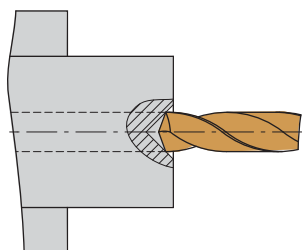
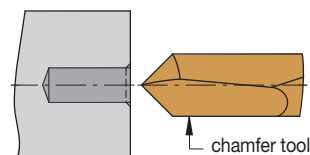
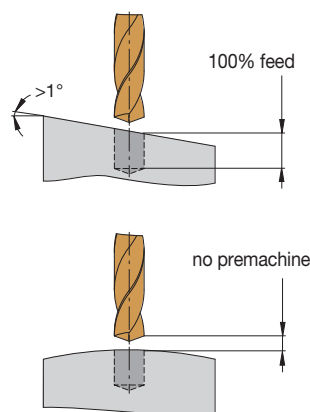


(continued)

**Wrong****Drilling and Chamfering**

Drill into the solid first, then chamfer.

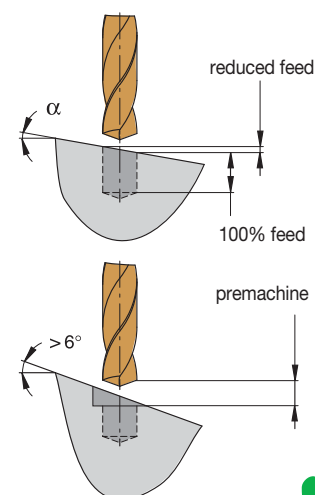
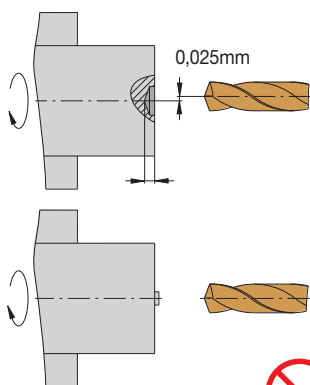
**Correct****Wrong****Drilling on Inclined or Rounded Surfaces**

When drilling on inclined or curved surfaces, use a lower feed than the standard value. The reduction of feed required is dependent on the inclination angle of the workpiece surface and the drill type (see table).

reduced feed (% of standard value)

| inclination<br>$\alpha$ | 3 x D  | 5 x D<br>Long | <5 x D     |
|-------------------------|--------|---------------|------------|
| 1°                      | 100%   | 80%           | premachine |
| 2°                      | 80–50% | 80–50%        | premachine |
| 3°                      | 65%    | 50%           | premachine |
| 4°                      | 50%    | premachine    | premachine |
| 6°                      | 30%    | premachine    | premachine |

Premachining is usually done with an end mill operation.

**Correct****Wrong****Drilling on Turning Machines**

When drilling on turning machines, the drill must be on centre. The tolerance range of the centre position should not exceed  $\pm 0.025\text{mm}$ . On bar-turning lathes, do not drill into centre stub or bur. Cut-off tools must be mounted precisely to eliminate centre stub or bur. Do not drill into pre-existing holes.

**Hole Depths Greater than 3 x D**

Hole depths that are deeper than three times the drill diameter may require a speed reduction. A 15% lower speed is suggested.