BPT
BIRLA
PRECISION

DAGGER BRAND®
SINCE 1937

PRECISION CUTTING & GRIPPING

CATALOGUE | सूची

Indian Tool Manufacturers (ITM) - A division of Birla Precision Technologies Ltd, pioneered in the year 1937, the manufacturer and supply of High Speed Steel Cutting Tools in India. Intensive research and development work has been an integral part of ITM's total operation on a continuous basis.

ITM products popularly known as "Dagger Brand" made from the finest High Speed Steel and conforming to stringent international standards are now exported to the European and American Markets apart from being sold throughout India through an extensive Distribution Network.

An extensive range of High Speed Steel Cutting Tools in various grades (M2, M35, M42 & T42) and a catalogue product range of various types of Drills, an assortment of Milling Cutters, Reamers, Taps and Tool Bits are manufactured in ITM's two well equipped units in Maharashtra having ISO 9001:2015 certification. The first plant in Nashik where mainly special tools are manufactured as per customer requirement and the second plant at Aurangabad, manufacturing standard catalogue items.

ITM have established a wide marketing network of branches/resident representatives/Distributors/Dealers at AHMEDABAD, BANGALORE, BARODA, BHOPAL, CHENNAI, DELHI, INDORE, JAMSHEDPUR, KOLKATA, KANPUR, LUDHIANA, MUMBAI, PUNE, and SECUNDERABAD.

ISO 0991 : 2000

Cert. No. 04 100 2002 0841-E3

This Catalogue supersedes all earlier Catalogues **& has been created jointly for both Cutting Tool & Tool Holding Divisions**
The Standard No. and year specified in the Catalogue are the latest at the time of publication

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TÜV NORD

CERTIFICATE

Management system as per

ISO 9001 : 2015

In accordance with TÜV NORD CERT procedures, it is hereby certified that

INDIAN TOOL MANUFACTURERS
(DIVISION OF BIRLA PRECISION TECHNOLOGIES LTD.)
Plant I : 61/62/63, MIDC Satpur, Nashik – 422 007
Plant II : B-15/3, MIDC Walui, Aurangabad – 431 133, Maharashtra, India

applies a management system in line with the above standard for the following scope

Plant 1 : Design, Manufacture and Sales of Drills, Cutters, Reamers, Taps and Masonry Drills.
Plant II : Manufacture and Sales of Drills, Taps and Tool Bits.

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Audit Report No. **2.5-0430/2002**

Valid until **30.05.2020**
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S.K.Kulta

Certification Body
at TÜV NORD CERT GmbH

Issue **04.06.2017**
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SAFETY NOTES OF CUTTING TOOLS

PRECAUTIONS FOR USING CUTTING TOOLS

Items	Precariousness	Counter measures
General Cutting Tools	Direct touch to a sharp cutting edge may cause injury.	When you set up tools to the machine or take tools out of the case, please wear protective gloves.
	Misuse or inappropriate working conditions may cause tool breakage or dispersion of broken pieces.	Please use safety item, such as safety glasses and protective gloves.
		Please use safety goods in the area of our recommended cutting conditions.
	Excessive impact or heavy wear will increase cutting resistance and may cause tool breakage and dispersion of broken pieces.	Please use safety item, such as safety glasses and protective gloves.
		Early exchanging tools is preferable.
	Dispersion of heated or prolonged chips may cause injury or burn.	Please use safety item, such as safety glasses and protective gloves.
	During cutting operation, cutting tools generate high heat, Direct contact of the tools shortly after machining may cause burn.	Please use safety item, such as safety glasses and protective gloves.
	Sparks, generation of heat or chips in high temperature during operation may cause fire.	Please do not operate around hazardous zone, in which there is some possibilty of fire or explosion.
		In case of using oil-coolant, please ensure fire prevention measures are in place.
	Lack of dynamic balance in high speed revolution cause tool-broken by vibration.	Please use safety item, such as safety glasses and protective gloves.
		Please conduct test operation before cutting, and confirm that there is no vibration or unusual sound.
	Direct contact of burrs which were generated on the rough surface of the workpiece may cause injury.	Do not touch workpiece with bare hand.
Milling Cutters and other Milling Tools	Since milling cutters have sharp edges, direct contact with bare hands may cause injury.	Please use safety item, such as safety glasses and protective gloves.
	If a cutter lacks balance, tools would cause vibration and it may cause injury by dispersion of broken piece.	Please use in the range of our recommended machining condition.
		Rotating portion and balancing should be checked regularly to prevent eccentric rotation or run out due to wear of bearing portion.
Drill	When drilling through hole with running work, a disc sometimes flies out from the end of frilling with high speed.This is very dangerous since the disc has sharp edge.	Please use safety items, such as safety glasses and protective gloves. Also attach covers on chuck part.

GUIDE ICONS FOR DRILLS

- HSS — Tool Material
- IS 5100 — Manufacturing standards
- h9 — Shank Tolerance
- k12 — Centre Drill Pilot Diameter Tolerance
- 120° — Centre Drill Point Angle
- 60° — Centre Drill Hole Form 'A'
- 60° 120° — Centre Drill Hole Form 'B'
- 30° — Core Drill Helix Angle
- h8 — Core Drill Diameter Tolerance
- Core Drilling Application
- 30° — Drill Helix Angle
- h8 — Drill Diameter Tolerance
- 118° — Drill Point Angle
- Drilling Application
- h8/h9 — Subland Drill Diameters Tolerance
- Subland Drill Application
- Taper Pin Drilling Application

GUIDE ICONS FOR REAMERS

- HSS — Tool Material
- IS 5444 — Manufacturing standards
- m6 — Reamer Diameter Tolerance
- Reaming Application
- Taper Reaming Application
- m6 — Shell Reamer Diameter Tolerance
- k11 — Bridge Reamer Diameter Tolerance

GUIDE ICONS FOR MILLING CUTTERS

- HSS — Tool Material
- IS 6309 — Manufacturing standards
- Cylindrical Milling Application
- Side and Face Milling Application
- Double Angle Milling Application
- Equal Angle Milling Application
- Slot Milling Application
- Counter Boring Application
- Counter Sinking Application
- Convex Milling Application
- Single Angle Milling Application
- Concave Milling Application
- T- Slot Milling Application
- Keyway Milling Application
- Single Corner Round Milling Application
- Double Corner Round Milling Application
- Hollow Milling Application

GUIDE ICONS FOR SCREWING TAPS

- HSS — Tool Material
- IS 6175 — Manufacturing standards
- 6H — Tap Tolerance
- 60° — Thread Form Angle
- BRIGHT — Surface Finish
- C-FORM — Chamfer / Taper Lead-Form
- Through Hole Tapping
- Blind Hole Tapping

NEW

PANTHER
Quicker • Sharper • More Powerful

TWIST DRILLS

Advantages:

Made out of Premium grade of HSS – Suitable for Tougher work materials
Drills have unique point geometry
Better rigidity gives longer life
Special Point to reduce thrust force while drilling
Split Point will act as self centering
Surface treated for maximum wear resistance
Wider flutes for optimum chip evacuation resulting increased Tool life
These drills are suitable to drill on Stainless Steel, Forged Steel etc.

PARALLEL SHANK TWIT DRILL

Size Range :

Metric size: 3.0 mm to13.0 mm (IS 5101)
Inch Size: 1/8" to ½" (BS 328)

TAPER SHANK TWIST DRILLS

Size Range:

Metric size: 10.0 mm to 25.0 mm (IS 5103)
Inch Size: 3/8" to 1"(BS 328)

SCREWING TAPS

Spiral Flute Taps:

Best Suitable for Blind hole applications
Eliminate chip clogging
Better thread finish

Spiral Point Taps:

Best suitable for through hole applications
Gun nose helps to push the chip forward
Better thread finish

Roll Form Taps:

Best suitable for blind & through hole applications
Stronger threads
Roll forming operation is chip less operation
Threads are produced by displacement of materials
Better surface finish
Suitable for Ductile materials

Straight Flute Cast Iron Taps:

Best suitable for blind & through hole applications
Suitable for Cast Iron materials
Better surface finish

Size Range: -

M3 to M16 (IS 6175, DIN 371, DIN 374, DIN 376, ISO 529)

END MILLS

Advantages:

Made out of Premium grade of HSS –Suitable for Tougher work materials
Better rigidity gives longer life
Special centre cutting geometry suitable for various applications
Most suitable for various milling applications

Size Range:

3.0 mm to 25.0 mm in Standard Series (IS 6353)

NEW

NINJA
SHARP WORK. RAZOR ACCURACY.

TWIST DRILLS

Advantages:

Made out of finest grade of HSS material
Thicker web for better rigidity
Special Point geometry to reduce thrust forces
Higher wear resistance
Special surface treatment for longer life
These drills are suitable to drill on Stainless Steel, Nickel Chromium Steel and hard material etc.

PARALLEL SHANK TWIST DRILLS
Size Range:
Metric size: 3.0 mm to 13.0 mm (IS 5101)
Inch Size: 1/8" to ½" (BS 328)

TAPER SHANK TWIST DRILLS
Size Range:
Metric size: 10.0 mm to 25.0 mm (IS 5103)
Inch Size: 3//8" to 1" (BS 328)

SCREWING TAPS

Ninja series Taps are made out of the finest grades of HSS materials. These Taps are manufactured on our latest CNC machines, with special geometries to suit different machining applications, based on work materials.

ITM NINJA series Taps consists of Spiral Flute, Spiral Point, Roll Form, and Straight Flute - Cast Iron . To enhance the performance of Taps, we can supply these taps with surface treatments like TiN, TiCN, TiAlN etc.

1. **Spiral Flute Taps** are best suitable for Blind Hole applications. (Size Range: M3 to M16)
2. **Spiral Point Taps** are specially designed for Through Hole applications (Size Range: M3 to M16)
3. **Roll Form Taps** is best suitable for both Blind and Through Hole applications. (Size Range: M6 to M16)
4. **Straight Flute – Cast Iron Taps** are best suitable for Cast Iron materials. (Size Range : M3 to M16)

ENDMILLS

Advantages:

Made out of finest grade of steel
Special geometry to give better performance
Unique flute geometry
Maximum material removal rate
Work at higher cutting speeds
Best suitable for both axial and radial cuts
These End mills are suitable for milling on Stainless Steel, Forged Steel, Nickel Chromium Steel, Hard & difficult to cut materials

Size Range:

3.0 mm to 25.0 mm in Standard Series (IS 6353)

NEW

TORPEDO PM TAPS HIGH STRENGTH, HIGH PERFORMANCE

TWIST DRILLS

Torpedo series Drills are made out of the advanced grades of HSS PM Materials. These Drills are produced on our latest CNC machines, with unique geometries to give better accuracy holes and excellent performance. These drills are developed to machine hardened steel materials like Stainless Steel, Nickel Chromium Steel and Forged Steel etc. These Torpedo High Performance Drills are designed having Special point geometry to reduce thrust forces while drilling.

Size Range:

Metric Size 3.0mm to 13.0mm as per IS 5101

Inch Size 1/8" to ½" as per BS 328

SCREWING TAPS

Torpedo Taps are made out of the highest quality of Powder Metallurgy HSS materials. These High Performance Taps are manufactured on our latest CNC machines, with specific geometries to suit different machining applications, based on work materials. ITM Torpedo series Taps consists of Spiral Flute, Spiral Point, Roll Form, and Straight Flute – Cast Iron.To enhance the performance of Taps, we can supply these taps with surface treatments like TiN, TiAlN, TiCN etc.,

1. **Spiral Flute Taps** are best suited for Blind Hole applications. Size Range: M3 to M16

2. **Spiral Point Taps** are specially designed for Through – Hole applications. Size Range: M3 to M16

3. **Roll Form Taps** are best suitable for both Blind and Through – Hole applications. Size Range: M6 to M16

4. **Straight Flute – Cast Iron Taps** are best suitable for Cast Iron materials. Size Range: M3 to M16

END MILLS

Torpedo Series of End mills are made out of best quality of PM grade of HSS Materials. These End mills are manufactured from our latest CNC machine, Walter, with special geometry to give better performance with higher productivity. These end mills are best suitable for materials like Stainless Steels, Nickel Chromium steels and tougher machining applications.

NEW

ANNULAR CUTTERS

Annular Cutters are most suitable for peripheral cutting

Size range from 12.0 mm to 50.0 mm

These cutters can be used in Structural Steel, Construction, Sheet metal and Fabrication Industries

Annular Cutters can be used at Portable drilling machines at higher cutting speeds

Special Shank design for rigid clamping and better productivity

Special Cutting edge geometry reduce the cutting forces and smooth slug ejection

Better hole finish

DRILL SET

Size Range from 1.0-13.0mm in steps of 0.5mm (25 Pcs Set)

Size Range from 1/16"- 1/4" in steps of 1/64"(13 Pcs Set)

Drills are available in Bright / Steam Blue Finish

Drills are manufactured as per IS 5101,DIN 338,BS 328 Part 1

NEEDLE FILES

Size Length: 160 mm

Zero Cut

Types: Flat, Half Round, Round, Three Square, Square

These files are used at Jewelry Industry and small parts of Automobile Industry.

DIAMOND FILES

Size Length: 160 mm

These files are used for Hard and Tough materials like Glass, Stones, Hardened Steel and Carbides.

HORSESHOE FILES

Shape: Flat with rasp cut on one side and file cut on opposite side.

These Files are used by blacksmiths and farriers (horse shoers.) for finishing of nails and horse shoes.

NEW

HATHYAR TOOLBITS

These tool bits are made out of Premium Grade of HSS

Tools Bits are available in 3 below brands

1)Hathyar - 600
2)Hathyar - 900
3)Hathyar -1000

All Square Tool Bits are supplied with 12-15 Deg. bevel, For easy end preparation, these tools bits edge retention is intact at heavy depth of cuts.

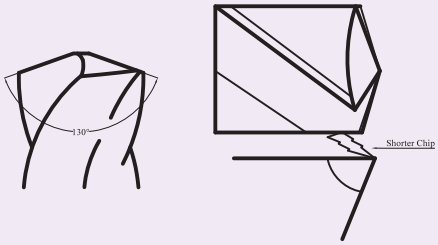
Hathyar Tool Bits can be used for faster cutting speeds, these tool bits will sustain at heavy / interrupted cuts.

Hathyar Tool Bits are mostly suitable for various turning operation like Parting, Grooving, Threading, Step Turning etc.

TS DRILL FOR FORGED STEEL MATERIALS

These Drills have special point geometry for forged steel material.

The point angle range from 130-140 deg as below.



Less lip clearance angle for stronger support of cutting edges
Thick web for rigidity of the drill and improved life
Shorter Lip Length
i)Produce narrow chips
ii)Tends to reduce friction and heat during the operation
Special surface treatment for wear resistance and higher productivity.

BPT BIRLA PRECISION

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DAGGER BRAND

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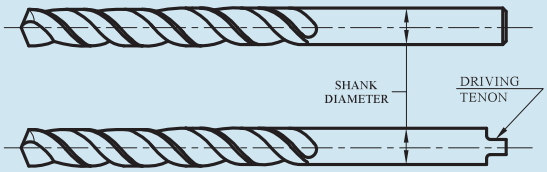
TWIST DRILLS

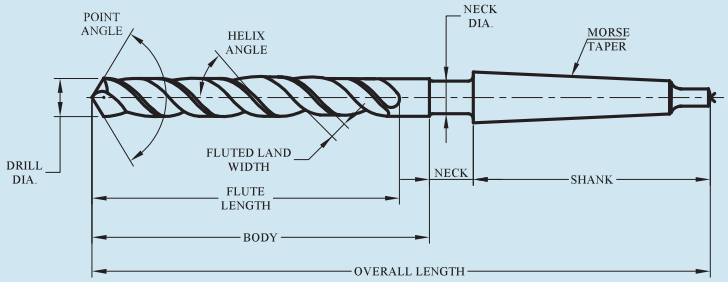
TWIST DRILLS

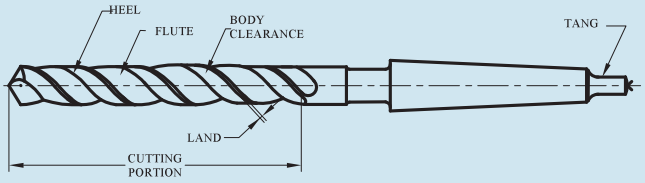
Elements of a Twist Drill and Related Terms

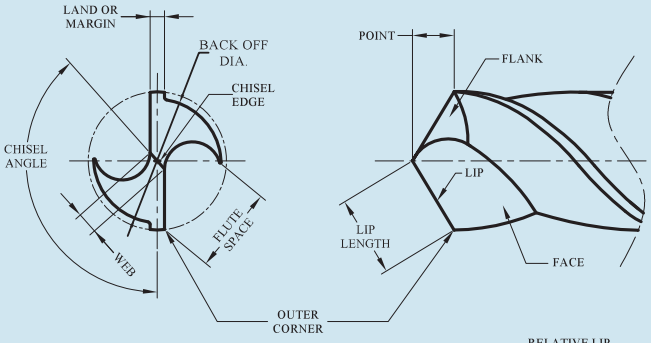
TWIST DRILL WITH PARALLEL SHANK

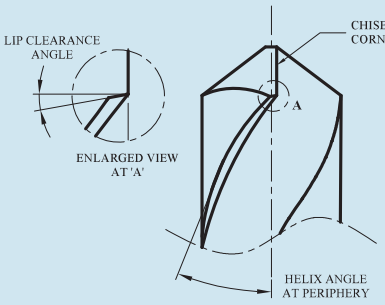


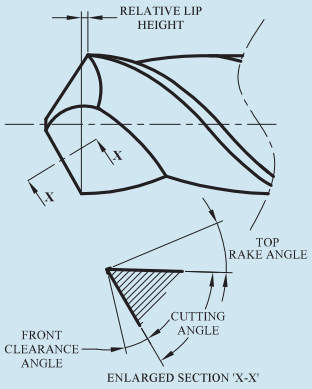
TWIST DRILL WITH TAPER SHANK





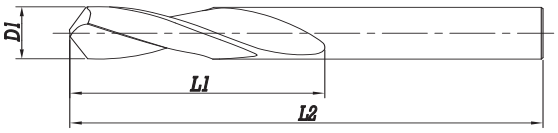






PARALLEL SHANK TWIST DRILLS

(Stub Series)



IS 5100 | HSS | 30° | h8 | 118°

Application:
Mainly used for portable drilling machines for drilling of general steel like Mild steel, Medium carbon steel, etc.

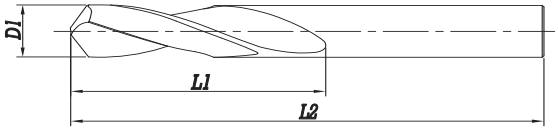
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)
mm	inch	No.		
1.00			6	26
1.02		60	6	26
1.04		59	6	26
1.07		58	7	28
1.09		57	7	28
1.10			7	28
1.18		56	7	28
1.19	3/64		8	30
1.20			8	30
1.30			8	30
1.32		55	8	30
1.40		54	9	32
1.50			9	32
1.51		53	10	34
1.59	1/16		10	34
1.60			10	34
1.61		52	10	34
1.70		51	10	34
1.78		50	11	36
1.80			11	36
1.85		49	11	36
1.90			11	36
1.93		48	12	38
1.98	5/64		12	38
1.99		47	12	38
2.00			12	38
2.06		46	12	38
2.08		45	12	38
2.10			12	38
2.18		44	13	40
2.20			13	40
2.26		43	13	40
2.30			13	40
2.37		42	14	43
2.38	3/32		14	43
2.40			14	43
2.44		41	14	43
2.49		40	14	43
2.50			14	43
2.53		39	14	43
2.58		38	14	43
2.60			14	43
2.64		37	14	43
2.70			16	46
2.71		36	16	46
2.78	7/64		16	46
2.79		35	16	46

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

Specifications conform to :
IS 5100 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 1897 : 1984

PARALLEL SHANK TWIST DRILLS

(Stub Series)



IS 5100 | HSS | 30° | h8 | 118°

Application:
Mainly used for portable drilling machines for drilling of general steel like Mild steel, Medium carbon steel, etc.

Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)
mm	inch	No.		
2.80			16	46
2.82		34	16	46
2.87		33	16	46
2.90			16	46
2.95		32	16	46
3.00			16	46
3.05		31	18	49
3.10			18	49
3.17	1/8		18	49
3.20			18	49
3.26		30	18	49
3.30			18	49
3.40			20	52
3.45		29	20	52
3.50			20	52
3.57	9/64	28	20	52
3.60			20	52
3.66		27	20	52
3.70			20	52
3.73		26	20	52
3.80		25	22	55
3.86		24	22	55
3.90			22	55
3.91		23	22	55
3.97	5/32		22	55
3.99		22	22	55
4.00			22	55
4.04		21	22	55
4.09		20	22	55
4.10			22	55
4.20			22	55
4.22		19	22	55
4.30		18	24	58
4.37	11/64		24	58
4.39		17	24	58
4.40			24	58
4.50		16	24	58
4.57		15	24	58
4.60			24	58
4.62		14	24	58
4.70		13	24	58
4.76	3/16		26	62
4.80		12	26	62
4.85		11	26	62
4.90			26	62
4.91		10	26	62
4.98		9	26	62

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

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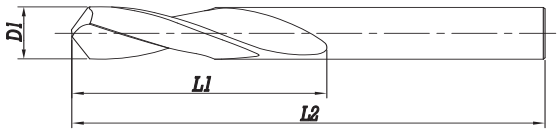
PARALLEL SHANK TWIST DRILLS

(Stub Series)



IS 5100 | HSS | 30° | h8 | 118°

Application:
Mainly used for portable drilling machines for drilling of general steel like Mild steel, Medium carbon steel, etc.

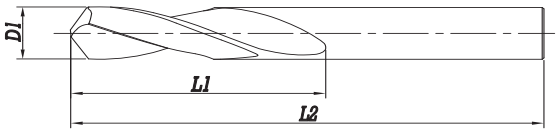
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)
mm	inch	No. / Letter		
5.00			26	62
5.05		8	26	62
5.10			26	62
5.11		7	26	62
5.16	13/64		26	62
5.18		6	26	62
5.20			26	62
5.22		5	26	62
5.30			26	62
5.31		4	28	66
5.40			28	66
5.41		3	28	66
5.50			28	66
5.56	7/32		28	66
5.60			28	66
5.61		2	28	66
5.70			28	66
5.79		1	28	66
5.80			28	66
5.90			28	66
5.94		A	28	66
5.95	15/64		28	66
6.00			28	66
6.05		B	31	70
6.10			31	70
6.15		C	31	70
6.20			31	70
6.25		D	31	70
6.30			31	70
6.35	1/4	E	31	70
6.40			31	70
6.50			31	70
6.53		F	31	70
6.60			31	70
6.63		G	31	70
6.70			31	70
6.75	17/64		34	74
6.76		H	34	74
6.80			34	74
6.90			34	74
6.91		I	34	74
7.00			34	74
7.04		J	34	74
7.10			34	74
7.14	9/32	K	34	74
7.20			34	74
7.30			34	74

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

Specifications conform to :
IS 5100 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 1897 : 1984

PARALLEL SHANK TWIST DRILLS

(Stub Series)



IS 5100 | HSS | 30° | h8 | 118°

Application:
Mainly used for portable drilling machines for drilling of general steel like Mild steel, Medium carbon steel, etc.

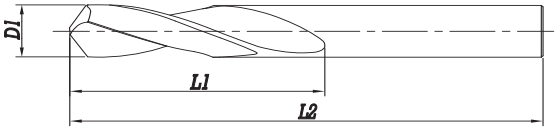
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)
mm	inch	Letter		
7.37		L	34	74
7.40			34	74
7.49		M	34	74
7.50			34	74
7.54	19/64		37	79
7.60			37	79
7.67		N	37	79
7.70			37	79
7.80			37	79
7.90			37	79
7.94	5/16		37	79
8.00			37	79
8.03		O	37	79
8.10			37	79
8.20		P	37	79
8.30			37	79
8.33	21/64		37	79
8.40			37	79
8.43		Q	37	79
8.50			37	79
8.60			40	84
8.61		R	40	84
8.70			40	84
8.73	11/32		40	84
8.80			40	84
8.84		S	40	84
8.90			40	84
9.00			40	84
9.09		T	40	84
9.10			40	84
9.13	23/64		40	84
9.20			40	84
9.30			40	84
9.35		U	40	84
9.40			40	84
9.50			40	84
9.52	3/8		43	89
9.58		V	43	89
9.60			43	89
9.70			43	89
9.80		W	43	89
9.90			43	89
9.92	25/64		43	89
10.00			43	89
10.08		X	43	89
10.10			43	89
10.20			43	89

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

Specifications conform to :
IS 5100 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 1897 : 1984

PARALLEL SHANK TWIST DRILLS

(Stub Series)



IS 5100 | HSS | 30° | h8 | 118°

Application:
Mainly used for portable drilling machines for drilling of general steel like Mild steel, Medium carbon steel, etc.

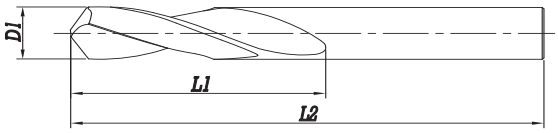
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)
mm	inch	Letter		
10.26		Y	43	89
10.30			43	89
10.32	13/32		43	89
10.40			43	89
10.49		Z	43	89
10.50			43	89
10.60			43	89
10.72	27/64		47	95
10.80			47	95
10.90			47	95
11.00			47	95
11.10			47	95
11.11	7/16		47	95
11.20			47	95
11.30			47	95
11.40			47	95
11.50			47	95
11.51	29/64		47	95
11.60			47	95
11.70			47	95
11.80			47	95
11.90			51	102
11.91	15/32		51	102
12.00			51	102
12.10			51	102
12.20			51	102
12.30	31/64		51	102
12.40			51	102
12.50			51	102
12.60			51	102
12.70	1/2		51	102
12.80			51	102
12.90			51	102
13.00			51	102
13.10			51	102
13.20			51	102
13.30			54	107
13.40			54	107
13.49	17/32		54	107
13.50			54	107
13.60			54	107
13.70			54	107
13.80			54	107
13.89			54	107
13.90	35/64		54	107
14.00			54	107
14.25			56	111

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

Specifications conform to :
IS 5100 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 1897 : 1984

PARALLEL SHANK TWIST DRILLS

(Stub Series)



IS 5100 | HSS | 30° | h8 | 118°

Application:
Mainly used for portable drilling machines for drilling of general steel like Mild steel, Medium carbon steel, etc.

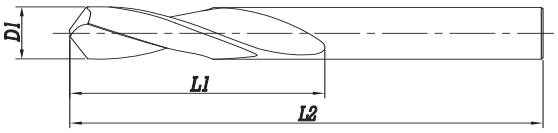
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)
mm	inch		
14.29	9/16	56	111
14.50		56	111
14.68	37/64	56	111
14.75		56	111
15.00		56	111
15.08	19/32	58	115
15.25		58	115
15.48	39/64	58	115
15.50		58	115
15.75		58	115
15.87	5/8	58	115
16.00		58	115
16.25		60	119
16.27	41/64	60	119
16.50		60	119
16.67	21/32	60	119
16.75		60	119
17.00		60	119
17.07	43/64	62	123
17.25		62	123
17.46	11/16	62	123
17.50		62	123
17.75		62	123
17.86	45/64	62	123
18.00		62	123
18.25		64	127
18.26	23/32	64	127
18.50		64	127
18.65	47/64	64	127
18.75		64	127
19.00		64	127
19.05	3/4	66	131
19.25		66	131
19.45	49/64	66	131
19.50		66	131
19.75		66	131
19.84	25/32	66	131
20.00		66	131
20.24	51/64	68	136
20.25		68	136
20.50		68	136
20.64	13/16	68	136
20.75		68	136
21.00		68	136
21.03	53/64	68	136
21.25		70	141
21.43	27/32	70	141

Specifications conform to :
IS 5100 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 1897 : 1984

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

PARALLEL SHANK TWIST DRILLS

(Stub Series)



IS 5100 | HSS | 30° | h8 | 118°

Application:
Mainly used for portable drilling machines for drilling of general steel like Mild steel, Medium carbon steel, etc.

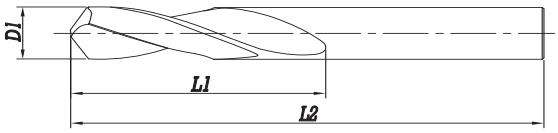
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)
mm	inch		
21.50		70	141
21.75		70	141
21.83	55/64	70	141
22.00		70	141
22.22	7/8	70	141
22.25		70	141
22.50		72	146
22.62	57/64	72	146
22.75		72	146
23.00		72	146
23.02	29/32	72	146
23.25		72	146
23.42	59/64	72	146
23.50		72	146
23.75		75	151
23.81	15/16	75	151
24.00		75	151
24.21	61/64	75	151
24.25		75	151
24.50		75	151
24.61	31/32	75	151
24.75		75	151
25.00	63/64	75	151
25.25		78	156
25.40	1	78	156
25.50		78	156
25.75		78	156
26.00		78	156
26.19	1.1/32	78	156
26.25		78	156
26.50		78	156
26.75		81	162
26.99	1.1/16	81	162
27.00		81	162
27.25		81	162
27.50		81	162
27.75		81	162
27.78	1.3/32	81	162
28.00		81	162
28.25		84	168
28.50		84	168
28.58	1.1/8	84	168
28.75		84	168
29.00		84	168
29.25		84	168
29.37	1.5/32	84	168
29.50		84	168

Specifications conform to :
IS 5100 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 1897 : 1984

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

PARALLEL SHANK TWIST DRILLS

(Stub Series)



IS 5100 | HSS | 30° | h8 | 118°

Application:
Mainly used for portable drilling machines for drilling of general steel like Mild steel, Medium carbon steel, etc.

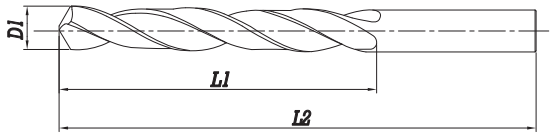
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)
mm	inch		
29.75		84	168
30.00		84	168
30.16	1.3/16	87	174
30.25		87	174
30.50		87	174
30.75		87	174
30.96	1.7/32	87	174
31.00		87	174
31.25		87	174
31.50		87	174
31.75	1.1/4	90	180
32.00		90	180
32.50		90	180
32.54	1.9/32	90	180
33.00		90	180
33.34	1.5/16	90	180
33.50		90	180
34.00		93	186
34.13	1.11/32	93	186
34.50		93	186
34.92	1.3/8	93	186
35.00		93	186
35.50		93	186
35.72	1.13/32	96	193
36.00		96	193
36.50		96	193
36.51	1.7/16	96	193
37.00		96	193
37.31	1.15/32	96	193
37.50		96	193
38.00		100	200
38.10	1.1/2	100	200
38.50		100	200
38.89		100	200
39.00		100	200
39.50		100	200
39.69		100	200
40.00		100	200

Specifications conform to :
IS 5100 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 1897 : 1984

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

PARALLEL SHANK TWIST DRILLS

(Jobber Series)



IS 5101 | HSS | 30° | h8 | 118°

Application:
General purpose drilling of Mild steel,
Medium carbon steel and Non Ferrous materials, etc.

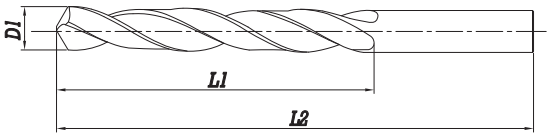
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)
mm	inch	No.		
1.00			12	34
1.02		60	12	34
1.04		59	12	34
1.07		58	14	36
1.09		57	14	36
1.10			14	36
1.18		56	14	36
1.19	3/64		16	38
1.20			16	38
1.30			16	38
1.32		55	16	38
1.40		54	18	40
1.50			18	40
1.51		53	20	43
1.59	1/16		20	43
1.60			20	43
1.61		52	20	43
1.70		51	20	43
1.78		50	22	46
1.80			22	46
1.85		49	22	46
1.90			22	46
1.93		48	24	49
1.98	5/64		24	49
1.99		47	24	49
2.00			24	49
2.06		46	24	49
2.08		45	24	49
2.10			24	49
2.18		44	27	53
2.20			27	53
2.26		43	27	53
2.30			27	53
2.37		42	30	57
2.38	3/32		30	57
2.40			30	57
2.44		41	30	57
2.49		40	30	57
2.50			30	57
2.53		39	30	57
2.58		38	30	57
2.60			30	57
2.64		37	30	57
2.70			33	61
2.71		36	33	61
2.78	7/64		33	61
2.79		35	33	61

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

Specifications conform to :
IS 5101 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 338 : 1984

PARALLEL SHANK TWIST DRILLS

(Jobber Series)



IS 5101 | HSS | 30° | h8 | 118°

Application:
General purpose drilling of Mild steel,
Medium carbon steel and Non Ferrous materials, etc.

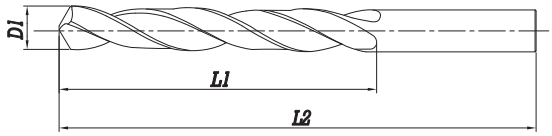
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)
mm	inch	No.		
2.80			33	61
2.82		34	33	61
2.87		33	33	61
2.90			33	61
2.95		32	33	61
3.00			33	61
3.05		31	36	65
3.10			36	65
3.17	1/8		36	65
3.20			36	65
3.26		30	36	65
3.30			36	65
3.40			39	70
3.45		29	39	70
3.50			39	70
3.57	9/64	28	39	70
3.60			39	70
3.66		27	39	70
3.70			39	70
3.73		26	39	70
3.80		25	43	75
3.86		24	43	75
3.90			43	75
3.91		23	43	75
3.97	5/32		43	75
3.99		22	43	75
4.00			43	75
4.04		21	43	75
4.09		20	43	75
4.10			43	75
4.20			43	75
4.22		19	43	75
4.30		18	47	80
4.37	11/64		47	80
4.39		17	47	80
4.40			47	80
4.50		16	47	80
4.57		15	47	80
4.60			47	80
4.62		14	47	80
4.70		13	47	80
4.76	3/16		52	86
4.80		12	52	86
4.85		11	52	86
4.90			52	86
4.91		10	52	86
4.98		9	52	86

Specifications conform to :
IS 5101 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 338 : 1984

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

PARALLEL SHANK TWIST DRILLS

(Jobber Series)



IS 5101 | HSS | 30° | h8 | 118°

Application:
General purpose drilling of Mild steel,
Medium carbon steel and Non Ferrous materials, etc.

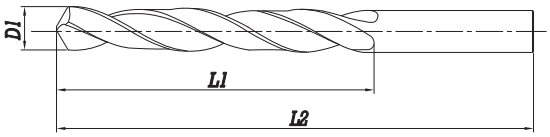
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)
mm	inch	No. / Letter		
5.00			52	86
5.05		8	52	86
5.10			52	86
5.11		7	52	86
5.16	13/64		52	86
5.18		6	52	86
5.20			52	86
5.22		5	52	86
5.30			52	86
5.31		4	57	93
5.40			57	93
5.41		3	57	93
5.50			57	93
5.56	7/32		57	93
5.60			57	93
5.61		2	57	93
5.70			57	93
5.79		1	57	93
5.80			57	93
5.90			57	93
5.94		A	57	93
5.95	15/64		57	93
6.00			57	93
6.05		B	63	101
6.10			63	101
6.15		C	63	101
6.20			63	101
6.25		D	63	101
6.30			63	101
6.35	1/4	E	63	101
6.40			63	101
6.50			63	101
6.53		F	63	101
6.60			63	101
6.63		G	63	101
6.70			63	101
6.75	17/64		69	109
6.76		H	69	109
6.80			69	109
6.90			69	109
6.91		I	69	109
7.00			69	109
7.04		J	69	109
7.10			69	109
7.14	9/32	K	69	109
7.20			69	109
7.30			69	109

Specifications conform to :
IS 5101 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 338 : 1984

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

PARALLEL SHANK TWIST DRILLS

(Jobber Series)



IS 5101 | HSS | 30° | h8 | 118°

Application:
General purpose drilling of Mild steel,
Medium carbon steel and Non Ferrous materials, etc.

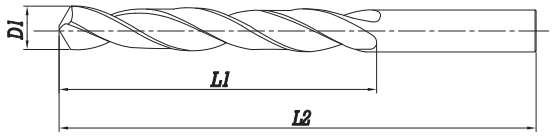
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)
mm	inch	Letter		
7.37		L	69	109
7.40			69	109
7.49		M	69	109
7.50			69	109
7.54	19/64		75	117
7.60			75	117
7.67		N	75	117
7.70			75	117
7.80			75	117
7.90			75	117
7.94	5/16		75	117
8.00			75	117
8.03		O	75	117
8.10			75	117
8.20		P	75	117
8.30			75	117
8.33	21/64		75	117
8.40			75	117
8.43		Q	75	117
8.50			75	117
8.60			81	125
8.61		R	81	125
8.70			81	125
8.73	11/32		81	125
8.80			81	125
8.84		S	81	125
8.90			81	125
9.00			81	125
9.09		T	81	125
9.10			81	125
9.13	23/64		81	125
9.20			81	125
9.30			81	125
9.35		U	81	125
9.40			81	125
9.50			81	125
9.52	3/8		87	133
9.58		V	87	133
9.60			87	133
9.70			87	133
9.80		W	87	133
9.90			87	133
9.92	25/64		87	133
10.00			87	133
10.08		X	87	133
10.10			87	133
10.20			87	133

Specifications conform to :
IS 5101 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 338 : 1984

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

PARALLEL SHANK TWIST DRILLS

(Jobber Series)



Application:
General purpose drilling of Mild steel,
Medium carbon steel and Non Ferrous materials, etc.

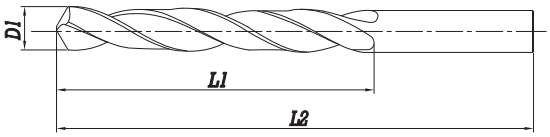
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)
mm	inch	Letter		
10.26		Y	87	133
10.30			87	133
10.32	13/32		87	133
10.40			87	133
10.49		Z	87	133
10.50			87	133
10.60			87	133
10.72	27/64		94	142
10.80			94	142
10.90			94	142
11.00			94	142
11.10			94	142
11.11	7/16		94	142
11.20			94	142
11.30			94	142
11.40			94	142
11.50			94	142
11.51	29/64		94	142
11.60			94	142
11.70			94	142
11.80			94	142
11.90			101	151
11.91	15/32		101	151
12.00			101	151
12.10			101	151
12.20			101	151
12.30	31/64		101	151
12.40			101	151
12.50			101	151
12.60			101	151
12.70	1/2		101	151
12.80			101	151
12.90			101	151
13.00			101	151
13.10			101	151
13.20			101	151
13.30			108	160
13.40			108	160
13.49	17/32		108	160
13.50			108	160
13.60			108	160
13.70			108	160
13.80			108	160
13.89	35/64		108	160
13.90			108	160
14.00			108	160
14.25			114	169

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

Specifications conform to :
IS 5101 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 338 : 1984

PARALLEL SHANK TWIST DRILLS

(Jobber Series)



IS 5101 | HSS | 30° | h8 | 118°

Application:
General purpose Drilling of mild steel,
Medium carbon steel and non ferrous materials, etc.

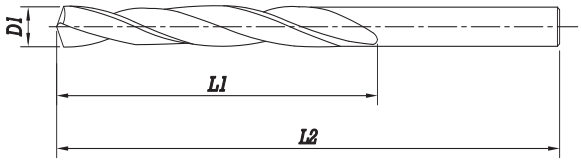
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)
mm	inch		
14.29	9/16	114	169
14.50		114	169
14.68	37/64	114	169
14.75		114	169
15.00		114	169
15.08	19/32	120	178
15.25		120	178
15.48	39/64	120	178
15.50		120	178
15.75		120	178
15.87	5/8	120	178
16.00		120	178
16.25		125	184
16.27	41/64	125	184
16.50		125	184
16.67	21/32	125	184
16.75		125	184
17.00		125	184
17.07	43/64	130	191
17.25		130	191
17.46	11/16	130	191
17.50		130	191
17.75		130	191
17.86	45/64	130	191
18.00		130	191
18.25		135	198
18.26	23/32	135	198
18.50		135	198
18.65	47/64	135	198
18.75		135	198
19.00		135	198
19.05	3/4	140	205
19.25		140	205
19.45	49/64	140	205
19.50		140	205
19.75		140	205
19.84	25/32	140	205
20.00		140	205

Specifications conform to :
IS 5101 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 338 : 1984

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

PARALLEL SHANK TWIST DRILLS

(Slow Spiral Series)



IS 5101 | HSS | 15° | h8 | 118°

Application:
These drills are used for drilling of hard, brittle and short chip materials, ie., Brass, Bronze and Magnesium Alloys, etc.

Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)
3.00	33	61
3.10	36	65
3.20	36	65
3.30	36	65
3.40	39	70
3.50	39	70
3.60	39	70
3.70	39	70
3.80	43	75
3.90	43	75
4.00	43	75
4.10	43	75
4.20	43	75
4.30	47	80
4.40	47	80
4.50	47	80
4.60	47	80
4.70	47	80
4.80	52	86

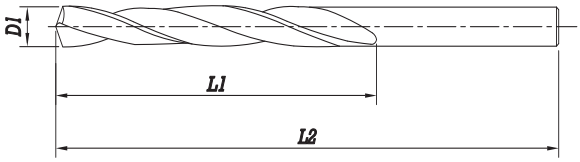
Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)
4.90	52	86
5.00	52	86
5.10	52	86
5.20	52	86
5.30	52	86
5.40	57	93
5.50	57	93
5.60	57	93
5.70	57	93
5.80	57	93
5.90	57	93
6.00	57	93
6.10	63	101
6.20	63	101
6.30	63	101
6.40	63	101
6.50	63	101
6.60	63	101
6.70	63	101

Specifications conform to :
IS 5101 : 2002

Drills are available in HSS-E & HSS-Co8 on request.
Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT & Straw Gold) are available on request.

PARALLEL SHANK TWIST DRILLS

(Slow Spiral Series)



IS 5101 | HSS | 15° | h8 | 118°

Application:
These drills are used for drilling of hard, brittle and short chip materials, ie., Brass, Bronze and Magnesium Alloys, etc.

Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)
6.80	69	109
6.90	69	109
7.00	69	109
7.10	69	109
7.20	69	109
7.30	69	109
7.40	69	109
7.50	69	109
7.60	75	117
7.70	75	117
7.80	75	117
7.90	75	117
8.00	75	117
8.10	75	117
8.20	75	117
8.30	75	117
8.40	75	117
8.50	75	117
8.60	81	125
8.70	81	125

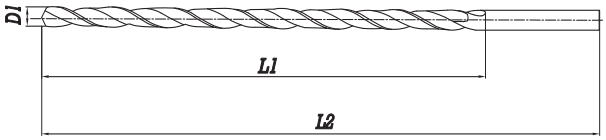
Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)
8.80	81	125
8.90	81	125
9.00	81	125
9.10	81	125
9.20	81	125
9.30	81	125
9.40	81	125
9.50	81	125
9.60	87	133
9.70	87	133
9.80	87	133
9.90	87	133
10.00	87	133
10.50	87	133
11.00	94	142
11.50	94	142
12.00	101	151
12.50	101	151
13.00	101	151

Specifications conform to :
IS 5101 : 2002

Drills are available in HSS-E & HSS-Co8 on request.
Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT & Straw Gold) are available on request.

PARALLEL SHANK TWIST DRILLS

(Long Series)



IS 5102 | HSS | 30° | h8 | 118°

Application:
For drilling in deep or inaccessible holes for Ferrous and Non Ferrous materials.

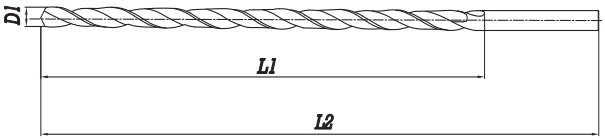
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)
mm	inch	No.		
1.00			33	56
1.02		60	33	56
1.04		59	33	56
1.07		58	37	60
1.09		57	37	60
1.10			37	60
1.18		56	37	60
1.19	3/64		41	65
1.20			41	65
1.30			41	65
1.32		55	41	65
1.40		54	45	70
1.50			45	70
1.51		53	50	76
1.59	1/16		50	76
1.60			50	76
1.61		52	50	76
1.70		51	50	76
1.78		50	53	80
1.80			53	80
1.85		49	53	80
1.90			53	80
1.93		48	56	85
1.98	5/64		56	85
1.99		47	56	85
2.00			56	85
2.06		46	56	85
2.08		45	56	85
2.10			56	85
2.18		44	59	90
2.20			59	90
2.26		43	59	90
2.30			59	90
2.37		42	62	95
2.38	3/32		62	95
2.40			62	95
2.44		41	62	95
2.49		40	62	95
2.50			62	95
2.53		39	62	95
2.58		38	62	95
2.60			62	95
2.64		37	62	95
2.70			66	100
2.71		36	66	100
2.78	7/64		66	100
2.79		35	66	100
2.80			66	100

Specifications conform to :
IS 5102 : 2002
ISO 494 : 1975
BS 328 Part 1 : 1993
DIN 340 : 1978

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 13 mm & milled flutes above 13 mm

PARALLEL SHANK TWIST DRILLS

(Long Series)



IS 5102 | HSS | 30° | h8 | 118°

Application:
For drilling in deep or inaccessible holes for Ferrous and Non Ferrous materials.

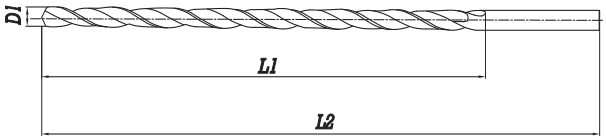
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)
mm	inch	No.		
2.82		34	66	100
2.87		33	66	100
2.90			66	100
2.95		32	66	100
3.00			66	100
3.05		31	69	106
3.10			69	106
3.17	1/8		69	106
3.20			69	106
3.26		30	69	106
3.30			69	106
3.40			73	112
3.45		29	73	112
3.50			73	112
3.57	9/64	28	73	112
3.60			73	112
3.66		27	73	112
3.70			73	112
3.73		26	73	112
3.80		25	78	119
3.86		24	78	119
3.90			78	119
3.91		23	78	119
3.97	5/32		78	119
3.99		22	78	119
4.00			78	119
4.04		21	78	119
4.09		20	78	119
4.10			78	119
4.20			78	119
4.22		19	78	119
4.30		18	82	126
4.37	11/64		82	126
4.39		17	82	126
4.40			82	126
4.50		16	82	126
4.57		15	82	126
4.60			82	126
4.62		14	82	126
4.70		13	82	126
4.76	3/16		87	132
4.80		12	87	132
4.85		11	87	132
4.90			87	132
4.91		10	87	132
4.98		9	87	132
5.00			87	132
5.05		8	87	132

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 13 mm & milled flutes above 13 mm

Specifications conform to :
IS 5102 : 2002
ISO 494 : 1975
BS 328 Part 1 : 1993
DIN 340 : 1978

PARALLEL SHANK TWIST DRILLS

(Long Series)



IS 5102 | HSS | 30° | h8 | 118°

Application:
For drilling in deep or inaccessible holes for Ferrous and Non Ferrous materials.

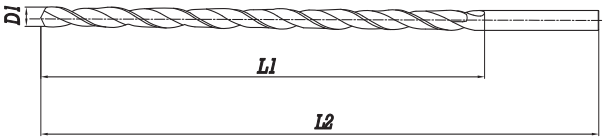
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)
mm	inch	No. / Letter		
5.10			87	132
5.11		7	87	132
5.16	13/64		87	132
5.18		6	87	132
5.20			87	132
5.22		5	87	132
5.30			87	132
5.31		4	91	139
5.40			91	139
5.41		3	91	139
5.50			91	139
5.56	7/32		91	139
5.60			91	139
5.61		2	91	139
5.70			91	139
5.79		1	91	139
5.80			91	139
5.90			91	139
5.94		A	91	139
5.95	15/64		91	139
6.00			91	139
6.05		B	97	148
6.10			97	148
6.15		C	97	148
6.20			97	148
6.25		D	97	148
6.30			97	148
6.35	1/4	E	97	148
6.40			97	148
6.50			97	148
6.53		F	97	148
6.60			97	148
6.63		G	97	148
6.70			97	148
6.75	17/64		102	156
6.76		H	102	156
6.80			102	156
6.90			102	156
6.91		I	102	156
7.00			102	156
7.04		J	102	156
7.10			102	156
7.14	9/32	K	102	156
7.20			102	156
7.30			102	156
7.37		L	102	156
7.40			102	156
7.49		M	102	156

Specifications conform to :
IS 5102 : 2002
ISO 494 : 1975
BS 328 Part 1 : 1993
DIN 340 : 1978

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 13 mm & milled flutes above 13 mm

PARALLEL SHANK TWIST DRILLS

(Long Series)



IS 5102 | HSS | 30° | h8 | 118°

Application:
For drilling in deep or inaccessible holes for Ferrous and Non Ferrous materials.

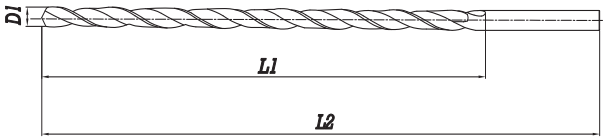
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)
mm	inch	Letter		
7.50			102	156
7.54	19/64		109	165
7.60			109	165
7.67		N	109	165
7.70			109	165
7.80			109	165
7.90			109	165
7.94	5/16		109	165
8.00			109	165
8.03		O	109	165
8.10			109	165
8.20		P	109	165
8.30			109	165
8.33	21/64		109	165
8.40			109	165
8.43		Q	109	165
8.50			109	165
8.60			115	175
8.61		R	115	175
8.70			115	175
8.73	11/32		115	175
8.80			115	175
8.84		S	115	175
8.90			115	175
9.00			115	175
9.09		T	115	175
9.10			115	175
9.13	23/64		115	175
9.20			115	175
9.30			115	175
9.35		U	115	175
9.40			115	175
9.50			115	175
9.52	3/8		121	184
9.58		V	121	184
9.60			121	184
9.70			121	184
9.80		W	121	184
9.90			121	184
9.92	25/64		121	184
10.00			121	184
10.08		X	121	184
10.10			121	184
10.20			121	184
10.26		Y	121	184
10.30			121	184
10.32	13/32		121	184
10.40			121	184

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 13 mm & milled flutes above 13 mm

Specifications conform to :
IS 5102 : 2002
ISO 494 : 1975
BS 328 Part 1 : 1993
DIN 340 : 1978

PARALLEL SHANK TWIST DRILLS

(Long Series)



IS 5102 | HSS | 30° | h8 | 118°

Application:
For drilling in deep or inaccessible holes for Ferrous and Non Ferrous materials.

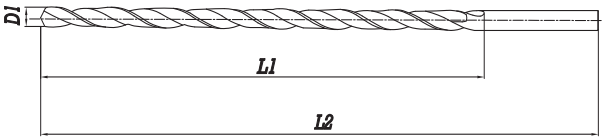
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)
mm	inch	Letter		
10.49		Z	121	184
10.50			121	184
10.60			121	184
10.70			128	195
10.72	27/64		128	195
11.11	7/16		128	195
11.30			128	195
11.40			128	195
11.50			128	195
11.51	29/64		128	195
11.60			128	195
11.70			128	195
11.80			128	195
11.90			134	205
11.91	15/32		134	205
12.00			134	205
12.10			134	205
12.20			134	205
12.30	31/64		134	205
12.40			134	205
12.50			134	205
12.60			134	205
12.70	1/2		134	205
12.80			134	205
12.90			134	205
13.00			134	205
13.10			134	205
13.20			134	205
13.30			140	214
13.40			140	214
13.49	17/32		140	214
13.50			140	214
13.60			140	214
13.70			140	214
13.80			140	214
13.89	35/64		140	214
13.90			140	214
14.00			140	214
14.25			144	220
14.29	9/16		144	220
14.50			144	220
14.68	37/64		144	220
14.75			144	220
15.00			144	220
15.08	19/32		149	227
15.25			149	227
15.48	39/64		149	227
15.50			149	227

Specifications conform to :
IS 5102 : 2002
ISO 494 : 1975
BS 328 Part 1 : 1993
DIN 340 : 1978

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 13 mm & milled flutes above 13 mm

PARALLEL SHANK TWIST DRILLS

(Long Series)



IS 5102 | HSS | 30° | h8 | 118°

Application:
For drilling in deep or inaccessible holes for Ferrous and Non Ferrous materials.

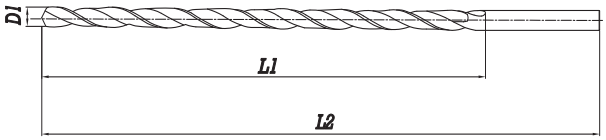
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)
mm	inch		
15.75		149	227
15.87	5/8	149	227
16.00		149	227
16.25		154	235
16.27	41/64	154	235
16.50		154	235
16.67	21/32	154	235
16.75		154	235
17.00		154	235
17.07	43/64	158	241
17.25		158	241
17.46	11/16	158	241
17.50		158	241
17.75		158	241
17.86	45/64	158	241
18.00		158	241
18.25		162	247
18.26	23/32	162	247
18.50		162	247
18.65	47/64	162	247
18.75		162	247
19.00		162	247
19.05	3/4	166	254
19.25		166	254
19.45	49/64	166	254
19.50		166	254
19.75		166	254
19.84	25/32	166	254
20.00		166	254
20.24	51/64	171	261
20.25		171	261
20.50		171	261
20.64	13/16	171	261
20.75		171	261
21.00		171	261
21.03	53/64	171	261
21.25		176	268
21.43	27/32	176	268
21.50		176	268
21.75		176	268
21.83	55/64	176	268
22.00		176	268
22.22	7/8	176	268
22.25		176	268
22.50		180	275
22.62	57/64	180	275
22.75		180	275
23.00		180	275

Specifications conform to :
IS 5102 : 2002
ISO 494 : 1975
BS 328 Part 1 : 1993
DIN 340 : 1978

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 13 mm & milled flutes above 13 mm

PARALLEL SHANK TWIST DRILLS

(Long Series)



Application:
For drilling in deep or inaccessible holes for Ferrous and Non Ferrous materials.

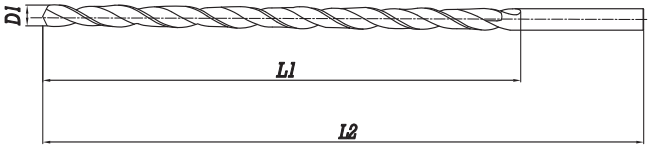
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)
mm	inch		
23.02	29/32	180	275
23.25		180	275
23.42	59/64	180	275
23.50		180	275
23.75		185	282
23.81	15/16	185	282
24.00		185	282
24.21	61/64	185	282
24.25		185	282
24.50		185	282
24.61	31/32	185	282
24.75		185	282
25.00	63/64	185	282
25.25		190	290
25.40	1	190	290
25.50		190	290
25.75		190	290
26.00		190	290
26.19	1.1/32	190	290
26.25		190	290
26.50		190	290
26.75		195	298
26.99	1.1/16	195	298
27.00		195	298
27.25		195	298
27.50		195	298
27.75		195	298
27.78	1.3/32	195	298
28.00		195	298
28.25		201	307
28.50		201	307
28.57	1.1/8	201	307
28.75		201	307
29.00		201	307
29.25		201	307
29.37	1.5/32	201	307
29.50		201	307
29.75		201	307
30.00		201	307
30.16	1.3/16	207	316
30.25		207	316
30.50		207	316
30.75		207	316
30.96	1.7/32	207	316
31.00		207	316
31.25		207	316
31.50		207	316

Specifications conform to :
IS 5102 : 2002
ISO 494 : 1975
BS 328 Part 1 : 1993
DIN 340 : 1978

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 13 mm & milled flutes above 13 mm

PARALLEL SHANK TWIST DRILLS

(Extra Long Series)



IS 7823 | HSS | 30° | h8 | 118°

Application:
Generally used in drilling in extremely deep holes for materials like Mild steel, Medium carbon steel and Non Ferrous materials.

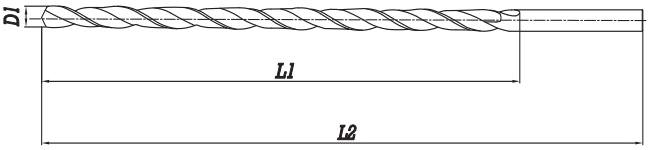
Preferred Size (D1) (h8)			Series 1		Series 2		Series 3		Series 4	
mm	inch	No.	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)
3.00			100	160	150	200				
3.05		31	100	160	150	200				
3.10			100	160	150	200				
3.17	1/8		100	160	150	200				
3.20			100	160	150	200				
3.26		30	100	160	150	200				
3.30			100	160	150	200				
3.40			100	160	150	200				
3.45		29	100	160	150	200				
3.50			100	160	150	200	200	250		
3.57	9/64	28	100	160	150	200	200	250		
3.60			100	160	150	200	200	250		
3.66		27	100	160	150	200	200	250		
3.70			100	160	150	200	200	250		
3.73		26	100	160	150	200	200	250		
3.80		25	100	160	150	200	200	250		
3.86		24	100	160	150	200	200	250		
3.90			100	160	150	200	200	250		
3.91		23	100	160	150	200	200	250		
3.97	5/32		100	160	150	200	200	250		
3.99		22	100	160	150	200	200	250		
4.00			100	160	150	200	200	250	250	315
4.04		21	100	160	150	200	200	250	250	315
4.09		20	100	160	150	200	200	250	250	315
4.10			100	160	150	200	200	250	250	315
4.20			100	160	150	200	200	250	250	315
4.22		19	100	160	150	200	200	250	250	315
4.30		18	100	160	150	200	200	250	250	315
4.37	11/64		100	160	150	200	200	250	250	315
4.39		17	100	160	150	200	200	250	250	315
4.40			100	160	150	200	200	250	250	315
4.50		16	100	160	150	200	200	250	250	315
4.57		15	100	160	150	200	200	250	250	315
4.60			100	160	150	200	200	250	250	315
4.62		14	100	160	150	200	200	250	250	315
4.70		13	100	160	150	200	200	250	250	315
4.76	3/16		150	200	200	250	250	315	300	400
4.80		12	150	200	200	250	250	315	300	400
4.85		11	150	200	200	250	250	315	300	400
4.90			150	200	200	250	250	315	300	400
4.91		10	150	200	200	250	250	315	300	400
4.98		9	150	200	200	250	250	315	300	400
5.00			150	200	200	250	250	315	300	400
5.06		8	150	200	200	250	250	315	300	400
5.10			150	200	200	250	250	315	300	400
5.11		7	150	200	200	250	250	315	300	400
5.16	13/64		150	200	200	250	250	315	300	400

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 13 mm & milled flutes above 13 mm

Specifications conform to :
IS 7823 : 2005
ISO 3292 : 1995

PARALLEL SHANK TWIST DRILLS

(Extra Long Series)



IS 7823 | HSS | 30° | h8 | 118°

Application:
Generally used in drilling in extremely deep holes for materials like Mild steel, Medium carbon steel and Non Ferrous materials.

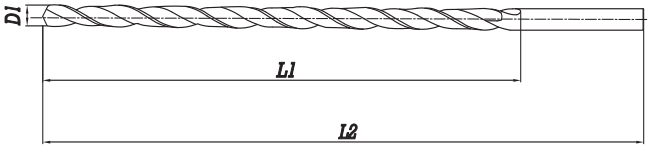
Preferred Size (D1) (h8)			Series 1		Series 2		Series 3		Series 4	
mm	inch	No./Letter	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)
5.18		6	150	200	200	250	250	315	300	400
5.20			150	200	200	250	250	315	300	400
5.22		5	150	200	200	250	250	315	300	400
5.30			150	200	200	250	250	315	300	400
5.31		4	150	200	200	250	250	315	300	400
5.40			150	200	200	250	250	315	300	400
5.41		3	150	200	200	250	250	315	300	400
5.50			150	200	200	250	250	315	300	400
5.56	7/32		150	200	200	250	250	315	300	400
5.60			150	200	200	250	250	315	300	400
5.61		2	150	200	200	250	250	315	300	400
5.70			150	200	200	250	250	315	300	400
5.79		1	150	200	200	250	250	315	300	400
5.80			150	200	200	250	250	315	300	400
5.90			150	200	200	250	250	315	300	400
5.94		A	150	200	200	250	250	315	300	400
5.95	15/64		150	200	200	250	250	315	300	400
6.00			150	200	200	250	250	315	300	400
6.04		B	150	200	200	250	250	315	300	400
6.10			150	200	200	250	250	315	300	400
6.15		C	150	200	200	250	250	315	300	400
6.20			150	200	200	250	250	315	300	400
6.25		D	150	200	200	250	250	315	300	400
6.30			150	200	200	250	250	315	300	400
6.35	1/4	E	150	200	200	250	250	315	300	400
6.40			150	200	200	250	250	315	300	400
6.50			150	200	200	250	250	315	300	400
6.53		F	150	200	200	250	250	315	300	400
6.60			150	200	200	250	250	315	300	400
6.63		G	150	200	200	250	250	315	300	400
6.70			150	200	200	250	250	315	300	400
6.75	17/64	H	150	200	200	250	250	315	300	400
6.80			150	200	200	250	250	315	300	400
6.90		I	150	200	200	250	250	315	300	400
7.00			150	200	200	250	250	315	300	400
7.03		J	150	200	200	250	250	315	300	400
7.10			150	200	200	250	250	315	300	400
7.14	9/32	K	150	200	200	250	250	315	300	400
7.20			150	200	200	250	250	315	300	400
7.30			150	200	200	250	250	315	300	400
7.37		L	150	200	200	250	250	315	300	400
7.40			150	200	200	250	250	315	300	400
7.49		M	150	200	200	250	250	315	300	400
7.50			150	200	200	250	250	315	300	400
7.54	19/64		200	250	250	315	300	400		
7.60			200	250	250	315	300	400		
7.67		N	200	250	250	315	300	400		

Specifications conform to :
IS 7823 : 2005
ISO 3292 : 1995

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 13 mm & milled flutes above 13 mm

PARALLEL SHANK TWIST DRILLS

(Extra Long Series)



IS 7823 | HSS | 30° | h8 | 118°

Application:
Generally used in drilling in extremely deep holes for materials like Mild steel, Medium carbon steel and Non Ferrous materials.

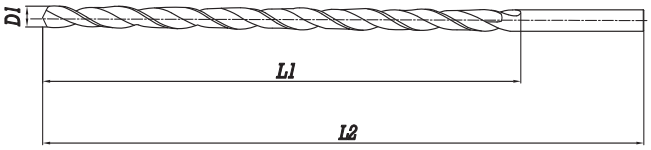
Preferred Size (D1) (h8)			Series 1		Series 2		Series 3	
mm	inch	Letter	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)
7.70			200	250	250	315	300	400
7.80			200	250	250	315	300	400
7.90			200	250	250	315	300	400
7.94	5/16		200	250	250	315	300	400
8.00			200	250	250	315	300	400
8.03		O	200	250	250	315	300	400
8.10			200	250	250	315	300	400
8.20		P	200	250	250	315	300	400
8.30			200	250	250	315	300	400
8.33	21/64		200	250	250	315	300	400
8.40			200	250	250	315	300	400
8.43		Q	200	250	250	315	300	400
8.50			200	250	250	315	300	400
8.60			200	250	250	315	300	400
8.61		R	200	250	250	315	300	400
8.70			200	250	250	315	300	400
8.73	11/32		200	250	250	315	300	400
8.80			200	250	250	315	300	400
8.84		S	200	250	250	315	300	400
8.90			200	250	250	315	300	400
9.00			200	250	250	315	300	400
9.09		T	200	250	250	315	300	400
9.10			200	250	250	315	300	400
9.13	23/64		200	250	250	315	300	400
9.20			200	250	250	315	300	400
9.30			200	250	250	315	300	400
9.34		U	200	250	250	315	300	400
9.40			200	250	250	315	300	400
9.50			200	250	250	315	300	400
9.52	3/8		200	250	250	315	300	400
9.58		V	200	250	250	315	300	400
9.60			200	250	250	315	300	400
9.70			200	250	250	315	300	400
9.80		W	200	250	250	315	300	400
9.90			200	250	250	315	300	400
9.92	25/64		200	250	250	315	300	400
10.00			200	250	250	315	300	400
10.08		X	200	250	250	315	300	400
10.10			200	250	250	315	300	400
10.20			200	250	250	315	300	400
10.26			200	250	250	315	300	400
10.30			200	250	250	315	300	400
10.32	13/32		200	250	250	315	300	400
10.40			200	250	250	315	300	400
10.49		Z	200	250	250	315	300	400
10.50			200	250	250	315	300	400
10.60			200	250	250	315	300	400

Specifications conform to :
IS 7823 : 2005
ISO 3292 : 1995

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 13 mm & milled flutes above 13 mm

PARALLEL SHANK TWIST DRILLS

(Extra Long Series)



IS 7823 | HSS | 30° | h8 | 118°

Application:
Generally used in drilling in extremely deep holes for materials like Mild steel, Medium carbon steel and Non Ferrous materials.

