ASHOK PIRAMAL GROUP

CORE VALUES

We abide by these enduring values that are the foundation of our business and at the heart of all we do each day.

Customer Focus

We listen to our customers.
We are committed to delivering real value.
We take ownership of our customer's problem until it is solved.

Integrity

We hold ourselves and others to the highest ethical standards.
We are honest with each other and constructively give and willingly accept candid feedback.
We build relationships of trust so we can share and accept the truth,
even when its hard to say or hear.
We do the right things even when no one is watching.

Teamwork

We respect others and value their ideas and point of view.
We work together and support each other to achieve our goals.
We incorporate fun with hard work.
We have a passion for winning.
We all play an important role.
We are one Enterprise. There is no "they" or "I".

Passion for Excellence

We strive to find better ways to solve customer problems.
We embrace change and use it to shape our own future.
we seek innovative solutions to achieve a competitive advantage.
We recognize outstanding performance.
We inspire each other to succeed.
We encourage risk-taking.

Accountability

We take ownership of results delivered in our area of work.
We are responsible for and committed to our own personal growth and development.
We work through challenges and obstacles to achieve a successful outcome.

Respect

We show consideration, listen and seek inputs and treat each other fairly.
We acknowledge work-life balance as a key driver to achieve a competitive edge.
We value diversity of people and ideas irrespective of the level of experience.

Company Profile

Miranda Tools was established in 1945 & is a part of Ashok Piramal Group, one of the most progressive and rapidly growing industrial groups in India. The group has diverse business interests in Textiles, Electronics, Auto Electricals, Cutting Tools & Real Estate Development.

Miranda Tools manufactures HSS Tool Bits, Drills, End mills, Reamers, HSS Saws and Metal Cutting Bandsaw Blades. It has its Manufacturing unit & Marketing office at Ankleshwar in the State of Gujarat in India. It is equipped with state of the art technology for producing precision cutting tools conforming to IS, BS, DIN, JIS & ISO standards.

Miranda Tools was the first Indian company manufacturing high speed steel tools to have been awarded the ISO 9002:1994 certificate by BVQI in August 1994. Miranda Tools is now certified to ISO 9001:2008 by BVQI since February 2009.

In 2005, Miranda Tools has entered into a joint venture for manufacturing HSS Taps with M/s FRENCH ENGINEERING WORKS, Johanessburg (South Africa). These Taps are manufactured conforming to IS, BS, DIN, JIS & ISO standards.

Miranda Tools has an extensive Sales & Marketing network comprising Depots/Branches/Resident Engineers & over 400 distributors spread all over India.

Miranda Tools is rapidly turning global with exports to most developed countries. It supplies its products to its customers in USA, UK, Europe, Middle East, South East Asia, Scandinavian countries & Australasia.

Terms & Conditions

Prices are given inclusive of excise duty & ED cess (Exclusive Low alloy Hand & Power Hacksaw)

But exclusive of sales Tax, Octroi, & other similar government levies.

Delivery F.O.R Destination.

This price supersedes our previous Price List, and are subject to revision without notice.

Unlisted intermediate sizes, the higher Price of next listed size inch or mm will apply.

We also manufacture special products as per your requirement.

BUREAU VERITAS
Certification

Certification
Awarded to

MIRANDA TOOLS PVT. LTD.

SITE 1: PLOT NO. 903 / 904, G.I.D.C., ANKLESHWAR – 393 002, GUJARAT, INDIA.
SITE 2: PLOT NO. A-2/4110, G.I.D.C., ANKLESHWAR – 393 002, GUJARAT, INDIA.

Bureau Veritas Certification (India) Private Limited certify that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the standard detailed below

STANDARD

ISO 9001:2008

SCOPE OF SUPPLY

SITE 1: PRODUCTION AND SUPPLY OF HIGH SPEED STEEL DRILLS, TOOL BITS, END MILLS AND REAMERS.

SITE 2: PRODUCTION AND SUPPLY OF SAWS SUCH AS POWER SAWS, HACKSAWS, METAL CUTTING BAND SAWS AND BI METAL BAND SAWS.

PERMITTED EXCLUSION(S)

7.3 – Design and development.

Original Approval Date: **19 August 1994**

Subject to the continued satisfactory operation of the organisation's Management System, this certificate is valid until: **10 January 2012**

To check this certificate validity please call: +91 22 6695 6300

Further clarifications regarding the scope of this certificate and the applicability of the Management System requirements may be obtained by consulting the organisation.

Certificate Number: **IND96075** *Date:* **09 February 2009**

R. K. SHARMA
Director

Bureau Veritas Certification acting the accreditation certificate number 008

UKAS QUALITY MANAGEMENT
008

Certification / Managing Office Address: "Marwah Centre" 6th Floor, Krishanlal Marwah Marg, Opp. Anza Industrial Estate, Off Saki Vihar Road, Andheri (East), Mumbai – 400 072, India.

MIRANDA TOOLS

Quality Policy

It is our policy to

Provide quality products and support that

consistently satisfy customer requirements

And

Achieve a preferred status in the market

through continuous improvement and innovation.

To achieve this, we shall consistently

comply with and improve our Quality

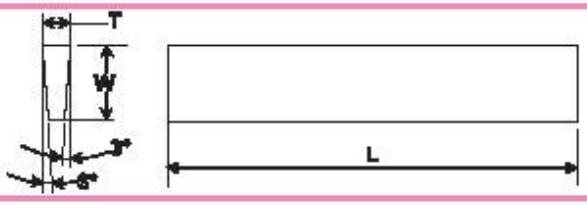
Management System.

ASHOK PIRAMAL GROUP

TOOLBITS

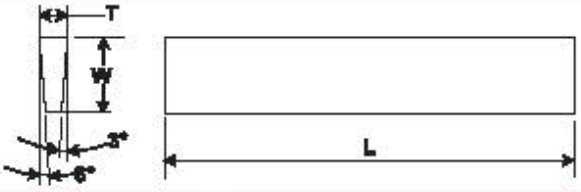
TOOLBITS

HSS FLAT TOOLBITS



SIZE		PCK QTY	MARK III			T42		
MM (T x W x L)	INCH (T x W x L)		PART CODE (MIR0902)		PRICE RS./PIECE	PART CODE (LSP0902)		PRICE RS./PIECE
			MM	INCH		MM	INCH	
3X20X150	1/8"X3/4"X6"	10	800AC	701AC	524	800AC	700AC	818
3X25X150	1/8"X1"X6"	10	801BC	701BC	749	801BC	701BC	1171
5X25X150	3/16"X1"X6"	10	810CC	710CC	823	810CC	710CC	1436
6X12X100	1/4"X1/2"X4"	10	820DC	720DC	316	820DC	004AC*	494
6X12X150	1/4"X1/2"X6"	10	821EC	721EC	485	821EC	721EC	760
6X16X150	1/4"X5/8"X6'	10	822FC	722FC	576	106AC*	006AC*	934
6X20X150	1/4"X3/4"X6"	10	823GC	723GC	685	823GC	723GC	1072
6X25X150	1/4"X1"X6'	10	824HC	724HC	836	824HC	724HC	1307
10X12X100	3/8"X1/2"X4"	10	830JC	730JC	475	830JC	730JC	745
10X16X100	3/8"X5/8"X4"	10	831KC	731KC	527	831KC	731KC	828
10X16X150	3/8"X5/8"X6"	10	832LC	732LC	824	832LC	732LC	1286
10X20X150	3/8"X3/4"X6"	10	833MC	733MC	950	833MC	733MC	1483
10X25X150	3/8"X1"X6"	10	834NC	734NC	1630	834NC	013AC*	2546
12X16X150	1/2"X5/8"X6"	1	840PC	740PC	1016	840PC	740PC	1805
12X20X150	1/2"X3/4"X6	1	841QC	741QC	1125	841QC	741QC	1995
12X25X150	1/2"X1"X6"	1	842RC	742RC	1476	842RC	742RC	2311
16X20X150	5/8"X3/4"X6"	1	850SC	750SC	1532	850SC	750SC	2617
20X25X150	3/4"X1"X6"	1	860TC	760TC	2158	860TC	760TC	4141

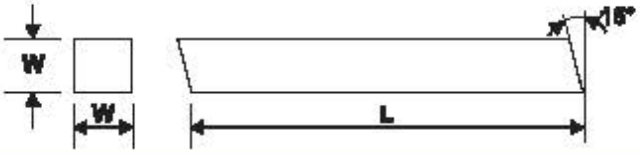
HSS PARTING TOOLBITS



SIZE INCH (T x W x L)	EQUIVALENT MM (T x W x L)	PCK QTY	MARK II		T42	
			PART CODE (MIR0901)	PRICE RS./PIECE	PART CODE (LSP0901)	PRICE RS./PIECE
3/32X1/2X4	2.38X12.7X101.6	10	900AC	414	201AC*	726
3/32X5/8X5	2.38X15.88X127	10	901BC	519	901BC	956
1/8X3/4X6	3.18X19.05X152.4	10	910CC	662	203BC*	1174
1/8X7/8X6	3.18X22.23X152.4	10	911DC	774	204CC*	1431
3/16X1X6	4.76X25.4X152.4	10	920EC	962	920EC	1641

Note : Item marked * are exstock are starts with MIR0909
All items required minimum order value of Rs. 20,000/-.

HSS TOOLBITS SQUARE



HSS TOOLBITS SQUARE ZEDD M2

MM (W x L)	INCH (W x L)	EQUIVALENT MM	GRADES ZEDD M2 SQ		PRICE RS./PIECE	PCK QTY
			mm (MIR0901)	Inch (MIR9901)		
-	3/32 x 2.1/2	2.38 x 63.50	-	000AC	75	10
-	3/32 x 3	2.38 x 76.20	-	001BC	87	10
3 x 75	1/8 x 3	3.18 x 76.20	200AC	010CC	87	10
3 x 100	1/8 x 4	3.18 x 101.60	201BC	011DC	116	10
4 x 75	5/32 x 3	3.97 x 76.20	210CC	020EC	87	10
4 x 100	5/32 x 4	3.97 x 101.60	211DC	021FC	118	10
5 x 75	3/16 x 3	4.76 x 76.20	220EC	030GC	76	10
5 x 100	3/16 x 4	4.76 x 101.60	221FC	031HC	99	10
5 x 150	3/16 x 6	4.76 x 152.40	222GC	032JC	154	10
6 x 75	1/4 x 3	6.35 x 76.20	230HC	040KC	86	10
6 x 100	1/4 x 4	6.35 x 101.60	231JC	041LC	101	10
6 x 150	1/4 x 6	6.35 x 152.40	232KC	042MC	145	10
6 x 200	1/4 x 8	6.35 x 203.20	233LC	043NC	208	10
8 x 75	5/16 x 3	7.94 x 76.20	240MC	050PC	95	10
8 x 100	5/16 x 4	7.94 x 101.60	241NC	051QC	123	10
8 x 150	5/16 x 6	7.94 x 152.40	242PC	052RC	206	10
8 x 200	5/16 x 8	7.94 x 203.20	243QC	0535C	261	10
-	3/8 x 3	9.53 x 76.20	-	060TC	120	10
-	3/8 x 4	9.53 x 101.60	-	061VC	145	10
-	3/8 x 6	9.53 x 152.40	-	062WC	226	10
-	3/8 x 8	9.53 x 203.20	-	063XC	309	10
-	3/8 x 10	9.53 x 254.00	-	064YC	397	10
10 x 75	-	-	250RC	-	133	10
10 x 100	-	-	251SC	-	158	10
10 x 150	-	-	252TC	-	245	10
10 x 200	-	-	253VC	-	342	10
10 x 250	-	-	254WC	-	433	10
12 x 75	1/2 x 3	12.70 x 76.20	260AC	070AC	180	10
12 x 100	1/2 x 4	12.70 x 101.60	261BC	071BC	226	10
12 x 150	1/2 x 6	12.70 x 152.40	262CC	072CC	347	10
12 x 200	1/2 x 8	12.70 x 203.20	263DC	073DC	455	10
12 x 250	1/2 x 10	12.70 x 254.00	264EC	074EC	693	10
14 x 100	9/16 x 4	14.29 x 101.60	303PC	075TC	279	1
14 x 150	9/16 x 6	14.29 x 152.40	265VC	076VC	430	1

HSS TOOLBITS SQUARE ZEDD M2

MM (W x L)	INCH (W x L)	EQUIVALENT MM	GRADES		PRICE RS./PIECE	PCK QTY
			ZEDD M2 SQ			
			mm (MIR0901)	inch (MIR0901)		
14 x 200	9/16 x 8	14.29 x 203.20	265WC	077HC	590	1
16 x 100	5/8 x 4	15.88 x 101.60	270FC	080FC	359	1
16 x 150	5/8 x 6	15.88 x 152.40	271GC	081GC	530	1
16 x 200	5/8 x 8	15.88 x 203.20	272HC	082HC	716	1
-	3/4 x 4	19.05 x 101.60	-	090JC	496	1
-	3/4 x 6	19.05 x 152.40	-	091KC	726	1
-	3/4 x 8	19.05 x 203.20	-	092LC	993	1
20 x 100	-	-	280JC	-	542	1
20 x 150	-	-	281KC	-	791	1
20 x 200	-	-	282LC	-	1081	1
25 x 150	1 x 6	25.40 x 152.40	290MC	100MC	1224	1
25 x 200	1 x 8	25.40 x 203.20	291NC	101NC	1664	1

Note : All items required minimum order value of Rs. 20,000/-.

HSS TOOLBITS SQUARE/ROUND S100 M35

MM (W x L)	INCH (W x L)	EQUIVALENT MM	GRADES				PRICE RS./ PIECE	PCK QTY
			S100 M35 (SQ.)		S100 M35 (RD)			
			mm (MIR0906)	inch (MIR0906)	mm (MIR0906)	inch (MIR0906)		
-	3/32 x 2.1/2	2.38 x 63.50	-	000AC	-	300AC	155	10
-	3/32 x 3	2.38 x 76.20	-	001BC	-	301BC	249	10
3 x 75	1/8 x 3	3.18 x 76.20	200AC	010CC	500AC	310CC	169	10
3 x 100	1/8 x 4	3.18 x 101.60	201BC	011DC	501BC	311DC	306	10
4 x 75	5/32 x 3	3.97 x 76.20	210CC	020EC	510CC	320EC	172	10
4 x 100	5/32 x 4	3.97 x 101.60	211DC	021FC	511DC	321FC	267	10
5 x 75	3/16 x 3	4.76 x 76.20	220EC	030GC	520EC	33GC	135	10
5 x 100	3/16 x 4	4.76 x 101.60	221FC	031HC	521FC	331HC	200	10
5 x 150	3/16 x 6	4.76 x 152.40	222GC	032JC	522GC	332JC	363	10
6 x 75	1/4 x 3	6.35 x 76.20	230HC	040KC	530HC	340KC	172	10
6 x 100	1/4 x 4	6.35 x 101.60	231JC	041LC	531JC	341LC	234	10
6 x 150	1/4 x 6	6.35 x 152.40	232KC	042MC	532KC	342MC	383	10
6 x 200	1/4 x 8	6.35 x 203.20	233LC	043NC	533LC	343NC	636	10
8 x 75	5/16 x 3	7.94 x 76.20	240MC	050PC	540MC	350PC	225	10
8 x 100	5/16 x 4	7.94 x 101.60	241NC	051QC	541NC	351QC	312	10
8 x 150	5/16 x 6	7.94 x 152.40	242PC	052RC	542PC	352RC	497	10
8 x 200	5/16 x 8	7.94 x 203.20	243QC	053SC	543QC	353SC	708	10
-	3/8 x 3	9.53 x 76.20	-	060TC	-	360TC	263	10
-	3/8 x 4	9.53 x 101.60	-	061VC	-	361VC	352	10
-	3/8 x 6	9.53 x 152.40	-	062WC	-	362WC	555	10
-	3/8 x 8	9.53 x 203.20	-	063XC	-	363XC	791	10
-	3/8 x 10	9.53 x 254.00	-	064YC	-	364YC	1048	10
10 x 75	-	-	250RC	-	550RC	-	287	10
10 x 100	-	-	251SC	-	551SC	-	383	10

HSS TOOLBITS SQUARE/ROUND S100 M35

MM (W x L)	INCH (W x L)	EQUIVALENT MM	GRADES				PRICE RS./ PIECE	PCK QTY
			S100 M35 (SQ.)		S100 M35 (RD)			
			mm (MIR0906)	inch (MIR0906)	mm (MIR0906)	inch (MIR0906)		
10 x 150	-	-	252TC	-	552TC	-	601	10
10 x 200	-	-	253VC	-	553VC	-	846	10
10 x 250	-	-	254WC	-	554WC	-	1117	10
12 x 75	1/2 x 3	12.70 x 76.20	260AC	070AC	560AC	370AC	416	10
12 x 100	1/2 x 4	12.70 x 101.60	261BC	071BC	561BC	371BC	555	10
12 x 150	1/2 x 6	12.70 x 152.40	262CC	072CC	562CC	372CC	855	10
12 x 200	1/2 x 8	12.70 x 203.20	263DC	073DC	563DC	373DC	1195	10
12 x 250	1/2 x 10	12.70 x 254.00	264EC	074EC	564EC	374EC	1676	10
14 x 100	9/16 x 4	14.29 x 101.60	303PC	103PC	503PC	375TC	714	1
14 x 150	9/16 x 6	14.29 x 152.40	304QC	104QC	504QC	376VC	1079	1
14 x 200	9/16 x 8	14.29 x 203.20	305RC	105RC	505RC	377HC	1499	1
16 x 100	5/8 x 4	15.88 x 101.60	270FC	080FC	570FC	380FC	916	1
16 x 150	5/8 x 6	15.88 x 152.40	271GC	081GC	571GC	381GC	1377	1
16 x 200	5/8 x 8	15.88 x 203.20	272HC	082HC	572HC	382HC	1883	1
-	3/4 x 4	19.05 x 101.60	-	090JC	-	390JC	1275	1
-	3/4 x 6	19.05 x 152.40	-	091KC	-	391KC	1908	1
-	3/4 x 8	19.05 x 203.20	-	092LC	-	392LC	2561	1
20 x 100	-	-	280JC	-	580JC	-	1388	1
20 x 150	-	-	281KC	-	581KC	-	2079	1
20 x 200	-	-	282LC	-	582LC	-	2771	1
25 x 150	1 x 6	25.40 x 152.40	290MC	100MC	590MC	400MC	3169	1
25 x 200	1 x 8	25.40 x 203.20	291NC	101NC	591NC	401NC	4225	1

Note : All items required minimum order value of Rs. 20,000/-.

HSS TOOLBITS SQUARE/ROUND S200 M42

MM (W x L)	INCH (W x L)	EQUIVALENT MM	GRADES				PRICE RS./ PIECE	PCK QTY
			S200 M42 (SQ.)		S200 M42 (RD)			
			mm (MIR0902)	inch (MIR0902)	mm (MIR0902)	inch (MIR0902)		
-	3/32 x 2.1/2	2.38 x 63.50	-	000AC	-	300AC	217	10
-	3/32 x 3	2.38 x 76.20	-	001BC	-	301BC	348	10
3 x 75	1/8 x 3	3.18 x 76.20	200AC	010CC	500AC	310CC	240	10
3 x 100	1/8 x 4	3.18 x 101.60	201BC	011DC	501BC	311DC	442	10
4 x 75	5/32 x 3	3.97 x 76.20	210CC	020EC	510CC	320EC	246	10
4 x 100	5/32 x 4	3.97 x 101.60	211DC	021FC	511DC	321FC	382	10
5 x 75	3/16 x 3	4.76 x 76.20	220EC	030GC	520EC	330GC	178	10
5 x 100	3/16 x 4	4.76 x 101.60	221FC	031HC	521FC	331HC	261	10
5 x 150	3/16 x 6	4.76 x 152.40	222GC	032JC	522GC	332JC	557	10
6 x 75	1/4 x 3	6.35 x 76.20	230HC	040KC	530HC	340KC	240	10
6 x 100	1/4 x 4	6.35 x 101.60	231JC	041LC	531JC	341LC	318	10
6 x 150	1/4 x 6	6.35 x 152.40	232KC	042MC	532KC	342MC	521	10
6 x 200	1/4 x 8	6.35 x 203.20	233LC	043NC	533LC	343NC	881	10
8 x 75	5/16 x 3	7.94 x 76.20	240MC	050PC	540MC	350PC	307	10
8 x 100	5/16 x 4	7.94 x 101.60	241NC	051QC	541NC	351QC	422	10

HSS TOOLBITS SQUARE/ROUND S200 M42

MM (W x L)	INCH (W x L)	EQUIVALENT MM	GRADES				PRICE RS./ PIECE	PCK QTY
			S200 M42 (SQ.)		S200 M42 (RD)			
			mm (MIR0902)	inch (MIR0902)	mm (MIR0902)	inch (MIR0902)		
8 x 150	5/16 x 6	7.94 x 152.40	242PC	052RC	542PC	352RC	679	10
8 x 200	5/16 x 8	7.94 x 203.20	243QC	053SC	543QC	353SC	960	10
-	3/8 x 3	9.53 x 76.20	-	060TC	-	360TC	365	10
-	3/8 x 4	9.53 x 101.60	-	061VC	-	361VC	484	10
-	3/8 x 6	9.53 x 152.40	-	062WC	-	362WC	777	10
-	3/8 x 8	9.53 x 203.20	-	063XC	-	363XC	1104	10
-	3/8 x 10	9.53 x 254.00	-	064YC	-	364YC	1460	10
10 x 75	-	-	250RC	-	550RC	-	398	10
10 x 100	-	-	251SC	-	551SC	-	535	10
10 x 150	-	-	252TC	-	552TC	-	838	10
10 x 200	-	-	253VC	-	553VC	-	1177	10
10 x 250	-	-	254WC	-	554WC	-	1556	10
12 x 75	1/2 x 3	12.70 x 76.20	260AC	070AC	560AC	370AC	596	10
12 x 100	1/2 x 4	12.70 x 101.60	261BC	071BC	561BC	371BC	778	10
12 x 150	1/2 x 6	12.70 x 152.40	262CC	072CC	562CC	372CC	1221	10
12 x 200	1/2 x 8	12.70 x 203.20	263DC	073DC	563DC	373DC	1704	10
12 x 250	1/2 x 10	12.70 x 254.00	264EC	074EC	564EC	374EC	2343	10
14 x 100	9/16 x 4	14.29 x 101.60	303PC	075FC	564FC	375FC	960	1
14 x 150	9/16 x 6	14.29 x 152.40	304QC	076GC	262DC	376GC	1450	1
14 x 200	9/16 x 8	14.29 x 203.20	305RC	077HC	277HC	377HC	2018	1
16 x 100	5/8 x 4	15.88 x 101.60	270FC	080FC	570FC	380FC	1310	1
16 x 150	5/8 x 6	15.88 x 152.40	271GC	081GC	571GC	381GC	1918	1
16 x 200	5/8 x 8	15.88 x 203.20	272HC	082HC	572HC	382HC	2689	1
-	3/4 x 4	19.05 x 101.60	-	090JC	-	-	1798	1
-	3/4 x 6	19.05 x 152.40	-	091KC	-	-	2639	1
-	3/4 x 8	19.05 x 203.20	-	092LC	-	-	3617	1
20 x 100	-	-	280JC	-	580JC	390JC	1962	1
20 x 150	-	-	281KC	-	581KC	391KC	2940	1
20 x 200	-	-	282LC	-	582LC	392LC	3920	1
25 x 150	1 x 6	25.40 x 152.40	290MC	100MC	590MC	400MC	4427	1
25 x 200	1 x 8	25.40 x 203.20	291NC	101NC	591NC	401NC	5904	1

Note : All items required minimum order value of Rs. 20,000/-.

HSS TOOLBITS SQUARE/ROUND S400 T42

MM (W x L)	INCH (W x L)	EQUIVALENT MM	GRADES				PRICE RS./ PIECE	PCK QTY
			S400 T42 (SQ.)		S400 T42 (RD)			
			mm (MIR0904)	inch (MIR0904)	mm (MIR0904)	inch (MIR0904)		
-	3/32 x 2.1/2	2.38 x 63.50	-	000AC	-	300AC	227	10
-	3/32 x 3	2.38 x 76.20	-	001BC	-	301BC	365	10
3 x 75	1/8 x 3	3.18 x 76.20	200AC	010CC	500AC	310CC	252	10
3 x 100	1/8 x 4	3.18 x 101.60	201BC	011DC	501BC	311DC	464	10
4 x 75	5/32 x 3	3.97 x 76.20	210CC	020EC	510CC	320EC	258	10
4 x 100	5/32 x 4	3.97 x 101.60	211DC	021FC	511DC	321FC	401	10

HSS TOOLBITS SQUARE/ROUND S400 T42

MM (W x L)	INCH (W x L)	EQUIVALENT MM	GRADES				PRICE RS./ PIECE	PCK QTY
			S400 T42 (SQ.)		S400 T42 (RD)			
			mm (MIR0904)	inch (MIR0904)	mm (MIR0904)	inch (MIR0904)		
5 x 75	3/16 x 3	4.76 x 76.20	220EC	030GC	520EC	330GC	188	10
5 x 100	3/16 x 4	4.76 x 101.60	221FC	031HC	521FC	331HC	275	10
5 x 150	3/16 x 6	4.76 x 152.40	222GC	032JC	522GC	332JC	587	10
6 x 75	1/4 x 3	6.35 x 76.20	230HC	040KC	530HC	340KC	252	10
6 x 100	1/4 x 4	6.35 x 101.60	231JC	041LC	531JC	341LC	335	10
6 x 150	1/4 x 6	6.35 x 152.40	232KC	042MC	532KC	342MC	549	10
6 x 200	1/4 x 8	6.35 x 203.20	233LC	043NC	533LC	343NC	927	10
8 x 75	5/16 x 3	7.94 x 76.20	240MC	050PC	540MC	350PC	326	10
8 x 100	5/16 x 4	7.94 x 101.60	241NC	051QC	541NC	351QC	444	10
8 x 150	5/16 x 6	7.94 x 152.40	242PC	052RC	542PC	352RC	714	10
8 x 200	5/16 x 8	7.94 x 203.20	243QC	053SC	543QC	353SC	1013	10
-	3/8 x 3	9.53 x 76.20	-	060TC	-	360TC	386	10
-	3/8 x 4	9.53 x 101.60	-	061VC	-	361VC	509	10
-	3/8 x 6	9.53 x 152.40	-	062WC	-	362WC	817	10
-	3/8 x 8	9.53 x 203.20	-	063XC	-	363XC	1163	10
-	3/8 x 10	9.53 x 254.00	-	064YC	-	364YC	1538	10
10 x 75	-	-	250RC	-	550RC	-	419	10
10 x 100	-	-	251SC	-	551SC	-	563	10
10 x 150	-	-	252TC	-	552TC	-	882	10
10 x 200	-	-	253VC	-	553VC	-	1240	10
10 x 250	-	-	254WC	-	554WC	-	1637	10
12 x 75	1/2 x 3	12.70 x 76.20	260AC	070AC	560AC	370AC	628	10
12 x 100	1/2 x 4	12.70 x 101.60	261BC	071BC	561BC	371BC	818	10
12 x 150	1/2 x 6	12.70 x 152.40	262CC	072CC	562CC	372CC	1286	10
12 x 200	1/2 x 8	12.70 x 203.20	263DC	073DC	563DC	373DC	1793	10
12 x 250	1/2 x 10	12.70 x 254.00	264EC	074EC	564EC	374EC	2468	10
14 x 100	9/16 x 4	14.29 x 101.60	264FC	075TC	564FC	375TC	1013	1
14 x 150	9/16 x 6	14.29 x 152.40	265VC	076VC	565VC	375FC	1526	1
14 x 200	9/16 x 8	14.29 x 203.20	265WC	077HC	565WC	377HC	2124	1
16 x 100	5/8 x 4	15.88 x 101.60	270FC	080FC	570FC	380FC	1379	1
16 x 150	5/8 x 6	15.88 x 152.40	271GC	081GC	571GC	381GC	2018	1
16 x 200	5/8 x 8	15.88 x 203.20	272HC	082HC	572HC	382HC	2832	1
-	3/4 x 4	19.05 x 101.60	-	090JC	-	390JC	1894	1
-	3/4 x 6	19.05 x 152.40	-	091KC	-	391KC	2779	1
-	3/4 x 8	19.05 x 203.20	-	092LC	-	392LC	3807	1
20 x 100	-	-	280JC	-	580JC	-	2066	1
20 x 150	-	-	281KC	-	581KC	-	3095	1
20 x 200	-	-	282LC	-	582LC	-	4128	1
25 x 150	1 x 6	25.40 x 152.40	290MC	100MC	590MC	400MC	4662	1
25 x 200	1 x 8	25.40 x 203.20	291NC	101NC	591NC	401NC	6214	1

HSS TOOLBITS SQUARE/ROUND S400E

MM (W x L)	INCH (W x L)	EQUIVALENT MM	GRADES				PRICE RS./ PIECE	PCK QTY
			S400E M35 (SQ.)		S400E M35 (RD)			
			mm (MIR0903)	inch (MIR0903)	mm (MIR0903)	inch (MIR0903)		
-	3/32 x 2.1/2	2.38 x 63.50	-	001BC	-	300AC	182	10
-	3/32 x 3	2.38 x 76.20	-	000AC	-	301BC	292	10
3 x 75	1/8 x 3	3.18 x 76.20	200AC	010CC	500AC	310CC	198	10
3 x 100	1/8 x 4	3.18 x 101.60	201BC	011DC	501BC	311DC	364	10
4 x 75	5/32 x 3	3.97 x 76.20	210CC	020EC	510CC	320EC	203	10
4 x 100	5/32 x 4	3.97 x 101.60	211DC	021FC	511DC	321FC	317	10
5 x 75	3/16 x 3	4.76 x 76.20	220EC	030GC	520EC	330GC	159	10
5 x 100	3/16 x 4	4.76 x 101.60	221FC	031HC	521FC	331HC	236	10
5 x 150	3/16 x 6	4.76 x 152.40	222GC	032JC	522GC	332JC	425	10
6 x 75	1/4 x 3	6.35 x 76.20	230HC	040KC	530HC	340KC	203	10
6 x 100	1/4 x 4	6.35 x 101.60	231JC	041LC	531JC	341LC	275	10
6 x 150	1/4 x 6	6.35 x 152.40	232KC	042MC	532KC	342MC	451	10
6 x 200	1/4 x 8	6.35 x 203.20	233LC	043NC	533LC	343NC	747	10
8 x 75	5/16 x 3	7.94 x 76.20	240MC	050PC	540MC	350PC	267	10
8 x 100	5/16 x 4	7.94 x 101.60	241NC	051QC	541NC	351QC	367	10
8 x 150	5/16 x 6	7.94 x 152.40	242PC	052RC	542PC	352RC	588	10
8 x 200	5/16 x 8	7.94 x 203.20	243QC	053SC	543QC	353SC	836	10
-	3/8 x 3	9.53 x 76.20	-	060TC	-	360TC	309	10
-	3/8 x 4	9.53 x 101.60	-	061VC	-	361VC	415	10
-	3/8 x 6	9.53 x 152.40	-	062WC	-	362WC	657	10
-	3/8 x 8	9.53 x 203.20	-	063XC	-	363XC	929	10
-	3/8 x 10	9.53 x 254.00	-	064YC	-	364YC	1233	10
10 x 75	-	-	250RC	-	550RC	-	337	10
10 x 100	-	-	251SC	-	551SC	-	450	10
10 x 150	-	-	252TC	-	552TC	-	708	10
10 x 200	-	-	253VC	-	553VC	-	995	10
10 x 250	-	-	254WC	-	554WC	-	1310	10
12 x 75	1/2 x 3	12.70 x 76.20	260AC	070AC	560AC	370AC	491	10
12 x 100	1/2 x 4	12.70 x 101.60	261BC	071BC	561BC	371BC	657	10
12 x 150	1/2 x 6	12.70 x 152.40	262CC	072CC	562CC	372CC	1008	10
12 x 200	1/2 x 8	12.70 x 203.20	263DC	073DC	563DC	373DC	1407	10
12 x 250	1/2 x 10	12.70 x 254.00	264EC	074EC	564EC	374EC	1970	10
14 x 100	9/16 x 4	14.29 x 101.60	264FC	075TC	564FC	375TC	842	1
14 x 150	9/16 x 6	14.29 x 152.40	265VC	076VC	565VC	376VC	1267	1
14 x 200	9/16 x 8	14.29 x 203.20	265WC	077HC	565WC	377HC	1763	1
16 x 100	5/8 x 4	15.88 x 101.60	270FC	080FC	570FC	380FC	1080	1
16 x 150	5/8 x 6	15.88 x 152.40	271GC	081GC	571GC	381GC	1618	1
16 x 200	5/8 x 8	15.88 x 203.20	272HC	082HC	572HC	382HC	2215	1
-	3/4 x 4	19.05 x 101.60	-	090JC	-	390JC	1498	1
-	3/4 x 6	19.05 x 152.40	-	091KC	-	391KC	2248	1

HSS TOOLBITS SQUARE/ROUND S400E

MM (W x L)	INCH (W x L)	EQUIVALENT MM	GRADES				PRICE RS./ PIECE	PCK QTY
			S400E M35 (SQ.)		S400E M35 (RD)			
			mm (MIR0903)	inch (MIR0903)	mm (MIR0903)	inch (MIR0903)		
-	3/4 x 8	19.05 x 203.20	-	092LC	-	392LC	3012	1
20 x 100	-	-	280JC	-	580JC	-	1633	1
20 x 150	-	-	281KC	-	581KC	-	2449	1
20 x 200	-	-	282LC	-	582LC	-	3265	1
25 x 150	1 x 6	25.40 x 152.40	290MC	100MC	590MC	400MC	3729	1
25 x 200	1 x 8	25.40 x 203.20	291NC	101NC	591NC	401NC	4971	1

Note : All items required minimum order value of Rs. 20,000/-.

HSS TOOLBITS SQUARE/ROUND S500

MM (W x L)	INCH (W x L)	EQUIVALENT MM	GRADES				PRICE RS./ PIECE	PCK QTY
			S500 T42 (SQ.)		S500 T42 (RD)			
			mm (MIR0905)	inch (MIR0905)	mm (MIR0905)	inch (MIR0905)		
-	3/32 x 2.1/2	2.38 x 63.50	-	001BC	-	300AC	242	10
-	3/32 x 3	2.38 x 76.20	-	000AC	-	301BC	387	10
3 x 75	1/8 x 3	3.18 x 76.20	200AC	010CC	500AC	010DC	263	10
3 x 100	1/8 x 4	3.18 x 101.60	201BC	011DC	201CC	311DC	482	10
4 x 75	5/32 x 3	3.97 x 76.20	210CC	020EC	210DC	320EC	264	10
4 x 100	5/32 x 4	3.97 x 101.60	211DC	021FC	211EC	321FC	411	10
5 x 75	3/16 x 3	4.76 x 76.20	220EC	030GC	520EC	031GC	194	10
5 x 100	3/16 x 4	4.76 x 101.60	221FC	031HC	221GC	331HC	287	10
5 x 150	3/16 x 6	4.76 x 152.40	222GC	032JC	522GC	332JC	588	10
6 x 75	1/4 x 3	6.35 x 76.20	230HC	040KC	231HC	040LC	264	10
6 x 100	1/4 x 4	6.35 x 101.60	231JC	041LC	231KC	341LC	349	10
6 x 150	1/4 x 6	6.35 x 152.40	232KC	042MC	532KC	442MC	569	10
6 x 200	1/4 x 8	6.35 x 203.20	233LC	043NC	533LC	343NC	975	10
8 x 75	5/16 x 3	7.94 x 76.20	240MC	050PC	540MC	350PC	346	10
8 x 100	5/16 x 4	7.94 x 101.60	241NC	051QC	241PC	051RC	473	10
8 x 150	5/16 x 6	7.94 x 152.40	242PC	052RC	542PC	352RC	758	10
8 x 200	5/16 x 8	7.94 x 203.20	243QC	053SC	543QC	353SC	1079	10
-	3/8 x 3	9.53 x 76.20	-	060TC	-	360TC	410	10
-	3/8 x 4	9.53 x 101.60	-	061VC	-	361VC	552	10
-	3/8 x 6	9.53 x 152.40	-	062WC	-	462WC	872	10
-	3/8 x 8	9.53 x 203.20	-	063XC	-	363XC	1239	10
-	3/8 x 10	9.53 x 254.00	-	064YC	-	364YC	1640	10
10 x 75	-	-	250RC	-	550RC	-	449	10
10 x 100	-	-	251SC	-	551SC	-	601	10
10 x 150	-	-	252TC	-	252VC	-	938	10
10 x 200	-	-	253VC	-	553VC	-	1322	10
10 x 250	-	-	254WC	-	554WC	-	1743	10
12 x 75	1/2 x 3	12.70 x 76.20	260AC	070AC	560AC	307AC	654	10
12 x 100	1/2 x 4	12.70 x 101.60	261BC	071BC	561BC	471BC	876	10
12 x 150	1/2 x 6	12.70 x 152.40	262CC	072CC	262DC	472CC	1346	10

HSS TOOLBITS SQUARE/ROUND S500 T42

MM (W x L)	INCH (W x L)	EQUIVALENT MM	GRADES				PRICE RS./ PIECE	PCK QTY
			S500 T42 (SQ.)		S500 T42 (RD)			
			mm (MIR0905)	inch (MIR0905)	mm (MIR0905)	inch (MIR0905)		
12 x 200	1/2 x 8	12.70 x 203.20	263DC	073DC	263EC	373DC	1877	10
12 x 250	1/2 x 10	12.70 x 254.00	264EC	074EC	564EC	374EC	2618	10
14 x 100	9/16 x 4	14.29 x 101.60	265FC	075TC	564FC	375FC	1079	1
14 x 150	9/16 x 6	14.29 x 152.40	265VC	076VC	504RC	376GC	1625	1
14 x 200	9/16 x 8	14.29 x 203.20	265WC	105RC	565WC	377HC	2260	1
16 x 100	5/8 x 4	15.88 x 101.60	270FC	080FC	570FC	480FC	1435	1
16 x 150	5/8 x 6	15.88 x 152.40	271GC	081GC	271HC	481GC	2149	1
16 x 200	5/8 x 8	15.88 x 203.20	272HC	082HC	272JC	382HC	2942	1
-	3/4 x 4	19.05 x 101.60	-	090JC	-	490JC	1995	1
-	3/4 x 6	19.05 x 152.40	-	091KC	-	491KC	2991	1
-	3/4 x 8	19.05 x 203.20	-	092LC	-	392LC	4009	1
20 x 100	-	-	280JC	-	580JC	-	2174	1
20 x 150	-	-	281KC	-	281LC	-	3261	1
20 x 200	-	-	282LC	-	582LC	-	4346	1
25 x 150	1 x 6	25.40 x 152.40	290MC	100MC	590MC	500MC	4955	1
25 x 200	1 x 8	25.40 x 203.20	291NC	101NC	591NC	401NC	6605	1

Note : All items required minimum order value of Rs. 20,000/-.

ZEDD	M2	(HSS WITH 0% COBALT) (62 - 65 HRC)
S100	M35	(HSS WITH 5% COBALT) (63 - 66 HRC)
S200	M42	(HSS WITH 8% COBALT) (65 - 68 HRC)
S400	T42	(HSS WITH 10% COBALT) (64 - 67 HRC)
S400E	M35	WITH CRYOGENIC (ULTRA LOW) HEAT TREATMENT (64-67 HRS)
S500E	T42	WITH CRYOGENIC (ULTRA LOW) HEAT TREATMENT (65-69 HRS)

Toolbits Application Guide

RECOMMENDED CUTTING SPEED - METER PER MINUTE

Material	10% Cobalt T42 S400/S500	8% Cobalt M42 S200	5% Cobalt M35 S100/S400E	M2 ZEDD
Mild Steel, Wrought Iron, Soft Brass, Copper, Bronze and Aluminium with tensile strength of less than 25 tons per square inch.	79-50	70-45	60-40	59-36
Steel & Steel Castings such as slightly hard Mild Steel, Soft Cast Iron & other metals like hard Brass, Copper & Aluminium with tensile strength upto 38 tons per square inch	39-26	36-24	33-32	30-21
Steel & Steel Castings such as Carbon Steel, medium hard cast Iron & other metals like hard Brass, Copper, Bronze & Aluminium with a tensile strength upto 45 tons per square inch.	29-21	26-18	24-16	22-15
Steel & Steel Castings such as Oil Hardened Steel, Chrome Steel, Hard Cast Iron, etc. With a tensile strength upto 50 tons per square inch.	22-16	21-15	20-14	18-23
Steel & Steel Castings including annealed High Speed Steel, with a tensile strength upto 65 tons per square inch.	15-13	15-12	14-11	12-10

RECOMMENDED DEPTH OF CUT	
OPERATION	**DEPTH OF CUT mm**
Rough turning	Depth of cut = machining allowance
Semi finish turning	0.50 to 0.20mm
Finish turning	0.40 to 0.10 mm

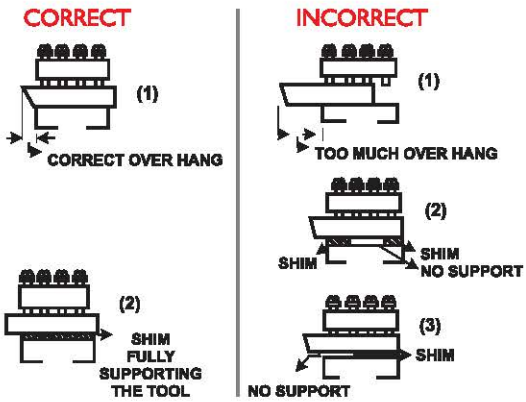
RECOMMENDED FEED

Surface Finish μ	Work Material	Range of cutting speed m/min.	Nose Radius in mm		
			0.5	1.0	2.0
			Feed in mm/rev.		
10	Carbon steel & Alloy steel	<50 >50	0.3 - 0.5 0.4 - 0.55	0.45 - 0.60 0.55 - 0.65	0.55 - 0.7 0.65 - 0.7
	Cast Iron Bronze & Aluminium Alloys	All Range	0.25 - 0.4	0.40 - 0.5	0.5 - 0.6
5	Carbon steel & Alloy steels	<50 >50	0.18 - 0.25 0.25 - 0.3	0.25 - 0.3 0.3 - 0.35	0.3 - 0.4 0.35 - 0.5
	Cast Iron, Bronze & Aluminium Alloys	All Range	0.15 - 0.25	0.25 - 0.4	0.4 - 0.6
2.5	Carbon steel & Alloy steel	< 50 50 - 100 > 100.	0.10 0.11 - 0.16 0.16 - 0.20	0.11 - 0.15 0.16 - 0.25 0.20 - 0.25	0.15 - 0.22 0.25 - 0.35 0.25 - 0.35
	Cast Iron, Bronze & Aluminium Alloys	All Range	0.1 - 0.15	0.15 - 0.2	0.2 - 0.35

HINTS FOR MACHINING

1. The tool must be kept sharp.
2. Tool overhang should be kept to a minimum less than a 1:1 ratio of overhang to the shank section, to avoid vibrations.
3. The finishing point of the tool must be set on the centre line of the work piece.
4. Re-grind at the appropriate time to minimise cutting forces. Worn out edges need a higher force.
5. Use positive rake angles. Do not use a negative rake angle unless called for.
6. The machine must be kept rigid.
7. The machine should be of adequate power.
8. The work piece and tool should be well clamped.
9. The depth of cut should be deep enough to avoid glazing.
10. The feed should be positive to avoid work hardening.
11. Minimum chip colourisation is desirable.

Correct way of Clamping the Tool.



TOOL CLAMPING

Tool bits should be fitted in the tool post or tool holder with a minimum of overhang as shown in figure (in the ratio of 1:1 of the tool size or less). The base of the tool bit should be flush with the tool post. When shims are used they should cover the entire length of the tool bit that rests on the tool post. It is not advisable to use a bent shim.

COMMON TOOL PROBLEMS, CAUSES AND REMEDIES

INDICATIONS	CAUSES	REMEDIES
Chipping	Too Keen a cutting edge. Chatter. Incorrect tool material. Too much relief. Lack of rigidity. Improper grinding.	Select Correct tool geometry. Prevent Chattering (See Chatter Below). Select suitable grade/quality. Reduce relief. Clamp rigidly. Use suitable grade of wheel for Grinding. Grind to give satisfactory finish to the cutting faces.
Cracking or Breaking	Feed to heavy. Worn out cutting edges. Improperly applied coolant. Too much rake or relief. Too much over hang. Lack of rigidity. Too much variation in depth of cut for the size of Tool bit. Improper clamping.	Reduce feed to recommended range. Re-grind the cutting edges. Apply copius flow of coolant. Grind to recommended rake/relief angles. Reduce over hang to the minimum possible extent. Clamp both the work & the tool rigidly. Minimise variation in depth of cut. Tool post or Tool holder worn out replace it. The tool must be supported at the bottom with a perfect flat (Parallel) plate shown & should be clamped rigidly check the work-clamping.
Chatter	Tool not in centre. Insufficient relief or clearance. Too much rake angle. Nose radius too large. Insufficient H.P.	Reset. Grind with adequate relief. Grind to recommended rake angle. Reduce the nose radius on the tool. Reduce depth of cut & feed.
Torn Finish	Speed too low. Dull tool. Improper grinding.	Increase speed as recommended. Re-sharpen the tool. Grind the tool to required angles with a suitable grade of wheel to give good finish on the cutting faces.
Flank wear	Speed too high. Feed to light. Improper grinding.	Reduce speed as recommended. Increase suitably. See grinding. (Chatter - Remedies)
Crater wear	Speed too high. Feed too high. Tool of incorrect grade.	Reduce speed. Reduce feed. Select tool material of better hot Hardness.
Glaze	Speed too low. Tool finish rough. Tool little rake.	Use recommended speed. Grind tool with finer grit wheel finer wheel will give finer finish on the cutting faces. Provide adequate rake.

TYPICAL CHEMICAL ANALYSIS OF HIGH SPEED STEELS

Our Tool Grade	Material Grade	Approx % of					
		C	Cr	Mo	W	Co	V
ZEDD	M2	0.90	4.1	5.0	6.4	-	1.8
S100 S400E	M35	1.2	4.1	5.0	6.4	4.8	1.9
S 200	M42	1.10	3.9	9.2	1.4	7.8	1.2
S 400 S 500	T42	1.26	4.0	3.6	9.3	10.0	3.2

Chemical analysis given above is only representative and varies from one manufacturer to another.

QUALITATIVE COMPARISON OF MAJOR STEEL PROPERTIES

Our Tool Grade	Material Grade	Red Hardness	Wear Resistance	Toughness	Grindability	Comp. Strength	Hardness Range-Hrc
ZEDD	M2						62-65
S100 S400E	M35						63-66
S 200	M42						65-69
S 400 S 500	T42						64-68

This table is intended to facilitate the steel choice. It does not take into account the various stress conditions imposed by different types of applications.

GUIDELINES FOR SELECTION OF TOOLGRADE FOR VARIOUS APPLICATIONS

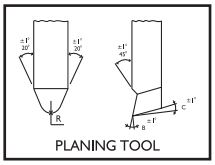
ZEDD (M2) - General purpose Tool for machining Mild Steel for various operations like Turning, Shaping, Slotting etc.

S100 & S400E (M35) - Has excellent toughness and wear resistance properties. Ideal for general purpose machining using conventional speeds & feeds. Most suitable grade for machining S. S. and Brass.

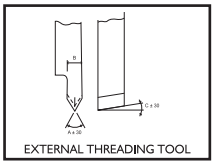
S200 (M42) - Has higher toughness than S400 & S500 grades and has excellent wear resistance properties. Ideal for applications where toughness as well as wear resistance properties are needed. i.e shaping, planner operation.

