COLCHESTER MASTER 2500

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

THE COLCHESTER LATHE COMPANY LTD., COLCHESTER, ENGLAND

IMPORTANT

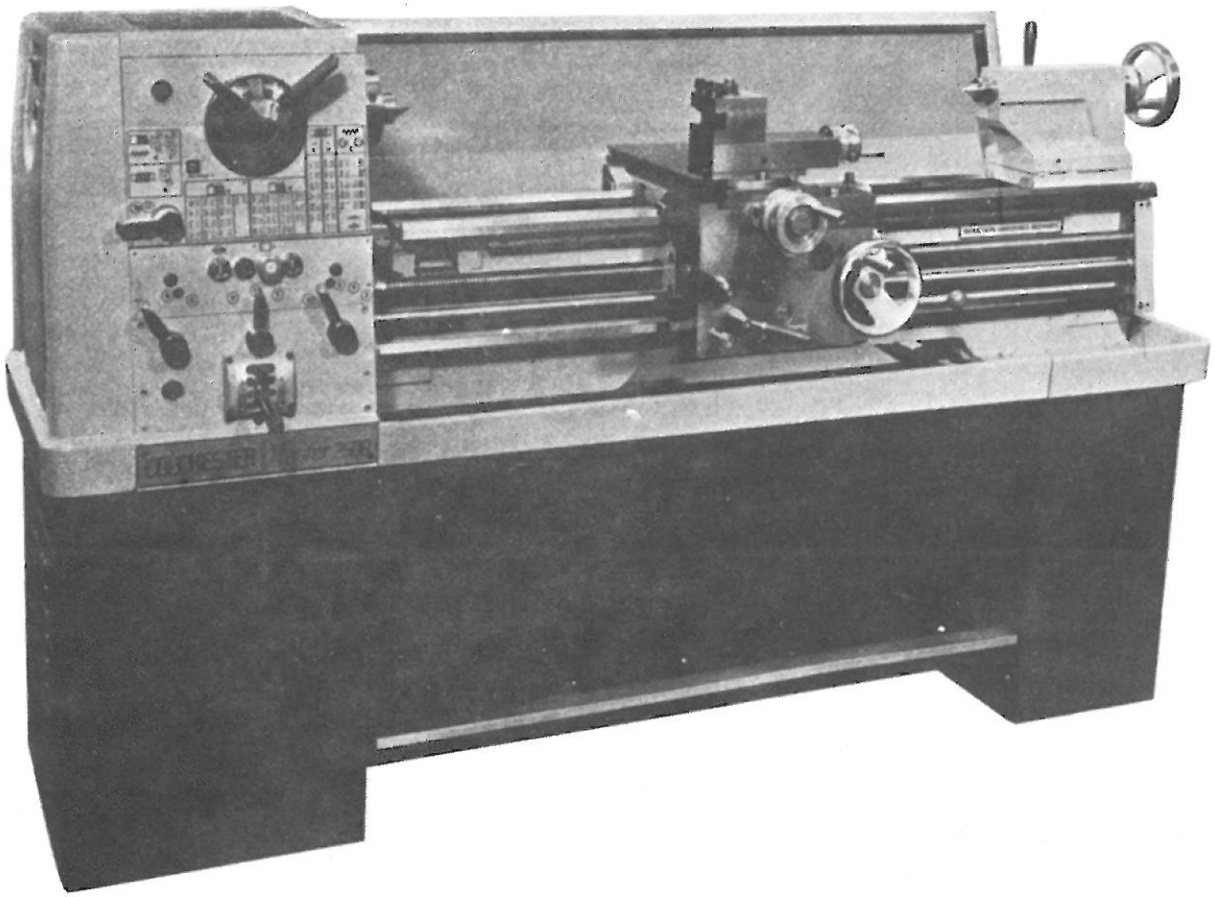
Please read before starting machine

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.

COLCHESTER MASTER 2500



This manual applies only to the machine having the serial number shown; this is stamped on the front of the lathe bed at the tailstock end and MUST be quoted in all communications.

Machine Serial Number . 50010.A.675...

THE COLCHESTER LATHE COMPANY LTD.,
COLCHESTER ESSEX ENGLAND

CLC/4960/681/6C

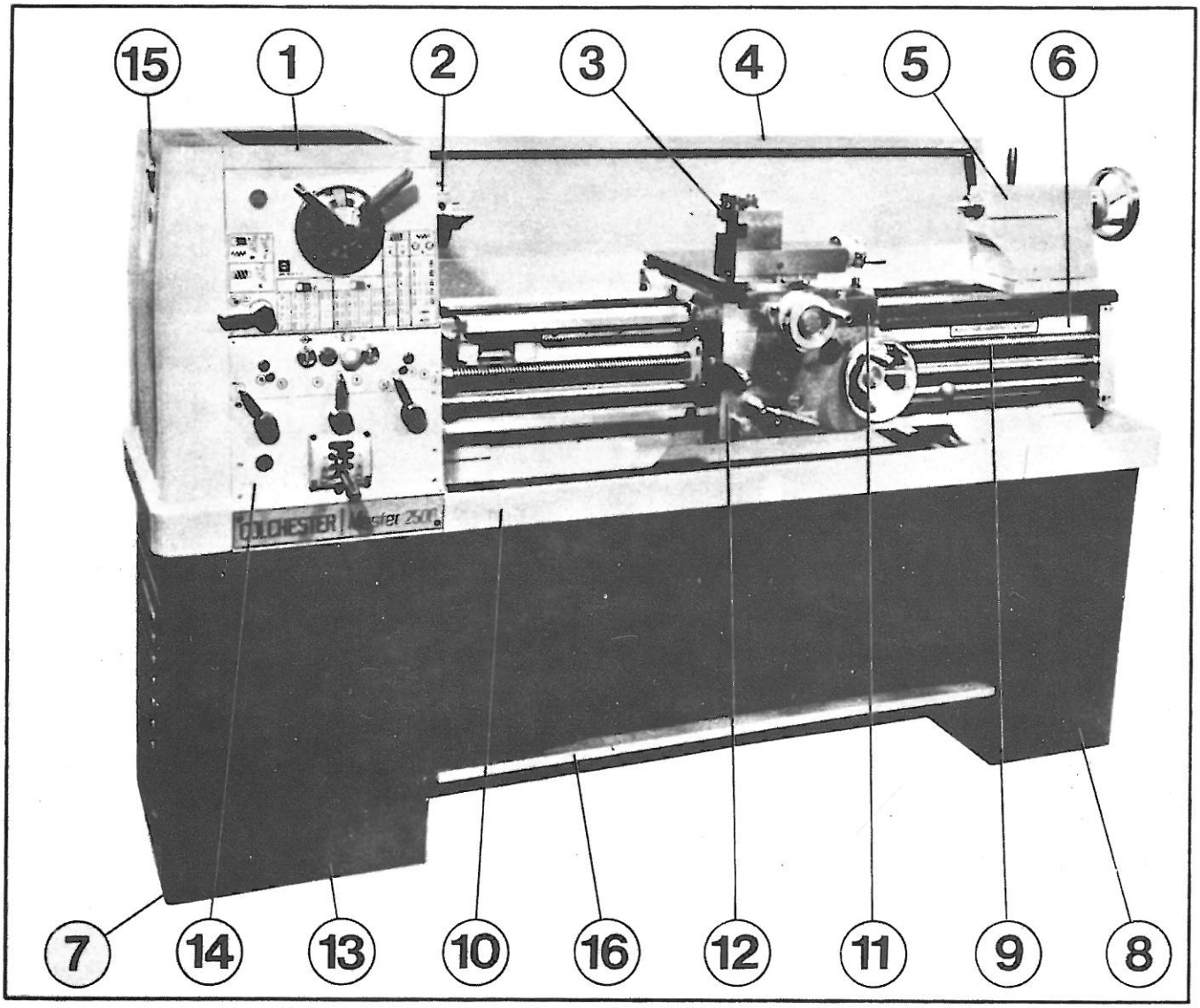
BRIEF SPECIFICATION

Height of centres		6½ in. (165mm)
Distances between centres		25 or 40 in. (635 or 1015mm)
Swing: over bed		13¼ in. (335mm)
over cross-slide		8¼ in. (210mm)
in gap (gap-bed lathe only)		19 in. (480mm)
Spindle nose		4 in. D.1 Camlock
Spindle bore (max. bar diameter)		1⅝ in. (40mm)
Taper of centres		No. 3 Morse
Weight (approx.)	25 in. between centres	1880 lb (855 kg)
	40 in. between centres	1960 lb (890 kg)

Drive: 5 h.p. single-speed motor (for further details refer to motor data plate).

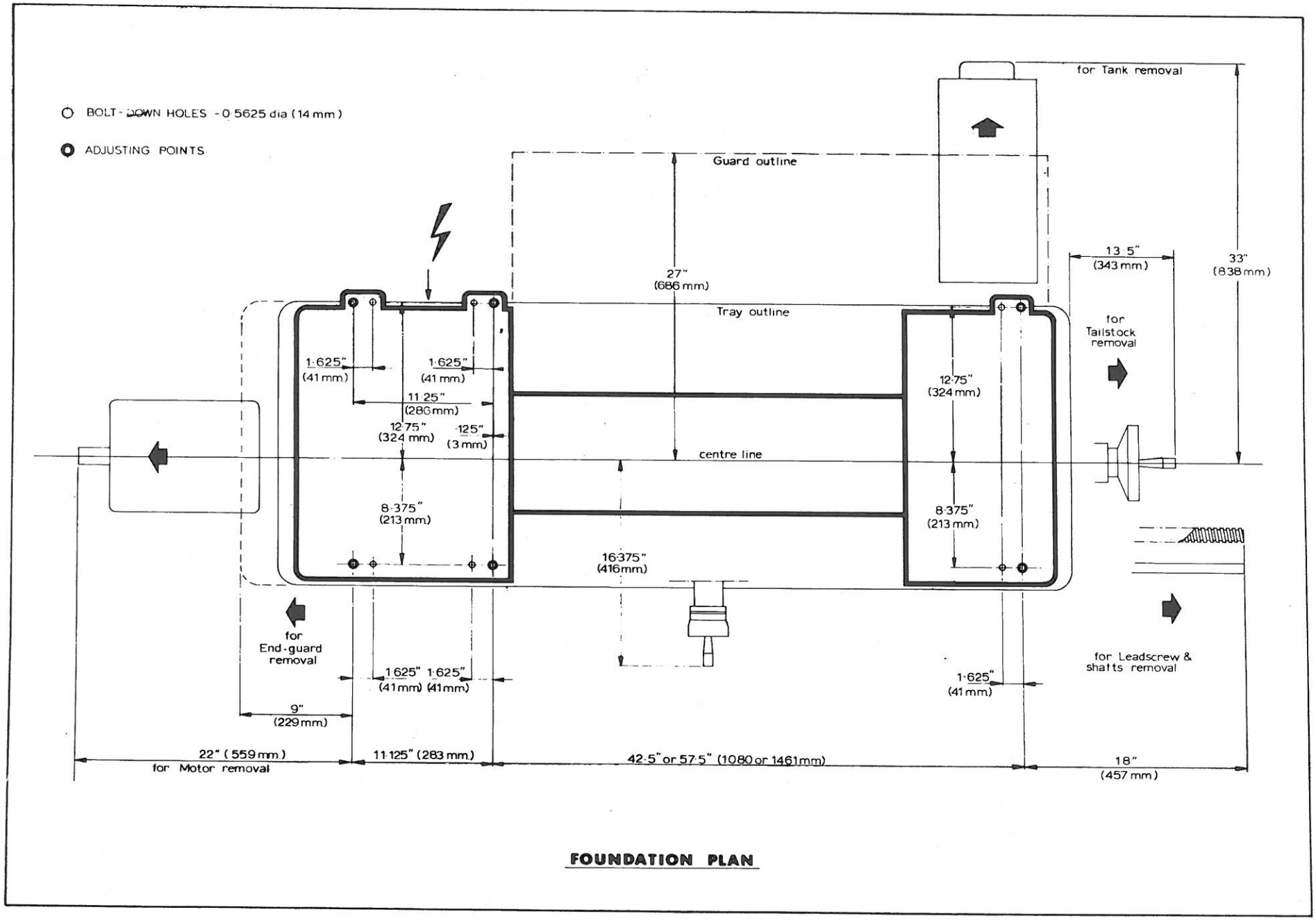
INDEX

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



FOUNDATION PLAN

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 (½" 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 phaselines; 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.

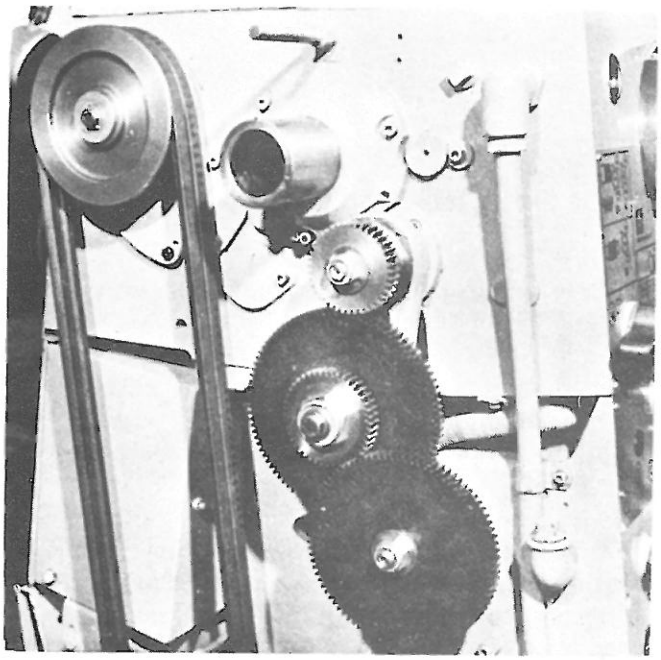


Fig. 1

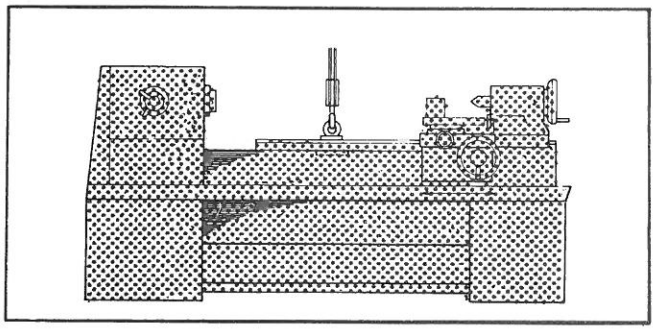
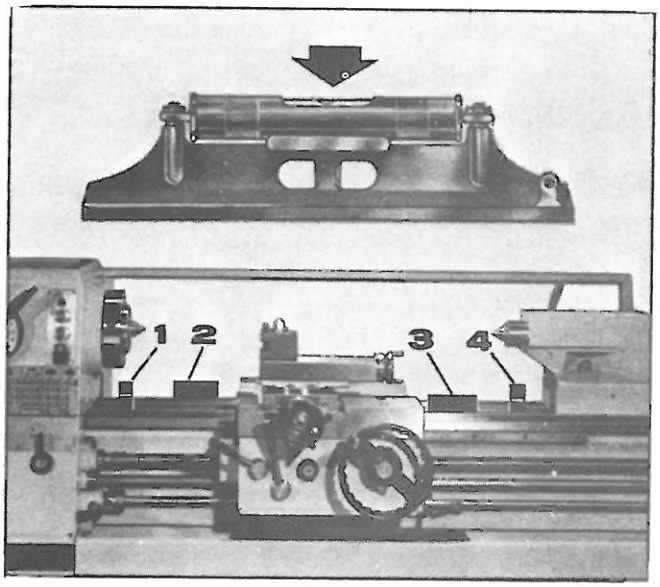


Fig. 2

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.

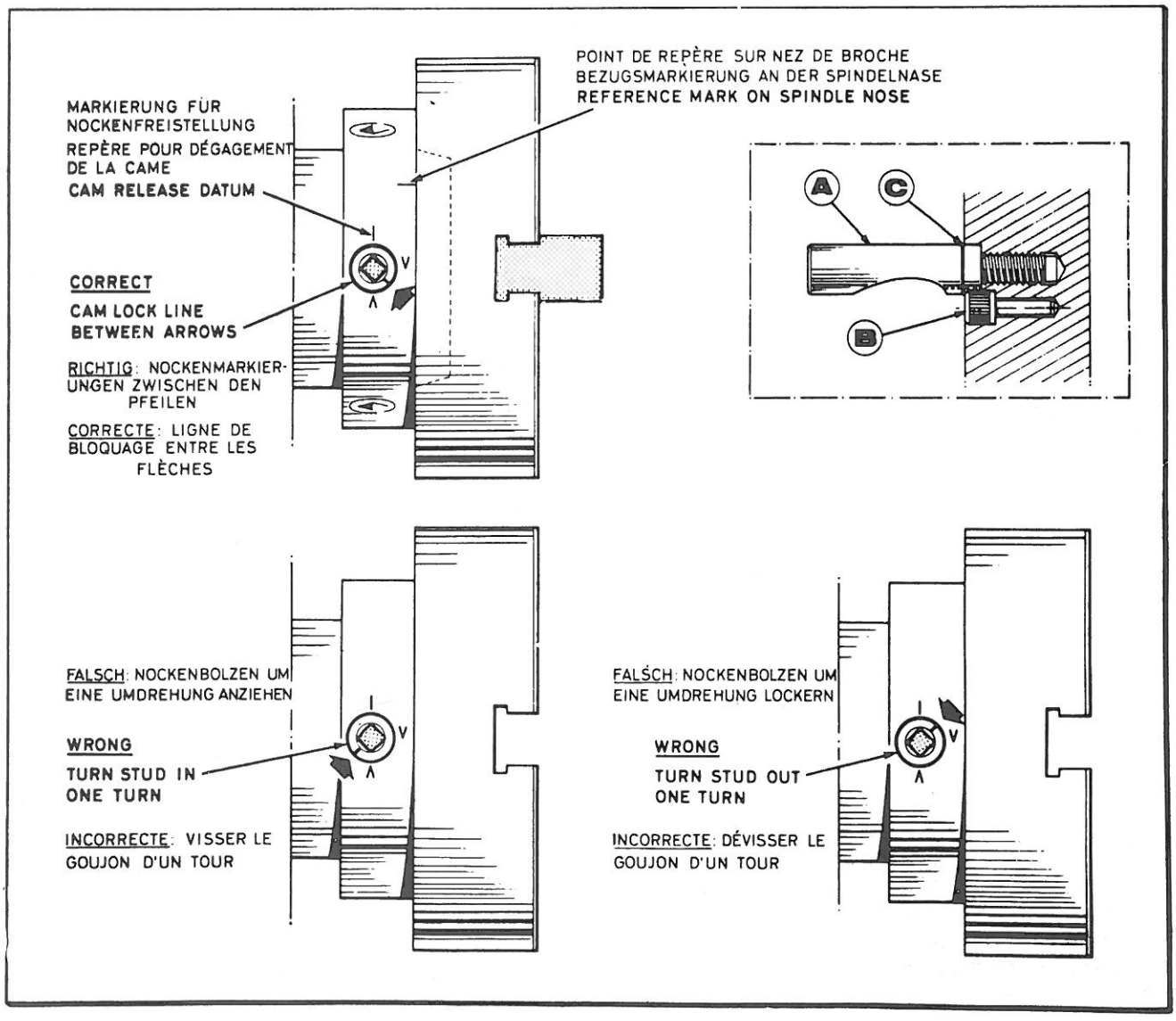
Fit and tighten the locking screw (B) at each stud before remounting the chuck for work.

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

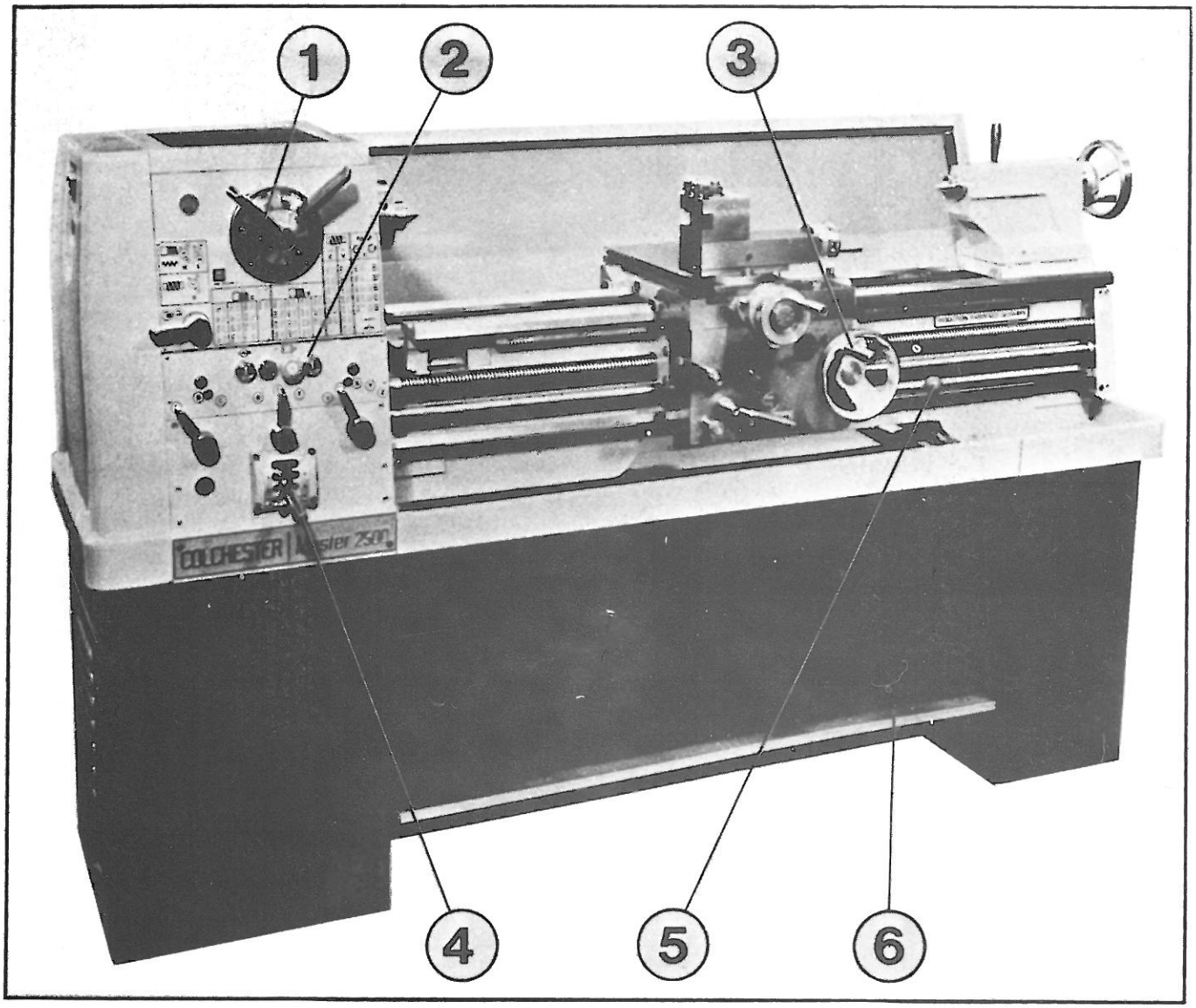


Fig. 5

LATHE CONTROLS

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

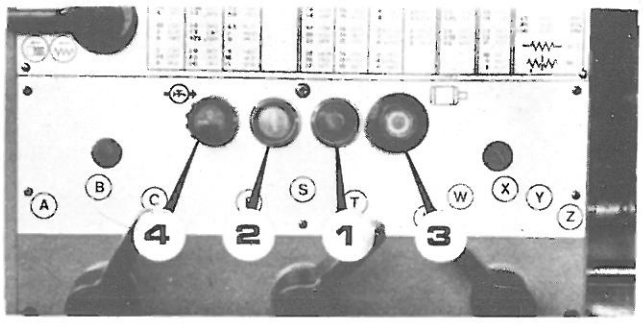


Fig. 6

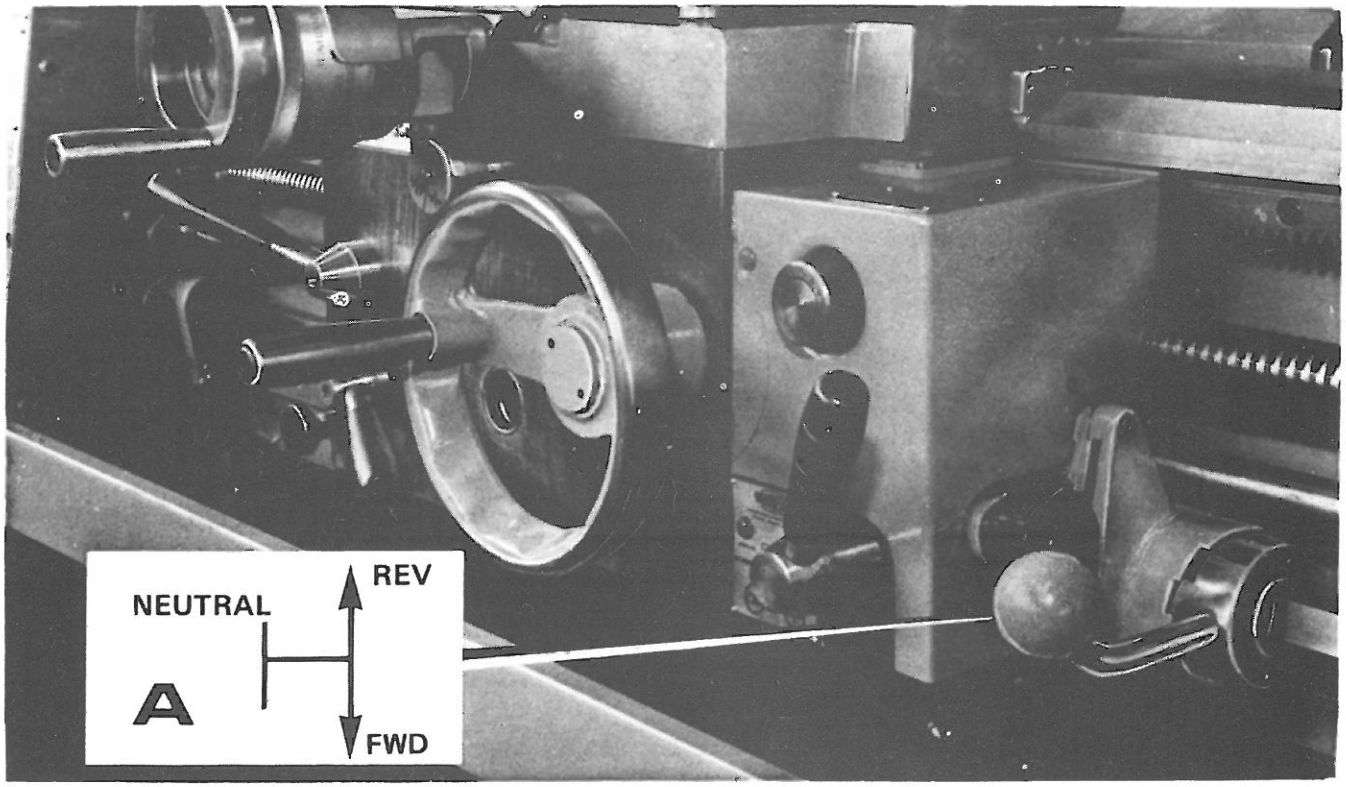


Fig. 7

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 inadvertant 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.

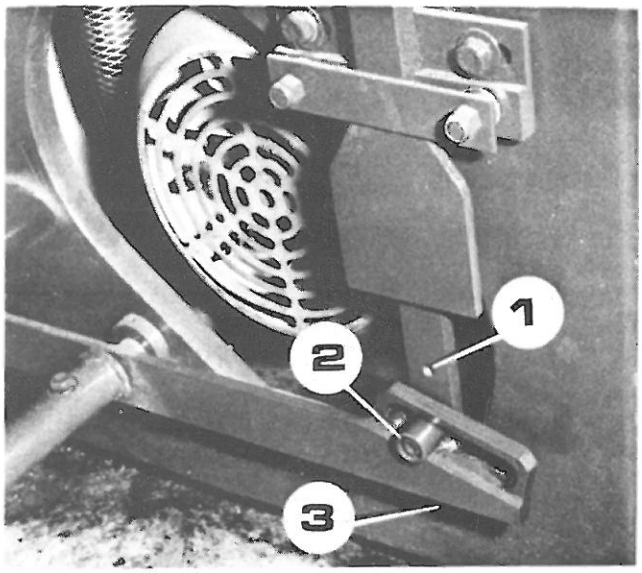


Fig. 8

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).

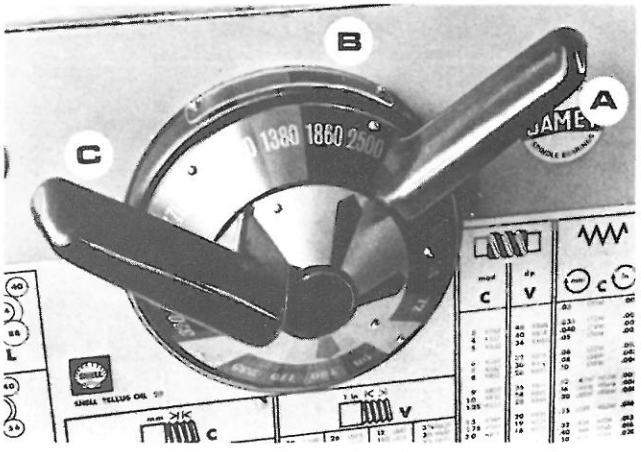
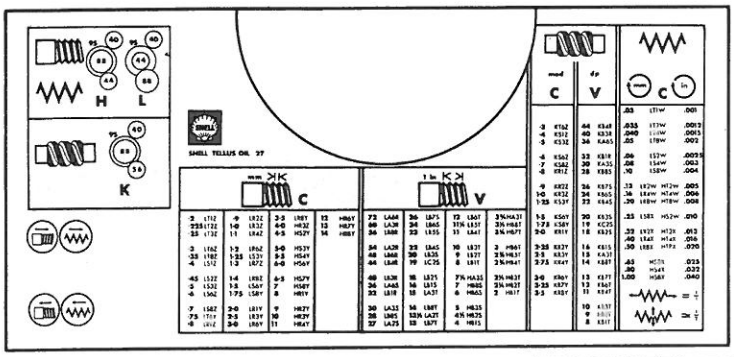


Fig. 9



ENGLISH

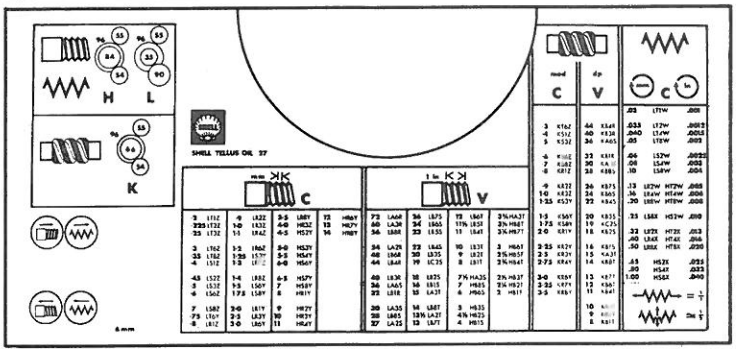


Fig. 10

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.

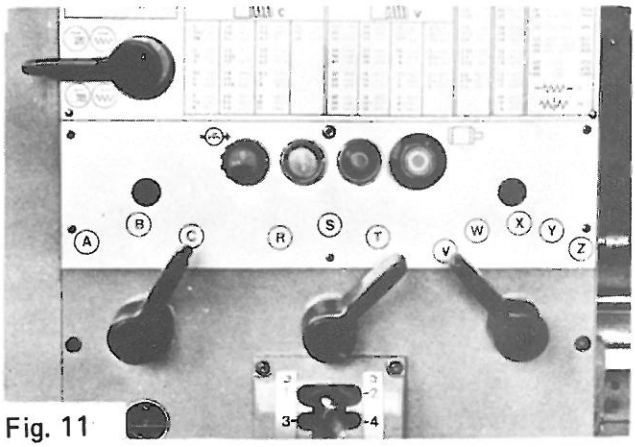


Fig. 11

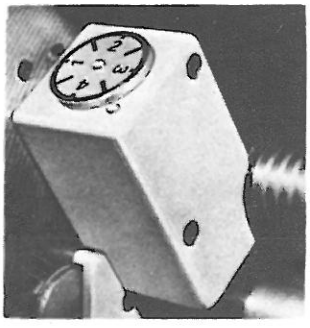


Fig. 12

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.

Unumbered 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).

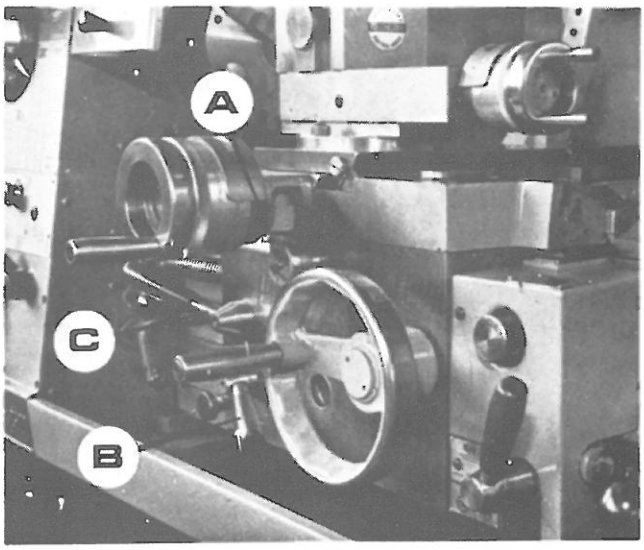


Fig. 14

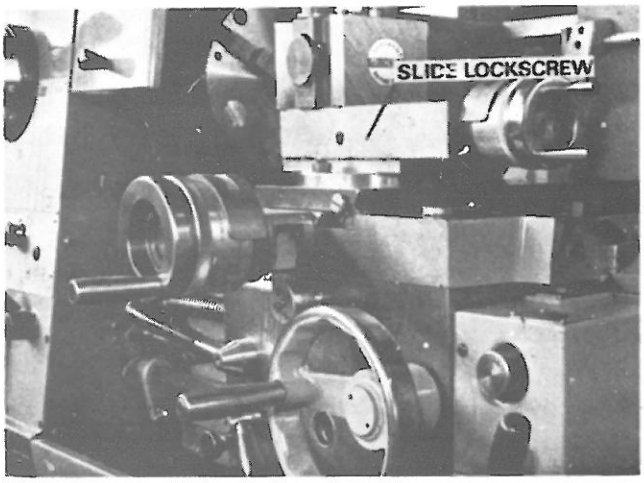


Fig. 15

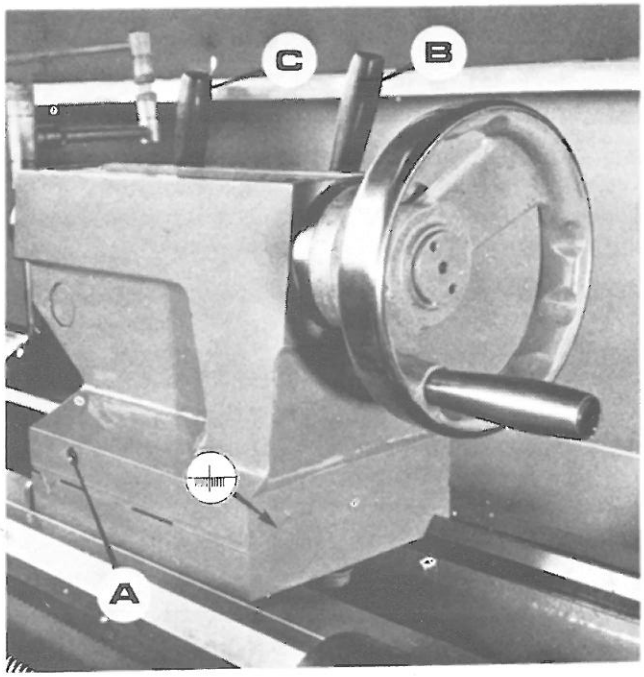


Fig. 16

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.

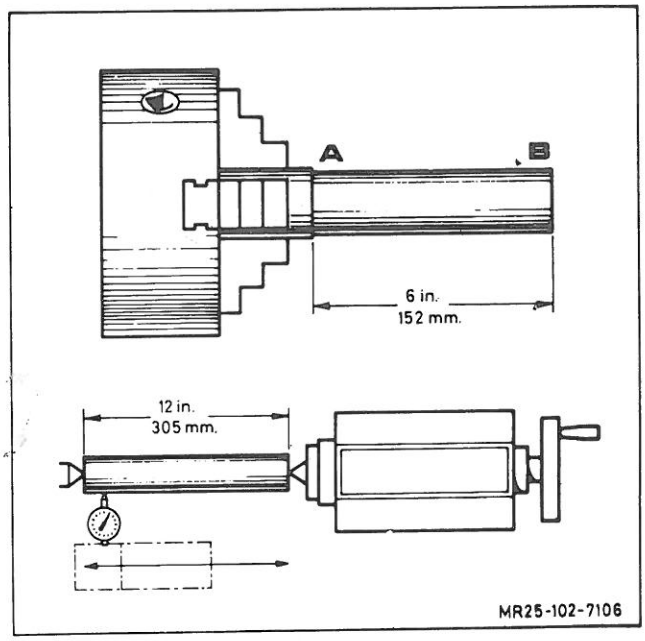


Fig. 17

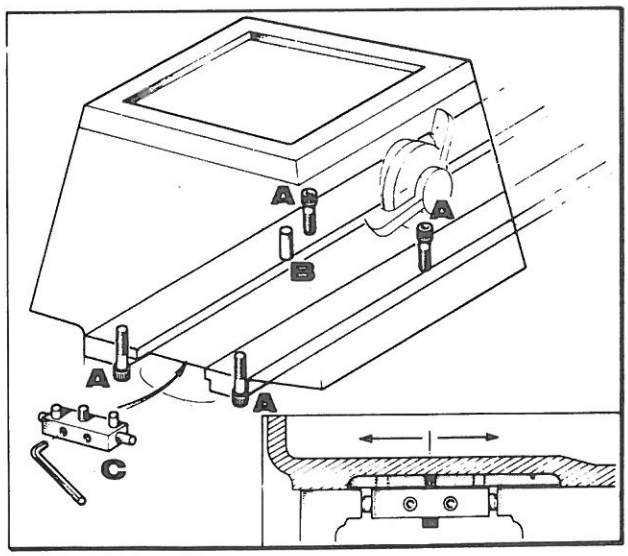


Fig. 18

END-GEAR TRAIN

Drive from headstock to gearbox is transmitted through a gear train enclosed by the headstock end-guard. 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 ¾ 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 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

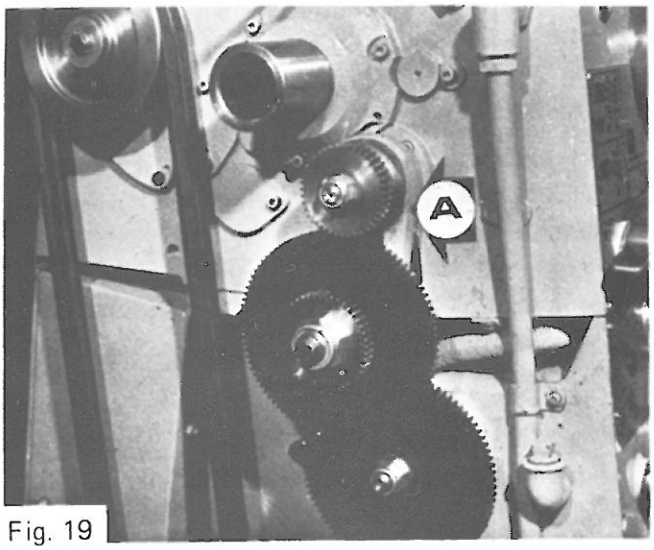


Fig. 19

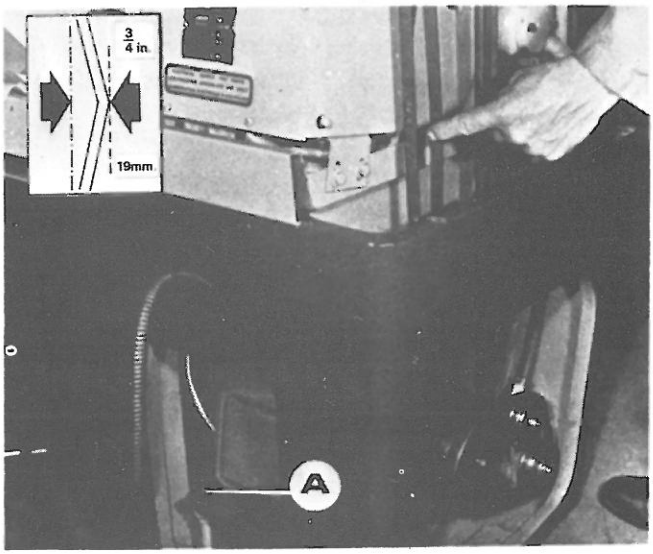


Fig. 20

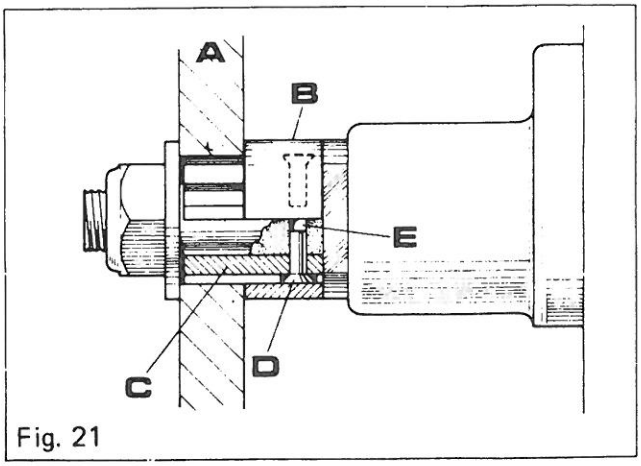


Fig. 21

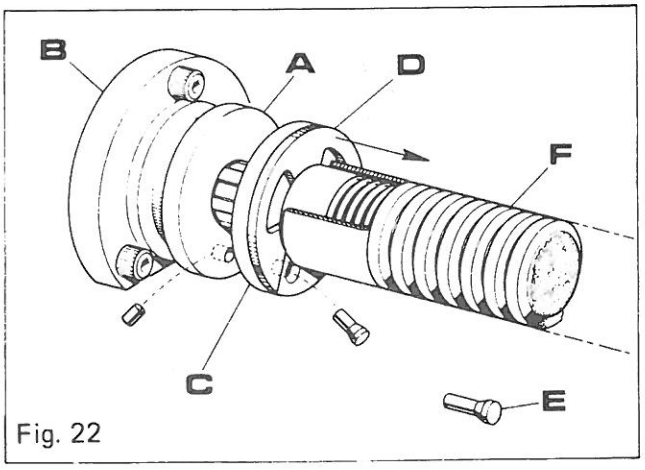


Fig. 22

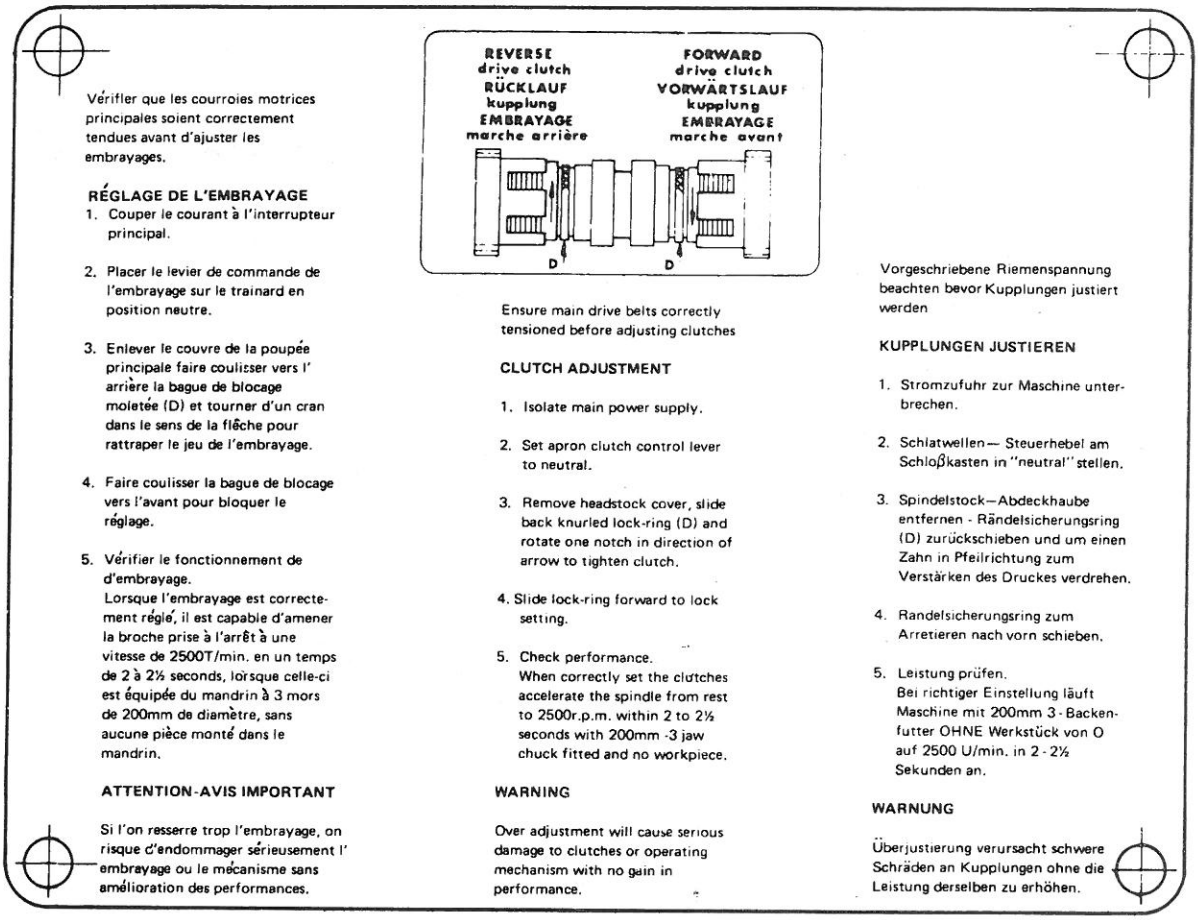


Fig. 23

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.

