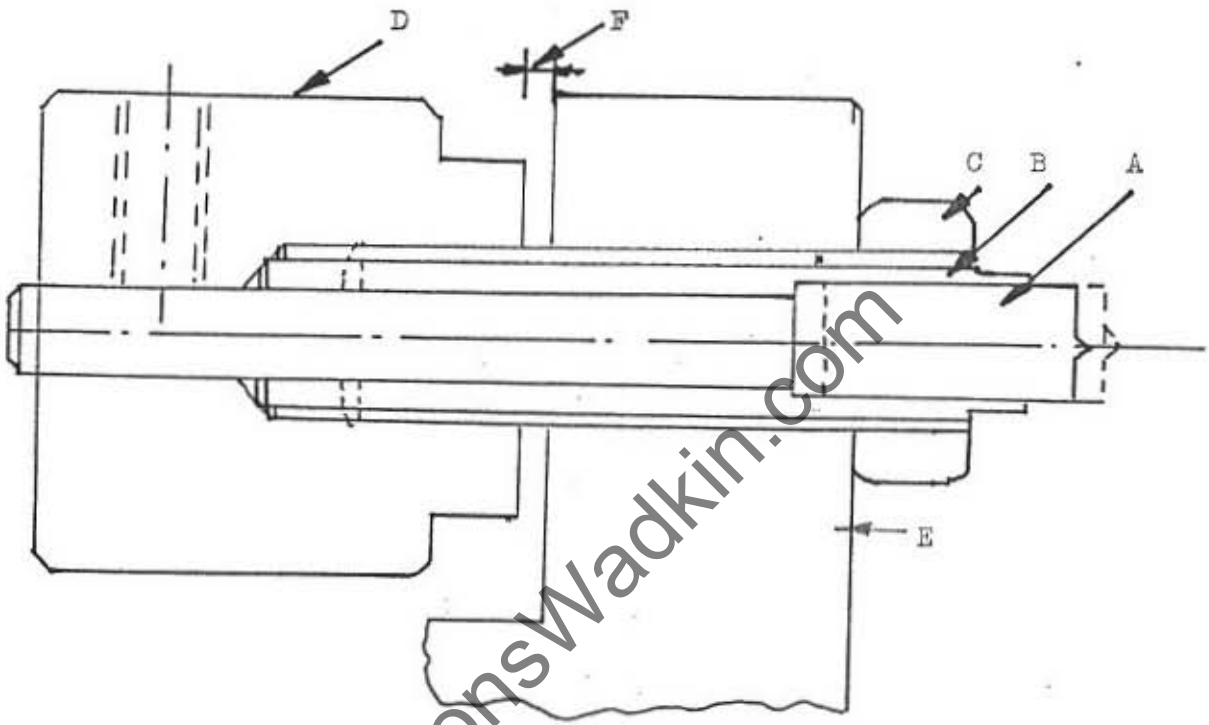
DUAL RADIUS DRESSER



PART IDENTIFICATION

A Diamond arbor
B Setter body
C Locknut
D Knurled nut
E Dresser unit
F Gap to determine advance of diamond. This should be:

Stylus sizes	Gap dimension		Rotation of knurled nut.
5mm (4.7) + 3mm	0.035 in.	0.85mm	2/3 turn
1/4 in. + 1/8 in.	0.065 in.	1.60mm	Between 1.1/4-1.1/3 turns

Fitting dual-radius dresser supplied in kit form

The dresser replaces the regular dresser as follows:-

1. Fit and dress a thick grinding wheel using the existing dresser.

2. Replace the old dresser unit with the new unit, fitting the locknut as before between the support and the wheel.

3. Tighten the screw in the knurled wheel securing this to the diamond arbor, and turn counter-clockwise to seat the arbor fully against its internal shoulder.

4. Without disturbing the diamond arbor seating, screw-in the whole unit so the diamond just touches the grinding wheel, and secure the locknut. Flats on the setter body allow a spanner or wrench to be used in adjusting the unit.

5. Side-dress the thick grinding wheel both sides and check width against the stylus width. The wheels should be thinner than the stylus by 0.20mm (0.008")
If it is not adjust the diamond, redress and recheck until correct.

