

PRODUCT CATALOGUE 2023



ROHIT has been on the vanguard in the field of HSS Cutting Tools & Solid Carbide Cutting Tools industry. We have been serving the Cutting Tools industry for over six decades. The company started its operations in the year 1963 under the visionary leadership of Mr. K.L Duggal who has taken this company from meager resources from a small Workshop in 1963 to 2-Manufacturing Units spread over 40,000 Square Foot and Cutting Tool Brand to Boast about.

Our Core Strengths:

Manufacturing Expertise

Our R&D Team which boasts of engineers' from India's Top Engineering Colleges is dedicated in providing new designs for the Carbide Drills, End Mills & Reamers so as to enhance productivity, repeatability and reduce CPC.

Heat Treatment Facility

We at ROHIT have over 6 decades of HSS Heat Treatment experience which helps in providing best performing HSS tools over and over again.

Product Know-how

Our employees & engineers have all the knowledge accumulated in the company's 6 Decades of expertise in Cutting Tool Industry. Simultaneously, our R&D center continuously provides Innovations and optimizes tool performance in our testing facility with the assistance of state-of-the-art technologies.

Innovations & New Designs

Our R&D center is the backbone of ROHIT's new designs. Currently our Milling & Drilling tools for machining Alloy Steels, SS, Titanium & other special alloys are leading the market with Lowest CPC guaranteed to the customer.

Regrinding Service

Save your Planet! We at ROHIT, believes that it is everyone's duty to do their bit towards the environment; hence Regrinding makes our companies core in enabling the customer reduce their cost, also helping environment by Recycling and our regrinding ensures customer's with refurbished tool similar to the new ROHIT tool they have used with original Tool Designs and coatings.

We are happy to help our customers reduce their Tooling Costs and improve their Bottom Line!



Chairman



Why Choose RIGPL?

- Quality down to last detail
- Expert advice on optimal tool application
- Highest Productivity, Excellent Economic Efficiency
- Specialized solutions to improve your Bottom Line
- Think Tank to make your Cutting Tools Last that bit Longer

Industry We Support

- Aerospace & Automotive
- Power Generation
- General Engineering
- Die & Mold Industry
- Medical Implants
- Ordnance Manufacturing
- Furniture Manufacturing

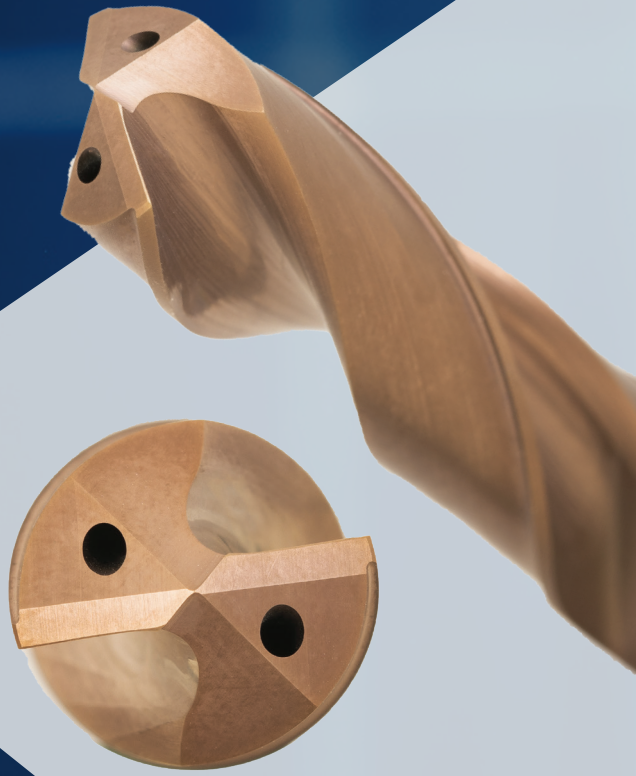


Table of Content

<u>Contents</u>	<u>Pages</u>
Table of Contents-cum-Selection Guide _____	07
Icon Glossary _____	15
Carbide Drills _____	16
Technical Information Carbide Drills _____	47
Carbide Reamers _____	66
Technical Information Carbide Reamers _____	75
Carbide End Mills _____	77
Technical Information Carbide End Mills _____	137
HSS Tool Bits, End Mills & Centre Drills _____	156
HSS Punches _____	177
HSS & Carbide Customized Tools _____	191
Forms & Conversion Tables _____	192

Carbide High Performance Drills (CTHS, CTHL series)

- Newly Developed High Wear Resistance NOVA coating
- Stable Low Thrust Point Form
- Edge Chamfer to provide longer cutting edge life
- Best suited for Drilling Alloy Steel, SS, Titanium & Ni alloys



Carbide High Performance Drills (C3HS, C3HL Series)

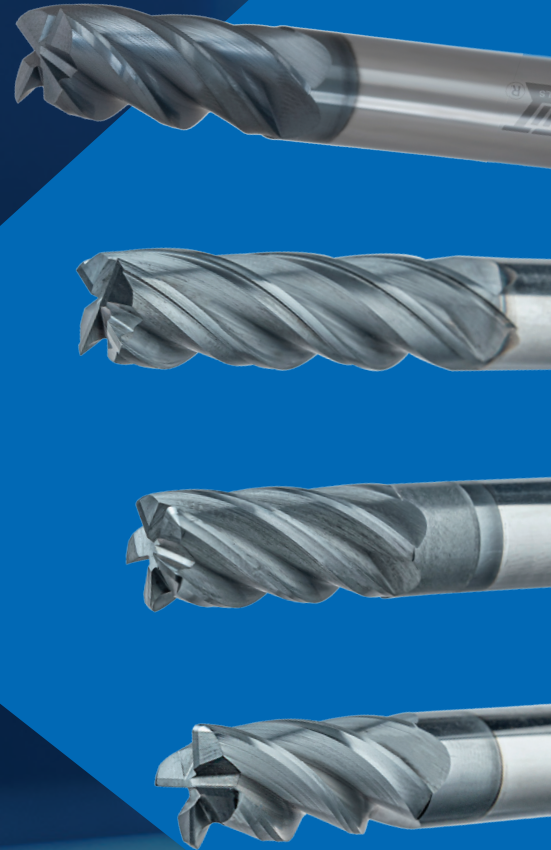
- Newly Developed High Wear Resistance NOVA coating
- Edge Honing to provide sturdy drill point
- Edge Chamfer to provide longer cutting edge life
- New chip Curling design for faster chip breakage
- Best suited for Drilling Alloy Steel, SS, Titanium & Ni alloys

“Carbide End Mills 301 or 302 Series

- Especially designed for Hard Machining up to 60HRc
- Use our 401 or 402 series for machining up to 70HRc”

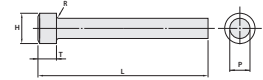
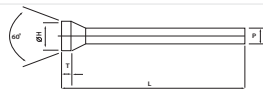
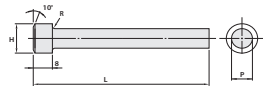
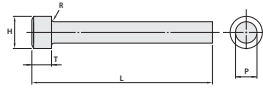
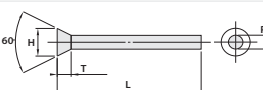
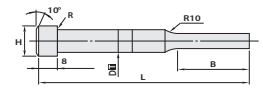
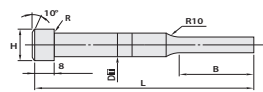
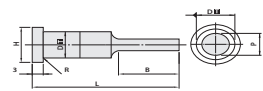
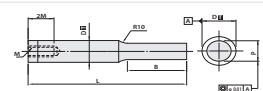
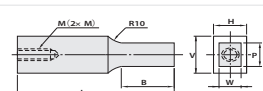

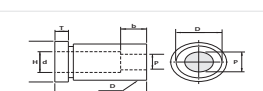
“Wood machining tools to cater to ever so growing needs of the **Wood Routing industry**”

“Carbide Variable Helix Endmills 330, 333 or 334 Series are designed for Chatter free machining of Alloy Steel, SS & Super alloys”

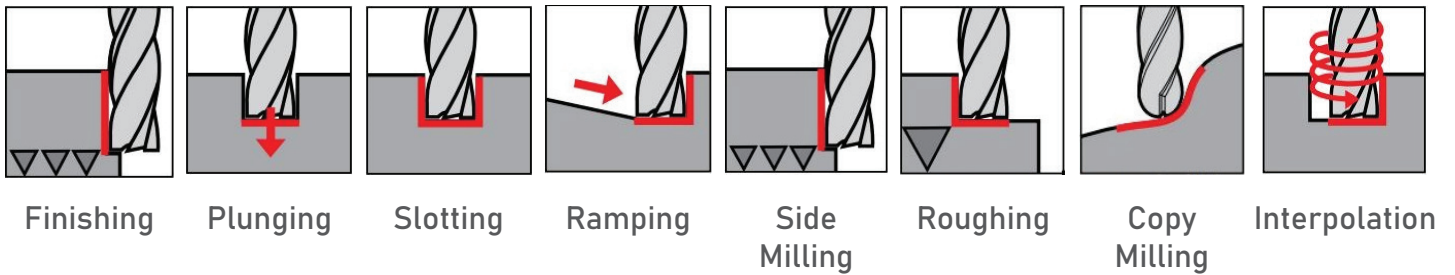


Description	Page No
GRADE CHART of HSS CUTTING TOOLS	157
HSS Square Tools Bits (Inch Sizes)	158
HSS Square Tools Bits (Metric Sizes)	159
HSS Rectangular (Flat) Tools Bits (Inch Sizes)	160
HSS Rectangular (Flat) Tools Bits (Metric Sizes)	162
HSS Round Tool Bits (Inch Sizes)	164
HSS Round Tool Bits (Metric Sizes)	166
HSS Parting Blades Cut-Off Blades	169
HSS Parallel Shank End Mills (Imperial Sizes)	174
HSS Parallel Shank End Mills (Metric Sizes)	175
HSS Center Drills Type-A	176
Geometry & Instructions	170

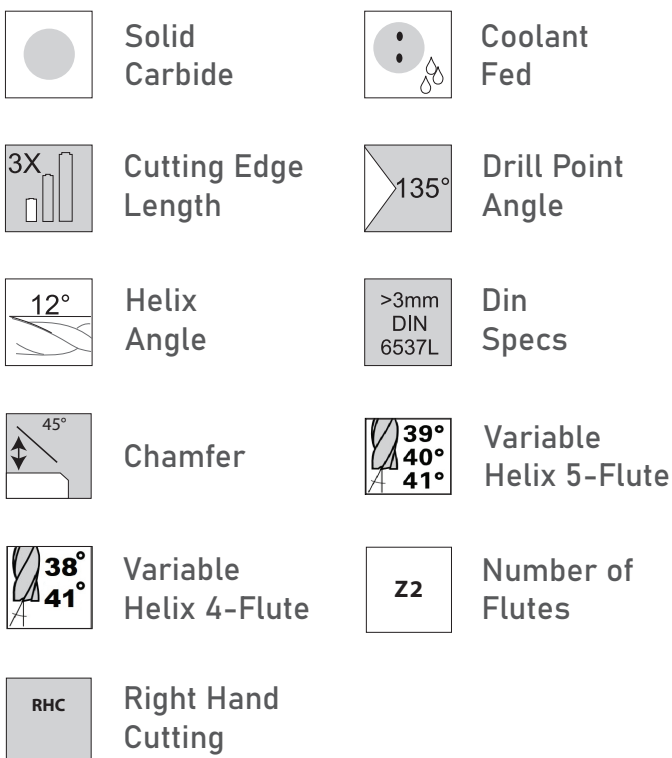


Series	Description	Body/tip Dia "P" (0.1 mm Increments)	Stock Availability	Drawing	Page Number
P101	HSS Straight Punches	1.1-25	Yes		180
P102	HSS Tapered Head Punches	3.0-12	++		181
P103	HSS Straight Punches For Medium Load	2.1-25	++		182
P104	HSS Straight Punches For Heavy Load	2.1-25	++		183
P105	HSS Mini Straight Punches	1-3	++		184
P106	HSS Shoulder Punches	2-24.9	+++		185
P107	HSS Shoulder Punches For Heavy Load	2-24.9	+++		186
P108	HSS Shoulder Punches Short Type	2-9.9	+++		187
P109	HSS Tapped Punches	2-24.9	Ask for Delivery Time		188
P110	HSS Block Punches		Ask for Delivery Time		189
P112	HSS Straight Button Dies		Ask for Delivery Time		190
P113	HSS Headed Button Dies		Ask for Delivery Time		190

