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

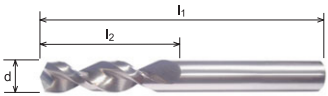
Threads	**M**	Metric	**MF**	Metric Fine	**BSW**	British Standard Whitworth	**BSF**	British Standard Whitworth Fine
	UNC	Unified National Coarse	**UNF**	Unified National Fine	**BSPT**	British Standard Pipe Taper "F" Series	**BSP**	British Standard Pipe (Fine) "G" Series
	NPS	National Pipe Straight	**NPT**	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

UDL Stub Drills - Long Chip



d	mm Equiv	l2	l1	Code
1.0		6	26	1630100
No.60	1.016	6	26	1630102
No.59	1.041	6	26	1630104
No.58	1.067	7	28	1630107
No.57	1.092	7	28	1630109
1.1		7	28	1630110
No.56	1.181	8	30	1630118
3/64”	1.191	8	30	1630119
1.2		8	30	1630120
1.3		8	30	1630130
No.55	1.321	8	30	1630132
No.54	1.397	9	32	1630139
1.4		9	32	1630140
1.5		9	32	1630150
No.53	1.511	10	34	1630152
1/16”	1.588	10	34	1630159
1.6		10	34	1630160
No.52	1.613	10	34	1630161
No.51	1.702	10	34	1630169
1.7		10	34	1630170
No.50	1.778	11	36	1630178
1.8		11	36	1630180
No.49	1.854	11	36	1630185
1.9		11	36	1630190
No.48	1.930	12	38	1630193
5/64”	1.984	12	38	1630198
No.47	1.994	12	38	1630199
2.0		12	38	1630200
No.46	2.057	12	38	1630206
No.45	2.083	12	38	1630208
2.1		12	38	1630210
No.44	2.184	13	40	1630218
2.2		13	40	1630220
No.43	2.261	13	40	1630226
2.3		13	40	1630230
No.42	2.375	14	43	1630237
3/32”	2.381	14	43	1630238
2.4		14	43	1630240
No.41	2.438	14	43	1630244
No.40	2.489	14	43	1630249
2.5		14	43	1630250
No.39	2.527	14	43	1630253
No.38	2.578	14	43	1630258
2.6		14	43	1630260
No.37	2.642	14	43	1630264
2.7		16	46	1630270
No.36	2.705	16	46	1630271
7/64”	2.778	16	46	1630278
No.35	2.794	16	46	1630279
2.8		16	46	1630280

d	mm Equiv	l2	l1	Code
No.34	2.819	16	46	1630282
No.33	2.870	16	46	1630287
2.9		16	46	1630290
No.32	2.976	16	46	1630295
3.0		16	46	1630300
No.31	3.048	18	49	1630305
3.1		18	49	1630310
1/8”	3.175	16	46	1630318
3.2		18	49	1630320
No.30	3.264	18	49	1630326
3.3		18	49	1630330
3.4		20	52	1630340
No.29	3.454	18	49	1630345
3.5		20	52	1630350
9/64”	3.572	20	52	1630357
3.6		20	52	1630360
No.27	3.658	20	52	1630366
3.7		20	52	1630370
No.26	3.734	20	52	1630373
No.25	3.797	22	55	1630379
3.8		22	55	1630380
No.24	3.861	22	55	1630386
3.9		22	55	1630390
No.23	3.912	22	55	1630391
5/32”	3.969	22	55	1630397
No.22	3.988	22	55	1630399
4.0		22	55	1630400
No.21	4.039	22	55	1630404
No.20	4.089	22	55	1630409
4.1		22	55	1630410
4.2		22	55	1630420
No.19	4.216	22	55	1630422
4.3		24	58	1630430
No.18	4.305	24	58	1630431
11/64”	4.366	24	58	1630437
No.17	4.394	24	58	1630439
4.4		24	58	1630440
No.16	4.496	24	58	1630449
4.5		24	58	1630450
No.15	4.572	24	58	1630457
4.6		24	58	1630460
3/16”	4.762	26	62	1630476
No.12	4.800	26	62	1630479
4.8		26	62	1630480
No.11	4.851	26	62	1630485
4.9		26	62	1630490
No.10	4.915	26	62	1630492
No.9	4.978	26	62	1630498
5.0		26	62	1630500
No.8	5.055	26	62	1630506