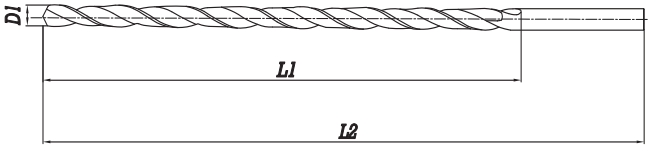
Preferred Size (D1) (h8)		Series 1		Series 2		Series 3	
mm	inch	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)
10.70		200	250	250	315	300	400
10.72	27/64	200	250	250	315	300	400
10.80		200	250	250	315	300	400
10.90		200	250	250	315	300	400
11.00		200	250	250	315	300	400
11.10		200	250	250	315	300	400
11.11	7/16	200	250	250	315	300	400
11.20		200	250	250	315	300	400
11.30		200	250	250	315	300	400
11.40		200	250	250	315	300	400
11.50		200	250	250	315	300	400
11.51	29/64	200	250	250	315	300	400
11.60		200	250	250	315	300	400
11.70		200	250	250	315	300	400
11.80		200	250	250	315	300	400
11.90		200	250	250	315	300	400
11.91	15/32	200	250	250	315	300	400
12.00		200	250	250	315	300	400
12.10		200	250	250	315	300	400
12.20		200	250	250	315	300	400
12.30	31/64	200	250	250	315	300	400
12.40		200	250	250	315	300	400
12.50		200	250	250	315	300	400
12.60		200	250	250	315	300	400
12.70	1/2	200	250	250	315	300	400
12.80		200	250	250	315	300	400
12.90		200	250	250	315	300	400
13.00		200	250	250	315	300	400
13.10		200	250	250	315	300	400
13.20		200	250	250	315	300	400
13.30		200	250	250	315	300	400
13.40		200	250	250	315	300	400
13.50		200	250	250	315	300	400
13.60		200	250	250	315	300	400
13.70		200	250	250	315	300	400
13.80		200	250	250	315	300	400
13.90		200	250	250	315	300	400
14.00		200	250	250	315	300	400

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 13 mm & milled flutes above 13 mm

Specifications conform to :
IS 7823 : 2005
ISO 3292 : 1995

PARALLEL SHANK TWIST DRILLS

(Extra Long Series)



DIN 1869 | HSS | 30° | h8 | 118°

Application:
Generally used in drilling in extremely deep holes for materials like Mild steel, Medium Carbon steel and Non Ferrous materials.

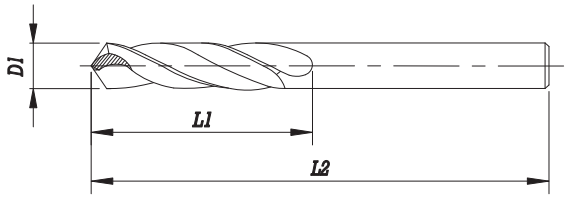
Size (D1) (h8)	Series 1		Series 2		Series 3	
mm	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)
8.0	165	240	210	305	265	390
8.1	165	240	210	305	265	390
8.2	165	240	210	305	265	390
8.3	165	240	210	305	265	390
8.4	165	240	210	305	265	390
8.5	165	240	210	305	265	390
8.6	175	250	220	320	280	410
8.7	175	250	220	320	280	410
8.8	175	250	220	320	280	410
8.9	175	250	220	320	280	410
9.0	175	250	220	320	280	410
9.1	175	250	220	320	280	410
9.2	175	250	220	320	280	410
9.3	175	250	220	320	280	410
9.4	175	250	220	320	280	410
9.5	175	250	220	320	280	410
9.6	185	265	235	340	295	430
9.7	185	265	235	340	295	430
9.8	185	265	235	340	295	430
9.9	185	265	235	340	295	430
10.0	185	265	235	340	295	430
10.5	185	265	235	340	295	430
11.0	195	280	250	360	305	450
11.5	195	280	250	360	305	450
12.0	205	295	260	380	305	480
12.7	205	295	260	380	305	480

Ground flutes up to 13 mm & Milled flutes above 13 mm

Specifications conform to :
DIN 1869 : 1970

PARALLEL SHANK TWIST DRILLS

(Stub with Split Point Series)



Application:
Mainly used for portable drilling machine for drilling of tougher materials like Forged steels and Hard steels, etc.

Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)
3.00	16	46
3.10	18	49
3.20	18	49
3.25	18	49
3.30	18	49
3.40	20	52
3.50	20	52
3.60	20	52
3.70	20	52
3.75	20	52
3.80	22	55
3.90	22	55
4.00	22	55
4.10	22	55
4.20	22	55
4.25	22	55
4.30	24	58
4.40	24	58
4.50	24	58
4.60	24	58
4.65	24	58
4.70	24	58
4.75	24	58
4.80	26	62
4.90	26	62
5.00	26	62

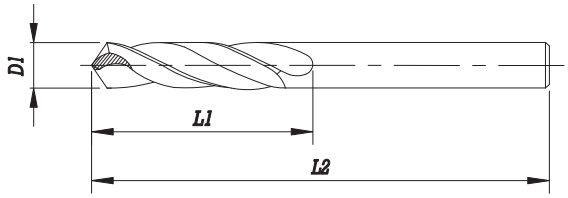
Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)
5.10	26	62
5.20	26	62
5.25	26	62
5.30	26	62
5.40	28	66
5.50	28	66
5.55	28	66
5.60	28	66
5.70	28	66
5.75	28	66
5.80	28	66
5.90	28	66
6.00	28	66
6.10	31	70
6.20	31	70
6.25	31	70
6.30	31	70
6.40	31	70
6.50	31	70
6.60	31	70
6.70	31	70
6.75	34	74
6.80	34	74
6.90	34	74
7.00	34	74
7.10	34	74

Specification conform to :
IS 5100 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 1897 : 1984

Drills are available in HSS, HSS-E on request.
Coatings (TiN, TiCN & TiAlN) and surface treatments (FBT) are available on request.

PARALLEL SHANK TWIST DRILLS

(Stub with Split Point Series)



Application:
Mainly used for portable drilling machine for drilling of tougher materials like Forged steels and Hard steels, etc.

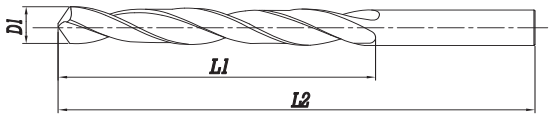
Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)	Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)
7.20	34	74	9.25	40	84
7.25	34	74	9.30	40	84
7.30	34	74	9.35	40	84
7.40	34	74	9.40	40	84
7.45	34	74	9.50	40	84
7.50	34	74	9.60	43	89
7.60	37	79	9.70	43	89
7.70	37	79	9.75	43	89
7.75	37	79	9.80	43	89
7.80	37	79	9.90	43	89
7.90	37	79	10.00	43	89
8.00	37	79	10.10	43	89
8.10	37	79	10.20	43	89
8.20	37	79	10.25	43	89
8.25	37	79	10.50	43	89
8.30	37	79	10.75	47	95
8.40	37	79	11.00	47	95
8.50	37	79	11.25	47	95
8.60	40	84	11.50	47	95
8.70	40	84	11.75	47	95
8.75	40	84	11.80	47	95
8.80	40	84	12.00	51	102
8.90	40	84	12.25	51	102
9.00	40	84	12.50	51	102
9.10	40	84	12.75	51	102
9.20	40	84	13.00	51	102

Specification conform to :
IS 5100 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 1897 : 1984

Drills are available in HSS, HSS-E on request.
Coatings (TiN, TiCN & TiAlN) and surface treatments (FBT) are available on request.

PARALLEL SHANK TWIST DRILLS

(Jobber Straw Gold Series)



Application:
These drills are used for drilling of stainless steels and difficult to cut materials such as Titanium and Inconel.

Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)
3.00	33	61
3.10	36	65
3.20	36	65
3.25	36	65
3.30	36	65
3.40	39	70
3.50	39	70
3.60	39	70
3.70	39	70
3.75	39	70
3.80	43	75
3.90	43	75
4.00	43	75
4.10	43	75
4.20	43	75
4.25	43	75
4.30	47	80
4.40	47	80
4.50	47	80
4.60	47	80
4.65	47	80
4.70	47	80
4.75	47	80
4.80	52	86

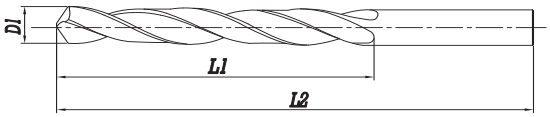
Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)
4.90	52	86
5.00	52	86
5.10	52	86
5.20	52	86
5.25	52	86
5.30	52	86
5.40	57	93
5.50	57	93
5.55	57	93
5.60	57	93
5.70	57	93
5.75	57	93
5.80	57	93
5.90	57	93
6.00	57	93
6.10	63	101
6.20	63	101
6.25	63	101
6.30	63	101
6.40	63	101
6.50	63	101
6.60	63	101
6.70	63	101
6.75	69	109

Specification conform to :
IS 5101 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 338 : 1984

Drills are available in HSS,HSS-E on request.
Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT & Straw Gold) are available on request.

PARALLEL SHANK TWIST DRILLS

(Jobber Straw Gold Series)



IS 5101 | HSS-Co8 | 30° | h8 | 118°

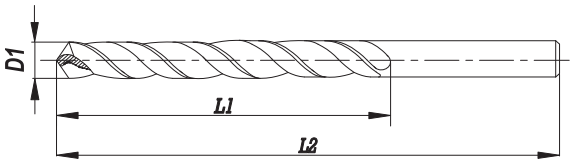
Application:
These drills are used for drilling of stainless steels and difficult to cut materials such as Titanium and Inconel.

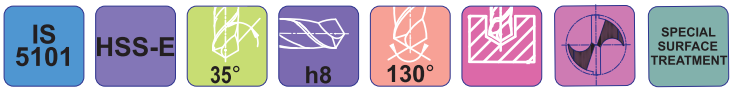
Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)	Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)
6.80	69	109	8.75	81	125
6.90	69	109	8.80	81	125
7.00	69	109	8.90	81	125
7.10	69	109	9.00	81	125
7.20	69	109	9.10	81	125
7.25	69	109	9.20	81	125
7.30	69	109	9.25	81	125
7.40	69	109	9.30	81	125
7.45	69	109	9.40	81	125
7.50	69	109	9.50	81	125
7.60	75	117	9.60	87	133
7.70	75	117	9.70	87	133
7.75	75	117	9.75	87	133
7.80	75	117	9.80	87	133
7.90	75	117	9.90	87	133
8.00	75	117	10.00	87	133
8.10	75	117	10.10	87	133
8.20	75	117	10.20	87	133
8.25	75	117	10.50	87	133
8.30	75	117	11.00	94	142
8.40	75	117	11.50	94	142
8.50	75	117	12.00	101	151
8.60	81	125	12.50	101	151
8.70	81	125	13.00	101	151

Specification conform to :
IS 5101 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 338 : 1984

Drills are available in HSS,HSS-E on request.
Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT & Straw Gold) are available on request.

PARALLEL SHANK TWIST DRILLS
(PANTHER- Jobber Series)





Application:
These drills are having unique geometry to cut tougher materials like Stainless steels, Nickel Chromium steels, Forged materials, etc.

Size (D1) (h8) mm	Size (D1) (h8) Inch	Flute Length (L1)	Overall Length (L2)
3.00		33	61
3.10		36	65
3.17	1/8	36	65
3.20		36	65
3.30		36	65
3.40		39	70
3.50		39	70
3.57	9/64	39	70
3.70		39	70
3.80		43	75
3.97	5/32	43	75
4.00		43	75
4.10		43	75
4.20		43	75
4.37	11/64	47	80
4.50		47	80
4.76	3/16	52	86
5.00		52	86
5.10		52	86
5.16	13/64	52	86
5.20		52	86
5.30		52	86
5.50		57	93
5.56	7/32	57	93
6.00		57	93
6.20		63	101
6.35	1/4	63	101
6.50		63	101
6.60		63	101
6.70		63	101
6.75	17/64	69	109
6.80		69	109

Size (D1) (h8) mm	Size (D1) (h8) Inch	Flute Length (L1)	Overall Length (L2)
7.00		69	109
7.14	9/32	69	109
7.50		69	109
7.94	5/16	75	117
8.00		75	117
8.20		75	117
8.30		75	117
8.33	21/64	75	117
8.50		75	117
8.60		81	125
8.70		81	125
8.80		81	125
9.00		81	125
9.30		81	125
9.50		81	125
9.52	3/8	87	133
10.00		87	133
10.20		87	133
10.30		87	133
10.32	13/32	87	133
10.40		87	133
10.50		87	133
11.00		94	142
11.11	7/16	94	142
11.50		94	142
11.80		94	142
12.00		101	151
12.50		101	151
12.70	1/2	101	151
12.80		101	151
13.00		101	151

Specification conform to :
IS 5101 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 338 : 1984

These Drills are also available in:

NINJA
HSS-Co8

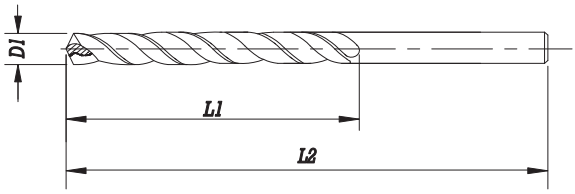
OUTPUT 20-25% MORE THAN PANTHER !

TORPEDO
HSS-PM

OUTPUT 40-80% MORE THAN PANTHER !

PARALLEL SHANK TWIST DRILLS

(Jobber Worm Pattern Series)



Application:
These drill are used for drilling of deep holes in Non Alloy steels, Alloy steels, Grey cast iron, etc.

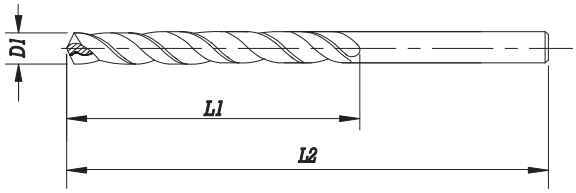
Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)	Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)
4.00	43	75	6.30	63	101
4.10	43	75	6.40	63	101
4.20	43	75	6.50	63	101
4.30	47	80	6.60	63	101
4.40	47	80	6.70	63	101
4.50	47	80	6.80	69	109
4.60	47	80	6.90	69	109
4.70	47	80	7.00	69	109
4.80	52	86	7.10	69	109
4.90	52	86	7.20	69	109
5.00	52	86	7.30	69	109
5.10	52	86	7.40	69	109
5.20	52	86	7.50	69	109
5.30	52	86	7.60	75	117
5.40	57	93	7.70	75	117
5.50	57	93	7.80	75	117
5.60	57	93	7.90	75	117
5.70	57	93	8.00	75	117
5.80	57	93	8.10	75	117
5.90	57	93	8.20	75	117
6.00	57	93	8.30	75	117
6.10	63	101	8.40	75	117
6.20	63	101	8.50	75	117

Specification conform to :
IS 5101 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 338 : 1984

Coatings (TiN,TiCN &TiAlN) and surface treatments (FBT) are available on request.

PARALLEL SHANK TWIST DRILLS

(Jobber Worm Pattern Series)



Application:
These drill are used for drilling of deep holes in Non Alloy steels, Alloy steels, Grey cast iron, etc.

Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)
8.60	81	125
8.70	81	125
8.80	81	125
8.90	81	125
9.00	81	125
9.10	81	125
9.20	81	125
9.30	81	125
9.40	81	125
9.50	81	125
9.60	87	133
9.70	87	133
9.80	87	133
9.90	87	133
10.00	87	133
10.10	87	133
10.20	87	133
10.30	87	133
10.40	87	133
10.50	87	133
10.60	87	133
10.70	94	142
10.80	94	142

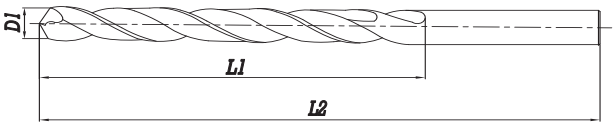
Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)
10.90	94	142
11.00	94	142
11.10	94	142
11.20	94	142
11.30	94	142
11.40	94	142
11.50	94	142
11.60	94	142
11.70	94	142
11.80	94	142
11.90	101	151
12.00	101	151
12.10	101	151
12.20	101	151
12.30	101	151
12.40	101	151
12.50	101	151
12.60	101	151
12.70	101	151
12.80	101	151
12.90	101	151
13.00	101	151

Specification conform to :
IS 5101 : 2002
ISO 235 : 1980
BS 328 Part 1 : 1993
DIN 338 : 1984

Coatings (TiN,TiCN &TiAlN) and surface treatments (FBT) are available on request.

PARALLEL SHANK TWIST DRILLS

(Straw Gold Long Series)



Application:
These drills are used for drilling Deep holes in Stainless steels and difficult to cut materials such as Titanium and Inconel.

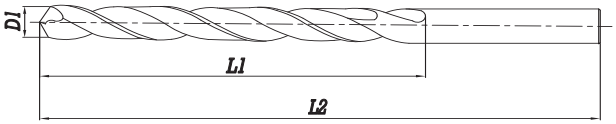
Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)	Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)
3.00	66	100	5.00	87	132
3.10	69	106	5.10	87	132
3.20	69	106	5.20	87	132
3.30	69	106	5.30	87	132
3.40	73	112	5.40	91	139
3.50	73	112	5.50	91	139
3.60	73	112	5.60	91	139
3.70	73	112	5.70	91	139
3.80	78	119	5.80	91	139
3.90	78	119	5.90	91	139
4.00	78	119	6.00	91	139
4.10	78	119	6.10	97	148
4.20	78	119	6.20	97	148
4.30	82	126	6.30	97	148
4.40	82	126	6.40	97	148
4.50	82	126	6.50	97	148
4.60	82	126	6.60	97	148
4.70	82	126	6.70	97	148
4.80	87	132	6.80	102	156
4.90	87	132	6.90	102	156

Specification conform to :
IS 5102 : 2002
ISO 494 : 1975
BS 328 Part 1 : 1993
DIN 340 : 1978

Drills are available in HSS,HSS-E on request.
Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.

PARALLEL SHANK TWIST DRILLS

(Straw Gold Long Series)



Application:
These drills are used for drilling Deep holes in Stainless steels and difficult to cut materials such as Titanium and Inconel

Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)
7.00	102	156
7.10	102	156
7.20	102	156
7.30	102	156
7.40	102	156
7.50	102	156
7.60	109	165
7.70	109	165
7.80	109	165
7.90	109	165
8.00	109	165
8.10	109	165
8.20	109	165
8.30	109	165
8.40	109	165
8.50	109	165
8.60	115	175
8.70	115	175
8.80	115	175
8.90	115	175
9.00	115	175

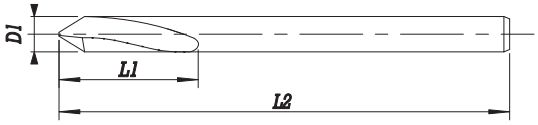
Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)
9.10	115	175
9.20	115	175
9.30	115	175
9.40	115	175
9.50	115	175
9.60	121	184
9.70	121	184
9.80	121	184
9.90	121	184
10.00	121	184
10.20	121	184
10.50	121	184
10.80	128	195
11.00	128	195
11.20	128	195
11.50	128	195
11.80	128	195
12.00	134	205
12.50	134	205
13.00	134	205

Specification conform to :
IS 5102 : 2002
ISO 494 : 1975
BS 328 Part 1 : 1993
DIN 340 : 1978

Drills are available in HSS,HSS-E on request.
Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.

PARALLEL SHANK TWIST DRILLS

(NC Spotting Drill 90°)



IS 14775 | HSS-Co8 | h8 | 90°

Application:
These drills are used for where precise centering required on holes.

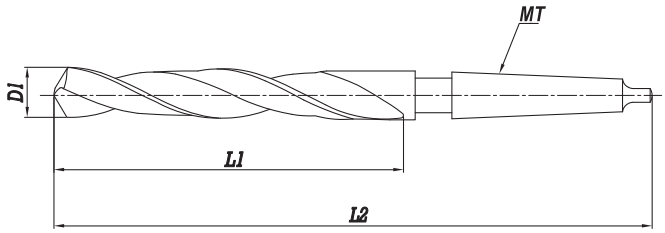
Size (D1) (h8) mm	Flute Length (L1)	Overall Length (L2)
3.00	12	46
4.00	12	55
5.00	15	60
6.00	20	66
8.00	25	79
10.00	25	89
12.00	30	102

Specification conform to :
IS 14775 : 2000

Drills are available in HSS & HSS-E on request.
Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.
NC Drills are also available with 60°&120° Point angles.

TAPER SHANK TWIST DRILLS

(With Standard Shank)



IS 5103 | HSS | 30° | h8 | 118°

Application:
General purpose drilling in Steel, Medium alloy steel, etc.

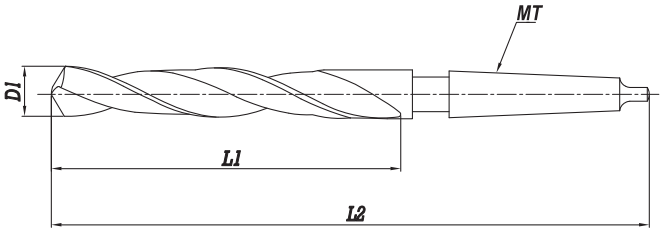
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch	No.			
3.00			33	114	1
3.05		31	36	117	1
3.10			36	117	1
3.17	1/8		36	117	1
3.20			36	117	1
3.26		30	36	117	1
3.30			36	117	1
3.40			39	120	1
3.45		29	39	120	1
3.50			39	120	1
3.57	9/64	28	39	120	1
3.60			39	120	1
3.66		27	39	120	1
3.70			39	120	1
3.73		26	39	120	1
3.80		25	43	124	1
3.86		24	43	124	1
3.90			43	124	1
3.91		23	43	124	1
3.97	5/32		43	124	1
3.99		22	43	124	1
4.00			43	124	1
4.04		21	43	124	1
4.09		20	43	124	1
4.10			43	124	1
4.20			43	124	1
4.22		19	43	124	1
4.30		18	47	128	1
4.37	11/64		47	128	1
4.39		17	47	128	1
4.40			47	128	1
4.50		16	47	128	1
4.57		15	47	128	1
4.60			47	128	1
4.62		14	47	128	1
4.70		13	47	128	1
4.76	3/16		52	133	1
4.80		12	52	133	1
4.85		11	52	133	1
4.90			52	133	1
4.91		10	52	133	1
4.98		9	52	133	1
5.00			52	133	1
5.06		8	52	133	1
5.10			52	133	1
5.11		7	52	133	1
5.16	13/64		52	133	1

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

Specifications conform to :
IS 5103 : 2002
ISO 235/1 : 1980
BS 328 Part 1 : 1993
DIN 345 : 1978

TAPER SHANK TWIST DRILLS

(With Standard Shank)



IS 5103 | HSS | 30° | h8 | 118°

Application:
General purpose drilling in Steel, Medium alloy steel, etc.

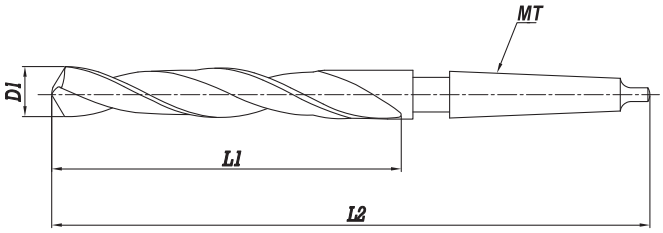
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch	No. / Letter			
5.18		6	52	133	1
5.20			52	133	1
5.22		5	52	133	1
5.30			52	133	1
5.31		4	57	138	1
5.40			57	138	1
5.41		3	57	138	1
5.50			57	138	1
5.56	7/32		57	138	1
5.60			57	138	1
5.61		2	57	138	1
5.70			57	138	1
5.79		1	57	138	1
5.80			57	138	1
5.90			57	138	1
5.94		A	57	138	1
5.95	15/64		57	138	1
6.00			57	138	1
6.05		B	63	144	1
6.10			63	144	1
6.15		C	63	144	1
6.20			63	144	1
6.25		D	63	144	1
6.30			63	144	1
6.35	1/4	E	63	144	1
6.40			63	144	1
6.50			63	144	1
6.53		F	63	144	1
6.60			63	144	1
6.63		G	63	144	1
6.70			63	144	1
6.75	17/64		69	150	1
6.76		H	69	150	1
6.80			69	150	1
6.90			69	150	1
6.91		I	69	150	1
7.00			69	150	1
7.04		J	69	150	1
7.10			69	150	1
7.14	9/32	K	69	150	1
7.20			69	150	1
7.30			69	150	1
7.37		L	69	150	1
7.40			69	150	1
7.49		M	69	150	1
7.50			69	150	1
7.54	19/64		75	156	1
7.60			75	156	1

Specifications conform to :
IS 5103 : 2002
ISO 235/1 : 1980
BS 328 Part 1 : 1993
DIN 345 : 1978

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

TAPER SHANK TWIST DRILLS

(With Standard Shank)



IS 5103 | HSS | 30° | h8 | 118°

Application:
General purpose drilling in Steel, Medium alloy steel, etc.

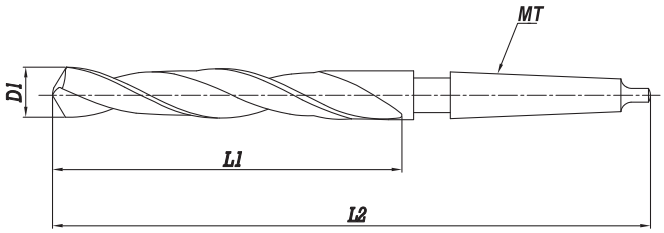
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch	Letter			
7.67		N	75	156	1
7.70			75	156	1
7.80			75	156	1
7.90			75	156	1
7.94	5/16		75	156	1
8.00			75	156	1
8.03		O	75	156	1
8.10			75	156	1
8.20		P	75	156	1
8.30			75	156	1
8.33	21/64		75	156	1
8.40			75	156	1
8.43		Q	75	156	1
8.50			75	156	1
8.60			81	162	1
8.61		R	81	162	1
8.70			81	162	1
8.73	11/32		81	162	1
8.80			81	162	1
8.84		S	81	162	1
8.90			81	162	1
9.00			81	162	1
9.09		T	81	162	1
9.10			81	162	1
9.13	23/64		81	162	1
9.20			81	162	1
9.30			81	162	1
9.35		U	81	162	1
9.40			81	162	1
9.50			81	162	1
9.52	3/8		87	168	1
9.58		V	87	168	1
9.60			87	168	1
9.70			87	168	1
9.80		W	87	168	1
9.90			87	168	1
9.92	25/64		87	168	1
10.00			87	168	1
10.08		X	87	168	1
10.10			87	168	1
10.20			87	168	1
10.26		Y	87	168	1
10.30			87	168	1
10.32	13/32		87	168	1
10.40			87	168	1
10.49		Z	87	168	1
10.50			87	168	1
10.60			87	168	1

Specifications conform to :
IS 5103 : 2002
ISO 235/1 : 1980
BS 328 Part 1 : 1993
DIN 345 : 1978

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

TAPER SHANK TWIST DRILLS

(With Standard Shank)



IS 5103 | HSS | 30° | h8 | 118°

Application:
General purpose drilling in Steel, Medium alloy steel, etc.

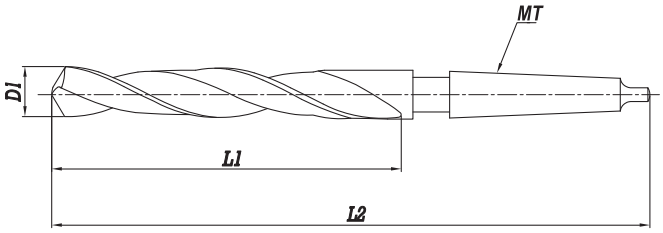
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
10.70		94	175	1
10.72	27/64	94	175	1
10.80		94	175	1
10.90		94	175	1
11.00		94	175	1
11.10		94	175	1
11.11	7/16	94	175	1
11.20		94	175	1
11.30		94	175	1
11.40		94	175	1
11.50		94	175	1
11.51	29/64	94	175	1
11.60		94	175	1
11.70		94	175	1
11.80		94	175	1
11.90		101	182	1
11.91	15/32	101	182	1
12.00		101	182	1
12.10		101	182	1
12.20		101	182	1
12.30	31/64	101	182	1
12.40		101	182	1
12.50		101	182	1
12.60		101	182	1
12.70	1/2	101	182	1
12.80		101	182	1
12.90		101	182	1
13.00		101	182	1
13.10	33/64	101	182	1
13.20		101	182	1
13.30		108	189	1
13.40		108	189	1
13.49	17/32	108	189	1
13.50		108	189	1
13.60		108	189	1
13.70		108	189	1
13.80		108	189	1
13.89	35/64	108	189	1
13.90		108	189	1
14.00		108	189	1
14.25		114	212	2
14.29	9/16	114	212	2
14.50		114	212	2
14.68	37/64	114	212	2
14.75		114	212	2
15.00		114	212	2
15.08	19/32	120	218	2

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

Specifications conform to :
IS 5103 : 2002
ISO 235/1 : 1980
BS 328 Part 1 : 1993
DIN 345 : 1978

TAPER SHANK TWIST DRILLS

(With Standard Shank)



IS 5103 | HSS | 30° | h8 | 118°

Application:
General purpose drilling in Steel, Medium alloy steel, etc.

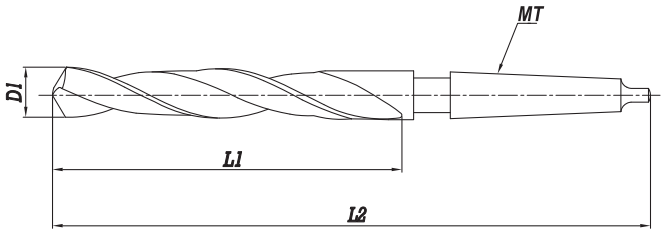
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
15.25		120	218	2
15.48	39/64	120	218	2
15.50		120	218	2
15.75		120	218	2
15.87	5/8	120	218	2
16.00		120	218	2
16.25		125	223	2
16.27	41/64	125	223	2
16.50		125	223	2
16.67	21/32	125	223	2
16.75		125	223	2
17.00		125	223	2
17.07	43/64	130	228	2
17.25		130	228	2
17.46	11/16	130	228	2
17.50		130	228	2
17.75		130	228	2
17.86	45/64	130	228	2
18.00		130	228	2
18.25		135	233	2
18.26	23/32	135	233	2
18.50		135	233	2
18.65	47/64	135	233	2
18.75		135	233	2
19.00		135	233	2
19.05	3/4	140	238	2
19.25		140	238	2
19.45	49/64	140	238	2
19.50		140	238	2
19.75		140	238	2
19.84	25/32	140	238	2
20.00		140	238	2
20.24	51/64	145	243	2
20.25		145	243	2
20.50		145	243	2
20.64	13/16	145	243	2
20.75		145	243	2
21.00		145	243	2
21.03	53/64	145	243	2
21.25		150	248	2
21.43	27/32	150	248	2
21.50		150	248	2
21.75		150	248	2
21.83	55/64	150	248	2
22.00		150	248	2
22.22	7/8	150	248	2
22.25		150	248	2

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

Specifications conform to :
IS 5103 : 2002
ISO 235/1 : 1980
BS 328 Part 1 : 1993
DIN 345 : 1978

TAPER SHANK TWIST DRILLS

(With Standard Shank)



IS 5103 | HSS | 30° | h8 | 118°

Application:
General purpose drilling in Steel, Medium alloy steel, etc.

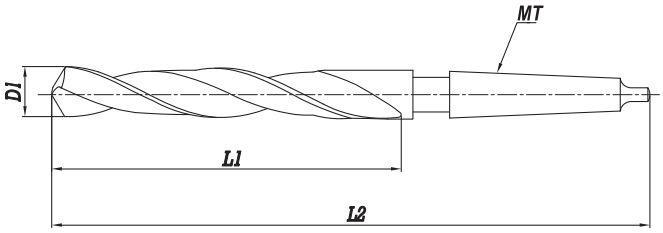
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
22.50		155	253	2
22.62	57/64	155	253	2
22.75		155	253	2
23.00		155	253	2
23.02	29/32	155	253	2
23.25		155	276	3
23.42	59/64	155	276	3
23.50		155	276	3
23.75		160	281	3
23.81	15/16	160	281	3
24.00		160	281	3
24.21	61/64	160	281	3
24.25		160	281	3
24.50		160	281	3
24.61	31/32	160	281	3
24.75		160	281	3
25.00	63/64	160	281	3
25.25		165	286	3
25.40	1	165	286	3
25.50		165	286	3
25.75		165	286	3
26.00		165	286	3
26.19	1.1/32	165	286	3
26.25		165	286	3
26.50		165	286	3
26.75		170	291	3
26.99	1.1/16	170	291	3
27.00		170	291	3
27.25		170	291	3
27.50		170	291	3
27.75		170	291	3
27.78	1.3/32	170	291	3
28.00		170	291	3
28.25		175	296	3
28.50		175	296	3
28.57	1.1/8	175	296	3
28.75		175	296	3
29.00		175	296	3
29.25		175	296	3
29.37	1.5/32	175	296	3
29.50		175	296	3
29.75		175	296	3
30.00		175	296	3
30.16	1.3/16	180	301	3
30.25		180	301	3
30.50		180	301	3
30.75		180	301	3

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

Specifications conform to :
IS 5103 : 2002
ISO 235/1 : 1980
BS 328 Part 1 : 1993
DIN 345 : 1978

TAPER SHANK TWIST DRILLS

(With Standard Shank)



IS 5103 | HSS | 30° | h8 | 118°

Application:
General purpose drilling in Steel, Medium alloy steel, etc.

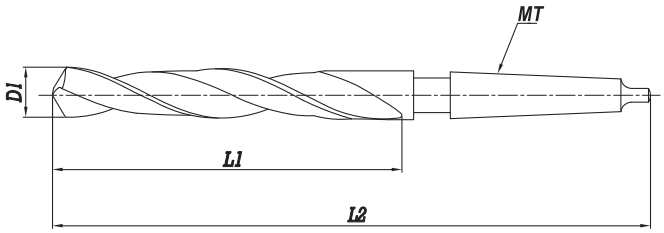
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
30.96	1.7/32	180	301	3
31.00		180	301	3
31.25		180	301	3
31.50		180	301	3
31.75	1.1/4	185	306	3
32.00		185	334	4
32.50		185	334	4
32.54	1.9/32	185	334	4
33.00		185	334	4
33.34	1.5/16	185	334	4
33.50		185	334	4
34.00		190	339	4
34.13	1.11/32	190	339	4
34.50		190	339	4
34.92	1.3/8	190	339	4
35.00		190	339	4
35.50		190	339	4
35.72	1.13/32	195	344	4
36.00		195	344	4
36.50		195	344	4
36.51	1.7/16	195	344	4
37.00		195	344	4
37.31	1.15/32	195	344	4
37.50		195	344	4
38.00		200	349	4
38.10	1.1/2	200	349	4
38.50		200	349	4
38.89	1.17/32	200	349	4
39.00		200	349	4
39.50		200	349	4
39.69	1.9/16	200	349	4
40.00		200	349	4
40.48	1.19/32	205	354	4
40.50		205	354	4
41.00		205	354	4
41.27	1.5/8	205	354	4
41.50		205	354	4
42.00		205	354	4
42.07	1.21/32	205	354	4
42.50		205	354	4
42.86	1.11/16	210	359	4
43.00		210	359	4
43.50		210	359	4
43.66	1.23/32	210	359	4
44.00		210	359	4
44.45	1.3/4	210	359	4
44.50		210	359	4

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

Specifications conform to :
IS 5103 : 2002
ISO 235/1 : 1980
BS 328 Part 1 : 1993
DIN 345 : 1978

TAPER SHANK TWIST DRILLS

(With Standard Shank)



IS 5103 | HSS | 30° | h8 | 118°

Application:
General purpose drilling in Steel, Medium alloy steel, etc.

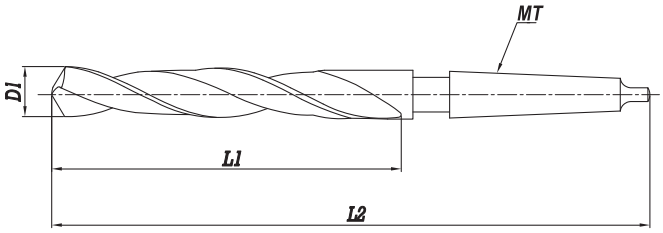
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
45.00		210	359	4
45.24	1.25/32	215	364	4
45.50		215	364	4
46.00		215	364	4
46.04	1.13/16	215	364	4
46.50		215	364	4
46.83	1.27/32	215	364	4
47.00		215	364	4
47.50		215	364	4
47.62	1.7/8	220	369	4
48.00		220	369	4
48.42	1.29/32	220	369	4
48.50		220	369	4
49.00		220	369	4
49.21	1.15/16	220	369	4
49.50		220	369	4
50.00		220	369	4
50.01	1.31/32	225	374	4
50.50		225	374	4
50.80	2	225	374	4
51.00		225	412	5
52.00		225	412	5
52.39	2.1/16	225	412	5
53.00		225	412	5
53.97	2.1/8	230	417	5
54.00		230	417	5
55.00		230	417	5
55.56	2.3/16	230	417	5
56.00		230	417	5
57.00		235	422	5
57.15	2.1/4	235	422	5
58.00		235	422	5
58.74	2.5/16	235	422	5
59.00		235	422	5
60.00		235	422	5
60.32	2.3/8	240	427	5
61.00		240	427	5
61.91	2.7/16	240	427	5
62.00		240	427	5
63.00		240	427	5
63.50	2.1/2	245	432	5
64.00		245	432	5
65.00		245	432	5
65.09	2.9/16	245	432	5
66.00		245	432	5
66.67	2.5/8	245	432	5
67.00		245	432	5

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

Specifications conform to :
IS 5103 : 2002
ISO 235/1 : 1980
BS 328 Part 1 : 1993
DIN 345 : 1978

TAPER SHANK TWIST DRILLS

(With Standard Shank)



IS 5103 | HSS | 30° | h8 | 118°

Application:
General purpose drilling in Steel, Medium alloy steel, etc.

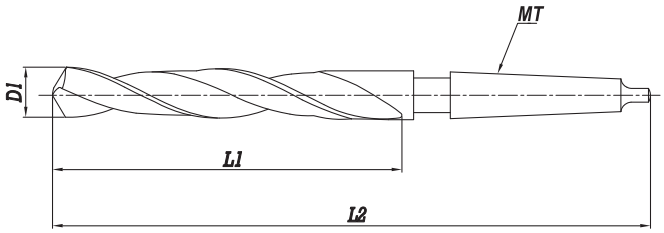
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
68.00		250	437	5
68.26	2.11/16	250	437	5
69.00		250	437	5
69.85	2.3/4	250	437	5
70.00		250	437	5
71.00		250	437	5
71.44	2.13/16	255	442	5
72.00		255	442	5
73.00		255	442	5
73.02	2.7/8	255	442	5
74.00		255	442	5
74.61	2.15/16	255	442	5
75.00		255	442	5
76.00		260	447	5
76.20	3	260	447	5
77.00		260	514	6
77.79	3.1/16	260	514	6
78.00		260	514	6
79.00		260	514	6
79.37	3.1/8	260	514	6
80.00		260	514	6
80.96	3.3/16	265	519	6
81.00		265	519	6
82.00		265	519	6
82.55	3.1/4	265	519	6
83.00		265	519	6
84.00		265	519	6
84.14	3.5/16	265	519	6
85.00		265	519	6
85.72	3.3/8	270	524	6
86.00		270	524	6
87.00		270	524	6
87.31	3.7/16	270	524	6
88.00		270	524	6
88.90	3.1/2	270	524	6
89.00		270	524	6
90.00		270	524	6
90.49	3.9/16	275	529	6
91.00		275	529	6
92.00		275	529	6
92.07	3.5/8	275	529	6
93.00		275	529	6
93.66	3.11/16	275	529	6
94.00		275	529	6
95.00		275	529	6
95.25	3.3/4	280	534	6
96.00		280	534	6

Specifications conform to :
IS 5103 : 2002
ISO 235/1 : 1980
BS 328 Part 1 : 1993
DIN 345 : 1978

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

TAPER SHANK TWIST DRILLS

(With Standard Shank)



IS 5103 | HSS | 30° | h8 | 118°

Application:
General purpose drilling in Steel,
Medium alloy steel, etc.

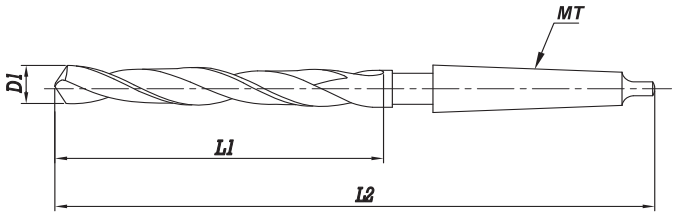
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
96.84	3.13/16	280	534	6
97.00		280	534	6
98.00		280	534	6
98.42	3.7/8	280	534	6
99.00		280	534	6
100.00		280	534	6
100.01	3.15/16	285	539	6
101.00		285	539	6
101.60	4	285	539	6
102.00		285	539	6
103.00		285	539	6
104.00		285	539	6
105.00		285	539	6
106.00		285	539	6

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 16 mm & milled flutes above 16 mm

Specifications conform to :
IS 5103 : 2002
ISO 235/1 : 1980
BS 328 Part 1 : 1993
DIN 345 : 1978

TAPER SHANK TWIST DRILLS

(With Oversize Shank)



IS 5104 | HSS | 30° | h8 | 118°

Application:
General purpose drilling in Steel, Medium alloy steel, etc.

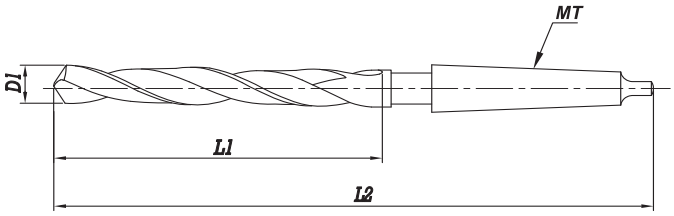
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
11.91	15/32	101	199	2
12.00		101	199	2
12.10		101	199	2
12.20		101	199	2
12.30	31/64	101	199	2
12.40		101	199	2
12.50		101	199	2
12.60		101	199	2
12.70	½	101	199	2
12.80		101	199	2
12.90		101	199	2
13.00		101	199	2
13.10	33/64	101	199	2
13.20		101	199	2
13.30		108	206	2
13.40		108	206	2
13.49	17/32	108	206	2
13.50		108	206	2
13.60		108	206	2
13.70		108	206	2
13.80		108	206	2
13.89	35/64	108	206	2
13.90		108	206	2
14.00		108	206	2
14.25		114	235	3
14.29	9/16	114	235	3
14.50		114	235	3
14.68	37/64	114	235	3
14.75		114	235	3
15.00		114	235	3
15.08	19/32	120	241	3
15.25		120	241	3
15.48	39/64	120	241	3
15.50		120	241	3
15.75		120	241	3
15.87	5/8	120	241	3
16.00		120	241	3
16.25		125	246	3
16.27	41/64	125	246	3
16.50		125	246	3
16.67	21/32	125	246	3
16.75		125	246	3
17.00		125	246	3
17.07	43/64	130	251	3
17.25		130	251	3
17.46	11/16	130	251	3
17.50		130	251	3

Figures mentioned in ***Red*** are for reference only.

Specifications conform to :
IS 5104 : 2002
ISO 235/1 : 1980
BS 328 Part 1 : 1993

TAPER SHANK TWIST DRILLS

(With Oversize Shank)



IS 5104 | HSS | 30° | h8 | 118°

Application:
General purpose drilling in Steel, Medium alloy steel, etc.

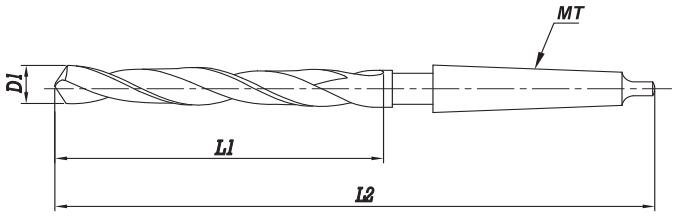
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
17.75		130	251	3
17.86	45/64	130	251	3
18.00		130	251	3
18.25		135	256	3
18.26	23/32	135	256	3
18.50		135	256	3
18.65	47/64	135	256	3
18.75		135	256	3
19.00		135	256	3
19.05	3/4	140	261	3
19.25		140	261	3
19.45	49/64	140	261	3
19.50		140	261	3
19.75		140	261	3
19.84	25/32	140	261	3
20.00		140	261	3
20.24	51/64	145	266	3
20.25		145	266	3
20.50		145	266	3
20.64	13/16	145	266	3
20.75		145	266	3
21.00		145	266	3
21.03	53/64	145	266	3
21.25		150	271	3
21.43	27/32	150	271	3
21.50		150	271	3
21.75		150	271	3
21.83	55/64	150	271	3
22.00		150	271	3
22.22	7/8	150	271	3
22.25		150	271	3
22.50		155	276	3
22.62	57/64	155	276	3
22.75		155	276	3
23.00		155	276	3
23.02	29/32	155	304	4
23.25		155	304	4
23.42	59/64	155	304	4
23.50		155	304	4
23.75		160	309	4
23.81	15/16	160	309	4
24.00		160	309	4
24.21	61/64	160	309	4
24.25		160	309	4
24.50		160	309	4
24.61	31/32	160	309	4
24.75		160	309	4

Figures mentioned in ***Red*** are for reference only.

Specifications conform to :
IS 5104 : 2002
ISO 235/1 : 1980
BS 328 Part 1 : 1993

TAPER SHANK TWIST DRILLS

(With Oversize Shank)



IS 5104 | HSS | 30° | h8 | 118°

Application:
General purpose drilling in Steel, Medium alloy steel, etc.

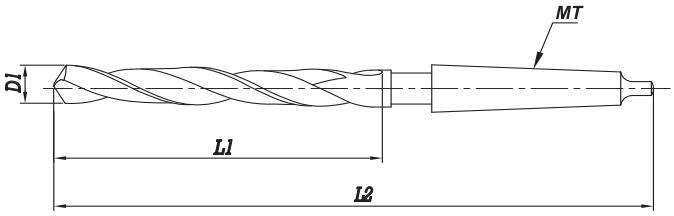
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
25.00	63/64	160	309	4
25.25		165	314	4
25.40	1	165	314	4
25.50		165	314	4
25.75		165	314	4
26.00		165	314	4
26.19	1.1/32	165	314	4
26.25		165	314	4
26.50		165	314	4
26.75		170	319	4
26.99	1.1/16	170	319	4
27.00		170	319	4
27.25		170	319	4
27.50		170	319	4
27.75		170	319	4
27.78	1.3/32	170	319	4
28.00		170	319	4
28.25		175	324	4
28.50		175	324	4
28.57	1.1/8	175	324	4
28.75		175	324	4
29.00		175	324	4
29.25		175	324	4
29.37	1.5/32	175	324	4
29.50		175	324	4
29.75		175	324	4
30.00		175	324	4
30.16	1.3/16	180	329	4
30.25		180	329	4
30.50		180	329	4
30.75		180	329	4
30.96	1.7/32	180	329	4
31.00		180	329	4
31.25		180	329	4
31.50		180	329	4
31.75	1.1/4	185	334	4
32.00		185	372	5
32.50		185	372	5
32.54	1.9/32	185	372	5
33.00		185	372	5
33.34	1.5/16	185	372	5
33.50		185	372	5
34.00		190	377	5
34.13	1.11/32	190	377	5
34.50		190	377	5
34.92	1.3/8	190	377	5
35.00		190	377	5

Figures mentioned in ***Red*** are for reference only.

Specifications conform to :
IS 5104 : 2002
ISO 235/1 : 1980
BS 328 Part 1 : 1993

TAPER SHANK TWIST DRILLS

(With Oversize Shank)



IS 5104 | HSS | 30° | h8 | 118°

Application:
General purpose drilling in Steel, Medium alloy steel, etc.

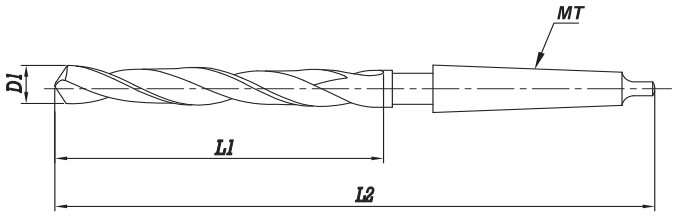
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
35.72	1.13/32	195	382	5
36.00		195	382	5
36.50		195	382	5
36.51	1.7/16	195	382	5
37.00		195	382	5
37.31	1.15/32	195	382	5
37.50		195	382	5
38.00		200	387	5
38.10	1.1/2	200	387	5
38.50		200	387	5
38.89	1.17/32	200	387	5
39.00		200	387	5
39.50		200	387	5
39.69	1.9/16	200	387	5
40.00		200	387	5
40.48	1.19/32	205	392	5
40.50		205	392	5
41.00		205	392	5
41.27	1.5/8	205	392	5
41.50		205	392	5
42.00		205	392	5
42.07	1.21/32	205	392	5
42.50		205	392	5
42.86	1.11/16	210	397	5
43.00		210	397	5
43.50		210	397	5
43.66	1.23/32	210	397	5
44.00		210	397	5
44.45	1.3/4	210	397	5
44.50		210	397	5
45.00		210	397	5
45.24	1.25/32	215	402	5
45.50		215	402	5
46.00		215	402	5
46.04	1.13/16	215	402	5
46.50		215	402	5
46.83	1.27/32	215	402	5
47.00		215	402	5
47.50		215	402	5
47.62	1.7/8	220	407	5
48.00		220	407	5
48.42	1.29/32	220	407	5
48.50		220	407	5
49.00		220	407	5
49.21	1.15/16	220	407	5
49.50		220	407	5
50.00		220	407	5

Figures mentioned in ***Red*** are for reference only.

Specifications conform to :
IS 5104 : 2002
ISO 235/1 : 1980
BS 328 Part 1 : 1993

TAPER SHANK TWIST DRILLS

(With Oversize Shank)



IS 5104 | HSS | 30° | h8 | 118°

Application:
General purpose drilling in Steel, Medium alloy steel, etc.

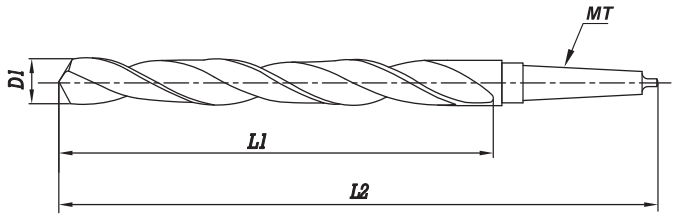
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
50.01	1.31/32	225	412	5
50.50		225	412	5
50.80	2	225	412	5
51.00		225	479	6
52.00		225	479	6
52.39	2.1/16	225	479	6
53.00		225	479	6
53.97	2.1/8	230	484	6
54.00		230	484	6
55.00		230	484	6
55.56	2.3/16	230	484	6
56.00		230	484	6
57.00		235	489	6
57.15	2.1/4	235	489	6
58.00		235	489	6
58.74	2.5/6	235	489	6
59.00		235	489	6
60.00		235	489	6
60.32	2.3/8	240	494	6
61.00		240	494	6
61.91	2.7/16	240	494	6
62.00		240	494	6
63.00		240	494	6
63.50	2.1/2	245	499	6
64.00		245	499	6
65.00		245	499	6
65.09	2.9/16	245	499	6
66.00		245	499	6
66.67	2.5/8	245	499	6
67.00		245	499	6
68.00		250	504	6
68.26	2.11/16	250	504	6
69.00		250	504	6
69.85	2.3/4	250	504	6
70.00		250	504	6
71.00		250	504	6
71.44	2.13/16	255	509	6
72.00		255	509	6
73.00		255	509	6
73.02	2.7/8	255	509	6
74.00		255	509	6
74.61	2.15/16	255	509	6
75.00		255	509	6
76.00		260	514	6
76.20	3	260	514	6

Figures mentioned in ***Red*** are for reference only.

Specifications conform to :
IS 5104 : 2002
ISO 235/1 : 1980
BS 328 Part 1 : 1993

TAPER SHANK TWIST DRILLS

(Long Series)



IS 8305 | HSS | 30° | h8 | 118°

Application:
For drilling deep or inaccessible holes.
Drilling in Steel, Medium alloy steel, etc.

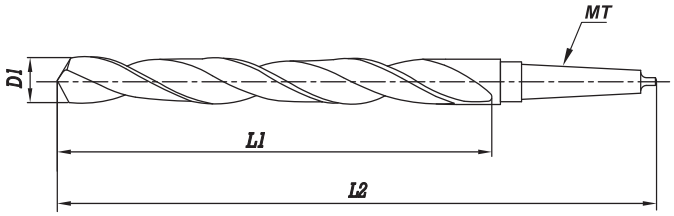
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch	No. / Letter			
5.00			74	155	1
5.05		8	74	155	1
5.10			74	155	1
5.11		7	74	155	1
5.16	13/64		74	155	1
5.18		6	74	155	1
5.20			74	155	1
5.22		5	74	155	1
5.30			74	155	1
5.31		4	80	161	1
5.40			80	161	1
5.41		3	80	161	1
5.50			80	161	1
5.56	7/32		80	161	1
5.60			80	161	1
5.61		2	80	161	1
5.70			80	161	1
5.79		1	80	161	1
5.80			80	161	1
5.90			80	161	1
5.94		A	80	161	1
5.95	15/64		80	161	1
6.00			80	161	1
6.05		B	86	167	1
6.10			86	167	1
6.15		C	86	167	1
6.20			86	167	1
6.25		D	86	167	1
6.30			86	167	1
6.35	1/4	E	86	167	1
6.40			86	167	1
6.50			86	167	1
6.53		F	86	167	1
6.60			86	167	1
6.63		G	86	167	1
6.70			86	167	1
6.75	17/64		93	174	1
6.76		H	93	174	1
6.80			93	174	1
6.90			93	174	1
6.91		I	93	174	1
7.00			93	174	1
7.04		J	93	174	1
7.10			93	174	1
7.14	9/32	K	93	174	1
7.20			93	174	1
7.30			93	174	1
7.37		L	93	174	1

Specifications conform to :
IS 8305 : 2002
DIN 341 : 1978

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 10 mm & milled flutes above 10 mm

TAPER SHANK TWIST DRILLS

(Long Series)



IS 8305 | HSS | 30° | h8 | 118°

Application:
For drilling deep or inaccessible holes.
Drilling in Steel, Medium alloy steel, etc.

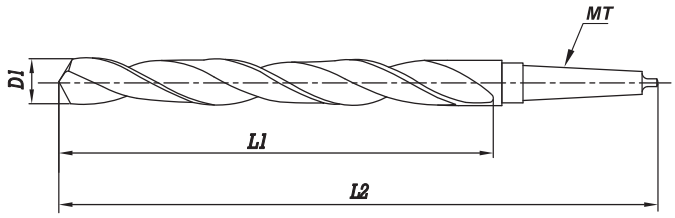
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch	Letter			
7.40			93	174	1
7.49		M	93	174	1
7.50			93	174	1
7.54	19/64		100	181	1
7.60			100	181	1
7.67		N	100	181	1
7.70			100	181	1
7.80			100	181	1
7.90			100	181	1
7.94	5/16		100	181	1
8.00			100	181	1
8.03		O	100	181	1
8.10			100	181	1
8.20		P	100	181	1
8.30			100	181	1
8.33	21/64		100	181	1
8.40			100	181	1
8.43		Q	100	181	1
8.50			100	181	1
8.60			107	188	1
8.61		R	107	188	1
8.70			107	188	1
8.73	11/32		107	188	1
8.80			107	188	1
8.84		S	107	188	1
8.90			107	188	1
9.00			107	188	1
9.09		T	107	188	1
9.10			107	188	1
9.13	23/64		107	188	1
9.20			107	188	1
9.30			107	188	1
9.35		U	107	188	1
9.40			107	188	1
9.50			107	188	1
9.52	3/8		116	197	1
9.58		V	116	197	1
9.60			116	197	1
9.70			116	197	1
9.80		W	116	197	1
9.90			116	197	1
9.92	25/64		116	197	1
10.00			116	197	1
10.08		X	116	197	1
10.10			116	197	1
10.20			116	197	1

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 10 mm & milled flutes above 10 mm

Specifications conform to :
IS 8305 : 2002
DIN 341 : 1978

TAPER SHANK TWIST DRILLS

(Long Series)



IS 8305 | HSS | 30° | h8 | 118°

Application:
For drilling deep or inaccessible holes.
Drilling in Steel, Medium alloy steel, etc.

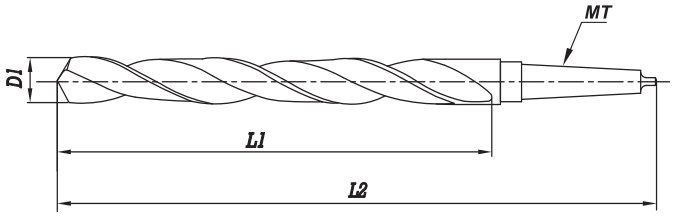
Size (D1) (h8)			Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch	Letter			
10.26		Y	116	197	1
10.30			116	197	1
10.32	13/32		116	197	1
10.40			116	197	1
10.49		Z	116	197	1
10.50			116	197	1
10.60			116	197	1
10.70			125	206	1
10.72	27/64		125	206	1
10.80			125	206	1
10.90			125	206	1
11.00			125	206	1
11.10			125	206	1
11.11	7/16		125	206	1
11.20			125	206	1
11.30			125	206	1
11.40			125	206	1
11.50			125	206	1
11.51	29/64		125	206	1
11.60			125	206	1
11.70			125	206	1
11.80			125	206	1
11.90			134	215	1
11.91	15/32		134	215	1
12.00			134	215	1
12.20			134	215	1
12.30	31/64		134	215	1
12.40			134	215	1
12.50			134	215	1
12.60			134	215	1
12.70	1/2		134	215	1
12.80			134	215	1
12.90			134	215	1
13.00			134	215	1
13.10	33/61		134	215	1
13.20			134	215	1
13.30			142	223	1
13.40			142	223	1
13.49	17/32		142	223	1
13.50			142	223	1
13.60			142	223	1
13.70			142	223	1
13.80			142	223	1
13.89	35/64		142	223	1
13.90			142	223	1
14.00			142	223	1

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 10 mm & milled flutes above 10 mm

Specifications conform to :
IS 8305 : 2002
DIN 341 : 1978

TAPER SHANK TWIST DRILLS

(Long Series)



IS 8305 | HSS | 30° | h8 | 118°

Application:
For drilling deep or inaccessible holes.
Drilling in Steel, Medium alloy steel, etc.

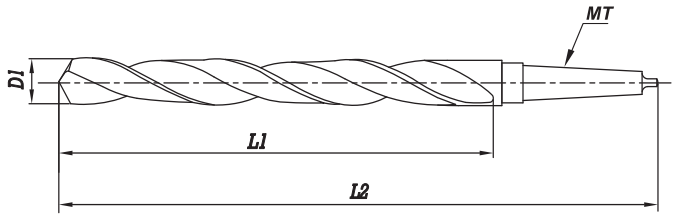
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
14.25		147	245	2
14.29	9/16	147	245	2
14.50		147	245	2
14.68	37/64	147	245	2
14.75		147	245	2
15.00		147	245	2
15.08	19/32	153	251	2
15.25		153	251	2
15.48	39/64	153	251	2
15.50		153	251	2
15.75		153	251	2
15.87	5/8	153	251	2
16.00		153	251	2
16.25		159	257	2
16.27	41/64	159	257	2
16.50		159	257	2
16.67	21/32	159	257	2
16.75		159	257	2
17.00		159	257	2
17.07	43/64	165	263	2
17.25		165	263	2
17.46	11/16	165	263	2
17.50		165	263	2
17.75		165	263	2
17.86	45/64	165	263	2
18.00		165	263	2
18.25		171	269	2
18.26	23/32	171	269	2
18.50		171	269	2
18.65	47/64	171	269	2
18.75		171	269	2
19.00		171	269	2
19.05	3/4	177	275	2
19.25		177	275	2
19.45	49/64	177	275	2
19.50		177	275	2
19.75		177	275	2
19.84	25/32	177	275	2
20.00		177	275	2
20.24	51/64	184	282	2
20.25		184	282	2
20.50		184	282	2
20.64	13/16	184	282	2
20.75		184	282	2
21.00		184	282	2
21.03	53/64	184	282	2

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 10 mm & milled flutes above 10 mm

Specifications conform to :
IS 8305 : 2002
DIN 341 : 1978

TAPER SHANK TWIST DRILLS

(Long Series)



IS 8305 | HSS | 30° | h8 | 118°

Application:
For drilling deep or inaccessible holes.
Drilling in Steel, Medium alloy steel, etc.

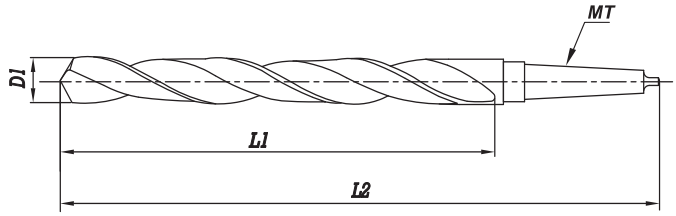
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
21.25		191	289	2
21.43	27/32	191	289	2
21.50		191	289	2
21.75		191	289	2
21.83	55/64	191	289	2
22.00		191	289	2
22.22	7/8	191	289	2
22.25		191	289	2
22.50		198	296	2
22.62	57/64	198	296	2
22.75		198	296	2
23.00		198	296	2
23.02	29/32	198	296	2
23.25		198	319	3
23.42	59/64	198	319	3
23.50		198	319	3
23.75		206	327	3
23.81	15/16	206	327	3
24.00		206	327	3
24.21	61/64	206	327	3
24.25		206	327	3
24.50		206	327	3
24.61	31/32	206	327	3
24.75		206	327	3
25.00	63/64	206	327	3
25.25		214	335	3
25.40	1	214	335	3
25.50		214	335	3
25.75		214	335	3
26.00		214	335	3
26.19	1.1/32	214	335	3
26.25		214	335	3
26.50		214	335	3
26.75		222	343	3
26.99	1.1/16	222	343	3
27.00		222	343	3
27.25		222	343	3
27.50		222	343	3
27.75		222	343	3
27.78	1.3/32	222	343	3
28.00		222	343	3
28.25		230	351	3
28.50		230	351	3
28.58	1.1/8	230	351	3
28.75		230	351	3
29.00		230	351	3

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 10 mm & milled flutes above 10 mm

Specifications conform to :
IS 8305 : 2002
DIN 341 : 1978

TAPER SHANK TWIST DRILLS

(Long Series)



IS 8305 | HSS | 30° | h8 | 118°

Application:
For drilling deep or inaccessible holes.
Drilling in Steel, Medium alloy steel, etc.

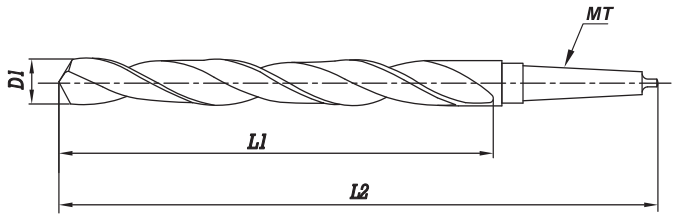
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
29.25		230	351	3
29.37	1.5/32	230	351	3
29.50		230	351	3
29.75		230	351	3
30.00		230	351	3
30.16	1.3/16	239	360	3
30.25		239	360	3
30.50		239	360	3
30.75		239	360	3
30.96	1.7/32	239	360	3
31.00		239	360	3
31.25		239	360	3
31.50		239	360	3
31.75	1.1/4	248	369	3
32.00		248	397	4
32.50		248	397	4
32.54	1.9/32	248	397	4
33.00		248	397	4
33.34	1.5/16	248	397	4
33.50		248	397	4
34.00		257	406	4
34.13	1.11/32	257	406	4
34.50		257	406	4
34.92	1.3/8	257	406	4
35.00		257	406	4
35.50		257	406	4
35.72	1.13/32	267	416	4
36.00		267	416	4
36.50		267	416	4
36.51	1.7/16	267	416	4
37.00		267	416	4
37.31	1.15/32	267	416	4
37.50		267	416	4
38.00		277	426	4
38.10	1.1/2	277	426	4
38.50		277	426	4
38.89	1.17/32	277	426	4
39.00		277	426	4
39.50		277	426	4
39.69	1.9/16	277	426	4
40.00		277	426	4
40.48	1.19/32	287	436	4
40.50		287	436	4
41.00		287	436	4
41.28	1.5/8	287	436	4
41.50		287	436	4

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 10 mm & milled flutes above 10 mm

Specifications conform to :
IS 8305 : 2002
DIN 341 : 1978

TAPER SHANK TWIST DRILLS

(Long Series)



IS 8305 | HSS | 30° | h8 | 118°

Application:
For drilling deep or inaccessible holes.
Drilling in Steel, Medium alloy steel, etc.

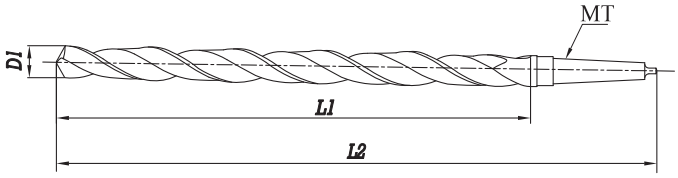
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
42.00		287	436	4
42.07	1.21/32	287	436	4
42.50		287	436	4
42.86	1.11/16	298	447	4
43.00		298	447	4
43.50		298	447	4
43.66	1.23/32	298	447	4
44.00		298	447	4
44.45	1.3/4	298	447	4
44.50		298	447	4
45.00		298	447	4
45.24	1.25/32	310	459	4
45.50		310	459	4
46.00		310	459	4
46.04	1.13/16	310	459	4
46.50		310	459	4
46.83	1.27/32	310	459	4
47.00		310	459	4
47.50		310	459	4
47.62	1.7/8	321	470	4
48.00		321	470	4
48.42	1.29/32	321	470	4
48.50		321	470	4
49.00		321	470	4
49.21	1.15/16	321	470	4
49.50		321	470	4
50.00		321	470	4

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 10 mm & milled flutes above 10 mm

Specifications conform to :
IS 8305 : 2002
DIN 341 : 1978

TAPER SHANK TWIST DRILLS

(Extra Long Series)



IS 7822 | HSS | 30° | h8 | 118°

Application :
For drilling in extremely deep holes for materials like Mild steel, Medium carbon steel and Non Ferrous metals, etc.