1. 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.
2. Remove the cover plate from top of headstock for access to both clutches.
3. 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.
4. 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.

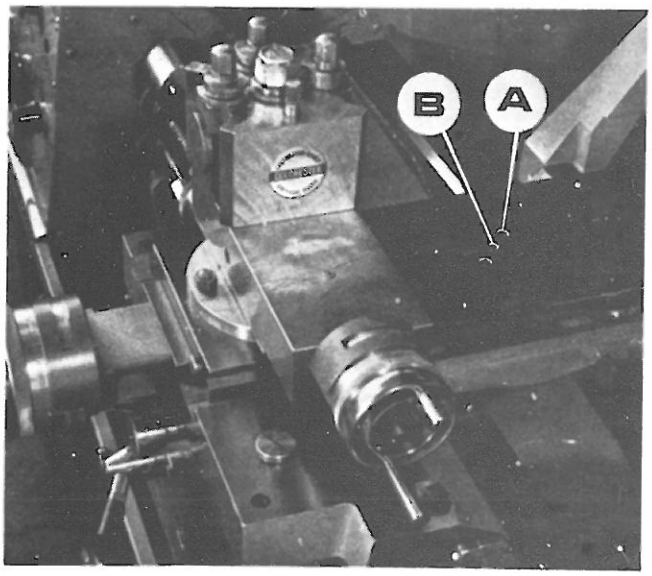


Fig 24

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 2½ 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.

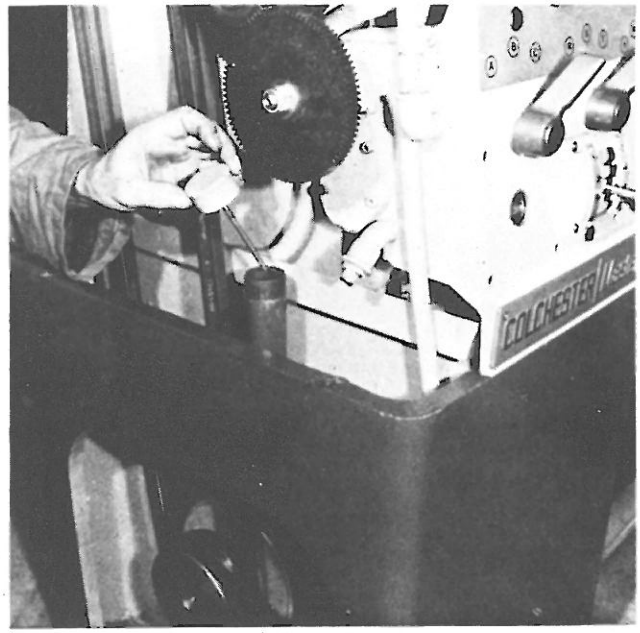


Fig. 25

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° C	0·870
Flash point closed	210° C (410° F)
Pour point	–29° C (–20° F)
Viscosity Redwood No. 1	70° F – 320 secs.
	140° F – 68 secs.
	200° F – 41 secs.
Viscosity Engler degrees	10·5 at 20° C

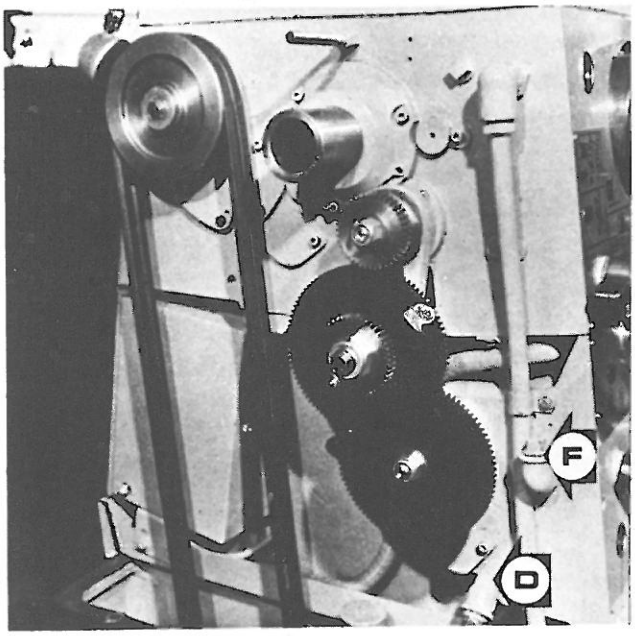


Fig. 26

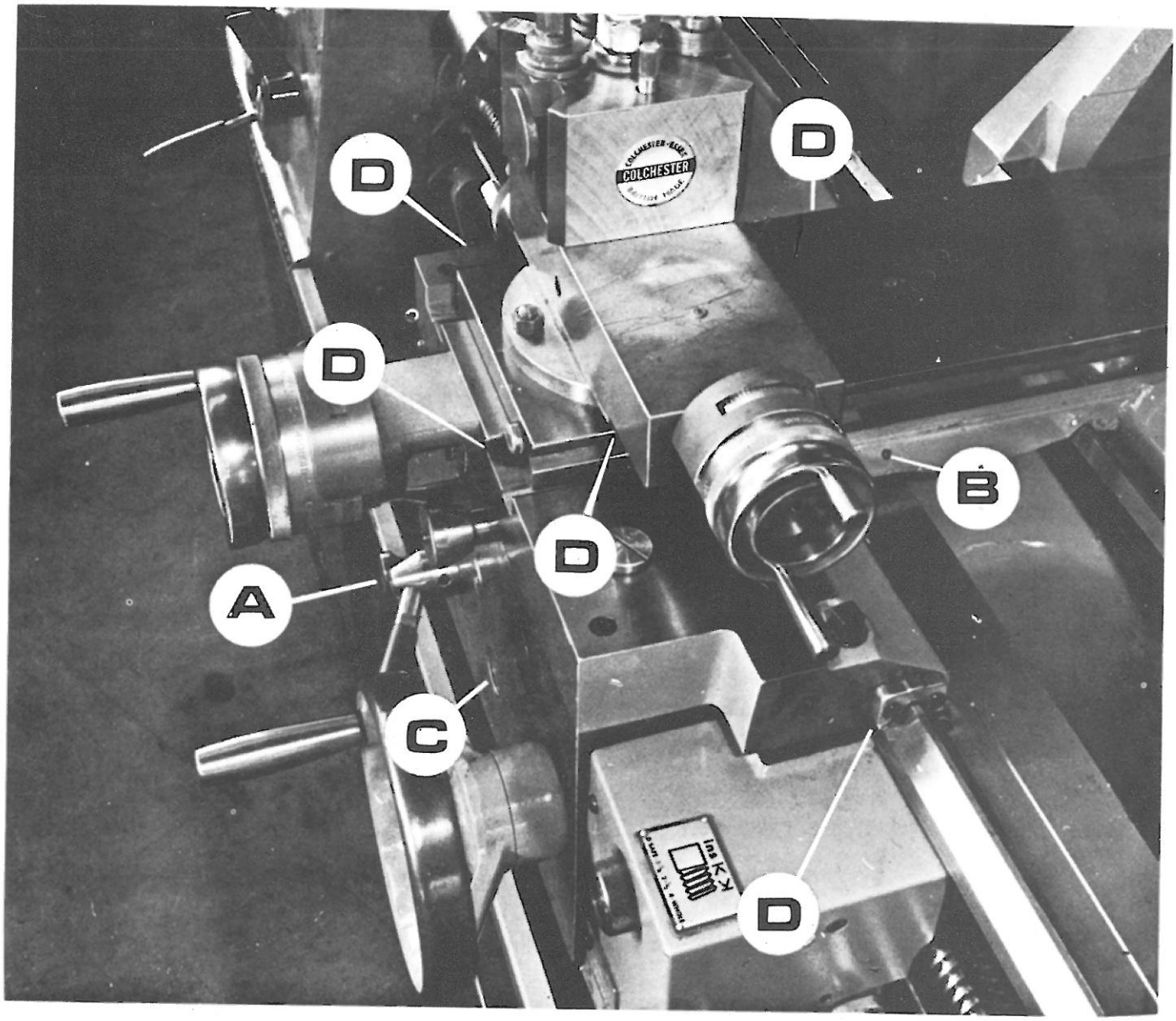


Fig. 27

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 gibs 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

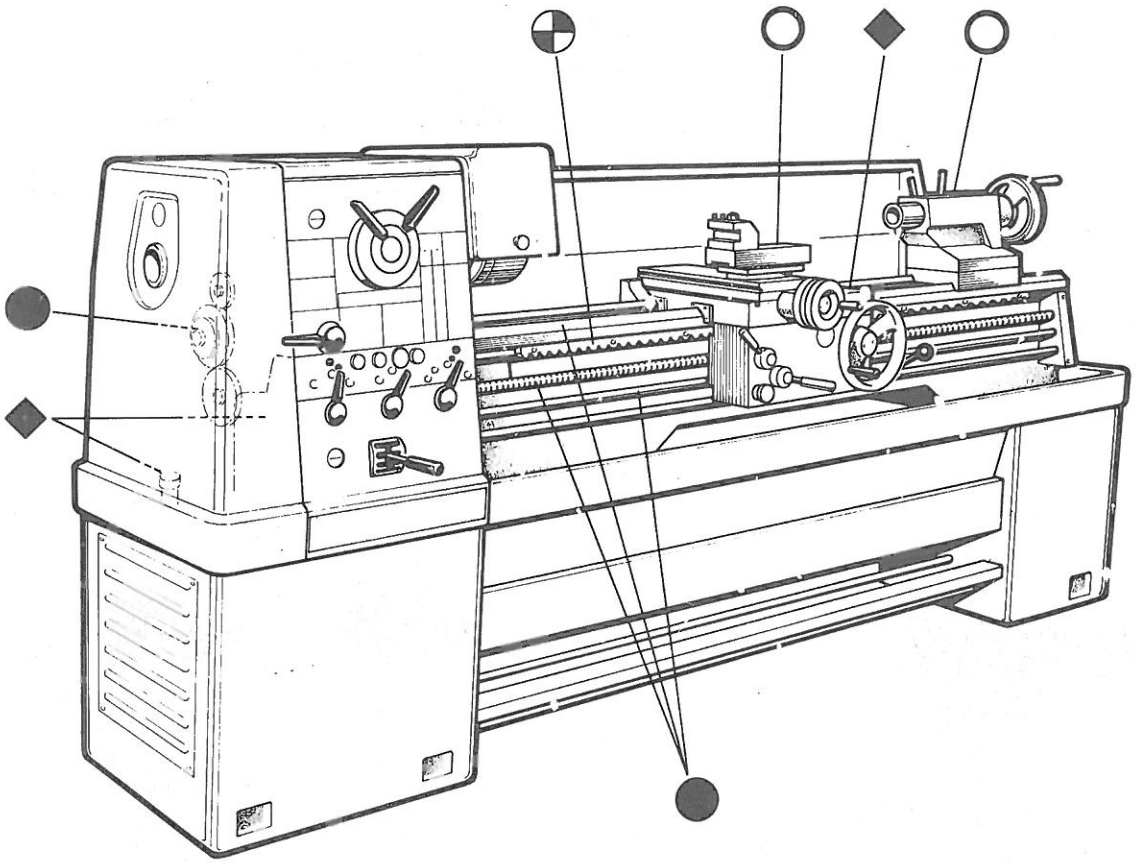
For trouble-free operation keep the lathe clean and regularly lubricated. The chart given in Fig. 28 shows the recommended attention and frequency.

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

⊕ GREASE EVERY WEEK
WÖCHENTLICH MIT FETT SCHMIEREN
GRAISSER CHAQUE SEMAINE

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

● **SMORJES VARJE DAG**

VOIDELLAAN OLJYLLA PAIVITTAIN

SMORJES VARJE VECKA MED FETT

VOIDELLAAN VOITELURASVALLA VIIKOITTAIN

○ **SMORJES VARJE VECKA**

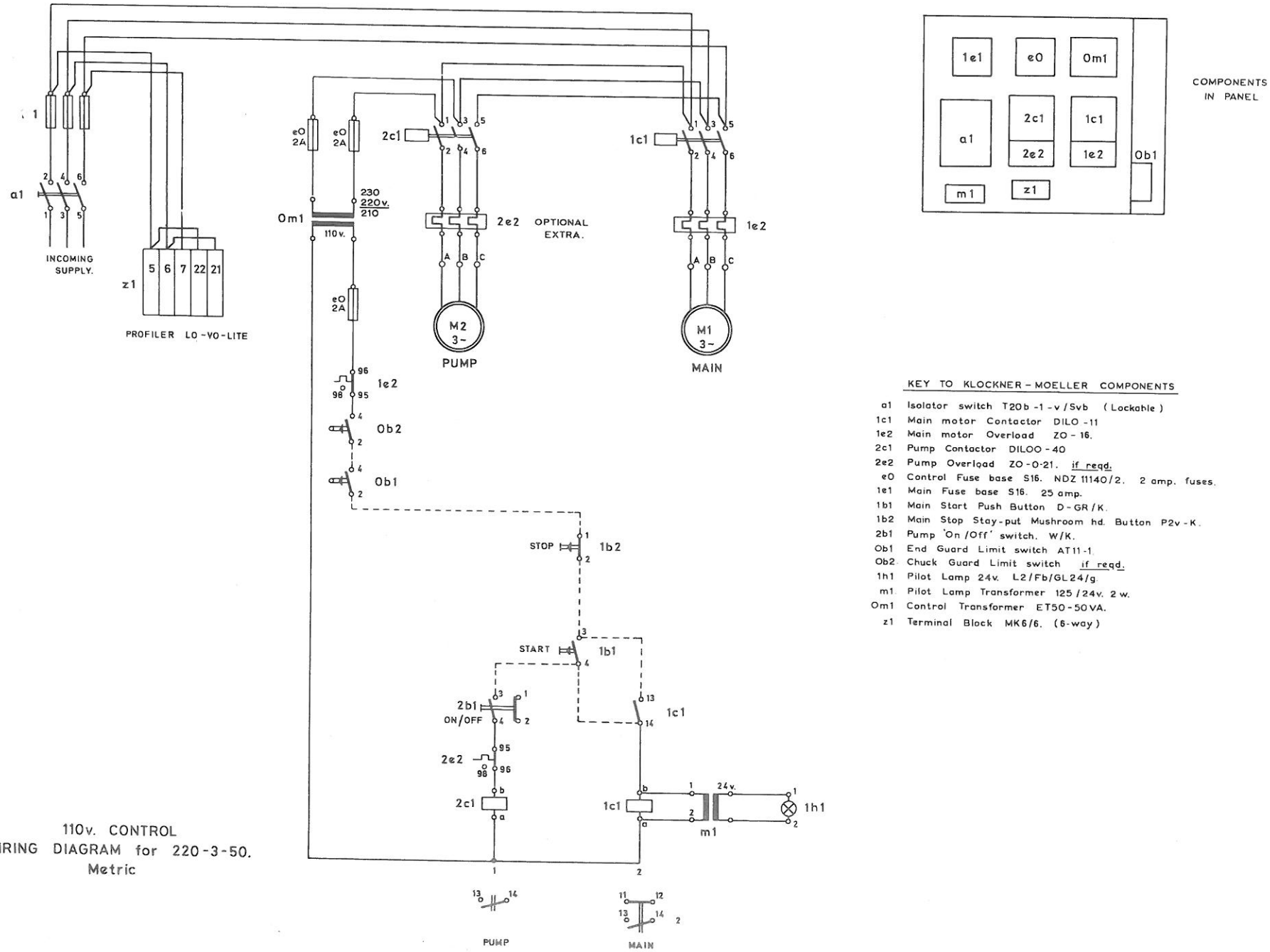
VOIDELLAAN OLJYLLA VIIKOITTAIN

KONTROLLERA OLJENIVAN OCH FYLL PA VID BEHOV

TARKASTETAAN MAARA JA TAYTETAAN MERKKIVIIVAAN ASTI KERRAN VIIKOSSA

Fig. 28

MR-25-7706

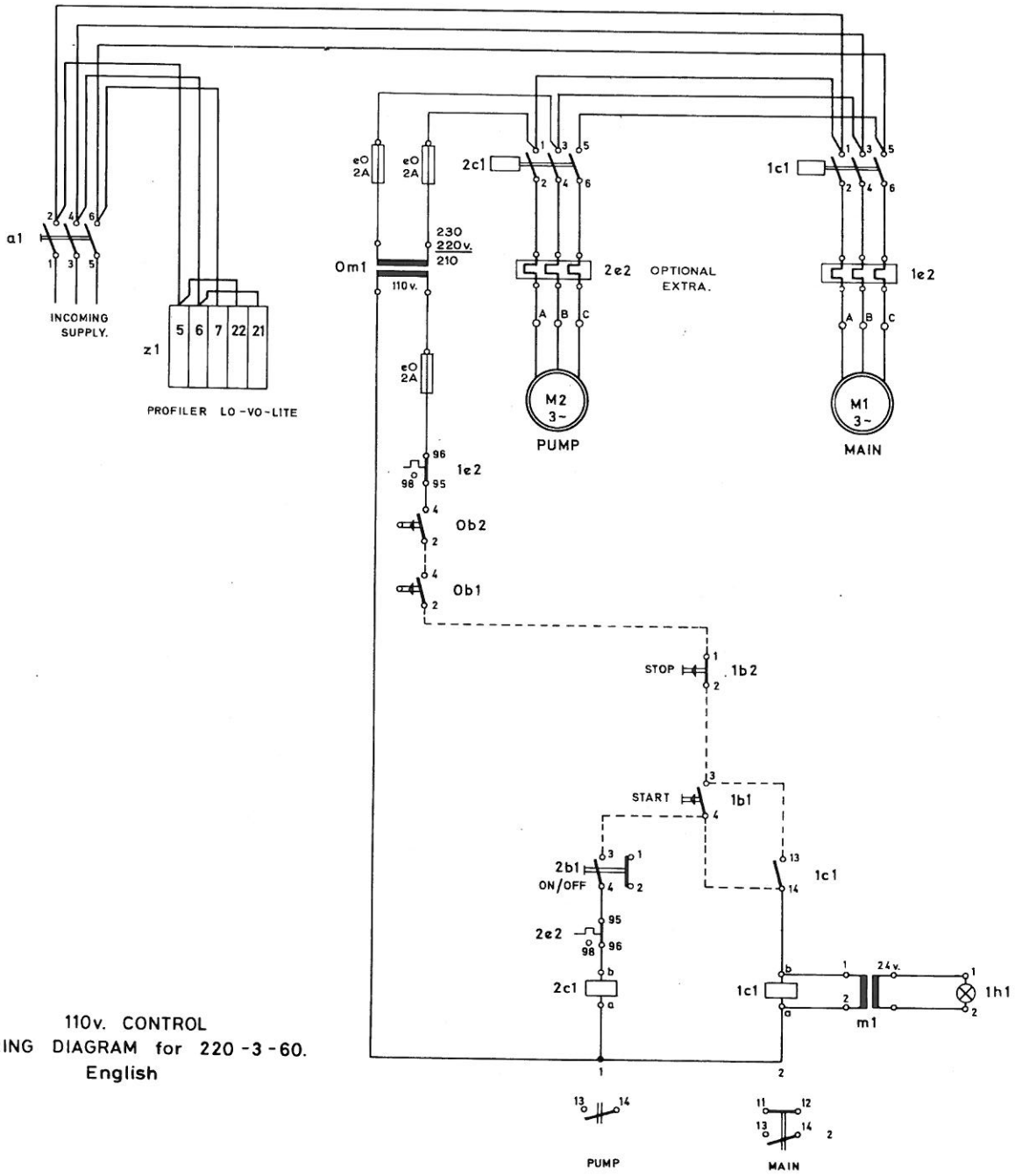


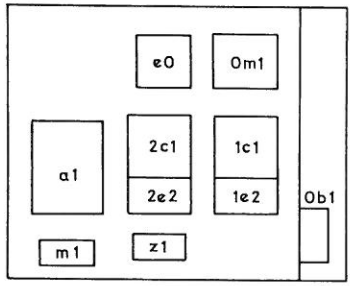
110v. CONTROL
WIRING DIAGRAM for 220-3-50.
Metric

COMPONENTS IN PANEL

KEY TO KLOCKNER - MOELLER COMPONENTS

a1	Isolator switch T20b -1 - v / Svb (Lockable)
1c1	Main motor Contactor DILO -11
1e2	Main motor Overload ZO - 16.
2c1	Pump Contactor DILOO - 40
2e2	Pump Overload ZO - 0-21. if reqd.
eO	Control Fuse base S16. NDZ 11140/2. 2 amp. fuses.
1e1	Main Fuse base S16. 25 amp.
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/Fb/GL24/g.
m1	Pilot Lamp Transformer 125 / 24v. 2 w.
Om1	Control Transformer ET50 - 50 VA.
z1	Terminal Block MK6/6. (6-way)



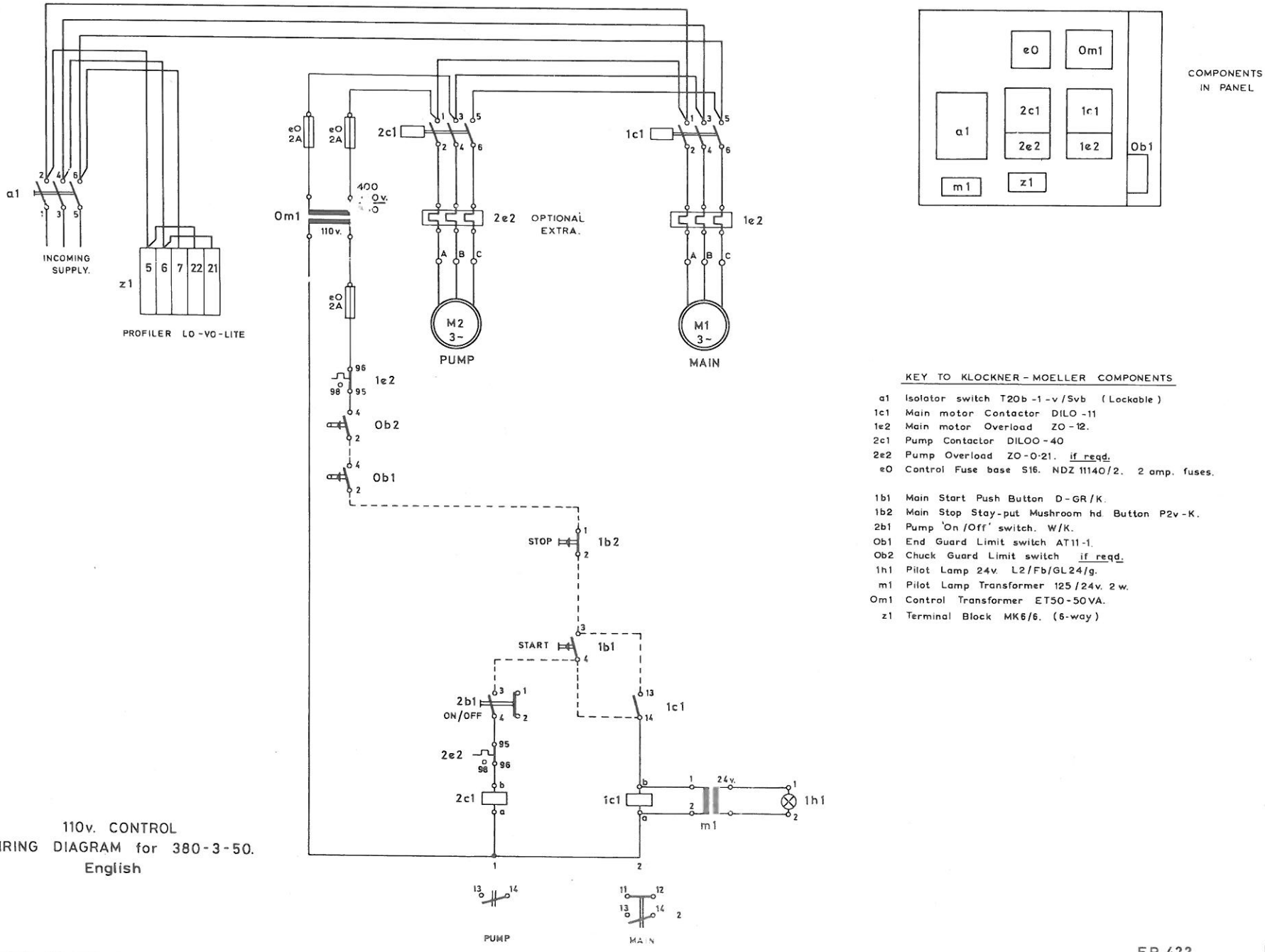


COMPONENTS IN PANEL

KEY TO KLOCKNER-MOELLER COMPONENTS

a1	Isolator switch T20b-1-v/Svb (Lockable)
1c1	Main motor Contactor DILO-11
1e2	Main motor Overload ZO-.
2c1	Pump Contactor DILOO-40
2e2	Pump Overload ZO-0-21. if reqd.
eO	Control Fuse base S16. NDZ 11140/2. 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/Fb/GL24/g.
m1	Pilot Lamp Transformer 125/24v. 2w.
Om1	Control Transformer ET50-50VA.
z1	Terminal Block MK6/6. (6-way)

110v. CONTROL
WIRING DIAGRAM for 220-3-60.
English

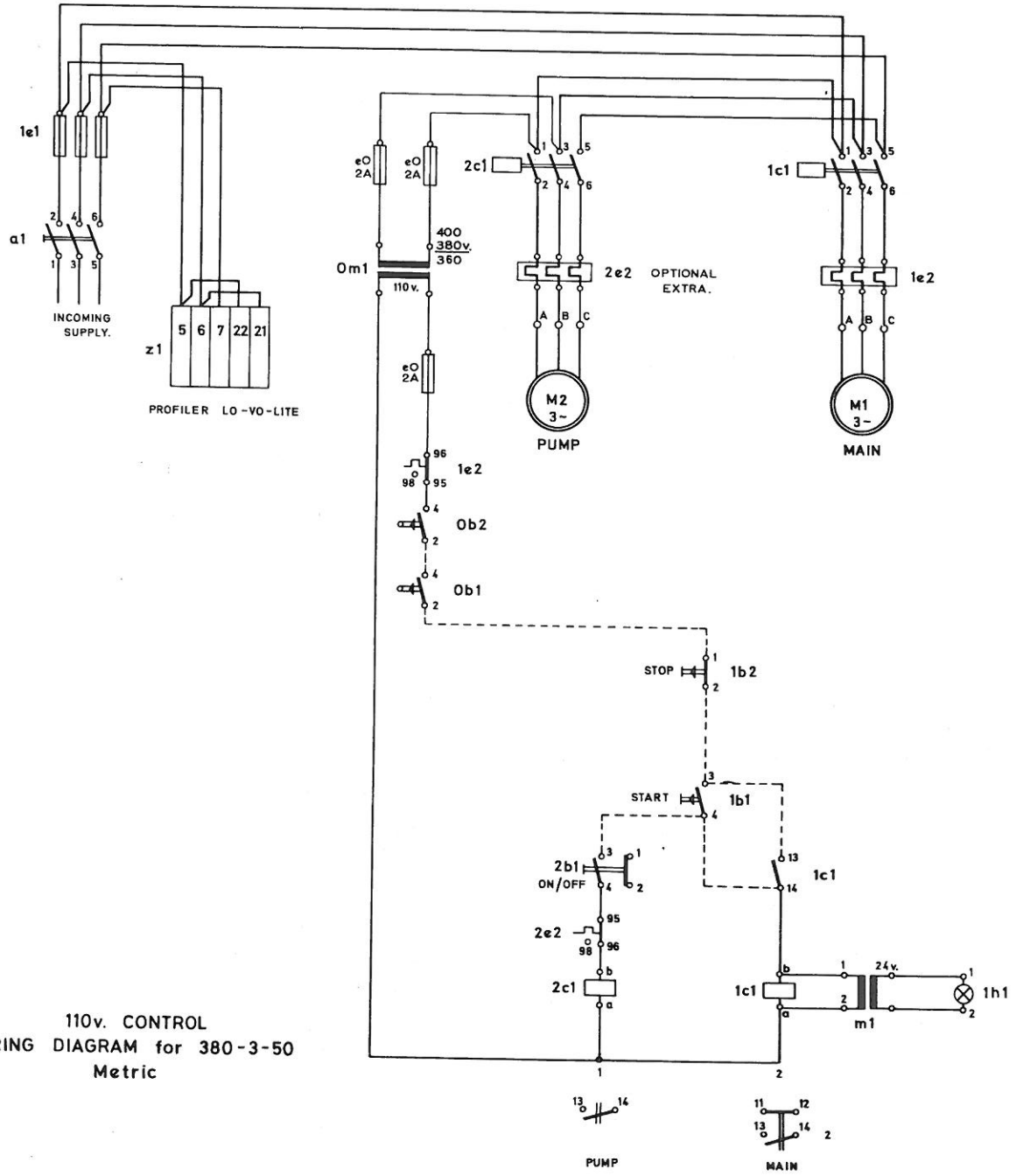


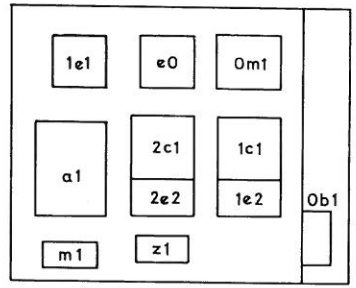
110v. CONTROL
WIRING DIAGRAM for 380-3-50.
English

COMPONENTS IN PANEL

KEY TO KLOCKNER-MOELLER COMPONENTS

a1	Isolator switch T20b-1-v/Svb (Lockable)
1c1	Main motor Contactor DILO-11
1e2	Main motor Overload ZO-12.
2c1	Pump Contactor DILOO-40
2e2	Pump Overload ZO-0·21. if reqd.
eO	Control Fuse base S16. NDZ 11140/2. 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/Fb/GL24/g.
m1	Pilot Lamp Transformer 125/24v. 2w.
0m1	Control Transformer ET50-50VA.
z1	Terminal Block MK6/6. (6-way)



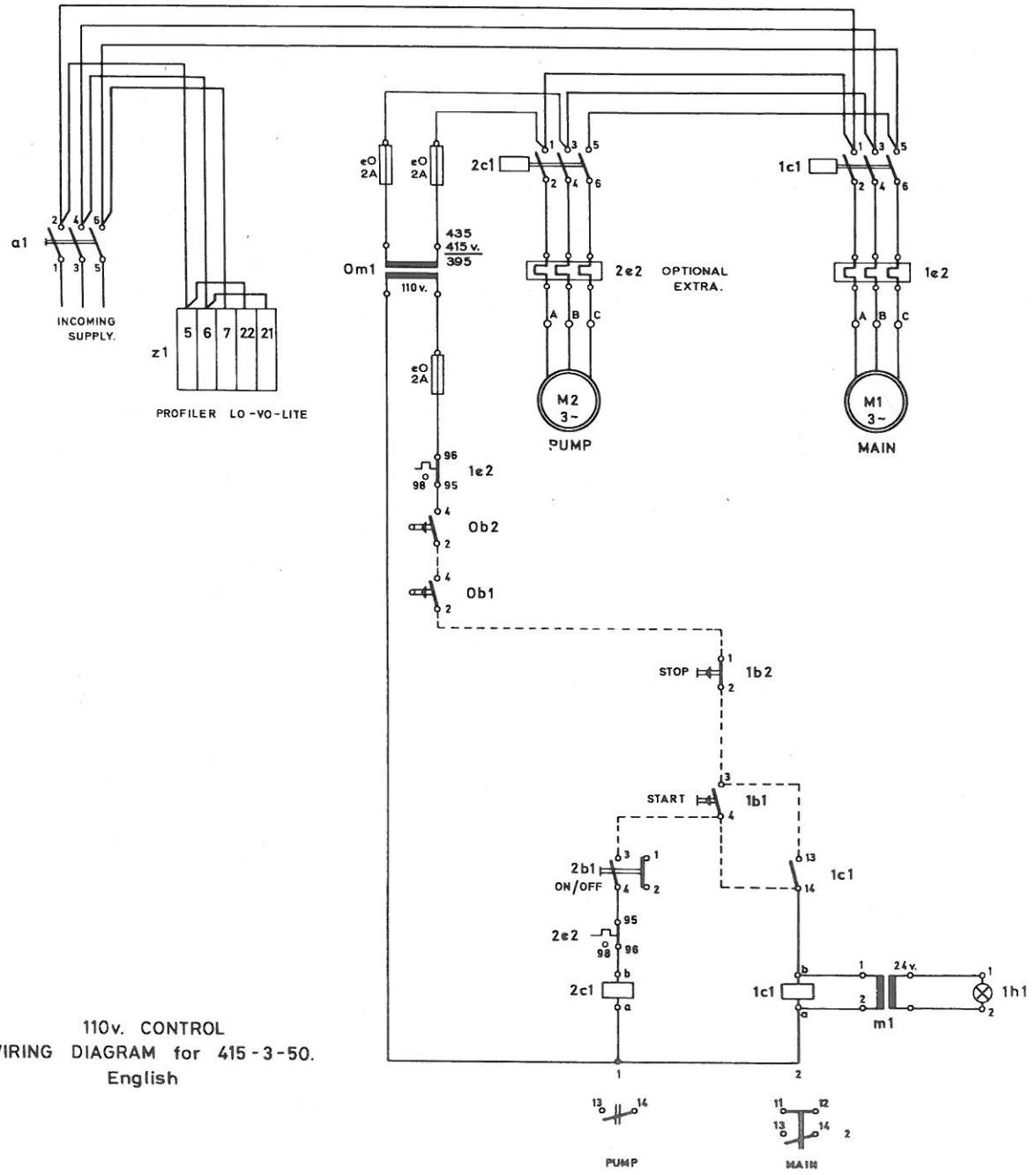


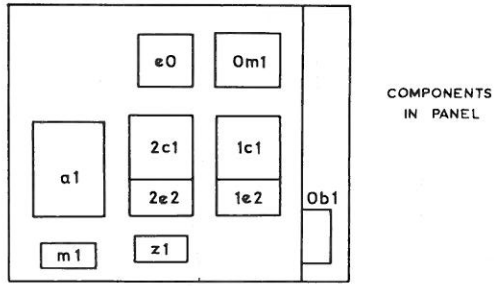
COMPONENTS IN PANEL

110v. CONTROL
WIRING DIAGRAM for 380-3-50
Metric

KEY TO KLOCKNER – MOELLER COMPONENTS

a1	Isolator switch T20b -1 - v / Svb (Lockable)
1c1	Main motor Contactor .DILO -11
1e2	Main motor Overload ZO - 12
2c1	Pump Contactor DILOO - 40
2e2	Pump Overload ZO - 0-21. if reqd.
eO	Control Fuse base S16. NDZ 11140/2. 2 amp. fuses.
1e1	Main Fuse base S16. 16 amp.
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/Fb/GL24/g.
m1	Pilot Lamp Transformer 125 / 24v. 2 w.
Om1	Control Transformer ET50 - 50VA.
z1	Terminal Block MK6/6. (6-way)

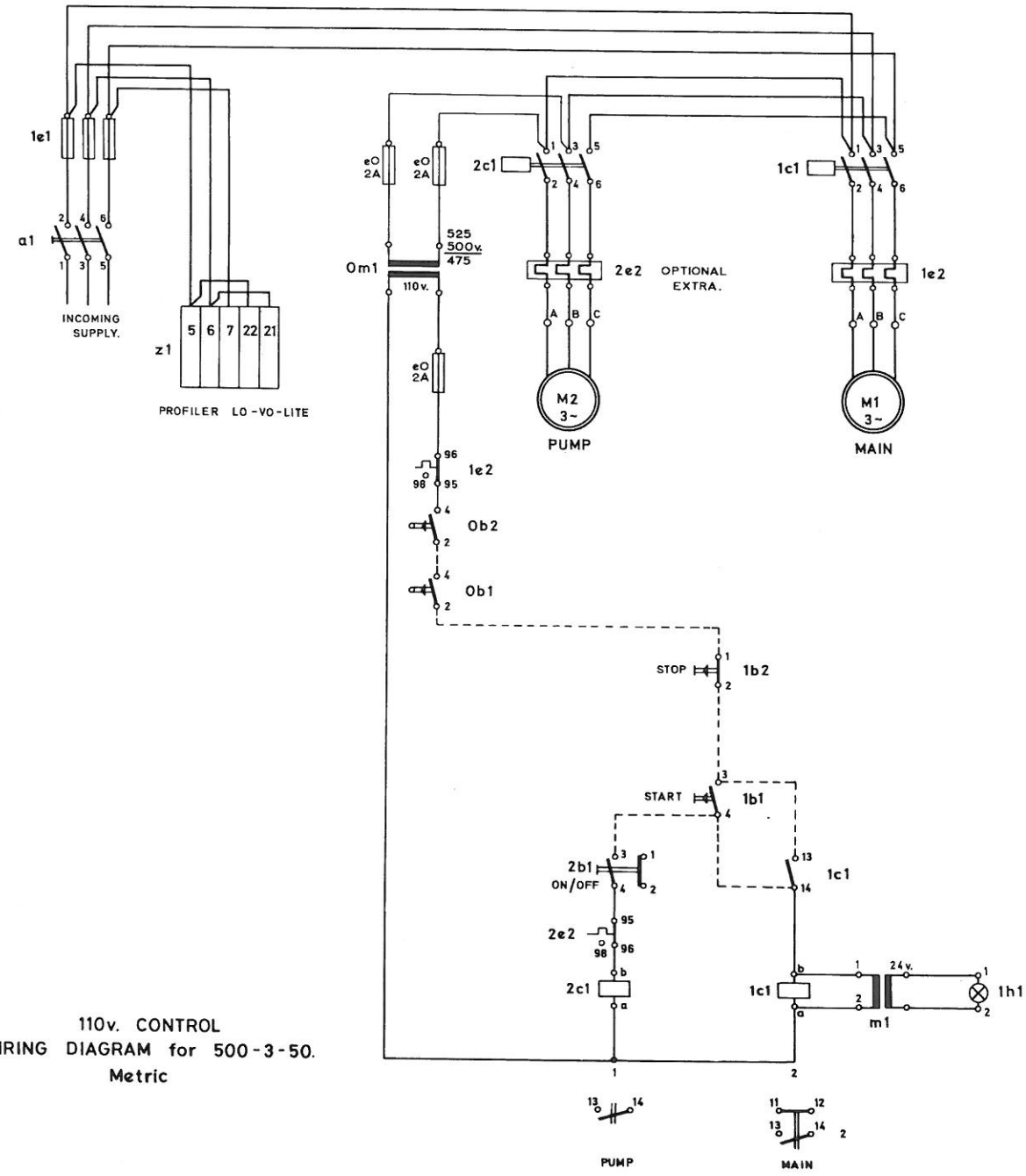


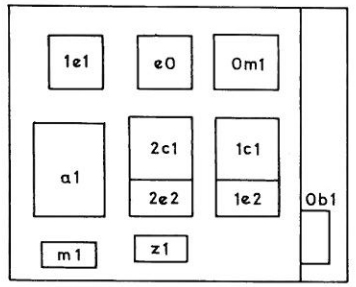


110v. CONTROL
WIRING DIAGRAM for 415-3-50.
English

KEY TO KLOCKNER-MOELLER COMPONENTS

a1	Isolator switch T20b-1-v/Svb (Lockable)
1c1	Main motor Contactor DILO-11.
1e2	Main motor Overload ZO-12.
2c1	Pump Contactor DILOO-40
2e2	Pump Overload ZO-0-21. if reqd.
eO	Control Fuse base S16. NDZ 11140/2. 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/Fb/GL24/g.
m1	Pilot Lamp Transformer 125/24v. 2w.
Om1	Control Transformer ET50-50VA.
z1	Terminal Block MK6/6. (6-way)



