












































ICON

LEGEND & DESCRIPTION

| | | | | | | | | | | |
|-------------------|---|---|---|---|---|---|---|---|---|------------------|
| Material | HSS | High Speed Steel | HSS Co5 | 5% Cobalt High Speed Steel | HSS Co8 | 8% Cobalt High Speed Steel | HSS Co8e | 8% Cobalt HSS, Eccentric Relief Sharpening | | |
| | HSS V3 | 3% Vanadium High Speed Steel | SOLID CARBIDE | 9-10% Cobalt, 0.2-0.8 µm Grain size. | CARBON STEEL | Carbon Steel | | | | |
| Finish | BLUE FINISH | Steam (HOMO) Temper | BRIGHT FINISH | No Surface Treatment | BRIGHT FINISH WITH TIN TIP | TIN Coated for a length of 4 x diameter | | | | |
| | GOLD OXIDE | Steam (HOMO) Temper Straw Colour | TiAIN | Titanium Aluminium Nitride (Black Finish) | TIN | Titanium Nitride (Gold Finish) | X.TREME | TiAlN suited to Solid Carbide (Violet -grey Finish) | | |
| Type | TYPE N | Type N Standard | TYPE W | Type W For Soft Materials | TYPE H | Type H For Hard Materials | TYPE FS | Parabolic Flute Strong Core | | |
| | CBA | Colour Band Application | | | | | | | | |
| Milling Profile |  | Staggered Teeth Side & Face Cutters |  | Straight Teeth Side & Face Cutters | | | | | | |
| |  | HR Fine Pitch Knuckle Type Roughing Profile |  | NR Coarse Pitch Knuckle Type Roughing Profile |  | HF Fine Pitch Flat Crest Rough Semi-finishing Profile |  | NF Coarse Pitch Flat Crest Rough Semi-finishing Profile | | |
| Standard | ISO 529 | ISO Standard 529 | DIN 371 | DIN Standard 371 | WORKS STD. | Factory Specifications | | | | |
| | RF | Refined Flute | QS | Quick Spiral | H 7 | Reamer to produce H7 Tolerance | | | | |
| Shank |  | Flatted Shank h6 Tolerance |  | Plain Shank h7 Tolerance |  | Threaded Shank h8 Tolerance |  | Carbide Plain Shank h6 Tolerance | | |
| |  | Morse Taper Shank MT 3 - 5 | | | | | | | | |
| Point Angle |  |  |  |  |  |  |  | Drill Point Angles | | |
| |  | Countersink Angles 60° & 90° | | | | | | | | |
| Lengths |  | Drills Stub Series |  | Drills Jobber Series |  | Drills Long Series |  | Drills Extra Length Series | | |
| |  | End Mills Regular Series |  | End Mills Long Series | | | | | | |
| Flute Helix Angle |  |  |  |  |  |  |  |  |  | Right hand helix |
| |  |  |  | Left hand helix | | | | | | |
| Centre Drills |  | Form A Standard |  | Form B Protected |  | Form R Radius | | | | |
| Inclination |  | To Suit 1 in 10 Taper |  | To Suit 1 in 50 Taper |  | To Suit 1 in 48 Taper | | | | |



ICON

LEGEND & DESCRIPTION

| | | | | | | | |
|-------------|---|----------------------------------|--|--|---------------------|---------------------------|-------------------------------|
| Threads | M Metric | MF Metric Fine | BSW British Standard Whitworth | BSF British Standard Whitworth Fine | | | |
| | UNC Unified National Coarse | UNF Unified National Fine | BSPT British Standard Pipe Taper "F" Series | BSP British Standard Pipe (Fine) "G" Series | | | |
| | NPS National Pipe Straight | NPT National Pipe Taper | BA British Association | BSB British Standard Brass | | | |
| | Thread Form - with 47½°/55°/60° flank angle | | | | | | |
| Tolerance | h8 (d) | h8 | k10 | h10 | k12 | e8 | Tolerance on cutting Diameter |
| | wreS d=h12 | wsd11 d=d11 | Woodruff Tolerance | | rH11 d1=js14 | Corner Rounding Tolerance | |
| Application | LH | Direction of Cut | | | | | |
| | Taper, Through & Blind Hole | Through & Blind Hole | Blind Hole Tapping | Through Hole Tapping | | | |
| | RH | Right Hand Cutting | | | Hand Taps | | |