6. Release the knurled wheel screw, then rotate the screw independant of the diamond arbor so that it contacts the dresser unit face, then rotate counter-clockwise to give the required gap - see table. Either use feeler gauges or note the rotation of the wheel.

7. Make sure the diamond is properly seated against its shoulder, by pushing it in' then tighten the knurled wheel screw to lock it to the diamond arbor.

8. Rotate the knurled wheel clock-wise fully 'in' then side dress a thin wheel or the 1/4" tip only of a thick wheel and check width. If incorrect modify steps 6 - 8 accordingly.

Adjusting worn dual-radius dressers

To correctly adjust a worn dual-radius dresser repeat steps 5 - 8.

Dressing a thick wheel to a small radius

For small radii we recommend using a regular, thick wheel, dressing this to a half-round square or angular profile and with the sides both dressed to a 5 degree angle. This gives a stronger wheel than if using a thin type. As it only has a small grinding area rapid wheel wear is normal, so only carry-out final grinding using a fine-grit wheel and dress frequently as follows:-

1. Fit a thick, fine wheel and rotate the knurled wheel fully 'out'.
Dress the wheel to the required section.

2. Move the wheel back about - 0.5mm.

3. Lock the dresser in the vertical position.

4. Rotate and lock the dresser at 85 degrees to one side. (Note that the scale is graduated in 10 degree movements).

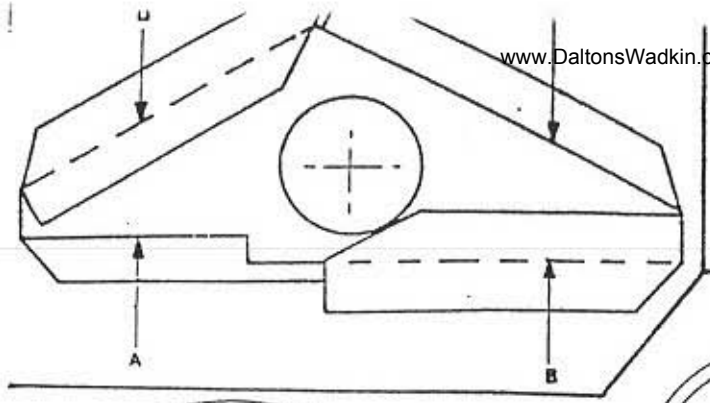
5. Side dress the wheel to 5 degrees by swivelling the diamond front to rear. gradually turning the knurled wheel clockwise until it again fully seats. The width of side dress should be about 5/8" (18mm) depending on the thin and thick wheel widths.

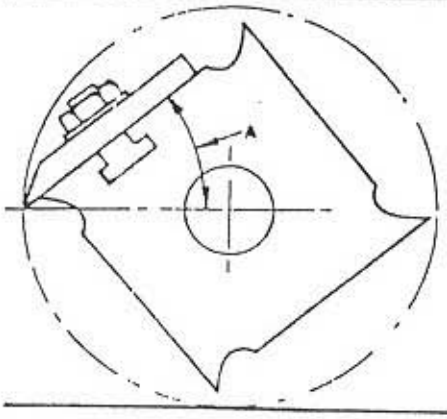
6. Repeat at the opposite side to complete the two side bevels.

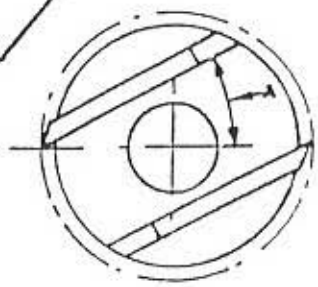
7. Turn the knurled wheel fully 'out' then dress the grinding wheel to the required section gradually rotating the knurled wheel until fully 'in' and at the same time rotating or swivelling the dresser as normal.

