

**"WADKIN" DOUBLE END TENONING**

**MACHINE — TYPE "DL"**

**INSTRUCTION BOOK NO: 1342**



T: 0116 2769111

F: 0116 2598138

ALWAYS QUOTE MODEL AND MACHINE NUMBER WHEN ORDERING SPARES

### SPARE PARTS

SHOULD SPARE PARTS BE REQUIRED DUE TO BREAKAGE OR WEAR, FULL PARTICULARS INCLUDING MACHINE AND TEST NUMBER MUST BE GIVEN, THIS INFORMATION IS ON THE NAMEPLATE ATTACHED TO THE FRONT OF THE MACHINE AND SHOULD BE FORWARDED TO THE SERVICE MANAGER.

<b>Wadkin PLC</b>	
GREEN LANE WORKS, LEICESTER, ENGLAND	
MACHINE NO.	
TEST NO.	
VOLTS	3- HZ
AMPS	MAX
"DL"	

### SAMPLE TYPE ORDER

MACHINE "DL"

MACHINE NO:

TEST NO:

PARTS REQUIRED

- |   |   |                                     |
|---|---|-------------------------------------|
| 1 | - | M10 x 50mm. long screwed stud       |
| 1 | - | M10 size. bright mild steel washers |
| 1 | - | Raising screw                       |

Wadkin PLC., Green Lane Works. Leicester LE5 4PF Telephone: 0116 2769111

## ATTENTION

THIS MACHINE CAN BE DANGEROUS IF IMPROPERLY USED.

ALWAYS USE GUARDS

KEEP CLEAR UNTIL ROTATION HAS CEASED

ALWAYS OPERATE AS INSTRUCTION AND IN ACCORDANCE WITH GOOD PRACTICE.

READ THE INSTRUCTION MANUAL.

### NOTE:

THIS MACHINE, WHEN UNDER WORKING CONDITIONS, MAY PRODUCE A NOISE LEVEL IN EXCESS OF 90 D.B. "WADKIN" LTD., WILL SUPPLY INFORMATION ON ACOUSTICAL ENCLOSURES ON REQUEST, AND WILL REQUIRE A WRITTEN UNDERTAKING THAT THE NECESSARY STEPS WILL BE TAKEN TO ENSURE THAT THE MACHINE IS ONLY USED IN COMPLIANCE WITH THE TERMS OF HEALTH AND SAFETY AT WORK - ACT 1974.

IT IS RECOMMENDED THAT ALL PERSONNEL INVOLVED WITH THE MACHINE ARE ACQUAINTED WITH THE WOODWORKING MACHINES REGULATIONS, 1974 AND ALSO BOOKLET NO: 41 - SAFETY IN THE USE OF WOODWORKING MACHINES - THE LATTER IS ISSUED BY THE DEPARTMENT OF EMPLOYMENT AND AVAILABLE FROM HER MAJESTY'S STATIONERY OFFICE.

### IMPORTANT

IT IS OUR POLICY AND THAT OF OUR SUPPLIERS TO REVIEW CONSTANTLY THE DESIGN AND CAPACITY OF OUR PRODUCTS. WITH THIS IN MIND WE WOULD REMIND OUR CUSTOMERS THAT WHILST THE DIMENSIONS AND PERFORMANCE DATA CONTAINED HEREIN ARE CURRENT AT THE TIME OF GOING TO PRESS, IT IS POSSIBLE THAT, DUE TO THE INCORPORATION OF LATEST DEVELOPMENTS TO ENHANCE PERFORMANCE, DIMENSIONS AND SUPPLIES MAY VARY FROM THOSE ILLUSTRATED.

## SAFETY RULES

THE SAFE OPERATION OF WOODWORKING MACHINERY REQUIRES CONSTANT ALERTNESS AND CLOSE ATTENTION TO THE WORK IN HAND.

CAREFULLY READ INSTRUCTION MANUAL BEFORE OPERATING MACHINE.

DO NOT OPERATE WITHOUT ALL GUARDS AND COVERS IN POSITION.

BE SURE MACHINE IS ELECTRICALLY EARTHED - GROUNDED.

REMOVE OR FASTEN LOOSE ARTICLES OF CLOTHING SUCH AS NECKTIES ETC, CONFINE LONG HAIR.

REMOVE JEWELLERY SUCH AS FINGER RINGS, WATCHES, BRACELETS ETC.

USE SAFETY FACE SHIELD, GOGGLES, OR GLASSES TO PROTECT EYES AND OTHER PERSONAL SAFETY EQUIPMENT AS REQUIRED.

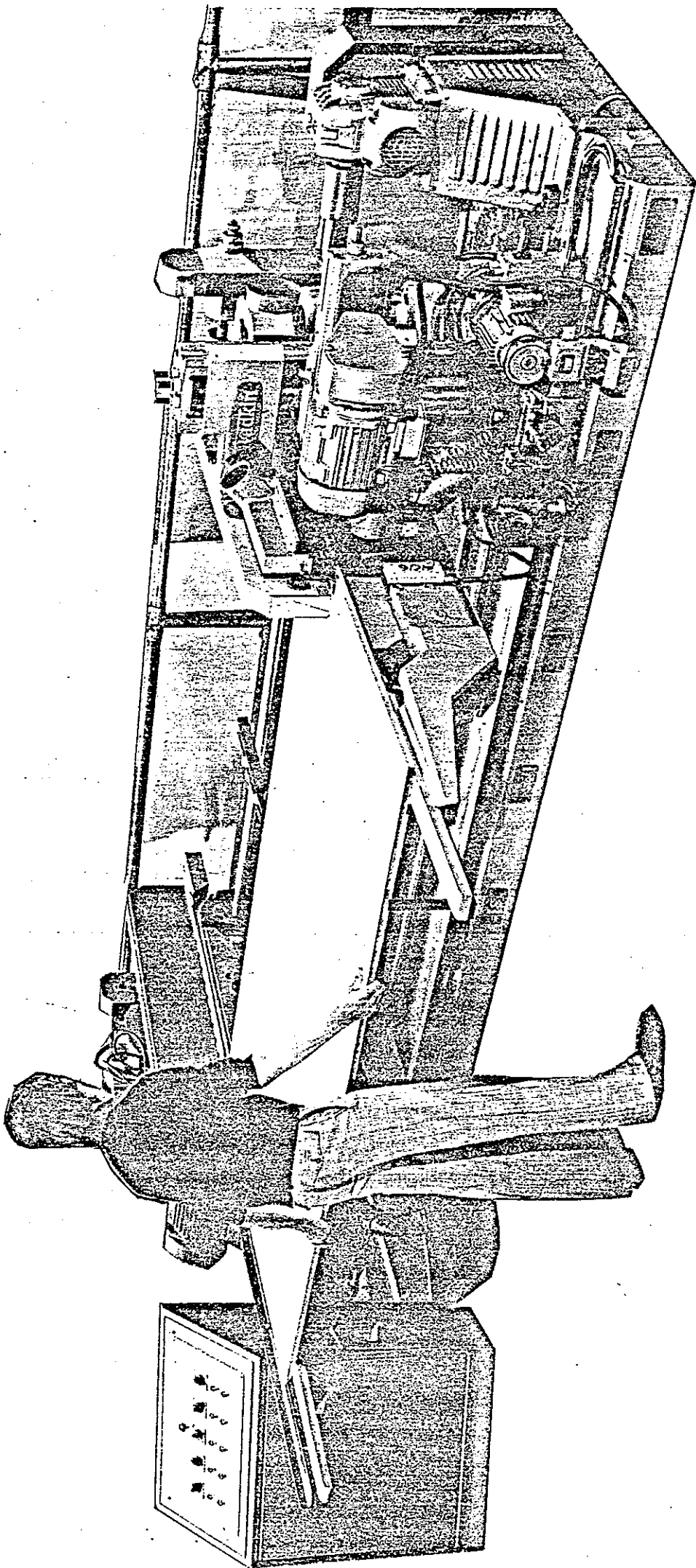
STOP MACHINE BEFORE MAKING ADJUSTMENTS OR CLEANING CHIPS FROM WORK AREA.

BLUNT CUTTERS OFTEN CONTRIBUTE TO ACCIDENTS. AN EFFICIENT MACHINIST KNOWS WHEN RE-SHARPENING IS NECESSARY, BUT IF THERE IS RELUCTANCE TO SPEND TIME ON GRINDING AND RE-SETTING, THE CUTTERS MAYBE RUN BEYOND THEIR EFFICIENT LIMITS AND INSTEAD OF CUTTING EFFICIENTLY AND SMOOTHLY, THEY TEND TO CHOP AND SNATCH AT THE WOOD. THIS NOT ONLY INCREASES THE RISK OF ACCIDENTS BUT ALSO LOWERS THE QUALITY OF WORK.

CUSTOMERS ARE STRONGLY ADVISED TO USE AT ALL TIMES, HIGH TENSILE STRENGTH CUTTER BLOCK BOLTS WHICH SHOULD BE TENSIONED BY MEANS OF A TORQUE SPANNER.

KEEP THE FLOOR AROUND THE MACHINE CLEAN AND FREE FROM SCRAPS, SAWDUST, OIL OR GREASE TO MINIMISE THE DANGER OF SLIPPING.

"DL" MACHINE



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WADKIN DOUBLE END TENONER - "DL"

PRINCIPAL DIMENSIONS AND CAPACITIES

Maximum thickness of Timber admitted	150mm.(6ins.)
Minimum distance across outside of chainbeams	170mm.(6.75ins.)
Maximum overhang track to column	150mm.(6ins.)
Minimum distance between cutters using hogging and scoring saws	190mm.(7.5ins.)
Minimum distance between cutters using scribing heads	180mm.(7ins.)
Maximum rise and fall of top pressures - without drive	150mm.(6ins.)
Maximum rise and fall of top pressures - with drive	100mm.(4ins.)
Maximum distance across track Option 1	1760mm.(69ins.)
Maximum distance across track Option 1 with sound enclosure	1200mm.(47ins.)

ALTERNATIVE

Maximum distance across tracks Option 2 2760mm.(109ins.)

ALTERNATIVE

Maximum distance across tracks Option 2 with sound enclosure	2200mm.(87ins.)
Alternative distance across tracks Option 3	3460mm.(136ins.)
Alternative distance across tracks Option 3 with sound enclosure	2900mm.(114ins.)

MAXIMUM INFEEED CAPACITY IN FRONT OF DOGS

MODEL NO.	INFEEED(MM)	CAPACITY(INS.)	NO.OF PITCHES IN CHAIN
DL 40/1 - single column	300	12	40
DL 40/2 - single column	300	12	40
DL 48/1 - single column	700	27	48
DL 48/2 - single column	700	27	48
DL 48/3 - single column	500	20	48
DL 48/4 - double column	300	12	48
DL 48/5 - double column	300	12	48
DL 56/1 - single column	1100	43	56
DL 56/2 - single column	1100	43	56
DL 56/3 - single column	900	36	56
DL 56/4 - double column	700	27	56
DL 56/5 - double column	700	27	56

Platform type track to accept dogs at 200, 400, 500, 800, 1000 and 2000mm.spacing

Maximum size of backing piece 125mm.(5ins.)deep, 45mm.(1.7ins.)overhang from edge of track.

PRINCIPAL DIMENSIONS AND CAPACITIES - CONTD.

SWING AWAY FENCE - MAXIMUM DIMENSIONS

From edge of fence - to edge of track		112mm.(4.5ins.)
Spindle diameter - all heads		35mm.
Optional spindle diameters - all heads		30mm. OR 1.1/4ins.
Spindle speeds - 50 hertz		3000 and 6000rpm.
Optional spindle speeds - 50 hertz		4500 and 6000rpm.
Spindle speeds - 60 hertz		3000 and 6000rpm.
Output of cutter units - 50 and 60 hertz		3.7KW (5.5HP) intermittent rating - TYPE "B"

Three types of motors can be employed

- Type "A" head - direct driven
- Type "B" head - belt driven
- Type "C" head - direct driven

Output of heads

TYPE "A" 3.7KW (5.0HP) continuously rated

Under certain conditions the options indicated can be supplied

optional 5.5KW (7.5HP) continuously rated

optional 7.5KW (10HP) continuously rated

TYPE "B" 3.7KW (5.0HP) intermittently rated

Under certain conditions the options indicated can be supplied

optional 5.5KW (7.5HP) intermittently rated

TYPE "C" 3.7KW (5.0HP) intermittently rated

Output of combined Hogging and Jump score Type "B" unit 50 and 60 hertz 5.5KW (7.5HP) - intermittently rated

Output of Beam mounted saw Type "C" unit 3.7KW (5.0HP) - intermittently rated

Output of Non-Canting beam mounted Jump scorer 0.55KW (0.75HP)

Speed of Non-Canting beam mounted Jump scorer 6000rpm.

Output of Feed Motor 50 and 60 hertz 1.5KW (2.0HP)

Speed of Feed Motor 50 hertz 1500rpm.

Output of Traverse Motor 50 and 60 hertz 1.5KW (2.0HP) 5 minute rated.

Speed of Traverse Motor 50 hertz 3000rpm.

Feed Speeds infinitely variable 50 hertz 3 - 18 metres/minute

10 - 60 feet/minute

Feed Speeds infinitely variable 60 hertz 3.6 - 21.6 metres/minute

12 - 72 feet/minute

Floor space - Refer to Foundation Plan DL 10042 sheet 2.

Enclosures - Foundation Plan DL 10042 sheets 1 and 2.



# DL Head Positions

Model	Infeed (mm)	Sequence	
DL40/1 DL48/1 DL56/1	300 700 1100		
DL40/2 DL48/2 DL56/2	300 700 1100		
DL48/3 DL56/3	500 900		
DL48/4 DL56/4	300 700		
DL48/5 DL56/5	300 700		

## SLINGING

### FIG.1.

1. Lifting Facilities in the form of four lifting irons are provided. These are located on either side of the machine bed.
2. It is very important to ensure that the lifting slings are attached to the lifting irons and are suitably arranged to enable the machine to be lifted so that the body is parallel to the floor prior to its siting.
3. **IMPORTANT** WHEN THE MACHINE IS IN SITU REMOVE THE LIFTING IRONS AND THE ATTENDANT BOLTS FROM THE MACHINE BED.

## CLEANING

Clean protective coating from all bright parts by applying a cloth soaked in paraffin, turpentine OR other solvent.

## MARKING OUT

Mark out floor, using floor plan supplied with machine and drill to suit 16mm. (5/8in.) rawlbolts. These are not supplied with the machine but are available on request at additional cost.

## LEVELLING

1. Fit steel packing piece beneath levelling screws in base of the machine.
2. Level bed using levelling screws, screwing them down on to packing pieces. The bed should be within 0.1mm. per 1000mm. (0.001ins. in 10 inches.)

**IMPORTANT** ALWAYS USE AN ENGINEER'S SPIRIT LEVEL.

3. Fully tighten rawlbolts and re-check levelling, adjust if required.

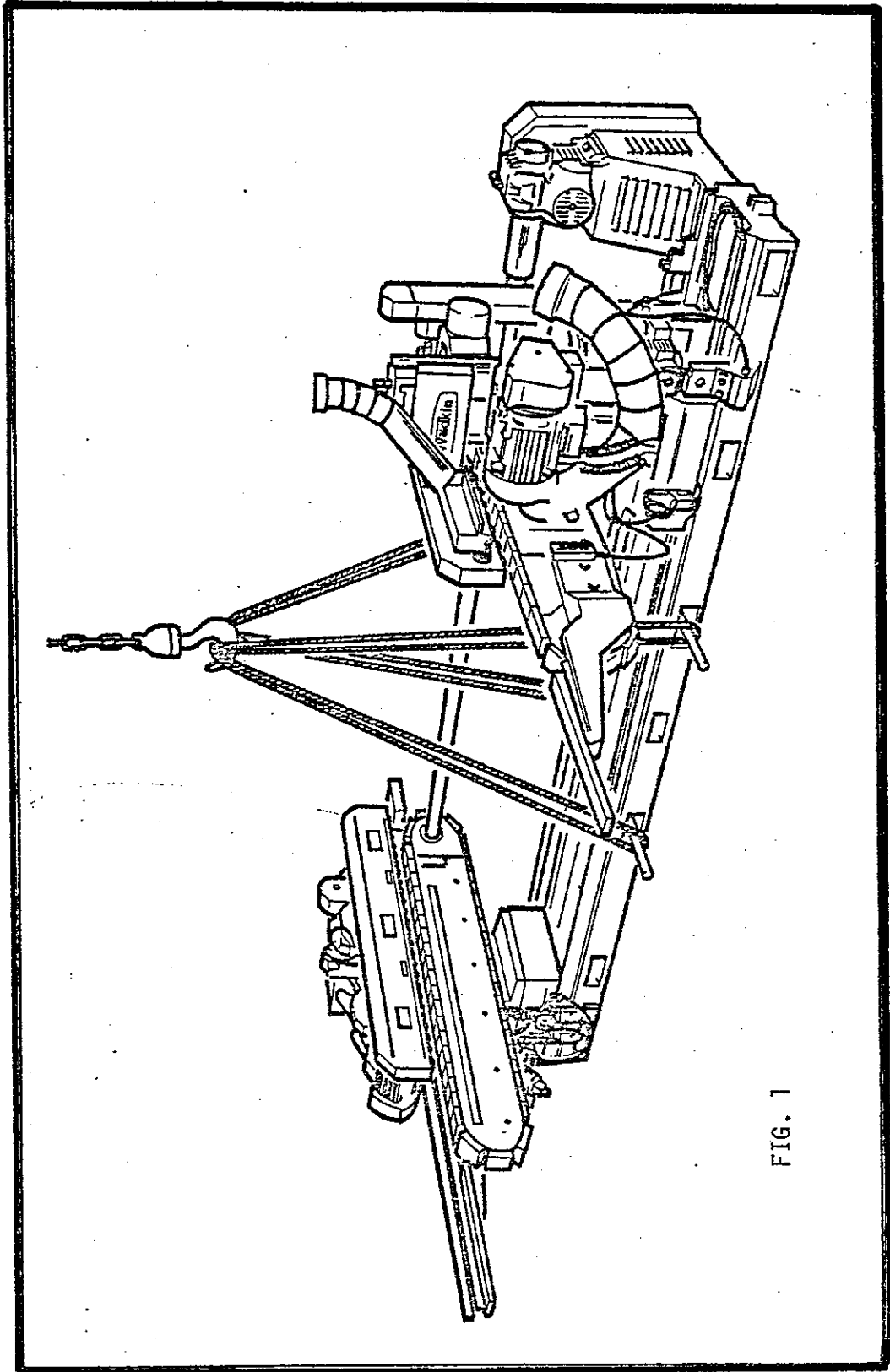


FIG. 1

## ELECTRICAL DETAILS

The motors and control gear at the control console have been wired before despatch. It is only required to connect the electrical power supply to the disconnect switch at the free standing electrical control console.

### POINTS TO NOTE WHEN CONNECTING TO THE POWER SUPPLY

1. Check that the electrical supply details on the machine nameplate correspond to the supply available.
2. Check that the main fuses are correct.
3. Connect the incoming supply leads to the appropriate terminals on the main 'Disconnect Switch'.
4. Check that all connections are sound.
5. Check that the adjustable headstock beam moves in the correct direction. Number 1 indicates traverse towards the fixed beam, number 2 indicates traverse away from the fixed beam.
6. If the directions of the traverse are reversed change over any two of the wires at the incoming supply. All other movements will be found to be correct when the traverse is correct.

