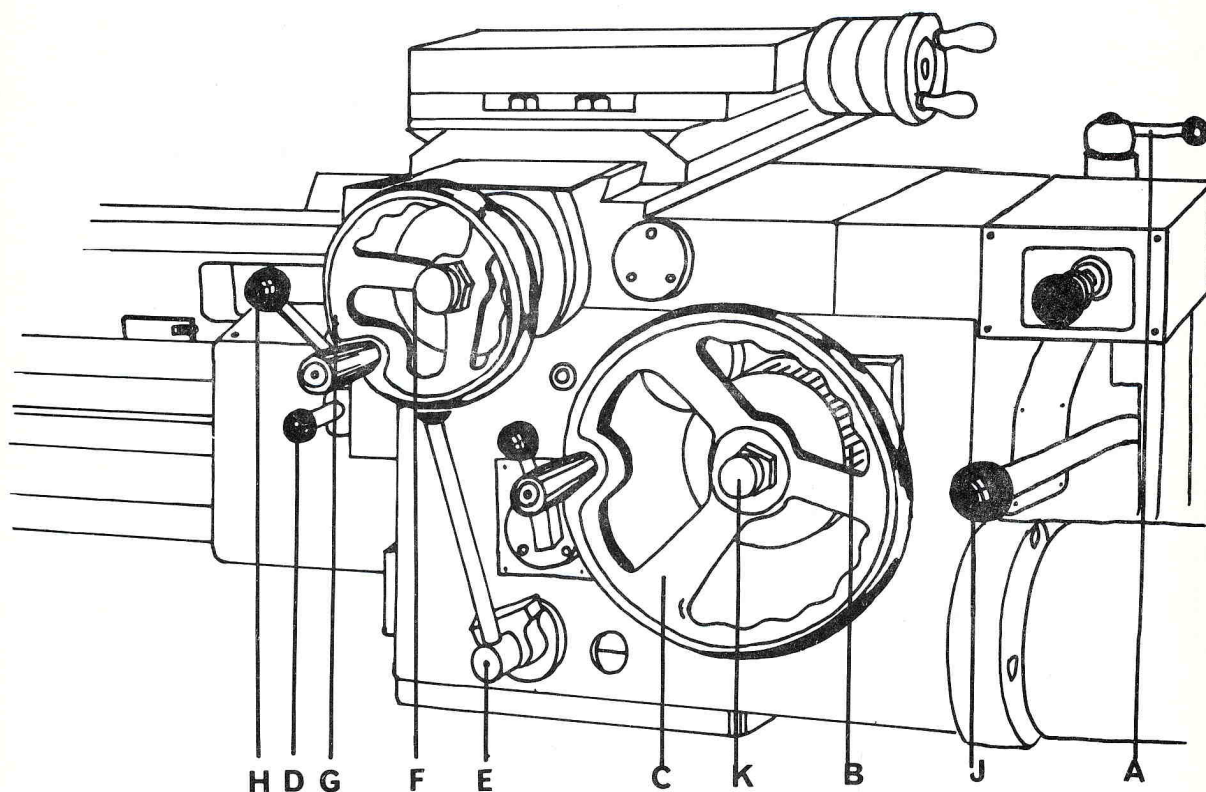


7.1 APRON



Do not operate the apron before reading the lubricating instructions. Section 3.

For selection of feeds from the gearbox see section 5.

Manual movement of the apron along the bed is by means of the handwheel 'C'. Ensure that the trip lever 'E' is in the trip position and the leadscrew nut operating lever 'H' is in the dis-engaged position as shown.