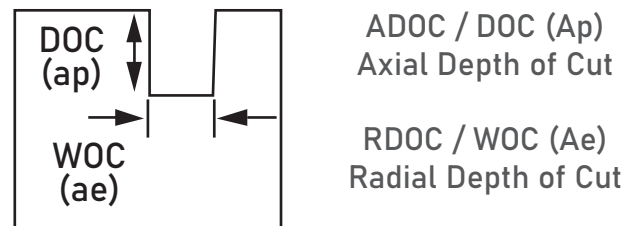
APPLICATION TYPE



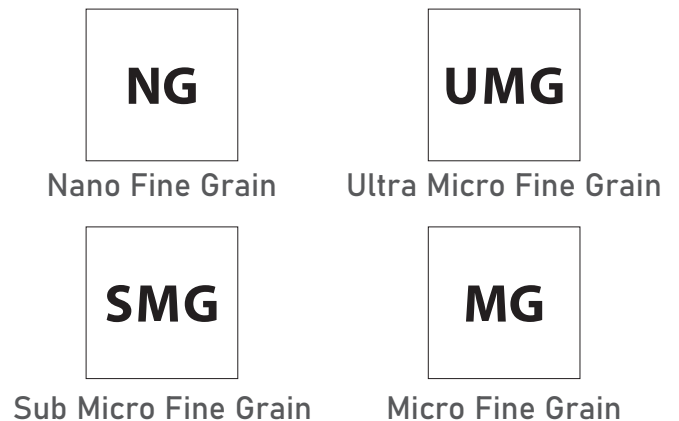
TOOL IDENTIFICATION



TYPES OF CUTTING



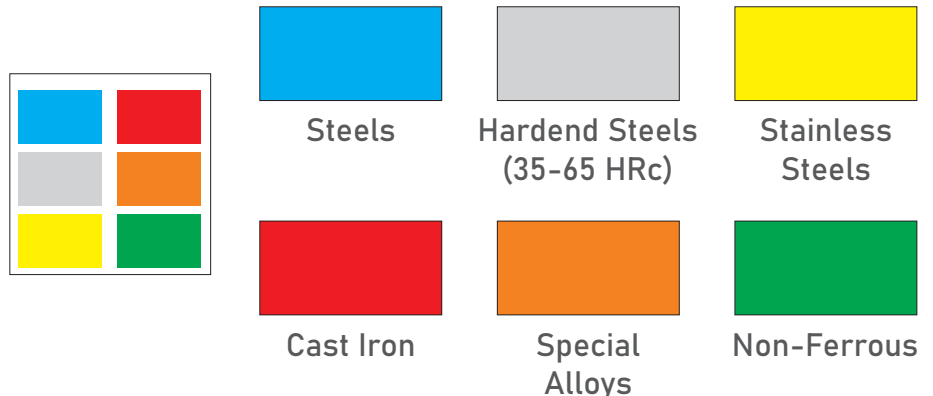
CARBIDE GRAIN SIZE



COATING TYPES



WORKPIECE MATERIAL GROUP



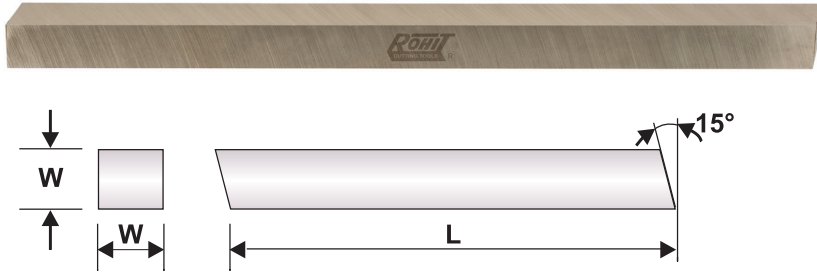
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HSS Parallel Shank End Mills (Metric Sizes)	175
HSS Center Drills Type-A	176
Geometry & Instructions	170

Features

- ROHIT HSS Tool Bits are available in ROHIT - 1X, 2X, SPECIAL, 3X, EC-500 grades
- Micro-structure & Hardness is checked thoroughly for consistency of tool bits to match our world class standards.
- Our 3X (T42) / EC500 (Cryo-T42) grade are especially meant for machining SS, harder alloy Steels & harder Cast Iron.
- Square HSS Tool Bits comes with 15° End Bevel Angles, having standard tolerance of h13.
- More than 8000+ sizes of Square HSS Tool bits are in stock to choose from.
- Flat Tool Bits comes with 0° End Bevel Angles, having standard tolerance of h13.
- Round Tool Bits comes with 0° End Bevel Angles, having standard tolerance of h9.
- Parting tools can be manufactured in FORM E & INDEX Type as per customer requirement, having standard tolerance of h13.
- Our HSS Cutting Tools can withstand any type of difficult cutting application known.

Grade	Description	HRC	End - Use
ROHIT-1X	AISI M2; HS 6 - 5 - 2	62-65	Recommended for use on non-ferrous metals like Aluminium, Copper and other free cutting metals like mild steel, EN-1A or soft materials
ROHIT-2X 5%Co.	AISI M35; HS 6 - 5 - 2 - 5	63-66	Exceptionally good toughness and red hardness, most suitable for heavy work on difficult materials and an ideal general purpose tool bit for machine shops. As a single point cutting tool, this quality is used to bring about the best advantage with tools which have to take deep cuts at high speeds. These tools are recommended for free cutting materials where high production is required.
ROHIT SPECIAL - 8%Co."	AISI M-42; HS 2 - 9 - 1 - 8	65-68	Recommended for use in cutting high alloy steel in annealed condition. This tool has a very long cutting life.
ROHIT-3X 10%Co.	AISI T-42; HS 10 - 4 - 3 - 10	65-67	This quality of tool bit retains its hardness even at very high temperatures and is recommended where the generation of heat is very high and the tool should not get blunt at high temperatures. This type is recommended for use in cutting of high alloy steels and stainless steels, such as EN-8M, EN-31, SS-304 etc. As the cutting life of the tool is longer than any quality of tool bit, it is recommended for use in automats (TRAUB M/C) where continuous processes are involved with multi-tools.
ROHIT-3X EC500	AISI T42 CRYOGENICALLY TREATED	65-67	Manufactured from High Speed Steel containing 10% Cobalt are cryogenically treated by cooling down tool bits at a pre-determined rate to liquid nitrogen temperature levels of 77° K resulting in a thermally stabilized material with a coherent, improved micro-structure that exhibits outstanding wear resistance and improved performance.

HSS Square Tools Bits | (Inch Sizes)

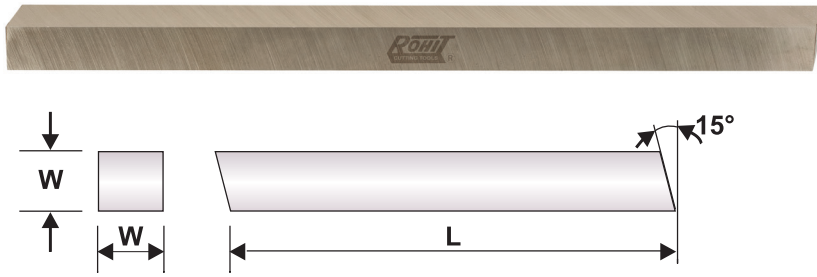


Tolerance (Width/Thickness)	h13
Tolerance (Length)	+/- 1.0mm
End Bevel	15°
Optional Bevel	0°/ 10°

Width (W) (Inches)	Width (W) (Inches)	Overall Length (L) (Inches)	1X (M2, 0%Co)	2X (M35, 5%Co)	Sp (M42, 8%Co)	3X (T42, 10%Co)	EC-500 (T42-Cryo)
1/8	1/8	3	HR1XSQ000J9	HR2XSQ000658	HR3XSQ000G68	HR4XSQ000CM1	HR44SQ000AA9
1/8	1/8	4	HR1XSQ000L5	HR2XSQ000666	HR3XSQ000G76	HR4XSQ000CN8	HR44SQ000AB7
3/16	3/16	3	HR1XSQ000Z4	HR2XSQ0006F1	HR3XSQ000GC0	HR4XSQ000CV1	HR44SQ000AG6
3/16	3/16	4	HR1XSQ00105	HR2XSQ0006H7	HR3XSQ000GD7	HR4XSQ000CW9	HR44SQ000AH4
3/16	3/16	6	HR1XSQ00113	HR2XSQ0006K0	HR3XSQ000GE5	HR4XSQ000CX6	HR44SQ000AJ9
1/4	1/4	3	HR1XSQ001Q3	HR2XSQ0006X1	HR3XSQ000GQ9	HR4XSQ000D94	HR44SQ000AS9
1/4	1/4	4	HR1XSQ001S8	HR2XSQ0006Z7	HR3XSQ000GR7	HR4XSQ000DB4	HR44SQ000AT7
1/4	1/4	6	HR1XSQ001U4	HR2XSQ000716	HR3XSQ000GS4	HR4XSQ000DC2	HR44SQ000AU5
1/4	1/4	8	HR1XSQ001V2	HR2XSQ000724	HR3XSQ000GT2	HR4XSQ000DD9	HR44SQ000AV3
5/16	5/16	3	HR1XSQ00204	HR2XSQ000773	HR3XSQ000GX3	HR4XSQ000DL2	HR44SQ000AX8
5/16	5/16	4	HR1XSQ00220	HR2XSQ000799	HR3XSQ000GY1	HR4XSQ000DN7	HR44SQ000AY6
5/16	5/16	6	HR1XSQ00238	HR2XSQ0007B9	HR3XSQ000GZ9	HR4XSQ000DP3	HR44SQ000AZ4
5/16	5/16	8	HR1XSQ00246	HR2XSQ0007C7	HR3XSQ000H00	HR4XSQ000DQ1	HR44SQ000B05
3/8	3/8	3	HR1XSQ002W9	HR2XSQ0007X0	HR3XSQ000HC9	HR4XSQ000E36	HR44SQ000BA8
3/8	3/8	4	HR1XSQ002Y4	HR2XSQ0007Z6	HR3XSQ000HE4	HR4XSQ000E51	HR44SQ000BB6
3/8	3/8	6	HR1XSQ00303	HR2XSQ000807	HR3XSQ000HF2	HR4XSQ000E69	HR44SQ000BC4
3/8	3/8	8	HR1XSQ00329	HR2XSQ000823	HR3XSQ000HG0	HR4XSQ000E77	HR44SQ000BD1
3/8	3/8	10	HR1XSQ00345	HR2XSQ000849	HR3XSQ000HH8	HR4XSQ000E85	HR44SQ000BE9
1/2	1/2	3	HR1XSQ003W8	HR2XSQ0008S0	HR3XSQ000HU9	HR4XSQ000EN6	HR44SQ000BR1
1/2	1/2	4	HR1XSQ003Y3	HR2XSQ0008U6	HR3XSQ000HV7	HR4XSQ000EQ0	HR44SQ000BS8
1/2	1/2	6	HR1XSQ00402	HR2XSQ0008W2	HR3XSQ000HW5	HR4XSQ000ER8	HR44SQ000BT6
1/2	1/2	8	HR1XSQ00428	HR2XSQ0008X9	HR3XSQ000HX2	HR4XSQ000E55	HR44SQ000BU4
1/2	1/2	10	HR1XSQ00444	HR2XSQ0008Z5	HR3XSQ000HY0	HR4XSQ000ET3	HR44SQ000BV2
5/8	5/8	4	HR1XSQ004G2	HR2XSQ000955	HR3XSQ000J16	HR4XSQ000EZ0	HR44SQ000BW0
5/8	5/8	6	HR1XSQ004J5	HR2XSQ000971	HR3XSQ000J32	HR4XSQ000F19	HR44SQ000BX7
5/8	5/8	8	HR1XSQ004K3	HR2XSQ000989	HR3XSQ000J40	HR4XSQ000F27	HR44SQ000BY5
3/4	3/4	4	HR1XSQ004Y2	HR2XSQ0009G6	HR3XSQ000JB9	HR4XSQ000FA4	HR44SQ000C53
3/4	3/4	6	HR1XSQ00519	HR2XSQ0009K7	HR3XSQ000JD4	HR4XSQ000FC0	HR44SQ000C61
3/4	3/4	8	HR1XSQ00527	HR2XSQ0009L5	HR3XSQ000JE2	HR4XSQ000FD7	HR44SQ000C79
1	1	5	-	HR2XSQ0009Y6	-	-	-
1	1	6	HR1XSQ005H9	HR2XSQ000A08	HR3XSQ000JQ6	HR4XSQ000FQ9	HR44SQ000CD0
1	1	8	HR1XSQ005K2	HR2XSQ000A24	HR3XSQ000JS1	HR4XSQ000FR7	HR44SQ000CE8

NOTE: TIN COATED HSS Tools are also available on request. Intermediate Sizes are available on request. Packing: Plastic Boxes only

HSS Square Tools Bits | (Metric Sizes)

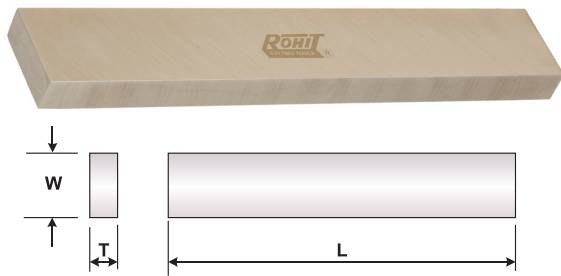


Tolerance (Width/Thickness)	h13
Tolerance (Length)	+/- 1.0mm
End Bevel	15°
Optional Bevel	0°/ 10°