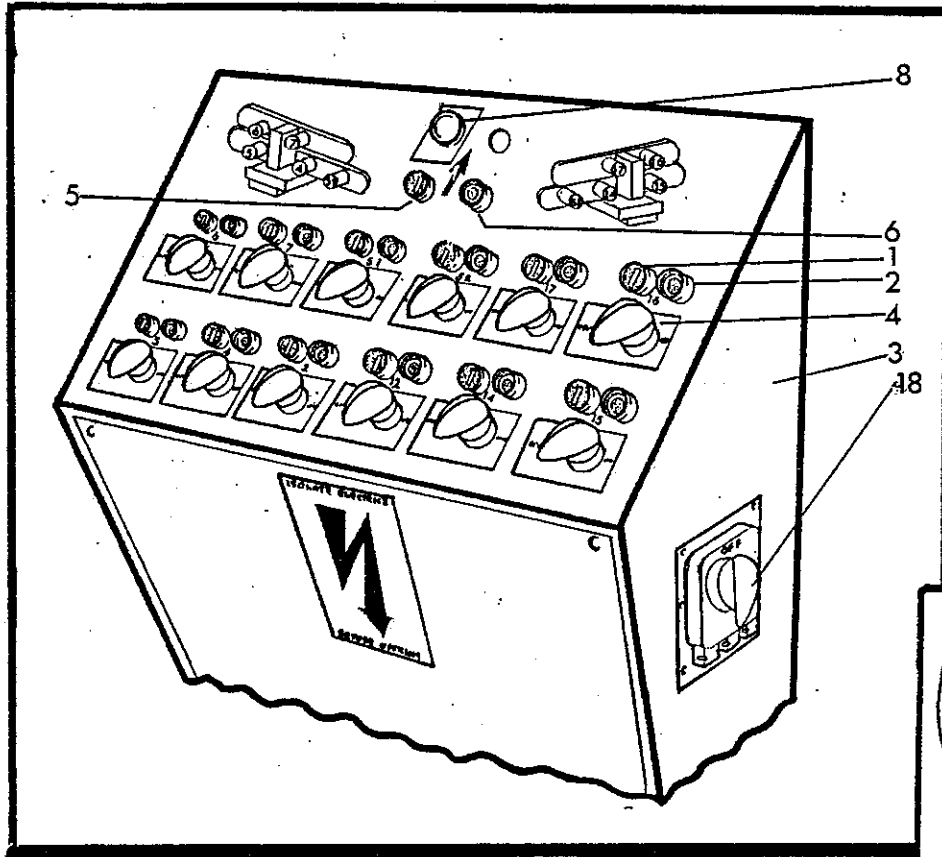
#### NOTE:

Dust exhaust system - information is available, on request.

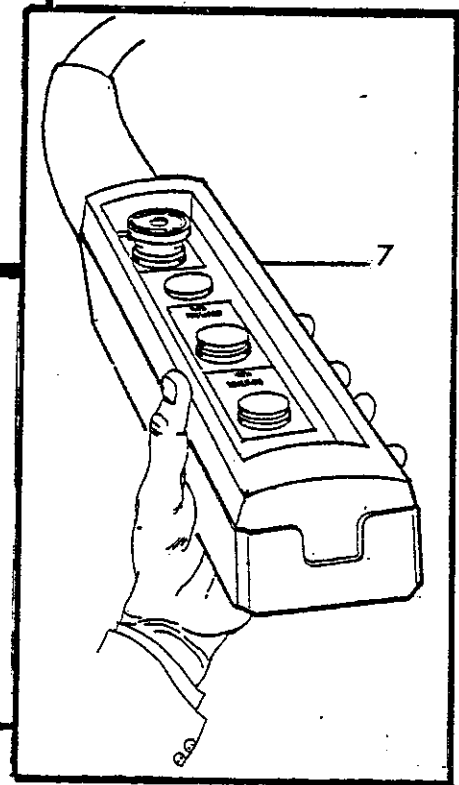
Pneumatics - recommended Air pressure - The input pressure should be set to  $5.7 \text{ Kg/cm}^2$  (80 lbs./sq.in.)

## CONTROLS

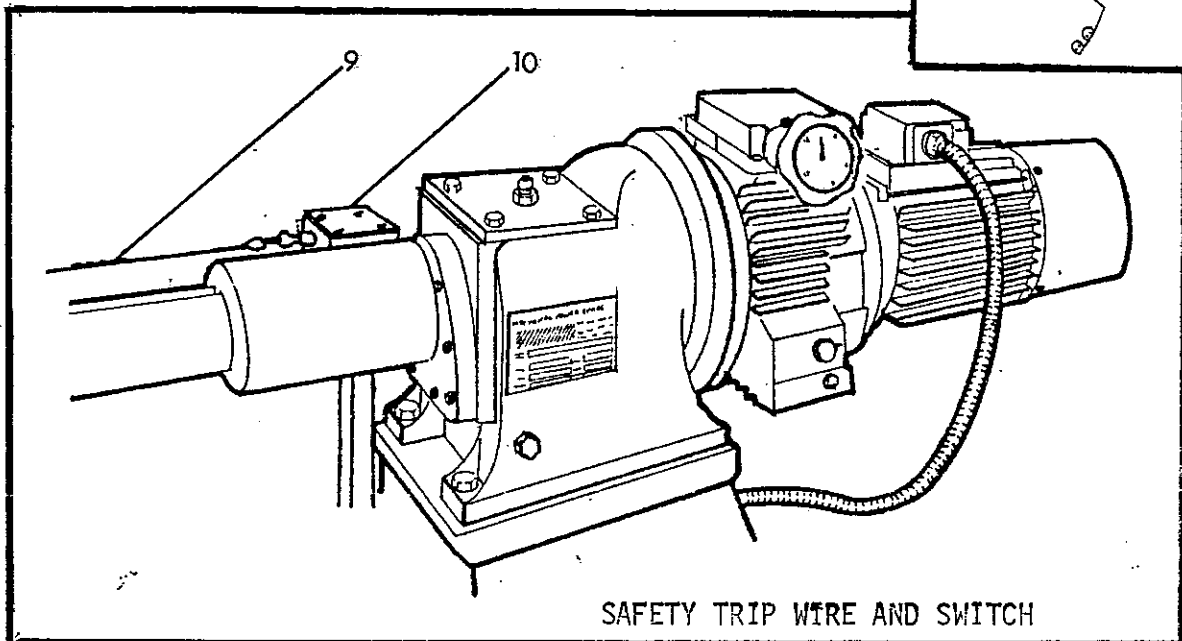
1. Individual head start (1) and stop (2) push buttons are mounted on the top of the control console (3).
  2. Head direction of rotation switches (4) are also fitted in the top of the console. Each switch can be moved either left OR right from the central "OFF" position depending on required head rotation direction.
  3. Feed start (5) and stop (6) buttons are mounted on top of the control console. For convenience an additional set of push buttons are mounted on the traverse chain beam. For quicker setting up an optional pedestrian control unit (7) can be supplied - this includes inching (jogging) facilities in both the forward and reverse moves and also a master "STOP" button.
  4. A master "STOP" button (8) is located on the top of the control console. In addition a safety trip wire (9) at the rear of the machine actuates a switch (10) in the stop circuit.
  5. A traverse switch (11) is fitted adjacent to the traverse motor (12) which is located on the moving saddle. Operation of the switch is as follows:-
    - (a) Switch in the centre position stops the traverse.
    - (b) Switch deflected either right OR left traverses the column assembly as required.
- NOTE: When the switch is released it returns to the centre "STOP" position. A limit switch fitted on the moving saddle stops the beam approximately 100mm. (4 inches) from the furthest possible traverse position at either end of the bed.
6. A pair of limit switches (13) and (14) are mounted on the overhead pressures. Operation of these actuate the jump scorers.
  7. A similar pair of limit switches (15) and (16) are mounted at the infeed end of the pressure beams, these are actuated when an oversize piece of timber is fed into the machine. These prevent jamming and protects both the operator and machine.
  8. A disconnect switch (18) is fitted on the right hand lower side of the control console.
  9. A Mechanical Digital Read out (17) which is thumb switch operated is provided to permit accurate setting of the moving beam.



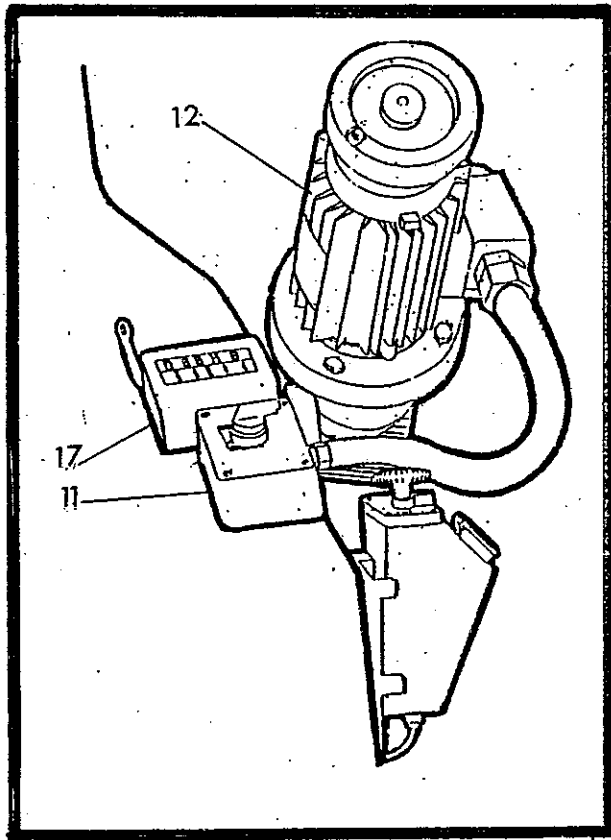
CONTROL  
CONSOLE



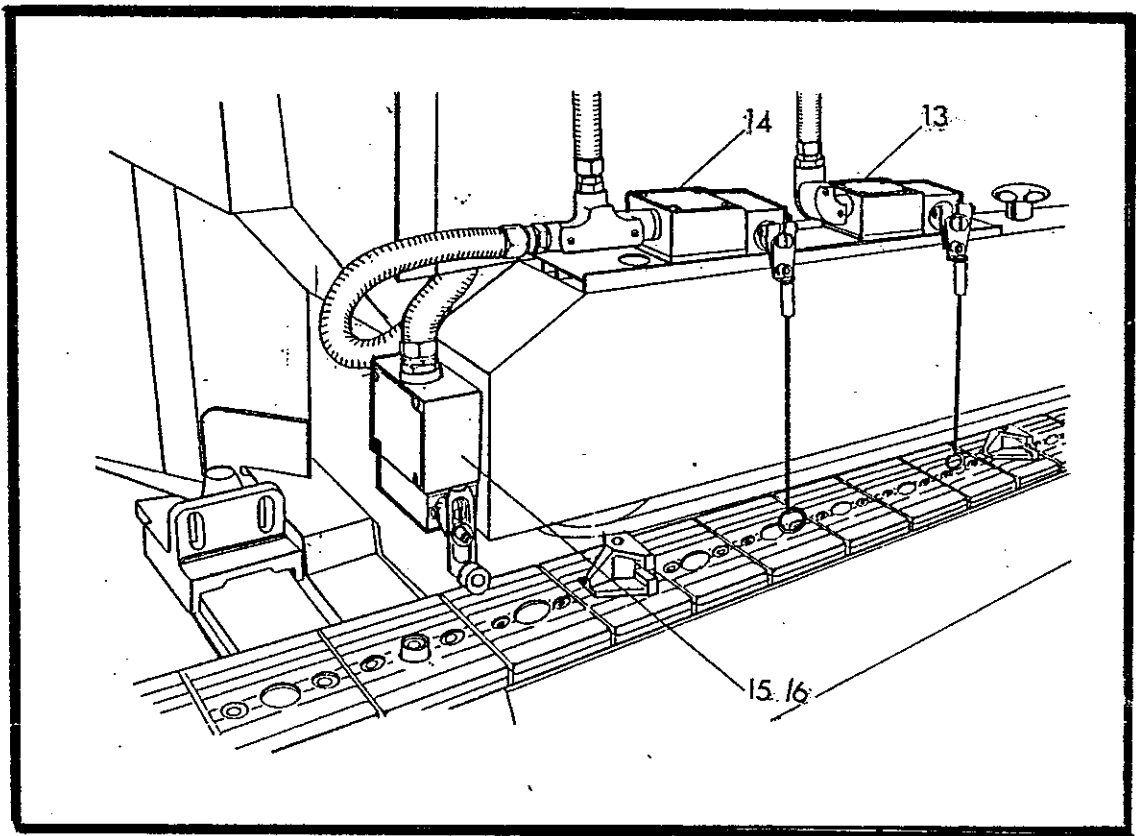
PEDESTRIAN  
CONTROL  
UNIT



SAFETY TRIP WIRE AND SWITCH



TRAVERSE MOTOR AND CONTROL



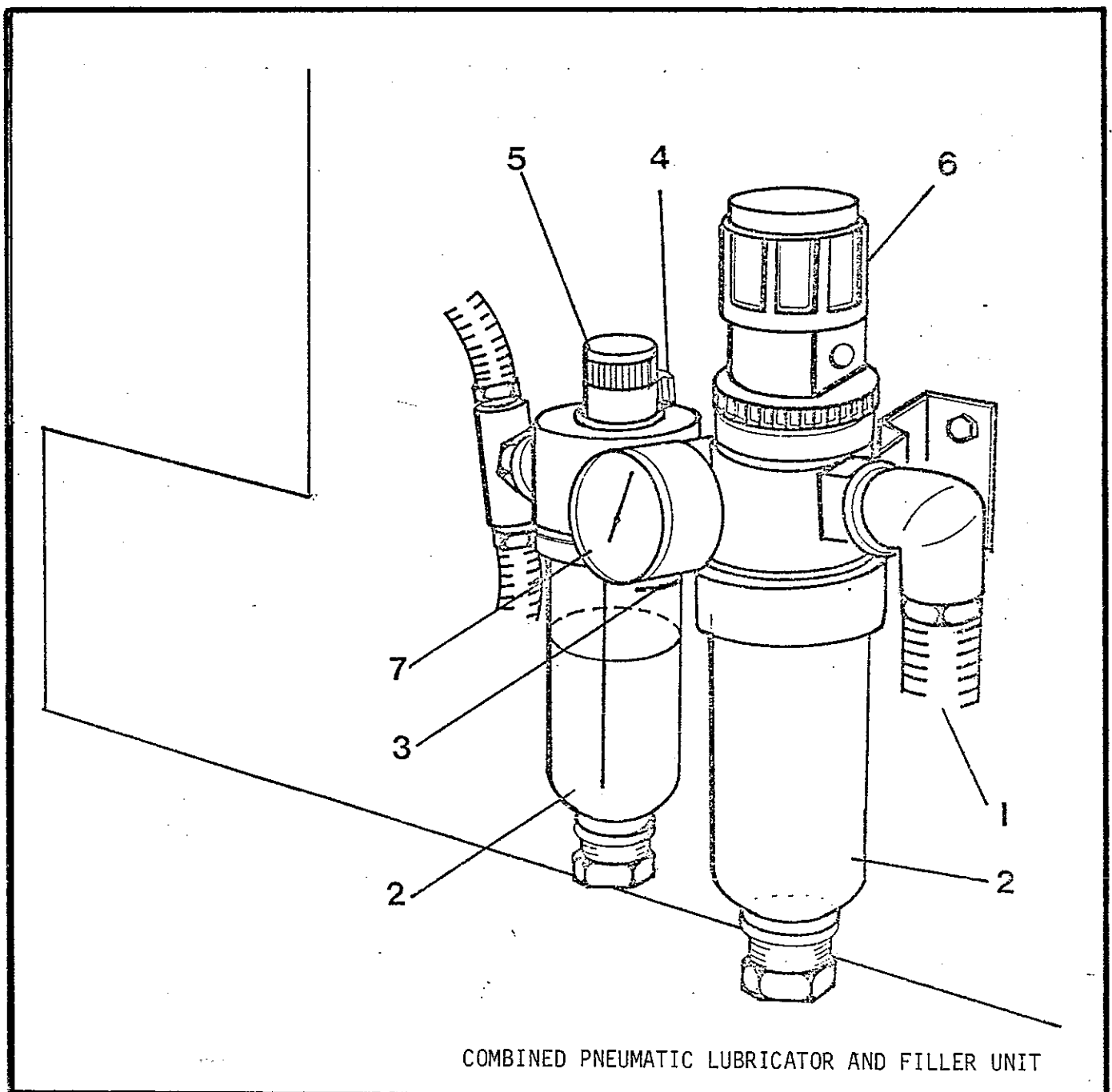
JUMP SCORER AND OVERSIZE TIMBER SWITCHES

## PREPARATION FOR OPERATION

The machine must be connected at point (1) to a compressed "air" supply.

This is required for air cleaning of the tracks and the operation of the jump scorer OR relisher when fitted. Check the bottles (2) to ensure that they have not been cracked or damaged during transit. Check that oil is up to level mark (3) and if necessary remove filler plug (4) and top up using the correct grade of oil - See Approved Lubricants. Page (39). The drip regulator (5) and the pressure is regulated by knob (6) adjust until a pressure of  $5.7\text{kg/cm}^3$  (80lbs/sq.in) is shown on the gauge (7).

It is advisable to keep all bright parts covered with a thin film of oil to prevent rusting.



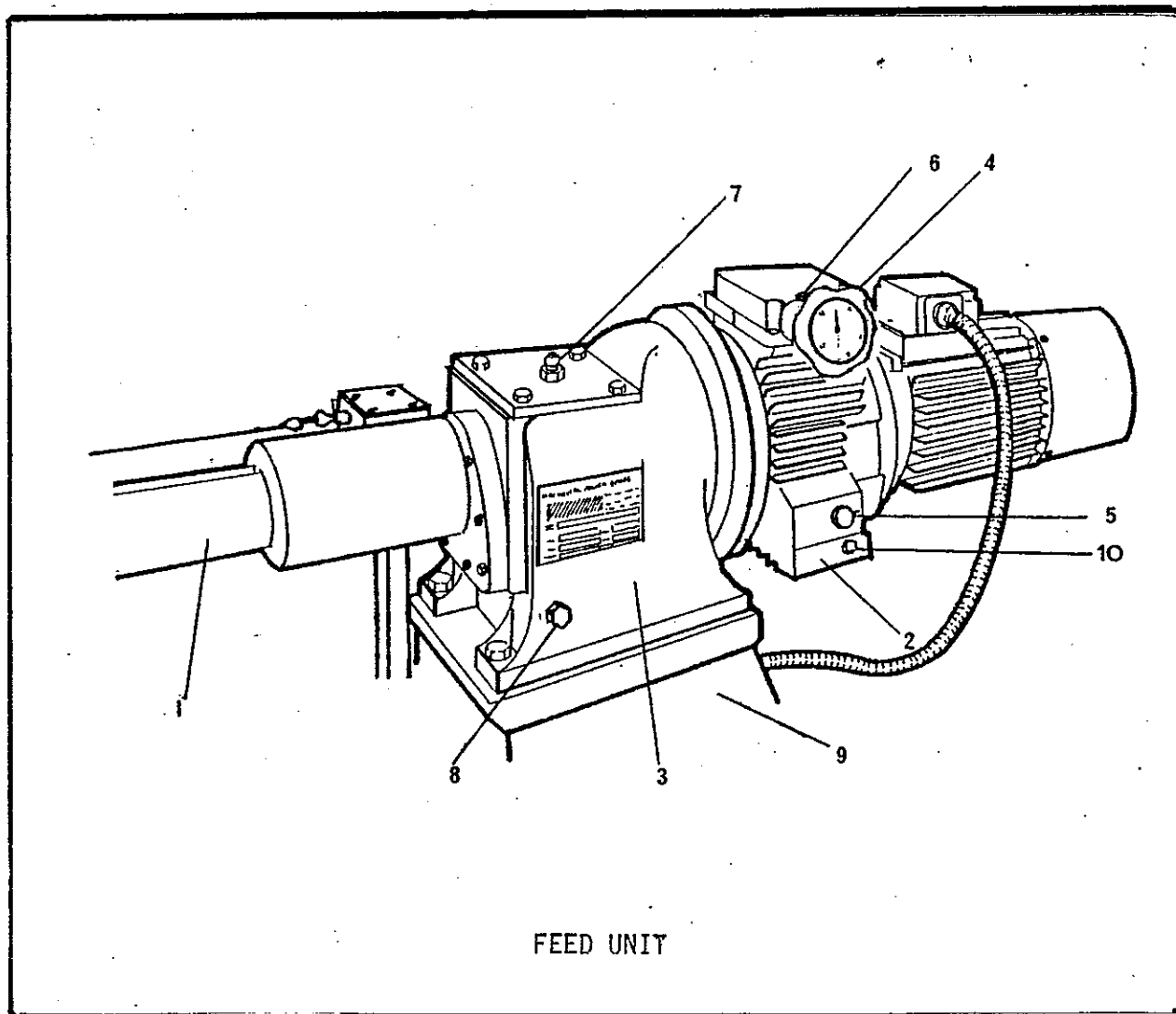
COMBINED PNEUMATIC LUBRICATOR AND FILLER UNIT



PREPARATION FOR OPERATION -- CONTD.