Dummy Block (Based on 7" Cutting Circle)
A. 15° Cutting Angle
B. 20° Cutting Angle
C. 25° Cutting Angle
D. 30° Cutting Angle

(Also marked in angles on the dummy block







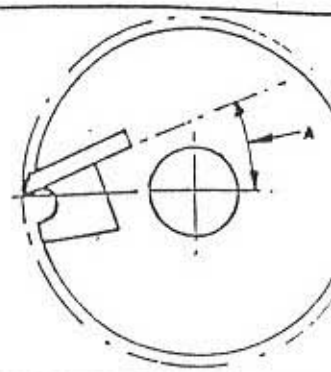


FIG.19.

Method of measuring cutting angles on various cutting heads. 'A' is the cutting angle.

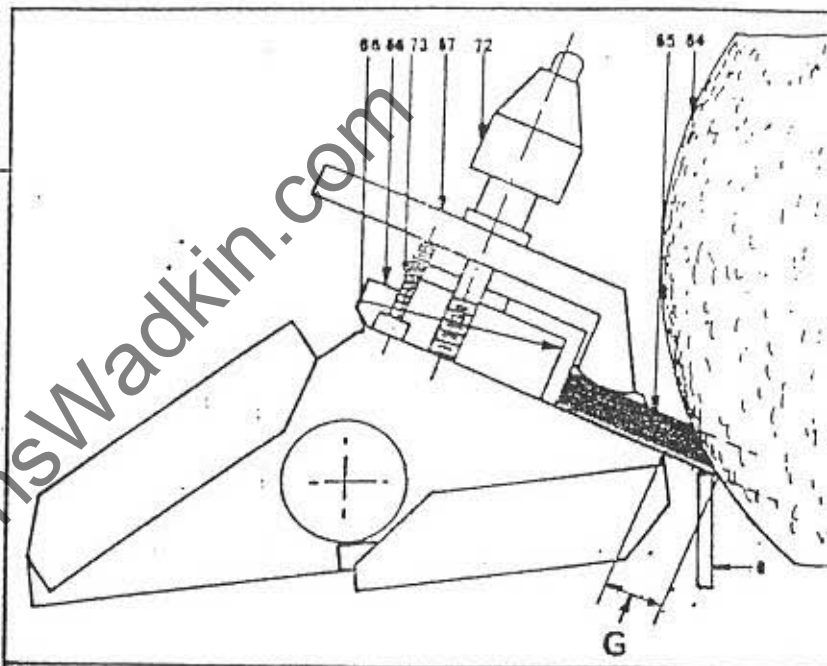


FIG.20.

Method of fitting a cutter to the 'D' 25° face.
68 Back Fence
66 Side Fence
73 Short Levelling Screw
67 Cutter Clamp
72 Clamp Locking Lever
65 Cutter
64 Grinding Wheel
G Gap (or minimum cutter projection) of 1/2".
8 Cutter Support.

