

# **COLCHESTER MASTER 2500**



INSTRUCTION & SPARE PARTS MANUAL  
BETRIEBSANLEITUNG & ERSATZTEIL-LISTE  
MANUEL D'ENTRETIEN ET DE RECHANGE  
INSTRUKTIONSBOK med RESERVDELSLISTA  
KAYTTOOHJEET ja VARAOSALUETTELO

# **IMPORTANT**

## **Please read before starting machine**

When this machine leaves the factory the end train gears are set for the fine range of feeds (L) as shown on the gearbox data plate, to avoid any possibility of damage to the leadscrew and feedshaft by accidental starting on high speeds and coarse feeds.

DO NOT select spindle speeds above 770 RPM with standard end train gear settings (H) or (K)

Before operating the machine read carefully  
OPERATION INSTRUCTIONS — pages 7 — 11  
in the manual.

## BRIEF SPECIFICATION

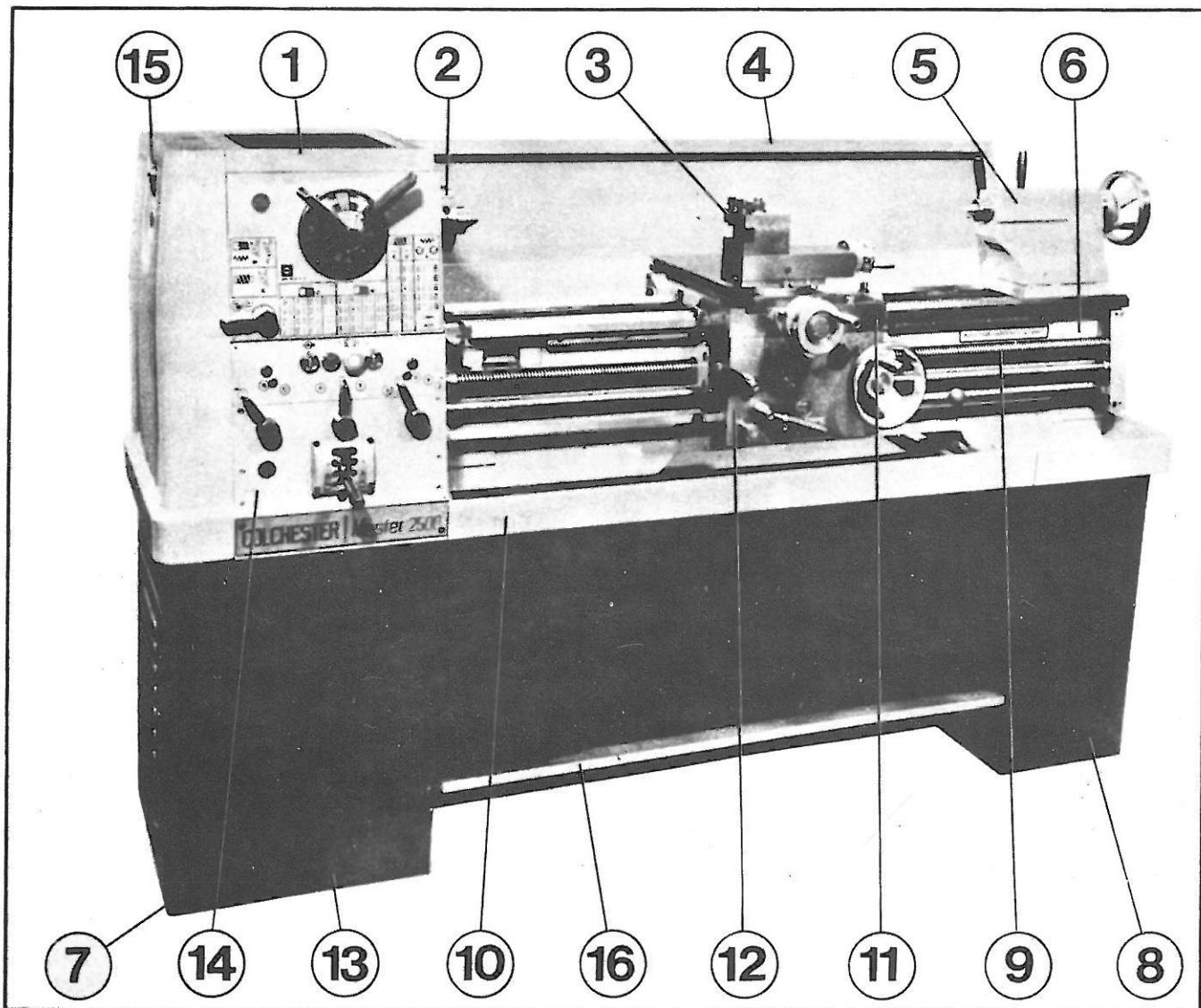
Height of centres	6½ in. (165mm)
Distances between centres	25 or 40 in. (635 or 1015mm)
Swing: over bed	13½ in. (335mm)
over cross-slide	8½ in. (210mm)
in gap (gap-bed lathe only)	19 in. (480mm)
Spindle nose	4 in. D.1 Camlock
Spindle bore (max. bar diameter)	1½ in. (40mm)
Taper of centres	No. 3 Morse
Weight (approx.)	1880 lb (855 kg) 1960 lb (890 kg)
Drive: 5 h.p. single-speed motor (for further details refer to motor data plate).	

## INDEX



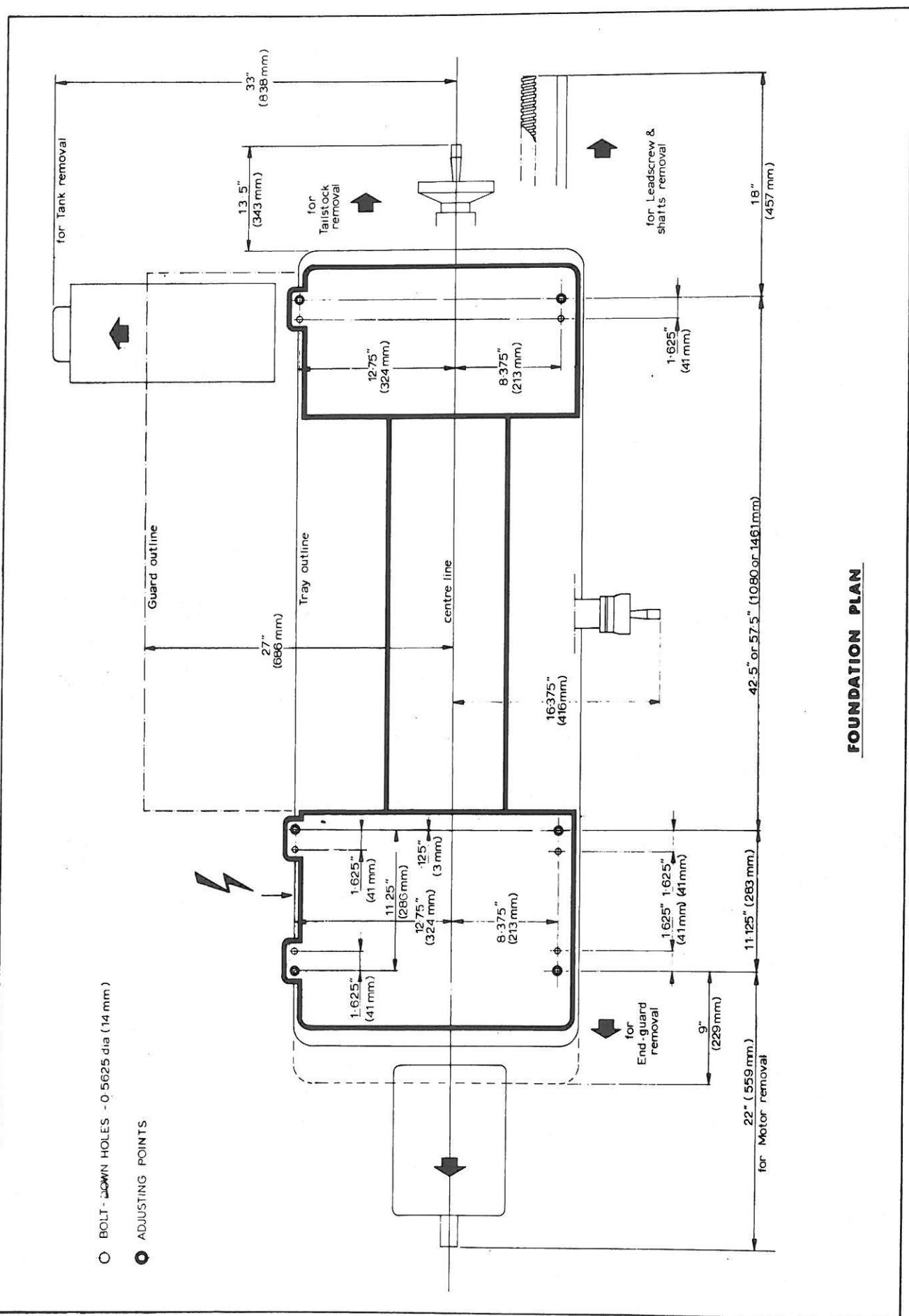
<b>INSTALLATION</b>	
Cleaning, lifting . . . . .	5
Installing . . . . .	5
Electric supply connection . . . . .	5
Chuck & Chuck mounting . . . . .	6
<b>OPERATION</b>	
Lathe controls . . . . .	7
Electrical controls . . . . .	7
Speed controls . . . . .	8
Thread & feed selection . . . . .	9
Apron controls . . . . .	10
Tailstock . . . . .	10
<b>SERVICING &amp; MAINTENANCE</b>	
Lathe alignment . . . . .	11
End gear train, belts . . . . .	12
Gearbox & leadscrew shearpin . . . . .	12
Drive clutches . . . . .	13
Cross-slide nut . . . . .	13
Lubrication . . . . .	14
Slideways . . . . .	15
Lubrication diagram . . . . .	16
Wiring diagram . . . . .	17, 18

# COLCHESTER MASTER 2500



## LEGEND

- |    |                        |
|----|------------------------|
| 1  | Headstock              |
| 2  | Spindle                |
| 3  | Topslide               |
| 4  | Splash-guard           |
| 5  | Tailstock              |
| 6  | Bed                    |
| 7  | Mounting feet          |
| 8  | Tail-end plinth        |
| 9  | Leadscrew              |
| 10 | Coolant tray           |
| 11 | Saddle and cross-slide |
| 12 | Apron                  |
| 13 | Head-end plinth        |
| 14 | Gearbox                |
| 15 | End cover (gear train) |
| 16 | Footbrake              |



## CLEANING

Before operating any controls, remove the anti-corrosion coating from all slideways and the end gear train, see Fig. 1 using white spirit or Kerosene. DO NOT USE CELLULOSE SOLVENTS FOR CLEANING AS THEY WILL DAMAGE THE PAINT FINISH.

Oil all bright machined surfaces immediately after cleaning, use heavy oil or grease on the end gears.

## LIFTING

Use the bed-clamping plates and eyebolt to sling the lathe as in Fig. 2. Position the saddle and tailstock along the bed to obtain balance.

**IMPORTANT: DO NOT USE SLINGS AROUND BED AS LEADSCREW AND FEEDSHAFT MAY BE BENT.**

## INSTALLING

Locate the machine on a solid foundation, allowing sufficient area for easy working and maintenance (see foundation plan). The lathe may be used when free-standing, but for maximum performance it should be bolted to the foundation.

**Free-Standing:**— Position lathe on foundation and adjust each of the six mounting feet to take equal share of the load. Then using an engineers precision level on the bedways (as in Fig. 3) adjust the feet to level the machine. Periodically check bed level to assure continued lathe accuracy.

**Fixed Installation:**— Position lathe over six bolts ( $\frac{1}{2}$ " or 12mm dia.) set into the foundation to correspond with mounting feet; dimensions are shown on plan. Accurately level the machine as in Fig. 3, then tighten the holding-down bolts and re-check bed level.

## ELECTRIC SUPPLY CONNECTION

Power should be supplied through a separate fused disconnect box, the input wires being connected to mains terminals of the electrical panel at the back of the headstock.

Main motor rotation must be anti-clockwise, viewed from the pulley end. Should motor run in wrong direction, interchange any two of the three phases; a wiring diagram is included in the Servicing and Maintenance Section.

## LUBRICATION CHECKS

Ensure headstock lubrication tank is filled with Shell Tellus oil 27, that gearbox is filled to correct level of sight window also with Tellus oil 27, and apron reservoir filled to level of sight window with Shell Tonna 33 lubricant.

Oil compound slide and tailstock through oilers furnished.

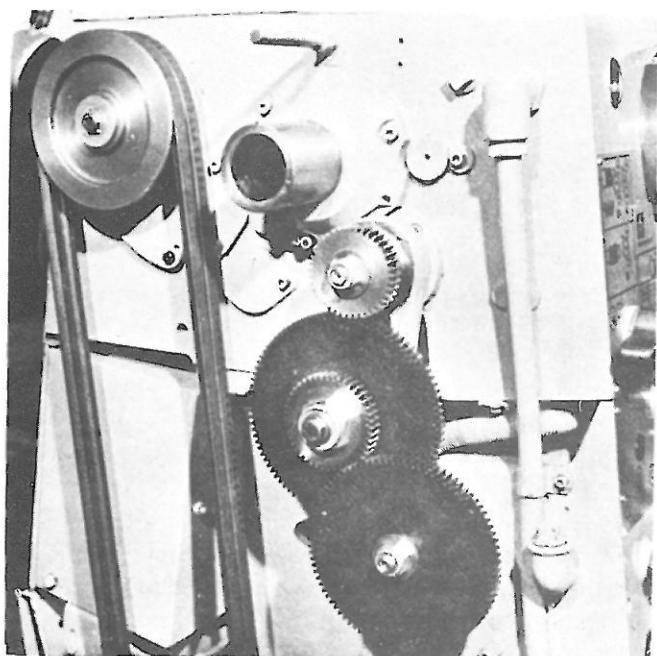


Fig. 1

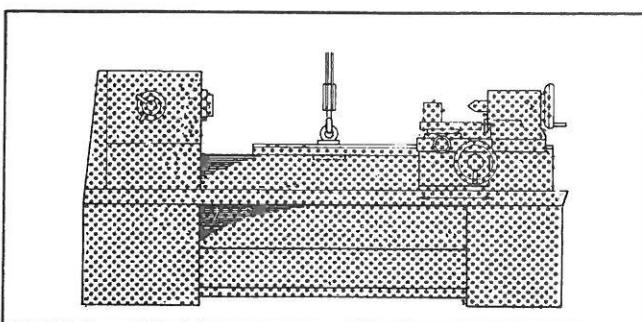
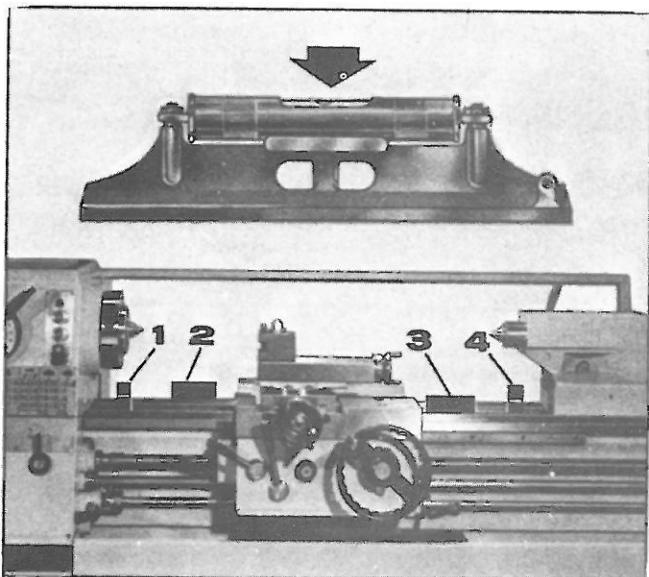


Fig. 2

Fig. 3



**NOTE:** When the lathe motor is switched on, the oil sight window in front of the headstock should fill with oil — indicating that the pump is operative. If this does not occur stop the machine and investigate the cause.

## CHUCKS AND CHUCK MOUNTING

### WARNING: USE ONLY HIGH SPEED CHUCKS.

When fitting chucks or faceplates, first ensure that spindle and chuck tapers are scrupulously clean and that all cams lock in the correct position; see Fig. 4. It may be necessary when mounting a new chuck to re-set the camlock studs (A). To do this, remove the cap-head locking screws (B) and set each stud so that the scribed ring (C) is flush with the rear face of the chuck — with the slot lining up with the locking screw hole (see inset, Fig. 4).

Now mount the chuck or faceplate on the spindle

nose and tighten the three cams in turn. When fully tightened, the cam lock line on each cam should be between the two V marks on the spindle nose.

If any of the cams do not tighten fully within these limit marks, remove the chuck or faceplate and re-adjust the stud as indicated in the illustration.

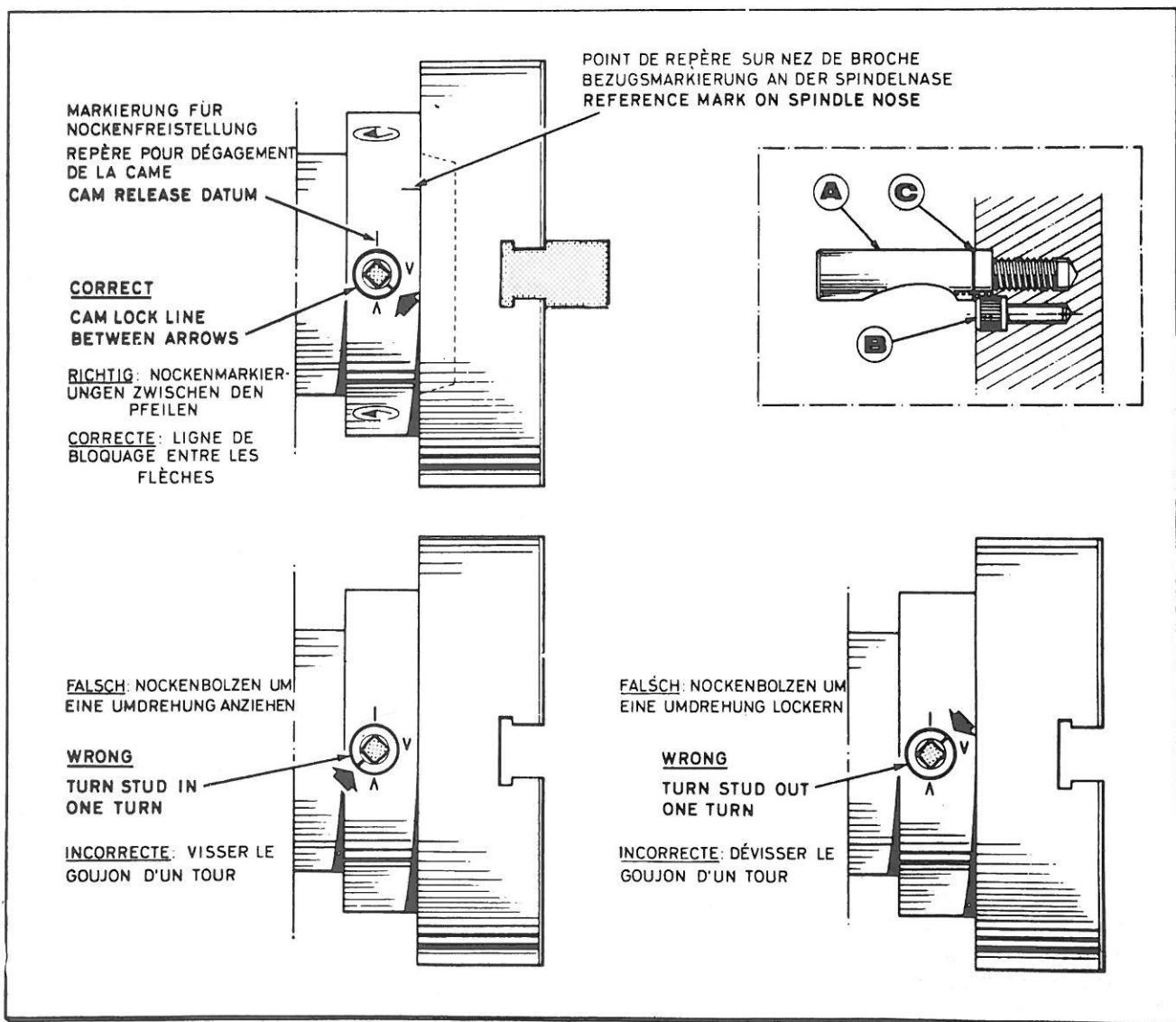
Fit and tighten the locking screw (B) at each stud before remounting the chuck for work.

A reference mark should be made on each correctly fitted chuck or faceplate to coincide with the reference mark scribed on the spindle nose. This will assist subsequent remounting. DO NOT INTERCHANGE CHUCKS OR FACE PLATES BETWEEN LATHES WITHOUT CHECKING FOR CORRECT CAM LOCKING.

### IMPORTANT

Take careful note of speed limitations when using faceplates; 12 in. faceplates should not be run at more than 1400 rev/min. and 18 in. faceplates at not more than 1050 rev/min.

Fig. 4



# OPERATION

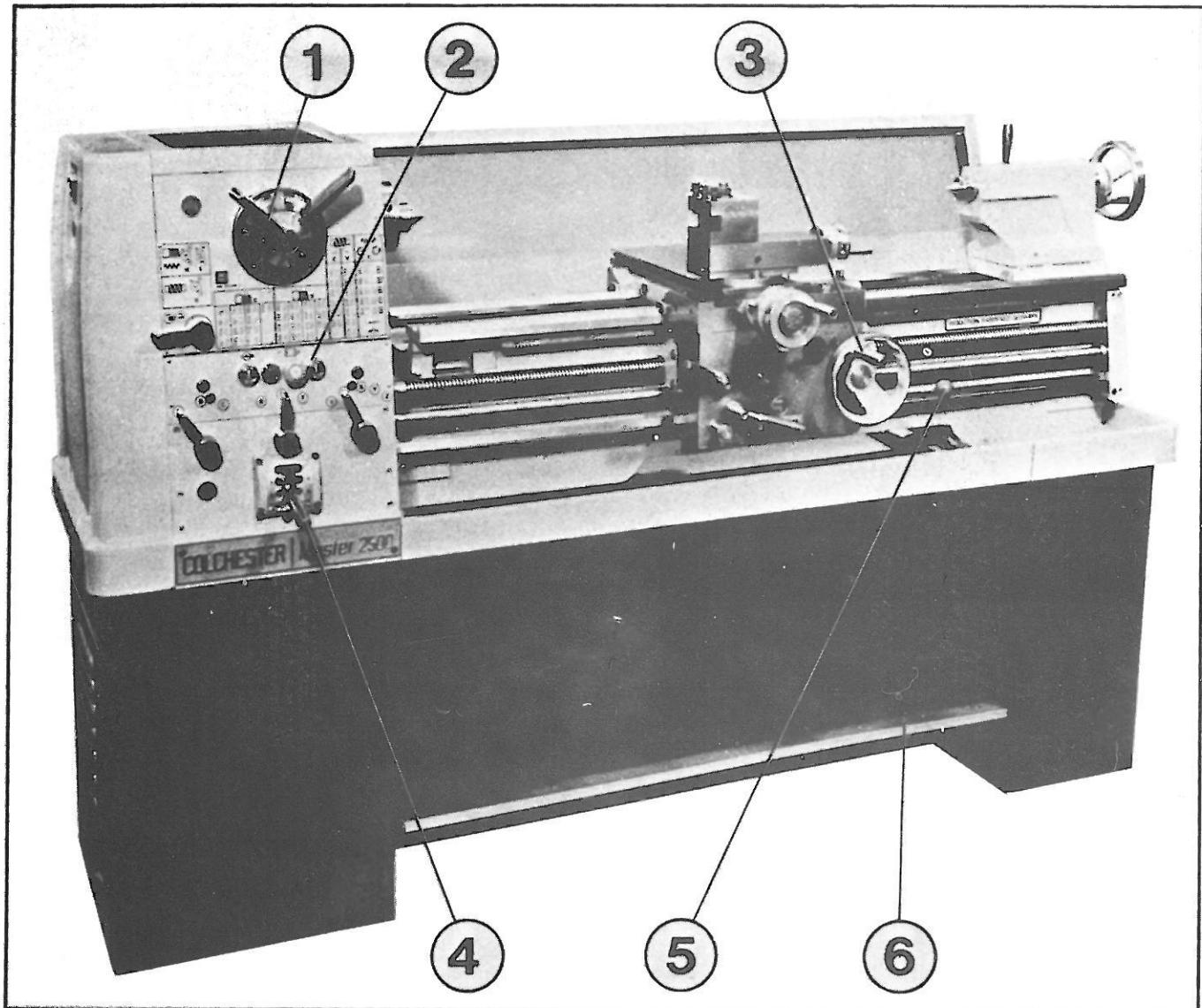


Fig. 5

## LATHE CONTROLS

- |                                       |  |
|---------------------------------------|--|
| 1. Spindle speed selector.            | 4. Gearbox, threads and feeds.             |
| 2. Electrical push-buttons.           | 5. Spindle rotation (forward and reverse). |
| 3. Apron, surfacing or sliding feeds. | 6. Footbrake.                              |

## ELECTRICAL CONTROLS

With the exception of the isolator switch, all lathe electrical controls are fitted into the front face of the headstock, see Fig. 6.

1. Press the GREEN button to start the main drive motor.
2. The indicator lamp glows whilst the motor is running.
3. Press the RED mushroom-head button to stop the main motor and also electrical supply to ancillary services.
4. Coolant pump ON/OFF switch.

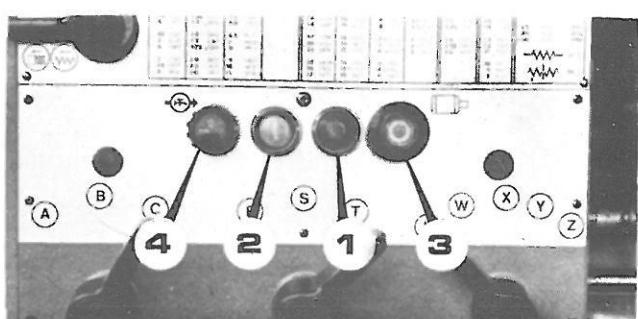


Fig. 6

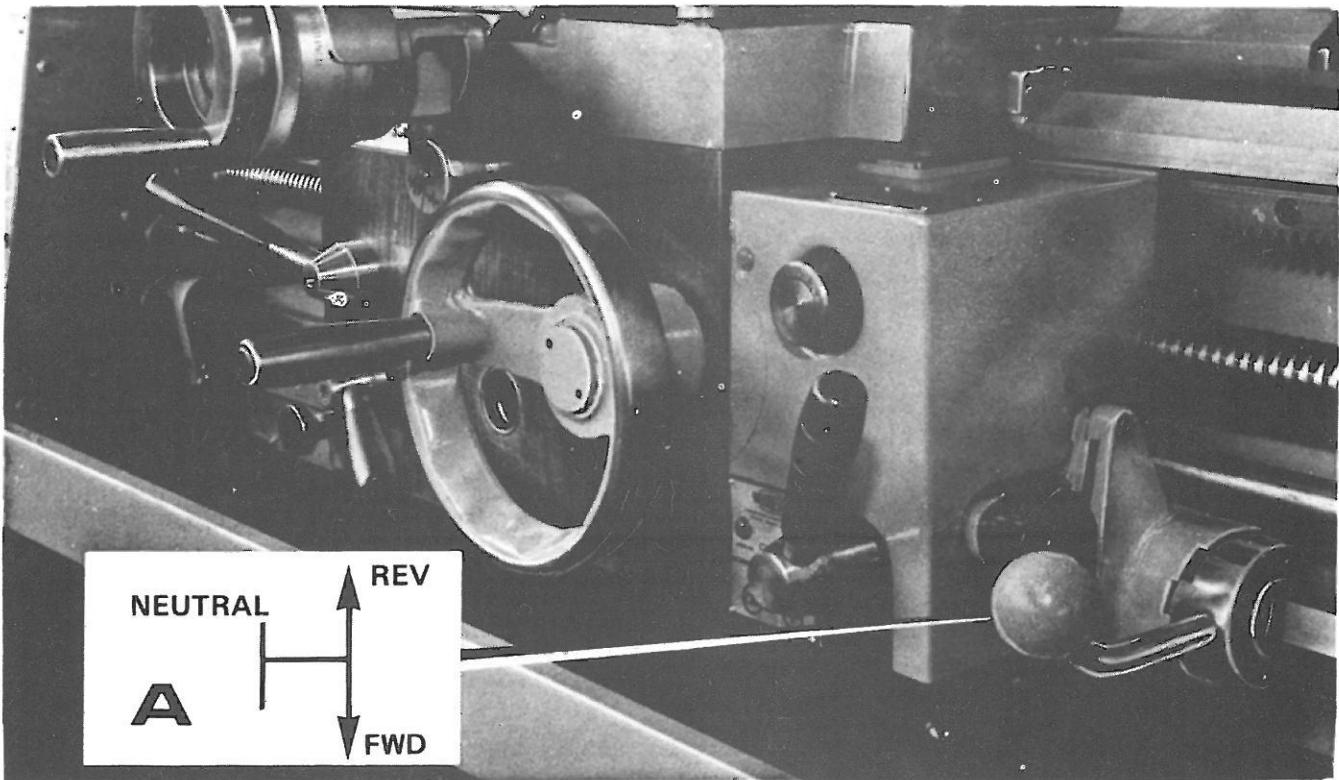


Fig. 7

#### SPEED CONTROLS

**Spindle Rotation** — selected by the apron lever (A) for forward and reverse rotation. With the main motor running move Lever (A) out then down for forward rotation, up for reverse.

Safety-gate location of the apron lever (A), prevents inadvertent operation.

**Footbrake:** A foot pedal between plinths operates the spindle brake and at the same time returns selector lever A to the central (disengaged) position.

Height of the foot pedal depends upon the position of a pin engaged in the bar (Fig. 8); a choice of three positions is provided.

#### OPERATION

**Spindle speeds:** — Selected by the grouped dial controls on the headstock; see Fig. 9.

The sixteen available speeds are shown directly on the lever-operated dial (A) in four groups, each of which is divided into four spindle speeds. Rotate this dial to bring the required speed group uppermost and opposite the fixed section (B). Now rotate lever (C) until the appropriate coloured arrow is aligned with the required speed on dial (A).

**DO NOT MOVE SPEED SELECTOR CONTROLS WHILST THE SPINDLE IS ROTATING.**

To free the spindle for hand rotation set any one of the blank spaces of dial (A) to the mid-position of the fixed section (B).

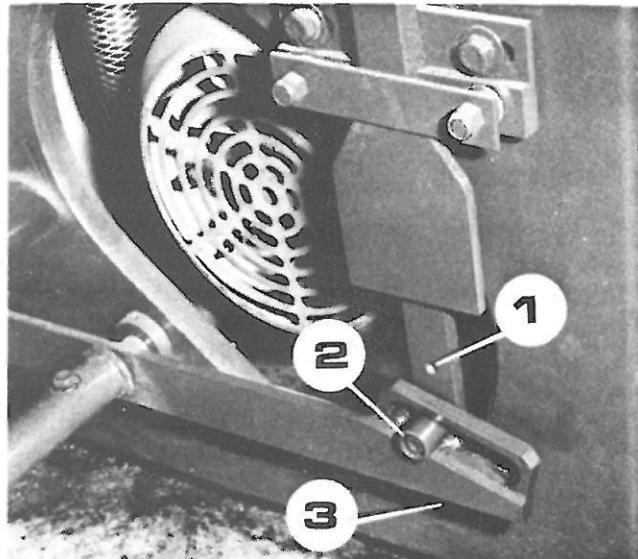


Fig. 8

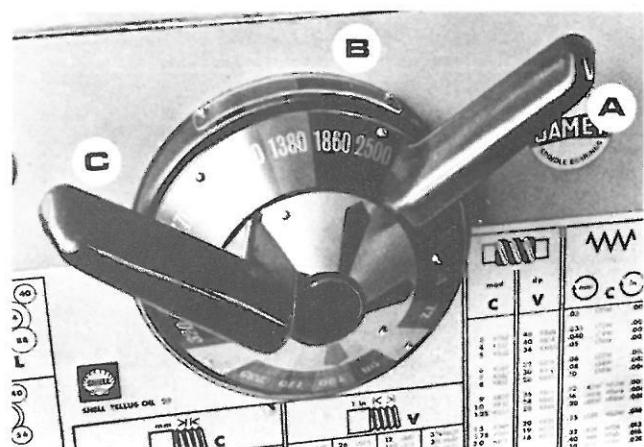
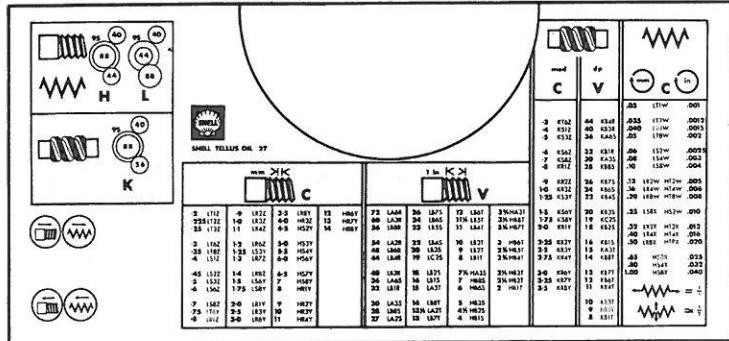


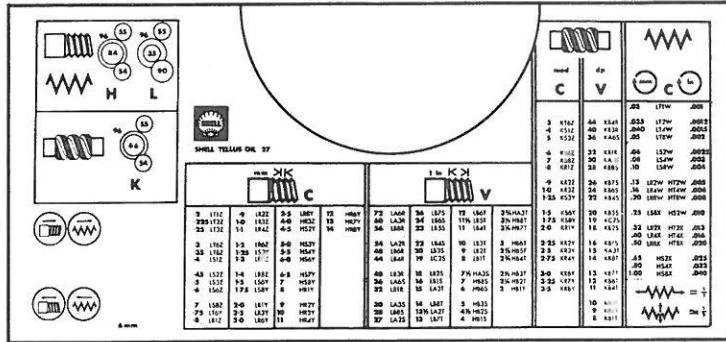
Fig. 9



ENGLISH

Fig. 10

METRIC



## THREAD AND FEED SELECTION

All threads and feeds given on the data plate fitted at the front of the headstock, are directly available from the gearbox, see Fig. 10, with the settings of control levers shown in Fig. 11.

The end gear train should be arranged as in the diagrams (H, L or K) shown on the data plate for either English or Metric pitches.

**Do not select the course range (H or K) at spindle speeds above 770 rev/min.**

### Threads available

45 Whitworth threads	2 to 72 t.p.i.
39 Metric threads	0·2 to 14mm pitch
18 Metric modules	0·3 to 3·5 mod.
21 Diametral pitches	8 to 44 D.P.

### Change Gears:

For any special threads not covered by the data plate, our Technical Department is available to specify the most convenient change gearing required.

**Feeds:** Sliding feeds per spindle revolution range from 0·001 to 0·040 in. (0·03 to 1·0mm).

Surfacing feeds are approximately half sliding feeds ('452 actual).

**Threading dial indicator — English:** To cut threads of even number per inch, close the leadscrew nut at any line on the dial; to cut threads of odd number per inch, close the leadscrew nut at any numbered line. Ensure that the appropriate dial line coincides exactly with the fixed point on each pass, see Fig. 12.

For metric thread cutting (and certain fractional English threads) the dial cannot be used. The leadscrew nut must be closed and the machine reversed by the control lever (A of Fig. 7) after each pass and tool withdrawal.

For D.P. and module pitches, keep leadscrew nut closed and operate machine as for metric threads.

**Threading dial indicator — Metric:** Supplied with lathes incorporating a metric leadscrew. This combination unit enables the majority of metric pitches shown on the data plate to be cut in a similar manner to that employed to cut English threads on lathes fitted with an English leadscrew, releasing the leadnut after each pass.

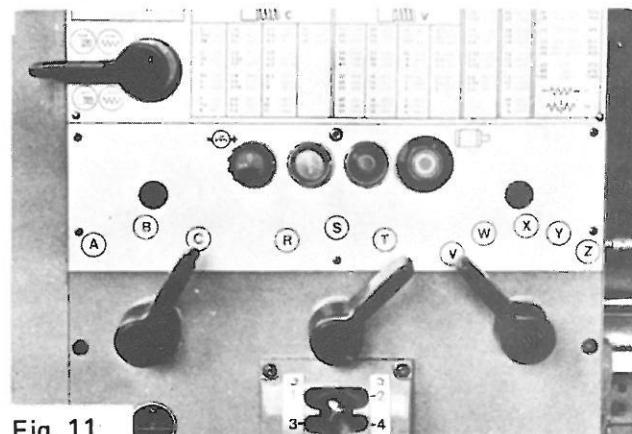


Fig. 11

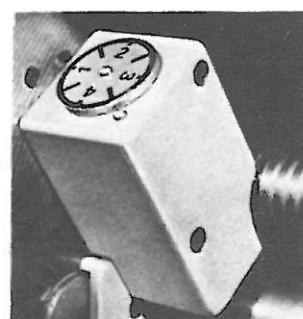


Fig. 12

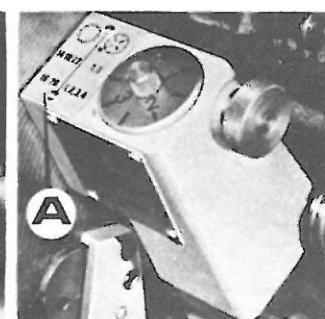


Fig. 13

The correct pinion must be engaged with the leadscrew to suit the pitch to be cut. For clarity, all pitches available through the gearbox have not been shown on the indicator plate (A of Fig. 13) but any pitch may be cut providing it is divisible into the pinion selected e.g. 0.4mm is divisible into 16T.

Using the 14, 18 or 22T pinion the leadscrew nut may be closed as dial line 1 or 3 pass the datum mark. Using the 16 or 20T pinion the leadscrew nut may be closed as any numbered line is passing the datum.

Unnumbered lines on the dial are not used.

Metric pitches not divisible into the pinions supplied, D.P. module and English threads can only be cut with the leadnut closed throughout.

#### APRON CONTROLS

In addition to handwheel operation, the saddle can be power-operated through controls on the front of the apron (see Fig. 14).

The push-pull knob (A) selects power surfacing or sliding feeds; push in for sliding, pull out for surfacing operation.

Lever (B) is moved up for power feed engagement, down for manual operation on right hand aprons and down for power feed, up for manual operation on left hand aprons. (See pages 14 and 15 Spares Section)

Lever (C) is pressed downward to engage the leadscrew nut for screw-cutting (see also 'Threading dial indicator' above).

**Feed-trip adjustment:** A trip mechanism is incorporated in the apron, enabling saddle and/or cross-slide to be fed up to fixed stops. Trip loads can be set high or low by adjustment of the knurled handwheel on the side of the apron.

The apron handwheel may be disengaged from its gear train during power operation or when screwcutting, by pulling the handwheel outwards to another spring-ball detent.

#### CROSS-SLIDE AND TOPSLIDE — see Fig. 14

A solid topslide is fitted as standard to the cross-slide, carried on a rotatable base which is marked 0-90-0-90 deg. for accurate indexing.

Handwheel dials are graduated in inch or metric divisions to suit the operating screw and nut fitted.

#### TAILSTOCK

Can be set over for the production of shallow tapers, or for re-alignment by adjustment of the screws (A) at each side of the base — see Fig. 16. Release the clamping lever and loosen screws beneath the tailstock which hold base to main casting, then retighten and check after adjustment of set-over.

Free the tailstock for movement along the bed by pushing the clamp lever (B). The tailstock barrel is locked by lever (C).