Remove Oil Level Plug (8) from reduction Gearbox (3) and check that oil level is up to the bottom of the hole. Top up if necessary through combined filler/breather plug (7).

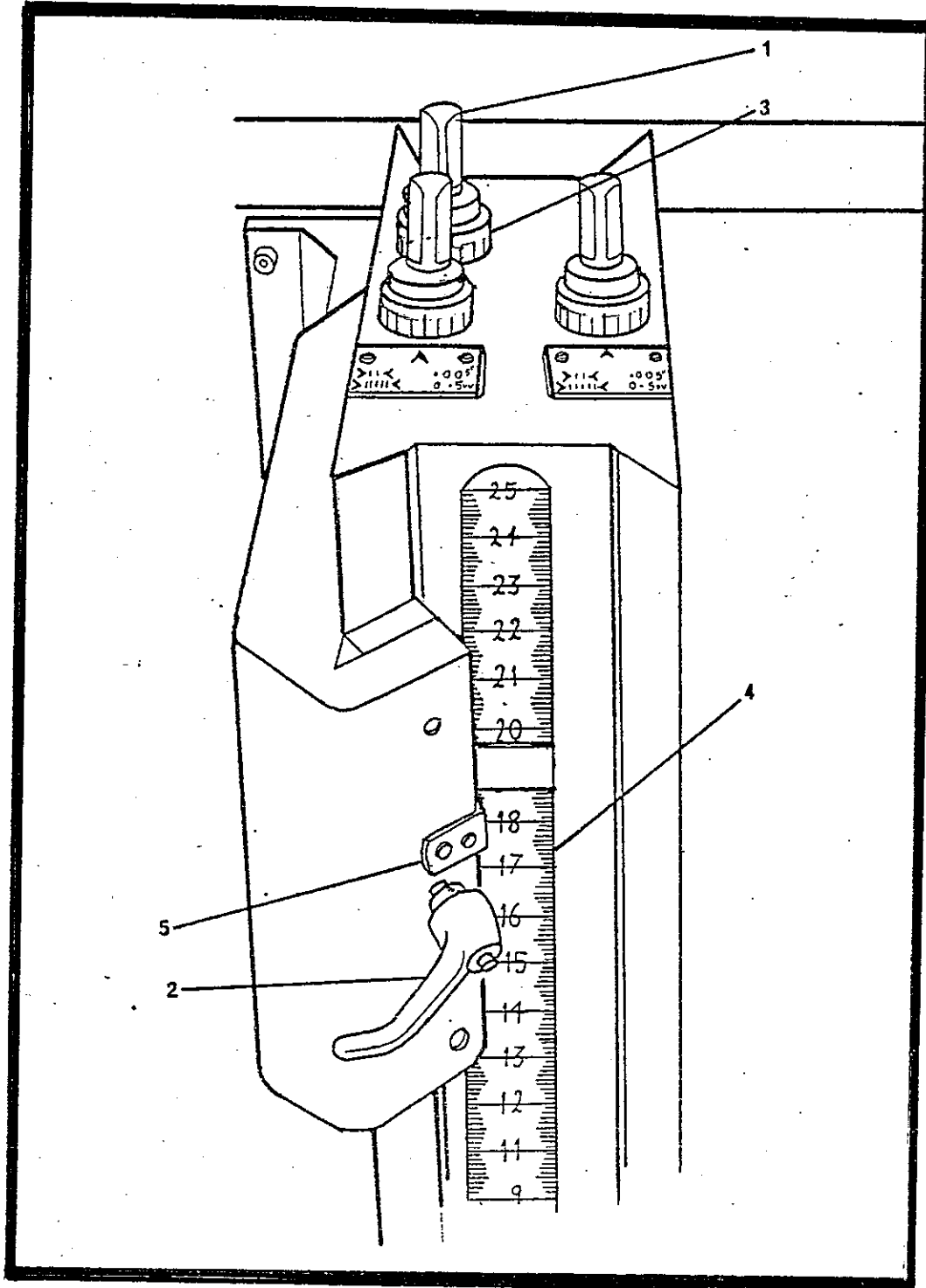
Check oil level sight (5) of Variable Speed Drive (2).  
Top up if necessary through plug (6).  
See Approved Lubricants - Page (39).



## ADJUSTMENTS.

### TOP PRESSURE ADJUSTMENT

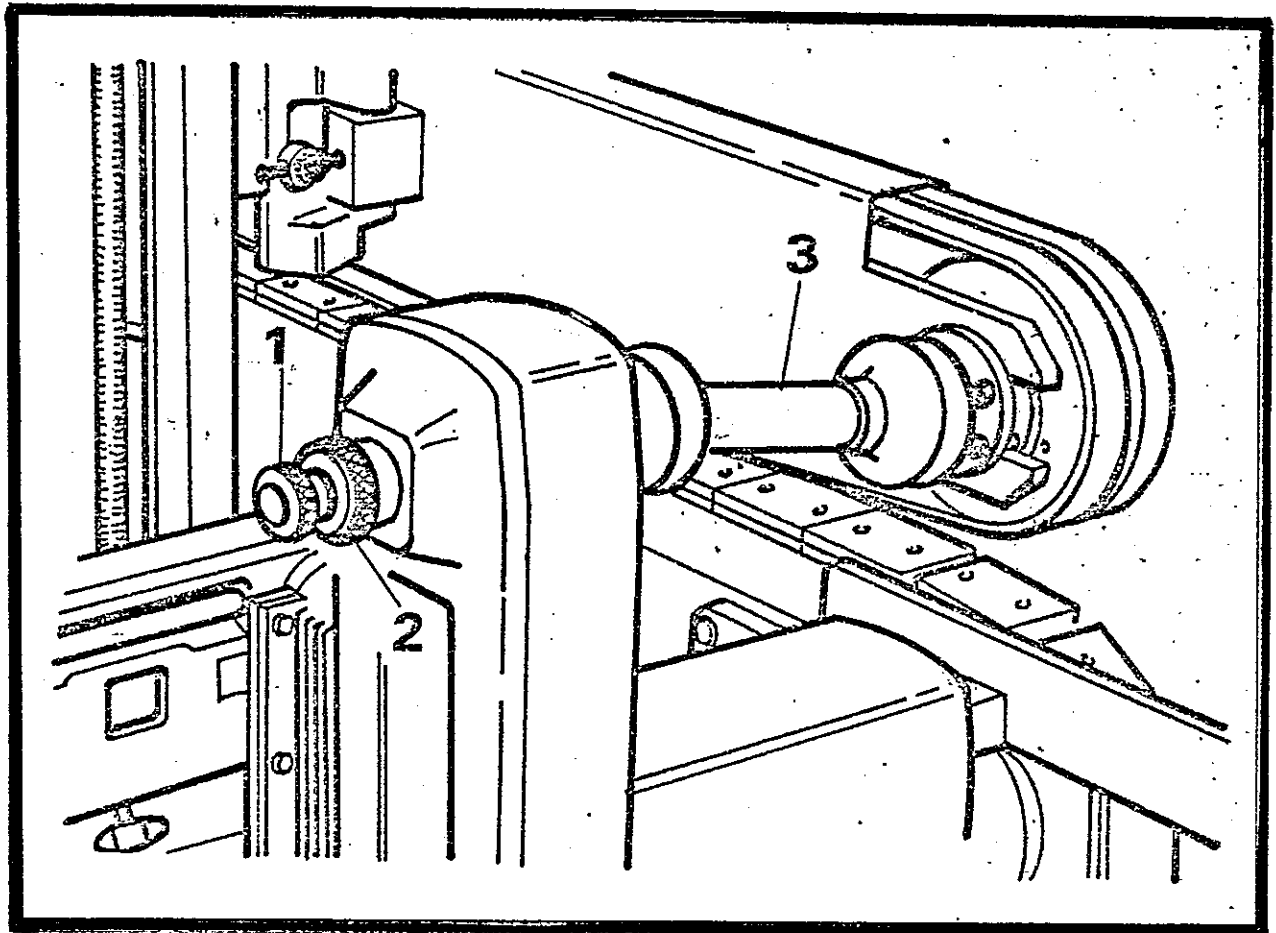
The top pressure is adjustable in the vertical mode. this is effected by the medium of screw adjustment by means of a crank handle from square (1), the locking lever for this movement is (2). The square (1) is fitted with a graduated calibrated vernier (3) each graduation represents 0.005 inches or five graduations represents 0.5mm. A calibrated scale (4) graduated 0 -6inches (0-150mm.) together with a depth gauge (5) is also provided.



## ADJUSTMENTS

### CLUTCH DRIVE

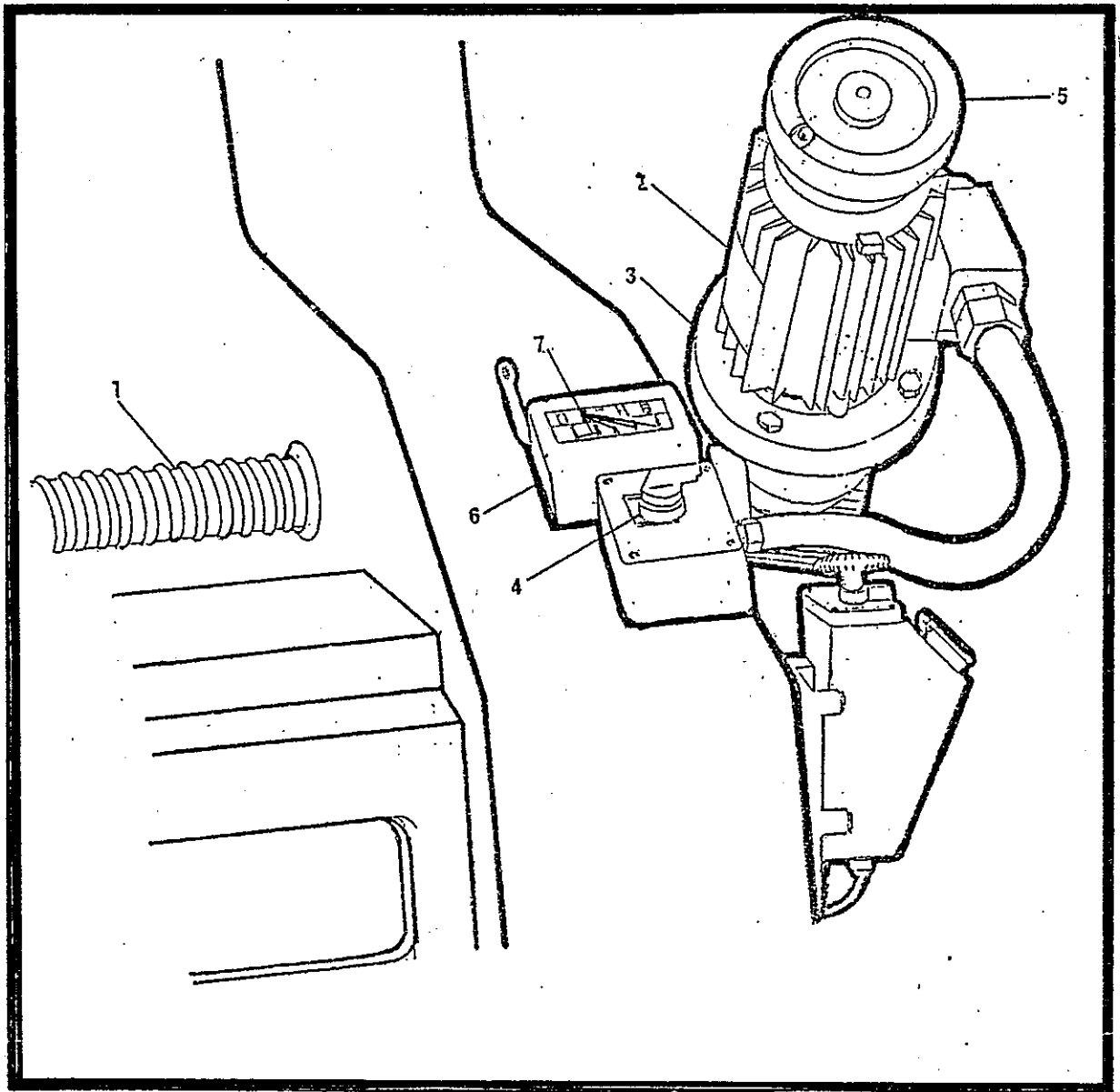
Drive to each top pressure is through a friction clutch controlled by handwheel (1). This feature compensates for the feed speed differential between the tracks and top pressures. Drive to each top pressure can be completely disengaged by removing pressure from the friction clutch by means of handwheels (1) and (2).



## ADJUSTMENTS

### COLUMN TRAVERSE ADJUSTMENT

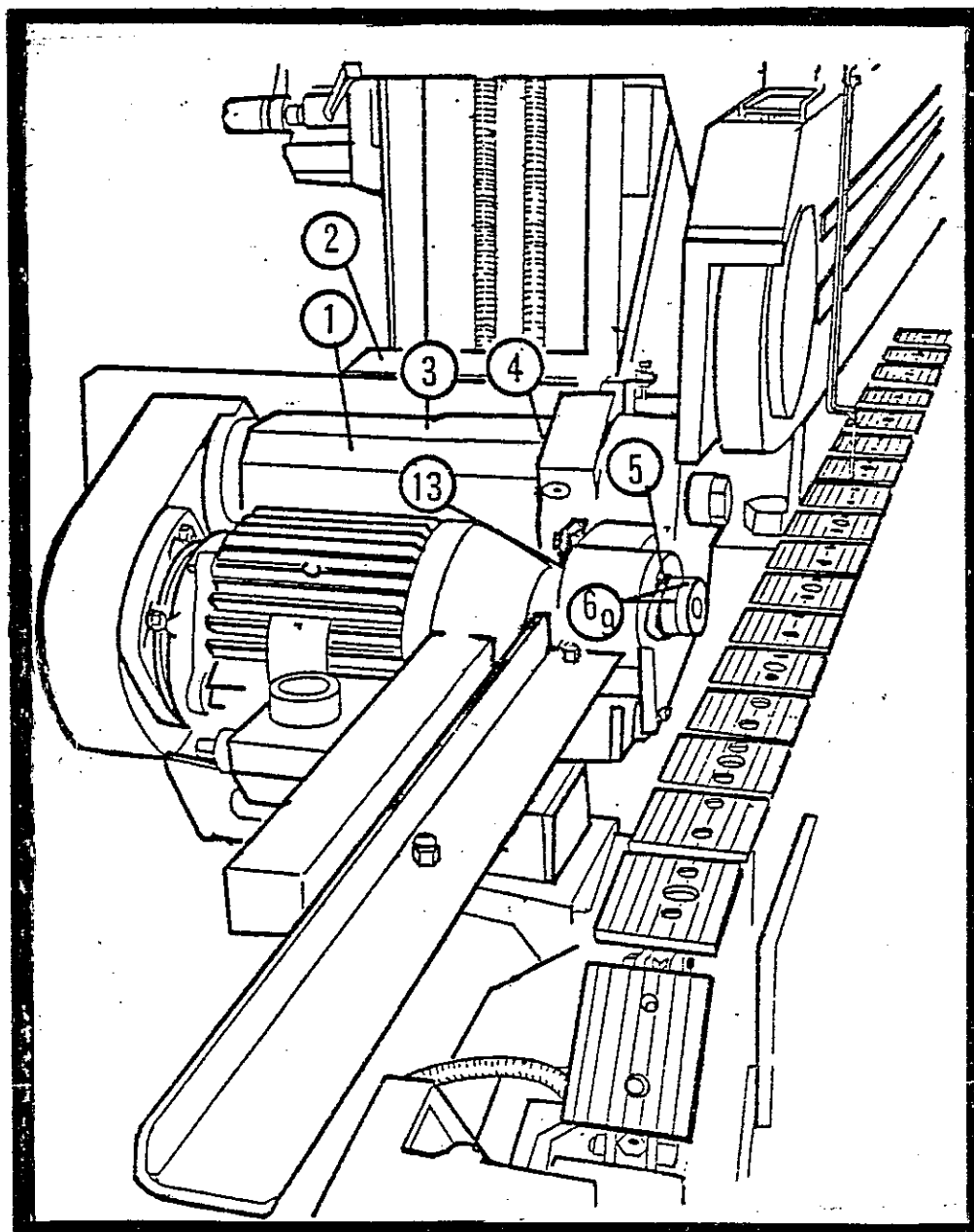
The power traverse to the adjustable beam is provided by means of a rotating nut and fixed tensioned lead screw (1) driven by a 1.5KW(2.0HP) Squirrel Cage Induction Motor (2) and a reduction gear box (3). Control of the power traverse to the adjustable beam is by selector switch (4). Final positioning should be carried out manually by hand-wheel (5). One revolution of the handwheel being equivalent to 6mm. (1/4in.) horizontal movement. At 100mm.(4ins.) from the end of maximum and minimum settings the power traverse is automatically switched off - hand traverse should then be employed. A mechanical digital readout (6) with tripping mechanism and integral hand operated thumb switches (7) is provided to facilitate setting up.



COLUMN TRAVERSE ADJUSTMENT

## ADJUSTMENT OF THE COMBINED HOGGING SAW AND JUMP SCORER UNIT

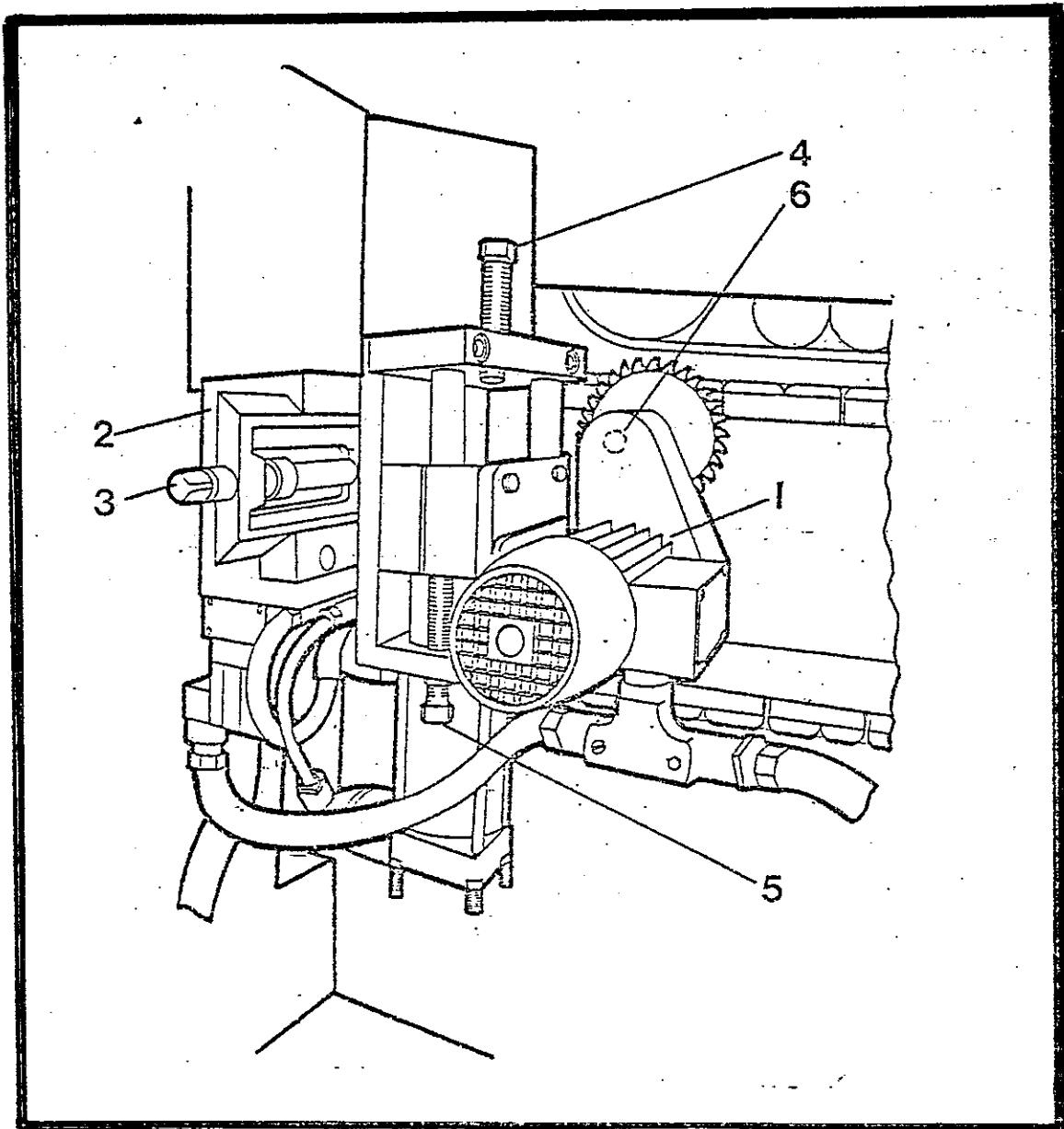
The scoring saw is mounted directly on the spigot of the hogging saw (1). The whole being mounted on a mounting slide (2). The latter is provided with horizontal, vertical and canting movements, refer to pages 16 and 17. The spindle housing (3) is provided with a tommy bar hole (4) enabling the spindle to be held stationary whilst the saw is changed. The scoring saw (5) moves in unison with the hogging saw unit. More finite adjustment of the scoring saw can be made for the lateral movement in relation to the hogging saw by means of adjusting screw (6). The maximum movement is 5 mm. Whilst the raise and fall adjustment is made via a set screw and two nuts (7) and (8) see page 15, situated on the underside of the casing for the belt driven scorer (9). A spindle lock (13) is provided to secure the spindle to facilitate the changing of the saw.