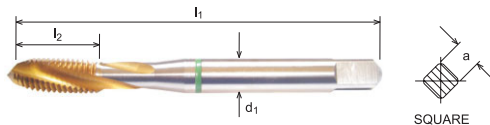
GENERAL






MATERIAL DESCRIPTIONS

| Materials | Code 0 | Code 1 | Code 2 | Code 3 | Code 4 | Code 5 | Code 7 |
|-----------------------|--------|--------|--------|--------|--------|--------|--------|
| Free Cutting Steels | x | x | x | x | x | x | x |
| Carbon Steel | x | x | x | x | x | x | x |
| Alloy Steel | x | x | x | x | x | x | x |
| Stainless Steel | x | x | x | x | x | x | x |
| Heat Resisting Alloys | | x | x | | | | |
| Nimonic Alloys | | | | x | x | x | x |
| Titanium | x | x | x | x | x | x | x |
| Tool Steel | | | | x | x | x | x |
| Cast Irons | x | x | x | x | x | x | x |
| Nickel | x | | | | | | |
| Manganese Steels | | x | x | | | x | x |
| Aluminium Alloys | x | x | x | x | x | x | x |
| Magnesium Alloys | | x | x | | | x | x |
| Zinc Alloys | | | | | | x | x |
| Copper | x | x | x | x | x | x | x |
| Synthetics / Plastics | x | x | x | x | x | x | x |

Green Band Spiral Flute Taps for tapping Carbon Steels



| |
|------------|
| Code |
| 562 |

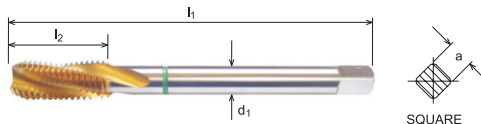
| | | |
|-------------|---|---|
| Properties | | |
| M | DIN 371 | HSSE V3 |
| ISO 2 6H |  |  |
| CBA |  | TIN |




| Size | Pitch | l_1 | l_2 | d_1 | a | No. of Flutes | Code |
|------|-------|-------|-------|-------|-----|---------------|---------|
| M3 | 0.5 | 56 | 11 | 3.5 | 2.7 | 3 | 5620300 |
| M4 | 0.7 | 63 | 13 | 4.5 | 3.4 | 3 | 5620400 |
| M5 | 0.8 | 70 | 16 | 6.0 | 4.9 | 3 | 5620500 |
| M6 | 1.0 | 80 | 19 | 6.0 | 4.9 | 3 | 5620600 |
| M7 | 1.0 | 80 | 19 | 7.0 | 5.5 | 3 | 5620700 |
| M8 | 1.25 | 90 | 22 | 8.0 | 6.2 | 3 | 5620800 |
| M10 | 1.5 | 100 | 24 | 10.0 | 8 | 3 | 5621000 |

| | | |
|--------------------|-----------|--------|
| Suited Materials | | |
| CARBON STEEL | CAST IRON | COPPER |
| FREE CUTTING STEEL | | |

| |
|------------|
| Code |
| 567 |

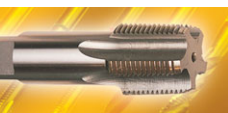
Green Band Spiral Flute Taps for tapping Carbon Steels

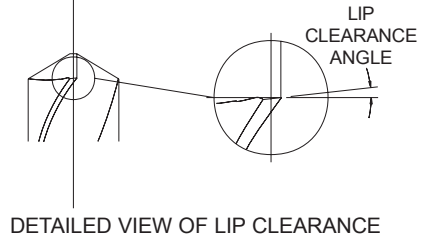
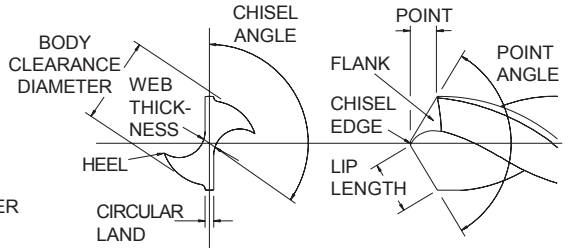
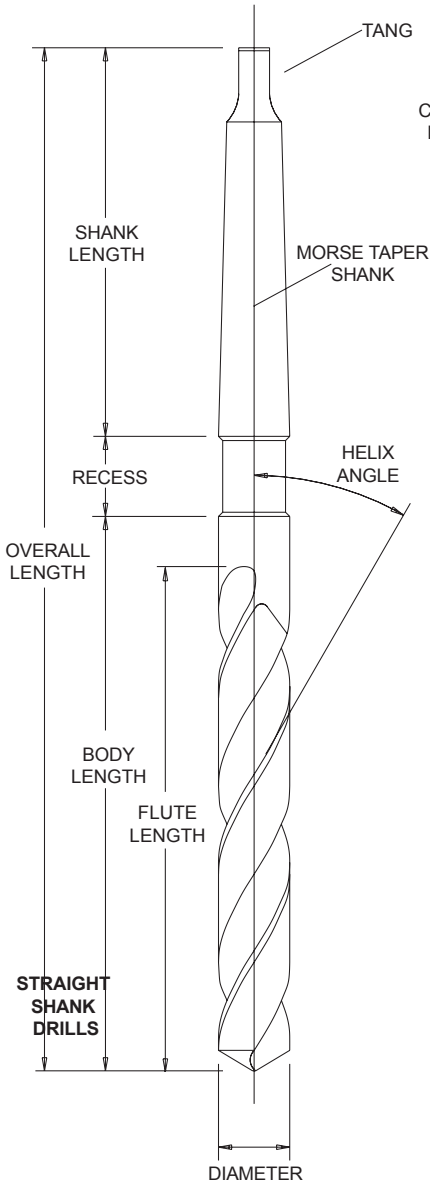


