Material to be drilled	Recommended Speed, Coolant and Lip Clearance Angle				
	Speed		Coolant	Point Angle	Lip Clearance Angle
	Metres per Minute	Feet per Minute			
Aluminium & Aluminium Alloys	61 - 92	200 - 300	Soluble Oil or Paraffin	118°	12°
Brass	46 - 76	150 - 250	Dry or Soluble Oil	118°	15°
Brass - Leaded	61 - 92	200 - 300	Dry or Soluble Oil	118°	15°
Bronze	30 - 61	100 - 200	Soluble Oil	118°	15°
Bronze - High Tensile	22 - 30	70 - 100	Soluble Oil	118°	15°
Cast Iron - Soft	30 - 46	100 - 150	Dry or use air	90°	12° - 15°
Cast Iron - Malleable	22 - 24	70 - 80	Soluble Oil	118°	10° - 12°
Cast Iron - Hard	15 - 22	50 - 70	Dry or use air	118°	10° - 12°
Cast Iron - Chilled	8 - 11	25 - 35	Soluble Oil	118°	10° - 12°
Copper	30 - 61	100 - 200	Soluble Oil	100°	15°
Magnesium	Up to 122	Up to 400	Soluble Oil or Paraffin	118°	12°
Monel	12 - 15	40 - 50	Soluble Oil or Sulphurised Oil	125°	10° - 12°
Steel - Plate, Bar, Cast, Forged Free Cutting Mild	30 - 61	100 - 200	Soluble Oil or Sulphurised Oil	118°	10° - 12°
Steel - Up to 620 N/mm² (175 HB)	24 - 33	80 - 110	Soluble Oil or Sulphurised Oil	118°	10° - 12°
Steel - >620 N/mm² (175 HB), < 910 N/mm² (250 HB)	14 - 22	45 - 70	Soluble Oil or Sulphurised Oil	118°	10°
Steel - >910 N/mm² (250 HB), <1220 N/mm² (350 HB)	9 - 14	30 - 45	Soluble Oil or Sulphurised Oil	125°	12°
Steel - >1220 N/mm² (350 HB)	5 - 8	15 - 25	Soluble Oil or Sulphurised Oil	130°	10°
Steel - Manganese (Low)	5 - 8	15 - 25	Soluble Oil	130°	10°
Steel - Stainless Free Cutting	15 - 18	50 - 60	Soluble Oil or Sulphurised Oil	118°	10° - 12°
Steel - Tough Grades	6 - 15	20 - 50	Soluble Oil or Sulphurised Oil	130° - 140°	6° - 12°

Recommended Speed, Coolant and Lip Clearance Angle			
Metric Sizes		Imperial Sizes	
Drill Diameter (mm)	Feed per Rev. (mm)	Drill Diameter	Feed per Rev. (inches)
6 - 8	0,10 - 0,25	1/4" - 5/16"	0,004" - 0,010"
>8 - 11	0,15 - 0,30	>5/16" - 7/16"	0,006" - 0,012"
>11 - 14	0,20 - 0,35	>7/16" - 9/16"	0,008" - 0,014"
>14 - 17,5	0,25 - 0,40	>9/16" - 11/16"	0,010" - 0,015"
>17,5 - 20,5	0,30 - 0,45	>11/16" - 13/16"	0,012" - 0,018"
>20,5 - 26,5	0,35 - 0,50	>13/16" - 1 1/16"	0,014" - 0,020"
>26,5 - 38	0,40 - 0,75	>1 1/16" - 1 1/2"	0,016" - 0,030"
>38	0,40 - 0,90	>1-1/2"	0,016" - 0,035"

Feed is an important aspect in successful performance. When drilling a new material, start at the lower end of the recommended feed and increase until optimum results are obtained. Optimum results are the lowest cost in producing the hole, tool life being just one factor. Emphasis should be placed on production rate, with tool life considered a partial cost of production, rather than the end result.