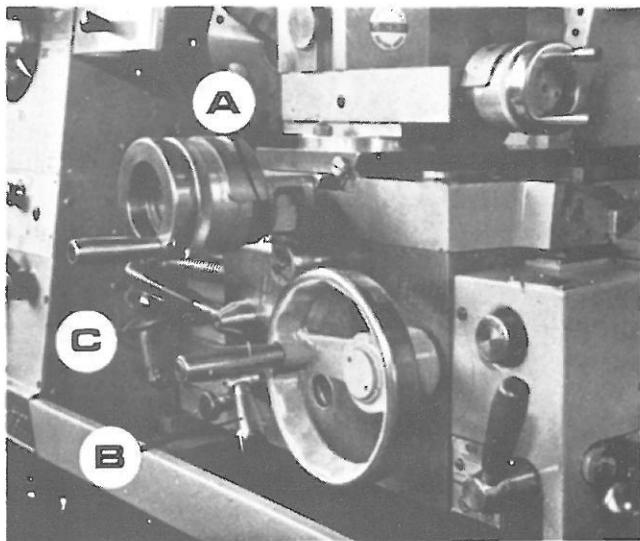


Fig. 14

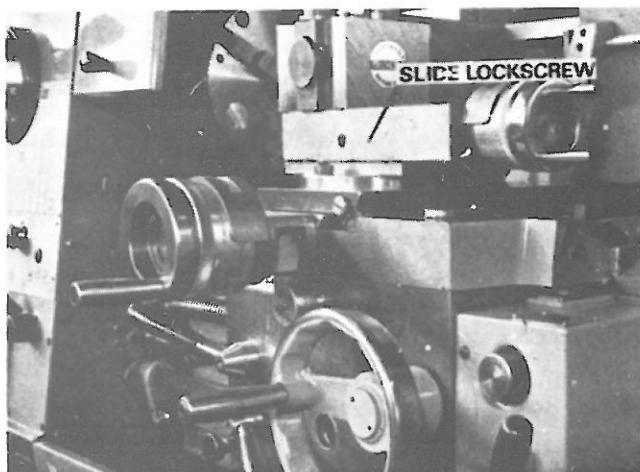


Fig. 15

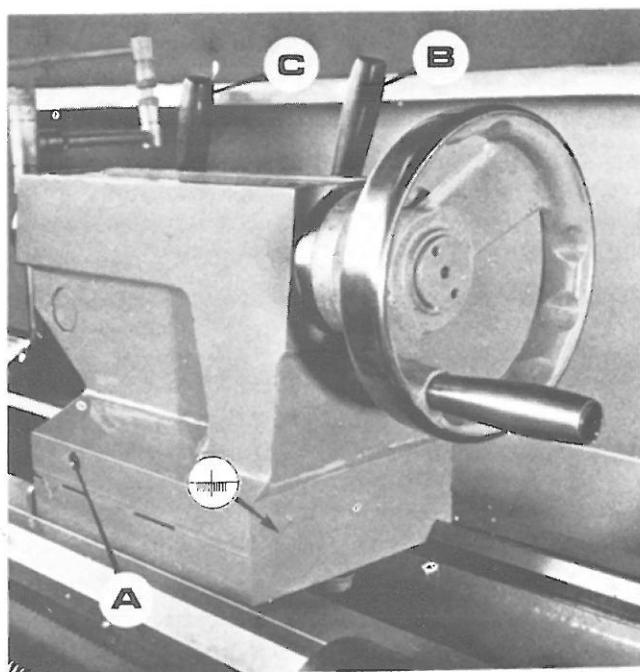


Fig. 16

## LATHE ALIGNMENT

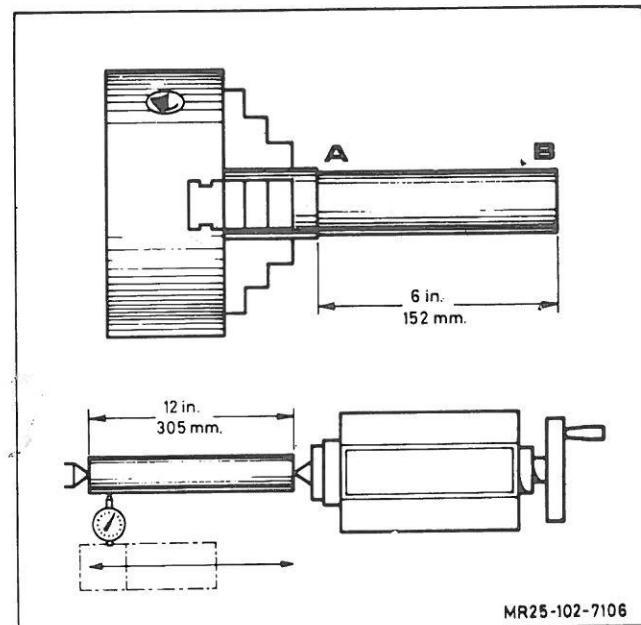
With the lathe installed and running, we recommend a check on machine alignment before commencing work. Check alignment and levelling at regular periods to assure continued accuracy.

**Headstock check:**— Take a light cut over a 6 in. (150mm) length of 2" dia. (50mm) steel bar held in the chuck (but not supported at the free end). Micrometer readings at each end of the turned bar (at A and B in Fig. 17) should be the same.

To correct a difference in readings, slacken the four headstock screws (A), shown in Fig. 18, then adjust the set-over pad (C) to pivot the headstock about the dowel (B). Tighten all securing screws after each adjustment and repeat the test cut and alignment check until the micrometer readings are identical.

**Tailstock check:**— Using a 12 in. (305mm) ground steel bar between centres, check alignment by fitting a dial test-indicator to the topslide and traversing the centre of the bar (Fig. 17).

To correct error, release the tailstock clamp lever (B) and adjust the two screws (A) shown in Fig. 16 after releasing the screws beneath the tailstock base.



MR25-102-7106

Fig. 17

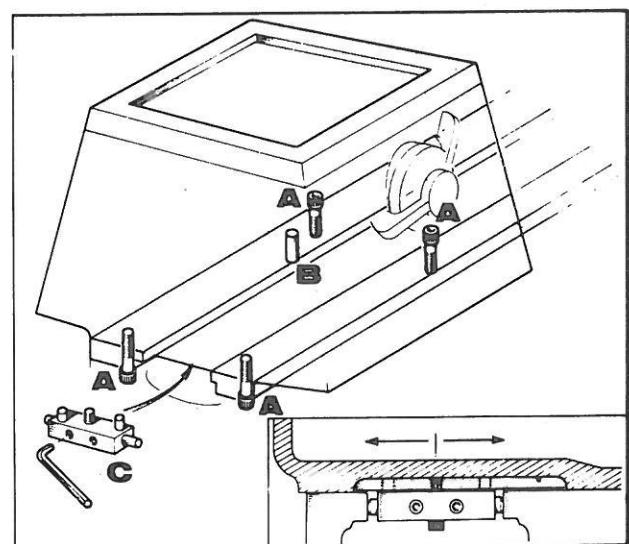


Fig. 18

# SERVICING & MAINTENANCE

## END-GEAR TRAIN

Drive from headstock to gearbox is transmitted through a gear train enclosed by the headstock endguard. Intermediate gears are carried on the adjustable swing-frame (A) shown in Fig. 19.

Gears must be thoroughly cleaned before fitting and backlash should be maintained at :005 in. (127mm) for correct mesh.

Lubricate gears regularly with thick machine oil or grease, and apply oil can to the intermediate gear spindle.

## DRIVING BELTS

To alter belt tension, remove the cover plate behind the headstock plinth and adjust the two screws (A) on the hinged motor platform (see Fig. 20). Ensure that the motor axis is kept level.

Light finger-pressure at a point mid-way between motor and headstock pulleys should produce approximately  $\frac{3}{4}$  in. (19mm) movement of each belt when under correct tension.

**NOTE:** The oil pump driving belt is automatically tensioned by its own spring-loaded jockey pulley.

## OVERLOAD PROTECTION

The transmission is protected against severe overload by shearpins fitted into the gearbox and leadscrew drive shafts. See Fig. 21 and 22.

## SHEARPIN REPLACEMENT

**Gearbox Drive Shaft (Fig. 21)** Isolate electrical supply and remove endguard. Remove driven gear (A) and spacer (B) exposing bush (C). Withdraw sheared pin heads from bush and remove bush. Push rest of shear pin through the locating hole (E) in drive shaft.

Replace bush (C) aligning holes in bush and driveshaft. Insert new pins and refit spacer (B) and change gear (A).

## LEADSCREW DRIVE SHAFT (Fig. 22)

Disengage drive to the leadscrew (F) by setting the right-hand lever of the gearbox to position R. Then rotate the flanged shaft (A) carrying the broken pin

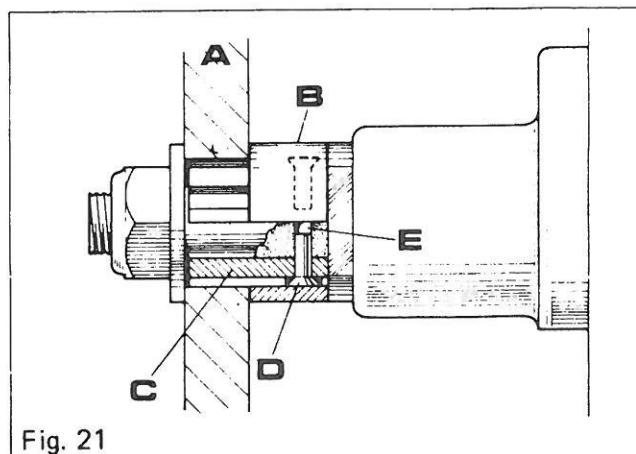


Fig. 21

to the slot at the bottom of the gearbox housing (B). Press the springloaded collar (C) to the right and push the pin into the slot. Rotate the shroud washer (D) to expose the pin head for removal from the lead-screw collar (C).

Align the holes in flanged-shaft (A) and collar (C) then insert a new pin (E) and rotate the shroud washer to cover and retain the new shearpin. Use only correct replacement shearpins

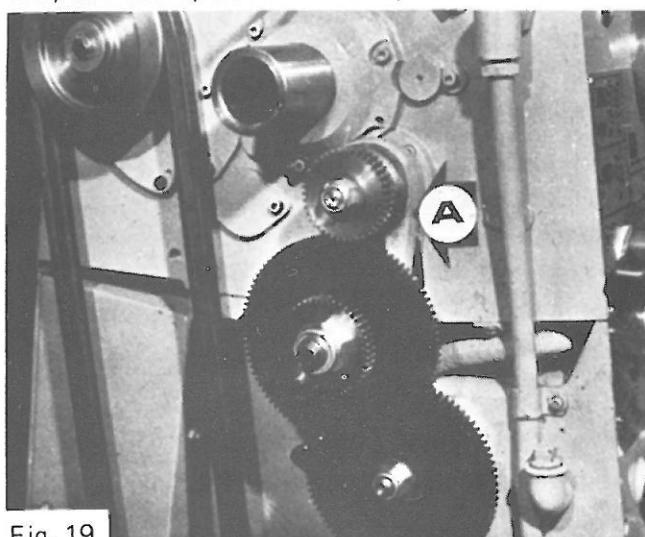


Fig. 19

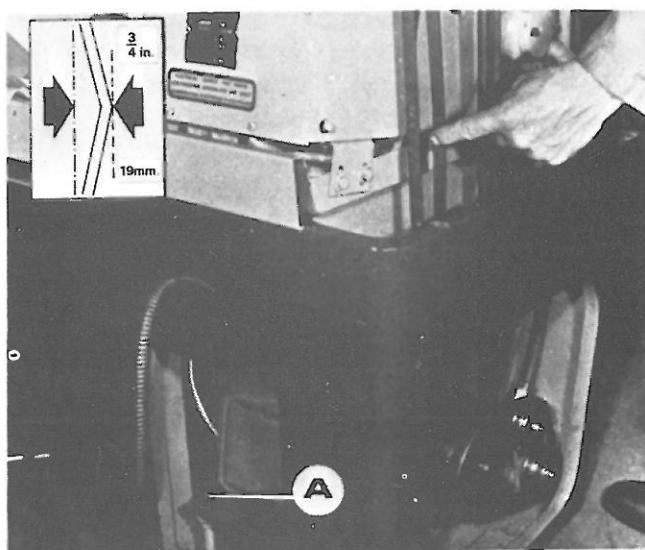


Fig. 20

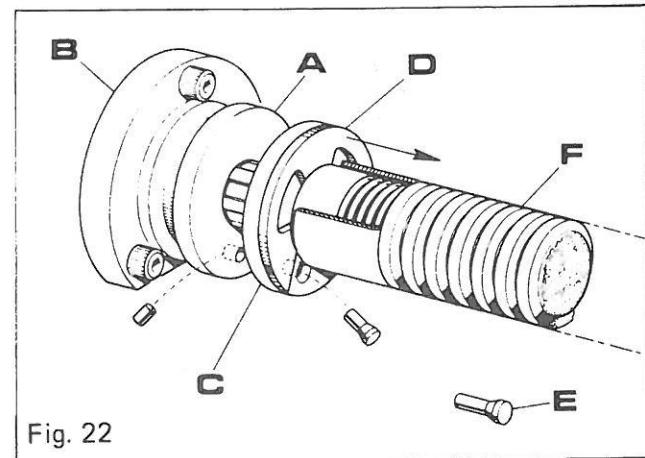


Fig. 22

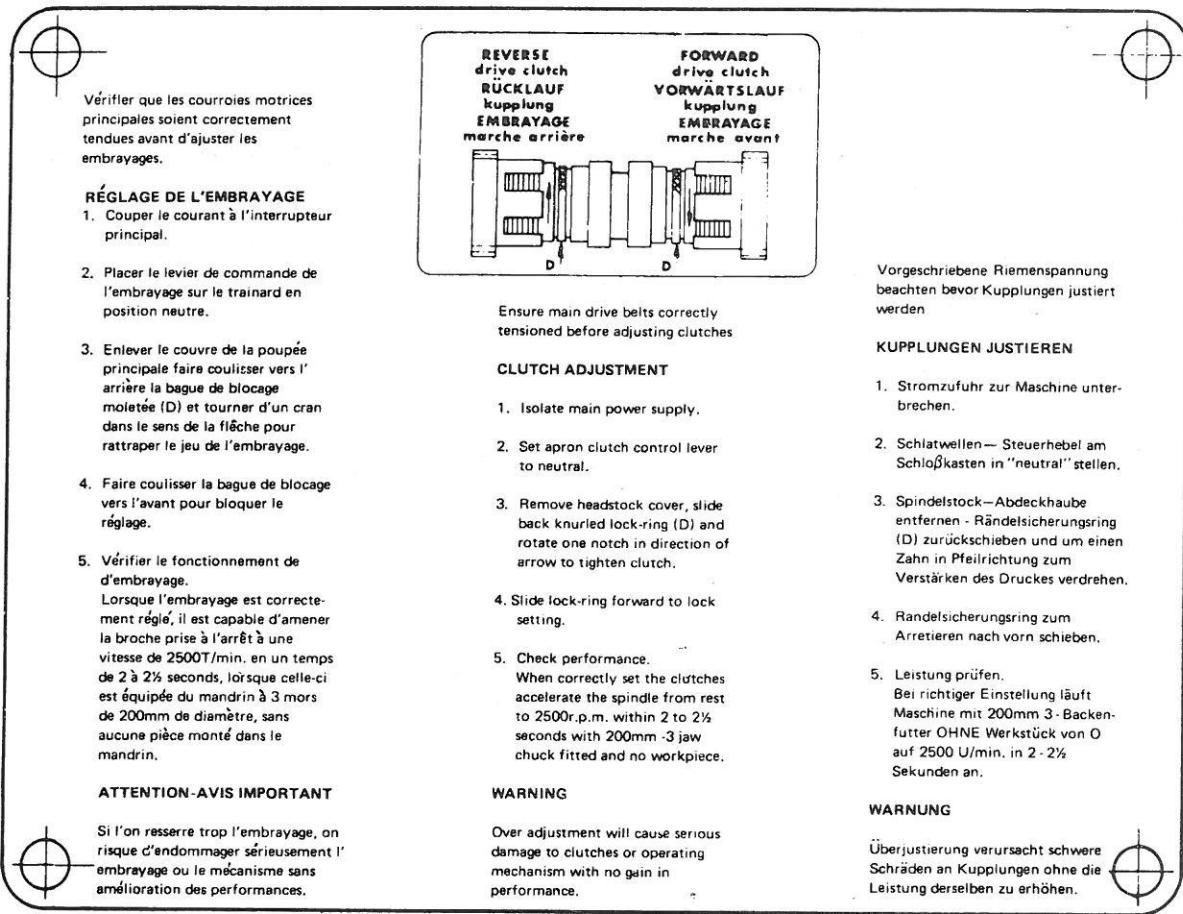


Fig. 23

## DRIVE CLUTCHES

Two multi-plate clutches (A and B of Fig. 23) provide drive for forward and reverse headstock spindle rotation.

Initial bedding-in of the friction surfaces will usually necessitate some adjustment. To adjust clutches.

- Isolate the lathe from mains power supply at the switch on rear electrical panel then disengage the clutches by setting red-handled apron control to the central position.
- Remove the cover plate from top of headstock for access to both clutches.
- Slide back knurled lock-ring from each clutch in turn and rotate it one notch at a time in direction of arrow (Fig. 23) to tighten the clutch. Slide lock-ring back into position to lock this setting.
- Refit cover plate and check performance. When correctly set, clutches should accelerate the spindle from rest to 2500 rev/min. within 2 – 2½ seconds; when fitted with a standard 200mm 3-jaw chuck without work-piece.

**AVOID OVER ADJUSTMENT WHICH MAY CAUSE SERIOUS DAMAGE TO CLUTCHES OR OPERATING MECHANISM WITH NO GAIN IN PERFORMANCE.**

## CROSS-SLIDE NUT

This is adjustable for elimination of slackness which may develop in service. Reduce backlash by loosening the rear caphead screw (A) shown in Fig. 24 then carefully screw in the centre screw (B) to adjust a wedge within the split nut. Make only slight alteration at a time and operate the cross-slide repeatedly through full travel to be sure of smooth action.

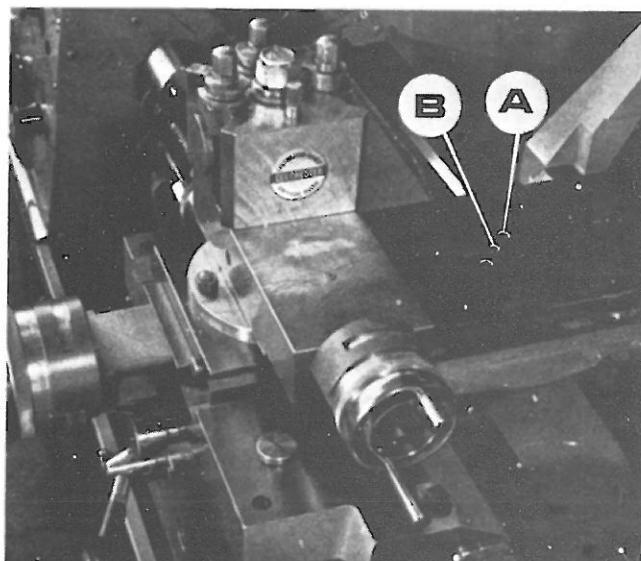


Fig. 24

## LUBRICATION SYSTEM

Headstock bearings and gears are supplied with oil delivered by an impeller-type pump attached to a tank in the head-end plinth. A distributor within the headstock supplies oil to the drive clutches, bearings and gears. The oil pump is driven by a vee-belt from the main motor, insuring continuous supply whilst the main motor is running; evidence of supply is shown through an oil sight window in the headstock front face. A self-adjusting jockey pulley ensures constant belt tension.

A large-bore pipe returns oil from the bottom of the headstock into the tank. Ensure that the oil level in the tank is kept topped up to the mark on the filler-cap dipstick, see Fig. 24. Check oil level weekly and change the oil every year using Shell Tellus Oil 27 or equivalent grade (see below). Tank capacity is  $2\frac{1}{2}$  gallons.

To empty the tank, set apron control lever to central position and stop the main motor. Detach the delivery pipe at the headstock, remove pipe cleats and with the pipe directed into a suitable container restart the main motor so causing the pump to empty the tank contents. The small quantity of oil left in the tank below the level of the pump intake can then be drained off through the drain plug projecting from the bottom of the tank.

**NOTE: THE USE OF INCORRECT GRADES OF OIL IS LIABLE TO CAUSE DAMAGE THROUGH OVER-HEATING.**

## GEARBOX

All gears are splash lubricated from an integral oil bath. An oil level sight window is furnished in the front face of gearbox. Top-up or refill gearbox with Shell Tellus Oil 27 through filler elbow (F). See Fig. 25.

Approximate quantity of oil required is 2 pints.

**NOTE:** Use only clean container for refilling or topping up oil level.

To drain gearbox, unscrew drain plug (D) in end of gearbox casting.

Where Shell Tellus 27 Oil is not obtainable, use a grade with the following characteristics:—

Specific gravity at  $20^{\circ}\text{C}$  0.870

Flash point closed  $210^{\circ}\text{C}$  ( $410^{\circ}\text{F}$ )

Pour point  $-29^{\circ}\text{C}$  ( $-20^{\circ}\text{F}$ )

Viscosity Redwood No. 11  $70^{\circ}\text{F}$  — 320 secs.

$140^{\circ}\text{F}$  — 68 secs.

$200^{\circ}\text{F}$  — 41 secs.

Viscosity Engler degrees 10.5 at  $20^{\circ}\text{C}$

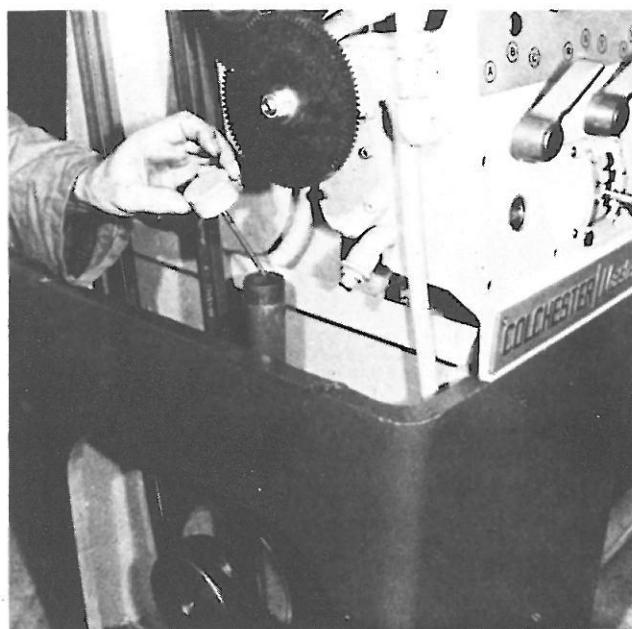


Fig. 25

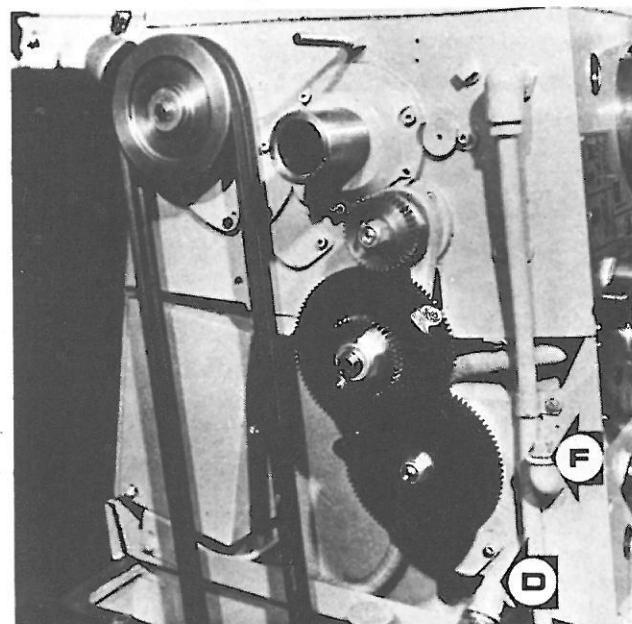


Fig. 26

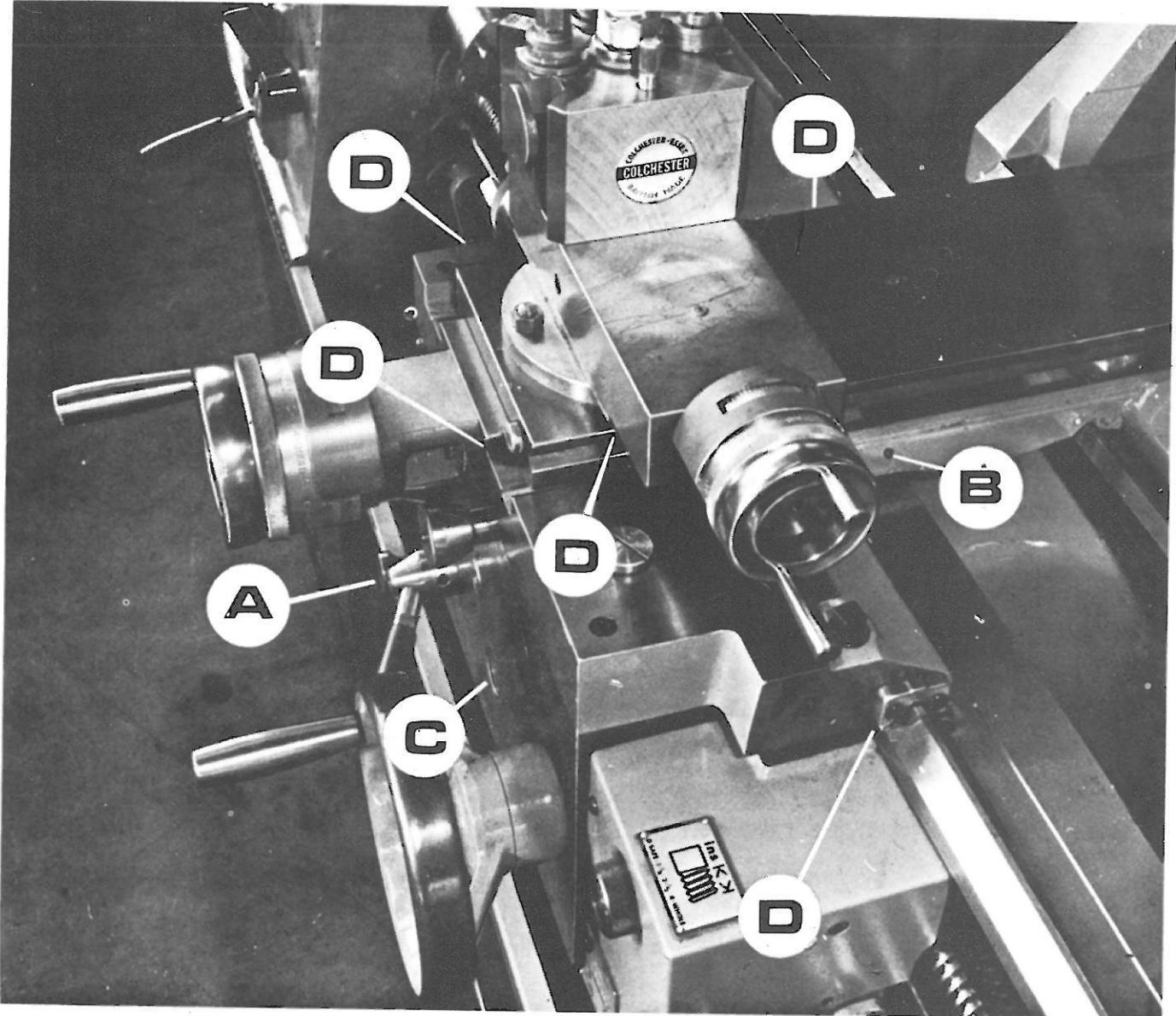


Fig. 27

### GENERAL LUBRICATION

**Apron and Slideways.** (Fig. 27) A manually operated lubricating pump (A) is incorporated into the apron. Drawing oil from the apron reservoir it enables the operator to ensure that the slideways are kept adequately lubricated. The pump should be operated; before commencing work and occasionally during the work period, until oil flows from the tell tale hole (B) in the carriage saddle, indicating that the system has received a full supply of oil. Should no oil appear at (B) refill the reservoir to the level of the oilsight (C) with Shell Tonna Oil 33.

### SLIDEWAYS ATTENTION

Ensure that slideways are thoroughly cleaned and lubricated before attempting adjustment. Then reset the gibbs by slackening the rear gib screw and tightening the front screw, a little at a time.

Check constantly for smooth action throughout full slide travel; avoid over-adjustment which can result in increased wear-rate and stiff or jerky action.

### REGULAR ATTENTION

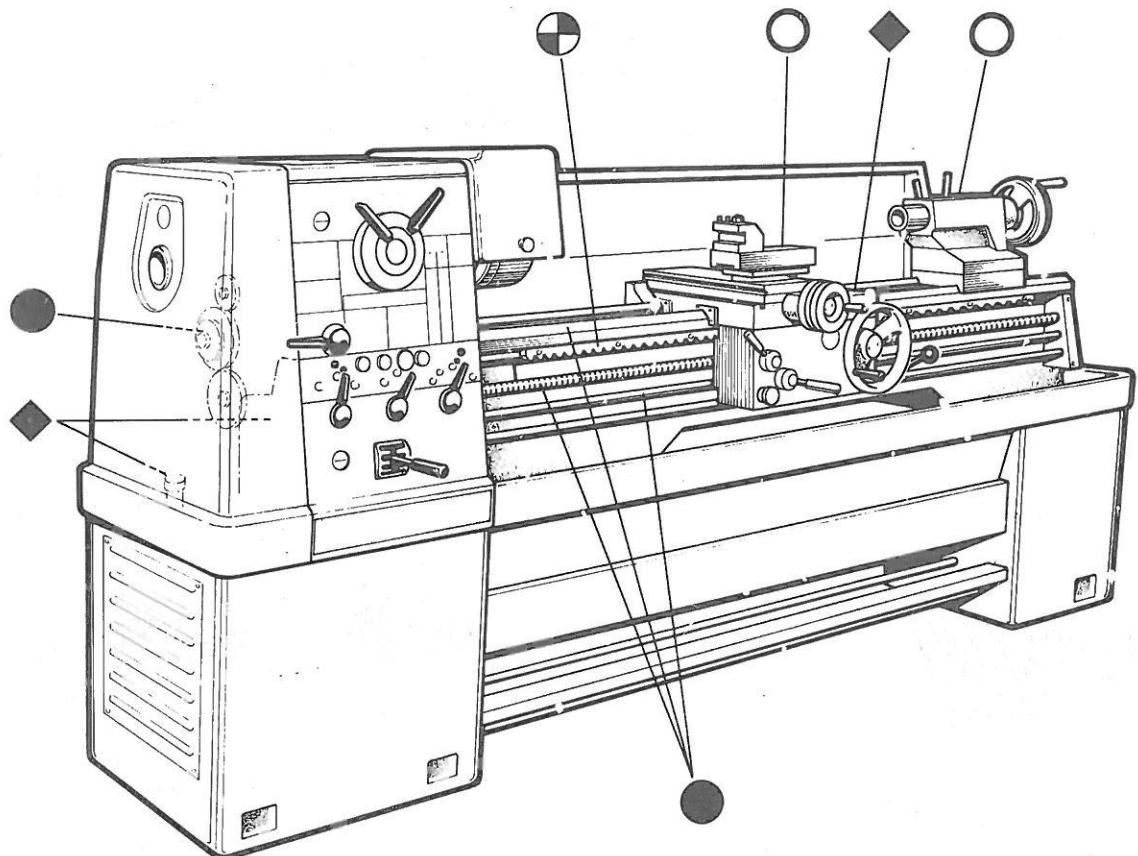
For trouble-free operation keep the lathe clean and regularly lubricated. The chart given in Fig. 28 shows the recommended attention and frequency.

Clean down and oil the bedways, leadscrew and feedshaft (including the tail-end bearings) once every day. In addition, apply oil daily to the intermediate gear spindle inside the end cover.

### SPINDLE BEARINGS

A pre-loaded spindle bearing arrangement is incorporated which does not require adjustment. Any wear which may take place is automatically compensated.

## LUBRICATION CHART



OIL EVERY DAY  
TÄGLICH ÖLEN  
GRAISSAGE TOUS LES JOURS

OIL EVERY WEEK  
WÖCHENTLICH ÖLEN  
GRAISSAGE CHAQUE SEMAINE

SMORJES VARJE DAG  
VOIDELLAAN OLJYLLA PAIVITTAIN

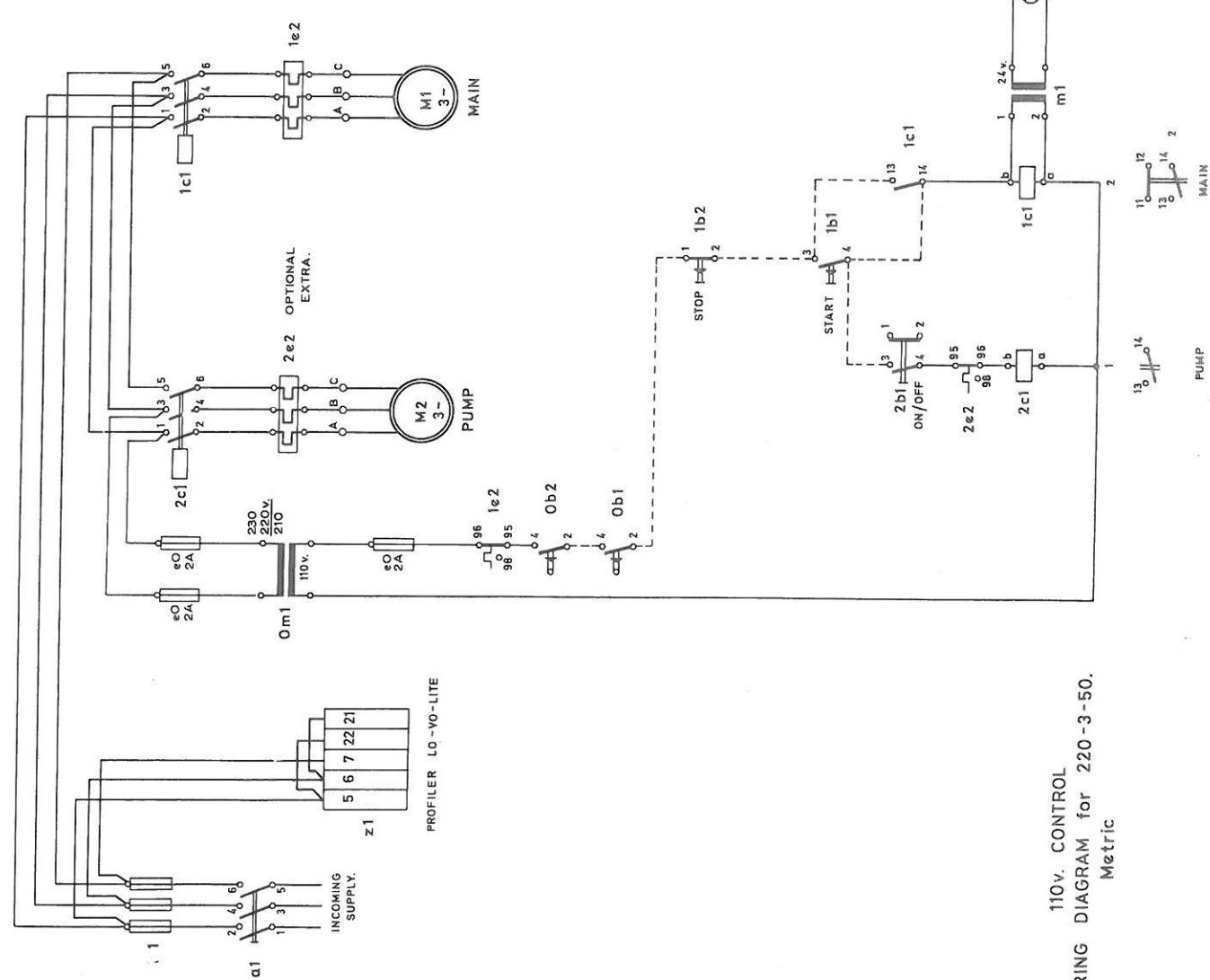
SMORJES VARJE VECKA  
VOIDELLAAN OLJYLLA VIKOITTAIN

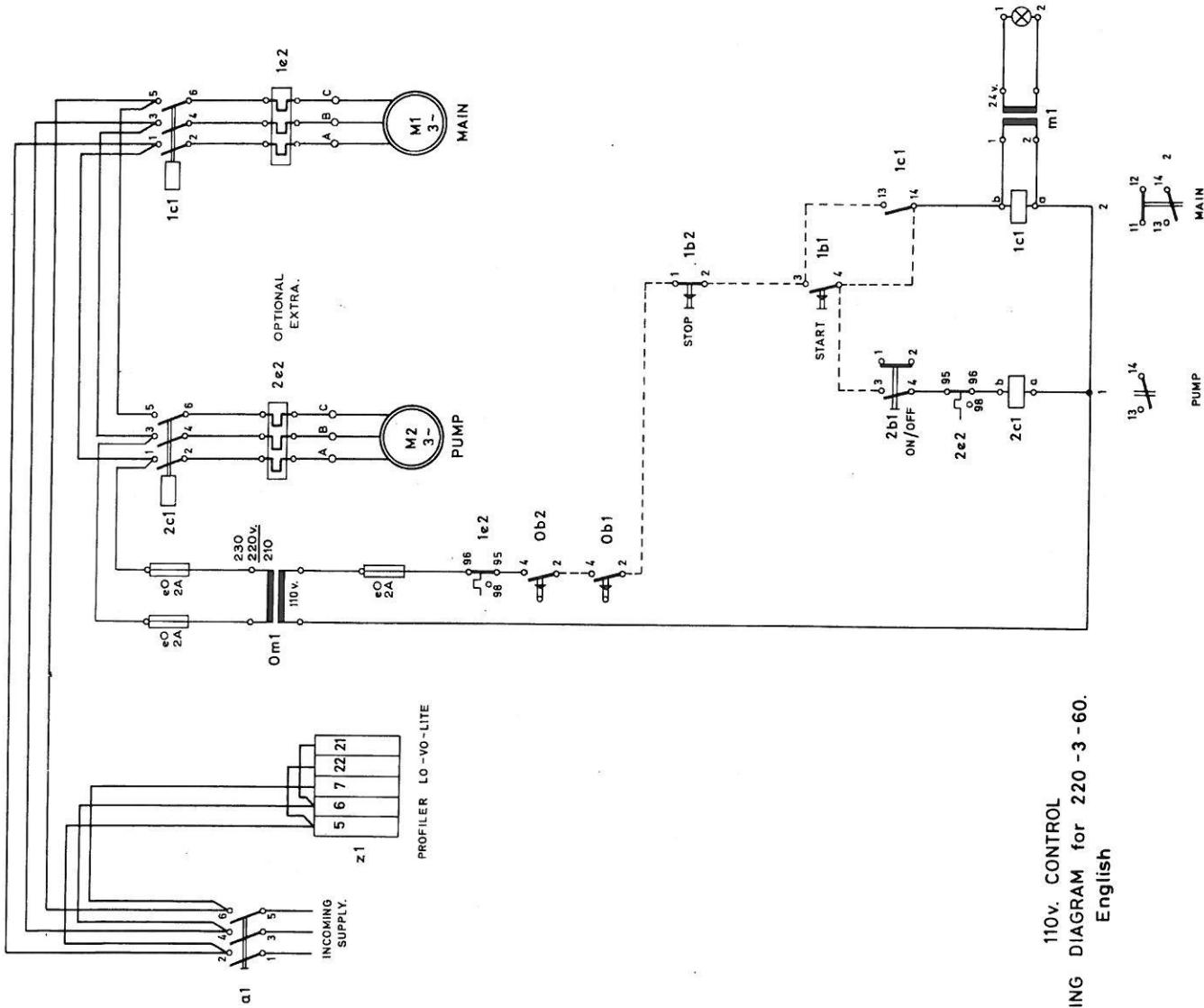
GREASE EVERY WEEK  
WÖCHENTLICH MIT FETT SCHMIEREN  
GRAISSEER CHAQUE SEMAINE

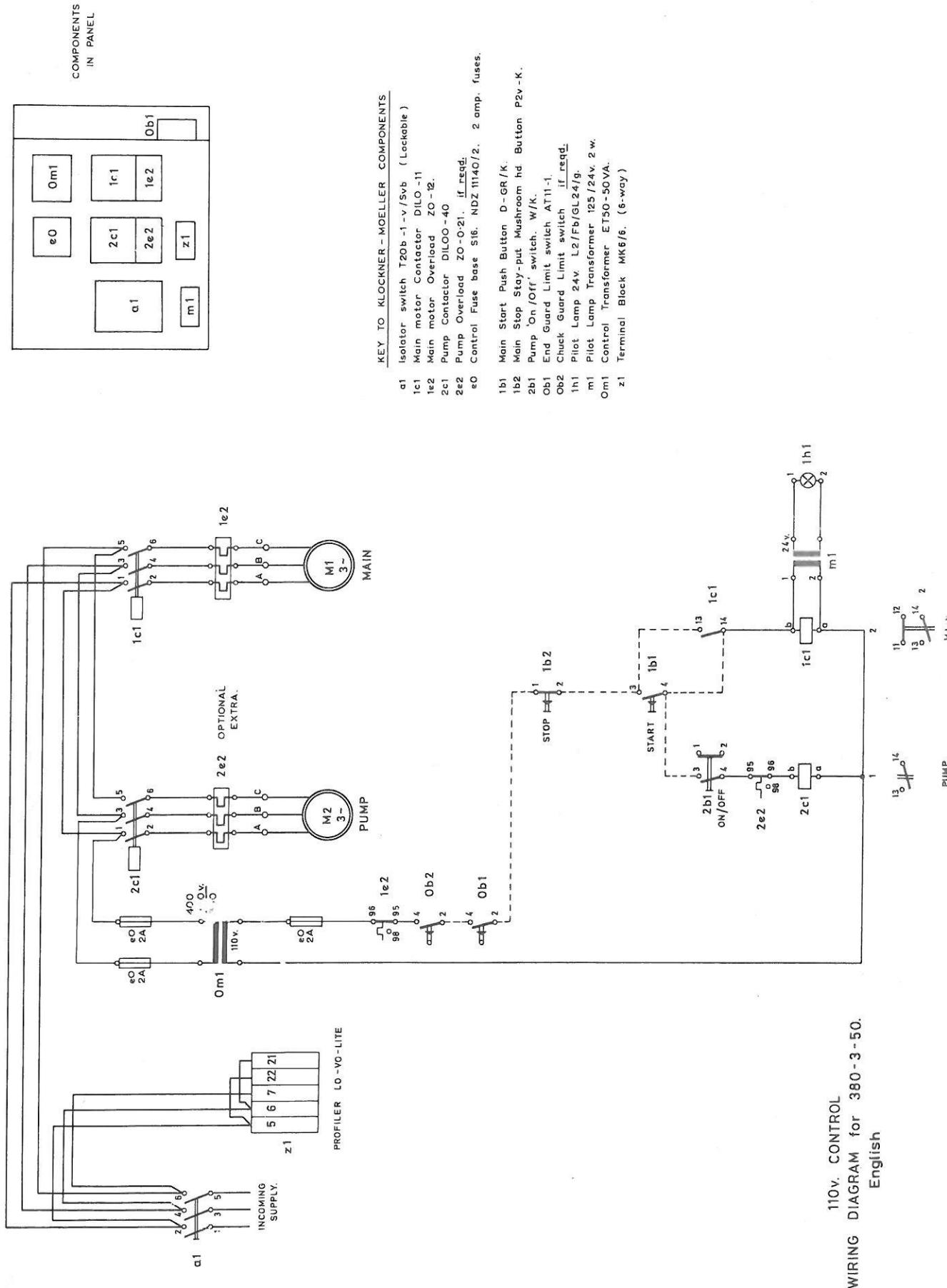
CHECK LEVEL & TOP UP EACH WEEK  
WÖCHENTLICH KONTROLIEREN UND AUFFÜLLEN  
VERIFIER ET FAIR LE PLEIN CHAQUE SEMAINE

