Face	Basic Diameter	Range of diameters used with
a	8½"	7½" - 9¼"
b	10"	9¼" - 10¾"
c	11¼"	10¾" - 14"

In all cases square up the cutter to the side fence before locking in position with the single clamp. On faces a and b set the stop rod against the back of the cutter. On face c and on the supplementary tables locate by a rear fence. Use the long fence on face c. Use the short fence on the supplementary table. The remaining cutter or cutters in the set can then be fitted in exactly the same position.

*NOTE: The gap between the near end of the cutter seating and the grinding wheel at the deepest point of the grind (the minimum cutter projection with shaped cutters) determine the seating angle of the cutter. This should be exactly the same as the cutting angle on the shaper collars to be used. The standard cutting angle for most two-cutter and all three-cutter collars is 30 degrees and the gap for all Q3S seatings is then ½". The cutting angle for two-cutter collars is easily checked by measuring the cutting diameter'B' (collar diameter plus 1/4" or ball-bearing follower diameter) and the cutter spacing C as shown in Fig.32. 'B' is exactly double 'C' when the cutting angle 'A' is 30 degrees. To find the correct gap for cutting angles other than 30 degrees refer to Fig.32. Measure cutter spacing 'C' and trace a horizontal line through the corresponding dimension on the chart. Measure cutting diameter 'B' and trace a vertical line through the corresponding dimension on the chart. Where the two lines cross, trace diagonally down the space to find the cutting angle 'A' and the gap 'D' between cutter seating and grinding wheel - 77 on figs 22-25. The correct face, a,b or c is shown directly above the cutting diameter line, or by referring to previous listings. The example in dotted outline shows 'B' at 3" and 'C' at 1½" to be ground on face 'a' and with a ½" gap to give a 30 degree seating angle. For sizes outside the range given, double both B and C. Read A and D direct.

Failure to use the correct cutter seating face or correct gap will give a slight error in cutting profile depth and in the clearance angle.

When grinding the remaining cutter (s) ensure that they fit accurately against the side and back fences (or stop rods) and do not alter the stylus settings. All cutters will then be dimensionally alike and close to perfect balance.

Cutter Notching

The attachment also allows shaper cutters to be precisely edge-notched to engage against a pin in the shaper collar to give instant cutter setting and safe holding.

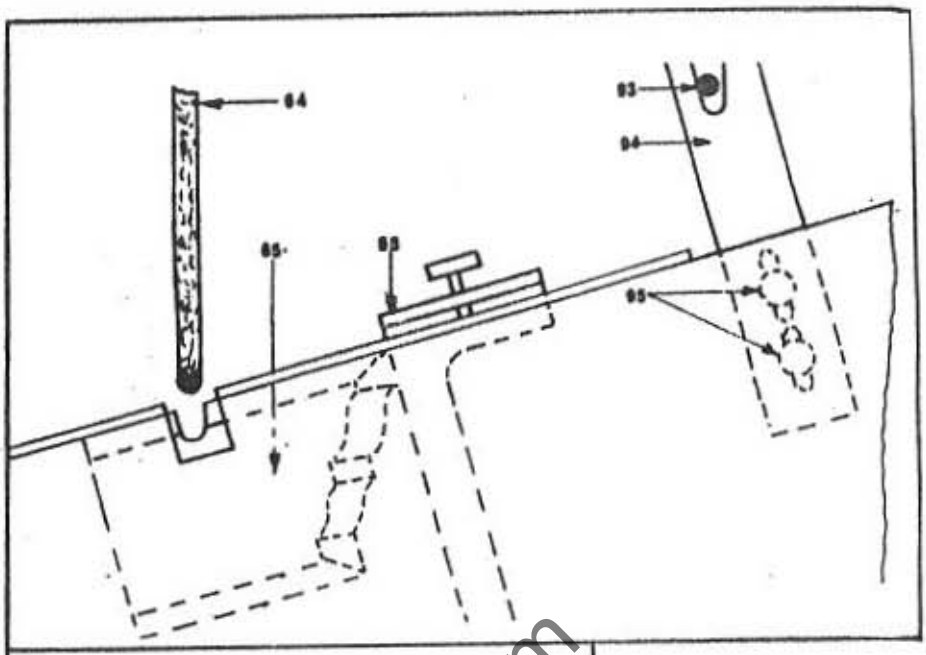
The position of the notch is controlled by a gauge on the template and which varies according to cutter profile and diameter of cutterhead. The notch in the cutter is formed after profiling the cutter, and each time after regrinding.