Width (W) (mm)	Width (W) (mm)	Overall Length (L) (mm)	1X (M2, 0%Co)	2X (M35, 5%Co)	Sp (M42, 8%Co)	3X (T42, 10%Co)	EC-500 (T42-Cryo)
3	3	75	HR1XSQ000B7	HR2XSQ00617	HR3XSQ000G35	HR4XSQ000CK5	HR44SQ00A89
3	3	100	HR1XSQ000C5	HR2XSQ00625	HR3XSQ000G43	HR4XSQ000CL3	HR44SQ00A97
5	5	75	HR1XSQ00139	HR2XSQ006L8	HR3XSQ000GF3	HR4XSQ000CZ2	HR44SQ00AK7
5	5	100	HR1XSQ00154	HR2XSQ006M6	HR3XSQ000GG1	HR4XSQ000D03	HR44SQ00AL5
5	5	150	HR1XSQ00162	HR2XSQ006N3	HR3XSQ000GH9	HR4XSQ000D11	HR44SQ00AM3
6	6	75	HR1XSQ001B6	HR2XSQ006R5	HR3XSQ000GK2	HR4XSQ000D45	HR44SQ00AN0
6	6	100	HR1XSQ001D1	HR2XSQ006S2	HR3XSQ000GL0	HR4XSQ000D52	HR44SQ00AP6
6	6	150	HR1XSQ001F7	HR2XSQ006T0	HR3XSQ000GM8	HR4XSQ000D60	HR44SQ00AQ4
6	6	200	HR1XSQ001G5	HR2XSQ006U8	HR3XSQ000GN5	HR4XSQ000D78	HR44SQ00AR2
8	8	75	HR1XSQ00261	HR2XSQ007G8	HR3XSQ000H26	HR4XSQ000DS6	HR44SQ00B13
8	8	100	HR1XSQ00295	HR2XSQ007H6	HR3XSQ000H34	HR4XSQ000DT4	HR44SQ00B21
8	8	150	HR1XSQ002B5	HR2XSQ007J1	HR3XSQ000H42	HR4XSQ000DU2	HR44SQ00B39
8	8	200	HR1XSQ002C3	HR2XSQ007K9	HR3XSQ000H59	HR4XSQ000DV0	HR44SQ00B47
10	10	75	HR1XSQ00352	HR2XSQ00864	HR3XSQ000HJ3	HR4XSQ000EA5	HR44SQ00BF7
10	10	100	HR1XSQ00378	HR2XSQ00880	HR3XSQ000HK1	HR4XSQ000EB3	HR44SQ00BG5
10	10	150	HR1XSQ00394	HR2XSQ00898	HR3XSQ000HL9	HR4XSQ000EC1	HR44SQ00BH3
10	10	200	HR1XSQ003A6	HR2XSQ008A0	HR3XSQ000HM7	HR4XSQ000ED8	HR44SQ00BJ8
10	10	250	HR1XSQ003B4	HR2XSQ008B8	HR3XSQ000HN4	HR4XSQ000EE6	HR44SQ00BK6
12	12	75	HR1XSQ003K4	HR2XSQ008D3	HR3XSQ000HP0	HR4XSQ000EH0	HR44SQ00BL4
12	12	100	HR1XSQ003L2	HR2XSQ008F9	HR3XSQ000HQ8	HR4XSQ000EJ5	HR44SQ00BM2
12	12	150	HR1XSQ003M0	HR2XSQ008J0	HR3XSQ000HR6	HR4XSQ000EK3	HR44SQ00BN9
12	12	200	HR1XSQ003N7	HR2XSQ008K8	HR3XSQ000HS3	HR4XSQ000EL1	HR44SQ00BP5
12	12	250	HR1XSQ003P3	HR2XSQ008L6	HR3XSQ000HT1	HR4XSQ000EM9	HR44SQ00BQ3
16	16	100	HR1XSQ004M9	HR2XSQ00997	HR3XSQ000J57	HR4XSQ000F35	HR44SQ00BZ3
16	16	150	HR1XSQ004P2	HR2XSQ009A9	HR3XSQ000J65	HR4XSQ000F43	HR44SQ000C04
16	16	200	HR1XSQ004Q0	HR2XSQ009B7	HR3XSQ000J73	HR4XSQ000F50	HR44SQ000C12
20	20	100	HR1XSQ00543	HR2XSQ009M3	HR3XSQ000JF0	HR4XSQ000FF3	HR44SQ000C87
20	20	150	HR1XSQ00550	HR2XSQ009N0	HR3XSQ000JG8	HR4XSQ000FG1	HR44SQ000C95
20	20	200	HR1XSQ00568	HR2XSQ009Q4	HR3XSQ000JH6	HR4XSQ000FH9	HR44SQ000CA7
25	25	150	HR1XSQ005B2	HR2XSQ009V3	HR3XSQ000JL7	HR4XSQ000FL0	HR44SQ000CB5
25	25	200	HR1XSQ005D7	HR2XSQ009W1	HR3XSQ000JM5	HR4XSQ000FM8	HR44SQ000CC3

NOTE: TIN COATED HSS Tools are also available on request. Intermediate Sizes are available on request. Packing: Plastic Boxes only

HSS Rectangular (Flat) Tools Bits | (Inch Sizes)



Tolerance (Width/Thickness)	h13
Tolerance (Length)	+/- 1.0mm
End Bevel	0°
Optional Bevel	As per Requirement

Thickness (T) (Inches)	Width (W) (Inches)	Overall Length (L) (Inches)	1X (M2, 0%Co)	2X (M35, 5%Co)	3X (T42, 10%Co)
1/8	3/8	8	HR1XRE002M8	HR2XRE00C45	HR4XRE00PA1
1/8	1/2	6	HR1XRE002P1	HR2XRE00C52	HR4XRE00PC7
1/8	1/2	8	HR1XRE002Q9	HR2XRE00C60	HR4XRE00PD4
1/8	5/8	6	HR1XRE002S4	HR2XRE00C78	HR4XRE00PE2
1/8	5/8	8	HR1XRE002T2	HR2XRE00C86	HR4XRE00PF0
1/8	3/4	6	HR1XRE002W6	HR2XRE00CA6	HR4XRE00PG8
1/8	3/4	8	HR1XRE002X3	HR2XRE00CB4	HR4XRE00PH6
1/8	1	6	HR1XRE00318	HR2XRE00CC2	HR4XRE00PJ1
1/8	1	8	HR1XRE00326	HR2XRE00CD9	HR4XRE00PK9
5/32	3/4	6	HR1XRE003H8	HR2XRE00CJ6	HR4XRE00PT9
5/32	3/4	8	HR1XRE003J3	HR2XRE00CK4	HR4XRE00PU7
3/16	1/2	6	HR1XRE004P9	HR2XRE00D44	HR4XRE00QH5
3/16	1/2	8	HR1XRE004Q7	HR2XRE00D51	HR4XRE00QJ0
3/16	3/4	6	HR1XRE004U8	HR2XRE00D85	HR4XRE00QM4
3/16	3/4	8	HR1XRE004V6	HR2XRE00D93	HR4XRE00QN1
3/16	1	6	HR1XRE004X1	HR2XRE00DB3	HR4XRE00QP7
3/16	1	8	HR1XRE004Y9	HR2XRE00DC1	HR4XRE00QQ5
1/4	5/8	6	HR1XRE006L6	HR2XRE00ED7	HR4XRE00RR2
1/4	5/8	8	HR1XRE006M4	HR2XRE00EE5	HR4XRE00RS9
1/4	3/4	6	HR1XRE006P7	HR2XRE00EF3	HR4XRE00RU5
1/4	3/4	8	HR1XRE006Q5	HR2XRE00EG1	HR4XRE00RV3
1/4	1	6	HR1XRE006T8	HR2XRE00EH9	HR4XRE00RW1
1/4	1	8	HR1XRE006U6	HR2XRE00EJ4	HR4XRE00RX8
5/16	3/4	6	HR1XRE007G6	HR2XRE00ES4	HR4XRE00SD1
5/16	3/4	8	HR1XRE007H4	HR2XRE00ET2	HR4XRE00SE9
3/8	1/2	4	HR1XRE008K6	HR2XRE00FN4	HR4XRE00TC3
3/8	1/2	6	HR1XRE008L4	HR2XRE00FP0	HR4XRE00TD0
3/8	1/2	8	HR1XRE008M2	HR2XRE00FQ8	HR4XRE00TE8
3/8	3/4	6	HR1XRE008U4	HR2XRE00FW5	HR4XRE00TK5
3/8	3/4	8	HR1XRE008V2	HR2XRE00FX2	HR4XRE00TL3
3/8	1	6	HR1XRE008Y5	HR2XRE00FY0	HR4XRE00TP4
3/8	1	8	HR1XRE008Z3	HR2XRE00FZ8	HR4XRE00TQ2

HSS Rectangular (Flat) Tools Bits | (Inch Sizes)

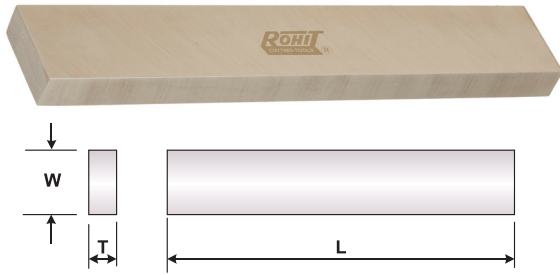
Thickness (T) (Inches)	Width (W) (Inches)	Overall Length (L) (Inches)	1X (M2, 0%Co)	2X (M35, 5%Co)	3X (T42, 10%Co)
3/8	1+1/4	6	HR1XRE00912	HR2XRE00G17	HR4XRE00TS7
3/8	1+1/4	8	HR1XRE00920	HR2XRE00G25	HR4XRE00TT5
3/8	1+1/2	6	HR1XRE00938	HR2XRE00G33	HR4XRE00TY4
3/8	1+1/2	8	HR1XRE00946	HR2XRE00G41	HR4XRE00TZ2
1/2	5/8	6	HR1XRE00A89	HR2XRE00GY9	HR4XRE00UU2
1/2	5/8	8	HR1XRE00A97	HR2XRE00GZ7	HR4XRE00UV0
1/2	3/4	6	HR1XRE00AB7	HR2XRE00H08	HR4XRE00UW8
1/2	3/4	8	HR1XRE00AC5	HR2XRE00H16	HR4XRE00UX5
1/2	1	6	HR1XRE00AF8	HR2XRE00H24	HR4XRE00V28
1/2	1	8	HR1XRE00AH4	HR2XRE00H32	HR4XRE00V36
1/2	1+1/4	6	HR1XRE00AL5	HR2XRE00H40	HR4XRE00V44
1/2	1+1/4	8	HR1XRE00AM3	HR2XRE00H57	HR4XRE00V51
1/2	1+1/2	6	HR1XRE00AN0	HR2XRE00H65	HR4XRE00V77
1/2	1+1/2	8	HR1XRE00AP6	HR2XRE00H73	HR4XRE00V85
5/8	3/4	6	HR1XRE00AT7	HR2XRE00H81	HR4XRE00VC1
5/8	3/4	8	HR1XRE00AU5	HR2XRE00H99	HR4XRE00VD8
5/8	1	6	HR1XRE00AV3	HR2XRE00HA1	HR4XRE00VE6
5/8	1	8	HR1XRE00AW1	HR2XRE00HC7	HR4XRE00VF4
3/4	1	6	HR1XRE00B47	HR2XRE00HJ1	HR4XRE00VP2
3/4	1	8	HR1XRE00B62	HR2XRE00HK9	HR4XRE00VQ0

Features

- Flat Tool Bits comes with 0° End Bevel Angles , but on special requirement or drawings bevel angles are provided.
- Standard tolerance of h13 is followed for all our Rectangular tool bits, specific tolerance can be manufactured on request.

NOTE: TIN COATED HSS Tools are also available on request. Intermediate Sizes are available on request.
Packing: Plastic Boxes only

HSS Rectangular (Flat) Tools Bits | (Metric Sizes)



Tolerance (Width/Thickness)	h13
Tolerance (Length)	+/- 1.0mm
End Bevel	0°
Optional Bevel	As per Requirement

Thickness (T) (mm)	Width (W) (mm)	Overall Length (L) (mm)	1X (M2, 0%Co)	2X (M35, 5%Co)	3X (T42, 10%Co)
2	12	200	HR1XRE00151	HR2XRE00BL3	HR4XRE00NH8
2	19.05	203.2	HR1XRE001C1	HR2XRE00BM1	HR4XRE00NK1
2.2	19.05	203.2	HR1XRE001J5	-	-
2.5	12	200	HR1XRE001Q0	HR2XRE00BP4	HR4XRE00NM7
2.5	19.05	203.2	HR1XRE001V9	HR2XRE00BS7	HR4XRE00NQ8
3	12	150	HR1XRE00235	HR2XRE00BW9	HR4XRE00NZ8
3	12	200	HR1XRE00250	HR2XRE00BX6	HR4XRE00P08
3	16	150	HR1XRE00276	HR2XRE00BY4	HR4XRE00P16
3	16	200	HR1XRE00292	HR2XRE00BZ2	HR4XRE00P24
3	19	150	HR1XRE002B2	HR2XRE00C03	HR4XRE00P32
3	19	200	HR1XRE002C0	HR2XRE00C11	HR4XRE00P40
3	25	150	HR1XRE002F3	HR2XRE00C29	HR4XRE00P65
3	25	200	HR1XRE002G1	HR2XRE00C37	HR4XRE00P73
4	16	150	HR1XRE00433	HR2XRE00CT4	HR4XRE00Q15
4	16	200	HR1XRE00441	HR2XRE00CU2	HR4XRE00Q23
4	19	150	HR1XRE00458	HR2XRE00CV0	HR4XRE00Q49
4	19	200	HR1XRE00466	HR2XRE00CW8	HR4XRE00Q56
4	20	150	HR1XRE00474	HR2XRE00CY3	HR4XRE00Q64
4	20	200	HR1XRE00482	HR2XRE00CZ1	HR4XRE00Q72
4	25	150	HR1XRE00490	HR2XRE00D02	HR4XRE00Q80
4	25	200	HR1XRE004A2	HR2XRE00D10	HR4XRE00Q98
5	16	150	HR1XRE005A1	HR2XRE00DM9	HR4XRE00QX9
5	16	200	HR1XRE005B9	HR2XRE00DN6	HR4XRE00QY7
5	19	150	HR1XRE005D4	HR2XRE00DP2	HR4XRE00QZ5
5	19	200	HR1XRE005E2	HR2XRE00DQ0	HR4XRE00R06
5	25	150	HR1XRE005L7	HR2XRE00DS5	HR4XRE00R22
5	25	200	HR1XRE005M5	HR2XRE00DT3	HR4XRE00R30
6	12	150	HR1XRE005Y8	HR2XRE00DX4	HR4XRE00R63
6	12	200	HR1XRE00607	HR2XRE00DY2	HR4XRE00R71
6	16	150	HR1XRE00615	HR2XRE00E01	HR4XRE00RA9
6	16	200	HR1XRE00623	HR2XRE00E19	HR4XRE00RB7

HSS Rectangular (Flat) Tools Bits | (Metric Sizes)