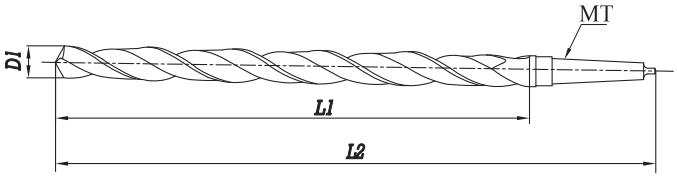
Preferred Size (D1) (h8)			Series 1		Series 2		Series 3		MT
mm	inch	Letter	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	Shank No
5.94		A	110	200	160	250	225	315	1
5.95	15/64		110	200	160	250	225	315	1
6.00			110	200	160	250	225	315	1
6.05		B	110	200	160	250	225	315	1
6.10			110	200	160	250	225	315	1
6.15		C	110	200	160	250	225	315	1
6.20			110	200	160	250	225	315	1
6.25		D	110	200	160	250	225	315	1
6.30			110	200	160	250	225	315	1
6.35	1/4	E	110	200	160	250	225	315	1
6.40			110	200	160	250	225	315	1
6.50			110	200	160	250	225	315	1
6.53		F	110	200	160	250	225	315	1
6.60			110	200	160	250	225	315	1
6.63		G	110	200	160	250	225	315	1
6.70			110	200	160	250	225	315	1
6.75	17/64		110	200	160	250	225	315	1
6.76		H	110	200	160	250	225	315	1
6.80			110	200	160	250	225	315	1
6.90			110	200	160	250	225	315	1
6.91		I	110	200	160	250	225	315	1
7.00			110	200	160	250	225	315	1
7.04		J	110	200	160	250	225	315	1
7.10			110	200	160	250	225	315	1
7.14	9/32	K	110	200	160	250	225	315	1
7.20			110	200	160	250	225	315	1
7.30			110	200	160	250	225	315	1
7.37		L	110	200	160	250	225	315	1
7.40			110	200	160	250	225	315	1
7.49		M	110	200	160	250	225	315	1
7.50			110	200	160	250	225	315	1
7.54	19/64		110	200	160	250	225	315	1
7.60			110	200	160	250	225	315	1
7.67		N	110	200	160	250	225	315	1
7.70			110	200	160	250	225	315	1
7.80			110	200	160	250	225	315	1
7.90			110	200	160	250	225	315	1
7.94	5/16		110	200	160	250	225	315	1
8.00			110	200	160	250	225	315	1
8.03		O	110	200	160	250	225	315	1
8.10			110	200	160	250	225	315	1
8.20		P	110	200	160	250	225	315	1
8.30			110	200	160	250	225	315	1
8.33	21/61		110	200	160	250	225	315	1
8.40			110	200	160	250	225	315	1
8.43		Q	110	200	160	250	225	315	1
8.50			110	200	160	250	225	315	1
8.60			110	200	160	250	225	315	1

Specifications conform to :
IS 7822 : 2005
ISO 3291 : 1995

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 10 mm & milled flutes above 10 mm

TAPER SHANK TWIST DRILLS

(Extra Long Series)



IS 7822 | HSS | 30° | h8 | 118°

Application :
For drilling in extremely deep holes for materials like Mild steel, Medium carbon steel and Non Ferrous metals, etc.

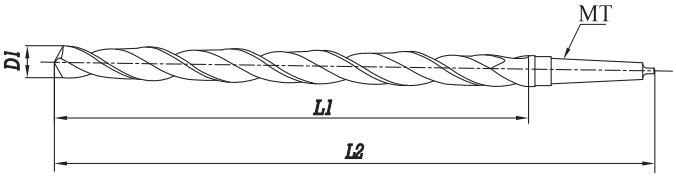
Preferred Size (D1) (h8)			Series 1		Series 2		Series 3		MT
mm	inch	Letter	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	Shank No
8.61		R	110	200	160	250	225	315	1
8.70			110	200	160	250	225	315	1
8.73	11/32		110	200	160	250	225	315	1
8.80			110	200	160	250	225	315	1
8.84		S	110	200	160	250	225	315	1
8.90			110	200	160	250	225	315	1
9.00			110	200	160	250	225	315	1
9.09		T	110	200	160	250	225	315	1
9.10			110	200	160	250	225	315	1
9.13	23/64		110	200	160	250	225	315	1
9.20			110	200	160	250	225	315	1
9.30			110	200	160	250	225	315	1
9.35		U	110	200	160	250	225	315	1
9.40			110	200	160	250	225	315	1
9.50			110	200	160	250	225	315	1
9.52	3/8		160	250	225	315	310	400	1
9.58		V	160	250	225	315	310	400	1
9.60			160	250	225	315	310	400	1
9.70			160	250	225	315	310	400	1
9.80		W	160	250	225	315	310	400	1
9.90			160	250	225	315	310	400	1
9.92	25/64		160	250	225	315	310	400	1
10.00			160	250	225	315	310	400	1
10.08		X	160	250	225	315	310	400	1
10.10			160	250	225	315	310	400	1
10.20			160	250	225	315	310	400	1
10.26		Y	160	250	225	315	310	400	1
10.30			160	250	225	315	310	400	1
10.32	13/32		160	250	225	315	310	400	1
10.40			160	250	225	315	310	400	1
10.49		Z	160	250	225	315	310	400	1
10.50			160	250	225	315	310	400	1
10.60			160	250	225	315	310	400	1
10.70			160	250	225	315	310	400	1
10.72	27/64		160	250	225	315	310	400	1
10.80			160	250	225	315	310	400	1
10.90			160	250	225	315	310	400	1
11.00			160	250	225	315	310	400	1
11.10			160	250	225	315	310	400	1
11.11	7/16		160	250	225	315	310	400	1
11.20			160	250	225	315	310	400	1
11.30			160	250	225	315	310	400	1
11.40			160	250	225	315	310	400	1
11.50			160	250	225	315	310	400	1
11.51	29/64		160	250	225	315	310	400	1
11.60			160	250	225	315	310	400	1
11.70			160	250	225	315	310	400	1
11.80			160	250	225	315	310	400	1

Specifications conform to :
IS 7822 : 2005
ISO 3291 : 1995

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 10 mm & milled flutes above 10 mm

TAPER SHANK TWIST DRILLS

(Extra Long Series)



IS 7822 | HSS | 30° | h8 | 118°

Application :
For drilling in extremely deep holes for materials like Mild steel, Medium carbon steel and Non Ferrous metals, etc.

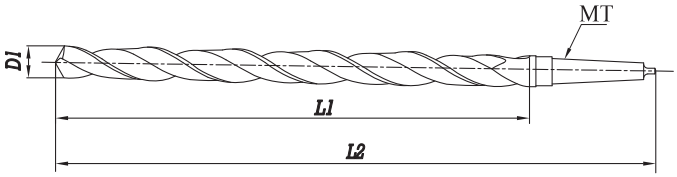
Preferred Size (D1) (h8)		Series 1		Series 2		Series 3		MT
mm	inch	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	Shank No
11.90		160	250	225	315	310	400	1
11.91	15/32	160	250	225	315	310	400	1
12.00		160	250	225	315	310	400	1
12.10		160	250	225	315	310	400	1
12.20		160	250	225	315	310	400	1
12.30	31/64	160	250	225	315	310	400	1
12.40		160	250	225	315	310	400	1
12.50		160	250	225	315	310	400	1
12.60		160	250	225	315	310	400	1
12.70	1/2	160	250	225	315	310	400	1
12.80		160	250	225	315	310	400	1
12.90		160	250	225	315	310	400	1
13.00		160	250	225	315	310	400	1
13.10	33/64	160	250	225	315	310	400	1
13.20		160	250	225	315	310	400	1
13.40		160	250	225	315	310	400	1
13.49	17/32	160	250	225	315	310	400	1
13.50		160	250	225	315	310	400	1
13.60		160	250	225	315	310	400	1
13.70		160	250	225	315	310	400	1
13.80		160	250	225	315	310	400	1
13.89	35/64	160	250	225	315	310	400	1
13.90		160	250	225	315	310	400	1
14.00		160	250	225	315	310	400	1
14.25		215	315	300	400	400	500	2
14.29	9/16	215	315	300	400	400	500	2
14.50		215	315	300	400	400	500	2
14.68	37/64	215	315	300	400	400	500	2
14.75		215	315	300	400	400	500	2
15.00		215	315	300	400	400	500	2
15.08	19/32	215	315	300	400	400	500	2
15.75		215	315	300	400	400	500	2
15.87	5/8	215	315	300	400	400	500	2
16.00		215	315	300	400	400	500	2
16.25		215	315	300	400	400	500	2
16.27	41/64	215	315	300	400	400	500	2
16.50		215	315	300	400	400	500	2
16.67	21/32	215	315	300	400	400	500	2
16.75		215	315	300	400	400	500	2
17.00		215	315	300	400	400	500	2
17.07	43/64	215	315	300	400	400	500	2
17.25		215	315	300	400	400	500	2
17.46	11/16	215	315	300	400	400	500	2
17.50		215	315	300	400	400	500	2
17.75		215	315	300	400	400	500	2
17.86		215	315	300	400	400	500	2

Specifications conform to :
IS 7822 : 2005
ISO 3291 : 1995

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 10 mm & milled flutes above 10 mm

TAPER SHANK TWIST DRILLS

(Extra Long Series)



IS 7822 | HSS | 30° | h8 | 118°

Application :
For drilling in extremely deep holes for materials like Mild steel, Medium carbon steel and Non Ferrous metals, etc.

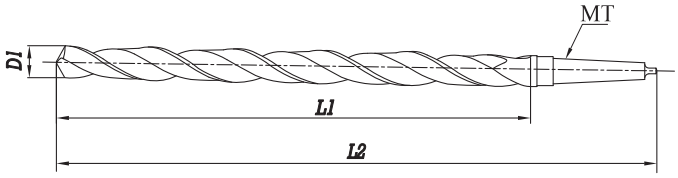
Preferred Size (D1) (h8)		Series 1		Series 2		Series 3		MT
mm	inch	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	Shank No
18.00		215	315	300	400	400	500	2
18.25		215	315	300	400	400	500	2
18.26	23/32	215	315	300	400	400	500	2
18.50		215	315	300	400	400	500	2
18.65	47/64	215	315	300	400	400	500	2
18.75		215	315	300	400	400	500	2
19.00		215	315	300	400	400	500	2
19.05	3/4	215	315	300	400	400	500	2
19.25		215	315	300	400	400	500	2
19.45	49/64	215	315	300	400	400	500	2
19.50		215	315	300	400	400	500	2
19.75		215	315	300	400	400	500	2
19.84	25/32	215	315	300	400	400	500	2
20.00		215	315	300	400	400	500	2
20.24	51/64	215	315	300	400	400	500	2
20.25		215	315	300	400	400	500	2
20.50		215	315	300	400	400	500	2
20.64	13/16	215	315	300	400	400	500	2
20.75		215	315	300	400	400	500	2
21.00		215	315	300	400	400	500	2
21.03	53/64	215	315	300	400	400	500	2
21.25		215	315	300	400	400	500	2
21.43	27/32	215	315	300	400	400	500	2
21.50		215	315	300	400	400	500	2
21.75		215	315	300	400	400	500	2
21.83	55/64	215	315	300	400	400	500	2
22.00		215	315	300	400	400	500	2
22.22	7/8	215	315	300	400	400	500	2
22.25		215	315	300	400	400	500	2
22.50		215	315	300	400	400	500	2
22.62	57/64	215	315	300	400	400	500	2
22.75		215	315	300	400	400	500	2
23.00		215	315	300	400	400	500	2
23.02	29/32	275	400	375	500	505	630	3
23.25		275	400	375	500	505	630	3
23.42	59/64	275	400	375	500	505	630	3
23.50		275	400	375	500	505	630	3
23.75		275	400	375	500	505	630	3
23.81	15/16	275	400	375	500	505	630	3
24.00		275	400	375	500	505	630	3
24.21	61/64	275	400	375	500	505	630	3
24.25		275	400	375	500	505	630	3
24.50		275	400	375	500	505	630	3
24.61	31/32	275	400	375	500	505	630	3
24.75		275	400	375	500	505	630	3
25.00	63/64	275	400	375	500	505	630	3
25.25		275	400	375	500	505	630	3

Specifications conform to :
IS 7822 : 2005
ISO 3291 : 1995

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 10 mm & milled flutes above 10 mm

TAPER SHANK TWIST DRILLS

(Extra Long Series)



IS 7822 | HSS | 30° | h8 | 118°

Application :
For drilling in extremely deep holes for materials like Mild steel, Medium carbon steel and Non Ferrous metals, etc.

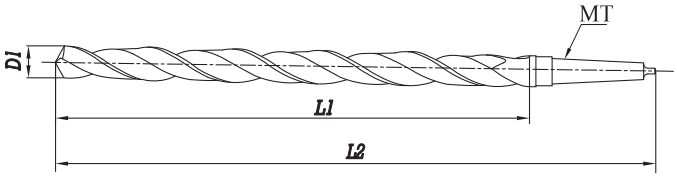
Preferred Size (D1) (h8)		Series 1		Series 2		Series 3		MT
mm	inch	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	Shank No
25.40	1	275	400	375	500	505	630	3
25.50		275	400	375	500	505	630	3
25.75		275	400	375	500	505	630	3
26.00		275	400	375	500	505	630	3
26.19	1.1/32	275	400	375	500	505	630	3
26.25		275	400	375	500	505	630	3
26.50		275	400	375	500	505	630	3
26.75		275	400	375	500	505	630	3
26.99	1.1/16	275	400	375	500	505	630	3
27.00		275	400	375	500	505	630	3
27.25		275	400	375	500	505	630	3
27.50		275	400	375	500	505	630	3
27.75		275	400	375	500	505	630	3
27.78	1.3/32	275	400	375	500	505	630	3
28.00		275	400	375	500	505	630	3
28.25		275	400	375	500	505	630	3
28.50		275	400	375	500	505	630	3
28.57	1.1/8	275	400	375	500	505	630	3
28.75		275	400	375	500	505	630	3
29.00		275	400	375	500	505	630	3
29.25		275	400	375	500	505	630	3
29.37	1.5/32	275	400	375	500	505	630	3
29.50		275	400	375	500	505	630	3
29.75		275	400	375	500	505	630	3
30.00		275	400	375	500	505	630	3
30.16	1.3/16	250	400	350	500	480	630	4
30.25		250	400	350	500	480	630	4
30.50		250	400	350	500	480	630	4
30.75		250	400	350	500	480	630	4
30.96	1.7/32	250	400	350	500	480	630	4
31.00		250	400	350	500	480	630	4
31.25		250	400	350	500	480	630	4
31.50		250	400	350	500	480	630	4
31.75	1.1/4	250	400	350	500	480	630	4
32.00		250	400	350	500	480	630	4
32.50		250	400	350	500	480	630	4
32.54	1.9/32	250	400	350	500	480	630	4
33.00		250	400	350	500	480	630	4
33.34	1.5/16	250	400	350	500	480	630	4
33.50		250	400	350	500	480	630	4
34.00		250	400	350	500	480	630	4
34.13	1.11/32	250	400	350	500	480	630	4
34.50		250	400	350	500	480	630	4
34.92	1.3/8	250	400	350	500	480	630	4
35.00		250	400	350	500	480	630	4
35.50		250	400	350	500	480	630	4
35.72	1.13/32	250	400	350	500	480	630	4

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 10 mm & milled flutes above 10 mm

Specifications conform to :
IS 7822 : 2005
ISO 3291 : 1995

TAPER SHANK TWIST DRILLS

(Extra Long Series)



IS 7822 | HSS | 30° | h8 | 118°

Application :
For drilling in extremely deep holes for materials like Mild steel, Medium carbon steel and Non Ferrous metals, etc.

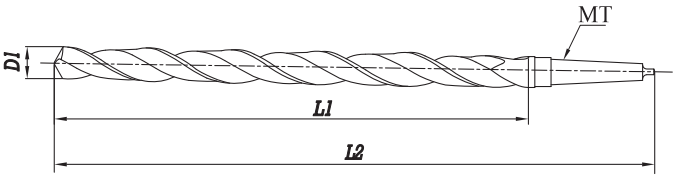
Preferred Size (D1) (h8)		Series 1		Series 2		Series 3		MT
mm	inch	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	Shank No
36.00		250	400	350	500	480	630	4
36.50		250	400	350	500	480	630	4
36.51	1.7/16	250	400	350	500	480	630	4
37.00		250	400	350	500	480	630	4
37.31	1.15/16	250	400	350	500	480	630	4
37.50		250	400	350	500	480	630	4
38.00		250	400	350	500	480	630	4
38.10	1.1/2	250	400	350	500	480	630	4
38.50		250	400	350	500	480	630	4
38.89	1.17/32	250	400	350	500	480	630	4
39.00		250	400	350	500	480	630	4
39.50		250	400	350	500	480	630	4
39.69	1.9/16	250	400	350	500	480	630	4
40.00		250	400	350	500	480	630	4
40.48	1.19/32	350	500	480	630			4
40.50		350	500	480	630			4
41.00		350	500	480	630			4
41.27	1.5/8	350	500	480	630			4
41.50		350	500	480	630			4
42.00		350	500	480	630			4
42.07	1.21/32	350	500	480	630			4
42.50		350	500	480	630			4
42.86	1.11/16	350	500	480	630			4
43.00		350	500	480	630			4
43.50		350	500	480	630			4
43.66	1.23/32	350	500	480	630			4
44.00		350	500	480	630			4
44.45	1.3/4	350	500	480	630			4
44.50		350	500	480	630			4
45.00		350	500	480	630			4
45.24	1.25/32	350	500	480	630			4
45.50		350	500	480	630			4
46.00		350	500	480	630			4
46.04	1.13/16	350	500	480	630			4
46.50		350	500	480	630			4
46.83	1.27/32	350	500	480	630			4
47.00		350	500	480	630			4
47.50		350	500	480	630			4
47.62	1.7/8	350	500	480	630			4
48.00		350	500	480	630			4
48.42	1.29/32	350	500	480	630			4
48.50		350	500	480	630			4
49.00		350	500	480	630			4
49.21	1.15/16	350	500	480	630			4
49.50		350	500	480	630			4
50.00		350	500	480	630			4
50.01	1.31/32	350	500	480	630			4

Figures mentioned in ***Red*** are for reference only. Ground flutes up to 10 mm & milled flutes above 10 mm

Specifications conform to :
IS 7822 : 2005
ISO 3291 : 1995

TAPER SHANK TWIST DRILLS

(Extra Long Series)



DIN 1870 | HSS | 30° | h8 | 118°

Application :
For drilling in extremely deep holes for materials like Mild steel, Medium carbon steel and Non Ferrous metals, etc.

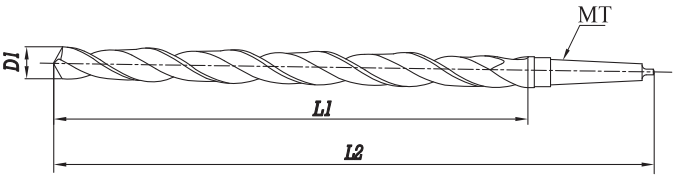
Size (D1) (h8)	Series 1		Series 2		MT
mm	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	Shank No
8.00	165	260	210	330	1
8.50	165	265	210	330	1
9.00	175	275	220	345	1
9.50	175	275	220	345	1
10.00	185	285	235	360	1
10.50	185	285	235	360	1
11.00	195	300	250	375	1
11.50	195	300	250	375	1
12.00	205	310	260	395	1
12.50	205	310	260	395	1
13.00	205	310	260	395	1
13.50	220	325	275	410	1
14.00	220	325	275	410	1
14.50	220	340	275	425	2
15.00	220	340	275	425	2
15.50	230	355	295	445	2
16.00	230	355	295	445	2
16.50	230	355	295	445	2
17.00	230	355	295	445	2
17.50	245	370	310	465	2
18.00	245	370	310	465	2
18.50	245	370	310	465	2
19.00	245	370	310	465	2
19.50	260	385	325	490	2
20.00	260	385	325	490	2
20.50	260	385	325	490	2
21.00	260	385	325	490	2
21.50	270	405	345	515	2
22.00	270	405	345	515	2
22.50	270	405	345	515	2
23.00	270	405	345	515	2

Ground flutes up to 10 mm & milled flutes above 10 mm

Specifications conform to :
DIN 1870 : 1970

TAPER SHANK TWIST DRILLS

(Extra Long Series)



DIN 1870 | HSS | 30° | h8 | 118°

Application :
For drilling in extremely deep holes for materials like Mild steel, Medium carbon steel and Non Ferrous metals, etc.

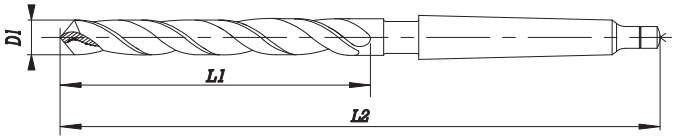
Size (D1) (h8)	Series 1		Series 2		MT
mm	FL (L1)	OAL (L2)	FL (L1)	OAL (L2)	Shank No
23.50	270	425	345	535	3
24.00	290	440	365	555	3
24.50	290	440	365	555	3
25.00	290	440	365	555	3
25.50	290	440	365	555	3
26.00	290	440	365	555	3
26.50	290	440	365	555	3
27.00	305	460	385	580	3
27.50	305	460	385	580	3
28.00	305	460	385	580	3
28.50	305	460	385	580	3
29.00	305	460	385	580	3
29.50	305	460	385	580	3
30.00	305	460	385	580	3
31.00	320	480	410	610	3
32.00	320	505	410	635	4
33.00	320	505	410	635	4
34.00	340	530	430	665	4
35.00	340	530	430	665	4
36.00	340	530	430	665	4
37.00	340	530	430	665	4
38.00	360	555	460	695	4
39.00	360	555	460	695	4
40.00	360	555	460	695	4
41.00	360	555	460	695	4
42.00	360	555	460	695	4
43.00	385	585	490	735	4
44.00	385	585	490	735	4
45.00	385	585	490	735	4
46.00	385	585	490	735	4
47.00	385	585	490	735	4
48.00	405	605	510	765	4
49.00	405	605	510	765	4
50.00	405	605	510	765	4

Ground flutes up to 10 mm & milled flutes above 10 mm

Specifications conform to :
DIN 1870 : 1970

TAPER SHANK TWIST DRILLS

(PANTHER - Standard Series)



IS 5103 | HSS-E | 35° | h8 | 130° | SPECIAL SURFACE TREATMENT

Application:
These drills are having unique geometry to cut tougher materials like Stainless steels, Nickel Chromium steels, Forged materials, etc.

Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
9.52	3/8	87	168	1
10.00		87	168	1
10.20		87	168	1
10.32	13/32	87	168	1
10.50		87	168	1
11.00		94	175	1
11.50		94	175	1
12.00		101	182	1
12.50		101	182	1
12.70	1/2	101	182	1
13.00		101	182	1
13.20		101	182	1
13.49	17/32	108	189	1
13.50		108	189	1
13.80		108	189	1
13.89	35/64	108	189	1
14.00		108	189	1
14.20		114	212	2
14.25		114	212	2
14.29	9/16	114	212	2
14.50		114	212	2
14.75		114	212	2
15.00		114	212	2
15.08	19/32	120	218	2
15.25		120	218	2
15.50		120	218	2
15.87	5/8	120	218	2
16.00		120	218	2
16.25		125	223	2
16.27	41/64	125	223	2
16.30		125	223	2
16.50		125	223	2

Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
16.67	21/32	125	223	2
16.75		125	223	2
17.00		125	223	2
17.25		130	228	2
17.46	11/16	130	228	2
17.50		130	228	2
18.00		130	228	2
18.25		135	233	2
18.26	23/32	135	233	2
18.50		135	233	2
18.75		135	233	2
19.00		135	233	2
19.05	3/4	140	238	2
19.25		140	238	2
19.50		140	238	2
19.84	25/32	140	238	2
20.00		140	238	2
20.24	51/64	145	243	2
20.25		145	243	2
20.50		145	243	2
20.64	13/16	145	243	2
21.00		145	243	2
21.50		150	248	2
22.00		150	248	2
22.22	7/8	150	248	2
22.50		155	253	2
23.00		155	253	2
23.50		155	276	3
24.00		160	281	3
24.50		160	281	3
25.00	63/64	160	281	3
25.40	1	165	286	3

Specifications conform to :
IS 5103 : 2002
ISO 235/1 : 1980
BS 328 Part 1 : 1993
DIN 345 :1978

These Drills are also available in:

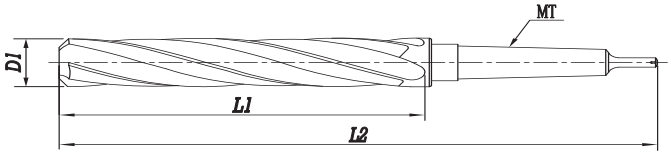
NINJA — HSS-Co8

OUTPUT 20-25% MORE THAN PANTHER !

TORPEDO — HSS-PM

OUTPUT 40-80% MORE THAN PANTHER !

TAPER SHANK CORE DRILLS



IS 5366 | HSS | 30° | h8

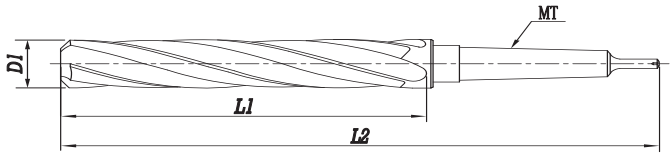
Application:
For enlarging pre-drilled core holes.

Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
7.94	5/16	75	156	1
8.00		75	156	1
8.10		75	156	1
8.20		75	156	1
8.30		75	156	1
8.33	21/64	75	156	1
8.40		75	156	1
8.50		75	156	1
8.60		81	162	1
8.70		81	162	1
8.73	11/32	81	162	1
8.80		81	162	1
8.90		81	162	1
9.00		81	162	1
9.10		81	162	1
9.13	23/64	81	162	1
9.20		81	162	1
9.30		81	162	1
9.40		81	162	1
9.50		81	162	1
9.52	3/8	87	168	1
9.60		87	168	1
9.70		87	168	1
9.80		87	168	1
9.90		87	168	1
9.92	25/64	87	168	1
10.00		87	168	1
10.10		87	168	1
10.20		87	168	1
10.30		87	168	1
10.32	13/32	87	168	1
10.40		87	168	1
10.50		87	168	1
10.60		87	168	1
10.70		94	175	1
10.72	27/64	94	175	1
10.80		94	175	1
10.90		94	175	1
11.00		94	175	1
11.10		94	175	1
11.11	7/16	94	175	1
11.20		94	175	1
11.30		94	175	1
11.40		94	175	1
11.50		94	175	1
11.51	29/64	94	175	1
11.60		94	175	1

Figures mentioned in ***Red*** are for reference only.

Specifications conform to :
IS 5366 : 2002
ISO 7079 : 1981
BS 328 Part 3 : 1990
DIN 343 : 1981

TAPER SHANK CORE DRILLS



IS 5366 | HSS | 30° | h8

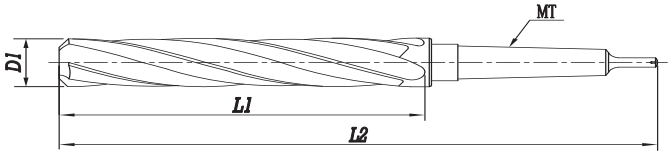
Application:
For enlarging pre-drilled core holes.

Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
11.70		94	175	1
11.80		94	175	1
11.90		101	182	1
11.91	15/32	101	182	1
12.00		101	182	1
12.10		101	182	1
12.20		101	182	1
12.30	31/64	101	182	1
12.40		101	182	1
12.50		101	182	1
12.60		101	182	1
12.70	1/2	101	182	1
12.90		101	182	1
13.00		101	182	1
13.10	33/64	101	182	1
13.20		101	182	1
13.30		108	189	1
13.40		108	189	1
13.49	17/32	108	189	1
13.50		108	189	1
13.60		108	189	1
13.70		108	189	1
13.80		108	189	1
13.89	35/64	108	189	1
13.90		108	189	1
14.00		108	189	1
14.25		114	212	2
14.29	9/16	114	212	2
14.50		114	212	2
14.68	37/64	114	212	2
14.75		114	212	2
15.00		114	212	2
15.08	19/32	120	218	2
15.25		120	218	2
15.48	39/64	120	218	2
15.50		120	218	2
15.75		120	218	2
15.87	5/8	120	218	2
16.00		120	218	2
16.25		125	223	2
16.27	41/64	125	223	2
16.50		125	223	2
16.67	21/32	125	223	2
16.75		125	223	2
17.00		125	223	2
17.07	43/64	130	228	2
17.25		130	228	2
17.46	11/16	130	228	2

Figures mentioned in ***Red*** are for reference only.

Specifications conform to :
IS 5366 : 2002
ISO 7079 : 1981
BS 328 Part 3 : 1990
DIN 343 : 1981

TAPER SHANK CORE DRILLS



IS 5366 | HSS | 30° | h8

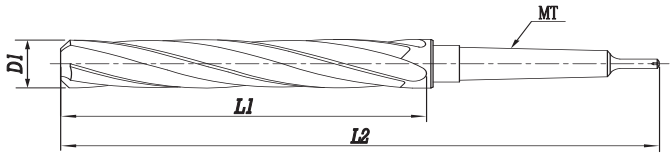
Application:
For enlarging pre-drilled core holes.

Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
17.50		130	228	2
17.75		130	228	2
17.80		130	228	2
18.00		130	228	2
18.25		135	233	2
18.26	23/32	135	233	2
18.50		135	233	2
18.65	47/64	135	233	2
18.75		135	233	2
19.00		135	233	2
19.05	3/4	140	238	2
19.25		140	238	2
19.45	49/64	140	238	2
19.50		140	238	2
19.75		140	238	2
19.84	25/32	140	238	2
20.00		140	238	2
20.24	51/64	145	243	2
20.25		145	243	2
20.50		145	243	2
20.64	13/16	145	243	2
20.75		145	243	2
21.00		145	243	2
21.03	53/64	145	243	2
21.25		150	248	2
21.43	27/32	150	248	2
21.50		150	248	2
21.75		150	248	2
21.83	55/64	150	248	2
22.00		150	248	2
22.22	7/8	150	248	2
22.25		150	248	2
22.50		155	253	2
22.62	57/64	155	253	2
22.75		155	253	2
23.00		155	253	2
23.02	29/32	155	253	2
23.25		155	276	3
23.42	59/64	155	276	3
23.50		155	276	3
23.75		160	281	3
23.81	15/16	160	281	3
24.00		160	281	3
24.21	61/64	160	281	3
24.25		160	281	3
24.50		160	281	3
24.61	31/32	160	281	3
24.75		160	281	3

Figures mentioned in ***Red*** are for reference only.

Specifications conform to :
IS 5366 : 2002
ISO 7079 : 1981
BS 328 Part 3 : 1990
DIN 343 : 1981

TAPER SHANK CORE DRILLS



IS 5366 | HSS | 30° | h8

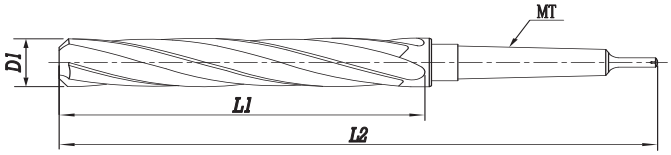
Application:
For enlarging pre-drilled core holes.

Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
25.00	63/64	160	281	3
25.25		165	286	3
25.40	1	165	286	3
25.50		165	286	3
25.75		165	286	3
26.00		165	286	3
26.19	1.1/32	165	286	3
26.25		165	286	3
26.50		165	286	3
26.75		170	291	3
26.99	1.1/16	170	291	3
27.00		170	291	3
27.25		170	291	3
27.50		170	291	3
27.75		170	291	3
27.78	1.3/32	170	291	3
28.00		170	291	3
28.25		175	296	3
28.50		175	296	3
28.58	1.1/8	175	296	3
28.75		175	296	3
29.00		175	296	3
29.25		175	296	3
29.37	1.5/32	175	296	3
29.50		175	296	3
29.75		175	296	3
30.00		175	296	3
30.16	1.3/16	180	301	3
30.25		180	301	3
30.50		180	301	3
30.75		180	301	3
30.96	1.7/32	180	301	3
31.00		180	301	3
31.25		180	301	3
31.50		180	301	3
31.75	1.1/4	185	306	3
32.00		185	334	4
32.50		185	334	4
32.54	1.9/32	185	334	4
33.00		185	334	4
33.34	1.5/16	185	334	4
33.50		185	334	4
34.00		190	339	4
34.13	1.11/32	190	339	4
34.50		190	339	4
34.92	1.3/8	190	339	4
35.00		190	339	4
35.50		190	339	4

Figures mentioned in ***Red*** are for reference only.

Specifications conform to :
IS 5366 : 2002
ISO 7079 : 1981
BS 328 Part 3 : 1990
DIN 343 : 1981

TAPER SHANK CORE DRILLS



IS 5366 | HSS | 30° | h8

Application:
For enlarging pre-drilled core holes.

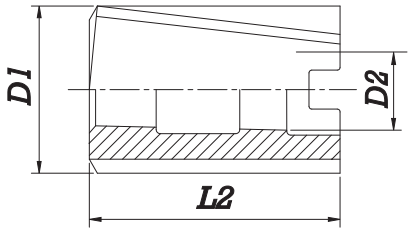
Size (D1) (h8)		Flute Length (L1)	Overall Length (L2)	MT Shank No
mm	inch			
35.72	1.13/32	195	344	4
36.00		195	344	4
36.50		195	344	4
36.51	1.7/16	195	344	4
37.00		195	344	4
37.31	1.15/32	195	344	4
37.50		195	344	4
38.00		200	349	4
38.10	1.1/2	200	349	4
38.50		200	349	4
38.89	1.17/32	200	349	4
39.00		200	349	4
39.50		200	349	4
39.69	1.9/16	200	349	4
40.00		200	349	4
40.48	1.19/32	205	354	4
40.50		205	354	4
41.00		205	354	4
41.28	1.5/8	205	354	4
41.50		205	354	4
42.00		205	354	4
42.07	1.21/32	205	354	4
42.50		205	354	4
42.86	1.11/16	210	359	4
43.00		210	359	4
43.50		210	359	4
43.66	1.23/32	210	359	4
44.00		210	359	4
44.45	1.3/4	210	359	4
44.50		210	359	4
45.00		210	359	4
45.24	1.25/32	215	364	4
45.50		215	364	4
46.00		215	364	4
46.04	1.13/16	215	364	4
46.50		215	364	4
46.83	1.27/32	215	364	4
47.00		215	364	4
47.50		215	364	4
47.62	1.7/8	220	369	4
48.00		220	369	4
48.42	1.29/32	220	369	4
48.50		220	369	4
49.00		220	369	4
49.21	1.15/16	220	369	4
49.50		220	369	4
50.00		220	369	4

Figures mentioned in ***Red*** are for reference only.

Specifications conform to :
IS 5366 : 2002
ISO 7079 : 1981
BS 328 Part 3 : 1990
DIN 343 : 1981

SHELL CORE DRILLS

(Taper Bore 1:30)



IS 7772 | HSS | 30° | h8

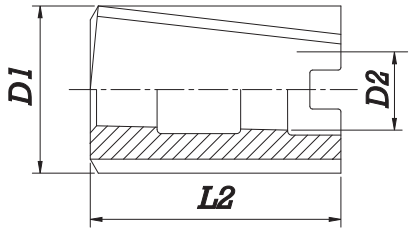
Application:
For enlarging pre-drilled holes.
Common arbors can be used
with different diameters of these drills.

Nominal diameter (D1) (h8)	Diameter of Large end of Taper Bore (D2)	Overall Length (L2)
25	13	45
26	13	45
27	13	45
28	13	45
29	13	45
30	13	45
31	13	45
32	13	45
33	13	45
34	13	45
35	13	45
36	16	50
37	16	50
38	16	50
39	16	50
40	16	50
41	16	50
42	16	50
43	16	50
44	16	50
45	16	50
46	19	56
47	19	56
48	19	56
50	19	56
52	19	56
55	22	63
58	22	63
60	22	63
62	22	63
65	27	71
70	27	71
72	27	71
75	27	71
80	32	80
85	32	80
90	32	80
95	40	90
100	40	90

Dimensions in mm
Specifications conform to :
IS 7772 : 2002
ISO 3314 : 1975

SHELL CORE DRILLS

Taper Bore (1/8 inch 12 inch on Dia)



BS 328 | HSS | 30° | h8

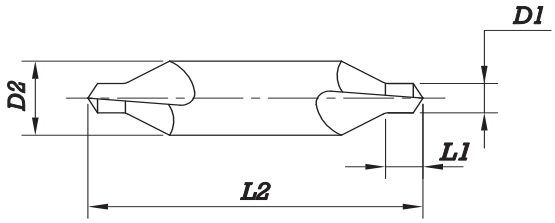
Application:
For enlarging pre-drilled holes.
Common arbors can be used
with different diameters of these drills.

Nominal diameter (D1) (h8)	Diameter of Large end of Taper Bore (D2)	Cutting Edge Length	Overall Length (L2)
1	5/8	2.1/4	2.3/4
1.1/16	5/8	2.1/4	2.3/4
1.1/8	5/8	2.1/4	2.3/4
1.3/16	5/8	2.1/4	2.3/4
1.1/4	5/8	2.1/4	2.3/4
1.5/16	3/4	2.3/8	3
1.3/8	3/4	2.3/8	3
1.7/16	3/4	2.3/8	3
1.1/2	3/4	2.3/8	3
1.9/16	3/4	2.3/8	3
1.5/8	3/4	2.3/8	3
1.11/16	1	2.3/4	3.1/2
1.3/4	1	2.3/4	3.1/2
1.13/16	1	2.3/4	3.1/2
1.7/8	1	2.3/4	3.1/2
1.15/16	1	2.3/4	3.1/2
2	1	2.3/4	3.1/2
2.1/8	1.1/4	3	3.3/4
2.1/4	1.1/4	3	3.3/4
2.3/8	1.1/4	3	3.3/4
2.1/2	1.1/2	3.1/4	4
2.5/8	1.1/2	3.1/4	4
2.3/4	1.1/2	3.1/4	4
2.7/8	1.1/2	3.1/4	4
3	1.1/2	3.1/4	4
3.1/8	1.3/4	3.3/4	4.1/2
3.1/4	1.3/4	3.3/4	4.1/2
3.3/8	1.3/4	3.3/4	4.1/2
3.1/2	1.3/4	3.3/4	4.1/2
3.5/8	2	4.1/4	5
3.3/4	2	4.1/4	5
3.7/8	2	4.1/4	5
4	2	4.1/4	5

Dimensions in Inches :
Specification conform to
BS 328 Part 4 : 1990

CENTRE DRILLS

Type - A



IS 6708 | HSS | h9 | k12 | 120° | 60°

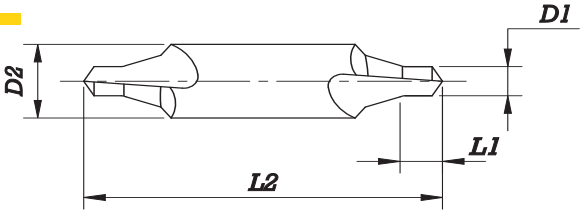
Application:
For producing centre hole form "A"

Pilot Diameter (D1) (k12)	Body Diameter (D2) (h9)	Overall Length (L2)		Pilot Length (L1)	
		Max	Min	Max	Min
1.00	3.15	33.50	29.50	1.90	1.30
1.25	3.15	33.50	29.50	2.20	1.60
1.60	4.00	37.50	33.50	2.80	2.00
2.00	5.00	42.00	38.00	3.30	2.50
2.50	6.30	47.00	43.00	4.10	3.10
3.15	8.00	52.00	48.00	4.90	3.90
4.00	10.00	59.00	53.00	6.20	5.00
5.00	12.50	66.00	60.00	7.50	6.30
6.30	16.00	74.00	68.00	9.20	8.00
8.00	20.00	83.00	77.00	11.50	10.10
10.00	25.00	103.00	97.00	14.20	12.80

Dimensions in mm
Specifications conform to :
IS 6708 : 2002
ISO 866 : 1975
DIN 333 : 1986

CENTRE DRILLS

Type - B



IS 6709 | HSS | h9 | k12 | 120° | 120° 60°

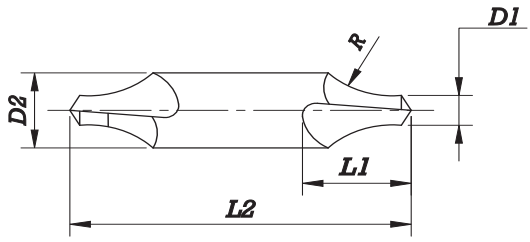
Application:
For producing centre hole form "B"

Pilot Diameter (D1) (k12)	Body Diameter (D2) (h9)	Overall Length (L2)		Pilot Length (L1)	
		Max	Min	Max	Min
1.60	6.30	47.00	43.00	2.80	2.00
2.00	8.00	52.00	48.00	3.30	2.50
2.50	10.00	59.00	53.00	4.10	3.10
3.15	11.20	63.00	57.00	4.90	3.90
4.00	14.00	70.00	64.00	6.20	5.00
5.00	18.00	78.00	72.00	7.50	6.30
6.30	20.00	83.00	77.00	9.20	8.00
8.00	25.00	103.00	97.00	11.50	10.10
10.00	31.50	128.00	122.00	14.20	12.80

Dimensions in mm
Specifications conform to :
IS 6709 : 2002
ISO 2540 : 1972
DIN 333 : 1986

CENTRE DRILLS

Type - R



IS 6710 | HSS | h9 | k12 | 120° | 60°

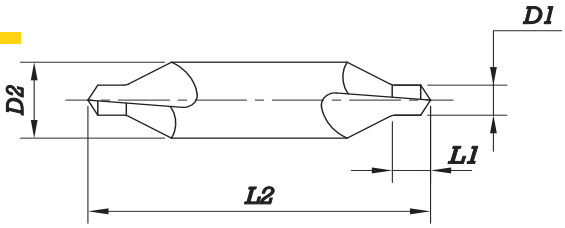
Application:
For producing centre hole form "R"

Pilot Diameter (D1) (k12)	Body Diameter (D2) (h9)	Overall Length (L2)		Cutting Edge Length	Radius (R)	
		Max	Min		Max	Min
1.00	3.15	33.50	29.50	3.00	3.15	2.50
1.25	3.15	33.50	29.50	3.35	4.00	3.15
1.60	4.00	37.50	33.50	4.25	5.00	4.00
2.00	5.00	42.00	38.00	5.30	6.30	5.00
2.50	6.30	47.00	43.00	6.70	8.00	6.30
3.15	8.00	52.00	48.00	8.50	10.00	8.00
4.00	10.00	59.00	53.00	10.60	12.50	10.00
5.00	12.50	66.00	60.00	13.20	16.00	12.50
6.30	16.00	74.00	68.00	17.00	20.00	16.00
8.00	20.00	83.00	77.00	21.20	25.00	20.00
10.00	25.00	103.00	97.00	26.50	31.50	25.00

Dimensions in mm
Specifications conform to :
IS 6710 : 2002
ISO 2541 : 1972
DIN 333 : 1986

CENTRE DRILLS

Inch Sizes



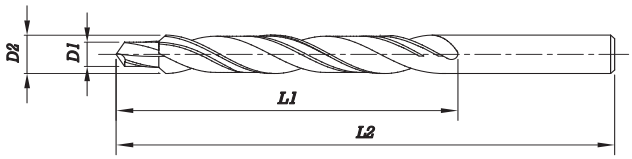
BS 328 | HSS | h9 | k12 | 120° | 60°

Application:
For producing centre hole form "A"

B. S. No	Body Diameter (D2)	Pilot Diameter (D1)		Pilot Length (L1)	Overall Length (L2)	
		Max	Min		Size	Tol ±
1	1/8	3/64	5/64	1/16	1.1/2	1/32
2	3/16	1/16	3/32	5/64	1.3/4	1/32
3	1/4	3/32	5/32	1/8	2	1/16
4	5/16	1/8	3/16	5/32	2.1/4	1/16
5	7/16	3/16	9/32	1/4	2.1/2	3/32
6	5/8	1/4	3/8	5/16	3	3/32
7	3/4	5/16	15/32	13/32	3.1/2	3/32

Dimensions in inches
Specifications conform to :
BS 328 Part 2 : 1990

SUBLAND TWIST DRILLS
(with Parallel Shank)



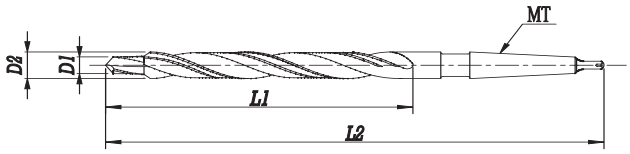
IS 12691 | HSS | 30° | h8/h9 | 118°

Application:
For producing holes
prior to tapping screw threads.

Large Dia. (D2) (h8)	Small Dia. (D1) (h9)	Overall Length (L2)	Flute Length (Total) (L1)	Small Dia. Length	Thread Size
9.00	6.80	125.00	81.00	21.00	M 8x1.25
11.00	8.50	142.00	94.00	25.50	M10x1.50
14.00	10.20	160.00	108.00	30.00	M12x1.75
15.50	12.00	178.00	120.00	34.50	M14x2.00

Dimensions in mm
Specifications conform to :
IS 12691 : 1999
ISO 3439 : 1975
DIN 8378 : 1981

SUBLAND TWIST DRILLS
(with Taper Shank)



IS 12687 | HSS | 30° | h8/h9 | 118°

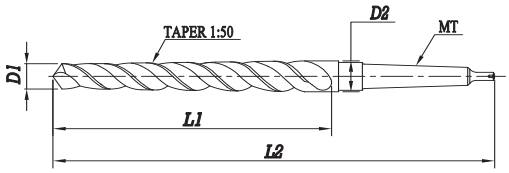
Application:
For producing holes
prior to tapping screw threads.

Large Diameter (D2) (h8)	Small Diameter (D1) (h9)	Overall Length (L2)	Flute Length (Total) (L1)	Small Dia. Length	MT Shank No	Thread Size
9.00	6.80	162	81	21	1	M8x1.25
11.00	8.50	175	94	25.5	1	M10x1.50
14.00	10.20	189	108	30	1	M12x1.75
16.00	12.00	218	120	34.5	2	M14x2.00
18.00	14.00	228	130	38.5	2	M16x2.00
20.00	15.50	238	140	43.5	2	M18x2.50
22.00	17.50	248	150	47.5	2	M20x2.50
24.00	19.50	281	160	51.5	3	M22x2.50
26.00	21.00	286	165	56.5	3	M24x3.00
30.00	24.00	296	175	62.5	3	M27x3.00
33.00	26.50	334	185	70	4	M30x3.50

Dimensions in mm
Specifications conform to :
IS 12687 : 1999
ISO 3438 : 1975
DIN 8379 : 1981

TAPER SHANK TWIST DRILLS

For Taper Pin Holes - with Taper 1:50



IS 5364 | HSS | 30° | h8 | 118°

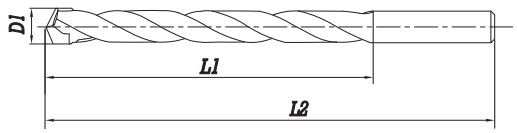
Application:
For drilling holes suitable for standard taper pins

Nominal Diameter	Small End Diameter (D1)	Large End Diameter (D2)	Overall Length (L2)	Parallel Diameter length	Flute Length (L1)	MT Shank No
5	4.98	6.62	164	6	86	1
6	5.97	8.25	196	6	117	1
8	7.97	10.69	222	10	143	1
10	9.96	13.12	244	10	165	1
12	11.96	15.70	293	15	198	2
16	15.95	21.07	362	15	267	2
20	19.95	25.15	393	22	278	3
25	24.94	30.88	433	22	313	3
32	31.93	37.99	472	30	327	4
40	39.92	46.22	500	40	348	4
50	49.90	56.42	550	50	368	5

Dimensions in mm
Specifications conform to :
IS 5364 : 2002

MASONRY DRILLS - CARBIDE TIPPED

(Ground Fluted & Bright Plated)



ITM STD | CARBIDE TIPPED | 30° | 135°

Application:
For drilling on traditional building materials such as a concrete, stone work bricks, tiles, slate, marbles, granites etc.

Size (D1)		Flute Length (L1)	Overall Length (L2)
mm	inch		
3	1/8	40	76
4	5/32	45	85
5	3/16	45	87
5.5	7/32	45	87
6	15/64	60	107
6.5	1/4	60	107
7	9/32	60	107
8	5/16	80	120
9	11/32	80	120
10	3/8	80	120
11	7/16	115	160
12	15/32	115	160
13	1/2	115	160

Specifications conform to :
ITM Standard

TECHNICAL SUPPLY CONDITIONS OF DRILLS

1. Twist Drills are normally supplied for RH Cutting, Type 'N', with a point angle ground to 118° and lip clearance angle minimum 8°.
2. Intermediate diameters, if ordered, shall be supplied with the same dimensions as of the next bigger diameter.
3. Parallel shank Drills are normally made without Driving tenon.
4. Taper shank Drills are normally supplied with Morse Taper according to IS: 1715- Dimensions for self holding tapers.
5. Non Standard or Special Drills are manufactured against specific orders.
6. Inch sizes drills are not recommended by Bureau of Indian Standards.
7. Other general requirements are maintained according to IS: 5099 - Technical Supply conditions for twist drills.

7.1 Hardness:

Cutting Portion	: 760 HV to 900 HV.
Shank Portion	: 240 HV to maximum hardness equal to cutting portion (incase of one piece construction) : 185 HV to 450 HV (in case of two piece construction).
Tang of Morse Taper	: Sizes below 10 mm 185 HV minimum and for sizes 10 mm and above 300 HV to 450 HV.
Driving Tenon	: 240 HV to maximum hardness equal to cutting portion.

7.2 Drills are provided with a back taper of 0.02 to 0.08mm per 100 mm Flute length.

7.3 Drills are maintained with radial run out (Tr) which is calculated by equation
$Tr = 0.03+0.01L/D$ (Where L = Total length & D =Drill diameter).

7.4 Twist drills are marked where diameter is 3 mm and above - Drill diameter, Material (HSS) and Trade Mark of Indian Tool Manufacturers
In case of Twist drills below 3 mm diameter, the marking shall be on the packing box only.

8. Twist Drills according to DIN, BS and ANSI are also manufactured against specific requirement.

HELIX ANGLE FOR TWIST DRILLS

Diameter		Helix Angles		
Over	Up to and incl.	Type - N	Type - H	Type -S
1.0	3.2	22°-28°	11°-15°	31°-36°
3.2	5.0	24°-30°	11°-15°	33°-38°
5.0	10.0	25°-31°	12°-17°	34°-40°
10.0	40.0	27°-34°	13°-17°	37°-42°
40.0	50.0	29°-38°	14°-19°	39°-46°

The drills are made in three types for Normal (N),Hard (H),Soft (S) work piece material. These type designations are based on the material to be cut and design requirements of drills.

TYPES OF DRILL POINTS

FOR VARIOUS APPLICATIONS

118°Point; general purpose point for most materials where work hardening and chip formation does not present a problem.

135°Point; a greater point angle is used for tough or harder materials such as highly Alloyed steels.

90°Point; a smaller point angle is used for soft and high ductile materials such as plastics and non-ferrous metals.

Standard point with 45°Chamfer; a corner chamfer is used to reduce the burr in soft materials or reduce corner breakdown in abrasive materials.

Split or Crankshaft point; this type is used to reduce thrust when hand drilling tough materials or to make self centering for NC equipment.

DRILL RE-GRINDING

Drill must re-sharpened before it becomes blunt.

During the re-grinding of drill, always keep the drill parallel to Grinding wheel, make a drill movement such that, it should to be maintained proper gradual relief, heel portion must lesser than cutting edge portion.

Ensure that the complete wear portion must re-ground for better performance of drill.

Ensure that Drill lip length / height must be equal to avoid to cut over size, unequal load during drilling.

Chisel angle must be maintained between 120-130 deg , if we maintained less than 120, penetration of drill is difficult, causes heavy load on machine.

Speeds & Feeds for H.S.S. Drills

Work Piece Material	Cutting Speed M/min		Drill Diameter in mm								
			1	2	5	8	12	16	25	40	63
Steel *45Kg.mm2	35-40	f	Hand	0.05	0.12	0.2	0.25	0.3	0.4	0.4	0.5
		n	12000	6000	2400	1500	1000	750	480	300	190
Steel *45-70Kg.mm2	30-35	f	Hand	0.05	0.12	0.2	0.25	0.3	0.4	0.4	0.5
		n	10000	5000	2100	1300	850	640	410	260	165
Steel *Above 70Kg.mm2	15-25	f	Hand	0.04	0.1	0.15	0.2	0.25	0.3	0.3	0.4
		n	8000	4000	1600	995	680	500	318	200	125
Alloy Steel *Above 100Kg.mm2	8-15	f	Hand	Hand	0.06	0.1	0.15	0.2	0.3	0.3	0.3
		n	3650	1840	735	455	305	230	145	90	80
Cast Iron Up to 18Kg.mm2	20-30	f	Hand	0.07	0.12	0.2	0.3	0.4	0.5	0.6	0.6
		n	8000	4000	1600	1000	660	500	320	200	127
Cast Iron Above 18-30 Kg.mm2	5-15	f	Hand	Hand	0.1	0.2	0.3	0.4	0.3	0.6	0.6
		n	3180	1600	635	400	265	200	130	80	50
Mang.Steel Above 15%	3-5	f	Hand	Hand	0.05	0.08	0.1	0.1	0.15	0.2	0.2
		n	1300	650	255	160	110	80	50	32	20
Stainless Steel	6-12	f	Hand	Hand	0.05	0.1	0.12	0.15	0.2	0.2	0.3
		n	2800	1400	570	360	240	180	110	70	45
Brass - Brittle	80-100	f	Hand	0.08	0.2	0.25	0.3	0.4	0.5	0.6	0.7
		n	28000	14000	5700	3600	2400	1800	1100	700	450
Brass - Ductile	50-60	f	Hand	0.05	0.15	0.25	0.3	0.4	0.5	0.6	0.7
		n	17500	8700	3500	2200	1500	1100	700	440	280
Copper & Zinc Alloy	50-70	f	Hand	0.04	0.14	0.18	0.22	0.25	0.3	0.45	0.5
		n	16000	8000	3200	2000	1325	1000	650	400	250
Aluminium Long Chipped	80-120	f	Hand	0.05	0.14	0.2	0.25	0.3	0.4	0.45	0.5
		n	32000	16000	6350	4000	2650	2000	1280	800	500
Aluminium Short Chipped	120-160	f	Hand	0.06	0.16	0.25	0.35	0.4	0.5	0.65	0.7
		n	38000	19000	7600	4800	3200	2400	1520	1000	600

f = Feed in mm per rev
n = R.P.M.
* = Tensile Strength

DRILLING TROUBLESHOOTING

OBSERVATION	REASON	REMEDY
Splitting up of drills.	Axial play in the drilling spindle. Springy clamping of work piece. Excessive feed.	Remove the play of the spindle.
Breakage of drills.	Improper holding in chuck. Insufficient Chip removal. Incorrectly ground drill.	Clamp drill rigidly. Remove chip frequently. Grind drill in time as recommended.
Drill catching and breaking.	Blow holes in job. Slanting or irregular surface at drill exit.	Decrease feed. Drill carefully by hand.
Land washed off.	Cutting speed too high. Insufficient coolant.	Reduce speed. Sufficient coolant to be fed to cutting zone-under pressure, if necessary.
Tilting up of machines. Drill springs back while emerging.	Feed too heavy. Machine too weak.	Reduce feed. Do not overload machine.
Burrs on straight shank drills.	Drill insecurely clamped. Heavy feed. Drill flutes clogged with chips.	Clamp drill rigidly. Reduce feed. Remove chips frequently.
Tenon broken or damaged.	Socket not free from dirt, oil, burrs or metal damming in receiving socket	Clean socket, remove burrs. If necessary, change sleeve.
Drill point showing sign of over-heating.	High cutting speed. Insufficient coolant. If used for drilling deep holes, feed is excessive.	Reduce RPM.Arrange for sufficient coolant. For deep hole reduce feed.
Hole produced more than normal diameter.	Drill incorrectly ground. Cutting edges not symmetric.	Grind drill correctly. Check with gauge.
Drilled hole showing metal damming at entry and burrs on exit surface.	Drill blunt. Burrs formation could be due to excessive feed.	Drill to be reground in time.
Poor surface finish of drilled hole.	Drill blunt. Feed excessive. Incorrect and insufficient coolant.	Sharpen drill. Reduce feed. Arrange for proper and sufficient coolant.
Drilled hole is oval.	Excessive feed, causing drill to blunt. Drill point is shifted from axis of drill. Drill running out.	Reduce feed. Align job with point. Arrange for exact drill running.

HIGH SPEED STEELS USED FOR CUTTING TOOLS

Depending on the application, cutting tools are manufactured using different grades of HSS.

The work material, its hardness, the machine tool used, part configuration, finish required on the components and volume of components to be produced are the few requirements that influence selection of different grades of HSS for manufacture of cutting tools.

Chemical composition of some grades of High Speed Steels normally used is given below,

HSS GRADES	CHEMICAL COMPOSITION					
	C	Cr	Mo	W	V	Co
M2	0.86/0.96	3.8/4.5	4.9/5.5	6.0/6.75	1.7/2.2	NIL
M35	0.88/0.96	3.8/4.5	4.9/5.5	6.0/6.75	1.7/2.2	4.5/5.2
M42	1.05/1.15	3.5/4.5	9.0/10.0	1.3/2.0	1.0/1.3	7.75/8.2
T42	1.25/1.35	3.5/4.5	3.2/4.0	9.5/10.7	2.8/3.5	9.7/10.2

C - Carbon Cr - Chromium Mo - Molybdenum
W - Tungsten Co - Cobalt V - Vanadium

TECHNICAL CALCULATIONS -DRILLING

Cutting Speed $V = \frac{\pi DN}{1000}$

D = Drill Diameter
N = Spindle Speed in R.P.M.

TOLERANCES

NOMINAL DIMENSION RANGE		Value of Deviation in microns																		
Above	Upto	d9	e8	f7	h6	h8	h9	h11	h12	h13	js14	js16	k11	k12	m6	z9	H7	H8	H13	N11
	3	-20 -45	-14 -28	-7 -16	0 -7	0 -14	0 -25	0 -60	0 -90	0 -140	+125 -125	+300 -300	+60 0	+100 0	+9 +2	+53 +28	+9 0	+14 0	+140 0	0 -60
3	6	-30 -60	-20 -38	-10 -22	0 -8	0 -18	0 -30	0 -75	0 -120	0 -180	+150 -150	+375 -375	+75 0	+120 0	+12 +4	+53 +35	+12 0	+18 0	+180 0	0 -75
6	10	-40 -76	-25 -47	-13 -28	0 -9	0 -22	0 -36	0 -90	0 -150	0 -220	+180 -180	+450 -450	+90 0	+150 0	+15 +6	+78 +42	+15 0	+22 0	+220 0	0 -90
10	18	-50 -93	-32 -59	-16 -34	0 -11	0 -27	0 -43	0 -110	0 -180	0 -270	+215 -215	+550 -550	+110 0	+180 0	+18 +7	+120 +50	+18 0	+27 0	+270 0	0 -110
18	30	-65 -117	-40 -73	-20 -41	0 -13	0 -33	0 -52	0 -130	0 -210	0 -330	+260 -260	+650 -650	+130 0	+210 0	+21 +8	+157 +73	+21 0	+33 0	+330 0	0 -130
30	40	-80 -142	-50 -89	-25 -50	0 -16	0 -39	0 -62	0 -160	0 -250	0 -390	+310 -310	+800 -800	+160 0	+250 0	+25 +9	+174 +112	+25 0	+39 0	+390 0	0 -160
40	50	-80 -142	-50 -89	-25 -50	0 -16	0 -39	0 -62	0 -160	0 -250	0 -390	+310 -310	+800 -800	+160 0	+250 0	+25 +9	+198 +136	+25 0	+39 0	+390 0	0 -160
50	65	-100 -174	-60 -106	-30 -60	0 -19	0 -46	0 -74	0 -190	0 -300	0 -460	+370 -370	+950 -950	+190 0	+300 0	+30 +11	+245 +172	+30 0	+46 0	+460 0	0 -190
65	80	-100 -174	-60 -106	-30 -60	0 -19	0 -46	0 -74	0 -190	0 -300	0 -460	+370 -370	+950 -950	+190 0	+300 0	+30 +11	+284 +210	+30 0	+46 0	+460 0	0 -190
80	100	-120 -207	-72 -126	-36 -71	0 -22	0 -54	0 -87	0 -220	0 -350	0 -540	+435 -435	+1100 -1100	+220 0	+350 0	+35 13	+345 +258	+35 0	+54 0	+540 0	0 -220
100	120	-120 -207	-72 -126	-36 -71	0 -22	0 -54	0 -87	0 -220	0 -350	0 -540	+435 -435	+1100 -1100	+220 0	+350 0	+35 13	+397 +310	+35 0	+54 0	+540 0	0 -220
120	140	-145 -245	-85 -148	-43 -83	0 -25	0 -63	0 -100	0 -250	0 -400	0 -630	+500 -500	+1250 -1250	+250 0	+400 0	+40 +15	+465 +365	+40 0	+63 0	+630 0	0 -250
140	160	-145 -245	-85 -148	-43 -83	0 -25	0 -63	0 -100	0 -250	0 -400	0 -630	+500 -500	+1250 -1250	+250 0	+400 0	+40 +15	+515 +415	+40 0	+63 0	+630 0	0 -250
160	180	-145 -245	-85 -148	-43 -83	0 -25	0 -63	0 -100	0 -250	0 -400	0 -630	+500 -500	+1250 -1250	+250 0	+400 0	+40 +15	+565 +465	+40 0	+63 0	+630 0	0 -250
180	200	-170 -285	-100 -172	-50 -96	0 -29	0 -72	0 -115	0 -290	0 -460	0 -720	+575 -575	+1450 -1450	+290 0	+460 0	+46 +17	+635 +520	+46 0	+72 0	+720 0	0 -290
200	225	-170 -285	-100 -172	-50 -96	0 -29	0 -72	0 -115	0 -290	0 -460	0 -720	+575 -575	+1450 -1450	+290 0	+460 0	+46 +17		+46 0	+72 0	+720 0	0 -290
225	250	-170 -285	-100 -172	-50 -96	0 -29	0 -72	0 -115	0 -290	0 -460	0 -720	+575 -575	+1450 -1450	+290 0	+460 0	+46 +17		+46 0	+72 0	+720 0	0 -290

All values are in μ (1μ = 0.001 mm)

CUTTING SPEED CHART FOR PANTHER JOBBER DRILLS

Work Material	Stainless Steel		Nickel Based Steel		Difficult to cut Steel	
Cutting Speed (Vc)	10 m/min		6 m/min		4 m/min	
Diameter (mm)	RPM	Feed (mm/rev)	RPM	Feed (mm/rev)	RPM	Feed (mm/rev)
2.0	1600	0.03	950	0.02	630	0.02
2.5	1250	0.04	750	0.03	500	0.03
3.0	1000	0.05	630	0.04	420	0.03
4.0	800	0.06	480	0.05	320	0.04
5.0	630	0.08	380	0.06	250	0.05
6.0	530	0.10	320	0.07	200	0.06
8.0	400	0.12	240	0.10	150	0.08
10.0	320	0.15	200	0.12	120	0.10
12.5	250	0.20	150	0.15	100	0.13

CUTTING SPEED CHART FOR PANTHER TAPER SHANK DRILL

Work Material	Stainless Steel		Nickel Based Steel		Difficult to cut Steel	
Cutting Speed (Vc)	10 m/min		6 m/min		4 m/min	
Diameter (mm)	RPM	Feed (mm/rev)	RPM	Feed (mm/rev)	RPM	Feed (mm/rev)
10.0	315	0.12	190	0.10	125	0.08
12.0	250	0.14	160	0.12	110	0.10
14.0	225	0.17	140	0.14	95	0.11
16.0	200	0.19	120	0.16	80	0.13
18.0	175	0.22	110	0.18	70	0.14
20.0	150	0.24	100	0.20	65	0.16
22.0	140	0.26	90	0.22	60	0.18
24.0	130	0.29	75	0.24	55	0.19
25.0	125	0.30	75	0.25	50	0.20

CUTTING FLUIDS	
Hard Tool and Alloy steel	Soluble oil compound or neat cutting oil
Low Carbon steel	Soluble oil
Copper brass or bronze	Soluble oil or dry
Aluminium and magnesium alloys	Soluble oil or neat cutting oil specially Produced for light alloys
Cast iron	Dry or compressed air
Stainless steel Nimonic Alloys Monel metals	Soluble oils can be used but Sulphurised or chlorinated mineral or fatty oils are most suitable
Zinc base Alloys	Soluble oil

HIGH PERFORMANCE DRILLS
APPLICATION SELECTION CHART

INDIAN TOOL MANUFACTURERS (DIVISION)

DAGGER BRAND® SINCE 1937

COATINGS	SUITABILITY
BRIGHT	● First Choice
FBT	▲ Second Choice
TIN	
TICN	
TIALN	

PANTHER — Quicker · Sharper · Effective Powerful

NINJA

TORPEDO — HIGH ENERGY HIGH PERFORMANCE

website: www.birlaprecision.com
CUSTOMER CARE : Ph: + 91 253 2352315 | Email: customercare@indiantool.com

TYPE OF MATERIAL	Hardness (BHN)	Tensile Strength (N/mm2)	Cutting Speed (Vc) M/Min	PANTHER BRIGHT	PANTHER FBT	PANTHER TIN	PANTHER TICN	PANTHER TIALN	NINJA BRIGHT	NINJA FBT	NINJA TIN	NINJA TICN	NINJA TIALN	TORPEDO BRIGHT	TORPEDO FBT	TORPEDO TIN	TORPEDO TICN	TORPEDO TIALN
Low Carbon Steel	<120	<400	20-25	▲	▲	●			▲	▲	●			▲	▲	●		
Medium Carbon Steel	<180	<500	16-20	▲	▲	●			▲	▲	●			▲	▲	●		
High Crabon Steel	<220	<700	15-18	▲	▲	●			▲	▲	●			▲	▲	●		
Alloy Steel	<250	<800	12-18			▲	●	●			▲	●	●			▲	●	●
Alloy Steel Hardened	>240<350	>850<1200	8-12			▲	●	●			▲	●	●			▲	●	●
Alloy Steel Hardened	>350	>1200	5-8			▲	●	●			▲	●	●			▲	●	●
Stainless Steel-Free Machining	<250	<850	8-12	▲		●	●	●	▲		●	●	●	▲		●	●	●
Stainless Steel-Moderate Machining	<250	<850	6-10	▲		●	●	●	▲		●	●	●	▲		●	●	●
Stainless Steel-Difficult Machining	<300	<1000	5-8	▲		●	●	●	▲		●	●	●	▲		●	●	●
Cast Iron - Gray	>150<230	>500<700	20-25			▲	●	●			▲	●	●			▲	●	●
Cast Iron - Ductile	>230<250	>700<850	15-20			▲	●	●			▲	●	●			▲	●	●
Cast Iron - Malleable	>250	>1200	10-15			▲	●	●			▲	●	●			▲	●	●
Aluminium, Un alloyed	<100	<350	35-40	▲	▲				▲	▲				▲	▲			
Aluminium Alloyed,Si<0.5%	<120	<400	25-35	▲	▲				▲	▲				▲	▲			
Aluminium Alloyed,Si>0.5%<10%	<120	<500	25-35	▲	▲				▲	▲				▲	▲			
Aluminium Alloyed,Si>10%	<120	<500	25-35	▲	▲				▲	▲				▲	▲			
Magnesium,Un alloyed	<100	<400	30-35	▲	▲				▲	▲				▲	▲			
Magnesium Alloyed,Si>0.5%	<150	<500	30-35	▲	▲				▲	▲				▲	▲			
Zinc & Its Alloys	<100	<350	30-35	▲	▲				▲	▲				▲	▲			
Copper & Its Alloys	<100	<350	30-35		▲		●	●		▲					▲		●	●
Brass and Bronze	<200	<700	25-30	▲			●	●	▲			●	●	▲			●	●
Nickel	<150	<500	6-10	▲		●			▲		●	●	●	▲		●		
Nickel Alloyed	<270	<900	4-6	▲		●			▲		●			▲		●		
Composites & Plastics	<120	<400	30-35	●					●					●				
Tool & Die Steel	<350	<1600	3-6			▲	●	●			▲	●	●			▲	●	●
Titanium and Titanium Alloys	<350	<1600	3-6			▲	●	●			▲	●	●			▲	●	●
Inconel	<350	<1600	3-6			▲	●	●			▲	●	●			▲	●	●

BPT BIRLA PRECISION

DRILL TECHNICAL QUESTIONNAIRE

DAGGER BRAND® SINCE 1937

DATE : / /

CUSTOMER DETAILS

CUSTOMER NAME .....
CONTACT PERSON .....
DEPARTMENT .....
MOBILE .....
E MAIL .....