Code

163

Properties

M INCH WIRE LETTER | DIN 1897 | HSS Co5

TYPE FS | 130°

h8 | 40° | BRIGHT FINISH

STANDARD POINT sizes below 1.5 mm

SPLIT POINT 1.5 mm and above

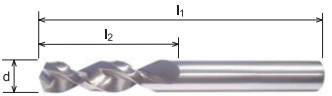
Suited Materials

CARBON STEEL | ALLOY STEEL | ALUMINIUM

GENERAL

STRAIGHT SHANK DRILLS

UDL Stub Drills - Long Chip



Code

163

Properties

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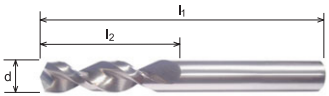
GENERAL

STRAIGHT SHANK DRILLS

d	mm Equiv	l_2	l_1	Code
... from previous page				
5.1		26	62	1630510
No.7	5.105	26	62	1630511
13/64"	5.159	26	62	1630516
No.6	5.182	26	62	1630518
5.2		26	62	1630520
No.5	5.220	26	62	1630522
5.3		26	62	1630530
No.4	5.309	28	66	1630532
5.4		28	66	1630540
No.3	5.410	28	66	1630541
5.5		28	66	1630550
7/32"	5.556	28	66	1630556
5.6		28	66	1630560
No.2	5.613	28	66	1630561
5.7		28	66	1630570
No.1	5.791	28	66	1630579
5.8		28	66	1630580
5.9		28	66	1630590
LTR.A	5.944	28	66	1630594
15/64"	5.953	28	66	1630595
6.0		28	66	1630600
LTR.B	6.045	31	70	1630605
6.1		31	70	1630610
LTR.C	6.147	31	70	1630615
6.2		31	70	1630620
LTR.D	6.248	31	70	1630625
6.3		31	70	1630630
LTR.E	6.350	31	70	1630634
1/4"	6.350	31	70	1630635
6.4		31	70	1630640
6.5		31	70	1630650
LTR.F	6.528	31	70	1630653
6.6		31	70	1630660
LTR.G	6.629	31	70	1630663
6.7		31	70	1630670
LTR.H	6.756	34	74	1630676
17/64"	6.747	34	74	1630677
6.8		34	74	1630680
6.9		34	74	1630690
LTR.I	6.909	34	74	1630691
7.0		34	74	1630700
LTR.J	7.036	34	74	1630704
7.1		34	74	1630710
LTR.K	7.137	34	74	1630713
9/32"	7.144	34	74	1630714
7.2		34	74	1630720
7.3		34	74	1630730
LTR.L	7.366	34	74	1630737
7.4		34	74	1630740

d	mm Equiv	l_2	l_1	Code
LTR.M	7.493	34	74	1630749
7.5		34	74	1630750
19/64"	7.541	37	79	1630754
7.6		37	79	1630760
LTR.N	7.671	37	79	1630767
7.7		37	79	1630770
7.8		37	79	1630780
7.9		37	79	1630790
5/16"	7.938	37	79	1630794
8.0		37	79	1630800
LTR.O	8.026	37	79	1630803
8.1		37	79	1630810
8.2		37	79	1630820
LTR.P	8.204	37	79	1630821
8.3		37	79	1630830
21/64"	8.334	37	79	1630833
8.4		37	79	1630840
LTR.Q	8.433	37	79	1630843
8.5		37	79	1630850
8.6		40	84	1630860
LTR.R	8.611	40	84	1630861
8.7		40	84	1630870
11/32"	8.731	40	84	1630873
8.8		40	84	1630880
LTR.S	8.839	40	84	1630884
8.9		40	84	1630890
9.0		40	84	1630900
LTR.T	9.093	40	84	1630909
9.1		40	84	1630910
23/64"	9.128	40	84	1630913
9.2		40	84	1630920
9.3		40	84	1630930
LTR.U	9.347	40	84	1630935
9.4		40	84	1630940
9.5		40	84	1630950
3/8"	9.525	43	89	1630953
LTR.V	9.756	43	89	1630958
9.6		43	89	1630960
9.7		43	89	1630970
9.8		43	89	1630980
LTR.W	9.804	43	89	1630981
9.9		43	89	1630990
25/64"	9.922	43	89	1630992
10.0		43	89	1631000
LTR.X	10.084	43	89	1631008
10.2		43	89	1631020
LTR.Y	10.262	43	89	1631026
13/32"	10.319	43	89	1631032
LTR.Z	10.490	43	89	1631049
10.5		43	89	1631050