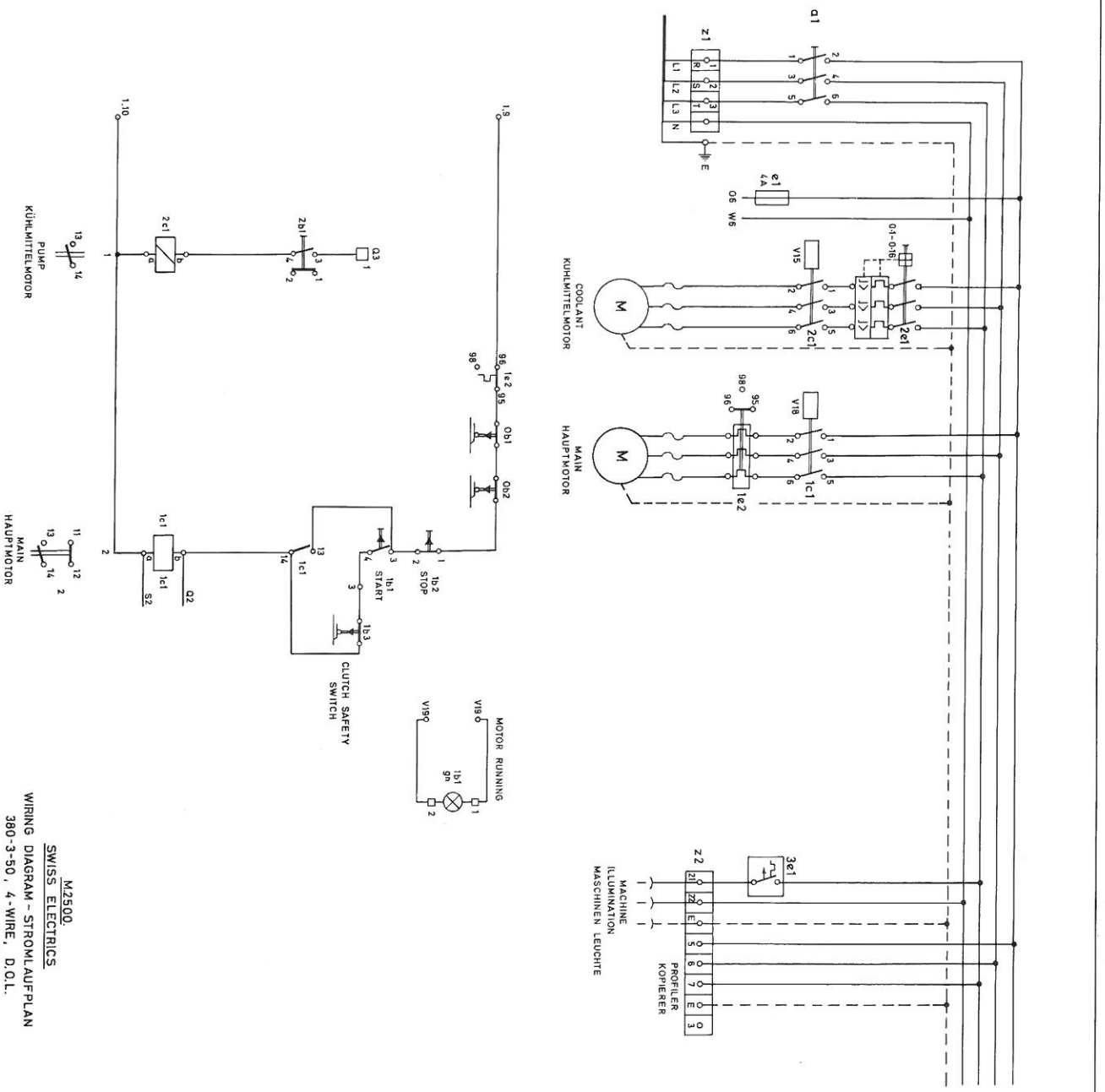


COMPONENTS IN PANEL

110v. CONTROL
WIRING DIAGRAM for 500-3-50.
Metric

KEY TO KLOCKNER-MOELLER COMPONENTS

a1	Isolator switch T20b-1-v/Svb (Lockable)
1c1	Main motor Contactor DILO-11
1e2	Main motor Overload ZO-12.
2c1	Pump Contactor DILOO-40
2e2	Pump Overload ZO-0-21. if reqd.
eO	Control Fuse base S16. NDZ 11140/2. 2 amp. fuses.
1e1	Main Fuse base S16. 16 amp.
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/Fb/GL24/g.
m1	Pilot Lamp Transformer 125/24v. 2w.
Om1	Control Transformer ET50-50VA.
z1	Terminal Block MK6/6. (6-way)



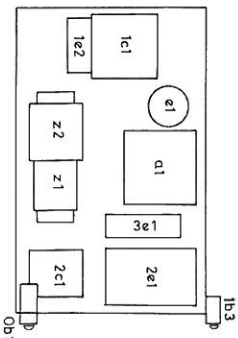
M2500
SWISS ELECTRICS

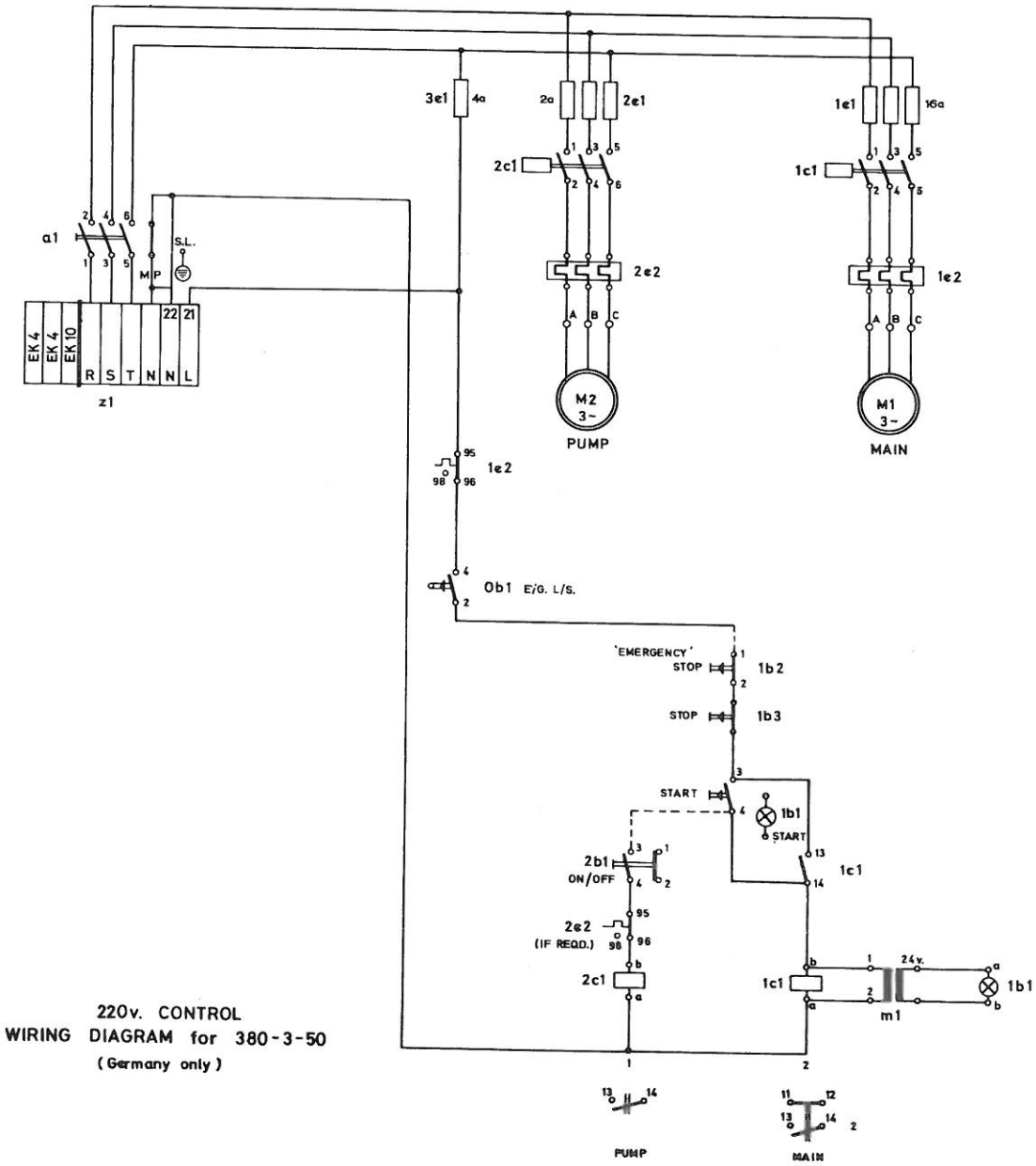
WIRING DIAGRAM - STROMLAUFPLAN
380-3-50, 4-WIRE, D.O.L.
220 v. Control.

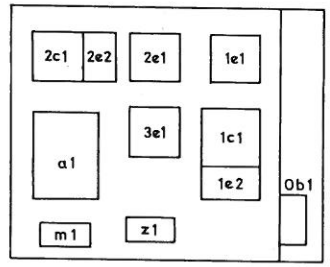
FROM M/C. SER. NO. 07127 -

STUCKLISTE
KEY TO COMPONENTS

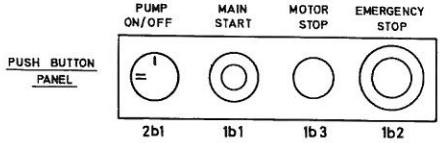
REF	TYP TYPE	ANZAHL QUANTITY	APPLICATIONS	BESCHREIBUNG	HERSTELLER MAKE
a1	T20b-1-v/Sb	1	Circuit Interrupter (Lockable)	Hauptschalter (abschliessbar)	Klockner-Moeller
1c1	DIL 0-11	1	Main Motor Contactor	Hauptschutz	" "
1e2	ZB-12	1	Main Motor Overload	Ueberlast	" "
2c1	DIL 00-40	1	Pump Contactor	Pumpenschutz	" "
2e1	PKZM0-0.16	1	Pump Overload (if required)	Ueberlast	" "
Ob1	AT 11-1	1	End Guard Limit Switch	Sicherheits-Endschalter	" "
3e1	5SN1304/04	1	Miniature Circuit Breaker	Ueberlastschalter	Siemens
1b1	D-GR/K	1	Main Start Push Button	Druckknopf Motor EIN	Klockner-Moeller
1b2	P2v-K	1	Stay out Mushroom Hd. Stop Button (Twist to release)	HALTSTOP	" "
1h1	L2/F2/GL125/g	1	Pilot Lamp (Green Lens)	Signallampe	" "
2s1	W/K	1	Pump ON/OFF Switch	EIN-AUS Schalter Kuhlmittelpumpe	" "
Ob2		1	Chuck Guard L/S (if required)		
3b		1	Machine Illumination Socket	Steckdose fur Maschinenleuchte	Adolf Feller
e1	S27-1-RE 27	1	Control Fuse Base/Lamp Fuses D11-1[illegible] 4A	Sicherungssockel	Klockner-Moeller
Z1	VR2-10 91 507 030 [illegible]	3	Terminal	Klemmen	Sprecher & Shuh
Z1	VR2-10 91 507 020-08	1	Terminal (Neutral)	" (Neutral)	" "
Z1	VRE1-25 91 509 010-02	1	Terminal (Earth)	" (Erde)	" "
Z2	VR2-2.5 91 506 035 11	6	Terminal	"	" "
Z2	VR2-2.5 91 506 035 12	1	Terminal (Neutral)	" (Neutral)	" "
Z2	VRE2-4 91 506 041 01	1	Terminal (Earth)	" (Erde)	" "
1b3	2HB-1	1	Clutch Safety Switch	Kupplungs-Sicherheitsschalter	Unimax







COMPONENTS IN PANEL

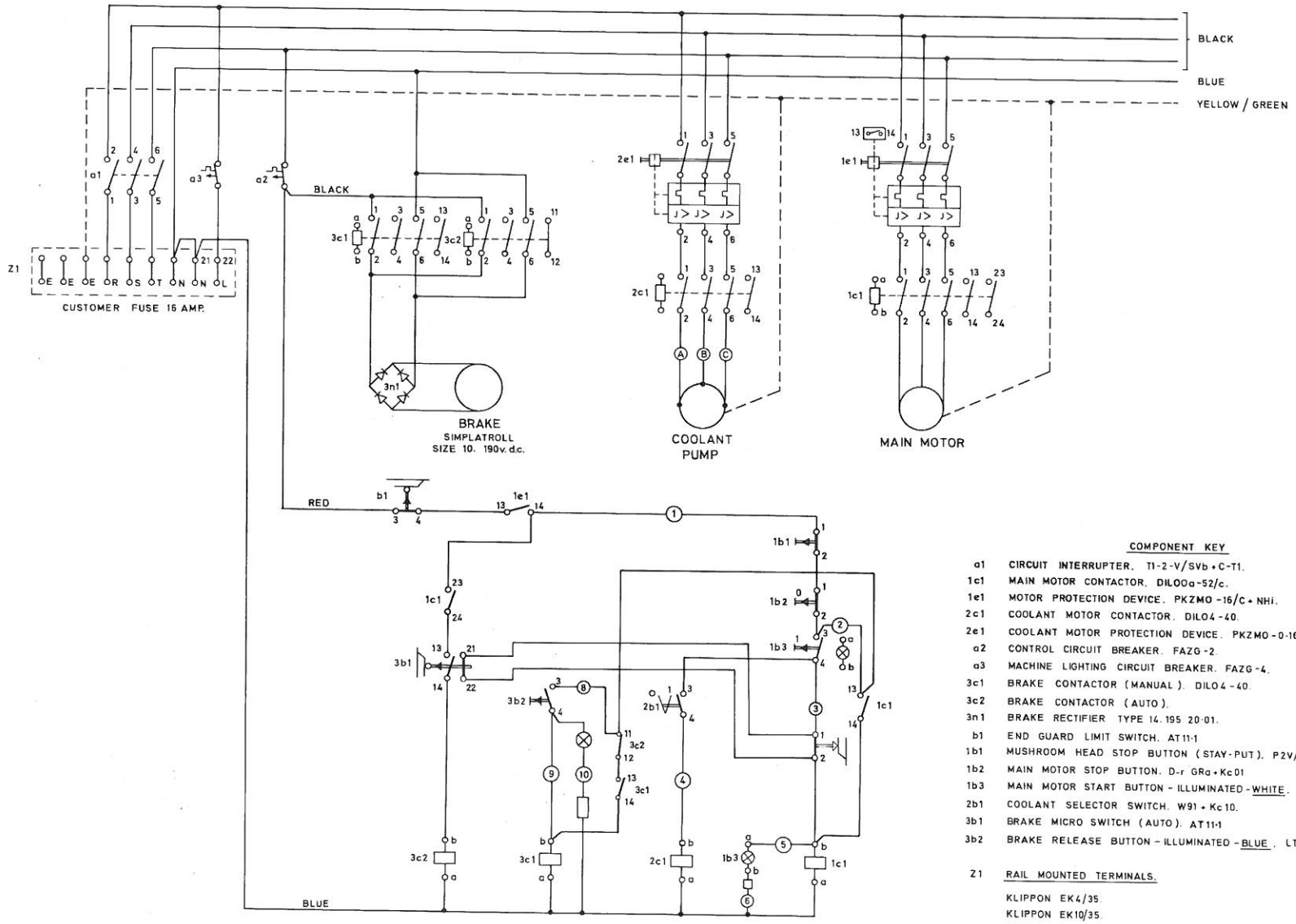


KEY TO KLOCKNER - MOELLER COMPONENTS

a1	Isolator switch T20b -1 -v/Svb (Lockable)
1c1	Main motor Contactor DILO -11
1e2	Main motor Overload ZO -12
2c1	Pump Contactor DILOO - 40
2e2	Pump Overload ZO -0·21. if reqd.
2e1	Coolant Fuse base, NDZ 11140/2 amp. fuse
1e1	Main Fuse base S16. 16 amp.
1b1	Main Start Push Button LT2/KEb/GL24/S2W
1b2	Main Stop Stay-put Mushroom hd. Button P2v-K. 'Emergency'
1b3	Main Stop Push Button D-r/G/K
3e1	Line Fuse base S16-1. 4 amp.
2b1	Pump 'On/Off' switch. W/K.
m1	Pilot Lamp Transformer 220/24v 2w.
0b1	End Guard Limit switch AT11-1.
z1	Terminal Block SAK6. 1099/1. 6-Way. EK4. EK10.

220v. CONTROL
WIRING DIAGRAM for 380-3-50
(Germany only)

M2500. E.P.471.



MASTER 2500.
220v. CONTROL
WIRING DIAGRAM FOR 380v.-3-50. 4-WIRE.
Incorporating Electro-magnetic brake - Germany.

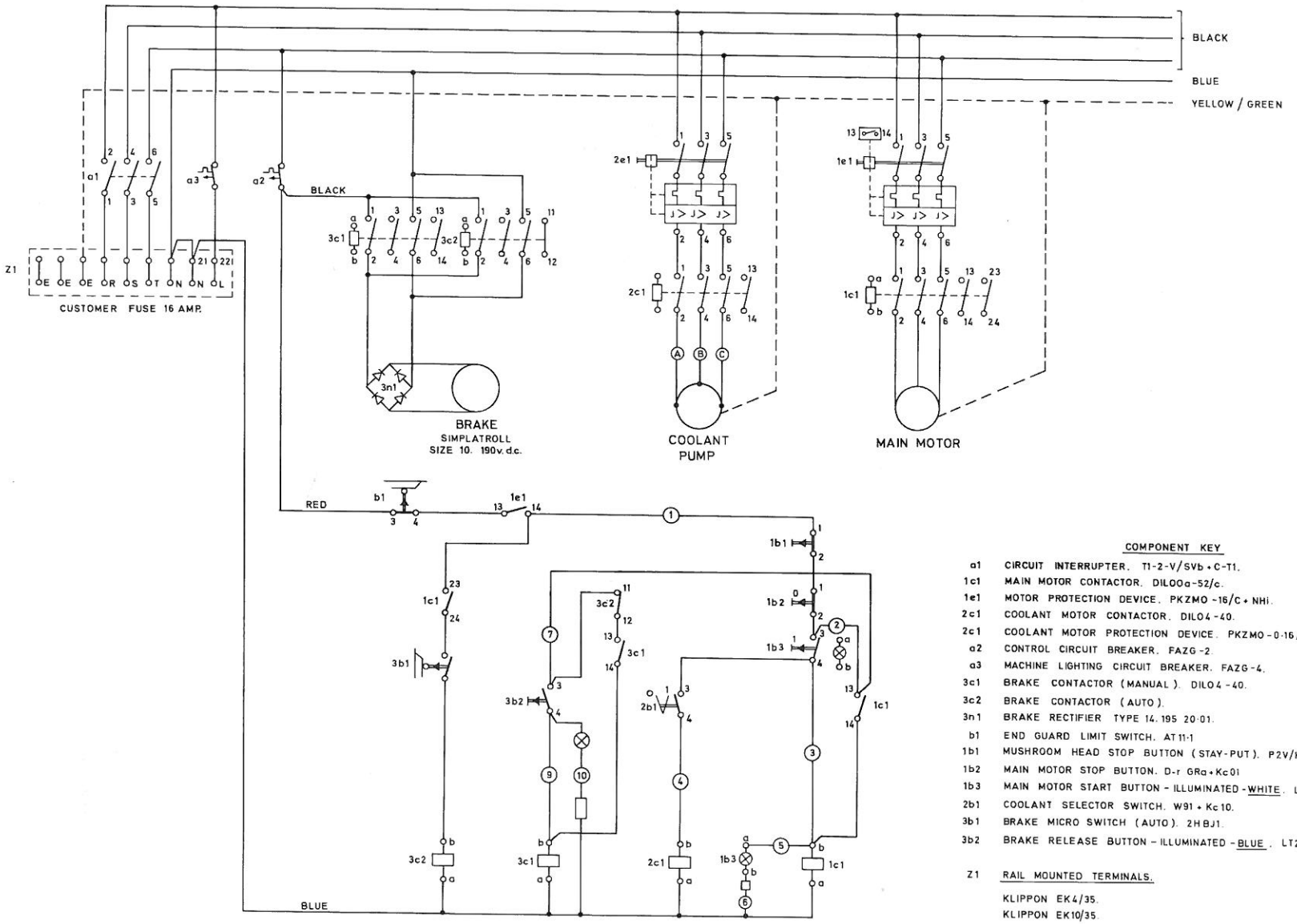
COMPONENT KEY

a1	CIRCUIT INTERRUPTER. T1-2-V/SVb + C-T1.
1c1	MAIN MOTOR CONTACTOR. DILOOa-52/c.
1e1	MOTOR PROTECTION DEVICE. PKZMO-16/C + NHi.
2c1	COOLANT MOTOR CONTACTOR. DILO4-40.
2e1	COOLANT MOTOR PROTECTION DEVICE. PKZMO-0·16/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 RECTIFIER TYPE 14.195 20·01.
b1	END GUARD LIMIT SWITCH. AT11-1
1b1	MUSHROOM HEAD STOP BUTTON (STAY-PUT). P2V/K 01.
1b2	MAIN MOTOR STOP BUTTON. D-r GRa + Kc01
1b3	MAIN MOTOR START BUTTON - ILLUMINATED - WHITE. LT2-WS + KFac
2b1	COOLANT SELECTOR SWITCH. W91 + Kc10.
3b1	BRAKE MICRO SWITCH (AUTO). AT11-1
3b2	BRAKE RELEASE BUTTON - ILLUMINATED - BLUE. LT2-b1 + KFac

Z1 RAIL MOUNTED TERMINALS.

KLIPPON EK4/35.
KLIPPON EK10/35.
KLIPPON SAK10/35.
KLIPPON SAK25/35.

EP.491.m.



MASTER 2500.
220v. CONTROL
WIRING DIAGRAM FOR 380v.-3-50. 4-WIRE.
Incorporating Electro-magnetic brake - Germany.

COMPONENT KEY

a1	CIRCUIT INTERRUPTER. T1-2-V/SVb + C-T1.
1c1	MAIN MOTOR CONTACTOR. DILOOa-52/c.
1e1	MOTOR PROTECTION DEVICE. PKZMO-16/C + NHi.
2c1	COOLANT MOTOR CONTACTOR. DILO4-40.
2c1	COOLANT MOTOR PROTECTION DEVICE. PKZMO-0-16/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 RECTIFIER TYPE 14.195 20·01.
b1	END GUARD LIMIT SWITCH. AT11-1
1b1	MUSHROOM HEAD STOP BUTTON (STAY-PUT). P2V/K 01.
1b2	MAIN MOTOR STOP BUTTON. D-r GRa+Kc01
1b3	MAIN MOTOR START BUTTON - ILLUMINATED - WHITE. LT2-WS+KFac
2b1	COOLANT SELECTOR SWITCH. W91 + Kc10.
3b1	BRAKE MICRO SWITCH (AUTO). 2HBJ1.
3b2	BRAKE RELEASE BUTTON - ILLUMINATED - BLUE. LT2-b1+KFac

Z1 RAIL MOUNTED TERMINALS.

KLIPPON EK4/35.
KLIPPON EK10/35.
KLIPPON SAK10/35.
KLIPPON SAK25/35.

EP.491.

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

RESERVDELSLISTA

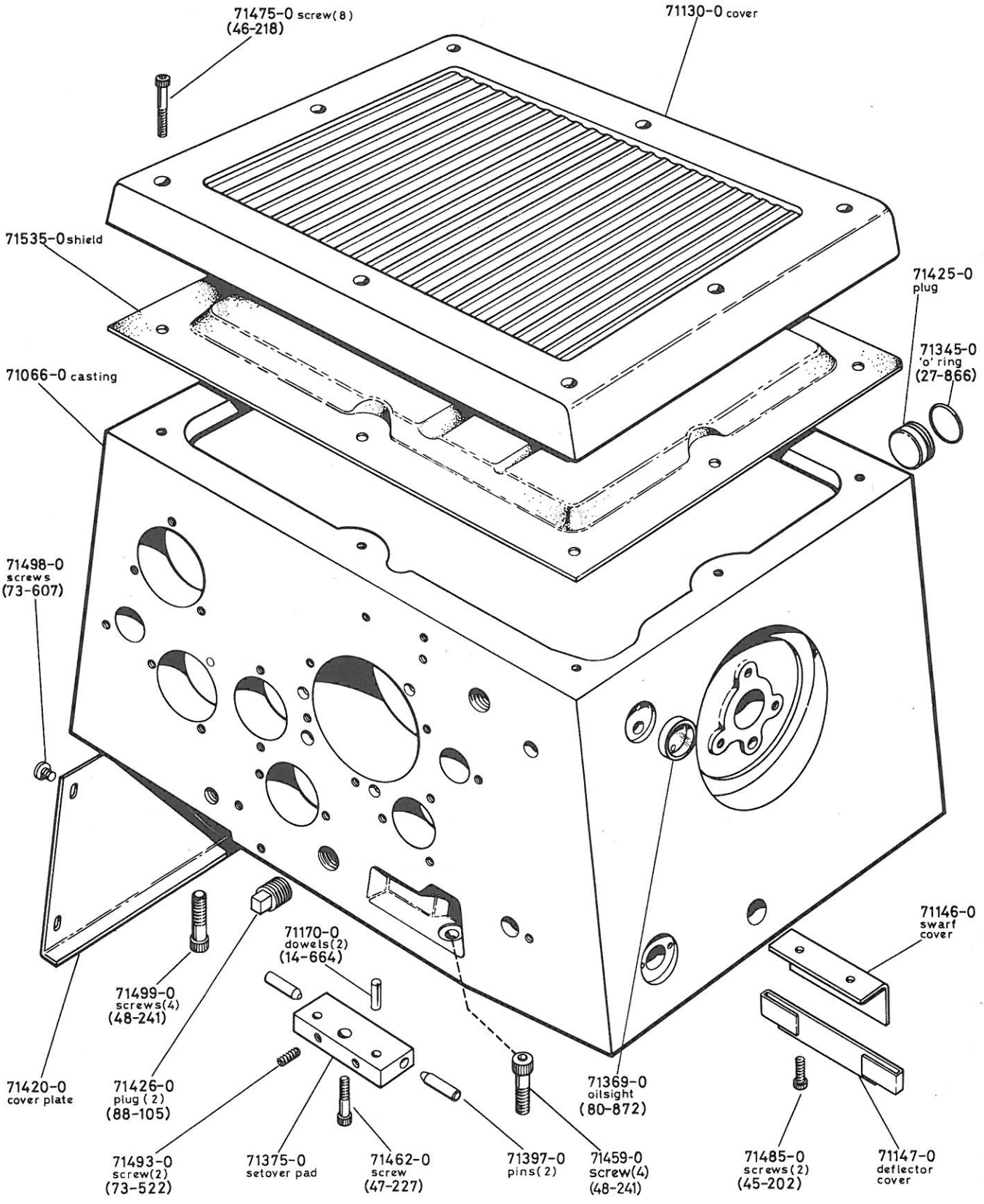
VIKTIGT vid beställning:

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 förfrågningar. Detta nummer är instämplat på bädden vid dubbdocksänden.

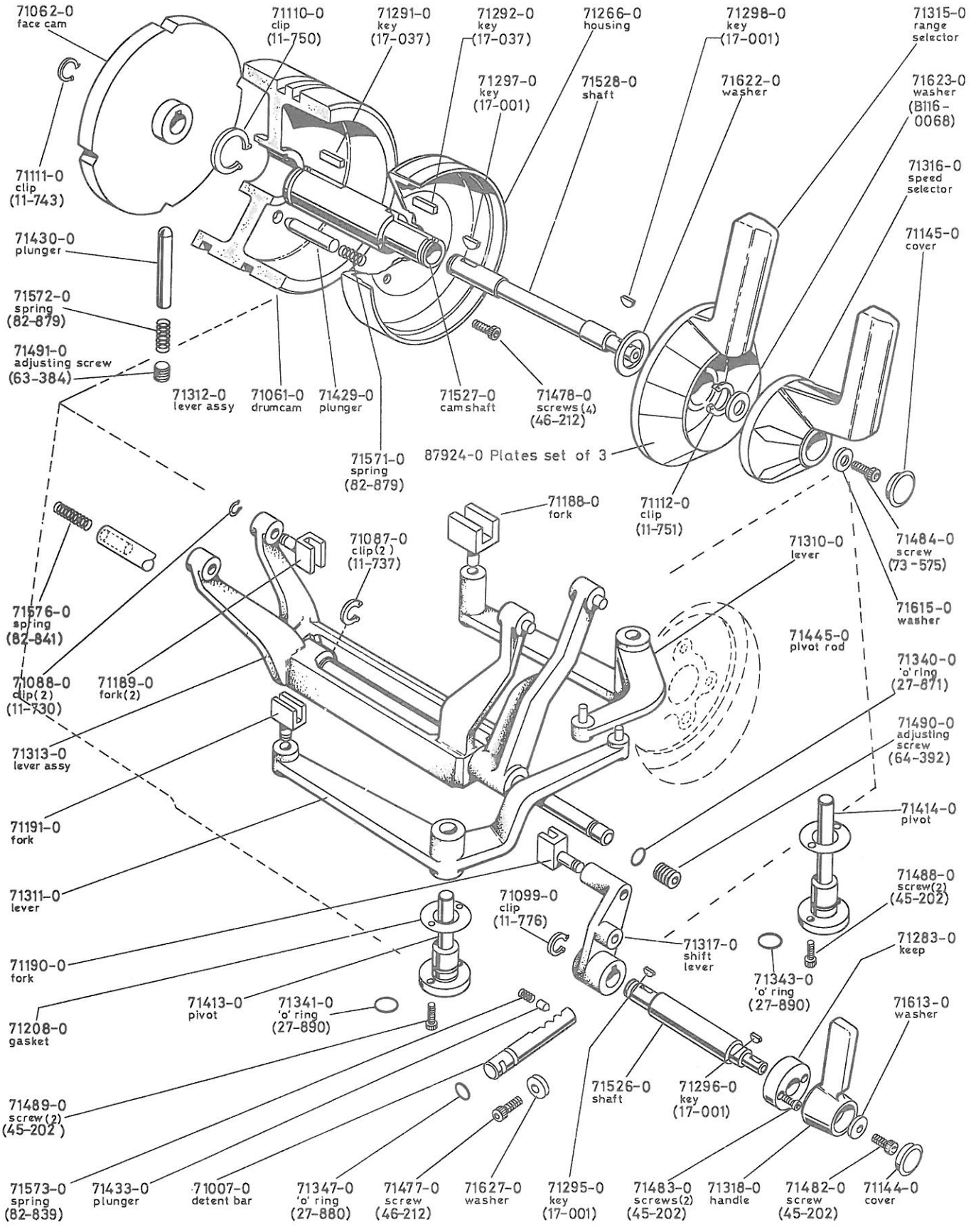
VARAOSALUETTELO

TARKEÄÄ tilattaessa varaosia -

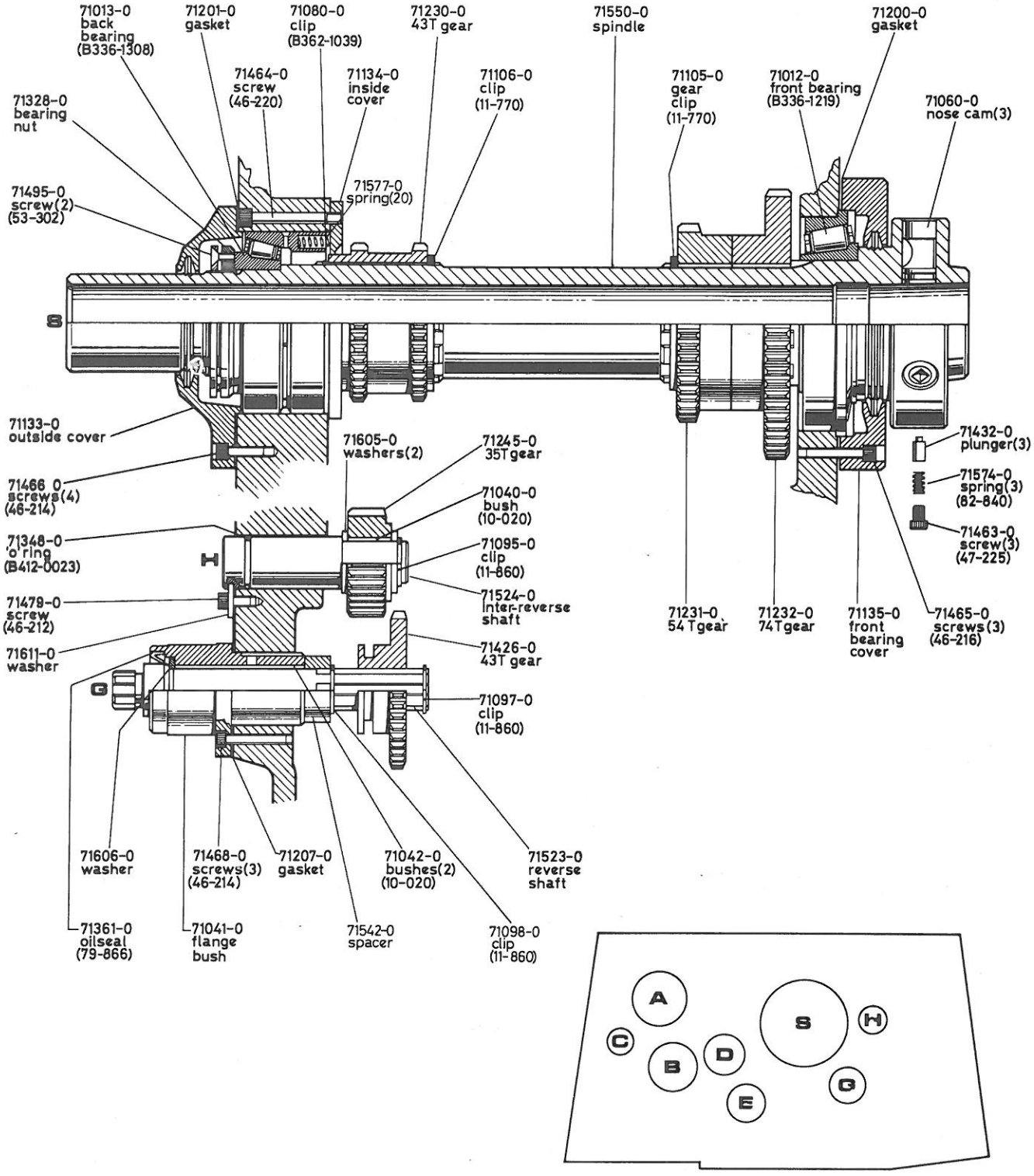
1. **Tilauksen on merkittävä piirroksissa mainittu varaosanumero. Kaikkiin varaosiin oma numeronsa. Myös varaosan nimi sellaisena kuin se alkuperäiskielellä esiintyy, on kirjoitettava tilaukseen.**
2. **Eräät varaosat ovat standardiosia, joita on paikallisissa kaupoissa yleisesti saatavissa. Näille osille on lisäksi ilmoitettu tunnusnumero (esim. 47-231) joka myöskinesiintyy varaosaluettelon jälkiosan hakemistossa, jossa yksityiskohtaisemmat tiedot kyseisestä varaosasta on ilmoitettu.**
3. **Samoin valmistusnumero, joka on lyöty rungon kärkipylkän puoleiseen päähän, on mainittava Kaikissa tilauksissa ja aina teknillisiä neuvoja pyydettäessä.**

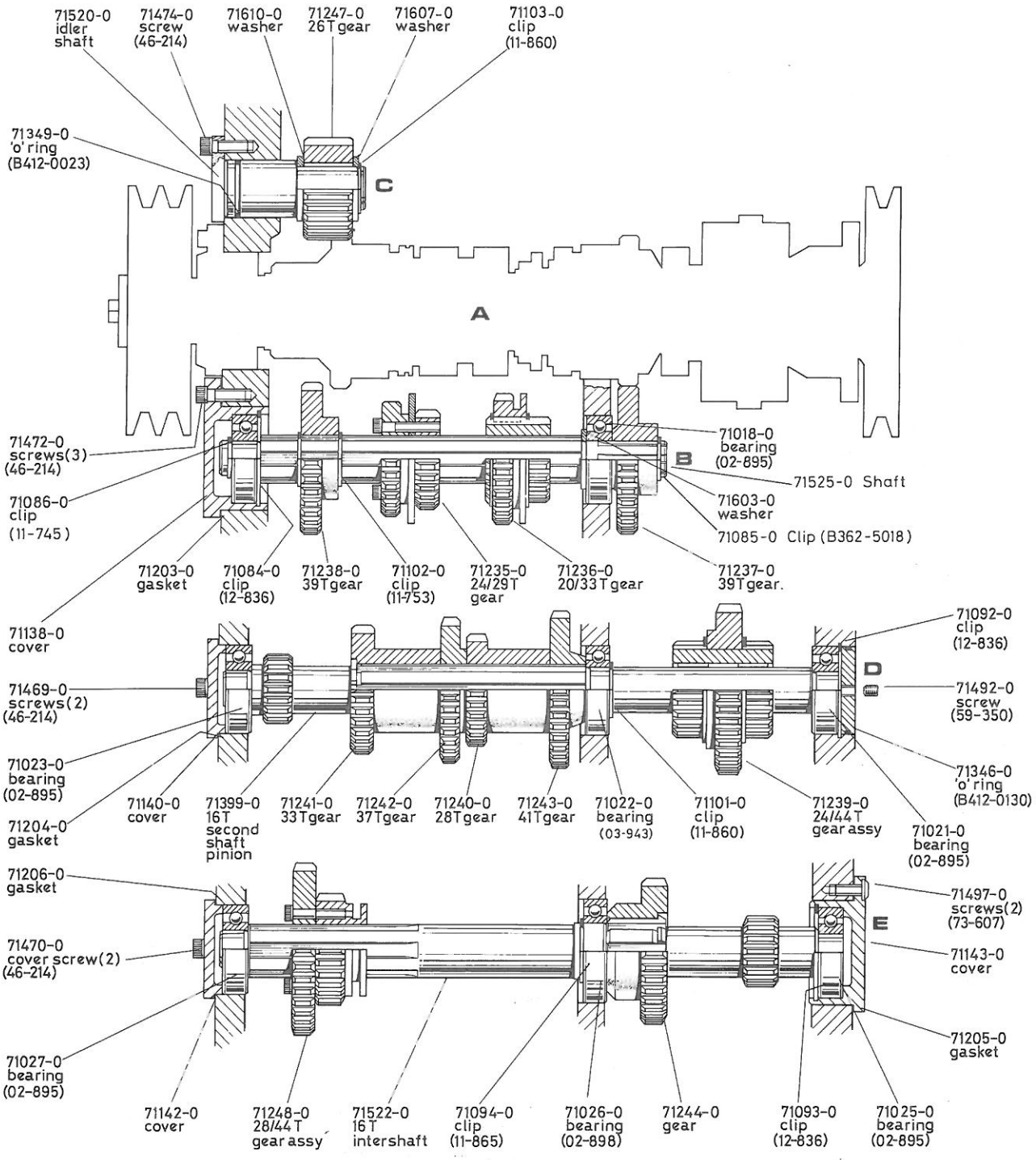

71475-0 screw(8)
(46-218)
71130-0 cover
71535-0 shield
71425-0
plug
71345-0
'o' ring
(27-866)
71066-0 casting
71498-0
screws
(73-607)
71146-0
swarf
cover
71170-0
dowels(2)
(14-664)
71499-0
screws(4)
(48-241)
71420-0
cover plate
71426-0
plug (2)
(88-105)
71369-0
oilsight
(80-872)
71493-0
screw(2)
(73-522)
71375-0
setover pad
71462-0
screw
(47-227)
71397-0
pins(2)
71459-0
screw(4)
(48-241)
71485-0
screws(2)
(45-202)
71147-0
deflector
cover