S400 & S500 (T42) - Has excellent red hardness properties and hence can be used at high speeds. This can withstand high temperatures. Ideal for use in modern workshops for heavy duty turning, parting and threading operations. Recommended for continuous production work and on automats

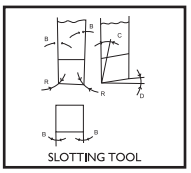
Recommended Tool Geometry For Different Operation With Single Point Cutting Tool



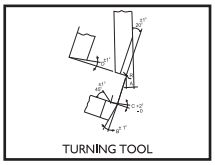
Non Farious	12°	10	4.0
Cast Iron	10°	8°	6.0
Alloys Carbon Steel	8°	8°	10.0
Stainless Steel	6°	6°	8.0
Type of Material	B ±2° 0	C ±1°	R



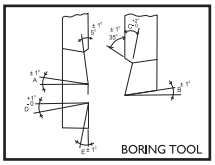
Non Farious	55°	0.50 TO 0.75 WIDTH OF TOOL	5°
Cast Iron			4°
Alloys Carbon Steel			5°
Stainless Steel			3°
Type of Material	A ±1°	B	C ±1°



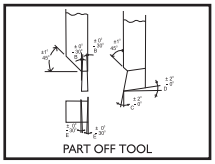
Non Farious	12°	8°	2°
Cast Iron	6°	10°	2°
Alloys Carbon Steel	6°	8°	2°
Stainless Steel	5°	5°	2°
Type of Material	C +2° 0	D +2° 0	B +0 -30



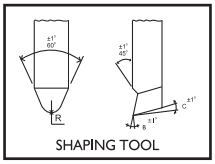
Non Farious	0.30 To 0.20 Width of Tool	10°	12°	10°	0.2
Cast Iron		8°	10°	8°	0.3
Alloys Carbon Steel		8°	8°	8°	0.3
Stainless Steel		6°	6°	6°	0.4
Type of Material	A	B ±1°	C ±2° 0	D ±1°	R



Non Farious	10°	10°	12°	10°	10°
Cast Iron	8°	8°	10°	8°	8°
Alloys Carbon Steel	8°	8°	8°	8°	8°
Stainless Steel	6°	6°	6°	6°	6°
Type of Material	A ±1°	B ±1°	C ±2° 0	D ±1° 0	E ±1°



Non Farious	1°	12°	8°	2°
Cast Iron	1°	6°	10°	2°
Alloys Carbon Steel	1°	6°	8°	2°
Stainless Steel	1°	5°	5°	2°
Type of Material	B +0 -30	C +2° 0	D +2° 0	E +0 -30



Non Farious	12°	10	4.0
Cast Iron	10°	8°	6.0
Alloys Carbon Steel	8°	8°	10.0
Stainless Steel	6°	6°	8.0
Type of Material	B ±2° 0	C ±1°	R

Note : Most suitable grade recommended for special steel are S400E, S200 & S500

HACKSAWS & BANDSAWS

SAWS

Hacksaw Blades

NOMINAL SIZE (Length X Width X Thickness) Teeth per Inch (TPI)	NOMINAL SIZE (Length X Width X Thickness) Teeth per Inch (TPI)	HSS REGULAR		HSS BIMETAL	
		PART CODE (MTA0402)	PRICE RS./PIECE	PART CODE (MTA0402)	PRICE RS./PIECE
12 x 1/2 x 0.025 (23G) x 14	300 x 12.5 x 0.63 x 14	050EC	49	651KC	47
12 x 1/2 x 0.025 (23G) x 18	300 x 12.5 x 0.63 x 18	051FC	49	630KC	47
12 x 1/2 x 0.025 (23G) x 24	300 x 12.5 x 0.63 x 24	052GC	49	750KC	47
12 x 1/2 x 0.025 (23G) x 32	300 x 12.5 x 0.63 x 32	053HC	49	751KC	47

POWER HACKSAW BLADES

NOMINAL SIZE (Length X Width X Thickness)	NOMINAL SIZE (Length X Width X Thickness)	PART CODE	HSS REGULAR		PART CODE	HSS BIMETAL	
			Teeth per inch (TPI)	HSS Regular Rs./Piece		Teeth per inch (TPI)	HSS BIMETAL Rs./Piece
Inches	mm	MTA040			MTAR		
12 x 1 x 0.050 (18 G)	300 x 25 x 1.25	2100JC	10	213	111EH000	10	179
12 x 1 x 0.050 (18 G)	300 x 25 x 1.25	2101KC	14	213	111FH000	14	179
14 x 1 x 0.050 (18 G)	350 x 25 x 1.25	2150LC	6	240	311DH000	6	202
14 x 1 x 0.050 (18 G)	350 x 25 x 1.25	2151MC	10	240	311EH000	10	202
14 x 1 x 0.050 (18 G)	350 x 25 x 1.25	2152NC	14	240	311FH000	14	202
16 x 1 x 0.050 (18 G)	400 x 25 x 1.25	2250RC	10	317	1811EH00	10	278
16 x 1 x 0.050 (18 G)	400 x 25 x 1.25	2251SC	14	317	1811FH00	14	278
17 x 1 x 0.050 (18 G)	425 x 25 x 1.25	2350WC	10	357	511EH000	10	303
17 x 1 x 0.050 (18 G)	425 x 25 x 1.25	2351XC	14	357	511FH000	14	303
18 x 1 x 0.050 (18 G)	450 x 25 x 1.25	2450AC	10	363	711EH000	10	310
18 x 1 x 0.050 (18 G)	450 x 25 x 1.25	2451BC	14	363	711FH000	14	310
14 x 1 1/4 x 0.062 (16 G)	350 x 32 x 1.60	2200PC	6	408	322DH000	6	339
14 x 1 1/4 x 0.062 (16 G)	350 x 32 x 1.60	2201QC	10	408	322EH000	10	339
16 x 1 1/4 x 0.062 (16 G)	400 x 32 x 1.60	2300TC	6	472	1822DH00	6	387
16 x 1 1/4 x 0.062 (16 G)	400 x 32 x 1.60	2301VC	10	472	1822EH00	10	387
17 x 1 1/4 x 0.062 (16 G)	425 x 32 x 1.60	2400YC	6	509	522DH000	6	437
17 x 1 1/4 x 0.062 (16 G)	425 x 32 x 1.60	2401ZC	10	509	522EH000	10	437
18 x 1 1/4 x 0.062 (16 G)	450 x 32 x 1.60	2500CC	6	525	722DH000	6	443
18 x 1 1/4 x 0.062 (16 G)	450 x 32 x 1.60	2501DC	10	525	722EH000	10	443
18 x 1 1/4 x 0.080 (14 G)	450 x 32 x 2.00	2502EC	4	652	-	-	-
18 x 1 1/4 x 0.080 (14 G)	450 x 32 x 2.00	2503FC	6	652	-	-	-
18 x 1 1/4 x 0.080 (14 G)	450 x 32 x 2.00	2504GC	10	652	-	-	-
18 x 1 1/2 x 0.062 (16 G)	450 x 40 x 1.60	2551JC	6	700	-	-	-
18 x 1 1/2 x 0.062 (16 G)	450 x 40 x 1.60	2552KC	10	700	-		
18 x 1 1/2 x 0.080 (14 G)	450 x 40 x 2.00	2553LC	4	774	743DH000	6	641
18 x 1 1/2 x 0.080 (14 G)	450 x 40 x 2.00	2554MC	6	774	-	-	-
18 x 1 1/2 x 0.080 (14 G)	450 x 40 x 2.00	2555NC	10	774	-	-	-
20 x 1 1/2 x 0.080 (14 G)	500 x 40 x 2.00	2650SC	4	859	2043DH00	6	708

POWER HACKSAW BLADES

NOMINAL SIZE (Length X Width X Thickness)	NOMINAL SIZE (Length X Width X Thickness)	PART CODE	HSS REGULAR		PART CODE	HSS BIMETAL	
			Teeth per inch (TPI)	HSS Regular Rs./Piece		Teeth per inch (TPI)	HSS BIMETAL Rs./Piece
Inches	mm	MTA040			MTAR		
20 x 1 1/2 x 0.080 (14 G)	500 x 40 x 2.00	2651TC	6	859	-	-	-
20 x 1 1/2 x 0.080 (14 G)	500 x 40 x 2.00	2652VC	10	859	-	-	-
21 x 1 1/2 x 0.080 (14 G)	525 x 40 x 2.00	2700WC	4	906	1043CH00	4	787
21 x 1 1/2 x 0.080 (14 G)	525 x 40 x 2.00	2701XC	6	906	1043DH00	6	787
21 x 1 1/2 x 0.080 (14 G)	525 x 40 x 2.00	2702VC	10	906	-	-	-
22 x 1 1/2 x 0.080 (14 G)	550 x 40 x 2.00	2750YC	4	949	2143CH00	4	854
22 x 1 1/2 x 0.080 (14 G)	550 x 40 x 2.00	2751ZC	6	949	2143DH00	6	854
24 x 1 1/2 x 0.080 (14 G)	600 x 40 x 2.00	2800AC	4	1041	1443CH00	4	922
24 x 1 1/2 x 0.080 (14 G)	600 x 40 x 2.00	2801BC	6	1041	1443DH00	6	922
24 x 1 1/2 x 0.080 (14 G)	600 x 40 x 2.00	2802VC	10	1041	-	-	-
24 x 1 1/2 x 0.100 (12 G)	600 x 40 x 2.50	2802CC	4	1235	-	-	-
24 x 1 1/2 x 0.100 (12 G)	600 x 40 x 2.50	2803DC	6	1235	-	-	-
28 x 1 1/2 x 0.100 (12 G)	700 x 40 x 2.50	2900JC	4	1489	-	-	-
28 x 1 1/2 x 0.100 (12 G)	700 x 40 x 2.50	2901KC	6	1489	-	-	-
30 x 1 1/2 x 0.100 (12 G)	750 x 40 x 2.50	3000NC	4	1659	-	-	-
30 x 1 1/2 x 0.100 (12 G)	750 x 40 x 2.50	3001PC	6	1659	-	-	-
24 x 2 x 0.080 (14 G)	600 x 50 x 2.00	2850EC	4	1461	-	-	-
24 x 2 x 0.080 (14 G)	600 x 50 x 2.00	2851FC	6	1461	-	-	-
24 x 2 x 0.100 (12 G)	600 x 50 x 2.50	2852GC	4	1730	1465CH00	4	1426
24 x 2 x 0.100 (12 G)	600 x 50 x 2.50	2853HC	6	1730	1465DH00	6	1426
28 x 2 x 0.100 (12 G)	700 x 50 x 2.50	2950LC	4	2014	2265CH00	4	1643
28 x 2 x 0.100 (12 G)	700 x 50 x 2.50	2951MC	6	2014	2265DH00	6	1643
30 x 2 x 0.100 (12 G)	750 x 50 x 2.50	3050QC	4	2245	1765CH00	4	1892
30 x 2 x 0.100 (12 G)	750 x 50 x 2.50	3051RC	6	2245	1765DH00	6	1892
32 x 2 x 0.100 (12 G)	800 x 50 x 2.50	3100SC	4	2302	1965CH00	4	1940
32 x 2 x 0.100 (12 G)	800 x 50 x 2.50	3101TC	6	2302	1965DH00	6	1940
36 x 2 x 0.100 (12 G)	900 x 50 x 2.50	3150VC	4	2714	2365CH00	4	2284
36 X 2 X 0.100 (12G)	900 x 50 x 2.50	3151WC	6	2714	2365DH00	6	2284
32 X 21/2 X 0.100 (12G)		-	-	-	1975CH00	4	2438

Width specification are approximate and depend upon availability of RM Steel.

Any other dimensional variability may occur due to RM steel availability, but adequate rigidity in cutting is assured.

All items required minimum order value of Rs. 20,000/-.

Metal Cutting Bandsaw Blades

NOMINAL SIZE (Length X Width X Thickness)	NOMINAL SIZE (Length X Width X Thickness)	TEETH PER INCH (TPI)	PART CODE	PRICE FOR 30.5 MTRS. LONG ROLL
Inches	mm	RACKER SET	MTA005	RS./ROLL
1/4 X 23G X 100' (30.5 mts)	6.35 X 0.63	10	1010DC	1638.00
3/8 X 23G X 100' (30.5 mts)	9.53 X 0.63	6	1106BC	1124.00
3/8 X 23G X 100' (30.5 mts)	9.53 X 0.63	8	1108CC	1124.00
3/8 X 23G X 100' (30.5 mts)	9.53 X 0.63	10	1110DC	1124.00
1/2 X 23G X 100' (30.5 mts)	12.70 X 0.63	6	1206BC	1357.00
1/2 X 23G X 100' (30.5 mts)	12.70 X 0.63	8	1208CC	1357.00
1/2 X 23G X 100' (30.5 mts)	12.70 X 0.63	10	1210DC	1357.00
1/2 X 23G SKIP X 100' (30.5 mts)	12.70 X 0.63	6	1206PC	1447.00
5/8 X 21G X 100' (30.5 mts)	15.88 X 0.80	6	1306BC	1765.00
5/8 X 21G X 100' (30.5 mts)	15.88 X 0.80	8	1308CC	1765.00
5/8 X 21G X 100' (30.5 mts)	15.88 X 0.80	10	1310DC	1765.00
3/4 X 21G X 100' (30.5 mts)	19.05 X 0.80	4	1404AC	1855.00
3/4 X 21G X 100' (30.5 mts)	19.05 X 0.80	6	1406BC	1855.00
3/4 X 21G X 100' (30.5 mts)	19.05 X 0.80	8	1408CC	1855.00
3/4 X 21G X 100' (30.5 mts)	19.05 X 0.80	10	1410DC	1855.00
3/4 X 21G SKIP X 100' (30.5 mts)	19.05 X 0.80	6	1406PC	2072.00
1 X 20G X 100' (30.5 mts)	25.40 X 0.90	4	1504AC	2465.00
1 X 20G X 100' (30.5 mts)	25.40 X 0.90	6	1506BC	2465.00
1 X 20G X 100' (30.5 mts)	25.40 X 0.90	8	1508CC	2465.00
1 X 20G X 100' (30.5 mts)	25.40 X 0.90	10	1510DC	2465.00

Note : All items required minimum order value of Rs. 20,000/-.

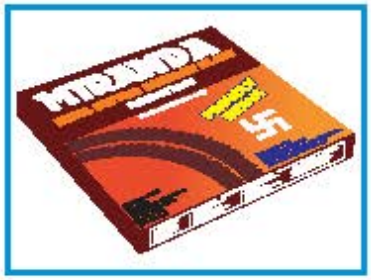
NOMINAL SIZE (Length X Width X Thickness)	NOMINAL SIZE (Length X Width X Thickness)	TEETH PER INCH (TPI)	PART CODE	PRICE FOR 30.5 MTRS. LONG ROLL
Inches	mm	WAVY SET	MTA005	RS./ROLL
1/4 X 23G X 100' (30.5 mts)	6.35 X 0.63	14	1014EC	1638.00
1/4 X 23G X 100' (30.5 mts)	6.35 X 0.63	18	1018FC	1638.00
1/4 X 23G X 100' (30.5 mts)	6.35 X 0.63	24	1024GC	1638.00
3/8 X 23G X 100' (30.5 mts)	3.53 X 0.63	14	1114EC	1124.00
3/8 X 23G X 100' (30.5 mts)	3.53 X 0.63	18	1118FC	1124.00
3/8 X 23G X 100' (30.5 mts)	3.53 X 0.63	24	1124GC	1124.00
1/2 X 23G X 100' (30.5 mts)	12.70 X 0.63	14	1214EC	1357.00
1/2 X 23G X 100' (30.5 mts)	12.70 X 0.63	18	1218FC	1357.00
1/2 X 23G X 100' (30.5 mts)	12.70 X 0.63	24	1224GC	1357.00
5/8 X 21G X 100' (30.5 mts)	15.88 X 0.80	14	1314EC	1765.00
5/8 X 21G X 100' (30.5 mts)	15.88 X 0.80	18	1318FC	1765.00
5/8 X 21G X 100' (30.5 mts)	15.88 X 0.80	24	1324GC	1765.00
3/4 X 21G X 100' (30.5 mts)	19.05 X 0.80	14	1414EC	1855.00
3/4 X 21G X 100' (30.5 mts)	19.05 X 0.80	18	1418FC	1855.00
3/4 X 21G X 100' (30.5 mts)	19.05 X 0.80	24	1424GC	1855.00
1 X 20G X 100' (30.5 mts)	25.04 X 0.90	14	1514EC	2465.00
1 X 20G X 100' (30.5 mts)	25.04 X 0.90	18	1518FC	2465.00
1 X 20G X 100' (30.5 mts)	25.40 X 0.90	24	1524GC	2465.00

Note : All items required minimum order value of Rs. 20,000/-.

Metal Cutting Bandsaw Welded Coils Racker Set

NOMINAL SIZE (Length X Width X Thickness)	NOMINAL SIZE (Length X Width X Thickness)	TEETH PER INCH (TPI)		PART CODE	PRICE
Inches	mm	RACKER SET	WAVY SET	MTA005	RS./COIL
3/4 X 21G X 8'3" (2515 mm)	19.05 X 0.80 X 2515	4		3604AC	206
3/4 X 21G X 8'3" (2515 mm)	19.05 X 0.80 X 2515	6		3606BC	206
3/4 X 21G X 8'3" (2515 mm)	19.05 X 0.80 X 2515	8		3608CC	206
3/4 X 21G X 8'3" (2515 mm)	19.05 X 0.80 X 2515	10		3610DC	206
3/4 X 21G X 8'3" (2515 mm)	19.05 X 0.80 X 2515		14	3614EC	206
3/4 X 21G X 9'10" (2997 mm)	19.05 X 0.80 X 2997	4		3704AC	234
3/4 X 21G X 9'10" (2997 mm)	19.05 X 0.80 X 2997	6		3706BC	234
3/4 X 21G X 9'10" (2997 mm)	19.05 X 0.80 X 2997	8		3708CC	234
3/4 X 21G X 9'10" (2997 mm)	19.05 X 0.80 X 2997	10		3710DC	234
3/4 X 21G X 9'10" (2997 mm)	19.05 X 0.80 X 2997		14	3714EC	234
3/4 X 21G X 11'71/2" (3544 mm)	19.05 X 0.80 X 3544	4		3804AC	269
3/4 X 21G X 11'71/2" (3544 mm)	19.05 X 0.80 X 3544	6		3806BC	269
3/4 X 21G X 11'71/2" (3544 mm)	19.05 X 0.80 X 3544	8		3808CC	269
3/4 X 21G X 11'71/2" (3544 mm)	19.05 X 0.80 X 3544	10		3810DC	269
3/4 X 21G X 11'71/2" (3544 mm)	19.05 X 0.80 X 3544		14	3814EC	269

Note : All items required minimum order value of Rs. 20,000/-.



BEST QUALITY

Introduction of Induction Handend Metal Cutting Bandsaw Blades

Miranda Tools have introduced, Induction hardening of carbon bandsaw, a state-of- the art technology in the Ankleshwar plant.

This has now replaced the conventional Flame hardening process.

INDUCTION V/S CONVENTIONAL FLAME HARDENING OF MCBB :

FLAME HARDENING	INDUCTION HARDENING
1. Gas based flame type heating system.	1. 1.Electrical & thyristor controlled heating system.
2. Low consistency.	2. Very consistent hardening quality.
3. Poor process parameter control.	3. Process parameters are precisely controlled.
4. Operator skill is important.	4. Operator skill is not very important.
5. Product is not 100% camber and twist free.	5. Product is camber and twist free.
6. Poor back hardness causes band twisting and uneven cutting.	6. Uniform back hardness ensures straight cutting of jobs.
7. Difficult to maintain hardness pattern.	7. Hardness pattern of tooth, gullet and body is easily maintained.
8. Entire body is blue- black.	8. Product is unique by appearance. Body-center is Metallic white.
9. Product performance - Inconsistent	9. Product performance - consistent
Today Miranda Tools is the only company in India which gives you the carbon bandsaw with great consistency and superior quality, using this teechnology.	

Instruction For Bandsaw Product

1. Running in of new band-saw blade (optimum radius forming of the tooth tip) 50% Feed - 50% Cutting speed. After cutting a surface of approx. 400 - 600sqr.cm. Slowly increase the feed and cutting speed to normal values.

2. These values apply for a material cross section / contact length of up to 500 mm Feed, determined according to chip thickness per teeth (mm)

Low -alloy steel	0.005 - 0.008
Alloy steel	0.004 - 0.008
Tool steel	0.002 - 0.005
Stainless steel	0.002 - 0.005
Bronze / copper	0.008 - 0.012
Aluminium	0.010 - 0.030

$$FZ = \frac{H}{40 \times m/min \times t \times TPI} = \text{Chip thickness per teeth}$$

H	=	Material diameter
40	=	Constant
m/min	=	Cutting speed
t	=	Time per section
TPI	=	Teeth per inch

3. **General rule for cutting speed and material**

The harder and tougher the material is, the lower should the cutting speed be. This assures that the tooth can "works its way" into the material.

The softer the material is, the higher should the cutting speed be. This assures that the teeth do not stick together with the material.

Unsatisfying cutting results and how to improve them.

Cutting perform.	Tool life	Cutting surface	Precision	Try the following
X		X	X	higher cutting speed
	X			lower cutting speed
	X	X		finer toothing
X				coarser toothing
		X	X	lower feed
X				higher feed
X				Hook tooth

LOW ALLOY HACKSAW BLADES

	DESCRIPTION	SIZE	PRICE RS./PIECE
LOW ALLOY HANDSAW BLADES	HANDSAW	12 X 1/2 X 23G X 14 TPI	6.45
	HANDSAW	12 X 1/2 X 23G X 18 TPI	6.45
	HANDSAW	12 X 1/2 X 23G X 24 TPI	6.45
	HANDSAW	12 X 1/2 X 23G X 32 TPI	6.45
LOW ALLOY POWER BLADES	POWER SAW	12 X 1 X 18G X 10 TPI	27.88
	POWER SAW	12 X 1 X 18G X 14 TPI	27.88
	POWER SAW	14 X 1 X 18G X 6 TPI	33.29
	POWER SAW	14 X 1 X 18G X 10 TPI	33.29
	POWER SAW	14 X 1 X 18G X 14 TPI	33.29
	POWER SAW	14 X 1.1/4 X 16G X 6 TPI	47.54
	POWER SAW	14 X 1.1/4 X 16G X 10 TPI	47.54
	POWER SAW	16 X 1 X 18G X 10 TPI	39.04
	POWER SAW	16 X 1 X 18G X 14 TPI	39.04
	POWER SAW	16 X 1.1/4 X 16G X 6 TPI	54.74
	POWER SAW	16 X 1.1/4 X 16G X 10 TPI	54.74
	POWER SAW	18 X 1 X 18G X 10 TPI	48.86
	POWER SAW	18 X 1 X 18G X 14 TPI	48.86
	POWER SAW	18 X 1.1/4 X 16G X 6 TPI	64.56
	POWER SAW	18 X 1.1/4 X 16G X 10 TPI	64.56
	POWER SAW	18 X 1.1/2 X 16G X 4 TPI	80.71
	POWER SAW	18 X 1.1/2 X 16G X 6 TPI	80.71
	POWER SAW	18 X 1.1/2 X 16G X 10 TPI	80.71

BIMETAL BANDSAW

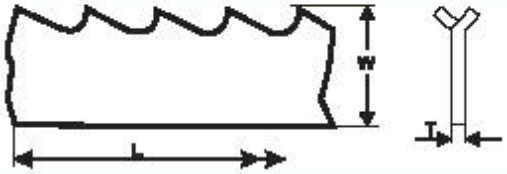
GRADE	SIZE	TEETH (TPI)	PRICE RS. / METER
FURIA N/VN	13X0.65	8,10,14, 6/10,8/12,10/14	521
	13X0.90	6,8,10,14, 5/8,6/10,8/12,10/14	562
	20X0.90	6,8,10,14, / 4/6,5/8,6/10,8/12,10/14	583
	27X0.90	4,6,8,10,14 / 3/4,4/6,5/8,6/10,8/12,10/14	602
	34X1.10	6 / 3/4,4/6,5/8,6/10	741
	41X1.30	6 / 3/4,4/6	1175
FURIA - VI	27X.90	2/3,3/4,4/6,5/8,6/10	602
	34X1.10	2/3,3/4,4/6	741
	41X1.30	1.2/2,2/3,3/4,4/6	1175
	54X1.60	0.75/1.2,1.2/2,2/3,3/4,4/6	1875
	67X1.60	0.75/1.2,1.2/2,2/3	2848
	80X1.60	0.75/1.2	----
TITAN-VX	27X.90	3/4	763
	34X1.10	2/3,3/4	940
	41X1.30	1.2/2,2/3,3/4	1578
	54X1.60	1.2/2,2/3.TPI	2402
	67X1.60	0.70/1,1.2/2,2/3	3757
KATANA-VX	27X.90	3/4,4/6	682
	34X1.10	2/3,3/4. TPI	841
	41X1.30	1.2/2,2/3,3/4,	1409
	54X1.60	2/3,0.7/1.2,1.2/2.TPI	2140
	67X1.60	0.7/1,1.2/2,2/3	3354
ALUMINA-CI	20X.90	3.TPI	661
	27X.90	2,3.TPI	682
	27X1.10	3	682
	34X1.10	1.25,2,3	841
	41X1.30	1.25, 2	1409
PROFILA-VIL	34X1.1	3/4, 4/6	841
	41X1.30	2/3,3/4, 4/6	1409
	54X1.60	2/3,3/4	2140
ULTIMA	34X1.10	2,3,4	1095
	41X1.30	2,3,4	1857
	54X1.60	1.2,2,3	2805

NOTE :

Length & TPI of bimetal loop as per requirement.

All items required minimum order value of Rs. 20,000/-.

Bandsaw Blades



Miranda Metal cutting Bandsaw Blades are Made from Carbon steel.
Miranda Metal cutting Bandsaw Rolls are manufactured with 4, 6, 8, 10, 14, 18, 24 TPI., Length 30.50 Mtrs. (100 ft.)
Miranda Metal cutting Bandsaw Coils are manufactured with Raker and Wavy set & Length 8' 3" (2515 mm.) 9' 10" 2997 mm), 11' 7½" (3544mm).
Miranda Metal cutting Bandsaw Welded Coils can be supplied as per customer requirements.

METAL CUTTING BAND SAW BLADE ROLL						
INCHES		MILLIMETERS		LENGTH	TEETH PER INCH (TPI)	
WIDTH W	THICKNESS T	WIDTH W	THICKNESS T	METERS L	RAKER SET	WAVY SET
1/4	0.025	6.35	0.63	30.5	10,	18, 24, 14
3/8	0.025	9.53	0.63	30.5	6, 8, 10	18, 24, 14
1/2	0.025	12.70	0.63	30.5	6, 8, 10	18, 24, 14
1/2	0.025	12.70	0.63	30.5	6	–
5/8	0.032	15.88	0.80	30.5	6, 8, 10	18, 24, 14
3/4	0.032	19.05	0.80	30.5	4, 6, 8, 10	18, 24, 14
3/4	0.032	19.05	0.80	30.5	6	–
1	0.035	25.40	0.90	30.5	4, 6, 8, 10	18, 24, 14

METAL CUTTING BAND SAW WELDED COILS							
INCHES			MILLIMETERS			TEETH PER INCH (TPI)	
LENGTH L	WIDTH W	THICKNESS T	LENGTH L	WIDTH W	THICKNESS T	RAKER SET	WAVY SET
8' 3"	3/4	0.032	2515	19.05	0.80	4, 6, 8, 10	18, 24, 14
9' 10"	3/4	0.032	2997	19.05	0.80	4, 6, 8, 10	18, 24, 14
11 7' 1/2"	3/4	0.032	3544	19.05	0.80	4, 6, 8, 10	18, 24, 14

Manufacturing Standards	
ISO	ISO - 5030 Part - 3

Description	Welded Rolls
Raker Set	4, 6, 8, 10 TPI
Wavy Set	18, 24, 14 TPI
Width	1/4", 3/8", 1/2", 5/8", 3/4" 1" OR 6.35, 9.53, 12.70, 15.88, 19.05, 25.40 mm.
Thickness	23G, 21G, 20G, OR 0.63, 0.80, 0.90mm.
Length	30.50 Mtrs. OR 100'
Applications	Suitable for metal cutting applications

Metal Cutting Band Saw Blade Selection Chart

Work Thickness In Inches	1/8"	1/4"	1"	2"	1/8"	1/4"	1"	2" & Over
Material to be cut	**Pitch T. P. I.**				**Cutting Speed feet/Minute**			
Free machining steel	18	14	10	6	250	200	175	150
Mild Steel	24	14	10	6	250	200	175	150
Carbon Steel	24	14	10	6	250	200	175	150
Annealed Tool & Alloy Steel	24	18	10	6	100	80	60	40
Alloy Construction Steel	24	14	10	8	175	150	125	100
High Speed Steel	24	14	10	8	150	100	75	50
Stainless Steel	24	14	10	8	100	75	50	50
Tubings	24	14	-	-	175	150	--	--
Grey Cast Iron	18	14	10	6	200	150	100	75
Malleable Cast Iron	18	10	8	6	200	175	150	125
Meehanite	18	10	8	6	150	100	75	50
Copper	-	10	8	6	--	1500	1500	1500
Aluminium	18	14	6	6	1800	1400	800	600
Phosphor Bronze	18	10	10	6	1200	900	700	700
Plastic	18	10	8	6	1500	2000	1500	1500
Asbestos	18	10	8	6	4000	3500	3000	3000
Phenolic	18	10	8	6	4500	4000	3500	3000
Paper	18	10	8	6	1500	1500	1500	1500
Rubber (Hard)	18	10	8	6	4000	3800	3000	3000

Feed Rate Chart

Feed Rate : Linear inch per minute						
Work Thickness	1/4"	1/2"	1"	1-1/2"	3"	6"
Carbon Steel	4.50	2.12	1.00	0.62	0.31	0.12
Cold Rolled Mild Steel	9.00	4.00	1.75	1.12	0.50	0.25
Cost Iron	16.00	7.50	3.25	2.12	1.00	0.43
High Carbon, High-Chrome Steel	2.25	1.00	0.50	0.25	0.12	0.03

Trouble Shooting

Problem	Cause	Remedy
1. Teeth Ripping	• Teeth too coarse	• Check if higher TPI saw is required
	• Excessive Feed / Load	• Decrease to recommended pressure/load
		• Check spring tension of blade
		• On vertical machines, the work is hand-fed, Feeding pressure should be moderate and steady.
	• Gullets filling up	• Use thicker cutting oil
	• Vibrating Work Piece	• Clamp and level securely
		• A slight movement of the piece causes the teeth to rip out
		• On vertical machines, as the work is hand-fed, adequate experience and care is required to feed the work with steady pressure, at the same time without causing vibration, Advice screw feed wherever possible.
2. Excessive blade breakage	• Teeth too coarse	• Check if higher TPI saw is recommended.
	• Excessive tension	• Reduce tension
	• Very heavy feed	• Decrease to recommended pressure/load (15 kg. on Horiz. M/c.)
	• Misaligned guides	• Adjust guides.
	• Very high speed	• Decrease to recommended speed.
	• Lack of coolant	• Always use cutting coolant
	• Weld not annealed	• Anneal the weld satisfactorily
3. Early teeth wear	• Teeth too coarse	• Use a finer tooth blade.
	• Very high speed	• Decrease to recommended speed
	• Too light a feed	• Increase to recommended pressure/load
	• Lack of coolant	• Always use cutting oil/coolant
	• Cut is binding the blade	• Decrease pressure/load
4. Blade twisting	• Excessive blade tension	• Decrease the tension
	• Guides too close to work	• Widen gap between guides.

BAND SAW BLADES

RANGE SUMMARY

ULTRA® FURIA - BIMETAL M42

Bi-metal band saw combines a special alloy steel backing, which offers a very good mechanical resistance, thus allowing a high output with a high quality High Speed Steel (M42) cutting edge.
This blade offers the best possible cutting performance at high speeds, it solves production efficiency problems. High output, recommended for industrial productions on automatic and semiautomatic machines.

FURIA - CONSTANT PITCH

Type of tooth	Section (width * thickness) mm	inch	Number of teeth per inch 1,2	2	3	4	6	8	10	14	18	24
N: REGULAR	6x0,9	1/4x.035							●	●		
	10x0,9	3/8x.035						●	●	●	●	
	13x0,65	1/2x.025						●	●	●	●	●
	13x0,9	1/2x.035					●	●	●	●	●	
	20x0,9	3/4x.035					●	●	●	●		
	27x0,9	1x.035				●	●	●	●	●		
	34x1,1	1 1/4x.042					●					
	41x1,3	1 1/2x.050					●					
Q: HOOK	6x0,9	1/4x.035					●					
	10x0,9	3/8x.035				●	●					
	13x0,65	1/2x.025					●					
	13x0,9	1/2x.035			●	●	●					
	20x0,9	3/4x.035			●	●						
	27x0,9	1x.035		●	●	●						
	27x1,1	1x.042		●	●							
	34x1,1	1 1/4x.042	●	●	●	●						
	41x1,3	1 1/2x.050	●	●	●	●						
	54x1,6	2x.063	●	●	●							
	67x1,6	2 5/8x.062	●	●								

USES

- Workshop production general engineering and steel work
- Structural steel cutting, alloy steel, stainless steel, pre-treated steel, large steel section.

FURIA - VARIABLE PITCH

Type of tooth	Section (width * thickness) mm	inch	Number of teeth per inch 8/10,25	1,2/2	2/3	3/4	4/6	5/8	6/10	8/12	10/14
VR: VARIABLE	10x0,9	3/8x.035							●	●	●
	13x0,65	1/2x.025							●	●	●
	13x0,9	1/2x.035						●	●	●	●
	20x0,9	3/4x.035					●	●	●	●	●
	27x0,9	1x.035				●	●	●	●	●	●
	34x1,1	1 1/4x.042				●	●	●	●		
	41x1,3	1 1/2x.050				●	●				
	20x0,9	3/4x.035					●				
VR: PASTAIE	27x0,9	1x.035			●	●	●	●	●		
	34x1,1	1 1/4x.042			●	●	●				
	41x1,3	1 1/2x.050		●	●	●	●				
	54x1,6	2x.050		●	●	●	●				
	54x1,6	2x.063	●	●	●	●	●				
	67x1,6	2 5/8x.062	●	●	●	●					
	80x1,6	3x.063	●								

ULTRA® ALUMINIA-M42

An extra-wide cut giving a half-setting 60% Large than that of a standard blade. This gives it a 60% large set, which prevents the material from closing up after the cut has been made. A variable pitch with a raker group of 5 teeth reduces vibration during cutting. Blade especially developed to cut aluminium, a material difficult to work, as it tends to "close up" when cut.

CONSTANT PITCH

Type of tooth	Section (width * thickness) mm	inch	Number of teeth per inch 1,25	2	3
Q: HOOK	20x0,9	3/4x.035			●
	27x0,9	1x.035		●	●
	27x1,1	1x.042		●	●
	34x1,1	1 1/4x.042	●	●	●
	41x1,3	1 1/2x.050	●	●	

ULTRA® KATANA-M42

Made from M42 steel with VX teething, this new blade offers an unrivalled compromise between hardness and resilience. The tooth design increases the rigidity of the blade and results in a straighter, more accurate cut. The reduced cutting angle offers greater tips sharpness, enabling optimum penetration particularly in "sticky" materials, requires less cutting effort. Extended operating life. Ideal for cutting stainless steel and cold workable materials.

VARIABLE PITCH

Type of tooth	Section (width * thickness) mm	inch	Number of teeth per inch 0,7/1,2	1,2/2	2/3	3/4	4/6
VR: HARD	27x0,9	1x.035				●	●
	34x1,1	1 1/4x.042			●	●	
	41x1,3	1 1/2x.050		●	●	●	
	54x1,6	2x.063	●	●	●		
	67x1,6	2 5/8x.063	●	●	●		

● Ground teeth

BAND SAW BLADES
RANGE SUMMARY

ULTRA® OPTIMA

Band saw blades to complete the Furia range.
M42 steel with heat treatment adapted to reduce the resistance to impacts.
Positif cutting angle allowing the cut of all materials. The back of the tooth is reinforced for a better impact resistance, Improved rolling circle teeth valley line to facilitate the chip disposal.
Teeth sequence cancelling bad vibrations during the cut.

USE
- Stocking plant, mechanics on automatic and semi-automatic machines.
- Cut steel, structural steel alloy, stainless steel, pretreated.

ULTRA® OPTIMA

Type de dents	Section (width * thickness) mm	Section (width * thickness) Inch	Number of teeth per inch 4/7	Number of teeth per inch 6/14
VI; VARIABLE PITCH	20 x 0,9	3/4 x .035	●	●
	27 x 0,9	1x.035	●	●
	34 x 1,1	1-1/4 x .042	●	●

ULTRA® PROFILA - M42

The Profila blade has been especially designed for cutting large steel and stainless steel profiles, singularly or in bundles. The blade's extra-large setting, enhances the safety conditions when cutting I-beams and girders reducing the occurence of pinching and blading. Profila's reinforced toothing substantially increases the blades resistance to shocks.

USE
- Power and rigid semi automatic machines.
- High hardness (130 daN/mm2) high alloy steel.
- Stainless steel.
- Fireproof steel.
- Super alloy steel : Inconel-Hastelloy-Monel.

ULTRA® PROFILA - VARIABLE PITCH

Type of teeth	Section (width * thickness) mm	Section (width * thickness) Inch	Number of teeth per inch 2/3	Number of teeth per inch 3/4	Number of teeth per inch 4/6
VIL	34x1,1	1 1/4x.042		●	●
	41x1,3	1 1/2.050	●	●	●
	54x1,6	2x.063	●	●	

ULTRA® TITAN - M51

Bi-metal band saw combines a superior alloy steel backing which permits maximum loading with a very high quality High Speed Steel (M51) cutting edge. This blading offers outstanding performance both in cutting and penetration on automatic and semi automatic machines.

USE
- Power and rigid semi automatic machines.
- High hardness (130 daN/mm2) high alloy steel.
- Stainless steel.
- Fireproof steel.
- Super alloy steel : Inconel-Hastelloy-Monel.

ULTRA® TITAN - CONSTANT PITCH

Type of teeth	Section (width * thickness) mm	Section (width * thickness) Inch	Number of teeth per inch 1,2	Number of teeth per inch 2	Number of teeth per inch 3
CI	34x1,1	1 1/4x.042		●	●
	41x1,3	1 1/2x.050	●	●	●
	54x1,6	2x.063	●	●	

ULTRA® TITAN - VARIABLE PITCH

Type of teeth	Section (width * thickness) mm	Section (width * thickness) Inch	Number of teeth per inch 0,7/1,2	Number of teeth per inch 1,2/2	Number of teeth per inch 3/4
VIL; VIRL	27x0,9	1x.035		●	●
	34x1,1	1 1/4x.042		●	●
	41x1,3	1 1/2x.050		●	●
	54x1,3	2x.090		●	
	54x1,6	2x.063		●	
	67x1,6	2 5/8x.063	●	●	●

ULTRA® ULTIMA - MSP®

For cutting exotic alloyed : bearing steels, nickel based stainless steels and other exotics.

ULTRA® ULTIMA - VARIABLE PITCH

Type of teeth	Section (width * thickness) mm	Section (width * thickness) Inch	Number of teeth per inch V 2+	V 3+	V 4+
V+	34x1,1	1 1/4x.042		●	●
	41x1,3	1 1/2x.050	●	●	●
	54x1,6	2x.063	●	●	

ULTRA® FURIA

Band saw blade for construction.

SLEEVE OF WELDED LOOPS FOR MEBA TR / 3 MACHINE

Type of teeth	Section (width * thickness) mm	Section (width * thickness) Inch	Length	Number of teeth per inch 10/14	ULTRA® Code
VIL; VARIABLE	13 x 0,65	1/2x.025	1330 mm	●	1330

HOW TO CHOOSE YOUR BAND SAW MATERIAL ? BAND SAW BLADES

The Ultra range charts below will help you select the proper band saw material for your application. Criteria to consider includes : quality of material relating to number of cuts required, length of band, section type, material to be cut and teething.

ULTRA® RANGE

ULTRA® offers you a full range to satisfy all needs.

	Aluminium Profiles	Aluminium Solids	Bronze Profiles	Bronze Solids	Low Carbon steels Profiles	Low Carbon steels Solids	High Carbon steels Profiles	High Carbon steels Solids	Alloy steels Solids	Bearing steel Solids	Steel for moulds Solids	Tools steel Solids	Stainless steels Solids	Nickel based alloys Solids	Titanium Solids
FURIA															
OPTIMA															
PROFILA															
KATANA															
TITAN															
ULTIMA															
ALUMINIA															
FLEX															
Cm/mn	+800		+100		90		70		60		45		40	30	15

ULTRA® helps you to choose the right teething.

CUTTING ANGLE

Use a positive cutting angle for difficult material to cut or non ferrous.

CI, VI, VIL, VX, V+

Use a neutral cutting angle for slightly alloyed construction steel and for profiles.

N, VN

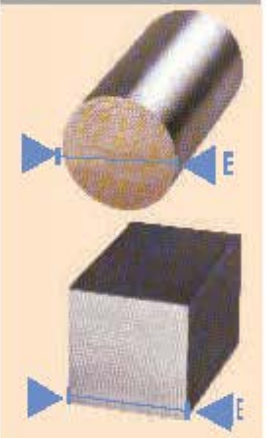
PITCH

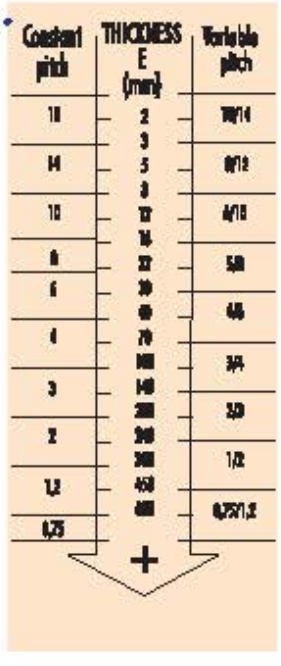
Choose the teething with the charts.
The teething is in TPI (number of teeth per Inch)

When the sections to be cut are variable use a vary pitch blade allowing a wider application range.

L (mm) / E (mm)	20	40	60	80	100	120	150	200	300	500
2	14	14	10/14	10/14	10/14	10/14	10/14	8/12	6/10	6/10
3	10/14	10/14	10/14	10/14	8/12	8/12	8/12	6/10	6/10	5/8
4	8/12	8/12	8/12	8/12	8/12	6/10	6/10	6/10	5/8	5/8
5	8/12	8/12	8/12	6/10	6/10	6/10	6/10	5/8	5/8	4/6
6	6/10	6/10	6/10	6/10	6/10	6/10	5/8	5/8	4/6	4/6
8	6/10	6/10	6/10	6/10	5/8	5/8	5/8	4/6	4/6	3/4
10		5/8	5/8	5/8	5/8	5/8	4/6	4/6	3/4	3/4
12		5/8	5/8	5/8	4/6	4/6	4/6	3/4	3/4	3/4
15		4/6	4/6	4/6	4/6	4/6	3/4	3/4	3/4	2/3
20			4/6	4/6	4/6	3/4	3/4	3/4	2/3	2/3
80				3/4	3/4	3/4	2/3	2/3	2/3	2/3
50						2/3	2/3	2/3	2/3	1.3/2

SOLID BARS

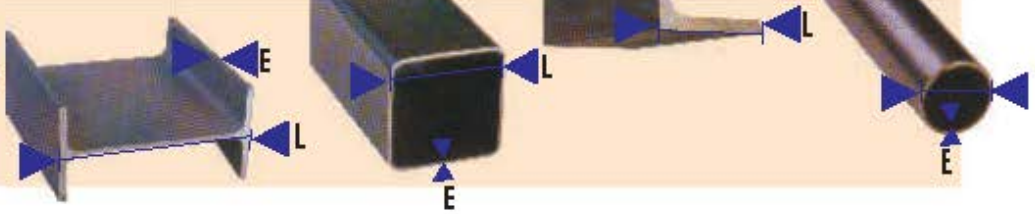




PROFILES AND PIPES

If the cut forms hollows :
▶ Take E =
E * (Number of walls / 2)

▶ Take L =
length of batch and report in the table.



Trouble Shooting

1. Teeth stripping

Probable cause :	Solution
Incorrect or no break in	Reduce speed and feed to 30% during break in
Incorrect tooth selection	Check cutting conditions
Lack of lubricant	Check lubricant
Feed too high	Reduce feed and check cutting conditions
Bad steel homogeneity	Check hardness
Bad chip removal	Check the brush and chip removal

2. Teeth fracture

Probable cause :	Solution
Bad break in	Reduce speed and feed to 30% during break in
Work piece not clamped	Check hydraulic pressure
Incorrect tooth selection	Check cutting conditions
Guides arms not adjusted properly	Adjust or replace the guide arms
Incorrect speed or feed	Adjust speed and feed

3. Wear on back of blade

Probable cause :	Solution
Incorrect tension of the blade	Adjust Tension
Too high feed on the back	Reduce Feed
Too high feed	Check cutting conditions
Blade incorrectly set up	Check blade position
Worn guides	Check guides arms and rollers
Bad set up creates cracks	Change blade and check guide arms

4. Blade breakage or cracks in gullet

Probable cause :	Solution
Too high blade tension	Reduce tension
Excessive feed	Reduce feed
Incorrect tooth selection (too course)	Check cutting conditions
No lubricant or incorrect lubricant	Check lubricant conditions
Guide arms too far from the work	Readjust the length to be cut
Guides too tight (twisting of the blade)	Check the blade position inside the guide
Teeth working before starting the cut	Allow 15mm clearance before starting cut

5. Wear on the two sides of the teeth

Probable cause :	Solution
Incorrect set up of the blade	Adjust guide arms width
Teeth rubbing on the guides arms	Adjust guide arms width
Guide arms are too wide for the blade	See machine operator's manual for blade thickness
Insufficient blade tension	Check blade tension
Non homogeneous material	Check work piece hardness
Worn out guides	Replace guide arms

6. Tooth gullet overloaded

Probable cause :	Solution
Too fine pitch	Select a new blade
Too high feed	Decrease feed
Incorrect feed	Check cutting parameters
No brush or worn out	Check the brush and position
Incorrect lubricant or no lubricant	Check the lubricant

7. Uneven wear and spots on the sides of t

Probable cause :	Solution
Damaged or missing guides	Check guides and replace/ adjust as necessary
The blade is rubbing on part of the machine	Check for free movement of the blade
Chips jammed in the guides	Clear the obstruction
Incorrect lubricant or no lubricant	Check lubricant

8. Twisted blade

Probable cause :	Solution
Excessive feed	Check cutting conditions
Guides too tight	Check guide adjustments
Work piece is loose	Check the hydraulic vice
No lubricant	Check lubricant

9. Bad surface finish

Probable cause :	Solution
Worn out blade	Replace the blade
Feed and speed not correct	Check cutting conditions
Poor blade tension	Check operator's manual for correct tension
No guides	Check the guide
Incorrect tooth selection	Check the manual and re select the tooth pitch

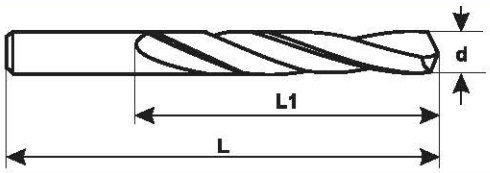
10. Wandering cuts ... going off line

Probable cause :	Solution
Damage to the set of the teeth	Check material hardness
Over feeding	Check cutting conditions & reduce feed force
Insufficient blade tension	Position arms as close to work as possible
Guide set too far apart or not in line	Check guides

DRILLS

DRILLS

HSS PARALLEL SHANK STD, GOLD AND SUPER JOBBER SERIES



IS : 5101 - 1991

DIA IN INCH (d)	SIZE		PCK QTY. NOS.	PART CODE	PRICE RS./10 NOS.		
	FLUTE LENGTH MM (L1)	OVERALL LENGTH MM (L)		MIR025 = STD MIR030 = GOLD MIR035 = SUPER	STD JOBBER (MIR025)	GOLD JOBBER (MIR030)	SUPER JOBBER (MIR035)
3/64"	16	38	10	0001CC	263	290	370
1/16"	20	43	10	0001DC	263	290	370
5/64"	24	49	10	0001EC	285	310	400
3/32"	30	57	10	0001FC	285	310	400
7/64"	33	61	10	0001GC	285	310	400
1/8"	36	65	10	0001HC	371	410	520
9/64"	39	70	10	0001JC	377	410	530
5/32"	43	75	10	0001KC	459	500	640
11/64"	47	80	10	0001LC	567	620	790
3/16"	52	86	10	0001MC	727	800	1020
13/64"	52	86	10	0001NC	799	880	1120
7/32"	57	93	10	0001PC	864	950	1210
15/64"	57	93	10	0001QC	961	1060	1350
1/4"	63	101	10	0001RC	1054	1160	1480
17/64"	69	109	10	0001SC	1346	1550	2020
9/32"	69	109	10	0001TC	1471	1690	2210
19/64"	75	117	10	0001VC	1689	1940	2530
5/16"	75	117	10	0001WC	1845	2120	2770
21/64"	75	117	10	0001XC	2193	2520	3290
11/32"	81	125	10	0001YC	2326	2690	3510
23/64"	81	125	10	0001ZC	2414	2780	3620
3/8"	87	133	10	0002AC	2746	3160	4120
25/64"	87	133	10	0002BC	3061	3520	4590
13/32"	87	133	10	0002CC	3330	3830	5000
27/64"	94	142	10	0002DC	3520	4050	5280
7/16"	94	142	10	0002EC	3928	4520	5890
29/64"	94	142	10	0002FC	4139	4760	6210
15/32"	101	151	10	0002GC	4425	5090	6640
31/64"	101	151	10	0002HC	4693	5400	7040
1/2"	101	151	10	0002JC	4952	5690	7430
33/64"	101	151	01	0002KC	6162	7090	-
17/32"	108	160	01	0002LC	6553	7540	-

HSS JOBBER DRILLS

DIA IN INCH (d)	SIZE		PCK QTY. NOS.	PART CODE	PRICE RS./10 NOS.		
	FLUTE LENGTH MM (L1)	OVERALL LENGTH MM (L)		MIR025 = STD MIR030 = GOLD MIR035 = SUPER	STD JOBBER (MIR025)	GOLD JOBBER (MIR030)	SUPER JOBBER (MIR035)
35/64"	108	160	01	0002MC	7116	8180	-
9/16"	114	169	01	0002NC	7459	8580	-
37/64"	114	169	01	0002PC	8032	9240	-
19/32"	120	178	01	0002QC	8032	9240	-
39/64"	120	178	01	0002RC	8717	10020	-
5/8"	120	178	01	0002SC	8717	10020	-
41/64"	125	184	01	0002TC	9137	10510	-
21/32"	125	184	01	0002VC	9137	10510	-
43/64"	130	191	01	0002WC	9500	10930	-
11/16"	130	191	01	0002XC	9500	10930	-
45/64"	130	191	01	0002YC	9500	10930	-
23/32"	135	198	01	0003AC	9500	10930	-
47/64"	135	198	01	0002ZC	9500	10930	-
3/4"	140	205	01	0227SC	9500	10930	-
49/64"	140	205	01	0227TC	10302	11850	-
25/32"	140	205	01	0227UC	10302	11850	-

Note : All items required minimum order value of Rs. 20,000/-.