Thickness (T) (mm)	Width (W) (mm)	Overall Length (L) (mm)	1X (M2, 0%Co)	2X (M35, 5%Co)	3X (T42, 10%Co)
6	19	150	HR1XRE00631	HR2XRE00E27	HR4XRE00RD2
6	19	200	HR1XRE00649	HR2XRE00E35	HR4XRE00RE0
6	25	150	HR1XRE00672	HR2XRE00E50	HR4XRE00RG6
6	25	200	HR1XRE00680	HR2XRE00E68	HR4XRE00RH4
8	16	150	HR1XRE007V3	HR2XRE00F18	HR4XRE00SR1
8	16	200	HR1XRE007W1	HR2XRE00F26	HR4XRE00SS8
8	19	150	HR1XRE007X8	HR2XRE00F34	HR4XRE00ST6
8	19	200	HR1XRE007Y6	HR2XRE00F42	HR4XRE00SU4
8	20	63	HR1XRE007Z4	-	-
8	25	150	HR1XRE00813	HR2XRE00F67	HR4XRE00SV2
8	25	200	HR1XRE00821	HR2XRE00F75	HR4XRE00SW0
10	16	150	HR1XRE009B5	HR2XRE00GA2	HR4XRE00U52
10	16	200	HR1XRE009C3	HR2XRE00GB0	HR4XRE00U60
10	25	150	HR1XRE009J7	HR2XRE00GF1	HR4XRE00U94
10	25	200	HR1XRE009K5	HR2XRE00GG9	-
12	16	150	HR1XRE009R0	HR2XRE00GN3	HR4XRE00UF5
12	16	200	HR1XRE009S7	HR2XRE00GP9	HR4XRE00UG3
12	25	150	HR1XRE009Y4	HR2XRE00GS2	HR4XRE00UM0
12	25	200	HR1XRE009Z2	HR2XRE00GT0	HR4XRE00UN7
16	25	150	HR1XRE00B13	HR2XRE00HF0	HR4XRE00VL1
16	25	200	HR1XRE00B21	HR2XRE00HG8	HR4XRE00VM9
20	25	150	HR1XRE00BB6	HR2XRE00HM5	HR4XRE00VR8
20	25	200	HR1XRE00BC4	HR2XRE00HN2	HR4XRE00VS5

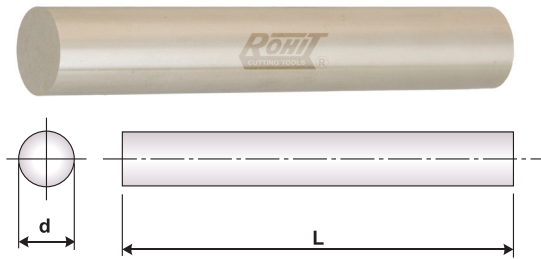
Features

- Flat Tool Bits comes with 0* End Bevel Angles , but on special requirement or drawings bevel angles are provided.
- Standard tolerance of h13 is followed for all our Rectangular tool bits, specific tolerance can be manufactured on request.

NOTE: TIN COATED HSS Tools are also available on request.

Intermediate Sizes are available on request.

Packing: Plastic Boxes only



Tolerance (Diameter)	h9
Tolerance (Length)	+/- 1.0mm
End Bevel	0°

Diameter (d) (Inches)	Overall Length (L) (Inches)	1X (M2, 0%Co)	2X (M35, 5%Co)	Sp (M42, 8%Co)	3X (T42, 10%Co)
1/8	3	HR1XRD005H8	HR2XRD01E35	HR3XRD01RJ0	HR4XRD01KF5
1/8	4	HR1XRD005J3	HR2XRD01E43	HR3XRD01RK8	HR4XRD01KG3
5/32	3	HR1XRD00724	HR2XRD01EF3	-	HR4XRD01KQ1
5/32	4	HR1XRD00732	HR2XRD01EG1	-	HR4XRD01KR9
3/16	3	HR1XRD008Q5	HR2XRD01EU0	HR3XRD01RU6	HR4XRD01L51
3/16	4	HR1XRD008R3	HR2XRD01EV8	HR3XRD01RV4	HR4XRD01L69
3/16	6	HR1XRD008S0	HR2XRD01EW6	HR3XRD01RW2	HR4XRD01L77
7/32	3	HR1XRD00AB9	HR2XRD01F75	-	HR4XRD01LH0
7/32	4	HR1XRD00AC7	HR2XRD01F83	-	HR4XRD01LJ5
7/32	6	HR1XRD00AD4	HR2XRD01F91	-	HR4XRD01LK3
1/4	3	HR1XRD00BY7	HR2XRD01FP0	HR3XRD01SB7	HR4XRD01LU1
1/4	4	HR1XRD00BZ5	HR2XRD01FQ8	HR3XRD01SC5	HR4XRD01LV9
1/4	6	HR1XRD00C06	HR2XRD01FR6	HR3XRD01SD2	HR4XRD01LW7
1/4	8	HR1XRD00C14	HR2XRD01FS3	HR3XRD01SE0	HR4XRD01LX4
5/16	3	HR1XRD00F11	HR2XRD01G33	HR3XRD01SN0	HR4XRD01MB2
5/16	4	HR1XRD00F29	HR2XRD01G41	HR3XRD01SP6	HR4XRD01MC0
5/16	6	HR1XRD00F37	HR2XRD01G58	HR3XRD01SQ4	HR4XRD01MD7
5/16	8	HR1XRD00F45	HR2XRD01G66	HR3XRD01SR2	HR4XRD01ME5
3/8	3	HR1XRD00J82	HR2XRD01GP9	HR3XRD01T39	HR4XRD01MU0
3/8	4	HR1XRD00J90	HR2XRD01GQ7	HR3XRD01T47	HR4XRD01MV8
3/8	6	HR1XRD00JA2	HR2XRD01GR5	HR3XRD01T54	HR4XRD01MW6
3/8	8	HR1XRD00JB0	HR2XRD01GS2	HR3XRD01T62	HR4XRD01MX3
3/8	10	HR1XRD00JC8	HR2XRD01GT0	HR3XRD01T70	HR4XRD01MY1
1/2	3	HR1XRD00Q51	HR2XRD01HD4	HR3XRD01TQ3	HR4XRD01NL9
1/2	4	HR1XRD00Q77	HR2XRD01HE2	HR3XRD01TR1	HR4XRD01NM7
1/2	6	HR1XRD00Q85	HR2XRD01HF0	HR3XRD01TS8	HR4XRD01NN4
1/2	8	HR1XRD00Q93	HR2XRD01HG8	HR3XRD01TT6	HR4XRD01NP0
1/2	10	HR1XRD00QA5	HR2XRD01HH6	HR3XRD01TU4	HR4XRD01NQ8
5/8	4	HR1XRD00VW2	HR2XRD01J22	HR3XRD01U38	HR4XRD01PF0
5/8	6	HR1XRD00VZ5	HR2XRD01J30	HR3XRD01U46	HR4XRD01PG8
5/8	8	HR1XRD00W06	HR2XRD01J48	HR3XRD01U53	HR4XRD01PH6

HSS Round Tool Bits | (Inch Sizes)

Diameter (d) (Inches)	Overall Length (L) (Inches)	1X (M2, 0%Co)	2X (M35, 5%Co)	Sp (M42, 8%Co)	3X (T42, 10%Co)
3/4	4	HR1XRD011V9	HR2XRD01JE0	HR3XRD01UC3	HR4XRD01Q07
3/4	6	HR1XRD011W7	HR2XRD01JF8	HR3XRD01UD0	HR4XRD01Q15
3/4	8	HR1XRD011X4	HR2XRD01JG6	HR3XRD01UE8	HR4XRD01Q23
7/8	4	HR1XRD017R2	HR2XRD01JM3	HR3XRD01UJ7	-
7/8	6	HR1XRD017S9	HR2XRD03AQ9	-	-
7/8	8	HR1XRD017T7	-	-	HR4XRD01Q80
1	4	HR1XRD01CW9	HR2XRD01JR2	HR3XRD01UP4	HR4XRD01QF9
1	6	HR1XRD01CX6	HR2XRD01JS9	HR3XRD01UQ2	HR4XRD01QG7
1	8	HR1XRD01CY4	HR2XRD01JT7	HR3XRD01UR0	HR4XRD01QH5

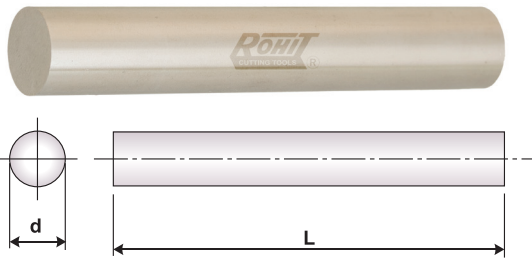
Features

- Round Tool Bits comes with 0* End Bevel Angles.
- Standard tolerance of h9 is followed for all our Round tool bits.
- More than 12000+ sizes of Round HSS Tool bits are in stock to choose from in all materials put together.

Application : Used for making special HSS punches, special tools, engraving bits, other types of tools or used as tool bits in lather or auto-mat machines.

NOTE: TIN COATED HSS Tools are also available on request. Intermediate Sizes are available on request.
Packing: Plastic Boxes only

HSS Round Tool Bits | (Metric Sizes)



Tolerance (Diameter)	h9
Tolerance (Length)	+/- 1.0mm
End Bevel	0°

Diameter (d) (mm)	Overall Length (L) (mm)	1X (M2, 0%Co)	2X (M35, 5%Co)	Sp (M42, 8%Co)	3X (T42, 10%Co)
2	75	HR1XRD00377	HR2XRD01DE6	HR3XRD01R80	HR4XRD01K11
2	100	HR1XRD00385	HR2XRD01DF4	-	HR4XRD01K29
2.5	75	HR1XRD00484	HR2XRD01DS5	HR3XRD01RC6	HR4XRD01K86
2.5	100	HR1XRD00492	-	HR3XRD01RD3	HX4XRD01K66
3	75	HR1XRD00567	HR2XRD01DZ0	HR3XRD01RG7	HR4XRD01KB4
3	100	HR1XRD00575	HR2XRD01E01	HR3XRD01RH5	HX4XRD01KA2
3.5	75	HR1XRD00641	HR2XRD01E76	HR3XRD01RL6	HR4XRD01KM0
3.5	100	HR1XRD00666	HR2XRD01E84	HR3XRD01RM4	HX4XRD01KL8
4	75	HR1XRD007A1	HR2XRD01EJ4	HR3XRD01RQ5	HR4XRD01KT4
4	100	HR1XRD007B9	HR2XRD01EK2	HR3XRD01RR3	HX4XRD01KS2
4.5	75	HR1XRD00880	HR2XRD01EQ9	HR3XRD02W83	HR4XRD01L28
4.5	100	HR1XRD00898	HR2XRD01ER7	HR3XRD01RT8	HX4XRD01L16
5	75	HR1XRD00989	HR2XRD01EY1	HR3XRD01RY7	HR4XRD01L93
5	100	HR1XRD009A9	HR2XRD01EZ9	HR3XRD01RZ5	HR4XRD01LA5
5	150	HR1XRD009B7	HR2XRD01F00	HX3XRD01RX5	HX4XRD01L81
5.5	75	HR1XRD00A65	HR2XRD01F26	HR3XRD01S14	HR4XRD01LE6
5.5	100	HR1XRD00A73	HR2XRD01F34	HR3XRD01S22	HR4XRD01LF4
5.5	150	HR1XRD00A81	HR2XRD01F42	HR3XRD01S30	HR4XRD01LG2
6	75	HR1XRD00B98	HR2XRD01FH8	HR3XRD01S71	HR4XRD01LN6
6	100	HR1XRD00BA0	HR2XRD01FJ3	HR3XRD01S89	HR4XRD01LP2
6	150	HR1XRD00BB8	HR2XRD01FK1	HR3XRD01S97	HR4XRD01LQ0
6	200	HR1XRD00BC6	HR2XRD01FL9	HR3XRD01SA9	HR4XRD01LR8
6.5	75	HR1XRD00C89	HR2XRD01FT1	HR3XRD01SF8	HR4XRD01LY2
6.5	100	HR1XRD00C97	HR2XRD01FU9	HR3XRD01SG6	HR4XRD01LZ0
6.5	150	HR1XRD00CA9	HR2XRD01FV7	HR3XRD01SH4	HR4XRD01M01
6.5	200	HR1XRD00CB7	-	-	HR4XRD01M19
7	75	HR1XRD00D88	HR2XRD01FX2	HR3XRD01SJ9	HR4XRD01M27
7	100	HR1XRD00D96	HR2XRD01FY0	HR3XRD01SK7	HR4XRD01M35
7	150	HR1XRD00DA8	HR2XRD01FZ8	-	HR4XRD01M43
7	200	HR1XRD00DB6	HR2XRD03AT2	-	HR4XRD01M50
7.5	75	HR1XRD00E53	HR2XRD01G09	HR3XRD036J4	HR4XRD01M76
7.5	100	HR1XRD00E61	HR2XRD01G17	HR3XRD01SM3	HR4XRD01M84
7.5	150	HR1XRD00E79	HR2XRD01G25	-	HR4XRD01M92

HSS Round Tool Bits | (Metric Sizes)