5-01-7106


71062-0 face cam
71110-0 clip (11-750)
71291-0 key (17-037)
71292-0 key (17-037)
71266-0 housing
71298-0 key (17-001)
71315-0 range selector
71297-0 key (17-001)
71528-0 shaft
71622-0 washer
71623-0 washer (B116-0068)
71111-0 clip (11-743)
71316-0 speed selector
71145-0 cover
71430-0 plunger
71572-0 spring (82-879)
71491-0 adjusting screw (63-384)
71312-0 lever assy
71061-0 drumcam
71429-0 plunger
71527-0 camshaft
71478-0 screws (4) (46-212)
71571-0 spring (82-879)
87924-0 Plates set of 3
71188-0 fork
71112-0 clip (11-751)
71087-0 clip (2) (11-737)
71310-0 lever
71484-0 screw (73-575)
71615-0 washer
71576-0 spring (82-841)
71445-0 pivot rod
71340-0 'o' ring (27-871)
71088-0 clip (2) (11-730)
71189-0 fork (2)
71490-0 adjusting screw (64-392)
71313-0 lever assy
71414-0 pivot
71191-0 fork
71488-0 screw (2) (45-202)
71311-0 lever
71099-0 clip (11-776)
71317-0 shift lever
71283-0 keep
71190-0 fork
71343-0 'o' ring (27-890)
71413-0 pivot
71341-0 'o' ring (27-890)
71613-0 washer
71208-0 gasket
71526-0 shaft
71296-0 key (17-001)
71489-0 screw (2) (45-202)
71573-0 spring (82-839)
71433-0 plunger
71007-0 detent bar
71347-0 'o' ring (27-880)
71477-0 screw (46-212)
71627-0 washer
71295-0 key (17-001)
71483-0 screws (2) (45-202)
71318-0 handle
71482-0 screw (45-202)
71144-0 cover

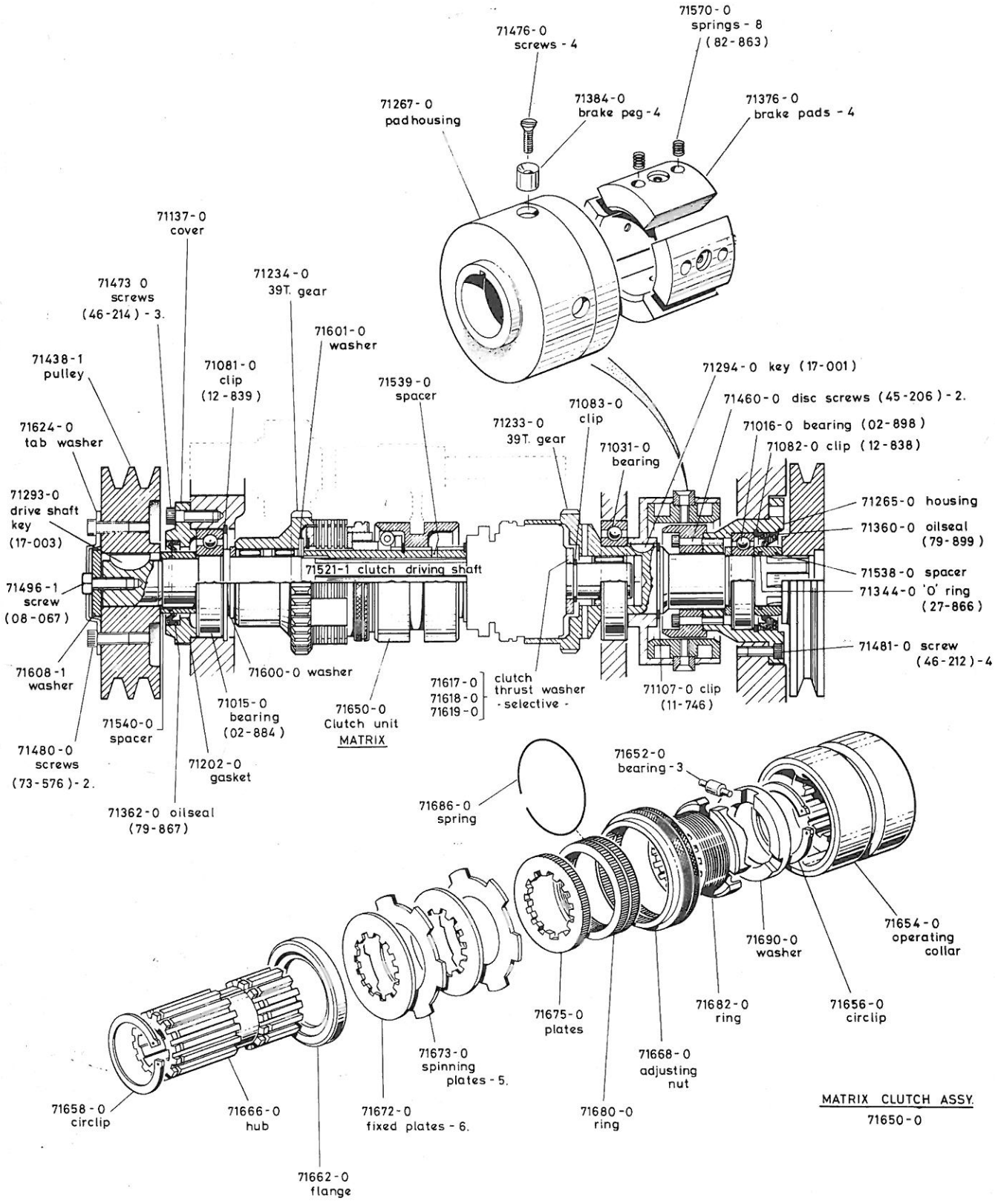
5-02-7106/1


71013-0 back bearing (B336-1308)
71201-0 gasket
71080-0 clip (B362-1039)
71230-0 43T gear
71550-0 spindle
71200-0 gasket
71464-0 screw (46-220)
71134-0 inside cover
71106-0 clip (11-770)
71105-0 gear clip (11-770)
71012-0 front bearing (B336-1219)
71060-0 nose cam(3)
71328-0 bearing nut
71577-0 spring(20)
71495-0 screw(2) (53-302)
S
71133-0 outside cover
71605-0 washers(2)
71245-0 35T gear
71432-0 plunger(3)
71574-0 spring(3) (82-840)
71466 0 screws(4) (46-214)
71040-0 bush (10-020)
71348-0 'o' ring (B412-0023)
H
71095-0 clip (11-860)
71463-0 screw(3) (47-225)
71524-0 Inter-reverse shaft
71479-0 screw (46-212)
71231-0 54T gear
71232-0 74T gear
71135-0 front bearing cover
71465-0 screws(3) (46-216)
71611-0 washer
71426-0 43T gear
G
71097-0 clip (11-860)
71606-0 washer
71468-0 screws(3) (46-214)
71207-0 gasket
71042-0 bushes(2) (10-020)
71523-0 reverse shaft
71361-0 oilseal (79-866)
71041-0 flange bush
71542-0 spacer
71098-0 clip (11-860)
A
S
H
C
D
B
G
E

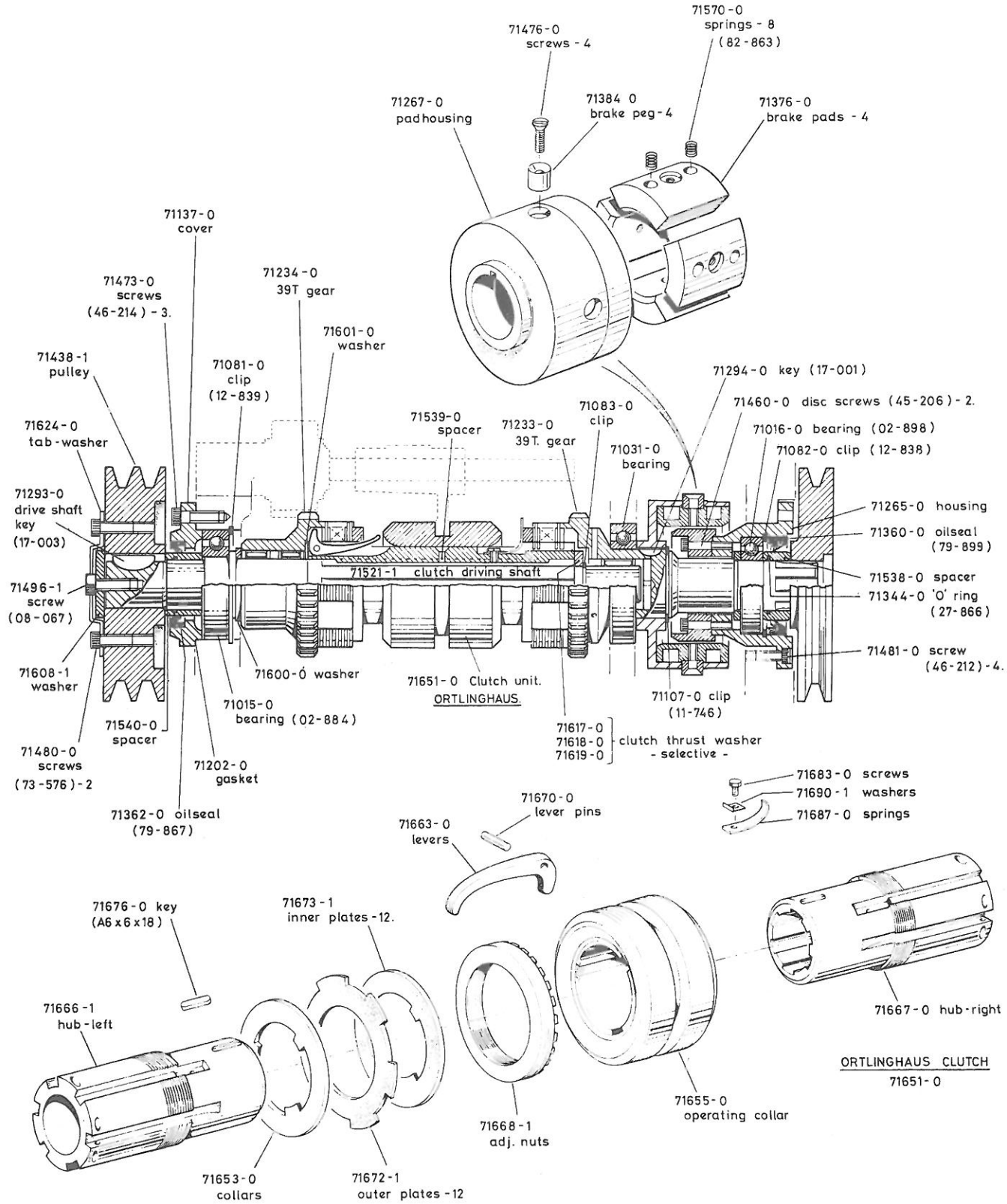

71520-0 idler shaft
71474-0 screw (46-214)
71610-0 washer
71247-0 26T gear
71607-0 washer
71103-0 clip (11-860)
71349-0 'o' ring (B412-0023)
C
A
B
71472-0 screws(3) (46-214)
71086-0 clip (11-745)
71018-0 bearing (02-895)
71525-0 Shaft
71603-0 washer
71085-0 Clip (B362-5018)
71203-0 gasket
71084-0 clip (12-836)
71238-0 39T gear
71102-0 clip (11-753)
71235-0 24/29T gear
71236-0 20/33T gear
71237-0 39T gear.
71138-0 cover
71092-0 clip (12-836)
D
71469-0 screws(2) (46-214)
71492-0 screw (59-350)
71023-0 bearing (02-895)
71346-0 'o' ring (B412-0130)
71204-0 gasket
71140-0 cover
71399-0 16T second shaft pinion
71241-0 33T gear
71242-0 37T gear
71240-0 28T gear
71243-0 41T gear
71022-0 bearing (03-943)
71101-0 clip (11-860)
71239-0 24/44T gear assy
71021-0 bearing (02-895)
71206-0 gasket
71497-0 screws(2) (73-607)
E
71470-0 cover screw(2) (46-214)
71143-0 cover
71205-0 gasket
71027-0 bearing (02-895)
71142-0 cover
71248-0 28/44T gear assy
71522-0 16T intershaft
71094-0 clip (11-865)
71026-0 bearing (02-898)
71244-0 gear
71093-0 clip (12-836)
71025-0 bearing (02-895)

5-04-7106M

HEADSTOCK ; CLUTCH SHAFT

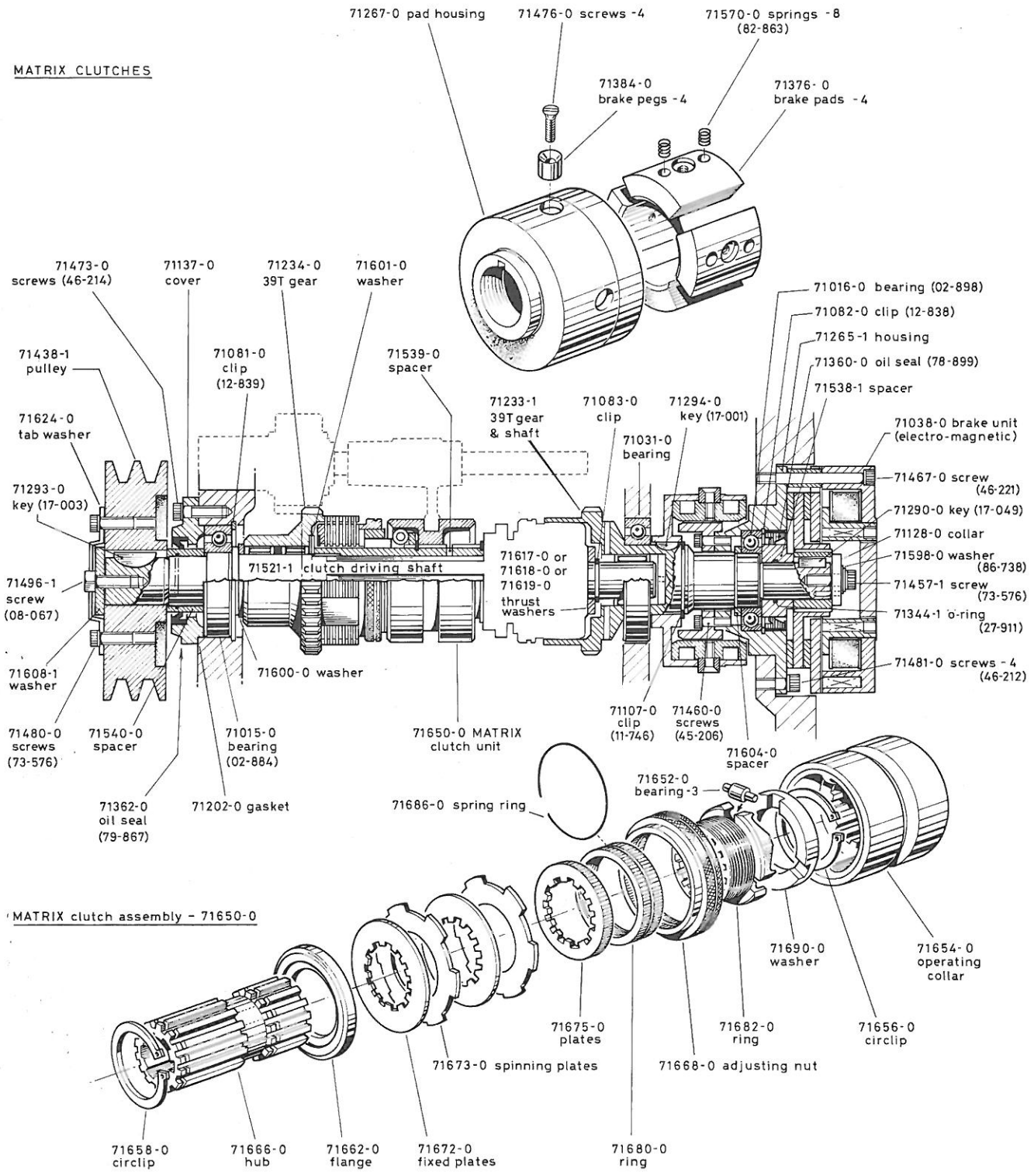


HEADSTOCK ; CLUTCH SHAFT



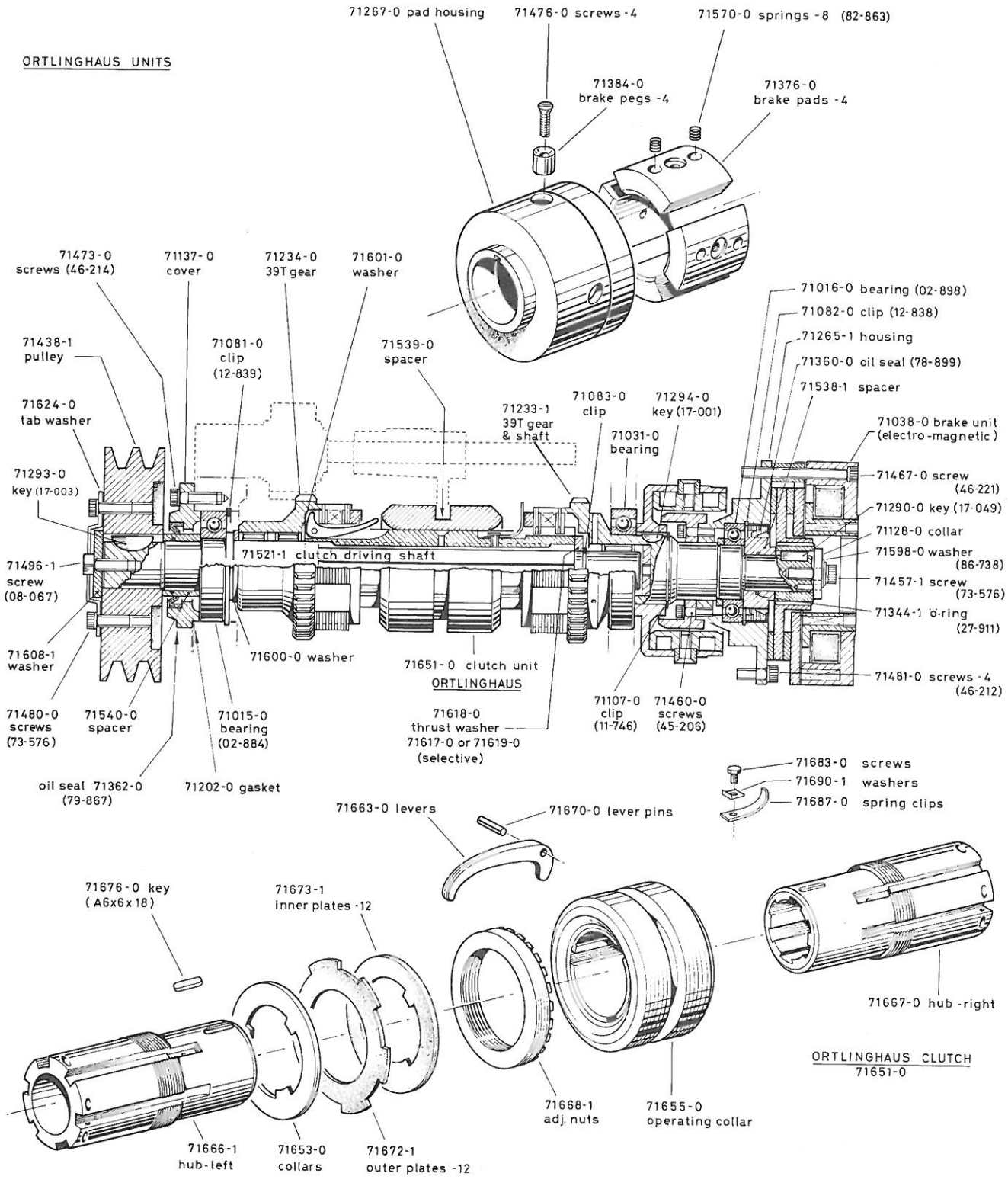
5-05A-7706

HEADSTOCK ; CLUTCH SHAFT



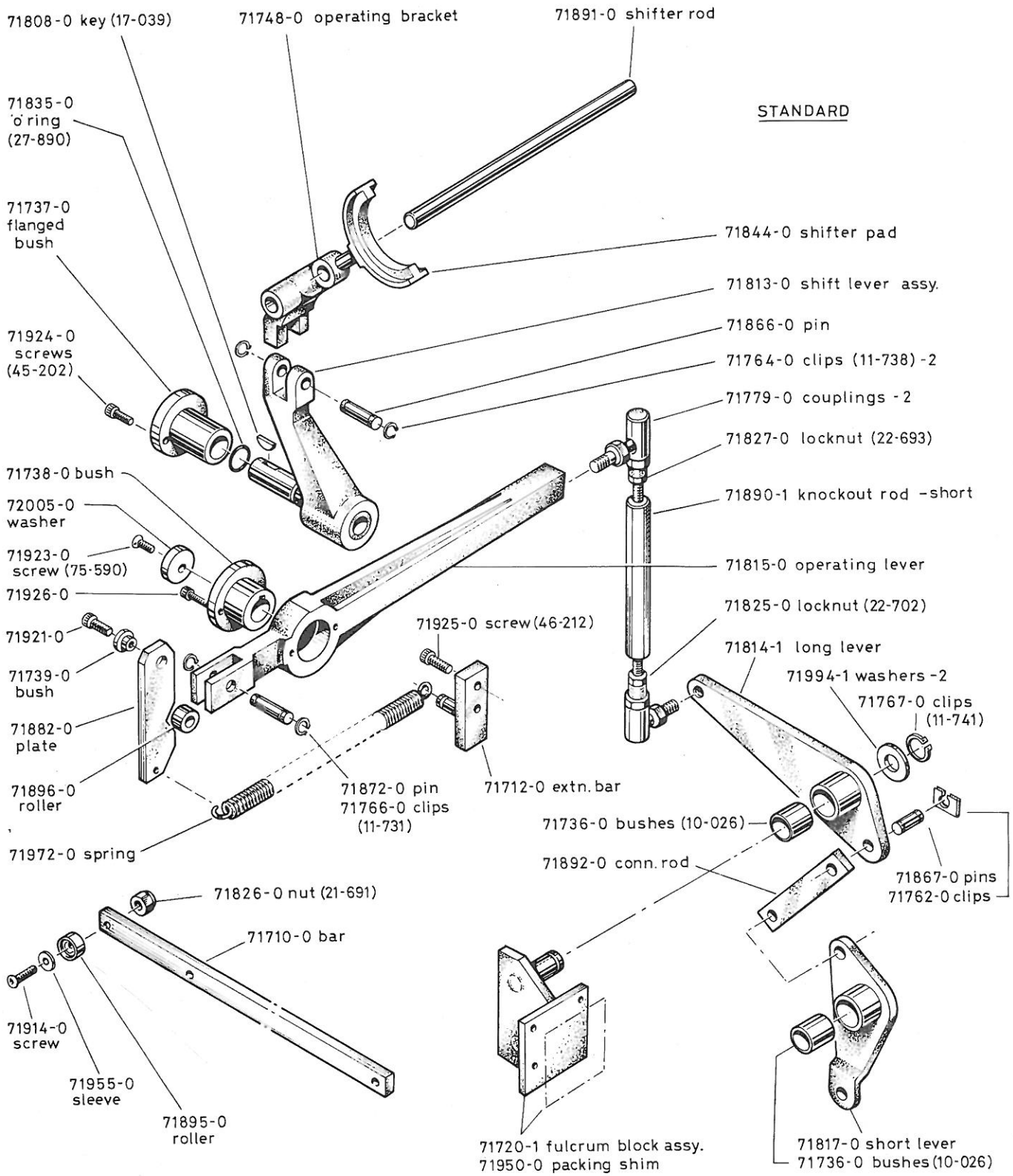
5-05-7901

HEADSTOCK; CLUTCH SHAFT

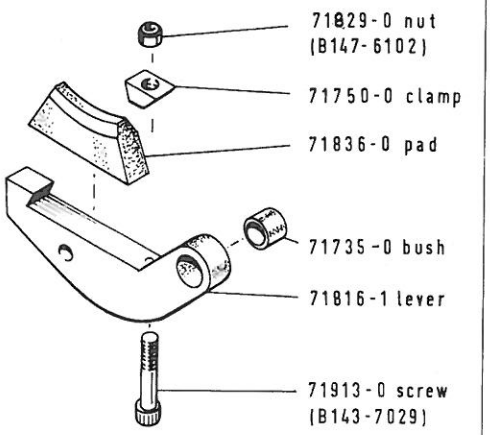


5-05A-7901

CLUTCH LINKAGE



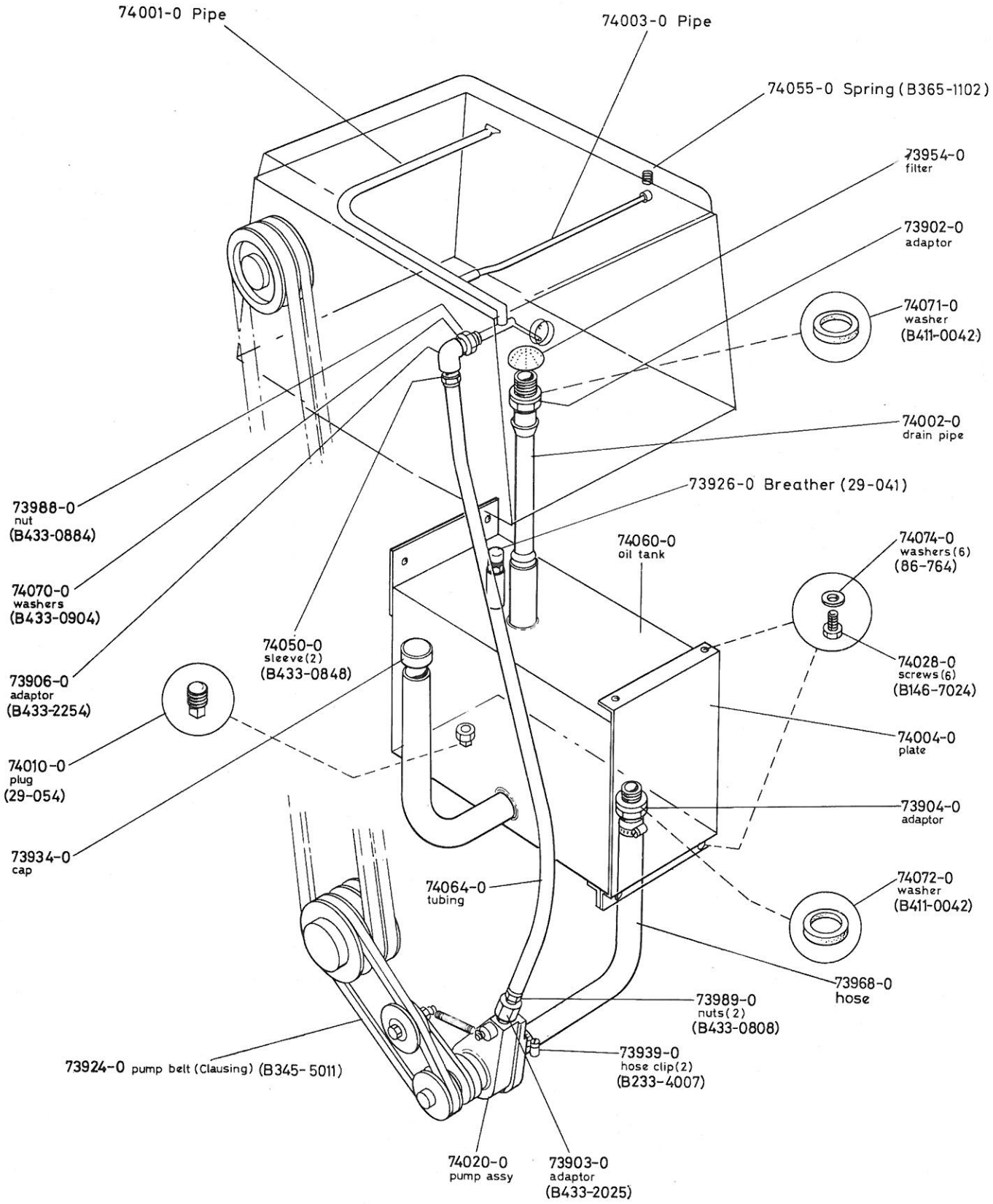
5-06-7804



71843-1 brake pad assy.

OPERATING MECHANISM

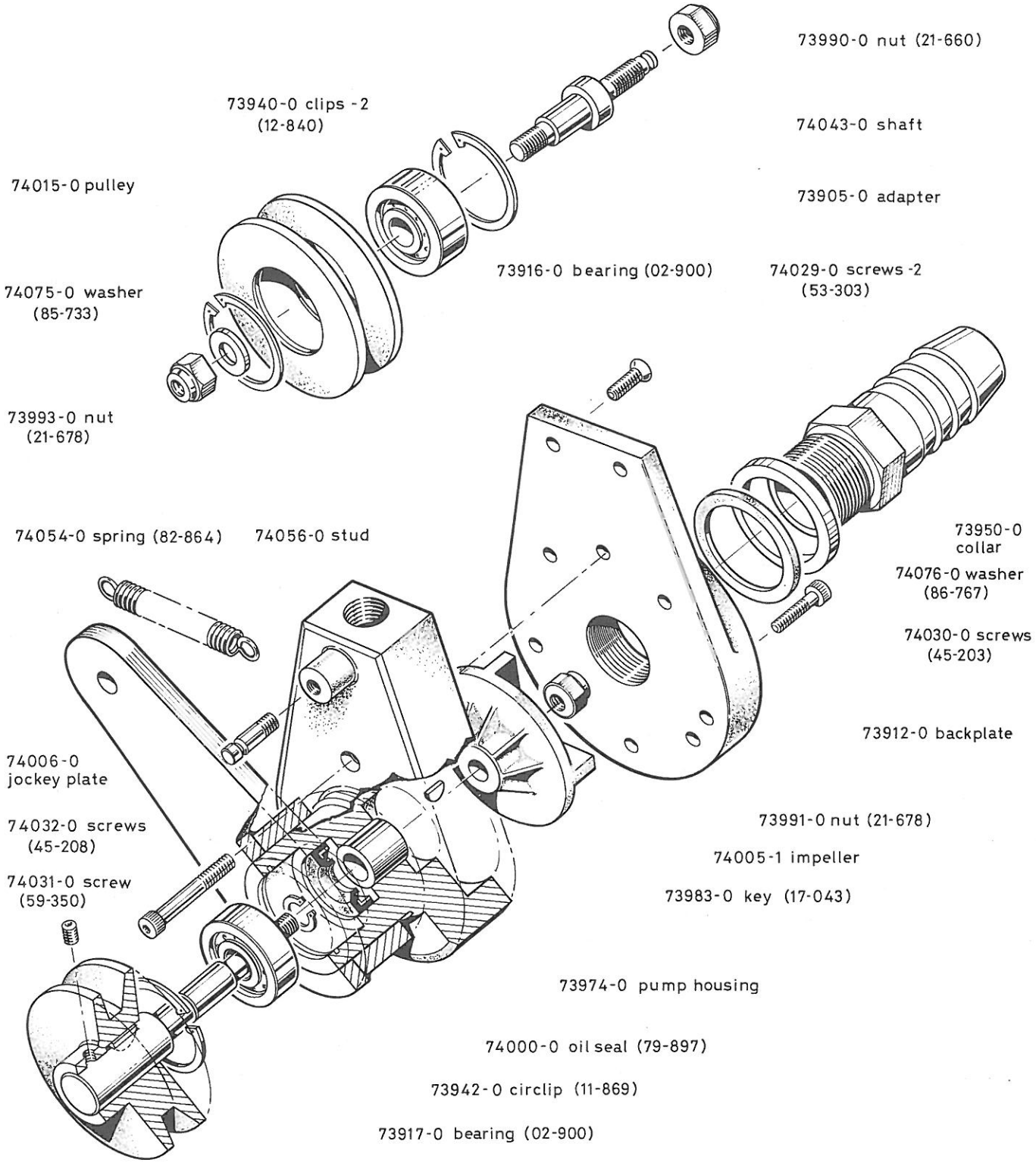
5-07-7707


74001-0 Pipe
74003-0 Pipe
74055-0 Spring (B365-1102)
73954-0 filter
73902-0 adaptor
74071-0 washer (B411-0042)
74002-0 drain pipe
73926-0 Breather (29-041)
73988-0 nut (B433-0884)
74070-0 washers (B433-0904)
73906-0 adaptor (B433-2254)
74010-0 plug (29-054)
73934-0 cap
74050-0 sleeve(2) (B433-0848)
74060-0 oil tank
74074-0 washers(6) (86-764)
74028-0 screws(6) (B146-7024)
74004-0 plate
73904-0 adaptor
74064-0 tubing
74072-0 washer (B411-0042)
73968-0 hose
73989-0 nuts(2) (B433-0808)
73939-0 hose clip(2) (B233-4007)
73924-0 pump belt (Clausing) (B345-5011)
74020-0 pump assy
73903-0 adaptor (B433-2025)

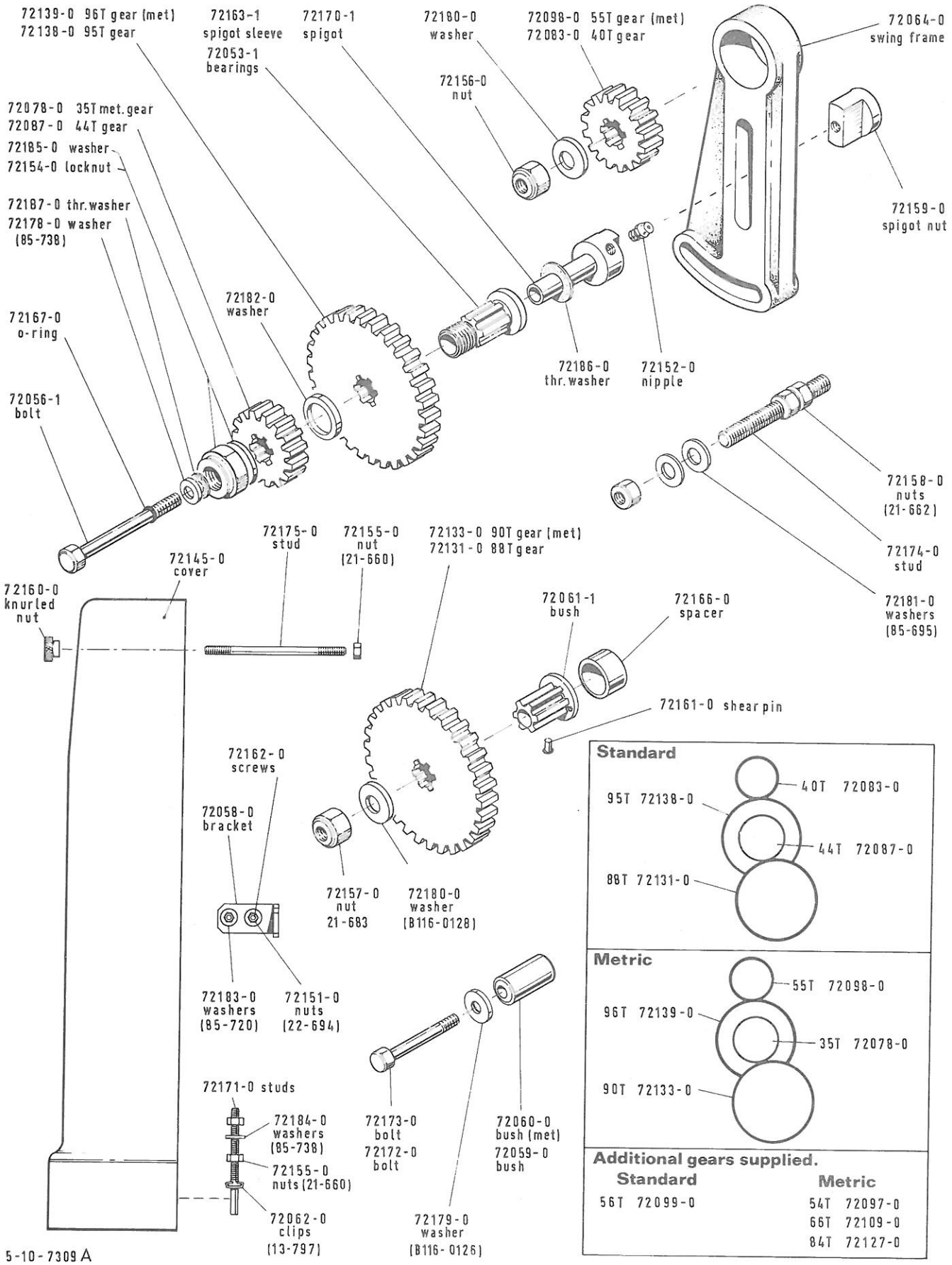
5-08A-7201

HEADSTOCK: LUBRICATION PUMP

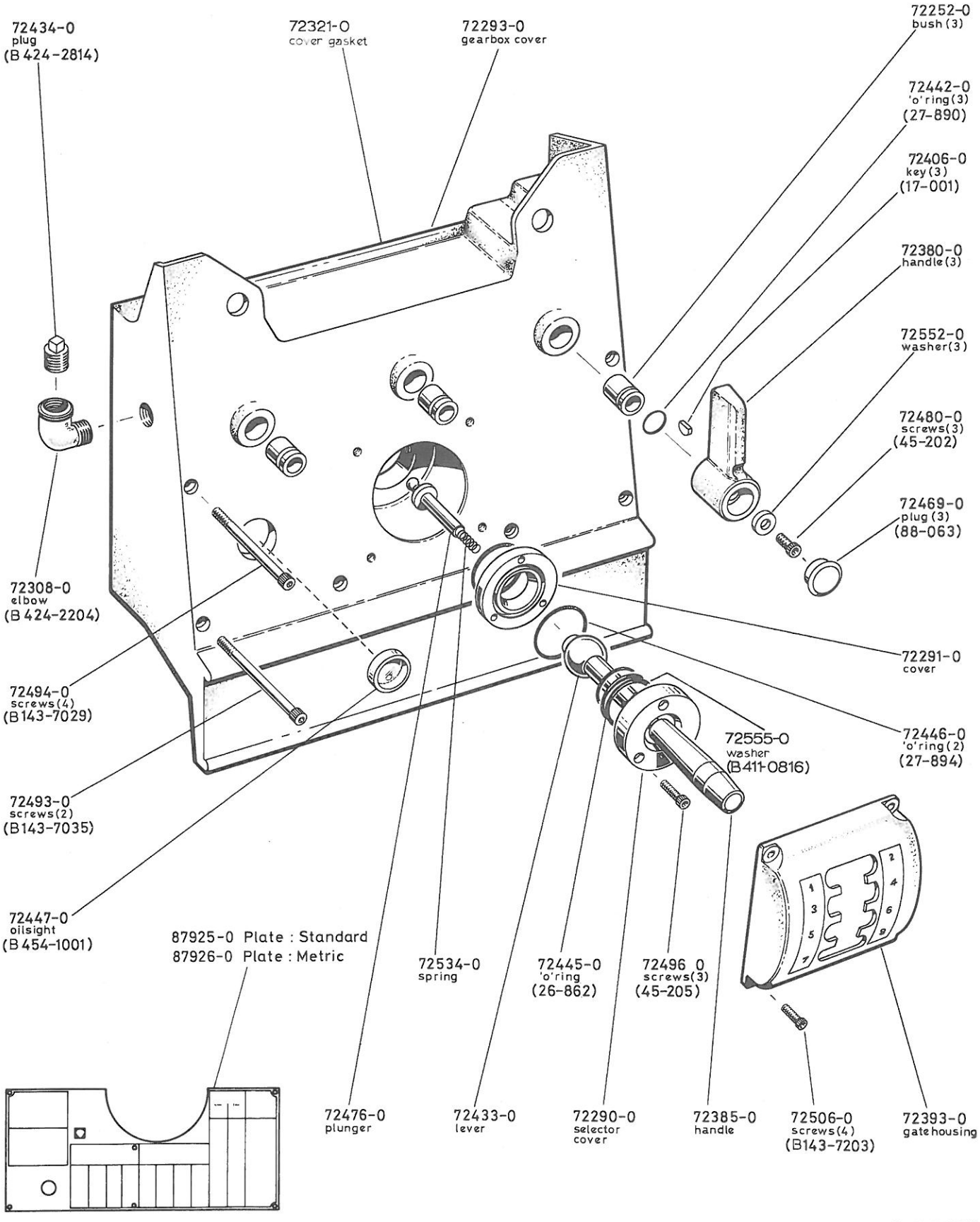
FROM SER.No.08745
TO SER. No.