HSS JOBBER DRILL SETS

1.50mm to 6.50mm - (13 Pcs)

1.00mm to 10.00mm - (19 Pcs)

1.00mm to 13.00mm - (25 Pcs)

SIZE MM	PART CODE MIR025 = STD MIR030 = GOLD MIR035 = SUPER	PRICE RS. / SET			
		STD JOBBER (MIR025)	GOLD JOBBER (MIR030)	SUPER JOBBER (MIR035)	PCK QTY
1.50 - 6.50	0107BC	864	950	1210	01 SET
1.00 - 10.00	9150KC	2348	2630	3405	01 SET
1.00 - 13.00	0113AC	4905	5494	7112	01 SET

SIZE INCH	PART CODE MIR025 = STD MIR030 = GOLD MIR035 = SUPER	PRICE RS. / SET			
		STD JOBBER (MIR025)	GOLD JOBBER (MIR030)	SUPER JOBBER (MIR035)	PCK QTY
1/16" - 1/4"	0107BC	864	950	1210	01 SET
1/16" - 3/8"	9150KC	2509	2810	3638	01 SET
1/16" - 1/2"	0113AC	5752	6444	8343	01 SET

HSS JOBBER DRILLS

DIA IN MM (d)	SIZE		PCK QTY. NOS.	PART CODE	PRICE RS./10 NOS.		
	FLUTE LENGTH MM (Ll)	OVERALL LENGTH MM (L)		MIR025 = STD MIR030 = GOLD MIR035 = SUPER	STD JOBBER (MIR025)	GOLD JOBBER (MIR030)	SUPER JOBBER (MIR035)
1.00	12	34	10	0040NC	263	290	-
1.05	12	34	10	0041PC	263	290	-
1.10	14	36	10	0042QC	263	290	-
1.15	14	36	10	0043RC	263	290	-
1.20	16	38	10	0044SC	263	290	-
1.25	16	38	10	0045TC	263	290	-
1.30	16	38	10	0046VC	263	290	-
1.35	18	40	10	0047WC	263	290	-
1.40	18	40	10	0048XC	263	290	-
1.45	18	40	10	0049YC	263	290	-
1.50	18	40	10	0050NC	263	290	-
1.55	20	43	10	0051AC	263	290	-
1.60	20	43	10	0052BC	263	290	-
1.65	20	43	10	0053CC	285	310	-
1.70	20	43	10	0054DC	285	310	-
1.75	22	46	10	0055EC	285	310	-
1.80	22	46	10	0056FC	285	310	400
1.85	22	46	10	0057GC	285	310	400
1.90	22	46	10	0058HC	285	310	400
1.95	24	49	10	0059JC	285	310	400
2.00	24	49	10	0060KC	285	310	400
2.05	24	49	10	0061LC	285	310	400
2.10	24	49	10	0062MC	285	310	400
2.15	27	53	10	0063NC	285	310	400
2.20	27	53	10	0064PC	285	310	400
2.25	27	53	10	0065QC	285	310	400
2.30	27	53	10	0066RC	285	310	400
2.35	27	53	10	0067SC	285	310	400
2.40	30	57	10	0068TC	285	310	400
2.45	30	57	10	0069VC	285	310	400
2.50	30	57	10	0070WC	285	310	400
2.55	30	57	10	0071XC	285	310	400
2.60	30	57	10	0072YC	285	310	400
2.65	30	57	10	0073NC	285	310	400
2.70	33	61	10	0074AC	285	310	400
2.75	33	61	10	0075BC	307	340	430
2.80	33	61	10	0076CC	307	340	430
2.85	33	61	10	0077DC	307	340	430
2.90	33	61	10	0078EC	307	340	430
2.95	33	61	10	0079FC	307	340	430
3.00	33	61	10	0080GC	307	340	430
3.10	36	65	10	0081HC	371	410	520

HSS JOBBER DRILLS

DIA IN MM (d)	SIZE		PCK QTY. NOS.	PART CODE	PRICE RS./10 NOS.		
	FLUTE LENGTH MM (L1)	OVERALL LENGTH MM (L)		MIR025 = STD MIR030 = GOLD MIR035 = SUPER	STD JOBBER (MIR025)	GOLD JOBBER (MIR030)	SUPER JOBBER (MIR035)
3.15	36	65	10	0082JC	377	410	530
3.20	36	65	10	0083KC	377	410	530
3.25	36	65	10	0084LC	377	410	530
3.30	36	65	10	0085MC	377	410	530
3.40	39	70	10	0086NC	377	410	530
3.50	39	70	10	0087PC	377	410	530
3.60	39	70	10	0088QC	459	500	640
3.65	39	70	10	0088VC	459	500	640
3.70	39	70	10	0089RC	459	500	640
3.75	39	70	10	0090SC	459	500	640
3.80	43	75	10	0091TC	459	500	640
3.90	43	75	10	0092VC	459	500	640
3.95	43	75	10	0092QC	459	500	640
4.00	43	75	10	0093WC	459	500	640
4.05	43	75	10	0093XC	567	620	790
4.10	43	75	10	0094XC	567	620	790
4.15	43	75	10	0094CC	567	620	790
4.20	43	75	10	0095YC	567	620	790
4.25	43	75	10	0096NC	567	620	790
4.30	47	80	10	0097AC	567	620	790
4.35	47	80	10	0097FC	567	620	790
4.40	47	80	10	0098BC	567	620	790
4.50	47	80	10	0099CC	727	800	1020
4.55	47	80	10	0099HC	727	800	1020
4.60	47	80	10	0100DC	727	800	1020
4.70	47	80	10	0101EC	727	800	1020
4.75	47	80	10	0102FC	727	800	1020
4.80	52	86	10	0103GC	727	800	1020
4.85	52	86	10	0103LC	799	880	1120
4.90	52	86	10	0104HC	799	880	1120
4.95	52	86	10	0104MC	799	880	1120
5.00	52	86	10	0105JC	799	880	1120
5.10	52	86	10	0106KC	799	880	1120
5.20	52	86	10	0107LC	799	880	1120
5.25	52	86	10	0108MC	864	950	1210
5.30	52	86	10	0109NC	864	950	1210
5.40	57	93	10	0110PC	864	950	1210
5.50	57	93	10	0111QC	864	950	1210
5.60	57	93	10	0112RC	864	950	1210
5.70	57	93	10	0113SC	961	1060	1350
5.75	57	93	10	0114TC	961	1060	1350
5.80	57	93	10	0115VC	961	1060	1350

HSS JOBBER DRILLS

DIA IN MM (d)	SIZE		PCK QTY. NOS.	PART CODE	PRICE RS./10 NOS.		
	FLUTE LENGTH MM (Ll)	OVERALL LENGTH MM (L)		MIR025 = STD MIR030 = GOLD MIR035 = SUPER	STD JOBBER (MIR025)	GOLD JOBBER (MIR030)	SUPER JOBBER (MIR035)
5.90	57	93	10	0116WC	961	1060	1350
6.00	57	93	10	0117XC	961	1060	1350
6.10	63	101	10	0118YC	1054	1160	1480
6.20	63	101	10	0119NC	1054	1160	1480
6.25	63	101	10	0120AC	1054	1160	1480
6.30	63	101	10	0121BC	1054	1160	1480
6.40	63	101	10	0122CC	1054	1160	1480
6.50	63	101	10	0123DC	1346	1550	2020
6.60	63	101	10	0124EC	1346	1550	2020
6.70	63	101	10	0125FC	1346	1550	2020
6.75	69	109	10	0126GC	1346	1550	2020
6.80	69	109	10	0127HC	1346	1550	2020
6.90	69	109	10	0128JC	1471	1690	2210
7.00	69	109	10	0129KC	1471	1690	2210
7.10	69	109	10	0130LC	1471	1690	2210
7.20	69	109	10	0131MC	1471	1690	2210
7.25	69	109	10	0132NC	1555	1790	2330
7.30	69	109	10	0133PC	1555	1790	2330
7.40	69	109	10	0134QC	1555	1790	2330
7.50	69	109	10	0135RC	1555	1790	2330
7.60	75	117	10	0136SC	1689	1940	2530
7.70	75	117	10	0137TC	1689	1940	2530
7.75	75	117	10	0138VC	1689	1940	2530
7.80	75	117	10	0139WC	1689	1940	2530
7.90	75	117	10	0140XC	1689	1940	2530
8.00	75	117	10	0141YC	1845	2120	2770
8.10	75	117	5	0142NC	1845	2120	2770
8.20	75	117	5	0143AC	1845	2120	2770
8.25	75	117	5	0144BC	2193	2520	3290
8.30	75	117	5	0145CC	2193	2520	3290
8.40	75	117	5	0146DC	2193	2520	3290
8.50	75	117	5	0147EC	2193	2520	3290
8.60	81	125	5	0148FC	2193	2520	3290
8.65	81	125	5	0148GC	2193	2520	3290
8.70	81	125	5	0149GC	2193	2520	3290
8.75	81	125	5	0150HC	2326	2690	3510
8.80	81	125	5	0151JC	2337	2690	3510
8.90	81	125	5	0152KC	2337	2690	3510
9.00	81	125	5	0153LC	2337	2690	3510
9.10	81	125	5	0154MC	2414	2780	3620
9.20	81	125	5	0155NC	2414	2780	3620
9.25	81	125	5	0156PC	2414	2780	3620

HSS JOBBER DRILLS

DIA IN MM (d)	SIZE		PCK QTY. NOS.	PART CODE	PRICE RS./10 NOS.		
	FLUTE LENGTH MM (Ll)	OVERALL LENGTH MM (L)		MIR025 = STD MIR030 = GOLD MIR035 = SUPER	STD JOBBER (MIR025)	GOLD JOBBER (MIR030)	SUPER JOBBER (MIR035)
9.30	81	125	5	0157QC	241 4	2780	3620
9.40	81	125	5	0158RC	2414	2780	3620
9.50	81	125	5	0159SC	2414	2780	3620
9.60	87	133	5	0160TC	2746	3160	4120
9.70	87	133	5	0161VC	2746	3160	4120
9.75	87	133	5	0162WC	2746	3160	4120
9.80	87	133	5	0163XC	2746	3160	4120
9.90	87	133	5	0164YC	3061	3520	4590
10.00	87	133	5	0165NC	3061	3520	4590
10.10	87	133	5	0166AC	3061	3520	4590
10.20	87	133	5	0167BC	3061	3520	4590
10.25	87	133	5	0168CC	3330	3830	5000
10.30	87	133	5	0169DC	3330	3830	5000
10.40	87	133	5	0170EC	3330	3830	5000
10.50	87	133	5	0171FC	3330	3830	5000
10.60	87	133	5	0172GC	3330	3830	5000
10.70	94	142	5	0173HC	3520	4050	5280
10.75	94	142	5	0174JC	3520	4050	5280
10.80	94	142	5	0175KC	3520	4050	5280
10.90	94	142	5	0176LC	3520	4050	5280
11.00	94	142	5	0177MC	3520	4050	5280
11.10	94	142	5	0178NC	3928	4520	5890
11.20	94	142	5	0179PC	3928	4520	5890
11.25	94	142	5	0180QC	3928	4520	5890
11.30	94	142	5	0181RC	3928	4520	5890
11.40	94	142	5	0182SC	3928	4520	5890
11.50	94	142	5	0183TC	4139	4760	6210
11.60	94	142	5	0184VC	4139	4760	6210
11.70	94	142	5	0185WC	4139	4760	6210
11.75	94	142	5	0186XC	4139	4760	6210
11.80	94	142	5	0187YC	4139	4760	6210
11.90	101	151	5	0188NC	4425	5090	6640
12.00	101	151	5	0189AC	4425	5090	6640
12.10	101	151	5	0190BC	4425	5090	6640
12.20	101	151	5	0191CC	4425	5090	6640
12.25	101	151	5	0192DC	4693	5400	7040
12.30	101	151	5	0193EC	4693	5400	7040
12.40	101	151	5	0194FC	4693	5400	7040
12.50	101	151	5	0195GC	4693	5400	7040
12.60	101	151	5	0196HC	4693	5400	7040
12.70	101	151	5	0197JC	4952	5690	7430
12.75	101	151	5	0198KC	4952	5690	7430

HSS JOBBER DRILLS

DIA IN MM (d)	SIZE		PCK QTY. NOS.	PART CODE	PRICE RS./10 NOS.		
	FLUTE LENGTH MM (L1)	OVERALL LENGTH MM (L)		MIR025 = STD MIR030 = GOLD MIR035 = SUPER	STD JOBBER (MIR025)	GOLD JOBBER (MIR030)	SUPER JOBBER (MIR035)
12.80	101	151	5	0199LC	4952	5690	7430
12.90	101	151	5	0200MC	4952	5690	7430
13.00	101	151	5	0201NC	4952	5690	7430
13.10	101	151	01	0202PC	6162	7090	-
13.20	101	151	01	0203QC	6162	7090	-
13.25	108	160	01	0204RC	6162	7090	-
13.30	108	160	01	0205SC	6162	7090	-
13.40	108	160	01	0206TC	6162	7090	-
13.50	108	160	01	0207VC	6553	7540	-
13.60	108	160	01	0208WC	6553	7540	-
13.70	108	160	01	0209XC	6553	7540	-
13.75	108	160	01	0210YC	6553	7540	-
13.80	108	160	01	0211NC	6553	7540	-
13.90	108	160	01	0212AC	7116	8180	-
14.00	108	160	01	0213BC	7116	8180	-
14.20	114	169	01	0213EC	7116	8180	-
14.30	114	169	01	0214CC	7116	8180	-
14.50	114	169	01	0215DC	7459	8580	-
14.75	114	169	01	0216EC	8032	9240	-
15.00	114	169	01	0217FC	8032	9240	-
15.15	120	178	01	0217JC	8032	9240	-
15.25	120	178	01	0218GC	8032	9240	-
15.30	120	178	01	0218HC	8032	9240	-
15.50	120	178	01	0219HC	8717	10020	-
15.75	120	178	01	0220JC	8717	10020	-
16.00	120	178	01	0221KC	8717	10020	-
16.50	125	184	01	0222LC	9137	10510	-
16.70	125	184	01	0222NC	9137	10510	-
17.00	125	184	01	0223MC	9137	10510	-
17.50	130	191	01	0224NC	9500	10930	-
18.00	130	191	01	0225PC	9500	10930	-
18.50	135	198	01	0226QC	9500	10930	-
19.00	135	198	01	0227RC	9500	10930	-
19.50	140	205	01	0228SC	10302	11850	-
20.00	140	205	01	0229TC	10302	11850	-

Note : All items required minimum order value of Rs. 20,000/-.

HSS JOBBER DRILLS - WIRE GAUGE

WIRE/NO GUAGE (d)	SIZE		PCK QTY. NOS.	PART CODE	PRICE RS./10 NOS.	
	FLUTE LENGTH MM (L1)	OVERALL LENGTH MM (L)		MIR025 = STD MIR030 = GOLD	STD JOBBER (MIR025)	GOLD JOBBER (MIR030)
WG1	57	93	10	0004AC	961	1060
WG2	57	93	10	0004BC	961	1060
WG3	57	93	10	0004CC	864	950
WG4	57	93	10	0004DC	864	950
WG5	52	86	10	0004EC	864	950
WG6	52	86	10	0004FC	799	880
WG7	52	86	10	0004GC	799	880
WG8	52	86	10	0004HC	799	880
WG9	52	86	10	0004JC	799	880
WG10	52	86	10	0004KC	799	880
WG11	52	86	10	0004LC	799	880
WG12	52	86	10	0004MC	727	800
WG13	47	80	10	0004NC	727	800
WG14	47	80	10	0004PC	727	800
WG15	47	80	10	0004QC	727	800
WG16	47	80	10	0004RC	727	800
WG17	47	80	10	0004SC	567	620
WG18	47	80	10	0004TC	567	620
WG19	43	75	10	0004VC	567	620
WG20	43	75	10	0004WC	567	620
WG21	43	75	10	0004XC	567	620
WG22	43	75	10	0004YC	459	500
WG23	43	75	10	0004ZC	459	500
WG24	43	75	10	0005AC	459	500
WG25	43	75	10	0005BC	459	500
WG26	39	70	10	0005CC	459	500
WG27	39	70	10	0005DC	459	500
WG28	39	70	10	0005EC	377	410
WG29	39	70	10	0005FC	377	410
WG30	36	65	10	0005GC	377	410
WG31	36	65	10	0005HC	371	410
WG32	33	61	10	0005JC	307	340
WG33	33	61	10	0005KC	307	340
WG34	33	61	10	0005LC	307	340
WG35	33	61	10	0005MC	307	340
WG36	33	61	10	0005NC	285	310
WG37	30	57	10	0005PC	285	310
WG38	30	57	10	0005QC	285	310
WG39	30	57	10	0005RC	285	310
WG40	30	57	10	0005SC	285	310
WG41	30	57	10	0005TC	285	310
WG42	30	57	10	0005VC	285	310

HSS JOBBER DRILLS - WIRE GUAGE

WIRE/NO GUAGE (d)	SIZE		PCK QTY. NOS.	PART CODE	PRICE RS./10 NOS.	
	FLUTE LENGTH MM (L1)	OVERALL LENGTH MM (L)		MIR025 = STD MIR030 = GOLD	STD JOBBER (MIR025)	GOLD JOBBER (MIR030)
WG43	27	53	10	0005WC	285	310
WG44	27	53	10	0005XC	285	310
WG45	24	49	10	0005YC	285	310
WG46	24	49	10	0005ZC	285	310
WG47	24	49	10	0006AC	285	310
WG48	24	49	10	0006BC	285	310
WG49	22	46	10	0006CC	285	310
WG50	22	46	10	0006DC	285	310
WG51	22	46	10	0006EC	285	310
WG52	20	43	10	0006FC	285	310
WG53	20	43	10	0006GC	263	290
WG54	18	40	10	0006HC	263	290
WG55	18	40	10	0006JC	263	290
WG56	16	38	10	0006KC	263	290
WG57	14	36	10	0006LC	263	290
WG58	14	36	10	0006MC	263	290
WG59	12	34	10	0006NC	263	290
WG60	12	34	10	0006PC	263	290

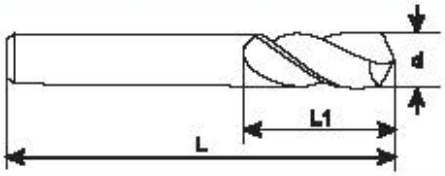
Note : All items required minimum order value of Rs. 20,000/-.

HSS JOBBER DRILLS - LETTER GAUGE

LETTER GAUGE (d)	SIZE		PCK QTY. NOS.	PART CODE	PRICE RS./10 NOS.	
	FLUTE LENGTH MM (L1)	OVERALL LENGTH MM (L)		MIR025 = STD MIR030 = GOLD	STD JOBBER (MIR025)	GOLD JOBBER (MIR030)
A	57	93	10	0009MC	961	1060
B	63	101	10	0009NC	1054	1160
C	63	101	10	0009PC	1054	1160
D	63	101	10	0009QC	1054	1160
E	63	101	10	0009RC	1054	1160
F	63	101	10	0009SC	1346	1550
G	63	101	10	0009TC	1346	1550
H	69	109	10	0009VC	1346	1550
I	69	109	10	0009WC	1471	1690
J	69	109	10	0009XC	1471	1690
K	69	109	10	0009YC	1471	1690
L	69	109	10	0009ZC	1555	1790
M	69	109	10	0010AC	1555	1790
N	75	117	10	0010BC	1689	1940
O	75	117	10	0010CC	1845	2120
P	75	117	10	0010DC	1845	2120
Q	75	117	10	0010EC	2193	2520
R	81	125	10	0010FC	2193	2520
S	81	125	10	0010GC	2337	2690
T	81	125	10	0010HC	2414	2780
U	81	125	10	0010JC	2414	2780
V	87	133	10	0010KC	2746	3160
W	87	133	10	0010LC	2746	3160
X	87	133	10	0010MC	3061	3520
Y	87	133	10	0010NC	3330	3830
Z	87	133	10	0010PC	3330	3830

Note : All items required minimum order value of Rs. 20,000/-.

HSS PARALLEL SHANK STUB SERIES DRILLS



IS : 5100 - 1969

DIA IN INCH (d)	SIZE		PCK QTY. NOS.	PART CODE	PRICE RS./10 NOS.	
	FLUTE LENGTH MM (L1)	OVERALL LENGTH MM (L)		MIR025 = STD MIR830 = GOLD	STD STUB (MIR025)	GOLD STUB (MIR830)
1/8"	20	52	10	1194GC	361	400
9/64"	20	52	10	1194HC	375	410
5/32"	22	55	10	1194JC	438	480
11/64"	24	58	10	1194KC	493	540
3/16"	26	62	10	1194LC	661	730
13/64"	26	62	10	1194MC	698	770
7/32"	28	66	10	1194NC	756	830
15/64"	28	66	10	1194PC	856	940
1/4"	31	70	10	1194QC	956	1050
17/64"	34	74	10	1194RC	1174	1350
9/32"	34	74	10	1194SC	1289	1480
19/64"	37	79	10	1194TC	1470	1690
5/16"	37	79	10	1194VC	1619	1860
21/64"	37	79	10	1194WC	1990	2290
11/32"	40	84	10	1194XC	2079	2390
23/64"	40	84	10	1194YC	2193	2520
3/8"	43	89	10	1194ZC	2290	2630
25/64"	43	89	10	1195AC	2804	3220
13/32"	43	89	10	1195BC	3015	3470
27/64"	47	95	10	1195CC	3395	3900
7/16"	47	95	10	1195DC	3537	4070
29/64"	47	95	10	1195EC	3774	4340
15/32"	51	102	10	1195FC	4007	4610
31/64"	51	102	10	1195GC	4349	5000
1/2"	51	102	10	1195HC	4436	5100
33/64"	54	107	01	1195JC	5218	6000
17/32"	54	107	01	1195KC	5218	6000
35/64"	54	107	01	1195LC	5552	6380
9/16"	56	111	01	1195MC	6047	6950
37/64"	56	111	01	1195NC	6295	7240
19/32"	58	115	01	1195PC	6810	7830
39/64"	58	115	01	1195QC	7383	8490
5/8"	58	115	01	1195RC	7383	8490
11/16"	62	123	01	1195WC	7383	8490

HSS STUB SERIES DRILLS

DIA IN MM (d)	SIZE		PCK QTY. NOS.	PART CODE	PRICE RS./10 NOS.	
	FLUTE LENGTH MM (L1)	OVERALL LENGTH MM (L)		MIR025 = STD MIR030 = GOLD	STD STUB (MIR025)	GOLD STUB (MIR030)
3.00	18	49	10	1257QC	306	340
3.10	18	49	10	1258RC	306	340
3.20	18	49	10	1259SC	375	410
3.30	18	49	10	1260TC	375	410
3.40	20	52	10	1261VC	375	410
3.50	20	52	10	1262WC	375	410
3.60	20	52	10	1263XC	375	410
3.70	20	52	10	1264YC	438	480
3.80	22	55	10	1265NC	438	480
3.90	22	55	10	1266AC	438	480
4.00	22	55	10	1267BC	438	480
4.10	22	55	10	1268CC	493	540
4.20	22	55	10	1269DC	493	540
4.30	24	58	10	1270EC	493	540
4.40	24	58	10	1271FC	493	540
4.50	24	58	10	1272GC	661	730
4.60	24	58	10	1273HC	661	730
4.70	24	58	10	1274JC	661	730
4.80	26	62	10	1275KC	661	730
4.90	26	62	10	1276LC	698	770
5.00	26	62	10	1277MC	698	770
5.10	26	62	10	1278NC	698	770
5.20	26	62	10	1279PC	698	770
5.30	26	62	10	1280QC	756	830
5.40	28	66	10	1281RC	756	830
5.50	28	66	10	1282SC	756	830
5.60	28	66	10	1283TC	756	830
5.70	28	66	10	1284VC	856	940
5.80	28	66	10	1285WC	856	940
5.90	28	66	10	1286XC	856	940
6.00	28	66	10	1287YC	856	940
6.10	31	70	10	1288NC	956	1050
6.20	31	70	10	1289AC	956	1050
6.30	31	70	10	1290BC	956	1050
6.40	31	70	10	1291CC	956	1050
6.50	31	70	10	1292DC	1174	1350
6.60	31	70	10	1293EC	1174	1350
6.70	31	70	10	1294FC	1174	1350
6.80	34	74	10	1295GC	1174	1350
6.90	34	74	10	1296HC	1289	1480
7.00	34	74	10	1297JC	1289	1480
7.10	34	74	10	1298KC	1289	1480
7.20	34	74	10	1299LC	1289	1480
7.30	34	74	10	1300MC	1336	1540
7.40	34	74	10	1301NC	1336	1540

HSS STUB SERIES DRILLS

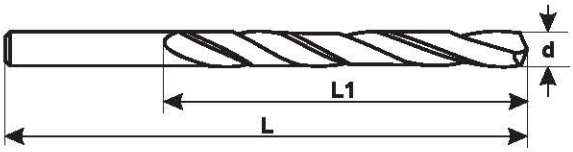
DIA IN MM (d)	SIZE		PCK QTY. NOS.	PART CODE	PRICE RS./10 NOS.	
	FLUTE LENGTH MM (Ll)	OVERALL LENGTH MM (L)		MIR025 = STD MIR030 = GOLD	STD STUB (MIR025)	GOLD STUB (MIR030)
7.50	34	74	10	1302PC	1336	1540
7.60	37	79	10	1303QC	1470	1690
7.70	37	79	10	1304RC	1470	1690
7.80	37	79	10	1305SC	1470	1690
7.90	37	79	10	1306TC	1619	1860
8.00	37	79	10	1307VC	1619	1860
8.10	37	79	10	1308WC	1619	1860
8.20	37	79	10	1309XC	1619	1860
8.30	37	79	10	1310YC	1990	2290
8.40	37	79	10	1311NC	1990	2290
8.50	37	79	10	1312AC	1990	2290
8.60	40	84	10	1313BC	2079	2390
8.70	40	84	10	1314CC	2079	2390
8.80	40	84	10	1315DC	2079	2390
8.90	40	84	10	1316EC	2079	2390
9.00	40	84	10	1317FC	2079	2390
9.10	40	84	10	1318GC	2193	2520
9.20	40	84	10	1319HC	2193	2520
9.30	40	84	10	1320JC	2193	2520
9.40	40	84	10	1321KC	2193	2520
9.50	40	84	10	1322LC	2193	2520
9.60	43	89	10	1323MC	2290	2630
9.70	43	89	10	1324NC	2290	2630
9.80	43	89	10	1325PC	2290	2630
9.90	43	89	10	1326QC	2804	3220
10.00	43	89	10	1327RC	2804	3220
10.10	43	89	10	1328SC	2804	3220
10.20	43	89	10	1329TC	2804	3220
10.30	43	89	10	1330VC	3015	3470
10.40	43	89	10	1331WC	3015	3470
10.50	43	89	10	1332XC	3015	3470
10.60	43	89	10	1333YC	3395	3900
10.70	47	95	10	1334NC	3395	3900
10.80	47	95	10	1335AC	3395	3900
10.90	47	95	10	1336BC	3395	3900
11.00	47	95	10	1337CC	3395	3900
11.10	47	95	10	1338DC	3537	4070
11.20	47	95	10	1339EC	3537	4070
11.30	47	95	10	1340FC	3774	4340
11.40	47	95	10	1341GC	3774	4340
11.50	47	95	10	1342HC	3774	4340
11.60	47	95	10	1343JC	3774	4340
11.70	47	95	10	1344KC	3774	4340
11.80	47	95	10	1345LC	3774	4340
11.90	51	102	10	1346MC	4007	4610

HSS STUB SERIES DRILLS

DIA IN MM (d)	SIZE		PCK QTY. NOS.	PART CODE	PRICE RS./10 NOS.	
	FLUTE LENGTH MM (Ll)	OVERALL LENGTH MM (L)		MIR025 = STD MIR030 = GOLD	STD STUB (MIR025)	GOLD STUB (MIR030)
12.00	51	102	10	1347NC	4007	4610
12.10	51	102	10	1348PC	4007	4610
12.20	51	102	10	1349QC	4007	4610
12.30	51	102	10	1350RC	4349	5000
12.40	51	102	10	1351SC	4349	5000
12.50	51	102	10	1352TC	4349	5000
12.60	51	102	10	1353VC	4436	5100
12.70	51	102	10	1354WC	4436	5100
12.80	51	102	10	1355XC	4436	5100
12.90	51	102	10	1356YC	4436	5100
13.00	51	102	10	1357NC	4436	5100
13.10	51	102	01	1357MC	5218	6000
13.20	51	102	01	1358AC	5218	6000
13.30	54	107	01	1358BC	5218	6000
13.40	54	107	01	1358CC	5218	6000
13.50	54	107	01	1359BC	5552	6380
13.60	54	107	01	1359CC	5552	6380
13.70	54	107	01	1359DC	5552	6380
13.80	54	107	01	1360CC	5552	6380
13.90	54	107	01	1360DC	6047	6950
14.00	54	107	01	1361DC	6047	6950
14.10	56	111	01	1361GC	6047	6950
14.20	56	111	01	1361KC	6047	6950
14.30	56	111	01	1361QC	6047	6950
14.40	56	111	01	1361RC	6295	7240
14.50	56	111	01	1362EC	6295	7240
14.60	56	111	01	1362FC	6810	7830
14.70	56	111	01	1362HC	6810	7830
14.80	56	111	01	1362RC	6810	7830
14.90	56	111	01	1362SC	6810	7830
15.00	56	111	01	1363FC	6810	7830
15.10	58	115	01	1363JC	6810	7830
15.20	58	115	01	1363PC	6810	7830
15.30	58	115	01	1363RC	7383	8490
15.40	58	115	01	1363SC	7383	8490
15.50	58	115	01	1364GC	7383	8490
15.60	58	115	01	1364HC	7383	8490
15.70	58	115	01	1364PC	7383	8490
15.80	58	115	01	1364VC	7383	8490
16.00	58	115	01	1365HC	7383	8490

Note : All items required minimum order value of Rs. 20,000/-.

HSS PARALLEL SHANK LONG GOLD SERIES



IS : 5102 - 1969

DIA IN INCH (d)	SIZE		PCK QTY. NOS.	PART CODE	PRICE RS./PIECE
	FLUTE LENGTH MM (L1)	OVERALL LENGTH MM (L)		MIR030	
1/8"	69	106	10	1405FC	176
9/64"	73	112	10	1405GC	176
5/32"	78	119	10	1405HC	191
11/64"	82	126	10	1405JC	191
3/16"	87	132	10	1405KC	191
13/64"	87	132	10	1405LC	223
7/32"	91	139	10	1405MC	259
15/64"	91	139	10	1405NC	282
1/4"	97	148	10	1405PC	290
17/64"	102	156	10	1405QC	491
9/32"	102	156	10	1405RC	491
19/64"	109	165	10	1405SC	491
5/16"	109	165	5	1405TC	508
21/64"	109	165	5	1405VC	508
11/32"	115	175	5	1405WC	535
23/64"	115	175	5	1405XC	631
3/8"	121	184	5	1405YC	557
25/64"	121	184	5	1405ZC	652
13/32"	121	184	5	1406AC	589
27/64"	128	195	5	1406BC	799
7/16"	128	195	5	1406CC	734
29/64"	128	195	5	1406DC	857
15/32"	134	205	5	1406EC	757
1/2"	134	205	1	1406GC	784
33/64"	140	214	1	1406HC	1204
17/32"	140	214	1	1406JC	1204
35/64'	140	214	1	1406KC	1300
9/16"	144	220	1	1406LC	1204
37/64"	144	220	1	1406MC	1387
19/32"	149	227	1	1406NC	1258
39/64"	149	227	1	1406PC	1424
5/8"	149	227	1	1406QC	1300

HSS LONG GOLD SERIES DRILLS

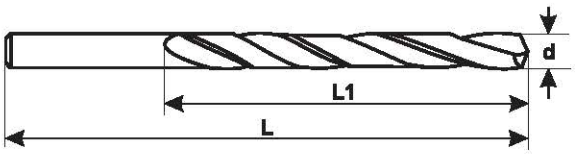
DIA IN MM (d)	SIZE		PCK QTY. NOS.	PART CODE	PRICE RS./PIECE
	FLUTE LENGTH MM (L1)	OVERALL LENGTH MM (L)		MIR030	
3.00	69	106	10	1453LC	176
3.10	69	106	10	1454MC	176
3.20	69	106	10	1455NC	176
3.30	69	106	10	1457QC	176
3.40	73	112	10	1458RC	176
3.50	73	112	10	1459SC	176
3.60	73	112	10	1460TC	191
3.70	73	112	10	1461VC	191
3.80	78	119	10	1463XC	191
3.90	78	119	10	1464YC	191
4.00	78	119	10	1465NC	191
4.10	78	119	10	1466AC	191
4.20	78	119	10	1467BC	191
4.30	82	126	10	1469DC	191
4.40	82	126	10	1470EC	191
4.50	82	126	10	1471FC	191
4.60	82	126	10	1472GC	191
4.70	82	126	10	1473HC	191
4.80	87	132	10	1475KC	191
4.90	87	132	10	1476LC	223
5.00	87	132	10	1477MC	223
5.10	87	132	10	1478NC	223
5.20	87	132	10	1479PC	223
5.30	87	132	10	1481RC	259
5.40	91	139	10	1482SC	259
5.50	91	139	10	1483TC	259
5.60	91	139	10	1484VC	282
5.70	91	139	10	1485WC	282
5.80	91	139	10	1487YC	282
5.90	91	139	10	1488NC	282
6.00	91	139	10	1489AC	282
6.10	97	148	10	1490BC	325
6.20	97	148	10	1491CC	325
6.30	97	148	10	1493EC	325
6.40	97	148	10	1494FC	402
6.50	97	148	10	1495GC	402
6.60	97	148	10	1496HC	491
6.70	97	148	10	1497JC	491
6.80	102	156	10	1499LC	491
6.90	102	156	10	1500MC	491
7.00	102	156	10	1501NC	491
7.10	102	156	10	1502PC	491
7.20	102	156	10	1503QC	491
7.30	102	156	10	1505SC	491
7.40	102	156	10	1506TC	491

HSS LONG GOLD SERIES DRILLS

DIA IN MM (d)	SIZE		PCK QTY. NOS.	PART CODE	PRICE RS./PIECE
	FLUTE LENGTH MM (L1)	OVERALL LENGTH MM (L)		MIR030	
7.50	102	156	10	1507VC	491
7.60	109	165	10	1508WC	491
7.70	109	165	10	1509XC	491
7.80	109	165	10	1511NC	491
7.90	109	165	10	1512AC	508
8.00	109	165	5	1513BC	508
8.10	109	165	5	1514CC	508
8.20	109	165	5	1515DC	508
8.30	109	165	5	1517FC	508
8.40	109	165	5	1518GC	508
8.50	109	165	5	1519HC	508
8.60	115	175	5	1520JC	535
8.70	115	175	5	1521KC	535
8.80	115	175	5	1523MC	554
8.90	115	175	5	1524NC	554
9.00	115	175	5	1525PC	554
9.20	115	175	5	1527RC	637
9.50	115	175	5	1531WC	557
9.80	121	184	5	1535AC	652
9.90	121	184	5	1536BC	652
10.00	121	184	5	1537CC	589
10.20	121	184	5	1539EC	652
10.50	121	184	5	1543JC	703
10.70	128	195	5	1545LC	799
10.80	128	195	5	1547NC	799
11.00	128	195	5	1549QC	734
11.20	128	195	5	1551SC	857
11.50	128	195	5	1555XC	757
11.80	128	195	5	1559BC	857
12.00	134	205	5	1561DC	784
12.20	134	205	5	1563FC	866
12.70	134	205	5	1569MC	784
13.00	134	205	5	1573RC	1090
13.20	134	205	5	1573TC	1204
13.50	140	214	1	1578XC	1204
13.80	140	214	1	1579AC	1300
14.00	140	214	1	1583CC	1204
14.25	144	220	1	1583FC	1204
14.50	144	220	1	1585EC	1276
15.00	144	220	1	1587GC	1276
15.25	149	227	1	1587KC	1300
15.50	149	227	1	1589JC	1300
15.75	149	227	1	1589MC	1300
16.00	149	227	1	1591LC	1328

Note : All items required minimum order value of Rs. 20,000/-.

HSS PARALLEL SHANK EXTRA LONG SERIES



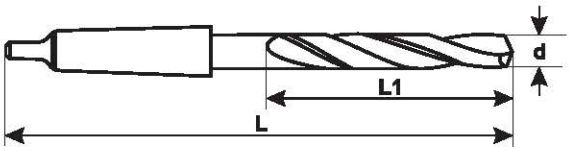
IS : 7823 - 1975

OAL MM (L)	150		175		200		225		250		300	
FL MM (L1)	100		120		135		150		170		200	
SIZE d INCH	PART CODE (MIR025)	PRICE RS./PIECE	PART CODE (MIR025)	PRICE RS./PIECE	PART CODE (MIR025)	PRICE RS./PIECE	PART CODE (MIR025)	PRICE RS./PIECE	PART CODE (MIR025)	PRICE RS./PIECE	PART CODE (MIR025)	PRICE RS./PIECE
1/8"	3100GC	521	3100HC	640	3100IC	724	3100JC	864	3100KC	1016	3100LC	1268
5/32"	3105GC	517	3105HC	640	3105IC	758	3105JC	949	3105KC	1140	3105LC	1450
3/16"	3150GC	517	3150HC	655	3150IC	821	3150JC	1010	3150AC	1200	3150BC	1588
7/32"	3151GC	571	3151HC	708	3151IC	881	3151JC	1080	3151KC	1276	3151LC	1684
1/4"	-		-		3135IC	924	-		3135KC	1345	3135LC	1813
9/32"	-		-		3140IC	1046	-		3140KC	1573	3140LC	2084
5/16"	-		-		3150IC	1100	-		3150KC	1636	3150LC	2136
11/32"	-		-		3160IC	1133	-		3160KC	1670	3160LC	2171
3/8"	-		-		3170IC	1196	-		3170KC	1679	3170LC	2216
13/32"	-		-		3180IC	1291	-		3180KC	1847	3180LC	2410
7/16"	-		-		-		-		3190KC	1909	3190LC	2480
15/32"	-		-		-		-		3200KC	2002	3200LC	2629
1/2"	-		-		-		-		3210KC	2068	3210LC	2718

OAL MM (L)	150		175		200		225		250		300	
FL MM (L1)	100		120		135		150		170		200	
SIZE d MM	PART CODE (MIR025)	PRICE RS./PIECE	PART CODE (MIR025)	PRICE RS./PIECE	PART CODE (MIR025)	PRICE RS./PIECE	PART CODE (MIR025)	PRICE RS./PIECE	PART CODE (MIR025)	PRICE RS./PIECE	PART CODE (MIR025)	PRICE RS./PIECE
3.00	3100AC	521	3100BC	640	3100CC	724	3100DC	864	3100EC	1016	3100FC	1268
3.50	3105AC	510	3105BC	594	3105CC	758	3105DC	949	3105EC	1140	3105FC	1450
4.00	3110AC	517	3111BC	640	3110CC	758	3111DC	949	3110EC	1140	3110FC	1450
4.50	3115AC	517	3115BC	640	3115CC	758	3115DC	949	3115EC	1140	3115FC	1501
5.00	3120AC	517	3120BC	655	3120CC	821	3120DC	1010	3120EC	1200	3120FC	1588
5.50	3125AC	571	3126BC	708	3125CC	881	3126DC	1080	3125EC	1276	3125FC	1684
6.00	3130AC	571	3130BC	743	3130CC	907	3130DC	1104	3130EC	1320	3130FC	1726
6.50	-		-		3135CC	924	-		3135EC	1345	3135FC	1813
7.00	-		-		3140CC	1027	-		3140EC	1478	3140FC	2040
7.50	-		-		3145CC	1046	-		3145EC	1573	3145FC	2084
8.00	-		-		3150CC	1100	-		3150EC	1636	3150FC	2136
8.50	-		-		3155CC	1133	-		3155EC	1670	3155FC	2171
9.00	-		-		3160CC	1133	-		3160EC	1670	3160FC	2171
9.50	-		-		3165CC	1196	-		3165EC	1679	3165FC	2216
10.00	-		-		3170CC	1238	-		3170EC	1723	3170FC	2322
10.50	-		-		3175CC	1291	-		3175EC	1847	3175FC	2410
11.00	-		-		-		-		3180EC	1909	3180FC	2480
11.50	-		-		-		-		3185EC	1909	3185FC	2480
12.00	-		-		-		-		3190EC	2002	2158AC	2629
12.50	-		-		-		-		2156AC	2068	2156CC	2718

Note : All items required minimum order value of Rs. 20,000/-.

HSS TAPER SHANK DRILLS



IS : 5103 - 1969

DIA INCH (d)	SIZE		PRODUCT CODE	MT SHANK	PRICE RS./ PIECE
	FLUTE LENGTH (L1) mm	OVERALL LENGTH (L) mm	MIR025		
1/8"	36	117	2550EC	MT1	221
9/64"	39	120	2550FC	MT1	232
5/32"	43	123	2550GC	MT1	221
11/64"	47	128	2550HC	MT1	299
3/16"	47	128	2550JC	MT1	299
13/64"	52	133	2550KC	MT1	307
7/32"	57	138	2550LC	MT1	320
15/64"	57	138	2550MC	MT1	307
1/4"	63	144	2550NC	MT1	342
17/64"	69	150	2550PC	MT1	377
9/32"	69	150	2550QC	MT1	373
19/64"	69	150	2550RC	MT1	377
5/16"	75	156	2550SC	MT1	373
21/64"	75	156	2550TC	MT1	477
11/32"	81	162	2550VC	MT1	455
23/64"	81	162	2550WC	MT1	500
3/8"	87	168	2550XC	MT1	455
25/64"	87	168	2550YC	MT1	536
13/32"	87	168	2550ZC	MT1	518
27/64"	94	175	2551AC	MT1	659
7/16"	94	175	2551BC	MT1	659
29/64"	94	175	2551CC	MT1	677
15/32"	101	182	2551DC	MT1	677
31/64"	101	182	2551EC	MT1	687
1/2"	101	182	2551FC	MT1	687
33/64"	101	182	2551GC	MT1	997
17/32"	108	189	2551HC	MT1	997
35/64"	108	189	2551JC	MT1	1068
9/16"	114	212	2551KC	MT2	1144
37/64"	114	212	2551LC	MT2	1194
19/32"	120	218	2551MC	MT2	1194
39/64"	120	218	2551NC	MT2	1213
5/8"	120	218	2551PC	MT2	1213
41/64"	125	223	2551QC	MT2	1240
21/32"	125	223	2551RC	MT2	1326
43/64"	130	228	2551SC	MT2	1344
11/16"	130	228	2551TC	MT2	1344
45/64"	130	228	2551VC	MT2	1474

DIA INCH (d)	SIZE		PRODUCT CODE	MT SHANK	PRICE RS./ PIECE
	FLUTE LENGTH (L1) mm	OVERALL LENGTH (L) mm	MIR025		
23/32"	135	233	2551WC	MT2	1474
47/64"	135	233	2551XC	MT2	1488
3/4"	140	238	2551YC	MT2	1488
49/64"	140	238	2551ZC	MT2	1564
25/32"	140	238	2552AC	MT2	1564
51/64"	145	243	2552BC	MT2	1696
13/16"	145	243	2552CC	MT2	1696
53/64"	145	243	2552DC	MT2	1822
27/32"	150	248	2552EC	MT2	1822
55/64"	150	248	2552FC	MT2	1907
7/8"	150	248	2552GC	MT2	1907
57/64"	155	253	2552HC	MT2	2118
29/32"	155	253	2552JC	MT2	2118
59/64"	155	276	2552KC	MT3	2461
15/16"	160	281	2552LC	MT3	2528
61/64"	160	281	2552MC	MT3	2642
31/32"	160	281	2552NC	MT3	2642
63/64"	160	281	2552PC	MT3	2766
1"	165	286	2552QC	MT3	2804
1.1/64"	165	286	2552RC	MT3	3071
1.1/32"	165	286	2552SC	MT3	3301
1.3/64"	170	291	2552TC	MT3	3376
1.1/16"	170	291	2552VC	MT3	3483
1.5/64"	170	291	2552WC	MT3	3491
1.3/32"	170	291	2552XC	MT3	3816
1.7/64"	175	296	2552YC	MT3	3836
1.1/8"	175	296	2552ZC	MT3	3836
1.9/64"	175	296	2553AC	MT3	4007
1.5/32"	175	296	2553FC	MT3	4007
1.11/64"	175	296	2553CC	MT3	4111
1.3/16"	180	301	2553DC	MT3	4341
1.13/64"	180	301	2553EC	MT3	4750
1.7/32"	180	301	2553BC	MT3	4750
1.15/64"	180	301	2553GC	MT3	5522
1.1/4"	185	306	2553HC	MT3	5522
1.17/64"	185	334	2553JC	MT4	6047
1.9/32"	185	334	2553KC	MT4	6047
1.19/64"	185	334	2553LC	MT4	6199

HSS TAPER SHANK DRILLS

DIA INCH (d)	SIZE		PRODUCT CODE	MT SHANK	PRICE RS./ PIECE
	FLUTE LENGTH (L1) mm	OVERALL LENGTH (L) mm	MIR025		
1.5/16"	185	334	2553MC	MT4	6199
1.21/64"	190	339	2553NC	MT4	6535
1.11/32"	190	339	2553PC	MT4	6801
1.23/64"	190	339	2553QC	MT4	7212
1.3/8"	190	339	2553RC	MT4	7212
1.25/64"	190	339	2553SC	MT4	7651
1.13/32"	195	344	2553TC	MT4	7651
1.27/64"	195	344	2553VC	MT4	7917
1.7/16"	195	344	2553WC	MT4	7917
1.29/64"	195	344	2553XC	MT4	7917
1.15/36"	195	344	2553YC	MT4	8106
1.31/64"	200	349	2553ZC	MT4	8777
1.1/2"	200	349	2554AC	MT4	8777
1.33/64"	200	349	2554BC	MT4	9041
1.17/32"	200	349	2554CC	MT4	9041
1.35/64"	200	349	2554DC	MT4	9576
1.9/16"	200	349	2554EC	MT4	9576
1.37/64"	205	354	2554FC	MT4	9995
1.19/32"	205	354	2554GC	MT4	9995
1.39/64"	205	354	2554HC	MT4	10394
1.5/8"	205	354	2554JC	MT4	10394
1.41/64"	205	354	2554KC	MT4	10802
1.21/32"	205	354	2554LC	MT4	10802
1.43/64"	205	354	2554MC	MT4	11077
1.11/16"	210	359	2554NC	MT4	11213
1.45/64"	210	359	2554PC	MT4	11477
1.23/32"	210	359	2554QC	MT4	11477
1.47/64"	210	359	2554RC	MT4	11882
1.3/4"	210	359	2554SC	MT4	11882
1.49/64"	210	359	2554TC	MT4	12160
1.25/32"	215	364	2554VC	MT4	12160
1.51/64"	215	364	2554WC	MT4	12712
1.13/16"	215	364	2554XC	MT4	12712
1.53/64"	215	364	2554YC	MT4	13350
1.27/32"	215	364	2554ZC	MT4	13350
1.55/64"	215	364	2555AC	MT4	13631
1.7/8"	220	369	2555BC	MT4	14865
1.57/64"	220	369	2555CC	MT4	14865

DIA INCH (d)	SIZE		PRODUCT CODE	MT SHANK	PRICE RS./ PIECE
	FLUTE LENGTH (L1) mm	OVERALL LENGTH (L) mm	MIR025		
1.29/32"	220	369	2555DC	MT4	14865
1.59/64"	220	369	2555EC	MT4	14974
1.15/16"	220	369	2555FC	MT4	14974
1.61/64"	220	369	2555GC	MT4	15134
1.31/32"	225	374	2555HC	MT4	21640
1.63/64"	225	374	2555JC	MT4	15940
2.0"	225	374	2555KC	MT4	15940
2.1/32"	225	412	2555MC	MT5	21640
2.1/16"	225	412	2555PC	MT5	21640
2.3/32"	230	417	2555RC	MT5	28164
2.1/8"	230	417	2555TC	MT5	28164
2.5/32"	230	417	2555WC	MT5	29586
2.3/16"	230	417	2555YC	MT5	29586
2.7/32"	235	422	2556AC	MT5	30828
2.1/4"	235	422	2556CC	MT5	30828
2.9/32"	235	422	2556EC	MT5	33646
2.5/16"	235	422	2556GC	MT5	33646
2.11/32"	235	422	2556JC	MT5	34287
2.3/8"	240	427	2556LC	MT5	34287
2.13/32"	240	427	2556NC	MT5	36446
2.7/16"	240	427	2556QC	MT5	36446
2.1/12"	240	427	2556DC	MT5	37059
2.10/2"	245	432	2556VC	MT5	37059
2.17/32"	245	432	2556XC	MT5	40957
2.9/16"	245	432	2556ZC	MT5	40957
2.19/32"	245	432	2557BC	MT5	41264
2.5/8"	245	432	2557DC	MT5	41264
2.21/32"	250	437	2557FC	MT5	42269
2.11/16"	250	437	2557HC	MT5	42269
2.23/32"	250	437	2557KC	MT5	45817
2.3/4"	250	437	2558MC	MT5	45817
2.25/32"	250	437	2559PC	MT5	49393
2.13/16"	255	442	2560RC	MT5	49393
2.27/32"	255	442	2560TC	MT5	50370
2.7/8"	255	442	2561WC	MT5	50370
2.29/32"	255	442	2561YC	MT5	53719
2.15/16"	255	442	2562AC	MT5	53719
2.31/32"	260	447	2563CC	MT5	54285

