



DM-42 Gun Drill Sharpening Fixture

Capacity: .750" - 2.125" (19 - 54mm)

The Sterling Gun Drills manual sharpening fixture provides a fast and easy method of sharpening gun drills with the popular facet style grind. Drills of a large diameter range are positioned and ground without the need of expensive bushings or collets. The universal nature of this fixture allows standard or custom grinds.



The Sterling Gun Drills DM-42 Gun Drill Regrinding Fixture consists of three elements:

- 1) The work head with a clamping device to hold a single flute gun drill in position.
- 2) A scale, graduated in degrees to allow the drill to be aligned in the vertical plane. This scale is mounted on the vertical member of the fixture that holds the workhead.
- 3) A scale, graduated in degrees to allow the drill to be aligned in the horizontal plane. This scale is mounted on the fixture base.

Both scales have locking levers to maintain vertical and horizontal positioning, and when used together allow compound angles to be ground on the nose of the drill mounted in the work head.

The fixture is normally used on a tool and cutter grinder equipped with a 11V9 or 11A2 style diamond wheel (120 - 150 grit). The spindle of the grinding wheel will start at 90° to the table slideway. The drill tip will also start at 90° to the table, opposite the spindle.



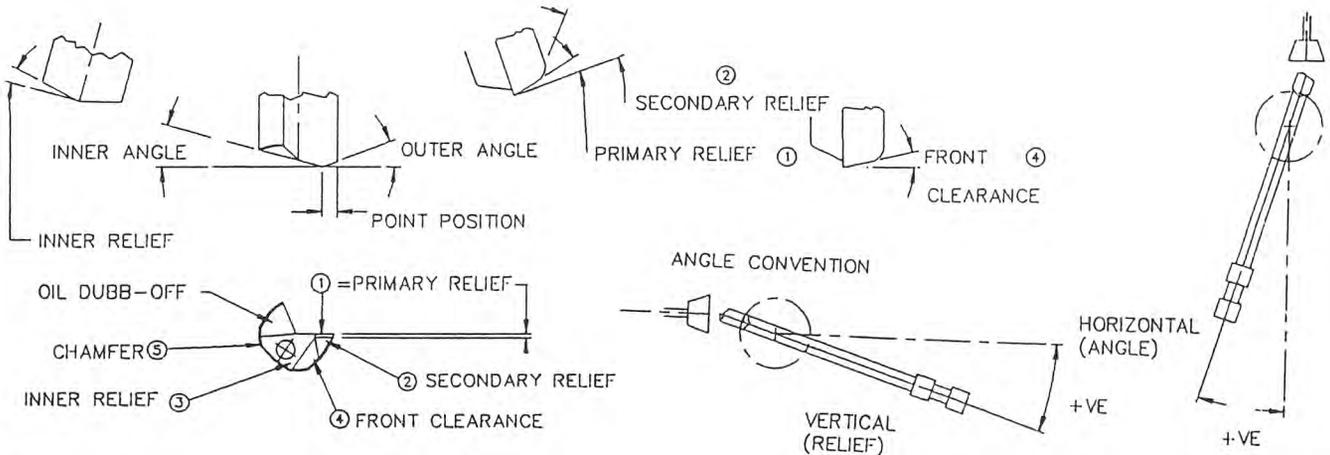
NOSE GRINDS: GUN DRILL



DM-42
Manual Regrind
Fixture

	Gun Drill					
	N-8		N-4		N-13	
	Steel (std.) Facet		Aluminum Facet		Cast Iron Facet	
Grind	Horz.	Vert.	Horz.	Vert.	Horz.	Vert.
1. Outer Primary	+30°	+12°	+15°	+15°	+40°	+12°
2. Outer Secondary	+29½°	+20°	+14½°	+20°	+39°	+25°
3. Inner Relief	-20°	+12°	-20°	+15°	-20°	+12°
Point Position	Dia./4		Dia./4		Dia./4	
4. Front Clearance	0°	+25°	0°	+25°	0°	+30°
Oil Dubb-Off	-25°	-15°	-25°	-15°	-25°	-12°
5. Hand Chamfer	Remove drill and freehand at 20° from the longitudinal axis. End at the rear edge of the primary relief					

Drill Diameter	Chamfer at 20° (5)	Primary Relief (1)	Tolerance of point position
.750" - 1.00"	.035" - .050"	.035" - .050"	± .015"
1.00" - 1.50"	.050" - .075"	.050" - .075"	± .020"
1.50" - 2.12"	.075" - .100"	.075" - .100"	± .025"



REGRINDING INSTRUCTIONS FOR STANDARD NOSE GRINDS**INITIAL SETTING DM-42**

1. Place the fixture on the table of the machine. The base of the fixture has two through slots that clamp the base to the table. Install two through bolts but do not tighten. Position the horizontal (base) register at zero. Indicate front face of the fixture zero to the table movement then tighten the through bolts.
2. Slide the gun drill into the fixture from the rear of workhead. With the top handle, lock on the tube leaving the carbide tip completely clear of the "V" block and clamp. From the front of the fixture, check that the gun drill's cutting face is level and the clamping wedge and flat on the tube. If not level or a gap exists between the wedge and the trailing side of the tube, remove the gun drill and adjust the button head screw in the wedge with a 1/8" hex key in or out to level the drill tip and take up any gap.

With both horizontal and vertical scales set at zero, the drill's flat cutting surface should be parallel to the table.

3. Grind the drill by following steps below for the N-8 nose grind (the most common grind). N-4, N-13 or any custom nose grinds can be ground to your requirements. It is recommended that a dust collection system be used. A cold gun or spraymist is recommended for large diameters.

GRINDING: GUN DRILL N-8 FACET NOSE GRIND

Step 1: Position horizontal register at +30°, vertical register at +12°. Grind until all wear is removed.

Step 2: Position horizontal register at +29°, vertical register at +20°. Grind to establish the primary relief width of approximately 5% of the diameter.

Step 3: Position horizontal register to -20°, vertical register at +12°. Grind to establish the point position width of the drill diameter (Dia./4).

Step 4: Position horizontal register at 0°, vertical register at +25°. Grind front clearance until the triangle created reaches the rear edge of the primary relief.

Step 5: Position horizontal register at -25°, vertical register at -15°. Grind until the triangle formed reaches the center of the tip "V".

Step 6: Remove drill and freehand a periphery chamfer around the radial surface at approx. 20°, stopping just short of the primary relief.