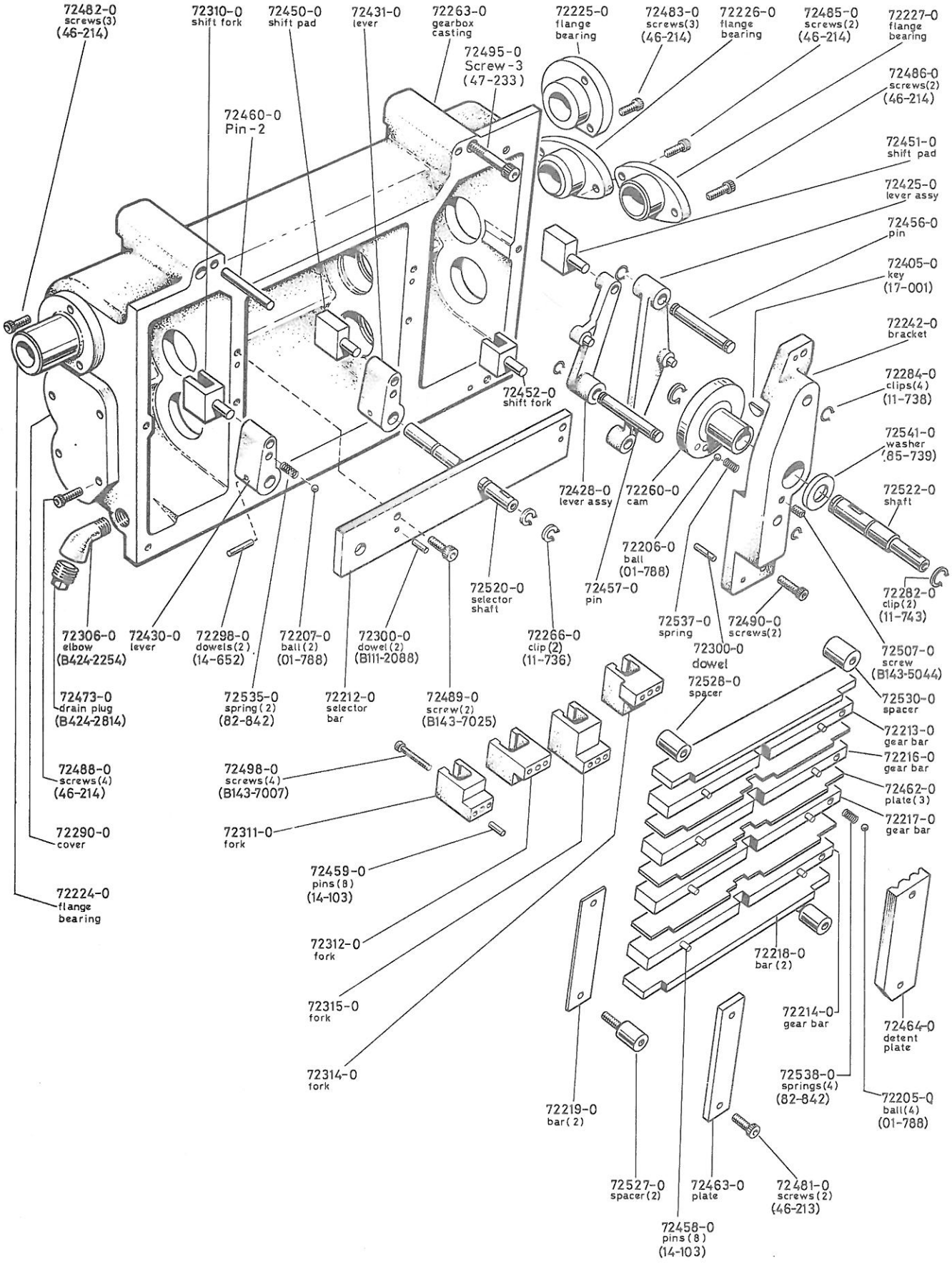
5-09-7905


72139-0 96T gear (met)
72138-0 95T gear
72163-1 spigot sleeve
72170-1 spigot
72053-1 bearings
72180-0 washer
72098-0 55T gear (met)
72083-0 40T gear
72064-0 swing frame
72156-0 nut
72078-0 35T met. gear
72087-0 44T gear
72185-0 washer
72154-0 locknut
72187-0 thr. washer
72178-0 washer (85-738)
72159-0 spigot nut
72182-0 washer
72167-0 o-ring
72056-1 bolt
72186-0 thr. washer
72152-0 nipple
72158-0 nuts (21-662)
72174-0 stud
72181-0 washers (85-695)
72175-0 stud
72155-0 nut (21-660)
72133-0 90T gear (met)
72131-0 88T gear
72145-0 cover
72160-0 knurled nut
72061-1 bush
72166-0 spacer
72161-0 shear pin
72162-0 screws
72058-0 bracket
72157-0 nut 21-683
72180-0 washer (B116-0128)
72183-0 washers (85-720)
72151-0 nuts (22-694)
72171-0 studs
72184-0 washers (85-738)
72155-0 nuts (21-660)
72062-0 clips (13-797)
72173-0 bolt
72172-0 bolt
72060-0 bush (met)
72059-0 bush
72179-0 washer (B116-0126)
Standard
40T 72083-0
95T 72138-0
44T 72087-0
88T 72131-0
Metric
55T 72098-0
96T 72139-0
35T 72078-0
90T 72133-0
Additional gears supplied.
Standard
56T 72099-0
Metric
54T 72097-0
66T 72109-0
84T 72127-0

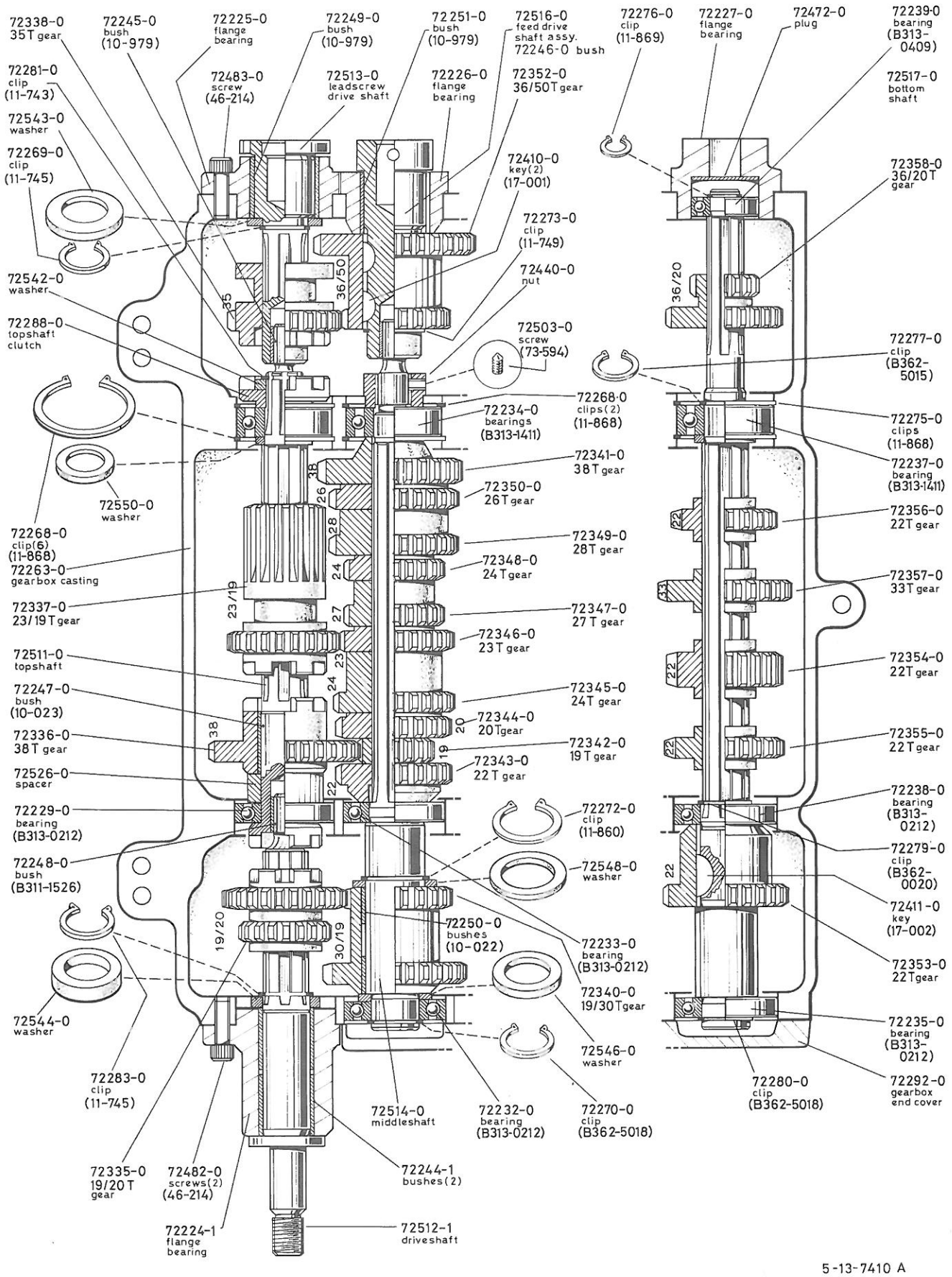
5-10-7309 A


72434-0
plug
(B 424-2814)
72321-0
cover gasket
72293-0
gearbox cover
72252-0
bush (3)
72442-0
'o' ring (3)
(27-890)
72406-0
key (3)
(17-001)
72380-0
handle (3)
72552-0
washer (3)
72480-0
screws (3)
(45-202)
72469-0
plug (3)
(88-063)
72308-0
elbow
(B 424-2204)
72494-0
screws (4)
(B143-7029)
72493-0
screws (2)
(B143-7035)
72447-0
oilsight
(B 454-1001)
72291-0
cover
72446-0
'o' ring (2)
(27-894)
72555-0
washer
(B 411-0816)
87925-0 Plate : Standard
87926-0 Plate : Metric
72534-0
spring
72445-0
'o' ring
(26-862)
72496 0
screws (3)
(45-205)
72476-0
plunger
72433-0
lever
72290-0
selector
cover
72385-0
handle
72506-0
screws (4)
(B143-7203)
72393-0
gate housing

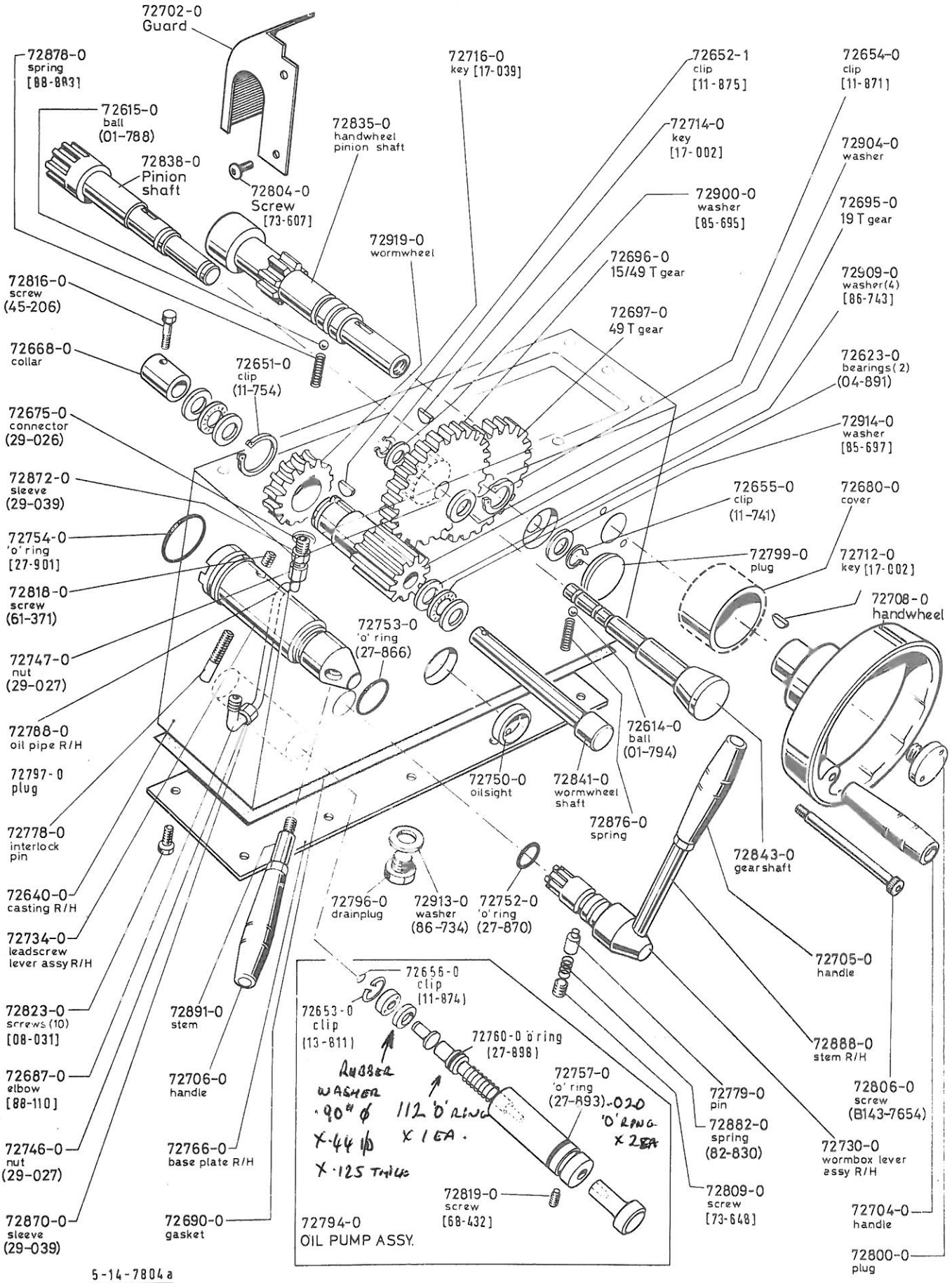
5-11-7106/1


72482-0 screws(3) (46-214)
72310-0 shift fork
72450-0 shift pad
72431-0 lever
72263-0 gearbox casting
72225-0 flange bearing
72483-0 screws(3) (46-214)
72226-0 flange bearing
72485-0 screws(2) (46-214)
72227-0 flange bearing
72495-0 Screw-3 (47-233)
72486-0 screws(2) (46-214)
72460-0 Pin-2
72451-0 shift pad
72425-0 lever assy
72456-0 pin
72405-0 key (17-001)
72242-0 bracket
72284-0 clips(4) (11-738)
72452-0 shift fork
72541-0 washer (85-739)
72428-0 lever assy
72260-0 cam
72522-0 shaft
72206-0 ball (01-788)
72520-0 selector shaft
72457-0 pin
72282-0 clip(2) (11-743)
72306-0 elbow (B424-2254)
72430-0 lever
72298-0 dowels(2) (14-652)
72207-0 ball(2) (01-788)
72300-0 dowel(2) (B111-2088)
72266-0 clip(2) (11-736)
72537-0 spring
72490-0 screws(2)
72300-0 dowel
72507-0 screw (B143-5044)
72528-0 spacer
72530-0 spacer
72473-0 drain plug (B424-2814)
72535-0 spring(2) (82-842)
72212-0 selector bar
72489-0 screw(2) (B143-7025)
72213-0 gear bar
72216-0 gear bar
72488-0 screws(4) (46-214)
72498-0 screws(4) (B143-7007)
72462-0 plate(3)
72217-0 gear bar
72290-0 cover
72311-0 fork
72459-0 pins(8) (14-103)
72224-0 flange bearing
72312-0 fork
72218-0 bar(2)
72315-0 fork
72214-0 gear bar
72464-0 detent plate
72314-0 fork
72538-0 springs(4) (82-842)
72205-0 ball(4) (01-788)
72219-0 bar(2)
72527-0 spacer(2)
72463-0 plate
72481-0 screws(2) (46-213)
72458-0 pins(8) (14-103)

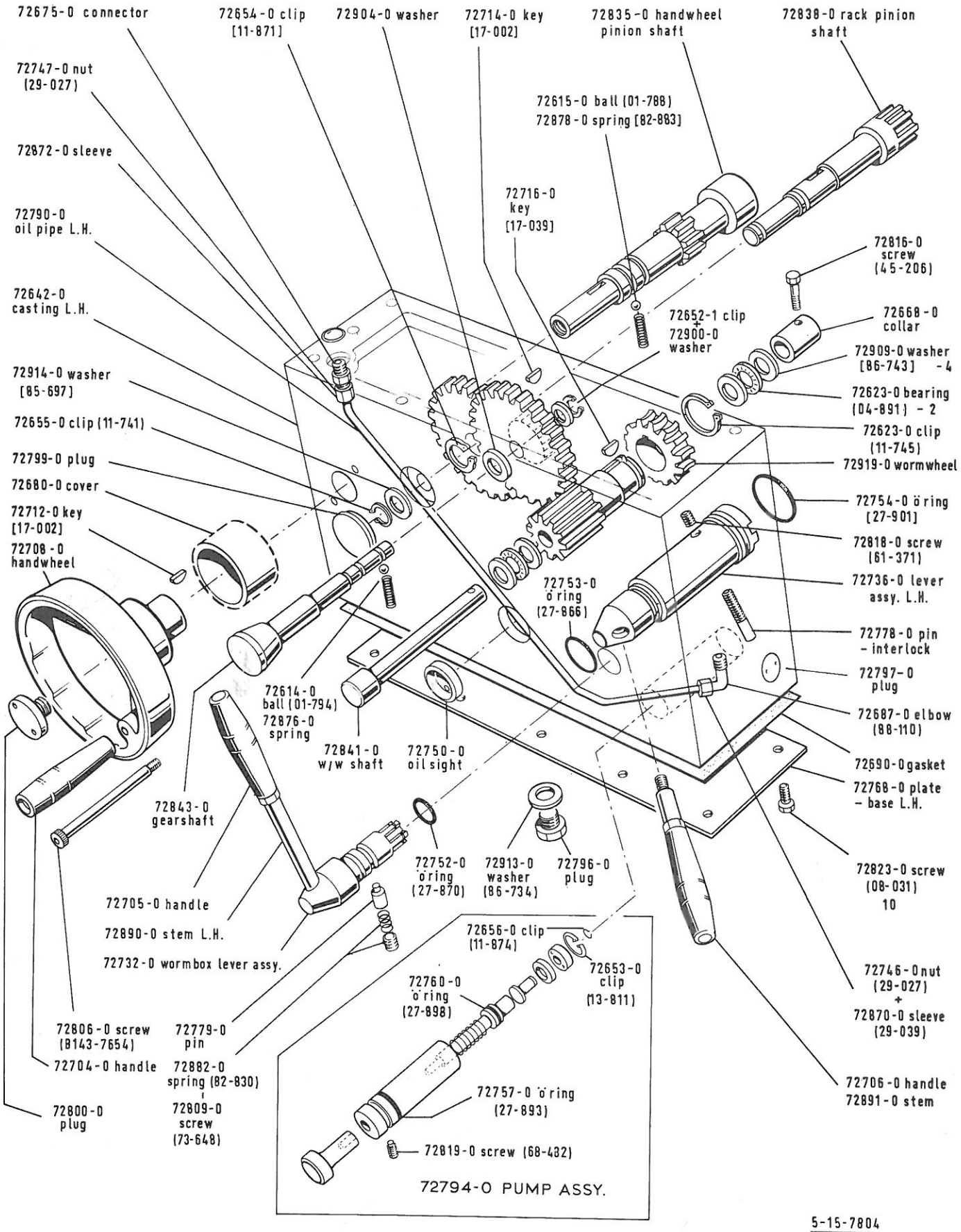
5-12-7106/1


72338-0 35T gear
72245-0 bush (10-979)
72225-0 flange bearing
72249-0 bush (10-979)
72251-0 bush (10-979)
72516-0 feed drive shaft assy. 72246-0 bush
72276-0 clip (11-869)
72227-0 flange bearing
72472-0 plug
72239-0 bearing (B313-0409)
72281-0 clip (11-743)
72483-0 screw (46-214)
72513-0 leadscrew drive shaft
72226-0 flange bearing
72352-0 36/50T gear
72517-0 bottom shaft
72543-0 washer
72269-0 clip (11-745)
72410-0 key(2) (17-001)
72358-0 36/20T gear
72273-0 clip (11-749)
72542-0 washer
72440-0 nut
72288-0 topshaft clutch
72503-0 screw (73-594)
72277-0 clip (B362-5015)
72268-0 clips(2) (11-868)
72234-0 bearings (B313-1411)
72275-0 clips (11-868)
72341-0 38T gear
72237-0 bearing (B313-1411)
72550-0 washer
72350-0 26T gear
72356-0 22T gear
72268-0 clip(6) (11-868)
72349-0 28T gear
72263-0 gearbox casting
72348-0 24T gear
72357-0 33T gear
72337-0 23/19T gear
72347-0 27T gear
72346-0 23T gear
72511-0 topshaft
72354-0 22T gear
72247-0 bush (10-023)
72345-0 24T gear
72344-0 20T gear
72355-0 22T gear
72336-0 38T gear
72342-0 19T gear
72526-0 spacer
72343-0 22T gear
72238-0 bearing (B313-0212)
72229-0 bearing (B313-0212)
72272-0 clip (11-860)
72279-0 clip (B362-0020)
72248-0 bush (B311-1526)
72548-0 washer
72411-0 key (17-002)
72250-0 bushes (10-022)
72233-0 bearing (B313-0212)
72353-0 22T gear
72340-0 19/30T gear
72544-0 washer
72235-0 bearing (B313-0212)
72546-0 washer
72283-0 clip (11-745)
72280-0 clip (B362-5018)
72292-0 gearbox end cover
72514-0 middleshaft
72232-0 bearing (B313-0212)
72270-0 clip (B362-5018)
72335-0 19/20T gear
72482-0 screws(2) (46-214)
72244-1 bushes(2)
72224-1 flange bearing
72512-1 driveshaft
35
36/50
38
26
28
24
23/19
27
24
23
38
20
19
22
19/20
30/19
36/20
33
24
22
22
22
22

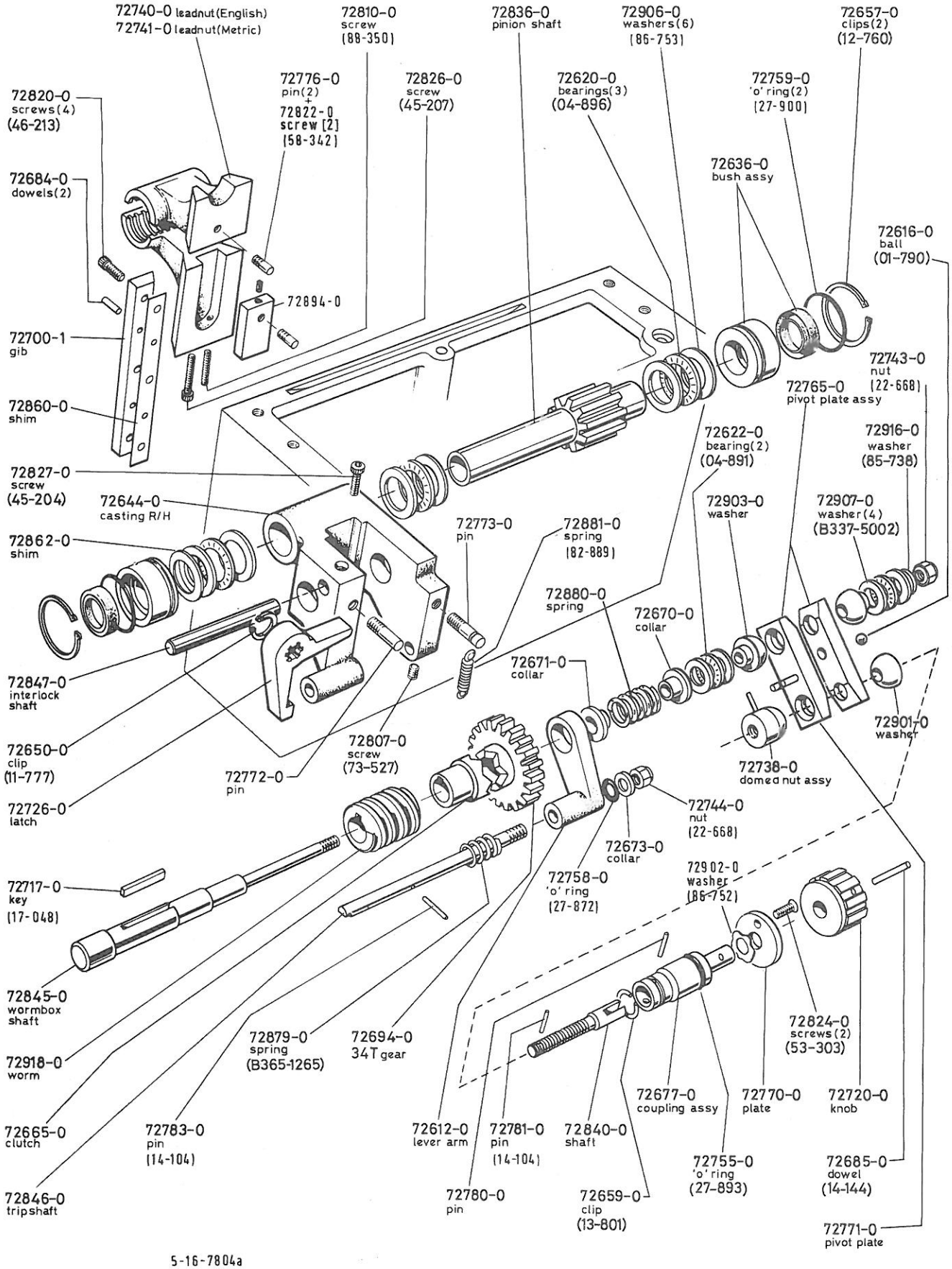
5-13-7410 A


72702-0 Guard
72878-0 spring [88-883]
72615-0 ball (01-788)
72838-0 Pinion shaft
72804-0 Screw [73-607]
72835-0 handwheel pinion shaft
72716-0 key [17-039]
72919-0 wormwheel
72652-1 clip [11-875]
72714-0 key [17-002]
72900-0 washer [85-695]
72696-0 15/49 T gear
72697-0 49 T gear
72654-0 clip [11-871]
72904-0 washer
72695-0 19 T gear
72909-0 washer(4) [86-743]
72623-0 bearings(2) (04-891)
72914-0 washer [85-697]
72816-0 screw (45-206)
72668-0 collar
72651-0 clip (11-754)
72675-0 connector (29-026)
72872-0 sleeve (29-039)
72754-0 'o' ring [27-901]
72818-0 screw (61-371)
72747-0 nut (29-027)
72788-0 oil pipe R/H
72797-0 plug
72778-0 interlock pin
72640-0 casting R/H
72734-0 leadscrew lever assy R/H
72823-0 screws (10) [08-031]
72687-0 elbow [88-110]
72746-0 nut (29-027)
72870-0 sleeve (29-039)
72891-0 stem
72706-0 handle
72766-0 base plate R/H
72690-0 gasket
72753-0 'o' ring (27-866)
72655-0 clip (11-741)
72680-0 cover
72799-0 plug
72712-0 key [17-002]
72708-0 handwheel
72614-0 ball (01-794)
72750-0 oilsight
72841-0 wormwheel shaft
72876-0 spring
72843-0 gear shaft
72796-0 drainplug
72913-0 washer (86-734)
72752-0 'o' ring (27-870)
72705-0 handle
72888-0 stem R/H
72779-0 pin
72882-0 spring (82-830)
72809-0 screw [73-648]
72730-0 wormbox lever assy R/H
72806-0 screw (B143-7654)
72704-0 handle
72800-0 plug
72656-0 clip (11-874)
72653-0 clip (13-811)
72760-0 'o' ring [27-898]
72757-0 'o' ring (27-893)
RUBBER WASHER .90" ø X .44 ø X .125 THICK
112 'O' RING X 1 EA.
'O' RING X 2 EA
72819-0 screw [68-432]
72794-0 OIL PUMP ASSY.

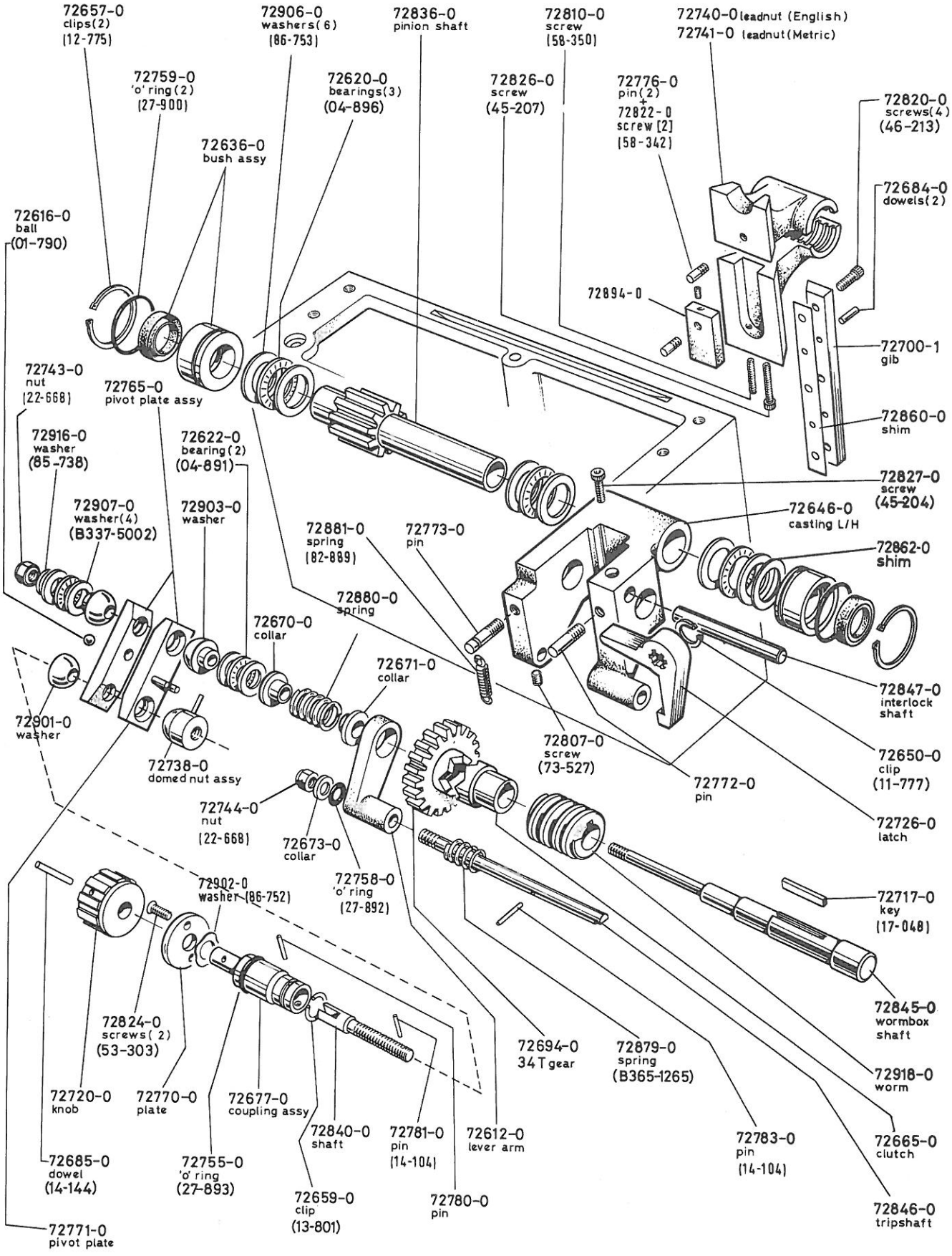
5-14-7804a


72675-0 connector
72654-0 clip [11-871]
72904-0 washer
72714-0 key [17-002]
72835-0 handwheel pinion shaft
72838-0 rack pinion shaft
72747-0 nut (29-027)
72615-0 ball (01-788)
72878-0 spring (82-883)
72872-0 sleeve
72716-0 key [17-039]
72790-0 oil pipe L.H.
72816-0 screw (45-206)
72642-0 casting L.H.
72652-1 clip + 72900-0 washer
72668-0 collar
72914-0 washer [85-697]
72909-0 washer [86-743] - 4
72623-0 bearing (04-891) - 2
72655-0 clip (11-741)
72623-0 clip (11-745)
72799-0 plug
72919-0 wormwheel
72680-0 cover
72754-0 o ring [27-901]
72712-0 key [17-002]
72818-0 screw (61-371)
72708-0 handwheel
72753-0 o ring (27-866)
72736-0 lever assy. L.H.
72778-0 pin - interlock
72614-0 ball (01-794)
72876-0 spring
72797-0 plug
72687-0 elbow (88-110)
72841-0 w/w shaft
72750-0 oil sight
72690-0 gasket
72768-0 plate - base L.H.
72843-0 gearshaft
72752-0 o ring (27-870)
72913-0 washer (86-734)
72796-0 plug
72823-0 screw (08-031) 10
72705-0 handle
72890-0 stem L.H.
72732-0 wormbox lever assy.
72656-0 clip (11-874)
72653-0 clip (13-811)
72760-0 o ring (27-898)
72746-0 nut (29-027) + 72870-0 sleeve (29-039)
72806-0 screw (B143-7654)
72779-0 pin
72704-0 handle
72882-0 spring (82-830)
72706-0 handle
72891-0 stem
72800-0 plug
72809-0 screw (73-648)
72757-0 o ring (27-893)
72819-0 screw (68-432)
72794-0 PUMP ASSY.

5-15-7804

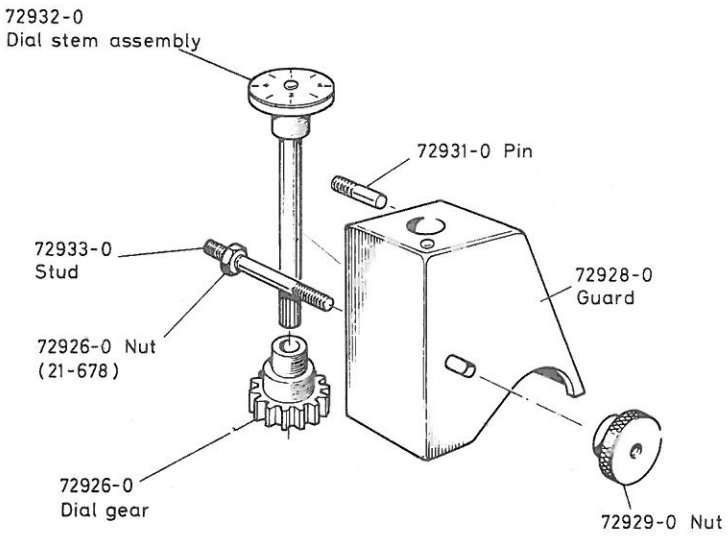

72740-0 leadnut(English)
72741-0 leadnut(Metric)
72810-0 screw (88-350)
72836-0 pinion shaft
72906-0 washers(6) (86-753)
72657-0 clips(2) (12-760)
72776-0 pin(2) + 72822-0 screw (2) (58-342)
72826-0 screw (45-207)
72620-0 bearings(3) (04-896)
72759-0 'o' ring(2) (27-900)
72820-0 screws(4) (46-213)
72636-0 bush assy
72684-0 dowels(2)
72616-0 ball (01-790)
72894-0
72700-1 gib
72743-0 nut (22-668)
72765-0 pivot plate assy
72860-0 shim
72622-0 bearing(2) (04-891)
72916-0 washer (85-738)
72827-0 screw (45-204)
72644-0 casting R/H
72903-0 washer
72907-0 washer(4) (B337-5002)
72862-0 shim
72773-0 pin
72881-0 spring (82-889)
72880-0 spring
72670-0 collar
72671-0 collar
72847-0 interlock shaft
72901-0 washer
72650-0 clip (11-777)
72807-0 screw (73-527)
72738-0 domed nut assy
72772-0 pin
72726-0 latch
72744-0 nut (22-668)
72673-0 collar
72758-0 'o' ring (27-872)
72902-0 washer (86-752)
72717-0 key (17-048)
72824-0 screws(2) (53-303)
72845-0 wormbox shaft
72879-0 spring (B365-1265)
72694-0 34T gear
72918-0 worm
72677-0 coupling assy
72770-0 plate
72720-0 knob
72665-0 clutch
72783-0 pin (14-104)
72612-0 lever arm
72781-0 pin (14-104)
72840-0 shaft
72755-0 'o' ring (27-893)
72685-0 dowel (14-144)
72846-0 tripshaft
72780-0 pin
72659-0 clip (13-801)
72771-0 pivot plate

5-16-7804a


72657-0 clips(2) (12-775)
72906-0 washers(6) (86-753)
72836-0 pinion shaft
72810-0 screw (58-350)
72740-0 leadnut (English)
72741-0 leadnut (Metric)
72759-0 'o' ring (2) (27-900)
72620-0 bearings(3) (04-896)
72826-0 screw (45-207)
72776-0 pin(2)
72822-0 screw (2) (58-342)
72820-0 screws(4) (46-213)
72636-0 bush assy
72684-0 dowels(2)
72616-0 ball (01-790)
72894-0
72700-1 gib
72743-0 nut (22-668)
72765-0 pivot plate assy
72860-0 shim
72916-0 washer (85-738)
72622-0 bearing(2) (04-891)
72827-0 screw (45-204)
72907-0 washer(4) (B337-5002)
72903-0 washer
72881-0 spring (82-889)
72773-0 pin
72646-0 casting L/H
72862-0 shim
72880-0 spring
72670-0 collar
72671-0 collar
72847-0 interlock shaft
72901-0 washer
72807-0 screw (73-527)
72650-0 clip (11-777)
72738-0 domed nut assy
72772-0 pin
72744-0 nut (22-668)
72726-0 latch
72673-0 collar
72758-0 'o' ring (27-892)
72902-0 washer (86-752)
72717-0 key (17-048)
72845-0 wormbox shaft
72824-0 screws(2) (53-303)
72694-0 34T gear
72879-0 spring (B365-1265)
72918-0 worm
72720-0 knob
72770-0 plate
72677-0 coupling assy
72840-0 shaft
72781-0 pin (14-104)
72612-0 lever arm
72783-0 pin (14-104)
72665-0 clutch
72685-0 dowel (14-144)
72755-0 'o' ring (27-893)
72659-0 clip (13-801)
72780-0 pin
72846-0 tripshaft
72771-0 pivot plate

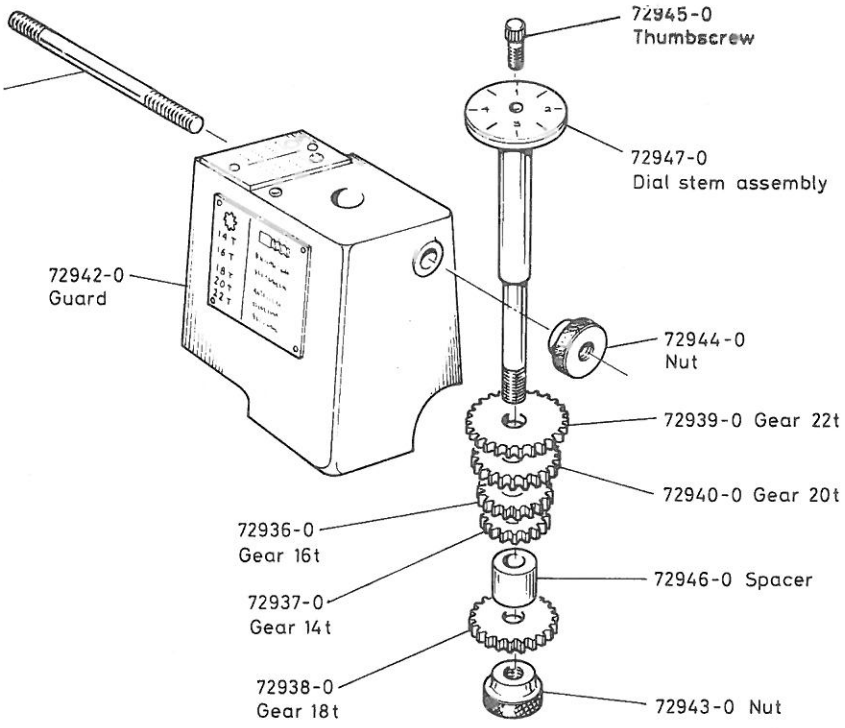
5-17-7804a

72925-0 DIAL INDICATOR ASSEMBLY (English)



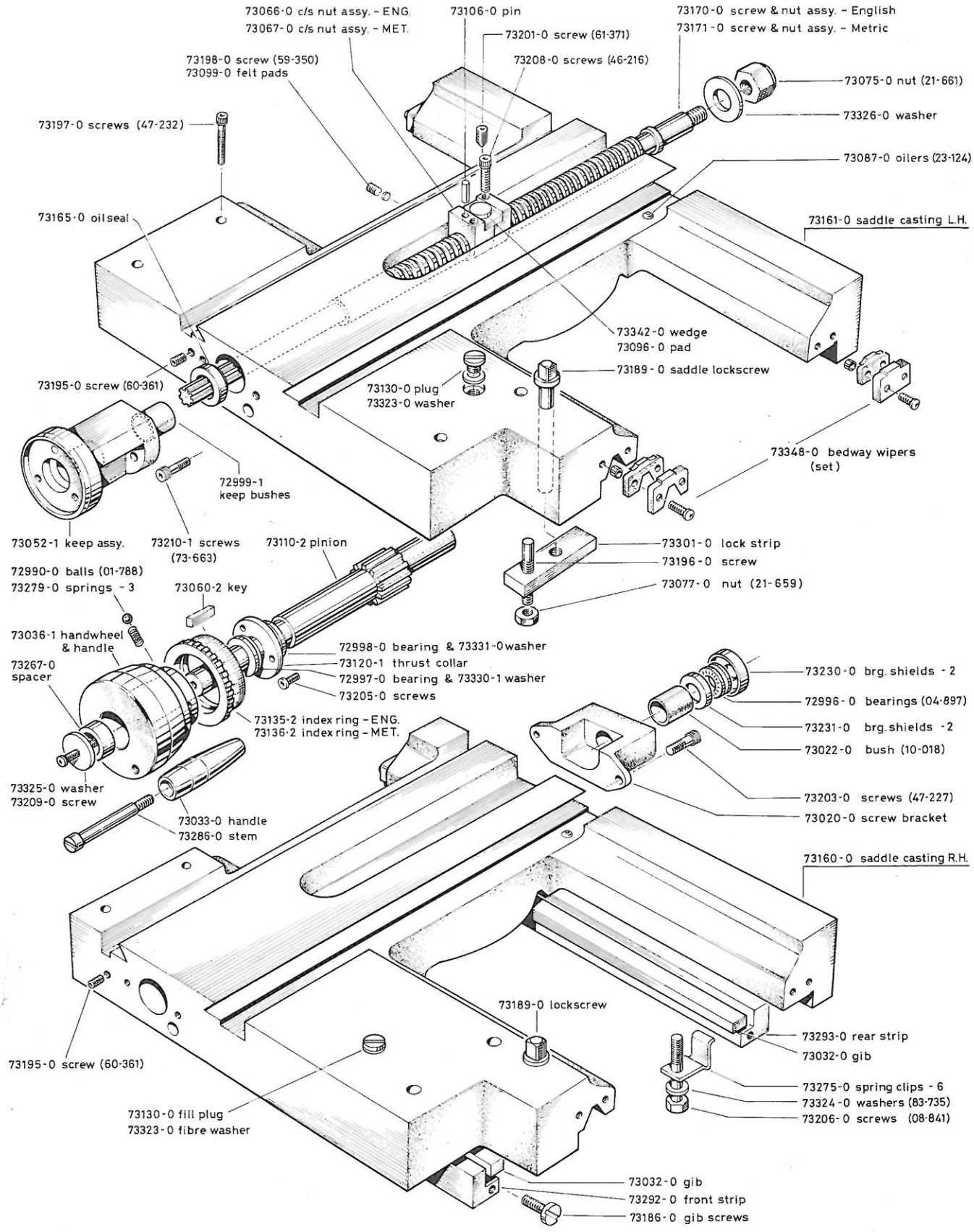
ENGLISH

72935-0 DIAL INDICATOR ASSEMBLY (Metric)

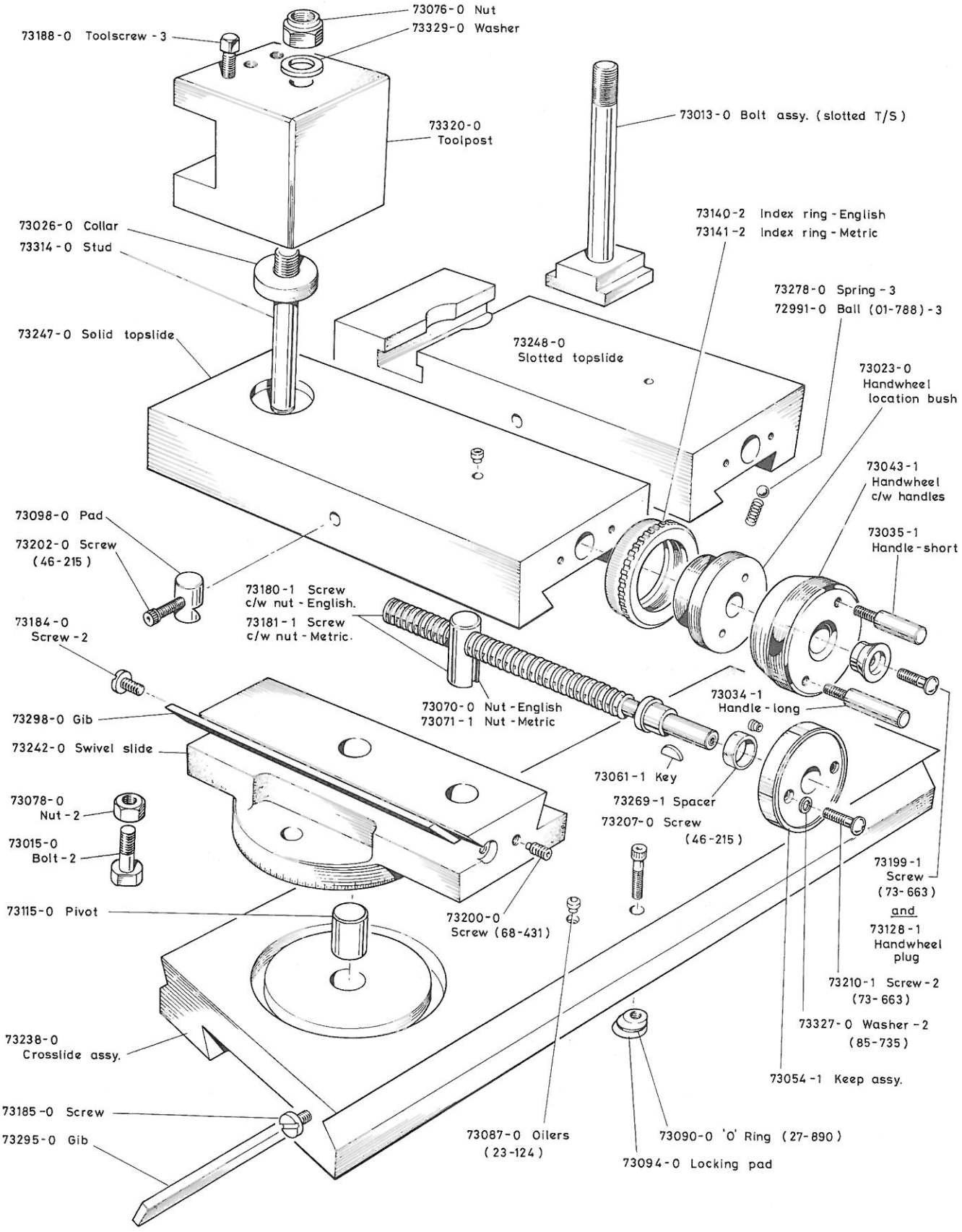


METRIC

For setting instructions read the plate on front of the guard, and on top surface.