| | | |
|-------------|---|---|
| Properties | | |
| M | DIN 376 | HSSE V3 |
| ISO 2 6H |  |  |
| CBA |  | TIN |

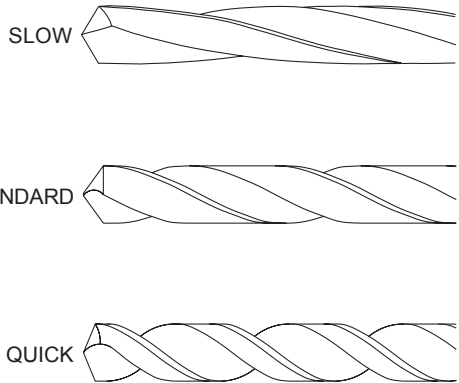
| Size | Pitch | l_1 | l_2 | d_1 | a | No. of Flutes | Code |
|------|-------|-------|-------|-------|------|---------------|---------|
| M3.5 | 0.6 | 56 | 13 | 2.5 | 2.1 | 3 | 5670350 |
| M4 | 0.7 | 63 | 13 | 2.8 | 2.1 | 3 | 5670400 |
| M5 | 0.8 | 70 | 16 | 3.5 | 2.7 | 3 | 5670500 |
| M6 | 1.0 | 80 | 19 | 4.5 | 3.4 | 3 | 5670600 |
| M8 | 1.25 | 90 | 22 | 6.0 | 4.9 | 3 | 5670800 |
| M10 | 1.5 | 100 | 24 | 7.0 | 5.5 | 3 | 5671000 |
| M12 | 1.75 | 110 | 29 | 9.0 | 7 | 3 | 5671200 |
| M14 | 2.0 | 110 | 30 | 11.0 | 9 | 3 | 5671400 |
| M16 | 2.0 | 110 | 32 | 12.0 | 9 | 3 | 5671600 |
| M18 | 2.5 | 125 | 34 | 14.0 | 11 | 4 | 5671800 |
| M20 | 2.5 | 140 | 34 | 16.0 | 12 | 4 | 5672000 |
| M22 | 2.5 | 140 | 34 | 18.0 | 14.5 | 4 | 5672200 |
| M24 | 3.0 | 160 | 38 | 18.0 | 14.5 | 4 | 5672400 |

| | | |
|--------------------|-----------|--------|
| Suited Materials | | |
| CARBON STEEL | CAST IRON | COPPER |
| FREE CUTTING STEEL | | |



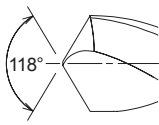


TYPES OF SPIRAL (OR HELIX) ANGLES

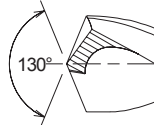
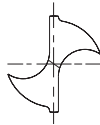


Note : Selecting the correct Drill
Refer to the User Guide for detailed information.