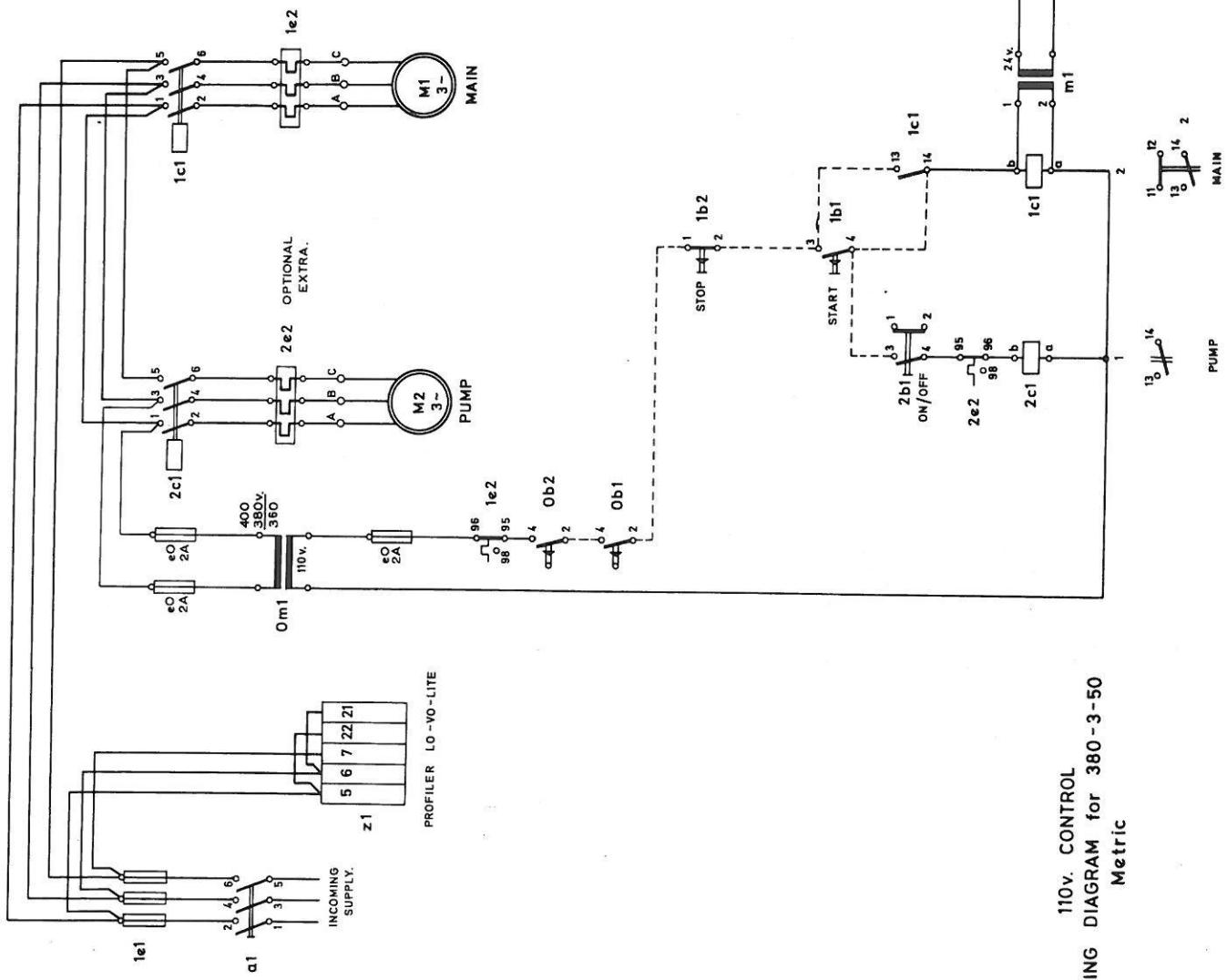
SMORJES VARJS VECKA MED FETT  
VOIDELLAAN VOITELURASVALLA  
VIKOITTAIN

KONTROLLERA OLJENIVAN  
OCH FYLL PA VID BEHOV  
TARKASTETAAN MAARA JA TAYTETAAN  
MERKKIVIIVAAN ASTI KERRAN VIKO SA

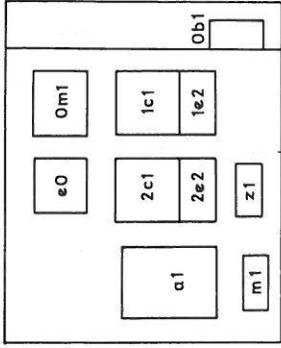






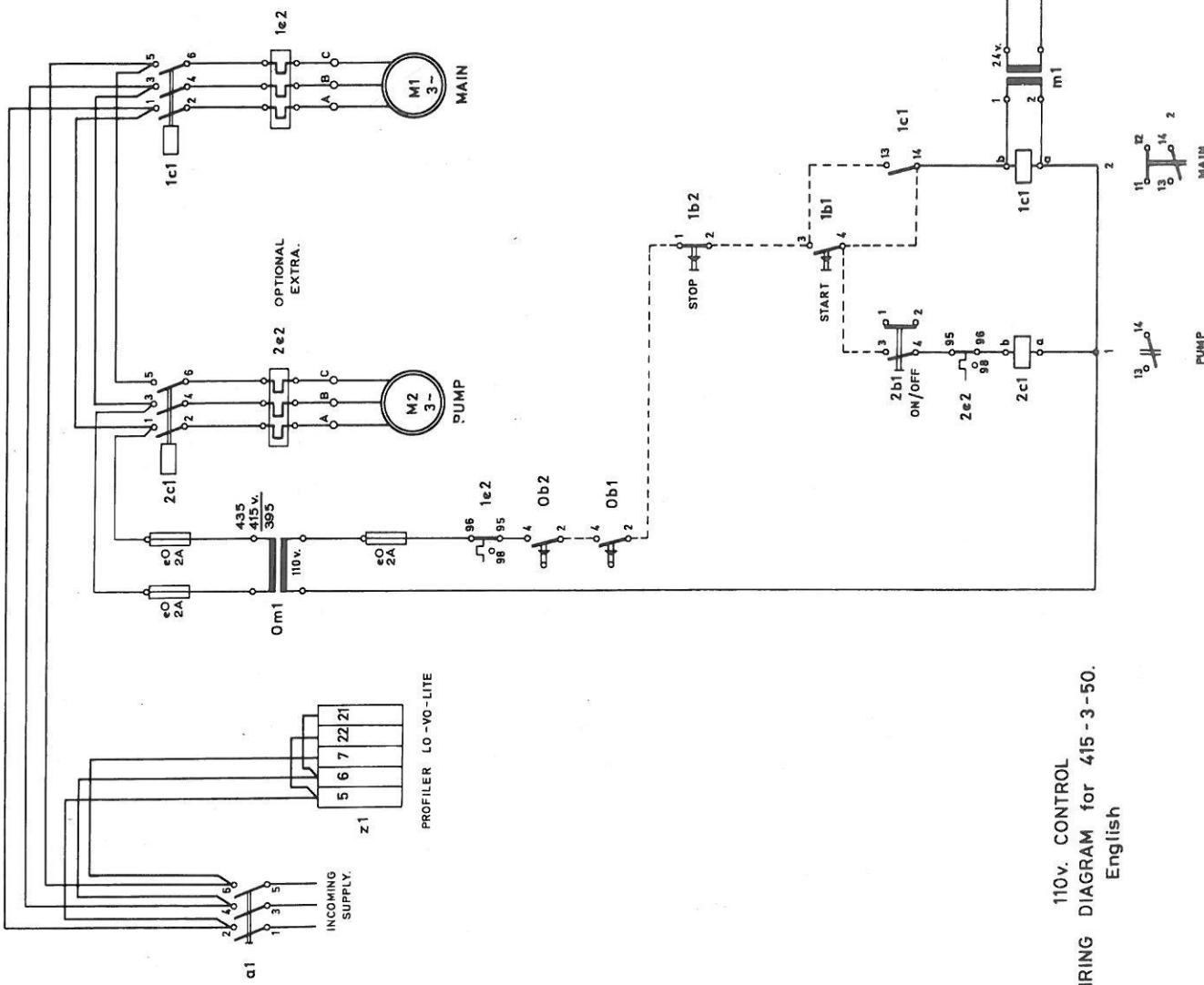


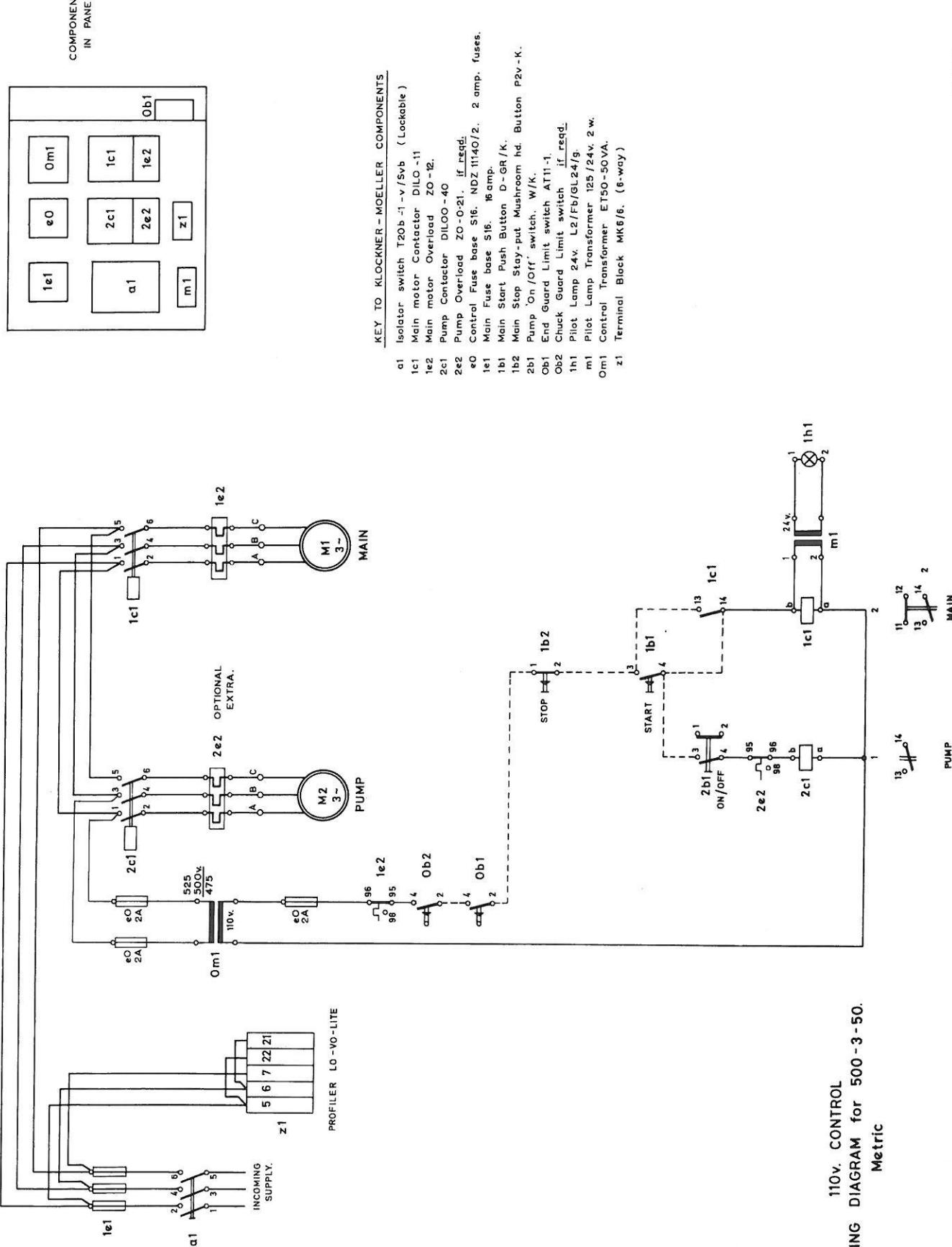
COMPONENTS  
IN PANEL

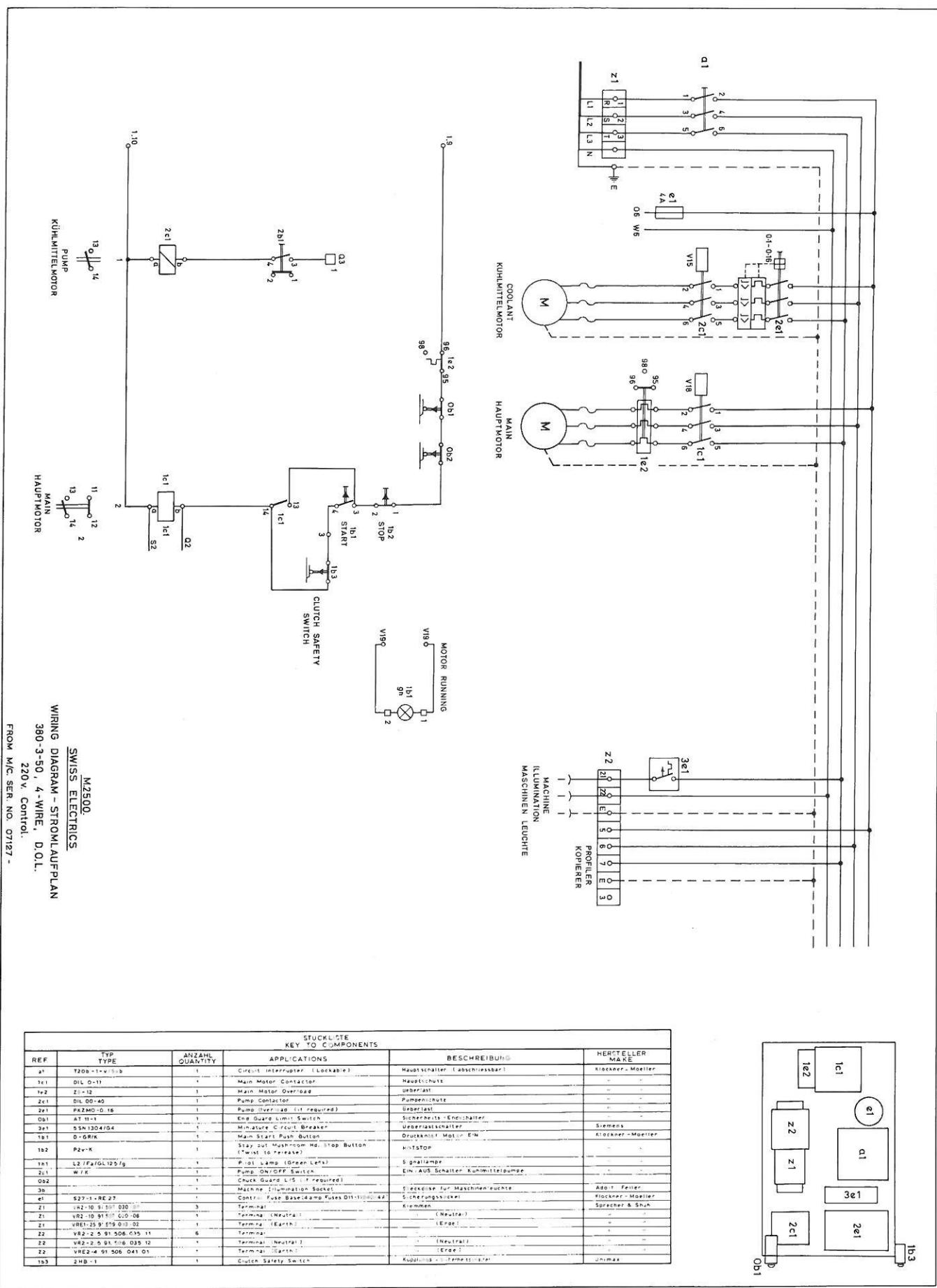


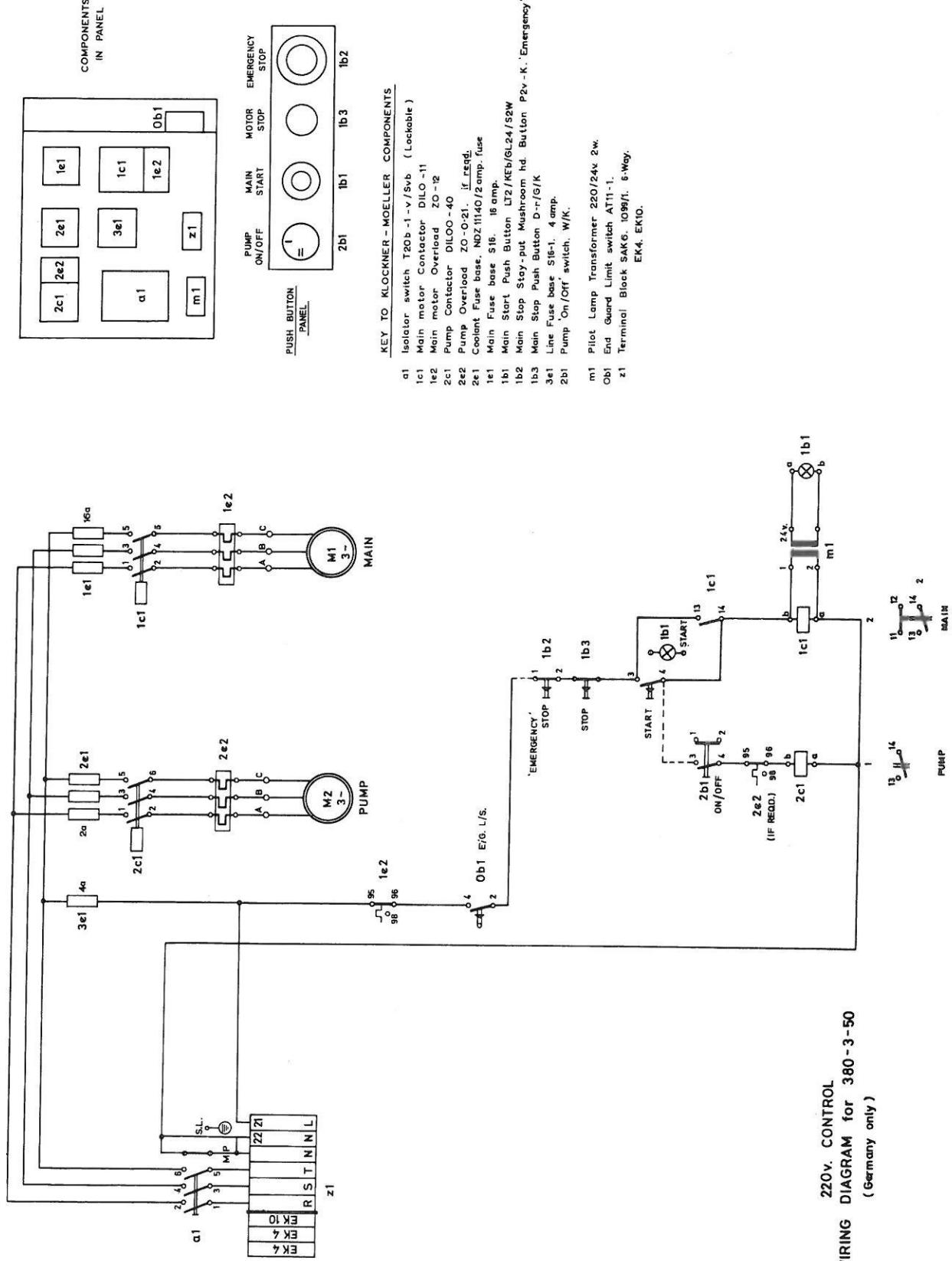
KEY TO KLOCKNER - MOELLER COMPONENTS

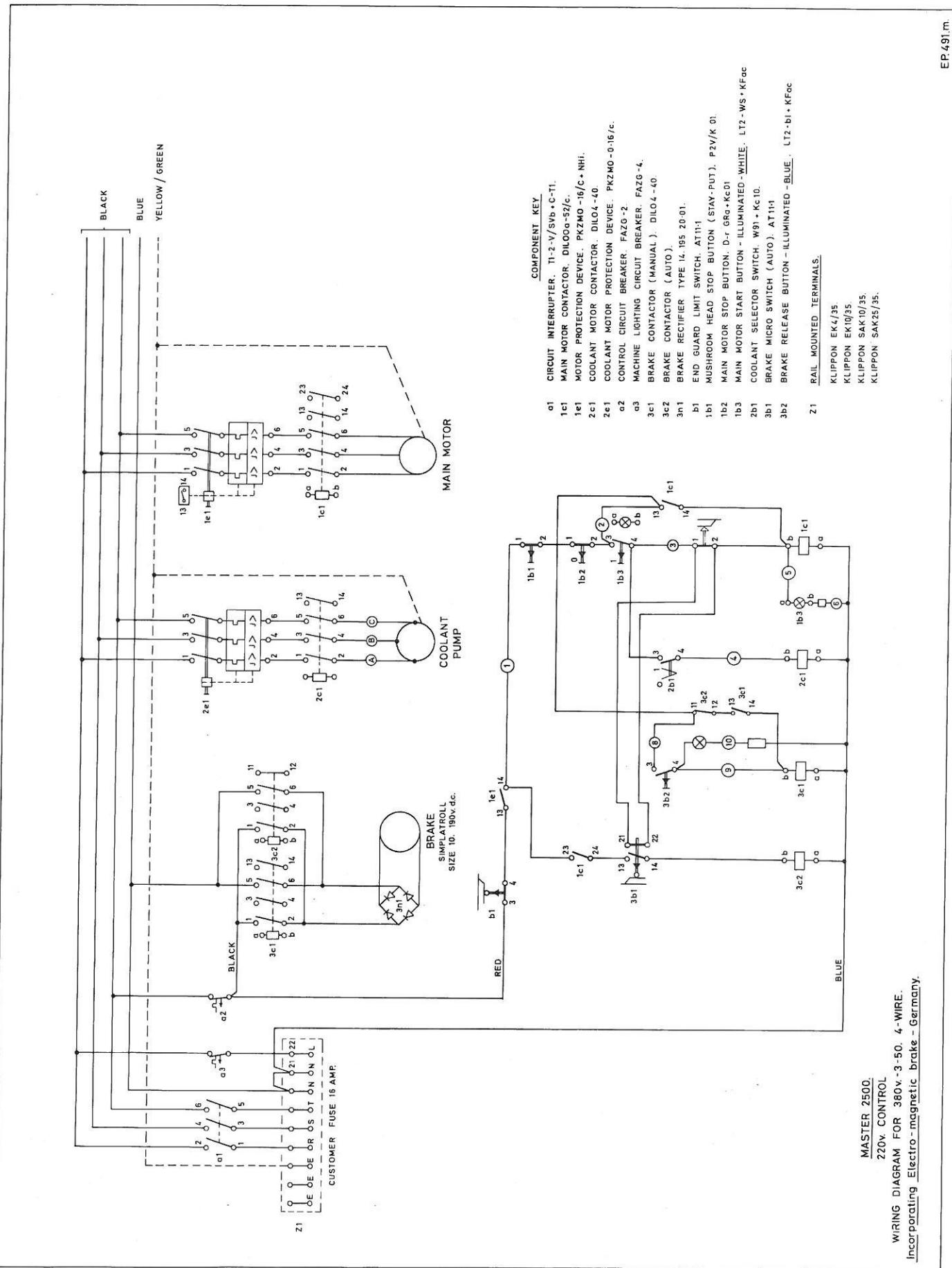
a1	Isolator switch T20b 1-v / Sv/b ( Lockable )
1c1	Main motor Contactor DIL0 -11.
1e2	Main motor Overload ZO -12.
2c1	Pump Contactor DIL00 -40
2e2	Pump Overload ZO -0-21, if reqd.
Ob1	Control Fuse base S16. NDZ 111A0/2. 2 amp. fuses.
1b1	Main Start Push Button D - GR / K.
1b2	Main Stop Stay - put Mushroom hd. Button P2v - K.
2b1	Pump 'On / Off' switch W/K.
Ob1	End Guard Limit switch AT11-1.
Ob2	Chuck Guard Limit switch if reqd.
1h1	Pilot Lamp 24v. L2/F2/G1.24/g.
m1	Pilot Transformer 125/24v. 2 w.
Om1	Control Transformer ET50 - 50VA.
z1	Terminal Block MK6/6. ( 6-way )

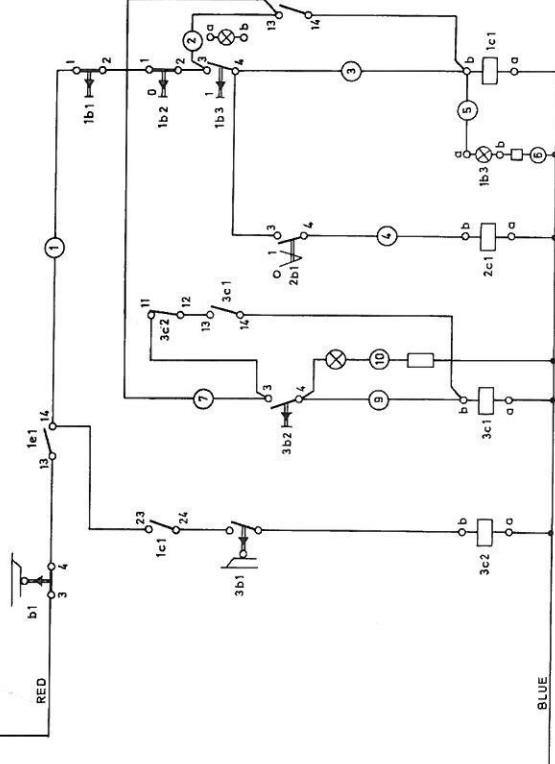
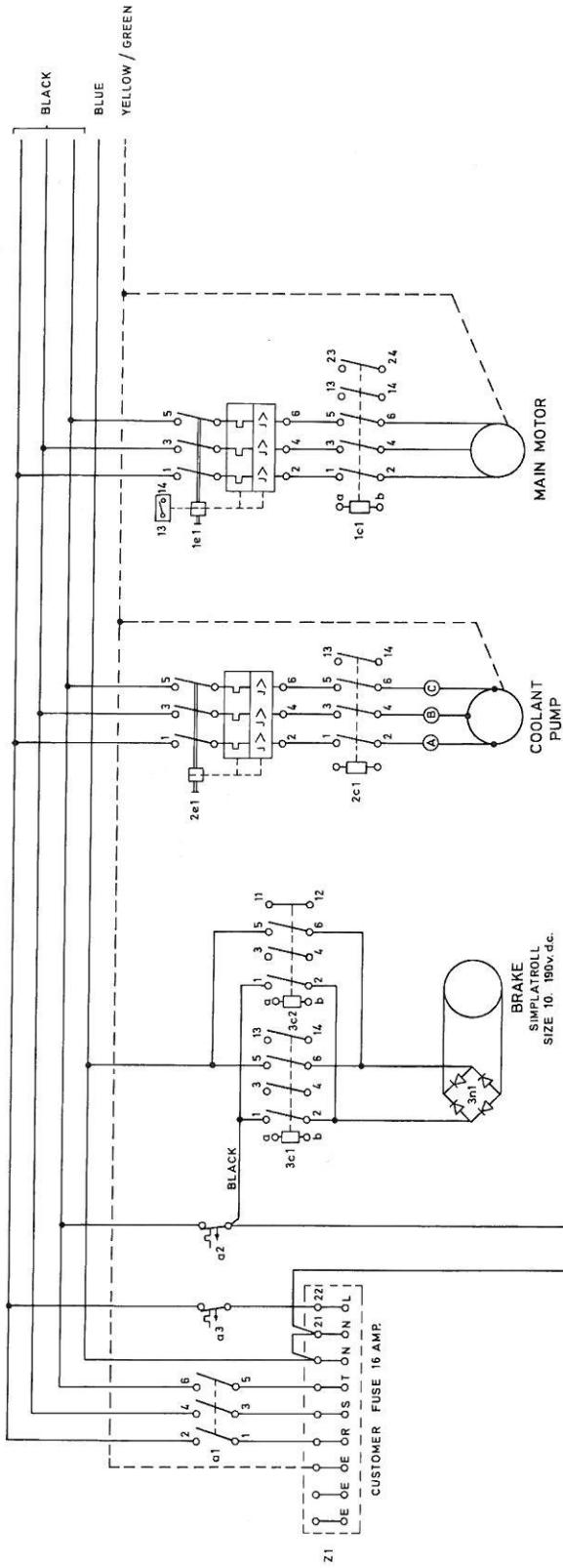












COMPONENT KEY

- |     |  |
|-----|--|
| a1  | CIRCUIT INTERRUPTER. TI-2-V/Syb * C-TI.        |
| 1c1 | MAIN MOTOR CONTACTOR. DILO0a-52/c.             |
| 1c2 | MOTOR PROTECTION DEVICE. PKZM0 -16/C * NHI.    |
| 2c1 | COOLANT MOTOR CONTACTOR. DILO4 -40.            |
| 2c2 | COOLANT MOTOR PROTECTION DEVICE. PKZM0 -01b/c. |
| a2  | CONTROL CIRCUIT BREAKER. FAZG -2               |
| a3  | MACHINE LIGHTING CIRCUIT BREAKER. FAZG -4.     |
| 3c1 | BRAKE CONTACTOR (MANUAL) DILO4 -40.            |
| 3c2 | BRAKE CONTACTOR (AUTO).                        |
| 3n1 | BRAKE RECIFIER TYPE 14.195 20.01.              |
| b1  | END GUARD LIMIT SWITCH. AT1-1                  |
| 1b1 | MUSHROOM HEAD STOP BUTTON (STAY-PUT). P2V/K 01 |
| 1b2 | MAIN MOTOR STOP BUTTON. D-r GRA + KF-01        |
| 1b3 | MAIN MOTOR START BUTTON - ILLUMINATED - WHITE. |
| 2b1 | COOLANT SELECTOR SWITCH. W91 + Kc 10.          |
| 3b1 | BRAKE MICRO SWITCH (AUTO). 2HBJ1               |
| 3b2 | BRAKE RELEASE BUTTON - ILLUMINATED - BLUE.     |
| 3b2 | BRAKE RELEASE BUTTON - ILLUMINATED - BLUE.     |
| 21  | RAIL MOUNTED TERMINALS.                        |
|     | KLIPPON EK4/35.                                |
|     | KLIPPON EK10/35.                               |
|     | KLIPPON SAK10/35.                              |
|     | KLIPPON SAK25/35.                              |

MASTER 2500.  
220v. CONTROL

WIRING DIAGRAM FOR 380v - 3-50. 4-WIRE.  
Incorporating Electro-magnetic brake - German



# COLCHESTER MASTER 2500

## CENTRE LATHE

## PARTS SECTION IMPORTANT

### IMPORTANT when ordering —

1. Quote component Order Number and description against each parts illustration for all component parts required.
2. Some parts are standard items which can generally be purchased locally; e.g. nuts, bolts, screws, washers. In such instances, the

- component Order Number and description is followed by a code reference which can be used with Appendix 1 to furnish a full specification.
3. Always quote lathe Serial Number in all parts orders or technical enquiries. This number is stamped into lathe bed at tailstock end.

## ERSATZTEILE

### WICHTIG

#### WICHTIG bei bestellung-

1. Teilnummer und Bezeichnung anhand der Illustration für sämtliche Teile unbedingt erforderlich.
2. Einige Ersatzteile sind Standardteile, welche generell auf dem hiesigen Markt beschafft werden können. In solchen Fällen hat die Ersatzteil-Bestellnummer und Bezeichnung eine Kenn-

- Nummer (z.B. 47-231) aus welcher in Anhang 1 detaillierte Angaben zu ersehen sind.
3. Immer die Serien-Nummer der Maschine bei sämtlichen Ersatzteil-Bestellungen oder technischen Anfragen angeben. Die Serien-Nummer ist im Drehbankbett am Reitstockende eingeschlagen.

## SECTION PIECES

### IMPORTANT

#### IMPORTANT pour passer commande:

- 1°) Indiquer le n° d'ordre de la pièce de rechange ainsi que la description figurant en regard de chaque pièce demandée.
- 2°) Certaines pièces sont d'un type standard et peuvent être achetées sur place comme: écrous, boulons, vis, lames. Dans ces cas le n° d'ordre

- est suivi d'une référence de commande (par exemple 47-231) qui sert à utiliser l'appendice 1 donnant une spécification complète.
- 3°) Spécifier toujours le n° de série du tour pour toute commande de pièces ou demande de renseignements techniques. Ce numéro est gravé sur le banc du coté de la contre-pointe.



# COLCHESTER MASTER 2500

## PARTS SECTION

### IMPORTANT when ordering —

1. Quote component Order Number and description against each parts illustration for all component parts required.
2. Some parts are standard items which can generally be purchased locally; e.g. nuts, bolts, screws,

washers. In such instances, the component Order Number and description is followed by a code reference (e.g. 47-231) which can be used with Appendix 1 to furnish a full specification.

3. Always quote lathe Serial Number in all parts orders or technical enquiries. This number is stamped into lathe bed at tailstock end.

## RESERVDELSLISTA

### VIKTIGT vid beställning:

1. Uppge alltid detaljernas ordernummer och beteckning. Detta gäller alla erforderliga reservdelar.
2. Vissa reservdelar är standardelement och kan vanligen köpas lokalt såsom muttrar, bultar, skruvar och brickor. I sådana fall uppges vid

beställning ett referensnummer, som finns för dessa detaljer (t.ex. 47-231).

3. Maskinens serienummer skall alltid uppges vid beställning av reservdelar eller tekniska förfrångningar. Detta nummer är instämplat på blicken vid dubbdockssänden.

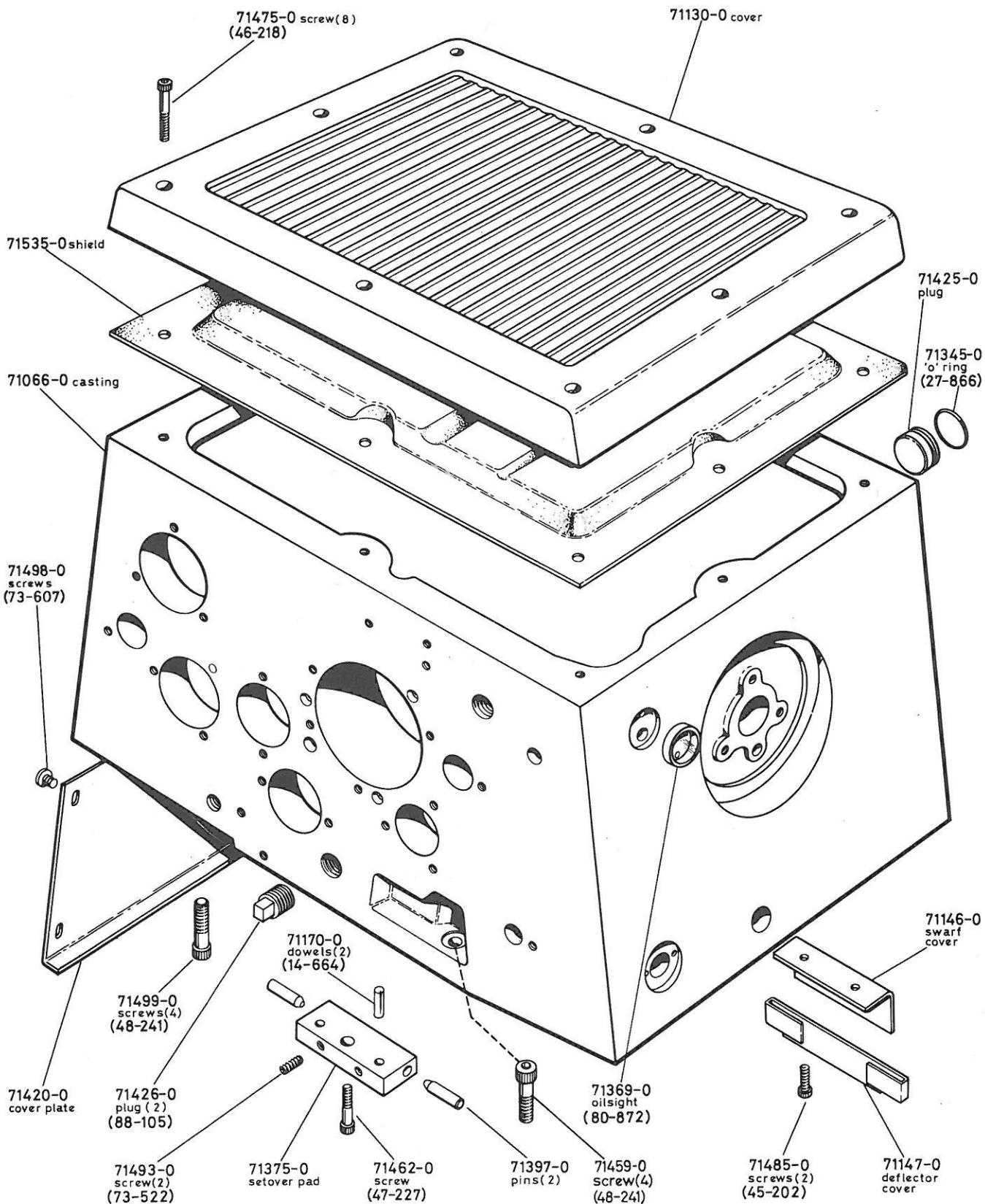
## VARAOSALUETTELO

### TARKEÄÄ tilattaessa varaosia -

1. Tilauksen on merkittävä piirroksissa mainittu varaosanumero. Kaikkiin varaosiin oma numero onsa. Myös varaosan nimi sellaisena kuin se alkuperäiskielellä esiintyy, on kirjoitettava tilaukseen.
2. Erääät varaosat ovat standardiosia, joita on paikallisissa kaupoissa yleisesti saatavissa. Näille osil-

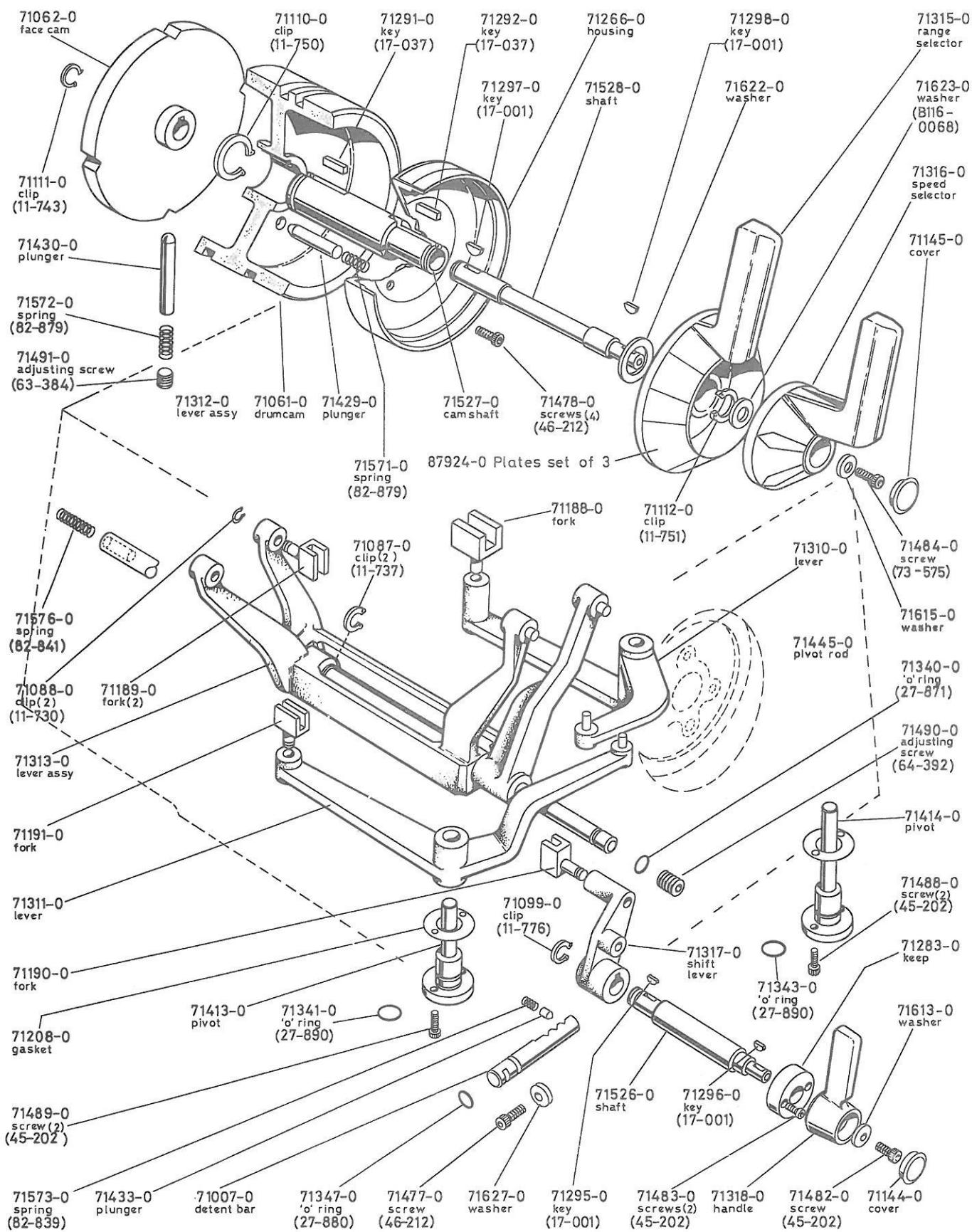
le on lisäksi ilmoitettu tunnusnumero (esim. 47-231) joka määräytyy varaosaluetteloon jälkiosan hakemistossa, jossa yksityiskohtaisemmat tiedot kyseisestä varaosasta on ilmicitettu.

