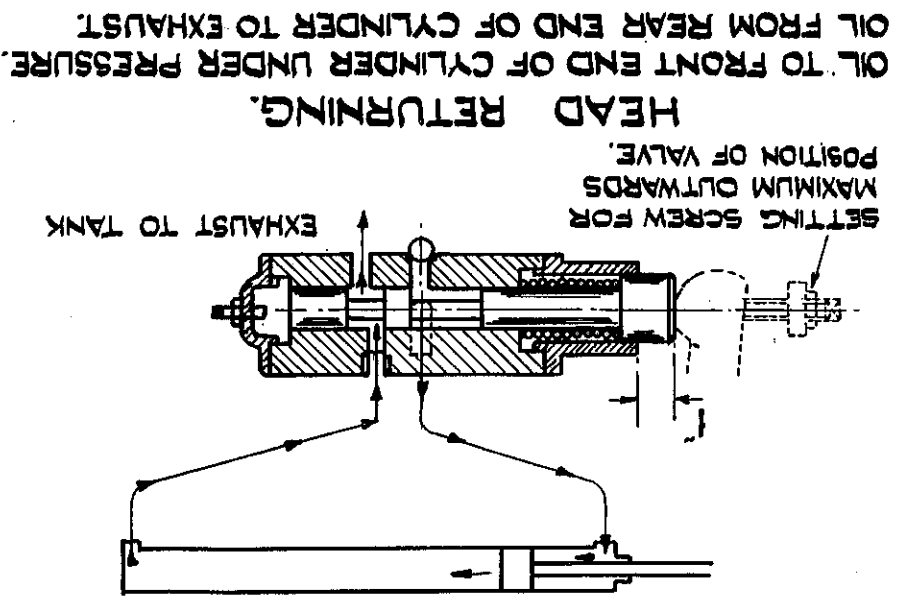
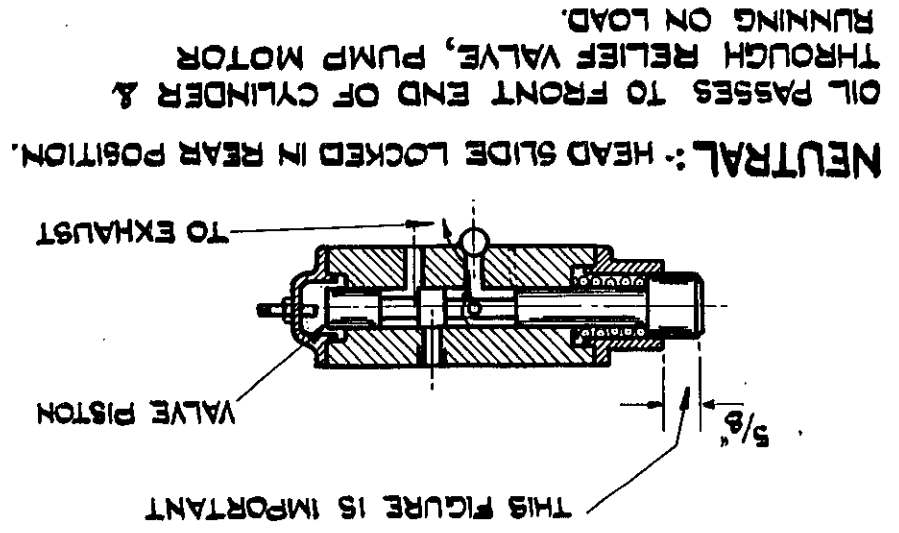
3. **THE RELIEF VALVE** (See Page 7).

This is a ball type valve, the ball being held against its seating by a small lever which is fixed to a rod. The rod passes through the valve block and carries a spring and locknuts for setting the pressure, and to increase the pressure the locknuts are screwed down (right hand). A pressure gauge is fitted to the valve block. The maximum recommended working pressure is 200 lbs. per square inch.

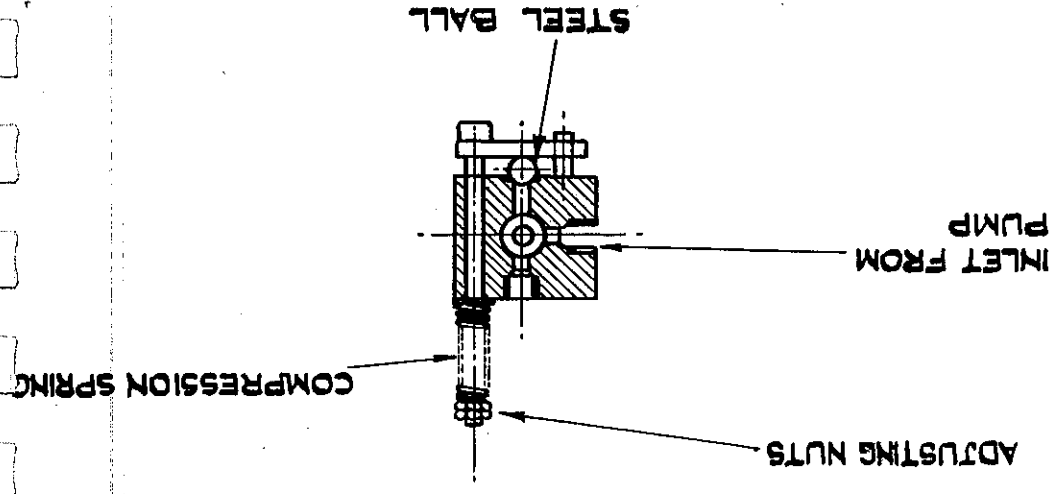
HYDRAULIC CIRCUIT



WORKING POSITIONS OF VALVE



SECTION THROUGH VALVE BLOCK
SHOWING RELIEF VALVE.