ADDRESS .....

ITM REPRESENTATIVE .....
BRANCH /DEALER .....

MOBILE .....
E MAIL .....

DRILL INFORMATION

SIZE & DESCRIPTION .....

DRILL MATERIAL: M2 ☐ M35 ☐ M42 ☐ PM HSS-E ☐

TYPE OF STANDARD: IS ☐ DIN ☐ ISO ☐ OTHERS ☐

COMPETITORS DETAILS .....

TOOL LIFE (NO. OF HOLE x DEPTH) IN METERS .....

TYPE AND SPECIAL FEATURES

SPIRAL: RH ☐ LH ☐

COATING/SURFACE TREATMENT

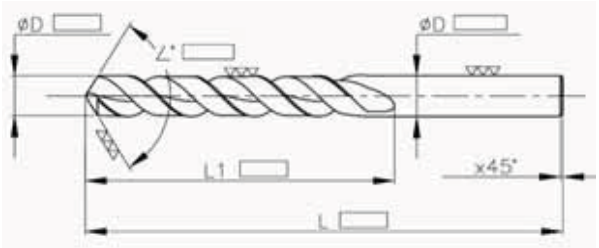
PARTIAL BLUE TEMPERED ☐
FULL BLUE TEMPERED ☐
BRIGHT FINISH ☐

TIN ☐
TICN ☐
TIALN ☐
Other _____

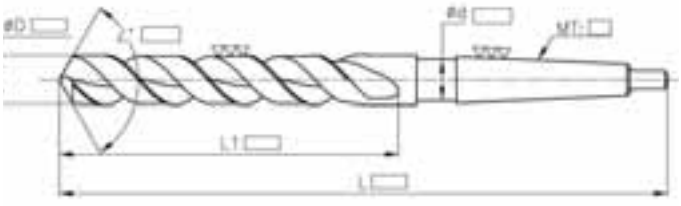
MONTHLY REQUIREMENT .....

ANY PROBLEM FACED WITH EXISTING DRILL/REMARK .....

P.S.T.D.



T.S.T.D.



POINT ANGLE GEOMETRY

118° ☐ 90° ☐ 135° ☐ DOUBLE ANGLE 90°/118° ☐

WITH SPLIT POINT ☐ WITH WEB THINNING ☐

COMPONENT DETAILS

COMPONENT NAME .....
MATERIAL .....
HARDNESS .....
TYPE OF HOLE: BLIND ☐ THROUGH ☐ STEPPED ☐

CHIP TYPE SHORT(DISCONTINUOUS)/LONG(CONTINUOUS)/CONTINUOUS WITH BUILTUP EDGE
TENSILE STRENGTH .....
DRILL HOLE SIZE .....
DRILL HOLE DEPTH .....
COOLANT/LUBRICATION Oil/Emulsion/Dry/Mist/Others

MACHINE DETAILS

MANUFACTURER .....
TYPE .....
POWER IN KW .....

SPINDLE ADAPTATION : MT/ISO TAPER /DIN: MT 228 A/B , ISO TAPER 2080/69871

DRILLING OPERATION: VERTICAL ☐ HORIZONTAL ☐

FEED CONTROL TYPE: CAM-CONTROLLED ☐ HYDRAULIC ☐ GEAR CONTROLLED ☐ SYNCHRONOUS SPINDLE ☐ HAND FEED ☐ OTHER _____

MACHINE TYPE

BENCH ☐
RADIAL ☐
CNC ☐
LATHE ☐
SPM ☐
OTHERS .....

DRILL HOLDING

DRILL CHUCK ☐
PARALLEL SLEEVE ☐
TAPER SLEEVE ☐
QUICK CHANGE COLLETS ☐

MACHINING DETAILS

SPEED ☐
FEED ☐
COOLANT PRESSURE (BAR) _____
COOLANT LPM _____

NOTE: I) USE TICK (√) OPTION WHERE NECESSORY
II) ALL FRAMED ENTRY FIELDS ARE MANDATORY & NECESSARY FOR DEFINING THE PRODUCT

CENTRE DRILL TECHNICAL QUESTIONNAIRE

DATE : / /

CUSTOMER DETAILS

CUSTOMER NAME .....
CONTACT PERSON .....
DEPARTMENT .....
MOBILE .....
E-MAIL .....

ADDRESS .....

ITM REPRESENTATIVE .....
BRANCH / DEALER .....

MOBILE .....
E-MAIL .....

CENTRE DRILL INFORMATION

SIZE & DESCRIPTION .....

DRILL MATERIAL: M2 ☐ M35 ☐ M42 ☐ PM HSS-E ☐

TYPES OF STANDARD: IS ☐ DIN ☐ ISO ☐ OTHERS ☐

COMPETITORS DETAILS .....

TOOL LIFE (NO. OF HOLE x DEPTH) IN METERS .....

TYPE AND SPECIAL FEATURES

SPIRAL : RH ☐ LH ☐

COATING / SURFACE TREATMENT

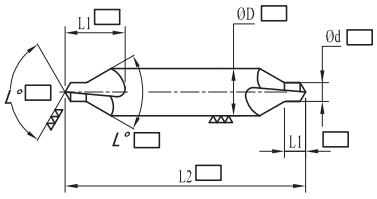
PARTIAL BLUE TEMPERED ☐
FULL BLUE TEMPERED ☐
BRIGHT FINISH ☐

TIN ☐
TICN ☐
TIALN ☐
OTHER .....

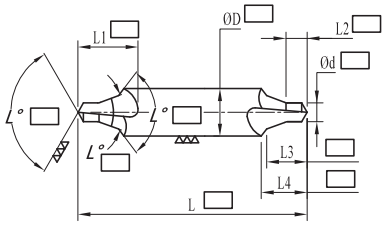
MONTHLY REQUIREMENT .....

ANY PROBLEM FACED WITH EXISTING CENTRE DRILL / REMARK .....

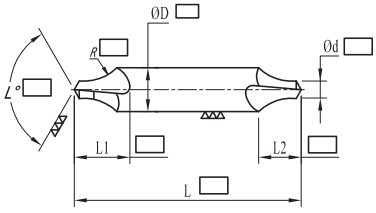
CENTRE DRILL TYPE-A



CENTRE DRILL TYPE-B



CENTRE DRILL TYPE-R



POINT ANGLE GEOMETRY

120° ☐

COMPONENT DETAILS

COMPONENT NAME .....
MATERIAL .....
HARDNESS .....
PILOT DIA. .....
PILOT LENGTH .....

TENSILE STRENGTH .....
COOLANT/LUBRICATION Oil/Emulsion/Dry/Circulation/Brush/Mist/Others

MACHINE DETAILS

MANUFACTURER .....
TYPE .....
POWER IN KW .....

SPINDLE ADAPTATION : MT/ISO TAPER/DIN : MT 228 A/B, ISO TAPER 2080/69871

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DRILLING OPERATION
VERTICAL ☐
HORIZONTAL ☐

FEED CONTROL TYPE
FEED CONTROLLED ☐
CAM-CONTROLLED ☐
HYDRAULIC ☐
HAND FEED ☐
OTHER .....

MACHINE TYPE
RADIAL ☐
CNC ☐
SPM ☐
OTHERS .....

CENTRE DRILL HOLDING
DRILL CHUCK ☐
RIGID (COLLET) ☐
QUICK CHANGE COLLETS ☐

MACHINING DETAILS
SPEED ☐
FEED ☐
COOLANT PRESSURE (BAR) .....
COOLANT LPM .....

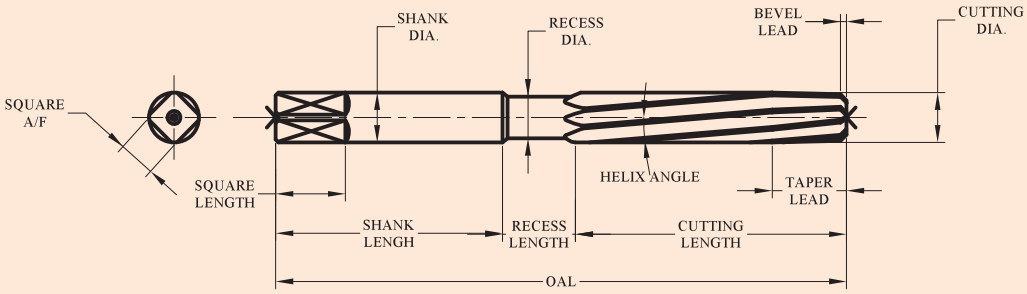
NOTE: I) USE TICK (✓) OPTION WHERE NECESSARY
II) ALL FRAMED ENTRY FIELDS ARE MANDATORY & NECESSARY FOR DEFINING THE PRODUCT

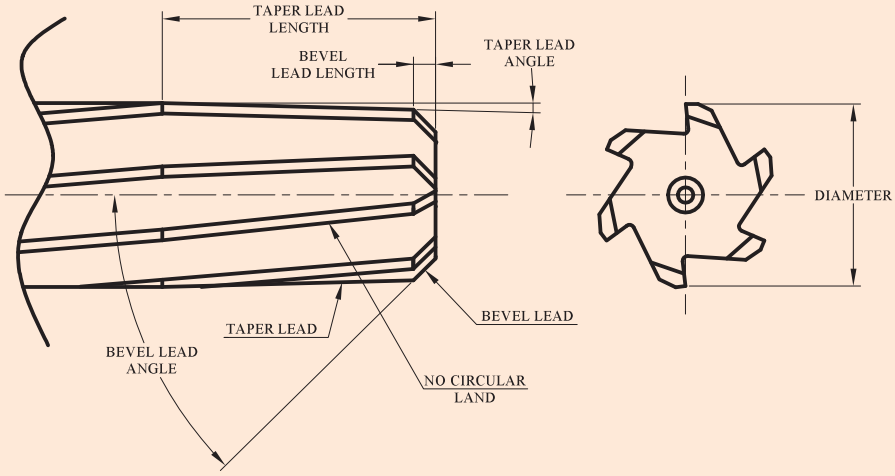
INDEX

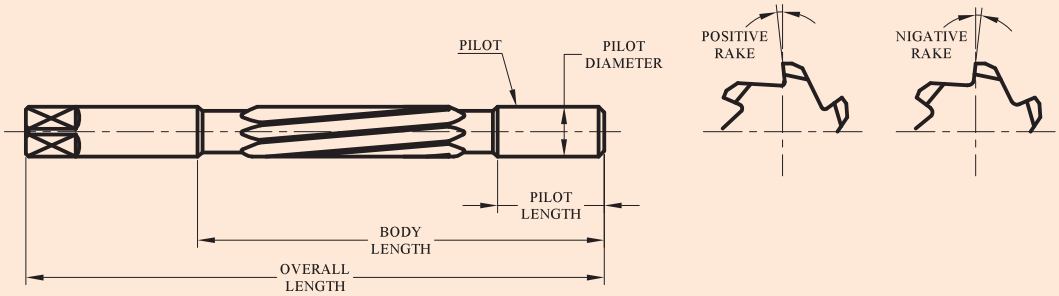
REAMERS

REAMERS

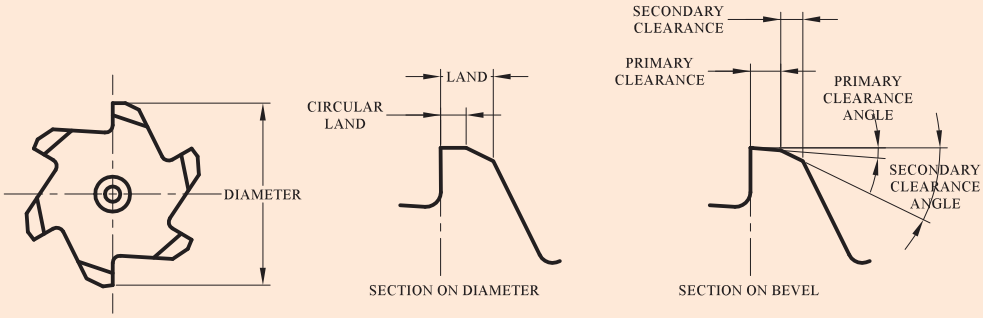
Elements of a Reamer and Related Terms



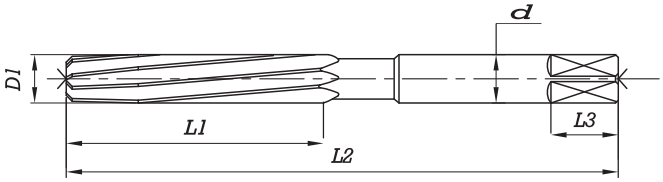




Terms Relating to Cutting Geometry of Reamer



PARALLEL HAND REAMERS



IS 5444 | HSS | m6

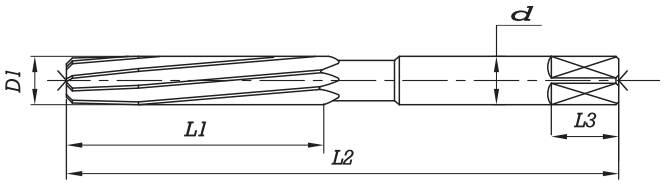
Application :
To produce accurate and finish holes by hand reaming.

Nominal Diameter (D1)(m6)	Cutting edge length (L1)	Overall length (L2)	Shank Dia (d) (h9)	Square	
				Size (h11)	Length (L3)
3.00	31	62	3.00	-	-
3.20	33	66	3.20	2.50	5.0
3.50	35	71	3.50	2.80	5.0
4.00	38	76	4.00	3.15	6.0
4.50	41	81	4.50	3.55	6.0
5.00	44	87	5.00	4.00	7.0
5.50	47	93	5.50	4.50	7.0
6.00	47	93	6.00	4.50	7.0
6.50	50	100	6.50	5.00	8.0
7.00	54	107	7.00	5.60	8.0
8.00	58	115	8.00	6.30	9.0
9.00	62	124	9.00	7.10	10.0
10.00	66	133	10.00	8.00	11.0
11.00	71	142	11.00	9.00	12.0
12.00	76	152	12.00	10.00	13.0
13.00	76	152	13.00	10.00	13.0
14.00	81	163	14.00	11.20	14.0
15.00	81	163	15.00	11.20	14.0
16.00	87	175	16.00	12.50	16.0
17.00	87	175	17.00	12.50	16.0
18.00	93	188	18.00	14.00	18.0
19.00	93	188	19.00	14.00	18.0
20.00	100	201	20.00	16.00	20.0
21.00	100	201	21.00	16.00	20.0
22.00	107	215	22.00	18.00	22.0
23.00	107	215	23.00	18.00	22.0
24.00	115	231	24.00	20.00	24.0
25.00	115	231	25.00	20.00	24.0
26.00	115	231	26.00	20.00	24.0
27.00	124	247	27.00	22.40	26.0
28.00	124	247	28.00	22.40	26.0
30.00	124	247	30.00	22.40	26.0
32.00	133	265	32.00	25.00	28.0
34.00	142	284	34.00	28.00	31.0
35.00	142	284	35.00	28.00	31.0
36.00	142	284	36.00	28.00	31.0
38.00	152	305	38.00	31.50	34.0
40.00	152	305	40.00	31.50	34.0
42.00	152	305	42.00	31.50	34.0
44.00	163	326	44.00	35.50	38.0
45.00	163	326	45.00	35.50	38.0
46.00	163	326	46.00	35.50	38.0
48.00	174	347	48.00	40.00	42.0
50.00	174	347	50.00	40.00	42.0
52.00	174	347	52.00	40.00	42.0
55.00	184	367	55.00	45.00	42.0
56.00	184	367	56.00	45.00	46.0

These reamers have LH helical flutes for RH cutting.

Dimensions in mm
Specifications conform to :
IS 5444 : 2002
ISO 236/1 : 1976
BS 328 Part 4 : 1990
DIN 206 : 1979

PARALLEL HAND REAMERS



IS 5444 | HSS | m6

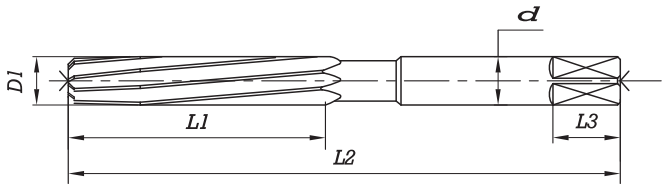
Application :
To produce accurate and finish holes by hand reaming.

Nominal Diameter (D1) (m6)	Cutting edge length (L1)	Overall length (L2)	Shank Dia (d) (h9)	Square	
				Size (h11)	Length (L3)
58.00	184	367	58	45	46
60.00	184	367	60	45	46
62.00	194	387	62	50	51
63.00	194	387	63	50	51
67.00	194	387	67	50	51
71.00	203	406	71	56	56

Dimensions in mm
Specifications conform to :
IS 5444 : 2002
ISO 236/1 : 1976
BS 328 Part 4 : 1990
DIN 206 : 1979

These reamers have LH helical flutes for RH cutting.

PARALLEL HAND REAMERS



BS 328 | HSS | m6

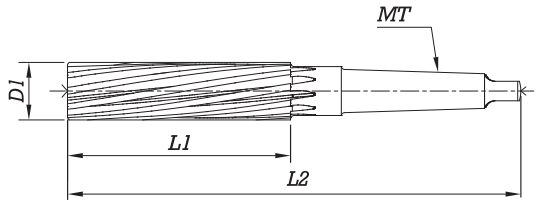
Application :
To produce accurate and finish holes by hand reaming.

Nominal Diameter (D1) (m6)	Cutting edge length (L1)	Overall length (L2)	Square	
			Size (h11)	Length (L3)
1/8	33	66	2.50	5.0
5/32	38	76	3.15	6.0
3/16	44	87	4.00	7.0
7/32	47	93	4.50	7.0
1/4	50	100	5.00	7.0
9/32	54	107	5.60	8.0
5/16	58	115	6.30	8.0
11/32	62	124	7.10	9.00
3/8	66	133	8.00	10.00
7/16	71	142	9.00	12.00
15/32	76	152	10.00	13.00
½	76	152	10.00	13.00
9/16	81	163	11.20	14.00
5/8	87	175	12.90	16.00
11/16	93	188	14.00	18.00
¾	100	201	16.00	18.00
13/16	100	201	16.00	20.00
7/8	107	215	18.00	22.00
15/16	115	231	20.00	24.00
1	115	231	20.00	24.00
1.1/16	124	247	22.40	26.00
1.1/8	124	247	22.40	26.00
1.3/16	133	265	25.00	28.00
1.1/4	133	265	25.00	28.00
1.5/16	133	265	25.00	28.00
1.3/8	142	284	28.00	31.00
1.7/16	142	284	28.00	31.00
1.1/2	152	305	31.50	34.00
1.5/8	152	305	31.50	34.00
1.3/4	163	326	35.50	38.00
1.7/8	174	347	40.00	42.00
2	174	347	40.00	42.00

Dimensions in inch/ mm
Specifications conform to :
BS 328 Part 4 : 1990

These reamers have LH helical flutes for RH cutting.

LONG FLUTED MACHINE REAMERS



IS 5445 | HSS | m6

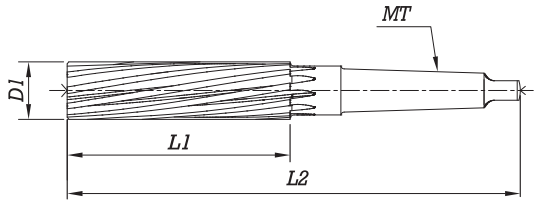
Application :
To produce accurate and finish holes by machine reaming.

Nominal Diameter (D1) (m6)	Cutting edge length (L1)	Overall length (L2)	MT Shank No.
3.00	31	111	1
3.20	33	113	1
3.50	35	115	1
4.00	38	118	1
4.50	41	121	1
5.00	44	124	1
6.00	47	127	1
6.50	50	130	1
7.00	54	134	1
8.00	58	138	1
9.00	64	142	1
10.00	66	146	1
11.00	71	151	1
12.00	76	156	1
13.00	76	156	1
14.00	81	161	1
15.00	81	181	2
16.00	87	187	2
17.00	87	187	2
18.00	93	193	2
19.00	93	193	2
20.00	100	200	2
21.00	100	200	2
22.00	107	207	2
23.00	107	207	2
23.50	107	234	3
24.00	115	242	3
25.00	115	242	3
26.00	115	242	3
27.00	124	251	3
28.00	124	251	3
30.00	124	251	3
31.75	133	260	3
32.00	133	293	4
34.00	142	302	4
35.00	142	302	4
36.00	142	302	4
38.00	152	312	4
40.00	152	312	4
42.00	152	312	4
44.00	163	323	4
45.00	163	323	4
46.00	163	323	4
48.00	174	334	4
50.00	174	334	4
52.00	174	371	5
55.00	184	381	5

Dimensions in mm
Specifications conform to :
IS 5445 : 2002
ISO 236/2 : 1976
BS 328 Part 4 : 1990

These reamers have LH helical flutes for RH cutting.

LONG FLUTED MACHINE REAMERS



IS 5445 | HSS | m6

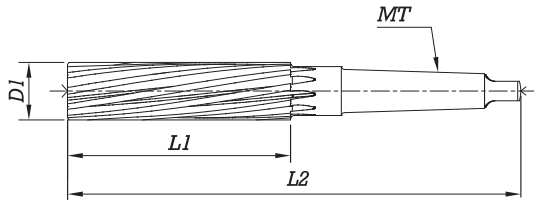
Application :
To produce accurate and finish holes by machine reaming.

Nominal Diameter (D1) (m6)	Cutting edge length (L1)	Overall length (L2)	MT Shank No
56.00	184	381	5
58.00	184	381	5
60.00	184	381	5
62.00	194	391	5
63.00	194	391	5
67.00	194	391	5
71.00	203	400	5
72.00	203	400	5
73.00	203	400	5
74.00	203	400	5
75.00	203	400	5

These reamers have LH helical flutes for RH cutting.

Dimensions in mm
Specifications conform to :
IS 5445 : 2002
ISO 236/2 : 1976
BS 328 Part 4 : 1990

LONG FLUTED MACHINE REAMERS



BS 328 | HSS | m6

Application :
To produce accurate and finish holes by machine reaming.

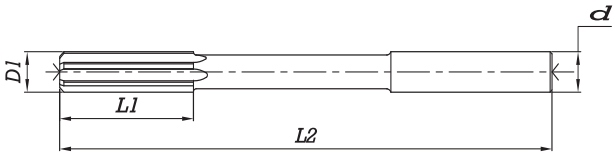
Nominal Diameter (D1) (m6)	Cutting edge length (L1)	Overall length (L2)	MT Shank No
1/8	33	113	1
5/32	38	118	1
3/16	44	124	1
1/4	50	130	1
9/32	54	134	1
5/16	58	138	1
11/32	62	142	1
3/8	66	146	1
13/32	66	146	1
7/16	71	151	1
15/32	76	156	1
1/2	76	156	1
9/16	81	181	2
5/8	87	187	2
11/16	93	193	2
3/4	100	200	2
13/16	100	200	2
7/8	107	207	2
15/16	115	242	3
1	115	242	3
1.1/16	124	251	3
1.1/8	124	251	3
1.3/16	133	260	3
1.1/4	133	260	3
1.5/16	133	293	4
1.3/8	142	302	4
1.7/16	142	302	4
1.1/2	152	312	4
1.5/8	152	312	4
1.3/4	163	323	4
1.7/8	174	334	4
2	174	334	4
2.1/4	184	381	5
2.1/2	194	391	5
3	212	409	5

Dimensions in inch / mm
Specifications conform to :
BS 328 Part 4 : 1990

These reamers have LH helical flutes for RH cutting.

MACHINE CHUCKING REAMERS

With Parallel Shank



IS 5446 | HSS | m6

Application :
To produce accurate and finish holes by machine chucking reamer.

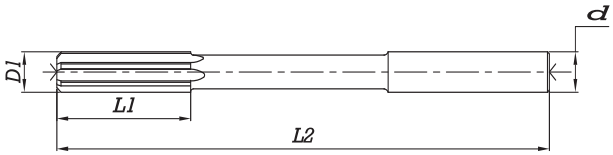
Nominal Diameter (D1) (m6)	Cutting edge length (L1)	Overall length (L2)	Shank Dia (d) (h9)
3.00	15	61	3.00
3.20	16	65	3.20
3.50	18	70	3.50
4.00	19	75	4.00
4.50	21	80	4.50
5.00	23	86	5.00
5.50	26	93	5.60
6.00	26	93	5.60
6.50	28	101	6.30
7.00	31	109	7.10
8.00	33	117	8.00
9.00	36	125	9.00
10.00	38	133	10.00
11.00	41	142	10.00
12.00	44	151	10.00
13.00	44	151	10.00
14.00	47	160	12.50
15.00	50	162	12.50
16.00	52	170	12.50
17.00	54	175	14.00
18.00	56	182	14.00
19.00	58	189	16.00
20.00	60	195	16.00

These reamers have straight flutes for RH cutting.

Dimensions in mm
Specifications conform to :
IS 5446 : 2002
ISO 521 : 1975
BS 328 Part 4 : 1990

MACHINE CHUCKING REAMERS

With Parallel Shank



BS 328 | HSS | m6

Application :
To produce accurate and finish holes by machine chucking reamer.

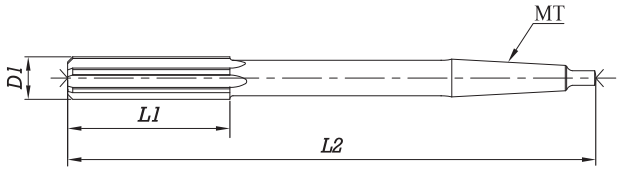
Nominal Diameter (D1) (m6)	Cutting edge length (L1)	Overall length (L2)	Shank Dia (d) (Inch)
1/8	16	65	0.0984
5/32	19	75	0.1240
3/16	23	86	0.1575
7/32	26	93	0.1968
1/4	28	101	0.1968
9/32	31	109	0.2480
5/16	33	117	0.2480
11/32	36	125	0.3150
3/8	38	133	0.3150
13/32	38	133	0.3150
7/16	41	142	0.3937
15/32	44	151	0.3937
1/2	44	151	0.3937
9/16	50	162	0.4921
5/8	52	170	0.4921

These reamers have straight flutes for RH cutting.

Dimensions in mm
Specifications conform to :
BS 328 Part 4 : 1990

MACHINE CHUCKING REAMERS

With Taper Shank



IS 5447 | HSS | m6

Application :
To produce accurate and finish holes by machine chucking reamer.

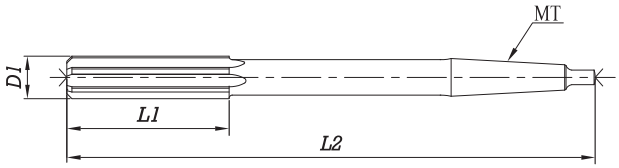
Nominal Diameter (D1) (m6)	Cutting edge length (L1)	Overall length (L2)	MT Shank No
3.00	15	122	1
3.20	16	124	1
3.50	18	126	1
4.00	19	128	1
4.50	21	130	1
5.00	23	133	1
5.50	26	138	1
6.00	26	138	1
6.50	28	144	1
7.00	31	150	1
8.00	33	156	1
9.00	36	162	1
10.00	38	168	1
11.00	41	175	1
12.00	44	182	1
13.00	44	182	1
14.00	47	189	1
15.00	50	204	2
16.00	52	210	2
17.00	54	214	2
18.00	56	219	2
19.00	58	223	2
20.00	60	228	2
21.00	62	232	2
22.00	64	237	2
23.00	66	241	2
23.50	66	264	3
24.00	68	268	3
25.00	68	268	3
26.00	70	273	3
28.00	71	277	3
30.00	73	281	3
31.00	75	285	3
31.75	77	290	3
32.00	77	317	4
34.00	78	321	4
35.00	78	321	4
36.00	79	325	4
38.00	81	329	4
40.00	81	329	4
42.00	82	333	4
44.00	83	336	4
45.00	83	336	4
46.00	84	340	4
48.00	86	344	4
50.00	86	344	4

Dimensions in mm
Specifications conform to :
IS 5447 : 2002
ISO 521 : 1975
BS 328 Part 4 : 1990

These reamers have straight flutes for RH cutting.

MACHINE CHUCKING REAMERS

With Taper Shank



BS 328 | HSS | m6

Application :
To produce accurate and finish holes by machine chucking reamer.

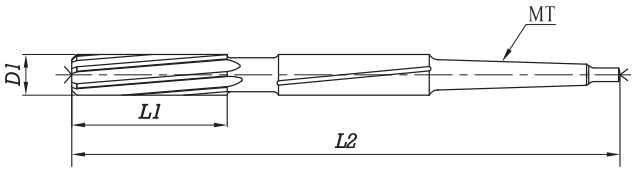
Nominal Diameter (D1) (m6)	Cutting edge length (L1)	Overall length (L2)	MT Shank No
5/32	19	128	1
3/16	23	133	1
¼	28	144	1
5/16	33	152	1
3/8	38	168	1
7/16	41	175	1
½	44	182	1
9/16	50	204	2
5/8	52	210	2
11/16	56	219	2
¾	60	228	2
13/16	62	232	2
7/8	64	237	2
15/16	68	268	3
1	70	273	3
1.1/16	71	277	3
1.1/8	73	281	3
1.3/16	75	285	3
1.1/4	77	290	3
1.5/16	77	317	4
1.3/8	78	321	4
1.7/16	79	325	4
1.1/2	81	329	4
1.5/8	82	333	4
1.3/4	83	336	4
2	86	344	4

These reamers have straight flutes for RH cutting.

Dimensions in inch/mm
Specifications conform to :
BS 328 Part 4 : 1990

MACHINE JIG REAMERS

With Taper Shank



IS 11002 | HSS | m6

Application :
To produce accurate and finish holes by machine jig reamer.

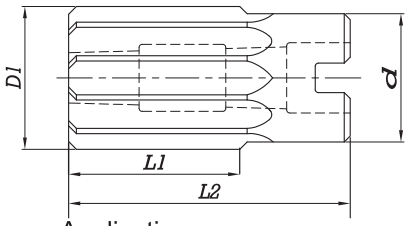
Nominal Diameter (D1) (m6)	Cutting edge length (L1)	Overall length (L2)	MT Shank No
6.00	26	138	1
6.50	28	144	1
7.00	31	150	1
8.00	33	156	1
9.00	36	162	1
10.00	38	168	1
11.00	41	175	1
12.00	44	182	1
13.00	44	182	1
14.00	47	189	1
15.00	50	204	2
16.00	52	210	2
17.00	54	214	2
18.00	56	219	2
19.00	58	223	2
20.00	60	228	2
21.00	62	232	2
22.00	64	237	2
23.00	66	241	2
23.50	66	264	3
24.00	68	268	3
25.00	68	268	3
26.00	70	273	3
28.00	71	277	3
30.00	73	281	3
31.00	75	285	3
31.75	77	290	3
32.00	77	317	4
34.00	78	321	4
35.00	78	321	4
36.00	79	325	4
38.00	81	329	4
40.00	81	329	4
42.00	82	333	4
44.00	83	336	4
45.00	83	336	4
46.00	84	340	4
48.00	86	344	4
50.00	86	344	4

Dimensions in mm
Specifications conform to :
IS 11002 : 1999

These reamers have LH helical flutes for RH cutting.

SHELL REAMERS

With Taper Bore - 1:30



IS 5926 | HSS | m6

Application :
For use in general machine reaming, common arbors can be used with different diameter of these reamers.

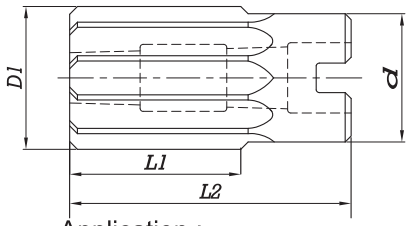
Nominal Diameter (D1) (m6)	Large end Dia of Taper bore	Cutting edge length (L1)	Overall length (L2)
21	10	28	40
22	10	28	40
23	10	28	40
24	13	32	45
25	13	32	45
26	13	32	45
27	13	32	45
28	13	32	45
29	13	32	45
30	13	32	45
31	16	36	50
32	16	36	50
33	16	36	50
34	16	36	50
35	16	36	50
36	19	40	56
37	19	40	56
38	19	40	56
39	19	40	56
40	19	40	56
41	19	40	56
42	19	40	56
43	22	45	63
44	22	45	63
45	22	45	63
46	22	45	63
47	22	45	63
48	22	45	63
49	22	45	63
50	22	45	63
51	27	50	71
52	27	50	71
53	27	50	71
54	27	50	71
55	27	50	71
56	27	50	71
57	27	50	71
58	27	50	71
59	27	50	71
60	27	50	71
61	32	56	80
62	32	56	80
63	32	56	80

Dimensions in mm
Specifications conform to :
IS 5926 : 2002
ISO 2402 : 1976
DIN 219 : 1981 (Type A)

These reamers have straight flutes for RH cutting with slot drive.

SHELL REAMERS

With Taper Bore - 1:30



IS 5926 | HSS | m6

Application :
For use in general machine reaming, common arbors can be used with different diameter of these reamers.

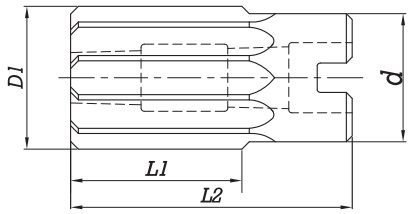
Nominal Diameter (D1)(m6)	Large end Dia of Taper bore	Cutting edge length (L1)	Overall length (L2)
64	32	56	80
65	32	56	80
66	32	56	80
67	32	56	80
68	32	56	80
69	32	56	80
70	32	56	80
71	32	56	80
72	40	63	90
73	40	63	90
74	40	63	90
75	40	63	90
76	40	63	90
77	40	63	90
78	40	63	90
79	40	63	90
80	40	63	90
81	40	63	90
82	40	63	90
83	40	63	90
84	40	63	90
85	40	63	90
86	50	71	100
87	50	71	100
88	50	71	100
89	50	71	100
90	50	71	100
91	50	71	100
92	50	71	100
93	50	71	100
94	50	71	100
95	50	71	100
96	50	71	100
97	50	71	100
98	50	71	100
99	50	71	100
100	50	71	100

These reamers have straight flutes for RH cutting with slot drive.

Dimensions in mm
Specifications conform to :
IS 5926 : 2002
ISO 2402 : 1976
DIN 219 : 1981 (Type A)

SHELL REAMERS

With Taper Bore - 1/8" taper per foot on dia



BS 328 | HSS | m6

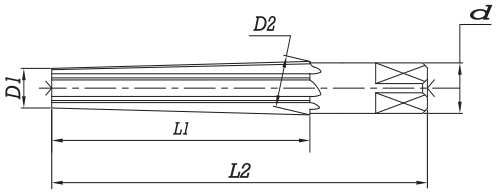
Application :
For use in general machine reaming, common arbors can be used with different diameter of these reamers.

Nominal Diameter (D1) (m6)	Large end Dia of Taper bore	Cutting edge length (L1)	Overall length (L2)
1	0.625	2.1/4	2.3/4
1.1/16	0.625	2.1/4	2.3/4
1.1/8	0.625	2.1/4	2.3/4
1.3/16	0.625	2.1/4	2.3/4
1.1/4	0.625	2.1/4	2.3/4
1.5/16	0.750	2.3/8	3
1.3/8	0.750	2.3/8	3
1.7/16	0.750	2.3/8	3
1.1/2	0.750	2.3/8	3
1.9/16	0.750	2.3/8	3
1.5/8	0.750	2.3/8	3
1.11/16	1.000	2.3/4	3.1/2
1.3/4	1.000	2.3/4	3.1/2
1.13/16	1.000	2.3/4	3.1/2
1.7/8	1.000	2.3/4	3.1/2
1.15/16	1.000	2.3/4	3.1/2
2	1.000	2.3/4	3.1/2
2.1/16	1.250	3	3.3/4
2.1/8	1.250	3	3.3/4
2.3/16	1.250	3	3.3/4
2.1/4	1.250	3	3.3/4
2.5/16	1.250	3	3.3/4
2.3/8	1.250	3	3.3/4
2.7/16	1.250	3	3.3/4
2.1/2	1.500	3	4
2.5/8	1.500	3.1/4	4
2.3/4	1.500	3.1/4	4
2.7/8	1.500	3.1/4	4
3	1.500	3.1/4	4
3.1/8	1.750	3.3/4	4.1/2
3.1/4	1.750	3.3/4	4.1/2
3.3/8	1.750	3.3/4	4.1/2
3.1/2	1.750	3.3/4	4.1/2
3.5/8	2.000	4.1/4	5
3.3/4	2.000	4.1/4	5
3.7/8	2.000	4.1/4	5
4	2.000	4.1/4	5

These reamers have left hand flutes for RH cutting with slot drive.

Dimensions in inch
Specifications conform to :
BS 328 Part 4 : 1990

SOCKET REAMERS WITH PARALLEL SHANK



IS 5882 | HSS

Application :
For use in reaming morse taper holes.

Morse Taper No	Cutting edge length (L1)	Overall length (L2)	Dia of Shank (d) (h9)	Square	
				Size (h11)	Length
0	61	98	8	6.3	9
1	66	102	10	8.0	11
2	79	121	14	11.2	14
3	96	146	20	16	20
4	119	179	25	20	24
5	150	222	31.5	25	28
6	208	300	45	35.5	38

These reamers have,

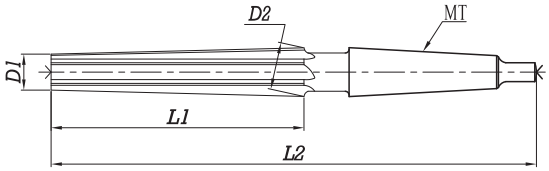
Type A Roughing - RH helical flutes for RH cutting

Type B Pre finishing - Straight flutes for RH cutting

Type C Finishing - LH helical flutes for RH cutting

Dimensions in mm
Specifications conform to :
IS 5882 : 2002
ISO 2250 : 1972
BS 328 Part 4 : 1990

SOCKET REAMER WITH TAPER SHANK



IS 5907 | HSS

Application :
For use in reaming morse taper holes.

Morse Taper No	Cutting edge length (L1)	Overall length (L2)	MT Shank No
0	61	137	1
1	66	142	1
2	79	173	2
3	96	212	3
4	119	263	4
5	150	331	5
6	208	389	5

Dimensions in mm
Specifications conform to :
IS 5907 : 2002
BS 328 Part 4 : 1990

These reamers have,

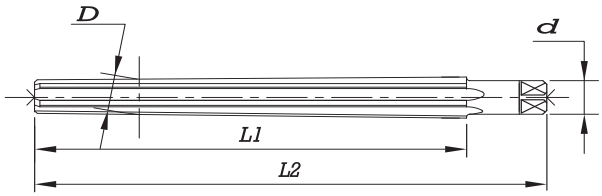
Type A Roughing - RH helical flutes for RH cutting

Type B Pre finishing - Straight flutes for RH cutting

Type C Finishing - LH helical flutes for RH cutting

TAPER PIN HAND REAMERS

Taper - 1:50 on Dia



IS 5881 | HSS

Application :
For use in reaming holes suitable for standard taper pins.

Nominal Diameter (D)	Cutting edge length (L1)	Overall length (L2)	Dia of Shank(d) (h11)	Square	
				Size (h11)	Length
3	58	80	4	3.15	6
4	68	93	5	4	7
5	73	100	6.3	5	8
6	105	135	8	6.3	9
8	145	180	10	8	11
10	175	215	12.5	10	13
12	210	255	14	11.2	14
16	230	280	18	14	18
20	250	310	22.4	18	22
25	300	370	28	22.4	26
30	320	400	31.5	25	28
40	340	430	40	31.5	34
50	360	460	50	40	42

These reamers have,

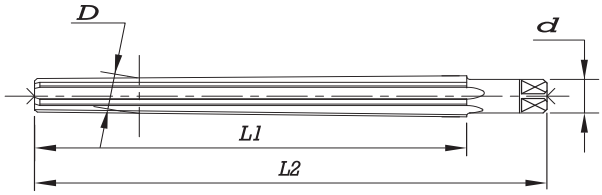
Type A -Straight flutes for RH cutting

Type B -LH Helical flutes for RH cutting

Dimensions in mm
Specifications conform to :
IS 5881 : 1999
ISO 3465 : 1975
BS 328 Part 4 : 1990
DIN 9 : 1975

TAPER PIN HAND REAMERS

Taper 1:48 On Dia



BS 122 | HSS

Application :
For use in reaming holes suitable for standard taper pins.

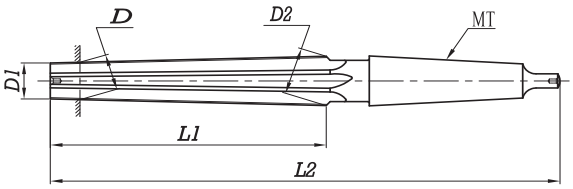
Nominal Diameter (D)	Large end Dia	Small end Dia	Cutting edge length (L1)	Overall length (L2)
1/8	0.127	0.0905	1.3/4	2.3/4
5/32	0.1580	0.1163	2	3
3/16	0.1950	0.1377	2.3/4	4
7/32	0.2200	0.1627	2.3/4	4
1/4	0.2530	0.1827	3.3/8	4.5/8
9/32	0.292	0.2061	4.1/8	5.5/8
5/16	0.3160	0.2301	4.1/8	5.5/8
11/32	0.3470	0.2533	4.1/2	6
3/8	0.3810	0.2768	5	6.1/2
13/32	0.4120	0.2922	5.3/4	7.1/2
7/16	0.4430	0.3232	5.3/4	7.1/2
1/2	0.5060	0.3706	6.1/2	8.1/4
9/16	0.5710	0.4304	6.3/4	8.1/2
5/8	0.6330	0.4768	7.1/2	9.1/4
3/4	0.7600	0.5777	8.3/4	10.3/4
7/8	0.885	0.6871	9.1/2	12

Dimensions in inches
Specifications conform to :
BS 122 Part 2 : 1964

These reamers have straight flutes RH cutting.

TAPER PIN MACHINE REAMERS

Taper 1:50



IS 5918 | HSS

Application :
For use in machine reaming holes suitable for standard taper pins.

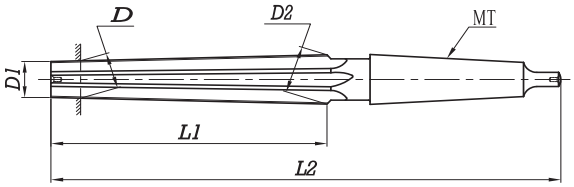
Nominal Diameter (D)	Cutting edge length (L1)	Overall length (L2)	MT Shank No
3	58	140	1
4	68	150	1
5	73	155	1
6	105	187	1
8	145	227	1
10	175	257	1
12	210	315	2
16	230	335	2
20	250	377	3
25	300	427	3
30	320	475	4
40	340	495	4
50	360	550	5

These reamers have LH helical flutes for RH cutting.

Dimensions in mm
Specifications conform to :
IS 5918 : 1999
ISO 3467 : 1975
BS 328 Part 4 : 1990
DIN 2180 : 1975

TAPER PIN MACHINE REAMERS

Taper 1:48



BS 122 | HSS

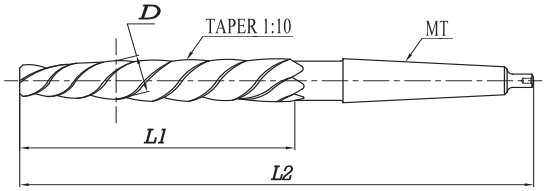
Application :
For use in machine reaming holes suitable for standard taper pins.

Nominal Diameter (D)	Large end dia (D2)	Small end dia (D1)	Cutting edge length (L1)	Overall length (L2)	MT Shank No
3/16	0.1950	0.1377	3.1/8	6.1/16	1
7/32	0.2200	0.1627	3.3/16	6.1/8	1
1/4	0.2530	0.1827	3.7/8	6.13/16	1
9/32	0.2920	0.2061	4.5/8	7.5/8	1
5/16	0.3160	0.2301	4.5/8	7.5/8	1
11/32	0.3470	0.2533	5.3/32	8.3/32	1
3/8	0.3810	0.2768	5.13/16	8.7/8	1
13/32	0.4120	0.2922	6.9/16	9.5/8	1
7/16	0.4430	0.3232	6.11/16	9.3/4	1
1/2	0.5060	0.3706	7.7/16	10.1/2	1
9/16	0.5710	0.4304	7.3/4	11.1/2	2
5/8	0.633	0.4768	8.1/2	12.1/4	2
3/4	0.7600	0.5777	9.3/4	13.1/2	2
7/8	0.885	0.6871	10.1/2	14.1/4	2

These reamers have straight flutes for RH cutting.

Dimensions in inches
Specifications conform to :
BS 122 Part 2 : 1964

MACHINE BRIDGE REAMERS



IS 5919 | HSS | k11

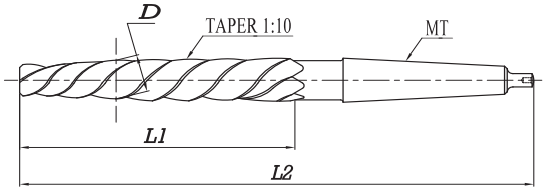
Application :
For use in opening out a predrilled hole for alignment in structural steel work.

Nominal Diameter (D) (k11)	Cutting edge length (L1)	Overall length (L2)	MT Shank No
6.40	75	151	1
7.40	80	156	1
8.40	85	161	1
9.50	90	166	1
10.00	95	171	1
11.00	100	176	1
13.00	105	199	2
14.00	115	209	2
15.00	125	219	2
16.00	135	229	2
17.00	135	251	3
19.00	145	261	3
21.00	155	271	3
23.00	165	281	3
25.00	180	296	3
28.00	195	311	3
31.00	210	326	3
32.00	210	354	4
34.00	220	364	4
37.00	220	364	4
40.00	230	374	4
43.00	240	384	4
49.00	250	394	4

These reamers have 25° LH helical flutes for RH cutting.

Dimensions in mm
Specifications conform to :
IS 5919 : 2002
ISO 2238 : 1972
BS 328 Part 4 : 1990

MACHINE BRIDGE REAMERS



BS 122 | HSS | k11

Application :
For use in opening out a predrilled hole for alignment in structural steel work.

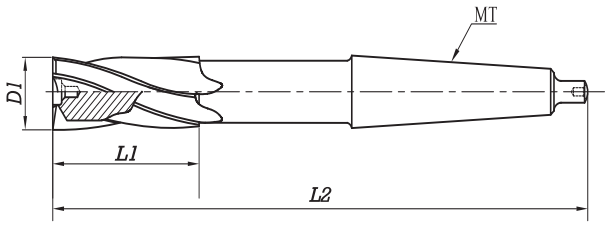
Nominal Diameter (D)	Cutting edge length (L1)	Overall length (L2)	Diameter small end of taper	MT Shank No
1/4	3.3/8	6.3/8	1/8	1
5/16	3.3/4	6.3/4	3/16	1
3/8	4	7	7/32	1
7/16	4.3/8	8.1/8	1/4	2
1/2	5.3/8	9.1/8	9/32	2
9/16	5.3/8	9.1/8	5/16	2
5/8	6.1/8	9.7/8	11/32	2
11/16	6.1/8	9.7/8	3/8	2
11/16	7.1/8	11.3/4	3/8	3
3/4	7.3/8	12	7/16	3
13/16	7.3/8	12	1/2	3
7/8	7.3/8	12	9/16	3
15/16	7.3/8	12	5/8	3
1	7.3/8	12	11/16	3
1.1/16	7.3/8	12	3/4	3
1.1/8	7.3/8	12	13/16	3
1.3/16	7.3/8	12	7/8	3
1.1/4	7.3/8	12	15/16	3
1.1/4	7.3/8	13	15/16	4
1.5/16	7.3/8	13	1	4
1.3/8	7.3/8	13	1.1/16	4
1.7/16	7.3/8	13	1.1/8	4
1.1/2	7.3/8	13	1.3/16	4
1.9/16	8.3/8	14	1.1/4	4
1.5/8	8.3/8	14	1.5/16	4
1.11/16	8.3/8	14	1.3/8	4
1.3/4	8.3/8	14	1.7/16	4
1.13/16	8.3/8	14	1.1/2	4
1.7/8	8.3/8	14	1.9/16	4
1.15/16	8.3/8	14	1.5/8	4
2	8.3/8	14	1.11/16	4

Dimensions in inches
Specifications conform to :
BS 122 Part 2 : 1964

These reamers have LH helical flutes for RH cutting.

HOLE MILLS UNGUIDED

Type A (Roughing)



IS 5989 | HSS | h7

Application :
For use in opening out a predrilled hole with flat bottom.

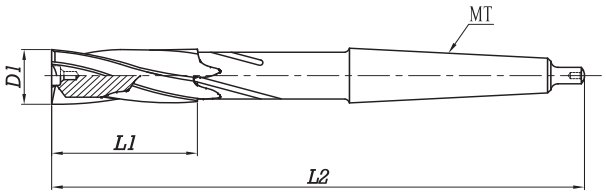
Nominal Diameter (D1) (h7)	Cutting edge length (L1)	Overall length (L2)	MT Shank No
4.9	25	110	1
5.9	25	110	1
7.9	25	120	1
9.9	30	125	1
11.8	35	140	1
12.8	35	140	1
13.8	35	160	1
14.8	35	160	2
15.8	40	160	2
17.8	45	180	2
19.8	45	180	2
21.7	45	200	2
23.7	55	200	3
24.7	55	200	3
25.7	60	200	3
26.7	60	220	3
27.7	60	220	3
29.7	60	220	3
31.7	60	220	3
33.7	60	250	4
34.7	60	250	4
35.7	60	250	4
37.7	60	250	4
39.7	60	250	4
41.6	60	250	4
44.6	60	250	4
46.6	60	280	4
47.6	60	280	4
49.6	60	280	4

These hole mills have RH helical flutes for RH cutting.

Dimensions in mm
Specifications conform to :
IS 5989 : 2002

HOLE MILLS GUIDED

Type B (Roughing / Finishing)



IS 5989 | HSS | h6/m6

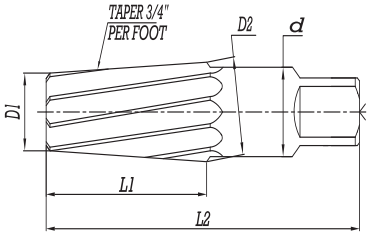
Application :
For use in opening out a predrilled hole with flat bottom.

Nominal Roughing (D1) (h6)	Diameter Finishing (D1) (m6)	Cutting edge length (L1)	Overall length (L2)	MT Shank No
4.9	5	25	150	1
5.9	6	25	150	1
7.9	8	25	170	1
9.9	10	30	180	1
11.8	12	35	190	1
12.8	13	35	200	1
13.8	14	35	200	1
14.8	15	35	210	2
15.8	16	40	230	2
17.8	18	45	235	2
19.8	20	45	245	2
21.7	22	45	255	2
23.7	24	55	290	3
24.7	25	55	290	3
25.7	26	60	305	3
26.7	27	60	305	3
27.7	28	60	305	3
29.7	30	60	320	3
31.7	32	60	320	3
33.7	34	60	360	4
34.7	35	60	360	4
35.7	36	60	360	4
37.7	38	60	390	4
39.7	40	60	390	4
41.6	42	60	390	4

Dimensions in mm
Specifications conform to :
IS 5989 : 2002

These hole mills have RH helical flutes for RH cutting.

TAPER PIPE REAMERS



ASA B 94.2 | HSS

Application :
Used for prior to tapping with taper pipe taps when tapping dry seal NPTF & Military aeronautical thread ANPT.

Nominal Size	Large end dia (D2)	Small end dia (D1)	Cutting edge length(L1)	Overall length(L2)
1/8	0.362	0.316	3/4	2.1/8
1/4	0.472	0.406	1.1/16	2.9/16
3/8	0.606	0.540	1.1/16	2.9/16
1/2	0.751	0.665	1.3/8	3.1/8
3/4	0.962	0.876	1.3/8	3.1/8
1	1.212	1.103	1.3/4	3.3/4
1.1/4	1.533	1.444	1.3/4	4
1.1/2	1.793	1.684	1.3/4	4.1/4
2	2.268	2.159	1.3/4	4.1/2

Dimensions in inches
Specifications conform to :
ASA B 94.2 : 1964

These reamers have LH helical flutes for RH cutting.
Taper 3/4 inch per foot.

TECHNICAL SUPPLY CONDITIONS OF REAMERS

1. Reamers are normally supplied with straight flutes or helical flutes for RH cutting.

2. Intermediate diameters, if ordered, shall be supplied with the same dimensions as the next larger standard size.

3. Non Standard or Special reamers are manufactured against specific orders.

4. Morse Taper Shank dimensions are according to IS: 1715 - Dimensions of Self-holding Tapers.

4.1 Driving square according to IS : 1850 - Dimensions for shank diameters and driving squares for rotating tools.

5. Other general requirements are maintained according to IS : 5443 - Technical supply conditions for high speed steel reamers.

5.1 Hardness:

Cutting Portion	: 760 HV to 900 HV.
Shank Portion	: 240 HV to maximum hardness equal to cutting portion (In case of one piece construction) : 185 HV to 450 HV (in case of two piece construction)
Tang of Morse Taper	: Size below 10mm, 185 HV minimum and for sizes 10mm and above 300 HV to 450 HV.
Driving Tenon	: 240 HV to maximum hardness equal to cutting portion.

5.2 Reamers are normally supplied with m6 tolerance on cutting portion and are expected to produce H8 holes, by selection will also be suitable for H7 holes.

RUN OUT TOLERANCE

Reamer diameter (mm)		Shell Reamers and Machine Reamers with Parallel Shank / Taper shank			Hand Reamer
Over	Up to & Including	On Bevel edge	On Diameter	On Shank diameter	On Taper lead
1	3	0.020	0.005	0.010	0.030
3	6	0.020	0.006	0.012	0.030
6	10	0.025	0.008	0.015	0.030
10	18	0.025	0.008	0.018	0.036
18	30	0.030	0.009	0.021	0.042
30	50	0.030	0.011	0.025	0.050
50	80	0.040	0.013	0.030	0.060
80	120	0.040	0.015		

5.4 Reamer shall have a back taper at the rate of 0.010 to 0.020 per 100mm cutting edge length up to 30.0mm diameter and 0.020 to 0.030 per 100 mm for sizes above 30 mm diameter.

6.0 Reamers according to DIN, BS & ANS are also manufactured against specific orders.

TOLERANCE FOR SPECIAL REAMERS

Ref: IS 5443-1994

GENERAL

Unless otherwise specified, the diameter of the cutting portion of the reamer shall have a tolerance of m6. For determining the tolerance for the diameter of the cutting portion of the reamers where a grade of accuracy other than m6 is required. It is impossible to infer in advance the tolerance of a hole produced by a particular reamer because the actual diameter produced by the reamer depends upon a number of factors.
Some of the factors which influence the accuracy of the hole diameter are as follows :

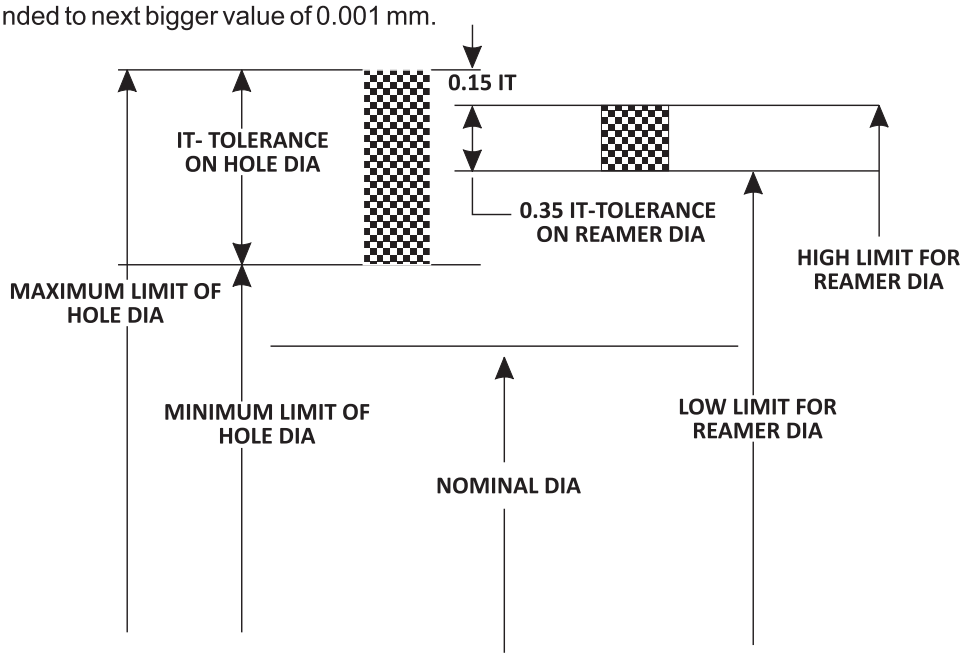
a) Type and amount of material to be removed.
b) Cutting edge design of the reamer.
c) Method of mounting and operation.
d) Condition of the reamer at the time of use, and
e) Lubrication.

These factors shall be taken in to account while determining the special tolerance to be given on a reamer in order to get a hole of given tolerance.

METHOD OF DETERMINING THE SPECIAL TOLERANCE

The maximum limit of the reamer diameter = Maximum limit of the hole -0.15 IT
The value of 0.15IT is to be rounded to next bigger value of 0.001 mm.

The minimum limit of the reamer diameter = Maximum limit of the reamer - 0.35IT
The value of 0.35IT is to be rounded to next bigger value of 0.001 mm.



Example:
For a 12H7 Hole

IT = 0.018 Hole size maximum limit = 12.018
Minimum limit = 12.000

Maximum limit of reamer diameter = maximum limit of the hole - 0.15IT
= 12.018 - 0.15x0.018 = 12.018 - 0.0027
= 12.018 - 0.003 = 12.015

Minimum limit of reamer diameter = maximum limit of the reamer - 0.35 IT
= 12.015 - 0.35x0.018 = 12.015 - 0.0063
= 12.015 - 0.007 = 12.008

RECOMMENDED UNDERSIZES FOR REAMING

Material	Range of diameter of bore (mm)				
	From 3 Upto 5	Over 5 Upto 10	Over 10 Upto 20	Over 20 Upto 30	Over 30
Steel upto 70 Kg/mm^2 Cast iron Plastics-Soft	0.1-0.2	0.2	0.2	0.3	0.4
Steel 70 -100 Kg/mm^2 Brass, Bronze	0.1-0.2	0.2	0.2	0.3	0.3
Copper, Light metals	0.1-0.2	0.3	0.3	0.4	0.5
Malleable cast iron	0.1-0.2	0.2	0.3	0.4	0.5
Plastic-hard	0.1-0.2	0.3	0.4	0.4	0.5
Steel casting	0.1-0.2	0.2	0.2	0.2	0.3

Values shown are in mm
To obtain optimal surface quality when reaming hard material, the above values for allowances to be halved and preferably performed in two operations pre-finishing and finishing. If pre-drill hole finish is obtained rough, the above values may have to be increased slightly.

REAMING SPEEDS

Reaming Speeds - Vary considerably depending on part of the material to be reamed, type of machine and finish and accuracy required. Generally reaming is done at about -2/3 the speed used for drilling the same material. Speed for drilling is shown on page 87.

Material to be reamed	Speed 'Vc'	
	Ft. per min	M per min
Aluminium and Aluminium Alloys	135-200	41-60
Bakelite, Vulcanite ,etc	65-100	20-30
Brass	100-160	30-48
Brass - leaded	135-200	41-60
Bronze : Ordinary	65-135	20-41
: High tensile	45-65	14-20
Cast iron : Soft	65-100	20-30
: Medium	50-60	15-18
: Hard	35-45	11-19
: Chilled	15-25	5-8
Copper	65-135	20-41
Duralumin	65-135	20-41
Magnesium and Magnesium alloys	160-265	48-80
Malleable Iron	45-50	14-15
Monel Metal	25-35	8-11
Zinc base die – Casting material (Mazak)	135-200	41-60
Slate,Stone,Marble	10-15	3-5
Steel : Free- cutting	65-100	20-30
Up to 40 tons tensile	50-75	15-22
40-60 tons tensile	30-45	9-14
60-80 tons tensile	20-30	6-9
Over 80 tons tensile	10-15	3-5
Manganese	10-15	3-5
Stainless steel – Martensite, Ferritic and Austenitic	20-50	6-15
Stainless steel – Free cutting	30-80	9-24
Wood	200-265	60-80

REAMING FEEDS

Reaming Feeds - Feeds are usually much higher than those recommended for drilling the same material i.e. as much as 200 to 300% of drill feeds. Very low feed will results in more reamer wear. Very high feed may lower the finish and accuracy of hole. It is desirable to use high feed at the same time finish and accuracy should be achieved.

Diameter of reamer in mm		Feed mm/rev
Over	Upto & Including	
-	4	0.06-0.2
4	6	0.10-0.3
6	10	0.12-0.4
10	16	0.16-0.6
16	20	0.20-0.8
20	25	0.24-1.0
25	40	0.30-1.2
40	63	0.40-1.2

REAMING TROUBLESHOOTING

PROBLEM	CAUSE	REMEDY
Broken or Twisted Tangs	Incorrect fit between shank & socket	Ensure that shank and socket are clean and free from damage
Rapid Tool wear	Insufficient stock to remove	Increase the amount of stock to be removed
Oversize Hole	Excessive lip height variation	Regrin to correct specification
	Displacement in the machine spindle	Repair and rectify machine displacement
	Defects on the tool holder	Replace tool holder
	Tool shank is damaged	Replace or Regrind the shank
	Ovality of the tool	Replace or Regrind the tool
	Asymmetric bevel lead angle	Regrind to correct specification
	Too High feed or cutting speed	Use recommended cutting conditions
Undersize Hole	Insufficient stock to remove	Increase the amount of stock to be removed
	Too much heat generated while reaming.The hole widens and shrinks	Increase the coolant flow
	The tool diameter is worn and is undersize	Regrind to correct specification
	Too low feed or cutting speed	Use recommended cutting conditions
	Pre-drilled hole size is too small	Decrease the amount of stock to be removed
Oval and conical hole	Displacement in the machine spindle	Repair and rectify machine displacement
	Misalignment between tool and hole	Use a bridge reamer
	Asymmetric bevel lead angle	Regrind to correct specification
Bad hole finish	Excessive stock to remove	Decrease the amount of stock to be removed
	Worn out tool	Regrind to specification
	Tool small cutting rake angle	Regrind to specification
	Too diluted emulsion or cutting oil	Increase % concentration
	Feed and/or speed too slow	Use recommended cutting conditions
	Cutting speed too high	Use recommended cutting conditions
The tool clamps and breaks	Worn out tool	Regrind to correct specification
	Back taper of the tool is too small	Check and modify/replace the tool
	The width of the land is too wide	Check and modify/replace the tool
	Workpiece material tend to squeeze	Use an adjuatable reamer to compensate for the displacement
	Pre-drilled hole size is too small	Decrease the amount of stock to be removed
	Heterogenous materials with hard inclusions	Use solid carbide reamer

BPT BIRLA PRECISION

REAMER TECHNICAL QUESTIONNAIRE

DAGGER BRAND® SINCE 1937

DATE : / /

CUSTOMER DETAILS

CUSTOMER NAME .....
CONTACT PERSON .....
DEPARTMENT .....
MOBILE .....
E-MAIL .....