3. Samoin valmistusnumero, joka on lyöty rungon kärkipylän puoleiseen pähän, on mainittava. Kaikissa tilauksissa ja aina teknillisä neuvoja pyydettäessä.



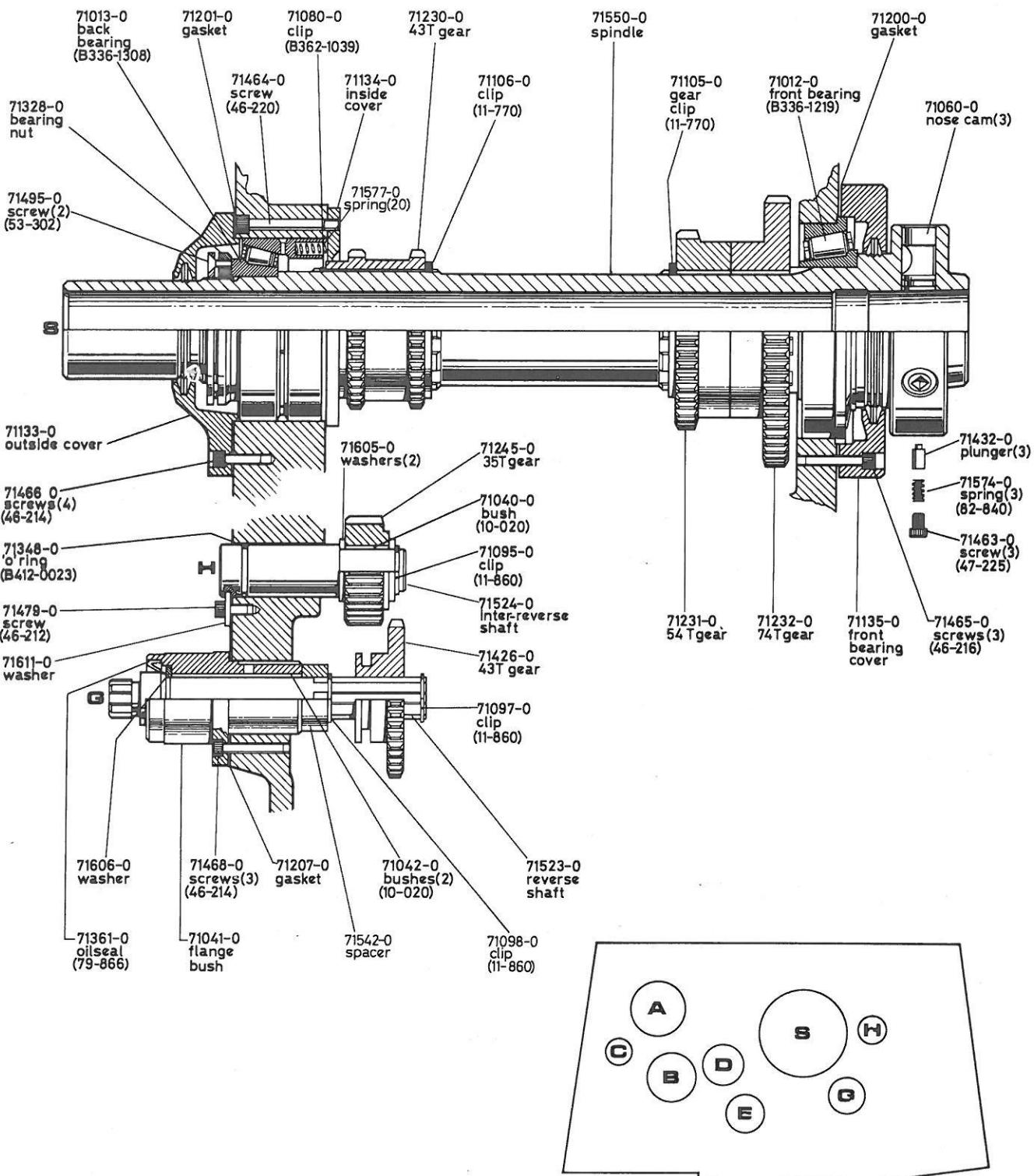
**HEADSTOCK; CONTROLS AND LEVERS**

FROM SER. No.00001  
TO SER. No.



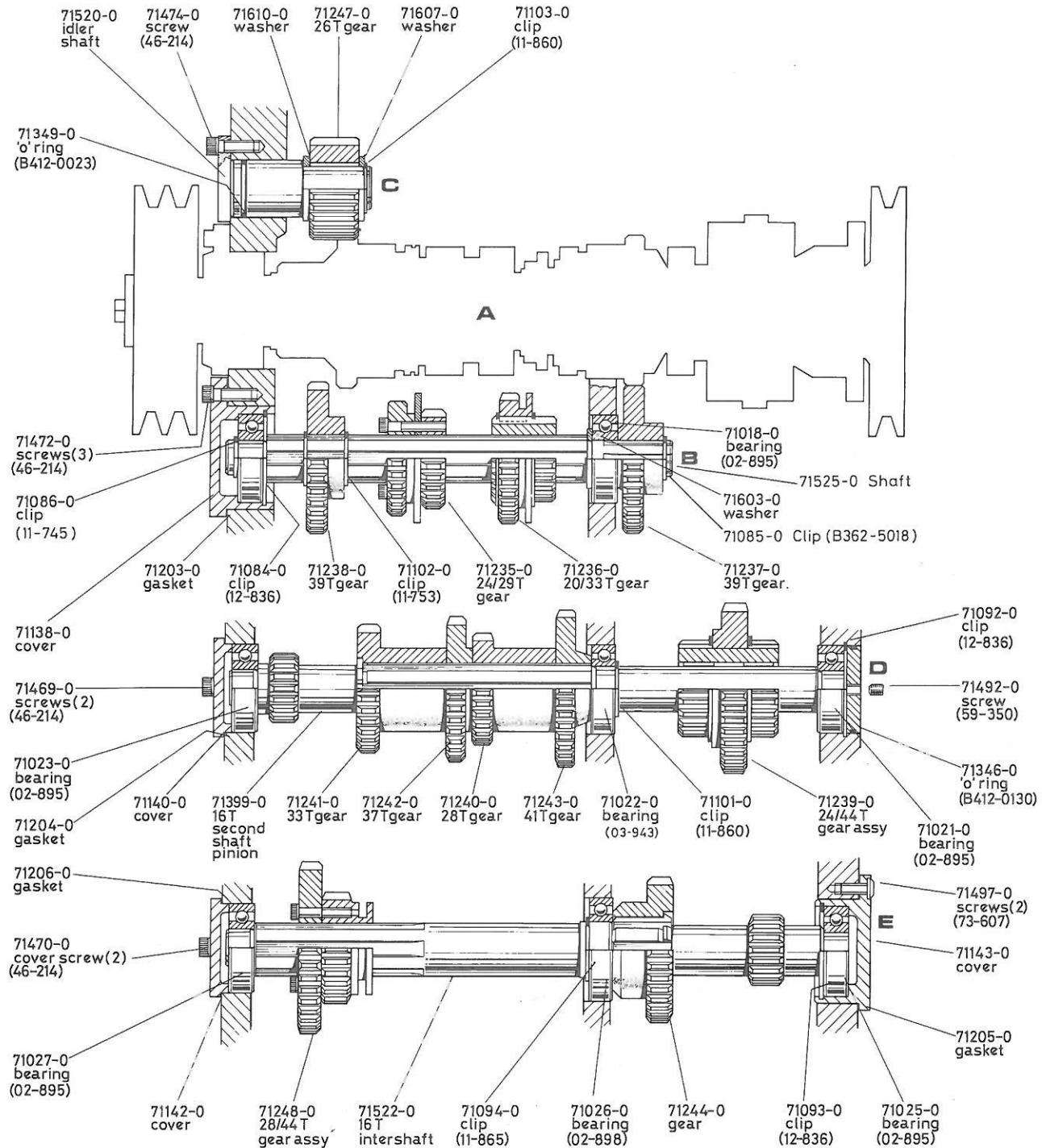
# HEADSTOCK; SPINDLE & GEARS

FROM SER. No. 00001  
TO SER. No.

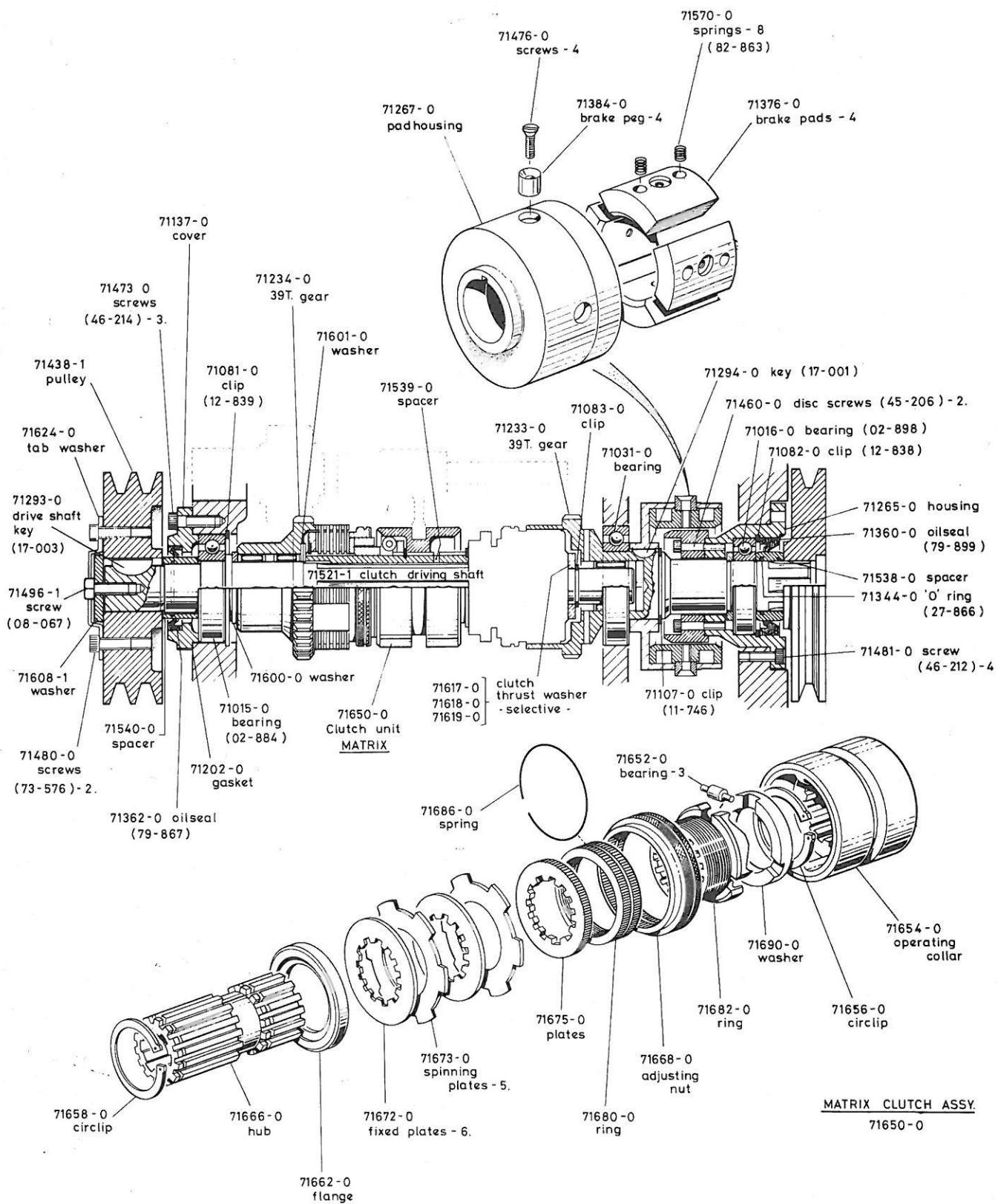


## HEADSTOCK; SHAFTS AND GEARS

FROM SER. No.00001  
TO SER. No.

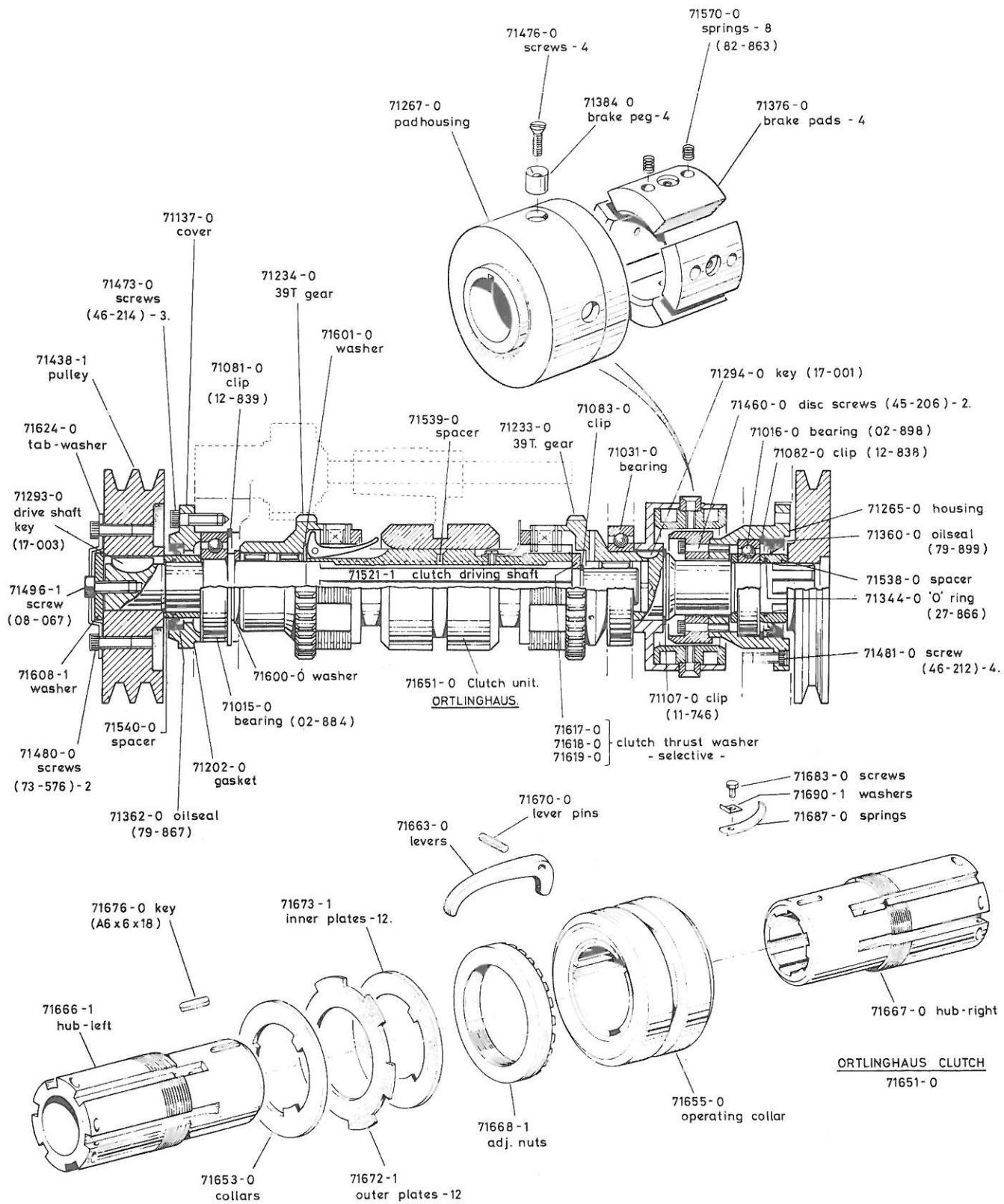


**HEADSTOCK ; CLUTCH SHAFT**



**HEADSTOCK ; CLUTCH SHAFT**

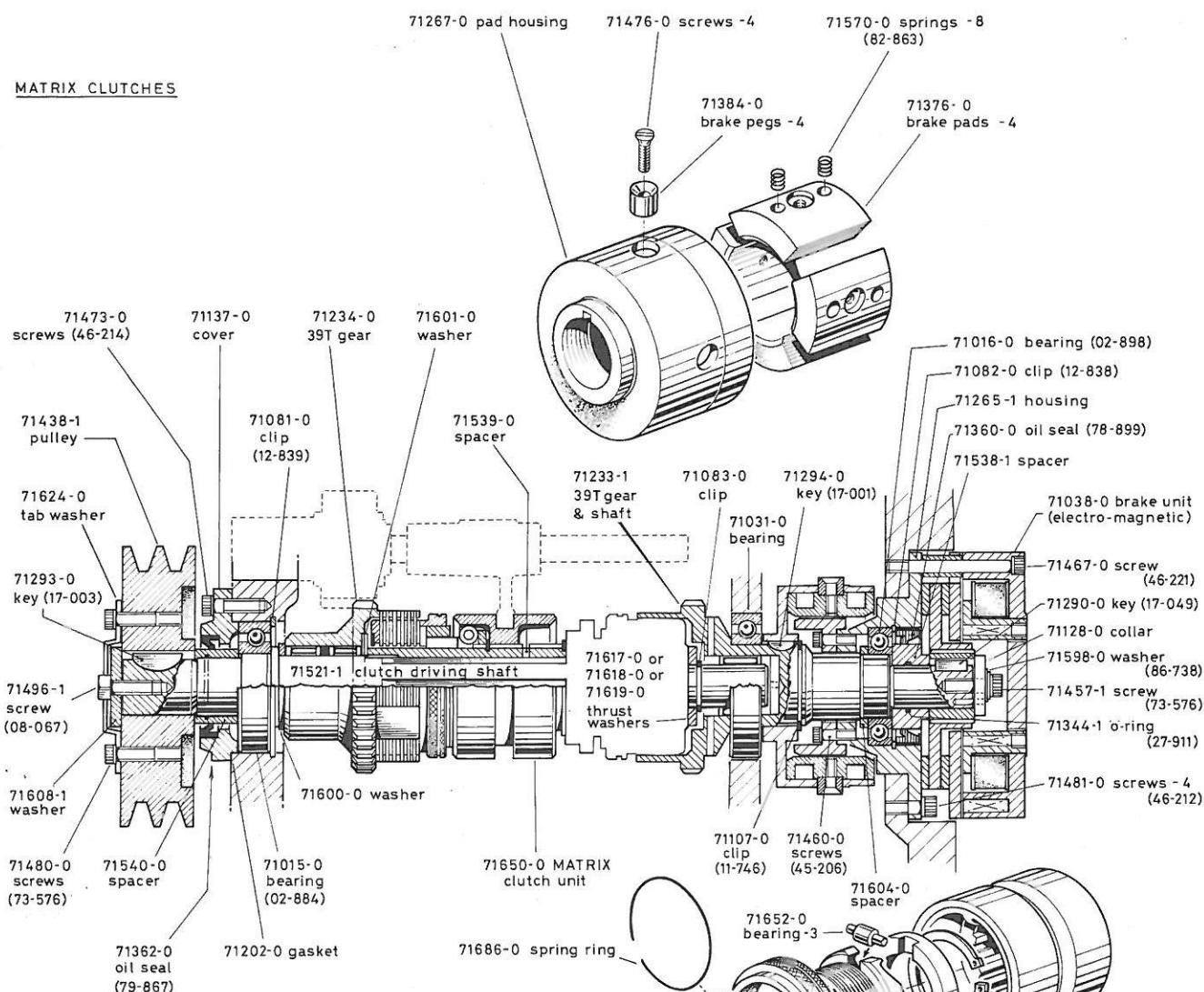
FROM SER. NO. 05387  
TO SER. NO.



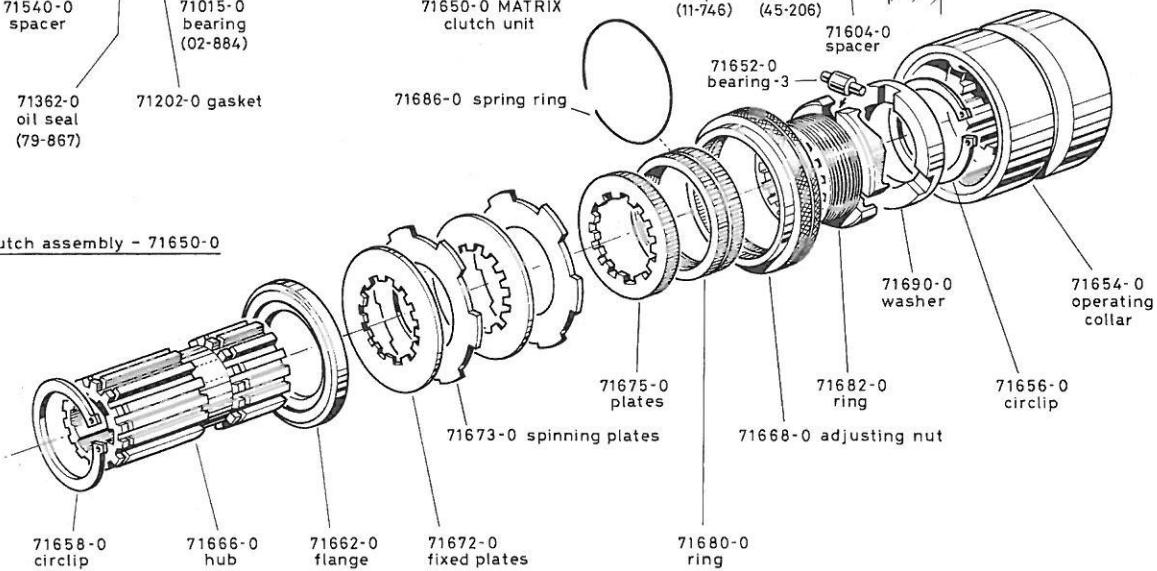
# HEADSTOCK ; CLUTCH SHAFT

FROM SER. No. 08494  
TO SER. No.

## MATRIX CLUTCHES

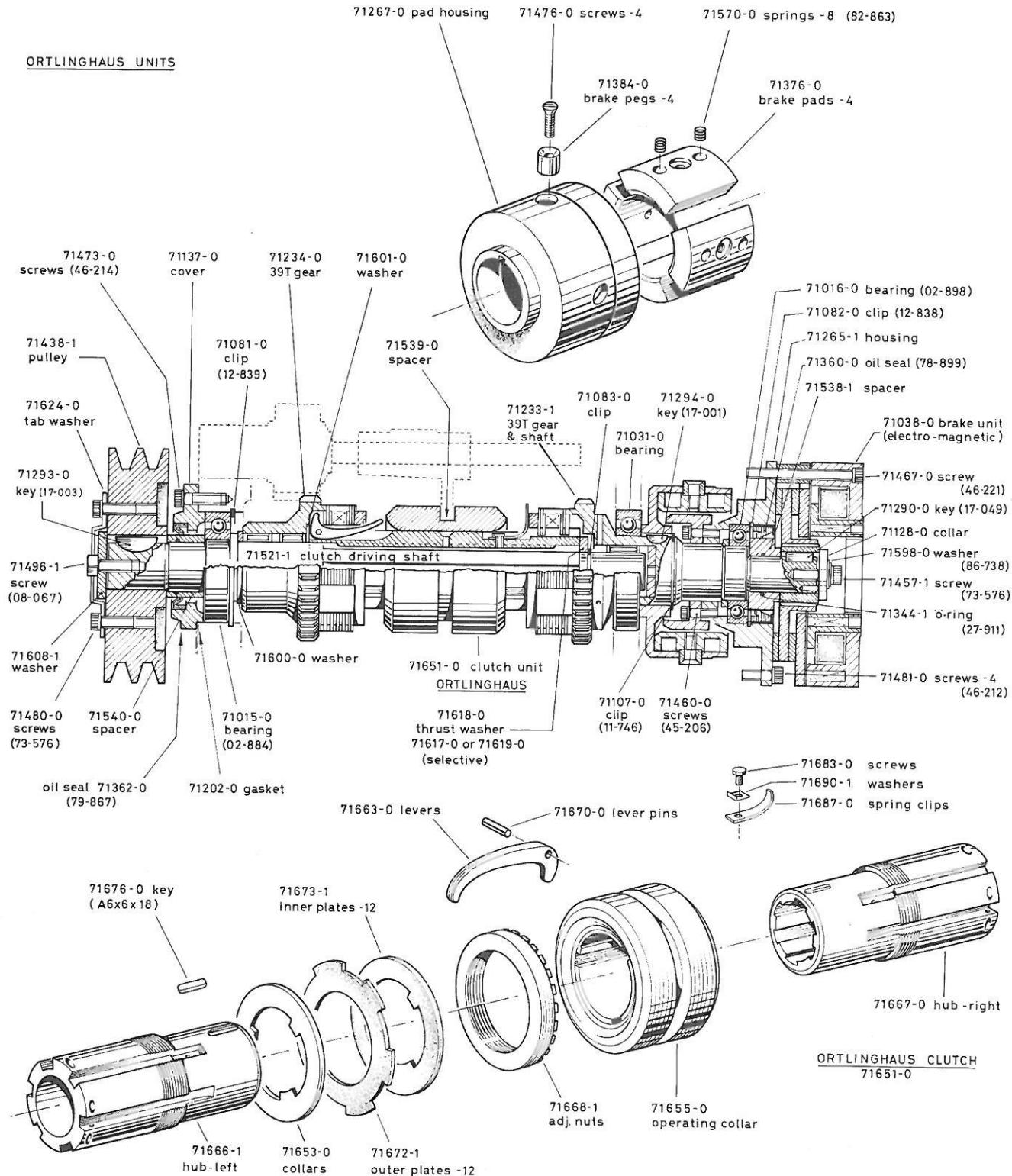


## MATRIX clutch assembly - 71650-0



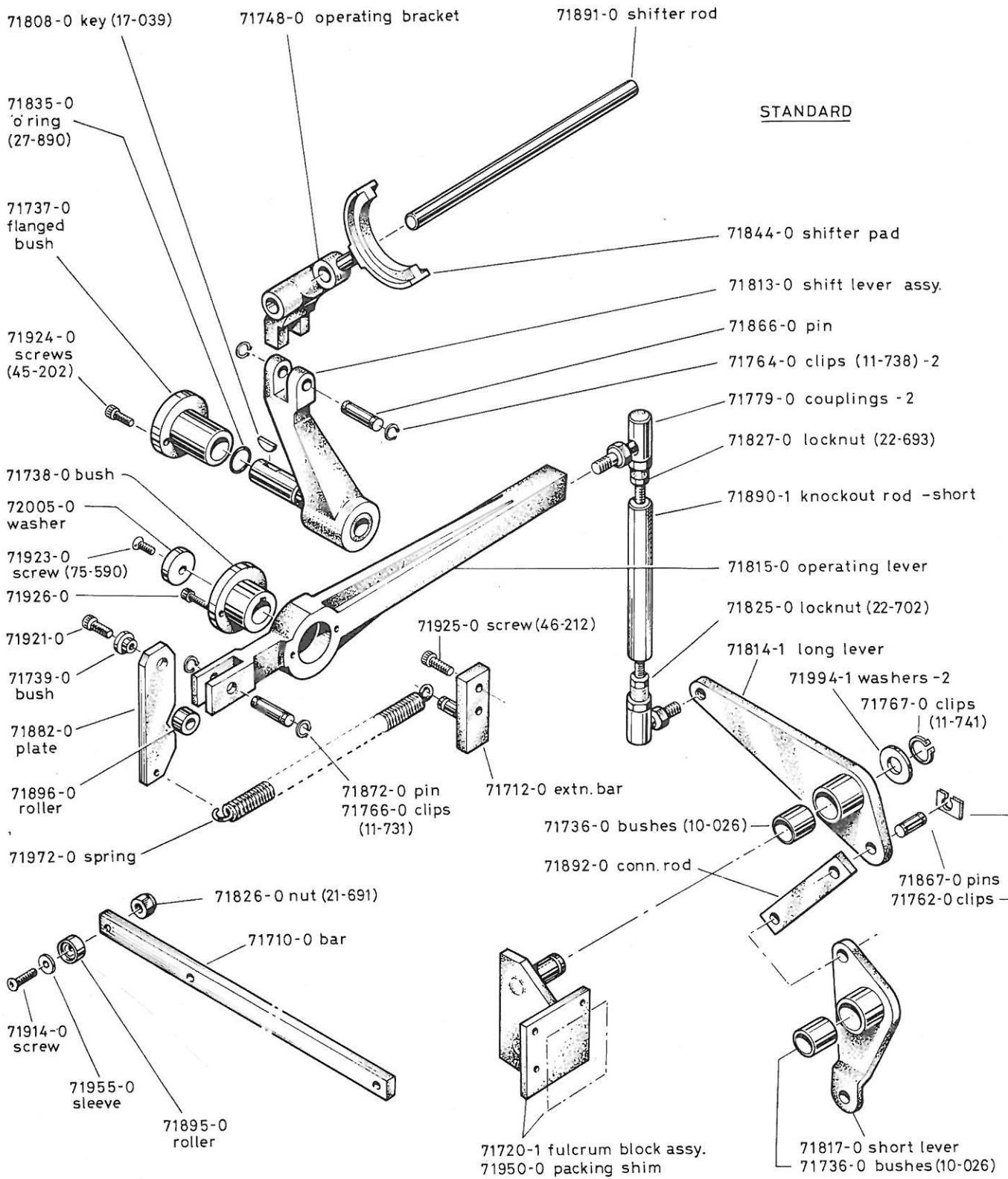
## HEADSTOCK; CLUTCH SHAFT

FROM SER. NO. 08494  
TO SER. NO.



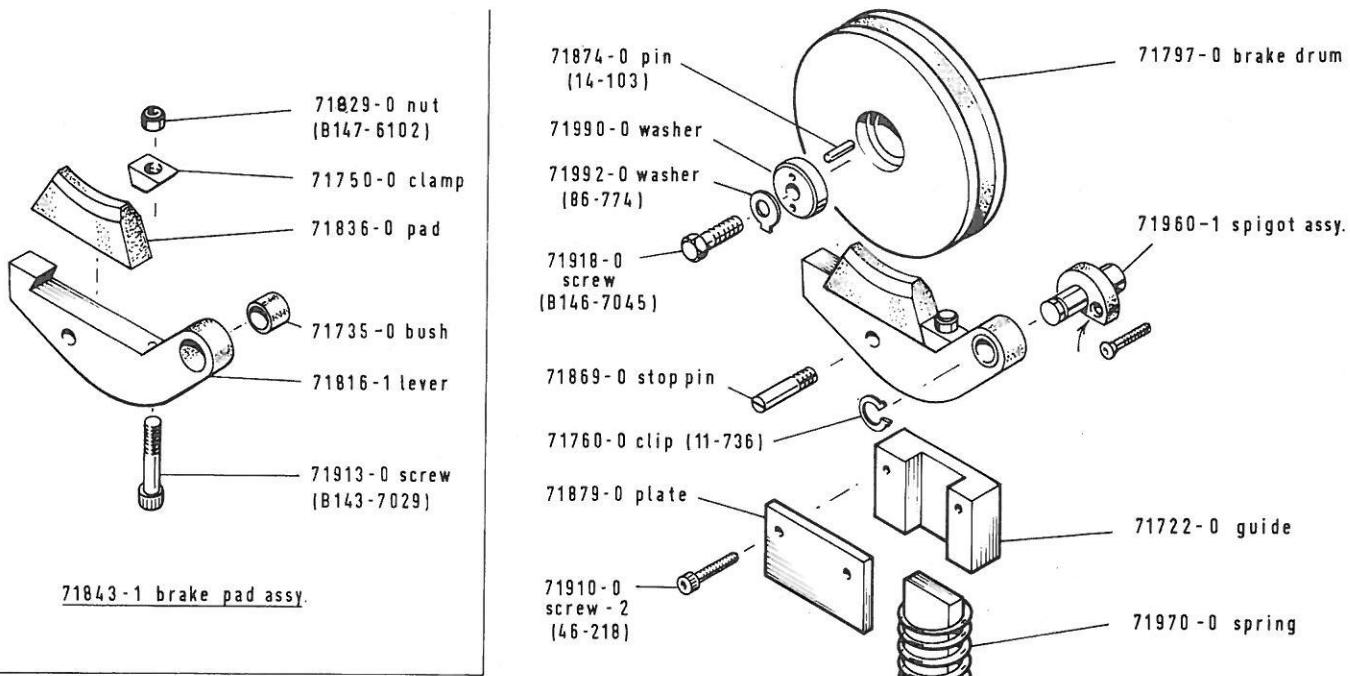
## CLUTCH LINKAGE

FROM SER.No. 07625  
TO SER.No. ....

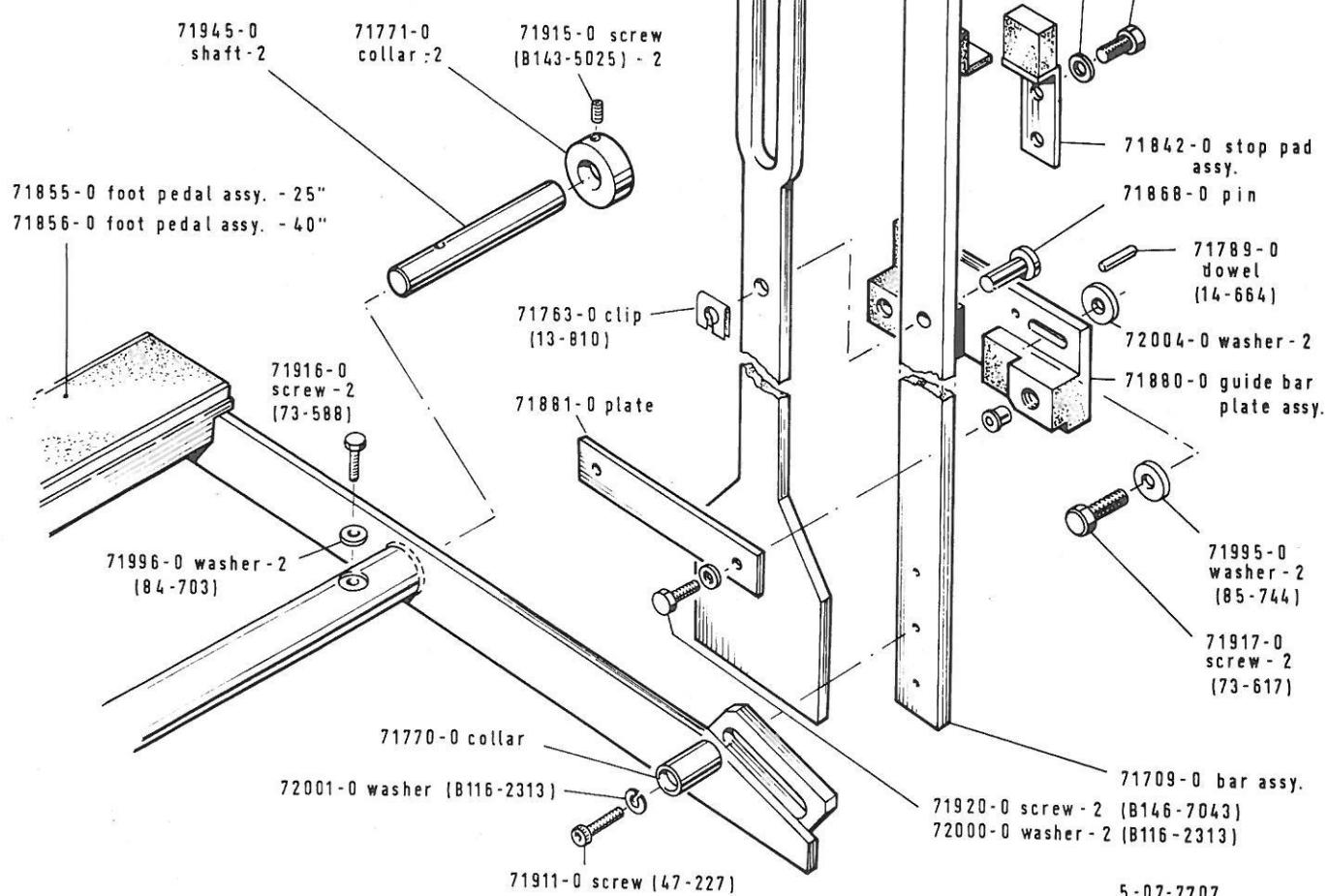


## BRAKE

FROM SER. No. 00813  
TO SER. No.