THE FOOT PEDAL AND TRIP MECHANISM

The foot pedal is pivoted on a shaft which carries a lever, and pull-rod "D" which is connected to the trip mechanism. The link mechanism is arranged so that when the foot pedal is pressed down, it pulls a lever "A" against the spring-loaded operating valve, thus setting the valve in the FORWARD position.

An adjustable trip cam on the saw carriage engages a roller mounted in one end of a pivoted lever "B". The other end of the lever carries a pull rod, which is connected to the trip mechanism, and lifts the links (when the trip cam engages the roller) so that the operating valve moves, under spring pressure, to the RETURN position.

At the end of the return stroke, a fixed cam on the saw carriage engages another roller and lever "E" with a pull rod which is connected to the right-angle arm of the valve operating lever, and this, acting as a bell crank lever, pushes the valve against the spring into the NEUTRAL position and the saw carriage comes to rest.

The two pull rods, which are connected to the rocker levers, are adjustable to compensate for wear on the trip cams.

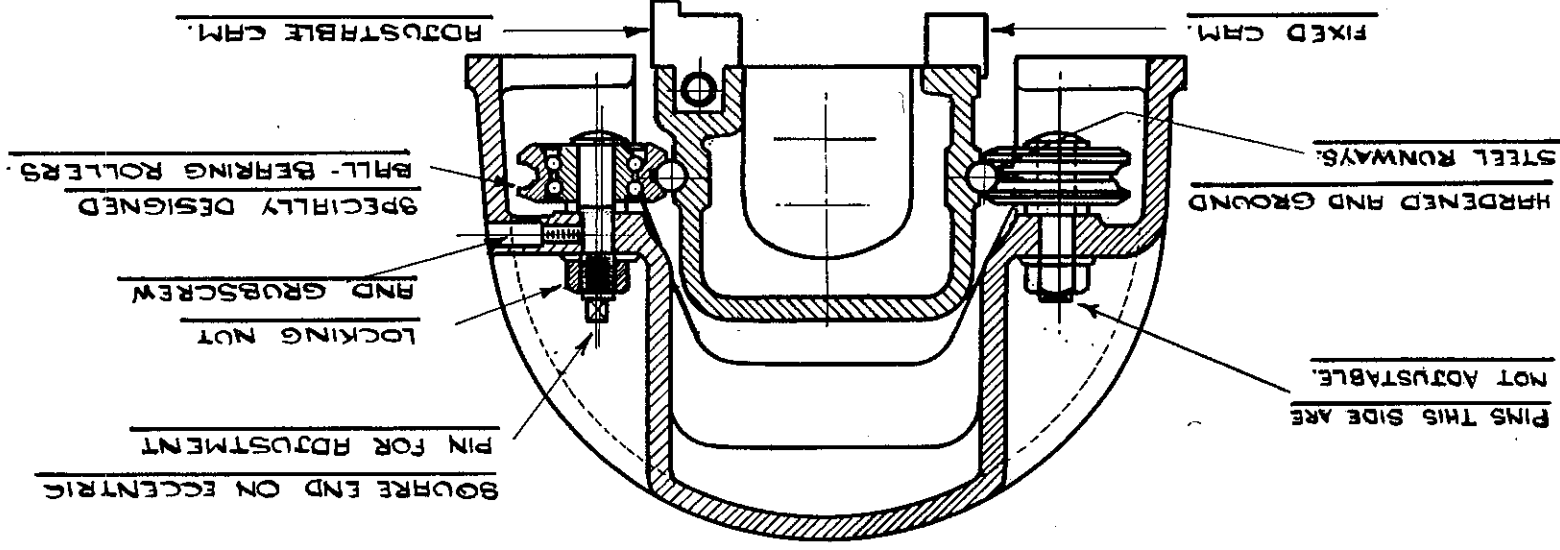
THE SAW CARRIAGE

This is mounted in four specially-designed ball bearing rollers, the outer rings of which run on hardened and ground steel runways.