Diameter (d) (mm)	Overall Length (L) (mm)	1X (M2, 0%Co)	2X (M35, 5%Co)	Sp (M42, 8%Co)	3X (T42, 10%Co)
8	75	HR1XRD00F86	HR2XRD01G82	HR3XRD01SS9	HR4XRD01MF3
8	100	HR1XRD00F94	HR2XRD01G90	HR3XRD01ST7	HR4XRD01MG1
8	150	HR1XRD00FB4	HR2XRD01GA2	HR3XRD01SU5	HR4XRD01MH9
8	200	HR1XRD00FC2	HR2XRD01GB0	HR3XRD01SV3	HR4XRD01MJ4
8.5	75	HR1XRD00G85	HR2XRD01GE3	-	-
8.5	100	HR1XRD00G93	HR2XRD036D8	-	HR4XRD01MM8
8.5	150	HR1XRD00GA5	HR2XRD01GF1	HR3XRD03825	-
9	75	HR1XRD00H50	HR2XRD01GG9	HR3XRD01SX8	HR4XRD01MP1
9	100	HR1XRD00H68	HR2XRD01GH7	HR3XRD01SY6	HR4XRD01MQ9
9	150	HR1XRD00H76	HR2XRD01GJ2	HR3XRD01T05	HR4XRD01MR7
9	200	HR1XRD00H84	HR2XRD01GK0	HR3XRD01T13	HR4XRD01MS4
9	250	HR1XRD00H92	HR2XRD01GL8	HR3XRD01T21	HR4XRD01MT2
9.5	75	HR1XRD00J17	-	-	-
9.5	100	HR1XRD00J25	-	-	-
9.5	150	HR1XRD00J41	HR2XRD01GM6	-	-
9.5	200	HR1XRD00J58	-	-	HR4XRD03675
10	75	HR1XRD00K57	HR2XRD01GV6	HR3XRD01T88	HR4XRD01MZ9
10	100	HR1XRD00K65	HR2XRD01GW4	HX3XRD02YW9	HR4XRD01N00
10	150	HR1XRD00K81	HR2XRD01GX1	HR3XRD01TA8	HR4XRD01N18
10	200	HR1XRD00K99	HR2XRD01GY9	HR3XRD01TB6	HR4XRD01N26
10	250	HR1XRD00KA1	HR2XRD01GZ7	HR3XRD01TC4	HR4XRD01N34
11	75	HR1XRD00M06	HR2XRD01H24	-	HR4XRD01N42
11	100	HR1XRD00M22	HR2XRD01H32	HR3XRD01TE9	HR4XRD01N59
11	150	HR1XRD00M48	HR2XRD01H40	HR3XRD039B9	HR4XRD01N67
12	75	HR1XRD00P11	HR2XRD01H73	HR3XRD01TK6	HR4XRD01NB1
12	100	HR1XRD00P37	HR2XRD01H81	HR3XRD01TL4	HR4XRD01NC9
12	150	HR1XRD00P52	HR2XRD01H99	HR3XRD01TM2	HR4XRD01ND6
12	200	HR1XRD00P60	HR2XRD01HA1	HR3XRD01TN9	HR4XRD01NE4
12	250	HR1XRD00P78	HR2XRD01HB9	HR3XRD01TP5	HR4XRD01NF2
13	75	HR1XRD00QN6	HR2XRD01HK9	HR3XRD01TV2	HR4XRD01NR6
13	100	HR1XRD00QQ0	HR2XRD01HL7	-	HR4XRD01NS3
13	150	HR1XRD00QR8	HR2XRD01HM5	-	HR4XRD01NT1
14	75	HR1XRD00SG0	HR2XRD01HR4	-	HR4XRD01NY0
14	100	HR1XRD00SH8	HR2XRD01HS1	HR3XRD01TZ3	HR4XRD01NZ8
14	150	HR1XRD00SJ3	HR2XRD01HT9	HR3XRD01U04	HR4XRD01P08
14	200	HR1XRD00SK1	HR2XRD03H38	-	HR4XRD01P24
15	100	HR1XRD00U99	HR2XRD01HY8	HR3XRD01U12	HR4XRD01P81
15	150	HR1XRD00UA1	HR2XRD01HZ6	HR3XRD02T29	HR4XRD01P99
16	100	HR1XRD00W97	HR2XRD01J63	HR3XRD01U61	HR4XRD01PK9
16	150	HR1XRD00WA9	HX2XRD02XX8	HR3XRD01U79	HR4XRD01PL7
16	200	HR1XRD00WB7	HR2XRD01J89	HR3XRD01U87	HR4XRD01PN2

Diameter (d) (mm)	Overall Length (L) (mm)	1X (M2, 0%Co)	2X (M35, 5%Co)	Sp (M42, 8%Co)	3X (T42, 10%Co)
17	100	HR1XRD00Y12	-	-	HR4XRD03097
17	150	HR1XRD00Y20	HR2XRD01JA9	-	HR4XRD01PP8
18	100	HR1XRD00ZY3	HR2XRD03HP4	-	HR4XRD01PR4
18	150	HR1XRD00ZZ1	-	HR3XRD03GX6	HR4XRD01PS1
19	100	HR1XRD011Q0	HR2XRD01JB7	HR3XRD01U95	HR4XRD01PW3
19	150	HR1XRD011R8	HR2XRD01JC5	HR3XRD01UA7	HR4XRD01PX0
19	200	HR1XRD011S5	HR2XRD01JD2	HR3XRD01UB5	HR4XRD01PY8
20	100	HR1XRD013M7	HR2XRD01JH4	HR3XRD01UF6	HX4XRD02XT5
20	150	HR1XRD013N4	HR2XRD01JJ9	HR3XRD01UG4	HR4XRD01Q56
20	200	HR1XRD013P0	HR2XRD01JK7	HR3XRD01UH2	HR4XRD01Q64
22	100	HR1XRD017A9	-	-	HR4XRD01Q72
22	150	HR1XRD017B7	-	-	-
25	100	HR1XRD01CR0	HR2XRD01JN0	HR3XRD01UL3	HR4XRD01QC6
25	150	HR1XRD01CS7	HR2XRD01JP6	HR3XRD01UM1	HR4XRD01QD3
25	200	HR1XRD01CT5	HR2XRD01JQ4	HR3XRD01UN8	HR4XRD01QE1

Features

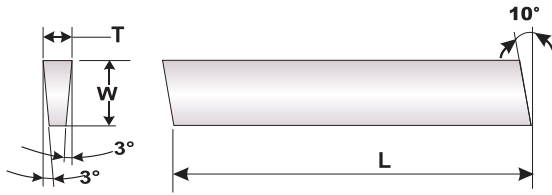
- Round Tool Bits comes with 0° End Bevel Angles.
- Standard tolerance of h9 is followed for all our Round tool bits.
- More than 12000+ sizes of Round HSS Tool bits are in stock to choose from in all materials put together.

Application : Used for making special HSS punches, special tools, engraving bits, other types of tools or used as tool bits in lathe or auto-mat machines.

NOTE: TIN COATED HSS Tools are also available on request.

Intermediate Sizes are available on request.

Packing: Plastic Boxes only



Tolerance (Width/Thickness)	h13
Tolerance (Length)	+/- 1.0mm
End Bevel	10°
Optional Bevel	As per Requirement

Thickness (T) (Inches, * >> mm)	Width (W) (Inches)	Overall Length (L) (Inches)	1X (M2, 0%Co)	2X (M35, 5%Co)	3X (T42, 10%Co)
3/32	1/2	4	HR1XPA000Z2	HR2XPA00250	HR4XPA00357
3/32	5/8	5	HR1XPA00129	HR2XPA00276	HR4XPA00365
1/8	3/4	6	HR1XPA001G3	HR2XPA002E5	HR4XPA003D4
1/8	7/8	6	HR1XPA001H1	HR2XPA002F3	HR4XPA003E2
3/16	1	6	HR1XPA001N7	HR2XPA002K2	HR4XPA003G8
1.5*	1/2	4	HR1XPA000P4	HR2XPA001Y2	-
1.75*	1/2	4	HR1XPA000R0	HR2XPA001Z0	-
1.75*	5/8	5	HR1XPA000S7	-	-

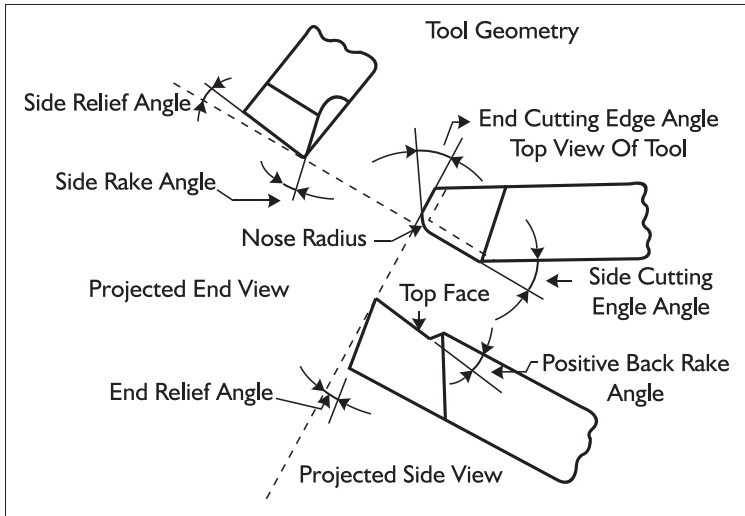
Features

- Parting tools can be manufactured in FORM E & INDEX Type as per customer requirement,
- Standard tolerance of h13 is followed for all our Parting tool bits.
- More than 50+ sizes of Parting Tool bits are in stock to choose from in all grades.
- Parting tool bits are manufactured at RIGPL in varying HSS material grades ranging from ROHIT 1X i.e. M2 or SKH51 grade suitable for Free Cutting Metals to ROHIT EC500 suitable for machining difficult to machine materials like alloy Steels, SS, etc.

NOTE: TIN COATED HSS Tools are also available on request.

Intermediate Sizes are available on request.

Packing: Plastic Boxes only



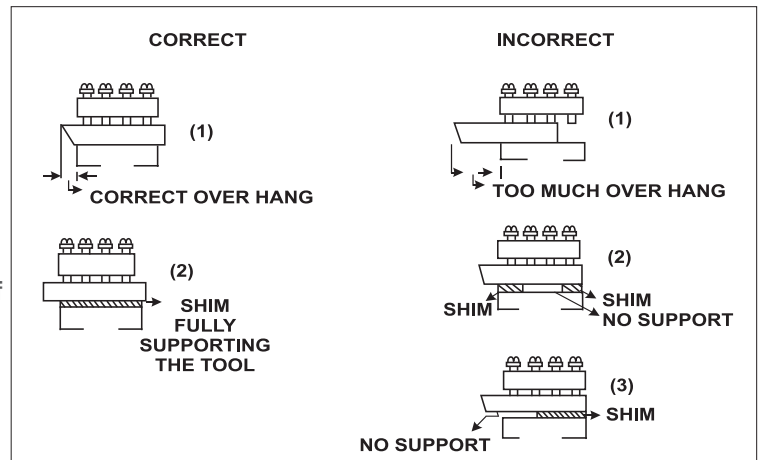
Machining Instructions

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

How To Clamp The Tool

TOOL CLAMPING

- Tool bits should be fitted in the tool post or tool holder with a minimum of overhang as 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.



Recommended Angles for High Speed Steel Single Point Tools



Material	Side Relief angle degrees	End Relief angle degrees	Back Rake angle degrees	Side Rake angle degrees
High Speed, Alloy & High Carbon Tool Steels & Stainless Steel	7 to 9	6 to 8	5 to 7	8 to 10
SAE Steels:				
1020, 1035, 1040	8 to 10	8 to 10	10 to 12	10 to 12
1045, 1095	7 to 9	8 to 10	10 to 12	10 to 12
11,121,120	7 to 9	7 to 9	12 to 14	12 to 14
1314, 1315	7 to 9	7 to 9	12 to 14	14 to 16
1335	7 to 9	7 to 9	12 to 14	14 to 16
23,152,320	7 to 9	7 to 9	8 to 10	10 to 12
233,023,352,340	7 to 9	7 to 9	8 to 10	10 to 12
23,452,350	7 to 9	7 to 9	6 to 8	8 to 10
311,531,203,130	7 to 9	7 to 9	8 to 10	10 to 12
31,353,140	7 to 9	7 to 9	8 to 10	8 to 10
325,041,404,340	7 to 9	7 to 9	6 to 8	8 to 10
61,406,145	7 to 9	7 to 9	6 to 8	8 to 10
Aluminium	12 to 14	8 to 10	30 to 35	14 to 16
Bakelite	10 to 12	8 to 10	0	0
Brass, Free Cutting	10 to 12	8 to 10	0	1 to 3
Red, Yellow, Bronze Cast & Bronze Commercial	8 to 10	8 to 10	0	-2 to -4
Bronze Free Cutting	8 to 10	8 to 10	0	2 to 4
Hard Phosphor Bronze	8 to 10	6 to 8	0	0
Cast Iron, Grey	8 to 10	6 to 8	3 to 5	10 to 12
Copper	12 to 14	12 to 14	14 to 16	18 to 20
Copper Alloys :				
Hard	8 to 10	6 to 8	0	0
Soft	10 to 12	8 to 10	0 to 2	0
Fibre	14 to 16	12 to 14	0 to 2	0
Fernico	14 to 16	10 to 12	14 to 16	10 to 12
Nickel Iron	14 to 16	10 to 12	6 to 8	12 to 14
Micarta	14 to 16	10 to 12	14 to 16	10 to 12
Monel & Nickel	14 to 16	12 to 14	8 to 10	12 to 14
Nickel, Silver	10 to 12	10 to 12	8 to 10	0 to -2
Rubber, Hard	18 to 20	14 to 16	0 to -2	0 to -2

Recommended Cutting Speed & Feed

Recommended Cutting Speed (m/min.)