## ADJUSTMENT OF BEAM MOUNTED NON CANTING JUMP SCORER.

The whole Scoring Saw Unit (1) is mounted on a Mounting Slide (2). Lateral Adjustment is made by crank handle on square (3). The maximum movement is whilst the Raise and Fall adjustment is made by the medium of two set screws (4) and (5).

The non-drive end of the saw spindle is provided with a 8mm.A/T. hexagon tommy bar hole (6) to enable the spindle to be held stationary whilst the saw is being changed.



BEAM MOUNTED NON-CANTING JUMP SCORER UNIT

## HIGH SPEED RELISHING HEAD

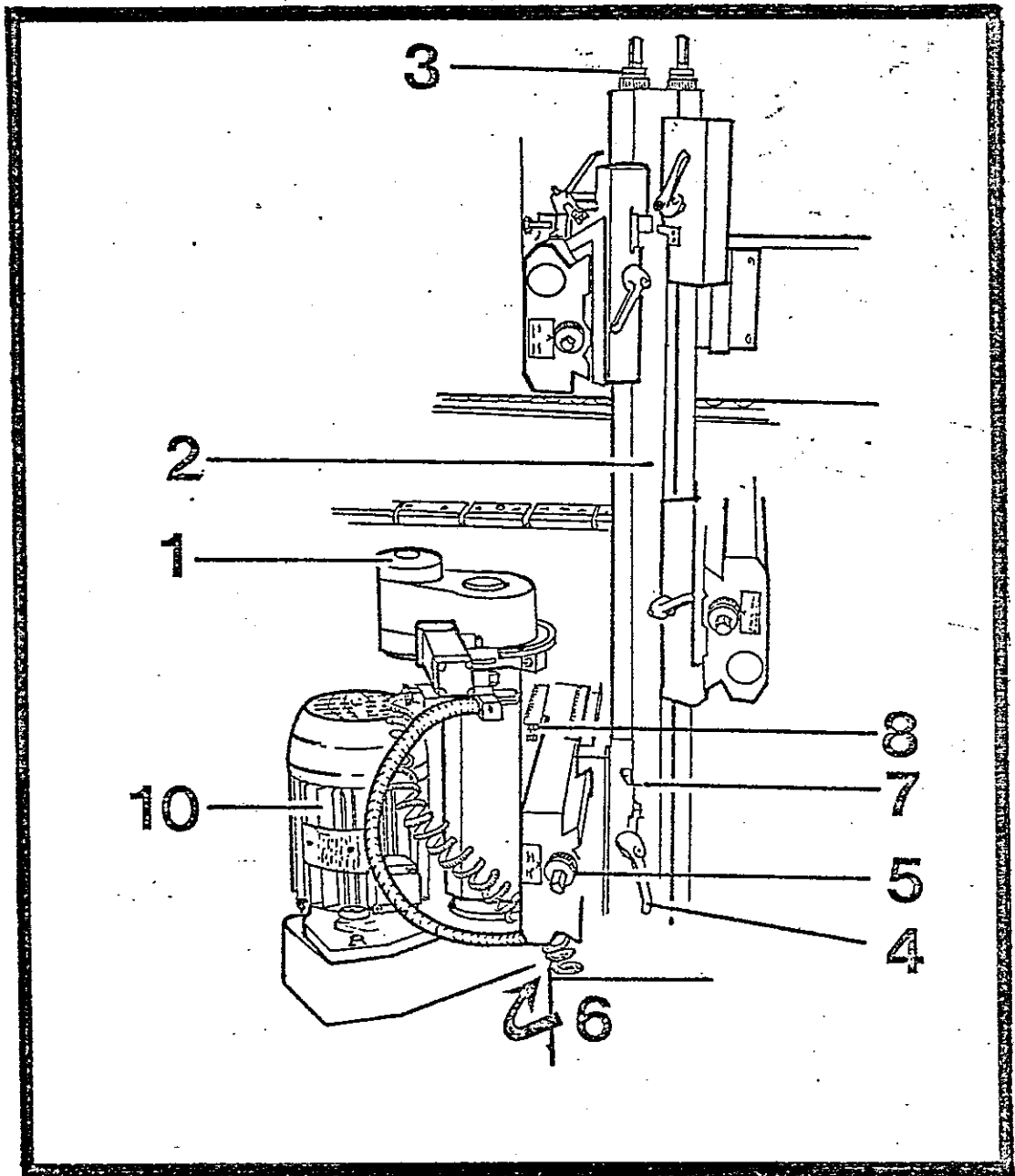
The head can be used statically as a high speed moulding head for light scribing, tongueing and grooving etc. or it can be used in the jump mode. The jump cycle is activated by the leading or trailing edges of the stock triggering adjustable limit switches which in turn operate the electro magnetic air valves integral with the operating pneumatic cylinder. The adjustable limit switches are located on slide rails mounted on the upperside of the pressure beam, left hand side looking at the infeed end of the machine. Thus a jump set up becomes a relatively simple procedure. In this mode stopped edge grooves, either square or up to  $45^{\circ}$  for mitre work - stopped or relished - can be performed by locating the trip switches on the switch carrying rail in such positions so as to be consistent with the correct spacing of the dogs and feed speed of the track and pressures.

There are no cams or levers, 'jumping' only occurs when stock is moving through the machine. Nearly any length of jump cut or multiple jumps is possible.

The relishing head (1) is mounted on the headstock column (2) and is provided with vertical adjustment from screwed square (3) attached to which is a circular vernier graduated in millimetres which gives and indication of the amount of movement. One revolution gives 6mm (0.25ins.). Total movement of 140mm (5.5ins.) is indicated on calibrated scale (7). The vertical movement is locked by locking handle (4). Horizontal movement is carried out by square (5) and the movement is locked by lever (6). Canting movement of the head is effected by slackening and re-tightening two nuts (8).

The relishing head consists of a belt driven auxiliary spindle (9) from a 317KW (5 h.p.) squirrel cage induction motor (10) adjustment about a motor spigot (11) is provided by and clamped by square ended locking screw (12). A pneumatic cylinder with integral solenoid (13) provides radial movement, the cutter being regulated by adjustable stops (14). In order to facilitate tool changing a tommy bar hole (15) is provided:

The input air pressure should be set to  $1.4\text{kg/cm}^2$  (20 lbs./sq.in.)



HIGH SPEED RELISHING HEAD

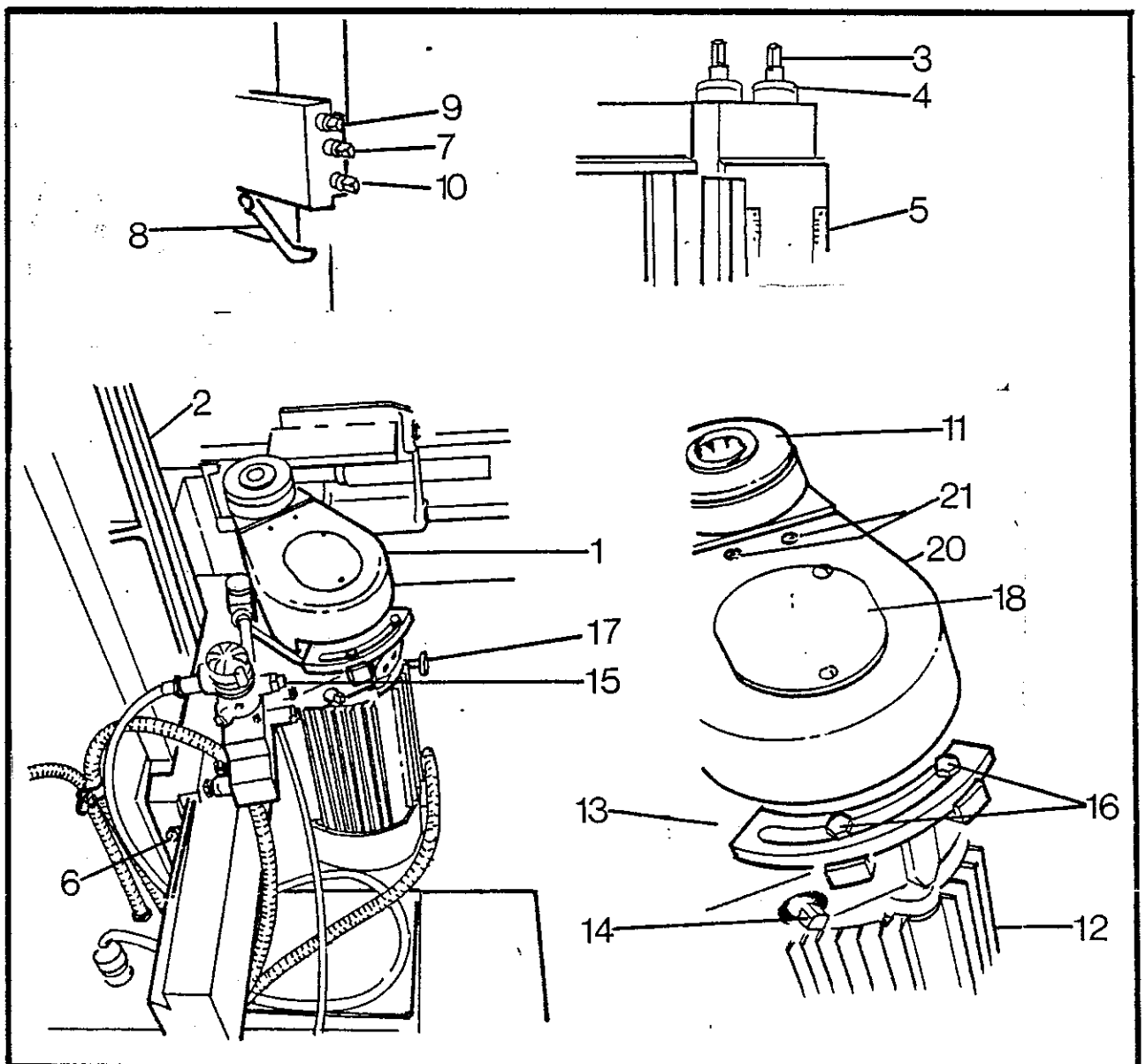


THE RELISHING HEAD (WITH PNEUMATICS) TYPE "A" HEADS.

THE RELISHING HEAD (1) is mounted on the outer face of the headstock mounting column (2) and is provided with vertical adjustment from screwed square (3) attached to which is a circular scale (4) which gives an indication of the amount of movement one revolution gives 6mm.(1/4in.) head movement. Total movement of 140mm.(5.5ins.) is indicated on rule (5). The vertical movement is locked by nut (6). Horizontal movement is carried out by means of square (7) and the movement locked by lever (8). Canting movement of the head is effected by turning the adjusting square (9), (10) is the lock for this movement. Turn in a counter clockwise direction to release the lock. Turn clockwise to lock.

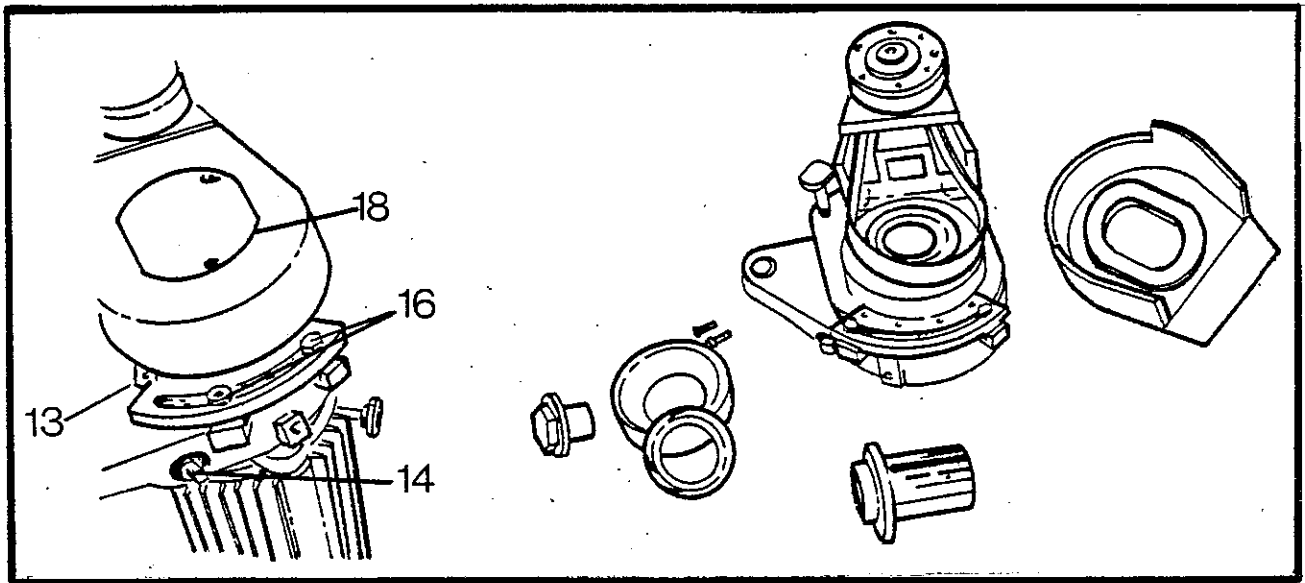
THE RELISHING HEAD consist s of a belt driven auxiliary spindle (11) from either a 3.7KW.(5HP) OR 5.5KW.(7.5HP) motor (12) adjustment about the motor spigot (13) is provided and clamped by square ended locking screw (14). A pneumatic cylinder with integral solenoid (15) provided radial movement, the cutter being regulated by adjustable stops (16).

A spring loaded plunger (17) is provided in the motor cover to provide a means of holding the spindles whilst removing OR refitting the cutters. Air pressure for the pneumatics should be regulated to 30lb./ins.(2.14Kg/cm<sup>2</sup>).

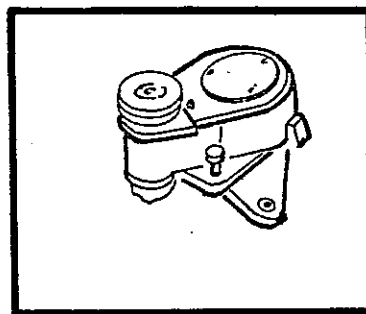


RELISHING HEAD (WITHOUT PNEUMATICS) TYPE "A" HEADS.

If pneumatics are not required the relishing unit can be supplied as a separate unit, it can either be used in the vertical OR horizontal mode and can be accommodated either on the left OR right hand side of the main column in the bottom position. To fit the unit to the head motor swing open cover (18) and thread bore of the unit over the end of the motor spindle so as to engage keywayed sleeve pulley, locknut and locate drive belt in the appropriate vee section. Close the cover (18) and secure the cover holding screws. The unit can now be rotated about the motor spigot (13) to the required position. Tighten the square ended locking screw (14) to hold the unit in the selected position. Radial adjustment being provided by adjustable stops (16).



RELISHING UNIT DISMANTLED



RELISHER UNIT MINUS SPRING TENSIONING EQUIPMENT

## ADJUSTMENTS

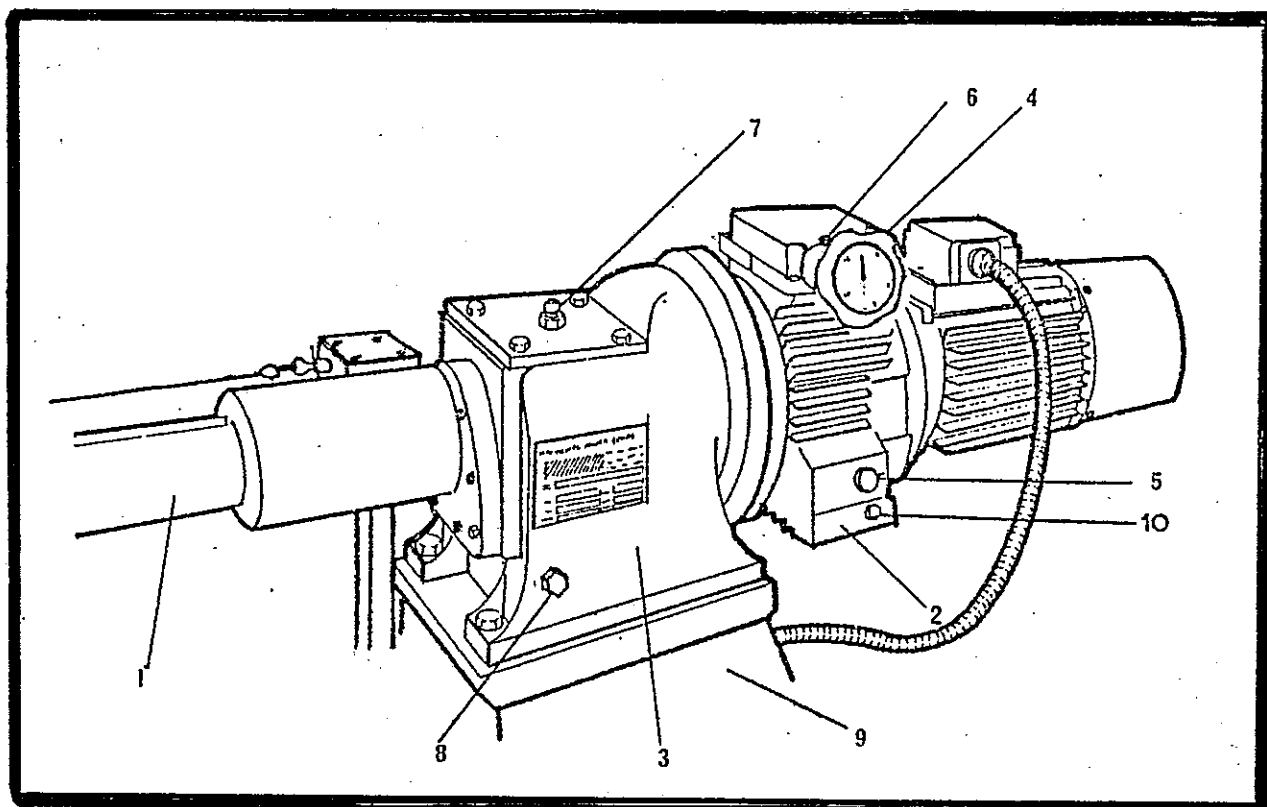
### FEED UNIT

The feed chains are driven via a 75mm. (3inch) diameter double key shaft (1) through an infinitely variable speed drive (2) and close coupled Reduction Gearbox (3). A combined tachometer and handwheel (4) operates the feed change mechanism and provides variable feed speeds of 3 - 18 metres per minute (10 - 60 feet per minute).