Template Preparation

Master template - prepare a master template as per fig. 27 for use with straight-edge cutters and when preparing mould templates. Dimension 'H' to form the gauge varies with shaper collar diameter and should be measured from the cutting edge, along the cutter face to the near face of the pin. When used with a ball bearing for shaping, the straight cutting edge should align with the latter. When used for straight profiling only the straight cutting edge normally projects 1/8" beyond the collar. One master template is needed for each size of shaper collar and should be identified accordingly.

FIG.30

Notching the Cutter
64 Grinding Wheel
65 Cutter
68 Back Fence
93 Notch Stylus
94 Notch Template
(can only be adjusted to vary slot depth)
95 Notch Template Securing Screws.



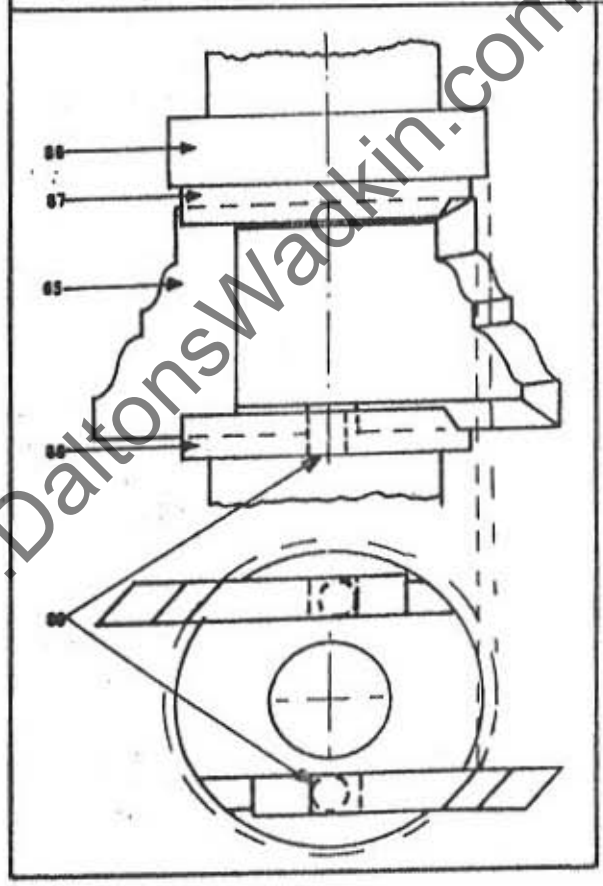


FIG.31.

Fitting the cutters
86 Ball Bearing Follower
87 Top Shaper Collar
65 Cutter
88 Bottom Shaper Collar
89 Setting/Safety Pin

NOTE:

It is possible to use the same cutters between several sets of shaper collars of similar diameter provided the same cutting angle is on each and dimension'H' also remains constant.

Mould template - Measure from the cutter-edge notch as shown in Fig. 28 to set out and form the mould profile. Grind the cutter to profile. Form the gauge at the opposite end of the same template to dimensions 'H' plus the profile depth on the cutter 'C', see Fig. 28.

Setting for Notching

Set the grinding head to read + ½" on the scale and dress the wheel. Use the grinding wheel upright. Place the setting stud (91) in position and butt the gauge part of the template against it, Fig. 29. Remove both stud and template. Place the cutter edge-against the side guide and cutting edge against the fence Fig. 26 - clamp the cutter in place.