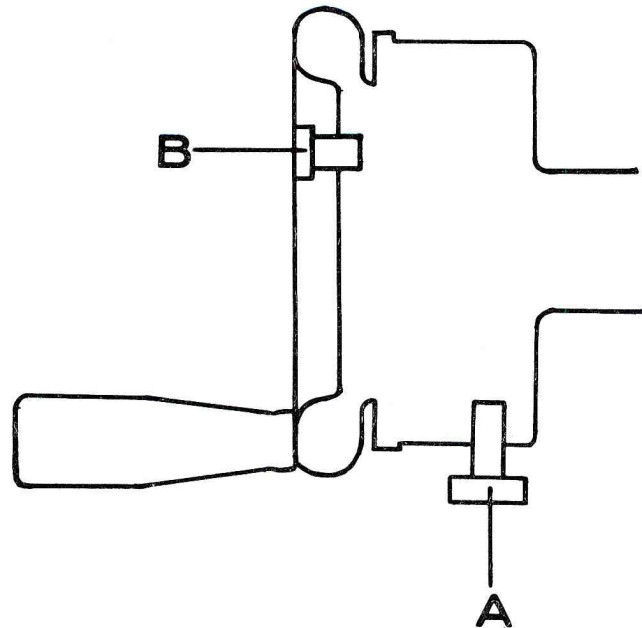
For length measurement the apron handwheel 'C' is fitted with dual dials 'B' one reading in inches the other in millimetres, they can be set to zero and locked in position by screw 'K'. The inch dial is divided into 64 divisions, each division represents $1/64$ " of travel, whilst the metric dial is divided into 250 divisions, each one representing 0.1 mm. of travel.

The cross slide is traversed by handwheel 'G' and is also fitted with dual dials one reading inches the other millimetres, they can be set to zero and locked in position by screw 'F'. The inch dial is divided into 200 divisions each division representing .001" movement of tool or .002" alteration to workpiece diameter, whilst the metric dial is divided into 250 divisions each division equals .02mm movement of tool or 0.04 mm alteration to workpiece diameter.

Longitudinal or cross feed selection is made by lever 'D'. When the cross feed is engaged the saddle should be clamped to the bed by lever 'A'.

The feed engage and trip lever 'E' is interlocked with the leadscrew nut operating lever 'H'. Clutch engagement lever 'J' travels with the apron and is additional to lever 'B' Section 4.1.

7.11 APRON continued



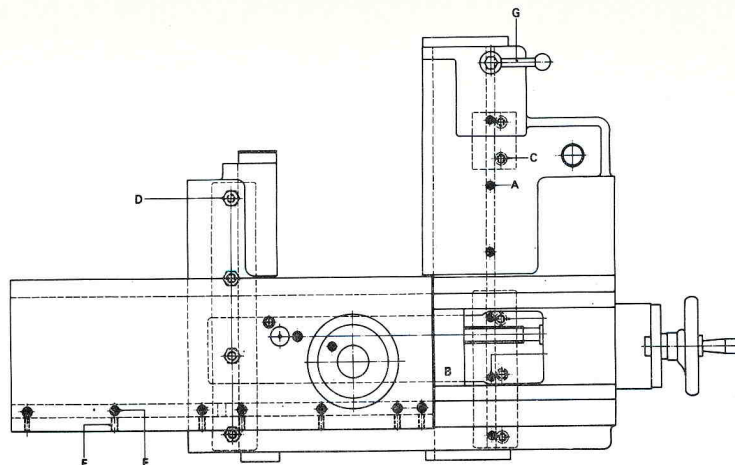
NOTE:-

Approx. movement of extreme stop positions = $1\frac{3}{4}$ turns.

TO OPERATE THREADING DEPTH STOP.

1. Turn finished diameter of workpiece in normal way.
2. Put threading tool in position and touch work diameter with tool tip, release screw 'B' set dial to zero and re-lock screw 'B' but DO NOT lock screw 'A'.
3. Retract at least two turns of saddle handwheel and lock screw 'A'.
4. Turn saddle handwheel slowly in a clockwise direction until a stop is felt, at this point the tool will be clear of the workpiece.
5. Un-lock screw 'A', move handwheel till zero reading is obtained at which point of tool should just be touching the workpiece. Re-lock screw 'A'. (A trial pass can now be made, but if not required un-lock screw 'A' and set handwheel to first cut e.g. .010" depth of cut.
6. Re-lock screw 'A' and take first cut.
7. Retract handwheel (max is $1\frac{3}{4}$ turns) just clear of workpiece and move saddle back to starting point of cut.
8. Wind saddle handwheel in carefully until stop is engaged (which is the previous cut position). For further cuts release screw 'A' and move saddle handwheel required amount for additional cut and lock screw 'A'.
9. Repeat operation 8 until desired depth of cut is obtained and then to dis-engage stop, un-lock screw 'A'.