The infinitely variable planetary drive unit is provided with an oil level sight window (5) and a filler plug (6). (10) is the drain plug. The Reduction Gearbox (3) is also provided with a combined filler/breather plug (7). (8) is the drain plug for this unit. The drive units will be filled with oil prior to despatch from our Works.

NOTE: The oil of the Planetary drive must be replaced after 100 hours use and that of the Reduction Gearbox after 500 hours use - See Maintenance Page (37).

The whole of the feed unit is compositively mounted on a common base (9) which forms an integral part of the machine.


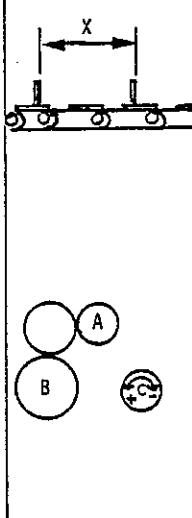


IMPORTANT: AN ADJUSTMENT OF SPEED OF THE DRIVE SHOULD ONLY TAKE PLACE WHEN THE DRIVE IS RUNNING, NEVER WHEN IT IS STATIONARY. IN THE EVENT OF ADJUSTMENT TAKING PLACE WHILST AT STANDSTILL, THE DRIVE SHOULD BE CAREFULLY RE-STARTED WITHOUT LOAD.

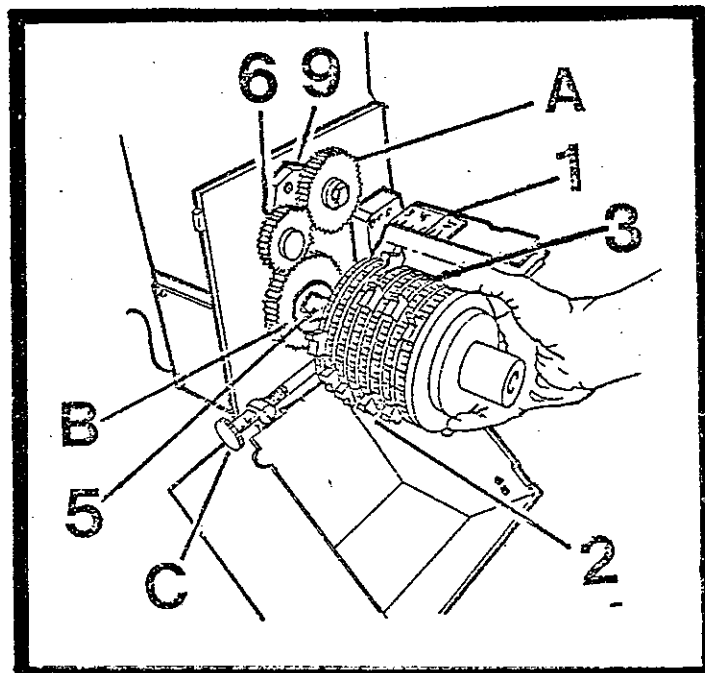
## THE TIMING UNIT

The sequence control of the "JUMP" operation of the relishing head and other cyclic functions are controlled from a timing unit mounted on the out side of the beam. A bank of twelve switches (1) operated by trip cam (2) mounted on an assembly of steel discs constituting a timing drum (3) is fitted with a train of gears which are driven from the back shaft (5). Gear train (4) comprises driving gear (A) on the back shaft (5) a fibre intermediate gear (6) and the cam shaft gear (B).

The employment of the timing unit involves the selection of one pair gear ratios to suit the track speed so that one revolution of the discs gives the equivalent ratio of distance of the following track movements.

GEAR RATIO TABLES	X	A	B		
16in.	400	48	16	0.66	
20in.	500	48	20	0.825	
24in.	600	48	24	0.99	
28in.	700	48	28	1.155	
37in.	800	48	32	1.32	
40in.	1000	48	40	1.65	
48in.	1200	48	48	1.98	
56in.	1400	48	56	2.31	
64in.	1600	48	64	2.64	
80in.	2000	48	80	3.30	
96in.	2400	48	96	3.96	
112in.	2800	48	112	4.62	

The above table shows "X" movement of track between dogs "A" AND "B" are the gear ratios in number of teeth.



## TIMING UNIT - CONTD.

### ADJUSTMENT OF THE TRIP DOGS.

With the aid of a template (or actual workpiece) positioned on the track relative to the unit to be 'timed' the "IN" trip dog is moved into contact with the first switch roller. Move the track forward until the "OUT" position is arrived at and the second trip dog so that it makes contact with the second switch roller. This procedure applies to each machining sequence.

### ADVANCE AND RETARD OF THE STARTING POINT OF EACH STEP OF THE CYCLE.

This can be achieved by turning the knurled knob (C) in a clockwise (negative) direction to advance and counterclockwise (positive) direction to retard. The extent of advancement OR retardation is indicated in the table shown under column (C) each measurement being in terms of one revolution of the screw.

### TO CHANGE THE GEAR RATIO

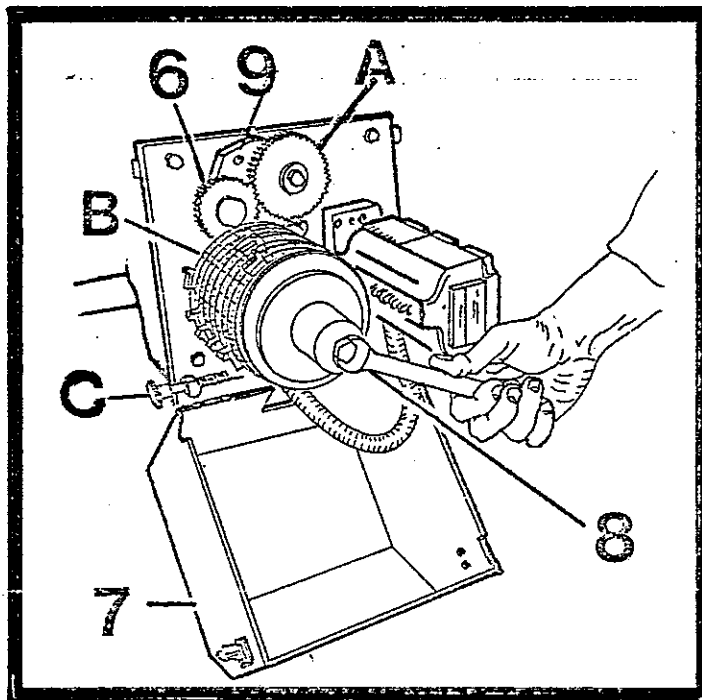
Open the timing unit cover (7).

Refer to the gear ratio tables attached to the inside of timing unit cover. Select the required cam shaft gear (B).

Slacken socket screw (9) to allow fibre gear (6) to be swung out of mesh.

Replace the gear (B) with the chosen gear then slide timing cam drum back into position and relock the retaining bolt (8). Re-mesh the fibre intermediate gear (6) with gears (A) and (B) and lock in position by socket screw (9).

Micro dial adjustment (C) allows for advancing OR retarding the cycle of programmed events which is necessary when a change of track speed is made.



## SETTING UP MACHINE

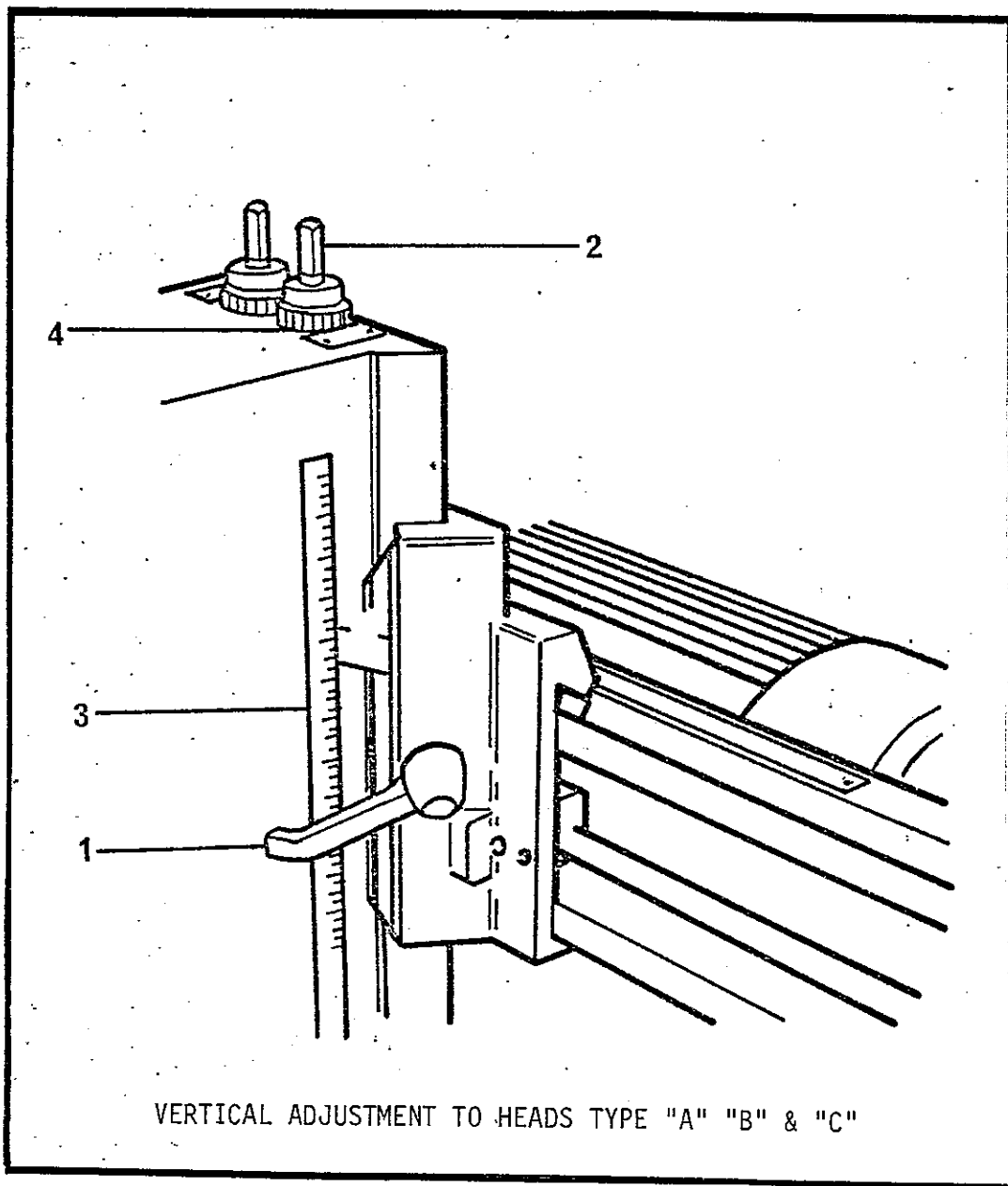
Ensure locks are free before making adjustments.

TYPE - "A" AND "C" HEADS - DIRECT DRIVEN

TYPE - "B" HEADS - BELT DRIVEN

TYPE - "A" "B" AND "C" HEADS

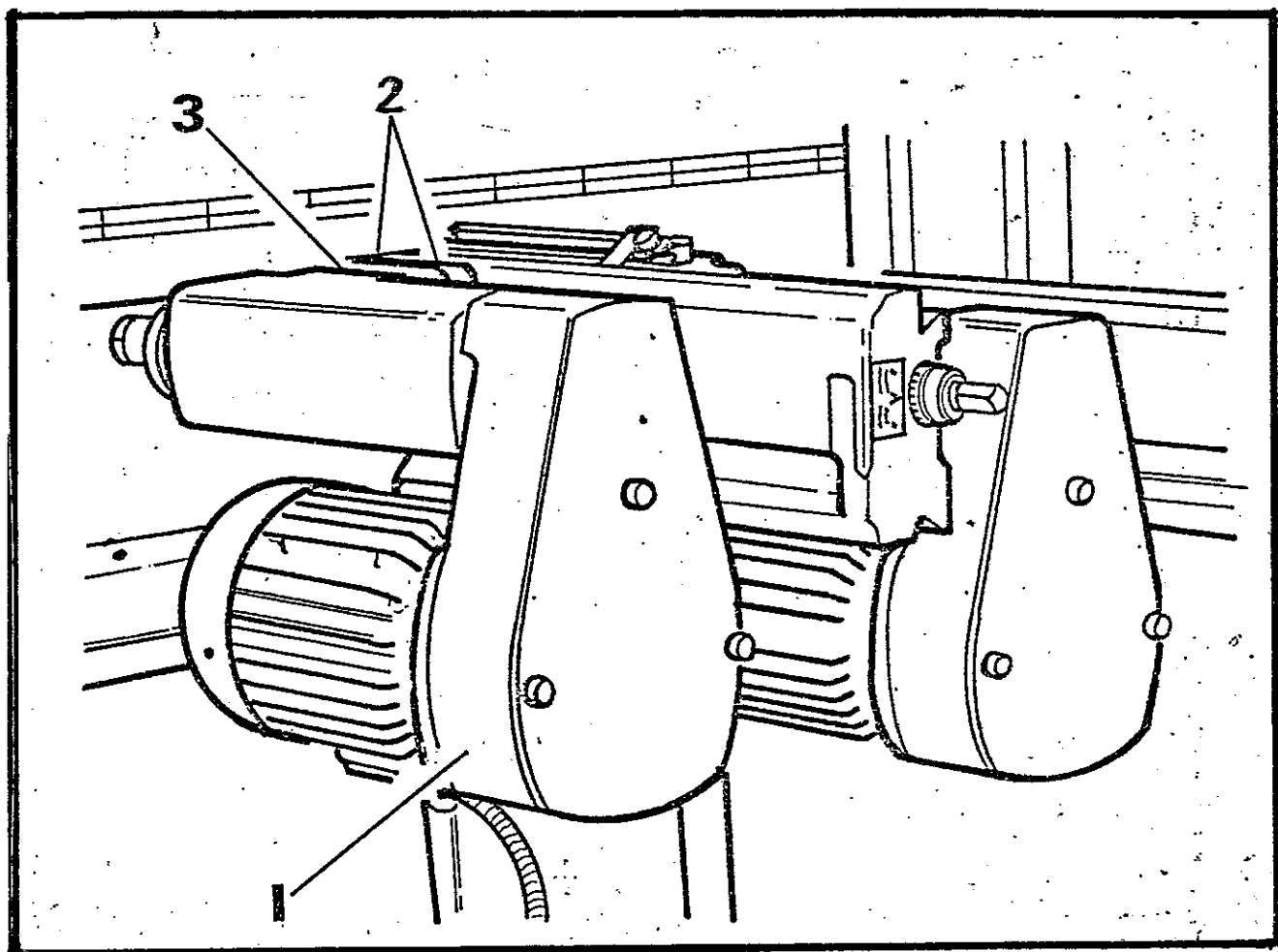
1. Set each head vertically by loosening locking handle (1) and position head by vertical adjustment screw (2) in-conjunction with height scales (3) on columns and micro adjustment scales (4) fitted to each vertical adjustment screw (2). Relock locking handle (1).



## SETTING UP MACHINE - CONTD.

### TYPE "B" AND "C" HEADS

2. To set heads to required angle manually support motor and belt drive housing (1) then loosen two 12mm. locking nuts (2) which are situated at the rear of the head canting boss. Move head assembly to required angle using the canting scale (3). Relock two 12mm. locknuts (2).

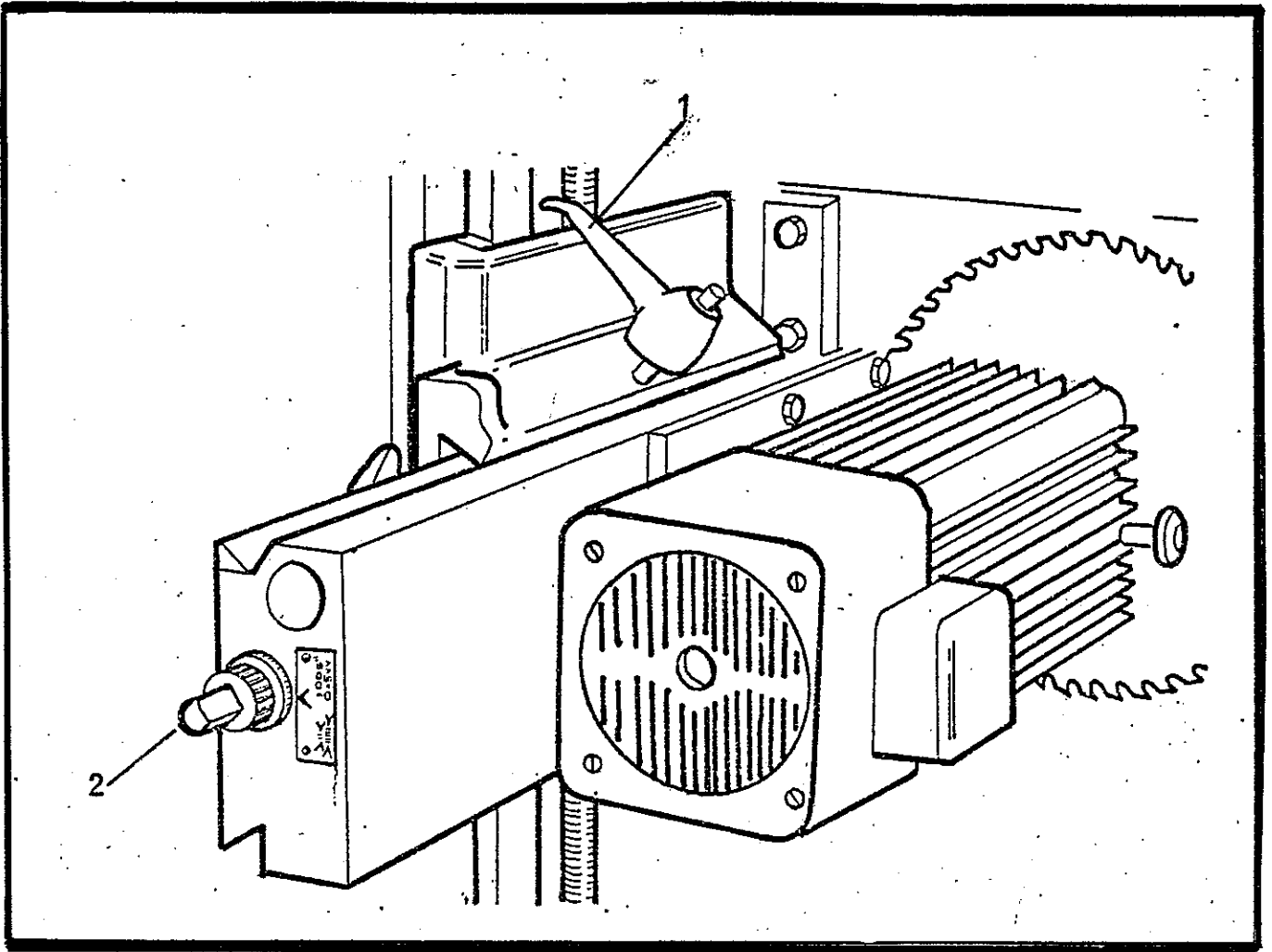


CANTING ADJUSTMENTS TO HEADS TYPE "B" & "C"

## SETTING UP MACHINE - CONTD.

### 3. TYPE "B" AND "C" HEADS

Set heads at required lateral position by loosening locking screw (1), adjusting head laterally to required position by means of screw (2) in conjunction with scale fitted to top of lateral slide housing and micro adjustment scale fitted to lateral adjustment screw.



LATERAL ADJUSTMENT TO HEADS TYPE "B" & "C".