Material	10% Cobalt T42	8% Cobalt M42	5% Cobalt M35	M2
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 Cut 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 Cut 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.	18-23	15-12	14-11	10-12

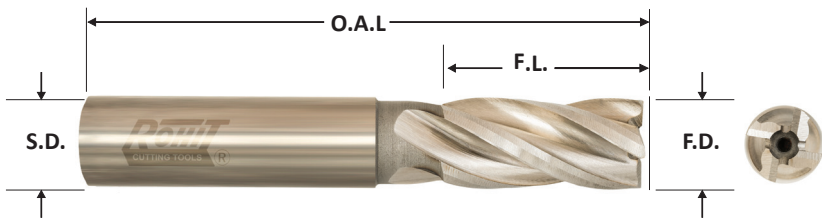
Recommended Depth of cut

Operation	Depth of Cut (mm)
Rough turning	Depth of cut = machining allowance
Semi finish turning	0.50 to 0.20mm
0.50 to 0.20mm	0.40 to 0.10mm

Recommended Feed

Surface Finish μ	Work Material	Range of Cutting Speed m/min.	Nose Radius in mm		
			0.5	1	2
			Feed in mm/rev.		
10	Carbon steel & Alloy steel	<50	0.3-0.5	0.45-0.6	0.55-0.7
		>50	0.4-0.55	0.55-0.65	0.65-0.7
	Cut Iron Bronze & Aluminium Alloys	All range	0.25-0.4	0.40-0.5	0.5-0.6
5	Carbon steels & Alloy steels	<50	0.18-0.25	0.25-0.3	0.3-0.4
		>50	0.25-0.3	0.3-0.35	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	0.1	0.11-0.15	0.15-0.22
		50- 100	0.11-0.16	0.16-0.25	0.25-0.35
		>100	0.16-0.2	0.2 - 0.25	0.25-0.35
	Cast Iron, Bronze & Aluminium Alloys	All range	0.1-0.15	0.15-0.2	0.2-0.35

Indications	Causes	Remedies
Chipping	<p>Too Keen a cutting edge. Chatter. Incorrect tool material. Too much relief. Lack of rigidity. Improper grinding.</p>	<p>Select Correct tool geometry. Prevent Chattering (See Chatter Below). Select suitable grade/quality. Reduce relief. Clamp rigidity. Use suitable grade of wheel for Grinding. Grind to give satisfactory finish to the cutting faces.</p>
Cracking or Breaking	<p>Feed to heavy. Worn out cutting edges Improperly applied coolant. Too much rake or relief. Too much over hang.</p> <p>Lack of rigidity. Too much variation in depth of cut for the size of Tool bit. Improper clamping.</p>	<p>Reduce feed to recommended range. Re-grind the cutting edges. Apply copious flow of coolant. Grind to recommended rake/relief angles. Reduce overhang to the minimum possible extent. Clamp both the work & the tool rigidly. Minimize variation in depth of cut.</p> <p>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.</p>
Chatter	<p>Tool not in centre. Insufficient relief or clearance. Too much rake angle. Nose radius too large. Insufficient H.P.</p>	<p>Reset. Grind with adequate relief. Grind to recommended rake angle. Reduce the nose radius on the tool. Reduce depth of cut & feed.</p>
Tom Finish	<p>Speed too low. Dull tool. Improper grinding.</p>	<p>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</p>
Flank wear	<p>Speed too high. Feed to light. Improper grinding.</p>	<p>Reduce speed as recommended. Increase suitably. See grinding.</p>
Crater wear	<p>Speed too high. Feed too high. Tool of incorrect grade.</p>	<p>Reduce speed. Reduce feed. Select tool material of better hot Hardness.</p>
Glaze	<p>Speed too low. Tool finish rough. Tool little rake.</p>	<p>Use recommended speed. Grind tool with finer grit wheel give finer wheel and give finer finish on the cutting faces. Provide adequate rake.</p>



Tolerance	
F.D. < 3/4"	(+ 0.005"/ - 0.000)
F.D. > 3/4"	(+ 0.010"/ - 0.000)

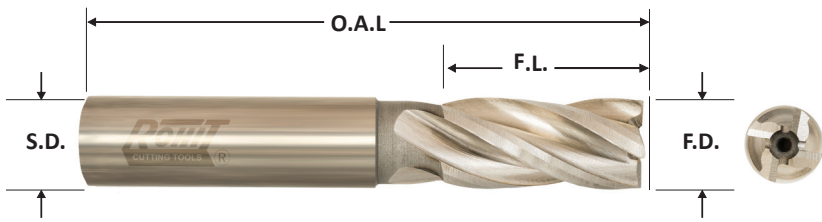
Features

- All HSS End Mills have 30° helical flutes and unmatched hardness to provide longer tool life.
- Sharper cutting edges of HSS End Mills provide longer life,
- HSS end mills comes with 4Flute & 6Flute (for bigger diameter)
- All in-house heat treatment equipment enables RIGPL to provide better hardness & micro structure control of these end mills.

Flute Dia (inch)	Flut Length (inch)	Shank Dia (inch)	Overall Length (inch)	1X (M2, 0%Co)	2X (M35, 5%Co)
1/8	3/8	1/4	1+7/8	HR1XGSE00CU1	HR2XGSE00EB9
5/32	3/8	1/4	1+7/8	HR1XGSE00CV9	HR2XGSE00EC7
3/16	1/2	1/4	2	HR1XGSE00CY2	HR2XGSE00EE2
7/32	1/2	1/4	2	HR1XGSE00D19	HR2XGSE00EG8
1/4	5/8	1/4	2+1/8	HR1XGSE00D35	HR2XGSE00EJ1
5/16	3/4	3/8	2+1/2	HR1XGSE00D50	HR2XGSE00EL7
3/8	7/8	3/8	2+5/8	HR1XGSE00D84	HR2XGSE00EP8
7/16	7/8	1/2	2+5/8	HR1XGSE00DB2	HR2XGSE00ES1
1/2	1	1/2	2+3/4	HR1XGSE00DD7	HR2XGSE00EU7
9/16	1+1/8	1/2	2+7/8	HR1XGSE00DH9	HR2XGSE00EX0
5/8	1+1/4	5/8	3+1/4	HR1XGSE00DL0	HR2XGSE00EZ6
11/16	1+3/8	5/8	3+3/8	HR1XGSE00DP1	HR2XGSE00F23
3/4	1+1/2	5/8	3+1/2	HR1XGSE00DS4	HR2XGSE00F56
13/16	1+5/8	3/4	3+5/8	HR1XGSE00DU0	HR2XGSE00F72
7/8	1+5/8	3/4	3+5/8	HR1XGSE00DX3	HR2XGSE00FA0
1	1+3/4	3/4	3+3/4	HR1XGSE00E18	HR2XGSE00FE1
1+1/8	1+7/8	1	4+1/8	HR1XGSE00E59	HR2XGSE00FJ0

NOTE: Intermediate sizes available only on request as per company MOQ, Specifications Conform to BS122: Part1: 1953

Packing: Single piece plastic boxes.



Tolerance	
F.D.	js14
S.D.	h8

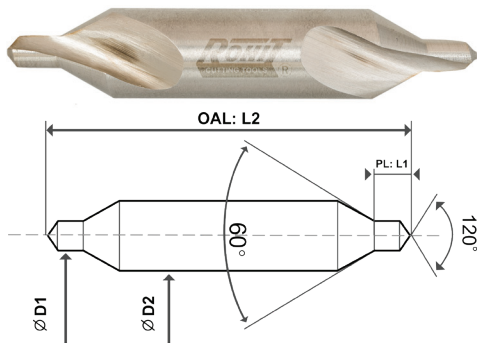
Features

- All HSS End Mills have 30° helical flutes and unmatched hardness to provide longer tool life.
- Sharper cutting edges of HSS End Mills provide longer life,
- HSS end mills comes with 4Flute & 6Flute (for bigger diameter)
- All in-house heat treatment equipment enables RIGPL to provide better hardness & micro structure control of these end mills.

Flute Dia (mm)	Flut Length (mm)	Shank Dia (mm)	Overall Length (mm)	1X (M2, 0%Co)	2X (M35, 5%Co)
3	10	4	42	HR1XGSE00CT3	HR2XGSE00EA1
4	11	4	43	HR1XGSE00CW7	HR2XGSE00ED4
5	13	5	47	HR1XGSE00CZ0	HR2XGSE00EF0
6	16	6	52	HR1XGSE00D27	HR2XGSE00EH6
7	16	8	52	HR1XGSE00D43	HR2XGSE00EK9
8	19	8	59	HR1XGSE00D68	HR2XGSE00EM5
9	19	10	59	HR1XGSE00D76	HR2XGSE00EN2
10	22	10	67	HR1XGSE00D92	HR2XGSE00EQ6
11	22	12	67	HR1XGSE00DA4	HR2XGSE00ER4
12	26	12	76	HR1XGSE00DC0	HR2XGSE00ET9
13	26	12	76	HR1XGSE00DE5	HR2XGSE00EV5
14	26	12	76	HR1XGSE00DF3	HR2XGSE00EW3
15	32	12	88	HR1XGSE00DJ4	HR2XGSE00EY8
16	32	16	88	HR1XGSE00DM8	HR2XGSE00F07
17	32	16	88	HR1XGSE00DN5	HR2XGSE00F15
18	32	16	88	HR1XGSE00DQ9	HR2XGSE00F31
19	38	16	101	HR1XGSE00DR7	HR2XGSE00F49
20	38	20	101	HR1XGSE00DT2	HR2XGSE00F64
22	38	20	101	HR1XGSE00DW6	HR2XGSE00F98
25	45	25	116	HR1XGSE00E00	HR2XGSE00FD3

NOTE: Intermediate sizes available only on request as per company MOQ, Specifications Conform to IS6353:1991.

Packing: Single piece plastic boxes.



Tolerance	
Pilot Dia (D1)	K12
Body Dia (D2)	h9

Specifications conform to
IS 6708: 1977
ISO 866: 1975
DIN 333: 1986
Dimensions in mm

Features

- BSW & DIN 333 Standards sizes are manufactured for HSS Center Drills
- Unmatched precise hardness (HRC) to provide long lasting Center Drill life
- All in-house heat treatment equipment enables RIGPL to provide better hardness & micro structure control of these Centre Drills.
- Type "A" Centre Drill for centre holes without protecting chamfer.

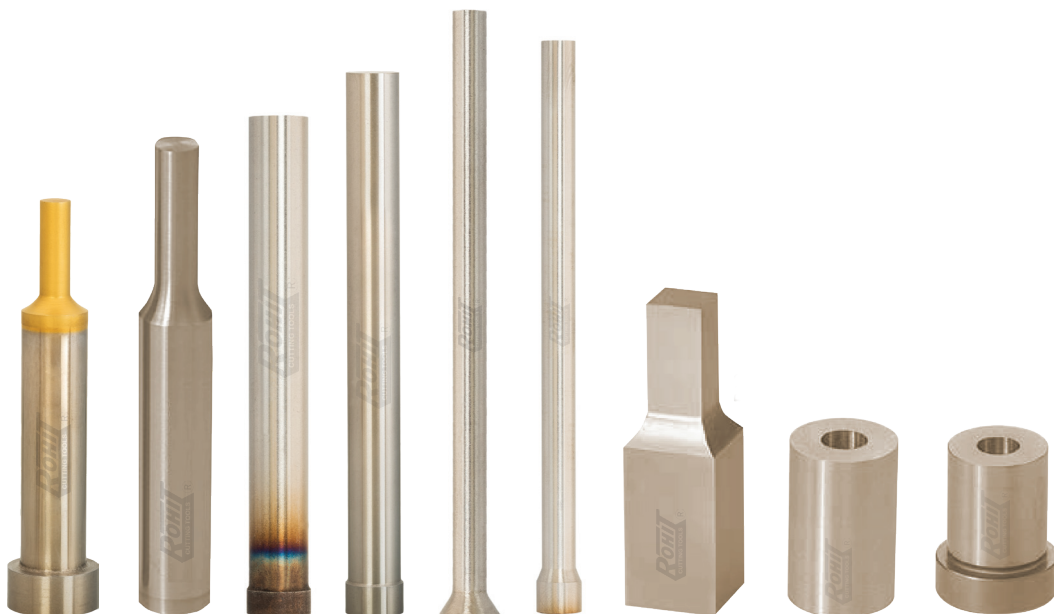
Type	Pilot Dia (inch)	Pilot Length (inch)	Body Dia (inch)	Overall Length (inch)	1X (M2, 0%Co)	2X (M35, 5%Co)
BS1	1/32	1/16	1/8	1+1/2	HR1XCA000B8	HR2XCA000U5
BS2	1/16	5/64	3/16	1+3/4	HR1XCA000D3	HR2XCA000W1
BS3	3/32	1/8	1/4	2	HR1XCA000G7	HR2XCA000Z4
BS4	1/8	5/32	5/16	2+1/4	HR1XCA000K8	HR2XCA00121
BS5	3/16	1/4	7/16	2+1/2	HR1XCA000M4	HR2XCA00147
BS6	1/4	5/16	5/8	3	HR1XCA000Q5	HR2XCA00170
BS7	5/16	13/32	3/4	3+1/2	HR1XCA000R3	HR2XCA00188

Type	Pilot Dia (mm)	Pilot Length (mm)	Body Dia (mm)	Overall Length (mm)	1X (M2, 0%Co)	2X (M35, 5%Co)
DIN 333	1.25	1.8	3.15	31.5	HR1XCA000C6	HR2XCA000V3
DIN 333	1.6	2.4	4	35.5	HR1XCA000E1	HR2XCA000X8
DIN 333	2	2.9	5	40	HR1XCA000F9	HR2XCA000Y6
DIN 333	2.5	3.6	6.3	45	HR1XCA000H5	HR2XCA00105
DIN 333	3.15	4.4	8	50	HR1XCA000J0	HR2XCA00113
DIN 333	4	5.6	10	56	HR1XCA000L6	HR2XCA00139
DIN 333	5	6.9	12.5	63	HR1XCA000N1	HR2XCA00154
DIN 333	6.3	8.6	16	71	HR1XCA000P7	HR2XCA00162
DIN 333	8	10.8	20	80	HR1XCA000S0	HR2XCA00196
DIN 333	10	13.5	25	100	HR1XCA000T8	HR2XCA001A8

NOTE: For TIN COATED HSS Centre Drills contact us for Delivery time & Quote.
Packing: Single piece plastic boxes.