HSS TAPER SHANK DRILLS

DIA MM (d)	SIZE		PRODUCT CODE	MT SHANK	PRICE RS./ PIECE
	FLUTE LENGTH (L1) mm	OVERALL LENGTH (L) mm	MIR025		
3.00	33	114	2634EC	MT1	221
3.20	36	117	2636GC	MT1	232
3.50	39	120	2640LC	MT1	221
3.80	43	123	2644QC	MT1	232
4.00	43	123	2646SC	MT1	221
4.20	43	123	2648VC	MT1	299
4.50	47	128	2652NC	MT1	299
4.80	52	133	2656DC	MT1	307
5.00	52	133	2658FC	MT1	299
5.20	52	133	2660HC	MT1	307
5.50	57	138	2664MC	MT1	299
5.80	57	138	2668RC	MT1	307
6.00	57	138	2670TC	MT1	299
6.20	63	144	2672WC	MT1	346
6.50	63	144	2676AC	MT1	373
6.75	69	150	2679DC	MT1	377
6.80	69	150	2680EC	MT1	377
7.00	69	150	2682GC	MT1	373
7.20	69	150	2684JC	MT1	377
7.50	69	150	2688NC	MT1	373
7.80	75	156	2692SC	MT1	377
8.00	75	156	2694WC	MT1	373
8.20	75	156	2696YC	MT1	455
8.50	75	156	2700CC	MT1	414
8.80	81	162	2704GC	MT1	500
9.00	81	162	2706JC	MT1	455
9.20	81	162	2708LC	MT1	500
9.50	81	162	2712QC	MT1	455
9.80	87	168	2716VC	MT1	536
10.00	87	168	2718XC	MT1	476
10.20	87	168	2720NC	MT1	532
10.50	87	168	2724DC	MT1	631
10.80	94	175	2728HC	MT1	659
11.00	94	175	2730KC	MT1	659
11.20	94	175	2732MC	MT1	677
11.50	94	175	2736RC	MT1	677
11.80	94	175	2740WC	MT1	677
12.00	101	182	2742YC	MT1	687
12.20	101	182	2744AC	MT1	687
12.30	101	182	2746CC	MT1	687
12.50	101	182	2748EC	MT1	687
12.70	101	182	2750GC	MT1	687
12.80	101	182	2752JC	MT1	953
13.00	101	182	2754LC	MT1	953
13.10	101	182	2755MC	MT1	997

DIA MM (d)	SIZE		PRODUCT CODE	MT SHANK	PRICE RS./ PIECE
	FLUTE LENGTH (L1) mm	OVERALL LENGTH (L) mm	MIR025		
13.20	101	182	2756NC	MT1	997
13.50	108	189	2760SC	MT1	1068
13.80	108	189	2764XC	MT1	1068
14.00	108	189	2766NC	MT1	1068
14.25	114	212	2767AC	MT2	1144
14.50	114	212	2768BC	MT2	1194
14.75	114	212	2769CC	MT2	1194
15.00	114	212	2770DC	MT2	1194
15.25	120	218	2771EC	MT2	1213
15.50	120	218	2772FC	MT2	1213
15.75	120	218	2773GC	MT2	1213
16.00	120	218	2774HC	MT2	1240
16.25	215	223	2775JC	MT2	1240
16.50	215	223	2776KC	MT2	1326
16.75	215	223	2777LC	MT2	1326
17.00	215	223	2778MC	MT2	1326
17.25	130	228	2779NC	MT2	1344
17.50	130	228	2780PC	MT2	1394
17.75	130	228	2781QC	MT2	1410
18.00	130	228	2782RC	MT2	1474
18.25	135	233	2783SC	MT2	1474
18.50	135	233	2784TC	MT2	1474
18.75	135	233	2785VC	MT2	1488
19.00	135	233	2786WC	MT2	1488
19.25	140	238	2787XC	MT2	1564
19.50	140	238	2788YC	MT2	1564
19.75	140	238	2789NC	MT2	1564
20.00	140	238	2790AC	MT2	1679
20.20	145	243	2790VC	MT2	1679
20.25	145	243	2791BC	MT2	1696
20.40	145	243	2792CC	MT2	1696
20.50	145	243	2793DC	MT2	1696
20.75	145	243	2794EC	MT2	1774
21.00	145	243	2795FC	MT2	1774
21.25	150	248	2796GC	MT2	1822
21.50	150	248	2797HC	MT2	1870
21.75	150	248	2798JC	MT2	1870
22.00	150	248	2799KC	MT2	1907
22.25	150	248	2800LC	MT2	2079
22.50	155	253	2801MC	MT2	2079
22.75	155	253	2802NC	MT2	2118
23.00	155	253	2803PC	MT2	2118
23.25	155	253	2804QC	MT3	2223
23.30	155	253	2805PC	MT3	2528
23.50	155	253	2805RC	MT3	2528

HSS TAPER SHANK DRILL

DIA MM (d)	SIZE		PRODUCT CODE	MT SHANK	PRICE RS./ PIECE
	FLUTE LENGTH (L1) mm	OVERALL LENGTH (L) mm	MIR025		
23.75	160	281	2806SC	MT3	2528
24.00	160	281	2807TC	MT3	2594
24.25	160	281	2808VC	MT3	2642
24.50	160	281	2809WC	MT3	2642
24.75	160	281	2810XC	MT3	2766
25.00	160	281	2811YC	MT3	2766
25.25	165	286	2812NC	MT3	2804
25.50	165	286	2813AC	MT3	3044
25.75	165	286	2814BC	MT3	3044
26.00	165	286	2815CC	MT3	3071
26.25	165	286	2816DC	MT3	3301
26.50	165	286	2817EC	MT3	3376
26.75	170	291	2818FC	MT3	3376
27.00	170	291	2819GC	MT3	3483
27.25	170	291	2820HC	MT3	3491
27.50	170	291	2821JC	MT3	3491
27.75	170	291	2822KC	MT3	3491
28.00	170	291	2823LC	MT3	3836
28.25	175	296	2824MC	MT3	3836
28.50	175	296	2825NC	MT3	3836
28.75	175	296	2826PC	MT3	3948
29.00	175	296	2827QC	MT3	4007
29.25	175	296	2828RC	MT3	4007
29.50	175	296	2829SC	MT3	4027
29.75	175	296	2830TC	MT3	4027
30.00	175	296	2831VC	MT3	4111
30.25	180	301	2832WC	MT3	4674
30.50	180	301	2833XC	MT3	4674
30.75	180	301	2834YC	MT3	4750
31.00	180	301	2835NC	MT3	5285
31.25	180	301	2836AC	MT3	5285
31.50	180	301	2837BC	MT3	5522
31.75	185	306	2838CC	MT4	5522
32.00	185	306	2839DC	MT4	6047
32.50	185	306	2840EC	MT4	6047
33.00	185	306	2842GC	MT4	6199
33.50	185	306	2843HC	MT4	6410
34.00	190	339	2844JC	MT4	6535
34.50	190	339	2845KC	MT4	7154
35.00	190	339	2846LC	MT4	7212
35.50	190	339	2847MC	MT4	7651
36.00	195	344	2848NC	MT4	7764
36.50	195	344	2849PC	MT4	7917
37.00	195	344	2850QC	MT4	8106
37.50	195	344	2851RC	MT4	8641

DIA MM (d)	SIZE		PRODUCT CODE	MT SHANK	PRICE RS./ PIECE
	FLUTE LENGTH (L1) mm	OVERALL LENGTH (L) mm	MIR025		
38.00	200	349	2852SC	MT4	8777
38.50	200	349	2853TC	MT4	9041
39.00	200	349	2854VC	MT4	9576
39.50	200	349	2855WC	MT4	9576
40.00	200	349	2856XC	MT4	9826
40.50	205	354	2857YC	MT4	10394
41.00	205	354	2858NC	MT4	10394
41.50	205	354	2859AC	MT4	10802
42.00	205	354	2860BC	MT4	10802
42.50	205	354	2861CC	MT4	11077
43.00	210	359	2862DC	MT4	11477
43.50	210	359	2863EC	MT4	11477
44.00	210	359	2864FC	MT4	11882
44.50	210	359	2865GC	MT4	11882
45.00	210	359	2866HC	MT4	12160
45.50	215	364	2867JC	MT4	12712
46.00	215	364	2868KC	MT4	12712
46.50	215	364	2869LC	MT4	13350
47.00	215	364	2870MC	MT4	13350
47.50	215	364	2871NC	MT4	13631
48.00	220	369	2872PC	MT4	14865
48.50	220	369	2873QC	MT4	14974
49.00	220	369	2874RC	MT4	14974
49.50	220	369	2875SC	MT4	15134
50.00	220	369	2876TC	MT4	15134
50.50	225	374	2877VC	MT4	15940
51.00	225	374	2878WC	MT5	21640
52.00	225	374	2879XC	MT6	21640
52.50	225	374	2879YC	MT6	28164
53.00	225	374	2880YC	MT6	28164
53.50	230	417	2880ZC	MT6	28164
54.00	230	417	2881NC	MT6	28164
54.50	230	417	2881PC	MT6	29586
55.00	230	417	2882AC	MT6	29586
55.50	230	417	2882BC	MT6	29586
56.00	230	417	2883BC	MT6	30828
56.50	235	422	2883CC	MT6	30828
57.00	235	422	2884CC	MT6	30828
57.50	235	422	2884DC	MT6	33646
58.00	235	422	2885DC	MT6	33646
58.50	235	422	2885EC	MT6	33646
59.00	235	422	2886EC	MT6	34287
59.50	235	422	2886FC	MT6	34287
60.00	235	422	2887EC	MT6	34287
60.50	240	427	2887FC	MT6	36446

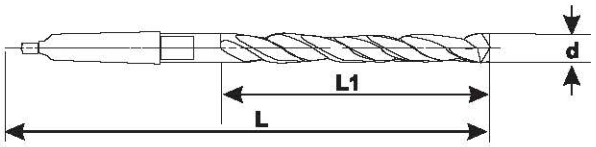
HSS TAPER SHANK DRILLS

DIA MM (d)	SIZE		PRODUCT CODE	MT SHANK	PRICE RS./ PIECE
	FLUTE LENGTH (Ll) mm	OVERALL LENGTH (L) mm	MIR025		
61.00	240	427	2888GC	MT6	36446
61.50	240	427	2888HC	MT6	36446
62.00	240	427	2889HC	MT6	36446
62.50	240	427	2889JC	MT6	36446
63.00	240	427	2890JC	MT6	37059
63.50	245	432	2890KC	MT6	37059
64.00	245	432	2891KC	MT6	40957
65.00	245	432	2892LC	MT6	40957
66.00	245	432	2893MC	MT6	41264
67.00	245	432	2894NC	MT6	42269

DIA MM (d)	SIZE		PRODUCT CODE	MT SHANK	PRICE RS./ PIECE
	FLUTE LENGTH (Ll) mm	OVERALL LENGTH (L) mm	MIR025		
68.00	250	437	2895PC	MT6	42269
69.00	250	437	2896QC	MT6	45817
70.00	250	437	2897RC	MT6	45817
71.00	250	437	2898SC	MT6	49393
71.50	255	442	2898TC	MT6	49393
72.00	255	442	2899TC	MT6	50370
73.00	255	442	2900VC	MT6	50370
74.00	255	442	2901WC	MT6	53719
75.00	255	442	2902XC	MT6	54285
76.00	255	442	2903YC	MT6	54285

Note : All items required minimum order value of Rs. 20,000/-.

HSS TAPER SHANK TWIST DRILLS (LONG SERIES)



IS : 8305 - 1976 (Type N)

SIZE		OAL	PRICE RS./PIECE
MM	INCH	MM	
5.00	13/64	155	670
		155	670
5.20		155	670
5.50	7/32	161	746
		161	746
5.80	15/64	161	746
		161	746
6.00		161	746
6.20	1/4	167	835
		167	835
6.50	17/64	167	835
		174	897
6.80		174	897
7.00	9/32	174	897
		174	897
7.20		174	927
7.50	19/64	174	927
		181	980
7.80	5/16	181	980
		181	980
8.00		181	980
8.20	21/64	181	1000
		181	1000
8.50	11/32	181	1000
		188	1083
8.80		188	1083
9.00	23/64	188	1083
		188	1109
9.20		188	1109
9.50	3/8	188	1109
		197	1109
9.80	25/64	197	1260
		197	1260
10.00		197	1260

SIZE		OAL	PRICE RS./PIECE
MM	INCH	MM	
22.25		289	289
22.50		296	296
	57/64	296	296
22.75		296	296
23.00		296	296
	29/32	296	296
23.25		319	319
	59/64	319	319
23.50		319	319
23.75		327	327
	15/16	327	327
24.00		327	327
	61/64	327	327
24.25		327	327
24.50		327	327
	31/32	327	327
24.75		327	327
25.00		327	327
25.25		335	335
	1	335	335
25.50		335	335
25.75		335	335
26.00		335	335
	1.1/32	335	335
26.25		335	335
26.50		335	335
26.75		343	343
	1.1/16	343	343
27.00		343	343
27.25		343	343
27.50		343	343
27.75		343	343
	1.3/32	343	343
28.00		343	343

HSS TAPER SHANK TWIST DRILLS (LONG SERIES)

SIZE		OAL	PRICE RS./PIECE
MM	INCH	MM	
10.20	13/32	197	1295
		197	1295
10.50	27/64	197	1295
		206	1323
10.80		206	1323
11.00	7/16	206	1323
		206	1372
11.20		206	1372
11.50	29/64	206	1372
		206	1372
11.80	15/32	206	1372
		215	1629
12.00		215	1629
12.20	31/64	215	1717
		215	1717
12.50	1/2	215	1717
		215	1717
12.80		215	1717
13.00	33/64	215	1717
		215	1717
13.20	17/32	215	1717
		223	1881
13.50		223	1881
13.80	35/64	223	1957
		223	1957
14.00		223	1957
14.25	9/16	245	2443
		245	2443
14.5	37/64	245	2443
		245	2447
14.75		245	2447
15.00	19/32	245	2447
		251	2555
15.25	39/64	251	2555
		251	2555
15.50		251	2555
15.75	5/8	251	2621
		251	2621
16.00		251	2621
16.25	41/64	257	2667
		257	2667
16.50	21/32	257	2667
		257	2723
16.75		257	2723

SIZE		OAL	PRICE RS./PIECE
MM	INCH	MM	
28.25		351	351
28.50		351	351
	1.1/8	351	351
28.75		351	351
29.00		351	351
29.25		351	351
	1.5/32	351	351
29.5		351	351
29.75		351	351
30.00		351	351
	1.3/16	360	360
30.25		360	360
30.50		360	360
30.75		360	360
	1.7/32	360	360
31.00		360	360
31.25		360	360
31.50		360	360
31.75	1.1/4	369	369
32.00		397	397
32.50		397	397
	1.9/32	397	397
33.00		397	397
	1.5/16	397	397
33.5		397	397
34.00		406	406
	1.11/32	406	406
34.5		406	406
	1.3/8	406	406
35.00		406	406
35.50		406	406
	1.13/32	416	416
36.00		416	416
36.50		416	416
	1.7/16	416	416
37.00		416	416
	1.15/32	416	416
37.50		416	416
38.00		426	426
	1.1/2	426	426
38.50		426	426
	1.17/32	426	426
39.00		426	426
39.50		426	426

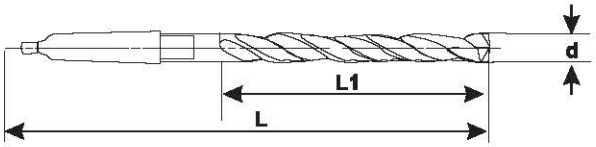
HSS TAPER SHANK TWIST DRILLS (LONG SERIES)

SIZE		OAL	PRICE RS./PIECE
MM	INCH	MM	
17.00	43/64	257	2723
		263	2956
17.25	11/16	263	2956
		263	2956
17.50		263	2956
17.75	45/64	263	2933
		263	2933
18.00		263	2933
18.25	23/32	269	3011
		269	3011
18.50	47/64	269	3011
		269	3059
18.75		269	3059
19.00	3/4	269	3059
		275	3059
19.25	49/64	275	3143
		275	3143
19.50		275	3143
19.75	25/32	275	3233
		275	3195
20.00	51/64	275	3195
		282	3248
20.25		282	3248
20.50	13/16	282	3248
		282	3309
20.75		282	3309
21.001	53/64	282	3309
		282	3844
21.25	27/32	289	3844
		289	3844
21.50		289	3844
21.75	55/64	289	3921
		289	3921
22.00	7/8	289	3921
		289	4187

SIZE		OAL	PRICE RS./PIECE
MM	INCH	MM	
	1.9/16	426	426
40.00		426	426
	1.19/32	436	436
40.50		436	436
41.00		436	436
	1.5/8	436	436
41.50		436	436
42.00		436	436
	1.21/32	436	436
42.50		436	436
	1.11/16	447	447
43.00		447	447
43.50		447	447
	1.23/32	447	447
44.00		447	447
	1.3/4	447	447
44.50		447	447
45.00		447	447
	1.25/32	459	459
45.50		459	459
46.00		459	459
	1.13/16	459	459
46.50		459	459
	1.27/32	459	459
47.00		459	459
47.50		459	459
	1.7/8	470	470
48.00		470	470
	1.29/32	470	470
48.50		470	470
49.00		470	470
	1.29/32	470	470
49.50		470	470
	1.15/16	470	470
49.50		470	470
50.00		470	470

Note : 1. Minimum order value required is Rs.20000.

HSS TAPER SHANK TWIST DRILLS (EXTRA LONG SERIES)



IS : 7822 - 1975

SIZE		OVERALL LENGTH IN MILIMETERS									
		200	225	250	275	300	315	325	350	375	400
MM	INCH	PRICE RS./PIECE									
10.00		1259	1426	1609	1879	2164	2363	2463	2758	3110	3460
10.50		1295	1479	1717	1985	2275	2464	2588	2960	3326	3748
11.00		1323	1526	1733	2017	2318	2545	2655	3014	3381	3743
11.50	7/16	1372	1557	1778	2068	2374	2588	2705	3095	3469	3879
12.00		-	1629	1855	2150	2463	2690	2825	3195	3547	3979
12.50	1/2	-	1717	1918	2227	2540	2775	2903	3346	3777	4268

SIZE		OVERALL LENGTH IN MILIMETERS											
		250	275	300	315	325	350	375	400	425	450	475	500
MM	INCH	PRICE RS./PIECE											
13.00		2275	2607	2960	3213	3381	3847	4318	4851	-	-	-	-
13.50		2349	2660	3041	3292	3441	3920	4425	4973	-	-	-	-
14.00		2427	2739	3095	3359	3496	3998	4516	5068	-	-	-	-
14.50	9/16	2443	2776	3141	3377	3547	4073	4594	5158	6064	6769	7617	8543
15.00		2497	2837	3217	3449	3634	4155	4660	5242	6037	6851	7694	8631
15.50		2555	2902	3248	3517	3683	4219	4749	5313	6081	6917	7761	8705
16.00	5/8	2621	2951	3313	3566	3751	4280	4822	5421	6207	7036	7855	8801
16.50		2666	2991	3377	3634	3809	4359	4911	5535	6301	7111	7935	8855
17.00		2722	3062	3412	3677	3860	4425	4978	5597	6375	7198	8012	8938
17.50	11/16	-	-	3496	3748	3935	4511	5061	5663	6452	7282	8114	9022
18.00		-	-	3547	3832	3998	4583	5150	5768	6533	7357	8199	9109
18.50		-	-	3604	3879	4070	4623	5211	5857	6615	7442	8255	9196

SIZE		OVERALL LENGTH IN MILIMETERS									
		300	315	325	350	375	400	425	450	475	500
MM	INCH	PRICE RS./PIECE									
19.00	3/4	3668	3935	4130	4700	5291	5935	6685	7527	8336	9250
19.50		3713	3979	4171	4785	5395	6056	6769	7616	8435	9340
20.00		3777	4045	4251	4840	5468	6143	6903	7694	8528	9453
20.50		3847	4119	4310	4921	5535	6236	6987	7826	8660	9596
21.00	13/16	3916	4199	4383	5026	5651	6338	7137	7959	8819	9747
21.50		3998	4268	4456	5115	5759	6459	7243	8128	8978	9944
22.00		4084	4382	4583	5211	5857	6567	7357	8253	9121	10102
22.50	7/8	4187	4474	4682	5299	5935	6637	7484	8368	9278	10270

HSS TAPER SHANK TWIST DRILLS (EXTRA LONG SERIES)

SIZE		OVERALL LENGTH IN MILIMETERS									
		300	315	325	350	375	400	425	450	475	500
MM	INCH	PRICE RS./PIECE									
23.00		4389	4684	4856	5474	6065	6755	7592	8521	9415	10420
23.50		4822	-	5362	5877	6461	6986	7850	8762	9699	10741
24.00	15/16	4822	-	5362	5935	6544	7231	8097	9040	9963	11027
24.50		4973	-	5597	6206	6769	7478	8363	9297	10255	11326
25.00		-	-	5801	6434	7036	7708	8600	9567	10541	11643
25.50	1	-	-	-	6634	7243	7937	8845	9818	10823	11915
26.00		-	-	-	6903	7505	8195	9109	10108	11104	12232
26.50		-	-	-	7111	7724	8423	9362	10366	11366	12532
27.00	1.1/16	-	-	-	7357	7995	8674	9610	10625	11662	12825
27.50		-	-	-	7592	8199	8888	9865	10893	11933	13113
28.00		-	-	-	7826	8435	9148	10108	11156	12470	13430
28.50	1.1/8	-	-	-	8078	8684	9375	10342	11428	12512	13707

SIZE		OVERALL LENGTH IN MILIMETERS									
		300	315	325	350	375	400	425	450	475	500
MM	INCH	PRICE RS./PIECE									
29.00		-	-	-	8305	8924	9631	10605	11701	12776	14017
29.50		-	-	-	8534	9148	9859	10857	11950	13064	14325
30.00	1.3/16	-	-	-	8777	9394	10102	11104	12220	13340	14607
31.00	1.1/4	-	-	-	9010	9629	10347	11379	12536	13687	15019
32.00		-	-	-	9075	9818	10857	11933	13143	14325	15716
33.00	1.5/16	-	-	-	-	-	11326	12464	13729	14965	16402
34.00		-	-	-	-	-	11821	12993	14317	15614	17108
35.00	1.3/8	-	-	-	-	-	12337	13564	14907	16267	17806
36.00		-	-	-	-	-	12825	14079	15483	16894	18503
37.00	1.7/16	-	-	-	-	-	13312	14607	16072	17528	19177
38.00	1.1/2	-	-	-	-	-	13820	15189	16695	18185	19905
39.00		-	-	-	-	-	14325	15854	17227	18763	20499

SIZE		OVERALL LENGTH IN MILIMETERS				
		400	425	450	475	500
MM	INCH	PRICE RS./PIECE				
40.00		14942	16309	17833	19397	21173
41.00	1.5/8	-	-	-	-	21874
42.00		-	-	-	-	22846
43.00		-	-	-	-	23859
44.00		-	-	-	-	24855
45.00	1.3/4	-	-	-	-	25868
46.00	1.13/16	-	-	-	-	26963
47.00		-	-	-	-	28053
48.00	1.7/8	-	-	-	-	29147
49.00	1.15/16	-	-	-	-	30219
50.00		-	-	-	-	31437

Note : 1. Minimum order value required is Rs.20000.

CENTRE DRILLS

HSS CENTRE DRILL TYPE-A IS : 6708

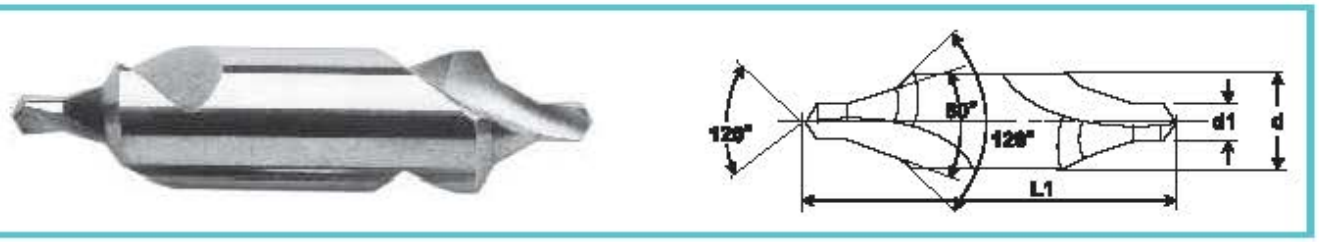
PILOT DIA MM (d)	SIZE		PCK QTY.	PRODUCT CODE	PRICE RS./ PIECE
	BODY DIA (d1)	OVERALL LENGTH (L1)		MDC025-Std. MDC030-Gold	
1.00	3.15	31.50	1	1844AC	131
1.25	3.15	31.50	1	1845BC	131
1.60	4.00	35.50	1	1846CC	131
2.00	5.00	40.00	1	1847DC	131
2.50	6.30	45.00	1	1848EC	150
3.15	8.00	50.00	1	1849FC	236
4.00	10.00	56.00	1	1850GC	292
5.00	12.50	63.00	1	1851HC	496
6.30	16.00	71.00	1	1852JC	585
8.00	20.00	80.00	1	1853KC	906
10.00	25.00	100.00	1	1851LC	1163

HSS CENTRE DRILL TYPE-B.S : 328/II/1950

B. S. NO.	PILOT DIA (d)	SIZE		PCK QTY.	PRODUCT CODE	PRICE RS./ PIECE
		BODY DIA (d1)	OVERALL LENGTH d1 Inch		MDC025-Std. MDC030-Gold	
BS-1	3/64"	1/8"	1.1/2"	1	1829AC	131
BS-2	1/16"	3/16"	1.3/4"	1	1830BC	131
BS-3	3/32"	1/4"	2"	1	1831CC	150
BS-4	1/8"	5/16"	2.1/4"	1	1832DC	236
BS-5	3/16"	7/16"	2.1/2"	1	1833EC	311
BS-6	1/4"	5/8"	3"	1	1833FC	585
BS-7	5/16"	3/4"	3.1/2"	1	1833GC	906

Note : MOQ Taps for all sizes - 50 Nos.

CENTRE DRILLS

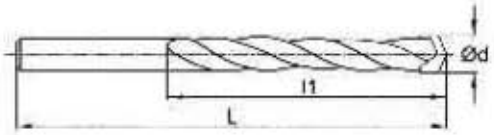


HSS CENTRE DRILL TYPE-B IS : 6709

PILOT DIA MM (d)	SIZE		PCK QTY.	PRODUCT CODE	PRICE RS./ PIECE
	BODY DIA (d1)	OVERALL LENGTH (MM)		MDC025-Std. MDC030-Gold	
1.00	4.00	37.50	1	1861MC	217
1.25	5.00	40.00	1	1861LC	234
1.60	6.30	47.00	1	1861NC	273
2.00	8.00	52.00	1	1861PC	384
2.50	10.00	59.00	1	1861QC	489
3.15	11.20	63.00	1	1861RC	654
4.00	14.00	70.00	1	1861SC	878
5.00	18.00	78.00	1	1861TC	1253
6.30	20.00	83.00	1	1861VC	1475
8.00	25.00	100.00	1	1861XC	1912
10.00	31.00	125.00	1	1861ZC	2270

Note : MOQ Taps for all sizes - 50 Nos.

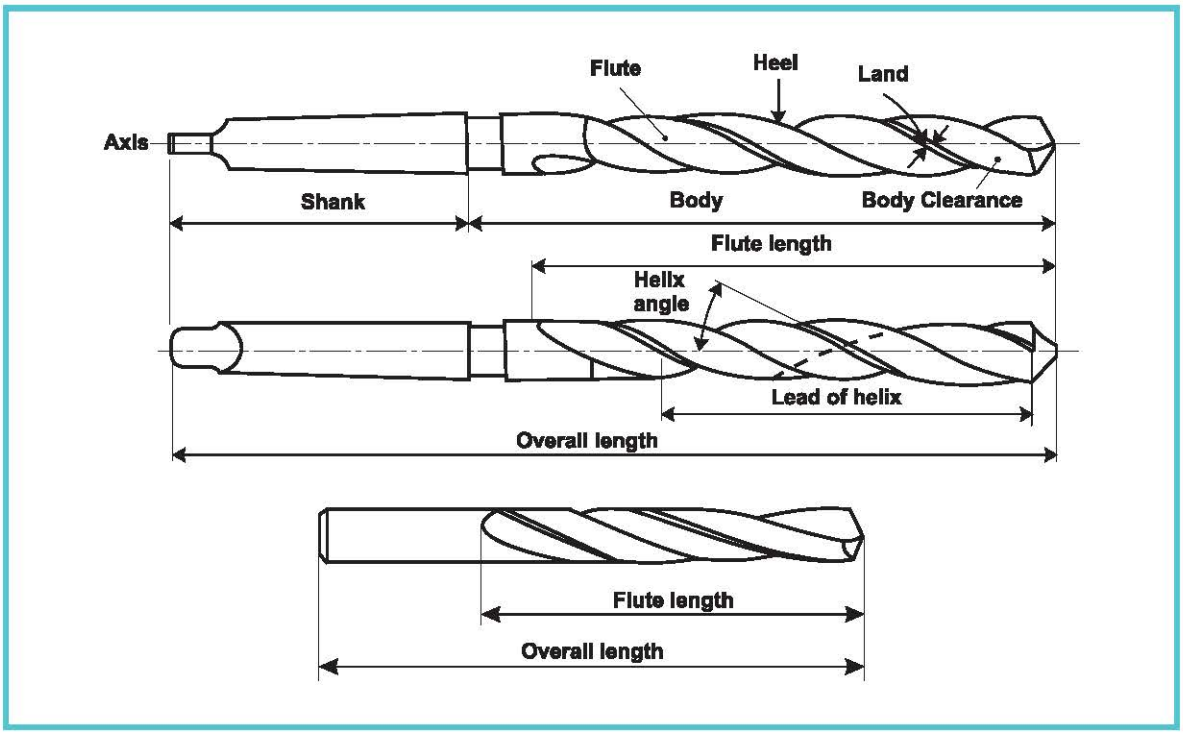
MASONRY DRILLS - CARBIDE TIPPED



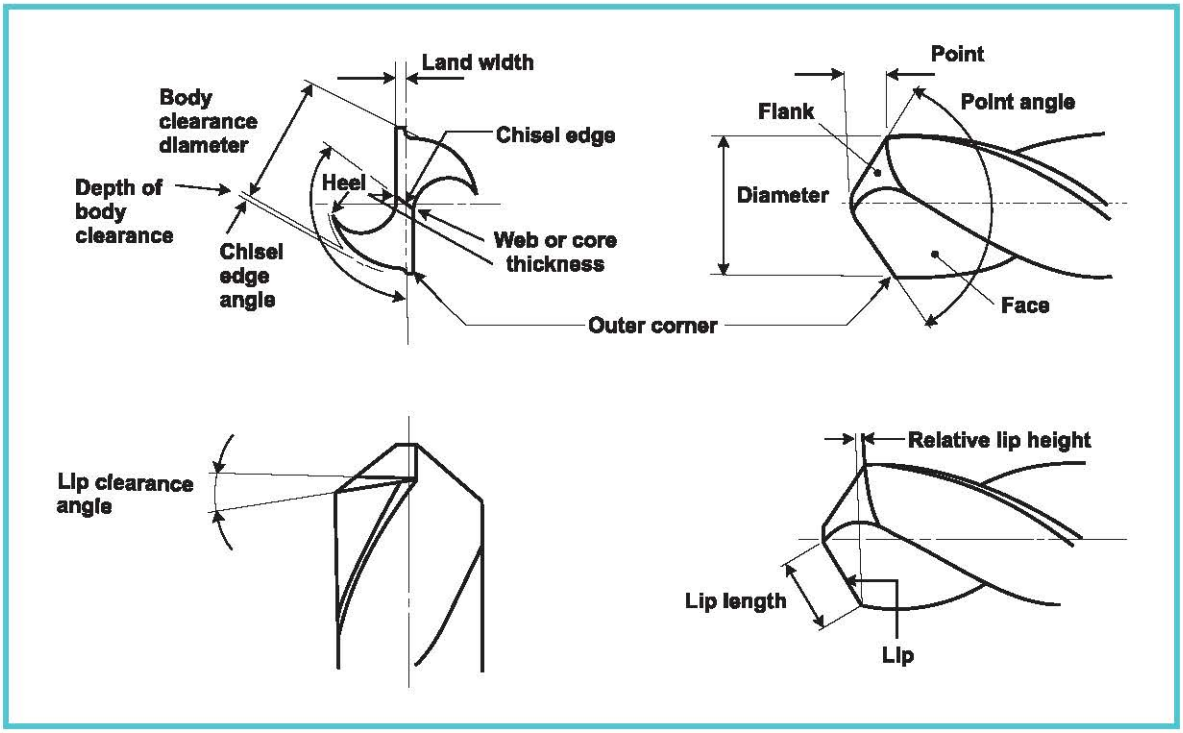
(GROUND FLUTED & BRIGHT PLATED)

SIZE (d)	MM	INCH		FLUTE LENGTH (L1)	OVERALL LENGTH (L)	PCK. QTY.	PRICE RS./PIECE
	PRODUCT CODE (MIM025)	SIZE	PRODUCT CODE (MIM025)				
3	0080GS	1/8"	0001HS	40	76	10	43
4	0093WS	5/32"	0001KS	45	85	10	46
5	0105JS	3/16"	0001MS	45	90	10	50
5.5	0111QS	7/32"	0001PS	45	90	10	58
6	0117XS	15/64"	0001QS	60	110	10	58
6.5	0123DS	1/4"	0001RS	60	110	10	58
7	0129KS	9/32"	0001TS	60	110	10	105
8	0141YS	5/16"	0001WS	80	120	10	105
9	0153LS	11/32"	0001YS	80	120	10	118
10	0165NS	3/8"	0002AS	80	120	10	118
11	0177MS	7/16"	0002ES	115	160	10	150
12	0189AS	15/32"	0002GS	115	160	10	150
13	0201NS	1/2"	0002JS	115	160	10	150

Twist Drill Terms - General Features



Twist Drill Terms - Point Geometry



Drill Selection Guide

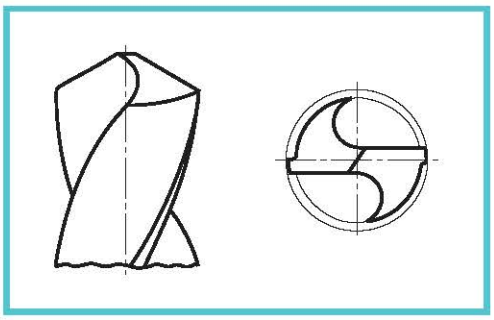
DRILL SERIES	STANDARD DRILLS	HIGH HELIX DRILLS	LOW HELIX DRILLS
Helix angle	STANDARD (25°-30°)	HIGH (34°-40°)	LOW (17°-23°)
Web Thickness	STANDARD	LOWER THAN STANDARD	LOWER THAN STANDARD
Choice standard	It is most suitable for drilling of steel, cast iron, alloy steel, and malleable cast iron and possible to drill stainless drill, brass, shallow hole of aluminium alloy, nickel and almost all kind of material.	This is most suitable for drilling of non-ferrous metal of aluminium, die casted alloy, magnesium alloy, zinc, copper etc., and deep hole of them and possible to get fine result of normal drilling and deep-hole drilling for stainless steel having good machinability.	This is most suitable for drilling of Bakelite, molded plastics, fiber, hard rubber and suitable for drilling of soft type BRASS and magnesium alloy.

Work material / Cutting condition / Dia. (mm)	Steels		Cast iron		Alloy steel		Aluminium		Copper		Stainless Steel		Plastics		Magnesium alloy		Brass	
	rpm	mm/rev	rpm	mm/rev	rpm	mm/rev	rpm	mm/rev	rpm	mm/rev	rpm	mm/rev	rpm	mm/rev	rpm	mm/rev	rpm	mm/rev
2	3550	0.03	3550	0.03	1800	0.02	10000	0.03	2800	0.03	1800	0.03	8000	0.03	14000	0.03	5000	0.04
3	2240	0.06	2240	0.06	1120	0.03	6300	0.06	1800	0.06	1120	0.06	5000	0.06	9000	0.06	3150	0.08
5	1400	0.11	1400	0.11	710	0.05	4000	0.11	1120	0.11	710	0.11	3150	0.11	5600	0.11	2000	0.14
8	900	0.16	900	0.16	450	0.08	2500	0.16	710	0.16	450	0.16	2000	0.16	3550	0.16	1250	0.20
12	560	0.22	560	0.22	280	0.11	1600	0.22	450	0.22	280	0.22	1250	0.22	2240	0.22	800	0.28
16	450	0.26	450	0.26	224	0.13	1250	0.26	355	0.26	224	0.26	1000	0.26	1800	0.26	630	0.33
20	355	0.30	355	0.30	180	0.15	1000	0.30	280	0.30	180	0.30	800	0.30	1400	0.30	500	0.38
25	280	0.34	280	0.34	140	0.17	800	0.34	224	0.34	140	0.34	630	0.34	1120	0.34	400	0.42
32	224	0.38	224	0.38	112	0.19	630	0.38	180	0.38	112	0.38	500	0.38	900	0.38	315	0.48
40	180	0.42	180	0.42	90	0.21	500	0.42	140	0.42	90	0.42	400	0.42	710	0.42	250	0.53
50	140	0.45	140	0.45	71	0.23	400	0.45	112	0.45	71	0.45	315	0.45	560	0.45	200	0.56

Drill Point Styles

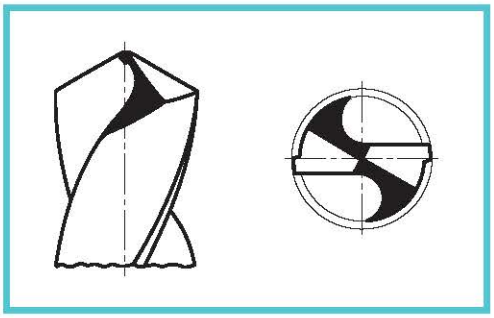
1. GENERAL PURPOSE DRILL

The 118° drill point is the most commonly used drill point. It will give satisfactory results in a wide variety of materials. This point style is supplied on all of our standard special drills unless specified otherwise except Spot Drills.



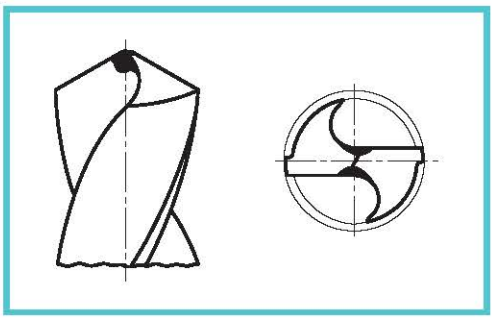
2. SPLIT POINT

118° or 135° split points are self-centering drill points that require less torque and thrust in hand or machine drilling. This point helps break up chips in deep hole drilling and is an excellent choice when used on drills for CNC equipment.



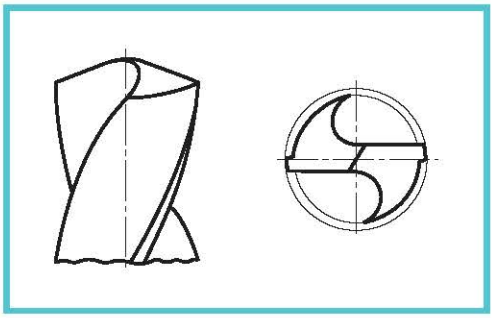
3. NOTCH THINNED POINT

This particular point style was developed to be used in heavy duty drilling applications. It produces excellent results in the drilling of high tensile alloys and steel forgings.



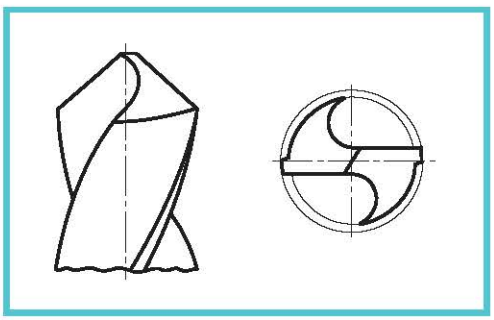
4. 135° POINT

Since the 135° drill point has a short cutting lip than a conventional 118° point and has less lip relief, it has the needed strength to drill tough, hard material. This point style can reduce or minimize the burr on breakthrough on many applications.



5. 90° POINT

The 90° drill point angle is most commonly used in wood, plastic and low density non-ferrous metals. This point will dramatically reduce cracking in drilling plastics. This point is also excellent for accurate spotting. All our standard spot drills are manufactured with this point style.



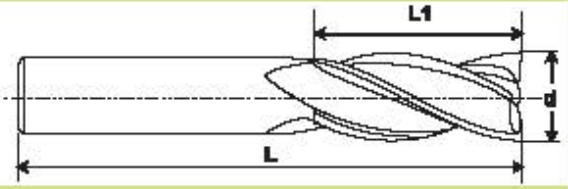
Common Drill Trouble, Shooting and Remedies

INDICATIONS	CAUSES	REMEDIES
Outer corners breakdown	Rpm Too High, Poor Lubrication, Clogging, Too Much Feed, Poor Lip Relief.	Reduce Speed And Feed Check Lip Relief.
Cutting lips Chip	Feed Too High, Too High Lip Relief.	Reduce Feed, Check Lip Relief.
Cracks in Cutting lips	Running Too Hot, Too Quickly Cooled While Sharpening.	Repoint Drill, Check Speed, Feed Check Lubricants.
Drill breaks	Point Improperly Ground, Too Much Feed, Drill Is Dull, Flutes Clogging, Backlash In Drill Machine.	Check For Proper Point, Check Feed, Inspect Drill Machine.
Tang breaks	Imperfect Fit Between Taper Shank & Socket, Flutes Clogged.	Check For Worn Socket Check For Proper Drill.
Drill breaks when drilling brass	Flutes Clogging, Wrong Drill.	Replace With Proper Drill.
Drill splits up center	Too Much Feed, Not Enough Lip Relief.	Reduce Feed, Check For Proper Lip Relief.
Drill will not enter work	Dull Drill, Not Enough Lip Relief, Web Too Heavy, Reverse Chisel.	Resharpen Drill, Check Lip Relief, Thin Web, Check Chisel Angle.
ROUGH HOLE	Dull Point, No Lubricant, Loose Fixture, Feed Too High.	Repoint Drill, Check For Proper Lubricant, Check Set Up Rigidity.
Oversize hole	Unequal Length On Cutting Lips, Loose Spindle.	Repoint, Measure For Equal Length Cutting Lips, Inspect Spindle.
Unequal chip size one flute to the other	Drill Becoming Dull Unequal Lips.	Resharpen Drill, Check For Proper Drill.
Chips change while drilling	Point Is Not Ground Properly, One Lip Is Cutting More Than The Other.	Repoint Drill, Measure For Equal Length Cutting Lips Check For Equal Lip Relief.
Drill corners burning (blue-black colour)	Speed Too High, Lack Of Coolant, Hard Spots.	Reduce Cutting Speed, Chamfer Drill Corners, Increase Coolant Flow, Place Nozzle Nearer Drill.

ENDMILLS

ENDMILLS

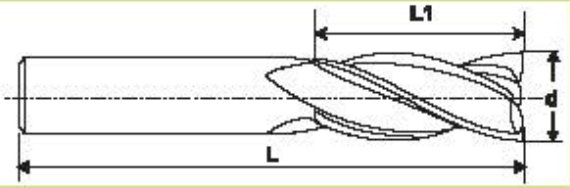
HSS PARALLEL SHANK ENDMILLS



IS : 6353 - 1991

DIA MM (d)	FL MM (L1)	OAL MM (L)	M2		M42		MOQ NOS.
			PART CODE (MIR061)	PRICE RS./ PIECE	PART CODE (MIR861)	PRICE RS./ PIECE	
3	8	40	1503AC	413*	1703AC	502*	40
4	11	43	1504BC	413*	1704BC	503*	40
5	13	47	1505CC	413*	1705CC	511	40
6	13	57	1506DC	462*	1706DC	568*	40
7	16	60	1507EC	522*	1707EC	656	30
8	19	63	1508FC	522*	1708FC	658*	30
9	19	69	1509BC	522*	1709BC	684	30
10	22	72	1510GC	522*	1710GC	686*	30
11	22	79	1511CC	522*	1711CC	726*	30
12	26	83	1512HC	539*	1712HC	737*	30
13	26	83	1513JC	613*	1713DC	841	25
14	26	83	1514JC	670*	1714JC	965	25
15	26	83	1515KC	778*	1715KC	1116	25
16	32	92	1516LC	782*	1716LC	1170*	25
17	32	92	1517MC	856*	1717EC	1256	25
18	32	92	1518MC	948*	1718MC	1393*	25
19	32	92	1519NC	948*	1719NC	1423	25
20	38	104	1520NC	1051*	1720NC	1508*	25
21	38	104	2421GC	1183	2921GC	1687	25
22	38	104	2422PC	1193*	2922PC	1734*	25
23	38	104	2423HC	1295*	2923HC	1884	25
24	45	121	2424QC	1295*	2924QC	2026	25
25	45	121	2425RC	1389*	2925RC	2129*	25
26	45	121	2426SC	1444	2926SC	2365	15
27	45	121	2427SC	1698	2927JC	3083	15
28	45	121	2428TC	1982*	2928TC	3332*	15
29	45	121	2429VC	1982	2929TC	3332	15
30	45	121	2430VC	2182*	2930VC	3347	15
32	53	133	2432WC	2379*	2932WC	3747	15
33	53	133	2433XC	2634	2933XC	4743	15
34	53	133	2434YC	2873	2934YC	4837	15
35	53	133	2435KC	2873	2935KC	4837	15
36	53	133	2436YC	3132	2936YC	5034	15
37	53	133	2437KC	3374	2937KC	5209	15
38	63	155	2438LC	3597	2938LC	6082	15

HSS PARALLEL SHANK ENDMILLS



IS : 6353 - 1991

DIA MM (d)	FL MM (L1)	OAL MM (L)	M2		M42		MOQ NOS.
			PART CODE (MIR061)	PRICE RS./ PIECE	PART CODE (MIR061)	PRICE RS./ PIECE	
39	63	155	2439MC	3815	2939MC	6322	15
40	63	155	2440ZC	4054*	2940ZC	6585	15
41	63	155	2441AC	4054	2941AC	6585	5
42	63	155	2442ZC	4613	2942BC	7407	5
43	63	155	2443BC	4613	2943CC	7407	5
45	63	155	2445CC	5167	2945DC	8346	5
46	63	155	2446DC	5167	2946EC	8346	5
47	63	155	2447EC	5699	2947FC	9045	5
48	75	177	2448ZC	5699	2948ZC	9980	5
49	75	177	2449GC	5699	2949HC	9980	5
50	75	177	2450AC	6252	2950AC	10589	5

Note : 1. Item marked * are exstock. For Remainig Item M.O.Q. required.OR (minimum order value of Rs.20000/-)

3. Endmills part code are for Non-center cut Endmills only. Center cut Endmills also can be supplied with same price & MOQ.
4. Endmill cutters above 20 Ø will be provided with 6 flutes and above 50 Ø - 8 Flutes unless otherwise specified.

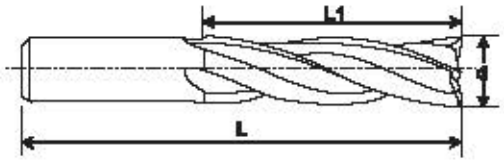
HSS PARALLEL SHANK ENDMILLS

BS : 122 (PART-1) 1953

DIA INCH (d)	FL INCH (L1)	OAL INCH (L)	M2		M42		MOQ NOS.
			PART CODE (MIR061)	PRICE RS./ PIECE	PART CODE (MIR061)	PRICE RS./ PIECE	
1/8	3/8	1.7/8	1004AC	415	1204AC	502	40
5/32	3/8	1.7/8	1005BC	415	1205BC	502	40
3/16	1/2	2	1006CC	415*	1206CC	502	40
7/32	1/2	2	1007CC	420	1207CC	518	40
1/4	5/8	2.1/8	1008DC	462*	1208DC	567*	40
9/32	3/4	2.1/2	1009DC	479	1209DC	625	30
5/16	3/4	2.1/2	1010EC	522*	1210EC	658*	30
3/8	7/8	2.5/8	1012FC	552*	1212FC	658	30
7/16	7/8	2.5/8	1014GC	525*	1214GC	658	30
1/2	1	2.3/4	1016JC	540*	1216JC	738*	30
9/16	1.1/8	2.7/8	1018KC	670	1218KC	964	25
5/8	1.1/4	3.1/4	1020LC	782*	1220LC	1169	25
11/16	1.3/8	3.3/8	1022MC	876	1222MC	1289	25
3/4	1.1/2	3.1/2	1024NC	952*	1224NC	1422	25
13/16	1.5/8	3.5/8	5226PC	1054	5426PC	1509	25
7/8	1.5/8	3.5/8	5228QC	1196	5428QC	1733	25
1	1.3/4	3.3/4	5232RC	1391*	5432RC	2129	25
1.1/8	1.7/8	4.1/8	5236SC	1982	5436SC	3331	15
1.1/4	2	4.1/4	5240TC	2379*	5440TC	3747	15
1.3/8	2.1/8	4.5/8	5244VC	2873	5444VC	4838	15
1.1/2	2.1/4	4.3/4	5248WC	3362	5448WC	5207	15
1.5/8	2.3/8	4.7/8	5252XC	4054	5452XC	6585	5
1.3/4	2.1/2	5.1/8	5256YC	5167	5456YC	8346	5
1.7/8	2.5/8	5.1/4	5260ZC	5699	5460ZC	9045	5
2	3	5.1/2	5264XC	6239	5464XC	9807	5

Note :
1. Item marked * are exstock. For Remainig item M.O.Q. required.OR (minimum order value of Rs.20000/-)
2. Endmills part code are for Non-center cut Endmills only. Center cut Endmills also can be supplied with same price & MOQ.
3. Endmill cutters above 20 Ø will be provided with 6 flutes and above 50 Ø - 8 Flutes unless otherwise specified.