ADDRESS .....

ITM REPRESENTATIVE .....
BRANCH / DEALER .....

MOBILE .....
E-MAIL .....

REAMER INFORMATION

SIZE & DESCRIPTION .....

REAMER MATERIAL: M2 ☐ M35 ☐ M42 ☐ PM HSS-E ☐

TYPES OF STANDARD: IS ☐ DIN ☐ BS ☐ OTHERS ☐

COMPETITORS REAMER DETAILS .....

TOOL LIFE (NO. OF HOLE x DEPTH) IN METERS .....

TYPE AND SPECIAL FEATURES

STRAIGHT FLUTE ☐ SPIRAL FLUTE ☐

COATING / SURFACE TREATMENT

PARTIAL BLUE TEMPERED ☐
FULL BLUE TEMPERED ☐
BRIGHT FINISH ☐

TIN ☐
TICN ☐
TIALN ☐
OTHER .....

MONTHLY REQUIREMENT .....

ANY PROBLEM FACED WITH EXISTING REAMER / REMARK .....

TYPE OF REAMER

PARALLEL HAND REAMER ☐
PARALLEL MACHINE REAMER ☐
MACHINE CHUCKING REAMER WITH PARALLEL SHANK ☐
MACHINE CHUCKING REAMER WITH TAPER SHANK ☐
MACHINE JIG REAMER WITH TAPER SHANK ☐

SHELL REAMER ☐
SOCKET REAMER WITH PARALLEL SHANK ☐
SOCKET REAMER WITH TAPER SHANK ☐
TAPER PIN HAND REAMER ☐
TAPER PIN MACHINE REAMER ☐
MACHINE BRIDGE REAMER ☐

COMPONENT DETAILS

COMPONENT NAME .....
MATERIAL .....
HARDNESS .....
TYPE OF HOLE: BLIND ☐ THROUGH ☐

TENSILE STRENGTH .....
REAMER HOLE SIZE .....
REAMER HOLE DEPTH .....
COOLANT/LUBRICATION: Oil/Emulsion/Dry/Mist/Others

MACHINE DETAILS

MANUFACTURER .....
TYPE .....
POWER IN KW .....

SPINDLE ADAPTATION : MT/ISO TAPER/DIN:MT 228 A/B, ISO TAPER 2080/69871

REAMING OPERATION
VERTICAL ☐
HORIZONTAL ☐

FEED CONTROL TYPE
CAM-CONTROLLED ☐
HYDRAULIC ☐
GEAR CONTROLLED ☐
SYNCHRONOUS SPINDLE ☐
HAND FEED ☐
OTHER .....

MACHINE TYPE
BENCH ☐
RADIAL ☐
CNC ☐
LATHE ☐
SPM ☐

REAMER HOLDING
DRILL CHUCK ☐
PARALLEL SLEEVE ☐
TAPER SLEEVE ☐
QUICK CHANGE COLLETS ☐
QUILL TYPE ☐

MACHINING DETAILS
SPEED ☐
FEED ☐
COOLANT PRESSURE (BAR) .....
COOLANT LPM .....

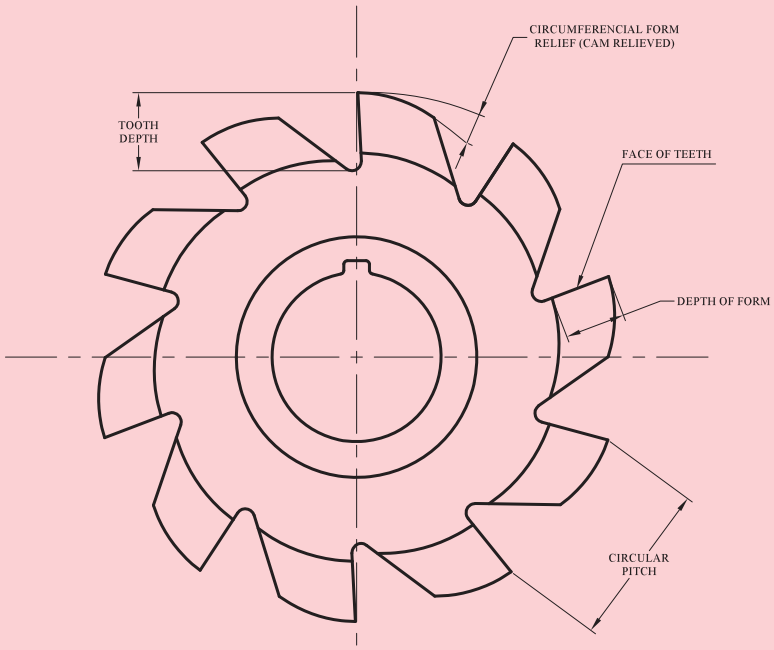
NOTE: I) USE TICK (√) OPTION WHERE NECESSARY
II) ALL FRAMED ENTRY FIELDS ARE MANDATORY & NECESSARY FOR DEFINING THE PRODUCT

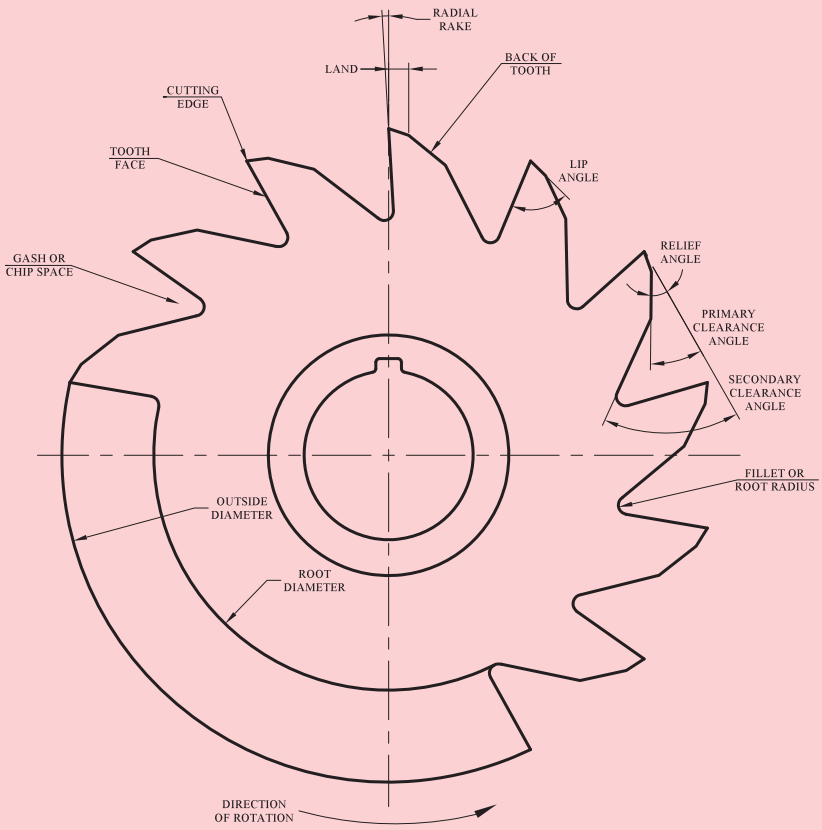
INDEX

MILLING CUTTERS (BORE TYPE)

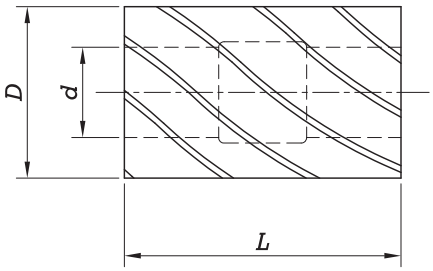
MILLING CUTTERS (BORE TYPE)

Elements of a Milling Cutter and Related Terms





CYLINDRICAL MILLING CUTTERS



IS 6309 | HSS

Application:
Mainly used for heavy depth of cuts of surface milling.

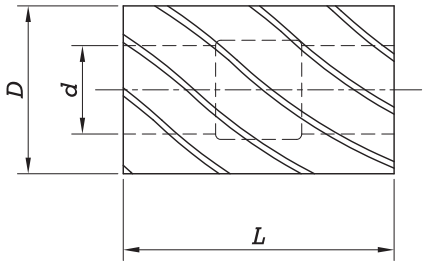
Diameter (D) (js16)	Bore (d) (H7)	Length (L) (js16)
50	22	40
50	22	63
50	22	80
63	27	50
63	27	70
80	32	63
80	32	100
100	40	70
100	40	125
125	50	80
125	50	125
160	60	125

Dimensions in mm
Specifications conform to :
IS 6309 : 2002
ISO 2584 : 1972
DIN 884 : 1976

These cutters have RH helix.
Normally Type N Tools are supplied.

CYLINDRICAL MILLING CUTTERS

(High Power Type)



BS 122 | HSS

Application:
Mainly used for heavy depth of cuts of surface milling.

Diameter (D) +0.045 -0.0	Bore (d) +0.00075 +0.00025	Length (L)
2.1/2	1	1
2.1/2	1	2
2.1/2	1	3
2.1/2	1	4
3	1.1/4	1
3	1.1/4	2
3	1.1/4	3
3	1.1/4	4
3	1.1/4	5
3	1.1/4	6
3.1/2	1.1/4	2
3.1/2	1.1/4	3
3.1/2	1.1/4	4
3.1/2	1.1/4	5
3.1/2	1.1/4	6
3.1/2	1.1/4	7
4	1.1/4 or 1.1/2	2
4	1.1/4 or 1.1/2	3
4	1.1/4 or 1.1/2	4
4	1.1/4 or 1.1/2	5
4	1.1/4 or 1.1/2	6
4	1.1/4 or 1.1/2	7
4	1.1/4 or 1.1/2	8
4.1/2	1.1/2 or 2	2
4.1/2	1.1/2 or 2	3
4.1/2	1.1/2 or 2	4
4.1/2	1.1/2 or 2	5
4.1/2	1.1/2 or 2	6
4.1/2	1.1/2 or 2	7
4.1/2	1.1/2 or 2	8
4.1/2	1.1/2 or 2	9

Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

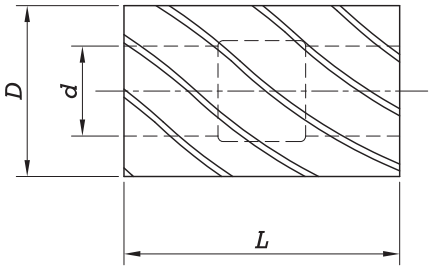
These cutters have LH helix.
Normally Type N Tools are supplied.

Tolerance on overall length
6-inch and below +0.030 inch
-0.00

Above 6-inch +0.060 inch
-0.00

CYLINDRICAL MILLING CUTTERS

(Helical Type)



BS 122 | HSS

Application:
Mainly used for heavy depth of cuts of surface milling.

Diameter (D) +0.045 -0.0	Bore (d) +0.00075 +0.00025	Length (L)
3	1.1/4	2
3	1.1/4	3
3	1.1/4	4
3	1.1/4	6
4	1.1/2	2
4	1.1/2	3
4	1.1/2	4
4	1.1/2	6
5	1.1/2 or 2	2
5	1.1/2 or 2	3
5	1.1/2 or 2	4
5	1.1/2 or 2	6

Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

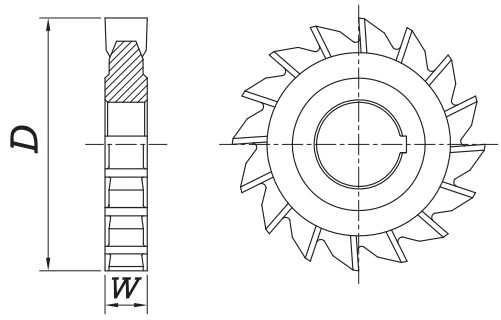
These cutters have LH helix.
Normally Type N Tools are supplied

Tolerance on overall length
6-inch and below +0.030 inch -0.00

Above 6-inch +0.060 inch -0.00

SIDE AND FACE CUTTERS

(Straight Teeth)



IS 6308 | HSS

Application:
Used for both side and face milling operations.

Diameter (D) (js16)	Width (W) (k11)	Bore (H7)
50	4	16
50	5	16
50	6	16
50	8	16
50	10	16
63	4	22
63	5	22
63	6	22
63	8	22
63	10	22
63	12	22
63	14	22
63	16	22
80	5	27
80	6	27
80	8	27
80	10	27
80	12	27
80	14	27
80	16	27
80	18	27
80	20	27
100	6	32

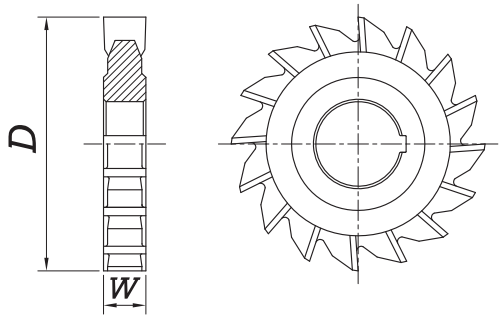
Normally Type N Tools are supplied.

Diameter (D) (js16)	Width (W) (k11)	Bore (H7)
100	8	32
100	10	32
100	12	32
100	14	32
100	16	32
100	18	32
100	20	32
100	22	32
100	25	32
125	8	32
125	10	32
125	12	32
125	14	32
125	16	32
125	18	32
125	20	32
125	22	32
125	25	32
125	28	32
160	10	40
160	12	40
160	14	40
160	16	40
160	18	40

Dimensions in mm
Specifications conform to :
IS 6308 : 2002
ISO 2587 : 1972
DIN 1885 : 1976

SIDE AND FACE CUTTERS

(Straight Teeth)



IS 6308 | HSS

Application:
Used for both side and face milling operations.

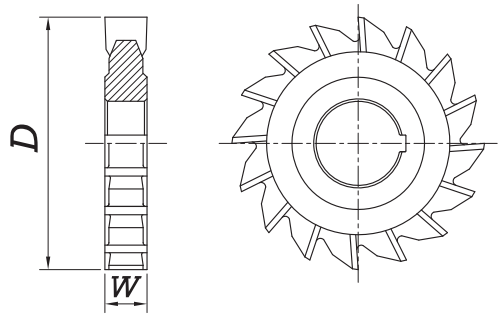
Diameter (D) (js16)	Width (W) (k11)	Bore (H7)
160	20	40
160	22	40
160	25	40
160	28	40
160	32	40
200	12	40
200	14	40
200	16	40
200	18	40
200	20	40
200	22	40
200	25	40
200	28	40
200	32	40
200	36	40
200	40	40

Dimensions in mm
Specifications conform to :
IS 6308 : 2002
ISO 2587 : 1972
DIN 1885 : 1976

Normally Type N Tools are supplied.
Type A - Staggered Teeth
Type B - Straight teeth

SIDE AND FACE CUTTERS

(Straight Teeth)



BS 122 | HSS

Application:
Used for both side and face milling operations.

Diameter (D) +0.045 -0.0	Bore +0.00075 +0.00025	Width (W) +0.0005 -0.0
2.1/2	1	1/4
2.1/2	1	5/16
2.1/2	1	3/8
2.1/2	1	1/2
3	1	1/4
3	1	5/16
3	1	3/8
3	1	1/2
3	1	5/8
3.1/2	1	1/4
3.1/2	1	5/16
3.1/2	1	3/8
3.1/2	1	7/16
3.1/2	1	1/2
3.1/2	1	5/8
3.1/2	1	3/4
4	1 or 1.1/4	1/4
4	1 or 1.1/4	3/8
4	1 or 1.1/4	1/2
4	1 or 1.1/4	5/8
4	1 or 1.1/4	3/4
4	1 or 1.1/4	7/8
4	1 or 1.1/4	1

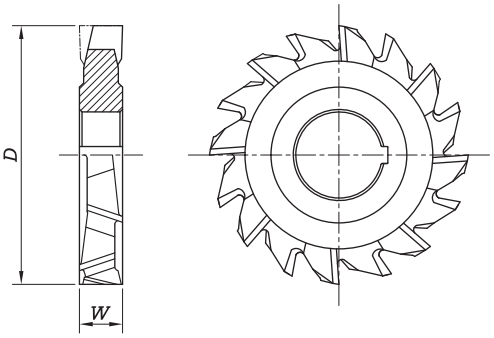
Diameter (D) +0.045 -0.0	Bore +0.00075 +0.00025	Width (W) +0.0005 -0.0
5	1.1/4	1/2
5	1.1/4	5/8
5	1.1/4	3/4
5	1.1/4	7/8
5	1.1/4	1
6	1.1/4 or 1.1/2	1/2
6	1.1/4 or 1.1/2	5/8
6	1.1/4 or 1.1/2	3/4
6	1.1/4 or 1.1/2	7/8
6	1.1/4 or 1.1/2	1
6	1.1/4 or 1.1/2	1.1/4
7	1.1/2	1/2
7	1.1/2	5/8
7	1.1/2	3/4
7	1.1/2	7/8
7	1.1/2	1
7	1.1/2	1.1/4
8	1.1/2	5/8
8	1.1/2	3/4
8	1.1/2	7/8
8	1.1/2	1
8	1.1/2	1.1/4
8	1.1/2	1.1/2

Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

Normally Type N Tools are supplied.
Width ¾ inch and above are normally supplied with LH helical teeth.

SIDE AND FACE CUTTERS

(Staggered Teeth)



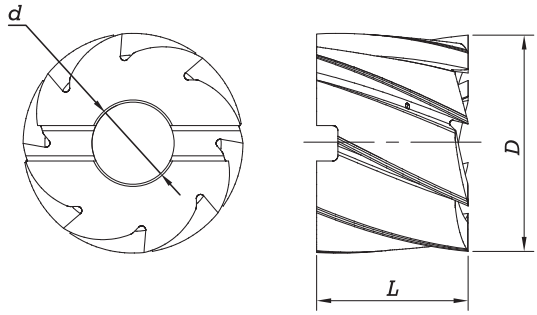
BS 122 | HSS

Application:
Used for both side and face milling operations.

Diameter (D) +0.045 -0.0	Bore +0.00075 +0.00025	Width (W) +0.0005 -0.0
3	1	1/4
3	1	5/16
3	1	3/8
3	1	1/2
4	1	1/4
4	1	5/16
4	1	3/8
4	1	1/2
4	1	5/8
5	1.1/4	3/8
5	1.1/4	1/2
5	1.1/4	5/8
6	1.1/4	3/8
6	1.1/4	1/2
6	1.1/4	5/8
6	1.1/4	3/4
7	1.1/2	1/2
7	1.1/2	5/8
7	1.1/2	3/4
7	1.1/2	7/8
8	1.1/2	5/8
8	1.1/2	3/4
8	1.1/2	7/8
8	1.1/2	1

Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

SHELL END MILLS



IS 6257 | HSS

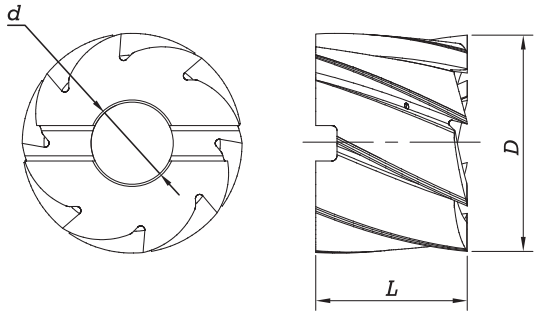
Application:
Used for both side and face milling operations mounted on Stub Arbor.

Diameter (D) (js16)	Bore (d) (H7)	Width (L) (k16)
40	16	32
50	22	36
63	27	40
80	27	45
100	32	50
125	40	56
160	50	63

Dimensions in mm
Specifications conform to :
IS 6257 : 2002
ISO 2586 : 1973
DIN 1880 : 1976

These cutters have RH helix for RH cutting.
Normally Type N Tools are supplied.

SHELL END MILLS



BS 122 | HSS

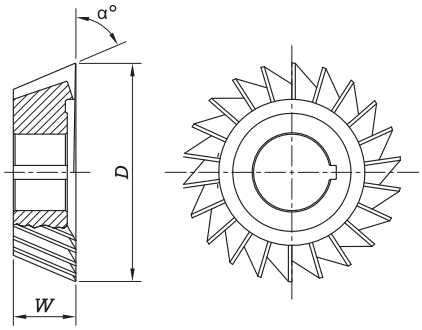
Application:
Used for both side and face milling operations mounted on Stub Arbor.

Diameter (D) +0.045 -0.0	Length (L) +0.030 -0.0	Bore (d) +0.00075 +0.00025
1.1/4	1	1/2
1.1/2	1.1/8	1/2
1.3/4	1.1/4	3/4
2	1.3/8	3/4
2.1/4	1.1/2	1
2.1/2	1.5/8	1
2.3/4	1.5/8	1
3	1.3/4	1.1/4
3.1/2	1.7/8	1.1/4
4	2.1/4	1.1/2
4.1/2	2.1/4	1.1/2
5	2.1/4	1.1/2
5.1/2	2.1/4	2
6	2.1/4	2

Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

These cutters have RH helix for RH cutting.
Normally Type N Tools are supplied.

SINGLE ANGLE CUTTERS



IS 6324 | HSS

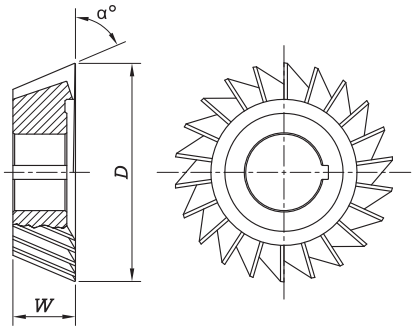
Application:
Use for milling Vee - shaped single slot serrations and chamfers.

Diameter (D) (js16)	Bore (H7)	Width (W) (js16)	Angle (α^0+1^0)
50	16	12	60^0 , 65^0 , 70^0 , 75^0
63	22	18	80^0, 85^0
63	22	26	
80	22	32	70^0 , 75^0, 80^0
100	27	36	

Dimensions in inches
Specifications conform to :
IS 6324 : 2001

Normally RH cutters Type H Tools are supplied.

SINGLE ANGLE CUTTERS



BS 122 | HSS

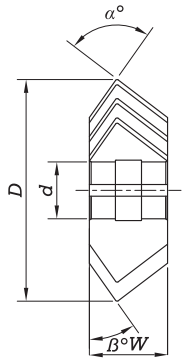
Application:
Use for milling Vee - shaped single slot serrations and chamfers.

Diameter (D) +0.045 -0.0	Bore +0.00075 +0.00025	Width (W) +0.015 -0.0	Angle (α^0+1^0)
2.3/4	1	5/16	30^0
2.3/4	1	7/16	40^0
2.3/4	1	1/2	45^0, 50^0, 60^0
2.3/4	1	1/2	70^0, 80^0
3	1.1/4	5/16	30^0
3	1.1/4	7/16	40^0
3	1.1/4	1/2	45^0
3	1.1/4	5/8	50^0, 60^0, 70^0, 80^0

Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

Normally RH cutters are supplied.

DOUBLE ANGLE CUTTERS



IS 6325 | HSS

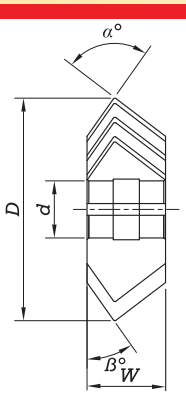
Application:
Use for milling Vee - shaped single slot serrations and chamfers.

Diameter (D) (js16)	Bore (d) (H7)	Width (W) (js16)	Small Angle (β^0 + 1^0)	Included Angle (α^0+1^0)
50	16	12	12	55
50	16	12	15	60
50	16	12	15	65
63	22	18	15	70
63	22	18	15	75
63	22	18	15	80
50	16	14	20	90
63	22	20	20	90
50	16	16	25	100
63	22	22	25	100
80	22	32	15	65
80	22	32	15	70
80	22	32	15	75
100	27	36	15	70
100	27	36	15	75
100	27	36	15	80

Dimensions in mm
Specifications conform to :
IS 6325 : 2001

Normally RH cutters Type H Tools are supplied.

DOUBLE ANGLE CUTTERS



BS 122 | HSS

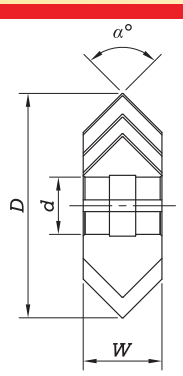
Application:
Use for milling Vee - shaped single slot serrations and chamfers.

Diameter (D) +0.045 -0.0	Bore (d) +0.00075 +0.00025	Width (W) +0.015 -0.0	Angle (β^0 x α^0)
2.3/4	1	5/8	12x48
2.3/4	1	5/8	12x53
2.3/4	1	5/8	12x58
2.3/4	1	5/8	12x63
2.3/4	1	5/8	12x68
2.3/4	1	5/8	12x73
3	1.1/4	3/4	12x48
3	1.1/4	3/4	12x53
3	1.1/4	3/4	12x58
3	1.1/4	3/4	12x63
3	1.1/4	3/4	12x68
3	1.1/4	3/4	12x73

Normally RH Tools are supplied.

Dimensions in Inches
Specifications conform to :
BS 122 Part 1 : 1989

EQUAL ANGLE CUTTERS



IS 6326 | HSS

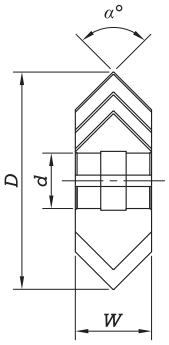
Application:
Use for milling Vee - shaped equal slot serrations and chamfers.

Diameter (D) (js16)	Bore (d) (H7)	Width (W) (k11)	Included Angle($\alpha^0 + 1^0$)
50	16	8	45
50	16	10	60
50	16	14	90
63	22	10	45
63	22	14	60
63	22	20	90
80	27	12	45
80	27	18	60
80	27	22	90
100	22	18	45
100	32	25	60
100	32	32	90

Normally Type H Tools are supplied.

Dimensions in mm
Specifications conform to :
IS 6326 : 2001
ISO 6108 : 1978

EQUAL ANGLE CUTTERS



BS 122 | HSS

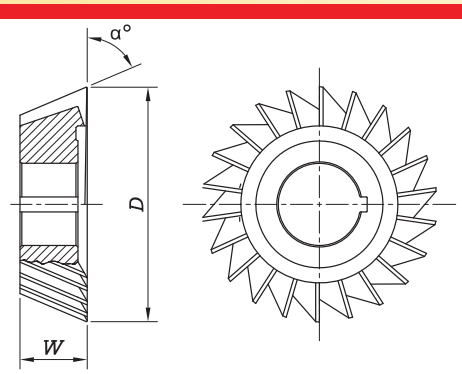
Application:
Use for milling Vee - shaped equal slot serrations and chamfers.

Diameter (D) +0.045 -0.0	Bore (d) +0.00075 +0.00025	Width (W) +0.015 -0.0	Included Angle (α°)
2.3/4	1	5/16	30
2.3/4	1	7/16	40
2.3/4	1	1/2	45, 60, 90
3	1.1/4	5/16	30
3	1.1/4	7/16	40
3	1.1/4	1/2	45
3	1.1/4	5/8	60, 90

Normally Type H Tools are supplied.

Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

SHELL END SINGLE ANGLE MILLING CUTTERS



IS 6256 | HSS

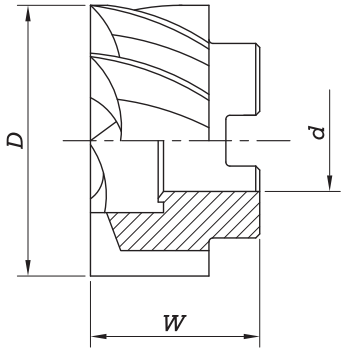
Application:
Use for milling Vee - shaped single slot serrations and chamfers.

Diameter (D) (js16)	Width (W) (js14)	Bore Dia (H7)	Included Angle (α°)	Tolerance on Dia
40	10	10	45°	±25'
50	13	13	45°	±25'
63	18	16	45°	±25'
80	22	22	45°	±20'
100	28	27	45°	±20'
125	36	32	45°	±20'
160	45	40	45°	±20'
40	13	10	50°,55°,60°	±25'
50	16	13	50°,55°,60°	±25'
63	20	16	50°,55°,60°	±25'
80	25	22	50°,55°,60°	±20'
100	32	27	50°,55°,60°	±20'
125	40	32	50°,55°,60°	±20'
160	50	40	50°,55°,60°	±20'

Normally RH cutters and Type H Tools are supplied.

Dimensions in mm
Specifications conform to :
IS 6256 : 2000
DIN 842 (P-1) : 1984

FACE CUTTERS



BS 122 | HSS

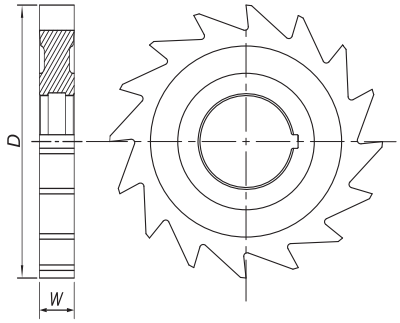
Application:
Use for end and face cutting with slot drive.

Diameter (D) +0.045 -0.0	Length (W) +0.030 -0.000	Bore (d) +0.00075 +0.00025
1.3/4	1.1/4	3/4
2	1.1/4	3/4
2.1/2	1.1/4	3/4
3	1.11/16	1.1/8
4	1.3/4	1.1/8
5	2	1.1/2

Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

These cutters have RH helix for RH cutting.
Normally Type N Tools are supplied.
Width above ¾ inch are normally supplied with LH helical flutes.

SLOTTING CUTTERS



BS 122 | HSS

Application :
Used for milling slot.

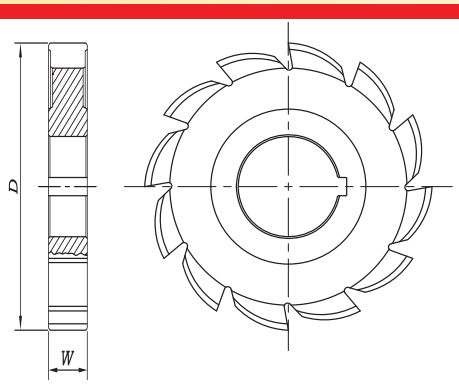
Diameter (D) +0.045 -0.0	Bore +0.00075 +0.00025	Width (W) +0.001 -0.001
2.1/2	1	1/4
2.1/2	1	5/16
2.1/2	1	3/8
2.1/2	1	7/16
2.1/2	1	1/2
3	1	1/4
3	1	5/16
3	1	3/8
3	1	7/16
3	1	1/2
3	1	5/8
3	1	3/4
3.1/2	1	1/4
3.1/2	1	5/16
3.1/2	1	3/8
3.1/2	1	7/16
3.1/2	1	1/2
3.1/2	1	5/8
3.1/2	1	3/4
3.1/2	1	7/8
4	1	1/4
4	1	5/16
4	1	3/8
4	1	7/16

Diameter (D) +0.045 -0.0	Bore +0.00075 +0.00025	Width (W) +0.001 -0.001
4	1	1/2
4	1	5/8
4	1	3/4
4	1	7/8
4	1	1
5	1.1/4	1/4
5	1.1/4	5/16
5	1.1/4	3/8
5	1.1/4	7/16
5	1.1/4	1/2
5	1.1/4	5/8
5	1.1/4	3/4
5	1.1/4	7/8
5	1.1/4	1
6	1.1/4	1/4
6	1.1/4	5/16
6	1.1/4	3/8
6	1.1/4	7/16
6	1.1/4	1/2
6	1.1/4	5/8
6	1.1/4	3/4
6	1.1/4	7/8
6	1.1/4	1

Dimensions in inches
Specifications conform to:
BS 122 Part 1 : 1989

Width above ¾ inch are normally supplied with LH helical flutes.

KEYWAY MILLING CUTTERS



IS 6355 | HSS

Application :
Used for milling keyway slot.

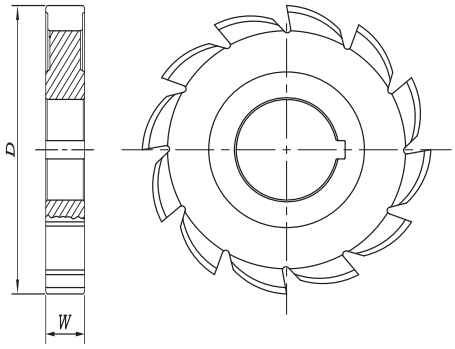
Diameter (D) (js16)	Bore (H7)	Width (W) (d9)
50	16	4
50	16	5
50	16	6
50	16	8
50	16	10
63	22	4
63	22	5
63	22	6
63	22	8
63	22	10
63	22	12
63	22	14
80	27	5
80	27	6
80	27	8
80	27	10
80	27	12
80	27	14
80	27	16
80	27	18
100	32	6
100	32	8
100	32	10
100	32	12

Diameter (D) (js16)	Bore (H7)	Width (W) (d9)
100	32	14
100	32	16
100	32	18
100	32	20
100	32	22
100	32	25
125	32	8
125	32	10
125	32	12
125	32	14
125	32	16
125	32	18
125	32	20
125	32	22
125	32	25
160	40	10
160	40	12
160	40	14
160	40	16
160	40	18
160	40	20
160	40	22
160	40	25

Dimensions in mm
Specifications conform to :
IS 6355 : 2002
ISO 2585 : 1972
DIN 1890 : 1976

Normally RH cutters and Type N Tools are supplied.

KEYWAY MILLING CUTTERS



IS 6355 | HSS

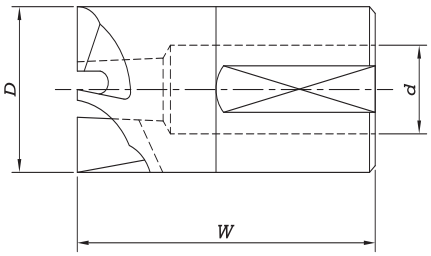
Application :
Used for milling keyway slot.

Diameter (D) (js16)	Bore (H7)	Width (W) (d9)
160	40	28
160	40	32
200	40	12
200	40	14
200	40	16
200	40	18
200	40	20
200	40	22
200	40	25
200	40	28
200	40	32
200	40	36
200	40	40

Normally RH cutters and Type N Tools are supplied.

Dimensions in mm
Specifications conform to :
IS 6355 : 2002
ISO 2585 : 1972
DIN 1890 : 1976

HOLLOW MILLS



BS 122 HSS

Application:
For hollow circular milling slots.

Bore +0.0 -0.002	Outside Diameter (D)	Overall Length (W)
1/4	5/8	1.1/2
9/32	3/4	1.1/2
5/16	3/4	1.1/2
11/32	3/4	1.1/2
3/8	1	1.3/4
7/16	1	1.3/4
1/2	1	1.3/4
9/16	1.1/4	2
5/8	1.1/4	2
11/16	1.1/2	2
3/4	1.1/2	2
13/16	1.1/2	2
7/8	1.3/4	2.1/4
15/16	1.3/4	2.1/4
1	1.3/4	2.1/4

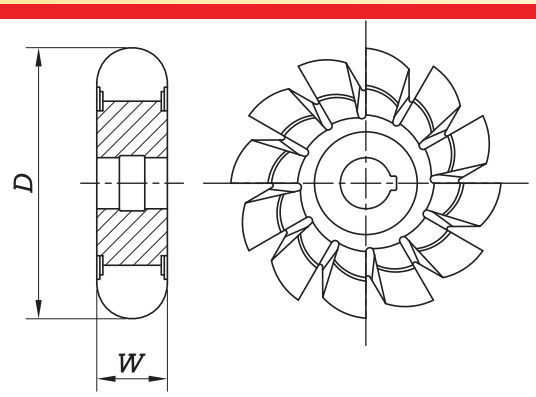
Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

Normally supplied for RH cutting.
Tolerance on outside diameter

1- inch and below - 0.0007 inch
- 0.0012 inch

Above 1-inch - 0.0007 inch
- 0.0015 inch

CONVEX MILLING CUTTERS



IS 6323 | HSS

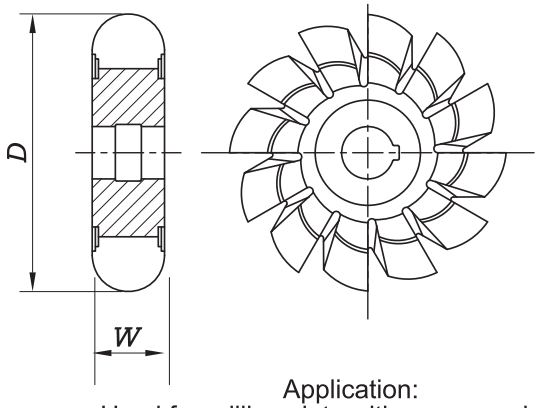
Application:
Used for milling slots with concave shapes.

Radius (k11)	Diameter (D) (js16)	Bore (H7)	Width (w)
1.6	50	16	3.2
2	50	16	4
2.5	63	22	5
3	63	22	6
3.15	63	22	6.3
4	63	22	8
5	63	22	10
6	80	27	12
6.3	80	27	12.6
8	80	27	16
10	100	32	20
12	100	32	24
12.5	100	32	25
16	125	32	32
20	125	32	40

Dimensions in mm
Specifications conform to :
IS 6323 : 2002
ISO 3860 : 1976
DIN 856 (Teil 1) : 1978

Normally Type N Tools are supplied.

CONVEX MILLING CUTTERS



BS 122 | HSS

Application:
Used for milling slots with concave shapes.

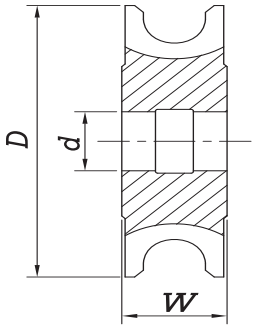
Diameter (D) +0.045 -0.0	Width & circle diameter (w)	Bore +0.00075 +0.00025
2.1/4	1/8	1
2.1/4	3/16	1
2.1/4	1/4	1
2.1/2	5/16	1
2.1/2	3/8	1
2.1/2	7/16	1
2.1/2	1/2	1
2.3/4	9/16	1
2.3/4	5/8	1
3	11/16	1
3	3/4	1
3.1/4	13/16	1
3.1/4	7/8	1
3.1/2	15/16	1
3.1/2	1	1
4	1.1/8	1.1/4
4	1.1/4	1.1/4
4.1/4	1.3/8	1.1/4
4.1/4	1.1/2	1.1/4

Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

Tolerance on width

5/8 - inch and below	+0.002 inch -0.000 inch	Above 5/8 - inch	+0.004 inch -0.000 inch

CONCAVE MILLING CUTTERS



IS 6322 | HSS

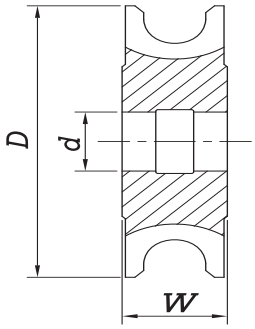
Application:
Used for milling slots with convex shapes.

Radius (N11)	Diameter (D) (js16)	Bore (d) (H7)	Width (w)
1.6	50	16	8
2	50	16	9
2.5	63	22	10
3	63	22	12
3.15	63	22	12
4	63	22	16
5	63	22	20
6	80	27	24
6.3	80	27	24
8	80	27	32
10	100	32	36
12	100	32	40
12.5	100	32	40
16	125	32	50
20	125	32	60

Dimensions in mm
Specifications conform to :
IS 6322 : 2002
ISO 3860 : 1976
DIN 855 (Teil-1) : 1978

Normally Type N Tools are supplied.

CONCAVE MILLING CUTTERS



BS 122 | HSS

Application:
Used for milling slots with convex shapes.

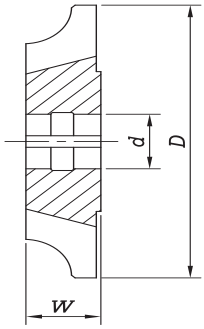
Diameter (D) +0.045 -0.0	Circle Diameter	Width (W) +0.010 -0.0	Bore (d) +0.00075 +0.00025
2.1/4	1/8	5/16	1
2.1/4	3/16	3/8	1
2.1/4	1/4	1/2	1
2.1/2	5/16	5/8	1
2.1/2	3/8	3/4	1
2.1/2	7/16	7/8	1
2.1/2	1/2	1	1
2.3/4	9/16	1.3/16	1
2.3/4	5/8	1.3/16	1
3	11/16	1.3/8	1
3	3/4	1.3/8	1
3.1/4	13/16	1.9/16	1
3.1/4	7/8	1.9/16	1
3.1/2	15/16	1.3/4	1
3.1/2	1	1.3/4	1
4	1.1/8	1.15/16	1.1/4
4	1.1/4	2.1/8	1.1/4
4.1/4	1.3/8	2.5/16	1.1/4
4.1/4	1.1/2	2.1/2	1.1/4

Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

Tolerance on circle diameter

5/8 - inch and below	+0.000 inch -0.002 inch	Above 5/8 - inch	+0.000 inch -0.004 inch

SINGLE CORNER ROUNDING CUTTERS



IS 6314 | HSS

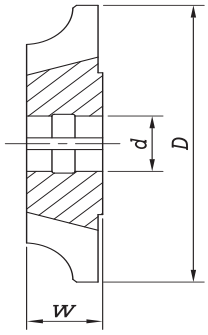
Application :
For milling convex type single corner rounding form.

Diameter (D) (js16)	Bore (d) (H7)	Width (W)	Radius (N11)
50	16	5	1.6
50	16	5	2
63	22	5	2.5
63	22	6	3
63	22	6	3.15
63	22	8	4
63	22	10	5
80	27	12	6
80	27	12	6.3
80	27	16	8
100	32	18	10
100	32	20	12
100	32	20	12.5
125	32	24	16
125	32	28	20

Dimensions in mm
Specifications conform to :
IS 6314 : 2002
ISO 3860 : 1976
DIN 6513 (Teil-1) : 1978

Normally RH cutter and Type N Tools are supplied.

SINGLE CORNER ROUNDING CUTTERS



BS 122 | HSS

Application :
For milling convex type single corner rounding form.

Diameter (D) +0.045 -0.0	Radius	Bore (d) +0.00075 +0.00025	Width (W) +0.010 -0.0
2.1/4	1/16	1	5/16
2.1/4	3/32	1	5/16
2.1/4	1/8	1	5/16
2.1/2	5/32	1	7/16
2.1/2	3/16	1	7/16
2.1/2	7/32	1	1/2
2.1/2	1/4	1	1/2
2.3/4	9/32	1	5/8
2.3/4	5/16	1	5/8
3	11/32	1	11/16
3	3/8	1	11/16
3.1/4	13/32	1	3/4
3.1/4	7/16	1	3/4
3.1/2	15/32	1	7/8
3.1/2	1/2	1	7/8
3.1/2	9/16	1	1
3.1/2	5/8	1	1
3.3/4	11/16	1	1.1/8
3.3/4	3/4	1	1.1/8

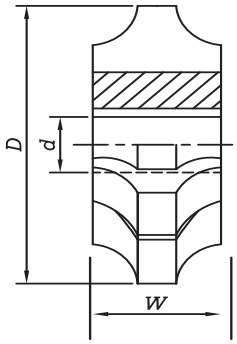
Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

Tolerance on Radius

5/16 - inch and below +0.000 inch -0.001 inch

Above 5/16 - inch +0.000 inch -0.002 inch

DOUBLE CORNER ROUNDING CUTTERS



BS 122 | HSS

Application :
For milling concave type double corner rounding form.

Diameter (D) +0.045 -0.0	Radius	Bore (d) +0.00075 +0.00025	Width (W) +0.010 -0.0
2.1/4	1/16	1	7/16
2.1/4	3/32	1	7/16
2.1/4	1/8	1	7/16
2.1/2	5/32	1	5/8
2.1/2	3/16	1	5/8
2.1/2	7/32	1	3/4
2.1/2	1/4	1	3/4
2.3/4	9/32	1	15/16
2.3/4	5/16	1	15/16
3	11/32	1	1.1/16
3	3/8	1	1.1/16
3.1/4	13/32	1	1.3/16
3.1/4	7/16	1	1.3/16
3.1/2	15/32	1	1.3/8
3.1/2	1/2	1	1.3/8
3.1/2	9/16	1	1.5/8
3.1/2	5/8	1	1.5/8
3.3/4	11/16	1	1.7/8
3.3/4	3/4	1	1.7/8

Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

Tolerance on Radius

5/16 - inch and below +0.000 inch -0.001 inch

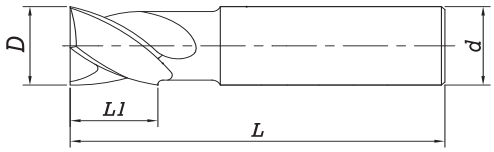
Above 5/16 - inch +0.000 inch -0.002 inch

INDEX

MILLING CUTTERS (SHANK TYPE)

MILLING CUTTERS (SHANK TYPE)

PARALLEL SHANK SLOT MILLING CUTTERS



IS 6352 | HSS

Application :
For milling keyway slot in machine spindles.

Diameter (D) (e8)	Shank Diameter (d) (h8)	Short Series		Standard Series	
		Cutting edge Length (L1)	Overall Length (L)	Cutting edge Length (L1)	Overall Length (L)
3	4	5	37	8	40
3.5	4	6	38	10	42
4	4	7	39	11	43
5	5	8	42	18	47
6	6	8	52	13	57
7	8	10	54	16	60
8	8	11	55	19	63
9	10	11	61	19	69
10	10	13	63	22	72
11	12	13	70	22	79
12	12	16	73	26	83
14	12	16	73	26	83
16	16	19	79	32	92
18	16	19	79	32	92
20	20	22	88	38	104
22	20	22	88	38	104
25	25	26	102	45	121
28	25	26	102	45	121
32	32	32	112	53	133
36	32	32	112	53	133
40	40	38	130	63	155
45	40	38	130	63	155
50	50	45	147	75	177
56	50	45	147	75	177
63	50	53	155	90	192
71	63	53	165	90	202

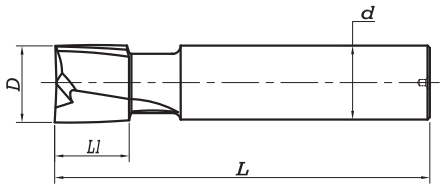
Dimensions in mm
Specifications conform to :
IS 6352 : 2001
ISO 1641/1 : 1978

Normally RH helical flutes RH cutting and Type N Tools are supplied with flat face - Type A.

Type A - Flat face helical fluted

Type B - Concave face helical fluted

PARALLEL SHANK SLOT DRILL



BS 122 | HSS

Application :
For milling keyway slot in machine spindles.

Diameter (D)	Cutting edge Length (L1)	Overall Length (L)	Shank Diameter (d)
1/8	3/8	1.7/8	1/4
5/32	3/8	1.7/8	1/4
3/16	1/2	2	1/4
7/32	1/2	2	1/4
1/4	5/8	2.1/8	1/4
5/16	3/4	2.1/2	3/8
3/8	7/8	2.5/8	3/8
7/16	7/8	2.5/8	1/2
1/2	1	2.3/4	1/2
9/16	1.1/8	2.7/8	1/2
5/8	1.1/4	3.1/4	5/8
11/16	1.3/8	3.3/8	5/8
3/4	1.1/2	3.1/2	5/8
7/8	1.5/8	3.5/8	3/4
1	1.3/4	3.3/4	3/4
1.1/8	1.7/8	4.1/8	1
1.1/4	2	4.1/4	1
1.3/8	2.1/8	4.5/8	1
1.1/2	2.1/4	4.3/4	1

Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

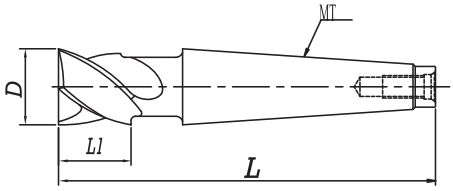
Normally straight flutes are supplied.

Tolerance on diameter and shank diameter

1/2 - inch and below +0.000 inch -0.0005 inch

Above 1/2 - inch +0.000 inch -0.001 inch

TAPER SHANK SLOT MILLING CUTTERS
(TAPPED END)



IS 6388 | HSS

Application :
For milling keyway slot in machine spindles.

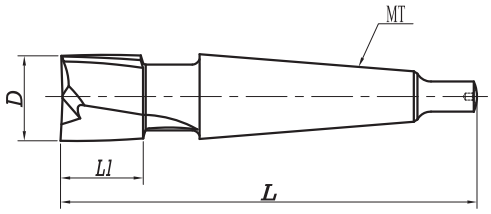
Diameter (D) (e8)	Short Series		Standard Series		MT Shank no
	Cutting edge Length (L1)	Overall Length (L)	Cutting edge Length (L1)	Overall Length (L)	
7	10	80	16	86	1
8	11	81	19	89	1
9	11	81	19	89	1
10	13	83	22	92	1
11	13	83	22	92	1
12	16	86	26	96	1
14	16	86	26	96	1
16	19	104	32	117	2
18	19	104	32	117	2
20	22	107	38	123	2
22	22	107	38	123	2
25	26	128	45	147	3
28	26	128	45	147	3
32	32	134	53	155	3
36	32	157	53	178	4
40	38	163	63	188	4
45	38	196	63	221	5
50	45	170	75	200	5
56	45	203	75	223	5
63	53	211	90	248	5

Dimensions in mm
Specifications conform to :
IS 6388 : 2001
ISO 1641/2 : 1978

Type D - Flat face LH helical fluted
Type F - Concave face LH helical fluted

Normally RH helical flute RH cutting and Type N Tools are supplied.

TAPER SHANK SLOT DRILL



BS 122 | HSS

Application :
For milling keyway slot in machine spindles.

Diameter (D)	Cutting edge Length (L1)	Overall Length (L)	MT Shank no
1/8	3/8	3.3/8	1
5/32	3/8	3.3/8	1
3/16	1/2	3.1/2	1
7/32	1/2	3.1/2	1
1/4	5/8	3.5/8	1
5/16	3/4	3.3/4	1
3/8	7/8	3.7/8	1
7/16	7/8	3.7/8	1
1/2	1	4	1
9/16	1.1/8	4.3/4	2
5/8	1.1/4	4.7/8	2
11/16	1.3/8	5	2
3/4	1.1/2	5.1/8	2
7/8	1.5/8	5.1/4	2
1	1.3/4	6.1/8	3
1.1/8	1.7/8	6.1/4	3
1.1/4	2	6.3/8	3
1.3/8	2.1/8	7.5/8	4
1.1/2	2.1/4	7.3/4	4

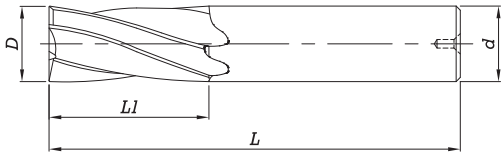
Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

Normally straight flutes RH cutting and Type H Tools are supplied.

Tolerance on diameter

1/2 - inch and below	+0.000 inch -0.0005 inch	Above 1/2 - inch	+0.000 inch -0.001 inch

PARALLEL SHANK END MILLS



IS 6353 | HSS

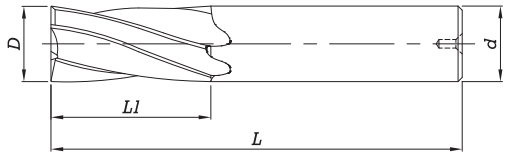
Application :
Used for general milling applications like slotting, profiling and plunge cutting etc.

Diameter (D) (js 14)	Shank Diameter (d) (h8)	Standard Series		Long Series	
		Cutting edge Length (L1)	Overall Length (L)	Cutting edge Length (L1)	Overall Length (L)
3	4	8	40	12	44
3.5	4	10	42	15	47
4	4	11	43	19	51
5	5	13	47	24	58
6	6	13	57	24	68
7	8	16	60	30	74
8	8	19	63	38	82
9	10	19	69	38	88
10	10	22	72	45	95
11	12	22	79	45	102
12	12	26	83	53	110
14	12	26	83	53	110
16	16	32	92	63	123
18	16	32	92	63	123
20	20	38	104	75	141
22	20	38	104	75	141
25	25	45	121	90	166
28	25	45	121	90	166
32	32	53	133	106	186
36	32	53	133	106	186
40	40	63	155	125	217
45	40	63	155	125	217
50	50	75	177	150	252
56	50	75	177	150	252
63	50	90	192	180	282
71	63	90	202	180	292

Dimension in mm
Specifications conform to :
IS 6353 : 2001
ISO 1641/1 : 1978
DIN 844 (Part 1) : 1978

These cutters have RH helix for RH cutting.
Normally Type N Tools are supplied.

PARALLEL SHANK END MILLS



BS 122 | HSS

Application :
Used for general milling applications like slotting, profiling and plunge cutting etc.

Diameter (D)	Shank Diameter (d)	Cutting edge Length (L1)	Overall Length (L)
1/8	1/4	3/8	1.7/8
5/32	1/4	3/8	1.7/8
3/16	1/4	1/2	2
7/32	1/4	1/2	2
1/4	1/4	5/8	2.1/8
5/16	3/8	3/4	2.1/2
3/8	3/8	7/8	2.5/8
7/16	1/2	7/8	2.5/8
1/2	1/2	1	2.3/4
9/16	1/2	1.1/8	2.7/8
5/8	5/8	1.1/4	3.1/4
11/16	5/8	1.3/8	3.3/8
3/4	5/8	1.1/2	3.1/2
13/16	3/4	1.5/8	3.5/8
7/8	3/4	1.5/8	3.5/8
1	3/4	1.3/4	3.3/4
1.1/8	1	1.7/8	4.1/8
1.1/4	1	2	4.1/4
1.3/8	1	2.1/8	4.5/8
1.1/2	1	2.1/4	4.3/4
1.5/8	1.1/4	2.3/8	4.7/8
1.3/4	1.1/4	2.1/2	5.1/8
1.7/8	1.1/4	2.5/8	5.1/4
2	1.1/2	3	5.1/2
2.1/8	1.1/2	3	5.1/2
2.1/4	1.1/2	3	5.5/8
2.3/8	1.1/2	3.1/4	5.7/8
2.1/2	1.1/2	3.1/2	6.1/8

Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

These cutters have RH helix RH cutting and Type N Tools are supplied.

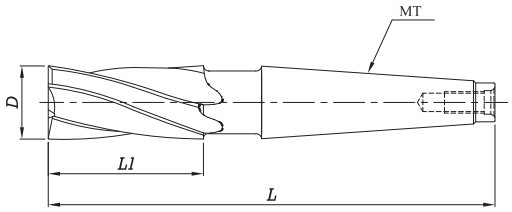
Tolerance on diameter

3/4 - inch and below	+0.005 inch -0.000 inch	Above 3/4 - inch	+0.010 inch -0.000 inch

Tolerance on shank diameter

1/2 - inch and below	+0.000 inch -0.0005 inch	Above 1/2 - inch	+0.000 inch -0.001 inch

TAPPER SHANK END MILLS
(TAPPED END)



IS 6354 | HSS

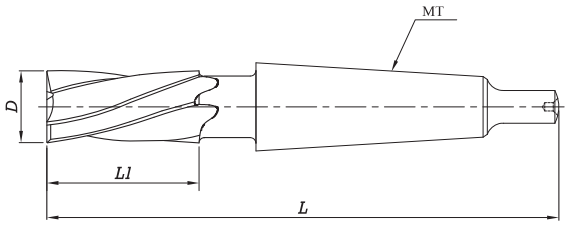
Application :
Used for general milling applications like slotting, profiling and plunge cutting etc.

Diameter (D) (js14)	Standard Series		Long Series		MT Shank no
	Cutting edge Length (L1)	Overall Length (L)	Cutting edge Length (L1)	Overall Length (L)	
6	13	83	24	94	1
7	16	86	30	100	1
8	19	89	38	108	1
9	19	89	38	108	1
10	22	92	45	115	1
11	22	92	45	115	1
12	26	96	53	123	1
14	26	96	53	123	1
16	32	117	63	148	2
18	32	117	63	148	2
20	38	123	75	160	2
22	38	123	75	160	2
25	45	147	90	192	3
28	45	147	90	192	3
32	53	155	106	208	3
36	53	178	106	231	4
40	63	188	125	250	4
45	63	221	125	283	5
50	75	200	150	275	5
56	75	233	150	308	5
63	90	248	180	338	5

Dimensions in mm
Specifications conform to :
IS 6354 : 2001
ISO 1641/2 : 1978
DIN 845 Part 1 : 1981

These cutters have RH helix.
Normally Type N Tools are supplied.

TAPPER SHANK END MILLS



BS 122 | HSS

Application :
Used for general milling applications like slotting, profiling and plunge cutting etc.

Diameter (D)	Cutting edge Length (L1)	Overall Length (L)		MT Shank no
		Tanged end Shank	Tapped end Shank	
1/8	3/8	3.3/8		1
5/32	3/8	3.3/8		1
3/16	1/2	3.1/2		1
7/32	1/2	3.1/2		1
1/4	5/8	3.5/8		1
5/16	3/4	3.3/4		1
3/8	7/8	3.7/8		1
7/16	7/8	3.7/8		1
1/2	1	4		1
9/16	1.1/8	4.3/4	4.3/8	2
5/8	1.1/4	4.7/8	4.1/2	2
11/16	1.3/8	5	4.5/8	2
3/4	1.1/2	5.1/8	4.3/4	2
13/16	1.5/8	5.1/4	4.7/8	2
7/8	1.5/8	5.1/4	4.7/8	2
1	1.3/4	6.1/8	5.5/8	3
1.1/8	1.7/8	6.1/4	5.3/4	3
1.1/4	2	6.3/8	5.7/8	3
1.3/8	2.1/8	7.5/8	7.1/8	4
1.1/2	2.1/4	7.3/4	7.1/4	4
1.5/8	2.3/8	7.7/8	7.3/8	4
1.3/4	2.1/2	8	7.1/2	4
1.7/8	2.5/8	8.1/8	7.5/8	4
2	2.3/4	8.1/4	7.3/4	4
2.1/8	3	9.7/8	9.3/32	5
2.1/4	3	9.7/8	9.3/32	5
2.3/8	3.1/4	10.1/8	9.11/32	5
2.1/2	3.1/2	10.3/8	9.19/32	5
2.3/4	3.1/2	10.5/8	9.27/32	5
3	4	10.7/8	10.3/32	5

Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

These cutters have RH helix tapped end shank and LH helix for tanged end shank.

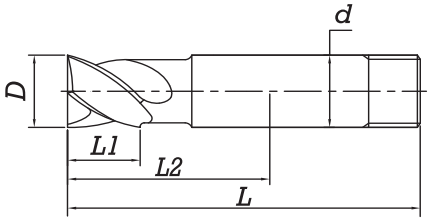
Normally Type N Tools are supplied.

Tolerance

3/4 - inch and below	+0.005 inch -0.000 inch	Above 3/4 - inch	+0.010 inch -0.000 inch

SCREWED SHANK SLOT DRILL

Short Series (Normal Series)



BS 122 | HSS

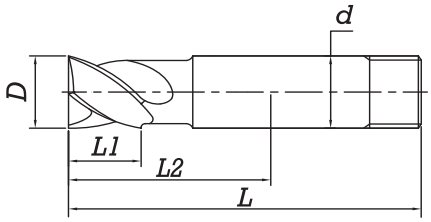
Application :
For milling keyway slots.

Diameter (D)	Cutting edge length (L1)	Shank Diameter (d)	Nominal Length below Chuck (L2)	Overall Length (L)
3.0	7.0	6	13.5	51.0
3.5	7.5	6	15.0	52.5
4.0	9.5	6	15.0	52.5
4.5	9.5	6	15.0	52.5
5.0	9.5	6	15.0	52.5
5.5	11.0	6	18.0	55.5
6.0	11.0	6	19.0	56.5
6.5	11.0	10	20.5	58.5
7.0	11.0	10	20.5	58.5
7.5	11.0	10	20.5	58.5
8.0	12.5	10	21.5	59.5
8.5	14.5	10	22.5	60.5
9.0	14.5	10	22.5	60.5
9.5	14.5	10	22.5	60.5
10.0	14.5	10	22.5	60.5
10.5	17.5	12	27.0	65.0
11.0	17.5	12	27.0	65.0
11.5	17.5	12	27.0	65.0
12.0	19.0	12	28.5	66.5
13.0	19.0	12	28.5	66.5
14.0	22.0	12	30.5	68.5
15.0	22.0	16	33.0	72.0
16.0	22.0	16	33.0	72.0
17.0	24.0	16	35.0	74.0
18.0	24.0	16	35.0	74.0
19.0	25.5	16	38.0	77.0
20.0	25.5	16	38.0	77.0
21.0	25.5	25	46.0	98.5
22.0	25.5	25	47.5	100.0
23.0	25.5	25	49.0	101.5
24.0	25.5	25	50.5	103.0
25.0	27.0	25	42.5	95.0
26.0	27.0	25	42.5	95.0
27.0	28.5	25	41.0	93.5
28.0	30.0	25	42.5	95.0
29.0	30.0	25	41.0	93.5
30.0	30.0	25	41.0	93.5
32.0	38.0	25	49.0	101.5
34.0	38.0	25	49.0	101.5
35.0	39.5	25	50.5	103.0
36.0	39.5	25	50.5	103.0
38.0	43.0	25	54.0	106.5
40.0	46.0	25	58.5	111.0
42.0	47.5	25	60.0	112.5
44.0	51.0	25	63.5	116.0
45.0	51.0	25	63.5	116.0
50.0	51.0	32	63.5	117.5

Dimensions in mm
Specifications conform to :
BS 122 Part 4 : 1980

SCREWED SHANK SLOT DRILL

Short Series (Normal Series)



BS 122 | HSS

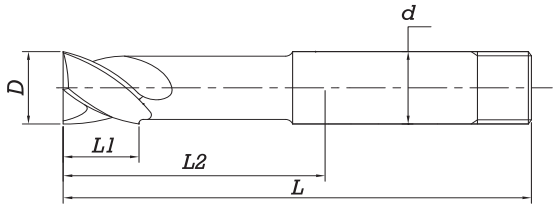
Application :
For milling keyway slots.

Diameter (D)	Cutting edge length (L1)	Shank Diameter (d)	Nominal Length below Chuck (L2)	Overall Length (L)
1/8	9/32	1/4	17/32	2
5/32	3/8	1/4	19/32	2.1/16
3/16	3/8	1/4	19/32	2.1/16
7/32	7/16	1/4	23/32	2.3/16
1/4	7/16	1/4	3/4	2.7/32
9/32	7/16	3/8	13/16	2.5/16
5/16	1/2	3/8	27/32	2.11/32
11/32	9/16	3/8	7/8	2.3/8
3/8	9/16	3/8	7/8	2.3/8
13/32	5/8	3/8	7/8	2.3/8
7/16	11/16	1/2	1.1/16	2.9/16
15/32	11/16	1/2	1.1/16	2.9/16
1/2	3/4	1/2	1.1/8	2.5/8
9/16	27/32	1/2	1.7/32	2.23/32
5/8	7/8	5/8	1.5/16	2.27/32
11/16	15/16	5/8	1.3/8	2.29/32
3/4	1	5/8	1.1/2	3.1/32
13/16	1	1	1.13/16	3.7/8
7/8	1	1	1.7/8	3.15/16
15/16	1	1	2.0	3.1/16
1	1.1/16	1	1.11/16	3.3/4
1.1/16	1.1/8	1	1.5/8	3.11/16
1.1/8	1.3/16	1	1.11/16	3.3/4
1.3/16	1.3/16	1	1.5/8	3.11/16
1.1/4	1.1/2	1	1.15/16	4
1.5/16	1.1/2	1	1.15/16	4
1.3/8	1.9/16	1	2	4.1/16
1.7/16	1.9/16	1	2	4.1/16
1.1/2	1.11/16	1	2.1/8	4.3/16
1.5/8	1.7/8	1	2.3/8	4.7/16
1.3/4	2	1	2.1/2	4.9/16
1.7/8	2.1/8	1	2.5/8	4.11/16
2	2.1/4	1	2.3/4	4.13/16

Dimensions in inches
Specifications conform to :
BS 122 Part 4 : 1980

SCREWED SHANK SLOT DRILL

(Long Series)



BS 122 | HSS

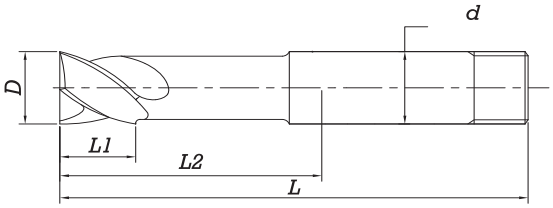
Application :
For milling keyway slots.