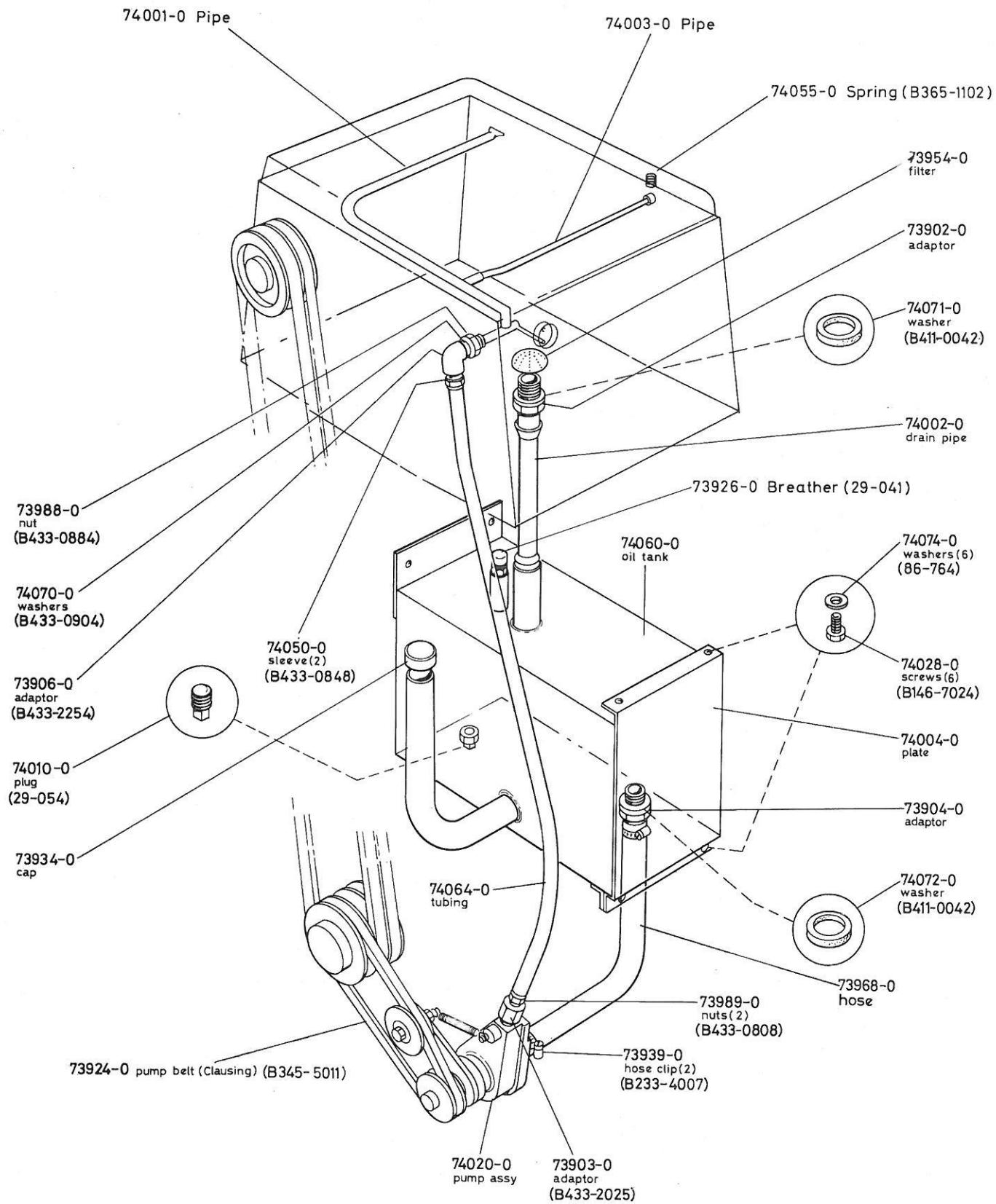
## OPERATING MECHANISM



5-07-7707

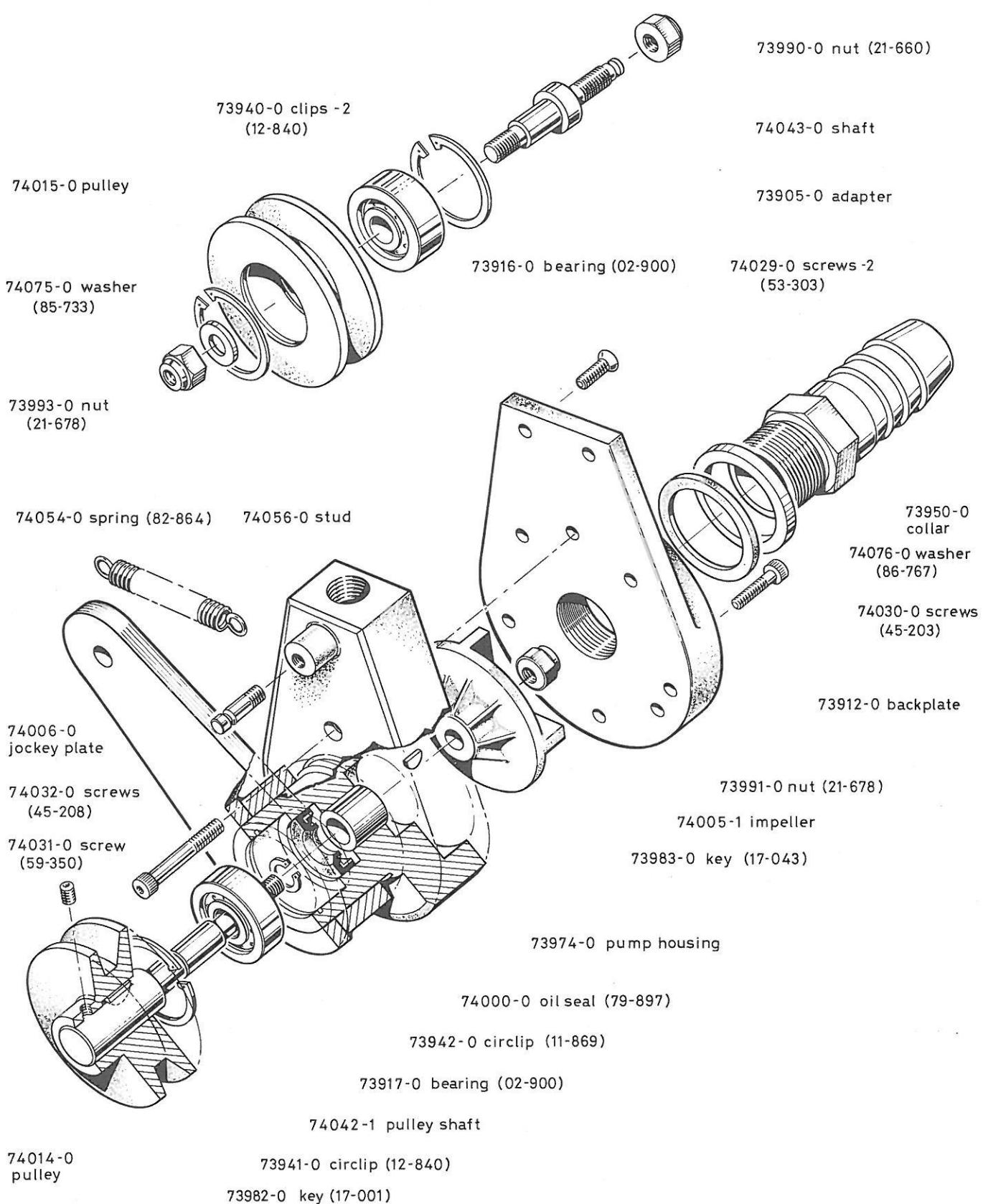
**HEADSTOCK LUBRICATION**

FROM SER. No.00001  
TO SER. No.



# HEADSTOCK: LUBRICATION PUMP

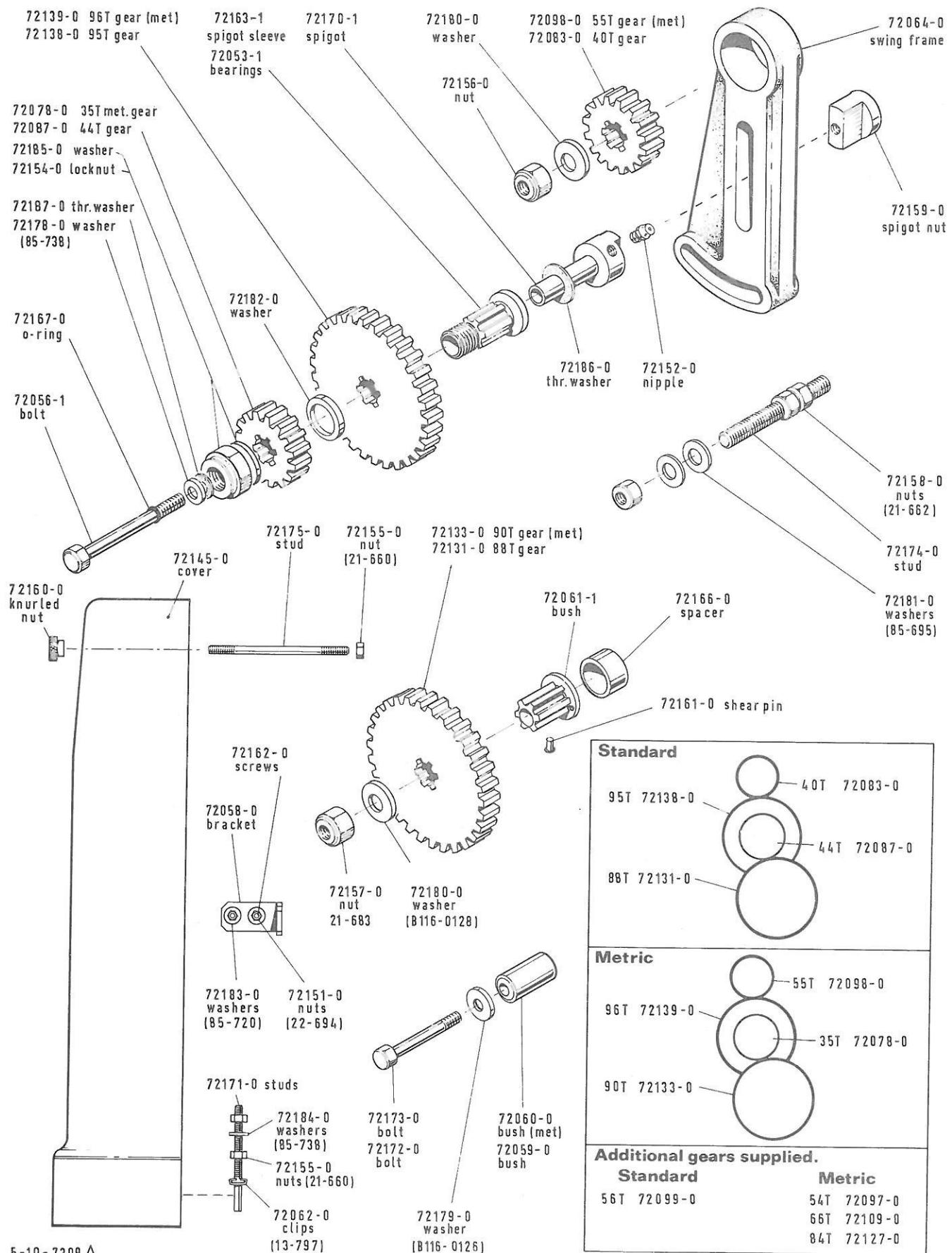
FROM SER.No.08745  
TO SER.No.



5-09-7905

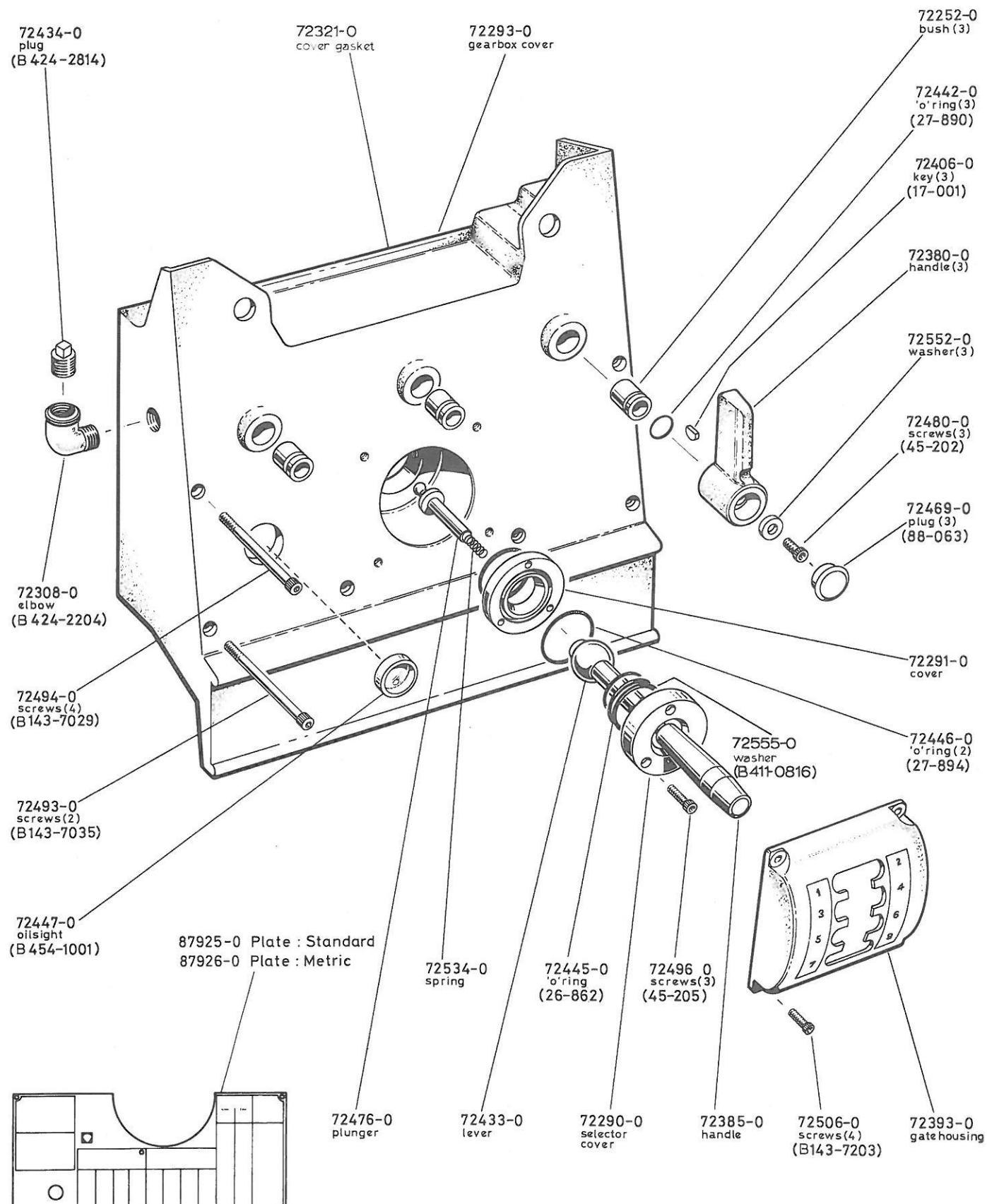
**SWING FRAME; END GEARS AND COVER**

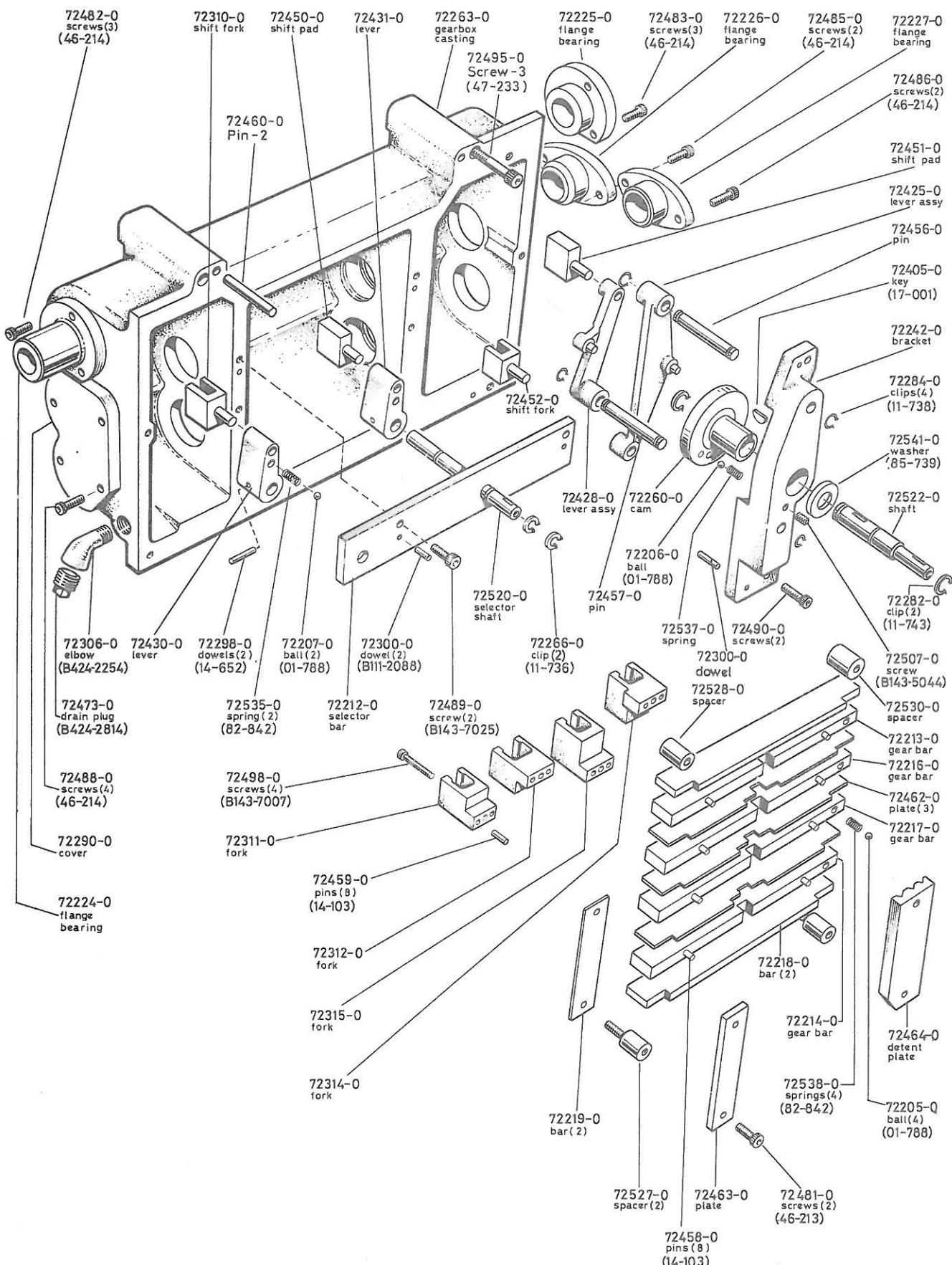
FROM SER. No. 04126  
TO SER. No.



**GEARBOX; FRONT CASTING AND LEVERS**

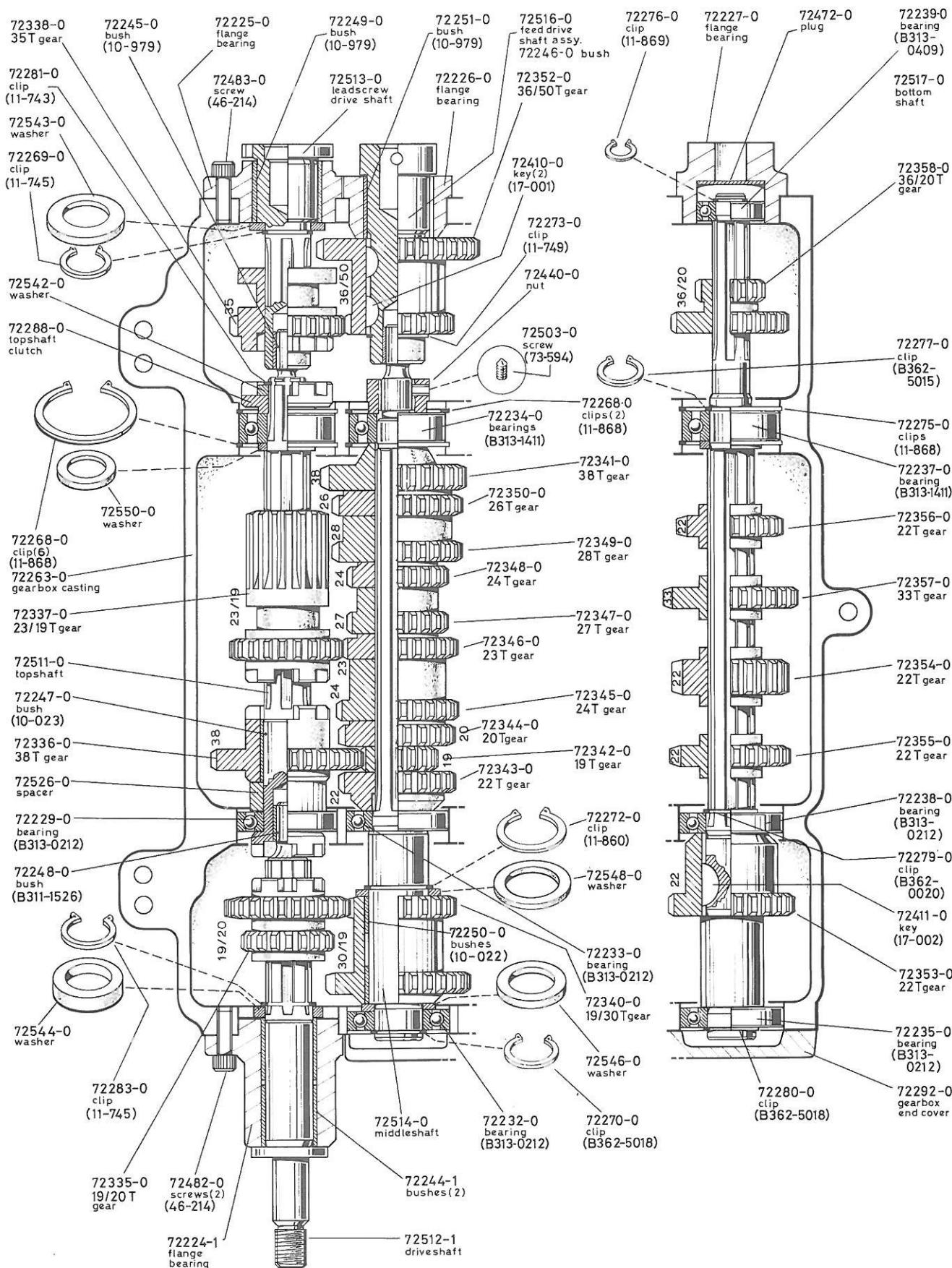
FROM SER. No.00001  
TO SER.No.





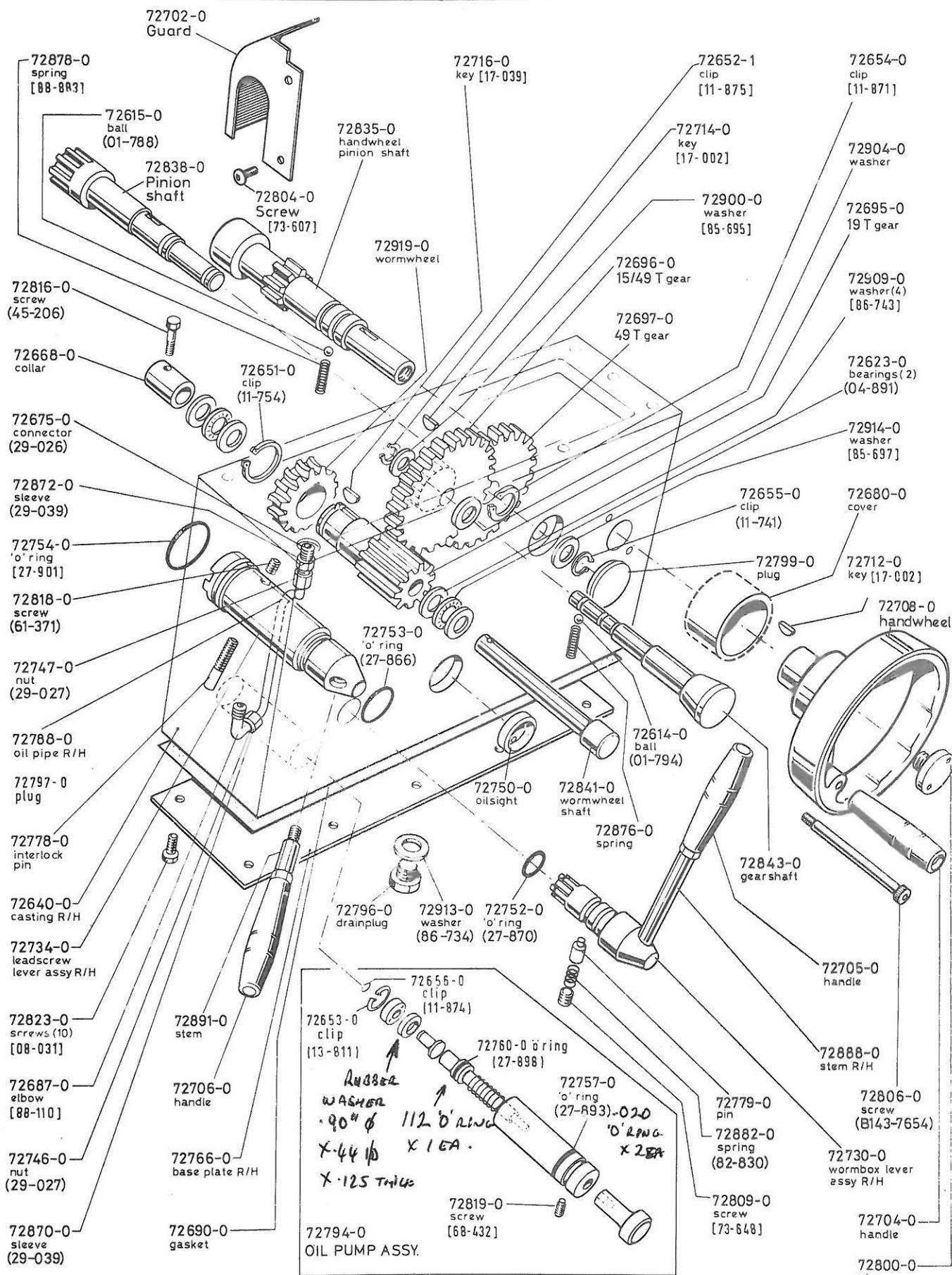
#### **GEARBOX; GEARS**

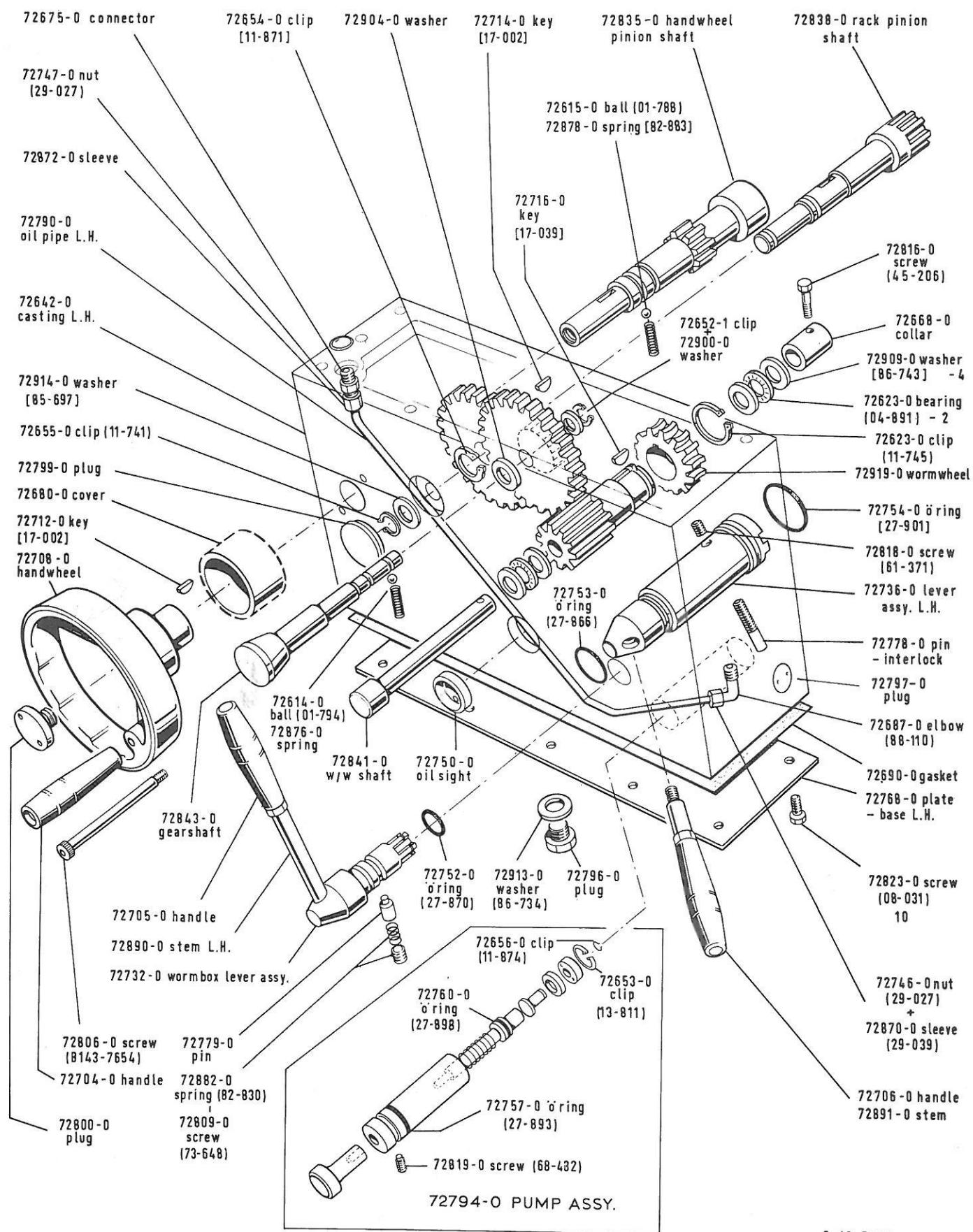
FROM SER. No.04126  
TO SER.No.



**APRON; RIGHT HAND**

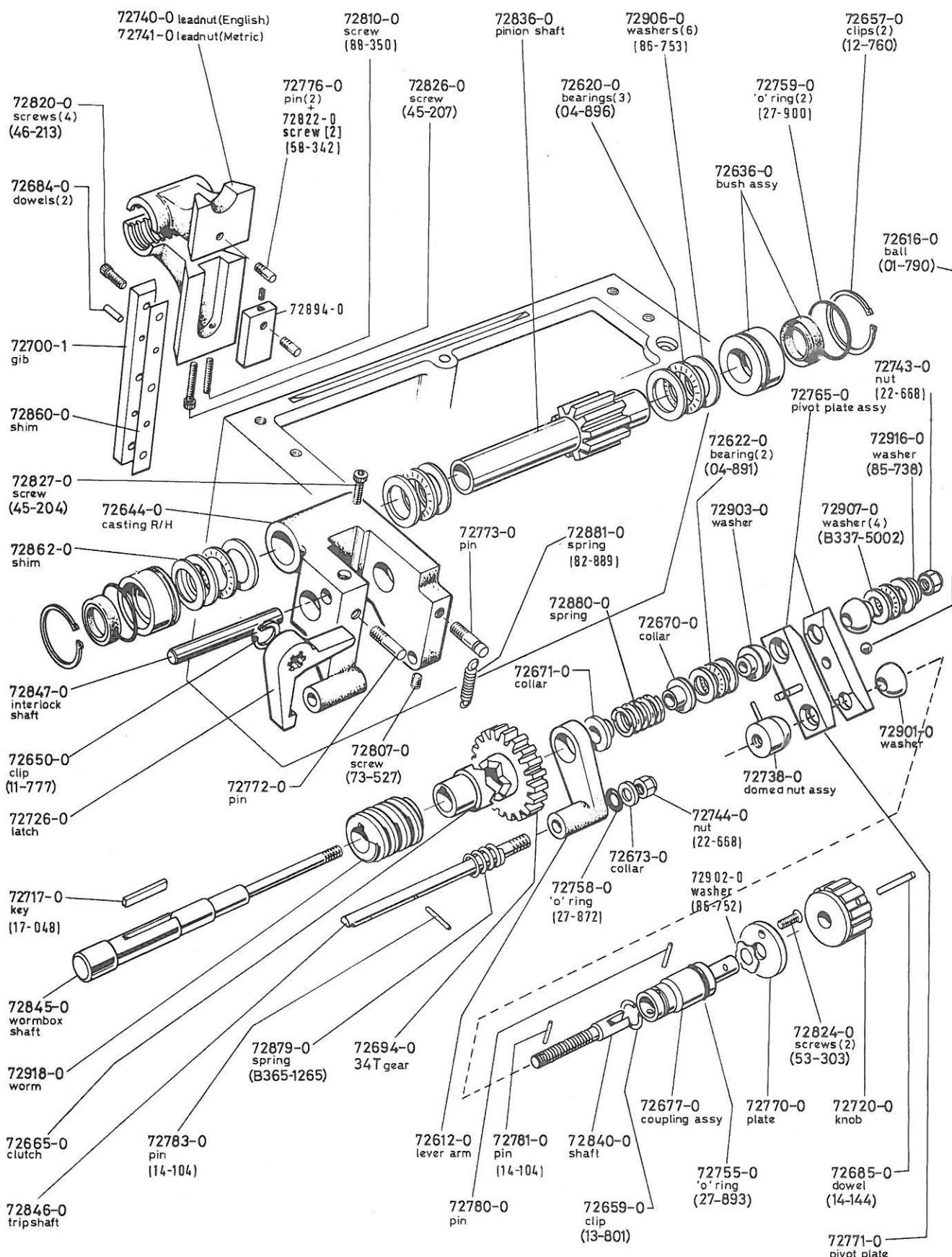
FROM SER. No.00001  
TO SER.No.

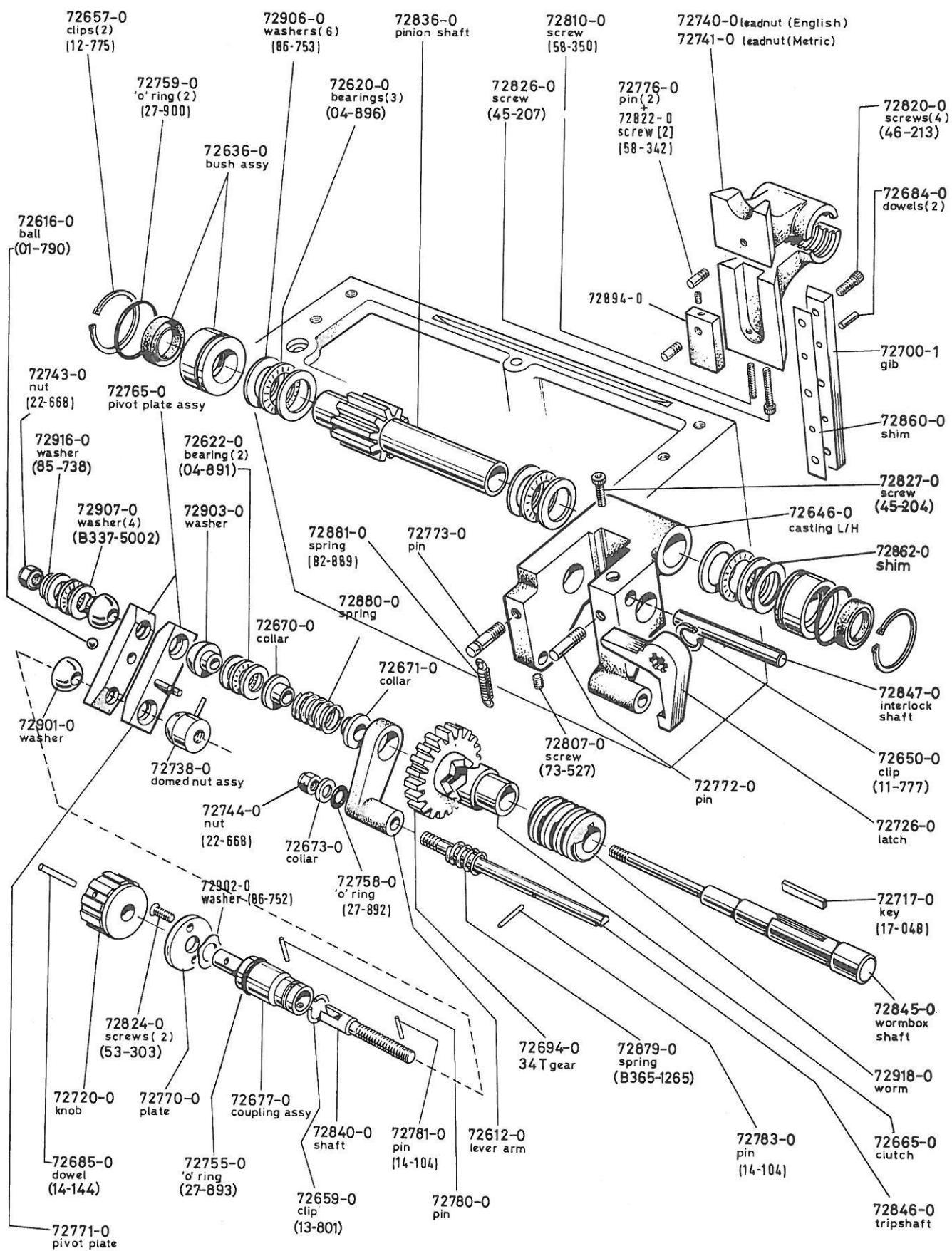




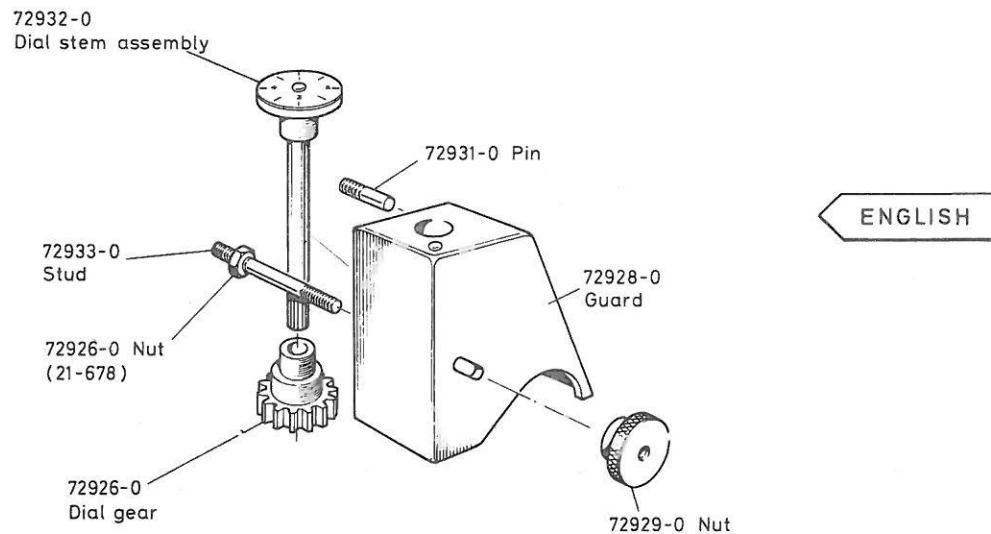
**WORMBOX; RIGHT HAND**

FROM SER. No.05386  
TO SER.No.