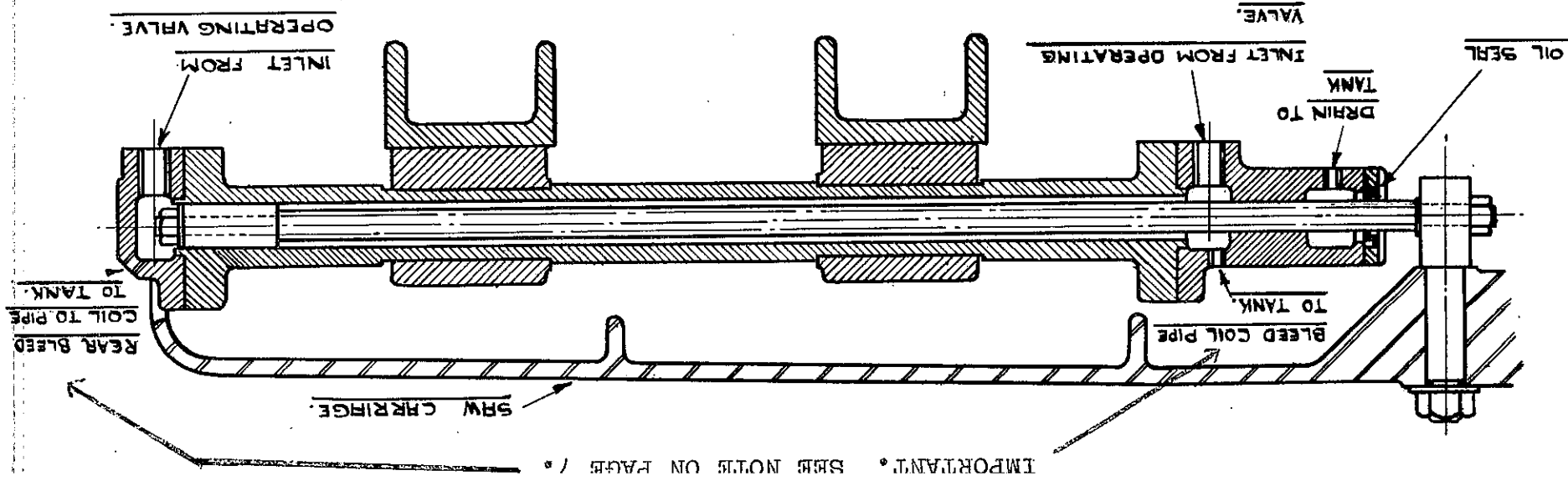
One pair of rollers is mounted on eccentric pins and can be adjusted by loosening the hexagon nut and turning the pin, which has been made square for this purpose.

The front end of the saw carriage is bored to receive the circular slide, which carries the saw motor, and which can be adjusted by the screw carried in the bracket at the top.

A locking screw is also fitted at the front end of the saw carriage, which engages the vee-shaped locking pad, and pushes it into the vee groove in the circular slide.



THE CYLINDER

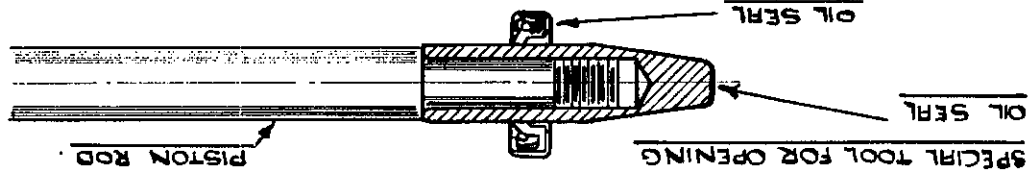


This is made up from solid drawn steel tube, with gunmetal ends screwed on and sweated into position. The piston is of gunmetal, and is secured to the ground piston rod, by a castle nut and split pin, the outer end of the piston rod being secured to the saw carriage by a special eye bolt. The end caps are of cast gunmetal, the front one being arranged to form a cavity which collects the oil that drains past the piston rod. This cavity is sealed at the outer end by a spring-loaded "GACO" type oil seal, and a pipe is connected from it to the tank, to carry the drain oil away.

Both end-caps are tapped to receive a small bore pipe, which acts as a "bleed" and allows air in the cylinder to escape, without reducing the efficiency of the hydraulic unit.