Diameter (D)	Cutting edge length (L1)	Shank Diameter (d)	Nominal Length below Chuck (L2)	Overall Length (L)
3.0	11.0	6	23.0	60.5
3.5	12.5	6	29.0	66.5
4.0	12.5	6	29.0	66.5
4.5	12.5	6	29.0	66.5
5.0	12.5	6	32.5	70.0
5.5	16.0	6	38.5	76.0
6.0	16.0	6	38.5	76.0
6.5	16.0	10	38.0	76.0
7.0	16.0	10	38.0	76.0
8.0	19.0	10	41.5	79.5
8.5	22.0	10	44.5	82.5
9.0	22.0	10	44.5	82.5
10.0	22.0	10	44.5	82.5
11.0	22.0	12	51.0	89.0
12.0	25.5	12	57.0	95.0
13.0	25.5	12	57.0	95.0
14.0	28.5	12	63.5	101.5
15.0	31.5	16	69.0	108.0
16.0	31.5	16	69.0	108.0
17.0	35.0	16	75.5	114.5
18.0	35.0	16	75.5	114.5
19.0	38.0	16	81.5	120.5
20.0	38.0	16	81.5	120.5
22.0	41.5	25	87.5	140.0
24.0	41.5	25	100.0	152.5
25.0	44.5	25	106.5	159.0
26.0	44.5	25	106.5	159.0
28.0	47.5	25	106.5	159.0
30.0	51.0	25	106.5	159.0
32.0	51.0	25	106.5	159.0
34.0	51.0	25	106.5	159.0
35.0	54.0	25	106.5	159.0
36.0	54.0	25	106.5	159.0
38.0	57.0	25	106.5	159.0
40.0	57.0	25	106.5	159.0
45.0	57.0	25	106.5	159.0

Dimensions in mm
Specifications conform to :
BS 122 Part 4 : 1980

SCREWED SHANK SLOT DRILL

(Long Series)



BS 122 | HSS

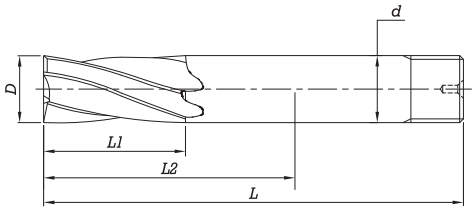
Application :
For milling keyway slots.

Diameter (D)	Cutting edge length (L1)	Shank Diameter (d)	Nominal Length below Chuck (L2)	Overall Length (L)
1/8	7/16	1/4	1.1/32	2.1/2
5/32	1/2	1/4	1.9/32	2.3/4
3/16	1/2	1/4	1.9/32	2.3/4
7/32	5/8	1/4	1.17/32	3
1/4	5/8	1/4	1.17/32	3
9/32	5/8	3/8	1.1/2	3
5/16	3/4	3/8	1.5/8	3.1/8
11/32	7/8	3/8	1.3/4	3.1/4
3/8	7/8	3/8	1.3/4	3.1/4
13/32	7/8	3/8	2	3.1/2
7/16	7/8	1/2	2	3.1/2
15/32	1	1/2	2.1/4	3.3/4
1/2	1	1/2	2.1/4	3.3/4
9/16	1.1/8	1/2	2.1/2	4
5/8	1.1/4	5/8	2.23/32	4.1/4
11/16	1.3/8	5/8	2.31/32	4.1/2
3/4	1.1/2	5/8	2.7/32	4.3/4
13/16	1.1/2	1	3.7/16	5.1/2
7/8	1.5/8	1	3.7/16	5.1/2
15/16	1.5/8	1	3.15/16	6
1	1.3/4	1	4.3/16	6.1/4
1.1/16	1.3/4	1	4.3/16	6.1/4
1.1/8	1.7/8	1	4.3/16	6.1/4
1.3/16	2	1	4.3/16	6.1/4
1.1/4	2	1	4.3/16	6.1/4
1.3/8	2.1/8	1	4.3/16	6.1/4
1.7/16	2.1/8	1	4.3/16	6.1/4
1.1/2	2.1/4	1	4.3/16	6.1/4
1.5/8	2.1/2	1	4.3/16	6.1/4
1.3/4	2.1/2	1	4.3/16	6.1/4
1.7/8	2.1/2	1	4.3/16	6.1/4
2	2.1/2	1	4.3/16	6.1/4

Dimensions in inches
Specifications conform to :
BS 122 Part 4 : 1980

SCREWED SHANK END MILLS

Short Series (Normal Series)



BS 122 | HSS

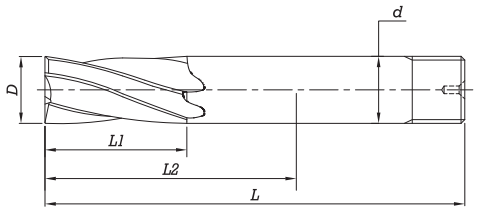
Application :
Used for general milling applications like slotting, profiling and plunge cutting etc.

Diameter (D)	Cutting edge length (L1)	Shank Diameter (d)	Nominal Length below Chuck (L2)	Overall Length (L)
3.0	9.5	6	16.5	54.0
3.5	12.5	6	19.5	57.0
4.0	12.5	6	19.5	57.0
4.5	12.5	6	19.5	57.0
5.0	16.0	6	23.0	60.5
5.5	16.0	6	23.0	60.5
6.0	16.0	6	23.0	60.5
6.5	16.0	10	22.5	60.5
7.0	15.0	10	22.5	60.5
7.5	18.0	10	25.5	63.5
8.0	18.0	10	25.5	63.5
8.5	21.0	10	28.5	66.5
9.0	21.0	10	28.5	66.5
9.5	21.0	10	28.5	66.5
10.0	21.0	10	28.5	66.5
10.5	19.0	12	28.5	66.5
11.0	19.0	12	28.5	66.5
11.5	22.5	12	32.0	70.0
12.0	24.0	12	32.0	70.0
13.0	24.5	12	32.0	70.0
14.0	28.5	12	35.0	73.0
15.0	26.5	16	38.0	77.0
16.0	26.5	16	38.0	77.0
17.0	32.0	16	41.0	80.0
18.0	35.0	16	41.0	80.0
19.0	38.0	16	44.5	83.5
20.0	38.0	16	44.5	83.5
21.0	38.0	25	42.5	95.0
22.0	41.5	25	46.0	98.5
23.0	41.5	25	46.0	98.5
24.0	41.5	25	46.0	98.5
25.0	44.5	25	49.0	101.5
26.0	43.0	25	49.0	101.5
28.0	46.0	25	52.0	104.5
30.0	46.0	25	52.0	104.5
32.0	49.0	25	55.5	108.0
34.0	49.0	25	55.5	108.0
35.0	52.5	25	58.5	111.0
36.0	52.5	25	58.5	111.0
38.0	55.5	25	62.0	114.5
40.0	58.5	25	65.0	117.5
42.0	60.5	25	65.0	117.5
44.0	63.5	25	68.0	120.5
45.0	63.5	25	68.0	120.5

Dimensions in mm
Specifications conform to :
BS 122 Part 4 : 1980

SCREWED SHANK END MILLS

Short Series (Normal Series)



BS 122 | HSS

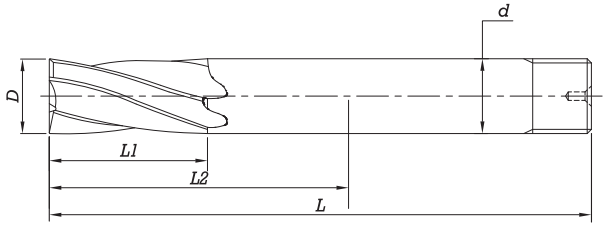
Application :
Used for general milling applications like slotting, profiling and plunge cutting etc.

Diameter (D)	Cutting edge length (L1)	Shank Diameter (d)	Nominal Length below Chuck (L2)	Overall Length (L)
1/8	3/8	1/4	21/32	2.1/8
5/32	1/2	1/4	25/32	2.1/4
3/16	1/2	1/4	25/32	2.1/4
7/32	5/8	1/4	29/32	2.3/8
1/4	5/8	1/4	29/32	2.3/8
9/32	19/32	3/8	7/8	2.3/8
5/16	23/32	3/8	1	2.1/2
11/32	27/32	3/8	1.1/8	2.5/8
3/8	27/32	3/8	1.1/8	2.5/8
13/32	7/8	3/8	1.1/8	2.5/8
7/16	3/4	1/2	1.1/8	2.5/8
15/32	7/8	1/2	1.1/4	2.3/4
1/2	15/16	1/2	1.1/4	2.3/4
9/16	1.1/8	1/2	1.3/8	2.7/8
5/8	1.1/16	5/8	1.1/2	3.1/32
11/16	1.3/8	5/8	1.5/8	3.5/32
3/4	1.1/2	5/8	1.3/4	3.9/32
13/16	1.1/2	1	1.11/16	3.3/4
7/8	1.5/8	1	1.13/16	3.7/8
15/16	1.5/8	1	1.13/16	3.7/8
1	1.11/16	1	1.15/16	4
1.1/16	1.11/16	1	1.15/16	4
1.1/8	1.13/16	1	2.1/16	4.1/8
1.3/16	1.13/16	1	2.1/16	4.1/8
1.1/4	1.15/16	1	2.3/16	4.1/4
1.5/16	1.15/16	1	2.3/16	4.1/4
1.3/8	2.1/16	1	2.5/16	4.3/8
1.7/16	2.1/16	1	2.5/16	4.3/8
1.1/2	2.3/16	1	2.7/16	4.1/2
1.5/8	2.3/8	1	2.9/16	4.5/8
1.3/4	2.1/2	1	2.11/16	4.3/4
1.7/8	2.5/8	1	2.13/16	4.7/8
2	2.3/4	1	2.15/16	5

Dimensions in inches
Specifications conform to :
BS 122 Part 4 : 1980

SCREWED SHANK END MILLS

(Long Series)



BS 122 | HSS

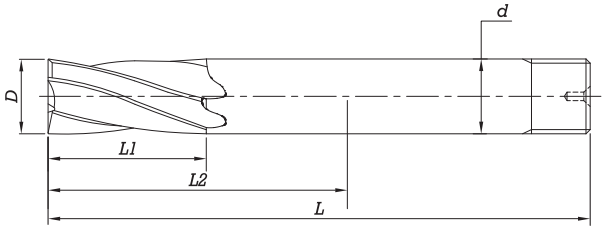
Application :
Used for general milling applications like slotting, profiling and plunge cutting etc.

Diameter (D)	Cutting edge length (L1)	Shank Diameter (d)	Nominal Length below Chuck (L2)	Overall Length (L)
3.0	19.0	6	26.0	63.5
3.5	25.5	6	32.5	70.0
4.0	25.5	6	32.5	70.0
4.5	25.5	6	32.5	70.0
5.0	31.5	6	38.5	76.0
5.5	31.5	6	38.5	76.0
6.0	31.5	6	38.5	76.0
6.5	35.0	10	41.5	79.5
7.0	34.0	10	41.5	79.5
7.5	34.0	10	41.5	79.5
8.0	34.0	10	41.5	79.5
8.5	37.0	10	44.5	82.5
9.0	37.0	10	44.5	82.5
10.0	37.0	10	44.5	82.5
11.0	41.5	12	51.0	89.0
12.0	49.5	12	57.0	95.0
13.0	50.0	12	57.0	95.0
14.0	57.0	12	63.5	101.5
15.0	58.5	16	69.5	108.5
16.0	58.5	16	69.5	108.5
17.0	67.0	16	76.0	115.0
18.0	70.0	16	76.0	115.0
19.0	76.0	16	82.5	121.5
20.0	76.0	16	82.5	121.5
22.0	85.5	25	90.5	143.0
24.0	92.0	25	96.5	149.0
25.0	100.0	25	104.5	157.0
26.0	98.5	25	104.5	157.0
28.0	98.5	25	104.5	157.0
30.0	98.5	25	104.5	157.0
32.0	100.0	25	106.5	159.0
34.0	100.0	25	106.5	159.0
35.0	100.0	25	106.5	159.0
36.0	100.0	25	106.5	159.0
38.0	100.0	25	106.5	159.0
40.0	101.5	25	106.5	159.0
45.0	101.5	25	106.5	159.0

Dimensions in mm
Specifications conform to :
BS 122 Part 4 : 1980

SCREWED SHANK END MILLS

(Long Series)



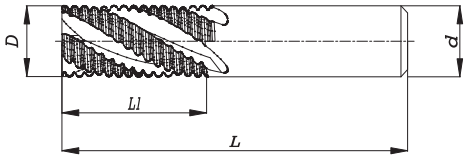
BS 122 | HSS

Application :
Used for general milling applications like slotting, profiling and plunge cutting etc.

Diameter (D)	Cutting edge length (L1)	Shank Diameter (d)	Nominal Length below Chuck (L2)	Overall Length (L)
1/8	3/4	1/4	1.1/32	2.1/2
5/32	1	1/4	1.9/32	2.3/4
3/16	1	1/4	1.9/32	2.3/4
7/32	1.1/4	1/4	1.17/32	3
1/4	1.1/4	1/4	1.17/32	3
9/32	1.11/32	3/8	1.5/8	3.1/8
5/16	1.11/32	3/8	1.5/8	3.1/8
11/32	1.15/32	3/8	1.3/4	3.1/4
3/8	1.15/32	3/8	1.3/4	3.1/4
13/32	1.1/2	3/8	1.3/4	3.1/4
7/16	1.5/8	1/2	2	3.1/2
15/32	1.7/8	1/2	2.1/4	3.3/4
1/2	1.15/16	1/2	2.1/4	3.3/4
9/16	2.1/4	1/2	2.1/2	4
5/8	2.5/16	5/8	2.3/4	4.9/32
11/16	2.3/4	5/8	3	4.17/32
3/4	3	5/8	3.1/4	4.25/32
13/16	3.1/16	1	3.5/16	5.3/8
7/8	3.3/8	1	3.9/16	5.5/8
15/16	3.5/8	1	3.13/16	5.7/8
1	3.15/16	1	4.1/8	6.3/16
1.1/16	3.7/8	1	4.1/8	6.3/16
1.1/8	3.7/8	1	4.1/8	6.3/16
1.3/16	3.7/8	1	4.1/8	6.3/16
1.1/4	3.15/16	1	4.3/16	6.1/4
1.5/16	3.15/16	1	4.3/16	6.1/4
1.3/8	3.15/16	1	4.3/16	6.1/4
1.7/16	3.15/16	1	4.3/16	6.1/4
1.1/2	3.15/16	1	4.3/16	6.1/4
1.5/8	4	1	4.3/16	6.1/4
1.3/4	4	1	4.3/16	6.1/4
1.7/8	4	1	4.3/16	6.1/4
2	4	1	4.3/16	6.1/4

Dimensions in inches
Specifications conform to :
BS 122 Part 4 : 1980

PARALLEL SHANK ROUGHER END MILLS



IS 6353 | HSS

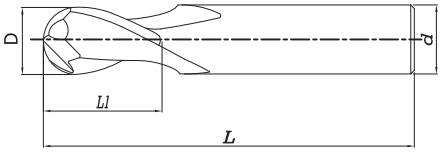
Application:
These end mills are designed for fast material removal with heavy depth of cuts.

Diameter (D) (js14)	Shank Diameter (d) (h8)	Standard Series		Long Series	
		Cutting Edge Length (L1)	Overall length (L)	Cutting Edge Length (L1)	Overall length (L)
3	4	8	40	12	44
3.5	4	10	42	15	47
4	4	11	43	19	51
5	5	13	47	24	58
6	6	13	57	24	68
7	8	16	60	30	74
8	8	19	63	38	82
9	10	19	69	38	88
10	10	22	72	45	95
11	12	22	79	45	102
12	12	26	83	53	110
14	12	26	83	53	110
16	16	32	92	63	123
18	16	32	92	63	123
20	20	38	104	75	141
22	20	38	104	75	141
25	25	45	121	90	166
28	25	45	121	90	166
32	32	53	133	106	186
36	32	53	133	106	186
40	40	63	155	125	217
45	40	63	155	125	217
50	50	75	177	150	252
56	50	75	177	150	252
63	50	90	192	180	282
71	63	90	202	180	292

Dimensions in mm
Specification conform to :
IS 6353 : 2001
ISO 1641/1 : 1978
DIN 844 (Part 1) : 1978

End Mills are also available in HSS-E & HSS-Co8.
Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.
Other Shank designs on request.

PARALLEL SHANK BALL NOSE END MILLS



IS 6353 | HSS

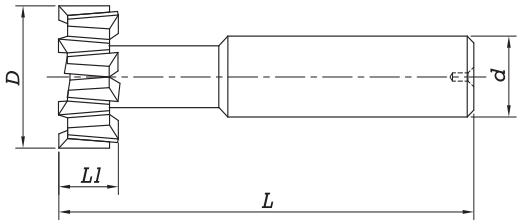
Application:
These are used for milling of radius bottom slots, fillets and special contours, profiles.

Diameter (D) (js14)	Shank Diameter (d) (h8)	Standard Series		Long Series	
		Cutting Edge Length (L1)	Overall length (L)	Cutting Edge Length (L1)	Overall length (L)
3	4	8	40	12	44
3.5	4	10	42	15	47
4	4	11	43	19	51
5	5	13	47	24	58
6	6	13	57	24	68
7	8	16	60	30	74
8	8	19	63	38	82
9	10	19	69	38	88
10	10	22	72	45	95
11	12	22	79	45	102
12	12	26	83	53	110
14	12	26	83	53	110
16	16	32	92	63	123
18	16	32	92	63	123
20	20	38	104	75	141
22	20	38	104	75	141
25	25	45	121	90	166
28	25	45	121	90	166
32	32	53	133	106	186
36	32	53	133	106	186
40	40	63	155	125	217
45	40	63	155	125	217
50	50	75	177	150	252
56	50	75	177	150	252
63	50	90	192	180	282
71	63	90	202	180	292

Dimensions in mm
Specification conform to :
IS 6353 : 2001
ISO 1641/1 : 1978
DIN 844 (Part 1) : 1978

End Mills are also available in HSS-E & HSS-Co8.
Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.
Other Shank designs on request.

T-SLOT CUTTERS
(With Parallel Shank)



IS 2668 | HSS

Application :
For opening out the bottom
of previously milled slot to form T-slots.

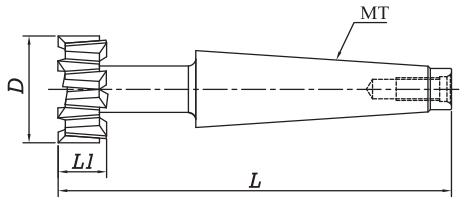
Nominal size of T-Slot	Diameter of cutter (D) (h12)	Width of cutter (L1) (h12)	Shank diameter (d) (h8)	Overall length (L)
10	18	8	12	70
12	21	9	12	74
14	25	11	16	82
18	32	14	16	90
22	40	18	25	108
28	50	22	32	124
36	60	28	32	139

Normally RH cutting and Type N Tools are supplied.

Dimensions in mm
Specifications conform to :
IS 2668 : 2004
ISO 3337 : 2000

T-SLOT CUTTERS

(With Taper Shank- Tapped End)



IS 2668 | HSS

Application :
For opening out the bottom
of previously milled slot to form T-slots.

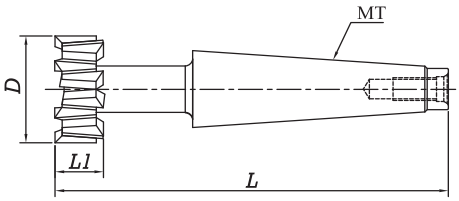
Nominal size of T-Slot	Diameter of cutter (D) (h12)	Width of cutter (L1) (h12)	Overall length (L)	MT Shank	
				No	Thread size of tapped hole
10	18	8	82	1	M6
12	21	9	98	2	M10
14	25	11	103	2	M10
18	32	14	111	2	M10
22	40	18	138	3	M12
28	50	22	173	4	M16
36	60	28	188	4	M16
42	72	35	229	5	M20
48	85	40	240	5	M20
54	95	44	251	5	M20

Dimensions in mm
Specifications conform to :
IS 2668 : 2004
ISO 3337 : 2000

Normally RH cutting and Type N Tools are supplied.

T-SLOT CUTTERS

(With Taper Shank- Tapped End)



Application :
For opening out the bottom
of previously milled slot to form T-slots.

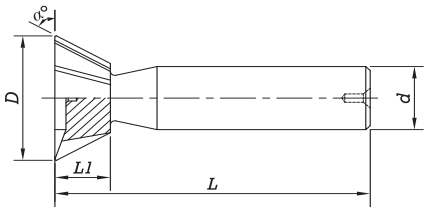
BS 122 | HSS

Nominal size of T-Slot	Diameter of cutter (D) +0.0 -0.010	Width of cutter (L1) +0.0 -0.005	Overall length (L)	MT Shank	
				No	Thread size of tapped hole
1/4	37/64	1/4	3.9/16	2	3/8 BSW
5/16	45/64	5/16	3.3/4	2	3/8 BSW
3/8	53/64	23/64	3.7/8	2	3/8 BSW
7/16	61/64	27/64	4.1/16	2	3/8 BSW
1/2	1.5/64	15/32	4.3/16	2	3/8 BSW
5/8	1.21/64	37/64	5.1/8	3	1/2 BSW
3/4	1.33/64	11/16	5.7/16	3	1/2 BSW
7/8	1.45/64	51/64	5.3/4	3	1/2 BSW
1	1.61/64	29/32	7.1/16	4	5/8 BSW
1.1/8	2.1/8	1.1/16	7.1/8	4	5/8 BSW
1.1/4	2.5/16	1.3/16	7.3/8	4	5/8 BSW
1.3/8	2.1/2	1.5/16	8.7/8	5	5/8 BSW
1.1/2	2.3/4	1.7/16	9.1/8	5	5/8 BSW

Normally RH cutting and Type N Tools are supplied.

Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

DOVE - TAIL MILLING CUTTERS



IS 6255 | HSS

Application :
To produce dove-tail slot in machine beds.

Angle (α)	Diameter (D)	Shank Diameter (d)	Overall length (L)	Width (L1)	Type
45°	16	12	60	4	A&B
45°	20	12	63	5	
45°	25	12	67	6.3	
45°	31.5	16	71	8	
50°	16	12	60	5	A
50°	20	12	63	6.3	
50°	25	12	67	8	
50°	31.5	16	71	10	
55°	16	12	60	5.6	A
55°	20	12	63	7.1	
55°	25	12	67	9	
55°	31.5	16	71	11.2	
60°	16	12	60	6.3	A&B
60°	20	12	63	8	
60°	25	12	67	10	
60°	31.5	16	71	12.5	

Dimensions in mm
Specifications conform to :
IS 6255 : 2000
ISO 3859 : 1977
DIN 1833 (Tail 1) : 1983

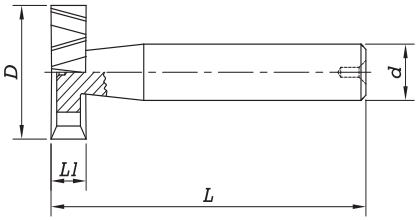
Type A: Dove-Tail milling cutter with plain parallel shank

Type B: Inverse Dove-Tail milling cutter with plain parallel shank

Normally RH cutting and Type N Tools are supplied.

WOODRUFF KEY SLOT MILLING CUTTERS

with Parallel Shank



IS 2669 | HSS

Application :
For milling seat to suit woodruff keys.

Diameter (D) (h11)	Width (L1) (e8)	Shank Diameter (d)	Overall Length (L)	Woodruff Key to IS:2294
10.5	2	6	50	2x3.7
10.5	2.5	6	50	2.5x3.7
10.5	3	6	50	3x3.7
13.5	3	10	56	3x5
13.5	4	10	56	4x5
16.5	3	10	56	3x6.5
16.5	4	10	56	4x6.5
16.5	5	10	56	5x6.5
19.5	4	10	56	4x7.5
19.5	5	10	56	5x7.5
19.5	6	10	63	6x7.5
22.5	5	10	63	5x9
22.5	6	10	63	6x9
22.5	8	10	63	8x9
25.5	6	10	63	6x10
28.5	6	10	63	6x11
28.5	8	10	63	8x11
28.5	10	12	71	10x11
32.5	8	10	63	8x13
32.5	10	12	71	10x13
45.5	10	12	71	10x16

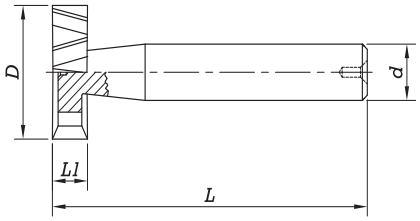
Dimensions in mm
Specifications conform to :
IS 2669 : 2001

Type A: Straight teeth
Type B: Staggered teeth

Normally Straight teeth, RH cutting and Type N Tools are supplied.

WOODRUFF KEY SLOT MILLING CUTTERS

with Parallel Shank



BS 122 | HSS

Application :
For milling seat to suit woodruff keys.

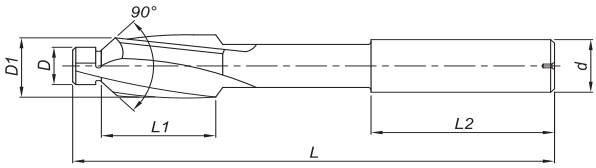
BS Cutter and Key no	Diameter of cutter (D) +0.010 -0.0	Width of Cutter (L1) +0.001 -0.0	Overall Length (L)	Shank Diameter (d)
204	0.505	0.061	2	1/2
304	0.505	0.093	2	1/2
404	0.505	0.124	2	1/2
305	0.63	0.093	2	1/2
405	0.63	0.124	2	1/2
505	0.63	0.155	2	1/2
406	0.755	0.124	2.1/4	1/2
506	0.755	0.155	2.1/4	1/2
606	0.755	0.187	2.1/4	1/2
507	0.88	0.155	2.1/2	1/2
607	0.88	0.187	2.1/2	1/2
807	0.88	0.249	2.1/2	1/2
608	1.005	0.187	2.3/4	1/2
808	1.005	0.249	2.3/4	1/2
1008	1.005	0.311	2.3/4	1/2
609	1.13	0.187	2.3/4	1/2
809	1.13	0.249	2.3/4	1/2
1009	1.13	0.311	2.3/4	1/2
810	1.255	0.249	2.3/4	1/2
1010	1.255	0.311	2.3/4	1/2
1210	1.255	0.374	2.3/4	1/2
1011	1.38	0.311	3	1/2
1211	1.38	0.374	3	1/2
812	1.38	0.249	3	1/2
1012	1.505	0.311	3	1/2
1212	1.505	0.374	3	1/2

Normally Straight teeth, RH cutting and Type N Tools are supplied.

Dimensions in inches
Specifications conform to ;
BS 122 Part 1 : 1989

COUNTERSINKS - 90°

With Parallel Shank & Solid Pilot



IS 5693 | HSS

Application :
To produce countersunk seat for cheese head screw.

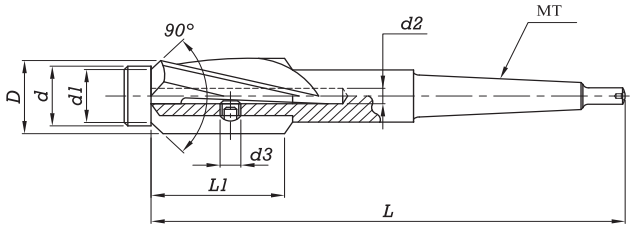
Diameter (D1) (z9)		Pilot Diameter (D)(e8)	Shank Diameter (d) (h9)	Cutting Edge Length (L1)	Shank Length (L2)	Overall length (L)
Over	Up to & icluding					
5	8	To be specified to suit pilot diameter, when ordering	5	14	31.5	71
8	12.5		8	18	35.5	80
12.5	20		12.5	22	40	100

These cutters have RH helical flutes for RH cutting.

Dimensions in mm
Specifications conform to :
IS 5693 : 2002
ISO 4205 : 1991
BS 328 Part 6 : 1992
DIN 1866 : 1975

COUNTERSINKS - 90°

With Morse Taper Shank & Detachable Pilot



IS 5703 | HSS

Application :
To produce countersunk seat for cheese head screw.

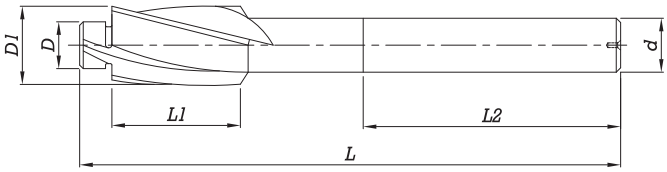
Diameter (D) (z9)		Pilot Diameter (d) (e8)		Pilot hole Diameter (d2) (H8)	Set Screw Dia (d3)	Cone Dia (d1)	Overall Length (L)	Cutting Edge Length(L1)	MT Shank no.
Over	Up to & including	Over	Up to & including						
12.5	16	6.3	14	4	M3	6	132	22	2
16	20	6.3	18	5	M4	6	140	25	2
20	25	8	22.4	6	M5	7.5	150	30	2
25	31.50	10	28	8	M6	9.5	180	35	3
31.5	40	12.5	35.5	10	M8	12	190	40	3

Dimensions in mm
Specifications conform to:
IS 5703 : 2002
ISO 4204 : 1977
DIN 1867 : 1975

These cutters have RH helical flutes for RH cutting.

COUNTERBORES

With Parallel Shank & Solid Pilot



IS 5704 | HSS

Application :
To produce countersunk seat for socket head screw.

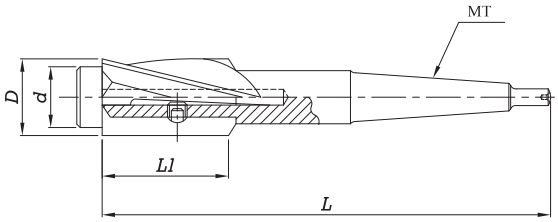
Diameter (D1) (z9)		Pilot Diameter (D) (e8)	Shank Diameter (d) (h9)	Cutting Edge Length (L1)	Shank Length (L2)	Overall length (L)
Over	Up to & including					
3.15	5	To be specified to suit pilot diameter, when ordering		10		56
5	8		5	14	31.5	71
8	12.5		8	18	35.5	80
12.5	20		12.5	22	40	100

Dimensions in mm
Specifications conform to :
IS 5704 : 2002
ISO 4206 : 1977
DIN 373 : 1975

Normally RH helical flutes and Type N Tools are supplied.

COUNTERBORES

With Morse Taper Shank & Detachable Pilot



IS 5710 | HSS

Application :
To produce countersunk seat for socket head screw.

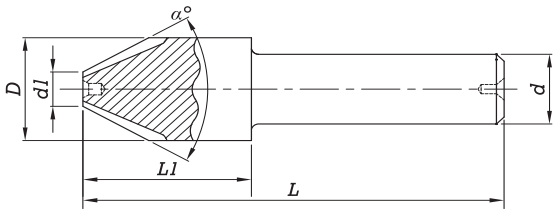
Diameter (D) (z9)		Pilot Diameter (d) (e8)		Pilot hole Diameter (H8)	Set Screw Size	Cutting Edge Length (L1)	Overall Length (L)	MT Shank no.
Over	Up to & including	Over	Up to & including					
12.5	16	5.0	14	4	M3	22	132	2
16	20	6.3	18	5	M4	25	140	2
20	25	8	22.4	6	M5	30	150	2
25	31.50	10	28	8	M6	35	180	3
31.5	40	12.5	35.5	10	M8	40	190	3
40	50	16	45	12	M8	50	236	4
50	63	20	56	16	M10	63	250	4

Dimensions in mm
Specifications conform to :
IS 5710 : 2002
ISO 4207 : 1977
BS 328 Part 5 : 1991
DIN 375 : 1975

Normally RH Helical flutes and Type N Tools are supplied.

COUNTERSINKS

With Included Angle 60°, 90° & 120°
(Parallel Shank)



IS 13304 | HSS

Application :
To produce counter sunk seat suitable for countersink head screws, also use as a deburring tool.

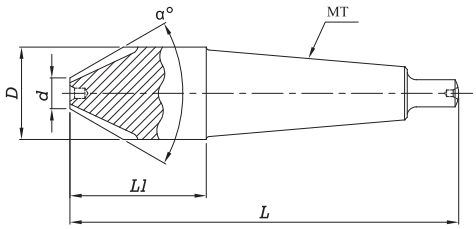
Nominal size (D)	Small Diameter (d1)	Overall Length (L)		Body Length (L1)		Shank Diameter (d) (h9)
		60°	90° & 120°	60°	90° & 120°	
8	1.6	48	44			8
10	2	50	46	18	14	8
12.5	2.5	52	48	20	16	8
16	3.2	60	56	24	20	10
20	4	64	60	28	24	10
25	7	69	65	33	29	10

These cutters have RH helical flutes for RH cutting.

Dimensions in mm
Specifications conform to :
IS 13304 : 2002
ISO 3294 : 1975
DIN 334 : 1979
DIN 335 : 1979
DIN 347 : 1962

COUNTERSINKS

With Included Angle 60°, 80°, 90° & 120°
(Taper Shank)



IS 13303 | HSS

Application :
To produce counter sunk seat suitable for countersink head screws, also use as a deburring tool.

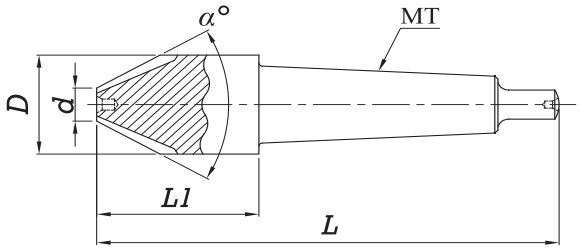
Nominal size (D)	Small Diameter (d)	Overall Length (L)		Body Length (L1)		MT Shank no.
		60°	90° & 120°	60°	90° & 120°	
16	3.2	97	93	24	20	1
20	4	120	116	28	24	2
25	7	125	121	33	29	2
31.5	9	132	124	40	32	2
40	12.5	160	150	45	35	3
50	16	165	153	50	38	3
63	20	200	185	58	43	4
80	25	215	196	73	54	4

These cutters have straight flutes for RH cutting.

Dimensions in mm
Specifications conform to :
IS 13303 : 2002
ISO 3294 : 1975
DIN 334 : 1979
DIN 335 : 1979
DIN 347 : 1962

COUNTERSINKS

With Included Angle 60°, 80°, 90° & 120°
(Taper Shank)



BS 122 | HSS

Application :
To produce counter sunk seat suitable for countersink head screw, also use as a deburring tool.

Body Diameter (D)	Overall Length (L)	Small Diameter (d)	Morse Taper No.
1/2	3.1/2	5/32	1
5/8	3.5/8	3/16	1
3/4	4.1/4	1/4	2
7/8	4.1/4	9/32	2
1	4.3/8	5/16	2
1.1/8	4.1/2	3/8	2
1.1/4	5.3/8	13/32	3
1.3/8	5.3/8	7/16	3
1.1/2	5.1/2	1/2	3
1.3/4	6.3/4	9/16	4
2	7	21/32	4
2.1/4	7.1/4	3/4	4
2.1/2	7.3/4	13/16	4
2.3/4	8	7/8	4
3	8.1/8	1	4

Dimensions in inches
Specifications conform to :
BS 122 Part 1 : 1989

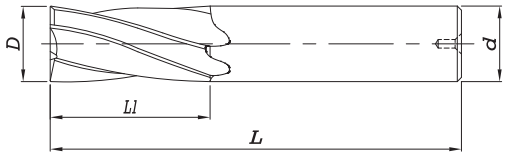
These countersinks have straight flutes for RH cutting.

Tolerance

1-inch and below	-0.001 inch -0.003 inch	Above 1-inch	-0.002 inch -0.005 inch

PARALLEL SHANK END MILLS

PANTHER SERIES



IS 6353 | HSS-E | SPECIAL SURFACE TREATMENT

Application :
Used for general milling applications like slotting, profiling and plunge cutting etc.

Diameter (D) (js 14)	Shank (d) Diameter (h8)	Standard Series		Long Series	
		Cutting edge Length (L1)	Overall Length (L)	Cutting edge Length (L1)	Overall Length (L)
3	4	8	40	12	44
3.5	4	10	42	15	47
4	4	11	43	19	51
5	5	13	47	24	58
6	6	13	57	24	68
7	8	16	60	30	74
8	8	19	63	38	82
9	10	19	69	38	88
10	10	22	72	45	95
11	12	22	79	45	102
12	12	26	83	53	110
14	12	26	83	53	110
16	16	32	92	63	123
18	16	32	92	63	123
20	20	38	104	75	141
22	20	38	104	75	141
25	25	45	121	90	166
28	25	45	121	90	166
32	32	53	133	106	186
36	32	53	133	106	186
40	40	63	155	125	217
45	40	63	155	125	217
50	50	75	177	150	252
56	50	75	177	150	252
63	50	90	192	180	282
71	63	90	202	180	292

These cutters have RH helix for RH cutting.
Normally Type N Tools are supplied.

Dimensions in mm
Specifications conform to :
IS 6353 : 2001
ISO 1641/1 : 1978
DIN 844 (Part 1) : 1978

These End Mills are also available in:

NINJA — HSS-Co8

OUTPUT 20-25% MORE THAN PANTHER !

TORPEDO — HSS-PM

OUTPUT 40-80% MORE THAN PANTHER !

TECHNICAL SUPPLY CONDITIONS OF MILLING CUTTERS

1. Milling cutters are normally supplied for RH cutting and tool Type N.

2. Intermediate diameters, if ordered, shall be supplied with the same dimensions as the next larger standard size.

3. Non Standard or Special cutters are manufactured against specific orders.

4. Bore of milling cutters is usually supplied with H7 tolerance and the shank tolerance as specified in the BIS/ISO.

5. Cutters with Taper shank are normally supplied with Morse Taper according to IS: 1715 - Dimensions of Self holding Tapers.

5.1 Dimensions for parallel shanks shall be according to IS: 8692 - Dimensions for parallel shanks for milling.

6. Other general requirements are maintained according to IS: 1830-Technical supply conditions for milling cutters.

6.1 Hardness:

Cutting Portion	:	760 HV to 900 HV.
Shank Portion	:	
Parallel Shank	:	240 HV to equal to cutting portion (In case of one piece construction) 185 HV to 450 HV (in case of two piece construction)
Morse Taper Shank	:	185 HV minimum (after construction)
Tang of Morse Taper Shank	:	300 HV to 450 HV.

6.2 Radial and Axial run out

Type of Cutter	Diameter range		Permissible Radial and Axial Run out		Testing Conditions
	Over	Upto and including	Form relieved	Profile Sharpened	
Cutter with bore	- 50 120	50 120 250	0.07 0.10 0.12	0.05 0.07 0.10	Rotated on Stationary test arbor
Cutter with Shank	- 50	50 120	0.07 0.10	0.05 0.07	Held between centers or shank rotated in a 'V'-block

7. Recommendation for Tool Type selection of milling cutters:

Tool Type N - For Mild steel, Malleable Cast iron and Medium hard Non-Ferrous metals.

Tool Type H - For specially Hard and Tough materials.

Tool Type S - For Soft and Ductile materials.

Basic Geometry for Machining Normal Materials - Carbon Steels & Cast Iron

Type of Tool	Helix angle	Positive rake	Primary Clearance
Cylindrical milling Cutter	30^0-35^0 R.H	8^0-12^0	7^0-9^0
Side & Face milling cutter	Straight teeth	6^0-10^0	4^0-6^0
Shell end mill	25^0-30^0 R.H	8^0-12^0	
Equal angle milling cutter	-	0^0	3^0-5^0
Woodruff key slot milling cutter	Straight teeth	3^0-5^0	3^0-5^0
Slot milling cutter with parallel shank	15^0-20^0 R.H	4^0-6^0	2^0-4^0
End mills with parallel shank	27^0-33^0 R.H	9^0-11^0	8^0-12^0
End mills with MT Shank		9^0-11^0	8^0-12^0
T-slot milling cutter with MT shank	12^0-18^0 L.H & R.H	6^0-10^0	4^0-6^0

Recommended Cutting Fluids for HSS Milling Cutters

Type of Material	Recommendations
Hard Tool and Alloy steel	Soluble oil compound or neat cutting oil.
Low carbon steel	Soluble oil.
Copper, Brass or Bronze	Soluble oil or Dry.
Aluminium and Aluminium Alloys	Soluble oil or neat cutting oil specially produced for light alloys.
Magnesium	Dry or Compressed air.
Cast Iron	Dry or Compressed air.
Stainless Steel Nimonic Alloys	Soluble oil can be used but sulphurised or chlorinated mineral oil or fatty oil are most suitable.
Zinc base Alloys	Soluble oil.

CUTTING SPEEDS (m/min)

Material	Plain Milling cutter	Shell end mill	Side milling cutter	End mill	Form relieved cutter
Unalloyed Steel up to 70 kg/mm^2	25-35	25-35	25-35	25-35	25-30
Steel up to 90 kg/mm^2	20-30	20-30	20-30	20-30	15-25
Cast Iron, Alloy steel up to 100 kg/mm^2	15-25	15-25	15-25	15-25	12-20
Copper, Brass, Red brass	40-60	40-60	40-60	40-60	30-50
Cast Bronze, Bronze	30-50	30-50	30-50	30-50	25-40
Aluminium long chipped	250-300	300-400	300-400	300-400	300-400
Tough Aluminium alloys, Aluminium cast alloys, Magnesium alloys	200-300	250-350	200-250	250-350	200-300
Age-hardened Aluminium alloys, Brittle Aluminium alloys	150-200	200-250	150-200	200-250	150-200

FEED PER TOOTH (mm/rev)

Material	Plain Milling cutter	Shell end mill	Side milling cutter	End mill	Form relieved cutter
Unalloyed Steel up to 70 kg/mm^2	0.2	0.25	0.07	0.05	0.04
Steel up to 90 kg/mm^2	0.1	0.15	0.06	0.03	0.03
Cast Iron, Alloy steel up to 100 kg/mm^2	0.08	0.1	0.05	0.02	0.02
Copper, Brass, Red brass	0.2	0.25	0.08	0.05	0.04
Bronze	0.15	0.2	0.06	0.04	0.03
Aluminium long chipped	0.15	0.2	0.07	0.05	0.04
Tough Aluminium alloys, Aluminium cast alloys, Magnesium alloys	0.1	0.15	0.06	0.04	0.03
Age-hardened Aluminium alloys, Brittle Aluminium alloys	0.05	0.08	0.05	0.03	0.03

Recommendations for SELECTION OF MILLING CUTTERS (Ref: IS 1830)

Material to be cut	Tensile strength (MPa)	Brinell Hardness (HB)	Tools Type
Carbon steel	Up to 500		N or (S)
	Above 500 up to 800		N
	Above 800 up to 1000		N or (H)
	Above 1000 up to 1300		H
Steel Casting			H
Gray Cast Iron		Up to 180 Over 180	N H
Malleable caste iron			N
Copper alloy	Soft Brittle		S or (N) N or (H)
Zinc alloy			S or (N)
Aluminium alloy	Soft Medium Hard		S N or (S) N or (S)
Aluminum alloy age hardened	Low Cutting speed High cutting speed		N S
Magnesium alloy			S or (N)
Plastics	Unlaminated Laminated		N or (S) S

Tool Type N - For Mild steel, Malleable cast iron and medium hard Non-Ferrous metals.

Tool Type H - For specially Hard and Tough materials.

Tool Type S - For Soft and Ductile materials.

MILLING TROUBLESHOOTING

PROBLEM	CAUSE	REMEDY
Breakage	Too high stock removal	Decrease feed per tooth
	Feed too fast	Slow down feed
	Flute lenth or overall lenth too long	Hold shank deeper,Use shorter endmill
Wear	Workpiece material too hard	Use tool with higher grade material and or proper coating
	Improper feed and speed	Use recommended cutting speed & feed
	Poor chip evacuation	Reposition coolant lines
	Conventional milling	Climb milling
	Improper cutter helix	Use recommended tool
Chipping	Feed rate too high	Reduce feed rate
	Chattering	Reduce the RPM
	Low cutting speed	Increase the RPM
	Conventional milling	Climb milling
	Tool rigidity	Choose a shorter tool and or place shank further up holder
	Worlpiece rigidity	Hold workpice tightly
Short Tool Life	Tough work material	Use Recommended tool
	Improper cutting angle and primary relief	Change to correct cutting angle
	Cutter/workpiece friction	Use coated tool
Bad Suface Finish	Feed too fast	Slow down to correct feed
	Spped too slow	Increase the speed
	Chip biting	Decrease stock removal
	Tool wear	Replace or regrind the tool
	Edge build up	Change to higher helix tool
	Chip welding	Increase coolant quantity
Workpiece Inaccuracy	Tool deflection	Choose a shorter tool and or place shank further up holder
	Insufficient number of flutes	Use tool with more number of flutes
	Loose/worn tool holder	Repair or replace it
	Poor tool holder rigidity	Replace with shorter /more rigid tool holder
	Poor spindle rigidity	Use larger spindle
Chattering	Feed and speed too high	Use recommended cutting spped and feed
	Flute or overall lenth too long	Hold shank deeper,Use shorter endmill
	Cutting too deep	Decrease depth of cut
	Not enough rigidity (machine & holder)	Check the tool holder and chane it,if necessary
	Workpiece rigidity	Hold workpiece tightly

END MILL TECHNICAL QUESTIONNAIRE

DATE : / /

CUSTOMER DETAILS

CUSTOMER NAME .....
CONTACT PERSON .....
DEPARTMENT .....
MOBILE .....
E-MAIL .....

ADDRESS .....

ITM REPRESENTATIVE .....
BRANCH / DEALER .....

MOBILE .....
E-MAIL .....

END MILL INFORMATION

SIZE & DESCRIPTION .....

END MILL MATERIAL: M2 ☐ M35 ☐ M42 ☐ PM HSS-E ☐

TYPES OF STANDARD: IS ☐ DIN ☐ BS ☐ OTHERS ☐

COMPETITORS END MILL DETAILS .....

TOOL LIFE IN METERS .....

TYPE AND SPECIAL FEATURES

COATING / SURFACE TREATMENT

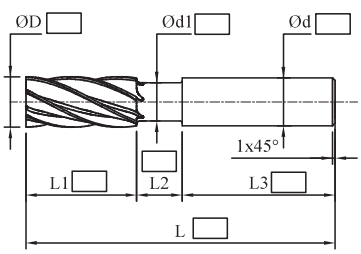
PARTIAL BLUE TEMPERED ☐
FULL BLUE TEMPERED ☐
BRIGHT FINISH ☐

TIN ☐
TICN ☐
TIALN ☐
OTHER .....

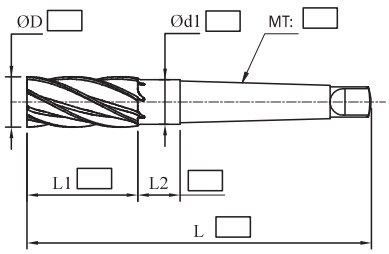
MONTHLY REQUIREMENT .....

ANY PROBLEM FACED WITH EXISTING END MILL / REMARK .....

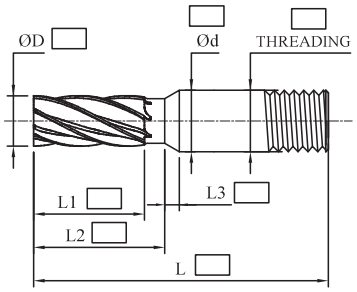
PARALLEL SHANK



TAPER SHANK



SCREWED SHANK



COMPONENT DETAILS

COMPONENT NAME .....
MATERIAL .....
HARDNESS .....

TENSILE STRENGTH .....

COOLANT / LUBRICATION Oil / Emulsion / Dry / Mist / Other

MACHINE DETAILS

MANUFACTURER .....
TYPE .....
POWER IN KW .....

SPINDLE ADAPTATION : MT / ISO TAPER / DIN : MT 228 A / B, ISO TAPER 2080 / 69871

END MILL OPERATION
VERTICAL ☐
HORIZONTAL ☐

FEED CONTROL TYPE
CAM-CONTROLLED ☐
HYDRAULIC ☐
GEAR CONTROLLED ☐
SYNCHRONOUS SPINDLE ☐
HAND FEED ☐
OTHER .....

MACHINE TYPE
BENCH ☐
RADIAL ☐
CNC ☐
LATHE ☐
SPM ☐

DRILL HOLDING
DRILL CHUCK ☐
PARALLEL SLEEVE ☐
TAPER SLEEVE ☐
QUICK CHANGE COLLETS ☐
QUILL TYPE ☐

MACHINING DETAILS
SPEED ☐
FEED ☐
COOLANT PRESSURE (BAR) .....
COOLANT LPM .....

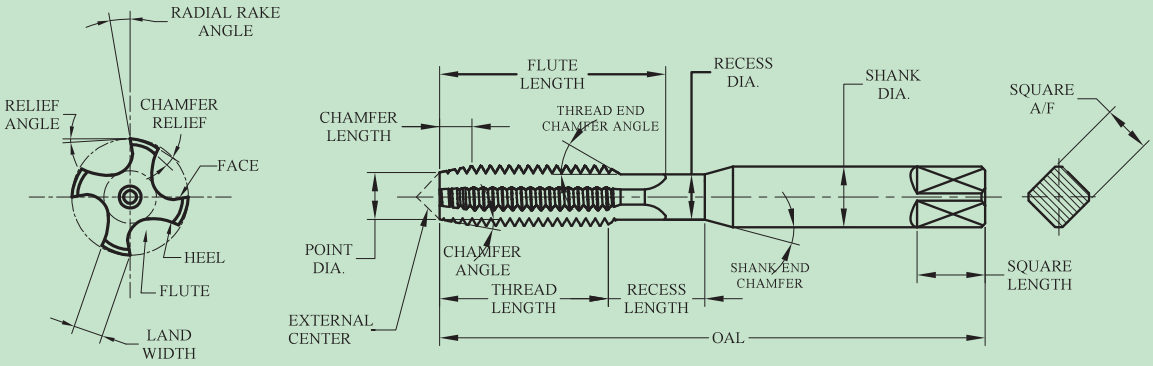
NOTE: I) USE TICK (✓) OPTION WHERE NECESSARY.
II) ALL FRAMED ENTRY FIELDS ARE MANDATORY & NECESSARY FOR DEFINING THE PRODUCT.

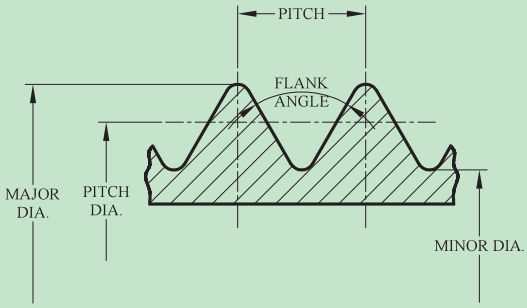
INDEX
SCREWING TAPS

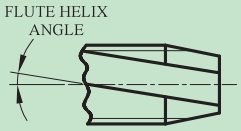
INDEX
SCREWING TAPS

SCREWING TAPS

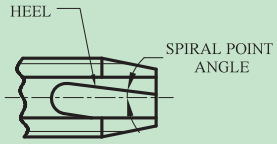
Elements of a Screwing Tap and Related Terms



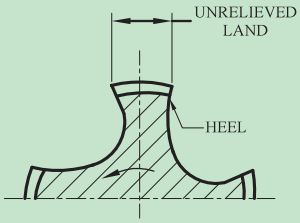




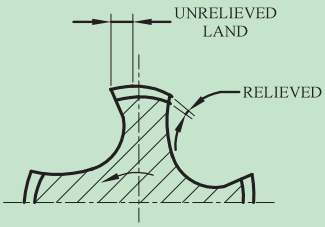
FLUTES WITH RH HELIX



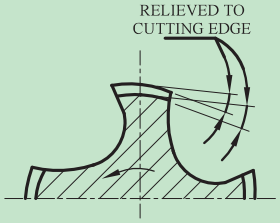
FLUTES WITH SPIRAL POINT



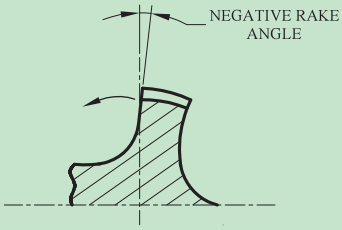
NO RELIEF



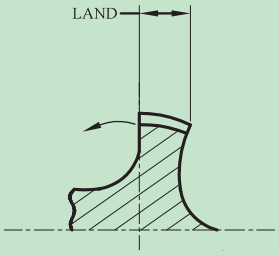
PARTIAL RELIEF



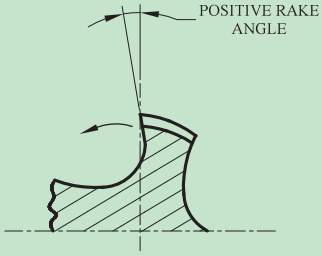
FULL RELIEF



NEGATIVE RAKE



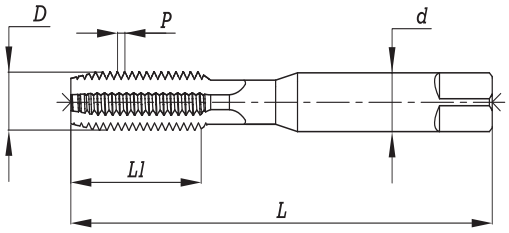
ZERO RAKE



POSITIVE RAKE

HAND AND SHORT MACHINE TAPS

(ISO Metric-Ground Threads Coarse Pitch)



IS 6175 | HSS | 6H | 60° | BRIGHT

Application :
These taps are used for producing internal threads by hand tapping.

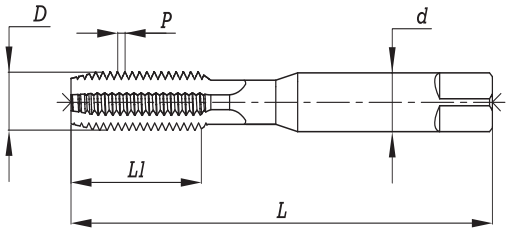
Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M3	0.50	11.0	48.0	3.15	2.50	5
M3.5	0.60	13.0	50.0	3.55	2.80	5
M4	0.70	13.0	53.0	4.00	3.15	6
M4.5	0.75	13.0	53.0	4.50	3.55	6
M5	0.80	16.0	58.0	5.00	4.00	7
M6	1.00	19.0	66.0	6.30	5.00	8
M7	1.00	19.0	66.0	7.10	5.60	8
M8	1.25	22.0	72.0	8.00	6.30	9
M9	1.25	22.0	72.0	9.00	7.10	10
M10	1.50	24.0	80.0	10.00	8.00	11

Dimensions in mm
Specification conform to :
IS 6175 Part 2 : 2002
ISO 529 : 1975
BS 949 Part 1 : 1992

These taps are supplied in set of three - Taper, Second & Bottoming non-serial with thread Tolerance 6H.

HAND AND SHORT MACHINE TAPS

(ISO Metric-Ground Threads Fine Pitch)



IS 6175 | HSS | 6H | 60° | BRIGHT

Application :
These taps are used for producing internal threads by hand tapping.

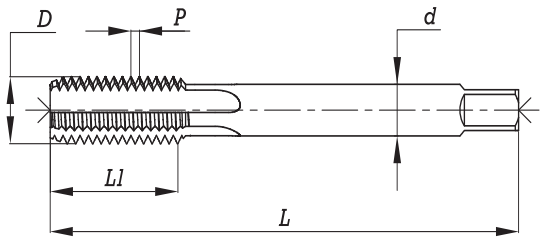
Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M3	0.35	11	48	3.15	2.50	5
M3.5	0.35	13	50	3.55	2.80	5
M4	0.50	13	53	4.00	3.15	6
M4.5	0.50	13	53	4.50	3.55	6
M5	0.50	16	58	5.00	4.00	7
M5.5	0.50	17	62	5.60	4.50	7
M6	0.75	19	66	6.30	5.00	8
M7	0.75	19	66	7.10	5.60	8
M8	0.75	16	66	8.00	6.30	9
M8	1.00	19	69	8.00	6.30	9
M9	0.75	16	66	9.00	7.10	10
M9	1.00	19	69	9.00	7.10	10
M10	0.75	17	73	10.00	8.00	11
M10	1.00	20	76	10.00	8.00	11
M10	1.25	20	76	10.00	8.00	11

Dimensions in mm
Specifications conform to :
IS 6175 Part 2 : 2002
ISO 529 : 1975
BS 949 Part 1 : 1992

These taps are supplied in set of two - Taper & Bottoming non-serial with thread Tolerance 6H.

HAND AND SHORT MACHINE TAPS

(ISO Metric-Ground Threads Coarse Pitch)



IS 6175 | HSS | 6H | 60° | BRIGHT

Application :
These taps are used for producing internal threads by hand tapping.

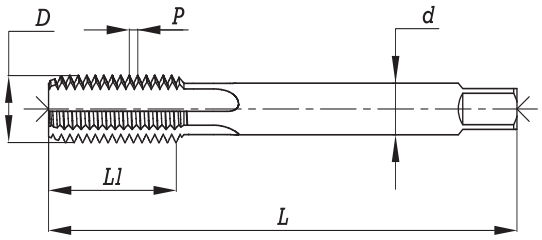
Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M3	0.50	11	48	2.24	1.80	4
M3.5	0.60	13	50	2.50	2.00	4
M4	0.70	13	53	3.15	2.50	5
M4.5	0.75	13	53	3.55	2.80	5
M5	0.80	16	58	4.00	3.15	6
M6	1.00	19	66	4.50	3.55	6
M7	1.00	19	66	5.60	4.50	7
M8	1.25	22	72	6.30	5.00	8
M9	1.25	22	72	7.10	5.60	8
M10	1.50	24	80	8.00	6.30	9
M11	1.50	25	85	8.00	6.30	9
M12	1.75	29	89	9.00	7.10	10
M14	2.00	30	95	11.20	9.00	12
M16	2.00	32	102	12.50	10.00	13
M18	2.50	37	112	14.00	11.20	14
M20	2.50	37	112	14.00	11.20	14
M22	2.50	38	118	16.00	12.50	16
M24	3.00	45	130	18.00	14.00	18
M25	3.00	45	130	20.00	16.00	20
M27	3.00	45	135	20.00	16.00	20
M30	3.50	48	138	20.00	16.00	20
M33	3.50	51	151	22.40	18.00	22
M36	4.00	57	162	25.00	20.00	24
M39	4.00	60	170	28.00	22.40	26
M42	4.50	60	170	28.00	22.40	26
M45	4.50	67	187	31.50	25.00	28
M48	5.00	67	187	31.50	25.00	28
M52	5.00	70	200	35.50	28.00	31
M56	5.50	70	200	35.50	28.00	31
M60	5.50	76	221	40.00	31.50	34
M64	6.00	79	224	40.00	31.50	34
M68	6.00	79	234	45.00	35.50	38

Dimensions in mm
Specifications conform to :
IS 6175 Part 3 : 2002
ISO 529 : 1975
BS 949 Part 1 : 1992

These taps are supplied in set of three - Taper, Second & Bottoming non-serial with thread Tolerance 6H.

HAND AND SHORT MACHINE TAPS

(ISO Metric-Ground Threads Fine Pitch)



IS 6175 | HSS | 6H | 60° | BRIGHT

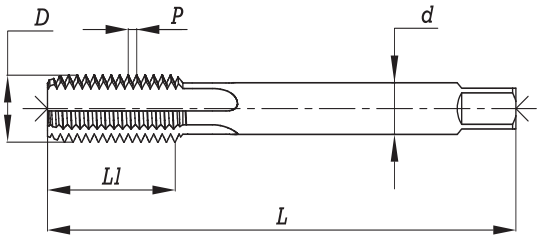
Application :
These taps are used for producing internal threads by hand tapping.

Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M3	0.35	11	48	2.24	1.80	4
M3.5	0.35	13	50	2.50	2.00	4
M4	0.50	13	53	3.15	2.50	5
M4.5	0.50	13	53	3.55	2.80	5
M5	0.50	16	58	4.00	3.15	6
M5.5	0.50	17	62	4.00	3.15	6
M6	0.75	19	66	4.50	3.55	6
M7	0.75	19	66	5.60	4.50	7
M8	0.75	16	66	6.30	5.00	8
M8	1.00	19	69	6.30	5.00	8
M9	0.75	16	66	7.10	5.60	8
M9	1.00	19	69	7.10	5.60	8
M10	0.75	17	73	8.00	6.30	9
M10	1.00	20	76	8.00	6.30	9
M10	1.25	20	76	8.00	6.30	9
M11	0.75	20	80	8.00	6.30	9
M11	1.00	20	80	8.00	6.30	9
M12	1.00	20	80	9.00	7.10	10
M12	1.25	24	84	9.00	7.10	10
M12	1.50	29	89	9.00	7.10	10
M14	1.00	22	87	11.20	9.00	12
M14	1.25	25	90	11.20	9.00	12
M14	1.50	30	95	11.20	9.00	12
M15	1.00	22	87	11.20	9.00	12
M15	1.50	30	95	11.20	9.00	12
M16	1.00	22	92	12.50	10.00	13
M16	1.50	32	102	12.50	10.00	13
M17	1.00	22	92	12.50	10.00	13
M17	1.50	32	102	12.50	10.00	13
M18	1.00	22	97	14.00	11.20	14
M18	1.50	29	104	14.00	11.20	14
M18	2.00	37	112	14.00	11.20	14
M20	1.00	27	102	14.00	11.20	14
M20	1.50	29	104	14.00	11.20	14
M20	2.00	37	112	14.00	11.20	14
M22	1.00	29	109	16.00	12.50	16
M22	1.50	33	113	16.00	12.50	16
M22	2.00	38	118	16.00	12.50	16
M24	1.00	29	114	18.00	14.00	18
M24	1.50	35	120	18.00	14.00	18
M24	2.00	35	120	18.00	14.00	18
M25	1.00	29	114	18.00	14.00	18
M25	1.50	35	120	18.00	14.00	18
M25	2.00	35	120	18.00	14.00	18
M26	1.50	35	120	18.00	14.00	18
M27	1.00	30	120	20.00	16.00	20
M27	1.50	37	127	20.00	16.00	20
M27	2.00	37	127	20.00	16.00	20

Dimensions in mm
Specifications conform to :
BS 949 Part 1 : 1992
IS 6175 Part 3 : 2002
ISO 529 : 1975

HAND AND SHORT MACHINE TAPS

(ISO Metric-Ground Threads Fine Pitch)



IS 6175 | HSS | 6H | 60° | BRIGHT

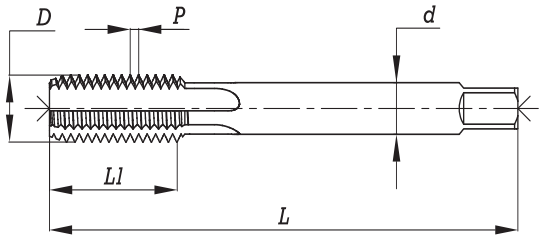
Application :
These taps are used for producing internal threads by hand tapping.

Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M28	1.00	30	120	20.00	16.00	20
M28	1.50	37	127	20.00	16.00	20
M28	2.00	37	127	20.00	16.00	20
M30	1.00	30	120	20.00	16.00	20
M30	1.50	37	127	20.00	16.00	20
M30	2.00	37	127	20.00	16.00	20
M30	3.00	48	138	20.00	16.00	20
M32	1.50	37	137	22.40	18.00	22
M32	2.00	37	137	22.40	18.00	22
M33	1.50	37	137	22.40	18.00	22
M33	2.00	37	137	22.40	18.00	22
M33	3.00	51	151	22.40	18.00	22
M35	1.50	39	144	25.00	20.00	24
M36	1.50	39	144	25.00	20.00	24
M36	2.00	39	144	25.00	20.00	24
M36	3.00	57	162	25.00	20.00	24
M38	1.50	39	149	28.00	22.40	26
M39	1.50	39	149	28.00	22.40	26
M39	2.00	39	149	28.00	22.40	26
M39	3.00	60	170	28.00	22.40	26
M40	1.50	39	149	28.00	22.40	26
M40	2.00	39	149	28.00	22.40	26
M40	3.00	60	170	28.00	22.40	26
M42	1.50	39	149	28.00	22.40	26
M42	2.00	39	149	28.00	22.40	26
M42	3.00	60	170	28.00	22.40	26
M42	4.00	60	170	28.00	22.40	26
M45	1.50	45	165	31.50	25.00	28
M45	2.00	45	165	31.50	25.00	28
M45	3.00	67	187	31.50	25.00	28
M45	4.00	67	187	31.50	25.00	28
M48	1.50	45	165	31.50	25.00	28
M48	2.00	45	165	31.50	25.00	28
M48	3.00	67	187	31.50	25.00	28
M48	4.00	67	187	31.50	25.00	28
M50	1.50	45	165	31.50	25.00	28
M50	2.00	45	165	31.50	25.00	28
M50	3.00	67	187	31.50	25.00	28
M52	1.50	45	175	35.50	28.00	31
M52	2.00	45	175	35.50	28.00	31
M52	3.00	70	200	35.50	28.00	31
M52	4.00	70	200	35.50	28.00	31
M55	1.50	45	175	35.50	28.00	31
M55	2.00	45	175	35.50	28.00	31
M55	3.00	70	200	35.50	28.00	31
M55	4.00	70	200	35.50	28.00	31
M56	1.50	45	175	35.50	28.00	31

Dimensions in mm
Specifications conform to :
IS 6175 Part 3 : 2002
ISO 529 : 1975
BS 949 Part 1 : 1992

HAND AND SHORT MACHINE TAPS

(ISO Metric-Ground Threads Fine Pitch)



IS 6175 | HSS | 6H | 60° | BRIGHT

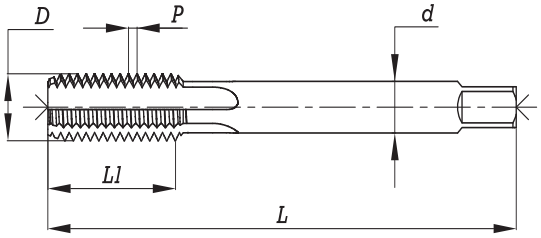
Application :
These taps are used for producing internal threads by hand tapping.

Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M56	2.00	45	175	35.50	28.00	31
M56	3.00	70	200	35.50	28.00	31
M56	4.00	70	200	35.50	28.00	31
M58	1.50	48	193	40.00	31.50	34
M58	2.00	48	193	40.00	31.50	34
M58	3.00	64	209	40.00	31.50	34
M58	4.00	64	209	40.00	31.50	34
M60	1.50	48	193	40.00	31.50	34
M60	2.00	48	193	40.00	31.50	34
M60	3.00	64	209	40.00	31.50	34
M60	4.00	64	209	40.00	31.50	34
M62	1.50	48	193	40.00	31.50	34
M62	2.00	48	193	40.00	31.50	34
M62	3.00	64	209	40.00	31.50	34
M62	4.00	64	209	40.00	31.50	34
M64	1.50	48	193	40.00	31.50	34
M64	2.00	48	193	40.00	31.50	34
M64	3.00	64	209	40.00	31.50	34
M64	4.00	64	209	40.00	31.50	34
M65	1.50	48	193	40.00	31.50	34
M65	2.00	48	193	40.00	31.50	34
M65	3.00	64	209	40.00	31.50	34
M65	4.00	64	209	40.00	31.50	34
M68	1.50	48	203	45.00	35.50	38
M68	2.00	48	203	45.00	35.50	38
M68	3.00	64	219	45.00	35.50	38
M68	4.00	64	219	45.00	35.50	38
M70	1.50	48	203	45.00	35.50	38
M70	2.00	48	203	45.00	35.50	38
M70	3.00	64	219	45.00	35.50	38
M70	4.00	64	219	45.00	35.50	38
M70	6.00	79	234	45.00	35.50	38
M72	1.50	48	203	45.00	35.50	38
M72	2.00	48	203	45.00	35.50	38
M72	3.00	64	219	45.00	35.50	38
M72	4.00	64	219	45.00	35.50	38
M72	6.00	70	234	45.00	35.50	38
M75	1.50	48	203	45.00	35.50	38
M75	2.00	48	203	45.00	35.50	38
M75	3.00	64	219	45.00	35.50	38
M75	4.00	64	219	45.00	35.50	38
M76	1.50	51	226	50.00	40.00	42
M76	2.00	51	226	50.00	40.00	42
M76	3.00	67	242	50.00	40.00	42
M76	4.00	67	242	50.00	40.00	42
M76	6.00	83	258	50.00	40.00	42
M78	2.00	51	226	50.00	40.00	42

Dimensions in mm
Specifications conform to :
IS 6175 Part 3 : 2002
ISO 529 : 1975
BS 949 Part 1 : 1992

HAND AND SHORT MACHINE TAPS

(ISO Metric-Ground Threads Fine Pitch)



IS 6175 | HSS | 6H | 60° | BRIGHT

Application :
These taps are used for producing internal threads by hand tapping.

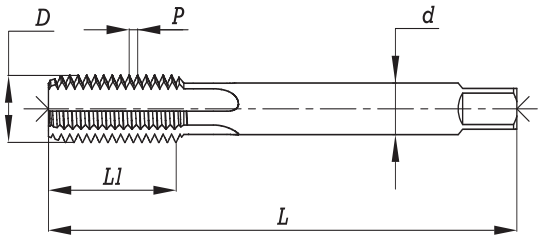
Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M80	1.50	51	226	50.00	40.00	42
M80	2.00	51	226	50.00	40.00	42
M80	3.00	67	242	50.00	40.00	42
M80	4.00	67	242	50.00	40.00	42
M80	6.00	83	258	50.00	40.00	42
M82	2.00	51	226	50.00	40.00	42
M85	2.00	51	226	50.00	40.00	42
M85	3.00	67	242	50.00	40.00	42
M85	4.00	67	242	50.00	40.00	42
M85	6.00	86	261	50.00	40.00	42
M90	2.00	51	226	50.00	40.00	42
M90	3.00	67	242	50.00	40.00	42
M90	4.00	67	242	50.00	40.00	42
M90	6.00	86	261	50.00	40.00	42
M95	2.00	54	244	56.00	45.00	46
M95	3.00	70	260	56.00	45.00	46
M95	4.00	70	260	56.00	45.00	46
M95	6.00	89	279	56.00	45.00	46
M100	2.00	54	244	56.00	45.00	46
M100	3.00	70	260	56.00	45.00	46
M100	4.00	70	260	56.00	45.00	46
M100	6.00	89	279	56.00	45.00	46

Dimensions in mm
Specifications conform to :
IS 6175 Part 3 : 2002
ISO 529 : 1975
BS 949 Part 1 : 1992

These taps are supplied in set of two - Taper and Bottoming in non-serial form with thread tolerance 6H.

HAND AND SHORT MACHINE TAPS - BSW

(Ground Threads)



BS 949 | HSS | ZONE-3 | 55° | BRIGHT

Application :
These taps are used for producing internal threads by hand tapping.

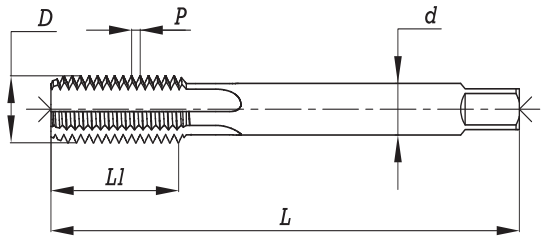
Nominal Diameter (D)	Thread per inch	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
1/8	40	11	48	3.15	2.50	5
3/16	24	16	58	5.00	4.00	7
1/4	20	19	66	6.30	5.00	8
5/16	18	22	72	8.00	6.30	9
3/8	16	24	80	10.00	8.00	11
7/16	14	25	85	8.00	6.30	9
1/2	12	29	89	9.00	7.10	10
9/16	12	30	95	11.20	9.00	12
5/8	11	32	102	12.50	10.00	13
11/16	11	37	112	14.00	11.20	14
3/4	10	37	112	14.00	11.20	14
7/8	9	38	118	16.00	12.50	16
1	8	45	130	18.00	14.00	18
1.1/8	7	48	138	20.00	16.00	20
1.1/4	7	51	151	22.40	18.00	22
1.3/8	6	57	162	25.00	20.00	24
1.1/2	6	60	170	28.00	22.40	26
1.3/4	5	67	187	31.50	25.00	28
2	4.1/2	70	200	35.50	28.00	31
2.1/4	4	76	221	40.00	31.50	34
2.1/2	4	79	224	40.00	31.50	34
2.3/4	3.1/2	79	234	45.00	35.50	38
3	3.1/2	83	258	50.00	40.00	42
3.1/4	3.1/4	86	261	50.00	40.00	42
3.1/2	3.1/4	86	261	50.00	40.00	42
3.3/4	3	89	279	56.00	45.00	46
4	3	89	279	56.00	45.00	46

These taps are supplied in set of three - Taper, Second & Bottoming in non serial form with thread tolerance class 2 (Zone 3) unless otherwise specified.

Dimensions in inch/mm
Specifications conform to :
BS 949 Part 1 : 1992

HAND AND SHORT MACHINE TAPS - BSF

(Ground Threads)



BS 949 | HSS | ZONE-3 | 55° | BRIGHT

Application :
These taps are used for producing internal threads by hand tapping.

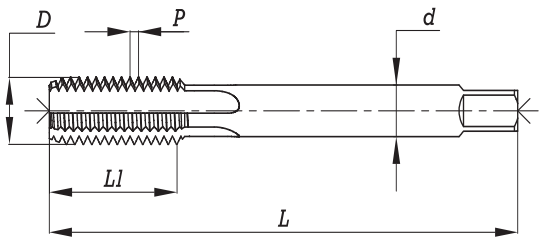
Nominal Diameter (D)	Thread per inch	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
3/16	32	16	58	5.00	4.00	7
1/4	26	19	66	6.30	5.00	8
5/16	22	22	72	8.00	6.30	9
3/8	20	24	80	10.00	8.00	11
7/16	18	25	85	8.00	6.30	9
1/2	16	29	89	9.00	7.10	10
9/16	16	30	95	11.20	9.00	12
5/8	14	32	102	12.50	10.00	13
11/16	14	37	112	14.00	11.20	14
3/4	12	37	112	14.00	11.20	14
7/8	11	38	118	16.00	12.50	16
1	10	45	130	18.00	14.00	18
1.1/8	9	48	138	20.00	16.00	20
1.1/4	9	51	151	22.40	18.00	22
1.3/8	8	57	162	25.00	20.00	24
1.1/2	8	60	170	28.00	22.40	26
1.5/8	8	60	170	28.00	22.40	26
1.3/4	7	67	187	31.50	25.00	28
2	7	70	200	35.50	28.00	31
2.1/4	6	76	221	40.00	31.50	34
2.1/2	6	79	224	40.00	31.50	34
2.3/4	6	79	234	45.00	35.50	38
3	5	83	258	50.00	40.00	42

These taps are supplied in set of three - Taper, Second & Bottoming in non serial form with thread tolerance class 2 (Zone 3) unless otherwise specified.

Dimensions in inch/mm
Specifications conform to :
BS 949 Part 1 : 1992

HAND AND SHORT MACHINE TAPS - UNC

(Ground Threads- Coarse Pitch)



BS 949 | HSS | ZONE-3 | 60° | BRIGHT

Application :
These taps are used for producing internal threads by hand tapping.

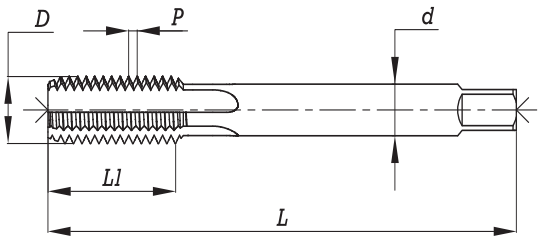
Nominal Diameter (D)	Thread per inch	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
1/4	20	19	66	6.30	5.00	8
5/16	18	22	72	8.00	6.30	9
3/8	16	24	80	10.00	8.00	11
7/16	14	25	85	8.00	6.30	9
1/2	13	29	89	9.00	7.10	10
9/16	12	30	95	11.20	9.00	12
5/8	11	32	102	12.50	10.00	13
3/4	10	37	112	14.00	11.20	14
7/8	9	38	118	16.00	12.50	16
1	8	45	130	18.00	14.00	18
1.1/8	7	48	138	20.00	16.00	20
1.1/4	7	51	151	22.40	18.00	22
1.3/8	6	57	162	25.00	20.00	24
1.1/2	6	60	170	28.00	22.40	26
1.3/4	5	67	187	31.50	25.00	28
2	4.1/2	70	200	35.50	28.00	31
2.1/4	4.1/2	76	221	40.00	31.50	34
2.1/2	4	79	224	40.00	31.50	34
2.3/4	4	79	234	45.00	35.50	38
3	4	83	258	50.00	40.00	42
3.1/4	4	86	261	50.00	40.00	42
3.1/2	4	86	261	50.00	40.00	42
3.3/4	4	89	279	56.00	45.00	46
4	4	89	279	56.00	45.00	46

Dimensions in inch/mm
Specifications conform to :
BS 949 Part 1 : 1992

These taps are supplied in set of three - Taper, Second & Bottoming in non serial form with thread tolerance class 2 (Zone 3) unless otherwise specified.

HAND AND SHORT MACHINE TAPS - UNF

(Ground Threads - Fine Pitch)



BS 949 | HSS | ZONE-3 | 60° | BRIGHT

Application :
These taps are used for producing internal threads by hand tapping.

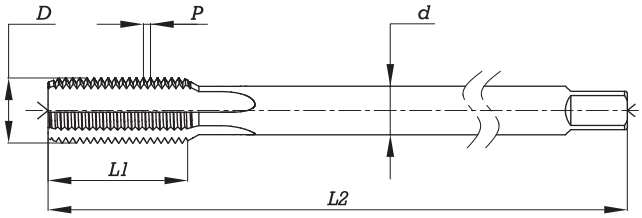
Nominal Diameter (D)	Thread per inch	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
1/4	28	19	66	6.30	5.00	8
5/16	24	19	69	8.00	6.30	9
3/8	24	20	76	10.00	8.00	11
7/16	20	22	82	8.00	6.30	9
1/2	20	24	84	9.00	7.10	10
9/16	18	25	90	11.20	9.00	12
5/8	18	25	95	12.50	10.00	13
3/4	16	29	104	14.00	11.20	14
7/8	14	33	113	16.00	12.50	16
1	12	35	120	18.00	14.00	18
1.1/8	12	37	127	20.00	16.00	20
1.1/4	12	37	137	22.40	18.00	22
1.3/8	12	39	144	25.00	20.00	24
1.1/2	12	39	149	28.00	22.40	26

Dimensions in inch/mm
Specifications conform to :
BS 949 Part 1 : 1992

These taps are supplied in set of three - Taper, Second & Bottoming in non serial form with thread tolerance class 2 (Zone 3) unless otherwise specified.

LONG SHANK MACHINE TAPS

(ISO Metric-Ground Threads Coarse Pitch)



IS 6175 | HSS | 6H | 60° | C-FORM | BRIGHT

Application :
These taps are used for producing internal threads for deep hole tapping applications.

Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M3	0.50	11	66	2.24	1.80	4
M3.5	0.60	13	68	2.50	2.00	4
M4	0.70	13	73	3.15	2.50	5
M4.5	0.75	13	73	3.55	2.80	5
M5	0.80	16	79	4.00	3.15	6
M6	1.00	19	89	4.50	3.55	6
M8	1.25	22	97	6.30	5.00	8
M10	1.50	24	108	8.00	6.30	9
M12	1.75	29	119	9.00	7.10	10
M14	2.00	30	127	11.20	9.00	12
M16	2.00	32	137	12.50	10.00	13
M18	2.50	37	149	14.00	11.20	14
M20	2.50	37	149	14.00	11.20	14
M22	2.50	38	158	16.00	12.50	16
M24	3.00	45	172	18.00	14.00	18
M27	3.00	45	180	20.00	16.00	20
M30	3.50	48	183	20.00	16.00	20
M33	3.50	51	201	22.40	18.00	22
M36	4.00	57	214	25.00	20.00	24
M39	4.00	60	225	28.00	22.40	26
M42	4.50	60	225	28.00	22.40	26
M45	4.50	67	247	31.50	25.00	28
M48	5.00	67	247	31.50	25.00	28
M52	5.00	70	265	35.50	28.00	31
M56	5.50	70	265	40.00	31.50	34
M64	6.00	79	296.5	40.00	31.50	34
M68	6.00	79	311.5	45.00	35.50	38

Dimensions in mm
Specifications conform to :
IS 6175 Part 4 : 2001
ISO 2283 : 1972
BS 949 Part 1 : 1992

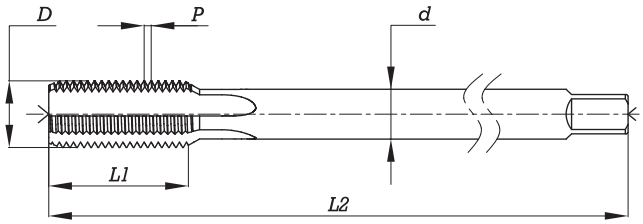
Type A - 5 Deg : Taper angle with long taper lead
Type B - 10 Deg : Taper angle with spiral point
Type C - 20 Deg : Taper angle with short taper lead
Type D - 10 Deg : Taper angle without spiral point

These taps are supplied with tolerance class 6H.

Sizes above M24 are not covered by;
IS 6175 Part 4:2001,ISO 2283:1972 and BS 949 Part 1:1992

LONG SHANK MACHINE TAPS

(ISO Metric-Ground Threads Fine Pitch)



IS 6175 | HSS | 6H | 60° | C-FORM | BRIGHT

Application :
These taps are used for producing internal threads for deep hole tapping applications.

Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M3	0.35	17	66	2.24	1.80	4
M4	0.50	13	73	3.15	2.50	5
M5	0.50	16	76	4.00	3.15	6
M6	0.75	19	89	4.50	3.55	6
M8	1.00	19	97	6.30	5.00	8
M10	1.00	20	108	8.00	6.30	9
M10	1.25	20	108	8.00	6.30	9
M12	1.25	24	119	9.00	7.10	10
M12	1.50	29	119	9.00	7.10	10
M16	1.50	32	137	12.50	10.00	13
M20	1.50	29	142	14.00	11.20	14
M20	2.00	37	149	14.00	11.20	14
M24	1.50	35	172	18.00	14.00	18
M24	2.00	35	172	18.00	14.00	18
M30	1.50	37	172	20.00	16.00	20
M30	2.00	37	172	20.00	16.00	20
M36	1.50	39	196.5	25.00	20.00	24
M36	2.00	39	196.5	25.00	20.00	24
M36	3.00	57	214.5	25.00	20.00	24
M42	1.50	39	204	28.00	22.40	26
M42	2.00	39	204	28.00	22.40	26
M42	3.00	60	225	28.00	22.40	26
M48	1.50	45	225	31.50	25.00	28
M48	2.00	45	225	31.50	25.00	28
M48	3.00	67	247	31.50	25.00	28
M52	1.50	45	240	35.50	28.00	31
M52	2.00	45	240	35.50	28.00	31
M52	3.00	70	265	35.50	28.00	31

Dimensions in mm
Specifications conform to :
IS 6175 Part 4 : 2001
ISO 2283 : 1972
BS 949 Part 1 : 1992

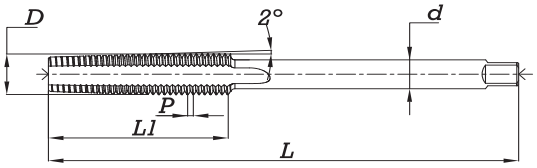
Type A - 5 Deg : Taper angle with long taper lead
Type B - 10 Deg : Taper angle with spiral point
Type C - 20 Deg : Taper angle with short taper lead
Type D - 10 Deg : Taper angle without spiral point

These taps are supplied with tolerance class 6H.

Sizes above M24 are not covered by;
IS 6175 Part 4:2001,ISO 2283:1972 and BS 949 Part 1:1992

NUT TAPS

(ISO Metric-Ground Threads Coarse Pitch)



IS 6175 | HSS | 6H | 60° | BRIGHT

Application :
These taps are used for producing internal threads of nuts.

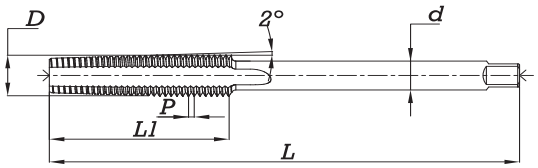
Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M6	1.00	32	110	4.50	3.55	6.00
M8	1.25	40	125	6.30	5.00	8.00
M10	1.50	45	140	8.00	6.30	9.00
M12	1.75	50	180	9.00	7.10	10.00
M14	2.00	56	200	11.20	9.00	12.00
M16	2.00	63	200	12.50	10.00	13.00
M18	2.50	63	220	14.00	11.20	14.00
M20	2.50	70	250	14.00	11.20	14.00
M22	2.50	80	280	16.00	12.50	16.00
M24	3.00	80	280	18.00	14.00	18.00
M27	3.00	90	315	20.00	16.00	20.00
M30	3.50	100	315	20.00	16.00	20.00
M33	3.50	110	355	22.40	18.00	22.00
M36	4.00	110	400	25.00	20.00	24.00
M39	4.00	125	400	28.00	22.40	26.00
M42	4.50	125	450	28.00	22.40	26.00
M45	4.50	140	500	31.50	25.00	28.00
M48	5.00	140	500	31.50	25.00	28.00

These taps are supplied with thread tolerance class 6H.
Taper lead 2°

Dimensions in mm
Specifications conform to :
IS 6175 Part 5 : 2001

NUT TAPS - BSW

(Ground Threads Coarse Pitch)



BS 949 | HSS | ZONE-3 | 55° | BRIGHT

Application :
These taps are used for producing internal threads of nuts.

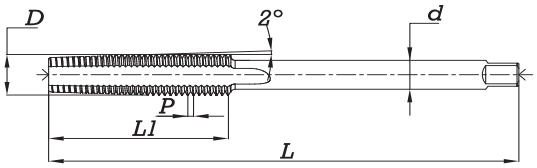
Nominal Diameter (D)	Threads per inch	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
1/4	20	38	110	4.50	3.55	6.00
5/16	18	42	120	6.00	4.50	7.00
3/8	16	48	140	7.00	5.60	8.00
7/16	14	55	160	8.00	6.30	9.00
1/2	12	64	180	9.00	7.10	10.00
9/16	12	64	200	11.20	9.00	12.00
5/8	11	70	200	12.50	10.00	13.00
3/4	10	76	250	14.00	11.20	14.00
7/8	9	85	280	16.00	12.50	16.00
1	8	95	280	18.00	14.00	18.00
1.1/8	7	109	315	20.00	16.00	20.00
1.1/4	7	109	355	22.40	18.00	22.00
1.1/2	6	127	400	28.00	22.40	26.00
1.3/4	5	153	500	31.50	25.00	28.00
2	4.1/2	170	560	35.50	28.00	31.00

These taps are usually supplied with thread tolerance class zone 3.
Taper lead 2°

Dimensions in inch/mm
Specifications conform to :
BS 949 : 1969

NUT TAPS - BSF

(Ground Threads Fine Pitch)



BS 949 | HSS | ZONE-3 | 55° | BRIGHT

Application :
These taps are used for producing internal threads of nuts.

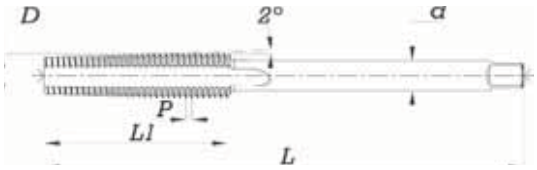
Nominal Diameter (D)	Threads per inch	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
1/4	26	30	110	4.50	3.55	6.00
5/16	22	35	120	6.00	4.50	7.00
3/8	20	38	140	7.00	5.60	8.00
7/16	18	43	160	8.00	6.30	9.00
1/2	16	48	180	9.00	7.10	10.00
9/16	16	48	200	11.20	9.00	12.00
5/8	14	55	200	12.50	10.00	13.00
3/4	12	64	250	14.00	11.20	14.00
7/8	11	70	280	16.00	12.50	16.00
1	10	76	280	18.00	14.00	18.00
1.1/8	9	85	315	20.00	16.00	20.00
1.1/4	9	85	355	22.40	18.00	22.00
1.3/8	8	95	400	25.00	20.00	24.00
1.1/2	8	95	400	28.00	22.40	26.00
1.5/8	8	95	450	28.00	22.40	26.00
1.3/4	7	109	500	31.50	25.00	28.00
2	7	109	560	35.50	28.00	31.00

These taps are usually supplied with thread tolerance class zone 3.
Taper lead 2°

Dimensions in inch/mm
Specifications conform to :
BS 949 : 1969

NUT TAPS - UNC

(Ground Threads Coarse Pitch)



BS 949 | HSS | ZONE-3 | 60° | BRIGHT

Application :
These taps are used for producing internal threads of nuts.

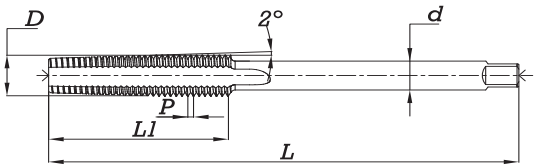
Nominal Diameter (D)	Threads per inch	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
1/4	20	38	110	4.50	3.55	6.00
5/16	18	43	125	6.00	4.50	7.00
3/8	16	48	140	7.00	5.60	8.00
7/16	14	55	160	8.00	6.30	9.00
1/2	13	59	180	9.00	7.10	10.00
9/16	12	64	200	11.20	9.00	12.00
5/8	11	70	200	12.50	10.00	13.00
3/4	10	76	250	14.00	11.20	14.00
7/8	9	85	280	16.00	12.50	16.00
1	8	95	280	18.00	14.00	18.00
1.1/8	7	109	315	20.00	16.00	20.00
1.1/4	7	109	355	22.40	18.00	22.00
1.3/8	6	127	400	25.00	20.00	24.00
1.1/2	6	127	400	28.00	22.40	26.00
1.3/4	5	153	500	31.50	25.00	28.00
2	4.1/2	170	560	35.50	28.00	31.00

These taps are usually supplied with thread tolerance class zone 3.
Taper lead 2°

Dimensions in inch/mm
Specifications conform to :
BS 949 : 1969

NUT TAPS - UNF

(Ground Threads Fine Pitch)



BS 949 | HSS | ZONE-3 | 60° | BRIGHT

Application :
These taps are used for producing internal threads of nuts.

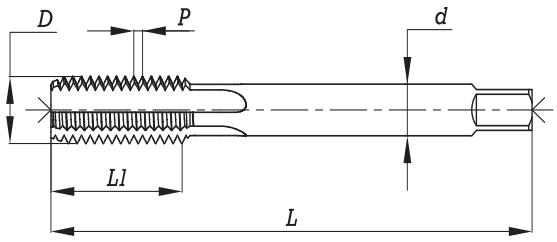
Nominal Diameter (D)	Threads per inch	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
1/4	28	28	110	4.50	3.55	6.00
5/16	24	32	125	6.00	4.50	7.00
3/8	24	32	140	7.00	5.60	8.00
7/16	20	38	160	8.00	6.30	9.00
1/2	20	38	180	9.00	7.10	10.00
9/16	18	43	200	11.20	9.00	12.00
5/8	18	43	200	12.50	10.00	13.00
3/4	16	48	250	14.00	11.20	14.00
7/8	14	55	280	16.00	12.50	16.00
1	12	64	280	18.00	14.00	18.00
1.1/8	12	64	315	20.00	16.00	20.00
1.1/4	12	64	355	22.40	18.00	22.00
1.3/8	12	64	400	25.00	20.00	24.00
1.1/2	12	64	400	28.00	22.40	26.00

These taps are usually supplied with thread tolerance class zone 3.
Taper lead 2°

Dimensions in inch/mm
Specifications conform to :
BS 949 : 1969

HAND TAPS - BSCY

(Ground Threads)



BS 949 | HSS | ZONE-3 | 60° | BRIGHT

Application :
These taps are used for producing internal threads of BS Cycle thread forms.

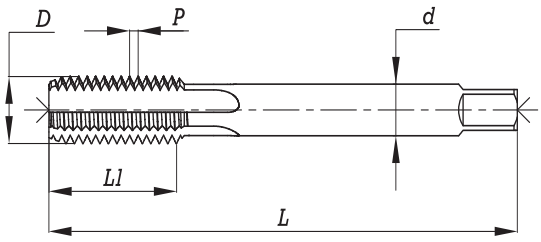
Nominal Diameter (D)	Threads per inch	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
1/4	26	19	66	6.30	5.0	8
5/16	26	19	69	8.0	6.30	9
3/8	26	20	76	10.0	8.0	11
7/16	26	22	82	8.0	6.30	9
1/2	26	24	84	9.0	7.10	10
9/16	26	25	90	11.20	9.0	12
5/8	26	25	95	12.50	10.0	13
11/16	26	29	104	14.0	11.20	14
3/4	26	29	104	14.0	11.20	14
7/8	24	33	113	16.0	12.50	16
1	24	35	120	18.0	14.0	18
1.1/8	26	37	127	20.0	16.0	20
1.9/16	24	39	149	28.0	22.40	26
1.5/8	24	39	149	28.0	22.40	26

These taps are usually supplied in set of three - Taper, Second & Bottoming with thread tolerance Zone 3.

Dimensions in inch/mm
Specifications conform to :
BS 949 Part 1 : 1992

HAND TAPS - BS (CONDUIT)

(Ground Threads)



BS 949 | HSS | ZONE-3 | 55° | BRIGHT

Application :
These taps are used for producing internal threads of BS Conduit thread forms.

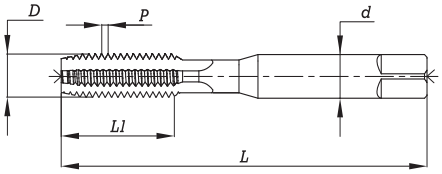
Nominal Diameter (D)	Threads per inch	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
1/2	18	24	84	9	7.10	10
5/8	18	25	95	12.50	10.0	13
3/4	16	29	104	14.0	11.20	14
1	16	35	120	18.0	14.0	18
1.1/4	16	37	137	22.40	18.0	22
1.1/2	14	39	149	28.0	22.40	26
2	14	45	175	35.5	28.0	31

These taps are usually supplied in set of three - Taper, Second & Bottoming with thread tolerance Zone 3.

Dimensions in inch/mm
Specifications conform to :
BS 949 Part 1 : 1992

HAND TAPS -BA

(Ground Threads)



BS 949 | HSS | ZONE-3 | 47°30' | BRIGHT

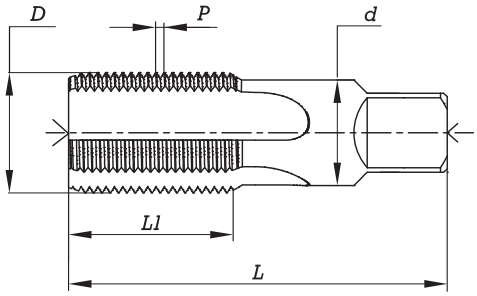
Application :
These taps are used for producing internal threads of BA thread forms.

Designating Number	Basic Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
						Size (h11)	Length
6	2.80	0.530	9.5	44.50	2.80	2.24	6
5	3.20	0.590	11	48.00	3.15	2.50	5
4	3.60	0.660	13	50.00	3.55	2.80	5
3	4.10	0.730	13	53.00	4.50	3.55	6
2	4.70	0.810	16	58.00	5.00	4.00	7
1	5.30	0.900	17	62.00	5.60	4.50	7
0	6.00	1.000	19	66.00	6.30	5.00	8

Dimensions in mm
Specifications conform to :
BS 949 Part 1 : 1992

These taps are usually supplied in set of three - Taper, Second & Bottoming with thread tolerance Zone 3.

PARALLEL PIPE HAND TAPS - BSP



BS 949 | HSS | ZONE-3 | 55° | BRIGHT

Application :
These taps are used for producing internal threads of Parallel pipe thread forms.

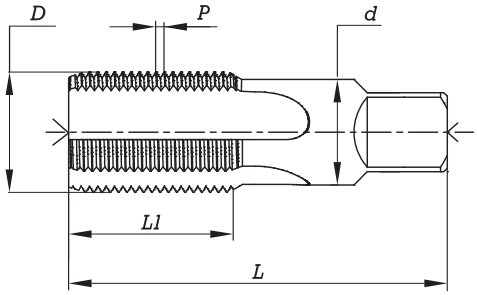
Nominal Size	Thread per inch	Basic major diameter of thread (D)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
						Size (h11)	Length
1/8	28	0.383	3/4	2.1/8	0.318	0.238	5/16
1/4	19	0.518	1.1/16	2.7/16	0.429	0.322	7/16
3/8	19	0.656	1.1/16	2.9/16	0.542	0.406	1/2
1/2	14	0.825	1.3/8	3.1/8	0.687	0.515	5/8
5/8	14	0.902	1.3/8	3.3/16	0.800	0.600	1.1/16
3/4	14	1.041	1.3/8	3.1/4	0.906	0.679	1.1/16
7/8	14	1.189	1.9/16	3.1/2	1.093	0.812	3/4
1	11	1.309	1.3/4	3.3/4	1.125	0.843	1.3/16
1.1/4	11	1.650	1.3/4	4	1.312	0.984	1.5/16
1.1/2	11	1.882	1.3/4	4.1/4	1.500	1.125	1
1.3/4	11	2.116	1.3/4	4.3/8	1.625	1.218	1.1/16
2	11	2.347	1.3/4	4.1/2	1.875	1.406	1.1/8
2.1/4	11	2.587	2.1/8	5	2.000	1.500	1.3/16
2.1/2	11	2.960	2.9/16	5.1/2	2.250	1.687	1.1/4
2.3/4	11	3.210	2.9/16	5.3/4	2.375	1.781	1.5/16
3	11	3.460	2.5/8	6	2.625	1.968	1.3/8
3.1/2	11	3.950	2.11/16	6.1/2	2.812	2.108	1.1/2
4	11	4.450	2.3/4	6.3/4	3.000	2.250	1.5/8

Dimensions in inches
Specifications conform to :
BS 949 : 1969

These taps are usually supplied in set of two - Taper & Bottoming with thread tolerance class Zone 3.

PARALLEL PIPE HAND TAPS (G - SERIES)

(Ground Threads)



IS 6175 | HSS | ZONE-3 | 55° | BRIGHT

Application :
These taps are used for producing internal threads of Parallel pipe thread forms.

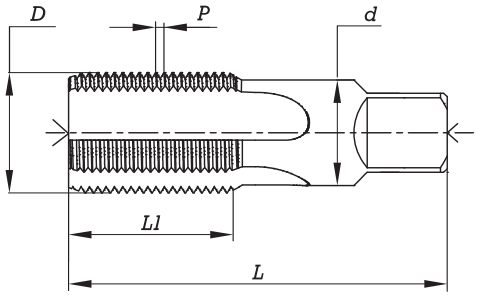
Size	Thread per inch	Major Dia. Min.	Basic Pitch Dia.	Effective Dia		Thread Length (L1)	Overall Length (L)	Shank dia (d) (h9)	Square	
				Min.	Max.				Size (h11)	Length
G1/8	28	9.760	9.147	9.168	9.190	15	59	8.00	6.30	9.00
G1/4	19	13.195	12.301	12.326	12.351	19	67	10.00	8.00	11.00
G3/8	19	16.700	15.806	15.831	15.856	21	75	12.50	10.00	13.00
G1/2	14	20.998	19.793	19.821	19.850	26	87	16.00	12.50	16.00
G5/8	14	22.954	21.749	21.777	21.806	26	91	18.00	14.00	18.00
G3/4	14	26.484	25.279	25.307	25.336	28	96	20.00	16.00	20.00
G7/8	14	30.244	29.039	29.067	29.096	29	102	22.40	18.00	22.00
G1	11	33.303	31.770	31.806	31.842	33	109	25.00	20.00	24.00
G1.1/8	11	37.951	36.418	36.454	36.490	34	115	28.00	22.40	26.00
G1.1/4	11	41.964	40.431	40.467	40.503	36	119	31.50	25.00	28.00
G1.1/2	11	47.857	46.324	46.360	46.395	37	125	35.50	28.00	31.00
G1.3/4	11	53.800	52.267	52.303	52.339	39	132	35.50	28.00	31.00
G2	11	59.668	58.135	58.171	58.207	41	140	40.00	31.50	34.00
G2.1/4	11	65.775	64.231	64.274	64.318	42	142	40.00	31.50	34.00
G2.1/2	11	75.249	73.706	73.748	73.792	45	153	45.00	35.50	38.00
G2.3/4	11	81.599	80.055	80.098	80.142	46	160	50.00	40.00	42.00
G3	11	87.949	86.405	86.448	86.492	48	164	50.00	40.00	42.00
G3.1/2	11	100.395	98.851	98.894	98.938	50	173	63.00	50.00	51.00
G4	11	113.095	111.551	111.594	111.638	53	185	71.00	56.00	56.00

These taps are usually supplied in set of two - Taper & Bottoming.

Dimensions in mm
Specifications conform to :
IS 6175 Part 6 : 2002
ISO 2284 : 1987
BS 949 Part 3 : 1993

PARALLEL PIPE HAND TAPS (Rp - SERIES)

(Ground Threads)



IS 6175 | HSS | ZONE-3 | 55° | BRIGHT

Application :
These taps are used for producing internal threads of Parallel pipe thread forms.

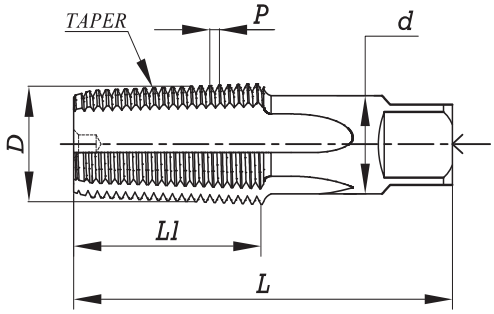
Size	Nominal dia	Thread per inch	Major Dia. Min.	Basic Pitch Dia.	Effective Dia		Thread Length (L1)	Overall Length (L)	Shank dia (d) (h9)	Square	
					Min.	Max.				Size (h11)	Length
Rp1/16	7.723	28	7.680	7.142	7.099	7.128	14	52	5.6	4.5	7
Rp1/8	9.728	28	9.685	9.147	9.104	9.133	15	59	8	6.3	9
Rp1/4	13.157	19	13.094	12.301	12.238	12.280	19	67	10	8	11
Rp3/8	16.662	19	16.599	15.806	15.743	15.785	21	75	12.5	10	13
Rp1/2	20.995	14	20.869	19.793	19.707	19.764	26	87	16	12.5	16
Rp3/4	26.441	14	26.355	25.279	25.193	25.250	28	96	20	16	20
Rp1	33.249	11	33.140	31.770	31.661	31.733	33	109	25	20	24
Rp1.1/4	41.910	11	41.801	40.431	40.322	40.394	36	119	31.5	25	28
Rp1.1/2	47.803	11	47.694	46.324	46.215	46.287	37	125	35.5	28	31
Rp2	59.614	11	59.505	58.135	58.026	58.098	41	140	40	31.5	34
Rp2.1/2	75.184	11	75.054	73.705	73.575	73.662	45	153	45	35.5	38
Rp3	87.884	11	87.754	86.405	86.275	86.362	48	164	50	40	42
Rp4	113.030	11	112.900	111.551	111.421	111.508	53	185	71	56	56

Dimensions in mm
Specifications conform to :
IS 6175 Part 7 : 2002
ISO 2284 : 1987
BS 949 Part 3 : 1993

These taps are usually supplied in set of two - Taper & Bottoming.

TAPER PIPE HAND TAPS (Rc - SERIES)

(Ground Threads)



IS 6175 | HSS | ZONE-3 | 55° | BRIGHT

Application :
These taps are used for producing internal threads of Taper pipe thread forms.

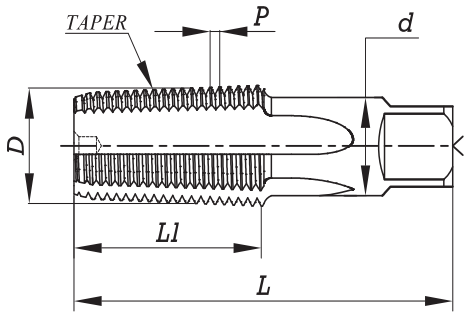
Designation	Nominal Dia	Thread per inch	Thread Length (L1)	Overall Length (L)	Shank dia (d) (h9)	Square	
						Size (h11)	Length
Rc1/8	9.728	28	15	59	8	6.3	9
Rc1/4	13.157	19	19	67	10	8	11
Rc3/8	16.662	19	21	75	12.5	10	13
Rc1/2	20.955	14	26	87	16	12.5	16
Rc3/4	26.441	14	28	96	20	16	20
Rc1	33.249	11	33	109	25	20	24
Rc1.1/4	41.91	11	36	119	31.5	25	28
Rc1.1/2	47.803	11	37	125	35.5	28	31
Rc2	59.614	11	41	140	40	31.5	34
Rc2.1/2	75.184	11	45	153	45	35.5	38
Rc3	87.884	11	48	164	50	40	42
Rc4	113.03	11	53	185	71	56	56

Dimensions in mm
Specifications conform to :
IS 6175 Part 8 : 2002
ISO 2284 : 1987
BS 949 Part 3 : 1993

These taps are usually supplied in set of two - Rougher & Finisher in serial thread form.

TAPER PIPE HAND TAPS - BSPT

(Ground Threads)



BS 949 | HSS | ZONE-3 | 55° | BRIGHT

Application :
These taps are used for producing internal threads of Taper pipe thread forms.

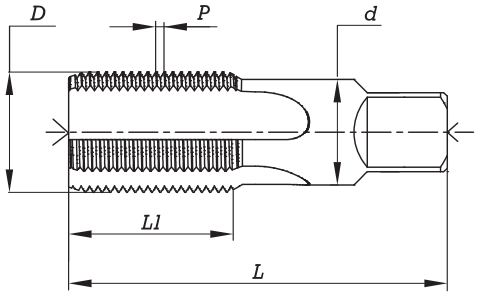
Nominal Size	Thread per inch	Basic or gauge dia of thread	Diameter		Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
			Large End	Small End (Before Chamfering)				Size (h11)	Length
1/8	28	0.383	0.3986	0.3518	3/4	2.1/8	0.318	0.238	5/16
1/4	19	0.518	0.5336	0.4672	1.1/16	2.7/16	0.429	0.322	7/16
3/8	19	0.656	0.6716	0.6052	1.1/16	2.9/16	0.542	0.406	1/2
1/2	14	0.825	0.8484	0.7625	1.3/8	3.1/8	0.687	0.515	5/8
3/4	14	1.041	1.0644	0.9785	1.3/8	3.1/4	0.906	0.679	11/16
1	11	1.309	1.3402	1.2308	1.3/4	3.3/4	1.125	0.843	13/16
1.1/4	11	1.650	1.6812	1.5718	1.3/4	4	1.312	0.984	15/16
1.1/2	11	1.882	1.9132	1.8038	1.3/4	4.1/4	1.500	1.125	1
2	11	2.347	2.3782	2.2688	1.3/4	4.1/2	1.875	1.406	1.1/8
2.1/2	11	2.960	2.9951	2.8350	2.9/16	5.1/2	2.250	1.687	1.1/4
3	11	3.460	3.4951	3.3311	2.5/8	6	2.625	1.968	1.3/8
3.1/2	11	3.950	3.9890	3.8210	2.11/16	6.1/2	2.812	2.108	1.1/2
4	11	4.450	4.4890	4.3171	2.3/4	6.3/4	3.000	2.250	1.5/8

Dimensions in inches
Specifications conform to :
BS 949 : 1969

These taps are usually supplied in set of two - Rougher and Finisher in serial thread form.

AMERICAN NATIONAL STRAIGHT PIPE HAND TAPS - NPS

(Ground Threads)



BS 949 | HSS | ZONE-3 | 60° | BRIGHT

Application :
These taps are used for producing internal threads of Parallel pipe thread forms.

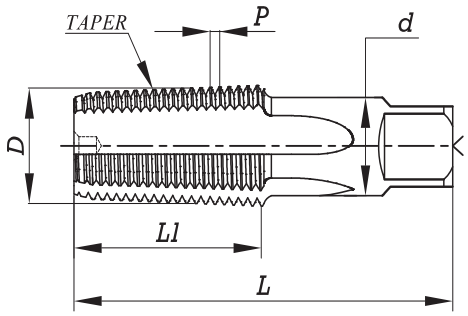
Nominal Size	Thread per inch	Basic or gauge dia of thread	Thread Length (L1)	Overall Length (L)	Shank diameter (d)(h9)	Square	
						Size (h11)	Length
1/16	27	0.3108	11/16	2.1/8	0.318	0.238	5/16
1/8	27	0.4044	3/4	2.1/8	0.318	0.238	5/16
1/4	18	0.5343	1.1/16	2.7/16	0.429	0.322	7/16
3/8	18	0.6714	1.1/16	2.9/16	0.542	0.406	1/2
1/2	14	0.8356	1.3/8	3.1/8	0.687	0.515	5/8
3/4	14	1.0460	1.3/8	3.1/4	0.906	0.679	11/16
1	11.1/2	1.3082	1.3/4	3.3/4	1.125	0.843	13/16
1.1/4	11.1/2	1.6530	1.3/4	4	1.312	0.984	15/16
1.1/2	11.1/2	1.8919	1.3/4	4.1/4	1.500	1.125	1
2	11.1/2	2.3658	1.3/4	4.1/2	1.875	1.406	1.1/8
2.1/2	8	2.8622	2.9/16	5.1/2	2.250	1.687	1.1/4
3	8	3.4885	2.5/8	6	2.625	1.968	1.3/8
3.1/2	8	3.9888	2.11/16	6.1/2	2.812	2.108	1.1/2
4	8	4.4871	2.3/4	6.3/4	3.000	2.250	1.5/8

Dimensions in inches
Specifications conform to :
BS 949 : 1969

These taps are usually supplied in set of two - Taper & Bottoming.

AMERICAN NATIONAL TAPER PIPE HAND TAPS - NPT

(Ground Threads)



BS 949 | HSS | ZONE-3 | 60° | BRIGHT

Application :
These taps are used for producing internal threads of Taper pipe thread forms.

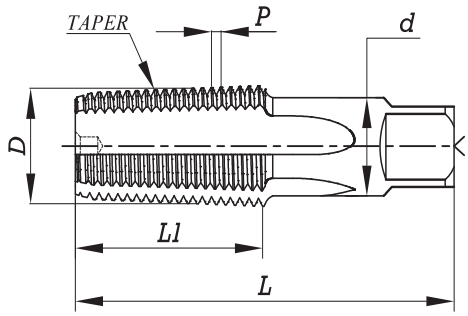
Nominal Size	Thread per inch	Basic or gauge dia of thread	Diameter		Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
			Large End	Small End (Before Chamfering)				Size (h11)	Length
1/16	27	0.3108	0.324	0.281	11/16	2.1/8	0.318	0.238	5/16
1/8	27	0.4044	0.420	0.373	3/4	2.1/8	0.318	0.238	5/16
1/4	18	0.5343	0.559	0.493	1.1/16	2.7/16	0.429	0.322	7/16
3/8	18	0.6714	0.694	0.628	1.1/16	2.9/16	0.542	0.406	1/2
1/2	14	0.8356	0.865	0.779	1.3/8	3.1/8	0.687	0.515	5/8
3/4	14	1.0460	1.075	0.989	1.3/8	3.1/4	0.906	0.679	11/16
1	11.1/2	1.3082	1.350	1.240	1.3/4	3.3/4	1.125	0.843	13/16
1.1/4	11.1/2	1.6530	1.393	1.584	1.3/4	4	1.312	0.984	15/16
1.1/2	11.1/2	1.8919	1.932	1.822	1.3/4	4.1/4	1.500	1.125	1
2	11.1/2	2.3658	2.405	2.297	1.3/4	4.1/2	1.875	1.406	1.1/8
2.1/2	8	2.8622	2.921	2.761	2.9/16	5.1/2	2.250	1.687	1.1/4
3	8	3.4885	3.547	3.383	2.5/8	6	2.625	1.968	1.3/8
3.1/2	8	3.9888	4.047	3.879	2.11/16	6.1/2	2.812	2.108	1.1/2
4	8	4.4871	4.547	4.375	2.3/4	6.3/4	3.000	2.250	1.5/8

These taps are usually supplied in set of two - Rougher and Finisher in serial thread form.

Dimensions in inches
Specifications conform to :
BS 949 : 1969

AMERICAN NATIONAL TAPER PIPE HAND TAPS - NPT

(Ground Threads)



ANSI B94.9 | HSS | ZONE-3 | 60° | BRIGHT

Application :
These taps are used for producing internal threads of Taper pipe thread forms.

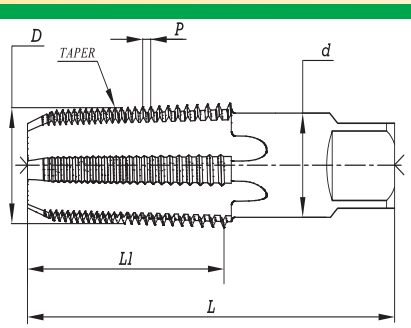
Nominal Diameter (D)	Thread per Inch	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
1/16	27	11/16	2.1/8	0.3125	0.234	3/8
1/8	27	3/4	2.1/8	0.4375	0.328	3/8
1/4	18	1.1/16	2.7/16	0.5625	0.421	7/16
3/8	18	1.1/16	2.9/16	0.7000	0.531	½
1/2	14	1.3/8	3.1/8	0.6875	0.515	5/8
3/4	14	1.3/8	3.1/4	0.9063	0.679	11/16
1	11.1/2	1.3/4	3.3/4	1.1250	0.843	13/16
1.1/4	11.1/2	1.3/4	4	1.3125	0.984	15/16
1.1/2	11.1/2	1.3/4	4.1/4	1.5000	1.125	1
2	11.1/2	1.3/4	4.1/2	1.8750	1.406	1.1/8

Dimensions in inches
Specifications conform to :
ANSI B 94.9 : 1971

These taps are usually supplied in set of two - Rougher & Finisher in serial thread form.

AMERICAN NATIONAL TAPER PIPE HAND TAPS (GAS) - NGT

(Ground Threads)



ITM STD | HSS | 60° | BRIGHT

Application :
These taps are used for producing internal threads in taper pipe pressure joints.

ITM Drawing no	Nominal size	Thread per inch	Max Thread Dia	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
							Size	Length
M-22-531	3/4	14	1.0770	2.1/2	4.1/2	0.750	-	-
M-22-574	3/4	14	1.0770	3.30	5.30	0.750		
M-22-535	3/4	14	1.0750	1.3/8	3.1/4	0.906	0.679	11/16

Dimensions in inches
Specifications conform to :
ITM Standard

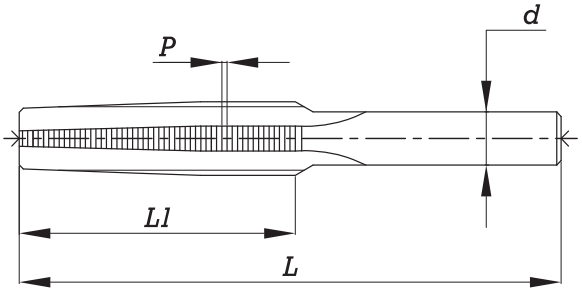
These taps are usually supplied in set of one.

Taps with locking slot having interrupted threads as per ITM Drawing No. M-22-531.

Taps with driving square without interruption as per ITM Drawing No. M-22-574 and M-22-585.

NIB TAPS

(Metric Ground Threads Coarse Pitch)



ITM STD | HSS | 6H | 60° | BRIGHT

Application :
These taps are used for producing internal threads of nuts in Fastener industries.

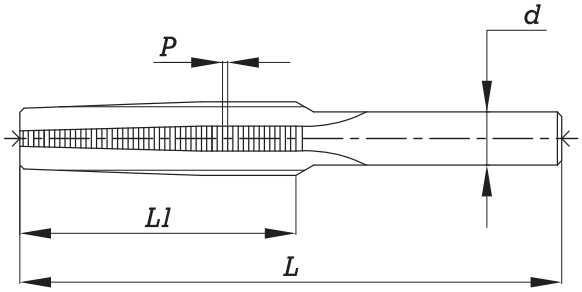
Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)
M3	0.50	15.00	60.00	2.30
M4	0.70	21.00	65.00	3.00
M5	0.80	21.00	70.00	3.80
M6	1.00	30.00	70.00	4.50
M8	1.25	38.00	90.00	6.05
M10	1.50	45.00	95.00	7.80
M12	1.75	53.00	102.00	9.50
M14	2.00	60.00	114.00	11.20
M16	2.00	60.00	127.00	13.10
M18	2.50	75.00	133.00	14.50
M20	2.50	75.00	133.00	16.50
M22	2.50	75.00	146.00	18.50
M24	3.00	90.00	165.00	19.80

These taps are usually supplied in set of one piece with thread tolerance 6H.

Dimensions in mm
Specifications conform to :
ITM Standard

NIB TAPS - BSW

(Ground Threads)



ITM STD | HSS | ZONE-3 | 55° | BRIGHT

Application :
These taps are used for producing internal threads of nuts in Fastener industries.

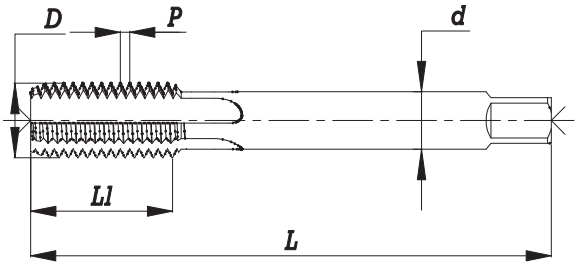
Nominal Diameter (D)	Thread Per Inch	Thread Length (L1)	Overall Length (L)	Shank diameter (d)
1/8	40	19.00	60.00	2.20
3/16	24	32.00	75.00	3.00
1/4	20	38.00	85.00	4.50
5/16	18	42.00	90.00	6.00
3/8	16	48.00	95.00	7.30
7/16	14	55.00	102.00	8.60
1/2	12	64.00	110.00	9.50
9/16	12	64.00	114.00	11.40
5/8	11	69.00	127.00	12.70
3/4	10	76.00	133.00	15.50
7/8	9	85.00	146.00	18.50
1	8	95.00	165.00	21.00

These taps are usually supplied in set of one piece with thread tolerance Zone 3.

Dimensions in inches / mm
Specifications conform to :
ITM Standard

HELICOIL TAPS

ISO Metric Ground Threads



BS 4377 | HSS | 6H | 60° | BRIGHT

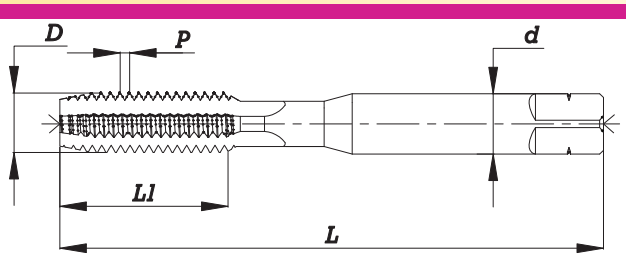
Application :
These taps are used for producing internal threads with higher sizes, to accommodate the helicoil inserts.

Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M3	0.50	13	53	4.00	3.15	6
M3.5	0.60	13	53	4.50	3.55	6
M4	0.70	16	58	5.00	4.00	7
M4.5	0.75	17	62	5.60	4.50	7
M5	0.80	19	66	6.30	5.00	8
M6	1.00	19	69	8.00	6.30	9
M7	1.00	19	69	9.00	7.10	10
M8	1.25	20	76	10.00	8.00	11
M10	1.50	29	89	9.00	7.10	10
M12	1.75	30	95	11.20	9.00	12
M14	2.00	32	102	12.50	10.00	13
M16	2.00	37	112	14.00	11.20	14
M18	2.50	38	118	16.00	12.50	16
M20	2.50	38	118	16.00	12.50	16
M22	2.50	45	130	18.00	14.00	18
M24	3.00	45	135	20.00	16.00	20

Dimensions in mm
Specifications conform to :
BS 4377 : 1980

PANTHER SERIES STRAIGHT FLUTE TAPS

ISO Metric Ground Threads -Coarse Pitch

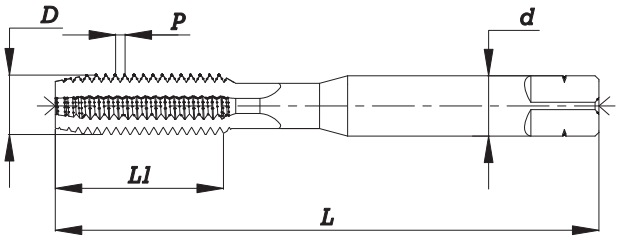


DIN 371 | HSS-E | 6H | 60° | BRIGHT

Application:
These Taps are used to produce internal threads for tougher materials like Forged steel, Stainless steel and difficult to cut materials, etc.

Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M3	0.50	11	56	3.5	2.7	6
M3.5	0.60	12	56	4	3	6
M4	0.70	13	63	4.5	3.4	6
M4.5	0.75	16	70	6	4.9	8
M5	0.80	16	70	6	4.9	8
M6	1.00	19	80	6	4.9	8
M7	1.00	19	80	7	5.5	8
M8	1.25	22	90	8	6.2	9
M9	1.25	22	90	9	7	10
M10	1.50	24	100	10	8	11

Dimensions in mm
Specifications conform to :
DIN 371 : 1971



IS 6175 | HSS-E | 6H | 60° | BRIGHT

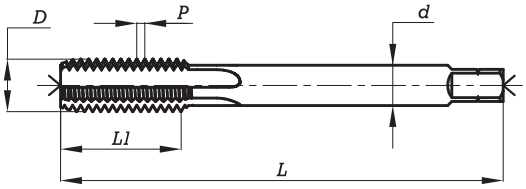
Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M3	0.50	11	48	3.15	2.50	5
M3.5	0.60	13	50	3.55	2.80	5
M4	0.70	13	53	4.00	3.15	6
M4.5	0.75	13	53	4.50	3.55	6
M5	0.80	16	58	5.00	4.00	7
M6	1.00	19	66	6.30	5.00	8
M7	1.00	19	66	7.10	5.60	8
M8	1.25	22	72	8.00	6.30	9
M9	1.25	22	72	9.00	7.10	10
M10	1.50	24	80	10.00	8.00	11

Dimensions in mm
Specifications conform to :
IS 6175 Part 2 : 2002

Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.

PANTHER SERIES STRAIGHT FLUTE TAPS

ISO Metric Ground Threads - Coarse Pitch

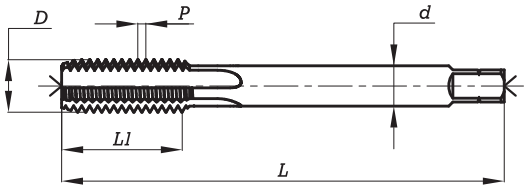


DIN 376 | HSS-E | 6H | 60° | BRIGHT

Application:
These Taps are used to produce internal threads for tougher materials like Forged steel, Stainless steel and difficult to cut materials, etc.

Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M3	0.50	11.00	56.00	2.20	-	-
M3.5	0.60	12.00	56.00	2.50	2.10	5.00
M4	0.70	13.00	63.00	2.80	2.10	5.00
M4.5	0.75	16.00	70.00	3.50	2.70	6.00
M5	0.80	16.00	70.00	3.50	2.70	6.00
M6	1.00	19.00	80.00	4.50	3.40	6.00
M7	1.00	19.00	80.00	5.50	4.30	7.00
M8	1.25	22.00	90.00	6.00	4.90	8.00
M9	1.25	22.00	90.00	7.00	5.50	8.00
M10	1.50	24.00	100.00	7.00	5.50	8.00
M11	1.50	24.00	100.00	8.00	6.20	9.00
M12	1.75	28.00	110.00	9.00	7.00	10.00
M14	2.00	30.00	110.00	11.00	9.00	12.00
M16	2.00	32.00	110.00	12.00	9.00	12.00

Dimensions in mm
Specifications conform to :
DIN 376 : 1971



IS 6175 | HSS-E | 6H | 60° | BRIGHT

Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M3	0.50	11	48	2.24	1.80	4
M3.5	0.60	13	50	2.50	2.00	4
M4	0.70	13	53	3.15	2.50	5
M4.5	0.75	13	53	3.55	2.80	5
M5	0.80	16	58	4.00	3.15	6
M6	1.00	19	66	4.50	3.55	6
M7	1.00	19	66	5.60	4.50	7
M8	1.25	22	72	6.30	5.00	8
M9	1.25	22	72	7.10	5.60	8
M10	1.50	24	80	8.00	6.30	9
M11	1.50	25	85	8.00	6.30	9
M12	1.75	29	89	9.00	7.10	10
M14	2.00	30	95	11.20	9.00	12
M16	2.00	32	102	12.50	10.00	13

Dimensions in mm
Specifications conform to :
IS 6175 Part 3 : 2002

Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.

NINJA HSS-Co8

These Taps are also available in:

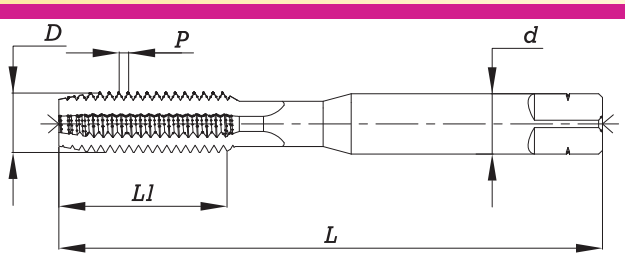
TORPEDO HSS-PM

OUTPUT 20-25% MORE THAN PANTHER !

OUTPUT 40-80% MORE THAN PANTHER !

PANTHER SERIES STRAIGHT FLUTE TAPS

ISO Metric Ground Threads - Fine Pitch



IS 6175 | HSS-E | 6H | 60° | BRIGHT

Application:
These Taps are used to produce internal threads for tougher materials like Forged steel, Stainless steel and difficult to cut materials, etc.

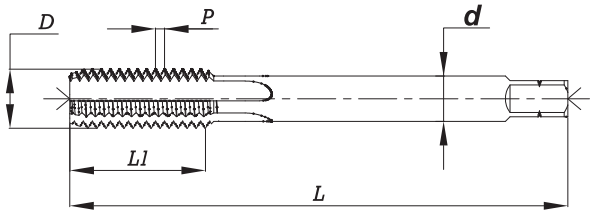
Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M3	0.35	11	48	3.15	2.50	5
M3.5	0.35	13	50	3.55	2.80	5
M4	0.50	13	53	4.00	3.15	6
M4.5	0.50	13	53	4.50	3.55	6
M5	0.50	16	58	5.00	4.00	7
M5.5	0.50	17	62	5.60	4.50	7
M6	0.75	19	66	6.30	5.00	8
M7	0.75	19	66	7.10	5.60	8
M8	0.75	16	66	8.00	6.30	9
M8	1.00	19	69	8.00	6.30	9
M9	0.75	16	66	9.00	7.10	10
M9	1.00	19	69	9.00	7.10	10
M10	0.75	17	73	10.00	8.00	11
M10	1.00	20	76	10.00	8.00	11
M10	1.25	20	76	10.00	8.00	11

Dimensions in mm
Specifications conform to :
IS 6175 Part 2 : 2002

Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.

PANTHER SERIES STRAIGHT FLUTE TAPS

ISO Metric Ground Threads - Fine Pitch



IS 6175 | HSS-E | 6H | 60° | BRIGHT

Application :
These Taps are used to produce internal threads for tougher materials like Forged steel, Stainless steel and difficult to cut materials, etc.

Nominal Diameter (D)	Pitch (P)	Thread Length (L)	Overall Length (L)	Shank Diameter (d) (h9)	Sqaure	
					Size (h11)	Length
M3	0.35	11	48	2.24	1.80	4
M3.5	0.35	13	50	2.50	2.00	4
M4	0.50	13	53	3.15	2.50	5
M4.5	0.50	13	53	3.55	2.80	5
M5	0.50	16	58	4.00	3.15	6
M5.5	0.50	17	62	4.00	3.15	6
M6	0.75	19	66	4.50	3.55	6
M7	0.75	19	66	5.60	4.50	7
M8	0.75	16	66	6.30	5.00	8
M8	1.00	19	69	6.30	5.00	8
M9	0.75	16	66	7.10	5.60	8
M9	1.00	19	69	7.10	5.60	8
M10	0.75	17	73	8.00	6.30	9
M10	1.00	20	76	8.00	6.30	9
M10	1.25	20	76	8.00	6.30	9
M11	0.75	20	80	8.00	6.30	9
M11	1.00	20	80	8.00	6.30	9
M12	1.00	20	80	9.00	7.10	10
M12	1.25	24	84	9.00	7.10	10
M12	1.50	29	89	9.00	7.10	10
M14	1.00	22	87	11.20	9.00	12
M14	1.25	25	90	11.20	9.00	12
M14	1.50	30	95	11.20	9.00	12
M15	1.00	22	87	11.20	9.00	12
M15	1.50	30	95	11.20	9.00	12
M16	1.00	22	92	12.50	10.00	13
M16	1.50	32	102	12.50	10.00	13

Dimensions in mm
Specifications conform to :
IS 6175 Part 3 : 2002

Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.

NINJA HSS-Co8

These Taps are also available in:

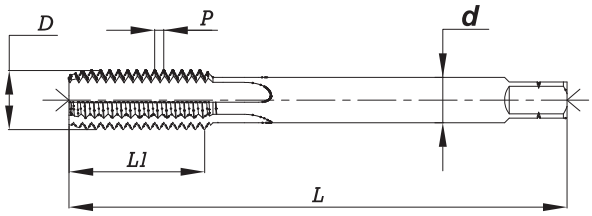
TORPEDO HSS-PM

OUTPUT 20-25% MORE THAN PANTHER !

OUTPUT 40-80% MORE THAN PANTHER !

PANTHER SERIES STRAIGHT FLUTE TAPS

ISO Metric Ground Threads - Fine Pitch



DIN 374 | HSS-E | 6H | 60° | BRIGHT

Application:
These Taps are used to produce internal threads for tougher materials like Forged steel, Stainless steel and difficult to cut materials, etc.

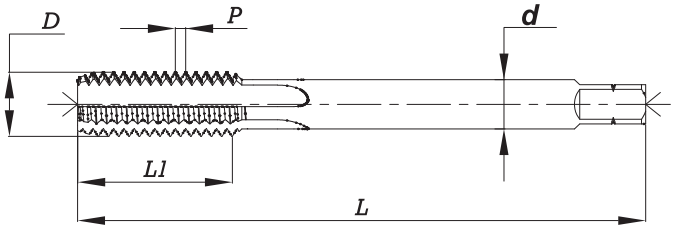
Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M3	0.35	8.00	56.00	2.20	-	-
M3.5	0.35	9.00	56.00	2.50	2.10	5.00
M4	0.50	10.00	63.00	2.80	2.10	5.00
M4.5	0.50	12.00	70.00	3.50	2.70	6.00
M5	0.50	12.00	70.00	3.50	2.70	6.00
M5.5	0.50	12.00	80.00	4.00	3.00	6.00
M6	0.75	14.00	80.00	4.50	3.40	6.00
M7	0.75	14.00	80.00	5.50	4.30	7.00
M8	0.75	18.00	80.00	6.00	4.90	8.00
M8	1.00	22.00	90.00	6.00	4.90	8.00
M9	0.75	18.00	80.00	7.00	5.50	8.00
M9	1.00	22.00	90.00	7.00	5.50	8.00
M10	0.75	20.00	90.00	7.00	5.50	8.00
M10	1.00	20.00	90.00	7.00	5.50	8.00
M10	1.25	24.00	100.00	7.00	5.50	8.00
M11	0.75	20.00	90.00	8.00	6.20	9.00
M11	1.00	20.00	90.00	8.00	6.20	9.00
M12	1.00	22.00	100.00	9.00	7.00	10.00
M12	1.25	22.00	100.00	9.00	7.00	10.00
M12	1.50	22.00	100.00	9.00	7.00	10.00
M14	1.00	22.00	100.00	11.00	9.00	12.00
M14	1.25	22.00	100.00	11.00	9.00	12.00
M14	1.50	22.00	100.00	11.00	9.00	12.00
M15	1.00	22.00	100.00	12.00	9.00	12.00
M15	1.50	22.00	100.00	12.00	9.00	12.00
M16	1.00	22.00	100.00	12.00	9.00	12.00
M16	1.50	22.00	100.00	12.00	9.00	12.00

Dimensions in mm
Specifications conform to :
DIN 374 : 1998

Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.

PANTHER SERIES STRAIGHT FLUTE TAPS

ISO Metric Ground Threads - Coarse Pitch



IS 6175 | HSS-E | 6H | 60° | BRIGHT

Application :
These Taps are used to produce internal threads for tougher materials like Forged steel, Stainless steel and difficult to cut materials, etc.