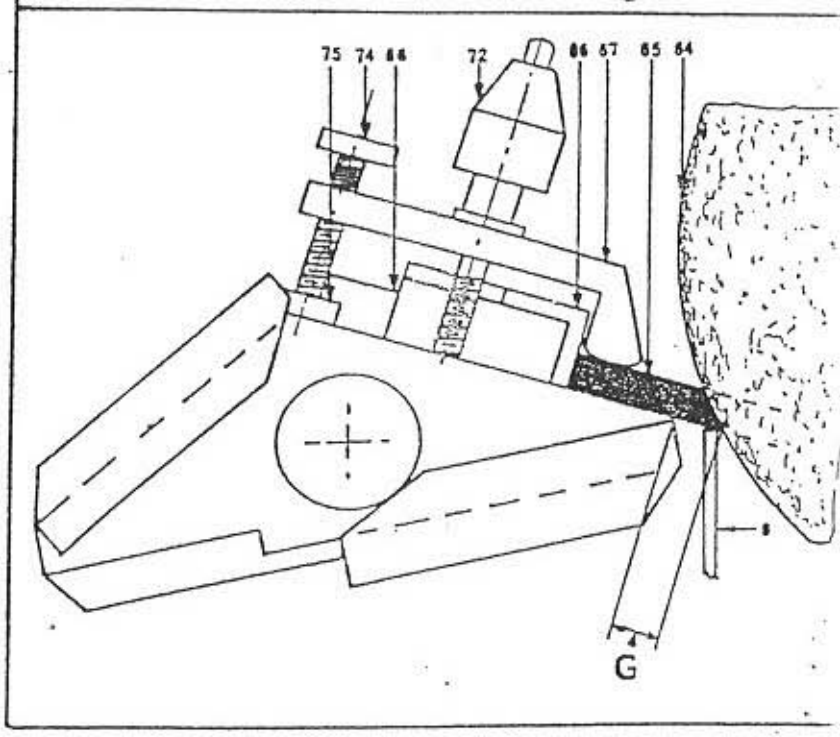


FIG.21

Method of fitting a cutter to the 'C' 20° face.
68 Back Fence
66 Side Fence
67 Cutter Clamp
72 Clamp Locking Lever
65 Cutter
64 Grinding Wheel
G Gap (or minimum cutter projection) of 1/2"
8 Cutter Support
74 Standard Levelling Screw
75 Nylon contact pad (removable)

DUMMY BLOCK

Cutters are normally ground in the head on Autool PR 230 and PR 300 grinders. It is possible to grind cutters independant of the cutterblock they are to be used on by fitting a dummy block. The normal dummy block has four cutter-mounting faces and should be fitted to a regular arbor so that the face to be used is uppermost and nearest the grinding wheel. The dummy block faces are for a) 15, b) 20, c) 25 and d) 30 degree cutting angles, see Fig.18 . The seating angle used on the dummy block must correspond with that of the cutterblock measured with cutters at minimum projection, as shown in Fig. 19 . Failure to use the correct face (or correct cutter projection) will give slight errors in profile and clearance angles.

SETTING FOR REGRINDING

Fit the template in approximate position and ensure that traverse across the full profile width is possible. Fasten the shaped cutter using the clamps, levelling these by the screws provided, with one edge against the side fence and the back edge against the rear fence. The deepest point of grind on the cutter should project 12 mm ($\frac{1}{2}$") beyond the edge of the cutterblock. Adjust the dummy block along the arbor so that the grinding wheel, cutter profile, stylus and template align, using the lateral movement of the stylus for final setting. Adjust the stylus cross-movement to control the amount ground off. Grind as cutters mounted in the head. When fitting the second and subsequent cutters make sure that these seat properly against the side and rear faces. Make no adjustment to the stylus setting. See Figs 20 and 21.

SETTING FOR BLANK CUTTERS

Fit the template in approximate position. Move the carriage so that the stylus contacts the deepest point of the grind. Keeping these in contact, adjust the stylus so that there is a 12 mm ($\frac{1}{2}$") gap between the dummy block and the near-end of the cutter support. Move the carriage so that the stylus contacts the shallowest point of the grind and hold in this position. Place the cutter on the dummy block and adjust this together with the rear fence so that the cutter rests on its support and just touches the grinding wheel. Fasten both rear fence and cutter in this position. Adjust the dummy block laterally to correspond with the template. Use the lateral and cross-traverse adjustment of the stylus to finally set and control the grind. Grind as blank cutters mounted in the head. See Figs 14 and 15.

Q3S ATTACHMENT

This is used when profile grinding and notching shaper cutters. By doing this they can be set against the precision pins Q3S shaper collars to give a pre-determined and repeatable cutting circle regardless of cutter wear.

Cutter grinding

The Q3S has three cutter-mounting faces corresponding to 30 degree cutting angles on shaper collars for the following: (See Figs 22-24).