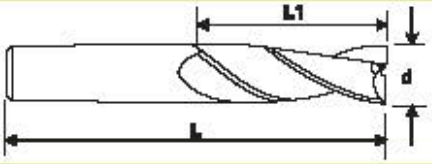
HSS PARALLEL SHANK ENDMILLS :- LONG SERIES
IS 6353 - 1991



DIA MM (d)	FL MM (L1)	OAL MM (L)	M2		M42		MOQ NOS.
			PART CODE (MIR061)	PRICE RS./ PIECE	PART CODE (MIR061)	PRICE RS./ PIECE	
3	12	44	2503AC	618	2703AC	745	40
4	19	51	2504BC	618	2704BC	748	40
5	24	58	2505CC	618*	2705CC	758	40
6	24	68	2506DC	690*	2706DC	841	40
7	30	74	2507EC	776	2707EC	964	30
8	38	82	2508FC	776*	2708FC	969	30
9	38	88	2509BC	776	2709BC	1001	30
10	45	95	2510GC	776*	2710GC	1008	30
12	53	110	2512HC	804*	2712HC	1101	30
14	53	110	2514JC	994	2714JC	1402	25
16	63	123	2516KC	1160*	2716KC	1696	25
18	63	123	2518LC	1412	2718LC	2030	25
20	75	141	2520MC	1998	2720MC	2198*	25
22	75	141	3422NC	2276	4222NC	2522	25
25	90	166	3434PC	2646*	4225PC	3090	25
26	90	166	3426QC	2753	4226QC	3283	15
28	90	166	3428RC	3989	4228RC	4844	15
30	90	166	3430SC	4382	4230SC	6109	15
32	106	186	3432TC	4948	4232TC	7012	15
33	106	186	3433XC	5480	4233XC	8592	15
36	106	186	3436YC	6521	4236YC	9380	15
40	125	217	3440ZC	8437	4240ZC	12239	15
45	125	217	3445EC	11108	4245EC	15924	5
50	150	252	3450AC	13417	4250AC	20015	5

Note :
1. Item marked * are exstock. For Remainig item M.O.Q. required.OR (minimum order value of Rs.20000/-)
2. Endmills part code are for Non-center cut Endmills only. Center cut Endmills also can be supplied with same price & MOQ.
3. Endmill cutters above 20 Ø will be provided with 6 flutes and above 50 Ø - 8 Flutes unless otherwise specified.

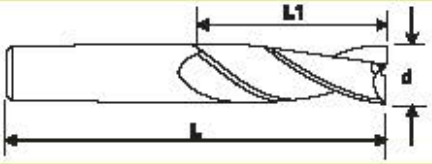
HSS PARALLEL SHANK SLOT DRILLS
IS 6352 - 1991



DIA MM (d)	FL MM (L1)	OAL MM (L)	M2		M42		MOQ NOS.
			PART CODE (MIR861)	PRICE RS./ PIECE	PART CODE (MIR061)	PRICE RS./ PIECE	
3	8	40	3703AC	503*	3803AC	610	40
4	11	43	3704BC	503*	3804BC	611	40
5	13	47	3705CC	503*	3805CC	619	40
6	13	57	3706DC	540*	3806DC	682	40
7	16	60	3707EC	540*	3807EC	717	30
8	19	63	3708FC	540*	3808FC	720	30
9	19	69	3709BC	540*	3809BC	773	30
10	22	72	3710GC	558*	3810GC	799	30
11	22	79	3711CC	558	3811CC	877	30
12	26	83	3712HC	611*	3812HC	949	30
14	26	83	3714JC	782*	3814DC	1107*	25
15	26	83	3715KC	883	3815JC	1299	25
16	32	92	3716LC	880*	3816KC	1299	25
18	32	92	3718MC	1082*	3818MC	1558	25
20	38	104	3720NC	1082*	3820NC	1558	25
21	38	104	3721GC	1264	3821GC	1794	25
22	38	104	3722PC	1264	3822PC	1832	25
23	38	104	3723HC	1502	3823HC	2133	25
24	45	121	3724QC	1502*	3824QC	2415	25

Note : Item marked * are exstock. For Remainig Item M.O.Q. required.OR (minimum order value of Rs.20000/-)

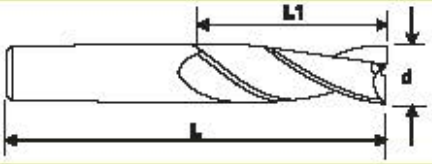
HSS PARALLEL SHANK SLOT DRILLS
IS 6352 - 1991



DIA MM (d)	FL MM (L1)	OAL MM (L)	M2		M42		MOQ NOS.
			PART CODE (MIR061)	PRICE RS./ PIECE	PART CODE (MIR061)	PRICE RS./ PIECE	
25	8	40	3725RC	1502*	3825RC	2415	40
26	11	43	3726SC	2121	3826SC	3034	40
30	13	47	3730VC	2604	3830VC	3849	40
32	13	57	3732WC	2604	3832WC	4036	40
34	16	60	3734BC	3132	3834BC	5183	30
35	19	63	3735KC	3132	3835KC	5183	30
36	19	69	3736YC	3362	3836YC	5345	30
38	22	72	3738LC	3627	3838LC	6183	30
40	22	79	3740ZC	3878	3840ZC	6459	30
41	26	83	3741CC	4389	3841CC	6954	30
42	26	83	3742DC	4389	3842DC	6954	25
43	26	83	3743EC	4879	3843EC	7700	25
44	32	92	3744FC	4879	3844FC	7700	25
45	32	92	3745AC	4879	3845AC	7700	25
46	38	104	3746BC	5416	3846BC	8620	25
47	38	104	3747CC	5416	3847CC	8620	25
48	38	104	3748DC	5416	3848DC	9669	25
49	38	104	3749EC	5941	3849EC	10350	25
50	45	121	3750AC	5941	3850AC	10350	25

Note : Item marked * are exstock. For Remaining Item M.O.Q. required.OR (minimum order value of Rs.20000/-)

HSS PARALLEL SHANK SLOT DRILLS
BS : 122 (PART-I) - 1953

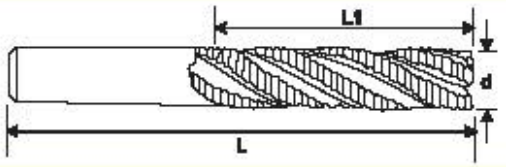


DIA INCH (d)	FL INCH (L1)	OAL INCH (L)	M2		M42		MOQ NOS.
			PART CODE (MIR061)	PRICE RS./ PIECE	PART CODE (MIR061)	PRICE RS./ PIECE	
1/8	3/8	1.7/8	3504AC	503	3604AC	609	40
5/32	3/8	1.7/8	3505BC	503	3605BC	609	40
3/16	1/2	2	3506CC	503	3606CC	609	40
7/32	1/2	2	3507AC	538	3607AC	652	40
1/4	5/8	2.1/8	3508DC	540	3608DC	720	40
5/16	3/4	2.1/2	3510EC	543	3610EC	720	30
3/8	7/8	2.5/8	3512FC	540	3612FC	720	30
7/16	7/8	2.5/8	3514GC	551	3614GC	762	30
1/2	1	2.3/4	3516JC	611	3616JC	827	30
9/16	1.1/8	2.7/8	3518KC	782	3618KC	1107	25
5/8	1.1/4	3.1/4	3520LC	882	3620LC	1298	25
11/16	1.3/8	3.3/8	3522MC	998	3622MC	1456	25
3/4	1.1/2	3.1/2	3524NC	1085	3624NC	1558	25
13/16	1.5/8	3.5/8	3526PC	1262	3626PC	1831	25
7/8	1.5/8	3.5/8	3528QC	1262	3628QC	1831	25
1	1.3/4	3.3/4	3532RC	1498	3632RC	2416	25
1.1/8	1.7/8	4.1/8	3536SC	2136	3636SC	3033	15
1.1/4	2	4.1/4	3540TC	2604	3640TC	4036	15
1.3/8	2.1/8	4.5/8	3544VC	3132	3644VC	5184	15
1.1/2	2.1/4	4.3/4	3548WC	3627	3648WC	6182	15
1.5/8	2.3/8	4.7/8	3552XC	4488	3652XC	6954	5
1.3/4	2.1/2	5.1/8	3556YC	4879	3654YC	7700	5
1.7/8	2.5/8	5.1/4	3560ZC	5416	3660ZC	8620	5
2	3	5.1/2	3564XC	5936	3664XC	9576	5

Note : Item marked * are exstock. For Remainig item M.O.Q. required.OR (minimum order value of Rs.20000/-)

HSS PARALLEL SHANK ROUGHING END MILLS M42

COARSE PITCH TO IS : 6353 - 1991 / BS :122



DIA MM (d)	FL MM (L1)	OAL MM (L)	M2		M42		MOQ NOS.
			PART CODE (MIR061)	PRICE RS./ PIECE	PART CODE (MIR061)	PRICE RS./ PIECE	
6	13	57	6006KC	1211	6106KC	1646	30
8	19	69	6008KC	1211	6108KC	1646	30
10	22	72	6010KC	1211*	6110KC	1646	30
11	22	79	6011KC	1211	6111KC	1646	30
12	26	83	6012KC	1211*	6112KC	1646	30
14	26	83	6014KC	1840	6114KC	2504	20
15	26	83	6015KC	2046	6115KC	2784	20
16	32	92	6016KC	2268*	6116KC	3090	20
18	32	92	6018KC	2766	6118KC	3449	20
20	38	104	6020KC	3086*	6120KC	4201	20
22	38	104	6022KC	3309	6122KC	4510	20
23	38	104	6023KC	3718	6123KC	5065	20
24	45	121	6024KC	3718	6124KC	5321	20
25	45	121	6025KC	3902	6125KC	5321	20
26	45	121	6026KC	4831	6126KC	6491	10
27	45	121	6027KC	4831	6127KC	6492	10
28	45	121	6028KC	6053	6128KC	7170	10
30	45	121	6030KC	6319	6130KC	8613	10
32	53	133	6032KC	6188	6132KC	10520	10
38	63	155	6038KC	9252	6138KC	15728	10
40	63	155	6040KC	11134	6140KC	20041	10

DIA INCH (d)	FL INCH (L1)	OAL INCH (L)	M2		MOQ NOS.
			PART CODE (MIR163)	PRICE RS./ PIECE	
1/4	5/8	2.1/8	6404KC	1211	30
5/16	3/4	2.1/2	6408KC	1211	30
3/8	7/8	2.5/8	6412KC	1211*	30
1/2	1	2.3/4	6416KC	1211*	30
5/8	1.1/4	3.1/4	6420KC	2268*	20
3/4	1.1/2	3.1/2	6424KC	3086*	20
7/8	1.5/8	3.5/8	6428KC	3309	20
1	1.3/4	3.3/4	6432KC	3902	20
1.1/8	1.7/8	4.1/8	6436KC	6053	10
1.1/4	2	4.1/4	6440KC	6188	10
1.1/2	2.1/4	4.3/4	6448KC	9252	10

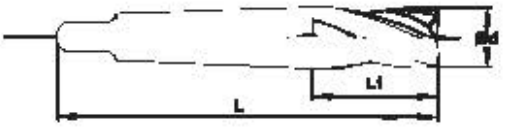
Note :

1. Item marked * are exstock.
2. For remainig item M.O.Q. required. OR (minimum order value of Rs.20000/-)
3. Roughing Endmill cutters above 25 Ø will be provided with 6 flutes unless otherwise specified.

HSS TAPER SHANK ENDMILLS STANDARD LENGTH M2

AS PER IS : 6354 - 1971 WITH TANGED END TAPER SHANK

AS PER IS : 6354 - 1991 WITH TAPPED END TAPER SHANK

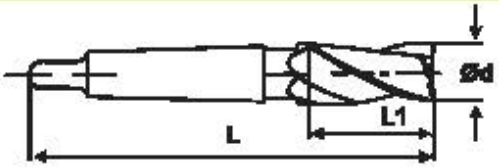


DIA MM	MT SHANK	PART CODE TANG END (MIRTE2)	FL MM (L1)	OAL MM (L)	PART CODE TANG END (MIRTE2)	PRICE RS./ PIECE	MOQ NOS.
8	MT1	710800	19	90	910800	648	25
10	MT1	711000	22	93	911000	701	25
12*	MT1	711200	26	96	911200	770	25
14*	MT1	711400	26	100	911400	1070	20
16	MT2	711600	32	124	911600	1140	20
18	MT2	711800	32	124	911800	1393	20
20*	MT2	712000	38	130	912000	1615	20
22*	MT2	712200	38	130	912200	1695	20
25	MT3	712500	45	157	912500	1997	20
26	MT3	712600	45	157	912600	2488	10
28	MT3	712800	45	157	912800	2782	10
30	MT3	713000	45	165	913000	3060	10
32*	MT3	713200	53	165	913200	3248	10
33	MT3	713300	53	165	913300	3937	5
35	MT3	713500	53	165	913500	4319	5
36	MT3	713600	53	203	913600	4732	5
38	MT4	713800	63	203	913800	5162	5
40	MT4	714000	63	203	914000	6002	5
41	MT4	714100	63	203	914100	6002	5
43	MT4	714300	63	203	914300	6615	5
44	MT4	714400	63	203	914400	6912	5
45	MT4	714500	63	203	914500	7434	5
46	MT4	714600	63	203	914600	7608	5
48	MT4	714800	75	203	914800	7980	5
50	MT4	715000	75	215	915000	8861	5
51	MT4	715100	75	250	915100	8884	3
53	MT4	715300	75	250	915300	12449	3
56	MT4	715600	75	250	915600	15729	3
60	MT4	716000	75	250	916000	16509	3
63	MT5	716300	90	265	916300	19794	3

Note : Item marked * are exstock. For Remainig item M.O.Q. required.OR (minimum order value of Rs.20000/-)

HSS TAPER SHANK SLOT DRILL STANDARD LENGTH M2

AS PER IS : 6388 - 1971 WITH TANGED END TAPER SHANK
AS PER IS : 6388 - 1991 WITH TAPPED END TAPER SHANK

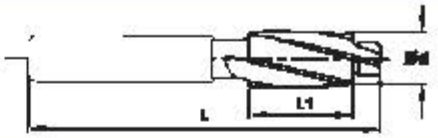


SIZE MM (d)	MT SHANK	PART CODE TANG END (MIRTEZ)	FL MM (L1)	OAL MM (L)	PART CODE TANG END (MIRTEZ)	PRICE RS./ PIECE	MOQ NOS.
8	MT1	710800	11	90	910800	794	25
10	MT1	711000	13	90	911000	809	25
12*	MT1	711200	16	90	911200	906	25
14*	MT1	711400	16	14	911400	1140	20
16	MT2	711600	19	110	911600	1184	20
18	MT2	711800	19	110	911800	1357	20
20*	MT2	712000	22	114	912000	1695	20
22*	MT2	712200	22	118	912200	1695	20
25	MT3	712500	26	143	912500	2019	20
26	MT3	712600	26	143	912600	2785	10
28	MT3	712800	26	143	912800	2950	10
30	MT3	713000	26	143	913000	3538	10
32*	MT3	713200	32	148	913200	3538	10
33	MT3	713300	32	148	913300	4595	5
35	MT3	713500	32	148	913500	4595	5
36	MT3	713600	32	179	913600	5359	5
38	MT4	713800	38	186	913800	5359	5
40	MT4	714000	38	186	914000	6117	5

Note : 1. Item marked * are exstock.

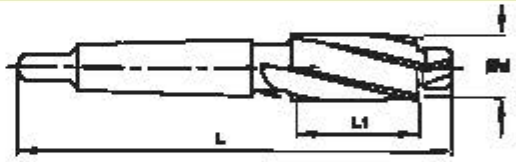
2. Remaining item M.O.Q. required OR (minimum order value of Rs. 20000/-)

HSS PARALLEL SHANK 3 FLUTE COUNTER BORE M2
AS PER IS : 5704-1988



DIA MM (d)	SHANK DIA	FL MM (L1)	OAL MM (L)	PART CODE (MIRPS)	PRICE RS./PIECE	MOQ NOS.
6.00	5	14	71	CB20600	803	15
6.50	5	14	71	CB20650	803	15
8.00	5	14	71	CB20800	836	15
10.00	8	18	80	CB21000	836	15
11.00	8	18	80	CB21100	878	15
12.50	8	18	80	CB21250	1000	15
15.00	12.5	22	100	CB21500	1186	15
18.00	12.5	22	100	CB21800	1711	15
20.00	12.5	22	100	CB22000	2516	15

HSS TAPER SHANK 3 FLUTE COUNTER BORE M2
AS PER IS : 5710-1988



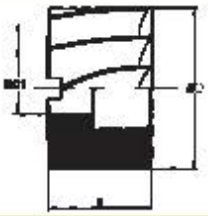
DIA MM (d)	MT SHANK	FL MM (L1)	OAL MM (L)	PART CODE (MIRTS)	PRICE RS./ PIECE	MOQ NOS.
12.50	MT2	30	132	CB21250	1636	15
13.50	MT2	30	132	CB21350	1636	15
14.50	MT2	30	132	CB21450	1828	15
16.50	MT2	38	140	CB21650	2105	15
17.50	MT2	38	140	CB21750	2263	15
19.50	MT2	38	140	CB21950	2673	15
20.00	MT2	38	140	CB22000	2780	15
22.00	MT2	46	150	CB22200	3183	15
23.00	MT2	46	150	CB22300	3652	15
25.00	MT2	46	150	CB22500	4468	15
26.00	MT3	54	180	CB22600	4952	15
28.00	MT3	54	180	CB22800	5474	15
29.00	MT3	54	180	CB22900	5770	15
31.00	MT3	54	180	CB23100	6324	15

DIA MM (d)	MT SHANK	FL MM (L1)	OAL MM (L)	PART CODE (MIRTS)	PRICE RS./ PIECE	MOQ NOS.
33.00	MT3	64	190	CB23300	7245	10
34.00	MT3	64	190	CB23400	7723	10
36.00	MT3	64	190	CB23600	8394	10
39.00	MT3	64	190	CB23900	9478	10
41.00	MT4	76	236	CB24100	10331	5
43.00	MT4	76	236	CB24300	10679	5
46.00	MT4	76	236	CB24600	12160	5
48.00	MT4	76	236	CB24800	13199	5
51.00	MT4	88	250	CB25100	14900	5
53.00	MT4	88	250	CB25300	16187	5
55.00	MT4	88	250	CB25500	17818	5
57.00	MT4	88	250	CB25700	19577	5
59.00	MT4	88	250	CB25900	21693	5
61.00	MT4	88	250	CB26100	24169	5

Note : 1. M.O.Q. required as follows OR (minimum order value of Rs.30000/-)
2. Tools without Pilot will be supplied as standard, unless specific pilot size is given.

HSS M2 SHELL ENDMILL

AS PER IS : 6257 - 1982



CUTTING DIA MM (d)	BORE DIA (d2)	LENGTH (d1)	PART CODE (MIRSE)	PRICE RS./PIECE	MOQ NOS.
40	16	32	IS20040	2729	5
50	22	36	IS20050	3320	5
63	27	40	IS20063	4806	5
80	27	45	IS20080	7101	2
100	32	50	IS20100	10897	2
125	40	56	IS20125	18271	2
160	50	63	IS20160	34486	2

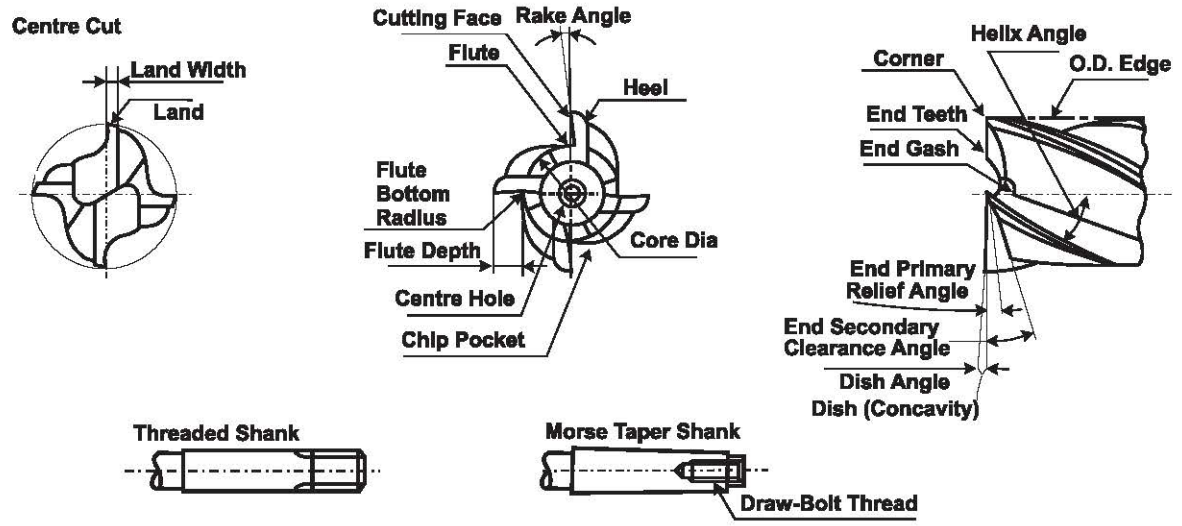
Note : Cutters type "N" will be supplied for RH rotation with RH cutting as standard.

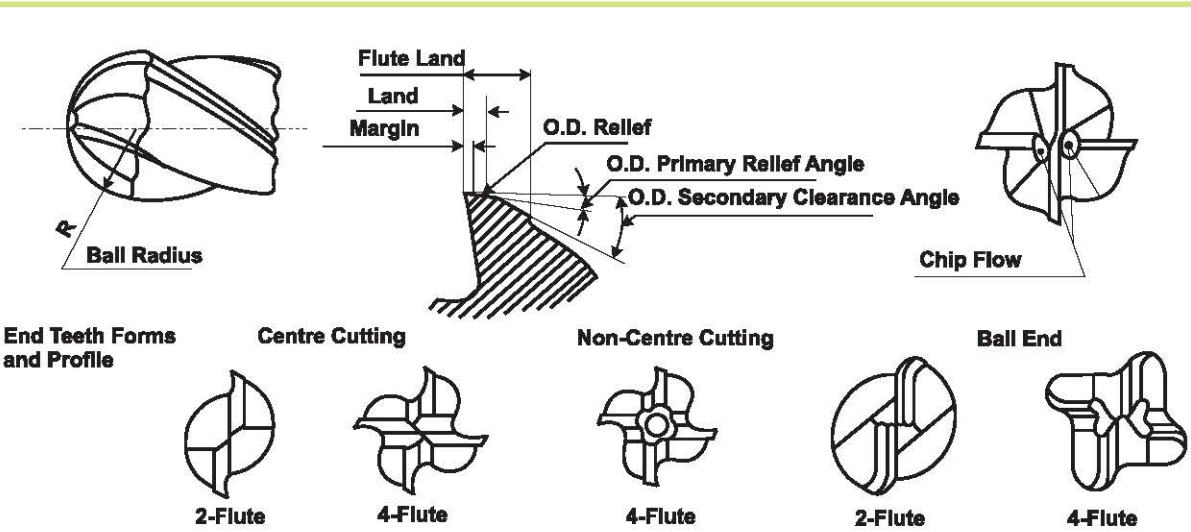
AS PER BS : 122 (PART - 1) 1953

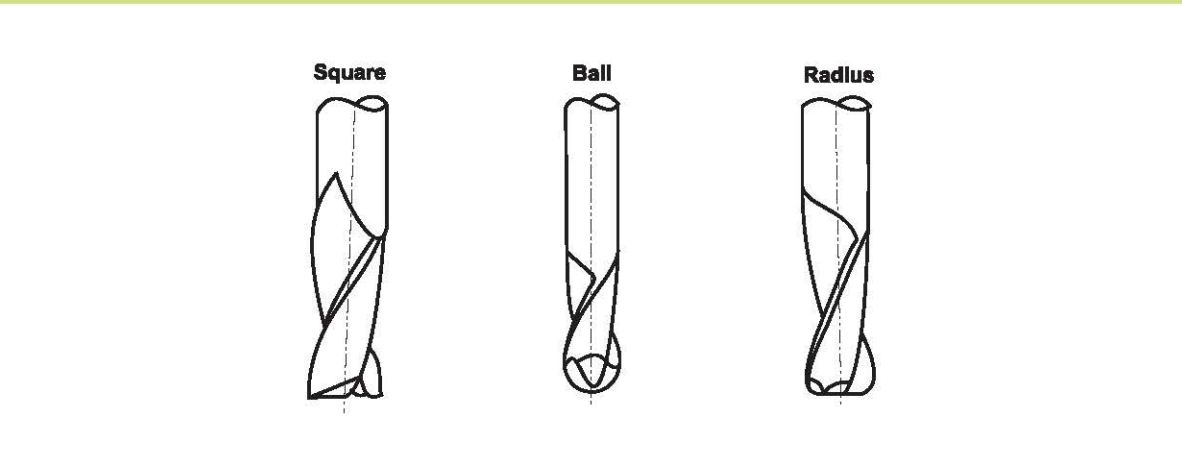
CUTTING DIA INCH (d)	BORE DIA (d2)	LENGTH (L2)	PART CODE (MIRSE)	PRICE RS. / PIECE	MOQ NOS.
1.1/4"	1/2"	1"	BS20040	1878	5
1.1/2"	1/2"	1.1/8"	BS20048	2298	5
1.3/4"	3/4"	1.1/4"	BS20056	2880	5
2"	3/4"	1.3/8"	BS20064	3413	5
2.1/4"	1"	1.1/2"	BS20072	4116	5
2.1/2"	1"	1.5/8"	BS20080	4787	5
2.3/4"	1"	1.5/8"	BS20088	5442	5
3"	1.1/4"	1.3/4"	BS20096	6336	5
3.1/2"	1.1/4"	1.7/8"	BS20112	7941	3
4"	1.1/2"	2.1/4"	BS20128	11679	3
4.1/2"	1.1/2"	2.1/4"	BS20144	14001	3
5"	1.1/2"	2.1/4"	BS20160	18271	3
5.1/2"	2"	2.1/4"	BS20176	21373	3
6"	2"	2.1/4"	BS20192	24651	3

Note : Cutters type "N" will be supplied for RH rotation with RH cutting as standard.

Endmill Terms - General Features







Dimensions of Weldon Flats

One flatted parallel shank
(with d1 from 6 to 20mm)

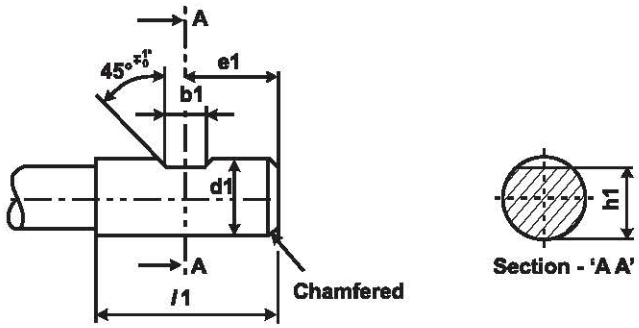
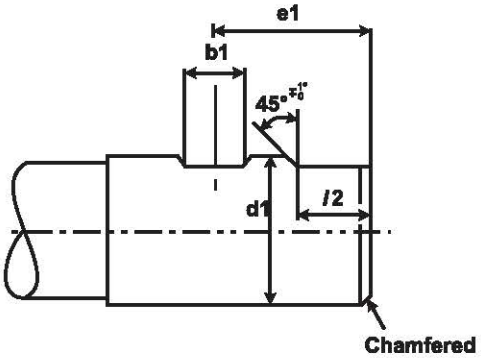


Figure 1

Two flatted parallel shanks
(with d1 from 25 to 63mm)



Other dimensions and data as per figure 1

Figure 2

Size Tolerance	d1 h6	b1 +0.05 0	e1 0 -1	h1 h13	l1 +2 0
	6	4.2	18	4.8	36
	8	5.5	18	6.6	36
	10	7	20	8.4	40
	12	8	22.5	10.4	45
	16	10	24	14.2	48
	20	11	25	18.2	50

d1 h6	b1 +0.05 0	e1 0 -1	h1 h13	l1 +2 0	l2 +1 0
25	12	32	23	56	17
32	14	36	30	60	19
40	14	40	38	70	19
50	18	45	47.8	80	23
63	18	50	60.8	90	23

Feed Recommendations

Cutting Diameter (mm)	Slotting Feed/Tooth (mm)		Heavy Profiling Feed/Tooth (mm)		Light Profiling Feed/Tooth (mm)	
	Min	Max	Min	Max	Min	Max
1-3	0.004	0.004	0.001	0.003	0.003	0.006
4-6	0.011	0.018	0.003	0.004	0.005	0.008
6-8	0.024	0.030	0.010	0.016	0.020	0.032
10-12	0.040	0.060	0.016	0.024	0.032	0.048
16-20	0.070	0.100	0.032	0.050	0.064	0.100
22-25	0.100	0.130	0.050	0.055	0.100	0.110
28-30	0.130	0.160	0.055	0.070	0.112	0.140
32-40	0.160	0.180	0.066	0.074	0.136	0.148
Above 40	-	-	0.066	0.074	0.136	0.148
Based on Short Series Slot Drill			Based on Regular Series End Mills			
For Longer Series, reduce Feed rate by 50%						

Useful Formulae

Spindle Speed

$$\text{Revs/min} = \frac{\text{Cutting Speed (M//min) x 1000 (mm)}}{(\pi \text{ x Cutting Diameter [mm]})}$$

$$\text{Cutting Speed (M/min)} = \frac{\text{Revs/min x } \pi \text{ x Cutter Diameter (mm)}}{\text{1000 (mm)}}$$

Table Feed :

Feed = Feed/Tooth (mm) x No. of Teeth x Revs/min (mm/min)

$$\text{Feed/Tooth (mm)} = \frac{\text{Table Feed (mm/min)}}{\text{(No. of Teeth x Revs/min)}}$$

$\pi = 3.142$

Note : Feed/Tooth is generally the same, whether cutter is uncoated or coated.

Care During Resharpening

1. Endmills should be resharpened before the cutting edges get excessively blunt.
2. Endmills need resharpening both on the periphery and the end.
3. The parameters to be maintained properly during resharpening of endmills are :
   a. Peripheral primary & secondary clearance angles.
   b. End primary & secondary clearance angles.
   c. Primary lands for periphery & end grinding.
   d. Proper chip flow should be provided after resharpening the end for center cutting type endmills.

Guidelines For Resharpening

Parameters to be maintained while resharpening an Endmill :

WORK MATERIAL	PRIMARY RELIEF ANGLE	SECONDARY CLEARANCE ANGLE	RADIAL LAND WIDTH (MM)	AXIAL LAND WIDTH (MM)
STEELS *CARBON *MANGANESE *NICKEL	8-12	16-20	0.50-1.00	0.6-1.5
TITANIUM BASE ALLOYS	10-14	18-24	0.30-0.70	0.4-1.0
ALUMINIUM	10-14	18-24	0.30-0.70	0.4-1.1

Note :

These Values Are Only Guidelines. A More Optimum Value Will Have To Be Established Through Trials.

For Larger Diameters, Smaller Angles And Bigger Land Widths Should Be Selected.

Common Endmill problems, Causes and Remedies

TOOL SYMPTOMS

INDICATIONS	CAUSES AND REMEDIES					
Abrasion-Rapid tool wear	Speeds and Feeds	Check tool alloy	Harder alloy	Be sure work alloy is correct	Coolant-mix ratio, condition	
Cratering (Edge Pitting)	Holddown-bolster if not rigid	Coolant-mix, condition, flow to point of cut	Tool Geometry-(increase rake, clearance)	Tool alloy (increase hardness, red heat)	Feeds & Speeds-less speed, than load/tooth	Try Conventional milling
BUE-(Built-up-edge)	Coolant-mix, flow	Flute and edge finish regrind	Feeds & Speeds-if on margin, Increase	Tool geometry-Increase rake, clearance		
Nicked Edges	Improve storage and handling	Rake angle-more metal behind edges				
Chip Welding	Feeds & Speeds (Reduce)	Coolant-mix, condition, flow				
Chip Packing	Flutes space, helix (increase)	Coolant-mix, condition, flow				

WORKPIECE SYMPTOMS

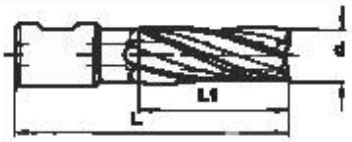
INDICATIONS	CAUSES AND REMEDIES				
Poor Finish	Tool for dullness, wear-replace or regrind	Feed & Speeds-reduce slightdy	Change to cutter with more edges (teeth)	Run-out-tool and holder; spindle play	
Inaccurate Machining	Tool for wear, dullness-replace	Reduce area of tool/work contact	Reduce tool slick-out	Bolster set-up	Machine alignment, also ways and bearing wear
Scalloping	Tool balance, try new tool	Lower feed per tooth	Workpiece deflection bolster Set-up	End dish, if insufficient, regrind	Tool & tool holder for concentricity; check bearings
Inaccurate Slot Position	If single pass, go rough, then finish cut				
Sloping Slot Sides	If using helix, try Straight two-flute	Rough cut, then finish			

MACHINE/OPERATORS SYMPTOMS

INDICATIONS	CAUSES AND REMEDIES					
Chatter	Feeds & Speeds; up load per tooth	Holddown; bolster as required	Deflection; reduce stick-out; increase Tool diameter	Contact area; reduce, if doubtful	Tool geometry; relief right for size of tool, work alloy?	Run-out, tool & holder, check spindle bearings
Rubbing	Tool sharpness; if dull, replace or regrind	Relief angle for cutter diameter, work alloy	Deflection-use larger diameter tool; reduce stick-out	Reduce feed per tooth		
Spindle Stall	H.P.-reduce contact area, feed rate	Tool geometry; increase rake angle or clearance	If conventional milling try. climb milling			

ANNULAR CUTTER

ANNULAR CUTTER HSS M2 & M42



DESCRIPTION Ø MM (dia. x flute)	25MM CUTTING DEPTH				
	PART CODE (MIRA2U)	PRICE RS. / PIECE HSS M2	PART CODE (MIRA4U)	PRICE RS. / PIECE HSS M42	MOQ NOS.
14X25	140025	1369	140025	1797	20
15X25	150025	1369	150025	1797	20
16X25	160025	1416	160025	1849	20
17X25	170025	1460	170025	1899	20
18X25	180025	1460	180025	1899	15
19X25	190025	1549	190025	1999	15
20X25	200025	1620	200025	2105	15
21X25	210025	1669	210025	2189	15
22X25	220025	1669	220025	2096	15
23X25	230025	1719	230025	2172	15
24X25	240025	1918	240025	2416	15
25X25	250025	1975	250025	2502	15
26X25	260025	2053	260025	2612	15
27X25	270025	2115	270025	2705	15
28X25	280025	2224	280025	2852	15
29X25	290025	2291	290025	2952	15
30X25	300025	2420	300025	3150	15
31X25	310025	2493	310025	3231	15
32X25	320025	2511	320025	3280	10
33X25	330025	2586	330025	3393	10
34X25	340025	2793	340025	3654	10
35X25	350025	2877	350025	3778	10
36X25	360025	2920	360025	3858	10
37X25	370025	3008	370025	3988	10
38X25	380025	3047	380025	4099	10
39X25	390025	3108	390025	4167	10
40X25	400025	3140	400025	4274	5
41X25	410025	3234	410025	4415	5
42X25	420025	3344	420025	4576	5
43X25	430025	3445	430025	4727	5
44X25	440025	3580	440025	4917	5
45X25	450025	3687	450025	5077	5
46X25	460025	3720	460025	5155	5
47X25	470025	3832	470025	5364	5
48X25	480025	3940	480025	5485	5

ANNULAR CUTTER

DESCRIPTION Ø MM (dia x flute)	25MM CUTTING DEPTH				
	PART CODE (MIRA2U)	PRICE RS. / PIECE HSS M2	PART CODE (MIRA4U)	PRICE RS. / PIECE HSS M42	MOQ NOS.
49X25	490025	4058	490025	5705	5
50X25	500025	4213	500025	5879	5
51X25	510025	4723	510025	6897	5
52X25	520025	4903	520025	7160	5
53X25	530025	5086	530025	7427	5
54X25	540025	5273	540025	7700	5
55X25	550025	5463	550025	7977	5
56X25	560025	5656	560025	8260	5
57X25	570025	5853	570025	8547	5
58X25	580025	6053	580025	8839	5
59X25	590025	6257	590025	9136	5
60X25	600025	6463	600025	9438	5
61X25	610025	6674	610025	9745	5
62X25	620025	6887	620025	10057	5

DESCRIPTION Ø MM (dia x flute)	50MM CUTTING DEPTH				
	PART CODE (MIRA2U)	PRICE RS. / PIECE HSS M2	PART CODE (MIRA4U)	PRICE RS. / PIECE HSS M42	MOQ NOS.
14X50	140050	1880	140050	2519	20
15X50	150050	1919	150050	2519	20
16X50	160050	2067	160050	2685	20
17X50	170050	2102	170050	2724	20
18X50	180050	2102	180050	2724	15
19X50	190050	2216	190050	2851	15
20X50	200050	2385	200050	3079	15
21X50	210050	2457	210050	3199	15
22X50	220050	2457	220050	3070	15
23X50	230050	2530	230050	3180	15
24X50	240050	2689	240050	3387	15
25X50	250050	2769	250050	3508	15
26X50	260050	2879	260050	3662	15
27X50	270050	2965	270050	3792	15
28X50	280050	3119	280050	3999	15
29X50	290050	3212	290050	4139	15
30X50	300050	3393	300050	4416	15
31X50	310050	3494	310050	4530	15
32X50	320050	3520	320050	4598	10
33X50	330050	3626	330050	4756	10
34X50	340050	3916	340050	5123	10
35X50	350050	4034	350050	5297	10
36X50	360050	4094	360050	5408	10
37X50	370050	4216	370050	5591	10
38X50	380050	4271	380050	5746	10

ANNULAR CUTTER

DESCRIPTION Ø MM (dia x flute)	50MM CUTTING DEPTH				
	PART CODE (MIRA2U)	PRICE RS. / PIECE HSS M2	PART CODE (MIRA4U)	PRICE RS. / PIECE HSS M42	MOQ NOS.
39X50	390050	4357	390050	5842	10
40X50	400050	4402	400050	5991	5
41X50	410050	4534	410050	6190	5
42X50	420050	4689	420050	6416	5
43X50	430050	4829	430050	6627	5
44X50	440050	5019	440050	6894	5
45X50	450050	5169	450050	7118	5
46X50	460050	5215	460050	7227	5
47X50	470050	5372	470050	7520	5
48X50	480050	5524	480050	7690	5
49X50	490050	5689	490050	7998	5
50X50	500050	5907	500050	8242	5
51X50	510050	6691	510050	9771	5
52X50	520050	6946	520050	10143	5
53X50	530050	7206	530050	10522	5
54X50	540050	7470	540050	10908	5
55X50	550050	7739	550050	11301	5
56X50	560050	8013	560050	11701	5
57X50	570050	8292	570050	12108	5
58X50	580050	8575	580050	12522	5
59X50	590050	8864	590050	12943	5
60X50	600050	9157	600050	13371	5
61X50	610050	9454	610050	13806	5
62X50	620050	9757	620050	14247	5

Note : 1. All Annular cutters shall be supplied with 19.05mm (3/4") universal shank.

Technical Details

RECOMMENDED RPM FOR ANNULAR CUTTERS....

	STEEL				CAST IRON			ALUM.	BRASS & BRONZE
	MILD	S. S. (free cutting)	S. S. (heat resisting)	Alloy Steel	CI (soft)	CI (hard)	CI (malle)		
Vc(m/ min.) → ↓ Diameter(mm)	27	17	8	3	36	18	20	60	44
14	614	387	182	68	819	409	455	1365	1001
16	537	338	159	60	717	358	398	1194	876
18	478	301	142	53	637	318	354	1062	778
20	430	271	127	48	573	287	318	955	701
22	391	246	116	43	521	261	290	869	637
24	358	226	106	40	478	239	265	796	584
25	344	217	102	38	459	229	255	764	561
28	307	193	91	34	409	205	227	682	500
30	287	180	85	32	382	191	212	637	467
35	246	155	73	27	328	164	182	546	400
40	215	135	64	24	287	143	159	478	350
45	191	120	57	21	255	127	142	425	311
50	172	108	51	19	229	115	127	382	280
55	156	98	46	17	208	104	116	347	255
60	143	90	42	16	191	96	106	318	234

TROUBLE SHOOTING

- **What causes annular cutters to break or dull prematurely?**

  The primary cause of broken or prematurely dull cutters is a feed rate that is too slow. Slow feed rates will reduce the life of your cutter. Using a firm, steady feed pressure throughout the cut will maximize performance and extend tool life.

- **Why do I have to clear chips from the cutter before every cut?**

  As the cutter begins removing material, new chips flow out through the gullets and up the flutes. If these pathways are not cleared before cutting a new hole, packing or binding may result, causing the cutter to fill with chips and possibly break.

- **When do I use a magnetic drill?**

  It can be time-consuming and cumbersome to try to jockey a large pipe into position at a stationary drill press or work center. A portable magnetic drill allows you to take the drill to the workpiece, instead of trying to bring the workpiece to the drill. A portable magnetic drill press also may be used in any position—vertical, horizontal, or overhead. The workpiece must be at least 3/8 inch thick.

Because annular cutters are hollow, there is no dead-zone resistance to overcome. All cutting edges are located near the periphery of the tool, and surface speeds are consistent throughout the entire cut.

- **Is the magnet on my portable drill press strong enough to drill pipe?**

  When you're using a portable drill press, a support system is needed. A safety chain or strap is also recommended, in case the magnet slips from the support. When you are using a magnetic drill and pipe adapter accessory, mount the adapter securely to the pipe with a tightly wrapped chain (see lead image). Make sure the support system for the drill arbor is rigid and in good condition.

- **How do I keep my magnetic drill from slipping?**

  Make sure the drill's magnetic base is clear of chips and debris and is securely attached to a clean workpiece. Uneven surfaces or large debris buildup prevents the magnet from obtaining optimal holding power, which can cause the drill to shift or lift during operation. A safety chain or strap also helps to prevent injury if the drill shifts. If it does shift or lifts during the cut, and the motor is not stopped, the cutter will break. A good magnetic drill will have a built-in safety circuit that stops the motor immediately when the drill lifts from the material.

- **What is the purpose of coated cutters, or cutters made from premium steel?**

  Cutters made from M2 high-speed steel (HSS) are recommended for materials with a Brinell hardness number (BHN) of up to 275. A titanium nitride or similar coating may be applied to M2 to fortify wear resistance in materials up to 325 BHN. For materials up to 350 BHN, cobalt steel (M42) is recommended with a titanium nitride or similar coating.

- **What makes the slug stick in the cutter?**

  Using lubricant or cutting fluid helps the slug to eject at the end of the cut. But when slug ejection becomes unreliable or the tube resists cutting, it probably means the cutter's cutting edges are becoming dull. Resharpen or replace your cutter.

- **Is coolant necessary?**

  Always use some form of coolant when drilling to maintain cutting performance and tool life. Any form of coolant or lubrication helps—even water works better than nothing at all.

- **What happens when my portable drill press becomes loose or parts wear out?**

  For the best performance, always maintain your drill as instructed in the operator's manual. Many magnetic drills feature a slide/gib/way system that requires periodic adjustments to maintain rigidity and optimal performance. Worn or damaged parts should be replaced to reduce the possibility of injury.