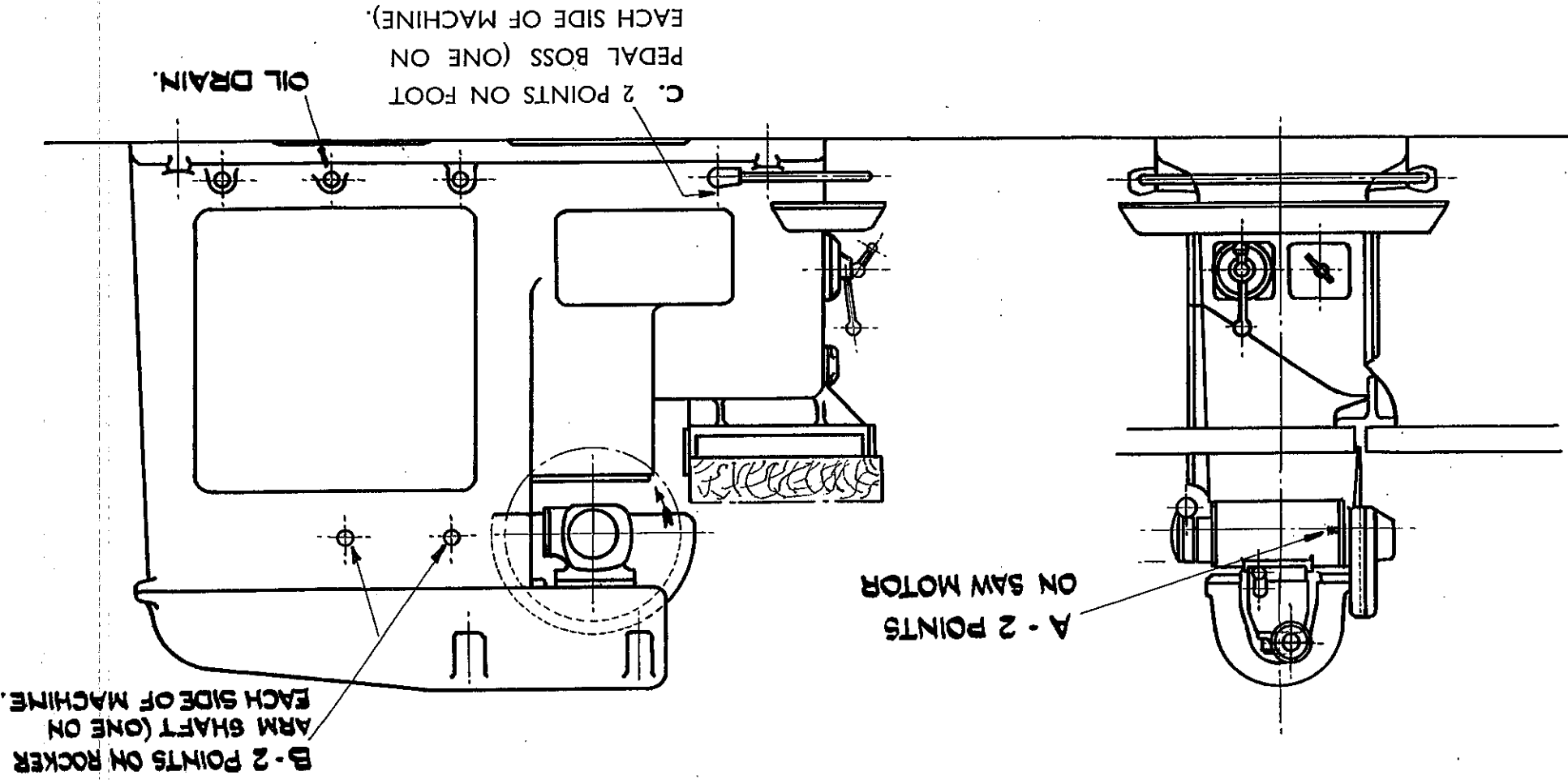
The whole assembly is mounted in two blocks which are split for easy fitting.

NOTE:—A special tool is supplied with the machine, to be used when refitting the oil seal, so that it does not get damaged.



NOTE DIRECTION IN WHICH OIL SEAL IS FITTED.

LUBRICATION CHART (MAIN MACHINE)



A - 2 POINTS
ON SAW MOTOR

B - 2 POINTS ON ROCKER
ARM SHAFT (ONE ON
EACH SIDE OF MACHINE.)