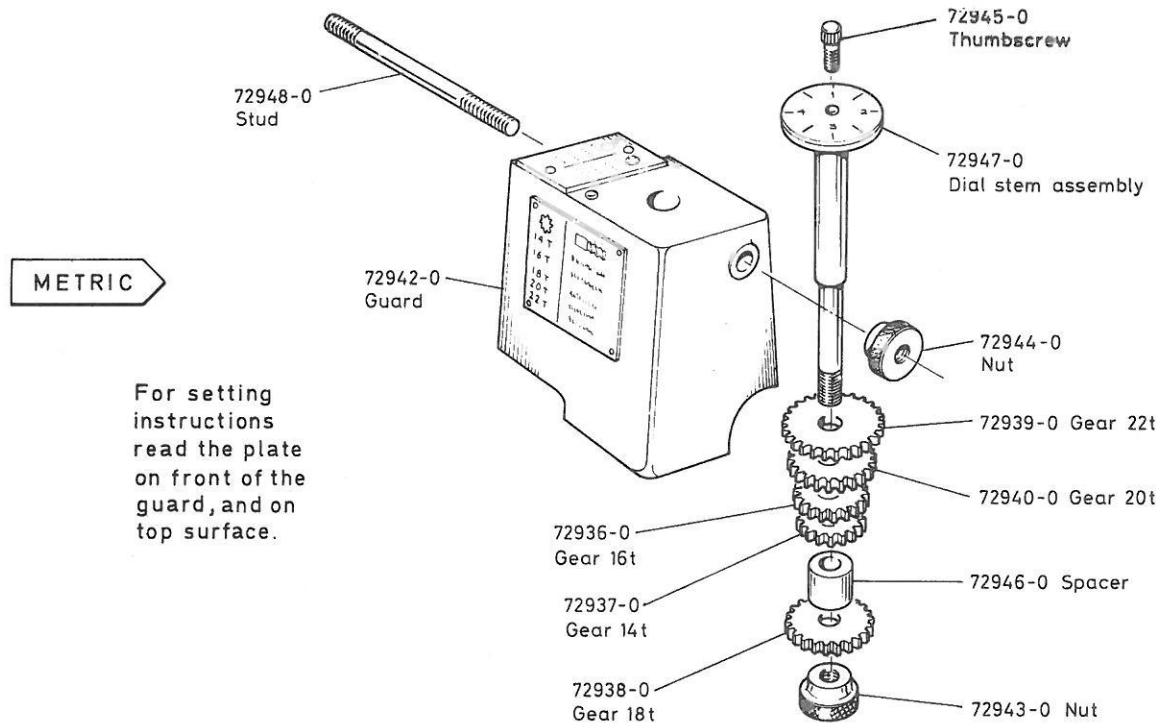




## 72925-0 DIAL INDICATOR ASSEMBLY (English)

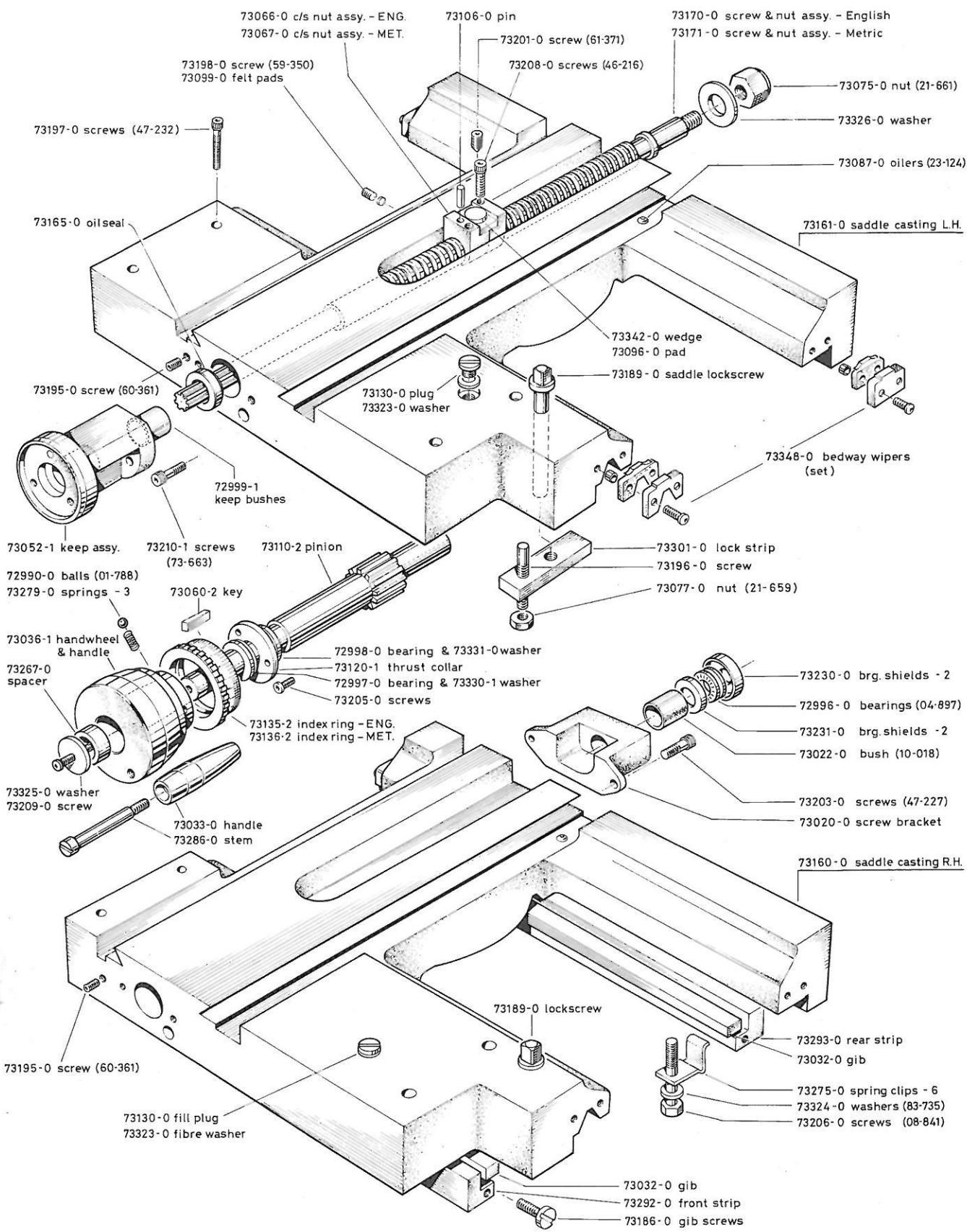


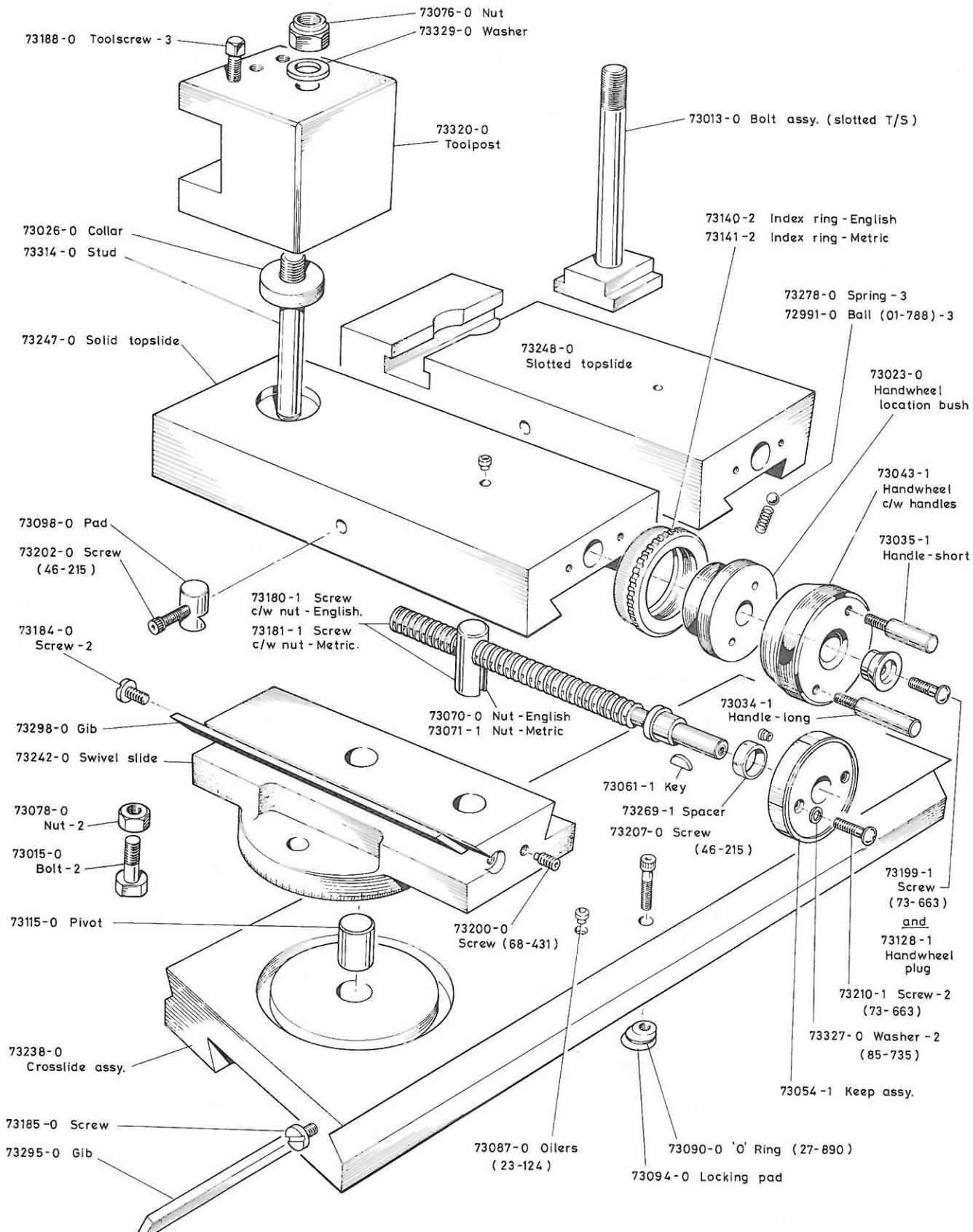
## 72935-0 DIAL INDICATOR ASSEMBLY (Metric)



SADDLES ASSEMBLIES

FROM SERIAL NUMBER 08818  
TO SER. NO.....

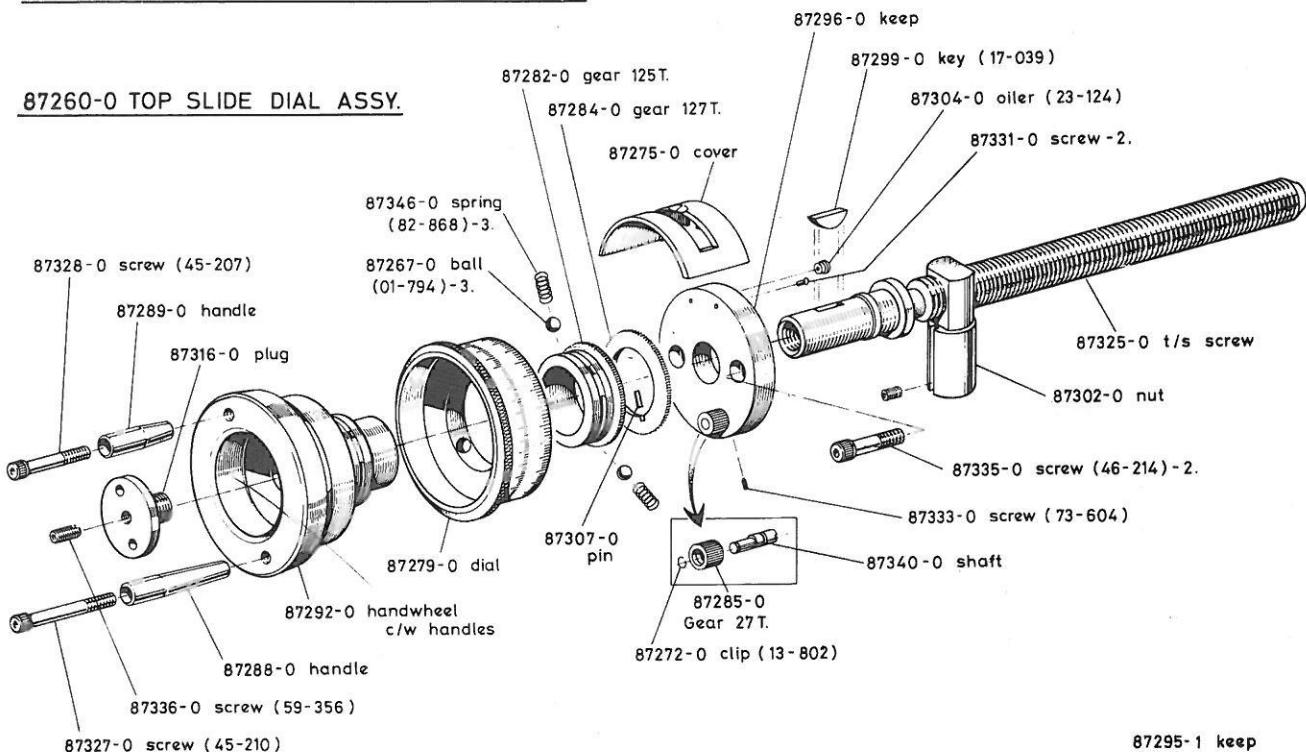




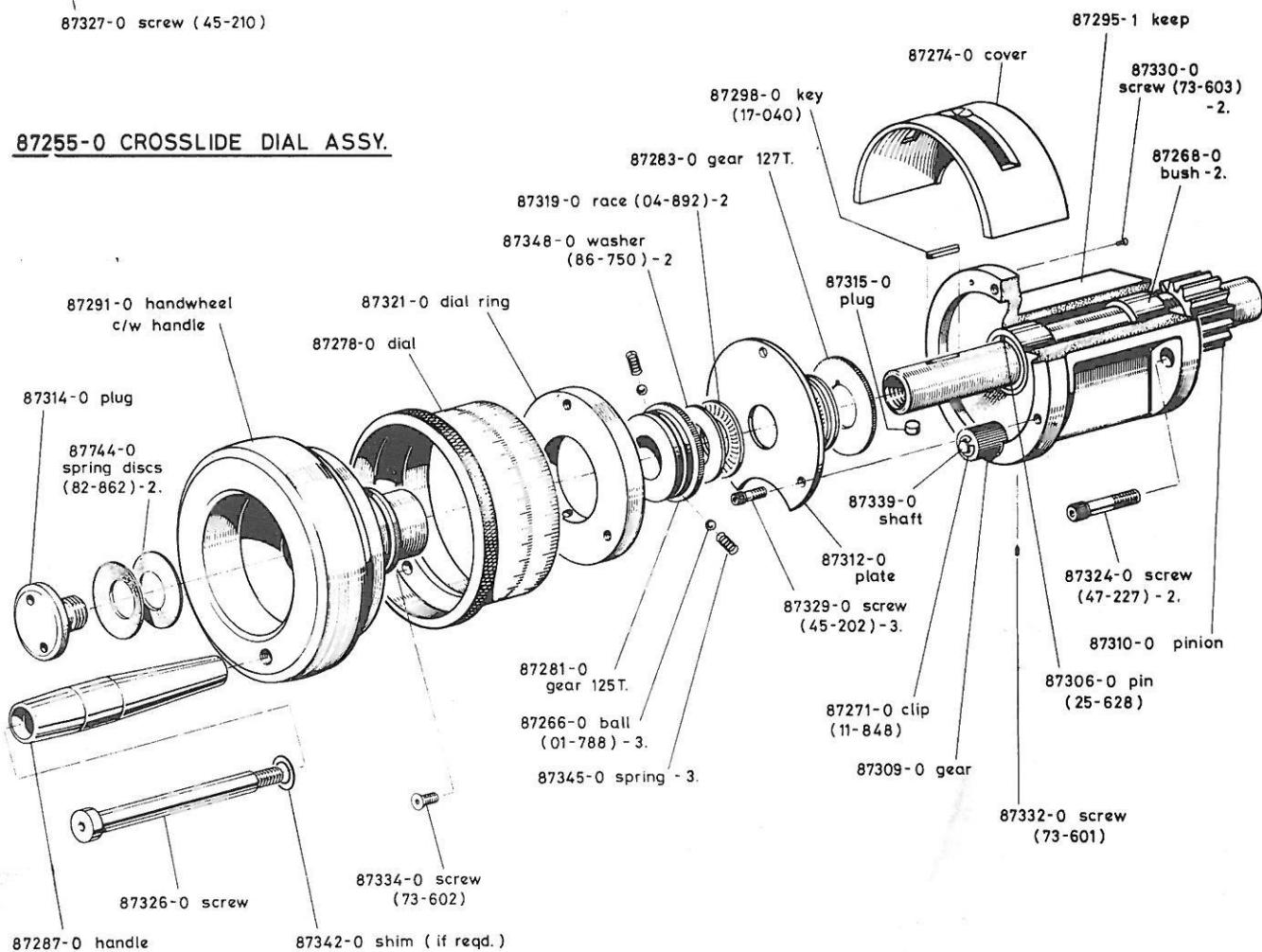
DUAL DIALS

87250-0 TOP & CROSSLIDE DUAL DIALS ASSY.

87260-0 TOP SLIDE DIAL ASSY.



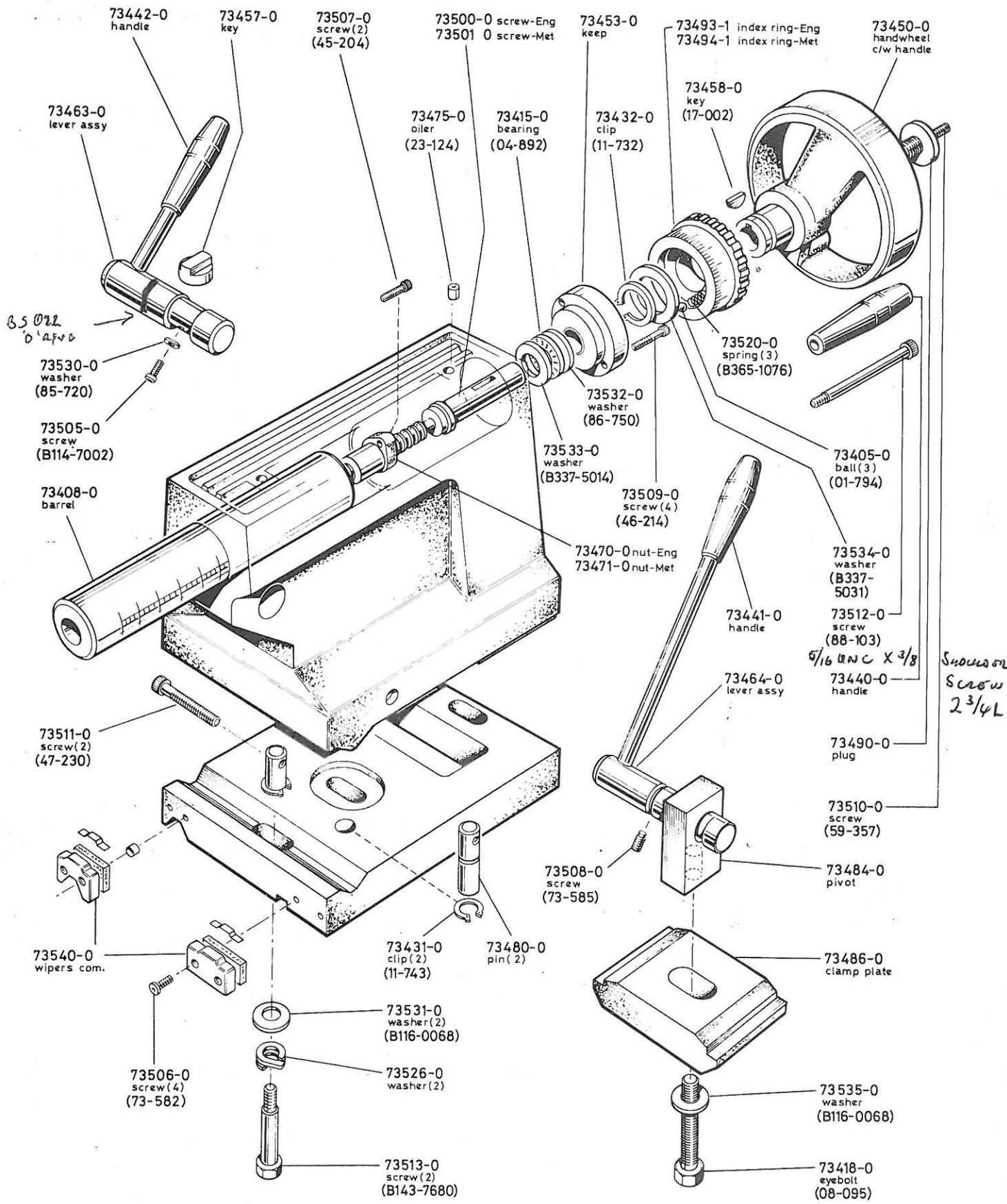
87255-0 CROSSLIDE DIAL ASSY.



TAILSTOCK

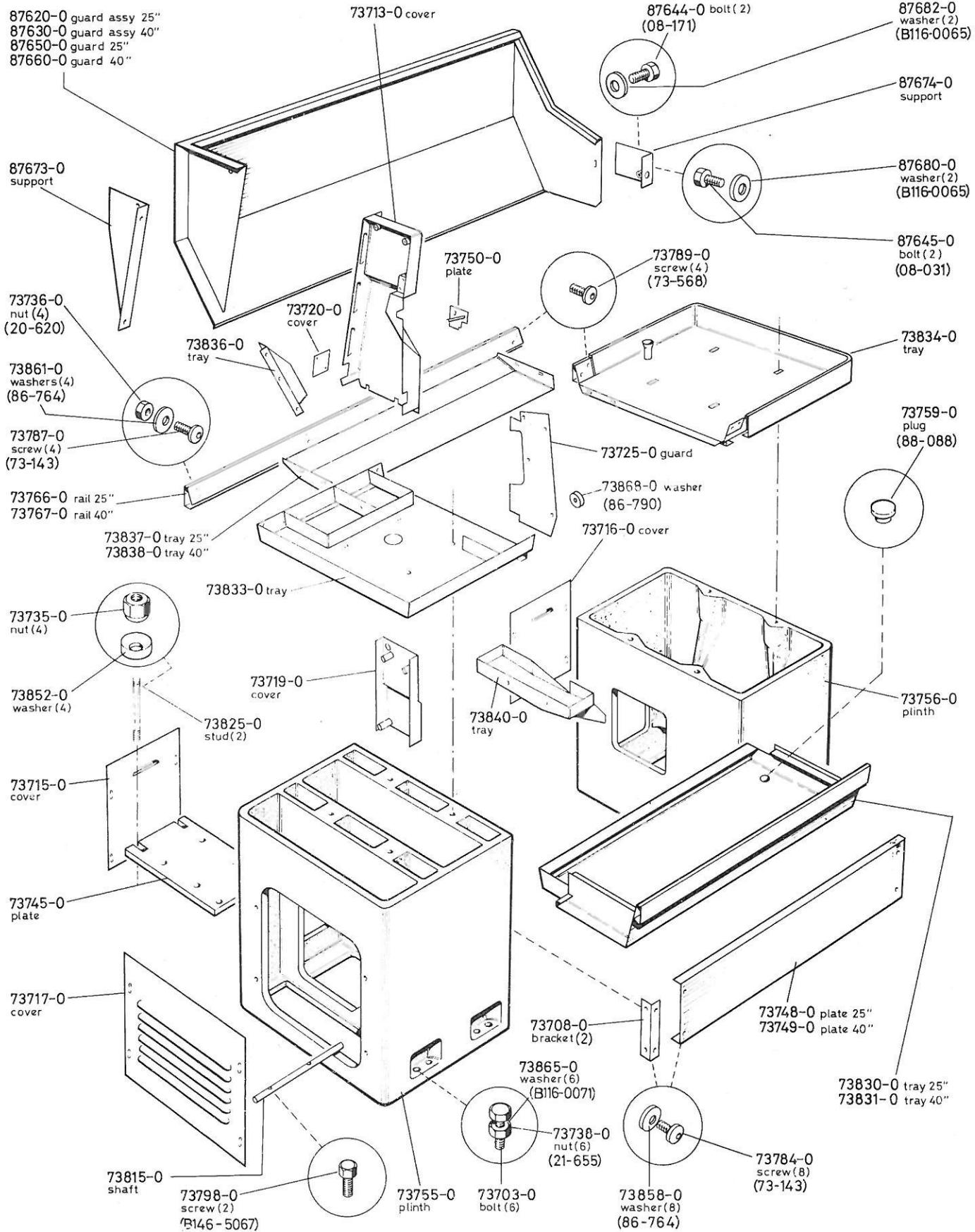
To Remove BARREL:— Turn Handle + LEVER ASSY  
Until FLAT ON LEVER ASSY. IS IN LINE WITH KEY.  
ENSURE KEY IS FULLY DISENGAGED FROM BARREL  
KEYWAY AND SLIDE BARREL OUT.

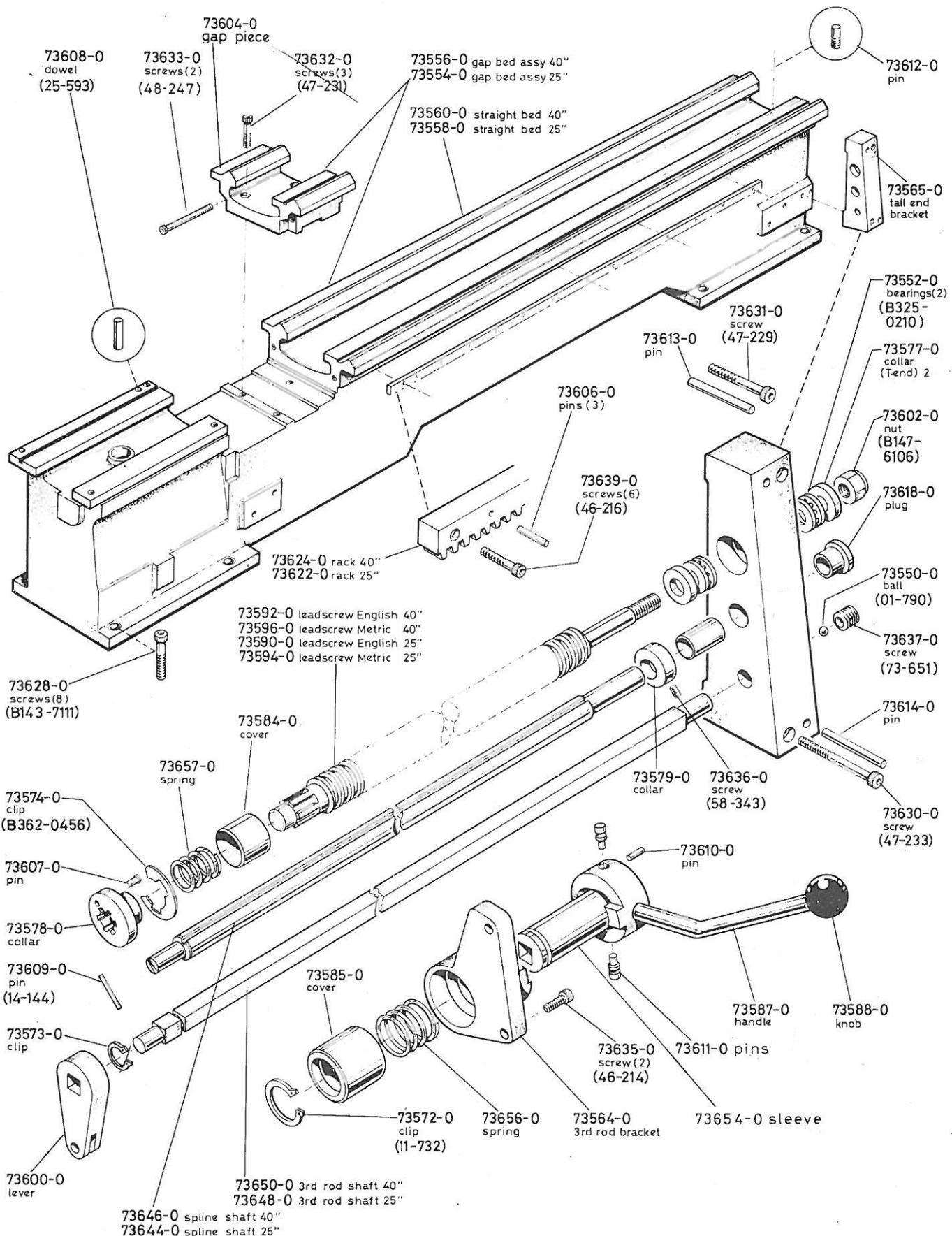
FROM SER. No. 05387  
TO SER. No.



**CABINET AND PANELS**

FROM SER.No.00001  
TO SER.No.



**BED AND SHAFTS**FROM SER. No. 00001  
TO SER. No.

Ref.	Component	Phase-Phase System			Phase-Neutral		Ref.	110v Control	
		220v	380v	415v	380v	415v		415v	550v
A	<b>Panel Assembly</b>	74107-0	74115-0	74103-0	74109-0	74105-0	1	74111-0	74113-0
B	<b>Start Contactor</b>	74186-0 (83-231)	74188-0 (83-230)	74189-0 (83-220)	74186-0 (83-231)	74187-0 (83-312)	2	74185-0 (83-307)	
C	<b>Start Contactor Coil</b>	74162-0 (83-244)	74164-0 (83-246)	74165-0 (83-248)	74162-0 (83-244)	74163-0 (83-311)	3	74161-0 (83-310)	
D	<b>Pump Contactor</b>	74201-0 (83-233)	74203-0 (83-234)	74204-0 (83-308)	74201-0 (83-233)	74202-0 (83-309)	4	74200-0 (83-236)	
E	<b>Circuit Interrupter</b>	74246-0 (83-314)		74245-0 (83-313)	74246-0 (83-314)	74245-0 (83-313)	5	74245-0 (83-313)	
F	<b>Start Overload</b>	74271-0 (83-186)		74270-0 (83-188)		74270-0 (83-188)	6	74270-0 (83-188)	74272-0 (83-197)
G	<b>Pilot Lamp Transformer</b>	74325-0 (15-129)		74323-0 (15-138)		74325-0 (15-129)	7	74326-0 (15-139)	74327-0 (15-163)
H	<b>Pump Overload</b>			74275-0 (83-183)		74275-0 (83-183)	8	74275-0 (83-183)	
J	<b>Terminal Block 6-Way</b>			74128-0 (15-156)		74128-0 (15-156)	9	74128-0 (15-156)	
K	<b>Terminal Block 3-Way</b>			74129-0 (15-157)		74129-0 (15-157)	10	74129-0 (15-157)	
L	<b>End Guard Switch</b>			74316-0 (B755-2111)		74316-0 (B755-2111)	11	74316-0 (B755-2111)	
M	<b>Main Fuse Assembly</b>	74224-0 (15-135)			74223-0 (15-158)		12	74223-0 (15-158)	
N	<b>Fuse Cartridge</b>	74152-0 (15-127)			74151-0 (15-159)		13	74151-0 (15-159)	
	<b>Secondary Fuse Assembly</b>						14	74220-0 (15-160)	
	<b>Fuse Cartridge</b>						15	74150-0 (15-161)	
	<b>Control Circuit Transformer</b>						16	74335-0 (83-315)	74336-0 (83-316)

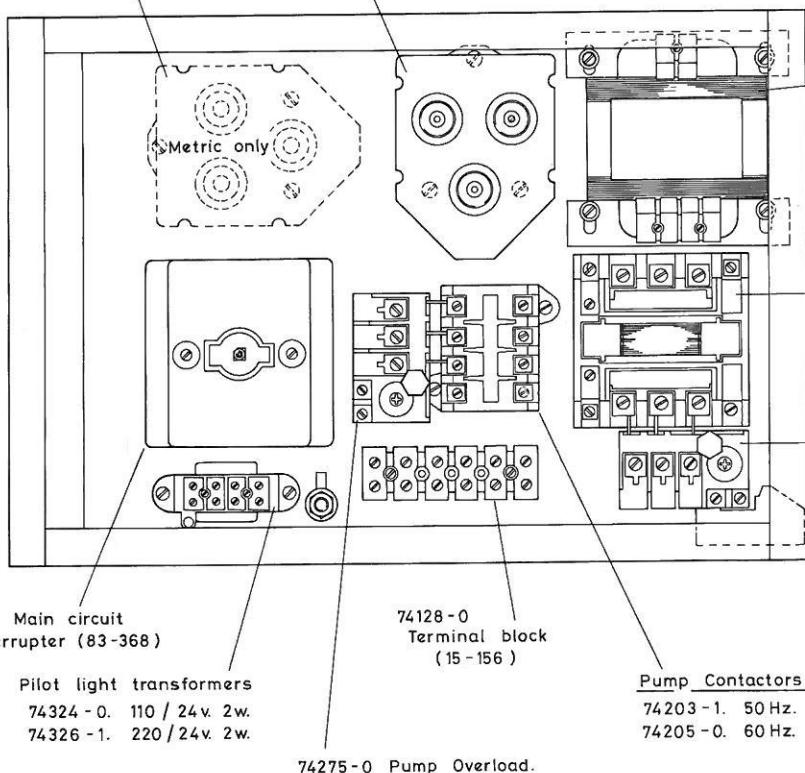
## ELECTRICS

74223-0 Main & Control Fuse unit.  
74293-0 Gauge ring NDR/2 amp.  
74150-0 Fuse cartridge 2 amp.

74233-0 Main & Control Fuse unit.  
74292-0 Gauge ring NDR/16. amp.  
74152-0 Fuse cartridge 25 amp.

### Control panels complete (110v. Control).

74103-1. 415 - 3 - 50. Eng.  
74107-1. 220 - 3 - 50. Met.  
74109-1. 380 - 3 - 50. Met.  
74113-1. 500 - 3 - 50. Met.  
74115-0. 380 - 3 - 50. Eng.



### Control Transformers

74336 - 0. ET50 / 500 / 110 - 50 VA.  
74335 - 0. ET50 / 415 / 110 - 50 VA.  
74338 - 0. ET50 / 220 / 110 - 50 VA.  
74337 - 0. ET50 / 380 / 110 - 50 VA.

### Main Contactors

74189 - 1. Standard Eng. & Met.  
74448 - 1. 220 - 3 - 60Hz.

### Main Motor Overloads

74270 - 0. Standard Eng. & Met.  
74271 - 0. 220 - 3 - 60Hz.

74316 - 0 Limit switch (End - guard ).

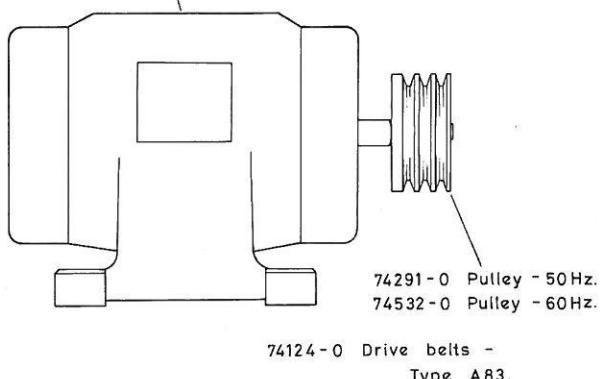
### Pump Contactors

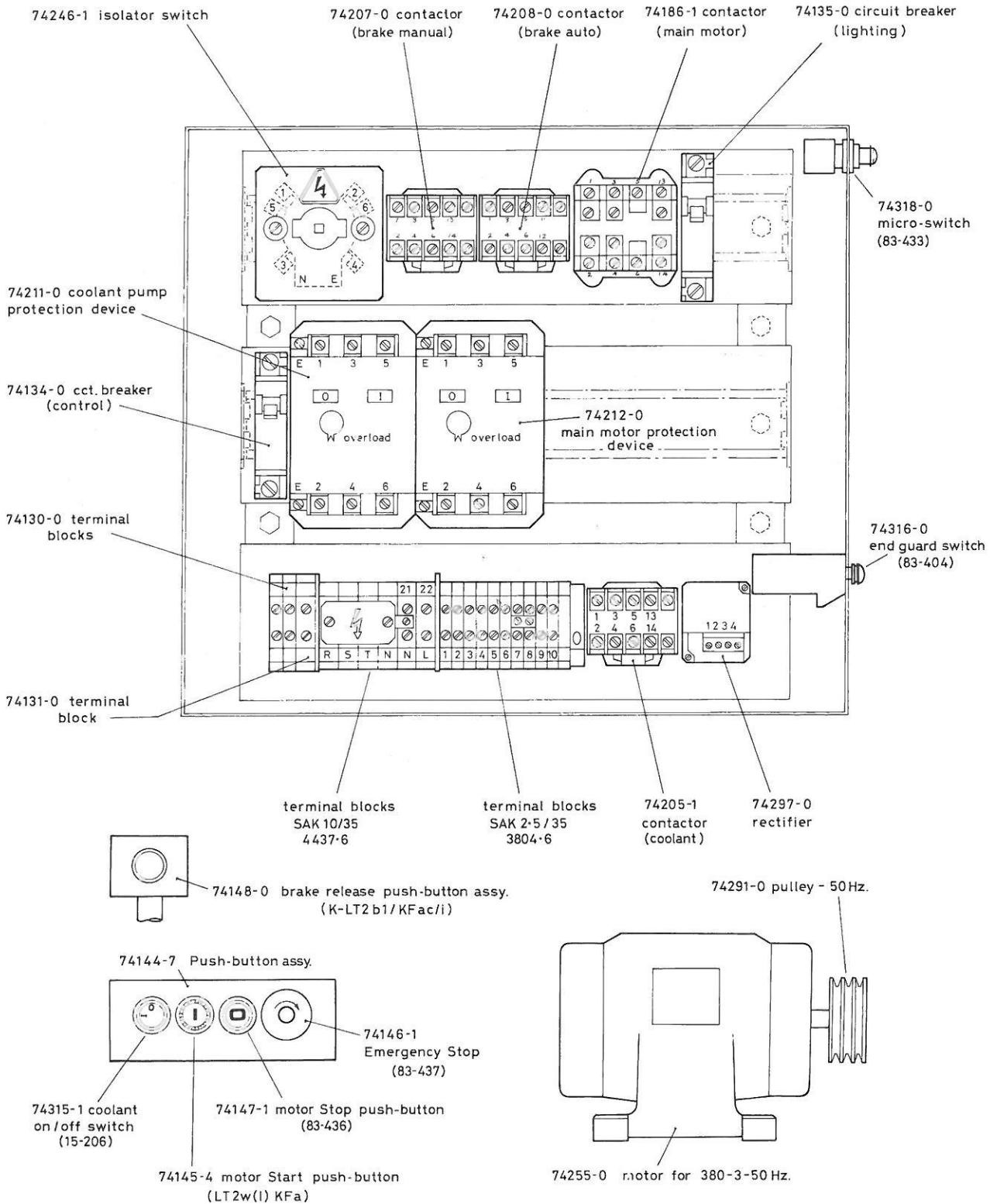
74203 - 1. 50 Hz.  
74205 - 0. 60 Hz.

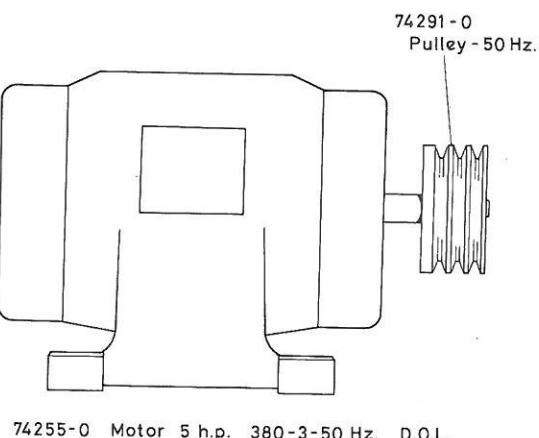
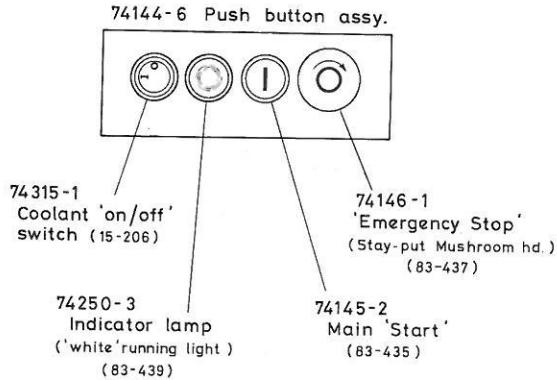
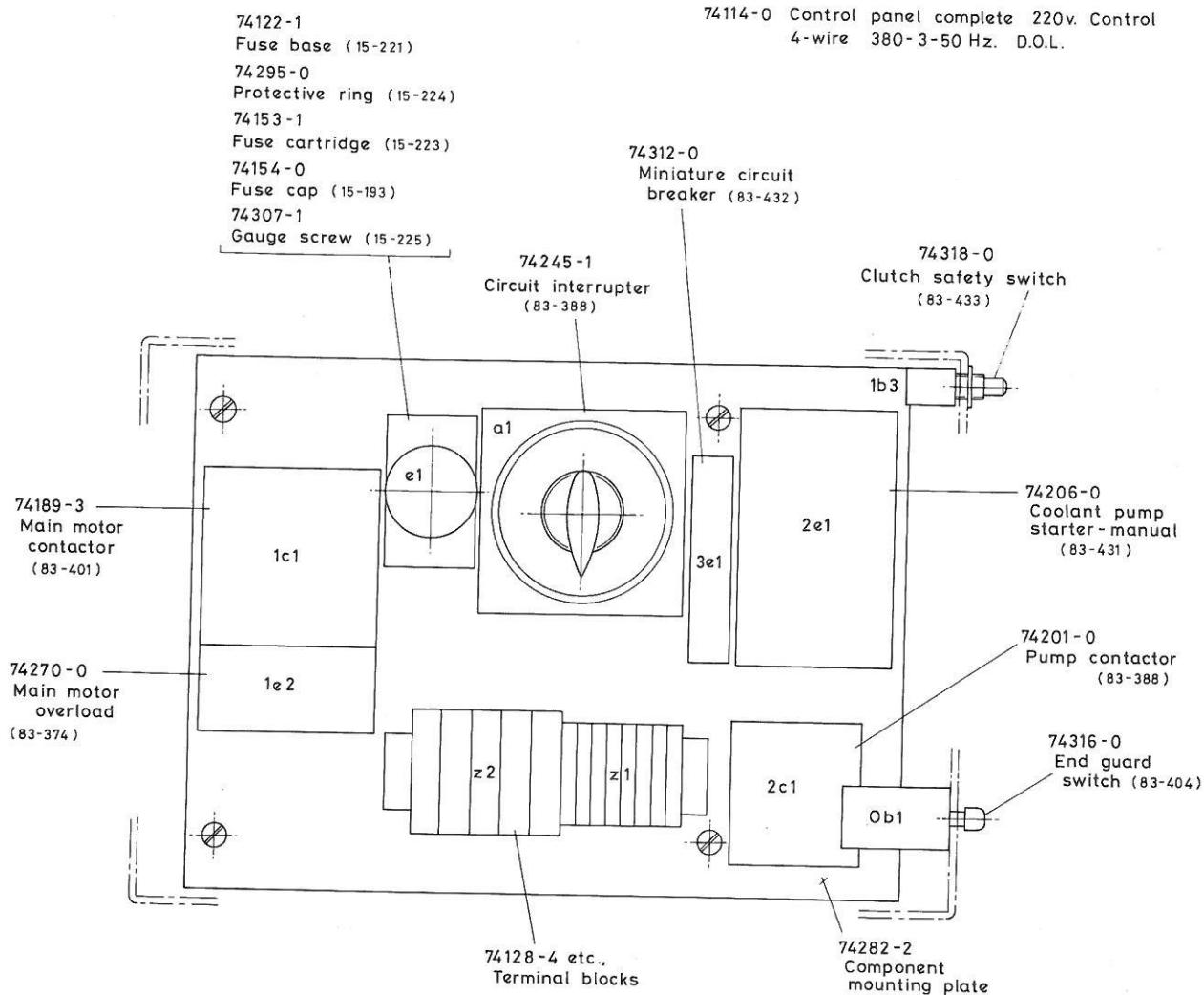
74255 - 0 Motor. 220 / 240 / 380 / 440 v.  
74256 - 0 Motor. 500 / 550 v.