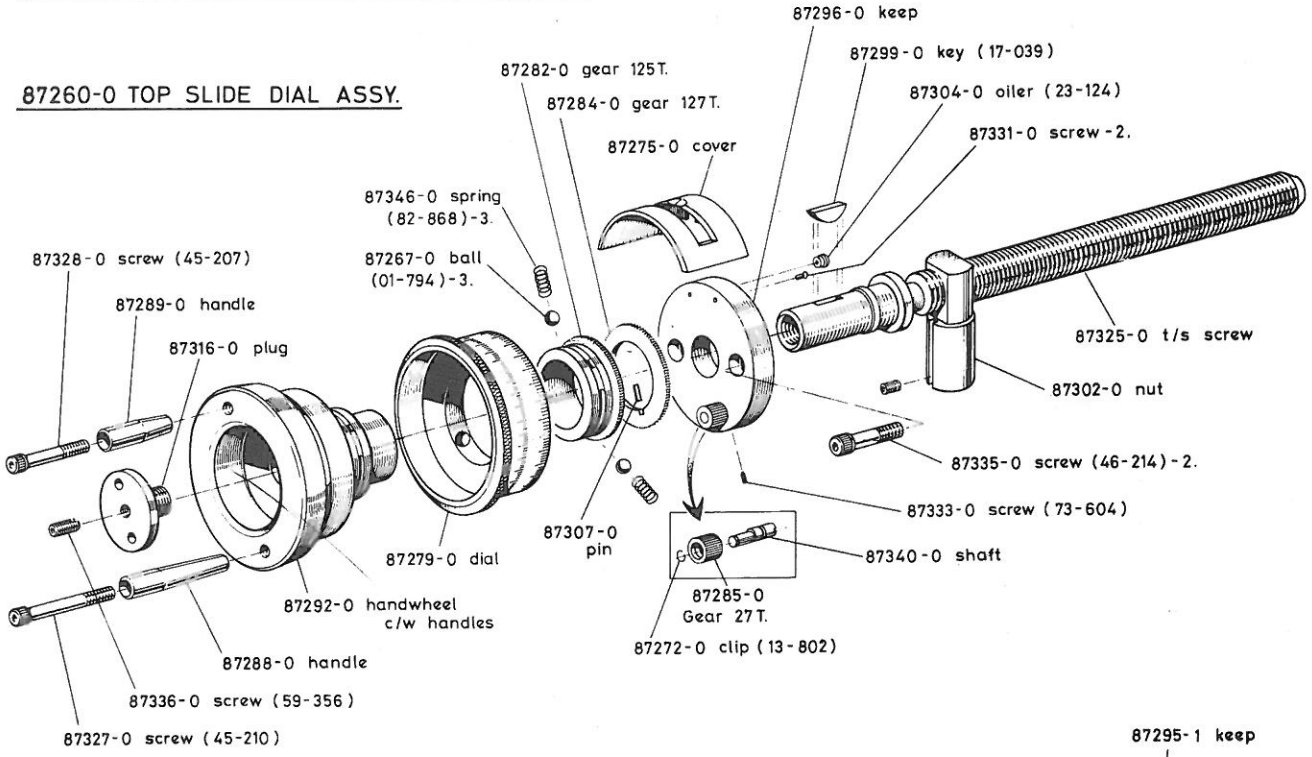

73066-0 c/s nut assy. - ENG.
73067-0 c/s nut assy. - MET.
73106-0 pin
73201-0 screw (61-371)
73170-0 screw & nut assy. - English
73171-0 screw & nut assy. - Metric
73198-0 screw (59-350)
73099-0 felt pads
73208-0 screws (46-216)
73075-0 nut (21-661)
73326-0 washer
73197-0 screws (47-232)
73087-0 oilers (23-124)
73165-0 oil seal
73161-0 saddle casting L.H.
73342-0 wedge
73096-0 pad
73189-0 saddle lockscrew
73195-0 screw (60-361)
73130-0 plug
73323-0 washer
73348-0 bedway wipers (set)
72999-1 keep bushes
73052-1 keep assy.
73210-1 screws (73-663)
73110-2 pinion
73301-0 lock strip
73196-0 screw
73077-0 nut (21-659)
72990-0 balls (01-788)
73279-0 springs - 3
73060-2 key
73036-1 handwheel & handle
73267-0 spacer
72998-0 bearing & 73331-0 washer
73120-1 thrust collar
72997-0 bearing & 73330-1 washer
73205-0 screws
73230-0 brg. shields - 2
72996-0 bearings (04-897)
73231-0 brg. shields - 2
73022-0 bush (10-018)
73135-2 index ring - ENG.
73136-2 index ring - MET.
73325-0 washer
73209-0 screw
73033-0 handle
73286-0 stem
73203-0 screws (47-227)
73020-0 screw bracket
73160-0 saddle casting R.H.
73189-0 lockscrew
73293-0 rear strip
73032-0 gib
73195-0 screw (60-361)
73275-0 spring clips - 6
73324-0 washers (83-735)
73206-0 screws (08-841)
73130-0 fill plug
73323-0 fibre washer
73032-0 gib
73292-0 front strip
73186-0 gib screws

5-19-7909A

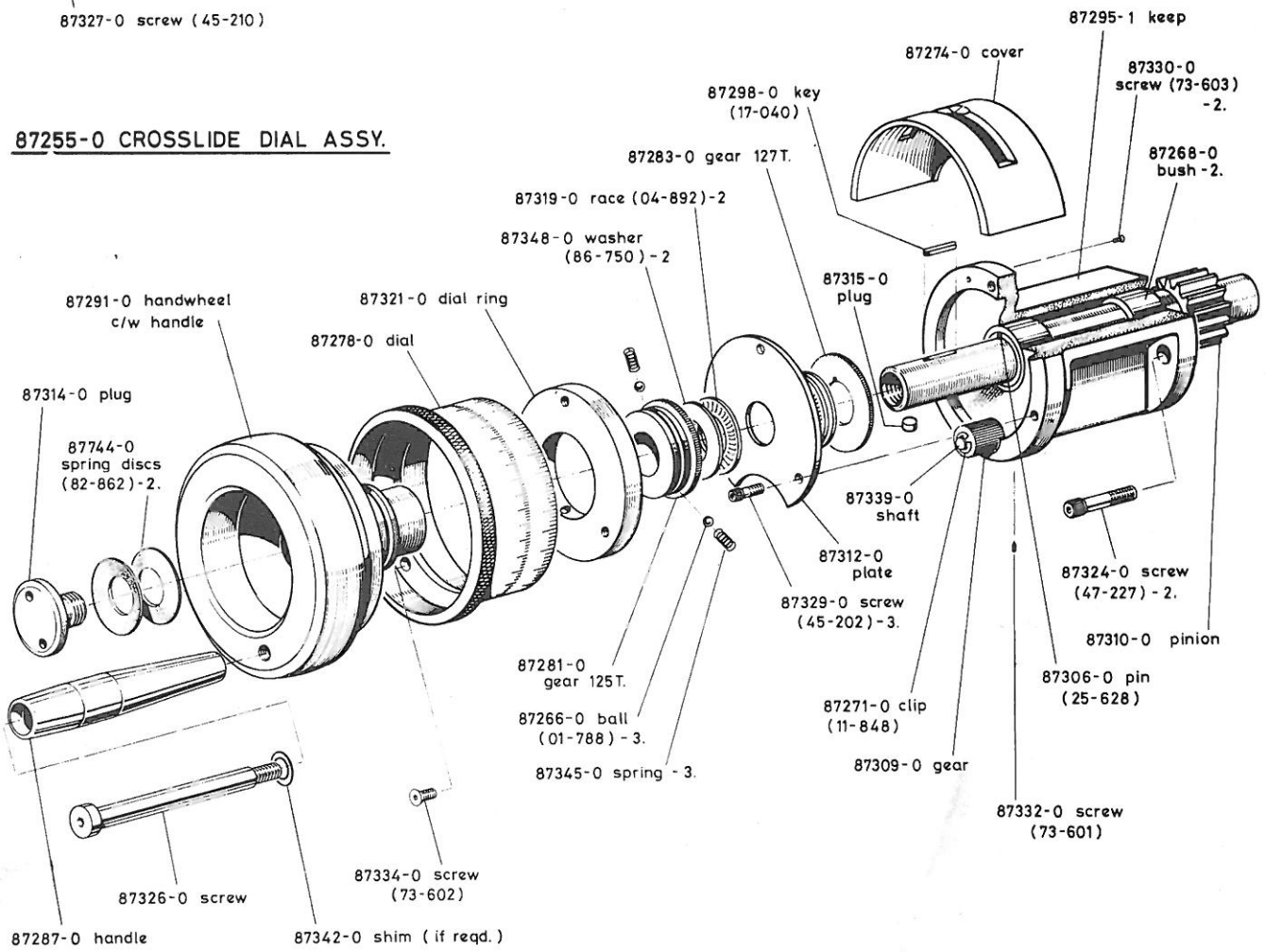

73076-0 Nut
73329-0 Washer
73188-0 Toolscrew - 3
73320-0 Toolpost
73013-0 Bolt assy. (slotted T/S)
73140-2 Index ring - English
73141-2 Index ring - Metric
73026-0 Collar
73314-0 Stud
73278-0 Spring - 3
72991-0 Ball (01-788) - 3
73247-0 Solid topslide
73248-0 Slotted topslide
73023-0 Handwheel location bush
73043-1 Handwheel c/w handles
73035-1 Handle - short
73098-0 Pad
73202-0 Screw (46-215)
73180-1 Screw c/w nut - English.
73181-1 Screw c/w nut - Metric.
73184-0 Screw - 2
73070-0 Nut - English
73071-1 Nut - Metric
73034-1 Handle - long
73298-0 Gib
73242-0 Swivel slide
73061-1 Key
73269-1 Spacer
73207-0 Screw (46-215)
73078-0 Nut - 2
73015-0 Bolt - 2
73199-1 Screw (73-663)
and
73128-1 Handwheel plug
73115-0 Pivot
73200-0 Screw (68-431)
73210-1 Screw - 2 (73-663)
73327-0 Washer - 2 (85-735)
73238-0 Crosslide assy.
73054-1 Keep assy.
73185-0 Screw
73295-0 Gib
73087-0 Oilers (23-124)
73090-0 'O' Ring (27-890)
73094-0 Locking pad

87250-0 TOP & CROSSLIDE DUAL DIALS ASSY.

87260-0 TOP SLIDE DIAL ASSY.



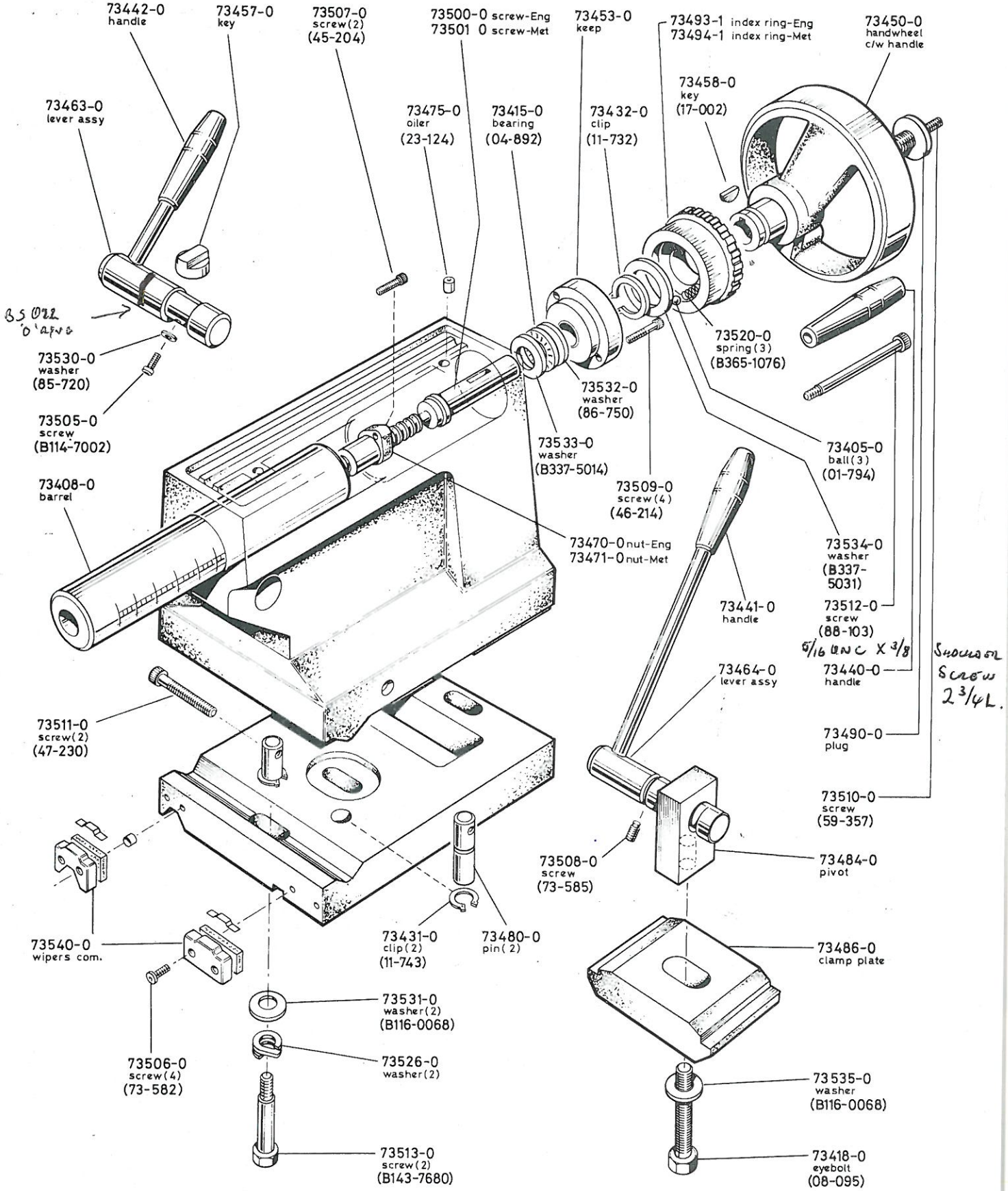
87255-0 CROSSLIDE DIAL ASSY.



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.

TAILSTOCK

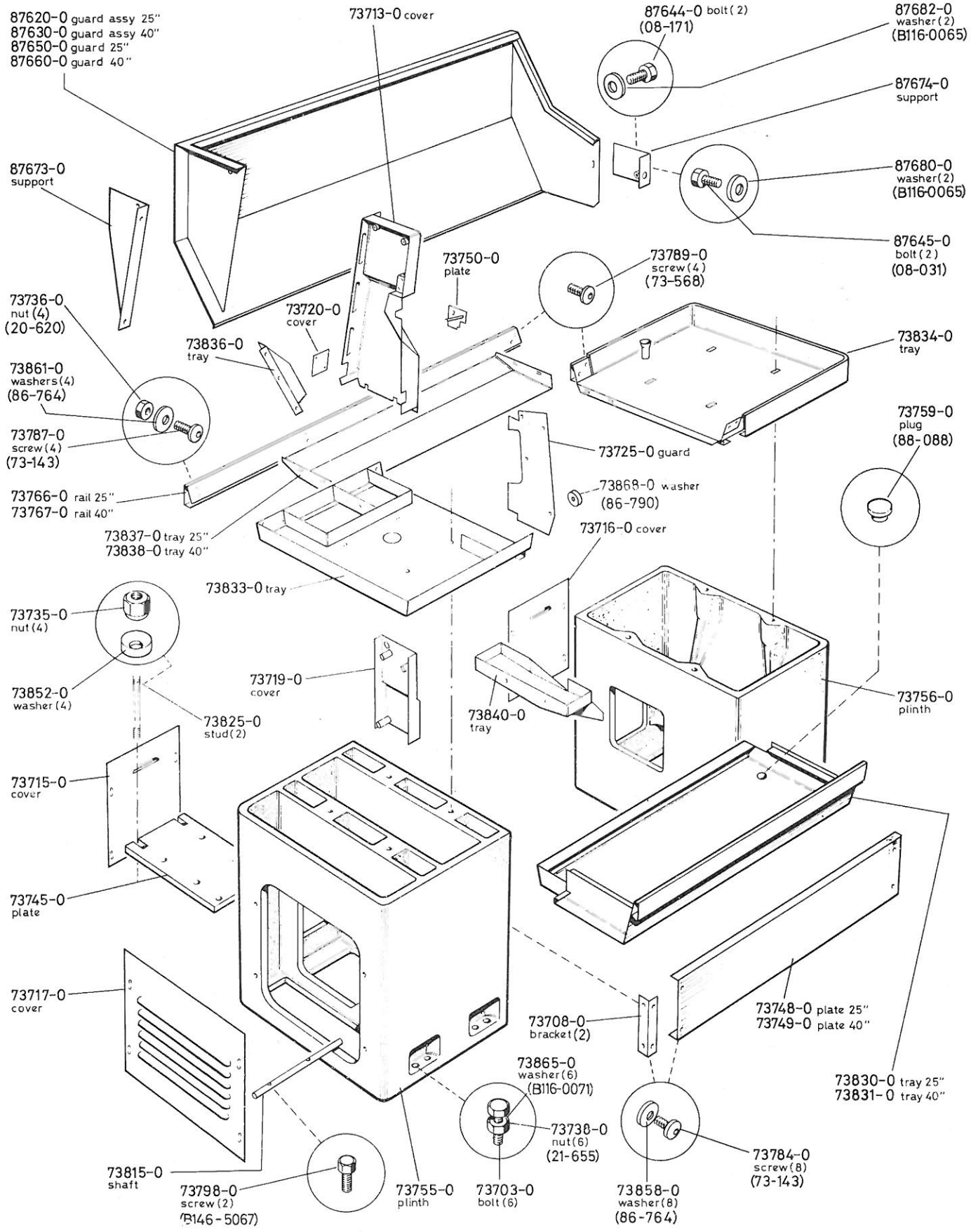
FROM SER. No. 05387
TO SER.No.



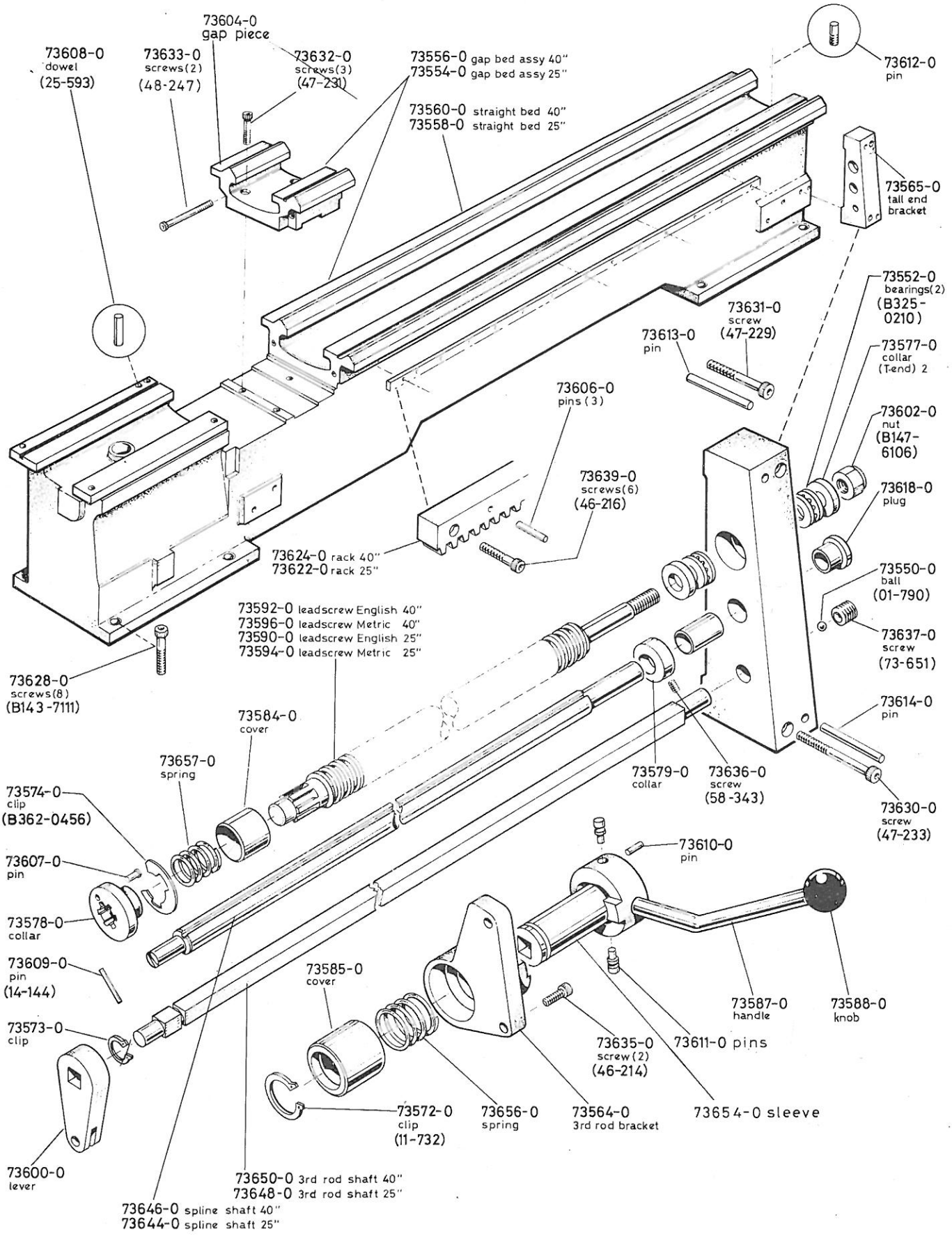
5-21-7706

CABINET AND PANELS

FROM SER.No.00001
TO SER.No.



5-22-7106/1


73604-0 gap piece
73608-0 dowel (25-593)
73633-0 screws(2) (48-247)
73632-0 screws(3) (47-231)
73556-0 gap bed assy 40"
73554-0 gap bed assy 25"
73560-0 straight bed 40"
73558-0 straight bed 25"
73612-0 pin
73565-0 tail end bracket
73552-0 bearings(2) (B325-0210)
73631-0 screw (47-229)
73613-0 pin
73577-0 collar (T-end) 2
73606-0 pins (3)
73602-0 nut (B147-6106)
73639-0 screws(6) (46-216)
73618-0 plug
73624-0 rack 40"
73622-0 rack 25"
73550-0 ball (01-790)
73592-0 leadscrew English 40"
73596-0 leadscrew Metric 40"
73590-0 leadscrew English 25"
73594-0 leadscrew Metric 25"
73637-0 screw (73-651)
73628-0 screws(8) (B143-7111)
73584-0 cover
73614-0 pin
73657-0 spring
73579-0 collar
73636-0 screw (58-343)
73574-0 clip (B362-0456)
73630-0 screw (47-233)
73610-0 pin
73607-0 pin
73578-0 collar
73609-0 pin (14-144)
73585-0 cover
73587-0 handle
73588-0 knob
73573-0 clip
73635-0 screw(2) (46-214)
73611-0 pins
73572-0 clip (11-732)
73656-0 spring
73564-0 3rd rod bracket
73654-0 sleeve
73600-0 lever
73650-0 3rd rod shaft 40"
73648-0 3rd rod shaft 25"
73646-0 spline shaft 40"
73644-0 spline shaft 25"

5-23-7309

Ref.	Component	Phase-Phase System			Phase-Neutral		Ref.	110v Control	
		220v	380v	415v	380v	415v		415v	550v
A	Panel Assembly	74107-0	74115-0	74103-0	74109-0	74105-0	1	74111-0	74113-0
B	Start Contactor	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	Start Contactor Coil	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	Pump Contactor	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	Circuit Interrupter	74246-0 (83-314)	74245-0 (83-313)		74246-0 (83-314)	74245-0 (83-313)	5	74245-0 (83-313)	
F	Start Overload	74271-0 (83-186)	74270-0 (83-188)		74270-0 (83-188)		6	74270-0 (83-188)	74272-0 (83-197)
G	Pilot Lamp Transformer	74325-0 (15-129)	74323-0 (15-138)		74325-0 (15-129)		7	74326-0 (15-139)	74327-0 (15-163)
H	Pump Overload		74275-0 (83-183)		74275-0 (83-183)		8	74275-0 (83-183)	
J	Terminal Block 6-Way		74128-0 (15-156)		74128-0 (15-156)		9	74128-0 (15-156)	
K	Terminal Block 3-Way		74129-0 (15-157)		74129-0 (15-157)		10	74129-0 (15-157)	
L	End Guard Switch		74316-0 (B755-2111)		74316-0 (B755-2111)		11	74316-0 (B755-2111)	
M	Main Fuse Assembly	74224-0 (15-135)			74223-0 (15-158)		12	74223-0 (15-158)	
N	Fuse Cartridge	74152-0 (15-127)			74151-0 (15-159)		13	74151-0 (15-159)	
	Secondary Fuse Assembly						14	74220-0 (15-160)	
	Fuse Cartridge						15	74150-0 (15-161)	
	Control Circuit Transformer						16	74335-0 (83-315)	74336-0 (83-316)

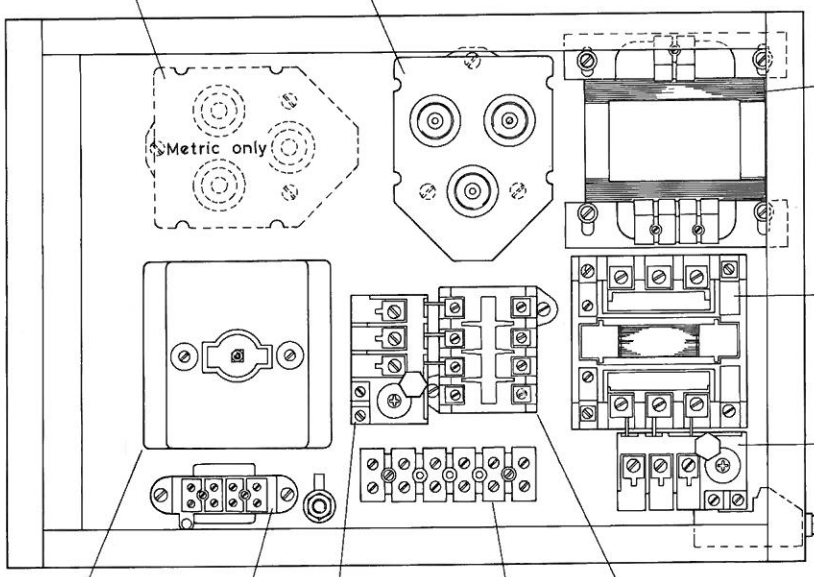
5-25-7106

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. 220-3-60 Hz.

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

74316-0 Limit switch (End-guard).

74245-1 Main circuit interrupter (83-368)

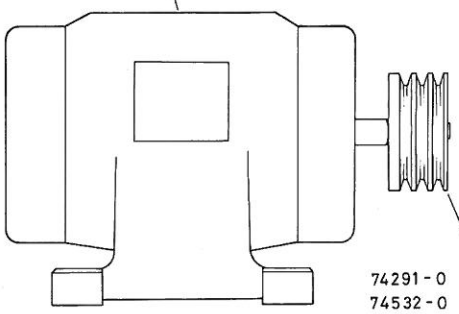
Pilot light transformers
74324-0. 110/24v. 2w.
74326-1. 220/24v. 2w.

74128-0 Terminal block (15-156)

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

74275-0 Pump Overload.

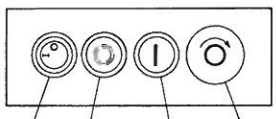
74255-0 Motor. 220/240/380/440 v.
74256-0 Motor. 500/550 v.



74291-0 Pulley - 50 Hz.
74532-0 Pulley - 60 Hz.

74124-0 Drive belts - Type A83.

Push Button Panel assembly 74144-4



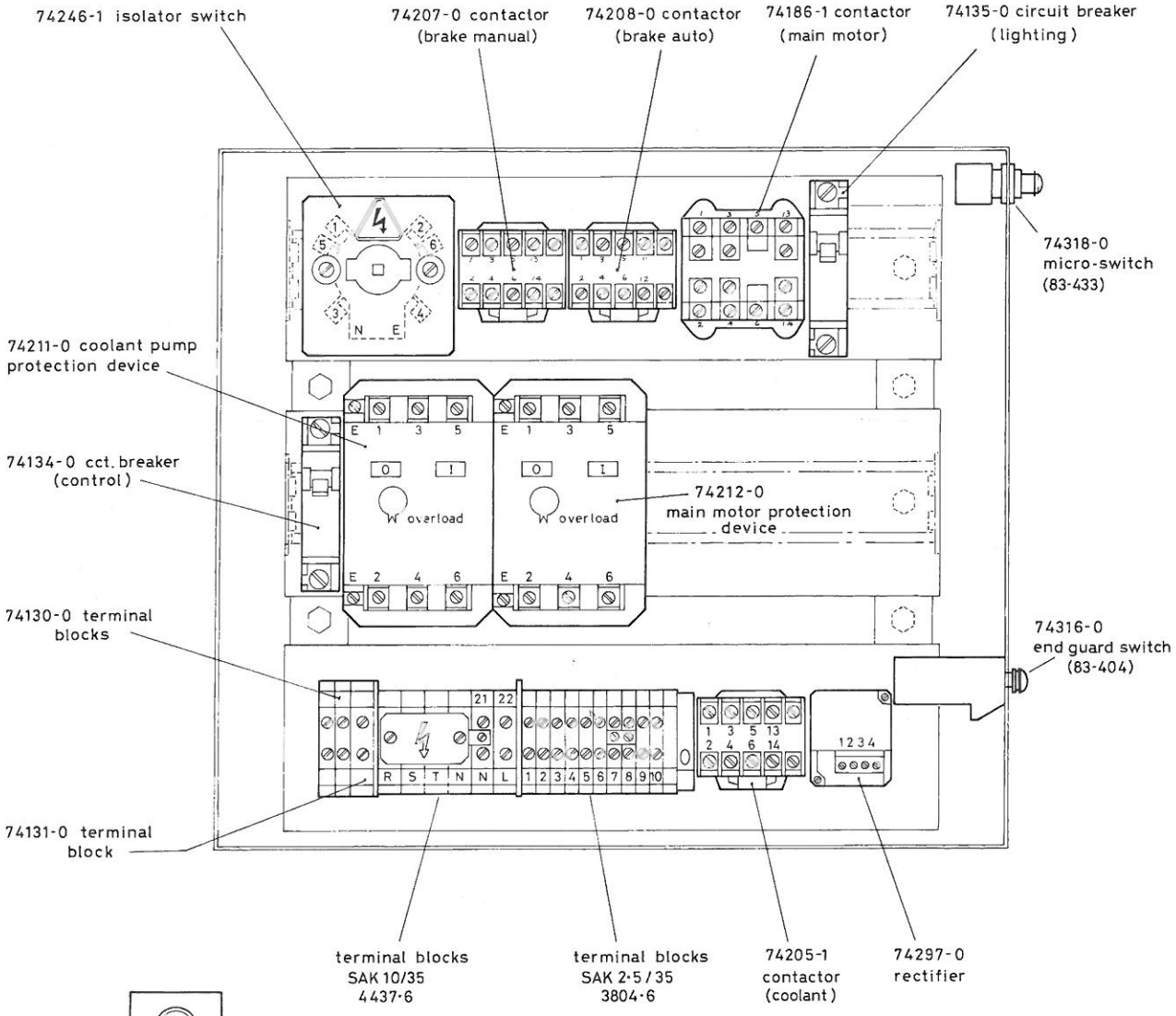
74315-1 Coolant 'on/off' switch (15-206)

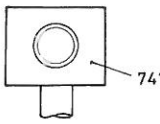
74146-1 'Emergency Stop' (Stay-put Mushroom hd.) (83-437)

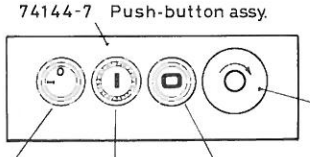
74250-2 Indicator lamp ('white' running light)

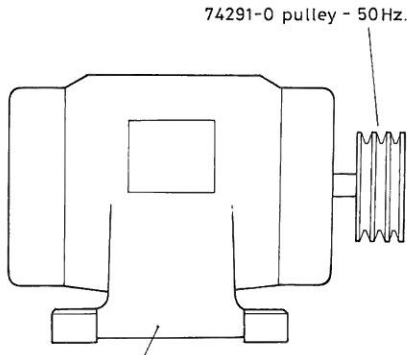
74145-2 Main 'Start' Push button (83-435)

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

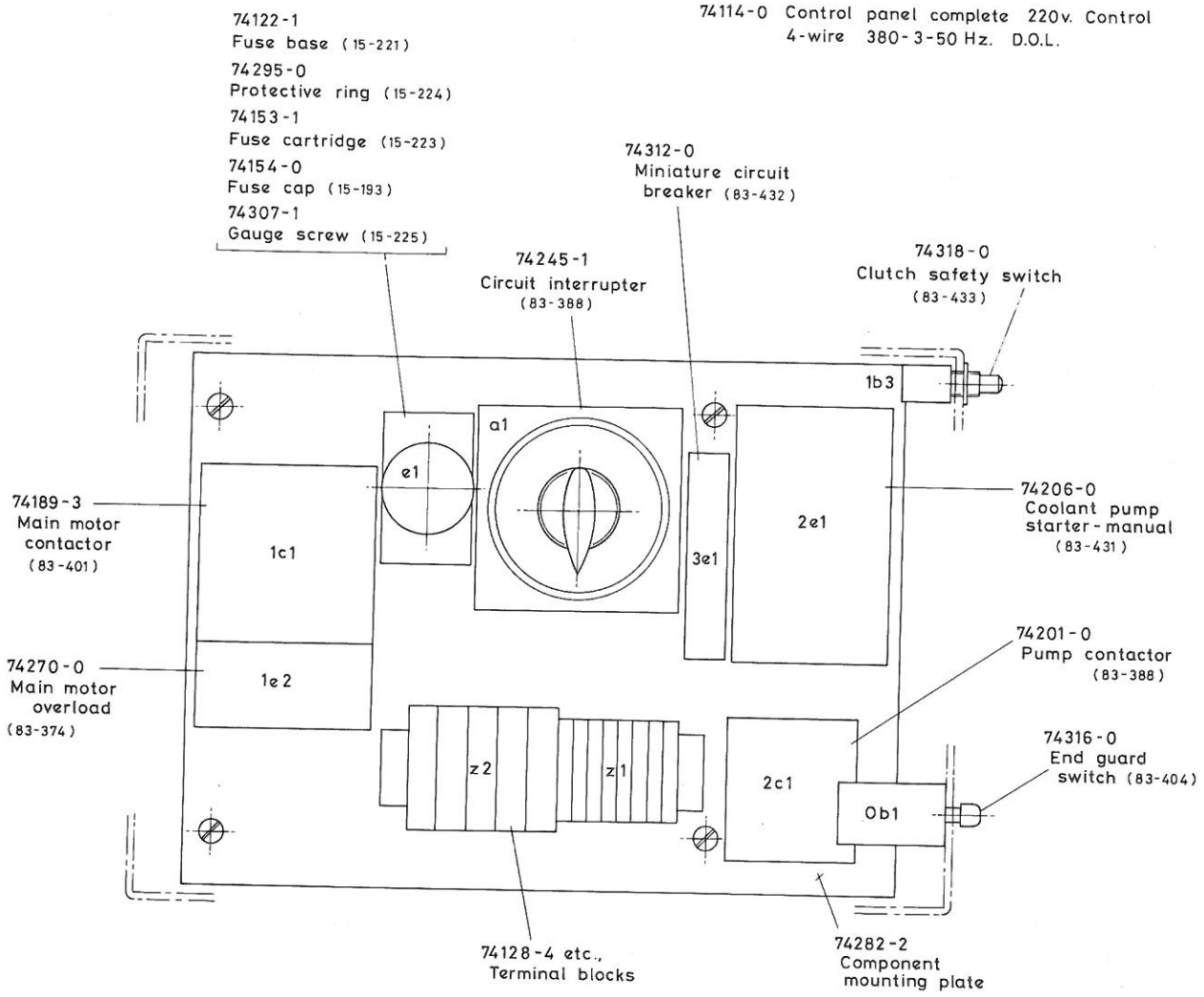


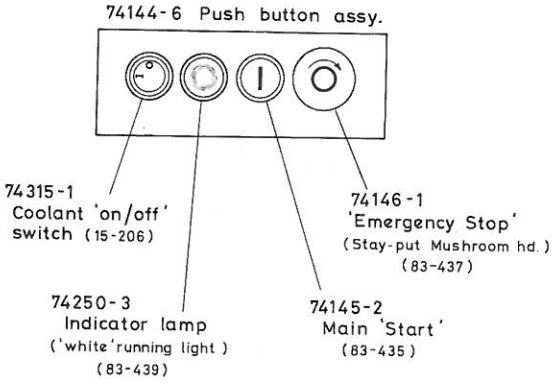


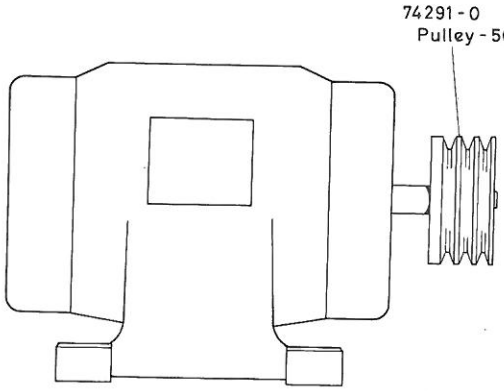




74114-0 Control panel complete 220v. Control 4-wire 380-3-50 Hz. D.O.L.