Nominal Diameter (D)	Pitch (P)	Thread Length (L)	Overall Length (L)	Shank Diameter (d) (h9)	Sqaure	
					Size(h11)	Length
M6	1.00	19	89	4.50	3.55	6
M7	1.00	19	89	5.60	4.50	7
M8	1.25	22	97	6.30	5.00	8
M9	1.25	22	97	7.10	5.60	8
M10	1.50	24	108	8.00	6.30	9
M11	1.50	25	115	8.00	6.30	9
M12	1.75	29	119	9.00	7.10	10
M14	2.00	30	127	11.20	9.00	12
M16	2.00	32	137	12.50	10.00	13

Dimensions in mm
Specifications conform to :
IS 6175 Part 4 : 2002

Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.

NINJA HSS-Co8

These Taps are also available in:

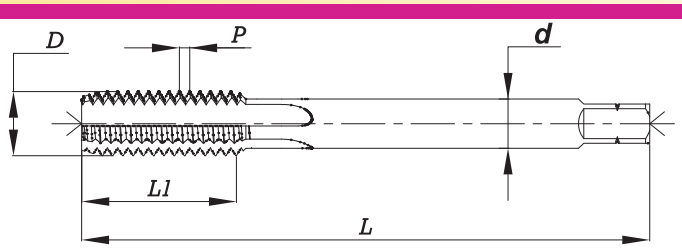
TORPEDO HSS-PM

OUTPUT 20-25% MORE THAN PANTHER !

OUTPUT 40-80% MORE THAN PANTHER !

PANTHER SERIES STRAIGHT FLUTE TAPS

ISO Metric Ground Threads - Fine Pitch



IS 6175 | HSS-E | 6H | 60° | BRIGHT

Application :
These Taps are used to produce internal threads for tougher materials like Forged steel, Stainless steel and difficult to cut materials, etc.

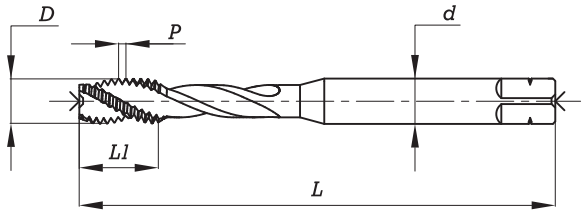
Nominal Diameter (D)	Pitch (P)	Thread Length (L)	Overall Length (L)	Shank Diameter (d) (h9)	Sqaure	
					Size(h11)	Length
M6	0.75	19	89	4.50	3.55	6
M7	0.75	19	89	5.60	4.50	7
M8	0.75	16	91	6.30	5.00	8
M8	1.00	19	97	6.30	5.00	8
M9	0.75	16	94	7.10	5.60	8
M9	1.00	19	97	7.10	5.60	8
M10	0.75	17	104	8.00	6.30	9
M10	1.00	20	108	8.00	6.30	9
M10	1.25	20	108	8.00	6.30	9
M11	0.75	20	110	8.00	6.30	9
M11	1.00	20	110	8.00	6.30	9
M12	1.00	20	110	9.00	7.10	10
M12	1.25	24	119	9.00	7.10	10
M12	1.50	29	119	9.00	7.10	10
M14	1.00	22	124	11.20	9.00	12
M14	1.25	25	127	11.20	9.00	12
M14	1.50	30	127	11.20	9.00	12
M15	1.00	22	124	11.20	9.00	12
M15	1.50	30	127	11.20	9.00	12
M16	1.00	22	127	12.50	10.00	13
M16	1.50	32	137	12.50	10.00	13

Dimensions in mm
Specifications conform to :
IS 6175 Part 4 : 2002

Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.

PANTHER SERIES SPIRAL FLUTE TAPS

ISO Metric Ground Threads - Coarse Pitch

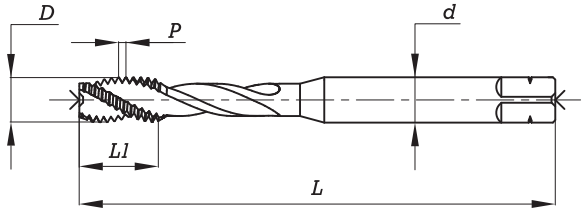


DIN 371 | HSS-E | 6H | 60° | BRIGHT

Application:
These Taps are best suited for Blind Hole applications and are specially designed to eliminate chip clogging, retracting chips backward direction.

Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M3	0.50	8	56	3.5	2.7	6
M3.5	0.60	9	56	4	3	6
M4	0.70	9	63	4.5	3.4	6
M4.5	0.75	9	70	6	4.9	8
M5	0.80	11	70	6	4.9	8
M6	1.00	13	80	6	4.9	8
M7	1.00	13	80	7	5.5	8
M8	1.25	15	90	8	6.2	9
M9	1.25	15	90	9	7	10
M10	1.50	17	100	10	8	11

Dimensions in mm
Specifications conform to :
DIN 371 : 1971



IS 6175 | HSS-E | 6H | 60° | BRIGHT

Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M3	0.50	8	48	3.15	2.50	5
M3.5	0.60	9	50	3.55	2.80	5
M4	0.70	9	53	4.00	3.15	6
M4.5	0.75	9	53	4.50	3.55	6
M5	0.80	11	58	5.00	4.00	7
M6	1.00	13	66	6.30	5.00	8
M7	1.00	13	66	7.10	5.60	8
M8	1.25	15	72	8.00	6.30	9
M9	1.25	15	72	9.00	7.10	10
M10	1.50	17	80	10.00	8.00	11

Dimensions in mm
Specifications conform to :
IS 6175 Part 2 : 2002

Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.

NINJA HSS-Co8

These Taps are also available in:

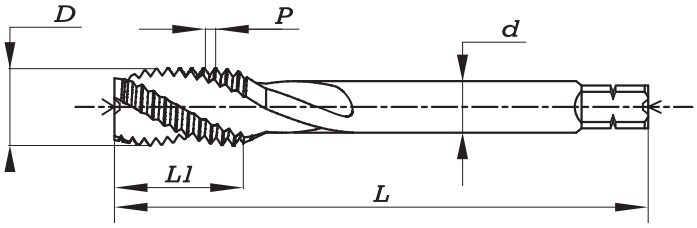
TORPEDO HSS-PM

OUTPUT 20-25% MORE THAN PANTHER !

OUTPUT 40-80% MORE THAN PANTHER !

PANTHER SERIES SPIRAL FLUTE TAPS

ISO Metric Ground Threads - Coarse Pitch



IS 6175 | HSS-E | 6H | 60° | BRIGHT

Application:
These Taps are best suited for Blind Hole applications and are specially designed to eliminate chip clogging, retracting chips backward direction.

Nominal Diameter (D)	Pitch (P)	Thread Length (L)	Overall Length (L)	Shank Diameter (d) (h9)	Sqaure	
					Size (h11)	Length
M3	0.50	8	48	2.24	1.80	4
M3.5	0.60	9	50	2.50	2.00	4
M4	0.70	9	53	3.15	2.50	5
M4.5	0.75	9	53	3.55	2.80	5
M5	0.80	11	58	4.00	3.15	6
M6	1.00	13	66	4.50	3.55	6
M7	1.00	13	66	5.60	4.50	7
M8	1.25	15	72	6.30	5.00	8
M9	1.25	15	72	7.10	5.60	8
M10	1.50	17	80	8.00	6.30	9
M11	1.50	18	85	8.00	6.30	9
M12	1.75	20	89	9.00	7.10	10
M14	2.00	21	95	11.20	9.00	12
M16	2.00	22	102	12.50	10.00	13

Dimensions in mm
Specifications conform to :
IS 6175 Part 3 : 2002

Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.

NINJA HSS-Co8

These Taps are also available in:

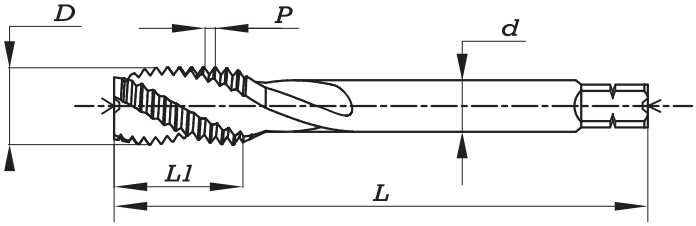
TORPEDO HSS-PM

OUTPUT 20-25% MORE THAN PANTHER !

OUTPUT 40-80% MORE THAN PANTHER !

PANTHER SERIES SPIRAL FLUTE TAPS

ISO Metric Ground Threads - Coarse Pitch



DIN 376 | HSS-E | 6H | 60° | BRIGHT

Application:
These Taps are best suited for Blind Hole applications and are specially designed to eliminate chip clogging, retracting chips backward direction.

Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M3	0.50	8.00	56.00	2.20	-	-
M3.5	0.60	9.00	56.00	2.50	2.10	5.00
M4	0.70	9.00	63.00	2.80	2.10	5.00
M4.5	0.75	9.00	70.00	3.50	2.70	6.00
M5	0.80	11.00	70.00	3.50	2.70	6.00
M6	1.00	13.00	80.00	4.50	3.40	6.00
M7	1.00	13.00	80.00	5.50	4.30	7.00
M8	1.25	15.00	90.00	6.00	4.90	8.00
M9	1.25	15.00	90.00	7.00	5.50	8.00
M10	1.50	17.00	100.00	7.00	5.50	8.00
M11	1.50	18.00	100.00	8.00	6.20	9.00
M12	1.75	20.00	110.00	9.00	7.00	10.00
M14	2.00	21.00	110.00	11.00	9.00	12.00
M16	2.00	22.00	110.00	12.00	9.00	12.00

Dimensions in mm
Specifications conform to :
DIN 376 : 1971

Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.

NINJA HSS-Co8

These Taps are also available in:

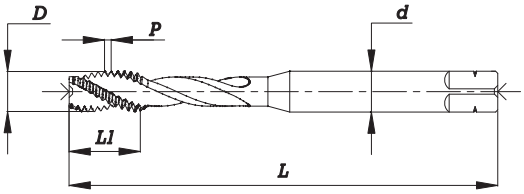
TORPEDO HSS-PM

OUTPUT 20-25% MORE THAN PANTHER !

OUTPUT 40-80% MORE THAN PANTHER !

PANTHER SERIES SPIRAL FLUTE TAPS

ISO Metric Ground Threads - Fine Pitch



IS 6175 | HSS-E | 6H | 60° | BRIGHT

Application:
These Taps are best suited for Blind Hole applications and are specially designed to eliminate chip clogging, retracting chips backward direction.

Nominal Diameter (D)	Pitch (P)	Thread Length (L)	Overall Length (L)	Shank Diameter (d) (h9)	Sqaure	
					Size (h11)	Length
M3	0.35	8	48	3.15	2.50	5
M3.5	0.35	9	50	3.55	2.80	5
M4	0.50	9	53	4.00	3.15	6
M4.5	0.50	9	53	4.50	3.55	6
M5	0.50	11	58	5.00	4.00	7
M5.5	0.50	12	62	5.60	4.50	7
M6	0.75	13	66	6.30	5.00	8
M7	0.75	13	66	7.10	5.60	8
M8	0.75	11	66	8.00	6.30	9
M8	1.00	13	69	8.00	6.30	9
M9	0.75	11	66	9.00	7.10	10
M9	1.00	13	69	9.00	7.10	10
M10	0.75	12	73	10.00	8.00	11
M10	1.00	14	76	10.00	8.00	11
M10	1.25	14	76	10.00	8.00	11

Dimensions in mm
Specifications conform to :
IS 6175 Part 2 : 2002

Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.

NINJA HSS-Co8

These Taps are also available in:

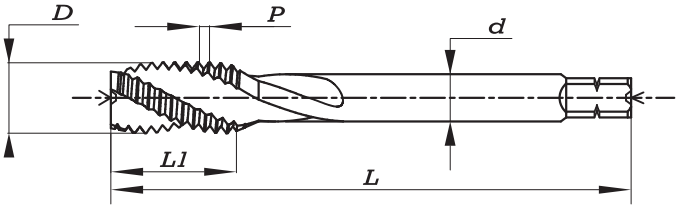
TORPEDO HSS-PM

OUTPUT 20-25% MORE THAN PANTHER !

OUTPUT 40-80% MORE THAN PANTHER !

PANTHER SERIES SPIRAL FLUTE TAPS

ISO Metric Ground Threads - Fine Pitch



IS 6175 | HSS-E | 6H | 60° | BRIGHT

Application:
These Taps are best suited for Blind Hole applications and are specially designed to eliminate chip clogging, retracting chips backward direction.

Nominal Diameter (D)	Pitch (P)	Thread Length (L)	Overall Length (L)	Shank Diameter (d) (h9)	Sqaure	
					Size (h11)	Length
M3	0.35	8	48	2.24	1.80	4
M3.5	0.35	9	50	2.50	2.00	4
M4	0.50	9	53	3.15	2.50	5
M4.5	0.50	9	53	3.55	2.80	5
M5	0.50	11	58	4.00	3.15	6
M5.5	0.50	12	62	4.00	3.15	6
M6	0.75	13	66	4.50	3.55	6
M7	0.75	13	66	5.60	4.50	7
M8	0.75	11	66	6.30	5.00	8
M8	1.00	13	69	6.30	5.00	8
M9	0.75	11	66	7.10	5.60	8
M9	1.00	13	69	7.10	5.60	8
M10	0.75	12	73	8.00	6.30	9
M10	1.00	14	76	8.00	6.30	9
M10	1.25	14	76	8.00	6.30	9
M11	0.75	14	80	8.00	6.30	9
M11	1.00	14	80	8.00	6.30	9
M12	1.00	14	80	9.00	7.10	10
M12	1.25	17	84	9.00	7.10	10
M12	1.50	20	89	9.00	7.10	10
M14	1.00	15	87	11.20	9.00	12
M14	1.25	18	90	11.20	9.00	12
M14	1.50	21	95	11.20	9.00	12
M15	1.00	15	87	11.20	9.00	12
M15	1.50	21	95	11.20	9.00	12
M16	1.00	15	92	12.50	10.00	13
M16	1.50	22	102	12.50	10.00	13

Dimensions in mm
Specifications conform to :
IS 6175 Part 3 : 2002

Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.

NINJA HSS-Co8

These Taps are also available in:

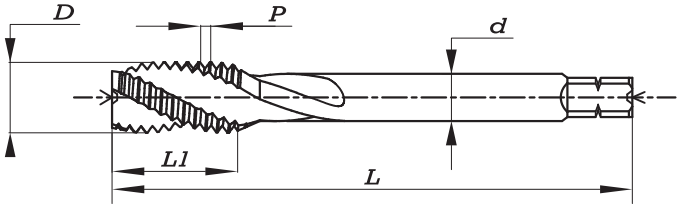
TORPEDO HSS-PM

OUTPUT 20-25% MORE THAN PANTHER !

OUTPUT 40-80% MORE THAN PANTHER !

PANTHER SERIES SPIRAL FLUTE TAPS

ISO Metric Ground Threads - Fine Pitch



DIN 374 | HSS-E | 6H | 60° | BRIGHT

Application:
These Taps are best suited for Blind Hole applications and are specially designed to eliminate chip clogging, retracting chips backward direction.

Nominal Diameter (D)	Pitch (P)	Thread Length (L1)	Overall Length (L)	Shank diameter (d) (h9)	Square	
					Size (h11)	Length
M3	0.35	8.00	56.00	2.20	-	-
M3.5	0.35	9.00	56.00	2.50	2.10	5.00
M4	0.50	9.00	63.00	2.80	2.10	5.00
M4.5	0.50	9.00	70.00	3.50	2.70	6.00
M5	0.50	11.00	70.00	3.50	2.70	6.00
M5.5	0.50	12.00	80.00	4.00	3.00	6.00
M6	0.75	13.00	80.00	4.50	3.40	6.00
M7	0.75	13.00	80.00	5.50	4.30	7.00
M8	0.75	11.00	80.00	6.00	4.90	8.00
M8	1.00	13.00	90.00	6.00	4.90	8.00
M9	0.75	11.00	80.00	7.00	5.50	8.00
M9	1.00	13.00	90.00	7.00	5.50	8.00
M10	0.75	12.00	90.00	7.00	5.50	8.00
M10	1.00	14.00	90.00	7.00	5.50	8.00
M10	1.25	14.00	100.00	7.00	5.50	8.00
M11	0.75	14.00	90.00	8.00	6.20	9.00
M11	1.00	14.00	90.00	8.00	6.20	9.00
M12	1.00	14.00	100.00	9.00	7.00	10.00
M12	1.25	17.00	100.00	9.00	7.00	10.00
M12	1.50	20.00	100.00	9.00	7.00	10.00
M14	1.00	15.00	100.00	11.00	9.00	12.00
M14	1.25	18.00	100.00	11.00	9.00	12.00
M14	1.50	21.00	100.00	11.00	9.00	12.00
M15	1.00	15.00	100.00	12.00	9.00	12.00
M15	1.50	21.00	100.00	12.00	9.00	12.00
M16	1.00	15.00	100.00	12.00	9.00	12.00
M16	1.50	22.00	100.00	12.00	9.00	12.00

Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.

Dimensions in mm
Specifications conform to :
DIN 374 : 1998

NINJA HSS-Co8

These Taps are also available in:

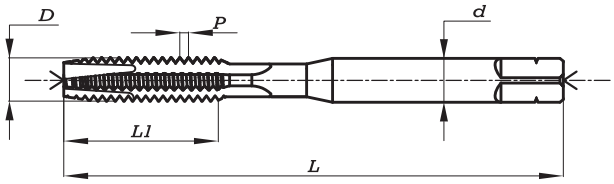
TORPEDO HSS-PM

OUTPUT 20-25% MORE THAN PANTHER !

OUTPUT 40-80% MORE THAN PANTHER !

PANTHER SERIES SPIRAL POINT TAPS

ISO Metric Ground Threads - Coarse Pitch

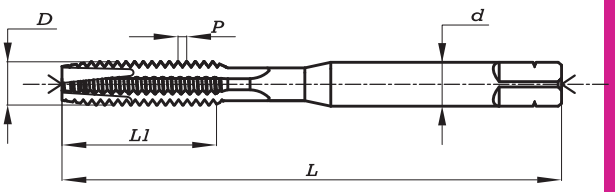


DIN 371 | HSS-E | 6H | 60° | BRIGHT

Application:
These taps are specially designed for Through Hole application and are suitable for higher cutting speed for higher productivity.

Nominal Diameter (D)	Pitch (P)	Thread Length (L)	Overall Length (L)	Shank Diameter (d) (h9)	Sqaure	
					Size(h11)	Length
M3	0.50	11	56	3.5	2.7	6
M3.5	0.60	12	56	4	3	6
M4	0.70	13	63	4.5	3.4	6
M4.5	0.75	16	70	6	4.9	8
M5	0.80	16	70	6	4.9	8
M6	1.00	19	80	6	4.9	8
M7	1.00	19	80	7	5.5	8
M8	1.25	22	90	8	6.2	9
M9	1.25	22	90	9	7	10
M10	1.50	24	100	10	8	11

Dimensions in mm
Specifications conform to :
DIN 371 : 1971



IS 6175 | HSS-E | 6H | 60° | BRIGHT

Nominal Diameter (D)	Pitch (P)	Thread Length (L)	Overall Length (L)	Shank Diameter (d) (h9)	Sqaure	
					Size(h11)	Length
M3	0.50	11	48	3.15	2.50	5
M3.5	0.60	13	50	3.55	2.80	5
M4	0.70	13	53	4.00	3.15	6
M4.5	0.75	13	53	4.50	3.55	6
M5	0.80	16	58	5.00	4.00	7
M6	1.00	19	66	6.30	5.00	8
M7	1.00	19	66	7.10	5.60	8
M8	1.25	22	72	8.00	6.30	9
M9	1.25	22	72	9.00	7.10	10
M10	1.50	24	80	10.00	8.00	11

Dimensions in mm
Specifications conform to :
IS 6175 Part 2 : 2002

Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.

NINJA HSS-Co8

These Taps are also available in:

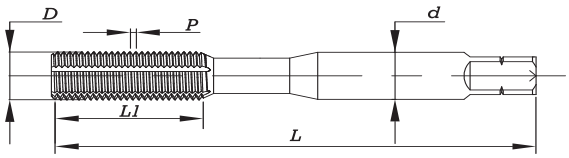
TORPEDO HSS-PM

OUTPUT 20-25% MORE THAN PANTHER !

OUTPUT 40-80% MORE THAN PANTHER !

PANTHER SERIES ROLL FORMING TAPS

ISO Metric Ground Threads - Coarse Pitch

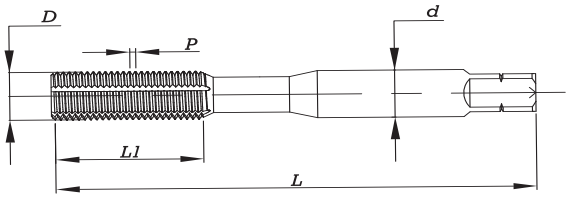


Application:
These taps are best suitable for both Blind & Through-Hole application. Roll forming operation is chip-less operation, forming a thread by displacement of material and not by cutting, hence these taps are best suitable for soft material like Aluminium, Brass, Bronze, etc.

DIN 371 | HSS-E | 6H | 60° | BRIGHT

Nominal Diameter (D)	Pitch (P)	Thread Length (L)	Overall Length (L)	Shank Diameter (d) (h9)	Sqaure	
					Size (h11)	Length
M3	0.50	11	56	3.5	2.7	6
M3.5	0.60	12	56	4	3	6
M4	0.70	13	63	4.5	3.4	6
M4.5	0.75	16	70	6	4.9	8
M5	0.80	16	70	6	4.9	8
M6	1.00	19	80	6	4.9	8
M7	1.00	19	80	7	5.5	8
M8	1.25	22	90	8	6.2	9
M9	1.25	22	90	9	7	10
M10	1.50	24	100	10	8	11

Dimensions in mm
Specifications conform to :
DIN 371 : 1971



IS 6175 | HSS-E | 6H | 60° | BRIGHT

Nominal Diameter (D)	Pitch (P)	Thread Length (L)	Overall Length (L)	Shank Diameter (d) (h9)	Sqaure	
					Size (h11)	Length
M3	0.50	11	48	3.15	2.50	5
M3.5	0.60	13	50	3.55	2.80	5
M4	0.70	13	53	4.00	3.15	6
M4.5	0.75	13	53	4.50	3.55	6
M5	0.80	16	58	5.00	4.00	7
M6	1.00	19	66	6.30	5.00	8
M7	1.00	19	66	7.10	5.60	8
M8	1.25	22	72	8.00	6.30	9
M9	1.25	22	72	9.00	7.10	10
M10	1.50	24	80	10.00	8.00	11

Dimensions in mm
Specifications conform to :
IS 6175 Part 2 : 2002

Coatings (TiN,TiCN & TiAlN) and Surface treatments (FBT) are available on request.

TECHNICAL SUPPLY CONDITIONS OF SCREWING TAPS

1. Screwing Taps are normally of the non serial type taps with straight flutes for the RH cutting.

2. Serial Taps, Helical flute taps and special taps are manufactured against specific orders.

3. Intermediate size/diameters if ordered, shall be supplied with the same dimensions on the next bigger diameter.

4. Other general requirements are maintained according to IS: 6171 - Technical supply conditions for high speed steel screwing taps.

5. Hardness:

Cutting Portion	: 760 HV to 900 HV
Driving Square	: 320 HV to maximum Hardness equal to cutting portion (In case of one piece construction)
	: 320 HV to 450 HV (In case of two piece construction)

5.1 Chamfer Dimensions:

No. of Taps in a set	Type of chamfer		Chamfer angle	Length (Approx)
	Serial	Non - serial		
3 (For coarse pitch Threads)	Rougher Intermediate Finisher	Taper Second Bottoming	5^0 10^0 20^0	8 threads 4 threads *2 to 3 threads
2 (For Fine pitch)	Rougher Finisher	Taper Bottoming	7^0 20^0	6 threads *2 to 3 threads
1	Nut		2^0	20 Threads

*The approximate word indicated in the column heading is not applicable here, as the range has been specified.

5.2 Radial run out when taps are held between centers (T.I.R.)

Diameter in mm		Radial runout TIR (Micron)		
Above	Up to and including	Taper lead	Thread dia	Shank dia
-	10	30	30	30
10	18	30	30	30
18	30	35	35	40
30	40	40	35	40
40	-	40	40	40

5.3 Taps are usually supplied with a back taper of 1:1000 maximum and the thread diameters are measured on 2nd or 3rd thread behind the chamfer angle.

Numbers of taps in a set	Type	Major diameter Min	Pitch Diameter	
			Min.	Max.
3	Rougher Intermediate Finisher	dB Min– 0.75p dB Min– 0.35p dB Min	d2BMin – 0.25p d2B Min–0.08p d2B Min	d2B Max–0.25p d2B Max–0.08p d2B Max
2	Rougher Finisher	dB Min–0.45p dB Min	d2B Min–0.12p d2B Min	d2B Max–0.12p d2B Max

Where,

dB Min – Minimum major diameter of finisher tap.

d2B Min – Minimum pitch diameter of finisher tap.

d2B Max – Maximum pitch diameter of finisher tap.

P – Pitch.

6. Serial taps can be supplied in sets or individual pieces as required by the purchaser.

7. Taps are normally supplied with tolerance zone 6H. However taps with other tolerance zone are manufactured against specific orders.

   ISO Metric taps with thread class 4H are used for tapping internal threads of tolerance zones 4H & 5H - recommended for close fits.

   Taps with thread tolerance class 6H to be used for tapping internal threads of tolerance zones 4G, 5G & 6H - recommended for medium fits.

   Taps with thread tolerance class 7H to be used for tapping internal threads of tolerance zones 6G, 7H & 8H - recommended for free fits.

8. Tolerance on threaded portion of taps, other than Pipe thread taps are maintained according to IS 6173 Part1:1992

Recommended Rake Angle and Cutting Speed for Taps

Material	Rake Angle	*Cutting Speed m/min
Steel up to 50 Kg/mm2 Tensile Strength	15 - 18	7 - 10
Steel 50-- 70Kg/mm2 Tensile Strength	12 -15	5 - 8
Steel 70 - 90Kg/mm2 Tensile Strength	9 - 12	4 - 6
Steel (Alloy) 90 -100Kg/mm2 Tensile Strength	6 - 10	2 - 3
Steel casting up to 70kg /mm2 Tensile Strength	12 - 15	3 - 5
Malleable Cast Iron	6 - 10	5 - 8
Cast Iron above 200 BHN	0 - 3	2 - 3
Cast Iron soft	3 - 5	8 - 10
Stainless Steel	10 - 12	3 - 5
Brass	0 - 3	8 - 10
Bronze	6 - 12	6 - 8
Copper long Chipped	15 - 20	8 - 12
Copper short Chipped	6 - 9	8 - 12
Aluminium	20 - 25	10 - 18
Synthetic and Plastic material	0 - 3	3 - 5

*The speed mentioned is recommended speed only. Under favourable and near to ideal working condition, this can be further increased.

CUTTING PARAMETERS IN TAPPING & RECOMMENDED CUTTING FLUIDS

The suggested peripheral speed shown in the following table is only starting points which may be varied considerably to suit service conditions.

Work Material	Speed 'Vc'		Cutting Fluids
	Metre/min	Ft./min	
Aluminium	15-45	50-150	Kerosene & Lard Oil or Kerosene & Light Oil
Aluminium Broze	6-24	20-80	Soluble Oil
Bakelite	15-30	50-100	Dry
Brass	15-60	50-200	Soluble Oil or Light BaseOil
Cast Iron	15-30	50-100	Dry or Soluble Oil
Copper	9-18	30-60	Mineral Oil with lard or Light Base Oil
Fibre	24-27	80-90	Dry
Magnesium	22-60	75-200	Light Base Oil Diluted with 40% - 50% Kerosene
Malleable Iron	10-18	35-60	Soluble Oil or Light BaseOil
Manganese Bronze	9-18	30-60	Mineral Oil with lard or Light Base Oil
Monel Metal	6-12	20-40	Sulphur Base Oil
Naval brass	24-30	80-100	Mineral Oil with lard or Light Base Oil
Phosphor Bronze	9-18	30-60	Mineral Oil with lard or Light Base Oil
PLASTICS:			
Thermo – plastic	15-30	50-100	Dry or Air Jet
Thermo – setting	15-30	50-100	Dry or Air Jet
STEELS:			
Free Machining AISI 1100 Series	18-30	60-100	Soluble Oil or Sulphur Base Oil
Low Carbon (up to 0.25%)	12-24	60-80	Soluble Oil or Sulphur Base Oil
Medium Carbon Annealed (0.3 to 0.6%)	9-18	30-60	Sulphur Base Oil
Heat treated (0.3 to 0.6% carbon) 224 -283 brinell	7-15	25-50	Chlorinated sulphur base oil
Stainless steel	1.5-10	5-35	Chlorinated sulphur base oil
Titanium alloys	3-12	10-40	Chlorinated sulphur base oil
Zinc – Die Castings	18-45	60-150	Kerosene & Lard Oil

TAP DRILL SIZES

Recommendations for drills for use prior to tapping
ISO metric Screw threads
(60° Thread angle)

Nominal diameter (mm)	Pitch (mm)	Drill dia (mm)
1.00	0.25	0.75
1.10	0.25	0.85
1.20	0.25	0.95
1.40	0.30	1.10
1.60	0.35	1.25
1.80	0.35	1.45
2.00	0.40	1.60
2.20	0.45	1.75
2.50	0.35	2.15
2.50	0.45	2.05
3.00	0.35	2.65
3.00	0.50	2.50
3.50	0.35	3.15
3.50	0.60	2.90
4.00	0.50	3.50
4.00	0.70	3.30
4.50	0.50	4.00
4.50	0.75	3.70
5.00	0.50	4.50
5.00	0.80	4.20
5.50	0.50	5.00
6.00	0.75	5.20
6.00	1.00	5.00
7.00	0.75	6.20
7.00	1.00	6.00
8.00	0.75	7.20
8.00	1.00	7.00
8.00	1.25	6.80
9.00	0.75	8.20
9.00	1.00	8.00
9.00	1.25	7.80
10.00	0.75	9.20
10.00	1.00	9.00
10.00	1.25	8.80
10.00	1.50	8.50
11.00	0.75	10.20
11.00	1.00	10.00
11.00	1.50	9.50

Nominal diameter (mm)	Pitch (mm)	Drill dia (mm)
12.00	1.00	11.00
12.00	1.25	10.80
12.00	1.50	10.50
12.00	1.75	10.20
14.00	1.00	13.00
14.00	1.25	12.80
14.00	1.50	12.50
14.00	2.00	12.00
15.00	1.00	14.00
15.00	1.50	13.50
16.00	1.00	15.00
16.00	1.50	14.50
16.00	2.00	14.00
17.00	1.00	16.00
17.00	1.50	15.50
18.00	1.00	17.00
18.00	1.50	16.50
18.00	2.00	16.00
18.00	2.50	15.50
20.00	1.00	19.00
20.00	1.50	18.50
20.00	2.00	18.00
20.00	2.50	17.50
22.00	1.00	21.00
22.00	1.50	20.50
22.00	2.00	20.00
22.00	2.50	19.50
24.00	1.00	23.00
24.00	1.50	22.50
24.00	2.00	22.00
24.00	3.00	21.00
25.00	1.00	24.00
25.00	1.50	23.50
25.00	2.00	23.00
26.00	1.50	24.50
27.00	1.00	26.00
27.00	1.50	25.50
27.00	2.00	25.00

TAP DRILL SIZES

Recommendations for drills for use prior to tapping
ISO metric Screw threads
(60° Thread angle)

Nominal diameter (mm)	Pitch (mm)	Drill dia (mm)
27.00	3.00	24.00
28.00	1.00	27.00
28.00	1.50	26.50
28.00	2.00	26.00
30.00	1.00	29.00
30.00	1.50	28.50
30.00	2.00	28.00
30.00	3.00	27.00
30.00	3.50	26.50
32.00	1.50	30.50
32.00	2.00	30.00
33.00	1.50	31.50
33.00	2.00	31.00
33.00	3.00	30.00
33.00	3.50	29.50
35.00	1.50	33.50
36.00	1.50	34.50
36.00	2.00	34.00
36.00	3.00	33.00
36.00	4.00	32.00
38.00	1.50	36.50
39.00	1.50	37.50
39.00	2.00	37.00
39.00	3.00	36.00
39.00	4.00	35.00
40.00	1.50	38.50
40.00	2.00	38.00
40.00	3.00	37.00

Nominal diameter (mm)	Pitch (mm)	Drill dia (mm)
42.00	1.50	40.50
42.00	2.00	40.00
42.00	3.00	39.00
42.00	4.00	38.00
42.00	4.50	37.50
45.00	1.50	43.50
45.00	2.00	43.00
45.00	3.00	42.00
45.00	4.00	41.00
45.00	4.50	40.50
48.00	1.50	46.50
48.00	2.00	46.00
48.00	3.00	45.00
48.00	4.00	44.00
48.00	5.00	43.00
50.00	1.50	48.50
50.00	2.00	48.00
50.00	3.00	47.00
52.00	1.50	50.50
52.00	2.00	50.00
52.00	3.00	49.00
52.00	4.00	48.00
52.00	5.00	47.00
56.00	5.50	50.50

TAP DRILL SIZES

Recommendations for drills for use prior to tapping screw threads
BSW and BSF Form
(55° Thread angle)

BSW BRITISH STD.WHITWORTH		
Nominal diameter (Inch)	TPI	Drill dia (mm)
1/8	40	2.55
3/16	24	3.7
1/4	20	5.1
5/16	18	6.5
3/8	16	7.9
7/16	14	9.3
1/2	12	10.5
9/16	12	12.1
5/8	11	13.5
11/16	11	15.0
3/4	10	16.25
7/8	9	19.25
1	8	22.0
1.1/8	7	24.75
1.1/4	7	28.0
1.1/2	6	33.5
1.3/4	5	39.0
2	4.5	44.5
2.1/4	4	51.0
2.1/2	4	57.0
2.3/4	3.5	62.14
3	3.5	68.30

BSF BRITISH STD.FINE		
Nominal diameter (Inch)	TPI	Drill dia (mm)
3/16	32	4
7/32	28	4.6
1/4	26	5.3
9/32	26	6.1
5/16	22	6.8
3/8	20	8.3
7/16	18	9.7
1/2	16	11.1
9/16	16	12.7
5/8	14	14
11/16	14	15.5
3/4	12	16.75
7/8	11	19.75
1	10	22.75
1. 1/8	9	25.5
1.1/4	9	28.5
1. 3/8	8	31.5
1.1/2	8	34.5
1.5/8	8	37.90
1.3/4	7	41.00
2	7	47.00
2.1/4	6	53.00
2.1/2	6	58.00
2.3/4	6	63.35
3	5	69.50

BA – BRITISH ASSOCIATION (47 1/2° Thread Angle)

Designating no.	Diameter (mm)	Pitch (mm)	Nearest Drill Size (mm)
0	6.0	1.00	5.10
1	5.3	0.90	4.50
2	4.7	0.81	4.00
3	4.1	0.73	3.40
4	3.6	0.66	3.00
5	3.2	0.59	2.65
6	2.8	0.53	2.30

TAP DRILL SIZES

Recommendations for drills For use prior to tapping screw threads
BSP (Parallel) and BSPT (Taper) Form
(55° Thread angle)

BSP (Parallel)		
Nominal diameter(inch)	TPI	Nearest Drill size (mm/inch)
1/8	28	8.80
1/4	19	11.80
3/8	19	15.25
1/2	14	3/4
5/8	14	53/64
3/4	14	24.50
7/8	14	28.25
1	11	30.75
1.1/4	11	39.50
1.1/2	11	1.25/32
1.3/4	11	51.00
2	11	2.1/4
2.1/4	11	(63.26)
2.1/2	11	(72.73)
2.3/4	11	(79.08)
3	11	(85.43)
3.1/2	11	(97.88)
4	11	(110.58)

BSPT (Taper)		
Nominal diameter (inch)	TPI	Nearest Drill size (mm/inch)
1/8	28	8.40
1/4	19	11.20
3/8	19	14.75
1/2	14	2.3/32
3/4	14	15/16
1	11	30.00
1.1/4	11	38.50
1.1/2	11	44.50
2	11	56.00
2.1/2	11	2.13/16
3	11	84.35
3.1/2	11	109.42

Sizes given within bracket are hole sizes
Corresponding drill sizes are non-standard

TAP DRILL SIZES

Recommendations for drills for use prior to tapping screw threads
Parallel and Taper Pipe

Pipe Threads – Taper 'Rc' series (55° Thread angle)			
Nominal Dia (Inch)	TPI	Hole Diameter Cylinder (mm)	Hole Diameter Taper (Large Dia) (mm)
1/8	28	8.3	8.50
1/4	19	11.00	11.40
3/8	19	14.50	14.90
1/2	14	18.10	18.50
3/4	14	23.50	24.00
1	11	29.60	30.10
1.1/4	11	38.10	38.80
1.1/2	11	44.00	44.70
2	11	55.60	56.50

Pipe Threads – Taper 'Rp' series (60° Thread angle)		
Nominal Dia (Inch)	TPI	Hole Diameter Taper (mm)
1/8	28	8.60
1/4	19	11.50
3/8	19	15.00
1/2	14	18.50
3/4	14	24.00
1	11	30.25
1. 1/4	11	39.00
1 .1/2	11	45.00
2	11	56.50

American National Taper Pipe Hand taps (NPT) (60° Thread Angle)			
Nominal Dia (Inch)	TPI	Hole Diameter Cylinder (mm)	Hole Diameter Taper (Large Dia) (mm)
1/8	27	8.5	8.70
1/4	18	11.00	11.30
3/8	18	14.40	14.70
1/2	14	17.80	18.20
3/4	14	23.10	23.60
1	11.1/2	29.10	29.60
1.1/4	11.1/2	37.80	38.50
1.1/2	11.1/2	43.90	44.40
2	11.1/2	55.90	56.40

Pipe Threads – Parallel 'G' series (55° Thread Angle)		
Nominal Dia (Inch)	TPI	Hole Diameter Taper (mm)
1/8	28	8.80
1/4	19	11.80
3/8	19	15.25
1/2	14	19.00
5/8	14	21.00
3/4	14	24.50
7/8	14	28.25
1	11	30.75
1.1/4	11	39.50
1.1/2	11	45.00
1.3/4	11	51.00
2	11	57.00

TAP DRILL SIZES

Recommendations for drills for use prior to tapping screw threads
UNC and UNF Form
(60° Thread angle)

UNC UNIFIED COARSE		
Nominal diameter (inch)	TPI	Drill dia (mm)
No.1	64.00	1.55
No.2	56.00	1.85
No.3	48.00	2.10
No.4	40.00	2.35
No.5	40.00	2.65
No.6	32.00	2.85
No.8	32.00	3.50
No.10	24.00	3.90
No.12	24.00	4.50
1/4	20.00	5.10
5/16	18.00	6.60
3/8	16.00	8.00
7/16	14.00	9.40
1/2	13.00	10.80
9/16	12.00	12.20
5/8	11.00	13.50
3/4	10.00	16.50
7/8	9.00	19.50
1	8.00	22.25
1. 1/8	7.00	25.00
1. 1/ 4	7.00	28.00
1.3/8	6.00	30.75
1. 1/2	6.00	34.00
1. 3/4	5.00	39.50
2	4.50	45.00

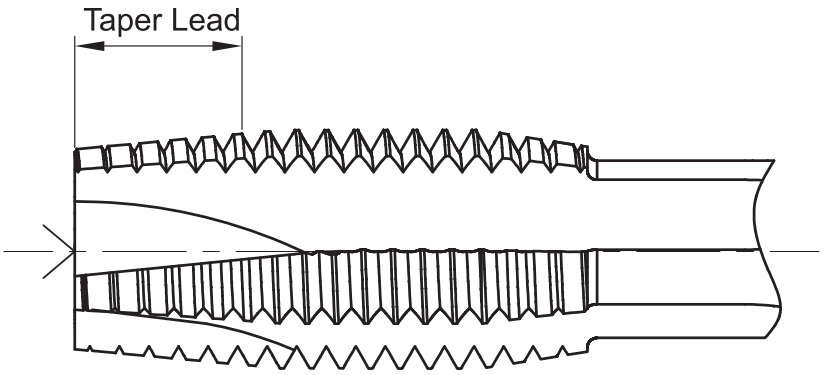
UNF UNIFIED FINE		
Nominal diameter (inch)	TPI	Drill dia (mm)
No.0	80	1.25
No.1	72	1.55
No.2	64	1.90
No.3	56	2.15
No.4	48	2.40
No.5	44	2.70
No.6	40	2.95
No.8	36	3.50
No.10	32	4.10
No.12	28	4.70
1/4	28	5.50
5/16	24	6.90
3/8	24	8.50
7/16	20	9.90
1/2	20	11.50
9/16	18	12.90
5/8	18	14.50
3/4	16	17.50
7/8	14	20.40
1	12	23.25
1.1/8	12	26.50
1.1/4	12	29.50
1.3/8	12	32.75
1.1/2	12	36.00

TAPPING TROUBLESHOOTING

PROBLEM	CAUSE	REMEDY
Oversize	Incorrect tolerance	Choose a tap with lower thread tolerance
	Incorrect axial feed rate	Reduce feed rate by 5-10% or increase compression of tap holder
	Wrong type of tap for application	Use spiral point for through hole or spiral flute for blind hole
		Use coated tool to prevent built up edge
	Tap not centered on the hole	Check tap holder and position tap centre on the hole
	Lack of lubrication	Use good lubrication in order to prevent built-up edge
	Tap speed too slow	Follow recommended speed
Undersize	Wrong type of tap for application	Use spiral point for through hole or spiral flute for blind hole
		Use coated tool to prevent built up edge
		Use tap with higher rake angle
	Incorrect tolerance	Choose a tap with higher tolerance
		Especially on material with low oversize tendency, such as cast iron, stainless steel
	Incorrect or lack of lubricant	Use good lubrication in order to prevent chip blockage inside the hole
	Tap drill hole too small	Increase drill diameter to the maximum value
		Follow recommeded drill size
Chipping	Wrong type of tap for application	Choose a tap with lower rake angle
		Choose a tap with longer chamfer
		Use spiral point taps for through hole and spiral flute for blind holes, in order to avoid chip blockage
	Incorrect or lack of lubricant	Use good lubrication in order to prevent built up edge
	Taps hit bottom of hole	Increase depth of drilling or decrease depth of tapping
	Work hardening surface	Reduce speed
		Use coated tool
		Use good lubrication
	Swarf trapping on reversal	Avoid sudden return of tap on reversal motion
	Chamfer hits hole entrance	Check axial position and reduce axial error of tap point on hole centre
	Tap drill hole too small	Increase drill diameter to maximum value Follow recommeded drill size
Breakage	Tap worn out	Use a new tap or regrind the old one
	Lack of lubricant	Use good lubrication in order to prevent built up edge and chip blockage.
	Taps hit bottom of hole	Increase depth of drilling or decrease depth of tapping
	Tap speed too high	Reduce cutting speed
		Follow recommended speed
	Work hardening surface	Reduce speed
		Use coated tool Use good lubrication
	Tap drill hole too small	Increase drill diameter up to maximum value
		Use recommended drill size
	Too high torque	Use tapping attachment with torque adjustment clutch
Rapid wear	Wrong type of tap for application	Use tap with lower rake angle and/or higher relief and/or longer chamfer
		Use coated tool
	Lack of lubricant	Use good lubrication in order to prevent built up edge and thermal stress on cutting edge
		Reduce cutting speed
	Tap speed too high	Follow recommended speed
Built up edge	Wrong type of tap for application	Use tap with lower rake angle and/or higher relief
	Lack of lubricant	Use good lubrication in order to prevent built up edge
	Surface treatment not suitable	See section for surface treatment recommendations
	Tap speed too low	Follow recommended speed

CHAMFER

Tap chamfer is tapering of the threads to distribute cutting action over several teeth. It generally reduces the cutting forces, increases tool life and allows higher cutting speed. When the tap enters the cutting hole and begins to cut, each tooth of the chamfer gradually enlarges the thread in the part, Only the 'first full thread' behind the chamfer produces the finish size of the thread. The teeth beyond the one full thread serve to guide and support the tap as it creates the desired complete threaded depth of the tapped hole. Chmafer length are selected based up on the type of hole to be tapped.



Long thread chamfer :
- Through hole
- Blind hole with sufficient room at bottom.

Short thread chamfer :
- Thread to the bottom of blind hole.

Form A	Form B	Form C	Form D	Form E	Form F
5-6 threads	4-5 threads	2-3 threads	3.5-5 threads	1.5-2 threads	1-1.5 threads

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APPLICATION				Spiral Point Taps					Spiral Fluted Taps					St. Flute Taps					Roll Form taps			
				BRIGHT	FBT	TIN	TICN	TIALN	BRIGHT	FBT	TIN	TICN	TIALN	BRIGHT	FBT	TIN	TICN	TIALN	BRIGHT	TIN	TICN	TIALN
				Through Hole					Blind Holes					Through / Blind Holes					Through / Blind Holes			
Material	Hardness	Tensile Strength	Cutting Speed																			
Low Carbon Steel	<120	<400	15-20	▲	▲	●			▲	▲	●								●	●		
Medium Carbon Steel	<180	<500	10-15	▲	▲	●			▲	▲	●								●	●		
High Crabon Steel	<220	<700	8-12	▲	▲	●			▲	▲	●									●		
Alloy Steel	<250	<800	10-15	▲		●	●	●	▲		●	●	●							●	●	●
Alloy Steel Hardened	>240 <350	>850 <1200	6-10	▲		●	●	●	▲		●	●	●							●	●	●
Alloy Steel Hardened	>350	>1200 <1600	3-5	▲		●	●	●	▲		●	●	●							●	●	●
Stainless Steel-Free Machining	<250	>850	7-10			▲	●	●			▲	●	●									
Stainless Steel-Moderate Machining	<250	>850	5-8			▲	●	●			▲	●	●									
Stainless Steel-Difficult Machining	>300	>1000	4-6			▲	●	●			▲	●	●									
Cast Iron - Gray	>150 <220	>500<700	12-18											▲		▲	●	●				
Cast Iron - Ductile	>220 <250	>700 <1000	6-10											▲		▲	●	●				
Cast Iron - Malleable	>250	>1200	8-12											▲		▲	●	●	●	●	●	●
Aluminium, Un alloyed	<100	<350	20-25	▲	▲	▲			▲	▲	▲								●	●	●	●
Aluminium Alloyed,Si<0.5%	<120	<400	25-35	▲	▲	▲			▲	▲	▲								●	●	●	●
Aluminium Alloyed,Si>0.5%<10%	<120	<500	15-20	▲	▲	▲			▲	▲	▲								●	●	●	●
Aluminium Alloyed,Si>10%	<120	<500	10-15	▲	▲	▲			▲	▲	▲								●	●	●	●
Magnesium,Un alloyed	<100	<400	15-20	▲	▲	▲			▲	▲	▲								●	●	●	●
Magnesium Alloyed,Si>0.5%	<150	<500	20-25	▲	▲	▲			▲	▲	▲								●	●	●	●
Zinc & Its Alloys	<100	<350	15-25																●	●	●	●
Copper & Its Alloys	<100	<350	15-25																●	●	●	●
Brass and Bronze	<200	<700	25-30			▲					▲											
Nickel	<150	<500	8-12			▲	●	●			▲	●	●									
Nickel Alloyed	<270	<900	6-8			▲	●	●			▲	●	●									
Composites & Plastics	<120	<400	15-25	●	●				●	●												
Tool & Die Steel	<350	<1600	4-8			▲	●	●			▲	●	●									
Titanium and Titanium Alloys	<350	<1600	4-6			▲	●	●			▲	●	●									
Inconel	<350	<1600	3-5			▲	●	●			▲	●	●									

THREAD IDENTIFICATION SYMBOLS

Symbol used for Metric threads

M	ISO Metric Screw Thread

Symbols Used for British Threads

BA	British Association Standard Thread
BSC	British Standard Bicycle Thread
BSF	British Standard Fine Thread
BSP	British Standard Pipe Thread
BSPT	British Standard Pipe Thread, Tapered
BSW	British Standard Whitworth coarse thread

Symbols Used for American Threads

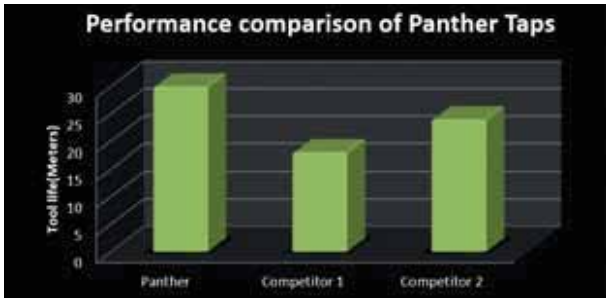
Acme-C	Acme threads, centralizing
Acme-G	Acme threads, general purpose
Stub Acme	Stub Acme thread
AMO	American Standard microscope objective thread
N. Butt	National Buttress thread
NC*	American National coarse thread series
NF*	American National fine thread series
NEF*	American National extra – fine thread series
8N*	American National 8 - thread series
12N*	American National 12 - thread series
16N*	American National 16 - thread series
NH*	American National hose coupling and fire hose coupling threads
NGO	American National gas outlet thread
NM	National Miniature thread series
NS*	Special threads of American national form
NC	American Standard coarse thread series
NF	American Standard fine thread series
NPT	American Standard taper pipe thread
NPTF	American Standard taper pipe thread (dry seal)
NPTR	American Standard taper pipe thread for railing fittings
NPS	American Standard straight pipe thread
NPSC	American Standard straight pipe thread in couplings
NPSF	American Standard internal straight pipe threads (dryseal)
NPSI	American Standard intermediate internal straight pipe threads (dryseal)
NPSM	American Standard straight pipe thread for mechanical joints
NPSL	American Standard straight pipe thread for locknuts and lockout pipe threads
NPSH	American Standard straight pipe thread for hose couplings and nipples
ANPT	Aeronautical taper pipe thread
RMS	American Standard surveying instrument mounting threads
UNC	Unified coarse thread series
UNF	Unified fine thread series
UNEF	Unified selected diameter – pitch combinations of the extra – fine thread series
UN	Unified selected diameter – pitch combinations of the 8 -12, and 16 – thread series
UNS	Unified thread of selected special diameters, pitches or lengths of engagement

* Non -preferred thread series

TECHNICAL DATA

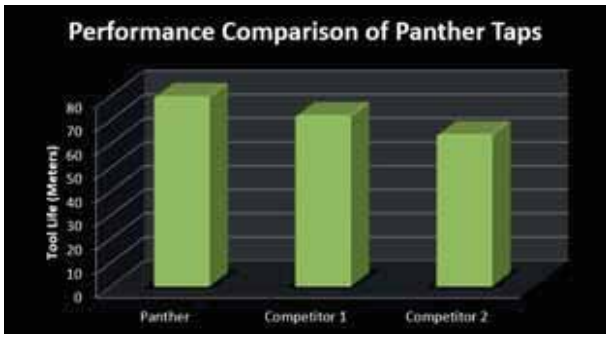
CASE STUDY OF PANTHER TAPS

Industry Segment	Automotive
Tap Size	Panther Straight CI Tap M10x1.5 6H TiALN DIN 371
Component	Cylinder Block
Work Material	Grey Cast Iron
Hardness	230 BHN
Hole Type	Blind Hole (12 Holes)
Prehole Diameter	8.50 mm
Drilling Depth	24.00 mm
Tapping Depth	18.00 mm
Machine	HMC
RPM	636
Cutting Speed (Vc)	20 m/min
Feed	955 mm/min
Gauge Tolerance	6H
Panther Life	30 Meter
Competitor 1 Life	18 Meter
Competitor 2 Life	24 Meter



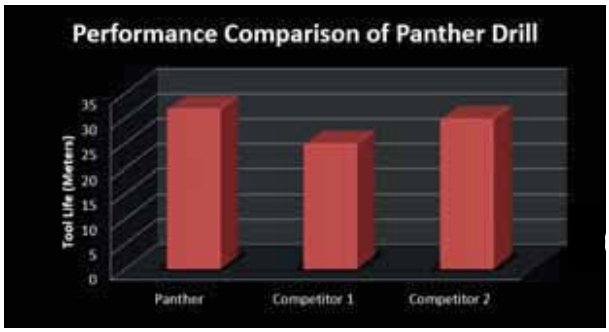
CASE STUDY OF PANTHER TAPS

Industry Segment	Automotive
Tap Size	Panther Roll Tap M6x1.0 6HX TiN DIN:371
Component	Crank Case
Work Material	Aluminium Alloy
Hole Type	Through Hole (8 Holes)
Prehole Diameter	5.50 mm
Drilling Depth	18.00 mm
Tapping Depth	15.00 mm
Machine	CNC
RPM	1850 rpm
Cutting Speed (Vc)	35 m/min
Feed	1850 mm/min
Gauge Tolerance	6H
Coolant	Water Soluble oil
Panther Life	80 Metre
Competitor 1 Life	72 Metre
Competitor 2 Life	64 Metre



CASE STUDY OF PANTHER JOBBER DRILL

Industry Segment	Automotive
Tap Size	Panther Jobber Drill 8.50mm
Component	Connecting Rod
Work Material	Forge Steel
Hardness	280-320 BHN
Hole Type	Through Hole (2 Holes)
Drilling Depth	40.00 mm
Machine	VMC
RPM	560 rpm
Cutting Speed (Vc)	15 m/min
Feed	80 mm/min
Coolant	Soluble Oil
Panther Life	32 Meter
Competitor 1 Life	25 Meter
Competitor 2 Life	30 Meter



BPT BIRLA PRECISION

TAP TECHNICAL QUESTIONNAIRE

DAGGER BRAND® SINCE 1937

DATE : / /

CUSTOMER DETAILS

CUSTOMER NAME .....
CONTACT PERSON .....
DEPARTMENT .....
MOBILE .....
E-MAIL .....

ADDRESS .....

ITM REPRESENTATIVE .....
BRANCH / DEALER .....

MOBILE .....
E-MAIL .....

TAP INFORMATION

SIZE & DESCRIPTION .....
TAP MATERIAL M2 ☐ M35 ☐ M42 ☐ PM HSS-E ☐

TYPES OF STANDARD IS ☐ DIN ☐ ISO529 ☐ ANSI ☐ OTHERS ☐

COMPETITORS TAP DETAILS .....

TOOL LIFE (NO. OF HOLE x DEPTH) IN METERS .....

TYPE AND SPECIAL FEATURES

SPIRAL : RH ☐ LH ☐

COATING / SURFACE TREATMENT

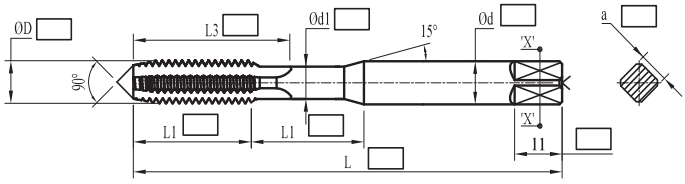
PARTIAL BLUE TEMPERED ☐
FULL BLUE TEMPERED ☐
BRIGHT FINISH ☐

TIN ☐
TICN ☐
TIALN ☐
OTHER .....

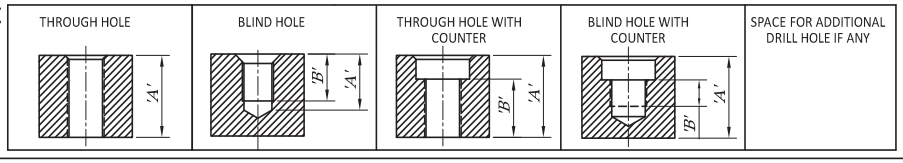
MONTHLY REQUIREMENT .....

ANY PROBLEM FACED WITH EXISTING TAP / REMARK .....

TAP



TYPE OF DRILL HOLE



COMPONENT DETAILS

COMPONENT NAME .....
MATERIAL .....
HARDNESS .....
TYPE OF HOLE BLIND/THROUGH/STEPED
THREAD STANDARD SIZE .....
TOLERANCE .....
TREATMENT .....

CHIP TYPE SHORT / LONG
TENSILE STRENGTH .....
DRILL HOLE SIZE .....
DRILL HOLE DEPTH .....
HOLE PROCESS DETAIL DRILLED/REAMED/PUNCHED/CAST/TURNED/DRAWN
TAPPING DEPTH .....
LUBRICATION OIL/EMULSION/DRY/CIRCULATION/BRUSH/MIST/OTHERS

MACHINE DETAILS

MANUFACTURER .....
TYPE .....
POWER IN KW .....

SPINDLE ADAPTATION : MT/ISO TAPER/DIN : MT 228 A/B, ISO TAPER 2080/69871

MODE OF TAPPING
HAND ☐
MACHINE ☐

DRILLING OPERATION
VERTICAL ☐
HORIZONTAL ☐
ROTATION OF TAP ☐
TAP REMAINS STATIONARY ☐

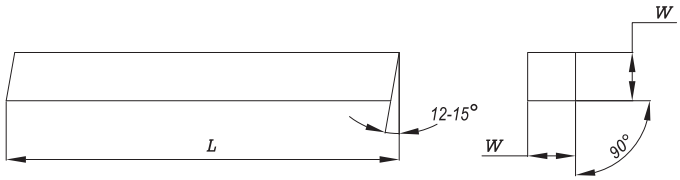
FEED CONTROL TYPE
FEED CONTROLLED ☐
CAM-CONTROLLED ☐
HYDRAULIC ☐
GUIDE SLEEVE ☐
CNC-CONTROLLED ☐
SYNCHRONOUS SPINDLE ☐
GEAR WORK ☐
MANUAL FEED ☐

MACHINE TYPE
TAPPING ☐
RADIAL ☐
CNC ☐
SPM ☐
OTHERS .....

MACHINING DETAILS
SPEED ☐
FEED ☐
COOLANT PRESSURE (BAR) .....
COOLANT LPM .....
COOLANT FEEDING
BY HAND ☐
BY MACHINE ☐

TAPPING ATTACHEMENT
RIGID (COLLET) ☐
TAP HOLDER ☐
WITH OVERLOAD CLUTCH ☐
WITH LENGTH COMPENSATION ☐
WITH AXE-PARALLEL FLOATING ☐
WITH INTERNAL LUBRICANT SUPPLY ☐

NOTE: I) USE TICK (√) OPTION WHERE NECESSARY
II) ALL FRAMED ENTRY FIELDS ARE MANDATORY & NECESSARY FOR DEFINING THE PRODUCT



ITM STD | HSS

Application :
For use in general turning operations.

INCH SERIES					
Size (W)	Length (L)				
3/16	3	4	6	-	-
1/4	3	4	6	8	-
5/16	3	4	6	8	-
3/8	3	4	6	8	-
1/2	3	4	6	8	10
5/8	-	4	6	8	-
3/4	-	4	6	8	-
1	-	-	6	8	-

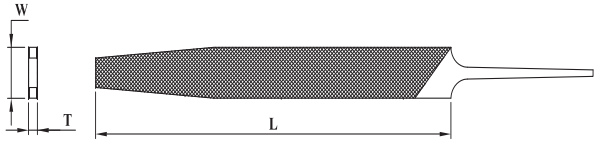
METRIC SERIES					
Size (W)	Length (L)				
5	75	100	150	-	-
6	75	100	150	200	-
8	75	100	150	200	-
10	75	100	150	200	-
12	75	100	150	200	250
16	-	100	150	200	-
20	-	100	150	200	-
25	-	-	150	200	-

Dimensions in inches/mm
Specifications conform to :
ITM Standard

We can supply in 3 series
HATHYAR - 600, HATHYAR - 900, HATHYAR - 1000

HATHYAR - 600 : Suitable for free cutting materials.
HATHYAR - 900 : Suitable for difficult to cut material.
HATHYAR -1000 : Suitable for Harder Alloy steel and Stainless steels.

ENGINEERING FILES



IS 1931 | HIGH CARBON STEEL

Application :
File is a multi-point Hand Tool, widely used for removing the sharp edges of components and make the smooth surface of components.

MACHINIST'S FILES				
SIZE - Length	FLAT	HAND	THREE SQUARE	SQUARE
	L x W x T	L x W x T	L x W	L x W
4"	100 x 12 x2.50	100 x 12 x2.50	100 x 8	100 x 4
6"	150 x 16 x 4.00	150 x 16 x 4.00	150 x 11	150 x 6
8"	200 x 20.5 x 5.00	200 x 20.5 x 5.00	200 x 15	200 x 7.5
10"	250 x 25 x 6.00	250 x 25 x 6.00	250 x 18	250 x 10
12"	300 x 30 x 6.50	300 x 30 x 6.50	300 x 20	300 x 12
14"	350 x 35 x 7.50	350 x 35 x 7.50	350 x 24	350 x 15
Bastard Second Cut Smooth				

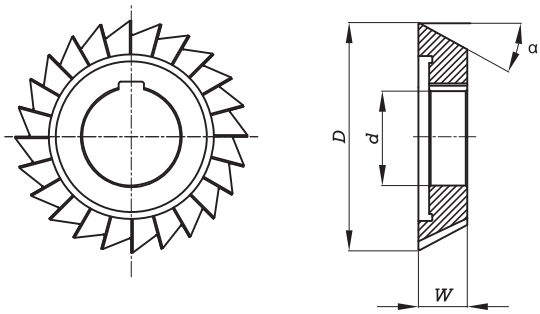
MACHINIST'S FILES			SPECIAL FILES	
SIZE - Length	ROUND	HALF ROUND	FLAT Aluminium	Hf Ro Aluminium
	L x D	L x W x T	L x W x T	L x W x T
4"	100 x 4	100 x 11 x 3.50		
6"	150 x 6	150 x 16 x 4.00		
8"	200 x 7.5	200 x 20 x 5.50	200 x 20 x 4.50	200 x 20 x 5.50
10"	250 x 9.5	250 x 24 x 7.00	250 x 25 x 6.00	250 x 24 x 7.00
12"	300 x 12	300 x 29 x 8.50	300 x 30 x 6.50	300 x 29 x 8.50
14"	350 x 15	350 x 34 x 10.00		

SAW FILES				
SIZE - Length	HEAVY Taper	REGULAR Taper	SLIM Taper	MILL Taper
	L x W	L x W	L x W	L x W x T
4"	100 x 9.4	100 x 8	100 x 6	
6"	150 x 12.9	150 x 12	150 x 8.5	150 x 16 x 3.00
8"	200 x 15.9	200 x 15	200 x 12	200 x 20 x 3.50
10"				250 x 25 x 4.50
12"				300 x 30 x 5.00
Second Cut				Bastard

WOOD & RASPS FILES				
SIZE - Length	FLAT RASP	Hf ROUND RASP	ROUND RASP	CABINET RASP
	L x W x T	L x W x T	L x D	L x W x T
6"		150 x 16 x 6.00	150 x 7.5	150 x 18 x 4.00
8"	200 x 20 x 6.50	200 x 21 x 7.50	200 x 9.5	200 x 25 x 6.00
10"	250 x 25 x 7.50	250 x 25 x 8.50	250 x 11.5	250 x 29 x 7.00
12"	300 x 30 x 8.50	300 x 30 x 10.00	300 x 13.5	300 x 34 x 8.00
Bastard Second Cut Smooth				

Dimension in mm/inches
Specifications conform to:
ITM Standard

CTC CUTTERS



Application:
These cutter used at Tea Garden Industry.

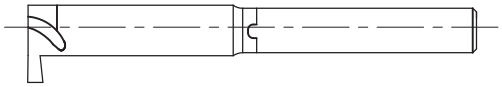
ITM STD | HSS

Diameter of Cutter (D)	Width (W)	Bore Diameter (d)	Cutter Angle (α)
3	5/8	1.1/4	65°
3	5/8	1.1/4	55°
3	5/8	1.1/4	60°
3	5/8	1.1/4	62°

Dimension in Inches
Specifications conform to:
ITM Standard

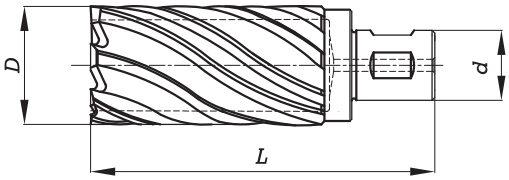
Cutters are available in M15 on request

GROOVING TOOL



These tools are manufactured as per specific requirements of customer.

ANNULAR CUTTERS



ITM STD | HSS | 30° | h8

Application:
An Annular cutter used to cut the annual groove at the periphery of the hole and leaves the solid core at the hole center. Annular are faster and more accurate than conventional drilling operation.

Size (D)	No of Flutes	Overall Length (L)	Shank Dia (d)
16.00	4	85	3/4
17.00	4	85	3/4
18.00	4	85	3/4
19.00	4	85	3/4
20.00	6	85	3/4
21.00	6	85	3/4
22.00	6	85	3/4
23.00	6	85	3/4
24.00	6	85	3/4
25.00	6	85	3/4
26.00	6	85	3/4
27.00	6	85	3/4
28.00	8	85	3/4
29.00	8	85	3/4
30.00	8	85	3/4
31.00	8	85	3/4
32.00	8	85	3/4
33.00	8	85	3/4
34.00	10	85	3/4
35.00	10	85	3/4
36.00	10	85	3/4
37.00	10	85	3/4
38.00	10	85	3/4
39.00	10	85	3/4
40.00	10	85	3/4
41.00	10	85	3/4
42.00	10	85	3/4
43.00	10	85	3/4
44.00	12	85	3/4
45.00	12	85	3/4
46.00	12	85	3/4
47.00	12	85	3/4
48.00	12	85	3/4
49.00	12	85	3/4
50.00	12	85	3/4

Dimensions in mm/inches
Specifications conform to:
ITM Standard

CUTTING TOOL DIVISION - UNIT 1, NASHIK

CUTTING TOOL DIVISION - UNIT 2, AURANGABAD

TOOL HOLDER DIVISION, AURANGABAD

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