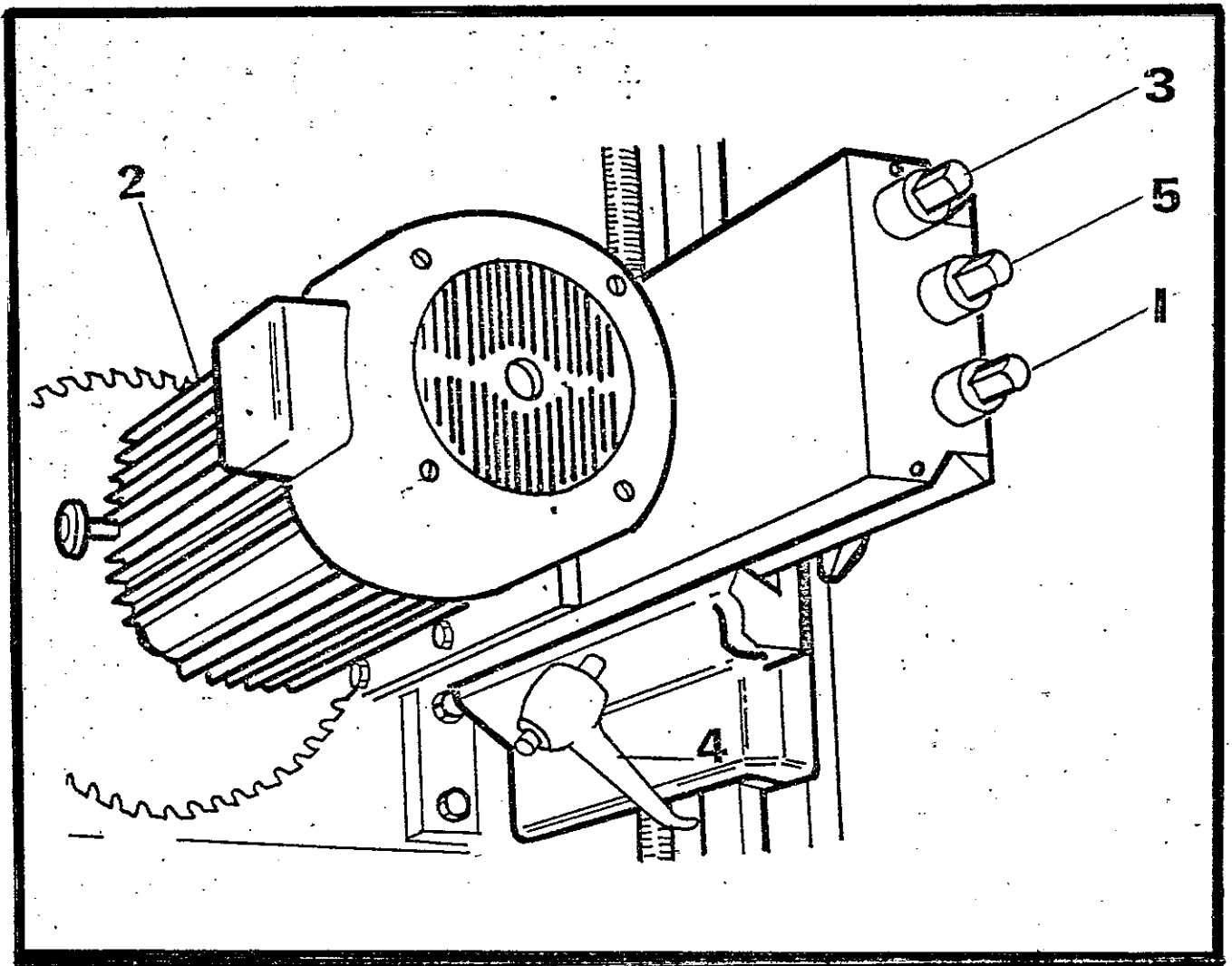
## SETTING UP MACHINE - CONTD.

### 4. TYPE "A" HEADS

Set heads at required angle by loosening locking screw (1) canting head unit (2) to required angle by canting screw (3) in conjunction with the canting scale fitted to the motor mounting boss and micro adjustment scale fitted to canting screw. Relock locking screw (1).

### 5. TYPE "A" HEADS

Set heads at required lateral position by loosening locking screw (4), adjusting head laterally to required position by means of screw (5) in conjunction with scale fitted to top of lateral slide housing and micro adjustment scale fitted to lateral adjustment screw. Relock locking screw (1).



CANTING AND LATERAL ADJUSTMENT TO HEADS TYPE "A"

## SETTING UP MACHINE - CONTD.

Set top pressure beams to thickness of timber:-

Loosen locking handle (1). Adjust pressure beam vertically by screw (2) in conjunction with accurate timber thickness scale (3) fitted to the pressure beam slide. Relock locking handle (1).

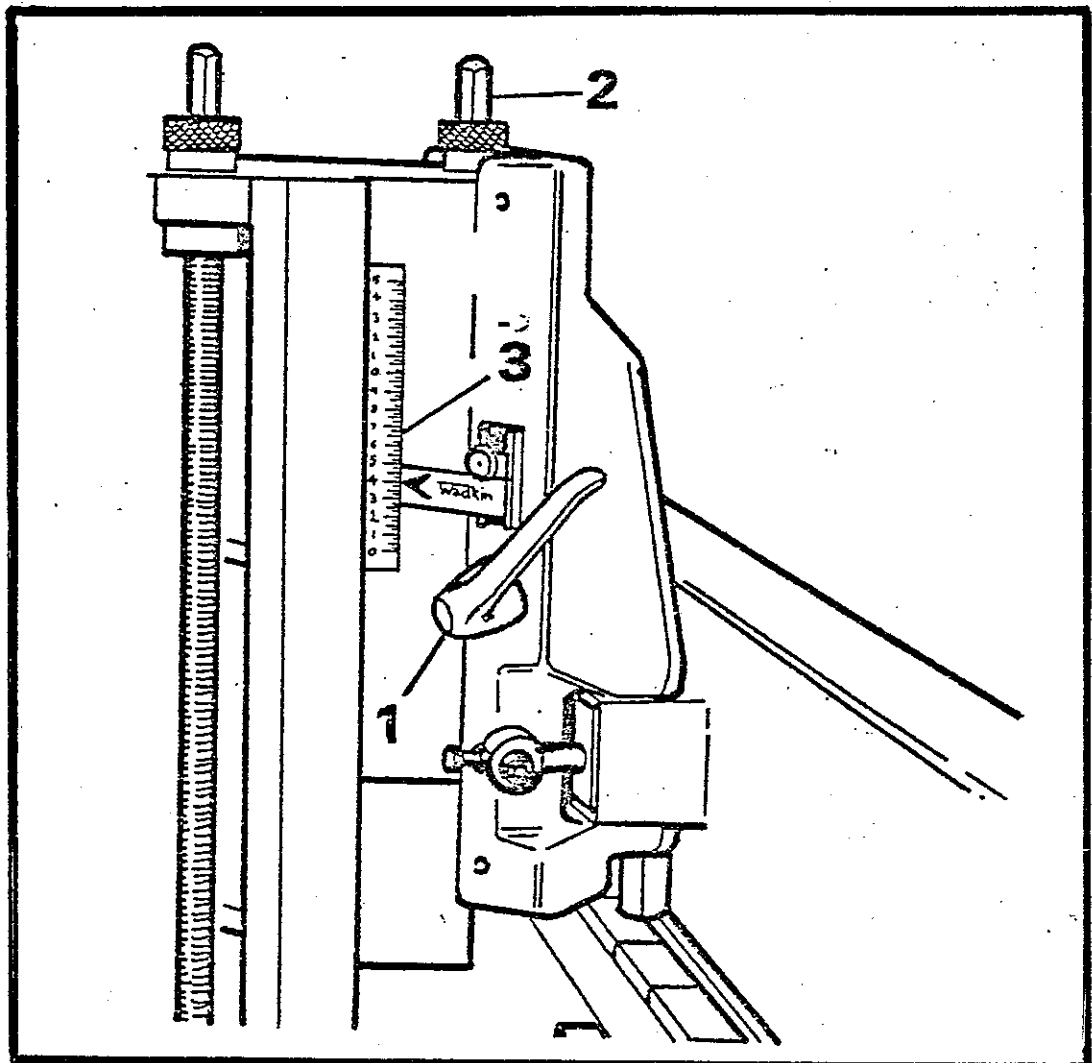
6. Set number of disappearing drive dogs required. Those not required should be secured below level of track as follows:-

Place special key (supplied with machine) over square of dog, depress and give half turn to secure dog below track.  
To release dogs reverse above procedure.

NOTE:- Various types of dogs (EXTRA) are available for specific types of work eg:-

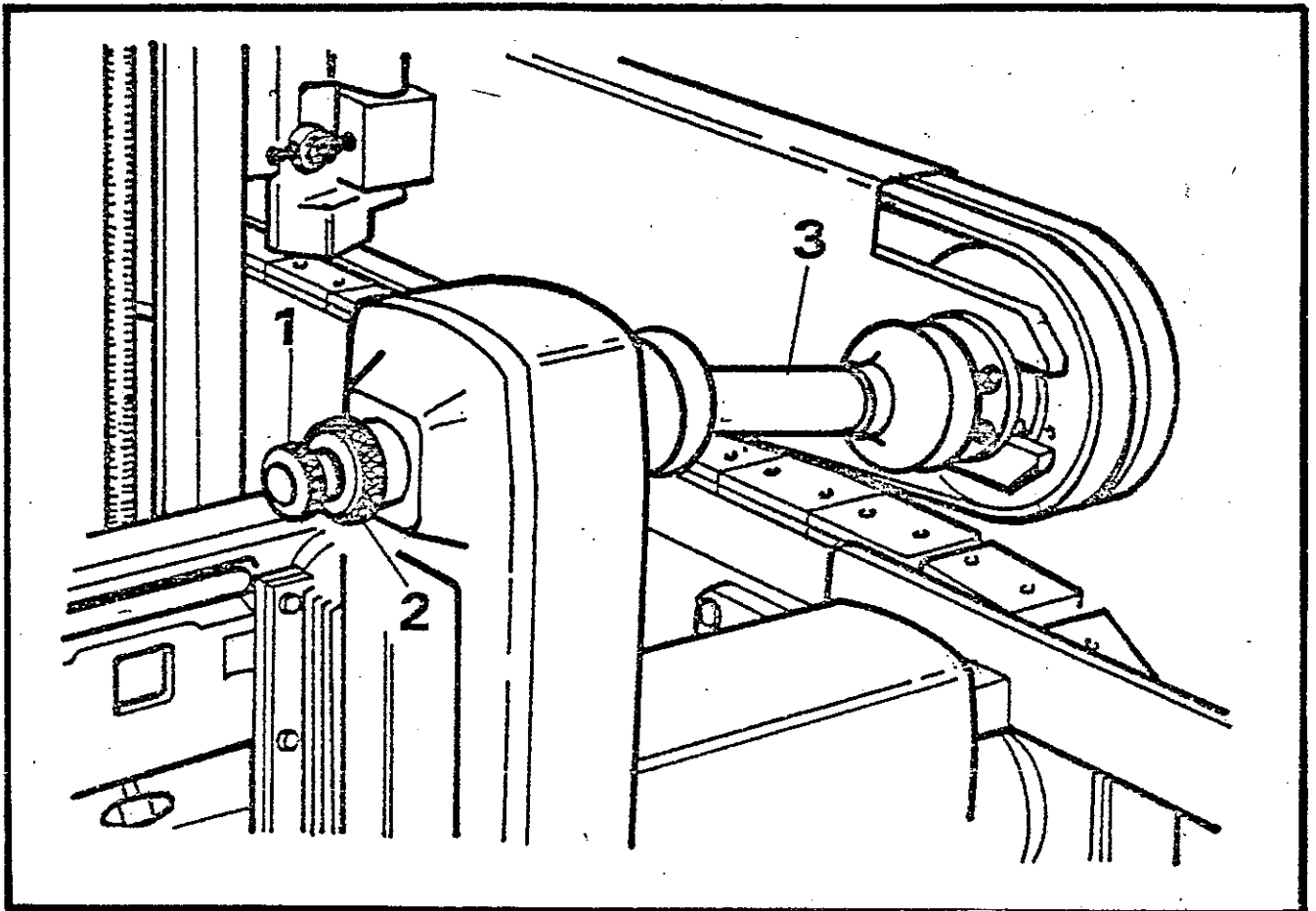
Disappearing dogs	}	Panels
Core stock dogs		
Flat back dogs	}	Joinery
Finger dogs		
Hold back dogs		

Further information on the above dogs is available on request.



## SETTING UP MACHINE - CONTD.

7. When crosscutting narrow board etc., feed against front of dogs, when feeding large panels feed against rear of dogs (back dog). Drive to pressures should be adjusted to suit various operations. Adjusting instructions are as follows:-
  - 1) When feeding timber against front of dogs (i.e. with dogs pushing timber) the drive to the pressures should be released by loosening the knurled locking handwheels (1) then releasing drive by knurled handwheels (2). Relock handwheels (1).
  - 2) When feeding timber against the back of dogs (back dogging) the drive to the pressures should be set to positive by loosening the knurled locking handwheels (1), setting positive drive by knurled handwheels (2) then relocking handwheels (1).
  - 3) When feeding timber with all dogs secured below track the pressures should be set to minimum driving position by loosening the knurled locking handwheels (1), turning knurled handwheels (2) until drive can be stopped by gripping drive shafts (3) with hand. When set relock handwheels (1).



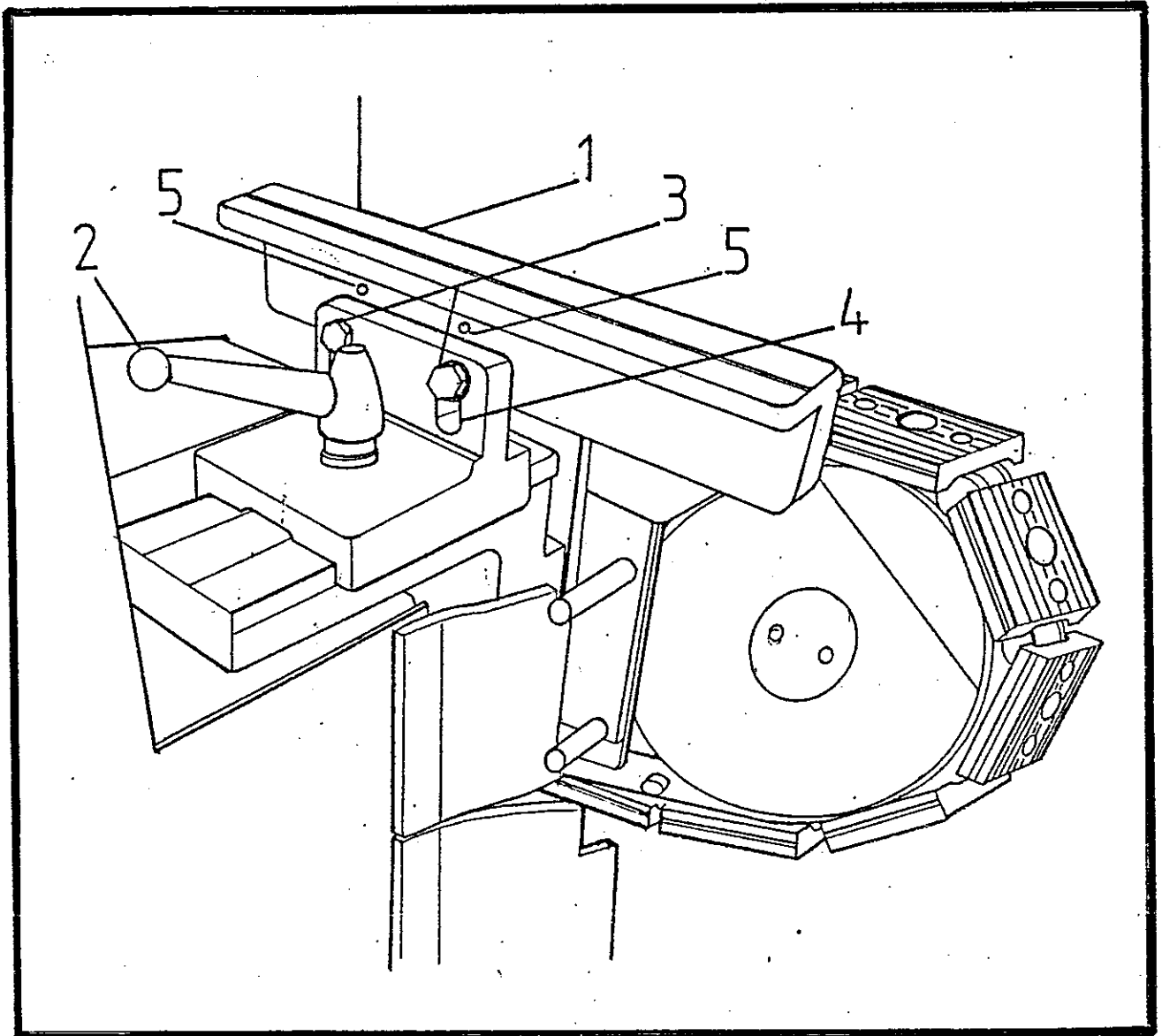
## SETTING UP MACHINE - CONTD.

8. Set required main track feed speed as previously described in "ADJUSTMENTS" Section.
9. Set fence (1) to guide the timber into the machine. Loosen lateral locking handle (2) and set fence by hand. Relock handle (2). Loosen the two hexagon headed bolts (3) and set fence vertically about elongated slots (4). Relock the two bolts (3).

An additional pair of holes (5) are provided in the fence to give alternative vertical movement.

Optional fence arrangements (EXTRA CHARGE) are available for specific types of work e.g:-

Swing away fence.  
Outfeed fences.



INFEED FENCE.

IMPORTANT

SAFETY DIRECTIVES

1. Oversize timber limit "STOP" switches are fitted on pressures to ensure incorrect thickness of stock does not foul machine.
2. Ensure that all tools and cutters are securely fixed and the speed selected is appropriate for the tooling.
3. Ensure that all guards are adjusted correctly to give maximum protection from rotating cutter equipment.
4. Ensure that all heads are running before feeding any timber into the machine.
5. Ensure that all heads are rotating in the correct direction.
6. Ensure that the feed track is correct for the work required.
7. Ensure that the pressures and fence are set correctly.
8. Master "STOP" buttons are fitted in convenient positions enabling the operator to "STOP" the machine immediately in case of emergency.
9. A safety "STOP" trip wire is fitted to the outfeed end of the machine enabling the operator to "STOP" the machine immediately in case of emergency.
10. Ensure that the machine is correctly lubricated before commencing to start.

## STARTING

Before starting it is essential to ensure that all cutters are tight and secure in the respective cutterblocks and the latter are securely locked on the spindle and that the pressures and fence are set correctly.

1. Select correct head rotational direction for each head in use as previously described in controls.
2. Turn disconnect switch handle fitted on the right hand side of the electrical control console to the 'ON' position.
3. Start each head - See controls. - See Page (7)
4. Start feed tracks - See controls. - See Page (7)
5. The machine is now ready for operation and the material can be fed into the machine and in so doing it should be pushed securely against the dogs (if in use) using the fence as a guide.

## STOPPING

1. The feed motor and each head can be stopped individually by the appropriate "STOP" push button located in the top of the electrical control console. It should also be noted that the feed motor can also be controlled from a separate push button station located at the moveable chain beam.
2. Depression of the Master "STOP" switch located at the top of the Electrical Control Console and also at the moveable chain beam isolates all electrics.

NOTE:- The Master "STOP" button is a Lock Off Type Button on depression - it remains "off" until released by turning in a clockwise direction.

3. The machine can be disconnected electrically by the Disconnect switch located at the right hand side of the electrical console. The switch handle being turned to the "off" position.