### Push Button Panel assembly 74144-4

74315-1 Coolant 'on/off' switch (15-206)  
74146-1 'Emergency Stop' (Stay-put Mushroom hd.) (83-437)  
74250-2 Indicator lamp ('white' running light)  
74145-2 Main 'Start' Push button (83-435)



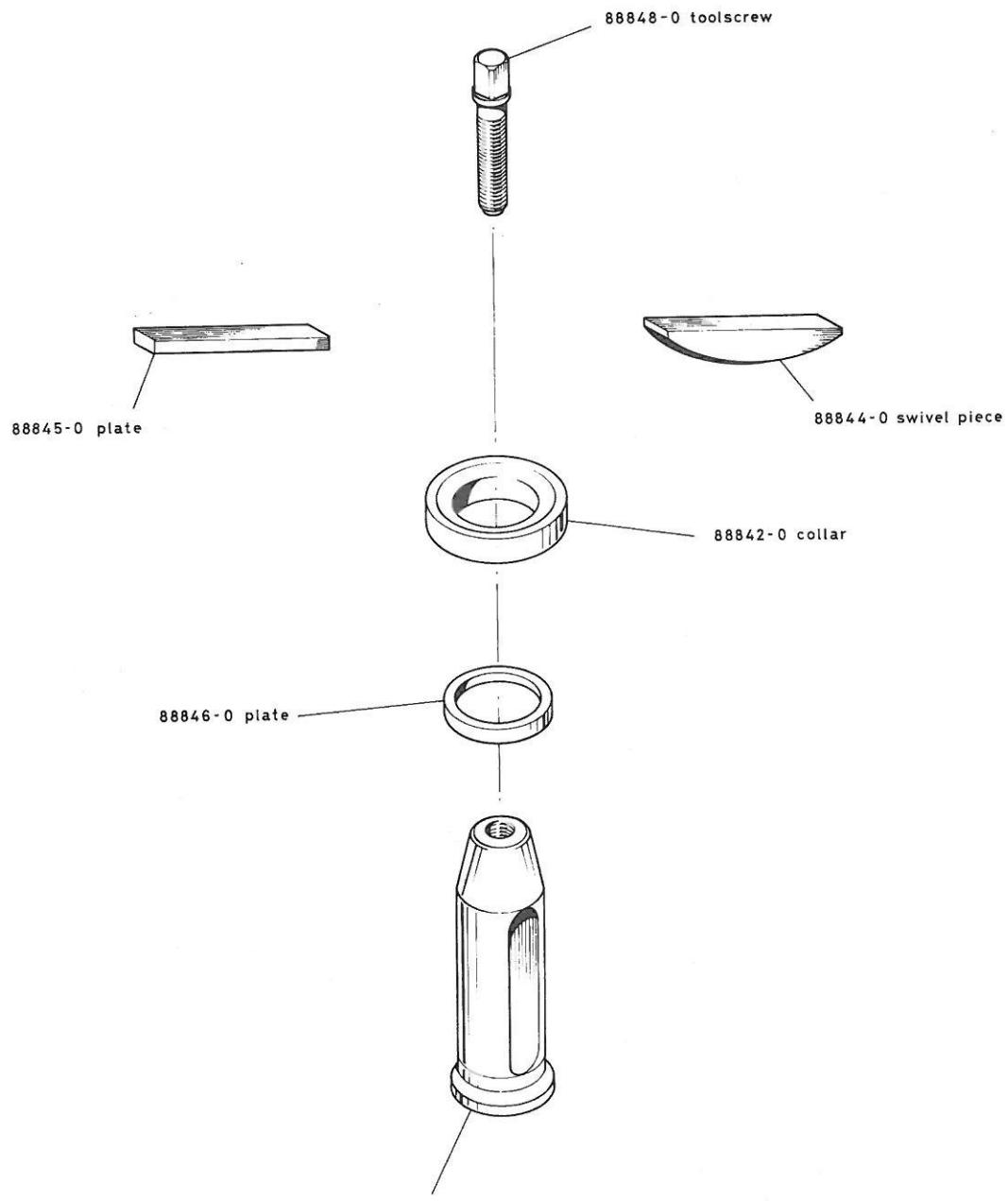
74117-0 CONTROL PANEL COMPLETE — for electro/magnetic brake system



## PILLAR TOOLPOST

FROM SER. No. 00001  
TO SER. No.

### 88840-0 TOOLPOST COMPLETE ASSY.



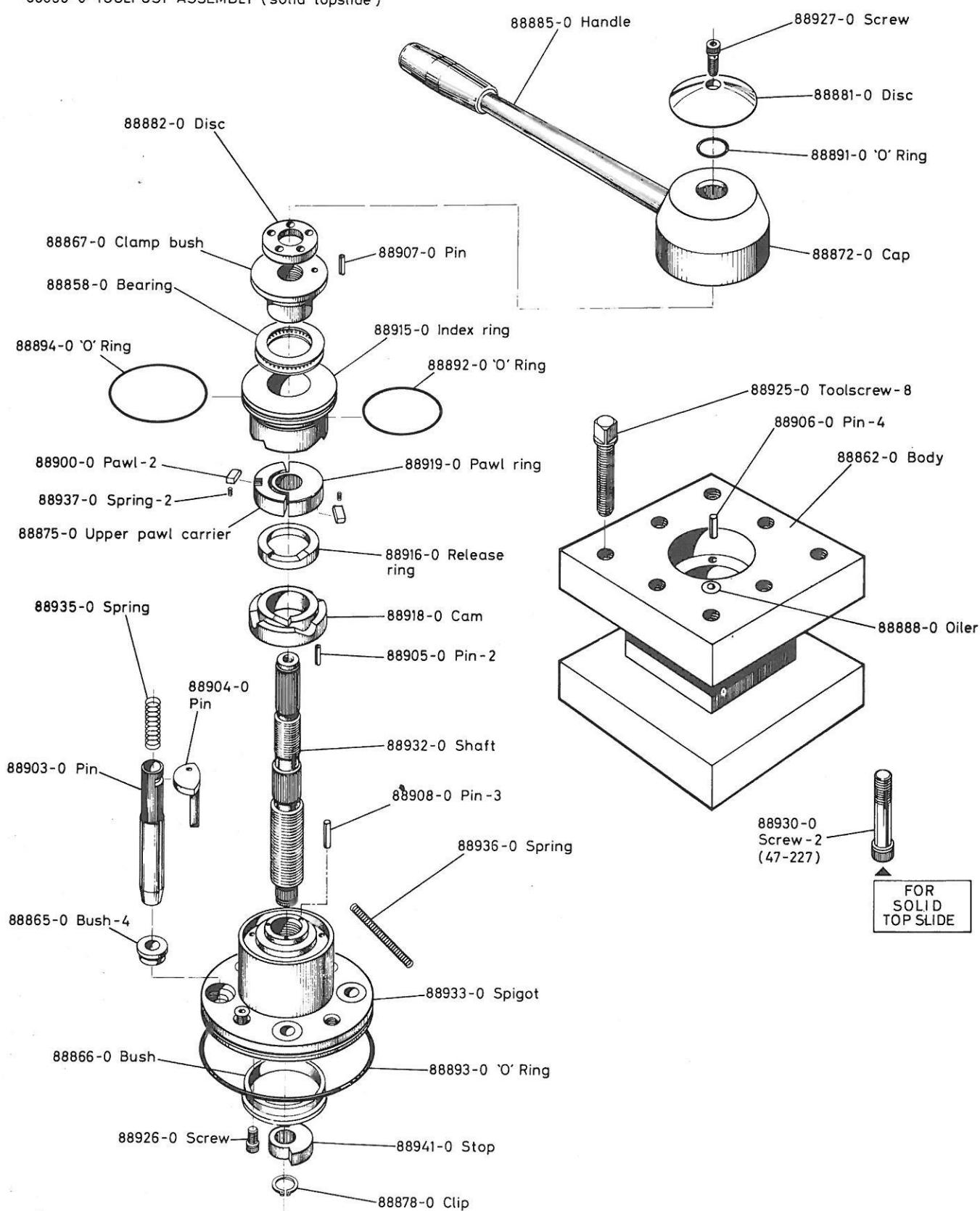
(for Armstrong T-1-S & FT-1-S and 1-S & 1-L toolholders)

5-47A-7206

**TOOLPOST ; 4 WAY TURRET**

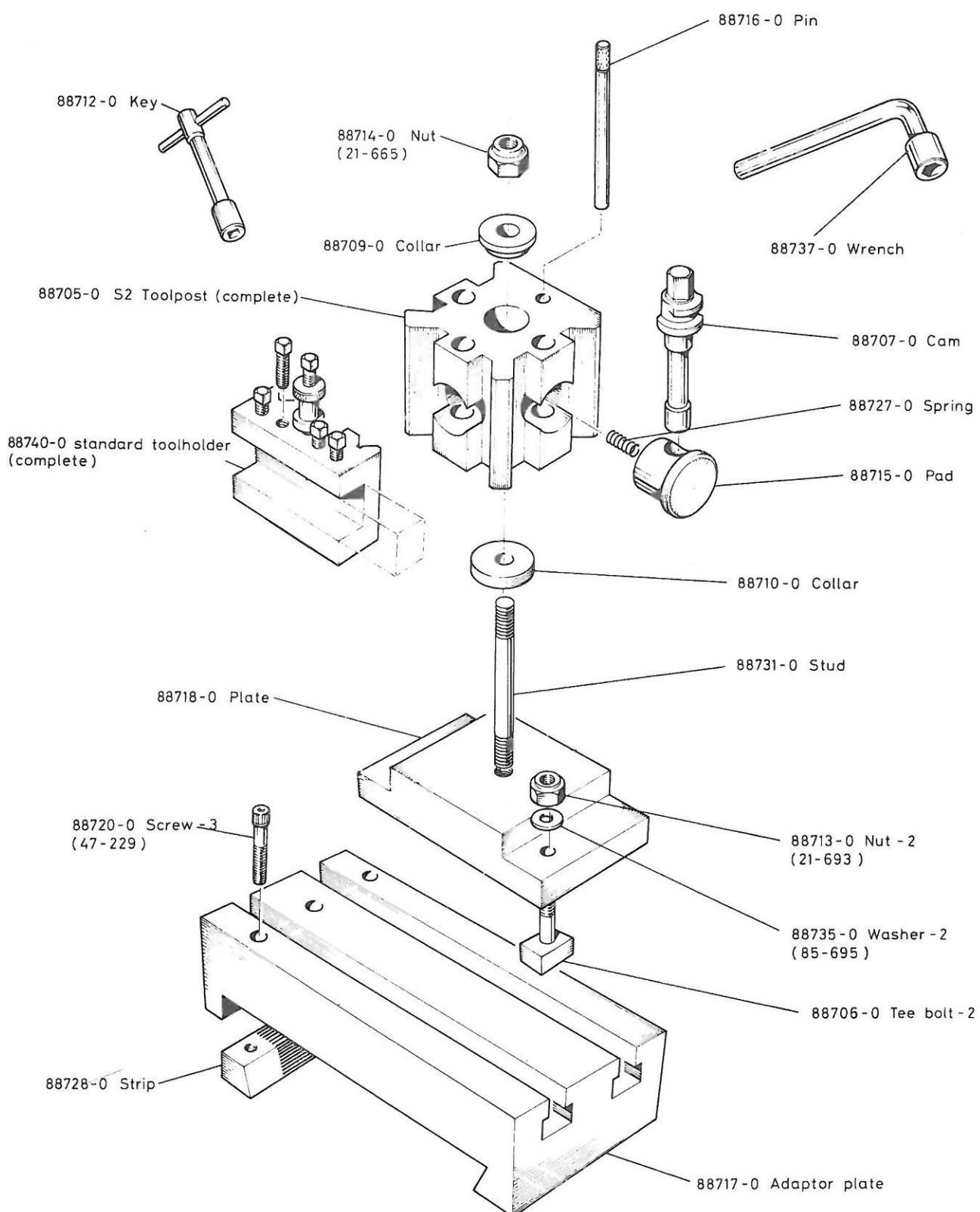
FROM SER. No. 00001  
TO SER. No....

88850-0 TOOLPOST ASSEMBLY (solid topslide )



**REAR TOOLPOST ; QUICK - CHANGE**FROM SER. No. 00001  
TO SER. No....

88700-0 REAR TOOLPOST QUICK CHANGE COMPLETE



## COOLANT UNIT

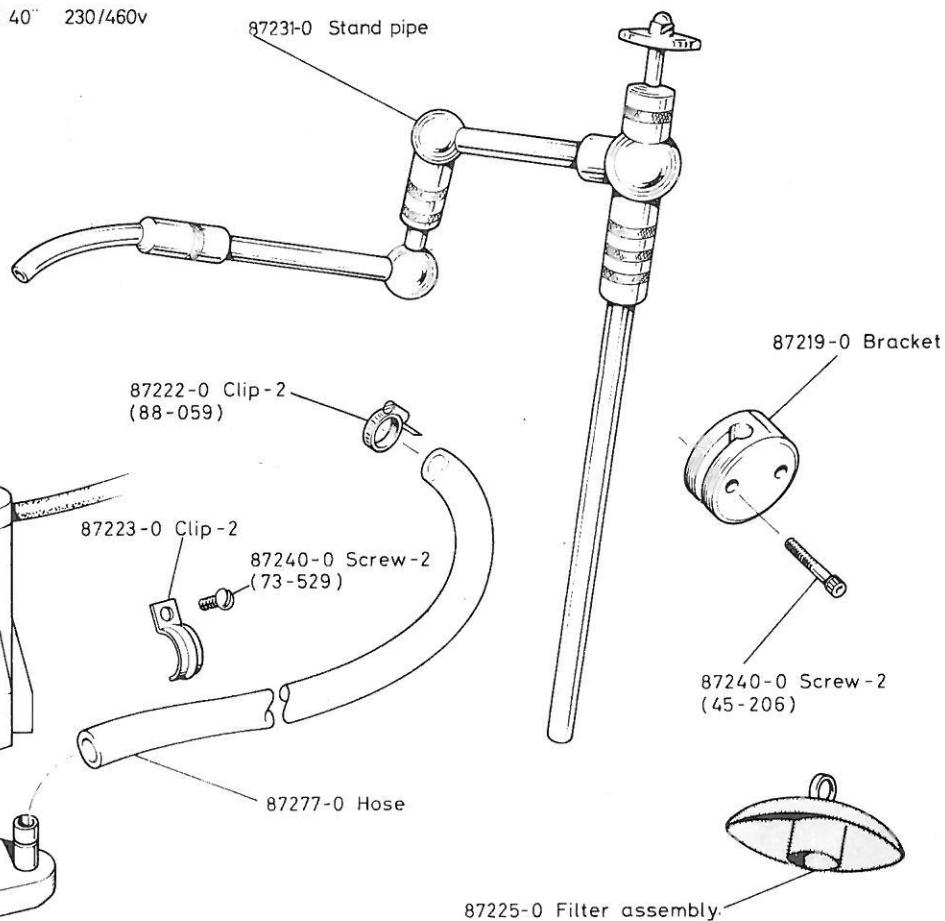
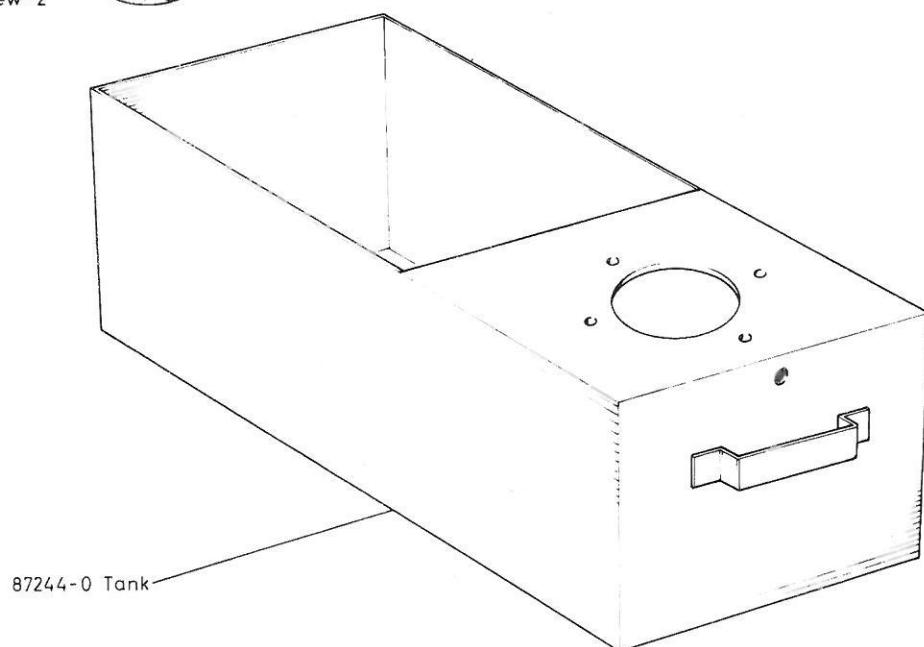
FROM SER. No. 00001  
TO SER. No...

REFER TO WIRING DIAGRAM BEFORE INSTALLING OR REPAIRS

87205-0	COOLANT UNIT COMPLETE 25"	208v
87206-0	COOLANT UNIT COMPLETE 25"	230/460v
87207-0	COOLANT UNIT COMPLETE 40"	208v
87208-0	COOLANT UNIT COMPLETE 40"	230/460v

87235-0	Pump 25" m/c 208v
87236-0	Pump 40" m/c 208v
87237-0	Pump 25" m/c 230/460v
87238-0	Pump 40" m/c 230/460v

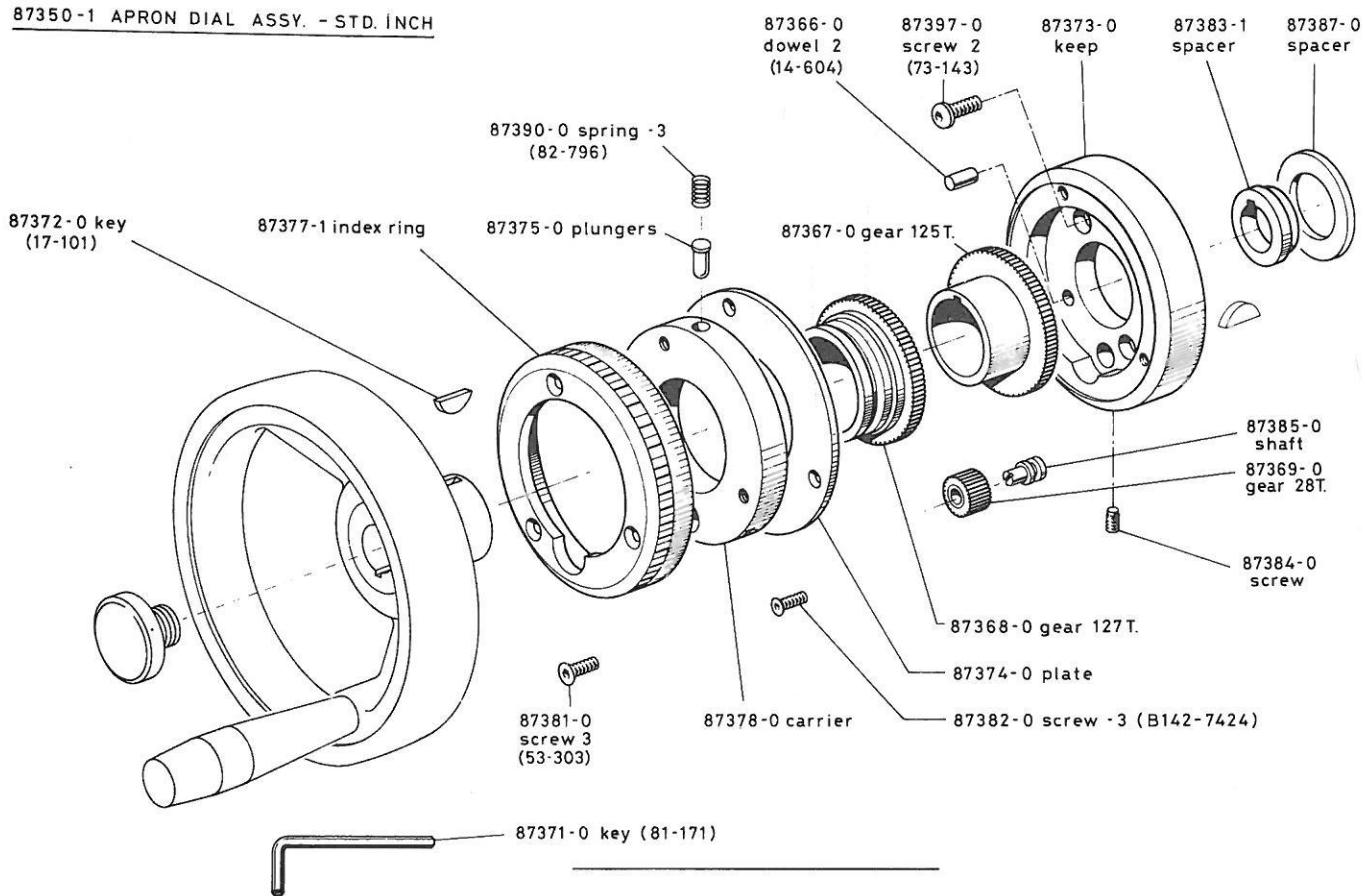
87242-0	Screw-2 (46-212)
87246-0	Washer-2 (85-735)



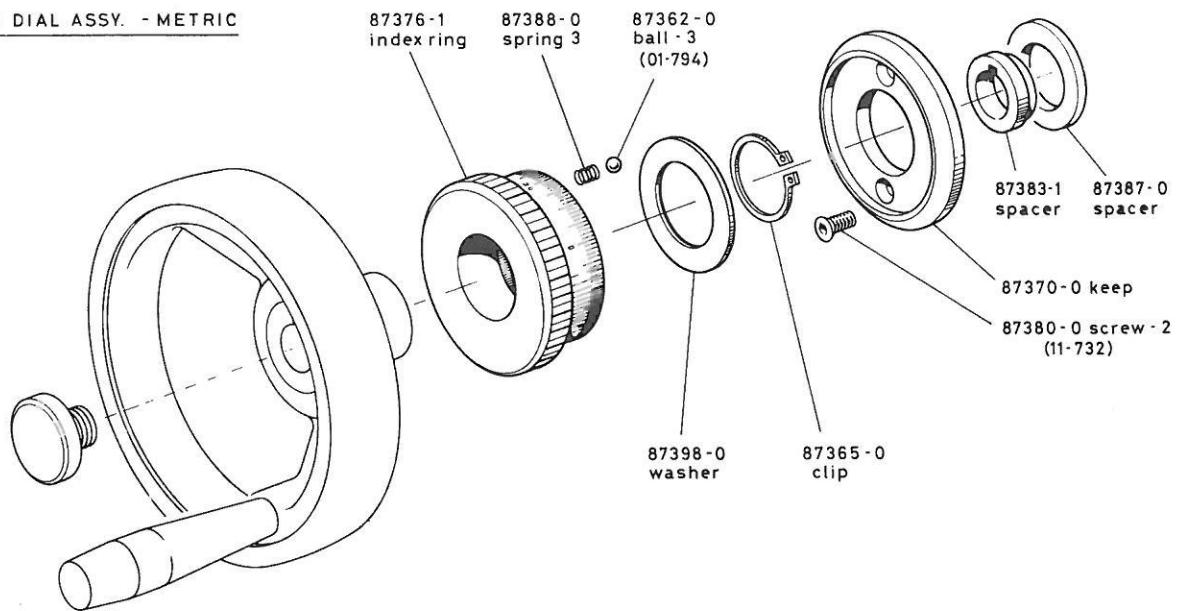
## APRON DIALS

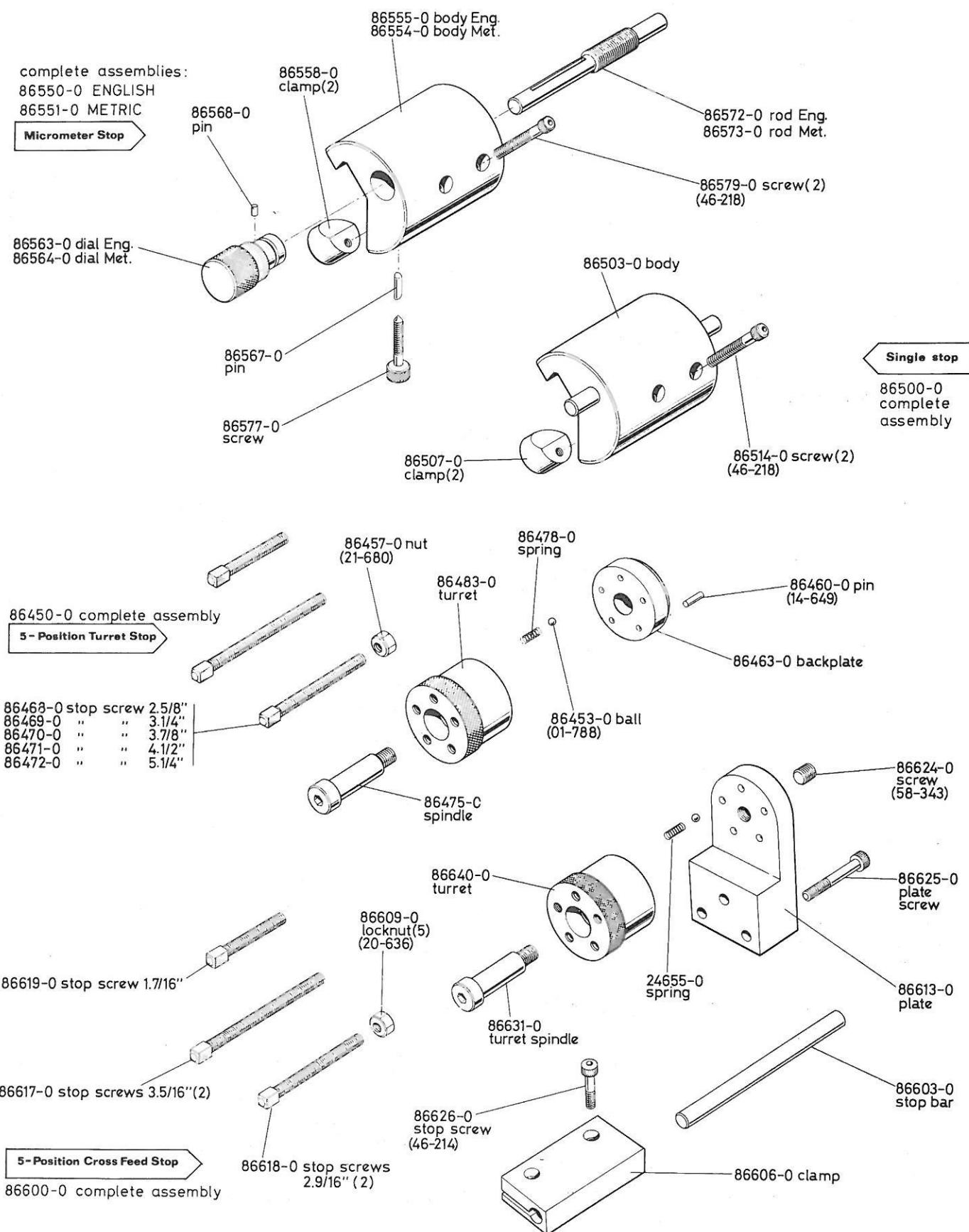
FROM SER. No. 01070  
TO SER. No....

87350-1 APRON DIAL ASSY. - STD. INCH



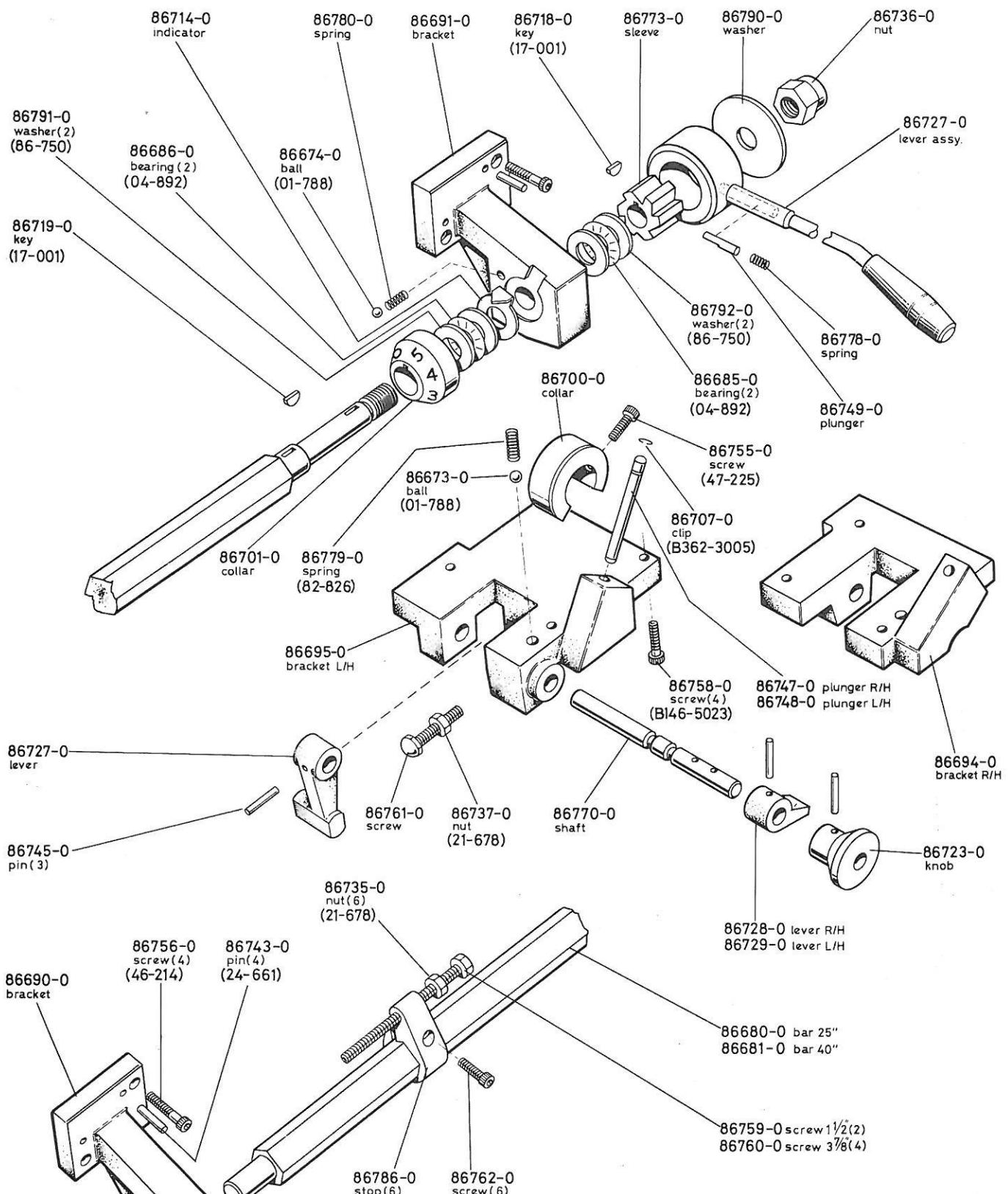
87355-1 APRON DIAL ASSY. - METRIC



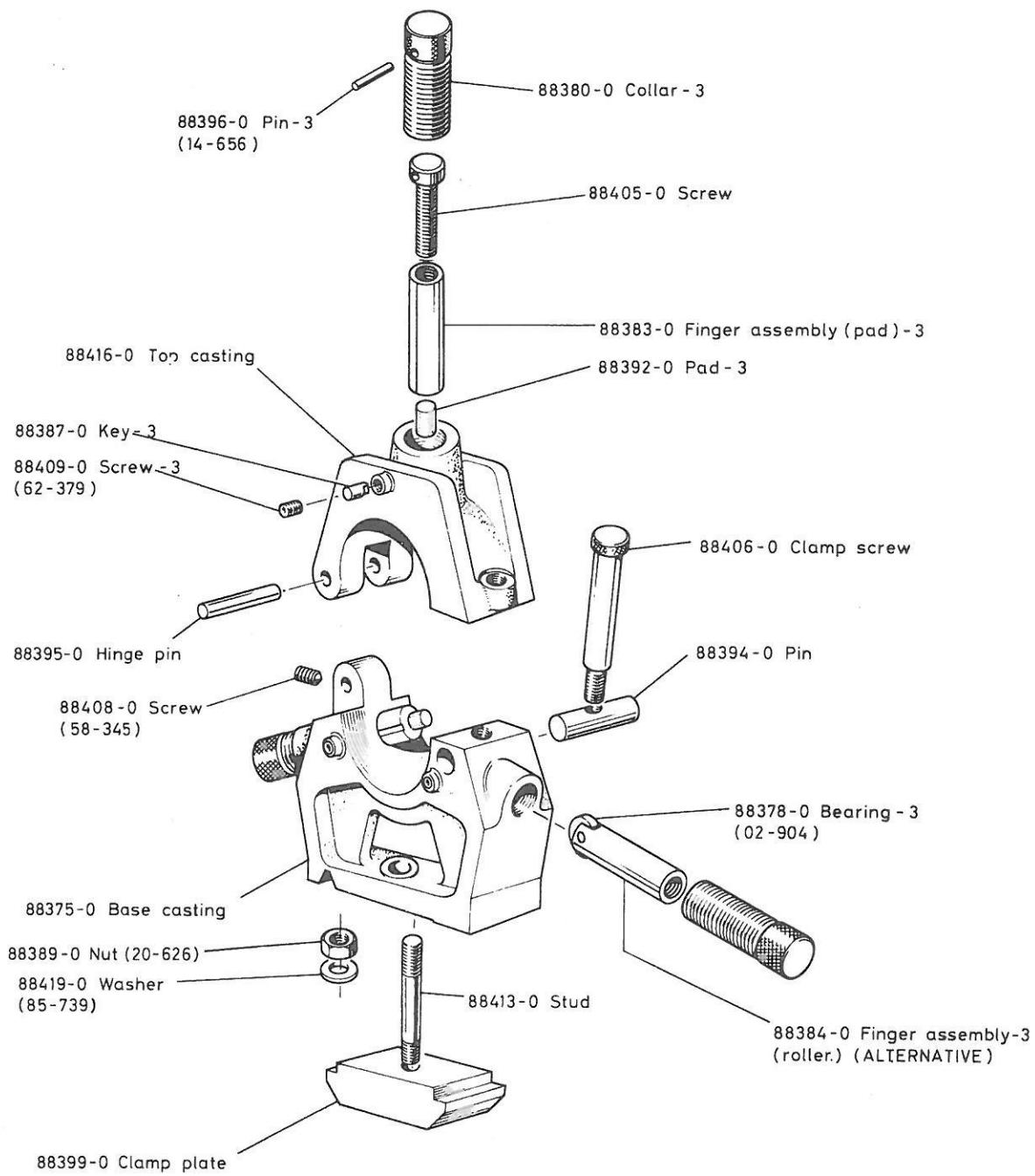


**BED STOP; 6 POSITION LONGITUDINAL**

FROM SER. No.00001  
TO SER.No.



86650-0 6-position longitudinal bedstop assembly 25in. R/H(grey)  
 86655-0 6-position longitudinal bedstop assembly 25in. L/H(grey)  
 86660-0 6-position longitudinal bedstop assembly 40in. R/H(grey)  
 86665-0 6-position longitudinal bedstop assembly 40 in. L/H(grey)

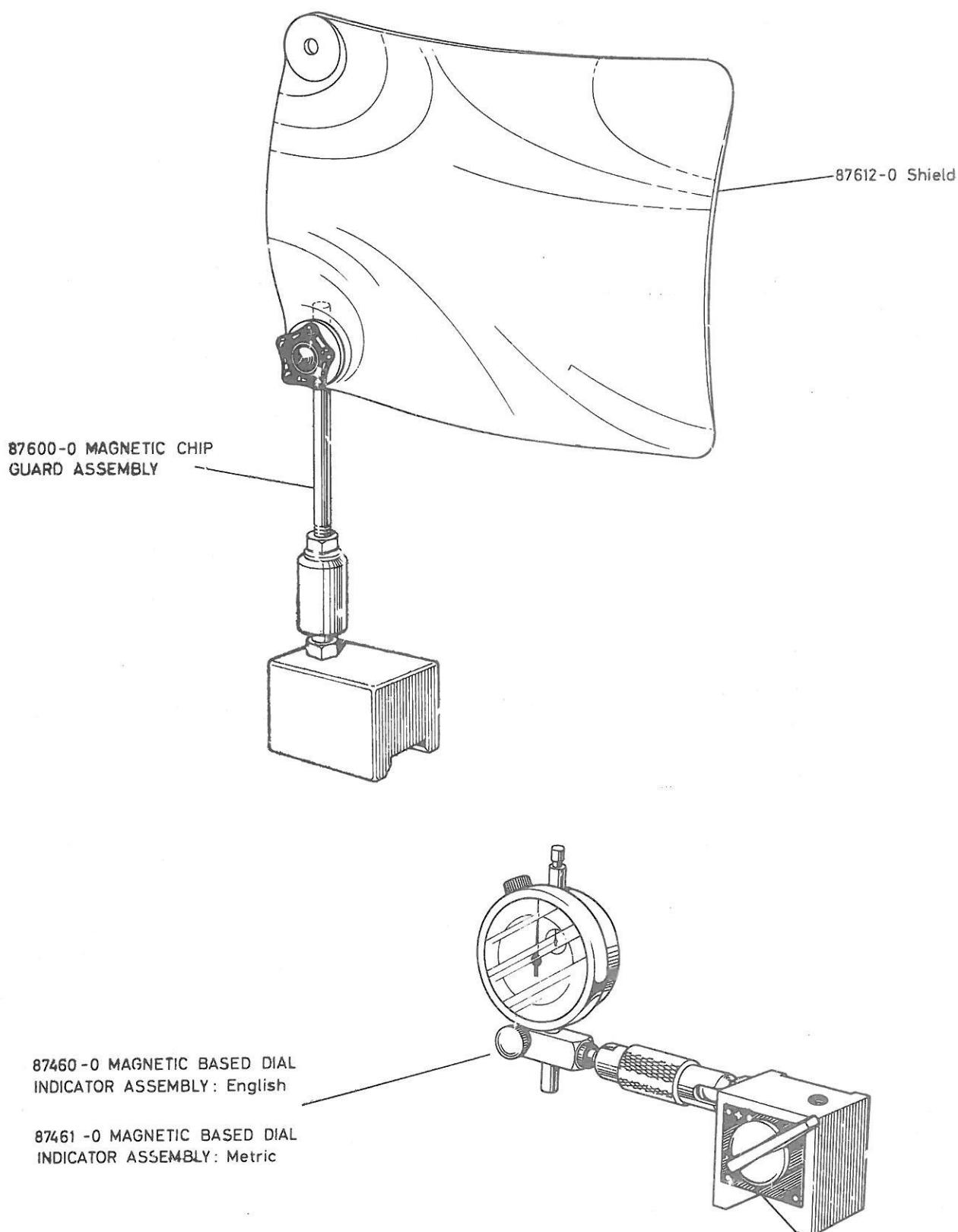



---

88350-0 STATIONARY STEADY : PADDED (Grey)  
 88355-0 STATIONARY STEADY : ROLLER (Grey)  
 88358-0 STATIONARY STEADY : ROLLER / PADDED (Grey)

**MAGNETIC CHIP GUARD / DIAL INDICATOR**

FROM SER No 00001  
TO SER. No....