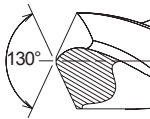
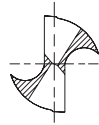
DRILL POINT STYLES



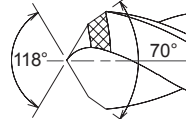
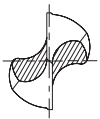
Standard Point



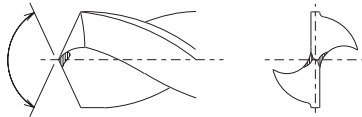
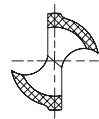
Split Point
Din 1412 Form C



"UX Point"
DIN 1412 TYPE B



Cast Iron Point
"DX Point"
DIN 1412 TYPE D

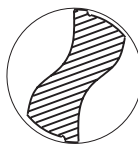


DIN 1412 TYPE A

FLUTE FORMS



- Conventional Web



- Parabolic Flute Form
- Thicker Web



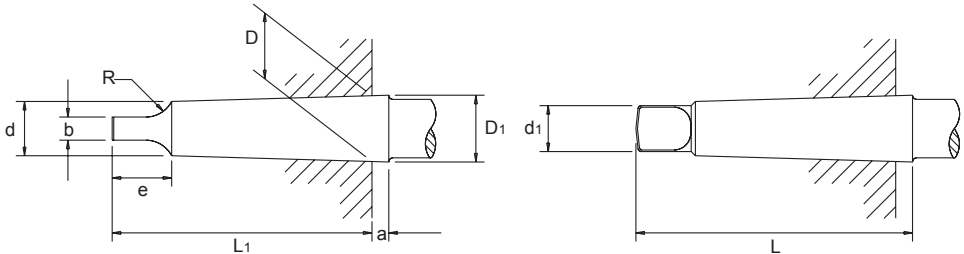
- Chipbreak SHANK DRILLS

Benefits of the Parabolic Flute Form

Heavy web construction increases rigidity under torsional load thus eliminating chatter at the cutting edges which cause edge break down and early failure. The Parabolic drill web is 50-90% thicker than the standard drill, depending on drill diameter.

Wider flute form, together with quicker spiral, promotes better chip removal while allowing easier coolant flow to the drill point.

STANDARD MORSE TAPER SHANK To I.S.O. 296 DIN228 BS1660



| No. of Taper | Fitting line Diameter D | Diameter d | Overall Length Max L | D 1 | a | Max L1 | Max e | H13 b | Max d1 | Taper / mm on Dia | Max R |
|--------------|-------------------------|------------|----------------------|------|-----|--------|-------|-------|--------|-------------------|-------|
| 1 | 12.065 | 9.0 | 65.5 | 12.2 | 3.5 | 62.0 | 13.5 | 5.2 | 8.7 | 0.04998 | 5.0 |
| 2 | 17.780 | 14.0 | 80.0 | 18.0 | 5.0 | 75.0 | 16.0 | 6.3 | 13.5 | 0.04995 | 6.0 |
| 3 | 23.825 | 19.0 | 99.0 | 24.1 | 5.0 | 94.0 | 20.0 | 7.9 | 18.5 | 0.05020 | 7.0 |
| 4 | 31.267 | 25.0 | 124.0 | 31.6 | 6.5 | 117.5 | 24.0 | 11.9 | 24.5 | 0.05194 | 8.0 |
| 5 | 44.399 | 36.0 | 156.0 | 44.7 | 6.5 | 149.5 | 29.0 | 15.9 | 35.7 | 0.05263 | 10.0 |
| 6 | 63.348 | 52.0 | 218.0 | 63.8 | 8.0 | 210.0 | 40.0 | 19.0 | 51.0 | 0.05214 | 13.0 |

HOW TO ORDER SPECIALS

MODIFIED STANDARDS

There are many instances when a special tool (a tool not found in the Somta catalogue or price list) can be manufactured from a standard product. We call this a 'modified standard'. Somta has both the capability and capacity to offer this service which, under normal circumstances, means a short delivery time.

The following are typical drill modifications:

Intermediate Diameters

Standard sizes can be ground down to special diameters and tolerances.

Reduced Overall Lengths

Standard drills can be cut to special lengths.

Drill Points

The standard drill point angle is 118° included. This can be modified to any angle required. Many special

points are available which include web thinning, notch points, split points, double angle points, spur and brad points etc.

Tangs and Flats

Tangs can be produced to DIN, ASA and ISO, also special whistle notch flats on shanks.

