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
	HSSE 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	TiAlN	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	⌀ h6	Flatted Shank h6 Tolerance	⌀ h7	Plain Shank h7 Tolerance	⌀ h8	Threaded Shank h8 Tolerance	⌀ h6	Carbide Plain Shank h6 Tolerance
	MT 3 - 5	Morse Taper Shank						
Point Angle								Drill Point Angles
		Countersink Angles						
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		
Incli-nation	 1:10	To Suit 1 in 10 Taper	 1:50	To Suit 1 in 50 Taper	 1:48	To Suit 1 in 48 Taper		

Continued on next page...

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
	47½°	55°	60°	Thread Form - with 47½°/55°/60° flank angle				
Tolerance	∅ h8 (d)	∅ h8	∅ k10	∅ h10	∅ k12	∅ e8	Tolerance on cutting Diameter	
	∅ w=e8 d=h12	∅ w=d11 d=d11	Woodruff Tolerance				∅ r=H11 d1=js14	Corner Rounding Tolerance
Application						Direction of Cut		
	Taper, Through & Blind Hole			Through & Blind Hole		Blind Hole Tapping		Through Hole Tapping
	LH	Left Hand Cutting		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 Carbon Steel Alloy Steel	x x x	x x x	x x x	x x x	x x 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 Magnesium Alloys Zinc Alloys	x	x x	x x	x	x	x x x	x x x
Copper	x	x	x	x	x	x	x
Synthetics / Plastics	x	x	x	x	x	x	x

Yellow Band Spiral Flute Taps for tapping Aluminium

Code

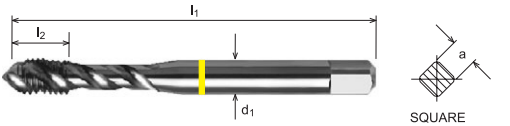
558

Properties

M	**DIN 371**	**HSSE V3**
ISO 2 6H	60°	40°
CBA		
	RH	BRIGHT FINISH

Suited Materials

ALUMINIUM	COPPER	SOFT BRASS
FREE CUTTING STEEL		



Size	Pitch	l_1	l_2	d_1	a	No. of Flutes	Code
M3	0.5	56	5	3.5	2.7	2	5580300
M4	0.7	63	7	4.5	3.4	2	5580400
M5	0.8	70	8	6	4.9	2	5580500
M6	1.0	80	10	6	4.9	2	5580600
M8	1.25	90	12.5	8	6.2	2	5580800
M10	1.5	100	15	10	8	3	5581000