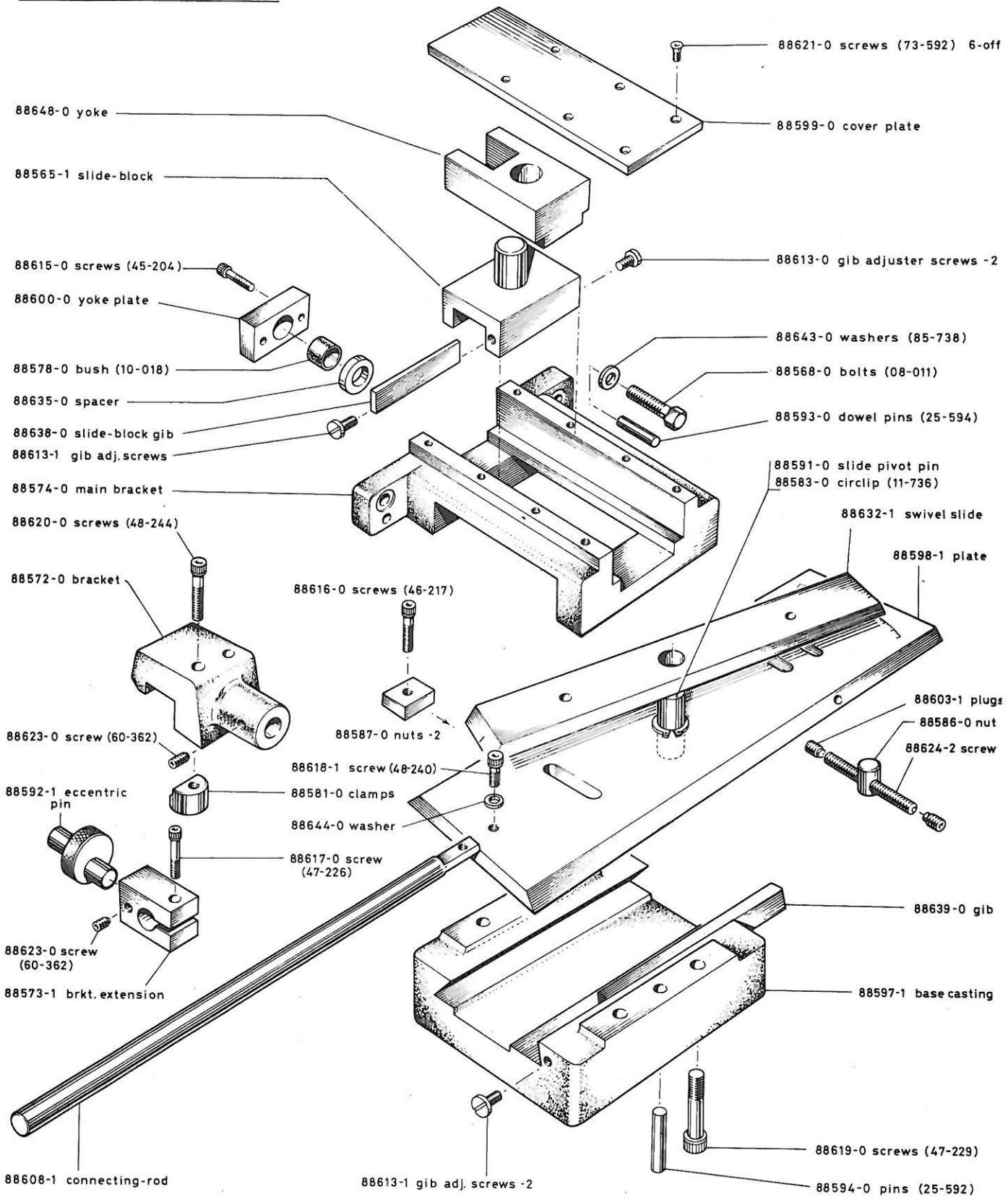


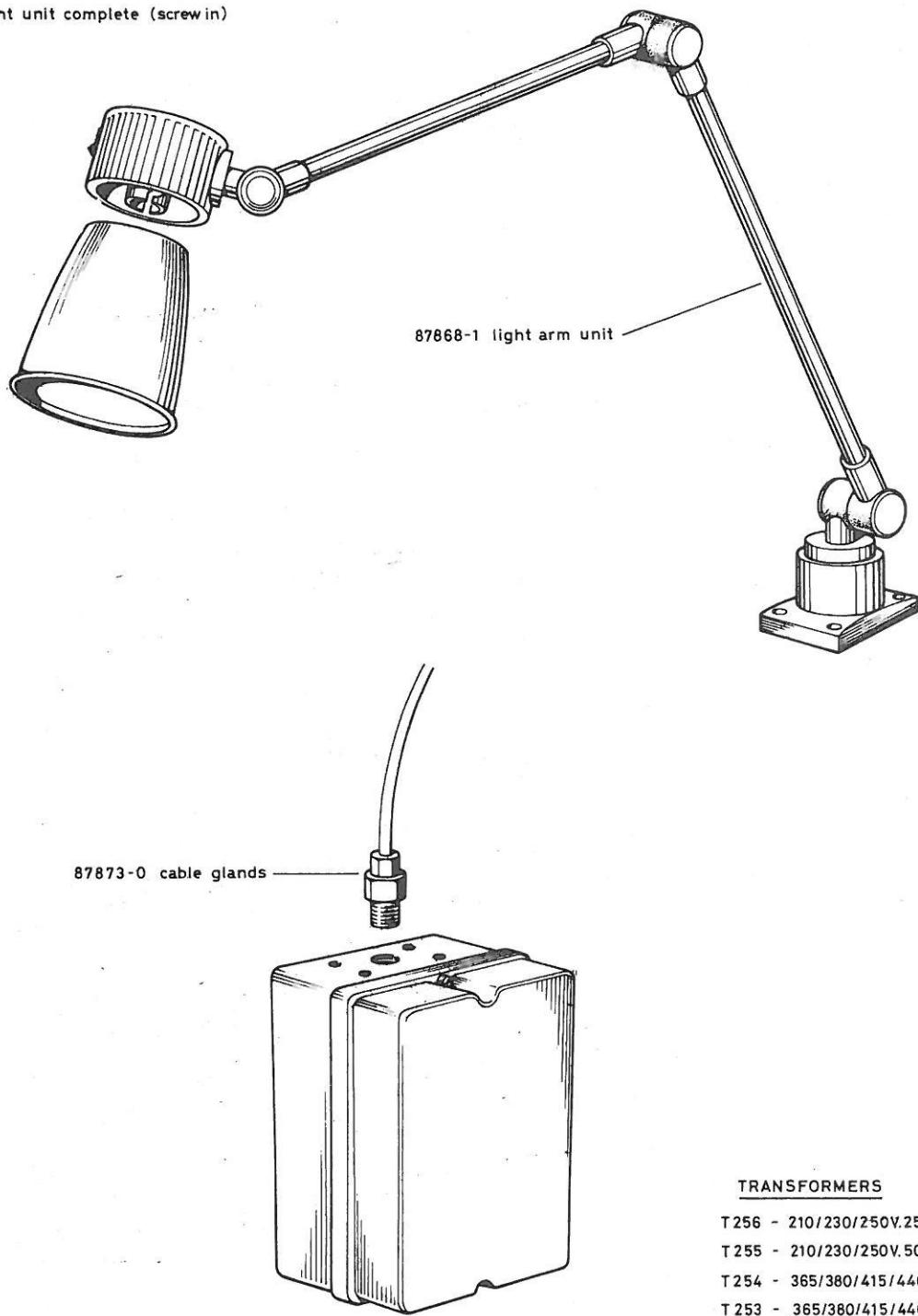
5-38-7106

## **TAPER TURNER**

FROM SER. No. "1980"  
TO SER. No.

88550-2 TAPER TURNER ASSY. (grey)



**LOW VOLT LIGHT**FROM SER. No. 00001  
198087850-1 Light unit complete (bayonet)  
87857-0 Light unit complete (screw in)**TRANSFORMERS**

T 256 - 210/230/250V.25V	87888-1
T 255 - 210/230/250V.50V	87882-1
T 254 - 365/380/415/440V. 25V	87890-1
T 253 - 365/380/415/440V. 50V	87884-1
T 257 - 500/550V. 50V	87886-1

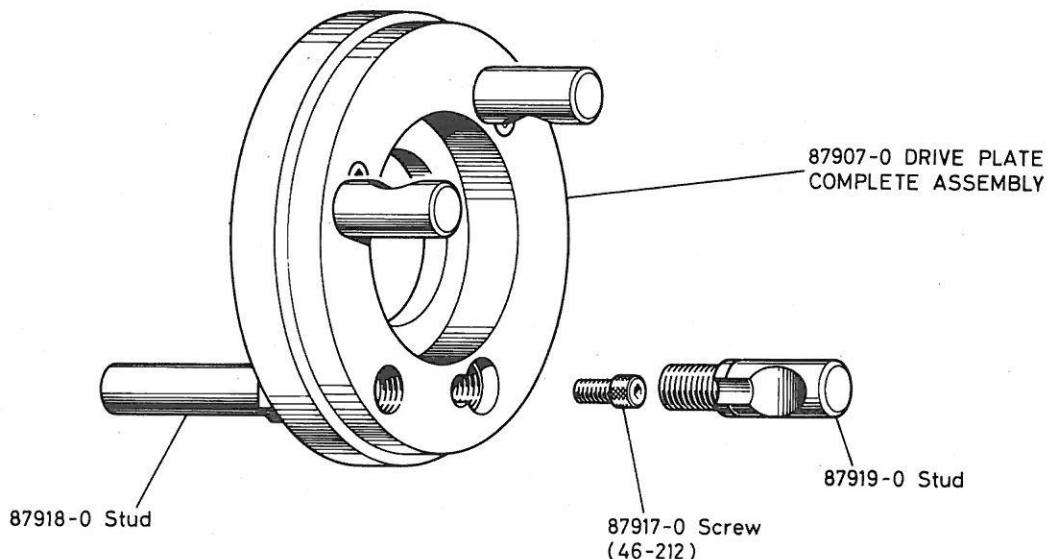
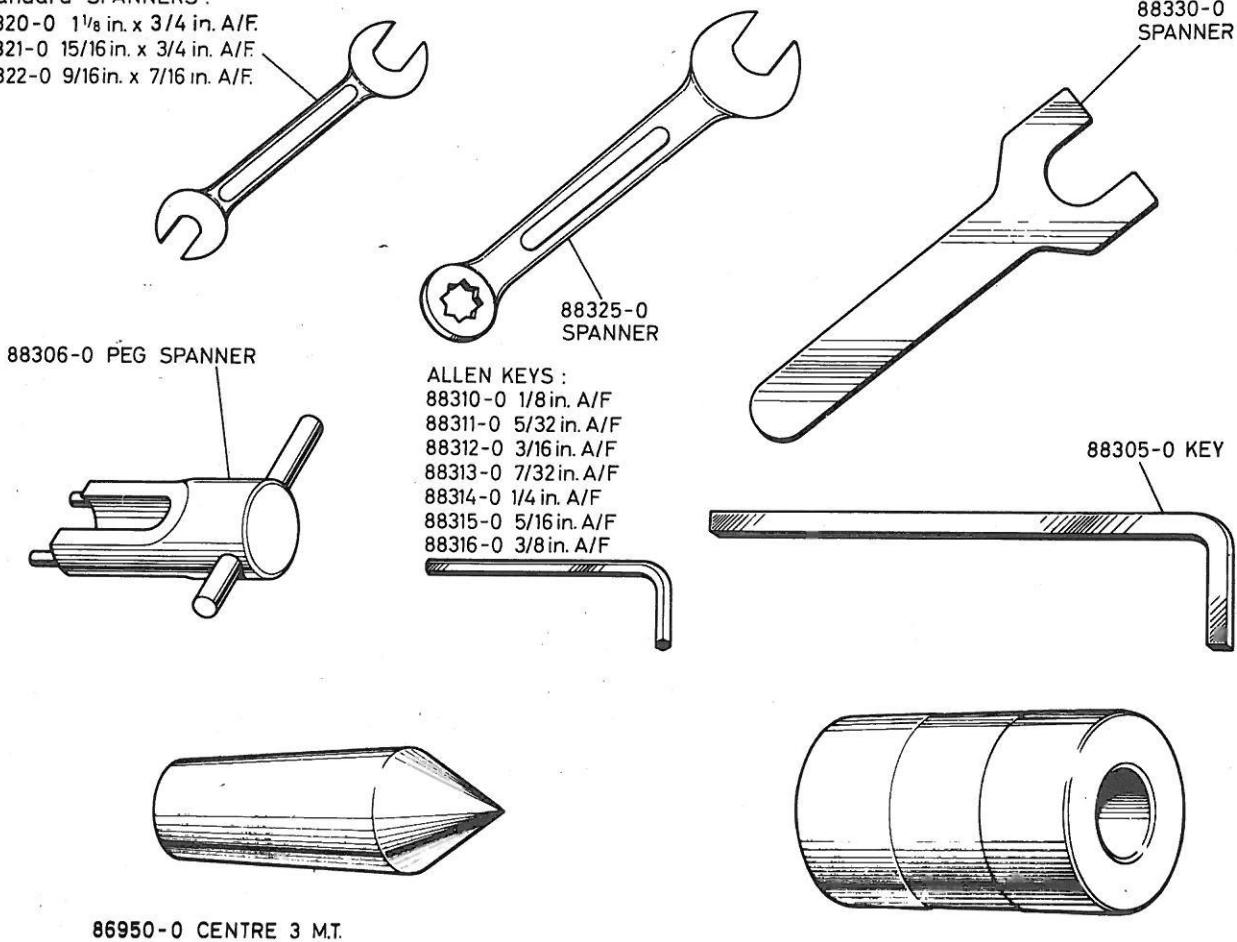
## STANDARD EQUIPMENT

FROM SER. No. 00001  
TO SER. No....

### 88300-0 TOOL KIT COMPLETE

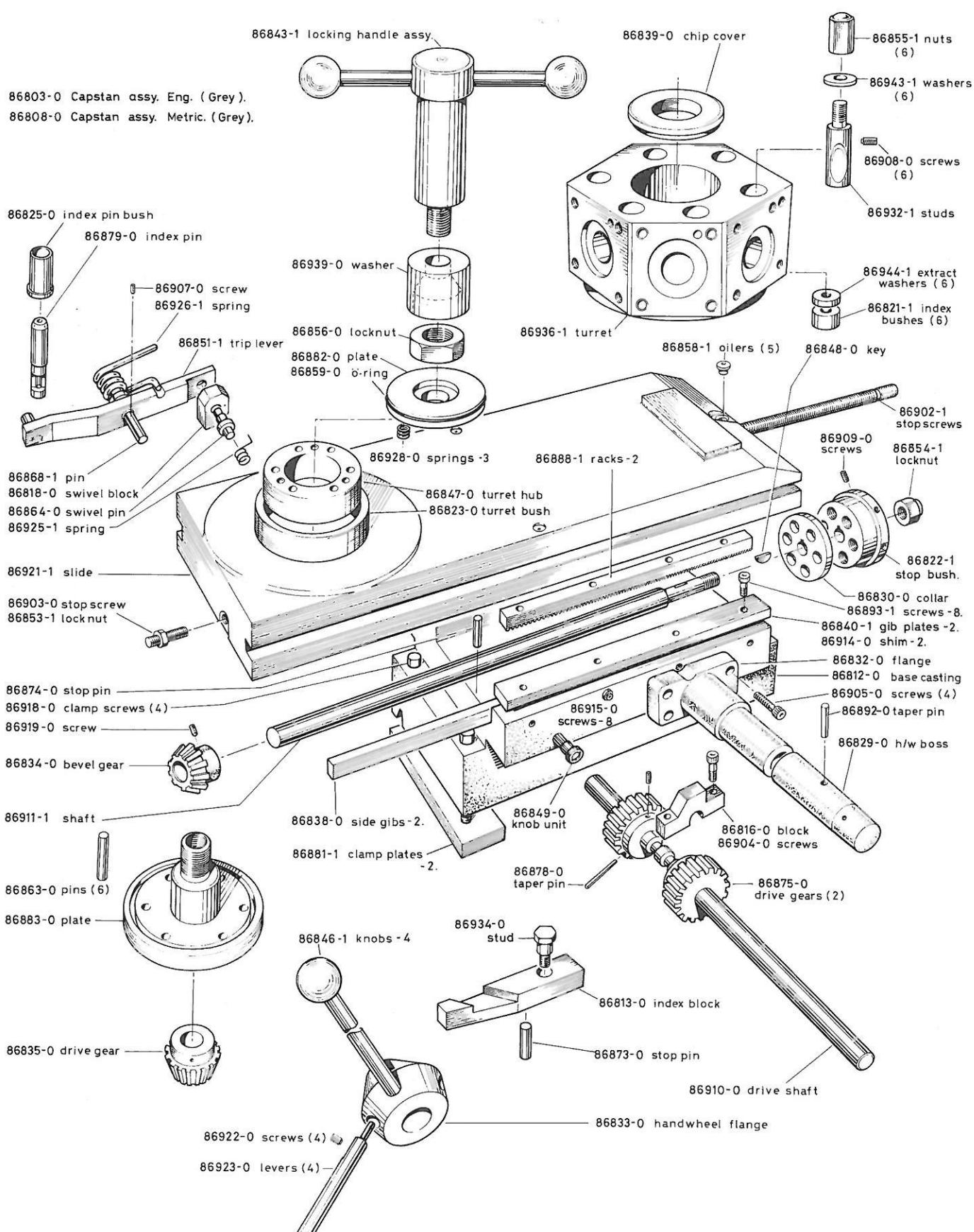
#### Standard SPANNERS :

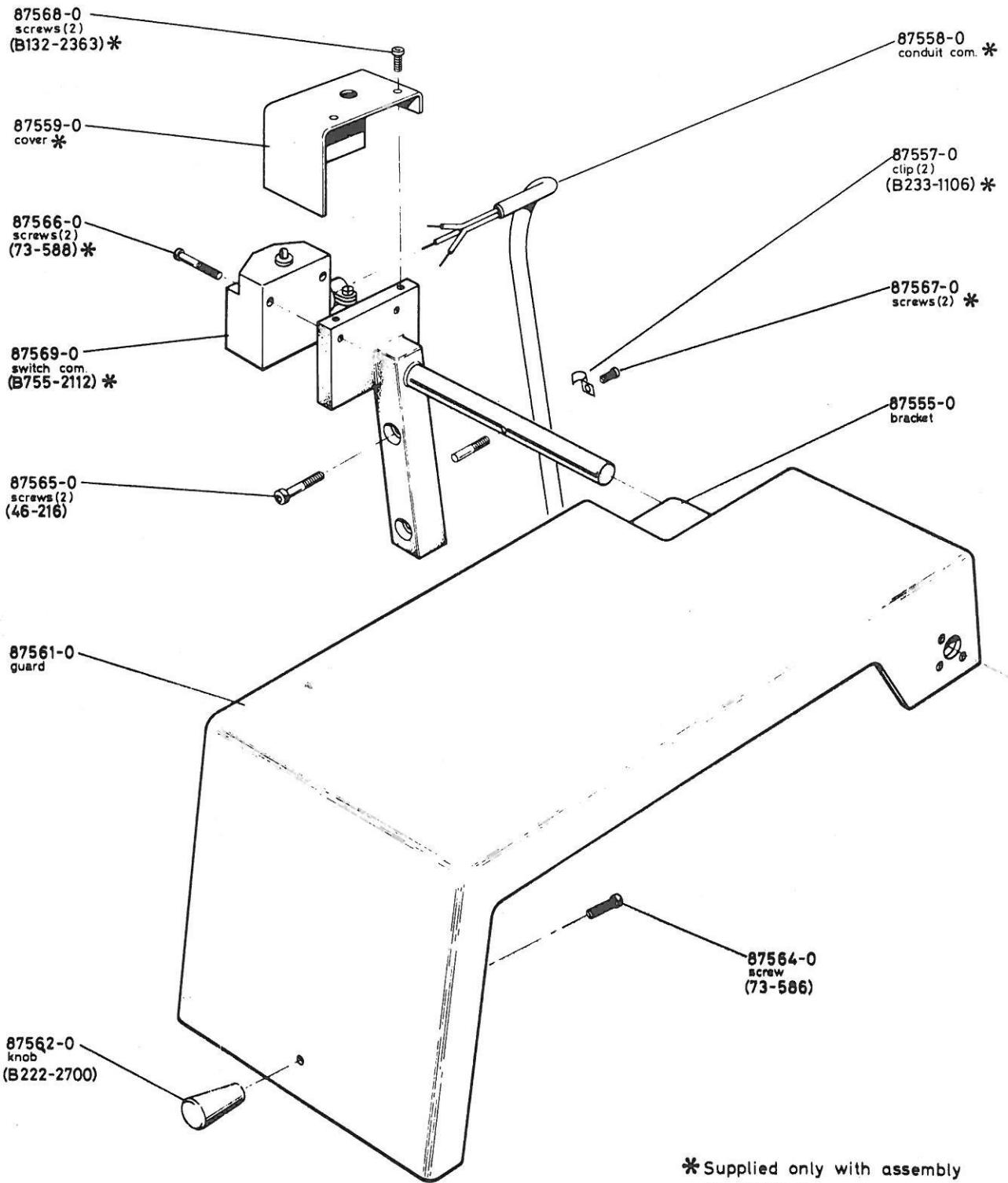
- 88320-0 1 1/8 in. x 3/4 in. A/F.
- 88321-0 15/16 in. x 3/4 in. A/F.
- 88322-0 9/16 in. x 7/16 in. A/F.



## CAPSTAN UNIT

FROM October 1979

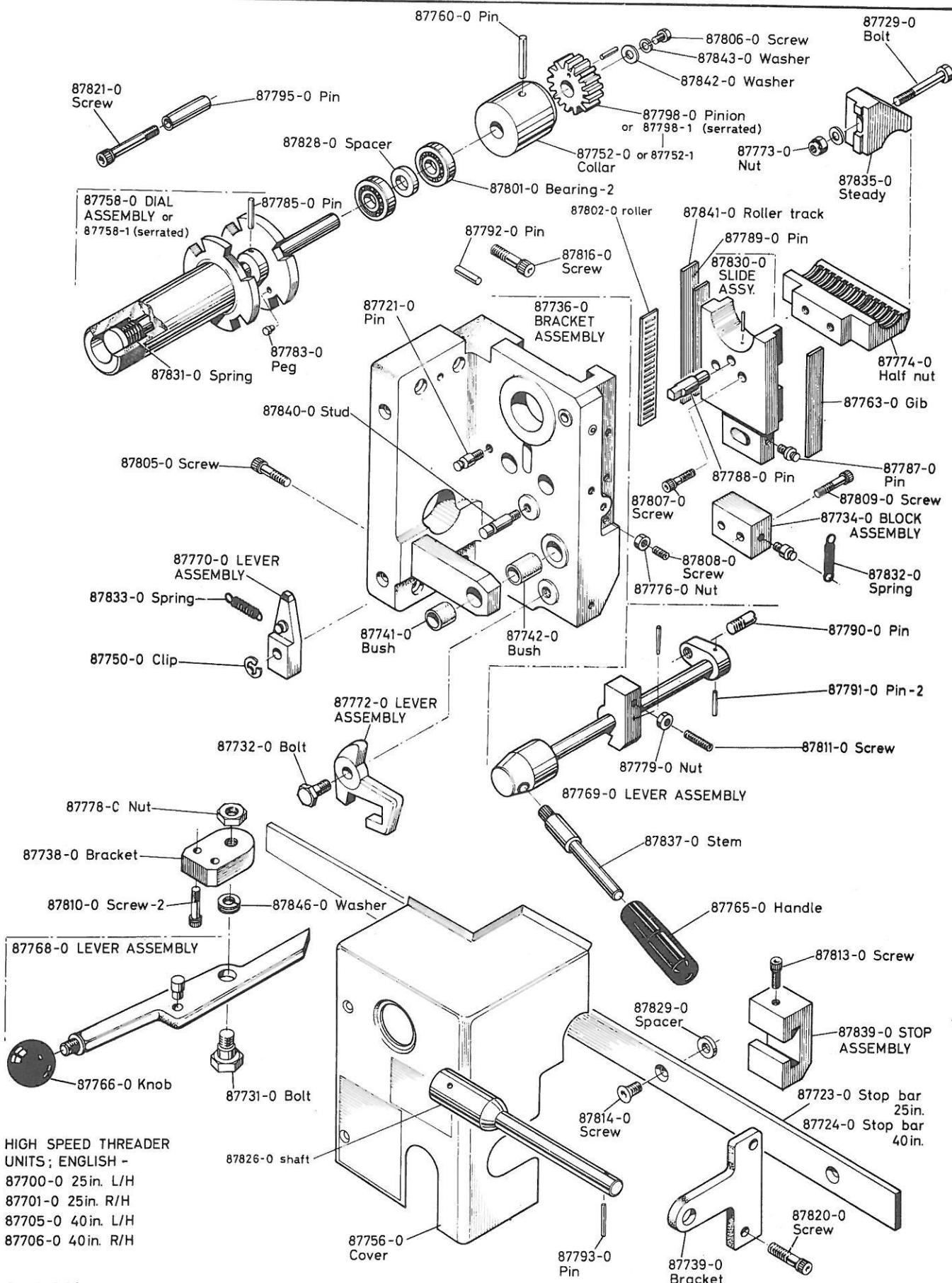


87550-0 CHUCK GUARD ASSEMBLY with LIMIT SWITCH  
87551-0 CHUCK GUARD ASSEMBLY without LIMIT SWITCH

\* Supplied only with assembly  
No. 87550-0

RAPID THREADER UNIT; ENGLISH

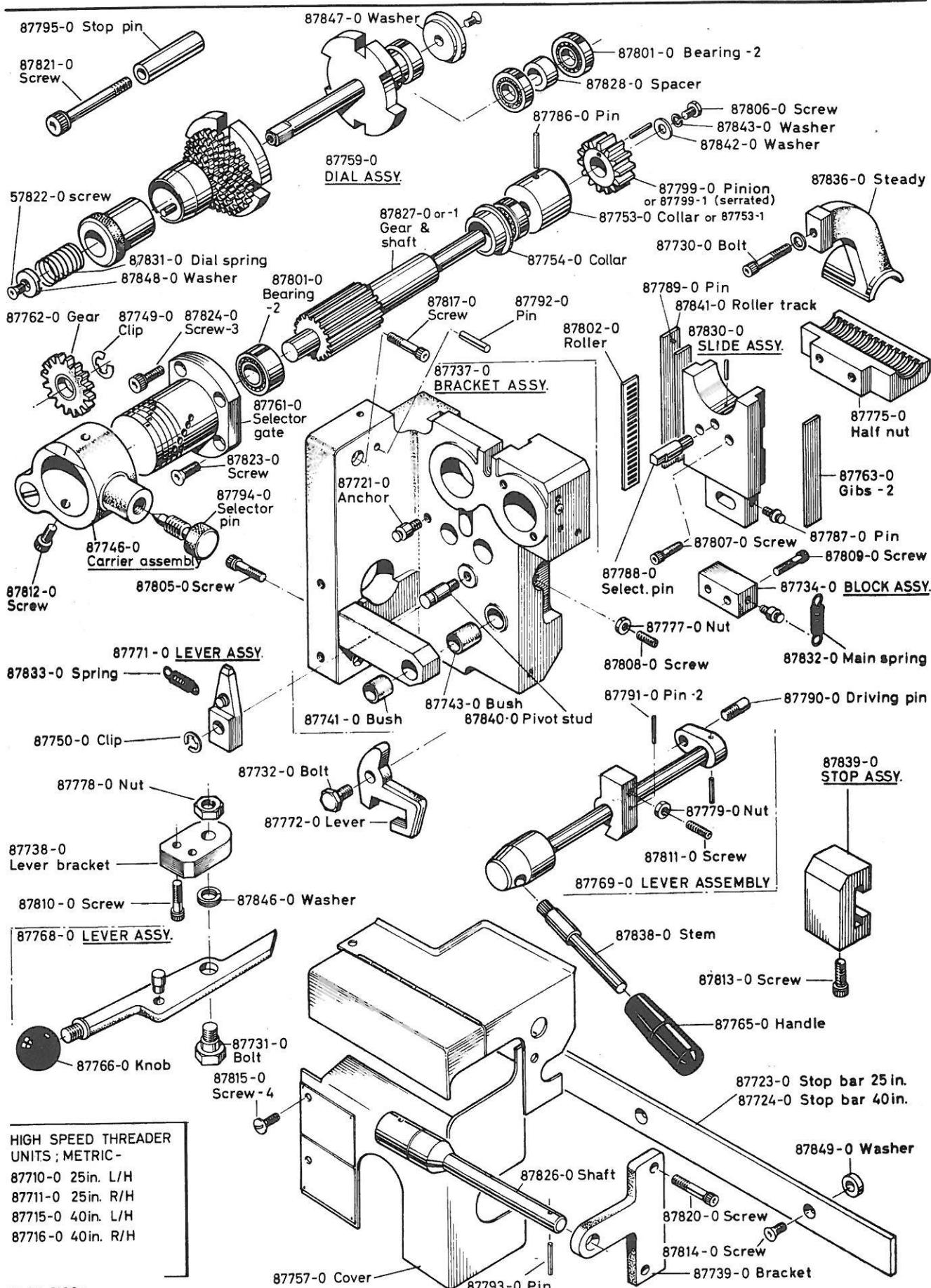
FROM SER. No. 00001  
TO SER. No. ....



HIGH SPEED THREADER UNITS; ENGLISH -  
87700-0 25in. L/H  
87701-0 25in. R/H  
87705-0 40in. L/H  
87706-0 40in. R/H

RAPID THREADER UNIT; METRIC

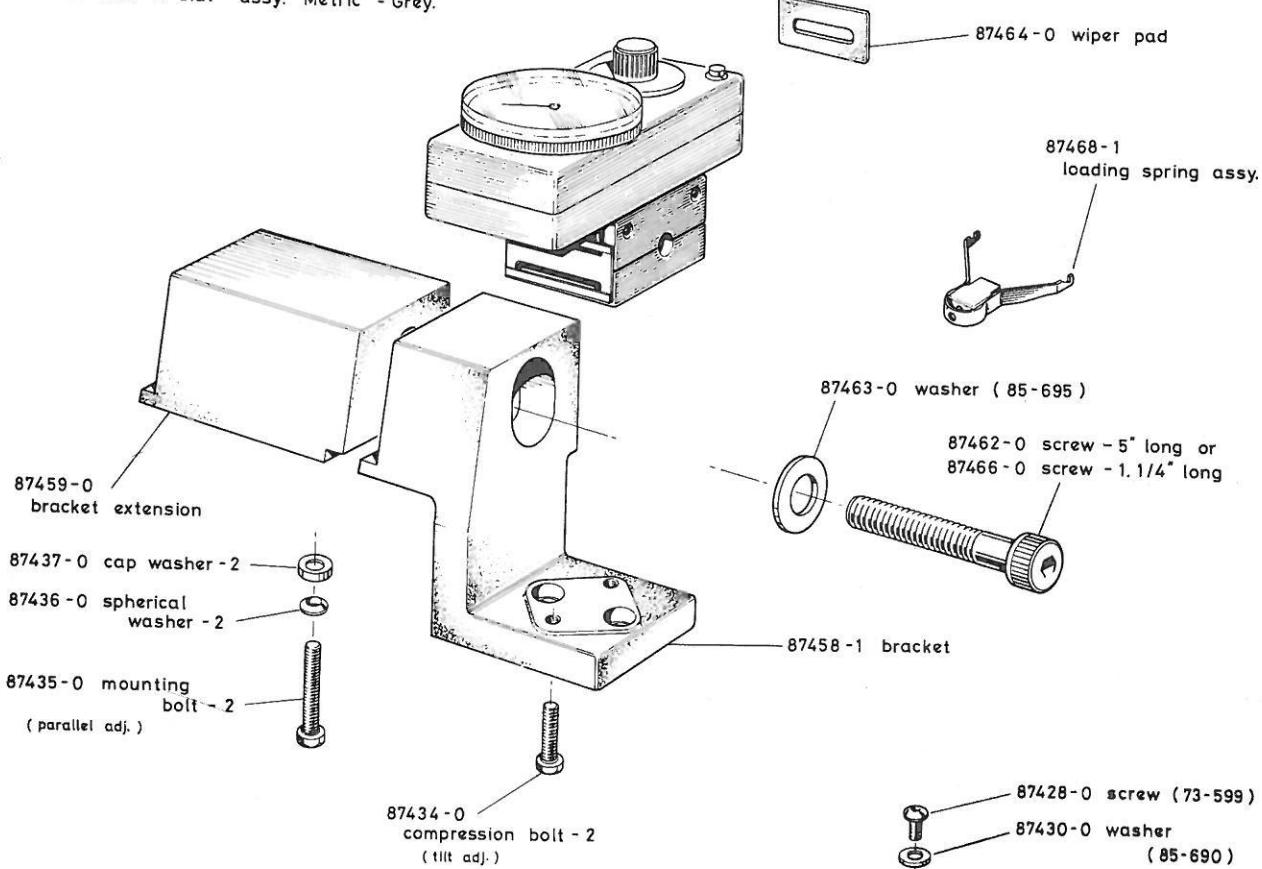
FROM SER. No. 00001  
TO SER. No. ....



## LONGITUDINAL POSITIONING DIALS

FROM SER. NO. 05387  
TO SER. NO.

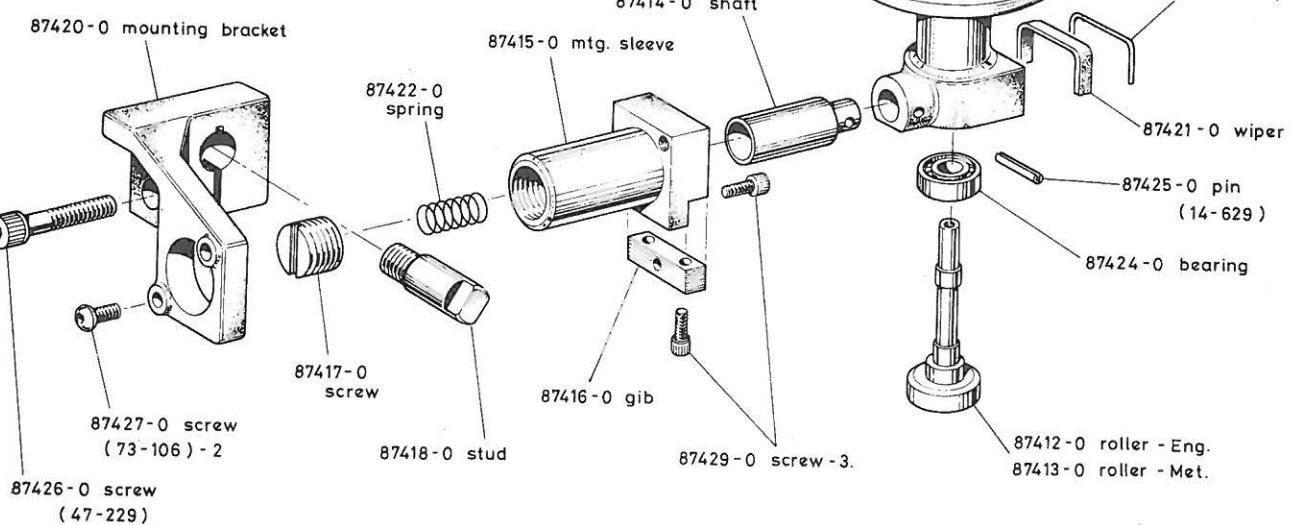
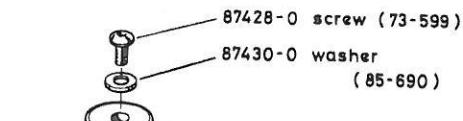
87450-1 'Trav-a-dial' assy. English - Grey.  
87455-1 'Trav-a-dial' assy. Metric - Grey.



87400-0 Roller Dial assy. English - Grey.  
87405-0 Roller Dial assy. Metric - Grey.

87431-0 Extension bracket.  
87432-0 Extension stud.

87410-0 dial housing - Eng.  
87411-0 dial housing - Met.



Reference Number

11-737 Circlip EXT 1/2 in. Anderton 1500 E.396  
11-738 Circlip EXT Anderton 3/8 in. 1400  
11-741 Circlip EXT Anderton 9/16 in. 1400  
11-743 Circlip EXT Anderton 5/8 in. 1400  
11-745 Circlip EXT Anderton 3/4 in. 1400  
11-746 Circlip EXT Anderton 1.1/2 in. 1400  
11-749 Circlip EXT Anderton 7/8 in. 1400  
11-750 Circlip EXT Anderton 1.1/16 in. 1400  
11-751 Circlip EXT Anderton 15/16 in. 1400  
11-753 Circlip EXT Anderton 1 in. 1400  
11-754 Circlip EXT Anderton 1.1/8 in. 1400  
11-770 Circlip EXT Anderton 2.5/8 in. 1400  
11-776 Circlip EXT Anderton 5/8 in. 1500 - E485  
11-777 Circlip EXT Anderton 3/4 in. 1500 - E580  
11-848 Circlip EXT Anderton 3/16 in. 1500 E147  
11-860 Circlip EXT 25 MM Anderton 1400  
11-865 Circlip EXT 30 MM Anderton 1400  
11-868 Circlip EXT 40 MM Anderton 1400  
11-869 Circlip EXT 12 MM Anderton 1400  
11-874 Circlip EXT Anderton 1500 E303  
11-875 Circlip EXT Anderton 1400 13 MM

12-760 Circlip Internal 11/16 in. Anderton 1300  
12-767 Circlip Internal Anderton 1300 40 MM  
12-836 Circlip Internal 47 MM Anderton 1300  
12-838 Circlip Internal 55 MM Anderton 1300  
12-839 Circlip Internal 62 MM Anderton 1300  
12-840 Circlip Internal 37 MM Anderton 1300

13-797 Circlip 3/8 in. anderton 1900  
13-801 Circlip Anderton type 1000-87  
13-802 Circlip Anderton type 1000-15  
13-803 Circlip Anderton type 500-15  
13-810 Safety circlip SL375  
13-811 Circlip Anderton 1700-25

14-103 Spring dowel 1/8 in. dia. x 1/2 in.  
14-144 Spring dowel 3/16 in. dia. x 1.1/4 in.  
14-604 Spring dowel 3/16 in. dia. x 1/2 in.  
14-605 Spring dowel 3/16 in. dia x 3/4 in.  
14-629 Spring dowel 1/8 in. dia. x 1 in.  
14-649 Spring dowel 3/16 in. dia. x 5/8 in.  
14-652 Spring dowel 3/16 in. dia. x 1 in.  
14-653 Spring dowel 3/16 in. dia. x 1.1/8 in.  
14-656 Spring dowel 3/16 in. dia. x 1.1/2 in.  
14-664 Spring dowel 1/4 in. dia. x 3/4 in.

16-841 Handle 3/8 in. bolt x 2.1/2 in. black

Reference Number

17-001	Key Woodruff No 3 BS 404
17-002	Key Woodruff No 9 BS 606
17-037	Key 3/15 in. x 3/16 in. x 3/4 in. longBS 46
17-039	Key Woodruff BS 505
17-040	Key Woodruff 1/8 in. x 1/8 in. x 3/4 in. BS46
17-043	Key Woodruff BS46 303
20-620	Nut 1/4 in. u.n.c. standard
20-621	Nut 5/16 in. u.n.c. standard
20-626	Nut 5/8 in. u.n.c. standard
20-636	Nut 5/16 in. u.n.c. thin
21-655	Locknut 3/4 in. u.n.c. Nyloc
21-660	Locknut 3/8 in. u.n.c. Simmonds Aero
21-661	Locknut 7/16 in. u.n.c. Nyloc NP/N146
21-662	Locknut 1/2 in. u.n.c. std/Nyloc NT/N1166
21-665	Locknut 5/8 in. u.n.c. Nyloc NP/N206
21-678	Locknut 5/8 in. u.n.c. thin Armalok A-5 CAPZ
21-680	Locknut 3/8 in. u.n.c. thin
21-683	Locknut 1/2 in. u.n.c. thin nut 'T' NT/N166
21-691	Locknut 1/4 in. u.n.c. Armalok A-4 CAPZ
21-692	Locknut 3/8 in. u.n.c. Armalok A-6 CAPZ
21-693	Locknut Simmonds PT/N166
22-693	Standard nut 3/8 in. BSF
22-694	Nut 2 BA Standard nut
22-702	Nut 7/16 in. BSF L/H
23-124	1/4 in. dia. Springwell oiler
23-827	1/4 in. Garland diaphragm oiler
24-452	Mills pin 3/16 in. dia. x 3/4 in. G.P.3
24-533	Mills pin 5/32 in. dia. x 3/4 in. G.P.3
24-534	Mills pin 5/32 in. dia. x 1 in. G.P.3
24-535	Mills pin 5/32 in. dia. x 1.1/4 in. G.P.3
24-541	Mills pin 3/16 in. dia. x 5/8 in. G.P.3
24-661	Mills pin 1/4 in. dia. x 7/8 in G.P.1
25-592	Pin 5/16 in dia. x 1.3/4 in. BS 3410
25-594	Pin 1/4 in. dia. x 1 in. Boneham & Turner
25-628	Pin 3/32- in. dia. x 1/4 in. Roll pin
27-182	Oil ring Dowty list 5 MK 10 PP 49 C
27-866	Oil ring Dowty list 5 MK 12 PP 49 C
27-870	Oil ring Dowty list 5 MK 6 PP 49 C