Series	Description	Page No
P101	HSS Straight Punches	180
P102	HSS Tapered Head Punches	181
P103	HSS Straight Punches For Medium Load	182
P104	HSS Straight Punches For Heavy Load	183
P105	HSS Mini Straight Punches	184
P106	HSS Shoulder Punches	185
P107	HSS Shoulder Punches For Heavy Load	186
P108	HSS Shoulder Punches Short Type	187
P109	HSS Tapped Punches	188
P110	HSS Block Punches	189
P112	HSS Straight Button Dies	190
P113	HSS Headed Button Dies	190

Code	Grade	Description	HRc
1X	ROHIT-1X	AISI M2; HS 6 - 5 - 2	60-63
AS	ROHIT-ASP	ASP-2030; HS 6 - 5 -3 -8	62-65



How to Order

Sr. No	For Series P101-P105	Types / Size	Example
1	Select Series	P101 - P105	P103
2	Select HSS Grade	1X / AS	1X
3	Select Head Diameter ("H")	9mm	09
4	Select Body Diameter ("P")	5.5mm	0550
5	Select OAL (Overall Length - "L")	80mm	080
	Ordering Code		P103-1X-09-0550-080

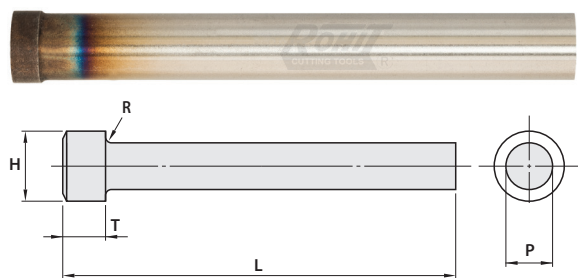
Sr. No	For Series P106-P108	Types / Size	Example
1	Select Series	P106 - P109	P106
2	Select HSS Grade	1X / AS	1X
3	Select Head Diameter ("H")	15mm	15
4	Select TIP Diameter ("P")	10.9mm	1090
5	Select OAL (Overall Length - "L")	100mm	100
6	Select TIP Length ("B")	13mm	13
	Ordering Code		P106-1X-15-1090-100-13

Sr. No	For Series P109	Types / Size	Example
1	Select Series	P109	P109
2	Select HSS Grade	1X / AS	AS
3	Select Head Diameter ("H")	10mm	10
4	Select TIP Diameter ("P")	5.5mm	0550
5	Select OAL (Overall Length - "L")	100mm	100
6	Select TIP Length ("B")	13mm	13
7	Tap Size ("M")	M5	M5
	Ordering Code		P109-AS-10-0550-100-13-M5

Sr. No	For Series P110	Types / Size	Example
1	Select Series	P110	P110
2	Select HSS Grade	1X	1X
3	Select Head Width ("H")	20	20
4	Select Head Height ("V")	8	08
5	Select TIP Width ("W")	6	0600
6	Select TIP Height ("P")	5.5	0550
7	Select TIP Length ("B")	13	13
8	Select OAL (Overall Length - "L")	70mm	070
	Ordering Code		P110- 1X-20-08-0600-0550-13-070

Sr. No	For Series P112	Types / Size	Example
1	Select Series	P112	P112
2	Select HSS Grade	1X	1X
3	Select Body Diameter ("D")	10mm	10
4	Select TIP Diameter ("P")	5.5	0550
5	Select OAL (Overall Length - "L")	30mm	030
	Ordering Code		P112-1X-10-0550-030

Sr. No	For Series P113	Types / Size	Example
1	Select Series	P113	P113
2	Select HSS Grade	1X	1X
3	Select Head Diameter ("H")	13mm	13
4	Select Body Diameter ("P")	5.5	0550
5	Select OAL (Overall Length - "L")	40mm	040
	Ordering Code		P113-1X-13-0550-040



Tolerance	
H	0, -0.2
L	+/-0.5
P	0, -0.02
T	+/-0.3

- Head Length "T" of 50mm Punch - 3mm
- Head Length "T" of above 50mm Length Punches - 5mm
- Sizes below 4mm : No Head Annealing is done

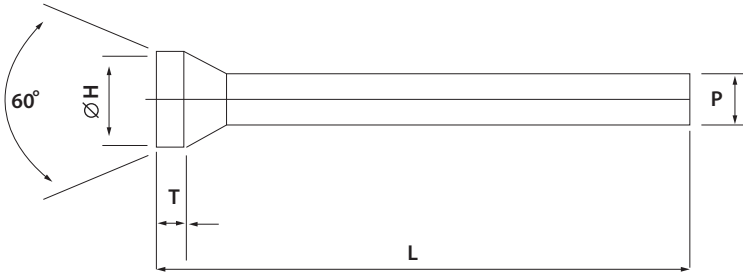
HEAD DIA "H" (mm)	BODY DIA "P" (0.1 mm increments) min. "P" max.	OVERALL LENGTH "L" (mm)			
3	1.1~2.0	50	75		
3.5	2.1~2.5	50	75		
4	2.5~3.0	50	75		
4.5	3.1~3.5	50	75		
5	3.6~4.0	50	75	100	
5.5	4.1~4.5	50	75	100	
6	4.6~5.0	50	75	100	
6.5	5.1~5.5	50	75	100	150
7	5.6~6.0	50	75	100	150
7.5	6.1~6.5	50	75	100	150
8	6.6~7.0	50	75	100	150
8.5	7.1~7.5	50	75	100	150
9	7.6~8.0	50	75	100	150
9.5	8.1~8.5	50	75	100	150
10	8.6~9.0	50	75	100	150
10.5	9.1~9.5		75	100	150
11	9.6~10.0		75	100	150
11.5	10.1~10.5		75	100	150

HEAD DIA "H" (mm)	BODY DIA "P" (0.1 mm increments) min. "P" max.	OVERALL LENGTH "L" (mm)			
12	10.6~11.0		75	100	150
12.5	11.1~11.5		75	100	150
13	11.6~12.0		75	100	150
13.5	12.1~12.5		75	100	150
14	12.6~13.0		75	100	150
14.5	13.1~13.5		75	100	150
15	13.6~14.0		75	100	150
16	14.1~15		75	100	150
17	15.1~16		75	100	150
18	16.1~17		75	100	150
19	17.1~18		75	100	150
20	18.1~19		75	100	150
21	19.1~20		75	100	150
22	20.1~21		75	100	150
23	21.1~22		75	100	150
24	22.1~23		75	100	150
25	23.1~24		75	100	150
26	24.1~25		75	100	150

NOTE: These are company standard punches available in stock or cut to lengths in ROHIT- 1X grade only



Tolerance	
H	0, -0.2
L	+/-0.5
P	0, -0.02
T	+/-0.3

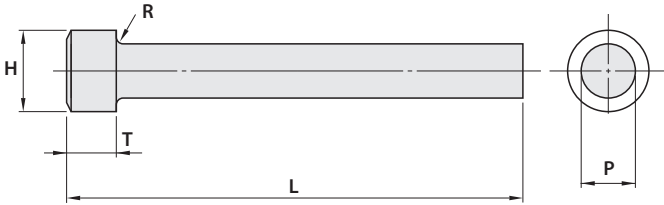


HEAD DIA "H" (mm)	BODY DIA "P" (0.1 mm increments) min. "P" max.	OVERALL LEN "L" (mm)				HEAD LEN "T" (mm)	
4.5	3.0~3.5	50	70	75		0.5	
5	3.5~4.0	50	70	75		0.5	
5.5	4.0~4.5	50	70	75	80	100	0.5
6	4.5~5.0	50	70	75	80	100	0.5
6.5	5.0~5.5	50	70	75	80	100	0.5
7	5.5~6.0	50	70	75	80	100	0.5
8	6.0~6.5	50	70	75	80	100	0.5
9	6.5~7.0	50	70	75	80	100	1
10	7.0~8.0	50	70	75	80	100	1
11	8.0~9.0		70	75	80	100	1
12	9.0~10.0		70	75	80	100	1
13	10.0~11.0		70	75	80	100	1
14	11.0~12.0		70	75	80	100	1

NOTE: This is Non-stock Item, ask your RIGPL representative for Delivery Period



Tolerance	
H	0, -0.2
L	+/-0.5
P	0, -0.02

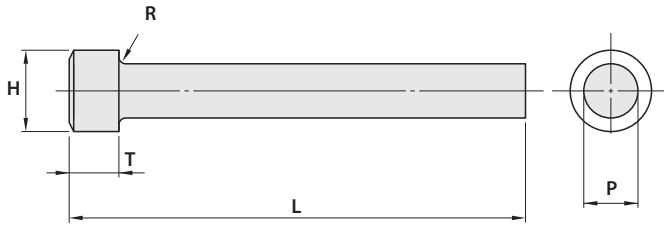


HEAD DIA "H" (mm)	BODY DIA "P" (0.1 mm increments) min. "P" max.	OVERALL LEN "L" (mm)				
		50	70	80	100	120
5	2.1~3.0	50	70	80		
6	3.1~4.0	50	70	80		
7	4.1~5.0	50	70	80		
8	5.1~6.0	50	70	80		
9	6.1~7.0	50	70	80	100	
10	7.1~8.0	50	70	80	100	
11	8.1~9.0	50	70	80	100	
12	9.1~10.0	50	70	80	100	120
13	10.1~11.0	50	70	80	100	120
14	11.1~12.0	50	70	80	100	120
15	12.1~13.0	50	70	80	100	120
16	13.1~14.0		70	80	100	120
17	14.1~15.0		70	80	100	120
18	15.1~16.0		70	80	100	120
19	16.1~17.0		70	80	100	120
20	17.1~18.0		70	80	100	120
21	18.1~19.0		70	80	100	120
22	19.1~20.0		70	80	100	120
23	20.1~21.0		70	80	100	120
24	21.1~22.0		70	80	100	120
25	22.1~23.0		70	80	100	120
26	23.1~24.0		70	80	100	120
27	24.1~25.0		70	80	100	120

NOTE: This is Non-stock Item, ask your RIGPL representative for Delivery Period

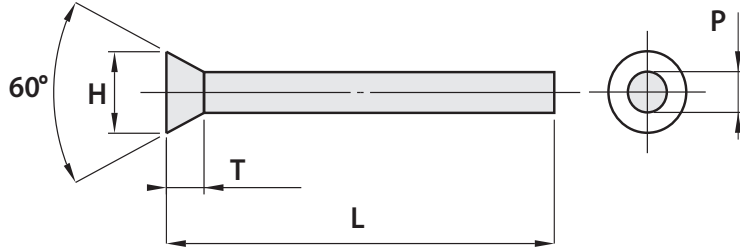


Tolerance	
H	0, -0.2
L	+/-0.5
P	0, -0.02



HEAD DIA "H" (mm)	BODY DIA "P" (0.1 mm increments) min. "P" max.	OVERALL LEN "L" (mm)				
6	2.1~3.0	50	70	80		
7	3.1~4.0	50	70	80		
8	4.1~5.0	50	70	80		
9	5.1~6.0	50	70	80		
10	6.1~7.0	50	70	80	100	
11	7.1~8.0	50	70	80	100	
12	8.1~9.0	50	70	80	100	
13	9.1~10.0	50	70	80	100	120
14	10.1~11.0	50	70	80	100	120
15	11.1~12.0	50	70	80	100	120
16	12.1~13.0	50	70	80	100	120
17	13.1~14.0		70	80	100	120
18	14.1~15.0		70	80	100	120
19	15.1~16.0		70	80	100	120
20	16.1~17.0		70	80	100	120
21	17.1~18.0		70	80	100	120
22	18.1~19.0		70	80	100	120
23	19.1~20.0		70	80	100	120
24	20.1~21.0		70	80	100	120
25	21.1~22.0		70	80	100	120
26	22.1~23.0		70	80	100	120
27	23.1~24.0		70	80	100	120
28	24.1~25.0		70	80	100	120

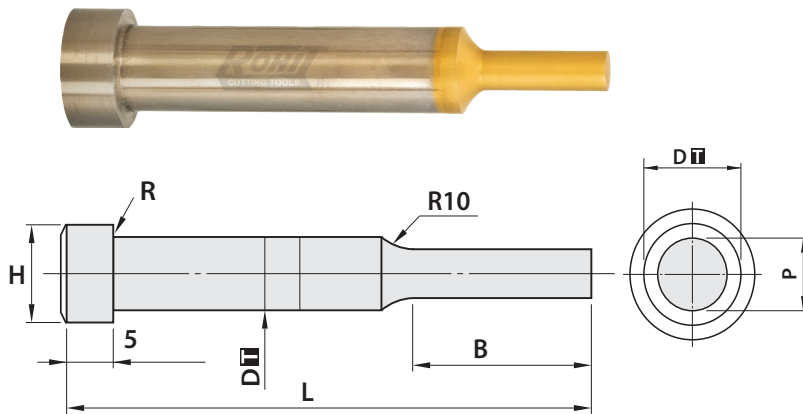
NOTE: This is Non-stock Item, ask your RIGPL representative for Delivery Period



Tolerance	
H	0, -0.2
L	+/-0.5
P	0, -0.02

HEAD DIA "H" (mm)	BODY DIA "P" (mm)	OVERALL LEN "L" (mm)
1.8	1	
2	1.1	
2.1	1.2	
2.3	1.3	
2.6	1.4	
2.8	1.5	
2.9	1.6	
3.1	1.7	
3.3	1.8	
3.4	1.9	
3.6	2	25mm
3.8	2.1	35mm
3.9	2.2	40mm
4.1	2.3	50mm
4.4	2.4	
4.5	2.5	
4.7	2.6	
4.9	2.7	
5.1	2.8	
5.2	2.9	
5.4	3	

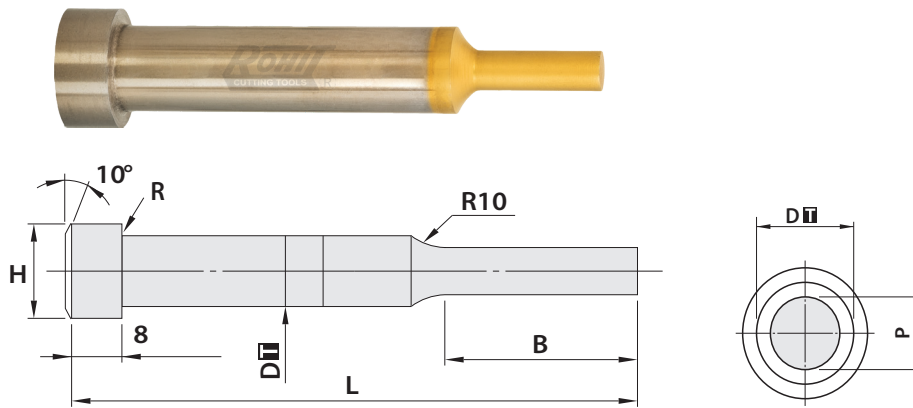
NOTE: This is Non-stock Item, ask your RIGPL representative for Delivery Period