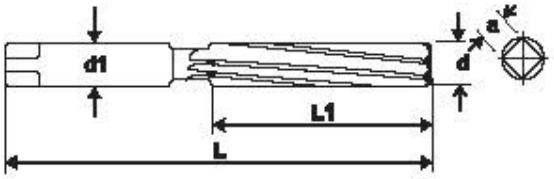
REAMERS

REAMERS

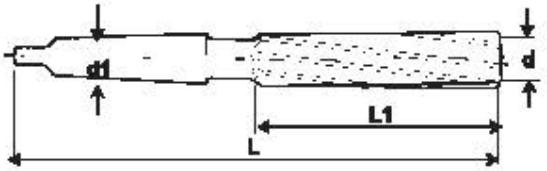
REAMERS

REFERENCE STANDARDS

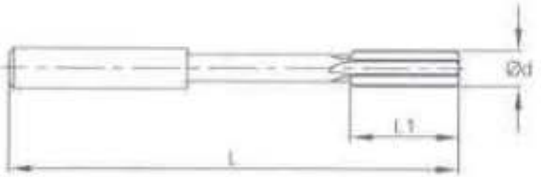
	MM SIZE	INCH SIZE
HSS HAND REAMERS	IS : 5444 - 1978	BS 328 PART-4
HSS MACHINE REAMERS WITH TAPER SHANK	IS : 5445 - 1978	1983
HSS CHUCKING REAMERS WITH PARALLEL SHANK	IS : 5446 - 1978	
HSS CHUCKING REAMERS WITH TAPER SHANK	IS : 5447 - 1978	



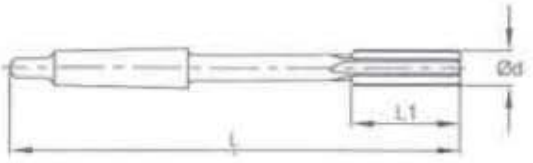
HSS HAND REAMERS WITH PARALLEL SHANK



HSS MACHINE REAMERS WITH TAPER SHANK



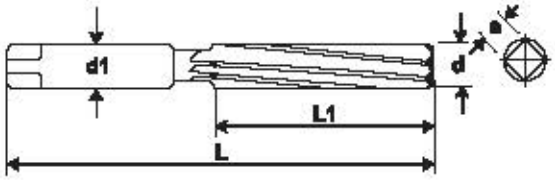
HSS CHUCKING REAMERS WITH PARALLEL SHANK



HSS CHUCKING REAMERS WITH TAPER SHANK

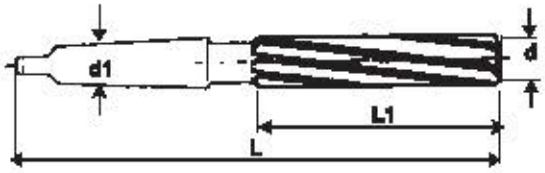
HSS HAND REAMERS AS PER IS : 5444 - 1978

HSS HAND REAMERS WITH PARALLEL SHANK



HSS MACHINE REAMERS WITH TAPER SHANK AS PER IS : 5445 - 1978

HSS MACHINE REAMERS WITH TAPER SHANK



SIZE MM	HAND REAMER				LONG FLUTED MACHINE REAMER					MOQ NOS.
	PART CODE (MIR065)	PRICE RS./ PIECE	FL MM (L1)	OAL MM (L)	PART CODE (MIR065)	PRICE RS./ PIECE	MT SHANK	FL MM (L1)	OAL MM (L)	
3.00	2107HC	617*	31	62	-	-	-	38	-	25
4.00	2110LC	617*	38	76	2352CC	617*	MT1	41	117	25
4.50	2111MC	617	41	81	2353DC	617	MT1	44	120	25
5.00	2112NC	617*	44	87	2354EC	617*	MT1	47	124	25
6.00	2114QC	718*	47	93	2356GC	718*	MT1	54	127	25
7.00	2116SC	718	54	107	2358JC	718*	MT1	58	134	15
8.00	2118VC	818*	58	115	2360LC	818*	MT1	62	138	15
9.00	2120XC	859	62	124	2362NC	859*	MT1	66	142	15
10.00	2122ZC	1034*	66	133	2364QC	1034*	MT1	71	146	15
11.00	2125BC	1159*	71	142	2366SC	1159*	MT1	76	151	15
12.00	2127DC	1208*	76	152	2368VC	1208*	MT1	76	156	15
13.00	2129FC	1524*	76	163	2370XC	1524*	MT1	81	156	15
14.00	2131HC	1524*	81	163	2372ZC	1524*	MT1	81	161	15
15.00	2133KC	1532	81	163	2375BC	1532*	MT2	87	181	10
16.00	2134LC	1532*	87	175	2377DC	1532*	MT2	87	187	10
17.00	2135MC	1770	87	175	2379FC	1770*	MT2	93	187	10
18.00	2136NC	1894	93	188	2380GC	1894*	MT2	93	193	10
19.00	2137PC	2009	93	188	2381HC	2009	MT2	100	193	10
20.00	2138QC	2246*	100	201	2382JC	2246*	MT2	100	200	10
21.00	2139RC	2536	100	201	2383KC	2536*	MT2	107	200	10
22.00	2140SC	2536	107	215	2384LC	2536*	MT2	107	207	10
23.00	2141TC	2968	107	215	2385MC	2968	MT2	115	207	10
24.00	2142VC	3284	115	231	2386NC	3284	MT3	115	242	5
25.00	2143WC	3294	115	231	2387PC	3294*	MT3	115	242	5

HSS REAMERS

SIZE MM	HAND REAMER				LONG FLUTED MACHINE REAMER					MOQ NOS.
	PART CODE (MIR065)	PRICE RS./ PIECE	FL MM (L1)	OAL MM (L)	PART CODE (MIR065)	PRICE RS./ PIECE	MT SHANK	FL MM (L1)	OAL MM (L)	
26.00	2144XC	4068	115	231	2388QC	12944	MT3	124	242	5
27.00	2145YC	4658	124	247	2389RC	4068	MT3	124	251	5
28.00	2146ZC	4658	124	247	2390SC	4658	MT3	124	251	5
29.00	2147AC	4939	124	247	2391TC	4 658	MT3	124	251	5
30.00	2148BC	5328	124	247	2392VC	4939	MT3	133	251	5
31.00	2149CC	5882	133	265	2393WC	5328*	MT3	133	260	5
32.00	2150DC	5882	133	265	2394XC	5882	MT4	133	293	5
33.00	2151EC	6685	133	265	2395YC	5882	MT4	142	293	3
34.00	2152FC	7504	142	284	2396ZC	6685	MT4	142	302	3
35.00	2153GC	8209	142	284	2398AC	7504	MT4	142	302	3
36.00	2154HC	8209	142	284	2399BC	8209	MT4	142	302	3
37.00	2155JC	9017	142	284	2400CC	8209	MT4	152	302	3
38.00	2156KC	9017	152	305	2401DC	9017	MT4	152	312	3
39.00	2157LC	9970	152	305	2402EC	9017	MT4	152	312	3
40.00	2158MC	10885	152	305	2403FC	9970	MT4	152	312	3
41.00	2159NC	10990	152	305	2404GC	10885	MT4	152	312	3
42.00	2160PC	12944	152	305	2405HC	10990	MT4	163	312	3
43.00	2161QC	12944	163	326	2406JC	12944	MT4	163	323	3
44.00	2162RC	12944	163	326	2407KC	12944	MT4	163	323	3
45.00	2163SC	15164	163	326	2408LC	15164	MT4	163	323	3
46.00	2164TC	15164	163	326	2409MC	15164	MT4	163	323	3
47.00	2165VC	16381	163	326	2410NC	16381	MT4	163	323	3
48.00	2166WC	17593	174	347	2411PC	17593	MT4	174	334	3
49.00	2167XC	17593	174	347	2412QC	17593	MT4	174	334	3
50.00	2168YC	17593	174	347	2413RC	17593	MT4	174	334	3

HSS HAND REAMERS AS PER BS 328 PART-4
HSS MACHINE REAMERS WITH TAPER SHANK AS PER IS 1983

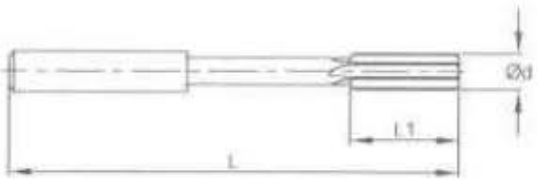
SIZE INCH	HAND REAMER				LONG FLUTED MACHINE REAMER					MOQ NOS.
	PART CODE (MIR065)	PRICE RS./ PIECE	FL INCH (L1)	OAL INCH (L)	PART CODE (MIR065)	PRICE RS./ PIECE	MT SHANK	FL INCH (L1)	OAL INCH (L)	
1/8	2014EC	617	1.5/16	2.5/8	-	-	MT1	-	-	25
5/32	2016GC	617	1.1/2	3	-	-	MT1	-	-	25
3/16	2018JC	617	1.3/4	3.7/16	2254EC	617	MT1	1.3/4	4.7/8	25
7/32	2020LC	617	1.7/8	3.11/16	2256GC	617	MT1	1.7/8	5	25
1/4	2022NC	718	2	3.15/16	2258JC	718*	MT1	2	5.1/8	25
9/32	2024QC	718	2.1/8	4.3/16	2260LC	718	MT1	2.1/8	5.1/4	15
5/16	2026SC	818	2.1/4	4.1/2	2262NC	818	MT1	2.1/4	5.3/8	15
11/32	2028VC	859	2.7/16	4.7/8	2264QC	859	MT1	2.7/16	5.9/16	15
3/8	2030XC	934	2.5/8	5.1/4	2266SC	934*	MT1	2.5/8	5.3/4	15

HSS REAMERS

SIZE INCH	HAND REAMER				LONG FLUTED MACHINE REAMER					MOQ NOS.
	PART CODE (MIR065)	PRICE RS./ PIECE	FL INCH (L1)	OAL INCH (L)	PART CODE (MIR065)	PRICE RS./ PIECE	MT SHANK	FL INCH (L1)	OAL INCH (L)	
13/32	2032ZC	1034	2.5/8	5.1/4	2268VC	1034	MT1	2.5/8	5.3/4	15
7/16	2035BC	1159	2.13/16	5.5/8	2270XC	1159	MT1	2.13/16	5.15/16	15
15/32	2037DC	1208	3	6	2272ZC	1208*	MT1	3	6.1/8	15
1/2	2039FC	1249	3	6	2275BC	1249*	MT1	3	6.1/8	15
17/32	2041HC	1524	3.3/16	6.7/16	2277DC	1524	MT1	3.3/16	6.5/16	15
9/16	2043KC	1524	3.3/16	6.7/16	2279FC	1524	MT2	3.3/16	7.1/8	10
19/32	2045MC	1532	3.7/16	6.7/8	2281HC	1532	MT2	3.7/16	7.3/8	10
5/8	2047PC	1532	3.7/16	6.7/8	2283KC	1532*	MT2	3.7/16	7.3/8	10
21/32	2049RC	1770	3.7/16	6.7/8	2285MC	1770	MT2	3.7/16	7.3/8	10
11/16	2051TC	1770	3.11/16	7.7/16	2287PC	1770	MT2	3.11/16	7.5/8	10
23/32	2053WC	2009	3.11/16	7.7/16	2289RC	2009	MT2	3.11/16	7.5/8	10
3/4	2055YC	2009	3.15/16	7.15/16	2291TC	2009	MT2	3.15/16	7.7/8	10
13/16	2058AC	2290	3.15/16	7.15/16	2293WC	2290	MT2	3.15/16	7.7/8	10
7/8	2060CC	2536	4.3/16	8.1/2	2295YC	2536	MT2	4.3/16	8.1/8	10
15/16	2062EC	3284	4.1/2	9.1/16	2298AC	3284	MT2	4.1/2	9.1/2	5
1	2064GC	3356	4.1/2	9.1/16	2300CC	3356*	MT3	4.1/2	9.1/2	5
1.1/16	2066JC	4658	4.7/8	9.3/4	2301DC	4658	MT3	4.7/8	9.7/8	5
1.1/8	2068LC	4658	4.7/8	9.3/4	2302EC	4658	MT3	4.7/8	9.7/8	5
1.3/16	2070NC	5328	5.1/4	10.7/16	2303FC	5328	MT3	5.1/4	10.1/4	5
1.1/4	2072QC	5882	5.1/4	10.7/16	2304GC	5882	MT4	5.1/4	10.1/4	5
1.5/16	2074SC	6685	5.1/4	10.7/16	2305HC	6685	MT4	5.1/4	11.9/16	3
1.3/8	2076VC	8209	5.5/8	11.3/16	2306JC	8209	MT4	5.5/8	11.15/16	3
1.7/16	2078XC	8278	5.5/8	11.3/16	2307KC	8278	MT4	5.5/8	11.15/16	3
1.1/2	2080ZC	9017	6	12	2308LC	9017	MT4	6	12.5/16	3
1.9/16	2082AC	10885	6	12	2309AC	10885	MT4	6	12.5/16	3
1.5/8	2083BC	10990	6	12	2309MC	10990	MT4	6	12.5/16	3
1.11/16	2084CC	12944	6.7/16	12.13/16	2310BC	12944	MT4	6.7/16	12.3/4	3
1.3/4	2085DC	12944	6.7/16	12.13/16	2310NC	12944	MT4	6.7/16	12.3/4	3
1.7/8	2087FC	17593	6.7/8	13.11/16	2311PC	17593	MT4	6.7/8	13.3/16	3
1.15/16	2088GC	17593	6.7/8	13.11/16	2312DC	17593	MT4	6.7/8	13.3/16	3
2	2089HC	17593	6.7/8	13.11/16	2312QC	17593	MT4	6.7/8	13.3/16	3

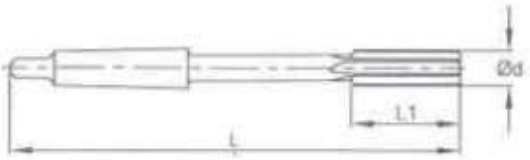
Note : Item marked * are exstock. For Remainig item M.O.Q. required.OR (minimum order value of Rs.20000/-)

HSS CHUCKING REAMERS WITH PARALLEL SHANK AS PER IS : 5446 - 1978



HSS CHUCKING REAMERS WITH PARALLEL SHANK

HSS CHUCKING REAMERS WITH TAPER SHANK AS PER IS : 5447 - 1978



HSS CHUCKING REAMERS WITH TAPER SHANK

SIZE MM	PARALLEL SHANK CHUCKING REAMER				TAPER SHANK CHUCKING REAMER					MOQ NOS.
	PART CODE (MIRD65)	PRICE RS./ PIECE	FL MM (L1)	OAL MM (L)	PART CODE (MIRD65)	PRICE RS./ PIECE	MT SHANK	FL MM (L1)	OAL MM (L)	
3.00	2659PC	617	15	61	-	-	MT1	-	-	25
4.00	2662SC	617	19	75	-	-	MT1	-	-	25
4.50	2663TC	617	21	80	2711RC	617	MT1	23	133	25
5.00	2664VC	617	23	86	2712FC	617	MT1	23	133	25
6.00	2665WC	718	26	93	2713GC	718	MT1	26	138	25
7.00	2666XC	718	31	109	2714HC	718	MT1	31	150	15
8.00	2667YC	818	33	117	2715JC	818	MT1	33	156	15
9.00	2668ZC	859	36	125	2716KC	859	MT1	36	162	15
10.00	2669AC	1034	38	133	2717LC	1034	MT1	38	168	15
11.00	2670BC	1159	41	142	2718MC	1159	MT1	41	175	15
12.00	2671CC	1208	44	151	2719NC	1208	MT1	44	182	15
13.00	2672DC	1524	44	151	2720PC	1524	MT1	44	182	15
14.00	2673EC	1524	47	160	2721QC	1524	MT1	47	189	15
15.00	2674FC	1532	50	162	2722RC	1532	MT2	50	204	10
16.00	2675GC	1532	52	170	2723SC	1532	MT2	52	210	10
17.00	-	-	-	-	2724TC	1770	MT2	54	214	10
18.00	-	-	-	-	2725VC	1894	MT2	56	219	10
19.00	-	-	-	-	2726WC	2009	MT2	58	223	10
20.00	-	-	-	-	2727XC	2246*	MT2	60	228	10
21.00	-	-	-	-	2728YC	2536	MT2	62	232	10
22.00	-	-	-	-	2729ZC	2536	MT2	64	237	10
23.00	-	-	-	-	2730AC	2968	MT2	66	241	10
24.00	-	-	-	-	2730CC	3284	MT3	68	268	5
25.00	-	-	-	-	2730EC	3294	MT3	68	268	5

HSS CHUCKING REAMER

SIZE MM	PARALLEL SHANK CHUCKING REAMER				TAPER SHANK CHUCKING REAMER					MOQ NOS.
	PART CODE (MIR065)	PRICE RS./ PIECE	FL MM (LI)	OAL MM (L)	PART CODE (MIR065)	PRICE RS./ PIECE	MT SHANK	FL MM (LI)	OAL MM (L)	
26.00	-	-	-	-	2730GC	4068	MT3	70	273	5
27.00	-	-	-	-	2731HC	4658	MT3	71	277	5
28.00	-	-	-	-	2732JC	4658	MT3	71	277	5
29.00	-	-	-	-	2733KC	4939	MT3	73	281	5
30.00	-	-	-	-	2734LC	5328	MT3	73	281	5
31.00	-	-	-	-	2735MC	5882	MT3	75	285	5
32.00	-	-	-	-	2736NC	5882	MT4	77	317	5
33.00	-	-	-	-	2737PC	6685	MT4	77	317	3
34.00	-	-	-	-	2738QC	7504	MT4	78	321	3
35.00	-	-	-	-	2739RC	8209	MT4	78	321	3
36.00	-	-	-	-	2740SC	8209	MT4	79	325	3
37.00	-	-	-	-	2741TC	9017	MT4	79	325	3
38.00	-	-	-	-	2742VC	9017	MT4	81	329	3
39.00	-	-	-	-	2743UC	9970	MT4	81	329	3
40.00	-	-	-	-	2743WC	10885	MT4	81	329	3
41.00	-	-	-	-	2743XC	10990	MT4	82	333	3
42.00	-	-	-	-	2744XC	12944	MT4	82	333	3
43.00	-	-	-	-	2745YC	12944	MT4	83	336	3
44.00	-	-	-	-	2745ZC	12944	MT4	83	336	3
45.00	-	-	-	-	2746ZC	15164	MT4	83	336	3
46.00	-	-	-	-	2747AC	15164	MT4	84	340	3
47.00	-	-	-	-	2747BC	16381	MT4	84	340	3
48.00	-	-	-	-	2748BC	17593	MT4	86	344	3
49.00	-	-	-	-	2748CC	17593	MT4	86	344	3
50.00	-	-	-	-	2749CC	17593	MT4	86	344	3

SIZE INCH	PARALLEL SHANK CHUCKING REAMER				TAPER SHANK CHUCKING REAMER					MOQ NOS.
	PART CODE (MIR065)	PRICE RS./ PIECE	FL INCH (LI)	OAL INCH (L)	PART CODE (MIR065)	PRICE RS./ PIECE	MT SHANK	FL INCH (LI)	OAL INCH (L)	
1/8	3604EC	617	5/8	2.9/16	-	-	MTI	-	-	25
5/32	2606GC	617	3/4	2.21/32	-	-	MTI	-	-	25
3/16	2608JC	617	29/32	3.3/8	-	-	MTI	-	-	25
7/32	2610LC	617	1.1/32	3.21/32	2680AC	617	MTI	1.1/32	5.7/16	25
1/4	2612NC	718	1.3/32	3.31/32	2680MC	718	MTI	1.3/32	5.21/32	25
9/32	2614QC	718	1.7/32	4.9/32	2681NC	718	MTI	1.7/32	5.29/32	15
5/16	2616SC	818	1.9/32	4.19/32	2682PC	818	MTI	1.5/16	6.1/8	15
11/32	2618VC	859	1.13/32	4.15/16	2683QC	859	MTI	1.13/32	6.3/8	15
3/8	2620XC	934	1.1/2	5.1/4	2684RC	934	MTI	1.1/2	6.5/8	15
13/32	2622ZC	1034	1.1/2	5.1/4	2685SC	1034	MTI	1.1/2	6.5/8	15
7/16	2624BC	1159	1.5/8	5.13/32	2686TC	1159	MTI	1.5/8	6.29/32	15

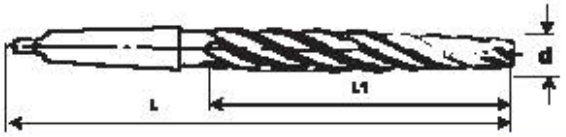
HSS CHUCKING REAMERS

SIZE INCH	PARALLEL SHANK CHUCKING REAMER				TAPER SHANK CHUCKING REAMER					MOQ NOS.
	PART CODE (MIR065)	PRICE RS./ PIECE	FL INCH (L1)	OAL INCH (L)	PART CODE (MIR065)	PRICE RS./ PIECE	MT SHANK	FL INCH (L1)	OAL INCH (L)	
15/32	2626DC	1208	1.23/32	5.15/16	2687VC	1208	MT1	1.3/4	7.5/32	15
1/2	2628FC	1249	1.23/32	5.15/16	2688WC	1249	MT1	1.3/4	7.5/32	15
17/32	2628GC	1524	1.31/32	6.3/8	2689XC	1524	MT1	1.27/32	7.7/16	15
9/16	2630HC	1524	1.31/32	6.3/8	2690YC	1524	MT2	1.31/32	8.1/32	10
19/32	2631JC	1532	2.1/32	.23/32	2691ZC	1532	MT2	2.1/32	8.1/4	10
5/8	2632KC	1532	2.1/32	6.23/32	2692AC	1532	MT2	2.1/32	8.1/4	10
21/32	-	-	-	-	2693BC	1770	MT2	2.1/8	8.7/16	10
11/16	-	-	-	-	2694CC	1770	MT2	2.7/32	8.5/8	10
23/32	-	-	-	-	2695DC	2009	MT2	2.9/32	8.25/32	10
3/4	-	-	-	-	2696EC	2009	MT2	2.11/32	8.31/32	10
13/16	-	-	-	-	2698GC	2290	MT2	2.7/16	9.1/8	10
7/8	-	-	-	-	2700JC	2536	MT2	2.17/32	9.11/32	10
15/16	-	-	-	-	2700NC	3284	MT2	2.21/32	10.9/16	5
1	-	-	-	-	2700SC	3356	MT3	2.3/4	10.3/4	5
1.1/16	-	-	-	-	2701TC	4658	MT3	2.25/32	10.29/32	5
1.1/8	-	-	-	-	2702VC	4658	MT3	2.7/8	11.1/16	5
1.3/16	-	-	-	-	2703WC	5328	MT3	2.15/16	11.7/32	5
1.1/4	-	-	-	-	2704XC	5882	MT4	3.1/32	11.7/16	5
1.5/16	-	-	-	-	2705YC	6685	MT4	3.1/16	12.21/32	3
1.3/8	-	-	-	-	2706ZC	8209	MT4	3.1/16	12.21/32	3
1.7/16	-	-	-	-	2707AC	8278	MT4	3.1/16	12.31/32	3
1.1/2	-	-	-	-	2708BC	9017	MT4	3.1/16	12.31/32	3
1.9/16	-	-	-	-	2709CC	10885	MT4	3.7/32	13.1/8	3
1.5/8	-	-	-	-	2708GC	10990	MT4	3.7/32	13.1/8	3
1.11/16	-	-	-	-	2708EC	12944	MT4	3.1/4	13.1/4	3
1.3/4	-	-	-	-	2708MC	12944	MT4	3.1/4	13.1/4	3
1.7/8	-	-	-	-	2708TC	17593	MT4	3.13/32	13.17/32	3
1.15/16	-	-	-	-	2708VC	17593	MT4	3.13/32	13.17/32	3
2	-	-	-	-	2709AC	17593	MT4	3.13/32	13.17/32	3

Note : Item marked * are exstock. For Remainig item M.O.Q. required.OR (minimum order value of Rs.20000/-)

MACHINE BRIDGE REAMERS

HSS M2 - AS PER IS 5919 : 1978



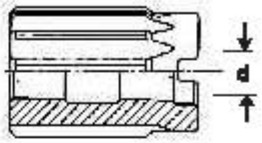
DIA. MM (d)	MT SHANK	FL (L1)	OAL (L)	FLUTES	PART CODE (MIRTS)	PRICE RS./PIECE	PRICE RS./PIECE
6.40	MT1	75	151	SF	BR20640	1077	15
7.40	MT1	80	156	SF	BR20740	1077	15
8.40	MT1	85	161	SF	BR20840	1262	15
9.40	MT1	90	166	SF	BR20940	1424	15
10.00	MT1	95	171	SF	BR21000	1577	15
11.00	MT1	100	176	SF	BR21100	1577	15
11.50	MT1	100	176	SF	BR21150	1844	15
12.00	MT2	105	199	SF	BR21200	1844	15
13.00	MT2	105	199	SF	BR21300	1999	15
13.50	MT2	115	209	SF	BR21350	1999	15
14.00	MT2	115	209	SF	BR21400	1999	15
15.00	MT2	125	219	SF	BR21500	2332	10
16.00	MT2	135	229	SF	BR21600	2879	10
17.00	MT3	135	251	SF	BR21700	2879	10
17.50	MT3	145	261	SF	BR21750	3232	10
18.00	MT3	145	261	SF	BR21800	3232	10
19.00	MT3	145	261	SF	BR21900	3232	10
20.00	MT3	155	271	SF	BR22000	3554	10
21.00	MT3	155	271	SF	BR22100	3852	10
21.50	MT3	165	281	SF	BR22150	3952	10
22.00	MT3	165	281	SF	BR22200	3952	10
23.00	MT3	165	281	SF	BR22300	4309	10
23.50	MT3	165	281	SF	BR22350	4309	5
24.00	MT3	180	296	SF	BR22400	4686	5
25.00	MT3	180	296	SF	BR22500	4686	5
26.00	MT3	180	296	SF	BR22600	5282	5
27.00	MT3	195	311	SF	BR22700	5282	5
28.00	MT3	195	311	SF	BR22800	5720	5
29.00	MT3	195	311	SF	BR22900	6176	5
30.00	MT3	195	311	SF	BR23000	6176	5
31.00	MT3	210	326	SF	BR23100	6802	5
32.00	MT4	210	354	SF	BR23200	6802	5
33.00	MT4	210	354	SF	BR23300	7318	3
34.00	MT4	220	364	SF	BR23400	7852	3
35.00	MT4	220	364	SF	BR23500	7852	3
36.00	MT4	220	364	SF	BR23600	8379	3
37.00	MT4	220	364	SF	BR23700	8931	3
38.00	MT4	230	374	SF	BR23800	8931	3
40.00	MT4	230	374	SF	BR24000	14203	3
43.00	MT4	240	384	SF	BR24300	16810	3
49.00	MT4	250	394	SF	BR24900	22867	3

Note : 1. RH cutting with LH helical flutes will be supplied as standard.

2. All items required minimum order value of Rs. 20,000/-.

HSS M2 SHELL REAMER :

AS PER IS 5926 : 1970 WITH 1:30 TAPER HOLE



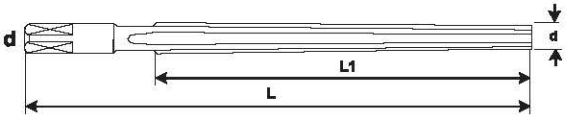
REAMER DIA MM	LENGTH	PART CODE (MIRSR2)	PRICE RS./PIECE	MOQ NOS.
21.00	45	IS2100	1918	5
22.00	45	IS2200	1918	5
23.00	45	IS2300	1918	5
24.00	45	IS2400	1918	5
25.00	45	IS2500	1918	5
26.00	45	IS2600	2032	5
27.00	45	IS2700	2032	5
28.00	45	IS2800	2180	5
29.00	45	IS2900	2284	5
30.00	45	IS3000	2295	5
31.00	50	IS3100	2389	5
32.00	50	IS3200	2403	5
33.00	50	IS3300	2524	5
34.00	50	IS3400	2624	5
35.00	50	IS3500	2655	5
36.00	56	IS3600	2766	5
37.00	56	IS3700	2873	5
38.00	56	IS3800	2912	5
39.00	56	IS3900	3057	5
40.00	56	IS4000	3057	5
41.00	56	IS4100	3192	5
42.00	56	IS4200	3623	5
43.00	63	IS4300	3623	5
44.00	63	IS4400	3676	5
45.00	63	IS4500	3833	5
46.00	63	IS4600	3833	5
47.00	63	IS4700	4016	5
48.00	63	IS4800	4095	5
49.00	63	IS4900	4124	5
50.00	63	IS5000	4292	5
51.00	71	IS5100	4971	5
52.00	71	IS5200	5018	5
53.00	71	IS5300	5018	5
54.00	71	IS5400	5018	5
55.00	71	IS5500	5505	5
56.00	71	IS5600	5505	5
57.00	71	IS5700	5505	5
58.00	71	IS5800	6173	5
59.00	71	IS5900	6173	5
60.00	71	IS6000	6173	5

REAMER DIA MM	LENGTH	PART CODE (MIRSR2)	PRICE RS./PIECE	MOQ NOS.
61.00	80	IS6100	7388	5
62.00	80	IS6200	7459	5
63.00	80	IS6300	7616	5
64.00	80	IS6400	8804	3
65.00	80	IS6500	8888	3
66.00	80	IS6600	8888	3
67.00	80	IS6700	9753	3
68.00	80	IS6800	9753	3
69.00	80	IS6900	9753	3
70.00	80	IS7000	10834	3
71.00	90	IS7100	10733	3
72.00	90	IS7200	10844	3
73.00	90	IS7300	11784	3
74.00	90	IS7400	11784	3
75.00	90	IS7500	11784	3
76.00	90	IS7600	11960	3
77.00	90	IS7700	13281	3
78.00	90	IS7800	13281	3
79.00	90	IS7900	13417	3
80.00	90	IS8000	14707	3
81.00	90	IS8100	14857	3
82.00	90	IS8200	14857	3
83.00	90	IS8300	15871	3
84.00	90	IS8400	15871	3
85.00	90	IS8500	16024	3
86.00	100	IS8600	17002	3
87.00	100	IS8700	17002	3
88.00	100	IS8800	17002	3
89.00	100	IS8900	17165	3
90.00	100	IS9000	20102	3
91.00	100	IS9100	20301	3
92.00	100	IS9200	20301	3
93.00	100	IS9300	21015	3
94.00	100	IS9400	21015	3
95.00	100	IS9500	21223	3
96.00	100	IS9600	24441	3
97.00	100	IS9700	24441	3
98.00	100	IS9800	24624	3
99.00	100	IS9900	27260	3
100.00	100	IS1000	27260	3

Note : 1. For Reaming item M.O.Q. required. OR (minimum order value of Rs.20000/-)

2. RH cutting straight flutes will be supplied as standard.

HSS TAPER PIN REAMERS



HSS TAPER PIN REAMERS (TAPER 1 IN 50)

HAND - IS : 5881 - 1984 MACHINE - IS : 5918 - 1984

DIA (MM)	TAPER PIN HAND REAMER		TAPER PIN MACHINE REAMER		MOQ NOS.
	PART CODE (MIRTP)	PRICE RS./PIECE	PART CODE (MIRTP)	PRICE RS./PIECE	
6	HR20600	1334	MR20600	1334	20
8	HR20800	1807	MR20800	1807	20
10	HR21000	1999	MR21000	1999	20
12	HR21200	2418	MR21200	2418	20
14	HR21400	2722	MR21400	2722	20
16	HR21600	3029	MR21600	3029	15
20	HR22000	4712	MR22000	4712	15
25	HR22500	4994	MR22500	4994	10
30	HR23000	6728	MR23000	6728	10
32	HR23200	7379	MR23200	7379	10
40	HR24000	13210	MR24000	13210	5
50	HR25000	22896	MR25000	22896	5

HSS TAPER PIN REAMERS (TAPER 1 IN 48)

HAND / MACHINE - BS 328(PART 4) 1983

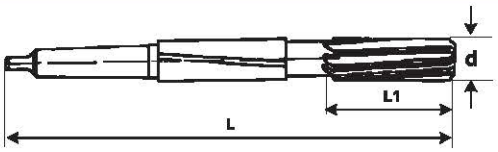
DIA (INCH)	TAPER PIN HAND REAMER		TAPER PIN MACHINE REAMER		MOQ NOS.
	PART CODE (MIRTP)	PRICE RS./PIECE	PART CODE (MIRTP)	PRICE RS./PIECE	
1/4	HR20008	1242	MR20008	1242	20
9/32	HR20009	1358	MR20009	1358	20
5/16	HR20010	1508	MR20010	1508	20
11/32	HR20011	1700	MR20011	1700	20
3/8	HR20012	1734	MR20012	1734	20
13/32	HR20013	1942	MR20013	1942	15
7/16	HR20014	1999	MR22000	1999	15
1/2	HR20016	2268	MR22500	2268	10
9/16	HR20018	2616	MR23000	2616	10
5/8	HR20020	2915	MR23200	2915	10
3/4	HR20024	3671	MR24000	3671	5
7/8	HR20028	4535	MR25000	4535	5

Note : 1. For Reaming item M.O.Q. required. OR (minimum order value of Rs.20000/-)

2. RH Cutting with straight flutes with will be supplied standard for Hand Reamer Taper Shank, Taper Pin Reamer will be supplied with Left Hand Helical Flutes.

HSS M2 TAPER SHANK JIG REAMERS

AS PER IS : 11002 - 1984



SIZE MM (d)	MT SHANK	FL MM (L1)	OAL MM (L)	PART CODE (MIRJR2)	PRICE RS./PIECE	MOQ NOS.
6.00	MT1	26	138	IS0600	988	20
7.00	MT1	31	150	IS0700	1049	20
8.00	MT1	33	156	IS0800	1049	20
9.00	MT1	36	162	IS0900	1137	20
10.00	MT1	38	168	IS1000	1297	20
11.00	MT1	41	175	IS1100	1297	20
12.00	MT1	44	182	IS1200	1487	20
13.00	MT1	44	182	IS1300	1767	20
14.00	MT1	47	189	IS1400	1767	20
15.00	MT2	50	204	IS1500	1953	15
16.00	MT2	52	210	IS1600	1953	15
17.00	MT2	54	214	IS1700	2254	15
18.00	MT2	56	219	IS1800	2524	15
19.00	MT2	58	223	IS1900	2524	15
20.00	MT2	60	228	IS2000	2753	15
21.00	MT2	62	232	IS2100	3176	15
22.00	MT2	64	237	IS2200	3176	15
23.00	MT2	66	241	IS2300	3176	15
24.00	MT3	68	268	IS2400	4124	10
25.00	MT3	68	268	IS2500	4466	10
26.00	MT3	70	273	IS2600	4993	10
27.00	MT3	71	277	IS2700	4993	10
28.00	MT3	71	277	IS2800	5446	10
29.00	MT3	73	281	IS2900	5905	5
30.00	MT3	73	281	IS3000	5905	5
31.00	MT3	75	285	IS3100	6835	5
32.00	MT4	77	317	IS3200	6853	5
33.00	MT4	77	317	IS3300	8048	5
34.00	MT4	78	321	IS3400	9266	5
35.00	MT4	78	321	IS3500	9266	5
36.00	MT4	79	325	IS3600	9943	5
37.00	MT4	79	325	IS3700	10631	5
38.00	MT4	81	329	IS3800	10631	5
39.00	MT4	81	329	IS3900	10631	5
40.00	MT4	81	329	IS4000	12220	5

SIZE MM (d)	MT SHANK	FL MM (L1)	OAL MM (L)	PART CODE (MIRJR2)	PRICE RS./PIECE	MOQ NOS.
41.00	MT4	82	333	IS4100	12250	3
42.00	MT4	82	333	IS4200	13687	3
43.00	MT4	83	336	IS4300	13687	3
44.00	MT4	83	336	IS4400	15037	3
45.00	MT4	83	336	IS4500	16330	3
46.00	MT4	84	340	IS4600	16330	3
47.00	MT4	84	340	IS4700	17803	3
48.00	MT4	86	344	IS4800	19362	3
49.00	MT4	86	344	IS4900	19362	3
50.00	MT4	86	344	IS5000	21525	3

HSS M2 TAPER SHANK JIG REAMERS
AS PER BS 122 (PART 2) 1964

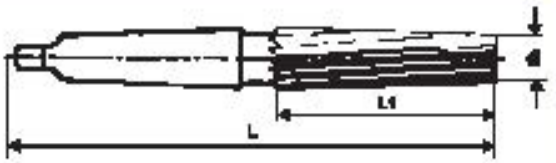
SIZE INCH (d)	MT SHANK	FL INCH (L1)	OAL INCH (L)	PART CODE (MIRJR2)	PRICE RS./PIECE	MOQ NOS.
1/4"	MT1	7/8	5.5/8	BS0008	988	20
9/32"	MT1	1	5.15/16	BS0009	1049	20
5/16"	MT1	1	5.15/16	BS0010	1049	20
11/32"	MT1	1.1/8	6.1/4	BS0011	1100	20
3/8"	MT1	1.1/8	6.1/4	BS0012	1100	20
13/32"	MT1	1.5/16	6.11/16	BS0013	1275	20
7/16"	MT1	1.5/16	6.11/16	BS0014	1275	20
15/32"	MT1	1.5/16	6.11/16	BS0015	1379	20
1/2"	MT1	1.5/16	6.11/16	BS0016	1410	20
9/16"	MT2	1.1/2	7.13/16	BS0018	1724	15
5/8"	MT2	1.1/2	7.13/16	BS0020	1858	15
11/16"	MT2	1.3/4	8.7/16	BS0022	2201	15
3/4"	MT2	1.3/4	8.7/16	BS0024	2432	15
13/16"	MT2	1.3/4	8.7/16	BS0026	2668	15
7/8"	MT2	2	8.7/8	BS0028	3059	15
15/16"	MT3	2	9.15/16	BS0030	3916	10
1"	MT3	2	9.15/16	BS0032	4284	10
1.1/16"	MT3	2.3/8	10.3/4	BS0034	4806	10
1.1/8"	MT3	2.3/8	10.3/4	BS0036	5224	10
1.3/16"	MT3	2.3/8	10.3/4	BS0038	5689	5
1.1/4"	MT3	2.3/8	10.3/4	BS0040	6593	5
1.5/16"	MT4	2.3/8	12	BS0042	7726	5
1.3/8"	MT4	2.3/4	13.1/8	BS0044	8612	5
1.7/16"	MT4	2.3/4	13.1/8	BS0046	9562	5
1.1/2"	MT4	2.3/4	13.1/8	BS0048	10228	5
1.5/8"	MT4	2.3/4	13.1/8	BS0052	10541	3
1.3/4"	MT4	3.1/8	14.5/16	BS0056	14178	3
1.7/8"	MT4	3.1/8	14.5/16	BS0060	17092	3
2"	MT4	3.1/8	14.5/16	BS0064	20711	3

Note : 1. RH cutting with LH helical flutes will be supplied as standard. (All items required minimum order value of Rs. 20,000/-.)

HSS M2 TAPER SHANK SOCKET REAMERS

AS PER IS : 5907 - 1970

(TYPE 'A' ROUGHING / TYPE 'B' PRE-FINISHING / TYPE 'C' FINISHING)



TYPE 'A' ROUGHING

MORSE TAPER	DESIGNATING SIZE	GUAGE DIA. MM	OAL (L)	PART CODE (MIRSOM)	PRICE RS./PIECE	MOQ NOS.
0.00	MT1	9.045	137	A2MT00	1663	20
1.00	MT1	12.065	142	A2MT00	1754	20
2.00	MT2	17.780	173	A2MT02	2604	20
3.00	MT3	23.825	212	A2MT03	3904	10
4.00	MT3	31.267	263	A2MT04	6113	10
5.00	MT5	44.399	331	A2MT05	11476	5
6.00	MT5	63.348	389	A2MT06	26286	5

TYPE 'B' PRE - FINISHING

MORSE TAPER	DESIGNATING SIZE	GUAGE DIA. MM	OAL (L)	PART CODE (MIRSOM)	PRICE RS./PIECE	MOQ NOS.
0.00	MT1	9.045	137	B2MT00	1663	20
1.00	MT1	12.065	142	B2MT00	1754	20
2.00	MT2	17.780	173	B2MT02	2604	20
3.00	MT3	23.825	212	B2MT03	3904	10
4.00	MT3	31.267	263	B2MT04	6113	10
5.00	MT5	44.399	331	B2MT05	11476	5
6.00	MT5	63.348	389	B2MT06	26286	5

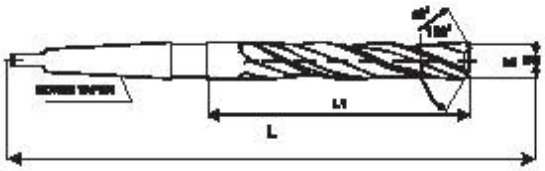
TYPE 'C' FINISHING

MORSE TAPER MT No.	DESIGNATING SIZE	GUAGE DIA. MM	OAL (L)	PART CODE (MIRSOM)	PRICE RS./PIECE	MOQ NOS.
0.00	MT1	9.045	137	C2MT00	1663	20
1.00	MT1	12.065	142	C2MT00	1754	20
2.00	MT2	17.780	173	C2MT02	2604	20
3.00	MT3	23.825	212	C2MT03	3904	10
4.00	MT3	31.267	263	C2MT04	6113	10
5.00	MT5	44.399	331	C2MT05	11476	5
6.00	MT5	63.348	389	C2MT06	26286	5

Note : All items required minimum order value of Rs. 20,000/-.

TAPER SHANK CORE DRILL HSS M2

AS PER IS : 5366 : 1978



DIA	SHANK	FL MM (L1)	OAL MM (L)	PART CODE (MIRTS)	PRICE RS./PIECE	MOQ NOS.
9.80	MT1	87	168	CD20980	795	25
10.00	MT1	87	168	CD21000	795	25
10.75	MT1	94	175	CD21075	797	25
11.00	MT1	94	175	CD21100	797	25
11.75	MT1	94	175	CD21175	853	25
12.00	MT1	101	182	CD21200	853	25
12.75	MT1	101	182	CD21275	899	25
13.00	MT1	101	182	CD21300	1219	25
13.75	MT1	108	189	CD21375	1337	25
14.00	MT1	108	189	CD21400	1337	25
14.75	MT2	114	212	CD21475	1434	15
15.00	MT2	114	212	CD21500	1434	15
15.75	MT2	120	218	CD21575	1467	15
16.00	MT2	120	218	CD21600	1467	15
16.75	MT2	125	223	CD21675	1546	15
17.00	MT2	125	223	CD21700	1546	15
17.75	MT2	130	228	CD21775	1669	15
18.00	MT2	130	228	CD21800	1797	15
18.70	MT2	135	233	CD21870	2056	15
19.00	MT2	135	233	CD21900	2056	15
19.70	MT2	140	238	CD21970	2066	15
20.00	MT2	140	238	CD22000	2066	15
20.70	MT2	145	243	CD22070	2209	10
21.00	MT2	145	243	CD22100	2209	10
21.70	MT2	150	248	CD22170	2336	10
22.00	MT2	150	248	CD22200	2336	10
22.70	MT2	155	253	CD22270	2624	10
23.00	MT2	155	253	CD22300	2624	10
23.70	MT3	160	281	CD22370	2867	5
24.00	MT3	160	281	CD22400	3009	5
24.70	MT3	160	281	CD22470	3009	5
25.00	MT3	160	281	CD22500	3482	5
25.70	MT3	165	286	CD22570	3482	5
26.00	MT3	165	286	CD22600	3758	5

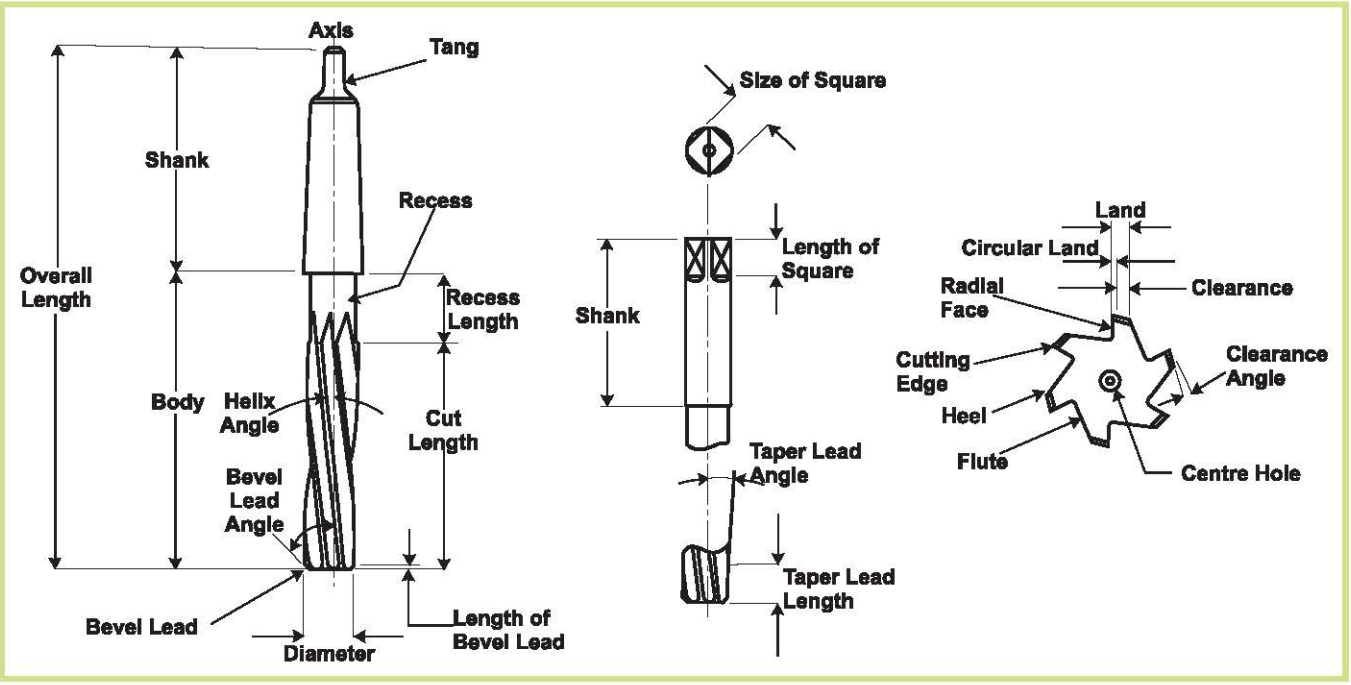
HSS TAPER SHANK CORE DRILL HSS M2

DIA	SHANK	FL MM (LI)	OAL MM (L)	PART CODE (MIRTS)	PRICE RS./PIECE	MOQ NOS.
27.70	MT3	170	291	CD22770	4307	5
28.00	MT3	170	291	CD22800	4562	5
29.70	MT3	175	296	CD22970	5075	5
30.00	MT3	175	296	CD23000	5075	3
31.60	MT4	185	306	CD23160	6181	3
32.00	MT4	185	334	CD23200	6774	3
33.60	MT4	190	339	CD23260	6917	3
34.00	MT4	190	339	CD23400	7587	3
34.60	MT4	190	339	CD23460	8012	3
35.00	MT4	190	339	CD23500	8012	3
36.00	MT4	195	344	CD23600	8619	3
38.00	MT4	200	349	CD23800	9091	3
40.00	MT4	200	349	CD24000	12089	3
42.00	MT4	205	354	CD24200	12451	3
45.00	MT4	210	359	CD24500	14064	3
46.00	MT4	215	359	CD24600	14582	3
48.00	MT4	220	369	CD24800	15939	3
50.00	MT4	220	369	CD25000	18299	3

Note : 1. No. of flutes will be supplied as follows.

- Above 9mm to 20 mm -3 Flutes
- Above 20mm to 50 mm -4 Flutes

Reamer Terms - General Features



Recommended Cutting Parameters

Material	Cutting Speed m/mim		Feed Rate Code		Reaming stock allowance in mm				
	Spiral Flute	Straight Flute	Spiral Flute	Straight Flute	dia. up to 6mm	dia. up to 10mm	dia up to 16mm	dia. up to 25mm	dia. up to 25mm
Steel up to tensile strength 700 N/mm^2	14	11	C	B	0.1-0.2	0.2	0.2-0.3	0.3-0.4	0.4-0.5
Steel above tensile strength 700N/mm^2	11	9	C	B	0.1-0.2	0.2	0.2	0.3	0.3-0.4
Cast steel	10	8	D	C	0.1-0.2	0.2	0.2	0.2-0.3	0.3-0.4
Grey cast iron	12	9	D	C	0.1-0.2	0.2	0.2-0.3	0.3-0.4	0.4-0.5
Malleable cast iron	10	8	C	B	0.1-0.2	0.2	0.3	0.4	0.5
Copper	17	14	D	C	0.1-0.2	0.2-0.3	0.3-0.4	0.4-0.5	0.5
Brass, Bronze	20	17	E	D	0.1-0.2	0.2	0.2-0.3	0.3	0.3-0.4
Light alloys	17-20	14-18	F	E	0.1-0.2	0.2-0.3	0.3-0.4	0.4-0.5	0.5
Plastics	20	16	B	A	0.1-0.2	0.2	0.4	0.4-0.5	0.5

Cutting speeds and feed may vary by 10-15% depending upon specific application

Reamer Feed Chart

FEED CODE	Reamer Diameter								
	5mm	8mm	10mm	12mm	16mm	20mm	25mm	30mm	40mm
A	0.100	0.150	0.170	0.185	0.220	0.250	0.280	0.320	0.390
B	0.150	0.180	0.210	0.240	0.280	0.310	0.360	0.400	0.500
C	0.185	0.220	0.260	0.285	0.335	0.390	0.440	0.480	0.600
D	0.200	0.270	0.320	0.360	0.410	0.470	0.540	0.600	0.730
E	0.250	0.350	0.390	0.430	0.500	0.530	0.640	0.750	0.910
F	0.350	0.440	0.500	0.550	0.630	0.700	0.800	0.930	1.200

Feed rates are given in mm/rev.

Common Reamer problems, Causes and Remedies

INDICATIONS	CAUSES	REMEDIES
Reamer produces oversize holes	Concentricity error of machine. spindle, holder or tool. Damaged fit between tool shank, chuck & collet. Bevel lead of tool incorrect. Cutting speed too high. Feed rate too high. Unsuitable coolant for work material.	Correct concentricity error. Ensure proper fit. Resharpen bevel lead. Reduce speed. Reduce feed. Use recommended coolant.
Reamer produces undersize holes	Tool tolerance incorrect. Material ductile hence contracts after reaming. Excessive heating during reaming. Reamer blunt. Cutting speed / feed rate too low. Insufficient stock for reaming.	Use properly designed reamer. Use quick spiral reamer. Use sufficient & correct coolant. Resharpen / change reamer. Increase speed / feed. Keep recommended stock for reaming.
Bell mouthing, oblong & other hole problems	Machine spindle non-concentric. Bevel lead incorrect. Axis of predrilled hole & reamer not in line.	Correct machine error. Sharpen reamer correctly. Use floating reamer holder. Use core drill before reaming.
Unsatisfactory surface finish	Reamer blunt. Built up edge on reamer. Cutting speed too high & feed rate too low. Stock removal allowance too small. Bevel lead incorrect.	Change / resharpen reamer. Use richer coolant, possibly cutting oil or reduce circular land width to almost zero. Adjust speed / feed. Keep recommended stock for reaming. Resharpen the bevel lead correctly.
Reamer seizes & breaks	Back taper incorrect. Excessive land wear. Circular land too wide for work material. Hard spots in the material. Stock removal allowance too small. Material tends to promote jamming.	Refer to the manufacturer. Reduce speed. Refer to manufacturer. Normalize / Anneal material. Keep recommended stock for reaming. Use quick spiral reamers.

Reamers and their economical application

Reamer Selection

With regard to their application reamers are of two main types.

- Hand reamers
- Machine reamers

Hand Reamers

Hand reamers are turned in the hole by means of a tap wrench which is mounted on the square. The feeding action is produced manually. To ensure a proper guidance in the hole the taper lead length of hand reamers is made considerably longer than that of machine reamers.

A Basic Rule For Reaming By Hand : Turn The Tool Only In The Cutting Direction. i.e. Never Reverse The Tool Contrary To Standard Practice In Thread Cutting. Cutting Edges Will Become Immediately Blunt If The Reamer Is Turned Back.

Machine Reamers

Machine Reamers are, as the name implies, exclusively designed for use on machines. Depending on the type of tool carrier, machine reamers can be divided in to the following categories :

- Reamers with straight shank
- Reamers with Morse taper shank
- Reamers with shanks of special design

A further distinctive feature of hand and machine reamers is the geometry of the cutting section, standardized under the following headings:

- Straight- fluted reamers
- LH spiral reamers
- Reamers with quick spiral (25°/45°) left-hand flutes

Tool with right-hand spiral flutes are only applied in special cases. They produce, like twist drills, a chip flow up the flutes, which often results in an unsatisfactory surface finish quality.

Reamers with straight flutes are suitable for the machining of blind holes. Here again the absence of chip space at the bottom of the hole means that swarf must be evacuated up the reamer flutes. For all other machining tasks, and particularly for interrupted holes (e.g. hole with keyways, intersecting holes and the like), reamers with left-hand spiral flutes are much more suitable. Chip removal is always in the direction of the feed and for this reason this flute geometry is used almost exclusively for through holes.

Their application in blind holes is limited to tasks where reaming to the full depth is not required, so that sufficient space for the chip volume created is available.

A reamer always follows the direction of the predrilled hole and does not correct alignment error of predrilled holes. Use of core drill after drilling is recommended for correct reaming results.

Reamers and their economical application

Practical Tips For Reaming

Always use;

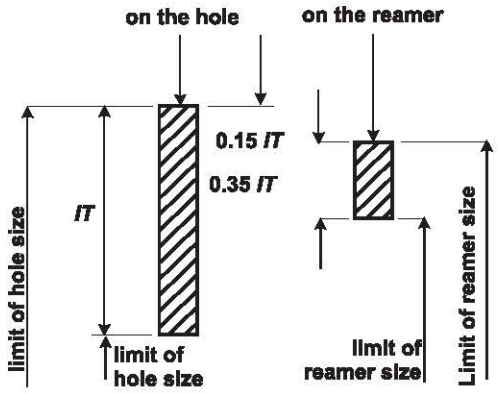
- Low cutting speeds
- High feed rates
- Good and sufficient coolant
- Floating holders to eliminate alignment errors of drilled hole & spindle axis.

Resharpening Of Reamers

Before resharpening reamers check concentricity between centers and only then decide whether resharpening is economical. Should diameter and back taper be still within the required tolerance regrinding of the bevel lead only is sufficient. As a basic rule always resharpen between centers and position with indexing finger.

Calculating Tolerance Limits

When it is necessary to define the dimensions of a special reamer, which is intended to cut to a specific tolerance, eg. D8, this well proven guide can be used.



Example of a 10mm hole with tolerance D8.

Maximum diameter of hole	=10.062
Minimum diameter of hole	= 10.040
Hole tolerance (IT8)	=0.022

The maximum limit for the reamer is the maximum limit of the hole size reduced by 0.15 times the tolerance for the hole. The value is rounded up to the next higher multiple of 0.001mm.