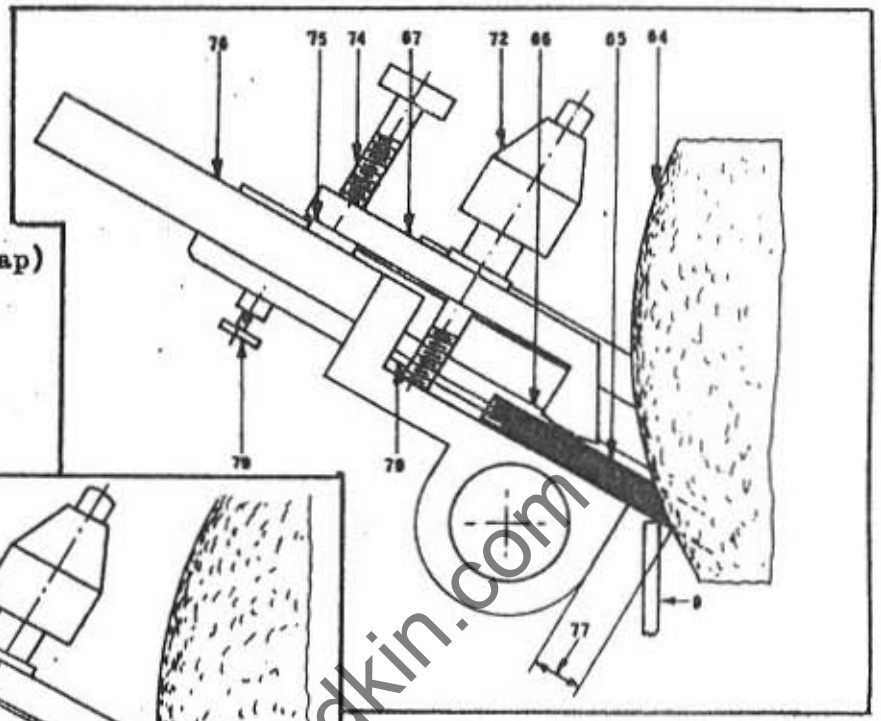
Face	Basic Diameter	Range of diameters used with
a	3"	$2\frac{1}{2}$" - $3\frac{1}{4}$"
b	$4\frac{1}{2}$"	$3\frac{1}{4}$" - $5\frac{1}{4}$"
c	6"	$5\frac{1}{4}$" - $7\frac{1}{2}$"

A supplementary table fastens to each of these by a single screw (ensure that the feet abutt the table edge), these give 30 degree cutting angles for the following:- See Fig.25.

FIG.22.

Method of fitting a cutter to the 'a' face of the Q3S used when grinding shaper cutters with collar diameters 2½-3¼"

76 Q3S Attachment
75 Nylon Contact Pad
74 Standard Levelling Screw
67 Cutter Clamp
72 Clamp Locking Lever
66 Side Fence/Guide
65 Cutter
64 Grinding wheel
8 Cutter Support
77 Minimum cutter projection (gap)
78 Depth stop rod
79 Lockscrew for stop rod.



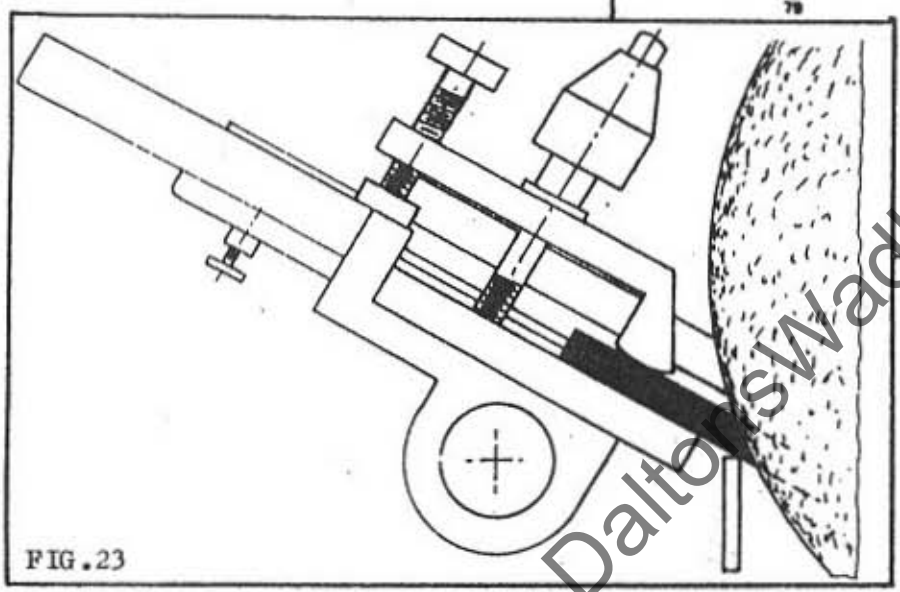


FIG.23

Method of fitting a cutter to the 'b' face of the Q3S used when grinding shaper cutters with collar diameters 3¼-5¼".