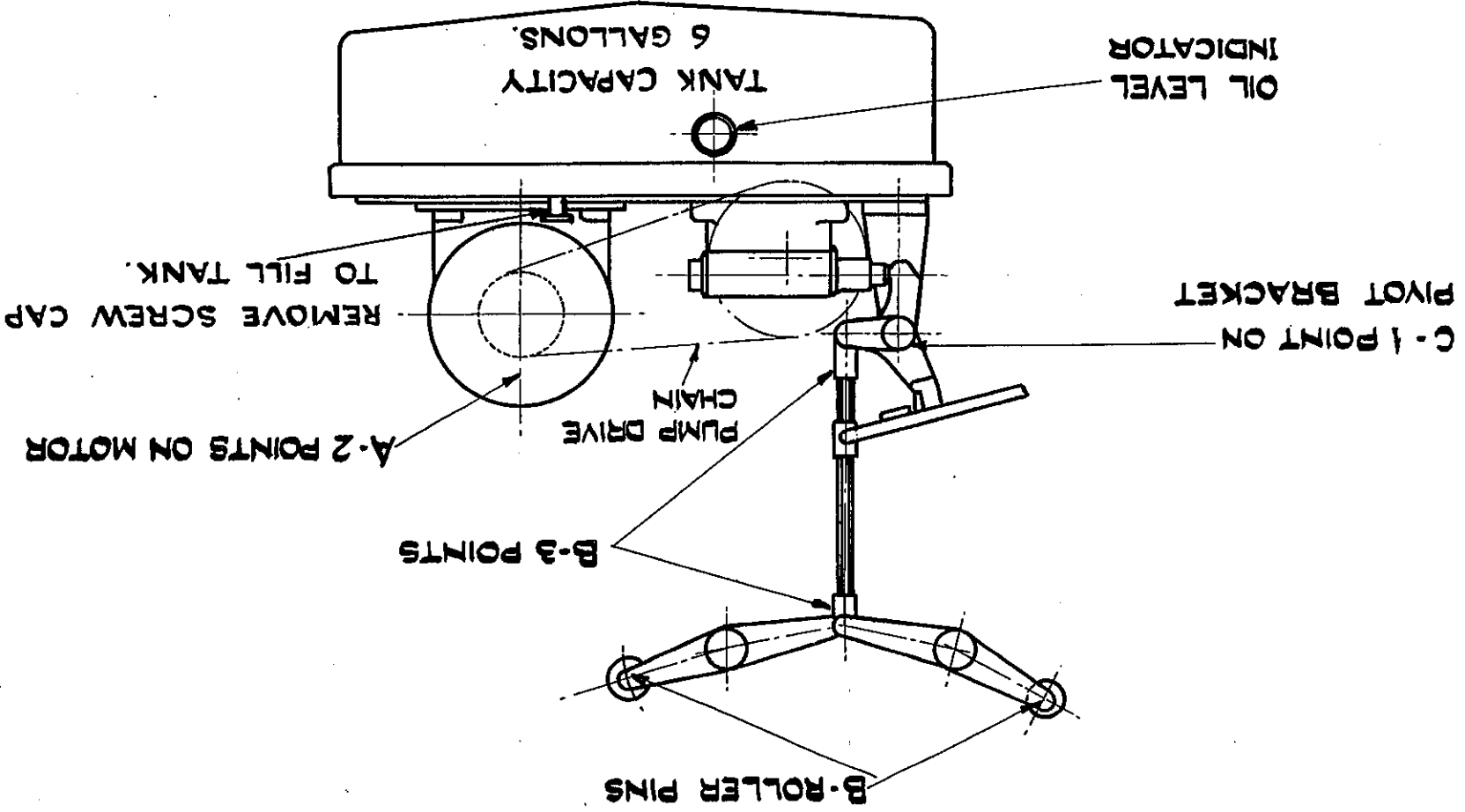
C. 2 POINTS ON FOOT
PEDAL BOSS (ONE ON
EACH SIDE OF MACHINE).

- A. GIVE 1 DEPRESSION OF THE GREASE GUN EVERY THREE MONTHS.
- B. GIVE 1 OR 2 DEPRESSIONS OF THE GREASE GUN EVERY TWO MONTHS.
- C. OIL WITH GOOD QUALITY MACHINE OIL EVERY WEEK.

FOR POINTS 'A' & 'B' USE WADKIN GREASE LUBRICANT L6

OR ALTERNATIVELY:- Shell-Mex & BP Ltd.—Shell NERITA grease 3
Vacuum Oil Co.—GARGOYLE grease BRB.3.
Caltex Lubricants—REGAL Starfak No. 2 grease.

LUBRICATION CHART (HYDRAULIC UNIT)



- A — GIVE NOT MORE THAN 1 DEPRESSION OF GREASE GUN EVERY THREE MONTHS
- B — GIVE 1 OR 2 DEPRESSIONS OF GREASE GUN WEEKLY
- C — OIL WITH GOOD QUALITY MACHINE OIL EVERY WEEK

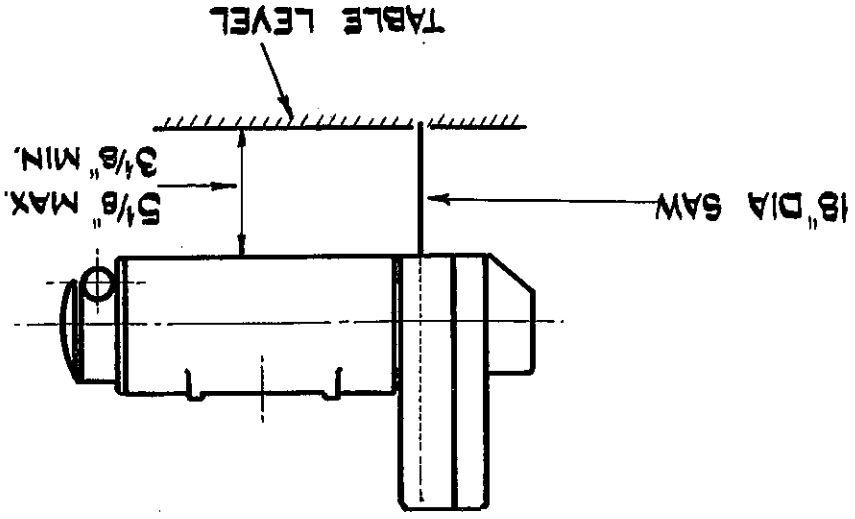
OIL CHAIN ON PUMP DRIVE WEEKLY

FOR HYDRAULIC UNIT USE WADKIN HYDRAULIC OIL, GRADE L.1.