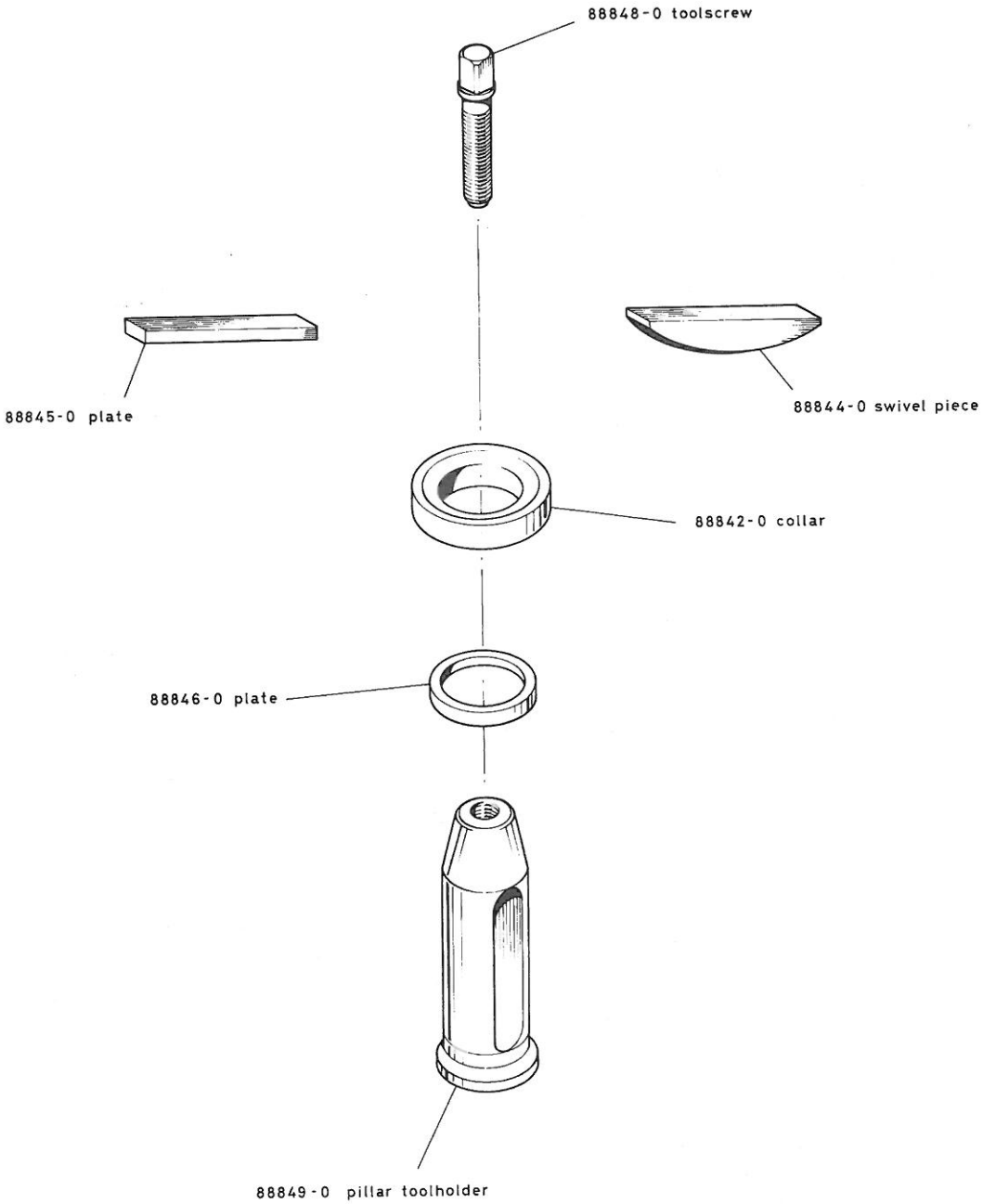






74255-0 Motor 5 h.p. 380-3-50 Hz. D.O.L.

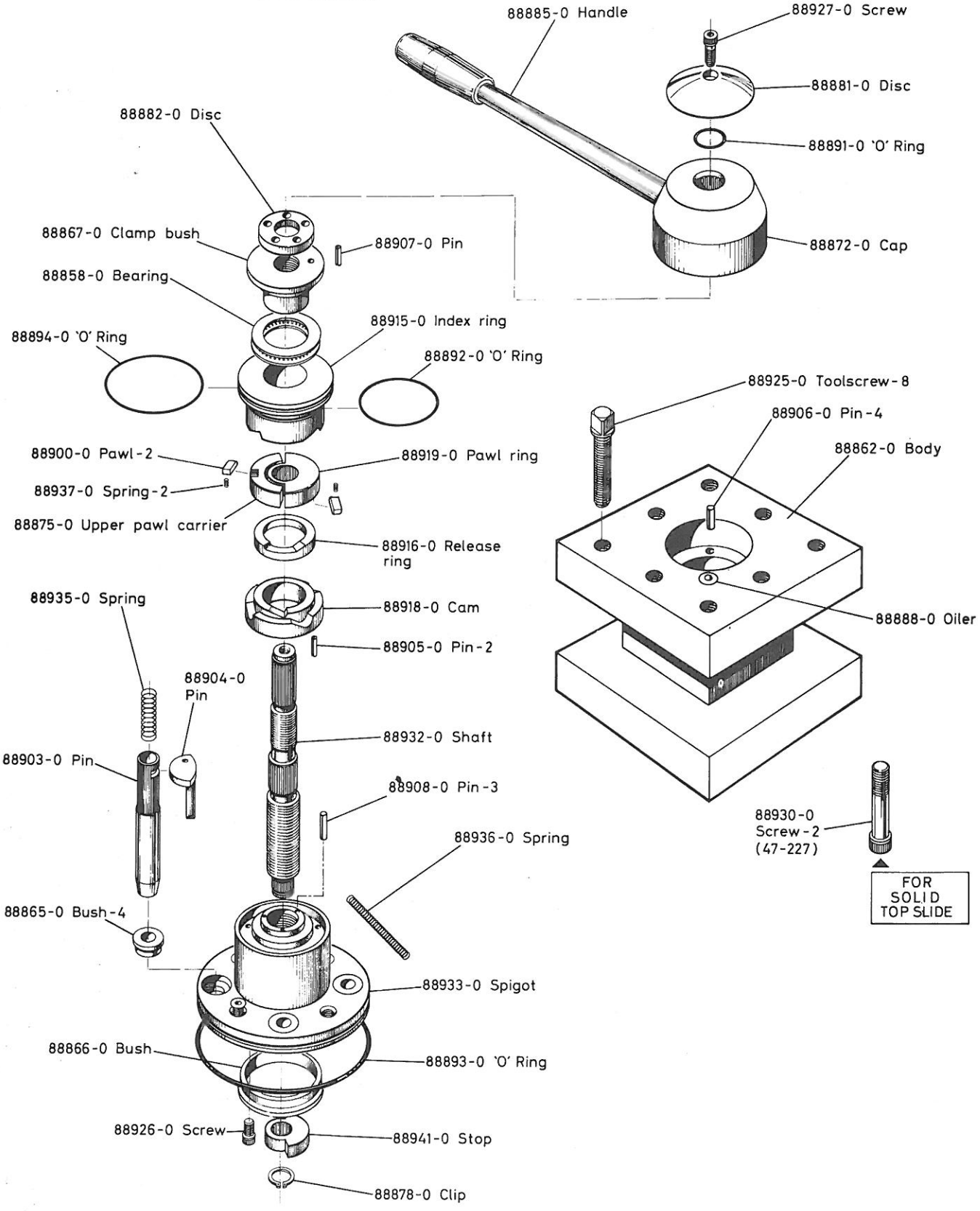
88840-0 TOOLPOST COMPLETE ASSY.



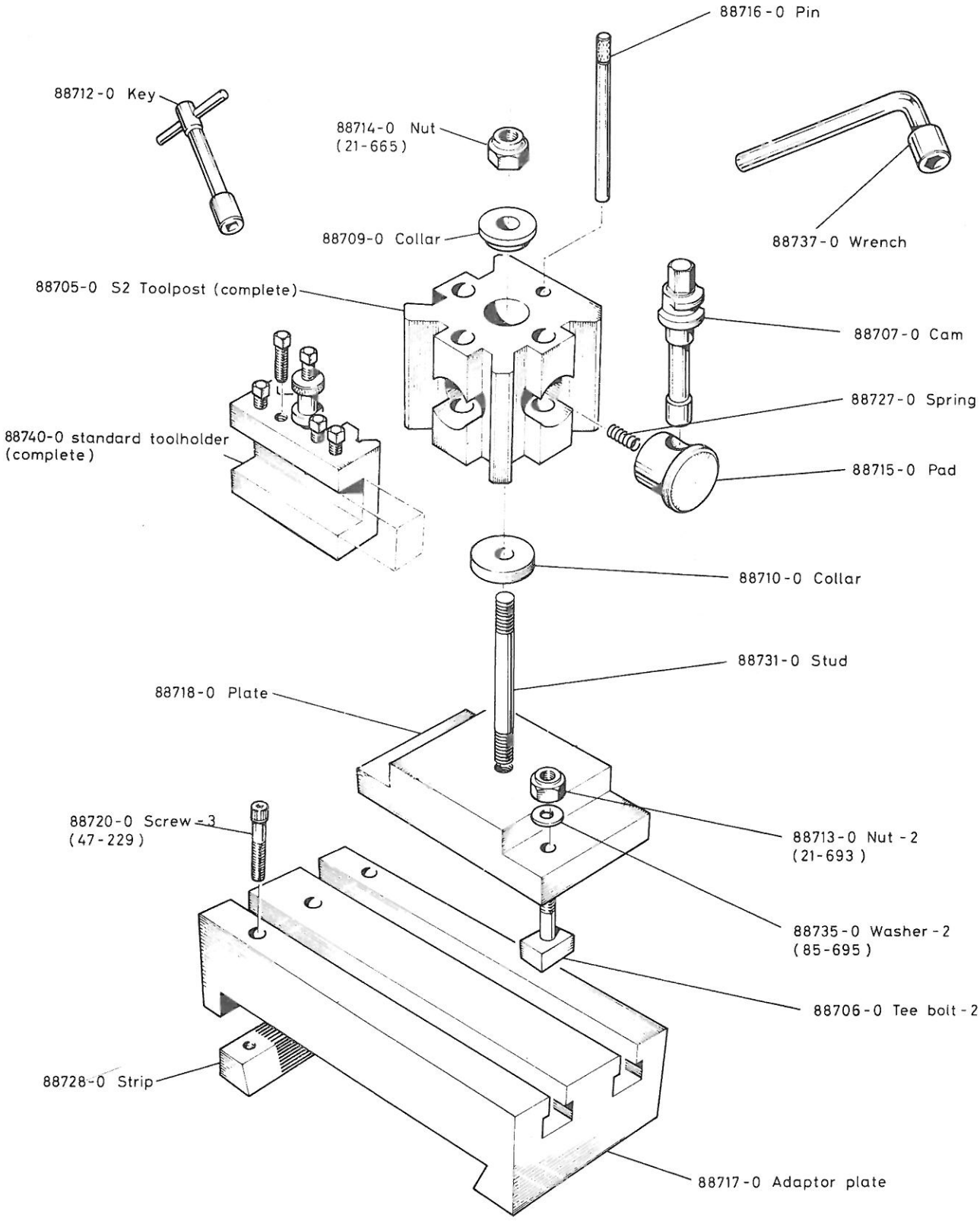
(for Armstrong T-1-S & FT-1-S and 1-S & 1-L toolholders)

5-47A-7206

88850-0 TOOLPOST ASSEMBLY (solid topslide)

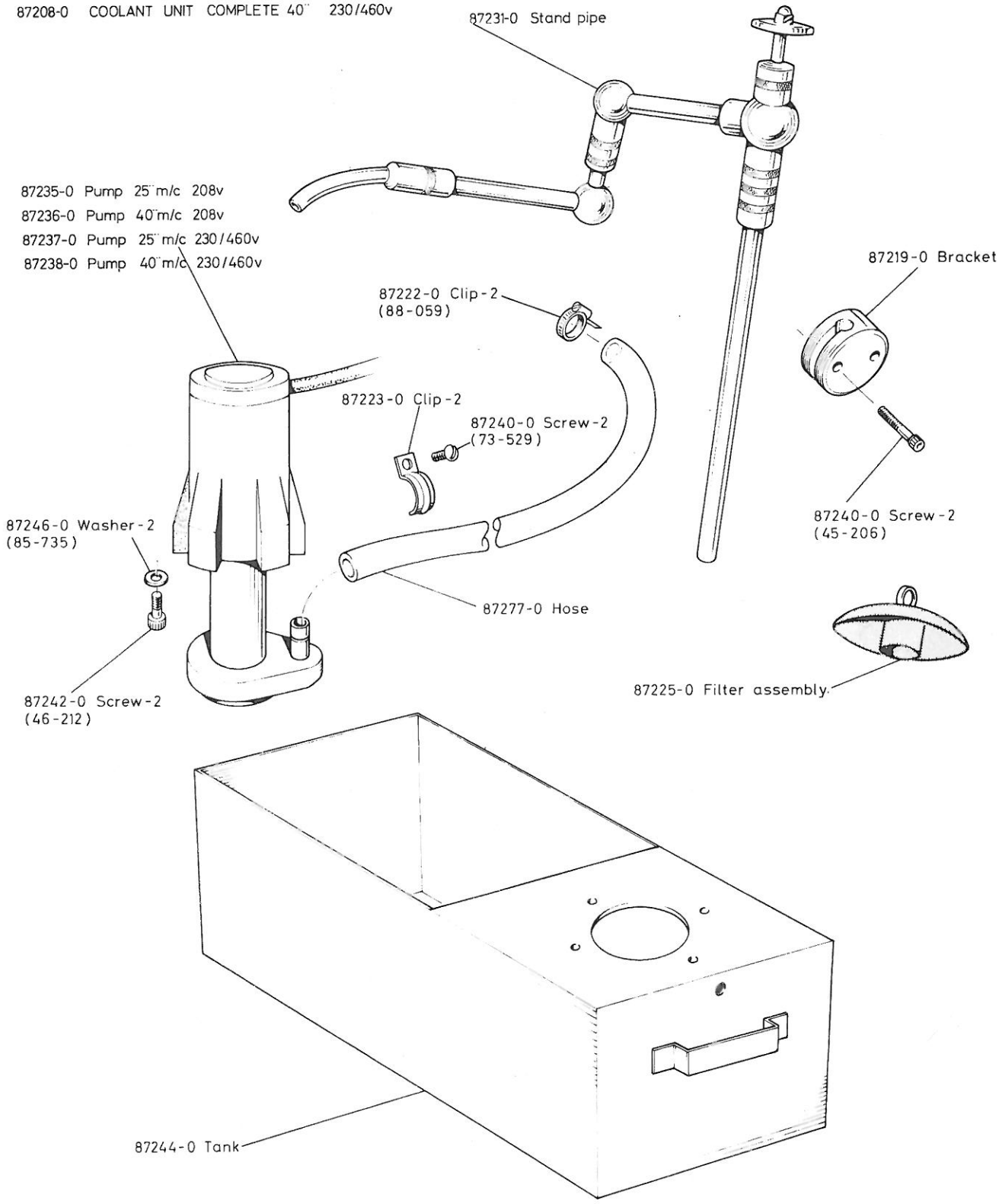


88700-0 REAR TOOLPOST QUICK CHANGE COMPLETE



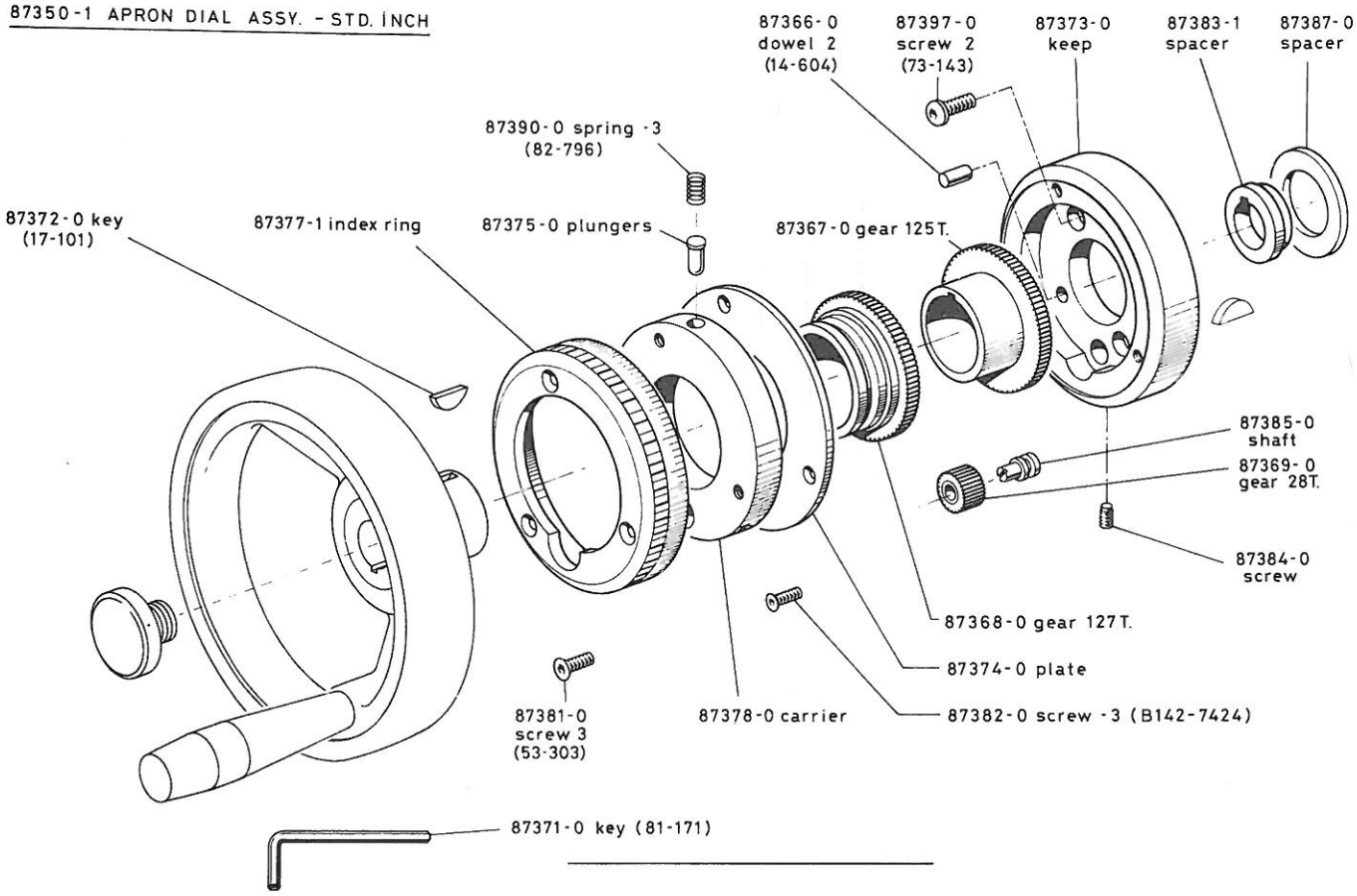
REFER TO WIRING DIAGRAM BEFORE INSTALLING OR REPAIRS

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

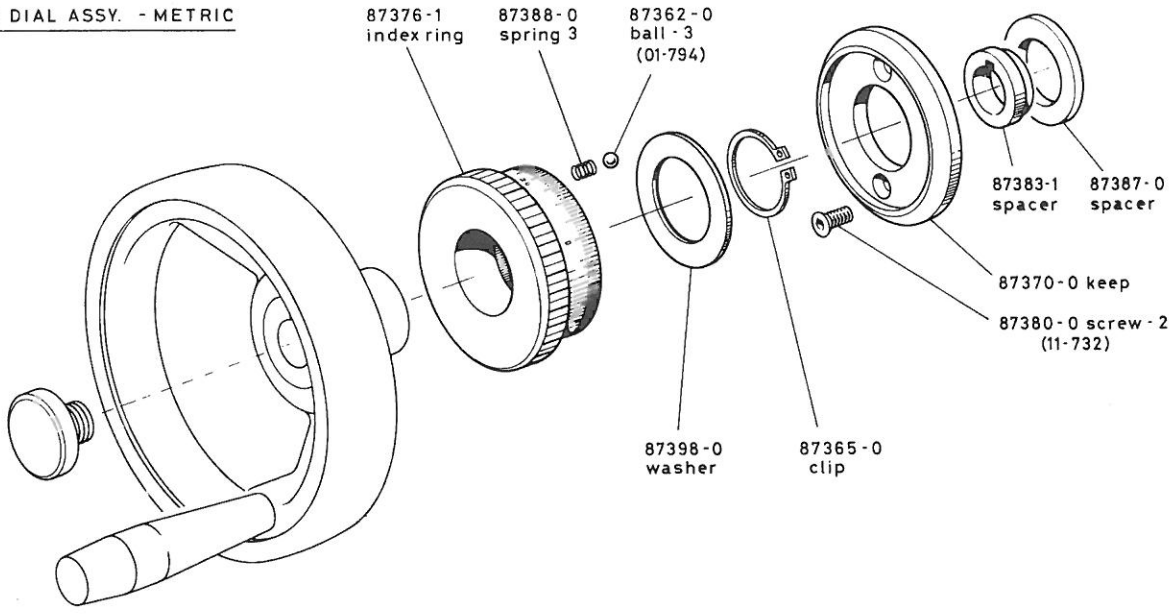


5-26A-7201

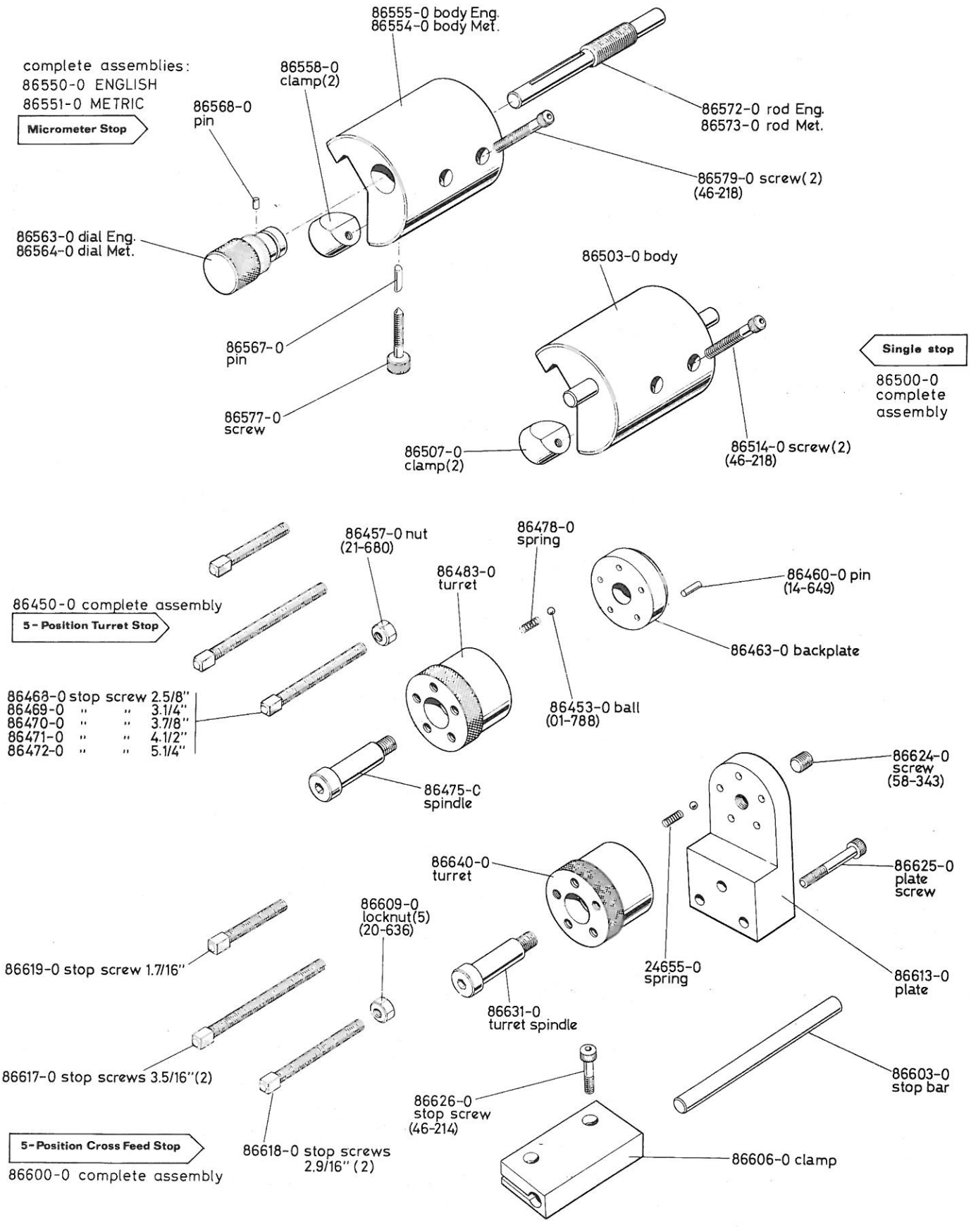
87350-1 APRON DIAL ASSY. - STD. INCH



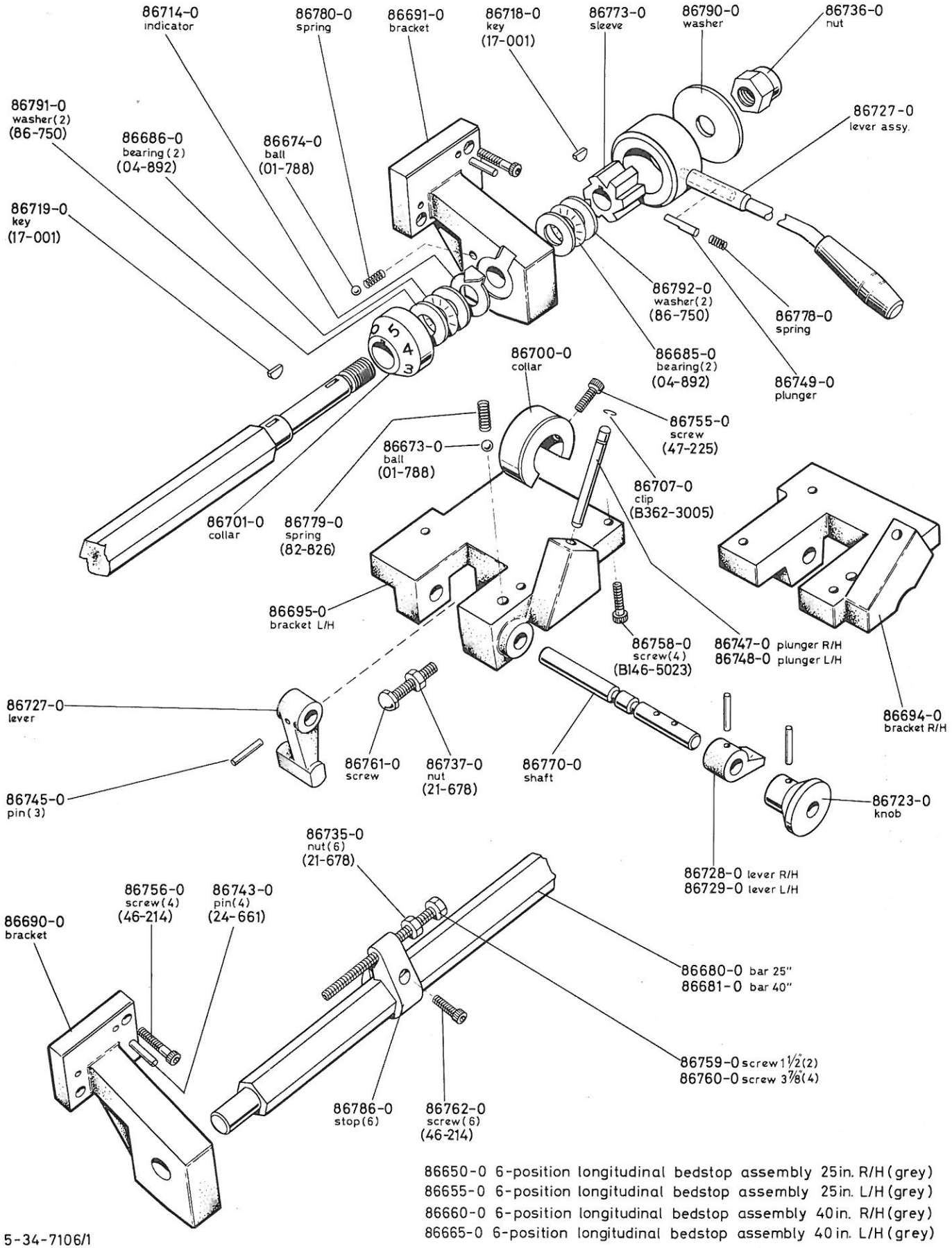
87355-1 APRON DIAL ASSY. - METRIC



5-32-7209

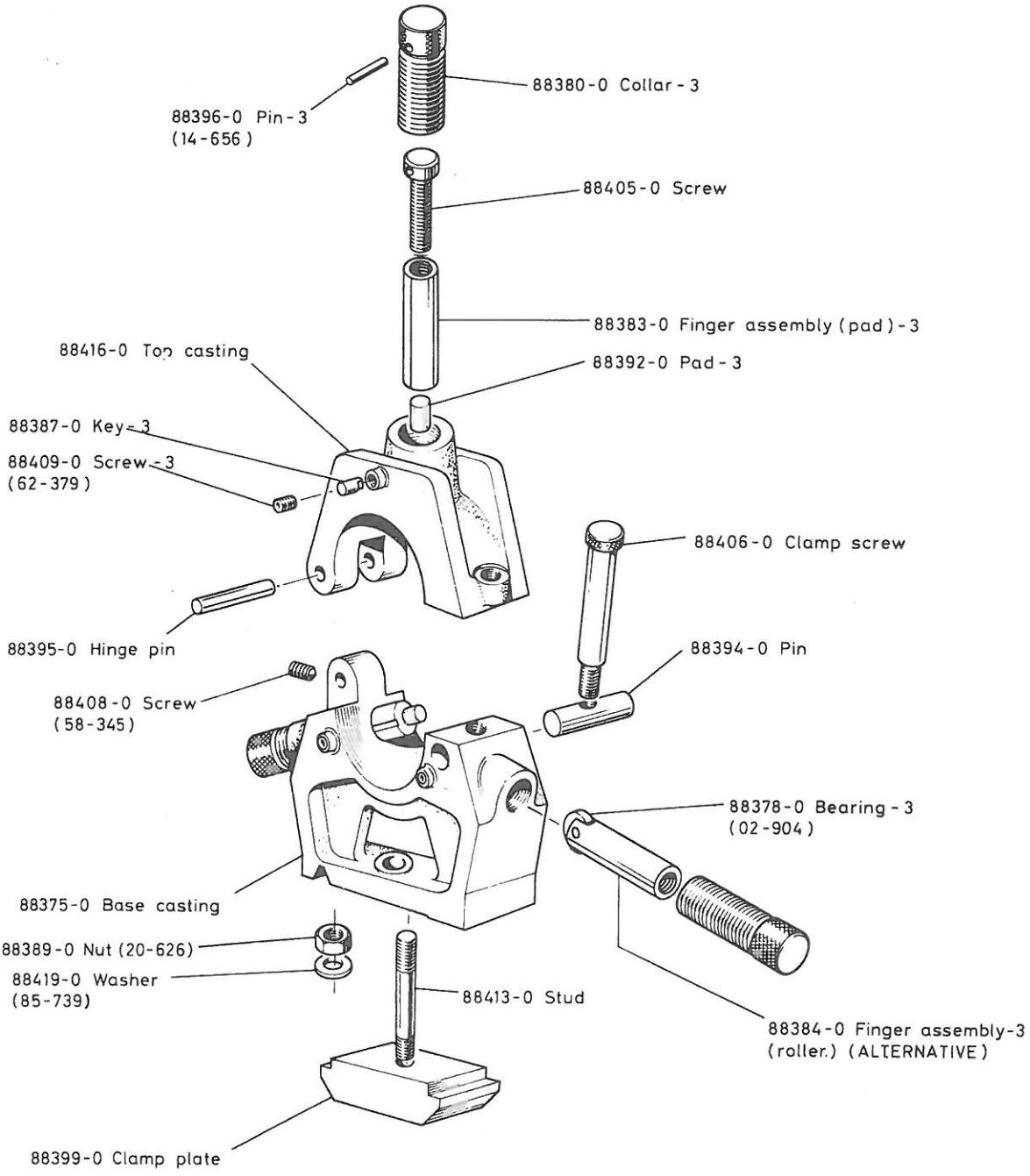

complete assemblies:
86550-0 ENGLISH
86551-0 METRIC
Micrometer Stop
86555-0 body Eng.
86554-0 body Met.
86558-0
clamp(2)
86568-0
pin
86572-0 rod Eng.
86573-0 rod Met.
86579-0 screw(2)
(46-218)
86563-0 dial Eng.
86564-0 dial Met.
86503-0 body
86567-0
pin
86577-0
screw
Single stop
86500-0
complete
assembly
86507-0
clamp(2)
86514-0 screw(2)
(46-218)
86457-0 nut
(21-680)
86478-0
spring
86483-0
turret
86460-0 pin
(14-649)
86450-0 complete assembly
5-Position Turret Stop
86463-0 backplate
86468-0 stop screw 2.5/8"
86469-0 " " 3.1/4"
86470-0 " " 3.7/8"
86471-0 " " 4.1/2"
86472-0 " " 5.1/4"
86453-0 ball
(01-788)
86475-0
spindle
86624-0
screw
(58-343)
86640-0
turret
86625-0
plate
screw
86609-0
locknut(5)
(20-636)
86619-0 stop screw 1.7/16"
24655-0
spring
86613-0
plate
86631-0
turret spindle
86603-0
stop bar
86617-0 stop screws 3.5/16"(2)
86626-0
stop screw
(46-214)
5-Position Cross Feed Stop
86618-0 stop screws
2.9/16" (2)
86606-0 clamp
86600-0 complete assembly

5-33-7106



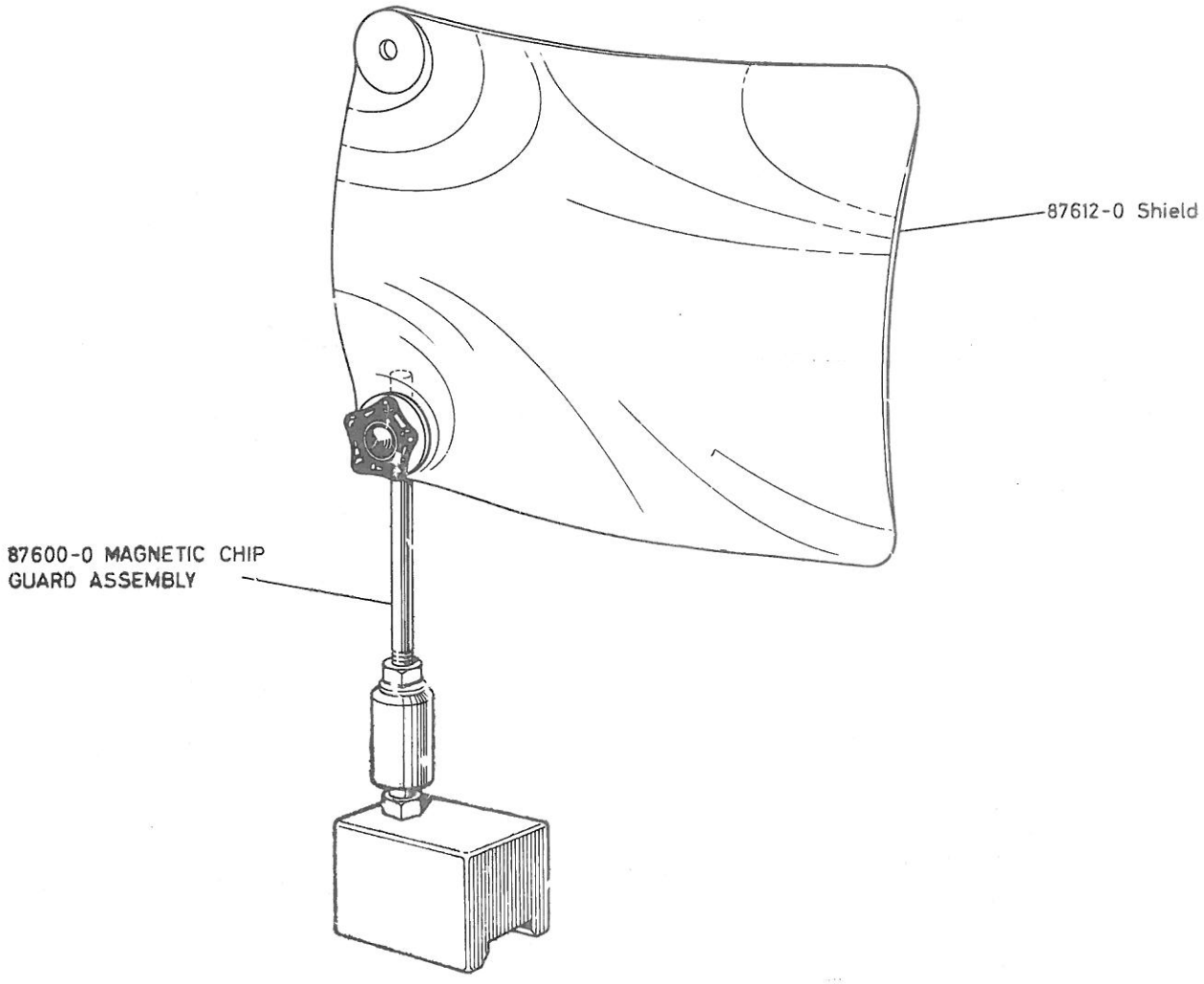
86650-0 6-position longitudinal bedstop assembly 25in. R/H (grey)
86655-0 6-position longitudinal bedstop assembly 25in. L/H (grey)
86660-0 6-position longitudinal bedstop assembly 40in. R/H (grey)
86665-0 6-position longitudinal bedstop assembly 40in. L/H (grey)