UDL Stub Drills - Long Chip



d	mm Equiv	l2	l1	Code
... from previous page				
27/64”	10.716	47	95	1631072
10.8		47	95	1631080
11.0		47	95	1631100
7/16”	11.112	47	95	1631111
11.2		47	95	1631120
11.5		47	95	1631150

d	mm Equiv	l2	l1	Code
29/64”	11.509	47	95	1631151
12.0		51	102	1631200
31/64”	12.303	51	102	1631229
12.5		51	102	1631250
1/2”	12.700	51	102	1631269
13.0		51	102	1631300

Code

163

Properties

M INCH WIRE LETTER | DIN 1897 | HSS Co5

TYPE FS | 130° | h8 | 40° | BRIGHT FINISH

STANDARD POINT sizes below 1.5 mm

SPLIT POINT 1.5 mm and above

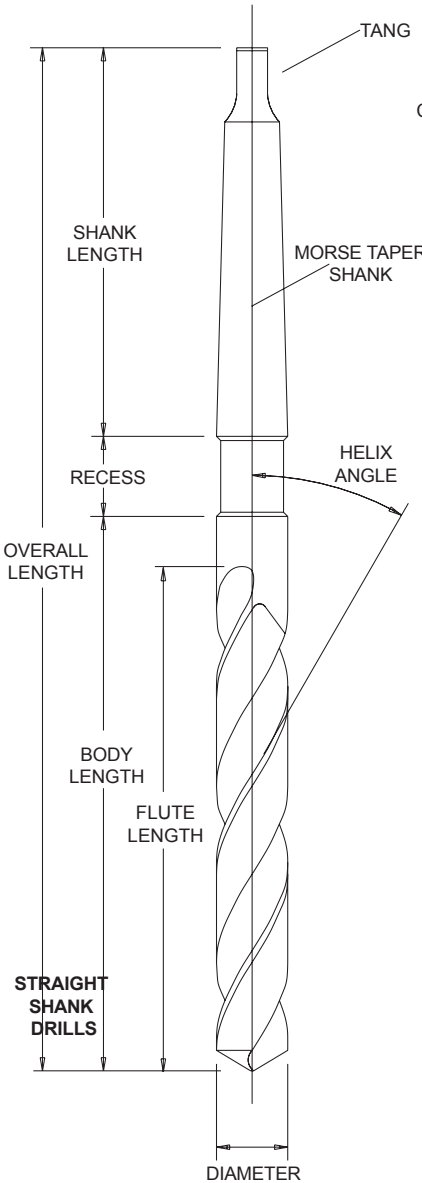
Suited Materials

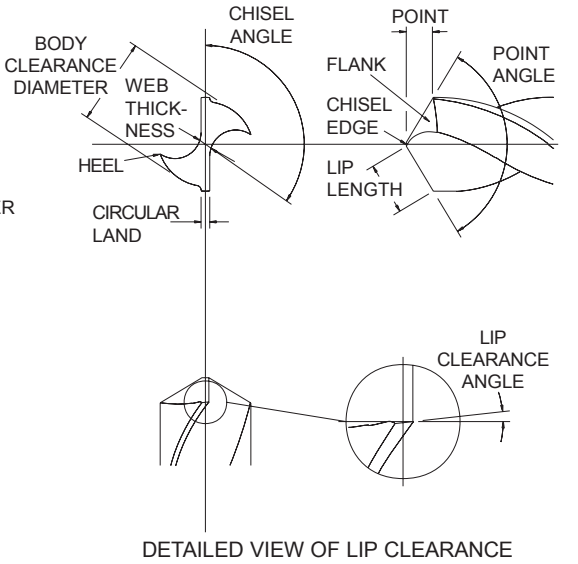