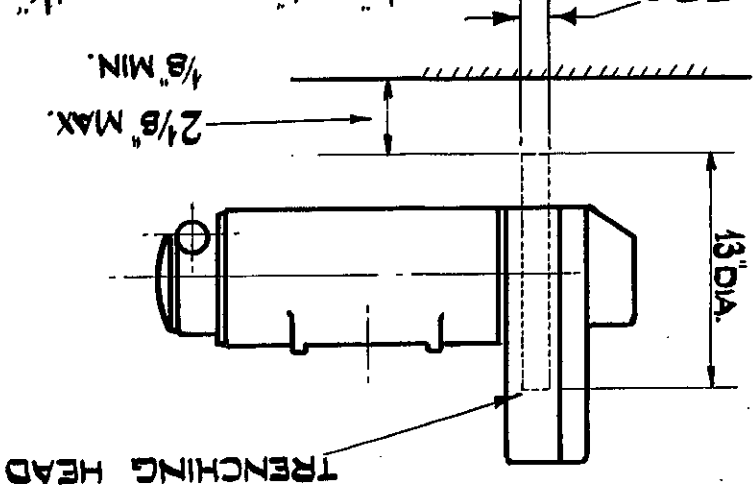
ALTERNATIVELY: — Vacuum Oil Co.—GARGOYLE DTE OIL
 Shell-Mex & BP Ltd.—Shell TELLUS OIL 27.
 Caltex Lubricants—REGAL OIL B (R & O).
 (light special).

CAPACITY CHART

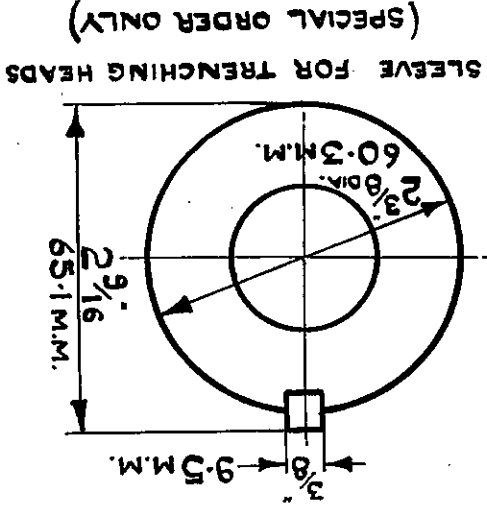
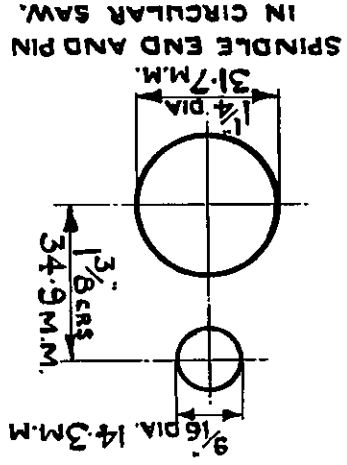
SAWING



TRENCHING



JP 550 FOR GROOVES 1/2" TO 1" WIDE UP TO 1/2" DEEP MAX. JP 55B FOR GROOVES 1/16" TO 2" WIDE UP TO 3/4" DEEP MAX.
 SPECIAL SLEEVE CJ 733 WITH LOCKNUT AND SPACING COLLARS, REQUIRED WITH THE TRENCHING HEADS.



SAWS AND TRENCHING HEADS

SAWS

The saws used on this machine run at high peripheral speed and correct balance and tension is essential. For general purposes we recommend the Wadkin WXT Flat Cross Cut Saw. For work demanding a high-grade finish use Wadkin WXT Hollow Ground Cross Cut Saw.

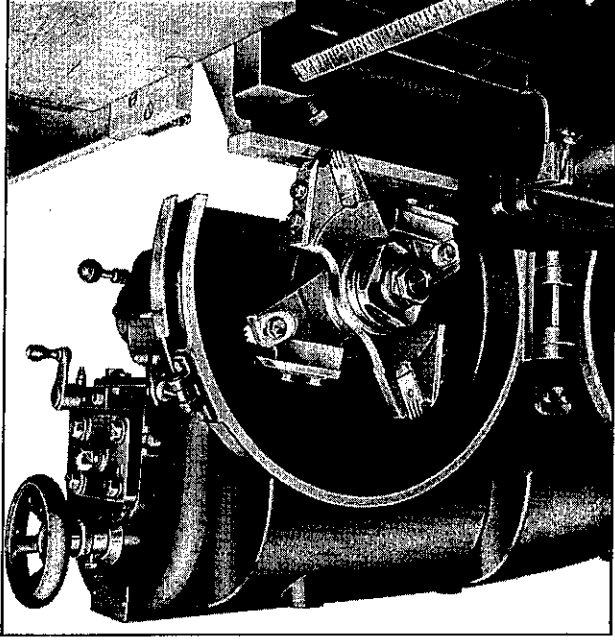
TRENCHING HEADS

To fit trenching heads, remove nuts and front saw collar from saw spindle; rear saw collar is left in position as the driving pin in the saw collar drives the trenching head. The complete head assembly is fitted in place of the saw and secured by two thin hexagon nuts.