7.2 SADDLE



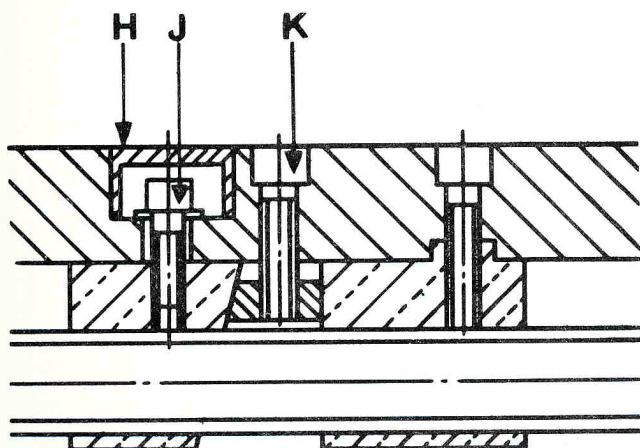
The saddle should not be moved before reading the lubricating instructions, Section 3. Wipers are fitted on the end of the saddle wings and on the front of the cross slide, it is advisable to remove these periodically to clean them. To re-assemble, use a light pressure to force the springing edge of the wiper down onto the bed or guideway, simultaneously tightening the retaining screws. The wipers should be checked regularly and renewed when necessary.

Wedge type slips are provided for saddle guide adjustment. To effect this adjustment the slips must be removed and ground on the top face. Removal of the slips can be accomplished without lowering the apron by the withdrawal of six screws 'A'. To gain access to the two screws in the saddle well, it is necessary to traverse the cross slide to the rear. Remove wiper plate and wiper from front of cross slide; guard 'B' can then be withdrawn leaving the screws exposed.

Gib plates are fitted under the front and rear bed guideways. These can also be removed for re-scraping without lowering the apron, the front plates by the withdrawal of four screws 'C' and the rear plates by the withdrawal of four screws 'D' situated beneath the rear of the saddle.

A slip is provided for the adjustment of the cross slide guideways. To effect this adjustment release the screws 'E' on the top of the slide, adjust the slip by means of the screws 'F' then re-lock the screws 'E'.

When the cross feed is engaged the saddle should be clamped to the bed by lever 'G'.



The cross slide nut consists of two parts which can be adjusted relative to one another to minimise backlash. This adjustment being carried out as follows:- Remove the cover 'H', release the screw 'J' then re-tighten until the nut will just slide. Tighten the screw 'K' until the cross screw can still be turned without undue force. Subsequently tighten the screw 'J' fully and replace the cover.

When taper turning attachment is fitted the clearance between the key and keyway of the telescopic joint must be taken into account when checking the backlash.

To service Rapid Traverse Clutches on 1709 thru 2415 aprons.

Remove apron from machine.

Remove brush holders noting length of exposed thread or other reference for re-assembly.

Remove Rack Pinion Shaft as follows:

- (1) Remove bearing cap on front side and snap ring from end of shaft.
- (2) Remove 4 screws in oil retainer cap on back side.
- (3) Unseat snap ring on front side of large gear and slide toward front.
- (4) Tap shaft out front to back.

Remove Apron Handwheel, Dial Assembly and Oil Pump.

Remove handwheel shaft and longitudinal clutch as follows:

- (1) Locate and drive out two (2) roll pins securing pinion.
- (2) Locate plug at rear of shaft, remove set screw. Drive pinion toward rear to knock out plug and bearing.
- (3) Tap shaft out back to front. Take care to catch clutch parts and spacers.

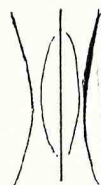
Remove cross feed clutch and shaft as follows:

- (1) Remove cap on front of apron.
- (2) Locate plug at rear and remove set screws.
- (3) Knock out shaft front to back. Take care to catch clutch parts and gears.

Re-assemble in reverse order. Mark gear teeth in line with keyways to facilitate alignment.

If testing of clutches while apron is separated from machine, be sure to run a ground wire between apron and machine or clutches will not work.

Clutch discs, 2 inner and 2 outer, should be dished and assembled as below. Middle outer disc remains flat -



(Curve of plates exaggerated for illustration.)

Amount of dish - .015 -  .010