CARBON STEEL | ALLOY STEEL | ALUMINIUM

GENERAL

STRAIGHT SHANK DRILLS

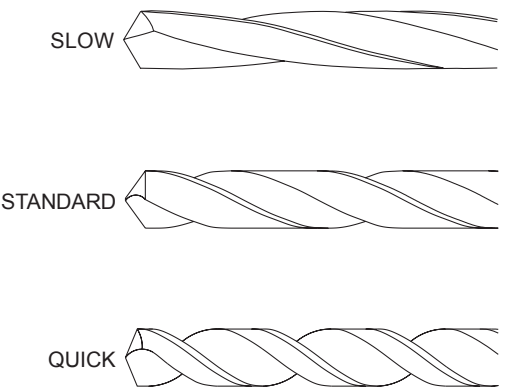
Drill Terminology





DETAILED VIEW OF LIP CLEARANCE

TYPES OF SPIRAL (OR HELIX) ANGLES

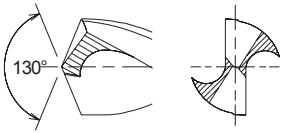


Note : Selecting the correct Drill
Refer to the User Guide for detailed information.

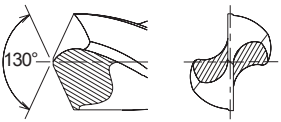
Drill Terminology

DRILL POINT STYLES

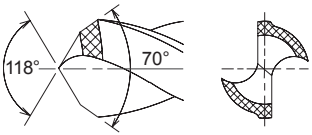
Standard Point



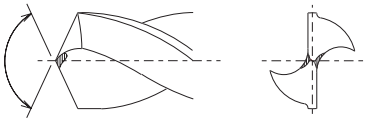
Split Point
Din 1412 Form C



"UX Point"
DIN 1412 TYPE B



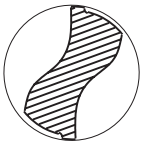
Cast Iron Point
"DX Point"
DIN 1412 TYPE D