The pair of heads are mounted on a sleeve with distance collars to suit the width of trench required. Four collars are supplied and by using these singly or in combinations, various widths of trench can be obtained. The heads should be securely locked on the sleeve with the special gunmetal nut provided.

The depth of trench is controlled by adjusting the head and motor unit vertically by means of the handwheel (page 4) on the front of the machine. A graduated dial is marked in 64ths to assist in setting, one turn of the handle moving the head one-eighth of an inch.

The maximum forward speed of the head when trenching should not exceed 20 ft. per minute. It will be necessary to use speeds below 20 ft. per minute as speed selected is governed by the timber being worked and the width and depth of trench.



WHAT TO LOOK FOR IF

1. **THE SAW MOTOR IS RUNNING, AND THE SAW CARRIAGE WILL NOT COME FORWARD**
 - a. The pump motor may not be running, in which case, send for an electrician.
 - b. The oil level in the tank is too low and requires "topping up."
 - c. The nuts on the relief valve have come loose, and there is no pressure.
2. **THE SAW CARRIAGE COMES FORWARD BUT WILL NOT GO BACK**
 - a. The return spring on the operating valve may be broken.
 - b. The piston or piston rod is stuck.
 - c. The nut has come off the front end of the piston rod.
3. **OIL RUNS DOWN THE FRONT OF THE MACHINE**

The oil seal round the piston rod may be worn out.
4. **THE SAW CARRIAGE COMES FORWARD WITH A JERKY MOVEMENT**
 - a. The driving chain for the pump may be too loose.
 - b. The runways are dirty, causing tight and loose spots on the saw carriage.
 - c. The oil level in the tank is too low.
5. **THE MACHINE WILL NOT START WHEN THE START BUTTON IS PRESSED**
 - a. The stop button may be locked in, if not send for the electrician, who may find:
 - b. The fuses are blown, or
 - c. The contactor gear needs adjusting.
6. **THE SAW CARRIAGE IS LOOSE, AND CUT IS NOT STRAIGHT**

The rollers require adjusting. (See page 11.)
7. **THE SAW CARRIAGE GOES BACK TOO FAR, AND BUMPS**

The fixed cam may be worn, and the pull rod requires adjustment. (See page 10.)
8. **THE SAW CARRIAGE COMES FORWARD VERY SLOWLY**
 - a. Dirt may have got between the valve operating lever, and the stop screw.
 - b. The pressure has dropped, in which case the relief valve requires adjusting.

ELECTRICAL INSTALLATION INSTRUCTIONS

The cabling between the motor and the control gear has been carried out by Wadkin Ltd., and it is only necessary to bring the line leads to the machine for it to be put into service. This should be done as follows :

1. Fit triple pole isolating switch near the machine, unless this has been supplied to special order by Wadkin Ltd., when it will be fitted and connected up at the machine.
2. Connect the line lead to the appropriate terminals. See diagram of connections. The cables should be taken to the machine in conduit and secured by locknuts to the control gear.
3. Connect solidly to earth.
4. Close isolating switch and press start button. If machine does not rotate in the right direction interchange any two incoming lines.

FAILURE TO START

1. Electric supply is not available at machine.
2. Fuses have blown or have not been fitted.
3. Isolating switch has not been closed.

STOPPAGE DURING OPERATION AND FAILURE TO RESTART

1. Fuses have blown.
2. Overloads have tripped. They will reset automatically after a short time, and the machine can be restarted in the usual manner.