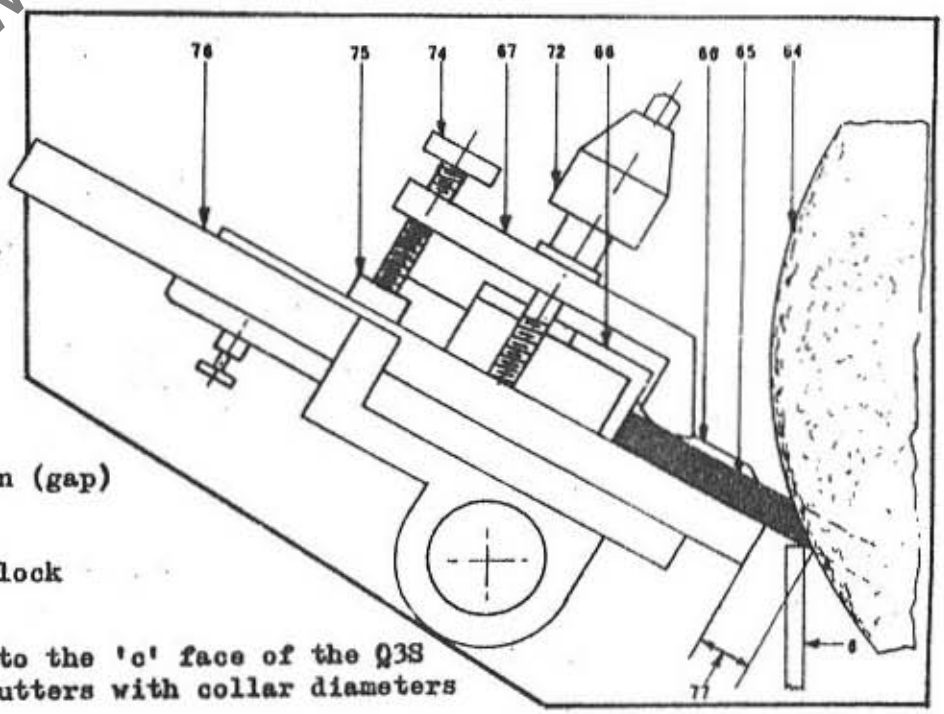


FIG 24.

76 Q3S Attachment
75 Nylon Contact Pad
74 Standard Levelling Screw
67 Cutter Clamp
72 Clamp Locking Lever
66 Side Fence/Guide
65 Cutter
64 Grinding Wheel
8 Cutter Support
77 Minimum cutter projection (gap)
78 Depth stop rod
79 Lockscrew for stop rod
68 Back Fence (from dummy block

Method of fitting a cutter to the 'c' face of the Q3S used when grinding shaper cutters with collar diameters of 5¼"-7½".

FIG.25.

Method of fitting a cutter to the supplementary table on the 'b' face of the Q3S used when grinding shaper cutter with collar diameters 9¼"-10¾". The supplementary table will also fit as faces a & b in the same way.

76 Q3S Attachment
75 Nylon Contact Pad
74 Standard Levelling Screw
67 Cutter Clamp
72 Clamp Locking Lever
66 Side Fence/Guide
65 Cutter
64 Grinding Wheel
8 Cutter Support
77 Minimum cutter projection (gap)
78 Depth stop rod
79 Lockscrew for stop rod
80 Supplementary Table
81 Securing Screw for 80.