DIN 1412 TYPE A

FLUTE FORMS

- Conventional Web



- Parabolic Flute Form
- Thicker Web

- Chipbreaker

STRAIGHT SHANK DRILLS

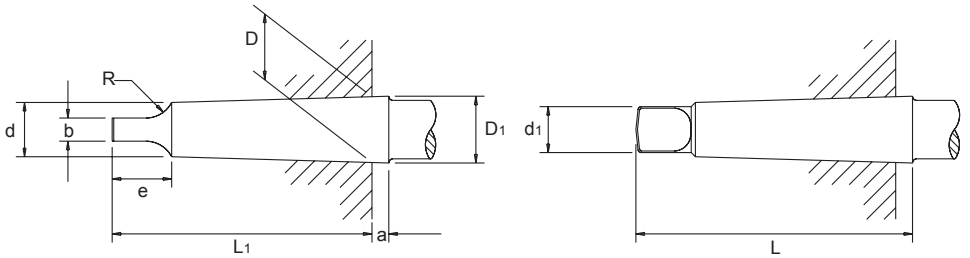
Benefits of the Parabolic Flute Form

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

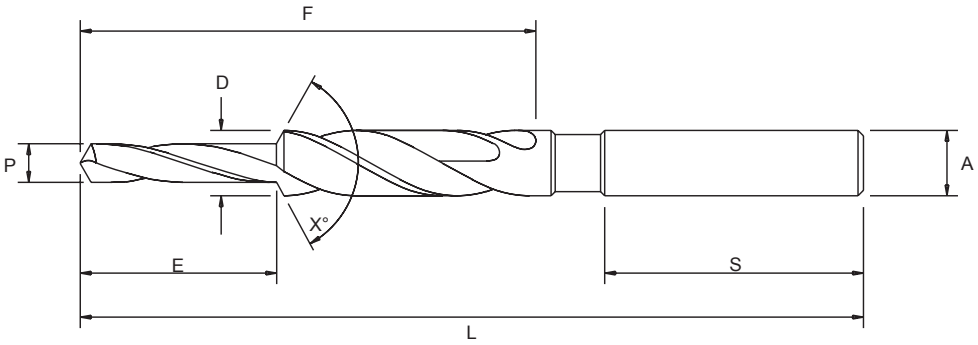
points are available which include web thinning, notch points, split points, double angle points, spur and brad points etc.

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.

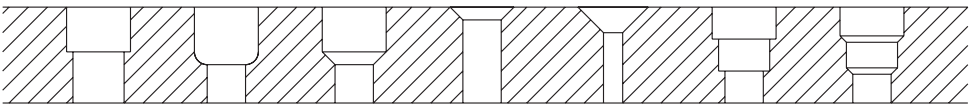
Surface Treatments
A full range of surface treatments including nitriding, stream oxide, chemical blackening, gold oxide and various titanium coatings are available.

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.

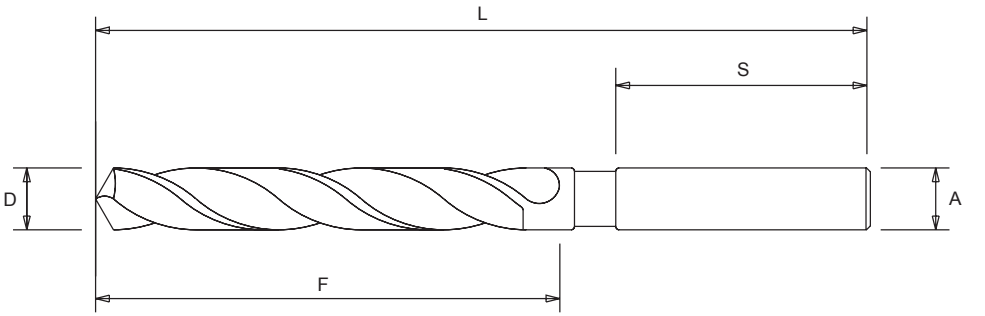


Some of the hole types that can be drilled in a single operation.

Drill Terminology

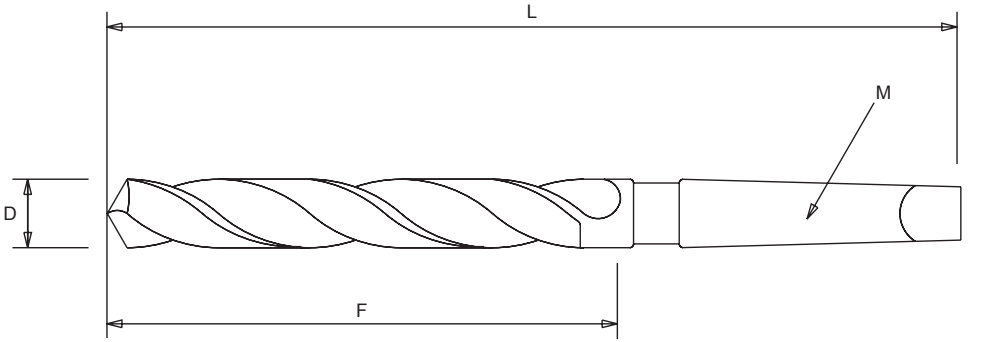
When an intermediate diameter or a non standard length of drill is required, the following diameters and lengths need to specified.

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