**IMPORTANT:** THIS SWITCH SHOULD ALWAYS BE USED TO ENSURE SAFETY DURING MAINTENANCE OR MACHINE DOWN TIME.

## LUBRICATION

### DAILY

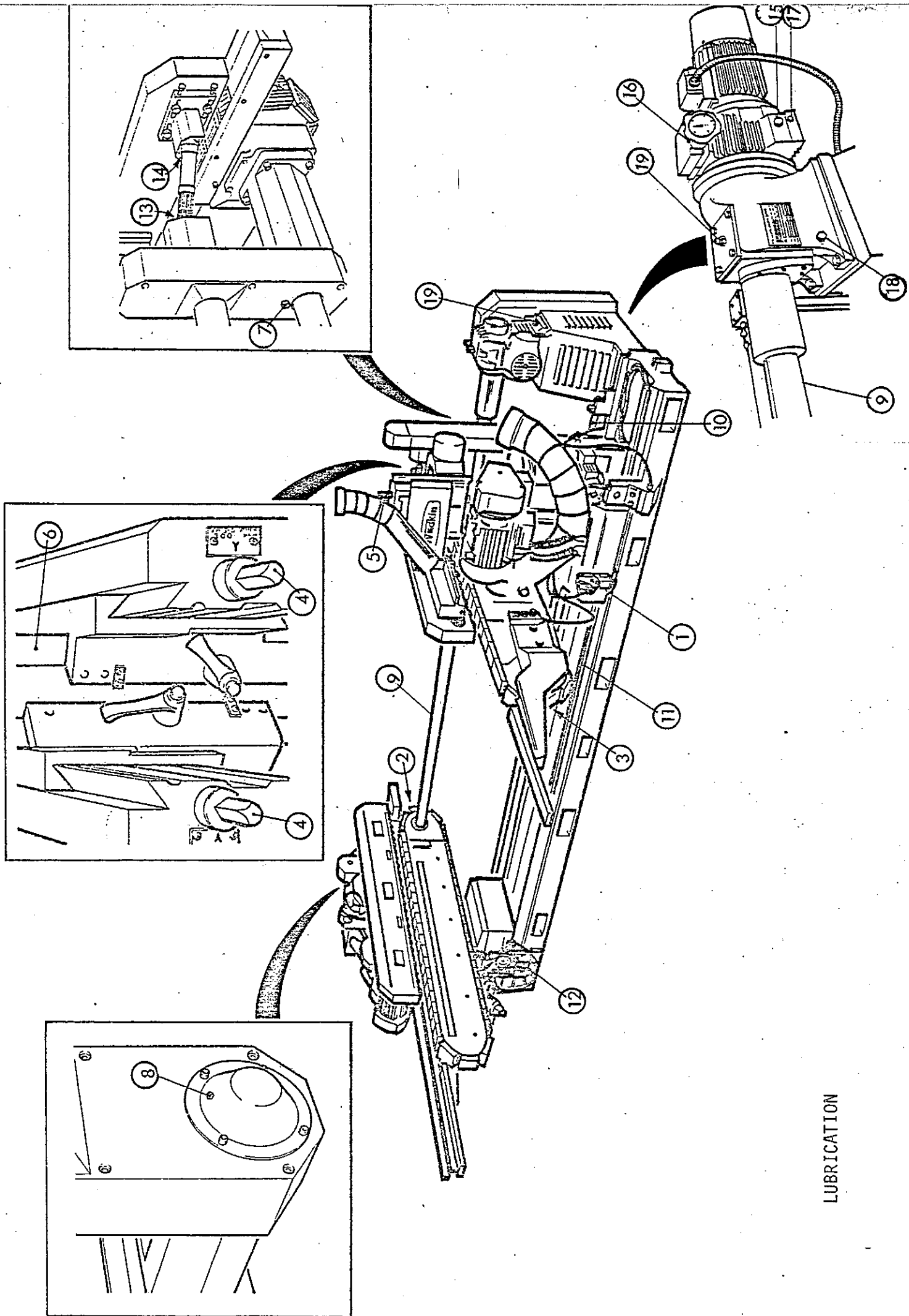
1. Two depressions of the oil gun (1) containing Wadkin Grade L.4 Oil. This lubricates the feed chain driving sprockets at the points (2) and (3). Also apply Redex to the feed chains.

### WEEKLY

2. Oil the cross traverse screw (4) raising screws (5) and all slide-ways (6) for heads and top pressure drives using Wadkin Grade L.4 Oil.

Oil lubricating points (7) and (8) of pressure drives, oil back shaft (9) traverse screw (10) bed slides (11) with Wadkin Grade L.4 Oil.

3. Top up "Tecalemit" lubrication unit (1) through filler plug until oil reaches level shown in oil level indication glass.
4. Top up pneumatic lubricator bottle (12) through filler plug until oil reaches correct level shown by indication mark on the side of bottle.
5. Lubricate universal joints driving top pressures at points (13) and (14) using Wadkin Grade L.6 grease.



LUBRICATION



MAINTENANCE - CONTD.

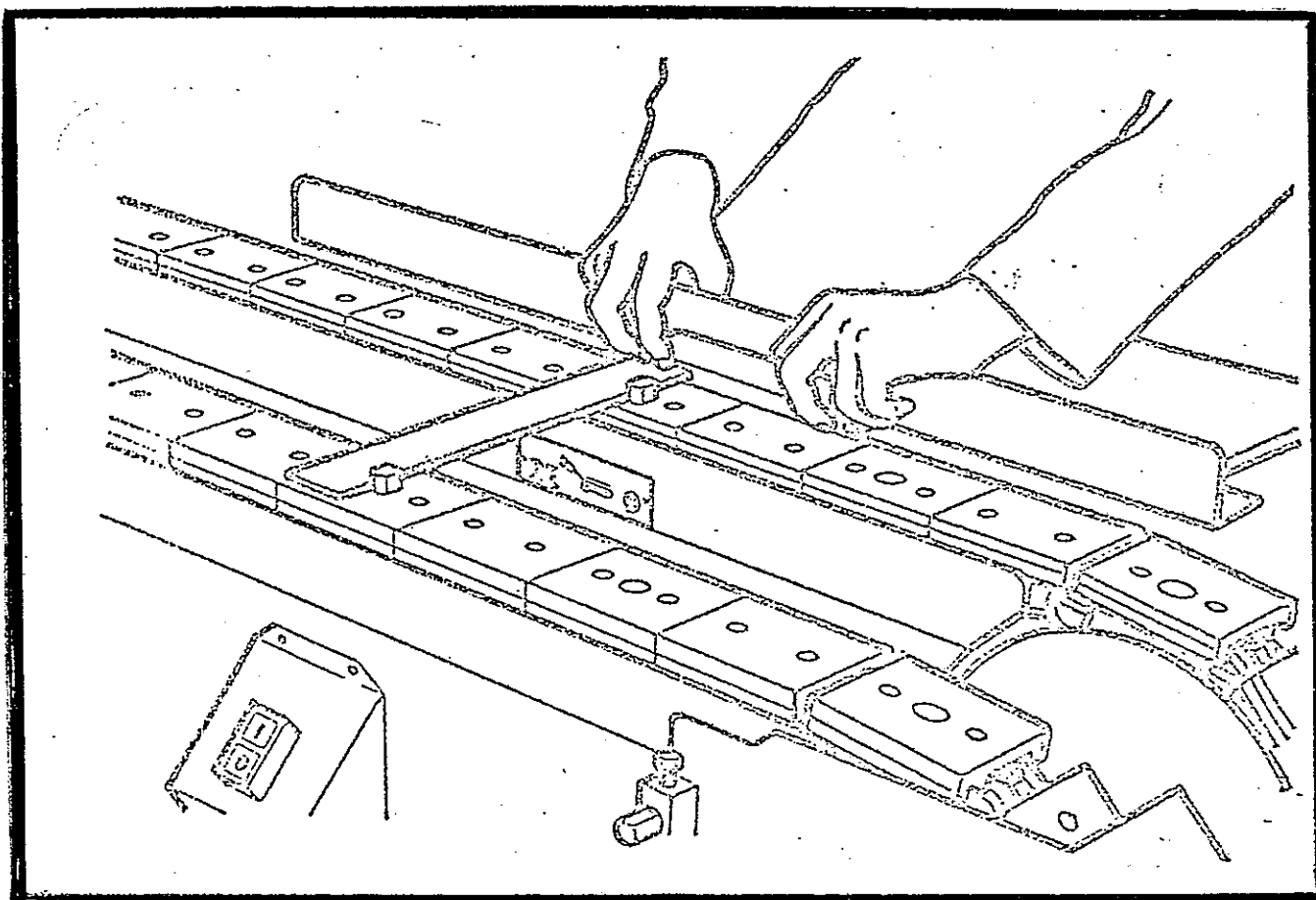
SETTING DISAPPEARING DOGS FOR SQUARENESS

The disappearing dogs are preset for squareness at the works. If adjustment becomes necessary - proceed as follows:-

1. Lower each pressure beam - See adjustments.- See Page (12)
2. Place a large machine square with stock to fence and blade across the tracks as shown below.
3. By means of FEED BUTTON START/STOP - See Controls Section. Bring a pair of dogs up to blade of machine square as shown.

NOTE: Each pair of dogs should be up to blade during check. Fixed dogs are fitted to one track and adjustable dogs to the other.

4. Align out of square dogs by loosening the button head socket screw in the adjustable dog - then slide dog diagonally until it touches the machine square and so lines up with the dog on the opposite track. When set re-lock button head socket screw.
5. When all dogs are set the top pressure beams should be re-adjusted to suit the thickness of timber to be worked.
6. Dogs not being used can be secured below the track by depressing dog with key supplied then giving half a turn.



## MAINTENANCE

### LUBRICATION

Variable speed "DISCO" Unit (Feed Unit).

The oil level should be checked regularly at (15) and topped up at filler (16) as necessary. Lack of oil will lead to premature wear. The correct quantity of oil is when the oil reaches the middle of the oil level window (15). When the drive is at standstill. The oil drain-plug (17) is equipped with a magnetic filter which attracts all metal particles present in the oil. This filter should be cleaned from time to time and always at each change of oil.

### CHANGING THE OIL

Quantity 0.4 litres (0.7 pint).

### RECOMMENDED LUBRICANTS

SHELL TELLUS NO.37  
MOBIL DTE OIL LIGHT NO.24.  
ESSO TERERSO 43 OR ESSTIC 42.  
CASTROL HIGH SPEED AWS 32.  
DUCKHAMS ZIRCON NO.4.

### FREQUENCY OF OIL CHANGE

For ambient temperatures\* + 12<sup>o</sup> to + 30<sup>o</sup> centigrade the oil should be changed after the first 100 running hours then after 500 running hours and subsequently every 1000 running hours.

At daily operation of 8 hours - change at 6 month intervals  
At daily operation of 16 hours - change at 3 month intervals  
At daily operation of 24 hours - change at 2 month intervals

\* For higher ambient temperatures + 30<sup>o</sup> to 43<sup>o</sup> centigrade Shell Tellus Oil No. 29. is recommended and the oil should be changed every 700 running hours.

For lower ambient temperatures down to - 29<sup>o</sup> centigrade Shell Tellus oil No. 27. is recommended.

### LUBRICATION

#### FEED DRIVE - REDUCTION GEARBOX.

The oil in a new unit should be drained after 500 hours duty and the case thoroughly flushed with light flushing oil and re-filled with new oil. It is recommended to drain, flush and re-fill with new oil after every 12 months OR more frequently - if operating conditions are severe.

IMPORTANT:- ONLY OIL OF THE CORRECT GRADE MAY BE USED.  
USE OF INCORRECT OIL WILL INVALIDATE ALL GUARANTEES.

MAINTENANCE - CONTD.

LUBRICATION - FEED DRIVE - CONTD.

The grade of oil and quantity indicated apply to all normal running conditions with ambient temperature 4.4<sup>o</sup> Centigrade to 43.3<sup>o</sup> Centigrade (40<sup>o</sup> Fahrenheit to 110<sup>o</sup> Fahrenheit). If the gearbox is to be used in higher or lower ambient temperature OR where abnormal conditions exist - reference should be made to Wadkin Ltd., for the grade of oil to be used.

To fill the gearbox remove the oil level plug (18) and filler/breather plug (19) and pour new oil in until it flows from the "level" hole. Replace the oil level plug (18) and filler/breather plug (19) in which the vent holes must always be clear.

CHANGING THE OIL

Quantity of oil 3.5 litres (6 pints).

RECOMMENDED LUBRICANTS

SHELL MACOMA R460  
SAE 140 EP  
ACMA NO.7 COMP

TRAVERSE DRIVE

Both the electric motor and the reduction gearbox are lubricated for "Life" and should not require any further attention.

APPROVED LUBRICANTS.

WADKIN GRADE	CASTROL	B.P.	SHELL	MOBIL	ESSO	GULF	CALTEX
L.1	HYSPIN AWS 32	ENERGOL H.L.32	VITROL 32	DTE OIL LIGHT 24	NUTO 44 OR ESSTIC H 44	HARMONY 43AW	RANDO OIL HDA
L.2	ALPHA ZN 150	ENERGOL H.P.150	VITREA 150	VACTRA EXTRA HEAVY	ESSTIC 65	SERVICE 13	URSA P 40
L.4	MAGNA 68	ENERGOL H.P.68	VITREA 68	VACTRA OIL HEAVY MEDIUM	ESSTIC 50	SERVICE, 51	URSA P 20
L.6	SPHEEROL AP 3	ENERGREASE L.S.3	ALVANIA GREASE NO.3	MOBILPLEX GREASE NO.48	BEACON 3	GULFCROWN GREASE NO.3	REGAL STARTAK PREMIUM 3

- L.1 OIL Hydraulic oil with anti-corrosion, anti-oxidation, anti-wear, anti-foam performance.
- L.2 OIL Gear oil (viscosity 150 centi-stokes at 40°C.)
- L.4 OIL Plain mineral oil (viscosity 68 centi-stokes at 40°C.)
- L.6 GREASE Grease NLGI NO.3. consistency Lithium bearing grease.

## LUBRICATION AND MAINTENANCE

The cutterblock spindle bearings have been charged with "KLUBER" LUBRICANT TYPE "ISOFEX NBU 15." This is a permanent lubricant. It will only be necessary to re-charge in the event of the removal of the bearings.

### PREPARATION PRIOR TO FITTING THE BEARINGS

Before fitting the new bearing the protective lubricant must be meticulously removed with petroleum spirit, triethanolamine or other volatile solution.

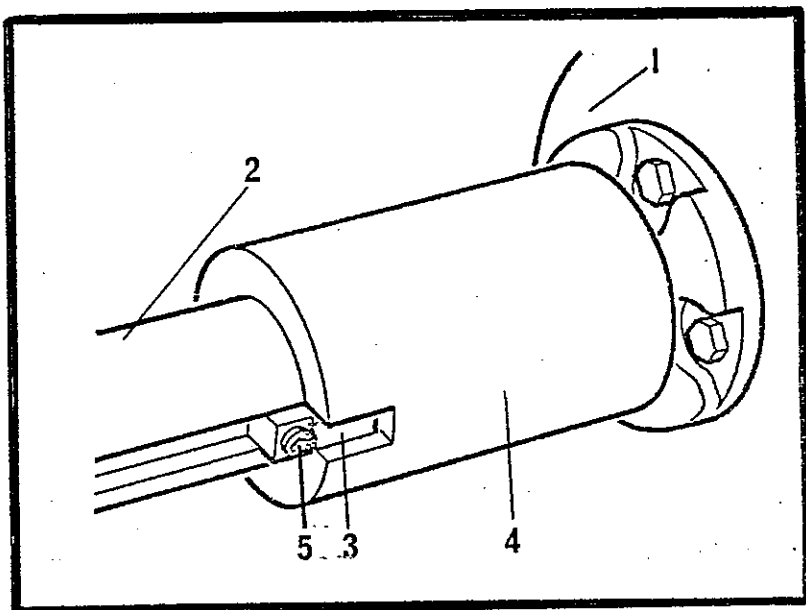
In order to prevent the moving parts from being damaged by over cleansing add a small amount of the new lubricant to the cleansing agent at the second bath. The film of grease which remains after the solvent has evaporated will provide a good protection for the bearing.

At this stage the new bearing should be charged with "KLUBER" LUBRICANT TYPE "ISOFEX NBU 15." It is very important that the correct amount of grease be applied to the bearing preferably the amount should be measured by applying the formula:-

$G$  (weight in grams) =  $d \times B \times 0.01$  where  $d$  = bore of the bearing in mm and  $B$  = the width in mm or approximately sufficient to fill one third of the bearing volume.

## BACKSHAFT SHEAR KEY

The drive from the worm reduction box (1) to the backshaft (2) is through a shear key (3). (Part No. DL 219) located in the coupling (4). This key prevents overload on the drive assembly. In the event of an overload, the shear key can be removed by inserting a size M8 "Allen" key in the hexagon socket cap screw (5) (Part No. K05 25 188). Replace with a new key.



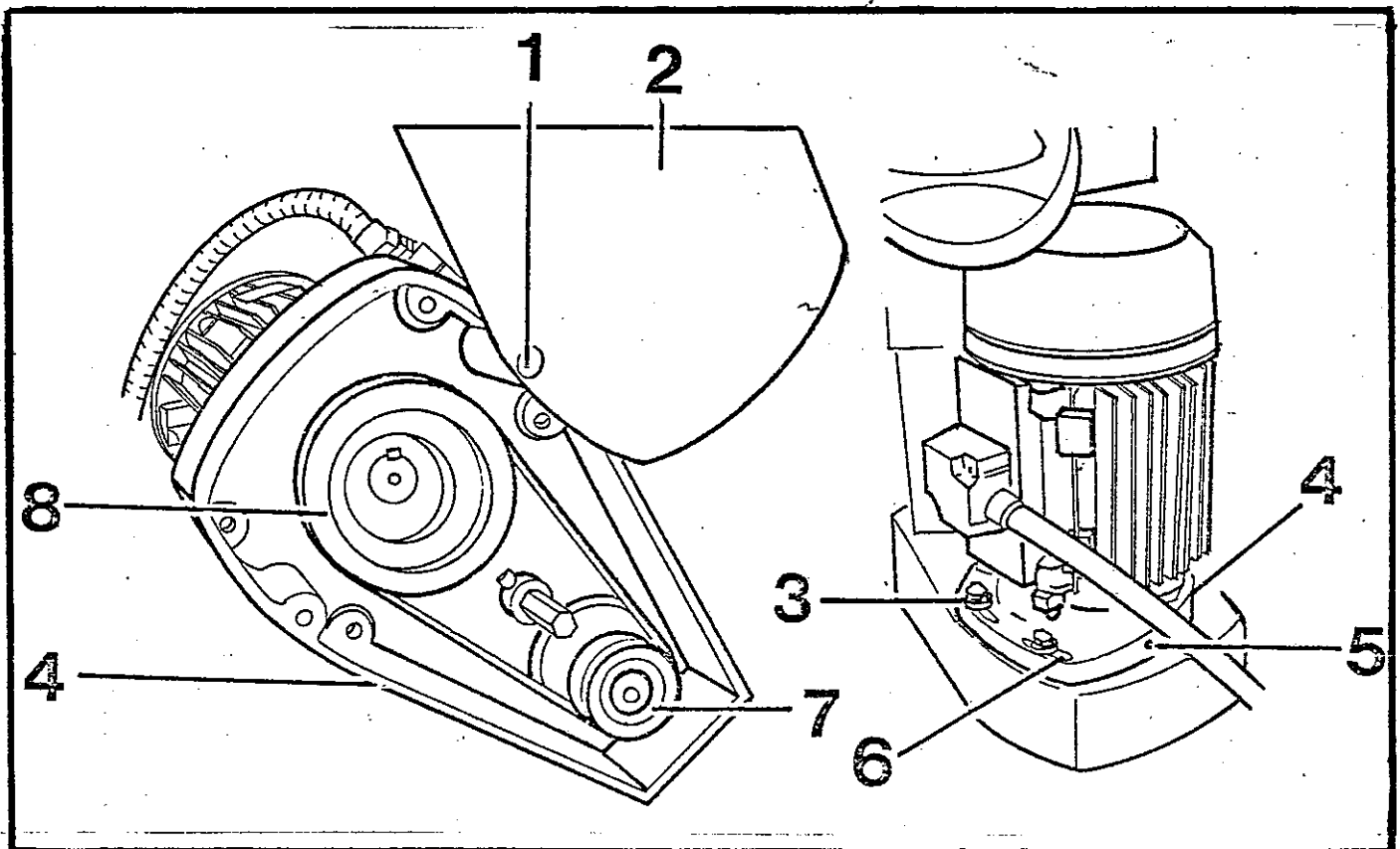
SHEAR KEY

## BELT REPLACEMENT OR SPEED CHANGING ON HEADS

Each belt driven head is fitted with two stepped pulleys to give alternative speeds of 4500 RPM or 6000 RPM. See page (47) for type of belt used.