0.15 x Hole tolerance (IT8)	= 0.0033
Rounded up	= 0.004

The minimum limit for the reamer is the maximum limit of the reamer reduced by 0.35 times the tolerance for the hole. The value is rounded up to the next higher multiple of 0.001mm.

0.35 x Hole tolerance (IT8)		= 0.0077
Rounded up		= 0.008
Maximum limit for reamer	= 10.062 - 0.004	= 10.058
Minimum limit for reamer	= 10.058 - 0.008	= 10.050

A similar method can be used for other tolerance when required.

HSS GROUND THREAD TAPS

TAPS

TAP MANUFACTURING

MIRANDA Taps will be supplied in M2, M35, M42 Grade of HSS.

Taps of Ø7.0mm & below will be supplied with external (male) center on both side or chamfer at Shank side
And Ø8.0mm and above will be supplied with internal (female) center on both side.

TOLERANCE :

Standard Tolerance is ISO Class 2; 6H; 2B; Zone 3; 5G .
Other Tolerance like ISO Class 1, ISO Class 3, 4H, 5H, 7H, 8H, 4G, 6G, 1B, 3B, Zone1, Zone2, Zone4.
Or Special tolerance will be maintained as per request of customer.

'We can supply the following Types of Tap with All STANDARD's like ISO , BS , DIN, JIS, ANSI etc							
Basic Form		**Standard Taps** Right Hand & Left Hand	**Spiral Pont** Right Hand & Left Hand	**Spiral Flute**			**NIB Tap (H / AH / R & Lead Guide) and NUT Tap.**
				Right & Left Hand Slow helix 15° - 20°	**Right & Left Hand** Standard helix 30° - 35°	**Right & Left Hand** Quick helix 35° - 40°	
Metric Threads	Size Range	M1 to M100	M1.5 to M40	M3 to M40	M3 to M40	M3 to M40	M3 to M33
	Pitch Range	0.2 to 6.0 mm					0.5 to 3.5 mm
Whitworth Threads	Size Range	1/8" to 3"	1/8" to 1.1.2"	1/8" to 1.1.2"	1/8" to 1.1.2"	1/8" to 1.1.2"	1/8" to 1.1/4"
	Pitch Range	40 TPI to 3.5 TPI					40 TPI to 8 TPI
Unified Threads	Size Range	No.0 to 4"	1/8" to 1.1.2"	1/8" to 1.1.2	1/8" to 1.1.2"	1/8" to 1.1.2"	1/8" to 1.1/4"
	Pitch Range	80 TPI to 4 TPI					80 TPI to 8 TPI
BA Threads	Size Range	14 BA to 0 BA	10 BA to 0 BA	10 BA to 0 BA	10 BA to 0 BA	10 BA to 0 BA	-
	Pitch Range	0.230 mm to 1.0 mm					-
BSP / BSPT	Size Range	1/16" to 4"	-	-		-	-
	Pitch Range	28 TPI to 11 TPI	-	-		-	-
NPSI / NPSF / NPT / NPTF.	Size Range	1/16" to 4"	-	-		-	-
	Pitch Range	27 TPI to 11.5 TPI	-	-		-	-

APPLICATON & SPECIAL TAPS :

Application Taps or Special Taps can be supplied as per requirement of customer or drawing of Customer or designed by us.
Also Special geometry Taps can be supplied on customer request.

SURFACE TREATMENT & COATING :

We can supply Taps with different surface treatement and coating like TiN,TiCN,TiAlN,Steam tempered etc.
As per requirement of customer.

MARKING :

Size, Pitch, Brand Name, Material Grade, Batch code.
Or As Per Customer Request.

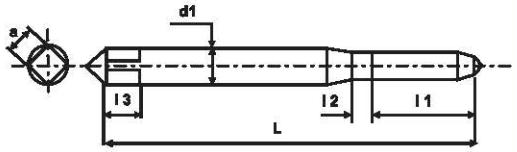
PACKING :

Split Plastic Box or Plastic Tube.
Or As Per Customer Requirement.

ISO METRIC GROUND THREADS - COARSE AND FINE PITCH PRICES

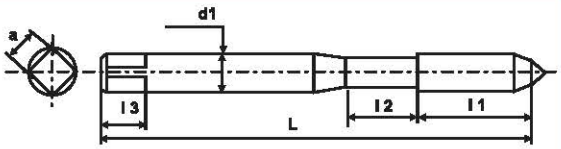
IS 6175 PART 1, 2 & 3 - 1992

PART - 1 (HAND & SHORT MACHINE TAPS)



SIZE	PITCH	SHANK DIA	THREAD LENGTH	RECESS LENGTH	OVERALL LENGTH	SQUARE		COARSE PITCH		FINE PITCH		
						SIZE	LENGTH	CODE (WTC_)	PRICE RS./PIECE	PITCH	CODE (WTF_)	PRICE RS./PIECE
		d1	l1	l2	L	a	l3					
M 1	0.25	2.50	5.50	4.50	38.50	2.00	4.00	M010253A	549	0.20	M012203A	576
M 1.1	0.25	2.50	5.50	4.50	38.50	2.00	4.00	M110253A	549	0.20	M110203A	576
M 1.2	0.25	2.50	5.50	4.50	38.50	2.00	4.00	M120253A	549	0.20	M120203A	576
M 1.4	0.30	2.50	7.00	5.00	40.00	2.00	4.00	M140303A	468	0.20	M140203A	524
M 1.6	0.35	2.50	8.00	5.00	41.00	2.00	4.00	M160353A	468	0.20	M160203A	524
M 1.8	0.35	2.50	8.00	5.00	41.00	2.00	4.00	M180353A	468	0.20	M180203A	524
M 2	0.40	2.50	8.00	5.50	41.00	2.00	4.00	M020403A	349*	0.25	M020253A	443
M 2.2	0.45	2.80	9.50	6.00	44.50	2.24	5.00	M220453A	349	0.25	M220253A	443
M 2.3	0.40	2.80	9.50	6.00	44.50	2.24	5.00	M230453A	349	0.25	M230253A	443
M 2.5	0.45	2.80	9.50	6.00	44.50	2.24	5.00	M250453A	349*	0.30	M250303A	443
M 2.6	0.45	2.80	9.50	6.00	44.50	2.24	5.00	M260453A	349	0.30	M260303A	443

PART - 2 (HAND & SHORT MACHINE TAPS) (COARSE PITCH)

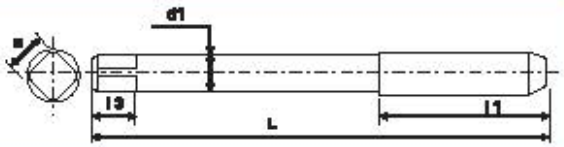


SIZE	PITCH	SHANK DIA	THREAD LENGTH	RECESS LENGTH	OVERALL LENGTH	SQUARE		COARSE PITCH			
						SIZE	LENGTH	PART CODE	STR. FLUTE (WHCD)	SPIRAL POINT (WHCP)	SPIRAL FLUTE (WHCT)
		d1	l1	l2	L	a	l3				
M 3	0.50	3.15	11	7	48	2.50	5.0	M030503A	204*	243*	272*
M 3.5	0.60	3.55	13	7	50	2.80	5.0	M350603A	204*	243*	272
M 4	0.70	4.00	13	8	53	3.15	6.0	M040703A	204*	243*	272*
M 4.5	0.75	4.50	13	8	53	3.55	6.0	M450753A	217*	272	290
M 5	0.80	5.00	16	9	58	4.00	7.0	M050803A	217*	272*	290*
M 6	1.00	6.30	19	11	66	5.00	8.0	M061003A	217*	272*	290*
M 8	1.25	8.00	22	13	72	6.30	9.0	M081253A	251*	305*	340*
M 10	1.5	10.00	24	15	80	8.00	11.0	M101503A	309*	373*	427*

PART - 2 (HAND & SHORT MACHINE TAPS) (FINE PITCH)

SIZE	PITCH	SHANK DIA	THREAD LENGTH	RECESS LENGTH	OVERALL LENGTH	SQUARE		FINE PITCH			
						SIZE	LENGTH	PART CODE	STR. FLUTE (WHFD)	SPIRAL POINT (WHFP)	SPIRAL FLUTE (WHFT)
		d1	l1	l2	L	a	l3				
M3	0.35	3.15	11	7	48	2.50	5.0	M030353A	290	345	389
M3.5	0.35	3.55	13	7	50	2.80	5.0	M350353A	290	345	389
M4	0.50	4.00	13	8	53	3.15	6.0	M040503A	290	345	364
M4.5	0.50	4.50	13	8	53	3.55	6.0	M450503A	290	337	375
M5	0.50	5.00	16	9	58	4.00	7.0	M050503A	290	337	388
M6	0.75	6.30	19	11	66	5.00	8.0	M060753A	290*	337*	373
M7	0.75	7.10	19	11	66	5.60	8.0	M070753A	339	407	454
M8	0.75	8.00	16	13	66	6.30	9.0	M080753A	339	407	454
M8	1	8.00	19	13	69	6.30	9.0	M081003A	311*	370*	411*
M9	1	9.00	19	14	69	7.10	10.0	M091003A	351*	427*	490*
M10	1	10.00	20	15	76	8.00	11.0	M101003A	351*	427*	490*
M10	1.25	10.00	20	15	76	8.00	11.0	M101253A	351*	427	490

PART - 3 (HAND & SHORT MACHINE TAPS) (COARSE PITCH)



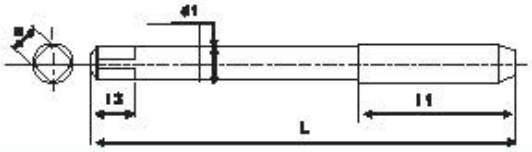
SIZE	PITCH	SHANK DIA	THREAD LENGTH	OVERALL LENGTH	SQUARE		COARSE PITCH			
					SIZE	LENGTH	PART CODE	STR. FLUTE (WUCD)	SPIRAL POINT (WUCP)	SPIRAL FLUTE (WUCT)
		d1	l1	L	a	l3		PRICE RS./PIECE		
M3	0.50	2.24	11	48	1.80	4.0	M030503A	229	273	317
M3.5	0.60	2.50	13	50	2.00	4.0	M350603A	229	273	317
M4	0.70	3.15	13	53	2.50	5.0	M040703A	229*	273*	317
M4.5	0.75	3.55	13	53	2.80	5.0	M450753A	243	289	327
M5	0.80	4.00	16	58	3.15	6.0	M050803A	243*	289*	327
M6	1.00	4.50	19	66	3.55	6.0	M061003A	243*	289*	332*
M8	1.25	6.30	22	72	5.00	8.0	M081253A	282*	346*	377*
M10	1.50	8.00	24	80	6.30	9.0	M101503A	330	406*	461*
M12	1.75	9.00	29	89	7.10	10.0	M121753A	490*	587*	677*
M14	2.00	11.20	30	95	9.00	12.0	M142003A	696*	869*	1029*
M16	2.00	12.50	32	102	10.00	13.0	M162003A	696*	869*	1029*
M18	2.50	14.00	37	112	11.20	14.0	M182503A	1012*	1204*	1434
M20	2.50	14.00	37	112	11.20	14.0	M202503A	1320*	1516*	1912
M22	2.50	16.00	38	118	12.50	16.0	M222503A	1374*	1597	1983
M24	3.00	18.00	45	130	14.00	18.0	M243003A	1546*	1776	2153
M25	3.00	18.00	45	130	14.0	18.0	M253003A	1932	2608	-
M27	3.00	20.00	45	135	16.0	20.0	M273003A	2381	2976	-
M30	3.50	20.00	48	138	16.0	20.0	M303503A	2662*	3328	-
M33	3.50	22.40	51	151	18.0	22.0	M333503A	3250	4387	-
M36	4.00	25.00	57	162	20.0	24.0	M364003A	4521*	5651	-
M39	4.00	28.00	60	170	22.4	26.0	M394003A	5290	-	-

PART - 3 (HAND & SHORT MACHINE TAPS) (COARSE PITCH)

SIZE	PITCH	SHANK DIA	THREAD LENGTH	OVERALL LENGTH	SQUARE		COARSE PITCH			
					SIZE	LENGTH	PART CODE	STR. FLUTE (WUF_)	SPIRAL POINT (WUCP)	SPIRAL FLUTE (WUCT)
		d1	l1	L	a	l3		PRICE RS./PIECE		
M 42	4.50	28.00	60	170	22.4	26.0	M424503A	6204	-	-
M 45	4.50	31.50	67	187	25	28.0	M454503A	8338	-	-
M 48	5.00	31.50	67	187	25	28.0	M485003A	8901	-	-
M 52	5.00	35.50	70	200	28	31.0	M525003A	11155	-	-
M 56	5.50	35.50	70	200	28	31.0	M565503A	15985	-	-
M 60	5.50	40.00	76	221	31.5	34.0	M605503A	16733	-	-
M 64	6.00	40.00	79	224	31.5	34.0	M646003A	17601	-	-
M 68	6.00	45.00	79	234	35.5	38.0	M686003A	21965	-	-
M 72	6.00	45.00	79	234	35.5	38.0	M726003A	29572	-	-
M 76	6.00	50.00	83	258	40	42.0	M766003A	36168	-	-
M 80	6.00	50.00	83	258	40	42.0	M806003A	43689	-	-
M 85	6.00	50.00	86	261	40	42.0	M856003A	53952	-	-
M 90	6.00	50.00	86	261	40	42.0	M906003A	67338	-	-
M 95	6.00	56.00	89	279	45	46.0	M956003A	84784	-	-
M 100	6.00	56.00	89	279	45	46.0	1006003A	104765	-	-

PART - 3 (HAND & SHORT MACHINE TAPS)

FINE PITCH



SIZE	PITCH	SHANK DIA	THREAD LENGTH	OVERALL LENGTH	SQUARE		PART CODE	FINE PITCH		
					SIZE	LENGTH		STR. FLUTE (WUF_)	SPIRAL POINT (WUP)	SPIRAL FLUTE (WUFI)
		d1	l1	L	a	l3		PRICE RS./PIECE		
M 3	0.35	2.24	11	48	1.80	4.00	M030353A	307	351	393
M 3.5	0.35	2.50	13	50	2.00	4.00	M350353A	307	351	393
M 4	0.50	3.15	13	53	2.50	5.00	M040503A	307	351	393
M 4.5	0.50	3.55	13	53	2.80	5.00	M450503A	310	361	393
M 5	0.50	4.00	16	58	3.15	6.00	M050503A	312	361	393
M 6	0.75	4.50	19	66	3.55	6.00	M060753A	312	377	393
M 7	0.75	5.60	19	66	4.50	7.00	M070753A	357	431	447
M 8	0.75	6.30	16	66	5.00	8.00	M080753A	357	431	447
M 8	1.00	6.30	19	69	5.00	8.00	M081003A	345	391	447
M 9	1.00	7.10	19	69	5.60	8.00	M091003A	383	444	507
M 10	1.00	8.00	20	76	6.30	9.00	M101003A	383	444	507
M 10	1.25	8.00	20	76	6.30	9.00	M101253A	383	444	507
M 12	1.00	9.00	20	80	7.10	10.00	M121003A	588*	714*	799
M 12	1.25	9.00	24	84	7.10	10.00	M121253A	560*	672*	765
M 12	1.50	9.00	29	89	7.10	10.00	M121503A	560*	672*	765*
M 14	1.00	11.20	22	87	9.00	12.00	M141003A	765	941	1098
M 14	1.25	11.20	25	90	9.00	12.00	M141253A	742	918	1075
M 14	1.50	11.20	30	95	9.00	12.00	M141503A	699*	918	1025
M 16	1.00	12.50	22	92	10.00	13.00	M161003A	765	948	1075
M 16	1.50	12.50	32	102	10.00	13.00	M161503A	699*	918	1025
M 18	1.00	14.00	22	97	11.20	14.00	M181003A	1205	1389	1634
M 18	1.50	14.00	29	104	11.20	14.00	M181503A	1171*	1358	1600
M 18	2.00	14.00	37	112	11.20	14.00	M182003A	1171	1358	1600
M 20	1.50	14.00	29	104	11.20	14.00	M201503A	1450*	1640*	2042
M 20	2.00	14.00	37	112	11.20	14.00	M202003A	1450	1640	2042
M 22	1.50	16.00	33	113	12.50	16.00	M221503A	1579	1797	2194
M 22	2.00	16.00	38	118	12.50	16.00	M222003A	1579	1797	2194
M 24	1.50	18.00	35	120	14.00	18.00	M241503A	1796*	2016	2428
M 24	2.00	18.00	35	120	14.00	18.00	M242003A	1796	2016	2428
M 25	1.50	18.00	35	120	14.00	18.00	M251503A	1979	2474	-
M 25	2.00	18.00	35	120	14.00	18.00	M252003A	1979	2474	-
M 26	1.50	18.00	35	120	14.00	18.00	M261503A	1991	2487	-
M 26	2.00	18.00	35	120	14.00	18.00	M262003A	1991	2487	-
M 27	1.50	20.00	37	127	16.00	20.00	M271503A	2662	3328	-
M 27	2.00	20.00	37	127	16.00	20.00	M272003A	2662	3328	-
M 28	1.50	20.00	37	127	16.00	20.00	M281503A	2662	3328	-
M 28	2.00	20.00	37	127	16.00	20.00	M282003A	2662	3328	-
M 30	1.50	20.00	37	127	16.00	20.00	M301503A	2990	3738	-
M 30	2.00	20.00	48	127	16.00	20.00	M302003A	2990	3738	-

PART - 3 (HAND & SHORT MACHINE TAPS)

FINE PITCH

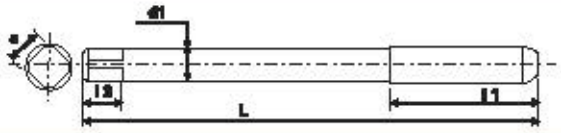
SIZE	PITCH	SHANK DIA	THREAD LENGTH	OVERALL LENGTH	SQUARE		FINE PITCH			
					SIZE	LENGTH	PART CODE	STR. FLUTE (WUF_)	SPIRAL POINT (WUFP)	SPIRAL FLUTE (WUFT)
		d1	l1	L	a	l3		PRICE RS./PIECE		
M 30	3.00	20.00	48	138	16.00	20.00	M303003A	2990	3738	-
M 32	1.50	22.40	37	137	18.00	22.00	M321503A	3151	3939	-
M 32	2.00	22.40	37	137	18.00	22.00	M322003A	3151	3939	-
M 33	1.50	22.40	37	137	18.00	22.00	M331503A	3651	4564	-
M 33	2.00	22.40	51	151	18.00	22.00	M332003A	3651	4564	-
M 33	3.00	22.40	51	151	18.00	22.00	M333003A	3651	4564	-
M 35	1.50	25.00	39	144	20.00	24.00	M351503A	5051	6314	-
M 36	1.50	25.00	39	144	20.00	24.00	M361503A	5051	6314	-
M 36	2.00	25.00	39	144	20.00	24.00	M362003A	5051	6314	-
M 36	3.00	25.00	39	162	20.00	24.00	M363003A	5051	6314	-
M 39	1.50	28	39	149	22.40	26.00	M391503A	6268	-	-
M 39	2.00	28	39	149	22.40	26.00	M392003A	6268	-	-
M 39	3.00	28	60	170	22.40	26.00	M393003A	6268	-	-
M 42	1.50	28	39	149	22.40	26.00	M421503A	7004	-	-
M 42	2.00	28	39	149	22.40	26.00	M422003A	6981	-	-
M 42	3.00	28	60	170	22.40	26.00	M423003A	6981	-	-
M 42	4.00	28	60	170	22.40	26.00	M424003A	6981	-	-
M 45	1.50	31.5	45	165	25.00	28.00	M451503A	9660	-	-
M 45	2.00	31.5	45	165	25.00	28.00	M452003A	9660	-	-
M 45	3.00	31.5	67	187	25.00	28.00	M453003A	9660	-	-
M 45	4.00	31.5	67	187	25.00	28.00	M454003A	9600	-	-
M 48	1.50	31.5	45	165	25.00	28.00	M481503A	10114	-	-
M 48	2.00	31.5	45	165	25.00	28.00	M482003A	10114	-	-
M 48	3.00	31.5	67	187	25.00	28.00	M483003A	10114	-	-
M 48	4.00	31.5	67	187	25.00	28.00	M484003A	10114	-	-
M 50	1.50	31.5	45	165	25.00	28.00	M501503A	11040	-	-
M 50	2.00	31.5	45	165	25.00	28.00	M502003A	11040	-	-
M 50	3.00	31.5	67	187	25.00	28.00	M503003A	11040	-	-
M 52	1.50	35.5	45	175	28.00	31.00	M521503A	12363	-	-
M 52	2.00	35.5	45	175	28.00	31.00	M522003A	12363	-	-
M 52	3.00	35.5	70	200	28.00	31.00	M523003A	12363	-	-
M 52	4.00	35.5	70	200	28.00	31.00	M524003A	12363	-	-
M 56	1.50	35.5	45	175	28.00	31.00	M561503A	16445	-	-
M 56	2.00	35.5	45	175	28.00	31.00	M562003A	16445	-	-
M 56	3.00	35.5	70	200	28.00	31.00	M563003A	16445	-	-
M 56	4.00	35.5	70	200	28.00	31.00	M564003A	16445	-	-
M 60	1.50	40	48	193	31.50	34.00	M601503A	18348	-	-
M 60	2.00	40	48	193	31.50	34.00	M602003A	18348	-	-
M 60	3.00	40	64	209	31.50	34.00	M603003A	18762	-	-

PART - 3 (HAND & SHORT MACHINE TAPS)

FINE PITCH

SIZE	PITCH	SHANK DIA	THREAD LENGTH	OVERALL LENGTH	SQUARE		FINE PITCH			
					SIZE	LENGTH	PART CODE	STR. FLUTE (WUF_)	SPIRAL POINT (WUFP)	SPIRAL FLUTE (WUFT)
		d1	l1	L	a	l3		PRICE RS./PIECE		
M 60	4.00	40	64	209	31.50	34.00	M604003A	18762	-	-
M 64	1.50	40	48	193	31.50	34.00	M641503A	19901	-	-
M 64	2.00	40	48	193	31.50	34.00	M642003A	19901	-	-
M 64	3.00	40	64	209	31.50	34.00	M643003A	19901	-	-
M 64	4.00	40	64	209	31.50	34.00	M644003A	19901	-	-
M 68	1.50	45	48	203	35.50	38.00	M681503A	24754	-	-
M 68	2.00	45	48	203	35.50	38.00	M682003A	24754	-	-
M 68	3.00	45	64	219	35.50	38.00	M683003A	25070	-	-
M 68	4.00	45	64	219	35.50	38.00	M684003A	25070	-	-
M 72	4.00	45	79	234	35.50	38.00	M724003A	27600	-	-

IS 6175 PART - 4 1991 (LONG SHANK MACHINE TAPS) (COARSE PITCH)



SIZE	PITCH	SHANK DIA	THREAD LENGTH	OVERALL LENGTH	SQUARE		PART CODE	COARSE PITCH		
					SIZE	LENGTH		TYPE A,C,D (WMC)	TYPE B (WMCP)	SPIRAL (WMCT)
		d1	l1	L	a	l3		PRICE RS./PIECE		
M 3	0.50	2.24	11.0	66	1.80	4.00	M030503A	292*	337*	367
M 3.5	0.60	2.50	13.0	68	2.00	4.00	M350603A	292	337	367
M 4	0.70	3.15	13.0	73	2.50	5.00	M040703A	292*	337*	367
M 4.5	0.75	3.55	13.0	73	2.80	5.00	M450753A	312	371	391
M 5	0.80	4.00	16.0	79	3.15	6.00	M050803A	312*	371*	391
M 6	1.00	4.50	19.0	89	3.55	6.00	M061003A	337*	395*	426
M 8	1.25	6.30	22.0	97	5.00	8.00	M081253A	370*	432*	463
M 10	1.50	8.00	24.0	108	6.30	9.00	M101503A	461*	542*	581
M 12	1.75	9.00	29.0	119	7.10	10.00	M121753A	653*	764*	838
M 14	2.00	11.20	30.0	127	9.00	12.00	M142003A	941*	1107	1273
M 16	2.00	12.50	32.0	137	10.00	13.00	M162003A	941*	1107	1273
M 18	2.50	14.00	37.0	149	11.20	14.00	M182503A	1310	1551	1748
M 20	2.50	14.00	37.0	149	11.20	14.00	M202503A	1619	1903	2082
M 22	2.50	16.00	38.0	158	12.50	16.00	M222503A	1799	2110	2082
M 24	3.00	18.00	45.0	172	14.00	18.00	M243003A	2007	2366	2629
M 25	3.00	18.00	45	173	14.0	18.0	M253003A	2646	-	-
M 27	3.00	20.00	45	180	16.0	20.0	M273003A	3092	-	-
M 30	3.50	20.00	48	183	16.0	20.0	M303503A	3403	-	-
M 33	3.50	22.40	51	201	18.0	22.0	M333503A	3987	-	-
M 36	4.00	25.00	57	215	20.0	24.0	M364003A	5199	-	-
M 39	4.00	28.00	60	225	22.4	26.0	M394003A	6262	-	-
M 42	4.50	28.00	60	225	22.4	26.0	M424503A	7147	-	-
M 45	4.50	31.50	67	247	25	28.0	M454503A	9585	-	-
M 48	5.00	31.50	67	247	25	28.0	M485003A	10781	-	-
M 52	5.00	35.50	70	265	28	31.0	M525003A	12478	-	-
M 56	5.50	35.50	70	265	28	31.0	M565503A	16054	-	-
M 60	5.50	40.00	76	294	31.5	34.0	M605503A	18952	-	-
M 64	6.00	40.00	79	297	31.5	34.0	M646003A	21384	-	-
M 68	6.00	45.00	79	312	35.5	38.0	M686003A	29797	-	-

PART - 4 (LONG SHANK MACHINE TAPS) (FINE PITCH)

SIZE	PITCH	SHANK DIA	THREAD LENGTH	OVERALL LENGTH	SQUARE		PART CODE	FINE PITCH	
					SIZE	LENGTH		TYPE A,C,D (WMF_)	TYPE B (WMFP)
		d1	l1	L	a	l3		PRICE RS./PIECE	
M 3	0.35	2.24	11	66	1.80	4.00	M030353A	384	487
M 3.5	0.35	2.50	13	68	2.00	4.00	M350353A	408	449
M 4	0.50	3.15	13	73	2.50	5.00	M040503A	384	435
M 4.5	0.50	3.55	13	73	2.80	5.00	M450503A	392	449

PART - 4 (LONG SHANK MACHINE TAPS) (FINE PITCH)

SIZE	PITCH	SHANK DIA	THREAD LENGTH	OVERALL LENGTH	SQUARE		FINE PITCH		
					SIZE	LENGTH	PART CODE	TYPE A,C,D (WWF)	TYBE B (WMFP)
		d1	l1	L	a	l3		PRICE RS./PIECE	
M 5	0.50	4.00	16	79	3.15	6.00	M050503A	392	449
M 6	0.75	4.50	19	89	3.55	6.00	M060753A	392	464
M 7	0.75	5.60	19	89	4.50	7.00	M070753A	445	523
M 8	0.75	6.30	16	91	5.00	8.00	M080753A	445	523
M 8	1.00	6.30	19	97	5.00	8.00	M081003A	416*	496
M 9	1.00	7.10	19	97	5.60	8.00	M091003A	491	577
M 10	1.00	8.00	20	108	6.30	9.00	M101003A	491*	577
M 10	1.25	8.00	20	108	6.30	9.00	M101253A	509	601
M 12	1.00	9.00	20	110	7.10	10.00	M121003A	746	859
M 12	1.25	9.00	24	119	7.10	10.00	M121253A	697	828
M 12	1.50	9.00	29	119	7.10	10.00	M121503A	697*	828
M 14	1.00	11.20	22	124	9.00	12.00	M141003A	972	1142
M 14	1.25	11.20	25	127	9.00	12.00	M141253A	936	1105
M 14	1.50	11.20	30	127	9.00	12.00	M141503A	936*	1105
M 16	1.00	12.50	22	127	10.00	13.00	M161003A	972	1142
M 16	1.50	12.50	32	137	10.00	13.00	M161503A	936*	1105
M 18	1.00	14.00	22	135	11.20	14.00	M181003A	1543	1815
M 18	1.50	14.00	29	142	11.20	14.00	M181503A	1508	1776
M 18	2.00	14.00	37	149	11.20	14.00	M182003A	1508	1776
M 20	1.50	14.00	29	142	11.20	14.00	M201503A	1963*	2320
M 20	2.00	14.00	37	149	11.20	14.00	M202003A	1963	2320
M 22	1.50	16.00	33	153	12.50	16.00	M221503A	2031	2393
M 22	2.00	16.00	38	158	12.50	16.00	M222003A	2031	2393
M 24	1.50	18.00	35	172	14.00	18.00	M241503A	2272	2678
M 24	2.00	18.00	35	172	14.00	18.00	M242003A	2272	2678
M 25	1.50	18.00	35	163	14.00	18.00	M251503A	2947	3493
M 25	2.00	18.00	35	163	14.00	18.00	M252003A	2947	3493
M 26	1.50	18.00	35	163	14.00	18.00	M261503A	2914	3440
M 26	2.00	18.00	35	163	14.00	18.00	M262003A	2914	3440
M 27	1.50	20.00	37	172	16.00	20.00	M271503A	3486	4419
M 27	2.00	20.00	37	172	16.00	20.00	M272003A	3486	4419
M 28	1.50	20.00	37	172	16.00	20.00	M281503A	3767	5173
M 28	2.00	20.00	37	172	16.00	20.00	M282003A	3767	5173
M 30	1.50	20.00	37	172	16.00	20.00	M301503A	3927	-
M 30	2.00	20.00	48	172	16.00	20.00	M302003A	3927	-
M 30	3.00	20.00	48	183	16.00	20.00	M303003A	3927	-
M 32	1.50	22.40	37	187	18.00	22.00	M321503A	4341	-
M 32	2.00	22.40	37	187	18.00	22.00	M322003A	4341	-
M 33	1.50	22.40	37	187	18.00	22.00	M331503A	4741	-
M 33	2.00	22.40	51	201	18.00	22.00	M332003A	4741	-
M 33	3.00	22.40	51	201	18.00	22.00	M333003A	4741	-
M 35	1.50	25.00	39	197	20.00	24.00	M351503A	6595	-
M 36	1.50	25.00	39	197	20.00	24.00	M361503A	6595	-
M 36	2.00	25.00	39	197	20.00	24.00	M362003A	6595	-
M 36	3.00	25.00	39	224	20.00	24.00	M363003A	6595	-

IS 6175 PART - 5 1991 (NUT TAPS) (COARSE PITCH)

SIZE	PITCH	SHANK DIA	THREAD LENGTH	OVERALL LENGTH	SQUARE		COARSE PITCH	
					SIZE	LENGTH	PART CODE (WVCN)	PRICE RS./PIECE
		d1	H	L	a	B		
M 6	1.00	4.50	32.0	110.0	3.55	6.00	M061003A	462*
M 8	1.25	6.30	40.0	125.0	5.00	8.00	M081253A	522*
M 10	1.50	8.00	45.0	140.0	6.30	9.00	M101503A	692
M 12	1.75	9.00	50.0	180.0	7.10	10.00	M121753A	1067
M 14	2.00	11.20	56.0	200.0	9.00	12.00	M142003A	1479
M 16	2.00	12.50	63.0	200.0	10.00	13.00	M162003A	1479
M 18	2.50	14.00	63.0	220.0	11.20	14.00	M182503A	2161
M 20	2.50	14.00	70.0	250.0	11.20	14.00	M202503A	2891
M 22	2.50	16.00	80.0	280.0	12.50	16.00	M222503A	2928
M 24	3.00	18.00	80.0	280.0	14.00	18.00	M243003A	3324
M 25	3.00	18.00	80.0	280.0	14.00	18.00	M253003A	3976
M 27	3.00	20.00	90.0	315.0	16.00	20.00	M273003A	5106
M 30	3.50	20.00	100.0	315.0	16.00	20.00	M303503A	6433
M 33	3.50	22.40	110.0	355.0	18.00	22.00	M333503A	7096
M 36	4.00	25.00	110.0	400.0	20.00	24.00	M364003A	9186
M 39	4.00	28.00	125.0	400.0	22.40	26.00	M394003A	10948
M 42	4.50	28.00	125.0	450.0	22.40	26.00	M424503A	13039
M 45	4.50	31.50	140.0	500.0	25.00	28.00	M454503A	15726
M 48	5.00	31.50	140.0	500.0	25.00	28.00	M485003A	18298

PART - 5 (NUT TAPS) (FINE PITCH)

SIZE	PITCH	SHANK DIA	THREAD LENGTH	OVERALL LENGTH	SQUARE		FINE PITCH	
					SIZE	LENGTH	PART CODE (WVFN)	PRICE RS./PIECE
		d1	H	L	a	B		
M 7	0.75	5.60	36.0	110.0	4.50	7.00	M070753A	545
M 8	0.75	6.30	40.0	12.50	5.00	8.00	M080753A	668
M 8	1.00	6.30	40.0	12.50	5.00	8.00	M081003A	606
M 9	1.00	7.10	40.0	140.00	5.60	8.00	M091003A	606
M 10	1.00	8.00	45.0	100.0	6.30	9.00	M101003A	606
M 10	1.25	8.00	45.0	100.0	6.30	9.00	M101253A	798
M 12	1.00	9.00	50.0	180.0	7.10	10.00	M121003A	798
M 12	1.25	9.00	50.0	180.0	7.10	10.00	M121253A	1250
M 12	1.50	9.00	50.0	180.0	7.10	10.00	M121503A	1250
M 14	1.00	11.20	56.0	200.0	9.00	12.00	M141003A	1250
M 14	1.25	11.20	56.0	200.0	9.00	12.00	M141253A	1864
M 14	1.50	11.20	56.0	200.0	9.00	12.00	M141503A	1864
M 16	1.00	12.50	63.0	200.0	10.00	13.00	M161003A	1864
M 16	1.50	12.50	63.0	200.0	10.00	13.00	M161503A	1864
M 18	1.00	14.00	63.0	220.0	11.20	14.00	M181003A	1864
M 18	1.50	14.00	63.0	220.0	11.20	14.00	M181503A	2522

PART - 5 (NUT TAPS) (FINE PITCH)

SIZE	PITCH	SHANK DIA	THREAD LENGTH	OVERALL LENGTH	SQUARE		FINE PITCH	
					SIZE	LENGTH	PART CODE (WVFN)	PRICE RS./PIECE
		d1	l1	L	a	l3		
M 18	2.00	14.00	63.0	220.0	11.20	14.00	M182003A	2522
M 20	1.50	14.00	70.0	250.0	11.20	14.00	M201503A	2522
M 20	2.00	14.00	70.0	250.0	11.20	14.00	M202003A	3237
M 22	1.50	16.00	80.0	280.0	12.50	16.00	M221503A	3237
M 22	2.00	16.00	80.0	280.0	12.50	18.00	M222003A	3437
M 24	1.50	18.00	80.0	280.0	14.00	18.00	M241503A	3437
M 24	2.00	18.00	80.0	280.0	14.00	18.00	M242003A	4086
M 25	1.50	18.00	80.0	280.0	14.00	18.00	M251503A	4086
M 25	2.00	18.00	80.0	280.0	14.00	18.00	M252003A	4592

NOTES : COARSE PITCH :

A set of Non-serial taps consists of Taper, Second, Bottoming
IS 6175 Part 1: Design will be supplied upto and including 2.6 mm
IS 6175 Part 2: Design will be supplied from 3 mm to 10 mm including 10 mm
IS 6175 Part 3: Design will be supplied above 10 mm.

Type"A" - 5 Deg. Taper with long taper lead
Type"B" - 10 Deg. Taper lead angle with spiral point
Type"C" - 20 Deg. Taper angle with short lead
Type"D" - 10 Deg. Taper angle without spiral point

Items marked with * are stockable Items. Remaining all items required minimum order value of Rs. 20000/ - OR

1 mm to 6 mm 100 Nos. 7 mm to 16 mm 50 Nos. 18 mm to 24 mm 10 Nos. 26 mm to 36 mm 05 Nos. & Corresponding inch size.

The tap sizes up to M6 will be supplied with male centers on both sides. Above M6 taps will be supplied with female centers on both sides.
Serial Taps at 5% extra M35 Material 35% Extra Left Hand Taps at 25% extra M42 Material 55% Extra

NOTES : FINE PITCH :

A set of Non-serial taps consists of Taper, Bottoming
IS 6175 Part 1: Design will be supplied upto and including 2.6 mm
IS 6175 Part 2: Design will be supplied from 3 mm to 10 mm including 10 mm
IS 6175 Part 3: Design will be supplied above 10 mm.

Type"A" - 5 Deg. Taper with long taper lead
Type"B" - 10 Deg. Taper lead angle with spiral point
Type"C" - 20 Deg. Taper angle with short lead
Type"D" - 10 Deg. Taper angle without spiral point

Serial Taps at 5% extra M35 Material 35% extra

Left Hand Taps at 25% extra. M42 Material 55% extra

The tap sizes up to M6 will be supplied with male centers on both sides. Above M6 taps will be supplied with female centers on both sides.

Items marked with * are stockable Items. Remaining all items required minimum order value of Rs. 20000/ - OR

1 mm to 6 mm 100 Nos. 7 mm to 16 mm 50 Nos. 18 mm to 24 mm 10 Nos. 26 mm and above 05 Nos. & Corresponding inch size

Prices inclusive of Excise duty at current rates.

VAT, Sales Tax, Octroi & other Government Levies will be changed extra as applicable.

HSS HAND TAPS - BSW

BS949 (Part - 1) -1992

SIZE	NOMINAL DIA	TPI	SHANK DIA	THREAD LENGTH	RACERS LENGTH	OVERALL LENGTH	SQUARE		PART CODE	STR. FLUTE (WTK_)	SPIRAL POINT (WTKP)	SPIRAL FLUTE (WTKT)	NUT TAPS (WVKN)
							SIZE	LENGTH					
			d1	l1		L	a	l3		PRICE RS./PIECE			
1/8"	3.175	40	3.15	11.00	7.00	48.00	2.50	5.00	1018406A	212*	259	308	-
3/16"	4.762	24	5.00	16.00	9.00	58.00	4.00	7.00	1316246A	212*	259	295	-
1/4"	6.350	20	6.30	19.00	11.00	66.00	5.00	8.00	1014206A	228*	279	324	478
5/16"	7.938	18	8.00	22.00	13.00	72.00	6.30	9.00	1516186A	252*	307	342	521
3/8"	9.525	16	10.00	24.00	15.00	80.00	8.00	11.00	1038166A	301*	366	421	634
7/16"	11.112	14	8.00	25.00	0.00	85.00	6.30	9.00	1716146A	392	489	557	854
1/2"	12.700	12	9.00	29.00	0.00	89.00	7.10	10.00	1012126A	486*	587	677	1063
9/16"	14.288	12	11.20	30.00	0.00	95.00	9.00	12.00	1916126A	706	879	1041	1479
5/8"	15.875	11	12.50	32.00	0.00	102.00	10.00	13.00	1058116A	706*	879	1041	1479
11/16"	17.462	11	14.00	37.00	0.00	112.00	11.20	14.00	1116116A	989	1187	1405	1818
3/4"	19.050	10	14.00	37.00	0.00	112.00	11.20	14.00	1034106A	1029*	1214	1444	2164
7/8"	22.225	9	16.00	38.00	0.00	118.00	12.50	16.00	1078096A	1387	1613	1983	2926
1"	25.400	8	18.00	45.00	0.00	130.00	14.00	18.00	1100086A	1802*	1932	2383	3813
1.1/8"	28.575	7	20.00	48.00	0.00	138.00	16.00	20.00	1118076A	2432	-	-	5135
1.1/4"	31.750	7	22.40	51.00	0.00	151.00	18.00	22.00	1114076A	2921	-	-	6360
1.3/8"	34.925	6	25.00	57.00	0.00	162.00	20.00	24.00	1138066A	3772	-	-	7639
1.1/2"	38.100	6	28.00	60.00	0.00	170.00	22.40	26.00	1112066A	4522	-	-	9163

Notes : Serial Taps at 5% extra / Left Hand Taps at 25% extra M35 Material 35% extra / M42 Material 55% extra

HSS HAND TAPS - BSF

BS949 (Part - I) -1992

SIZE	NOMINAL DIA	TPI	SHANK DIA	THREAD LENGTH	RACESS LENGTH	OVERALL LENGTH	SQUARE		PART CODE	STR. FLUTE (WTLD)	SPIRAL POINT (WTLP)	SPIRAL FLUTE (WTLT)	NUT TAPS
			d1	l1		L	a	B		PRICE RS./PIECE			
3/16"	4.762	32	5.00	16.00	9.00	58.00	4.00	7.00	1316326A	212*	259	295	-
1/4"	6.350	26	6.30	19.00	11.00	66.00	5.00	8.00	1014266A	228*	279	324	478
5/16"	7.938	22	8.00	22.00	13.00	72.00	6.30	9.00	1516226A	252*	307	342	521
3/8"	9.525	20	10.00	24.00	15.00	80.00	8.00	11.00	1038206A	301*	366	421	634
7/16"	11.112	18	8.00	25.00	0.00	85.00	6.30	9.00	1716186A	392	489	557	854
1/2"	12.700	16	9.00	29.00	0.00	89.00	7.10	10.00	1012166A	486*	587	677	1063
9/16"	14.288	16	11.20	30.00	0.00	95.00	9.00	12.00	1916166A	706	879	1041	1479
5/8"	15.875	14	12.50	32.00	0.00	102.00	10.00	13.00	1058146A	706	879	1041	1479
11/16"	17.462	14	14.00	37.00	0.00	112.00	11.20	14.00	1116146A	989	1187	1405	1818
3/4"	19.050	12	14.00	37.00	0.00	112.00	11.20	14.00	1034126A	1029	1214	1444	2164
7/8"	22.225	11	16.00	38.00	0.00	118.00	12.50	16.00	1078116A	1387	1613	1983	2926
1"	25.400	10	18.00	45.00	0.00	130.00	14.00	18.00	1100106A	1802	1932	2383	3813
1.1/8"	28.575	9	20.00	48.00	0.00	138.00	16.00	20.00	1118096A	2432	-	-	5135
1.1/4"	31.750	9	22.40	51.00	0.00	151.00	18.00	22.00	1114096A	2921	-	-	6360
1.3/8"	34.925	8	25.00	57.00	0.00	162.00	20.00	24.00	1138086A	3772	-	-	7639
1.1/2"	38.100	8	28.00	60.00	0.00	170.00	22.40	26.00	1112086A	4522	-	-	9163

Notes : Serial Taps at 5% extra / Left Hand Taps at 25% extra M35 Material 35% extra / M42 Material 55% extra

HSS HAND TAPS - UNC

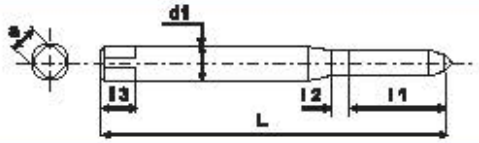
BS949 (Part - I) -1992

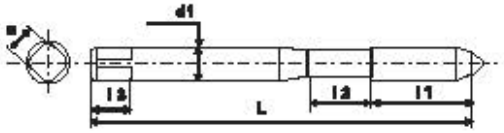
SIZE	NOMINAL DIA	TPI	SHANK DIA	THREAD LENGTH	RACESS LENGTH	OVERALL LENGTH	SQUARE		PART CODE	STR. FLUTE (WTGD)	SPIRAL POINT (WTGP)	SPIRAL FLUTE (WTGT)	NUT TAPS
							SIZE	LENGTH		PRICE RS./PIECE			
			d1	l1		L	a	B					
No 1	1.854	64	2.50	8.00	5.50	41.00	2.00	4.00	N001646A	470	-	-	-
No 2	2.184	56	2.80	9.50	6.00	44.50	2.24	5.00	N002566A	350	-	-	-
No 4	2.845	40	3.15	11.00	7.00	48.00	2.50	5.00	N004406A	212	-	-	-
No 5	3.175	40	3.15	11.00	7.00	48.00	2.50	5.00	N005406A	212	259	295	-
No 6	3.505	32	3.55	13.00	7.00	50.00	2.80	5.00	N006326A	212	259	295	-
No 8	4.166	32	4.50	13.00	8.00	53.00	3.55	6.00	N008326A	212	259	295	-
No 10	4.826	24	5.00	16.00	9.00	58.00	4.00	7.00	N010246A	212	259	295	-
No 12	5.486	24	5.60	17.00	9.00	62.00	4.50	7.00	N012246A	218	273	318	-
1/8"	3.175	40	3.55	13.00	7.00	50.00	2.80	5.00	1018286A	212*	259	308	-
3/16"	4.763	32	5.00	16.00	9.00	58.00	4.00	7.00	1316246A	212*	259	295	-
1/4"	6.350	20	6.30	19.00	11.00	66.00	5.00	8.00	1014206A	228*	279	324	478
5/16"	7.937	18	8.00	22.00	13.00	72.00	6.30	9.00	1516186A	252*	307	342	521
3/8"	9.525	16	10.00	24.00	15.00	80.00	8.00	11.00	1038166A	301*	366	421	634
7/16"	11.112	14	8.00	25.00	0.00	85.00	6.30	9.00	1716146A	392	489	557	854
1/2"	12.700	13	9.00	29.00	0.00	89.00	7.10	10.00	1012136A	486*	587	677	1063
9/16"	14.288	12	11.20	30.00	0.00	95.00	9.00	12.00	1916126A	706	879	1041	1479
5/8"	15.875	18	12.50	32.00	0.00	102.00	10.00	13.00	1058116A	706*	879	1041	1479
11/16"	17.463	11	14.00	37.00	0.00	112.00	11.20	14.00	1116116A	989	1187	1405	1818
3/4"	19.050	10	14.00	37.00	0.00	112.00	11.20	14.00	1034106A	1029*	1214	1444	2164
7/8"	22.225	9	16.00	38.00	0.00	118.00	12.50	16.00	1078096A	1387	1613	1983	2926
1"	25.400	8	18.00	45.00	0.00	130.00	14.00	18.00	1100086A	1802*	1932	2383	3813
1.1/8"	28.575	7	20.00	48.00	0.00	138.00	16.00	20.00	1118076A	2432	-	-	5135
1.1/4"	31.750	7	22.40	51.00	0.00	151.00	18.00	22.00	1114076A	2921	-	-	6360
1.3/8"	34.925	6	25.00	57.00	0.00	162.00	20.00	24.00	1138066A	3772	-	-	7639
1.1/2"	38.100	6	28.00	60.00	0.00	170.00	22.40	26.00	1112066A	4522	-	-	9163

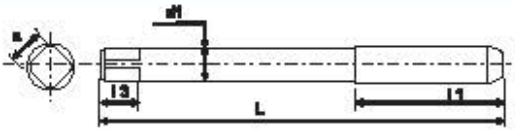
Notes : Serial Taps at 5% extra / Left Hand Taps at 25% extra M35 Material 35% extra / M42 Material 55% extra

HSS HAND TAPS - UNF

BS949 (Part - I) -1992







SIZE	NOMINAL DIA	TPI	SHANK DIA	THREAD LENGTH	RACESS LENGTH	OVERALL LENGTH	SQUARE		PART CODE	STR. FLUTE (WT)(D)	SPIRAL POINT (WT)(P)	SPIRAL FLUTE (WT)(T)	NUT TAPS
							SIZE	LENGTH					
			d1	l1		L	a	l3		PRICE RS./PIECE			
No 0	1.524	80	2.50	8.00	5.00	41.00	2.00	4.00	N000806A	470	-	-	-
No 1	1.854	72	2.50	8.00	5.50	41.00	2.00	4.00	N001726A	470	-	-	-
No 2	2.184	64	2.80	9.50	6.00	44.50	2.24	5.00	N002646A	350	-	-	-
No 4	2.845	48	3.15	11.00	7.00	48.00	2.50	5.00	N004486A	212	-	-	-
No 5	3.175	44	3.15	11.00	7.00	48.00	2.50	5.00	N005446A	212	259	295	-
No 6	3.505	40	3.55	13.00	7.00	50.00	2.80	5.00	N006406A	212	259	295	-
No 8	4.166	36	4.50	13.00	8.00	53.00	3.55	6.00	N008366A	212	259	295	-
No 10	4.826	32	5.00	16.00	9.00	58.00	4.00	7.00	N010326A	212	259	295	-
No 12	5.486	28	5.60	17.00	9.00	62.00	4.50	7.00	N012286A	218	273	295	-
1/8"	3.175	40	3.55	13.00	7.00	50.00	2.80	5.00	I018406A	212*	259	308	-
3/16"	4.763	32	5.00	16.00	9.00	58.00	4.00	7.00	I316326A	212	259	295	-
1/4"	6.350	28	6.30	19.00	11.00	66.00	5.00	8.00	I014286A	228*	279	324	478
5/16"	7.938	24	8.00	22.00	13.00	72.00	6.30	9.00	I516246A	252	307	342	521
3/8"	9.525	24	10.00	24.00	15.00	80.00	8.00	11.00	I038246A	301*	-	-	634
7/16"	11.112	20	8.00	24.00	0.00	85.00	6.30	9.00	I716206A	392	-	-	854
1/2"	12.700	20	9.00	29.00	0.00	89.00	7.10	10.00	I012206A	486*	-	-	1063
9/16"	14.288	18	11.20	30.00	0.00	95.00	9.00	12.00	I916186A	706	-	-	1479
5/8"	15.875	18	12.50	32.00	0.00	102.00	10.00	13.00	I058186A	706*	-	-	-
11/16"	17.463	11	14.00	37.00	0.00	112.00	11.20	14.00	I116116A	989	-	-	-
3/4"	19.050	16	14.00	37.00	0.00	112.00	11.20	14.00	I034166A	1029*	-	-	-
7/8"	22.230	14	16.00	38.00	0.00	118.00	12.50	16.00	I078146A	1387	-	-	-
1"	25.400	12	18.00	45.00	0.00	130.00	14.00	18.00	I100126A	1802*	-	-	-
1.1/8"	28.575	12	20.00	48.00	0.00	138.00	16.00	20.00	I118126A	2432	-	-	-
1.1/4"	31.750	12	22.40	51.00	0.00	151.00	18.00	22.00	I114126A	2921	-	-	-
1.3/8"	34.930	12	25.00	57.00	0.00	162.00	20.00	24.00	I138126A	3772	-	-	-
1.1/2"	38.100	12	28.00	60.00	0.00	170.00	22.00	26.00	I112126A	4522	-	-	-

Notes : Serial Taps at 5% extra / Left Hand Taps at 25% extra M35 Material 35% extra / M42 Material 55% extra

HSS HAND TAPS - BSCy

BS949 (Part - 2) -1951

SIZE	BASIC MAJOR DIA	PITCH	SHANK DIA	THREAD LENGTH	OVERALL LENGTH	SQUARE		STRENGTH FLUTE	
						SIZE	LENGTH	PART CODE (WHQD)	PRICE RS./PIECE
			d1	l1	L	a	l3		
14 SWG	2.273	56	0.128	7/16	1.3/4	0.105	3/16	S145609A	381
10 SWG	3.589	40	0.144	11/16	2	0.116	3/16	S104006A	204
9 SWG	3.995	40	0.159	3/4	2.1/8	0.123	1/4	S094009A	204
5/32 BSCy	3.968	32	0.159	3/4	2.1/8	0.123	1/4	1532329A	237
3/16 BSCy	4.762	32	0.189	7/8	2.3/8	0.149	1/4	1316329A	237
7/32 BSCy	5.556	26	0.221	7/8	2.3/8	0.173	1/4	1732269A	253
1/4 BSCy	6.350	26	0.253	1	2.1/8	0.197	9/32	1014269A	268
5/16 BSCy	7.937	26	0.315	1.1/8	2.3/4	0.242	11/32	1516269A	325
7/16 BSCy	11.112	26	0.323	1.1/4	3	0.242	13/32	1716269A	491
1/2 BSCy	12.700	26	0.367	1.1/4	3	0.275	7/16	1012269A	613
9/16 BSCy	14.287	26	0.429	1.1/2	3	0.322	1/2	916269A	976
1.0 BSCy	25.400	24	0.800	1.1/2	3.1/4	0.600	13/16	1100249A	1652
1.370 BSCy	34.798	24	1.108	1.1/2	4	0.831	1.1/16	1013709A	3899
1.375 BSCy	34.925	24	1.108	1.1/2	4	0.831	1.1/16	1013756A	3899

The manufacturing range of BSCy taps is 14 Swg upwards, For the sizes above 1.1/2", quotation will be given on Specific request.