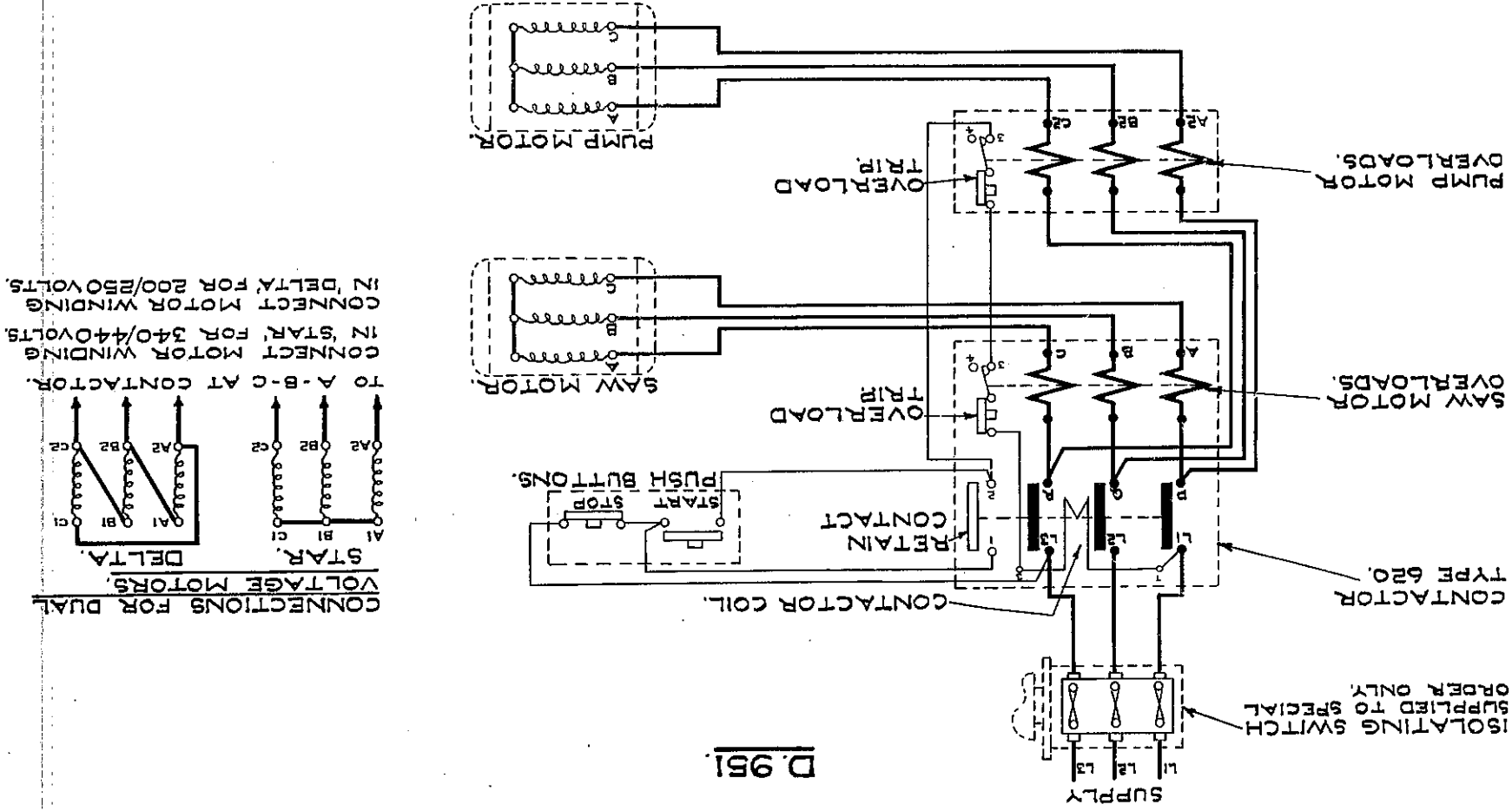
ADJUSTMENTS

For a finer overload setting, set the load indicator to a lower value and vice versa for a less fine setting. The load indicator should only be moved a small amount at a time.

GENERAL

Check the earth connection from time to time. Users are recommended to display in an appropriate position in the maintenance department Wadkin Electrical Maintenance Instructions, Card No. 356, which is issued gratis on application.

INSTALLATION INSTRUCTIONS
 FIT ISOLATING SWITCH NEAR MACHINE SO THAT THE ELECTRICAL GEAR MAY READILY BE ISOLATED FOR INSPECTION PURPOSES. BRING SUPPLY CABLES TO ISOLATING SWITCH AND TO L1-L2-L3 AT CONTACTOR THROUGH CONDUIT WHICH SHOULD BE SCREWED INTO THE MACHINE AND SECURED BY MEANS OF LOCKNUTS. ENSURE THAT THE DIRECTION OF ROTATION IS CORRECT BEFORE PUTTING THE MACHINE INTO SERVICE, TO REVERSE ROTATION INTERCHANGE L1 AND L3 AT CONTACTOR.
OPERATING INSTRUCTIONS
 TO START MACHINE: CLOSE ISOLATING SWITCH AND PRESS 'START' BUTTON. TO STOP MACHINE: PRESS 'STOP' BUTTON. TO LOCK OFF MACHINE: PRESS AND TURN 'STOP' BUTTON. THIS MUST BE RELEASED BEFORE A START CAN BE MADE.
 SHOULD THE MACHINE STOP DUE TO OVERLOAD, WAIT FOR A SHORT TIME TO ALLOW THE COILS TO COOL THEN START IN THE USUAL MANNER. THE OVERLOADS ARE SET AT THESE WORKS AT 'AUTO' FOR AUTOMATIC RESET AFTER TRIPPING. IF SET AT 'HAND', THE PLUNGERS ON THE OVERLOAD ASSEMBLIES SHOULD BE DEPRESSSED TO RESET.



... blow away harmful dust, chips and dirt with a Wadkin Electric Blower

No motor can run at its maximum efficiency with its ventilating duct or control gear covered with dust and dirt. Sooner or later the resultant overheating will cause serious trouble.

Similarly, accumulations of chips and dust, in the mechanical parts of the machine can interfere with its efficiency. A few minutes a week for blowing down all Woodworking Machinery will be amply repaid in better and easier running, in increased life, and freedom from breakdown.

Blowers can be supplied for single phase A.C. or Direct Current for any voltage up to 250.

Please state voltage when ordering.