Yellow Band Spiral Flute Taps for tapping Aluminium

Code

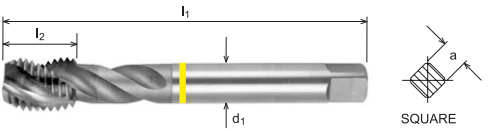
569

Properties

M	**DIN 376**	**HSSE V3**
ISO 2 6H	60°	40°
CBA		
	RH	BRIGHT FINISH

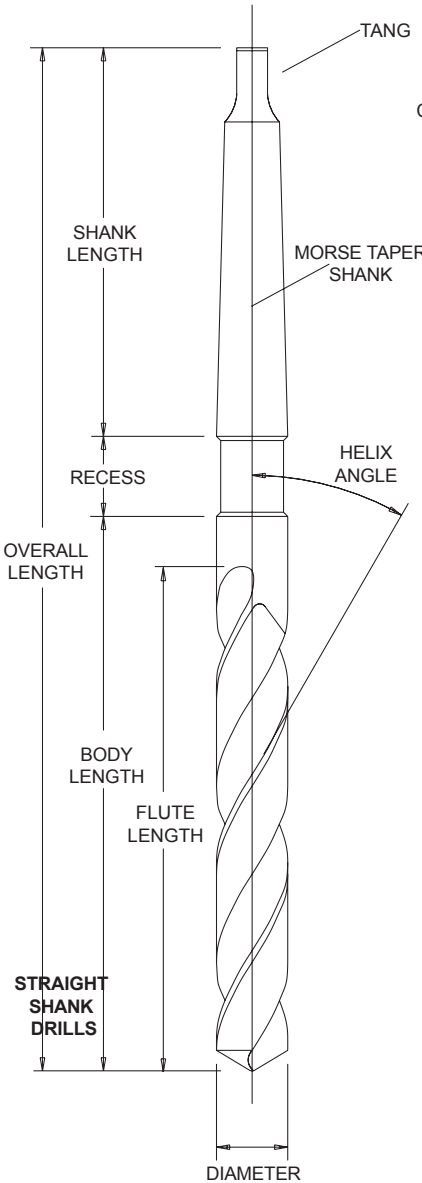
Suited Materials

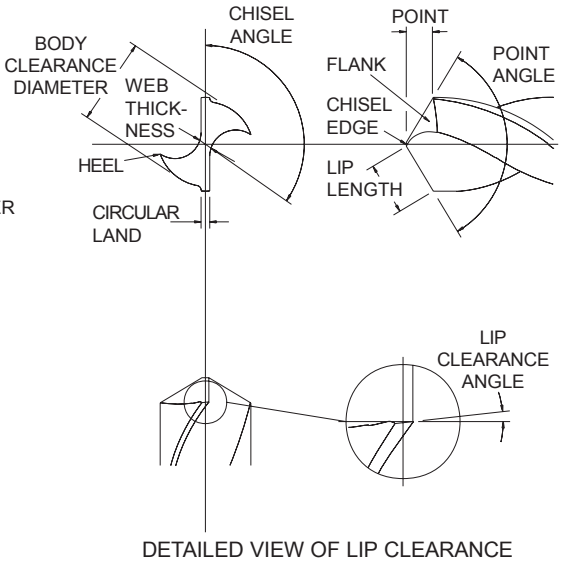
ALUMINIUM	COPPER	SOFT BRASS
FREE CUTTING STEEL		



Size	Pitch	l_1	l_2	d_1	a	No. of Flutes	Code
M12	1.75	110	17.5	9	7	3	5691200
M14	2	110	20	11	9	3	5691400
M16	2	110	20	12	9	3	5691600
M18	2.5	125	25	14	11	3	5691800
M20	2.5	140	25	16	12	3	5692000
M22	2.5	140	25	18	14.5	3	5692200
M24	3	160	30	18	14.5	3	5692400

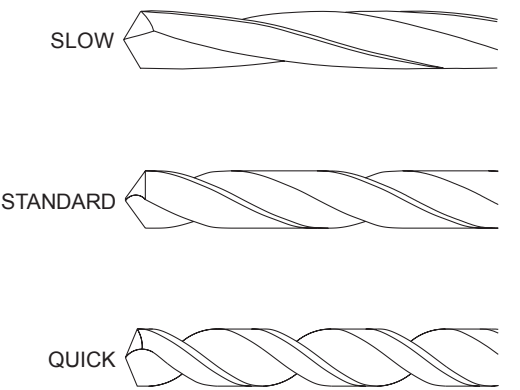
Drill Terminology





DETAILED VIEW OF LIP CLEARANCE

TYPES OF SPIRAL (OR HELIX) ANGLES

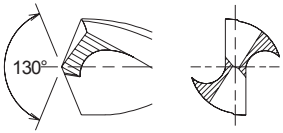


Note : Selecting the correct Drill
Refer to the User Guide for detailed information.

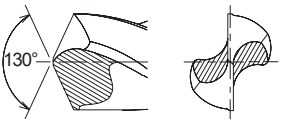
Drill Terminology

DRILL POINT STYLES

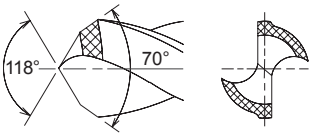
Standard Point



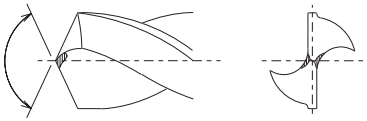
Split Point
Din 1412 Form C



"UX Point"
DIN 1412 TYPE B



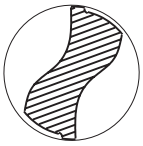
Cast Iron Point
"DX Point"
DIN 1412 TYPE D



DIN 1412 TYPE A

FLUTE FORMS

- Conventional Web



- Parabolic Flute Form
- Thicker Web

- Chipbreaker

STRAIGHT SHANK DRILLS

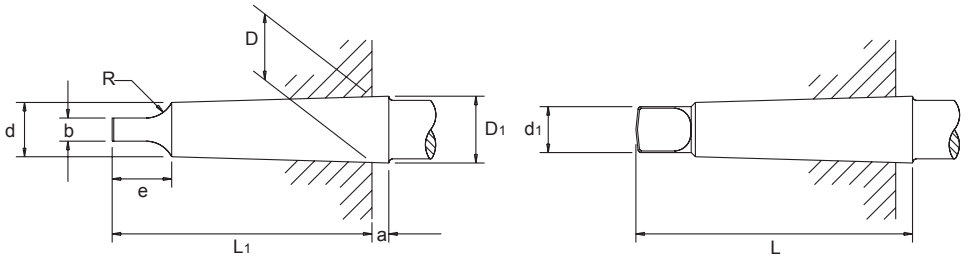
Benefits of the Parabolic Flute Form

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.