Manufacturers & Suppliers

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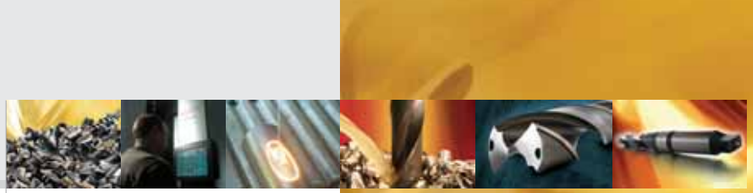


SOMTA
World Class Cutting Tools

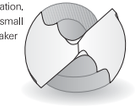
LIGHTHOUSE ADVERTISING

MTS CHIPBREAKER DRILLS

Chipbreaker Drills

The Chipbreaker Concept

This outstanding development increases drill cutting efficiency by means of greatly improved chip control. A chipbreaker rib is positioned along the length of the flutes, which curls and breaks long chip forming material into small manageable chips for easier evacuation. There is no clogging of chips in the flutes, as small chips flow freely along the flutes. The chipbreaker drill thus cuts more freely than standard drills.



The small chips also permit coolant to flow more freely to the drill point, giving improved heat dissipation and drilling performance.
As the chipbreaker rib extends down the entire flute length, the chipbreaker form and effect is retained even after conventional sharpening. The chipbreaker rib gives added rigidity, markedly increasing the number of holes per re-grind, even where chip control is not considered important.

Chipbreaker Coolant Feed Drills

The benefits of providing coolant internally directly to the drill cutting edge include higher cutting speeds (reduced times by up to 75%), higher feed rates, longer tool life (3 to 10 times), and less frequent resharpening. In addition they provide a superior finish.

The coolant assists in clearing chips from the drill point and it's pressure forces the swarf along the flutes of the drill facilitating drilling to greater depths without repeated withdrawal to clear swarf.

Coolant tubes or holes are located away from the drill web, thus not affecting web strength. Both variants connect to all coolant systems.

Coolant can be provided by the normal coolant pump supplied with most machines using soluble oil. However, we recommend using a mist coolant at a pressure of 550 to 800kPa (80 to 120psi). This method is clean and efficient, eliminating the problem of collecting, filtering and re-using the coolant.

Chipbreaker Drill Style Variations

Somta offers a range of Morse Taper Shank Chipbreaker Drills, with variations in point angle, HSS grade and coolant feed options.

Point Styles

118°
The conventional chipbreaker drill point angle is 118°, which is suitable for the majority of high performance applications.

170°
Where through-holes are being drilled and there is a requirement for high operational efficiency without the need for deburring on punch-through, we recommend the use of a 170° brad point angle.


118° Standard Point


170° Brad Point

Coolant Feed Styles

Normal Chipbreaker
This is the usual configuration of the Chipbreaker Drill, which has no coolant feed.

Oil Tube Chipbreaker
Coolant is fed through shank cross holes into oil tubes which are inserted into a groove which runs down the length of the flutes. Oil is fed from the tubes at the outer edge of the point diameter directly onto the workpiece, cooling the workpiece and stimulating small chip evacuation. Because the chipbreaker rib breaks up long stringy chips into small pieces there is no chance of chips snagging and removing the coolant tube.

Oil Hole Chipbreaker
As in the oil tube version, oil is fed into shank cross holes which are connected to internal holes which run down the drill flute length in a helix form.The oil is fed from holes at the drill point onto the workpiece with the same benefits as the oil tube version. The difference with the oil hole version is that the holes at the point are located closer to the centre of the drill. The advantage of the oil hole version is that the helix is located below the surface of the flute, whereas the oil tube is recessed into the flute surface.

Material Types

HSS Material Grades

M2
Most chipbreaker drills are manufactured from M2 standard High Speed Steel material. M2 products have a black oxide steam tempered finish.

M35
We also offer M35 High Speed Steel to extend product life even further due to the superiority of M35 over M2. All M35 products are finished with a Gold Oxide surface treatment to differentiate from the M2 steam tempered finish.

Chipbreaker Product Codes & Features

The following table represents the standard range of Morse Taper Shank Chipbreaker Drills stocked by Somta.

Product Code	Coolant Feed Option	Material (HSS)	Point Style	Flute Form
2A1	None	M2	118° standard	Chipbreaker
2A2	Oil Tube	M2	130° standard	Chipbreaker
2A6	Oil Tube	M35	130° standard	Chipbreaker
2A7	Oil Tube	M35	170° brad	Chipbreaker
270	Oil Hole	M2	130° standard	Chipbreaker
271	Oil Hole	M35	130° standard	Chipbreaker

For ordering, specify the product code followed by a 4 digit code to represent the diameter. For example a 30.5mm diameter oil tube M35 170° point chipbreaker would be ordered as Product Code 2A73050.