NOTE:

It is possible to use the second shorter fence against the back edge of the cutter to square this up.

Turn the attachment completely over to engage the notch template with the notch stylus. Rest the cutter on the cutter support when grinding the notch, fig. 30.

The equipment used for notching is permanently aligned at the factory and should not be disturbed. The only adjustment is to the notch depth by varying the projection of the notch template.

Re-notch cutters each time they are reground.

Fitting Cutters

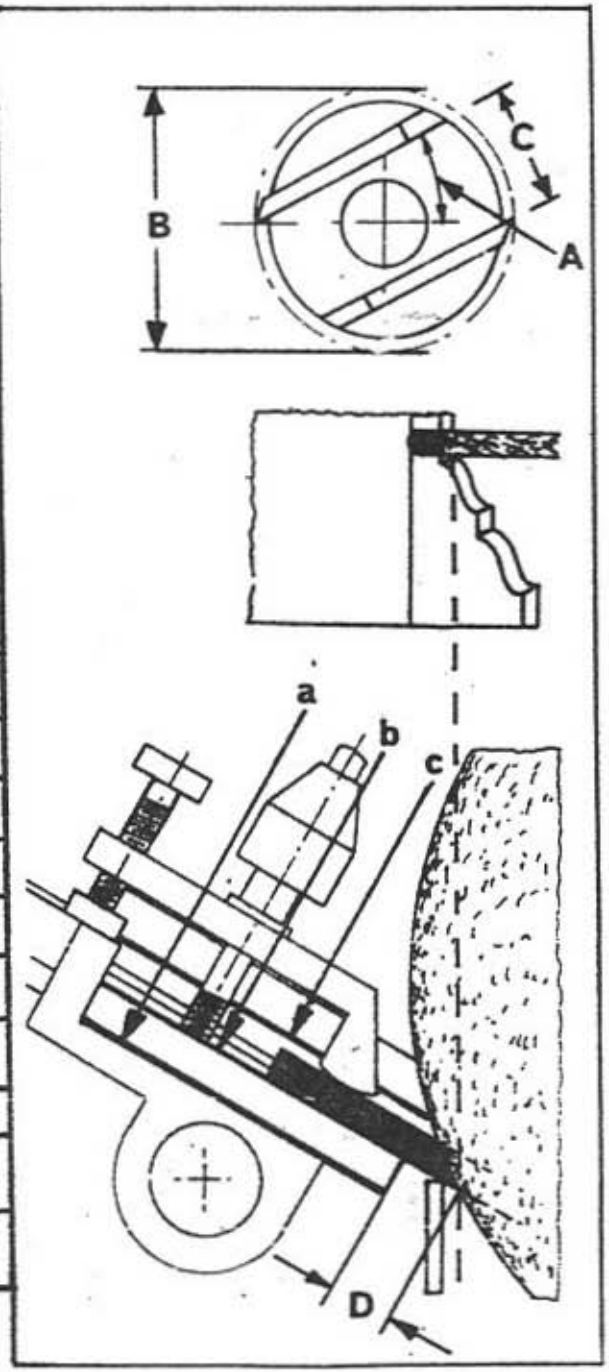
Clean the slots and the pin in the shaper collars. Assemble the collars and the cutters and finger tighten. Push the cutters against the pins, tapping their end with a soft mallet. Tighten in position, see Fig. 31.

FIG.32.