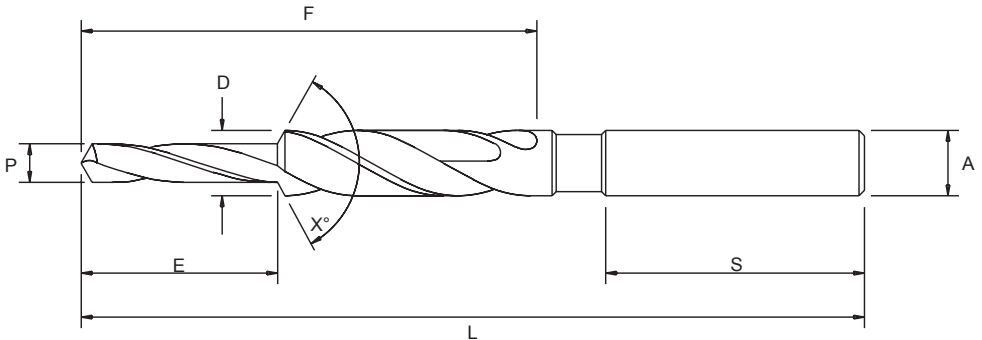
Step Drills

Standard drills can be modified into step drills.

Surface Treatments

A full range of surface treatments including nitriding, stream oxide, chemical blackening, gold oxide and various titanium coatings are available.

MULTIPLE DIAMETER DRILLS



Specify whether drill is to be Step or Subland Type.

D = Diameter of large, fluted section.

P = Diameter of small, fluted section.

A = Shank Diameter.

L = Overall Length.

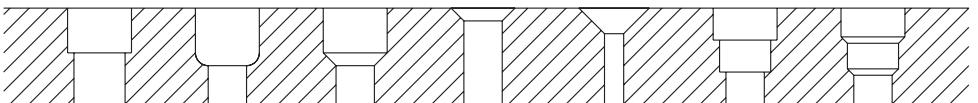
F = Flute Length.

E = Length of Small Diameter. This is measured from the extreme point to the bottom corner of the step angle.

X° = Included angle of the step angle.

S = Shank Length.

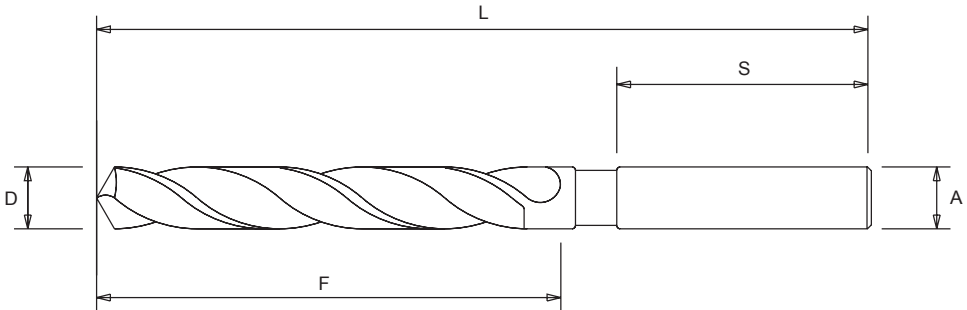
It is possible to drill two or more diameters in a hole on one operation with a correctly designed drill and these are often used in mass production engineering.



Some of the hole types that can be drilled in a single operation.

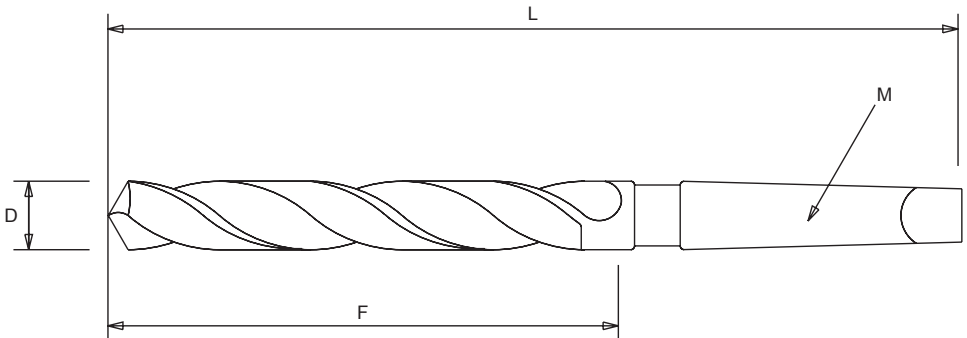
When an intermediate diameter or a non standard length of drill is required, the following diameters and lengths need to be specified.

Straight Shank Drills



D = Drill Diameter
A = Shank Diameter
L = Overall Length
F = Flute Length
S = Shank Length

Morse Taper Shank Drills



D = Drill Diameter
L = Overall Length
F = Flute Length
M = Morse Taper Size