Drill Terminology

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 manfactured 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

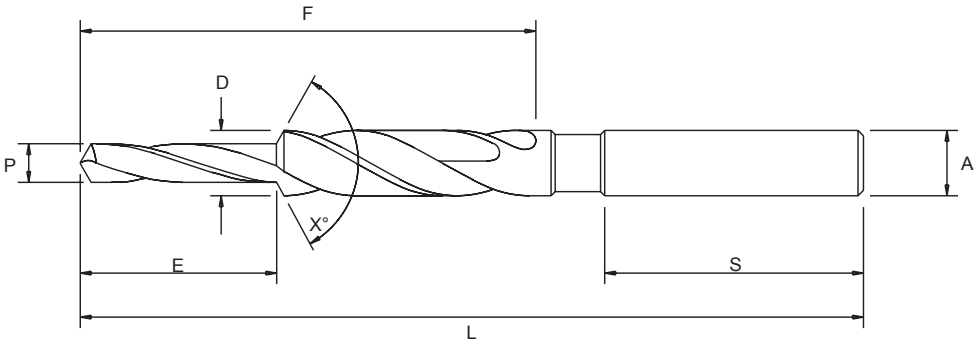
points are available which include web thinning, notch points, split points, double angle points, spur and brad points etc.

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.

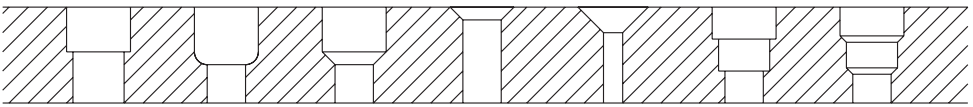
Surface Treatments
A full range of surface treatments including nitriding, stream oxide, chemical blackening, gold oxide and various titanium coatings are available.

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.

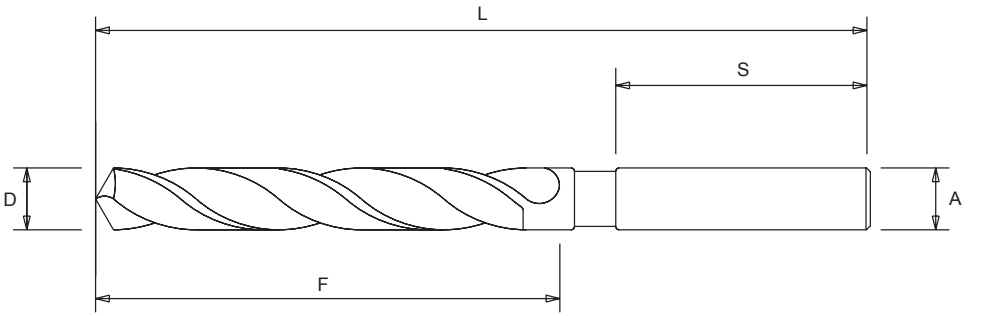


Some of the hole types that can be drilled in a single operation.

Drill Terminology

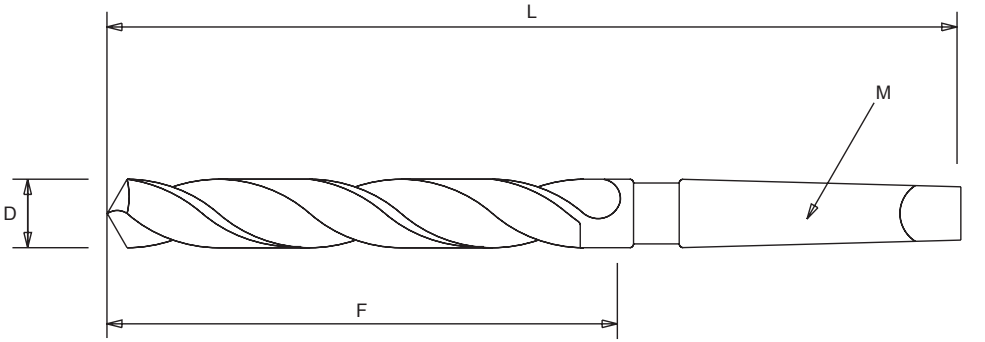
When an intermediate diameter or a non standard length of drill is required, the following diameters and lengths need to specified.

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