To change belt on each head for required speed - proceed as follows:-

1. Isolate machine electrically.
  2. Unscrew and remove 3 - knurled knobs (1) securing belt cover plate (2) to head.
  3. Remove belt cover plate (2).
  4. Loosen 3 - hexagon head nuts (3) at the rear of head pulley housing (4).
  5. Locate 10mm toggle bar (supplied with machine) in motor mountin boss at point (5) and move motor about elongated slots (6) to release tension on pulleys (7) and (8).
  6. Fit belt on pulleys (7) and (8) to give required spindle speed.
- NOTE: Belt is shown on the high speed pulleys (7) and (8) in illustration.
7. Apply tension to the belt by moving the motor with the toggle bar (located in motor mounting boss). Correct belt tension is when the belt deflection is approximately 10mm under slight finger pressure.
  8. When belt tension is correct relock 3 - hexagon head nuts (3).
  9. Replace belt cover plate (2) and secure with the 3 - knurled knobs (1).

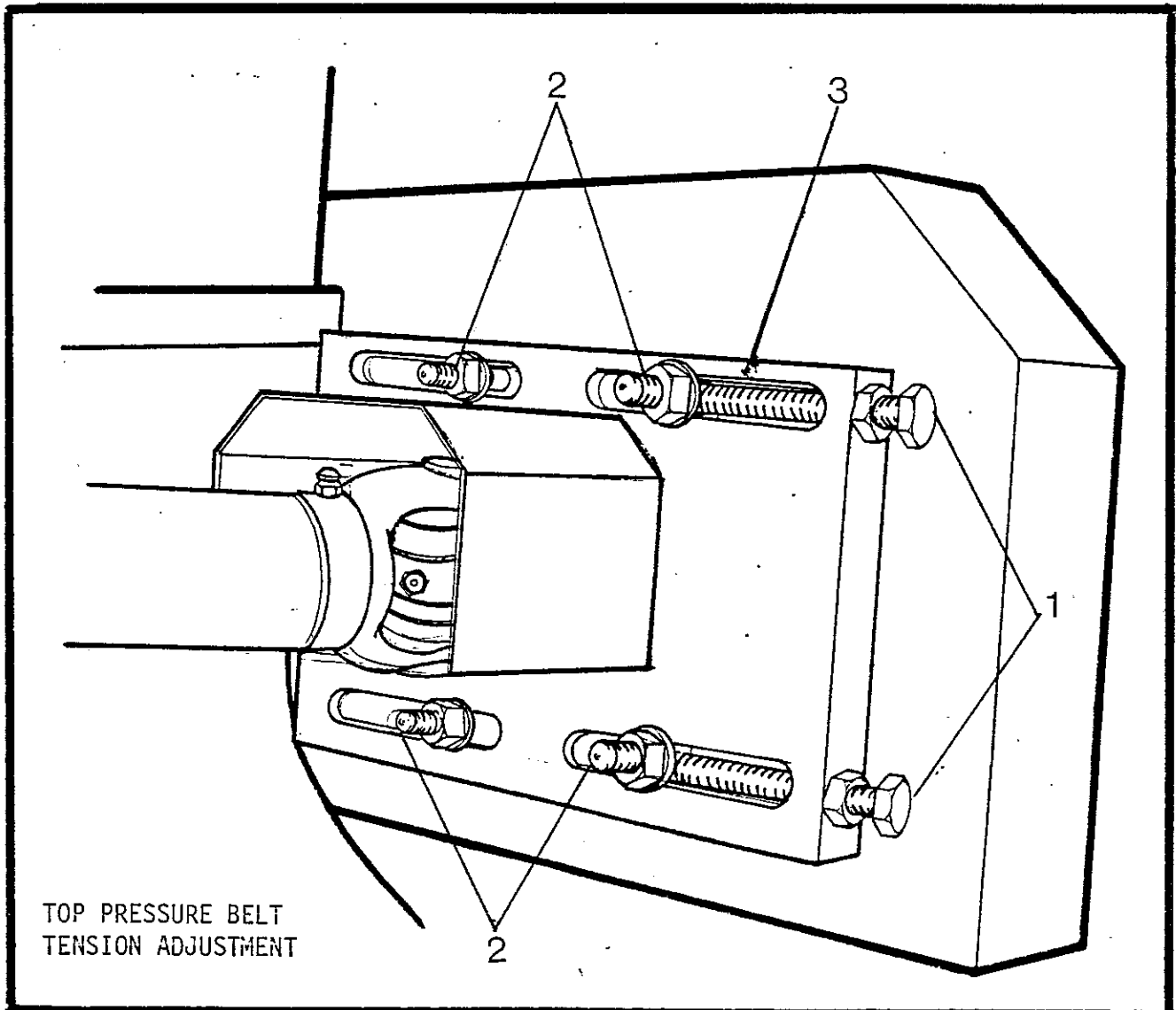


## MAINTENANCE

LUBRICATION - See page (34)

### TOP PRESSURE BELT TENSION ADJUSTMENT

1. Release set screws (1) and unfasten four hexagon nuts (2) and slide universal joint carrier about the elongated slots (3).
2. The correct belt tension is when the belts in the bottom centre of the pressure beam cover about 1/8in. (3mm) of the roller.
3. When the belts are correctly tensioned relock the four nuts (2) and reset the set screws (1).
4. Use the same procedure to adjust the tension of the belts on the opposite pressure beam.



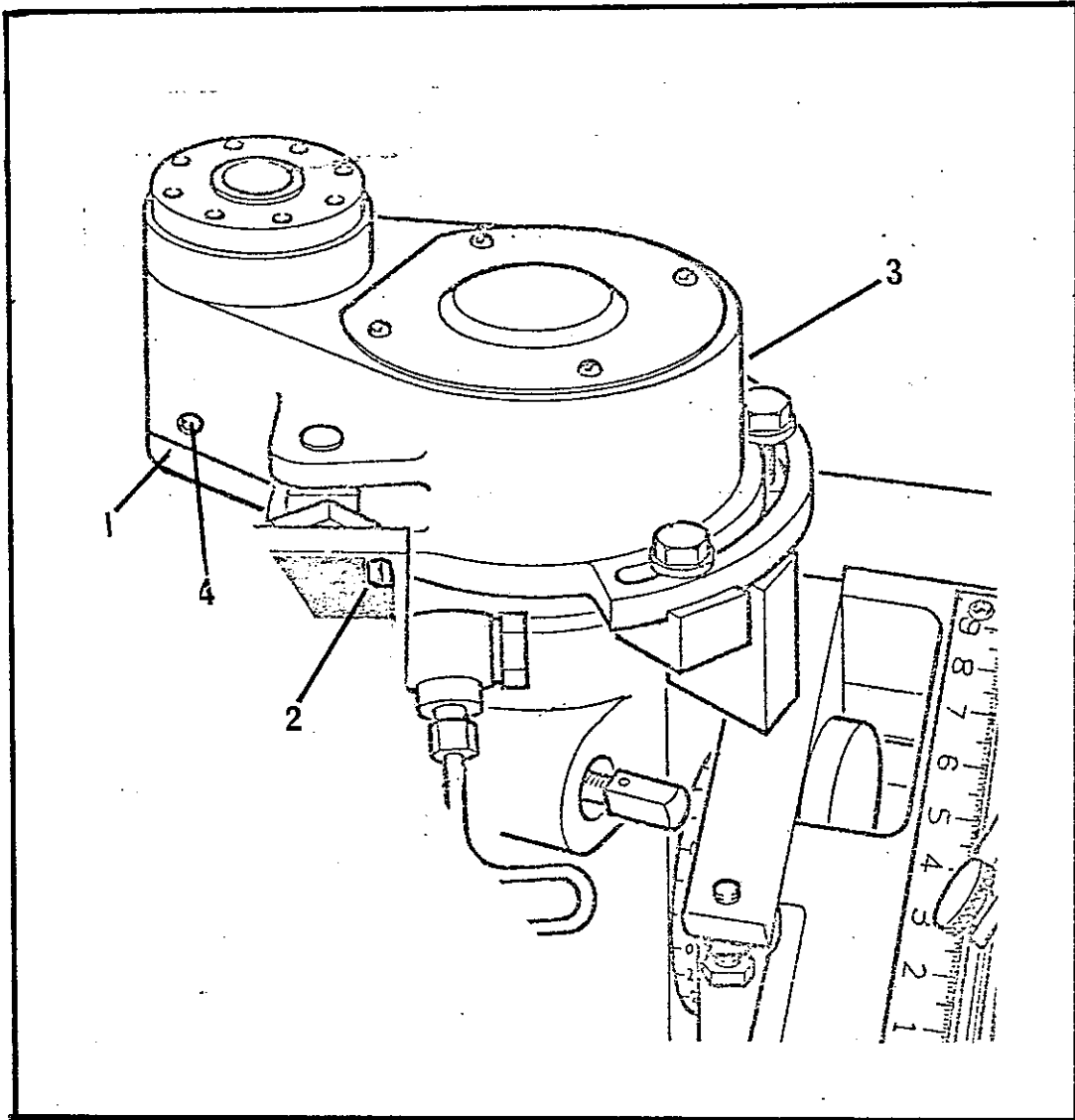


RELISHING HEAD - TYPE "B" HEADS.

Method of tensioning belt (Part No. K30 78 270)

Loosen clamping plate (1) by releasing six hexagon head screws (2).  
Turn housing for pivot bearings/belt adjustment (3) by means of a  
tommy bar inserted in one of the four 6mm. diameter holes (4).

When the correct tensioning is obtained tighten the six screws (2).



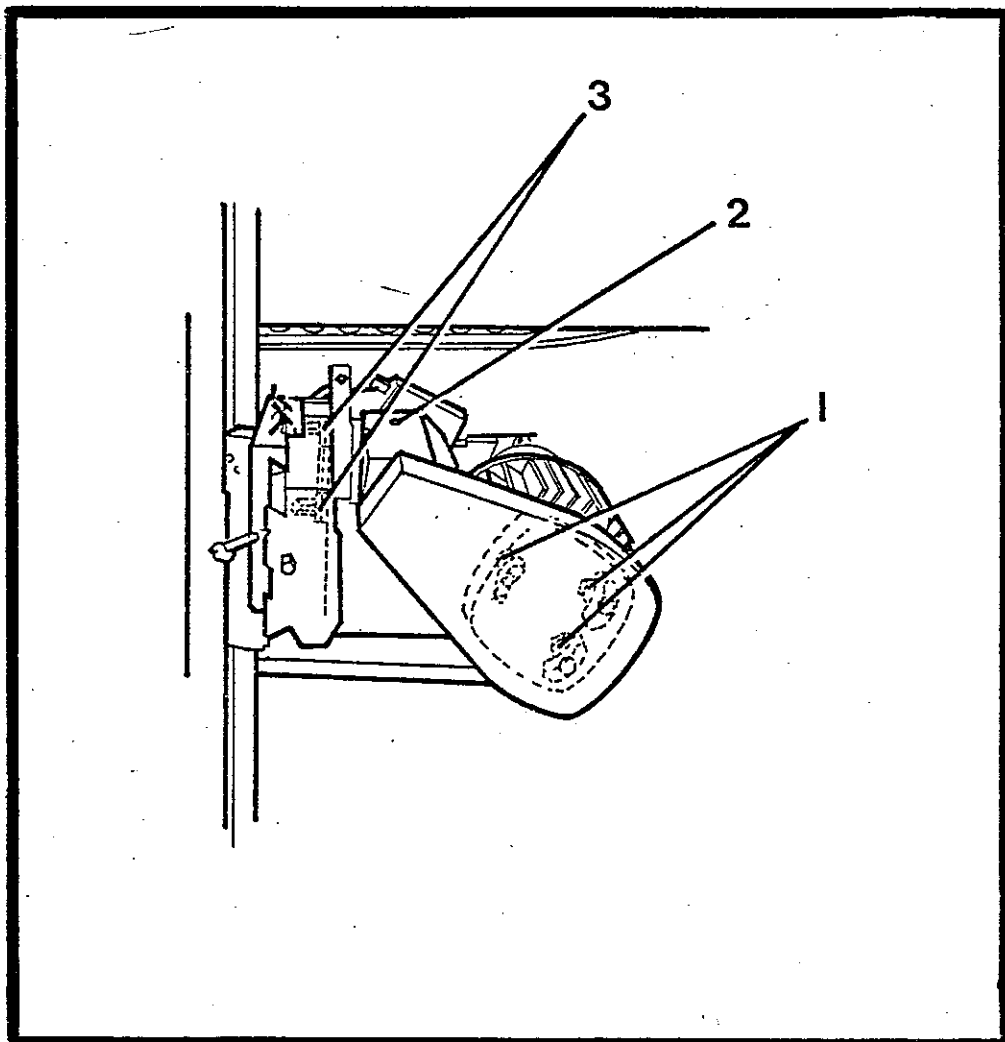
HIGH SPEED RELISHING HEAD - BELT TENSIONING

## COMBINED HOGGING SAW AND JUMP SCORER UNIT

Method of tensioning the Belt - "STEPHENS" MIRACLO Belt - Part No. DL 83.

Loosen three hexagon nuts (1) at the rear of the Head Pulley Housing and locate 10mm. toggle bar (supplied with the machine) in motor mounting boss at point (2) and move motor about the elongated slots clockwise to increase tension and counter clockwise to decrease the tension.

Correct belt tension is when the belt deflection is 10mm. under slight finger pressure. When the correct tension is reached re-tighten the nuts (1). Locking nuts (3) are those which are provided for the canting movement of the head.

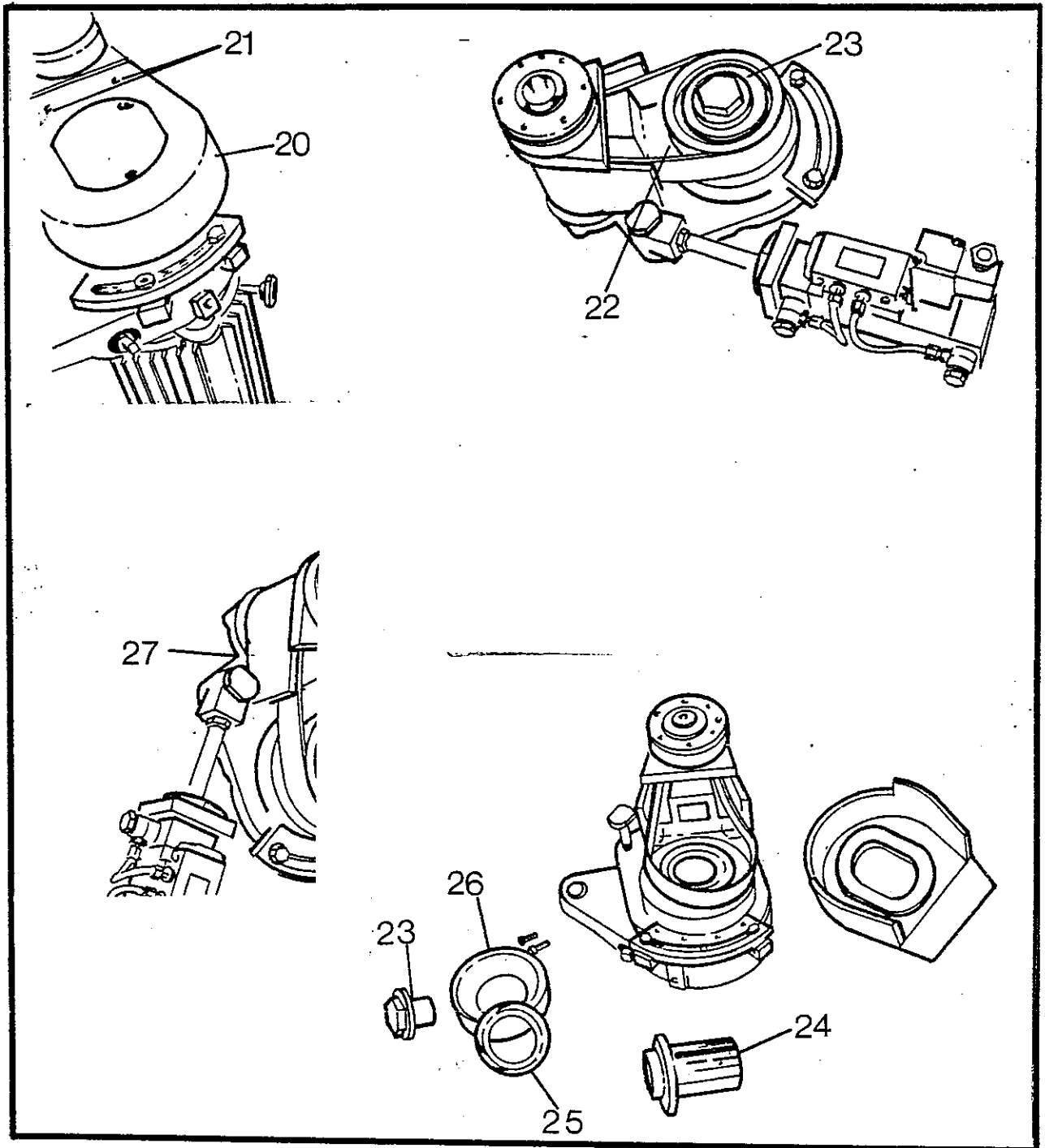


# RELISHING HEAD

## TYPE "A" HEADS

### TO CHANGE THE DRIVE BELT

Remove belt guard (20) by loosening two "ALLEN" screws (21) and loosen belt tensioning screw (22). Remove extended locknut (23) and withdraw from the driving shaft the keywayed sleeve (24) locking cone (25) and motor pulley (26). Remove two nuts (27) and then remove the complete spindle assembly. The cutter spindle can be then removed permitting easy replacement of the belt. Re-assemble in the reverse order.



SUGGESTED SPARE PARTS

Part No.		No.Off
TOP PRESSURE TRACKS		
K06 01 207	Top Idler Sprocket Bearings 6205-2RS	4
K06 04 190	Clutch Shaft Thrust Bearings ZKL 51105	2
K06 10 213	Clutch Shaft Needle Thrust Cages AXK 2542	2
K06 10 254	Clutch Shaft Needle Thrust washers AS 2542	4
K06 01 121	Pulley Pivot Block Bearings 6004-2RS	4
K06 01 332	Pulley Housing Spindle Bearings 6304-2RS	4
CHAIN TRACKS		
K06 01 129	Jockey Arm Bearings 6008-2RS	4
K06 10 423	Drive Hub Needle Thrust Cages AXK 85110	4
K06 10 263	Drive Hub Needle Thrust Washers AS 85110	8
BELT DRIVEN HEADS		
K06 04 131	Rise and Fall and Horizontal Screws Thrust Bearings AKL 51104	4
K06 01 222	Rear Spindle Bearing 6207-2RS	1
K06 01 229	Front Spindle Bearing 6208-2RS	1
DIRECT DRIVEN HEADS - TYPE "A" AND "C"		
K06 04 131	Rise and Fall and Horizontal Screws Thrust Bearings ZKL 51104	2
BELT DRIVEN HEAD		
K30 78 226	3000 to 6000 rpm speed Poly 'V' belt 260 J10	1
TOP PRESSURES		
K30 78 258	"FENNER" Vee Belt Code 240 D.0313 D.3130	3
K30 85 530	1.1/4in. x 583in. x 115.1/2in. inside length 3/16in. thick. Vee Belt	2
OIL SEALS AND 'O' RINGS		
K30 69 108	Fence Rise and Fall and Lateral Screws 'O' ring No. R122	2
K30 69 108	Top Pressure Rise and Fall Screws 'O' ring No. R122	2

Part No.		No. Off
	BELT DRIVEN HEADS	
K30 69 108	Rise and Fall and Horizontal Screws 'O' ring No. R122	2 per head
	BELT DRIVEN HEADS	
K30 69 108	Rise and Fall Screws 'O' ring No. R122	1 per head
	CHAIN BEAM HUB FOR DRIVE SHAFT	
K30 74 310	Oil Seal Gaco SN 70/85/8	2
	TOP PRESSURE DRIVE COVER	
K30 73 310	Oil Seal Gaco SN 70/85/8	2
	INFINITELY VARIABLE FEED DRIVE	
	Input Assembly Fitted on Motor Shaft	1
	Planets	1
	Planet Bushes	1
	Right Hand Outer Fixed Ring	1
	Centre Medium Moveable Outer Ring	1