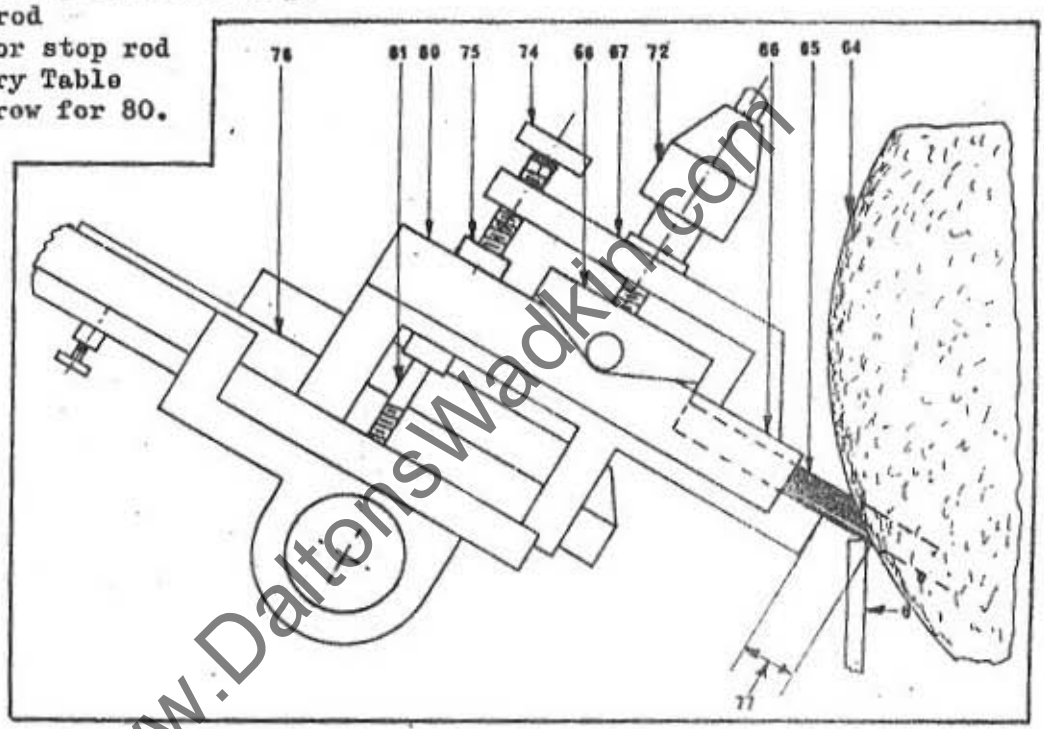


FIG.20.

Fitting the cutter
67 Cutter Clamp
65 Cutter
68 Back Fence

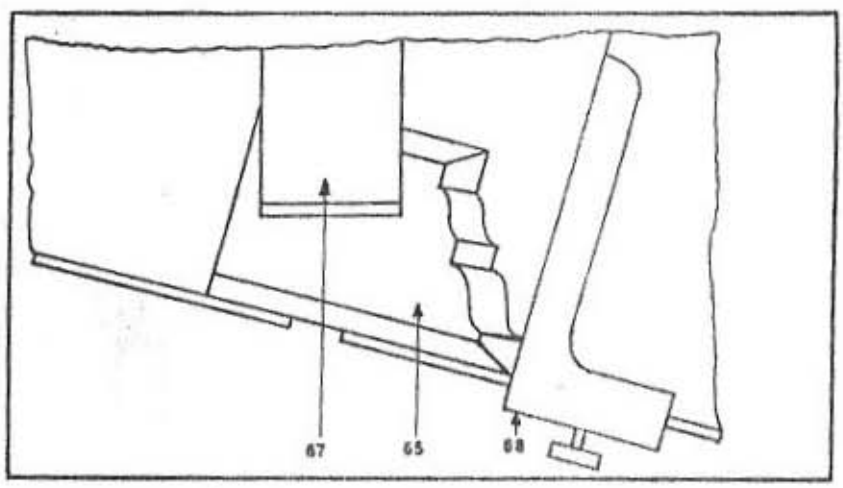


FIG.27

Master Template Manufacture
82 ¼" approx.
83 ¾" approx. - cut-out for stylus sideways alignment
84 Line of Cutter Edge
86 Ball Bearing Follower
87 Top Shaper Collar
65 Cutter
88 Bottom Shaper Collar
89 Setting/safety Pin
H Pin-to-cutting-edge dimension
85 3/4" approx.