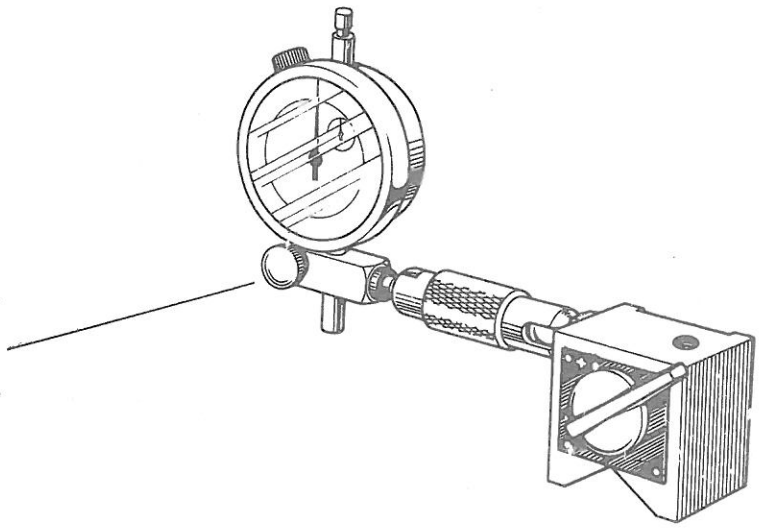
5-34-7106/1



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

5-35A-7201



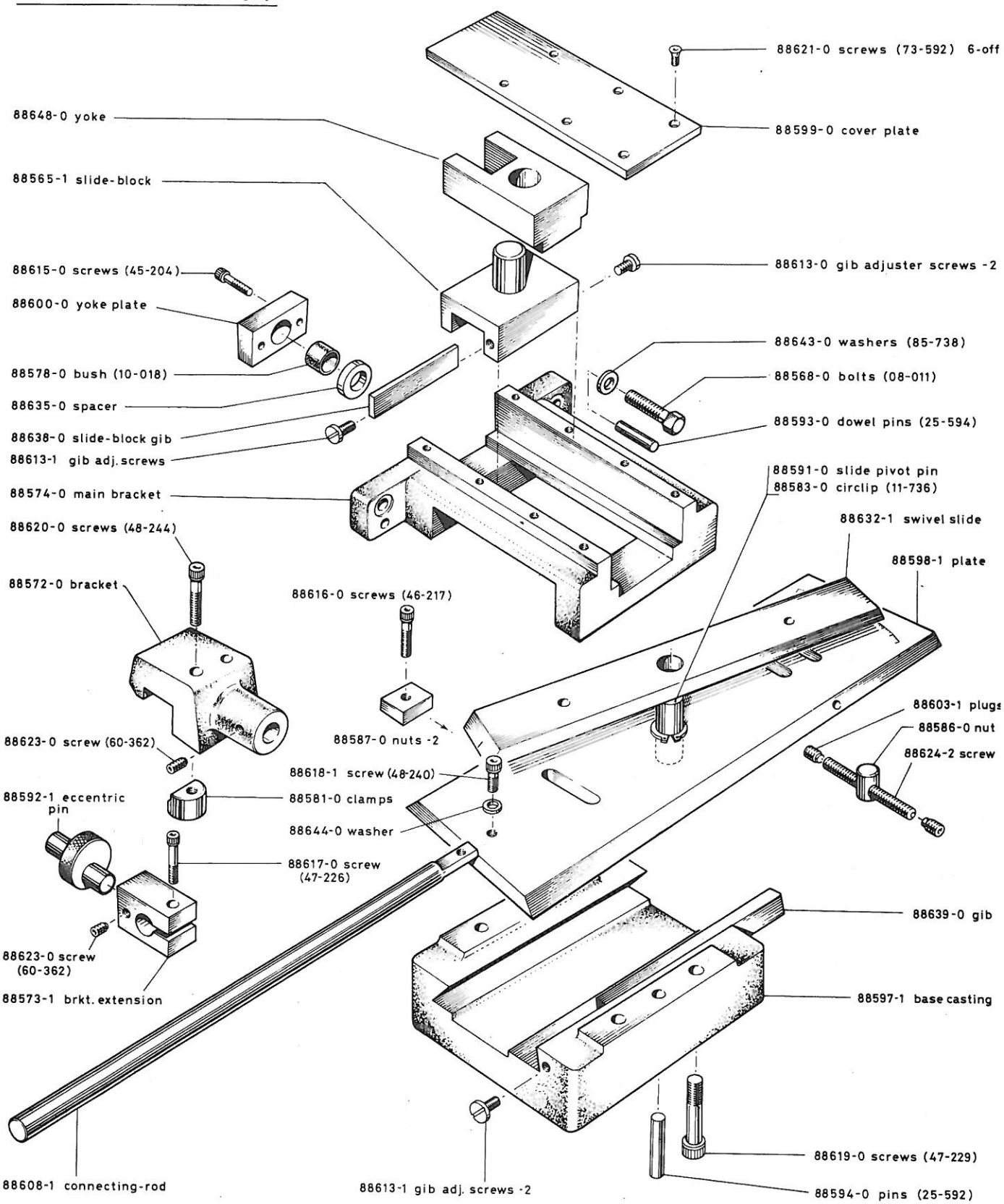


87460-0 MAGNETIC BASED DIAL INDICATOR ASSEMBLY: English

87461-0 MAGNETIC BASED DIAL INDICATOR ASSEMBLY: Metric

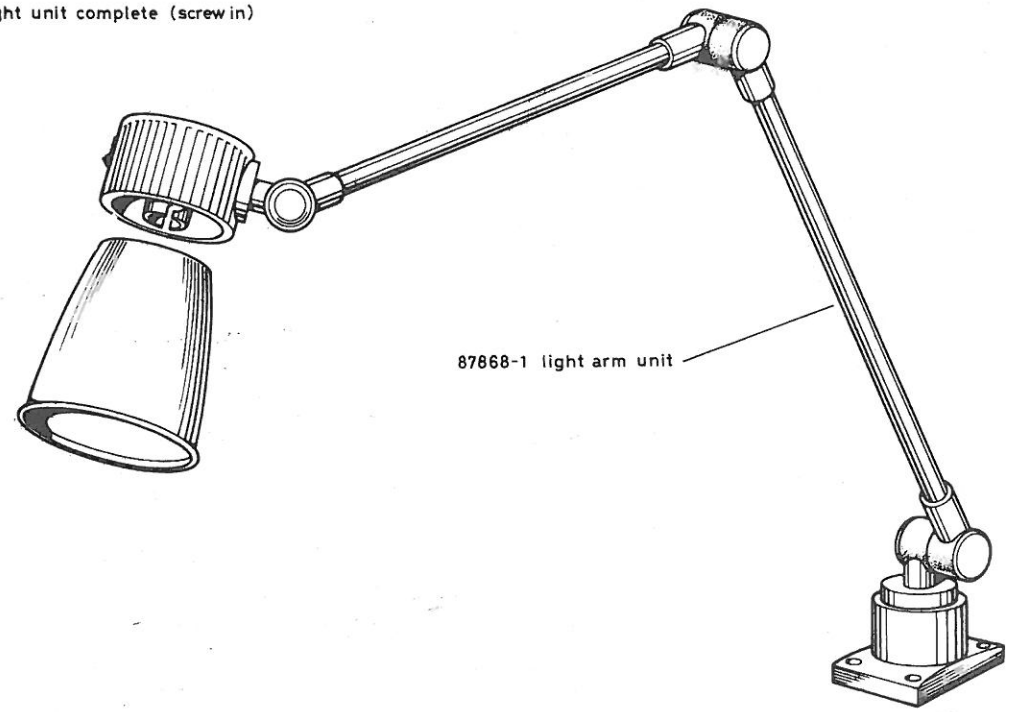
5-38-7106

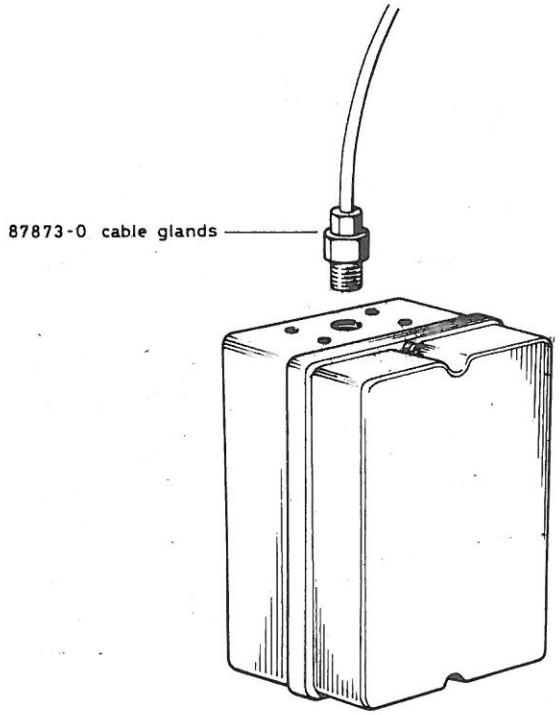
88550-2 TAPER TURNER ASSY. (grey)



LOW VOLT LIGHT

87850-1 Light unit complete (bayonet)
87857-0 Light unit complete (screw in)



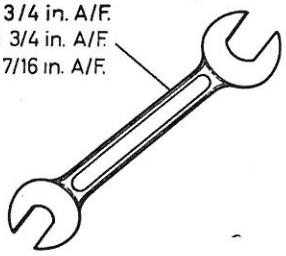


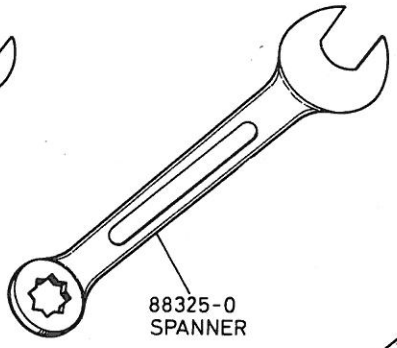
TRANSFORMERS

T256	210/230/250V.25V	87888-1
T255	210/230/250V.50V	87882-1
T254	365/380/415/440V. 25V	87890-1
T253	365/380/415/440V. 50V	87884-1
T257	500/550V. 50V	87886-1

88300-0 TOOL KIT COMPLETE

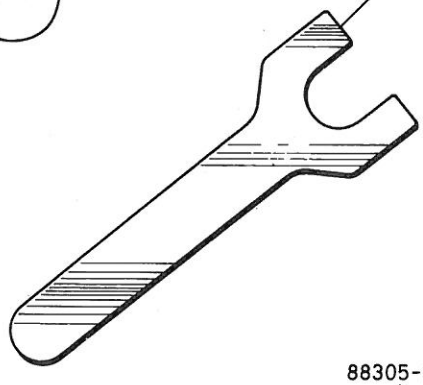
Standard SPANNERS :
88320-0 1⅛ in. x 3/4 in. A/F.
88321-0 15/16 in. x 3/4 in. A/F.
88322-0 9/16 in. x 7/16 in. A/F.



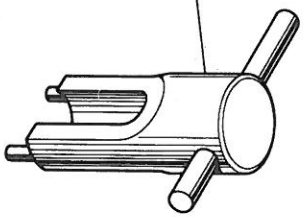


88325-0 SPANNER

88330-0 SPANNER

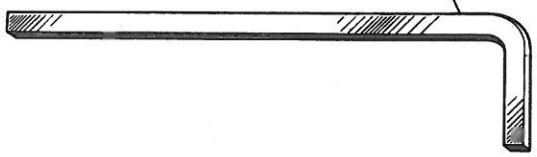


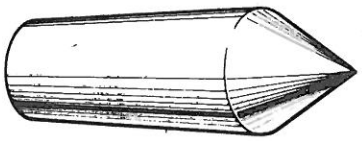
88306-0 PEG SPANNER



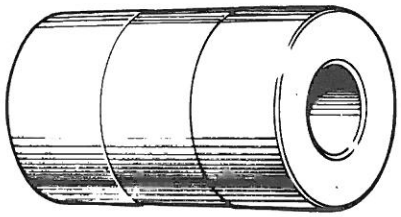
ALLEN KEYS :
88310-0 1/8 in. A/F
88311-0 5/32 in. A/F
88312-0 3/16 in. A/F
88313-0 7/32 in. A/F
88314-0 1/4 in. A/F
88315-0 5/16 in. A/F
88316-0 3/8 in. A/F

88305-0 KEY

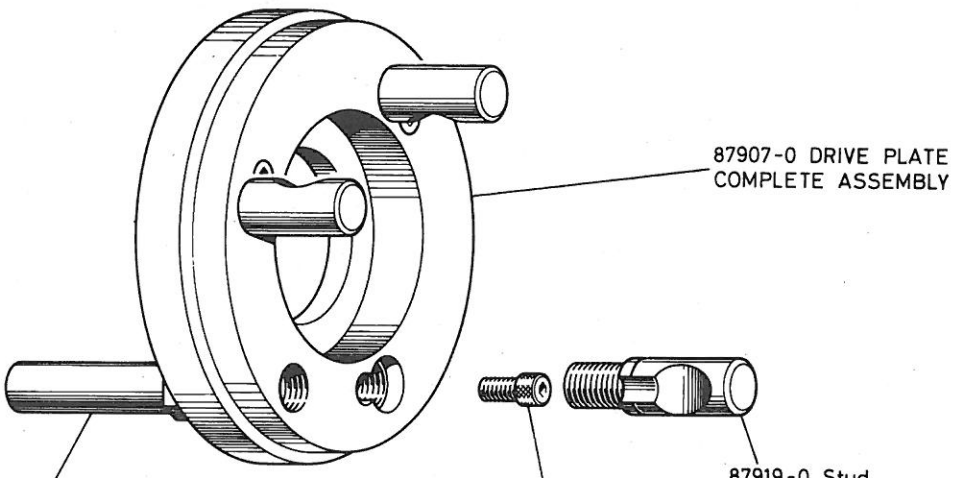




86950-0 CENTRE 3 M.T.



86967-0 CENTRE BUSH



87907-0 DRIVE PLATE COMPLETE ASSEMBLY

87918-0 Stud

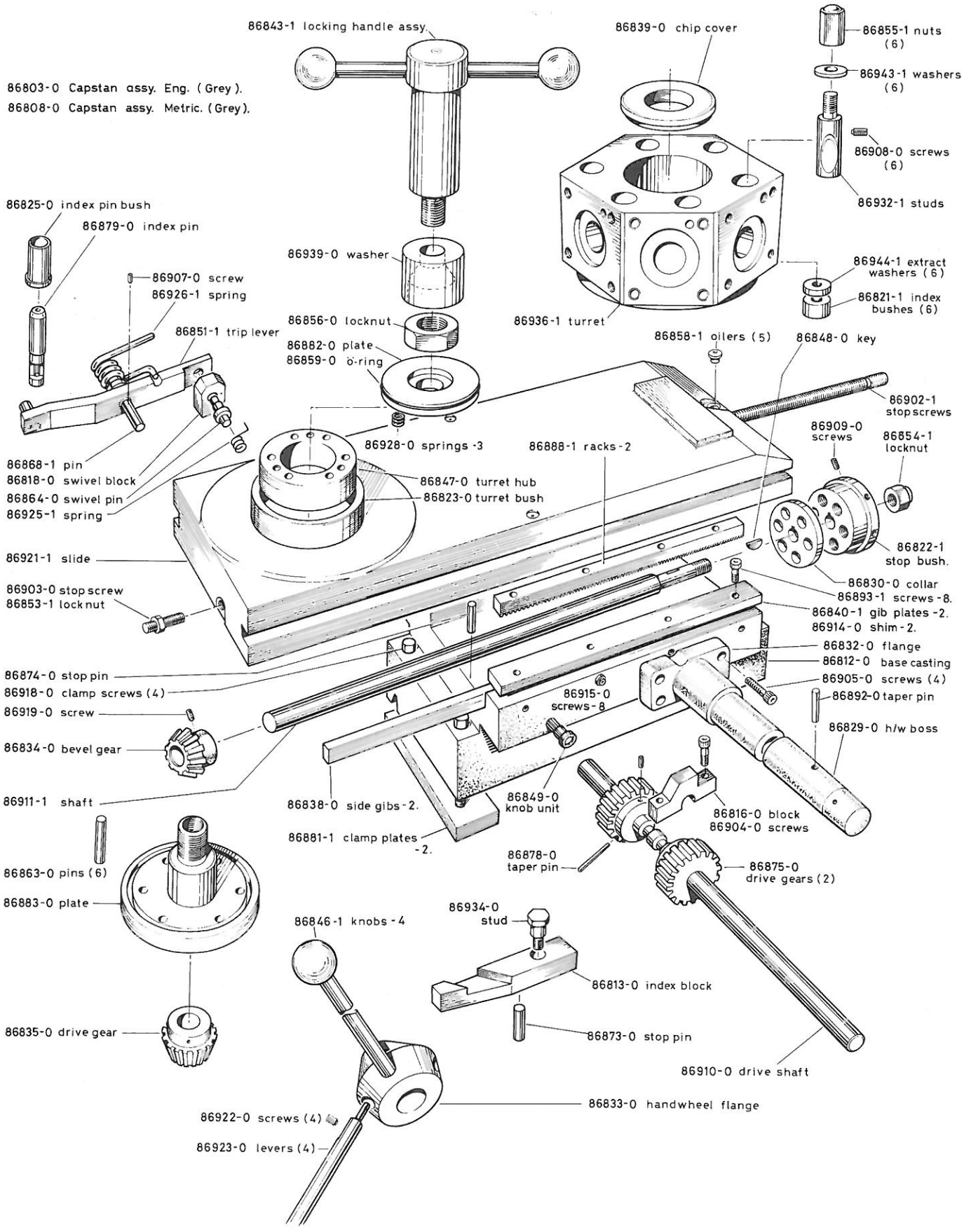
87917-0 Screw (46-212)

87919-0 Stud

5-41-7106

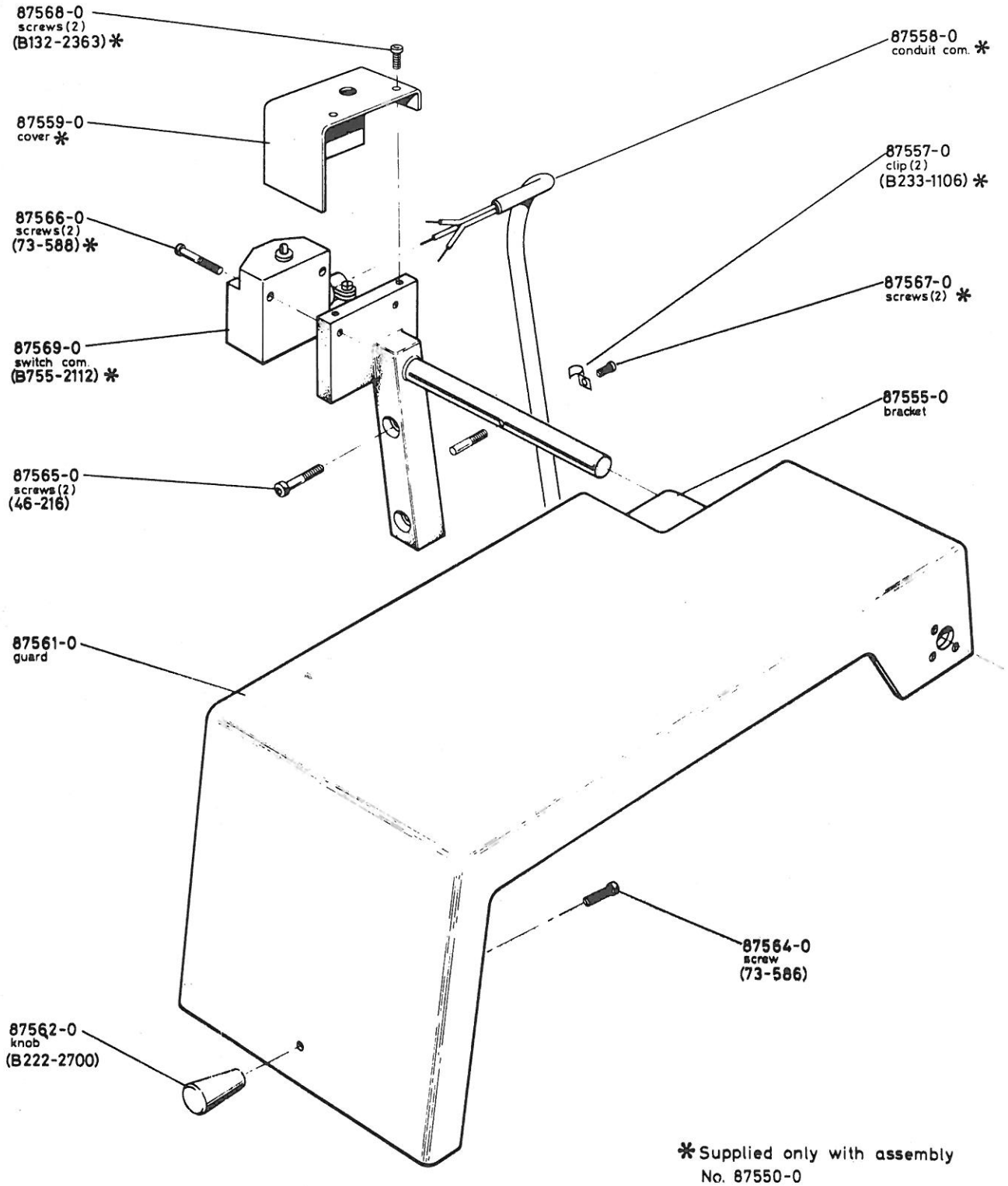
CAPSTAN UNIT

FROM October 1979



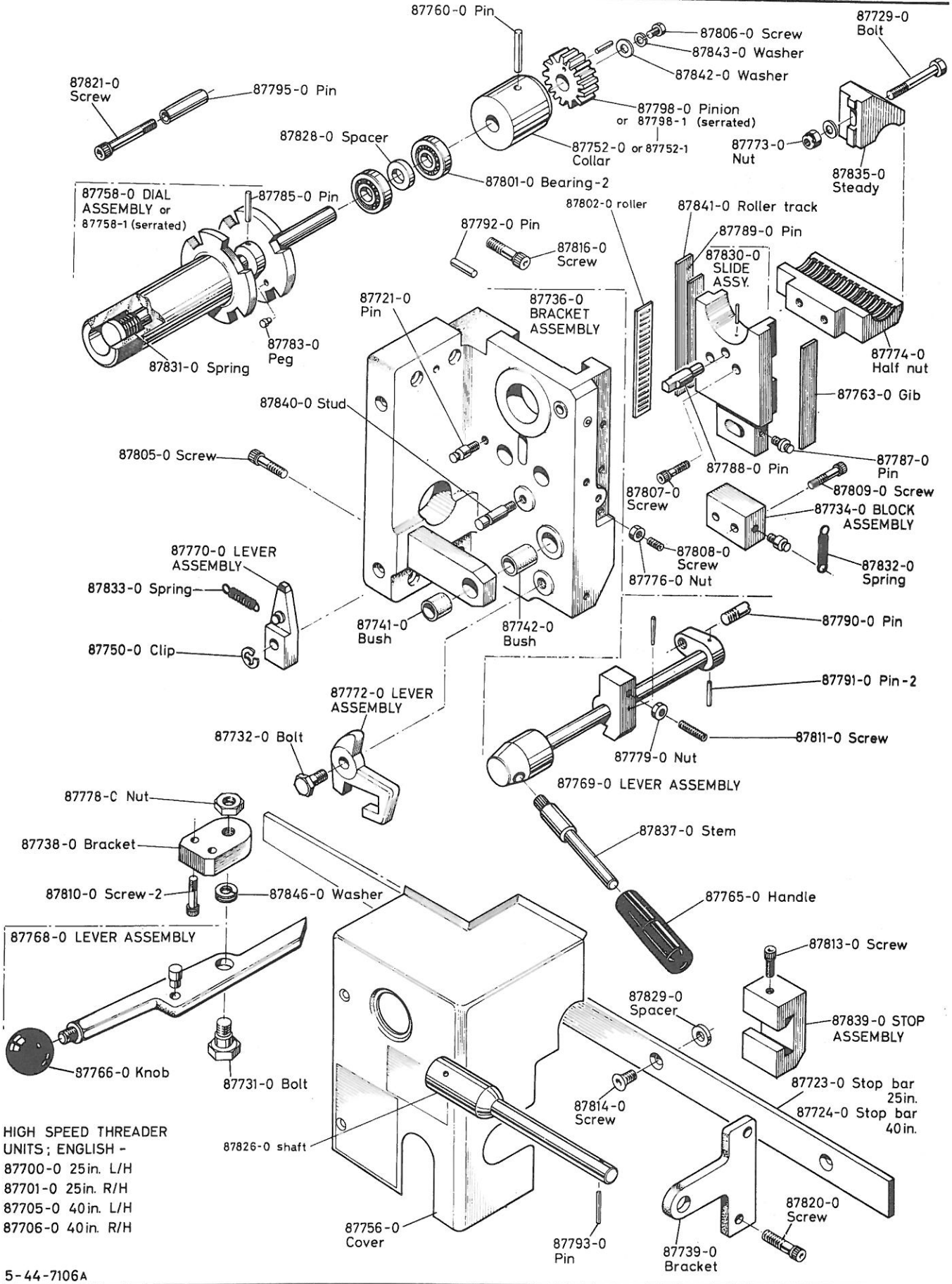
5-42-7911

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



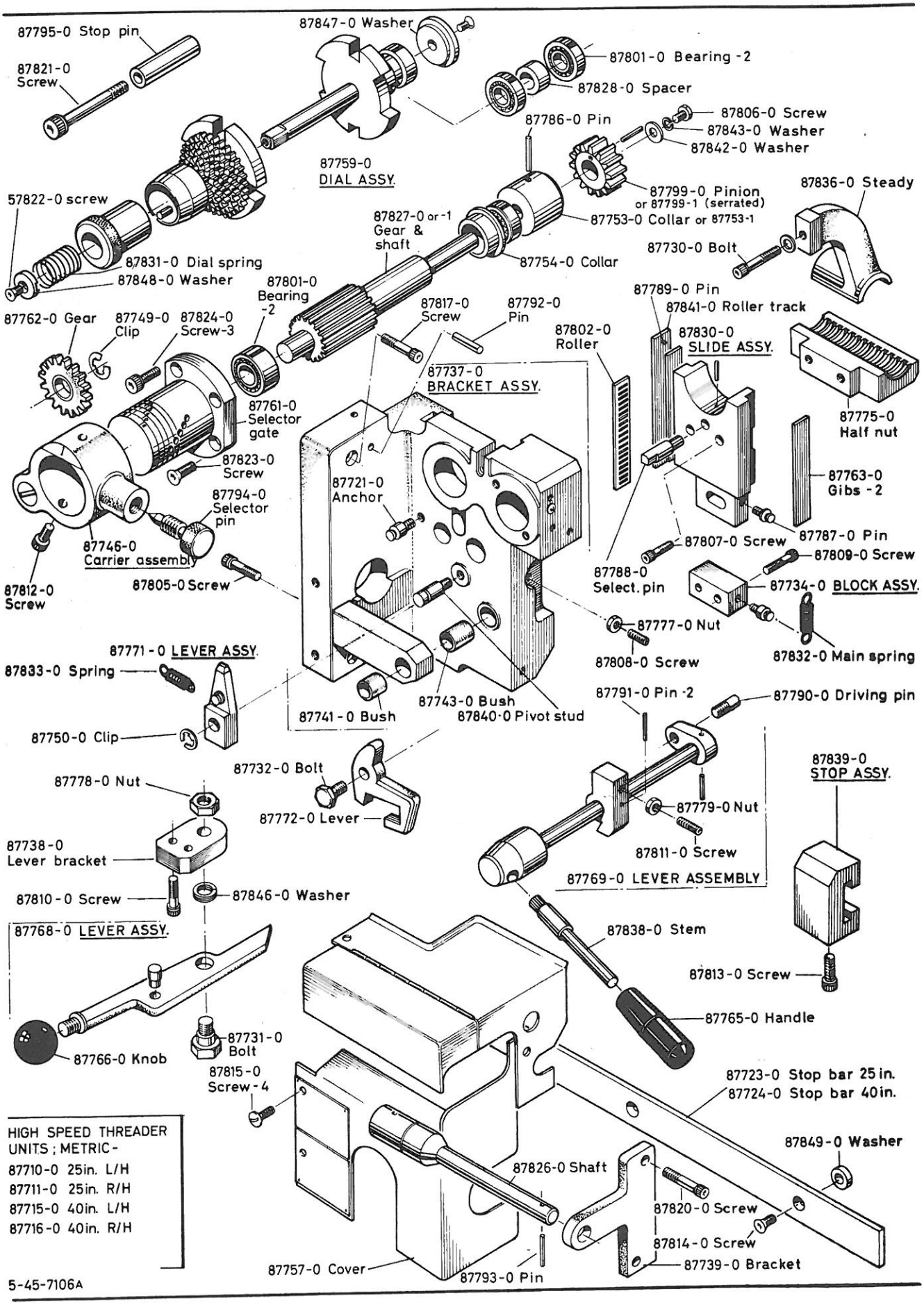
* Supplied only with assembly No. 87550-0

5-43-7106



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

5-44-7106A



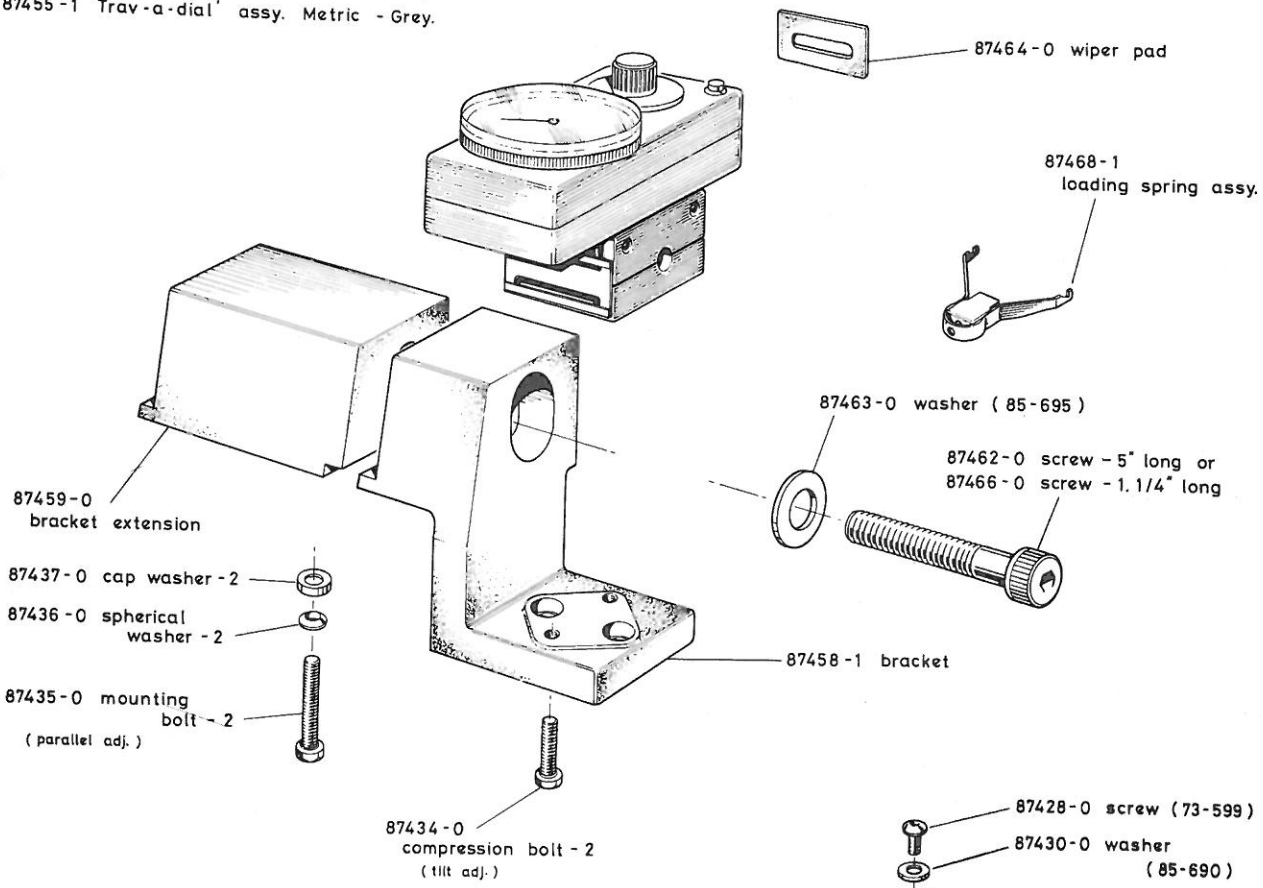
HIGH SPEED THREADER UNITS; METRIC-

87710-0 25in. L/H
87711-0 25in. R/H
87715-0 40in. L/H
87716-0 40in. R/H

5-45-7106A

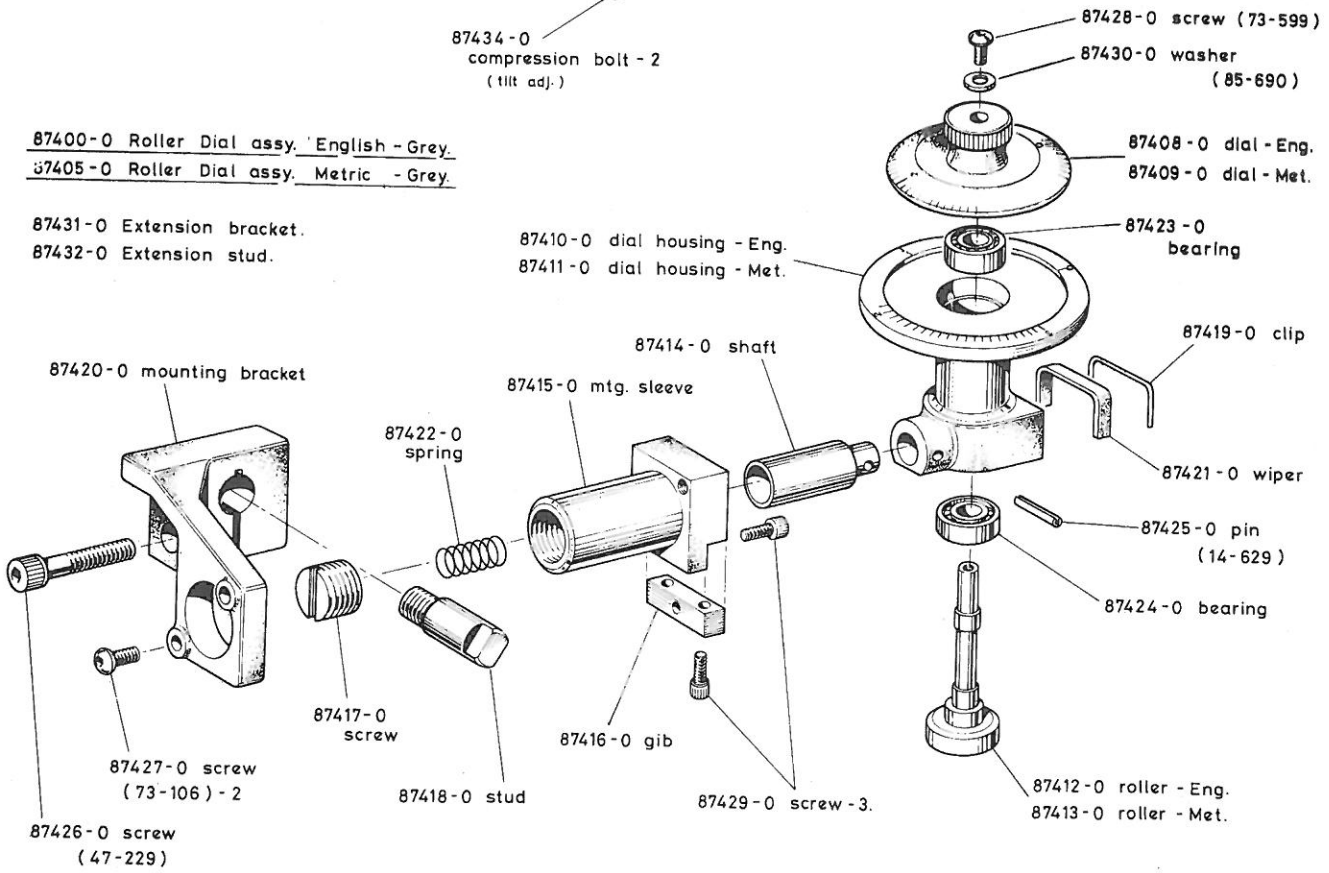
LONGITUDINAL POSITIONING DIALS

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.



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 3o 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

Reference Number

27-871	Oil ring Dowty list 1 MK 7 PP 51 C
27-880	Oil ring Dowty list 5 MK 2 PP 49 C
27-890	Oil ring Dowty list 5 MK 4 PP 49 C
27-893	Oil ring Dowty list 5 MK 8 PP 49 C
27-894	Oil ring Dowty list 5 MK 20 PP 49 C
27-898	Oil ring Dowty list 1 MK 10
29-026	Reducing connector Enots B1740-C
29-027	Nut union Enots B1741-C
29-039	Tubing sleeve Enots Z2
29-041	Breather No. MB2030 1/8 BSP
29-054	Nut BS 1740 1/4 in BSP
45-202	Cap screw 10-24 t.p.i. x 1/2 in.
45-203	Cap screw 10-24 t.p.i. x 5/8 in.
45-204	Cap screw 10-24 t.p.-i. x 3/4 in.
45-205	Cap screw 10-24 t.p.i. x 7/8 in.
45-206	Cap screw 10-24 t.p.i. x 1 in.
45-207	Cap screw 10-24 t.p.i. x 1.1/4 in.
45-208	Cap screw 10-24 t.p.i. x 1.1/2 in.
45-210	Cap screw 10-24 t.p.i. x 2 in.
46-211	Cap screw 1/4 in. u.n.c. x 3/8 in.
46-212	Cap screw 1/4 in. u.n.c. x 1/2 in.
46-213	Cap screw 1/4 in u.n.c. x 5/8 in.
46-214	Cap screw 1/4 in. u.n.c. x 3/4 in.
46-215	Cap screw 1/4 in. u.n.c. x 7/8 in.
46-216	Cap screw 1/4 in. u.n.c. x 1 in.
46-217	Cap screw 1/4 in. u.n.c. x 1.1/4 in.
46-218	Cap screw 1/4 in. u.n.c. x 1.1/2 in.
46-220	Cap screw 1/4 in. u.n.c. x 2 in.
46-221	Cap screw 1/4 in. u.n.c. x 2.1/4 in.
47-225	Cap screw 5/16 in. u.n.c. x 3/4 in.
47-226	Cap screw 5/16 in. u.n.c. x 7/8 in.
47-227	Cap screw 5/16 in. u.n.c. x 1 in.
47-229	Cap screw 5/16 in. u.n.c. x 1.1/2 in.
47-231	Cap screw 5/16 in. u.n.c. x 2 in.
47-232	Cap screw 5/16 in. u.n.c. 2.1/4 in.
47-233	Cap screw 5/16 in. u.n.c. 2.1/2 in.
48-241	Cap screw 3/8 in. u.n.c. 1.1/4 in.
48-244	Cap screw 3/8 in. u.n.c. x 2 in.
48-247	Cap screw 3/8 in. u.n.c. x 3 in.
48-249	Cap screw 3/8 in. u.n.c. x 4 in.

Reference Number	
48-251	Cap screw 3/8 in. u.n.c.. x 2.3/4 in.
53-302	Countersunk screw 10-24 t.p.i. x 3/8 in.
53-303	Countersunk screw 10-24 t.p.i. x 1/2 in.
53-305	Countersunk screw 10-24 t.p.i. x 3/4 in.
54-308	Countersunk screw 1/4 in. u.n.c. x 1/2 in.
55-318	Countersunk screw 5/16 in. u.n.c. x 3/4 in.
58-342	Cup point screw 10-24 t.p.i. x 3/16 in.
58-343	Cup point screw 10-24 t.p.i. x 1/4 in.
58-344	Cup point screw 10-24 t.p.i. x 5/16 in.
58-345	Cup point screw 10-24 t.p.i. x 3/8 in.
59-350	Cup point screw 1/4 in. u.n.c. x 1/4 in.
59-356	Cup point screw 1/4 in. u.n.c. x 3/4 in.
59-357	Cup point screw 1/4 in. u.n.c. x 1 in.-
60-361	Cup point screw 5/16 in. u.n.c. x 5/16 in.
60-362	Cup point screw 5/16 in. u.n.c. x 3/8 in.
61-370	Cup point screw 3/8 in. x 3/8 in long
61-371	Cup point screw 3/8 in. x 1/2 in. long
62-379	Cup point screw 7/16 x 1/2 in. long
63-384	Cup point screw 1/2 in. x 1/2 in. long
63-386	Cup point screw 1/2 in. x 3/4 in. long
68-431	Dog screw 5/16 u.n.c. x 1/2 in.
69-442	Dog screw 3/8 u.n.c. x 1 in.
69-439	Dog screw 3/8 u.n.c. x 1/2 in.

Reference Number

73-106	Cap domed head 10-24 u.n.c. x 3/4 in.
73-143	Domed head screw 1/4 u.n.c. x 3/8 in.
73-486	Screw cheese head 2 BA x 1/2 in.
73-522	Socket screw cone Wedglok 5/16 in. x 3/4 in. x 90°
73-527	Socket screw Wedglok full dog 1/4 in. u.n.c. x 3/8 in.
73-529	Pan head screw 10-24 u.n.c. x 3/8 in.
73-568	Domed head screw 1/4 u.n.c. x 3/4 in.
73-575	Cap head screw 10-24 x 1/2 in. Wedglok
73-579	Button head screw 1/4 u.n.c. x 1/2 in.
73-582	Domed head Cadium plated screw 10-24 x 1/2 in.
73-585	Half dog screw Wedglok 1/4 u.n.c. x 3/8 in.
73-586	Cheese head screw 1/4 u.n.c. x 1/2 in.
73-588	Hex. head screw 5/16 in. x 3/4 in.
73-590	Socket countersunk head screw Wedglok 1/4 in. u.n.c. x 5/8 in.
73-592	Screw No 8-32 u.n.c. x 3/8 in. long countersunk
73-594	Cone point set screw 10-24 u.n.c. x 1/4 in. long
73-599	Round head screw 10-24 t.p.i. x 3/8 in.
73-601	Screw 4 BA x 3/16 half dog socket set
73-602	Screw No 6 u.n.c.. x 1/2 in. socket countersunk
73-603	Screw No 4-40 x 3/8 socket counter sunk
73-604	Screw 6 BA x 1/8 half dog
73-607	Domed head scre-w 1/4 u.n..c. x 1/2 long
73-651	Cup point screw 1/2 u.n.c. x 3/4 ESLOK coated

79-866	Oil seal Weston W16210631-R4
79-867	Oil seal Weston W18713731-R4
79-897	Oil seal Burtonwood M12-28-8
79-899	Oil seal Weston W21615747-R4

80-872	Oilsight Tecalamit IC 4611 $114.94 EA + 7/11

81-156	Allen Key 3/8 in.
81-157	Allen key 5/16 in.
81-158	Allen key 7/32in.
81-159	Allen key 3/16 in.
81-160	Allen key 5/32 in.
81-161	Allen key 1/8 in.
81-167	Allen key 1/4 in.
81-171	1/16 A/F Allen key
81-172	15/16 A/F Box spanner

82-063	Spring Flexo 163208
82-796	Spring Flexo 82804
82-803	Spring Flexo 103210
82-807	Spring Flexo 223412
82-826	Spring Flexo 82805
82-830	Spring Flexo 123306

Reference Number

82-839	Spring Flexo 112908
82-840	Spring Flexo 62703
82-841	Spring Flexo 113207
82-842	Spring Flexo 82905
82-857	Spring Flexo AR 3748
82-862	Schnorr Disc Spring K16 34 x 22.5 x 0.8 mm
82-863	Spring Flexo 123006
82-868	Spring Flexo 72804
82-879	Spring Flexo 123210
84-702	Lock washer 1/4 in. dia. Bore single coil
84-703	Lock washer 5/16 in. dia. bore single coil
84-704	Lock washer 3/8 in. dia. bore single coil
85-690	Washer 3/16 in. dia. bore single coil
85-691	Washer 1/4 in. dia. bore
85-695	Washer 1/2 in. ID x 1 OD x 0.92
85-699	Washer 3/4 in. dia. bore
85-720	Washer 2 BA standardplain
85-733	Washer 5/16 ID Table 4 15 SWG
85-735	Washer 1/4 in. dia. Table 3
85-738	Washer 3/8 ID x 3/4 OD x 15 SWG
85-739	Washer 5/8 ID x 1.1/4 in. OD x 11 SWG
85-744	Washer 3/8 ID x 7/8 OD x 18 SWG
86-734	Fibre washer 1/2 in. ID x 13/16 OD
86-750	Washer Ina Thrust AS 2035
86-764	Washer 1/4 in ID x 9/16 OD x 0.56
86-767	Washer Fibre Enots 1386 G
86-774	Tab washer for 5/16 u.n.c. screw SP 107
86-790	Washer 1/4 in. ID x 3/4 in x .064 Table 5
86-791	Washer fibre 1/4 ID x 1/2 OD x 1/16
88-059	Tery's Hose clip No 1234
88-063	Sealing plug Robert Moss A46
88-080	Sealing plug Robert Moss A48
88-088	Buckle clip A.E.I. MCA10 4 in.
88-089	Sealing plug Robert Moss H181
88-103	Stripper Bolt 3/8 NOM 2.3/4 in. long x 5/16 u.n.c. thread
88-105	Drain plug Tecalemit 1/2 BSP 4377/4

Reference Number	
B433-0808	Enots tubing nut (222) 34/0279/08
B433-0884	Enots Hobbs nut 1/2 in. BSP (K113/24)
B433-0904	Hobbs washer 1/2 in. BSP (K114/24)
B433-2025	Straight Adaptor Enots - 34-0346-28
B433-2254	Hobbs elbow adaptor 1/2 in. BSP 34-0338-37
B454-1001	Oil window unit, tecalemit IC 4611
B613-3002	Motor A.E.I. 5 HP 220/240/380/420
B613-3003	Motor A.E.I. 5 HP 500/550
B731-4101	Locknut Hex light 1/2 in.-
B732-2106	Coupling 3/4 in. Kopex C10
B981-2257	Spanner 1.1/8 in. x 15/16 A/F

For electrical equipment refer to wiring diagram.