M35 Material 35% / M42 Material 55% extra

HSS HAND TAPS - BA

BS949 (Part - I) -1992

SIZE	PITCH	NOMINAL DIA	SHANK DIA d1	THREAD LENGTH l1	RACESS LENGTH	OVERALL LENGTH L	SQUARE SIZE a	SQUARE LENGTH l3	PART CODE (WTHD)	STRENGTH FLUTE PRICE RS./PIECE	SPIRAL POINT PRICE RS./PIECE
No 0	1.000	6.000	6.30	19.00	11.00	66.00	5.00	8.00	N0BA106A	220	278
No 1	0.900	5.300	5.60	17.00	9.00	62.00	4.50	7.00	N1BA906A	220	278
No 2	0.810	4.700	5.00	16.00	9.00	58.00	4.00	7.00	N2BA816A	204*	242*
No 3	0.730	4.100	4.50	13.00	8.00	53.00	3.55	6.00	N2BA736A	204	242
No 4	0.660	3.600	3.55	13.00	7.00	50.00	2.80	5.00	N4BA666A	204*	242*
No 5	0.590	3.200	3.15	11.00	7.00	48.00	2.50	5.00	N5BA596A	204	242
No 6	0.530	2.800	2.80	9.50	6.00	44.50	2.24	5.00	N6BA536A	220*	278*
No 8	0.430	2.200	2.80	9.50	6.00	44.50	2.24	5.00	N8BA436A	443	-
No 10	0.350	1.700	2.50	8.00	5.00	41.00	2.00	4.00	10BA356A	524	-
No 11	0.310	1.500	2.50	8.00	5.00	41.00	2.00	4.00	11BA316A	524	-
No 12	0.280	1.300	2.50	7.00	5.00	40.00	2.00	4.00	12BA286A	524	-
No 13	0.250	1.200	2.50	5.50	4.50	38.50	2.00	4.00	13BA256A	576	-
No 14	0.230	1.000	2.50	5.50	4.50	38.50	2.00	4.00	14BA236A	576	-

The manufacturing range of BA taps is No. 14 upwards and upto No.0.

All the tap sizes will be supplied with male centers on both sides.

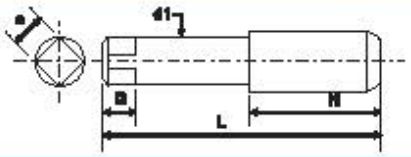
Item marked with * are stockable items. Remaining all items required minimum order Qty. as follows

No. 0 to 3/16" = 100 Nos. 1/4" to 5/8" = 50 Nos. 3/4" to 1" = 10 Nos. 1.1/8" to 1.1/2" = 5 Nos.

M35 Material 35% extra / M42 Material 55% extra

HSS HAND TAPS - BSP - (G/Rp)

BS949 (Part - I) -1969



SIZE	BASIC MAJOR DIA	TPI	SHANK DIA	THREAD LENGTH	OVERALL LENGTH	SQUARE		PART CODE	PARALLEL THREAD			TAPER THREAD		
						SIZE	LENGTH		BSP (WHPD)	NPS (WHSD)	NPSF (WHUD)	BSPT (WHRD)	NPT (WTSD)	NPTF (WHTD)
			d1	H	L	a	B		PRICE RS./PIECE					
1/8"	0.383	28	0.318	3/4"	2.1/8	0.238	5/16"	1018286A	337*	385	460	437*	437*	511
1/4"	0.518	19	0.429	1.1/16	2.7/16	0.322	7/16"	1014196A	524*	665	811	794*	794*	958
3/8"	0.656	19	0.542	1.1/16	2.9/16	0.406	1/2"	1038196A	773*	817	983	1012*	1012*	1196
1/2"	0.825	14	0.687	1.3/8	3.1/8	0.515	5/8"	1012146A	1112*	1185	1426	1461	1461	1748
5/8"	0.902	14	0.800	1.3/8	3.3/16	0.600	11/16"	1058146A	1260	-	-	-	-	-
3/4"	1.041	14	0.906	1.3/8	3.1/4	0.679	11/16"	1034146A	1650*	1748	2087	2174	2174	2576
7/8"	1.189	14	1.093	1.9/16	3.1/2	0.812	3/4"	1078146A	2096	-	-	-	-	-
1"	1.309	11	1.125	1.3/4	3.3/4	0.843	13/16"	1100116A	2604*	2950	3531	3393	3393	4014
1.1/4"	1.650	11	1.312	1.3/4	4	0.984	15/16"	1114116A	4016	4560	-	4968	4968	5917
1.1/2"	1.882	11	1.500	1.3/4	4.1/4	1.125	1"	1112116A	5020	5687	-	6038	6038	-
1.3/4"	2.116	11	1.625	1.3/4	4.3/8	1.218	1.1/16"	1134116A	6276	-	-	-	-	-
2"	2.347	11	1.875	1.3/4	4.1/2	1.406	1.1/8"	1200116A	8993	10166	-	9493	9493	-
2.1/4"	2.587	11	1.875	1.3/4	4.1/2	1.406	1.1/8"	1214116A	15565	-	-	-	-	-
2.1/2"	2.959	11	2.25	2.563	5.1/2	1.687	1.1/4"	1212116A	22299	-	-	32752	32752	-
2.3/4"	3.210	11	2.375	2.563	5.3/4	1.781	1.5/16"	1234116A	25070	-	-	-	-	-
3"	3.46	11	2.625	2.625	6	1.968	1.3/8"	130011NA	28256	-	-	42694	42694	-
3.1/2"	3.95	11	2.812	2.688	6.5	2.103	1.1/2"	1312116A	37134	-	-	56074	56074	-
4"	4.45	11	3.000	2.75	6.75	2.23	1.5/8"	140011NA	46730	-	-	70535	70535	-

Items marked with * are stockable items. Remaining all items required Minimum order value of Rs. 20000/ Nett.

1/8" to 5/8" = 50 Nos. 3/4" to 1" = 10 Nos. 1.1/8" to 1.1/2" = 5 Nos. above 1.1/2" x 2 Nos each.

Serial Taps at 5% extra. M35 Material 35% extra. Left Hand Taps at 25% extra. M42 Material 55% extra.

NIB TAP

SIZE	PITCH	SHANK DIA	THREAD LENGTH	OVERALL LENGTH	PART CODE (XNC)	STRENGTH FLUTE
		d1	l1	L		PIECE NA/PIECE
M3	0.50	2.30	16.0	60.0	LM030503D	381*
M4	0.70	3.00	21.0	65.0	LM040703D	387*
M5	0.80	3.80	21.0	70.0	LM050803D	411*
M6	1.00	4.60	30.0	70.0	NM061003D	457*
M8	1.25	6.10	38.0	90.0	NM081253D	493*
M10	1.50	7.80	45.0	95.0	NM101503D	624*
M12	1.75	9.50	53.0	102.0	NM121753D	736*

The above taps will be supplied with TICN & M35 material coating

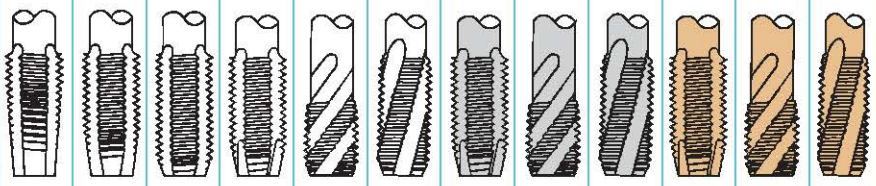
The tap sizes upto M6* will be supplied with malecenters on both sides, above M6 taps will be supplied with female centers on both sides.

The tap sizes up to M6 will be supplied with 3 flutes, above M6 will be supplied with 5 flute. Any other style of Nib taps can be offered on specific request.

Items marked with * are stockable items. Remaining all items required Minimum order value of Rs. 10000/ Netz. or 5 Nos. for size whichever is higher.

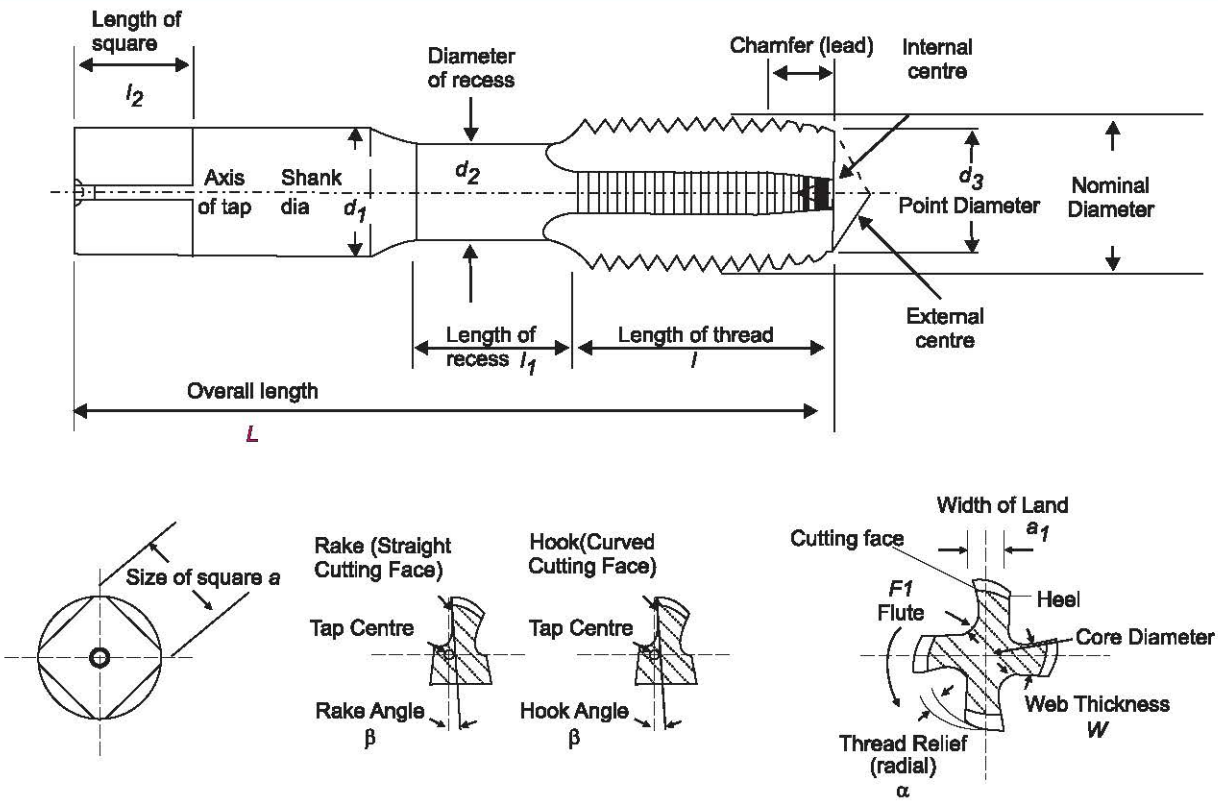
The manufacturing range of nib taps is M3 upwards, for the sizes above M12, quotation will be given on Specific request.

TAP SELECTION CHART

SUITABILITY		HAND TAPS		MACHINE TAPS											
(●) MOST SUITABLE	DESCRIPTION	STD SET	SERIAL SET	STR.FL TPR	STR.FL SEC	STR.FL BTM	BF SPPT	BF SPRL 30°	BF SPRL 15°	BT SPPT	BT SPRL 30°	BT SPRL 15°	TIN SPPT	TIN SPRL 30°	TIN SPRL 15°
(○)SUITABLE	TYPES OF TAP	TPR + SEC + BTM	Rougher + Inter + Finisher												
	CHAMFER	-	-	A	D	C	B	C	C	B	C	C	B	C	C
	LEAD (NO. OF THREADS)	-	-	6 - 8 (3.5-5)	3 - 4,5 (2 - 3)	1,5 - 2	3 - 5	2 - 3	2 - 3	3 - 5	2 - 3	2 - 3	3 - 5	2 - 3	2 - 3
TYPE OF MATERIAL	Note : STR.FL. Taps with larger diameter or fine pitch my be used to tap deeper in long chipping materials due to a greater Flute Volume : Metal Removal ratio.														
STEEL UNDER 450 N/mm2		●	○	○	○					○	○				
STEELS UP TO 750 N/mm2		●	●	●	●		○	○	○	●	●	○	○	○	○
STEELS UP TO 1000 N/mm2		●	●				○	○	○	○	○	●	●	○	●
STEELS OVER 1000 N/mm2		○	●									○	○	○	○
STAINLESS STEELS		○	●		○					○	○		○	○	
CAST IRON (SHORT CHIPPING)		●	●		○	○									○
MALLEABLE CAST IRON (LONG CHIPPING)		●	●		○		○	○		●	●	●			
BRASS (SHORT CHIPPING)		●	○		●	●			○						○
BRASS (LONG CHIPPING)		●	○		○		●	●	●						
SOFT ALUMINIUM, COPPER, ZINC, ETC.		●	○		○		○	○					○	○	
ALUMINIUM ALLOYS, MALLEABLE BRONZE, ETC.		●	●		○		●	●	○						
TOUGH ALUMINIUM (Si > 10%) HARD BRONZE ETC.		○	●		○		○	○	○				○	○	○
SOFT PLASTICS, THERMO PLASTICS PVC. ETC.		○			○		○	○	○						
HARD PLASTICS, BAKELITE, ETC.		○			○	○									○
SPECIAL ALLOYS, TITA NIUM, INCONEL, ETC.	TAPS WITH SPECIAL GEOMETRY CAN BE SUPPLIED ON SPECIFIC REQUEST.														

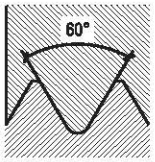
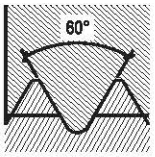
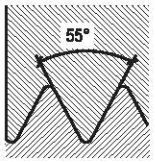
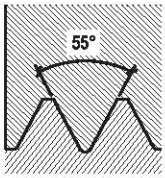
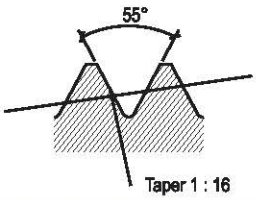
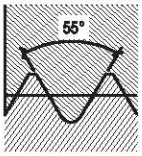
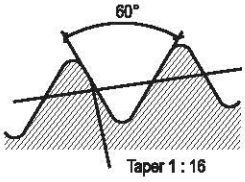
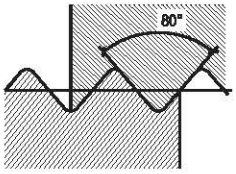
Special coating - TiAlN / TiCN coated taps also can be provided on request for specific application.

TAP TERMONOLOGY - ABBREVIATIONS

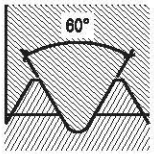
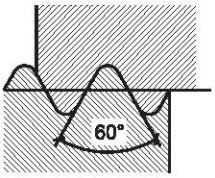
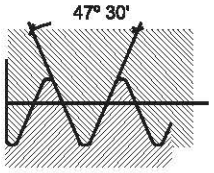
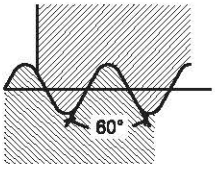
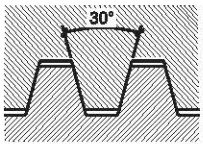
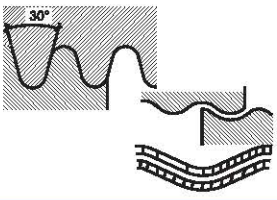
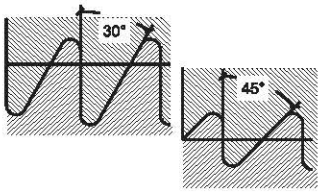
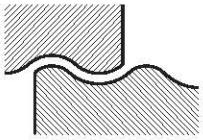


BTM	Bottoming	**UNF**	Unified Fine Thread
SEC	Second	**UNEF**	Unified Extra Fine Thread
TPR	Taper	**UN**	Unified
BOT	Bottom	**UNS**	Unified Special Thread
SO3	Set of Three	**NPS**	American Standard Straight Pipe
SO2	Set of Two	**NPSF**	Dryseal American Standard Pipe Thread
SER SO3	Serial Set of Three		(Leak - Proof Joint)
SPPT	Spiral Point	**NPT**	American Standard Taper Pipe Thread
SPRL	Spiral Flute	**NPTF**	Dryseal American Standard Taper Pipe Thread
MC	Metric Coarse		(Leak - Proof Joint)
MF	Metric Fine	**NGT**	National Gas Taper Thread
BSW	British Standard Whitworth Coarse Thread	**API**	American Petroleum - Instite Pipe Thread
BSF	British Standard Whitworth Fine Thread	**BF**	Bright Finish
BA	British Association Standard Thread	**BT**	Steam / Blue Tempered
BSCy	British Standard Cycle Thread	**Ni**	Nitride
BSB	British Standard Brass	**TiN**	Titanium Nitride
G	British Standard Parallel Pipe (Mechanical Joint)	**TiCN**	Titanium Carbo Nitride
Rp	British Standard Parallel Pipe (Leak - Proof Joint)	**TiAlN**	Titanium Alluminium Nitride
Rc	British Standard Tapered Pipe (1:16 Conical Taper)	**LS**	Long Shank
NC	American National Coarse Thred	**LH**	Left Hand
UNC	Unified Coarse Thread	**RH**	Right Hand
NF	Americal National Fine Thread		

POPULAR THREAD FORMS

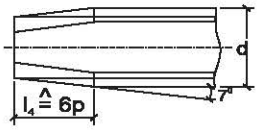
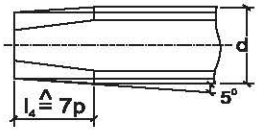
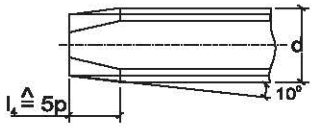
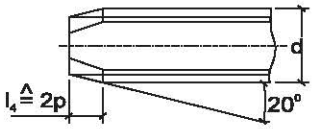
Sr. No.	Name Of Thread	Symbol	Form Of Thread	Standard
1	ISO METRIC THREAD	M		IS 4218 DIN 13, DIN 14 JIS B 0205, JIS B 0207 BS 3643
2	UNIFIED THREAD	U		ANSI B 1.1 BS 1580 JIS B 0206 JIS B 0208
3	WHITWORTH THREAD	W		BS 84
4	STRAIGHT PIPE THREAD	R BSP PF		DIN 259 DIN 2999 DIN 3858 BS 21 JIS B 0203
5	TAPER PIPE THREAD	R BSP PT		DIN 2999 DIN 3858 BS 21 JIS B 0203
6	AMERICAN STANDARD STRAIGHT PIPE THREAD	NPS		ANSI B 2.1
7	AMERICAN STANDARD TAPER PIPE THREAD	NPT NPTF		ANSI B 2.1 ANSI B 1.20.3 ANSI B 1.20.4
8	STEEL CONDUIT THREAD	PG C		DIN 40430 JIS B 0204

POPULAR THREAD FORMS

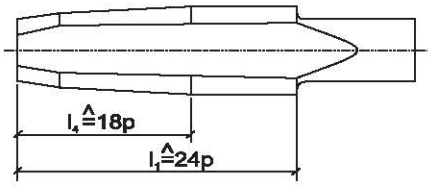
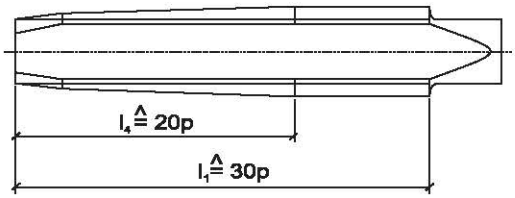
Sr. No.	Name Of Thread	Symbol	Form Of Thread	Standard
9	SEWING MACHINE THREAD	SM		JIS B 0226
10	BYCYCLE THREAD	FG BSCy BC		DIN 79012 BS 811 JIS B 0225
11	BRITISH ASSOCIATION THREAD	BA		BS 93
12	AUTOMOBILE TYPE VALVE THREAD	Vg TV		DIN 7756 JIS D 4208
13	ACME THREAD	Tr TM		DIN 103 JIS B 0221
14	KNUCKLE THREAD	Rd		DIN 405 DIN 20400 DIN 15403 DIN 3182 DIN 7273
15	BUTTRESS THREAD	S		DIN 513 DIN 2781
16	EDISON SCREW THREAD	E		DIN 40400 JIS C 7709

TYPE OF CHAMFERS

HAND TAPS

Chamfer Style	View	Description
TAPER ROUGHER		Taps set of Two Pieces - Fine Pitch Non Serial Taps - Taper Serial Taps - Rougher
TAPER ROUGHER		Taps set of Three Pieces - Coarse Pitch Non Serial Taps - Taper Serial Taps - Rougher
SECOND INTERMEDIATE		Taps set of Three Pieces Non Serial Taps - Second Serial Taps - Intermediate
BOTTOMING FINISHER		Taps set of Two Pieces & Three Pieces Non Serial Taps - Bottoming Serial Taps - Finisher

NIB TAPS & NUT TAPS

CHAMFER	VIEW	DESCRIPTION
LONG LEAD = 75 - 80% OF THREAD LENGTH		Specially designed Nib Tabs for highspeed nut tapping on cold forged components.
		Conventional Nut Taps with long thread length suitable for nut tapping of hot forged components.

TAP AND COMPONENT TOLERANCES

Generally speaking taps will cut threads larger than the tap themselves. This oversizing will depend on material, speed, lubrication and alignment of tap to hole amongst other variables. However, under normal conditions, MIRANDA tap size can be selected according to the component size required as per the tables shown below. Tolerances "to manufacturer's discretion." (eg 6HX, 6GX).

METRIC THREAD FORMS								
TAP SIZE			GENERAL CLASS OF COMPONENT THREAD					
ISO MARK	+ DIN MARK	JIS MARK	JIS CLASS	ISO AND DIN CLASS				
		Ia, Ib	1st					
ISO 1	ISO 1 (4H)	II*	2nd	4H	5H			
ISO 2	ISO 2 (6H)	III, 6H*	3rd	4G	5G	6H		
ISO 3	ISO 3 (6G)	6G*				6G	7H	8H

Note: Because the JIS system is in transition to ISO 2857, JIS II taps (~ISO 1/4H) are offered for user of the old B4430 Type J Spec, whilst 6H (ISO 2) and 6G (ISO 3) taps are offered to users who require ISO 2857 tolerances, but still use Type J collect sizes in their machines.

WHITWORTH THREAD FORMS			
TAP SIZE			COMPONENT TOLERANCE
ISO MARK	DIN MARK	JIS MARK	B. S. CLASS
CL 1	CF	CF	CLOSE FIT
CL 2	MF	MF	MEDIUM FIT
CL 3	FF	FF	FREE FIT

UNIFIED THREAD FORMS		
TAP SIZE		COMPONENT TOLERANCE
ISO MARK	DIN MARK	CLASS
CL 1	3B	3B
CL 2	2B	2B
CL 3	1B	1B

BSP THREAD FORMS 55°				
TAP SIZE				COMPONENT
ISO 5969	BS EQUIV	JIS EQUIV	JIS EQUIV	TYPE OF THREAD GENERATED
G	BSPF	228	PF	ISO 228 Mechanical Joint
Rp	BSPP	2999	PS	ISO 7/1 Leakproof Joint
Rc	BSPT	2999	PT	ISO 7/1 CONIC, 1:16 Taper

NATIONAL (Unified) PIPE THREAD FORM 60°	
TAP SIZE	COMPONENT
ISO MARK	TYPE OF THREAD GENERATED
NPS	Mechanical Joint or Coupling
*NPSF	Dryseal (leak proof)
NPT	1 : 16 Taper
*NPTF	Dryseal, 1 : 16 Taper

NOTE : Altered crest and root profiles of Dryseal taps ensures and interference fit on crests and roots which prevent leakage.

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 50-70 Kg/mm2 Tensile Strength	12 - 15	5 - 8
Steel 70-90 Kg/mm2 Tensile Strength	9 - 12	4 - 6
Steel (Alloy) 90 - 100 kg/mm2 Tensile Strength	6 - 10	2 - 3
Steel casting up to 70 kg/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.

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./mm	
ALUMINIUM	15 - 45	50 - 150	Kerosene & Lard Oil or Kerosene & Light Oil
Aluminium Bronze	6 - 24	20 - 80	Soluble Oil
Bakelite	15 - 30	50 - 100	Dry
Brass	15 - 60	50 - 200	Soluble Oil or Light Base Oil
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% Koresene
Malleable iron	10 - 18	35 - 60	Soluble Oil or Sulphur base Oil
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

RECOMMENDED TAPPING DRILL

MC ISO METRIC COARSE

SIZE mm	PITCH mm	DRILL mm
M1	0.25	0.75
M1.1	0.25	0.85
M1.2	0.25	0.95
M1.4	0.3	1.1
M1.6	0.35	1.25
M1.7	0.35	1.35
M1.8	0.35	1.45
M2	0.4	1.6
M2	0.45	1.55
M2.2	0.45	1.75
M2.3	0.4	1.9
M2.5	0.45	2.05
M2.6	0.45	2.15
M3	0.5	2.5
M3	0.6	2.4
M3.5	0.6	2.9
M4	0.7	3.3
M4	0.75	3.25
M4.5	0.75	3.75
M5	0.8	4.2
M5	0.9	4.1
M5.5	0.9	4.6
M6	1	5
M7	1	6
M8	1.25	6.75
M9	1.25	7.75
M10	1.5	8.5
M11	1.5	9.5
M12	1.75	10.2
M14	2	12
M16	2	14
M18	2.5	15.5
M20	2.5	17.5
M22	2.5	19.5
M24	3	21
M27	3	24
M30	3.5	26.5
M33	3.5	29.5
M36	4	32
M39	4	35
M42	4.5	37.5
M45	4.5	40.5
M48	5	43
M52	5	47
M56	5.5	50.5
M60	5.5	54.5
M64	6	58
M68	6	62
M72	6	66
M76	6	70

MF ISO METRIC FINE

SIZE mm	PITCH mm	DRILL mm
M2	0.25	1.75
M2.2	0.25	1.95
M2.3	0.25	2.05
M2.5	0.35	2.15
M2.6	0.35	2.25
M3	0.35	2.65
M3.5	0.35	3.15
M4	0.45	3.65
M4	0.5	3.5
M5	0.35	4.65
M5	0.5	4.5
M5	0.75	4.25
M5.5	0.5	5
M6	0.5	5.5
M6	0.75	5.25
M7	0.75	6.25
M8	0.5	7.5
M8	0.75	7.25
M8	1.0	7
M9	0.75	8.25
M9	1.0	8
M10	0.5	9.5
M10	0.75	9.25
M10	1	9
M10	1.25	8.75
M11	0.75	10.25
M11	1	10
M11	1.25	9.75
M12	0.5	11.5
M12	0.75	11.25
M12	1	11
M12	1.25	10.75
M12	1.5	10.5
M14	1	13
M14	1.25	12.75
M14	1.5	12.5
M15	0.75	14.25
M15	1	14
M15	1.5	13.5
M16	0.5	15.5
M16	0.75	15.25
M16	1	15
M16	1.25	14.75
M16	1.5	14.5
M17	1	16
M17	1.5	15.5
M18	0.75	17.25
M18	1	17
M18	1.25	16.75
M18	1.5	16.5

MF (continued) ISO METRIC FINE

SIZE mm	PITCH mm	DRILL mm
M18	2	16
M19	1	18
M20	1	19
M20	1.5	18.5
M20	2	18
M22	1	21
M22	1.5	20.5
M22	2	20
M24	1	23
M24	1.5	22.5
M24	2	22
M25	1	24
M25	1.5	23.5
M25	2	23
M27	1	26
M27	1.5	25.5
M27	2	25
M28	1	27
M28	1.5	26.5
M28	2	26
M30	1	29
M30	1.5	28.5
M30	2	28
M30	3	27
M32	1	31
M32	1.5	30.5
M32	2	30
M33	1.5	31.5
M33	2	31
M33	3	30
M35	1.5	33.5
M35	2	33
M35	3	32
M36	1	35
M36	1.5	34.5
M36	2	34
M36	3	33
M38	1	37
M38	1.5	36.5
M38	2	36
M39	1.5	37.5
M39	2	37
M39	3	36
M40	1	39
M40	1.5	38.5
M40	2	38
M40	3	37
M42	1.5	40.5
M42	2	40
M42	3	39

MF (continued) ISO METRIC FINE

SIZE mm	PITCH mm	DRILL mm
M42	4	38
M45	1.5	43.5
M45	2	43
M45	3	42
M48	1.5	46.5
M48	2	46
M48	3	45
M48	4	44
M50	1.5	48.5
M50	2	48
M50	3	47
M52	1.5	50.5
M52	2	50
M52	3	49
M52	4	48
M56	2	54
M56	4	52

G (BSP) MECHANICAL JOINT
Rp (BSP) LEAKPROOF KOINT

		G	RP
SIZE Inch	PITCH TPI	DRILL mm	DRILL mm
1/8	28	8 .8	8.6
1/4	19	11.8	11.5
3/8	19	15.25	15
1/2	14	19	18.5
5/8	14	21	20.5
3/4	14	24.5	24
7/8	14	28.25	27.75
1"	11	30.75	30.25
1 1/4	11	39.5	39
1 1/2	11	45.25	44.75
1 3/4	11	51.3	50.5
2"	11	57.2	56.5
2 1/4	11	63.3	62.5
2 1/2	11	72.8	72.3
3"	11	85.5	85

Rc (BSPT)

SIZE Inch	PITCH TPI	DRILL mm
1/8	28	8.6
1/4	19	11.5
3/8	19	15
1/2	14	18.5
3/4	14	24
1"	11	30
1 1/4	11	39
1 1/2	11	45
2"	11	56.5
2 1/2	11	71.5

RECOMMENDED TAPPING DRILL

UNC

SIZE No or Inch	PITCH TPI	DRILL mm
No. 1	64	1.55
No. 2	56	1.85
No. 3	48	2.1
No. 4	40	2.35
No. 5	40	2.65
No. 6	32	2.85
No. 8	32	3.5
No. 10	24	3.9
No. 12	24	4.5
1/4	20	5.1
5/16	18	6.6
3/8	16	8
7/16	14	9.4
1/2	13	10.8
9/16	12	12.2
5/8	11	13.5
3/4	10	16.5
7/8	9	19.5
1"	8	22.25
1 1/8	7	25
1 1/4	7	28
1 3/8	6	30.75
1 1/2	6	34
1 3/4	5	39.5
2"	4.5	45
2 1/4	4.5	51.5
2 1/2	4	57.25
2 3/4	4	63.5
3"	4	70

UNEF

SIZE No or Inch	PITCH TPI	DRILL mm
No.12	32	4.70
1/4	32	5.50
5/16	32	7.10
3/8	32	8.60
7/16	28	10.10
1/2	28	11.70
9/16	24	13.00
5/8	24	14.75
11/16	24	16.25
3/4	20	17.50
13/16	20	19.25
7/8	20	20.75
15/16	20	22.25
1"	20	23.75
1 1/8	18	26.75
1 1/4	18	30.00
1 3/8	18	33.00
1 1/2	18	36.00

BSW

SIZE Inch	PITCH TPI	DRILL mm
1/8	40	2.6
5/32	32	3.1
3/16	24	3.6
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
5/8	11	13.5
11/16	11	15
3/4	10	16.5
7/8	9	19.25
1"	8	22
1 1/8	7	24.75
1 1/4	7	28
1 1/2	6	33.5
1 3/4	5	39
2"	4.5	44.5
2 1/4	4	50
2 1/2	4	56.5

UN - 8

SIZE Inch	PITCH TPI	DRILL mm
1 1/8	8	25.30
1 1/4	8	28.50
1 3/8	8	31.60
1 1/2	8	34.80
1 5/8	8	38.00
1 3/4	8	41.20
1 7/8	8	44.30
2"	8	47.50
2 1/4	8	55.00
2 1/2	8	61.30

NPT / NPTF

(1:16 TAPER) SIZE Inch	PITCH TPI	DRILL mm
1/16	27	6.30
1/8	27	8.50
1/4	18	11.10
3/8	18	14.70
1/2	14	18.00
3/4	14	23.00
1"	11 1/2	29.00
1 1/4	11 1/2	38.00
1 1/2	11 1/2	44.00
2"	11 1/2	56.00

BSF

SIZE Inch	PITCH TPI	DRILL mm
3/16	32	4
7/32	28	4.7
1/4	26	5.4
9/32	26	6.2
5/16	22	6.8
3/8	20	8.3
7/16	18	9.8
1/2	16	11.2
9/16	16	12.7
5/8	14	14
11/16	14	15.75
3/4	12	17
7/8	11	20
1"	10	23
1 1/8	9	26
1 1/4	9	29
1 3/8	8	32
1 1/2	8	35
1 5/8	8	37.5
1 3/4	7	40
2"	7	46.5

UN - 12

SIZE No or Inch	PITCH TPI	DRILL mm
1 5/8	12	39.10
1 3/4	12	42.30
1 7/8	12	45.40
2"	12	48.60
2 1/4	12	55.00
2 1/4	12	61.30
1"	12	23.50

UNF

SIZE No or Inch	PITCH TPI	DRILL mm
No. 0	80	1.25
No. 1	72	1.55
No. 2	64	1.9
No. 3	56	2.15
No. 4	48	2.4
No. 5	44	2.7
No. 6	40	2.95
No. 8	36	3.5
No. 10	32	4.1
No. 12	28	4.7
1/4	28	5.5
5/16	24	6.9
3/8	24	8.5
7/16	20	9.9
1/2	20	11.5
9/16	18	12.9
5/8	18	14.5
3/4	16	17.5
7/8	14	20.4
1"	12	23.25
1 1/8	12	26.5
1 1/4	12	29.5
1 3/8	12	32.75
1 1/2	12	36

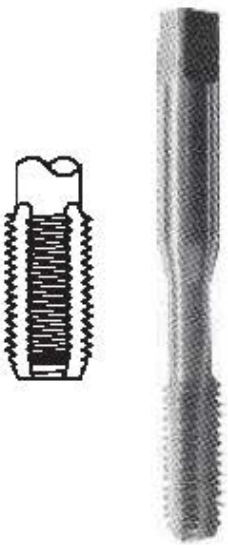
NPS / NPSF

		NPS	NPSF
SIZE No or Inch	PITCH TPI	DRILL mm	DRILL mm
1/8	27	8.9	8.7
1/4	18	11.5	11.30
3/8	18	15.00	14.70
1/2	14	18.50	18.20
3/4	14	24.00	23.50
1"	11 1/2	30.00	29.50
1 1/4	11 1/2	39.00	38.50
1 1/2	11 1/2	45.00	44.50
2"	11 1/2	57.00	56.50

APPLICATION - HAND TAPS

STANDARD SET	SERIAL SET
Taper 	Rougher 
Second 	Intermediate 
Bottom 	Finisher 
Hand Taps with full thread profile for general purpose use; Right and Left Hand threads are available in most popular sizes for use in blind or through holes.	Recommended for precision hand tapping in through or blind holes. The progressive truncated thread form is especially suited for tough materials such as stainless or high tensile steels.

STRAIGHT FLUTE MACHINE TAPS

STR. FL. TPR.	STR. FL. SEC	STR. FL. BOT
		
A straight flute tap for use mainly in shallow through holes.The ISO Coarse and Fine taps have a 5° and 7° lead respectively.	For use in shallow or medium depth through holes in long chipping material or blind holes in short chipping materials. Fine thread holes can be threaded deeper without long chips choking the flutes. ISO Second lead - 10° (Coarse) and 12° (Fine)	For use through or blind holes in short chipping materials and where it might be necessary to thread to the bottom of the hole. ISO Bottom lead - 23° (Coarse) and 20° (Fine)

APPLICATION - MACHINE TAPS

SPIRAL FLUTE TAPS

Spiral Flute Taps are desinged for machine tapping of blind hole and are particularly useful where chip disposal poses problems. The right hand spiral flutes direct the chips back along the flute and out of the hole. They are available in slow (15°), standard (30°), fast (40°) flute helixes. The shortened thread length of the 30° and 40° DIN and ISO Spiral Flute taps allow for more efficient chip removal as well as lower torque loads. These are suitable for tapping deep holes in a variety of different materials. Various types are available.

BF SPRL 30°
Bright Finish 30° Spiral Flute Taps are suitable for tapping blind holes in non-ferrous materials and steel where cold welding does not pose a problem.

BT SPRL 30°
Steam Tempered Spiral Flute Taps are suitable for tapping blind holes in most steels, where cold welding occurs. Supplied as standard where no helix or surface treatments specified.

TIN SPRL 30°
Titanium Nitrided 30° Spiral Flute Taps are suitable for tapping blind holes in abrasive materials, or where higher speeds and a longer tool life are required.

SO SPRL 30°
TICN / TIAIN Spiral Flute Taps have specially adapted geometry for tapping blind holes in hard steels where tap wear out is high.

SLOW SPIRAL FLUTE TAPS (~15°)

BF SPRL 15°
Bright Finish 30° Spiral Flute Taps are suitable for tapping blind holes in togugher non-ferrous materials with medium to long chips, or steels up to 1000 N/mm² where cold welding does not pose a problem.

BT SPRL 15°
Steam Tempered 15° Spiral Flute Taps are suitable for tapping blind holes in tough steels up to 1000 N/mm² where cold welding occurs. Supplied as standard where surface treatment not specified.

TIN SPRL 15°
Titanium Nitrided 15° Spiral Flute Taps are suitable for tapping blind holes in tough, abrasive materials where higher tapping speeds or longer tool life are required.

SO SPRL 15°
TICN / TIAIN Spiral Flute Taps have specially adapted geometry for tapping blind holes in hard steels where tap wear out is high.

APPLICATION - MACHINE TAPS

SPIRAL POINT TAPS

Also known as Gun Type, Bull Nose or Chipdriver taps. MIRANDA Spiral Point taps are designed for through hole tapping, as the chips are driven ahead of the tap, with coolant flowing, freely through shallow flutes to the cutting edges.

The greater strength and reduced torque loads allow for higher tapping speeds, thus making this an ideal prodution machine tap. Various types are offered.

BF SPPT
Bright Finish Spiral Point Taps have no surface treatment and are normally used for tapping through holes in non-ferrous materials or steels where cold welding does not poss a problem.

BT SPPT
Steam Tempered Spiral Point Taps are used for tapping through holes in most steels, espacially where cold welding is a problem. This is the most common SP tap and is supplied as standard when no other surface treatment is specified.

TIN COATED SPPT
Titanium Nitrided Spiral Point Taps are used for tapping through holes in abrasive materials, or where higher speeds and a longer tool life are equired.

SO SPPT
TiCN / TiAlN Spiral Point Taps are used for tapping through holes for high tap wear out.

PIPE TAPS

MIRANDA Pipe Taps are available in a variety of thread forms and norms which cover most popular application. These cater for both ISO (Whitworth 55° - old BSP Thered Form) and American (60°) threading system. These may be categorised as follows :

PARALLEL PIPE THREADS	
THREAD FORM	THREAD ANGLE
G (BSP Mechanical Joint)	55°
G (BSP Mechanical Joint)	55°
RP (BSP Leak-Proof Joint)	55°
RP (BSP Leak-Proof Joint)	55°
NPS (Mechanical Joint NPSM / NPSC)	60°
NPSF (Dryseal Leak-Proof Joint)	60°

CONICAL PIPE THREADS	
THREAD FORM	THREAD ANGLE
RC (1:16 Taper)	55°
NPT (1:16 Taper)	60°
NPTF (Dryseal 1:16 Taper)	60°

SURFACE TREATMENTS :-
Surface treatments offered by **MIRANDA** are as follows :

BF - Bright Finish - for non-ferrous metals or steels which do not cold-weld.

BT - Steam Tempered - black oxide treatment for all steels, especially those prone to cold welding. Supplied as standard, unless otherwise specified.

TiN - Titanium Nitride - PVD process imparts a hard wear-resistant golden surface with low friction, thus allowing for greater tapping speeds.

TiCN and TiAlN treatments have similar properties, and are also available against special request.

CHAMFER LEADS

The following chamfer, or lead, angles will be used for different types of taps in ISO, JIS and DIN. The angles should be used as a guide only, as angles and clearances are often altered according to no. of flutes, geometry and application of tool.

Coarse Threads	Fine Threads	Form	Flutes	No. of Threads	Lead Angle
Taper		A	Straight	6 - 8	5°
	Taper			6 - 8	7°
		D	Straight	3.5 - 5	8°
Second Spiral Point	Spiral Point	B	Straight with Spiral Point	3 - 5	8-10°
Spiral Flute	Spiral Flute		Spiral Flute	2 - 3	15°
Bottom	Bottom	C	Straight	1.5 - 2.5	20°
		E	Straight & Spiral	1.5 - 2	23°

CLOSE FIT AND FREE FIT TAPS

CLOSE FIT Taps are used when a close or tight fitting thread is required. They are also recommended when a standard tap generates an oversize thread due to machine run-out, soft material, or application conditions.
FREE FIT Taps are used when a free or loose fitting thread is required, or when the application allows for a tap with a greater wear allowance to be utilised in abrasive materials such as cast iron. These taps are available in most popular thread forms and types. For more details see section under tolerances.

SPECIAL TAPS

Many sizes, overall geometry and thread forms not listed in this catalogue may be available and in some cases ex-stock at our factory. If not, custom made taps may be manufactured to order.
The following data is required before quotations can be given :

1. Quantity required.
2. Nominal Size.
3. Pitch of TPI (coarse pitch assumed unless specified.)
4. Threadform.
5. Right hand or Left hand (right hand assumed unless specified.)
6. Type of tap (i.e. taper, second, bottom, spiral point, spiral flute etc.)
7. Class of fit required.
8. Material to be threaded.
9. Depth of hole.
10. Type of hole.
11. Through hole or blind hole.
12. Will there be keyways or cross holes in the component to be tapped ?
13. Is the job to be tapped vertically or horizontally ?
14. And finally we would like to know the machine doing the tapping, if possible.

For better price and delivery, special taps are normally made from ISO, DIN or JIS blanks held in stock. If this is unsuitable please supply overall dimensions or preferably drawings giving all relevant details.

TROUBLE SHOOTING GUIDE

DIMENSIONAL ACCURACY

Over Size Pitch Diameter

Causes	Solutions
Incorrect tap	a) Use proper tolerance taps. b) Use longer taper lead taps.
Chip Packing	a) Use spiral fluted taps. b) Reduce number of flutes to increase space for chips. c) If tapping a blind hole, allow the extra depth for chamfer or reduce the chamfer length. d) Use proper lubricant.
Galling	a) Use proper surface treated taps like steam tempered or TIN coated. b) Use proper cutting lubricant. c) Reduce tapping speed. d) Use proper cutting face angle in accordance with material being tapped. e) Use larger hole size.
Operating Conditions	a) Apply proper tapping speed. b) Correct alignment of tap and drill hole. c) Use proper tapping speed to avoid torn or rough threads. d) Use pitch control tapping. e) Use proper tapping machine with suitable power. f) Avoid mis alignment of the tap with respect to workpeice.

Under Size Pitch Diameter

Incorrect Tap	a) Use oversize taps for i) Cutting materials such as copper alloy, aluminium alloy and cast iron. b) Use proper chamfer angle. c) Increase cutting angle of tap in relation with material to be tapped.
Damaged thread	a) Use proper reversing speed to avoid damaging tapped thread on the way out of the hole.

TOOL LIFE

Wear

Incorrect Tap Selecton	a) Apply specially designed taps for tapping high tensile materials. b) Change to a type of high - speed tap that contains vanadium. c) Use proper surface treated taps like steam tempered or TIN coated. d) Increase chamfer length.
Operating Conditions	a) Reduce tapping speed. b) Apply proper cutting lubricants. c) Avoid work hardened hole. d) Use largerhole size.

SURFACE FINISH

Torn or Rough Treads

Causes	Solutions
Chamfer Too Short	a) Increase the chamfer length.
Wrong Cutting Angle	a) Select the correct cutting face angle.
Galling	a) Use thread relieved taps. b) Reduce land width. c) Use proper surface treated taps like steam tempered or TIN coated. d) Use over size drill. e) Obtain proper alignment between tap and work.
Chip Packing	a) Use Spiral fluted taps. b) Use over size drill.

TOOL LIFE

Breakage

Incorrect Tap Selection	a) Avoid chip packing in the flutes of bottom of the hole. b) Use sprial fluted taps for blind holes. c) Use proper surface treated taps like steam tempered or TIN coated.
Excessive Tapping Torque	a) Use larger drill size. b) Increase the chamfer length. c) Increae cutting angle. d) Apply a tap with more thread relief and reduced land width.
Operating Conditions	a) Reduce tapping speed. b) Avoid misalignment between tap and the hole and tapered hole. c) Use floating tap holder. d) Use tapping holder with torque adjustment. e) Avoid hitting bottom of the hole with tap.
Tool Condition	a) Do not grind the bottom of the flute. b) Avoid too narrow land width c) Regrind tool more frequently.

Edge Chipping

Incorrect Tap Selecton	a) Reduce cutting angle. b) Increase chamfer length.
Operating Conditions	a) Reduce tapping speed. b) Avoid misalignment between tap and the hole. c) Avoid sudden return or reverse in blind hole tapping.

DATA SHEET FOR TAP

Branch Name : _____ Date of Visit : _____

Name of Person : _____ Contact Person : _____

Name of Customer & Address : _____

_____

Tele.No. : _____ Fax. No : _____ E-mail : _____

Sr.No.	Required Details	Tap Sizes			
		1	2	3	4
1	Tap Size & Pitch				
2	Tap Material				
3	Dimensions : Fl Length,OAL,Sh Dia				
4	Thread Form Metric / BSW / Other				
5	Thread Type (Right / Left)				
6	Type of Tap (Straight , Spiral, SPPT)				
7	Spiral Tap - Angle				
8	Class of Fit / 6H,4H,5H,6G/Other				
9	Work Piece Name / Material				
10	Hardness / Strength				
11	Type of Hole (Blind/Through)				
12	Depth of Thread & Hole				
13	Tapping (Vertical/Horizantal)				
14	Cutting Speed / RPM				
15	Coolant Used				
16	Types of Machine				
17	Tap Clamping				
18	Currently used Tap				
19	Tool life of Current Tap				
20	Price of Current Tap				
21	Order Volume				
22	Any Problem with present Tap used				
Comment					

MIRANDA TOOLS
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-MAIL ID : marketing@mirandatools.net , miranda1@narmada.net.in WEBSITE : www.mirandatools.in

Note : 6G Tolerance,Gauge Dimension Required , BSP Taps,RP/G Series Confirmation.