NOTE: Cutting edge aligns with ball bearing follower or is 1/8" beyond collar

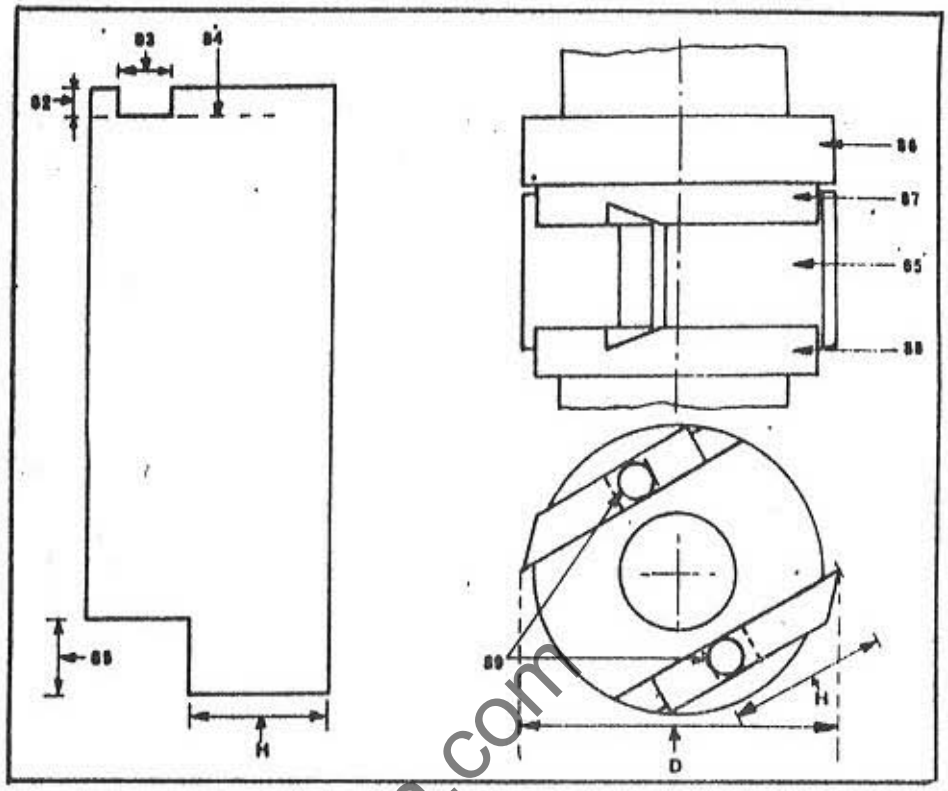


FIG.28.

Mould template manufacture For notch cut-out after grinding first cutter. Total width is 'H' plus mould depth 'C', 'M' is width of mould cutter.

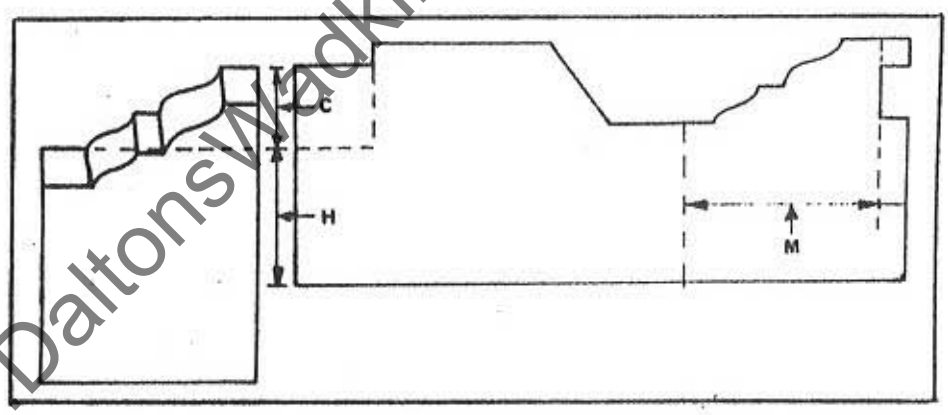


FIG.29.

Method of setting the fence for notching
90 Side Fence L.H.
91 Locating Stud
49 Template
92 Side Fence R.H.
68 Back Fence (common to 93S when profile grinding and the dummy block)