CHART 1

B cutting diameter

	a		b		c			Q3S face
	2 ¼ ½ ¾	3 ¼ ½ ¾	4 ¼ ½ ¾	5 ¼ ½ ¾	6 ¼ ½ ¾	7 ¼ ½ ¾		6 ¼ ½
C cutter spacing								
1 ¼								
⅜								
½								
⅝								
¾								
⅞								
2								
⅛								
¼								
⅜								
½								
⅝								
¾								
⅞								
3								
A cutting angle				34°	30°	27°	24°	22°	19°
D cutter projection				⅛	½	⅞	1⅛	1½	1¾



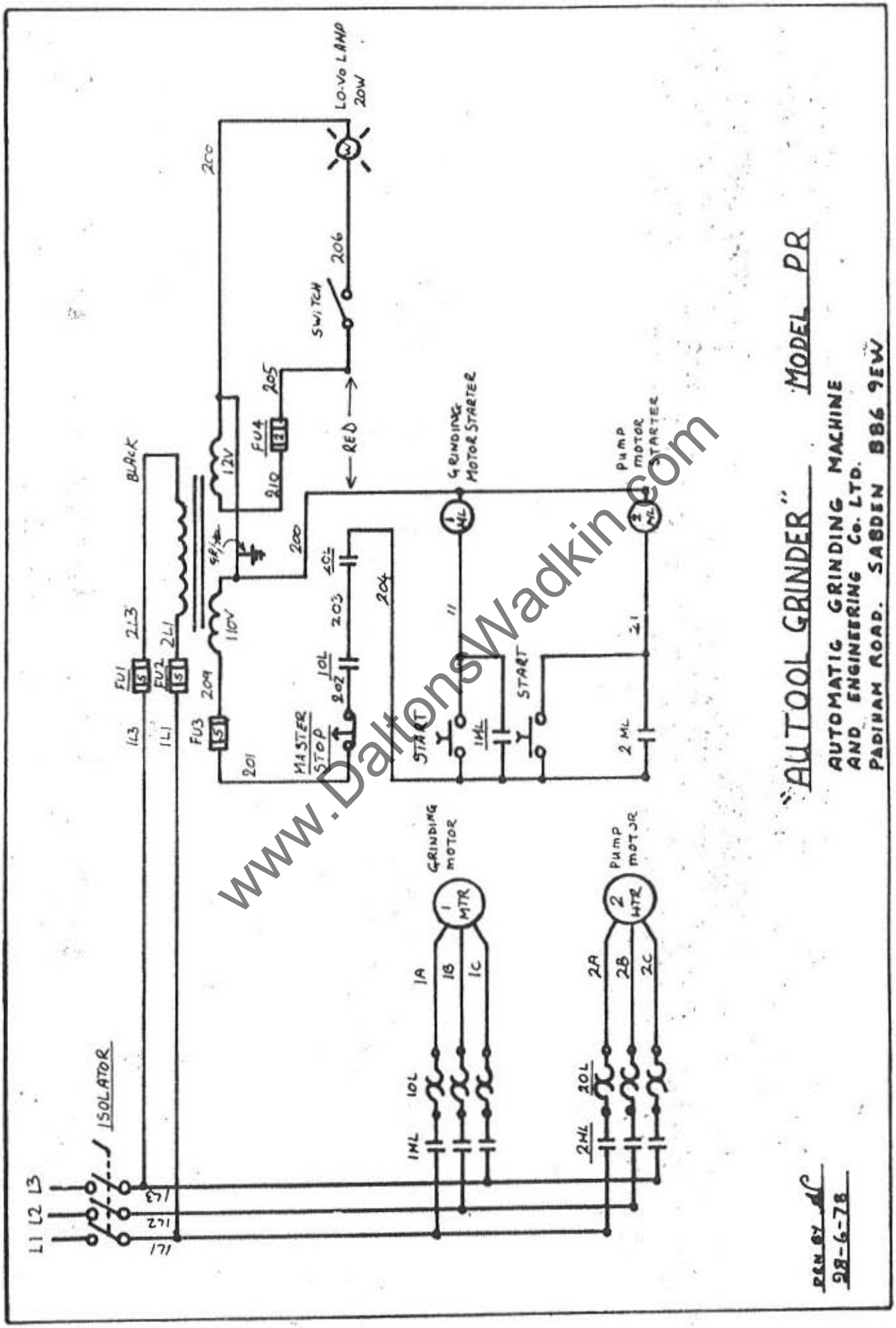


FIG 33.