Tolerance	
H	0, -0.2
L	+/-0.5
P	0, -0.02
D	0, -0.05
B	0, +0.5

HEAD DIA "H" (mm)	BODY DIA "D" (mm)	BODY LEN "B" (mm)	OVERALL LEN "L" (mm)				TIP DIA "P" (0.1 mm increments) min. "P" max.
6	4	8	50	70	80	100	2.0~3.9
7	5	8	50	70	80	100	2.0~4.9
8	6	8	50	70	80	100	2.0~5.9
10	8	13	50	70	80	100	3.0~7.9
12	10	13	50	70	80	100	3.0~9.9
15	13	13	50	70	80	100	6.0~12.9
18	16	19		70	80	100	10.0~15.9
22	20	19		70	80	100	13.0~19.9
27	25	19	50	70	80		18.0~24.9
6	4	13	50	70	80	100	2.0~3.9
7	5	13	50	70	80	100	2.0~4.9
8	6	13	50	70	80	100	2.0~5.9
10	8	19	50	70	80	100	3.0~7.9
12	10	19	50	70	80	100	3.0~9.9
15	13	19	50	70	80	100	6.0~12.9
18	16	25		70	80	100	10.0~15.9
22	20	25		70	80	100	13.0~19.9
27	25	25		70	80	100	18.0~24.9
18	16	40		70	80	100	10.0~15.9
22	20	40		70	80	100	13.0~19.9
27	25	40		70	80	100	18.0~24.9

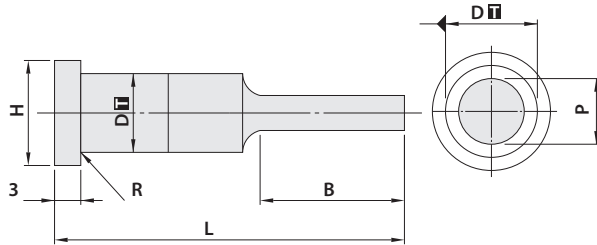
NOTE: This is Non-stock Item, ask your RIGPL representative for Delivery Period



Tolerance	
H	0, -0.2
L	+/-0.5
P	0, -0.02
D	0, -0.05
B	0, +0.5

HEAD DIA "H" (mm)	BODY DIA "D" (mm)	BODY LEN "B" (mm)	OVERALL LEN "L" (mm)				TIP DIA "P" (0.1 mm increments) min. "P" max.	
10	5	8	50	70	80	100	2.00~4.9	
11	6	8	50	70	80	100	2.00~5.9	
13	8	13		70	80	100	120	3.00~7.9
15	10	13		70	80	100	120	3.00~9.9
18	13	13		70	80	100	120	6.00~12.9
21	16	19		70	80	100	120	10.00~15.9
25	20	19		70	80	100	120	13.00~19.9
30	25	19		70	80	100	120	18.00~24.9
10	5	13		70	80	100		2.00~4.9
11	6	13		70	80	100		2.00~5.9
13	8	19		70	80	100	120	3.00~7.9
15	10	19		70	80	100	120	3.00~9.9
18	13	19		70	80	100	120	6.00~12.9
21	16	25		70	80	100	120	10.00~15.9
25	20	25		70	80	100	120	13.00~19.9
30	25	25		70	80	100	120	18.00~24.9

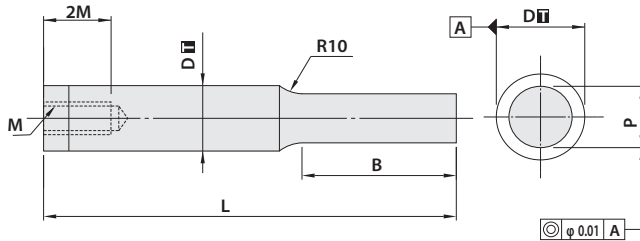
NOTE: This is Non-stock Item, ask your RIGPL representative for Delivery Period



Tolerance	
H	0, -0.2
L	+/-0.5
P	0, -0.02
D	0, -0.05
B	0, +0.5

HEAD DIA "H" (mm)	BODY DIA "D" (mm)	TIP LEN "B" (mm)	OVERALL LEN "L" (mm)				TIP DIA "P" (0.1 mm increments) min. "P" max.
7	4	8	25	30	35	40	2.0~3.9
8	5	8	25	30	35	40	2.0~4.9
9	6	8	25	30	35	40	2.50~5.9
11	8	8	25	30	35	40	5.0~7.9
13	10	8	25	30	35	40	7.0~9.9
7	4	13		30	35	40	2.0~3.9
8	5	13		30	35	40	2.0~4.9
9	6	13		30	35	40	2.50~5.9
11	8	13		30	35	40	5.0~7.9
13	10	13		30	35	40	7.0~9.9

NOTE: This is Non-stock Item, ask your RIGPL representative for Delivery Period



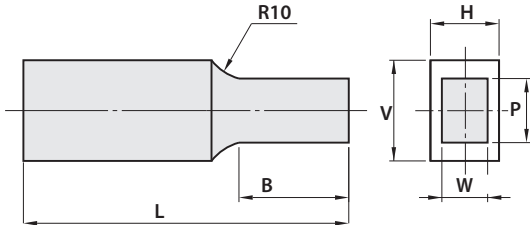
Tolerance	
D	0, -0.02
L	+/-0.5
P	0, -0.02
B	0, +0.5

BODY DIA "D" (mm)	TIP LENGTH "B" (mm)	TAP SIZE "M" (mm)	OVERALL LENGTH "L" (mm)				TIP DIA "P" (0.1 mm increments) min. "P" max.
5	8	3	50	70	80	100	2.0~4.9
6	8	3	50	70	80	100	2.0~5.9
8	13	4	50	70	80	100	3.0~7.9
10	13	5	50	70	80	100	3.0~9.9
13	13	6		70	80	100	6.0~12.9
16	19	6		70	80	100	10.0~15.9
20	19	6		70	80	100	13.0~19.9
25	19	6		70	80	100	18.0~24.9
5	13	3	50	70	80	100	2.0~4.9
6	13	3	50	70	80	100	2.0~5.9
8	19	4	50	70	80	100	3.0~7.9
10	19	5	50	70	80	100	3.0~9.9
13	19	6		70	80	100	6.0~12.9
16	25	6		70	80	100	10.0~15.9
20	25	6		70	80	100	13.0~19.9
25	25	6		70	80	100	18.0~24.9
5	25	3		70	80	100	2.0~4.9
6	25	3		70	80	100	2.0~5.9
8	30	4		70	80	100	3.0~7.9
10	30	5		70	80	100	3.0~9.9
13	30	6		70	80	100	6.0~12.9
16	40	6		70	80	100	10.0~15.9
20	40	6		70	80	100	13.0~19.9
25	40	6		70	80	100	18.0~24.9

NOTE: This is Non-stock Item, ask your RIGPL representative for Delivery Period

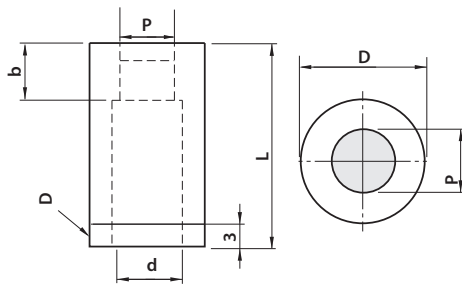


Tolerance	
B	0, +0.5
P, H, V, W	+/-0.02
L	+/-0.5



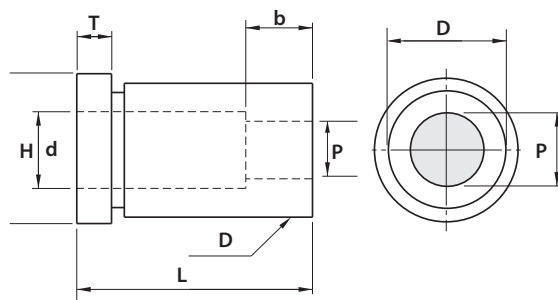
HEAD WID "H" (mm)	TIP WIDTH "W" (0.1 mm increments) min. "W" max.	HEAD HEIGHT "V" mm									OAL "L" (mm)	TIP LEN "B" (mm)	
		8	10	13	16	20	22	25	28	30		S	L
		TIP HEIGHT "P" min~max (0.1 mm increments)											
		3~8	3~10	4~13	5~16	6~20	7~22	8~25	18~28	10~30			
8	3.0~8.0	o	o	o	o	o	o	o	o	o	70	8	13
10	3.0~10.0	o	o	o	o	o	o	o	o	o	70	8	13
13	4.0~13.0	o	o	o	o	o	o	o	o	o	80	13	19
16	5.0~16.0	o	o	o	o	o	o	o	o	o	80	13	19
20	6.0~20.0	o	o	o	o	o	o	o	o	o	80	19	25
22	7.0~22.0	o	o	o	o	o	o	o	o	o	100	19	25
25	8.0~25.0	o	o	o	o	o	o	o	o	o	100	19	25
28	8.0~28.0	o	o	o	o	o	o	o	o	o	100	19	25
30	10.0~30.0	o	o	o	o	o	o	o	o	o	100	19	25

NOTE: This is Non-stock Item, ask your RIGPL representative for Delivery Period



Tolerance	
b	0, +0.5
D, P, d	+/-0.02
L	+/-0.5

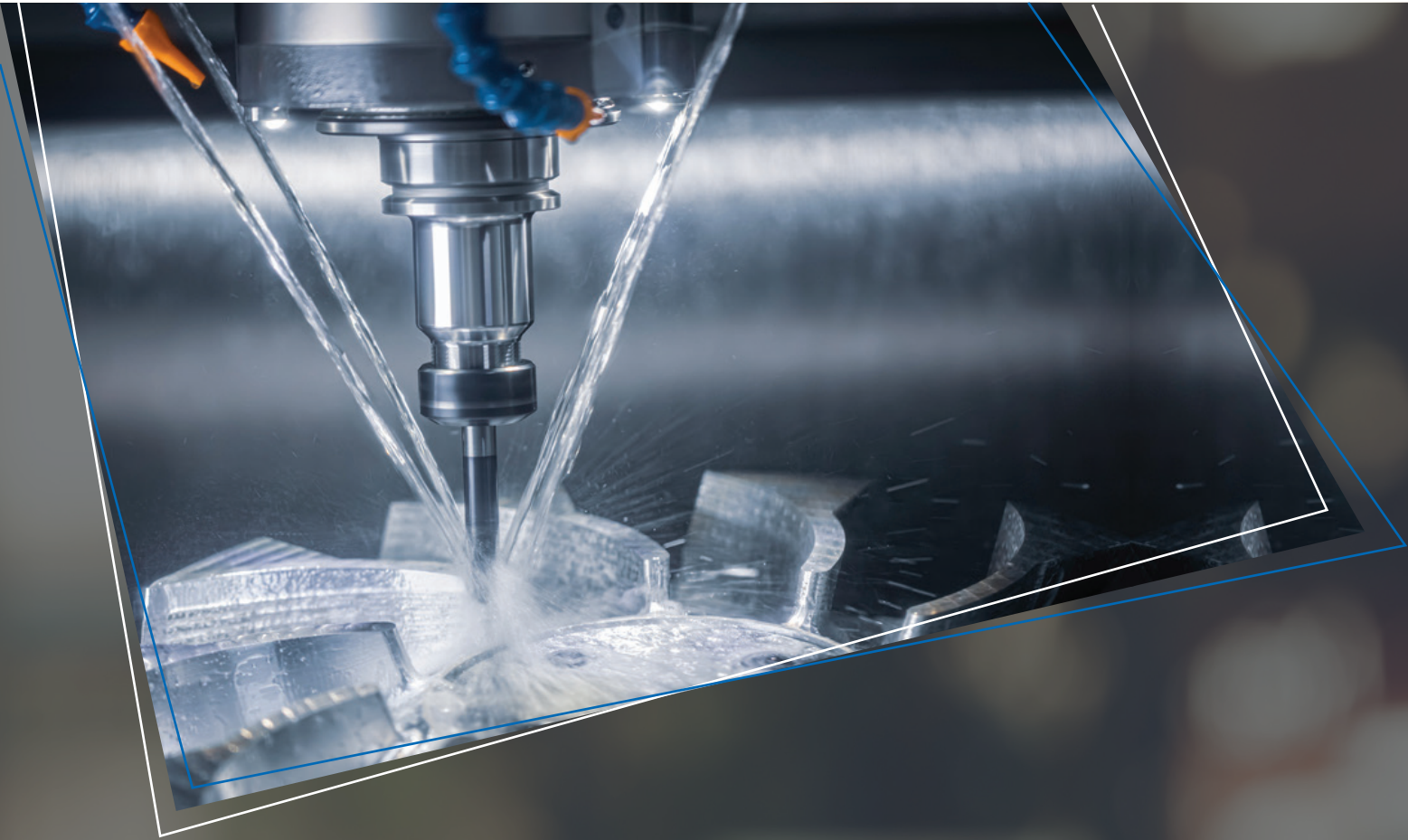
BODY DIA "D" (mm)	OVERALL LEN "L" (mm)					TIP DIA "P" (0.1 mm increments) min. "P" max.	"b" (mm)	"d" (mm)
6	20	25	30	35		2.0~3.0	3	3.4
8	20	25	30	35	40	2.0~4.0	4	4.4
10	20	25	30	35	40	2.0~6.0	6	6.4
13	20	25	30	35	40	3.0~8.0	8	8.4
16	20	25	30	35	40	5.0~10.0	8	10.6
20	20	25	30	35	40	7.0~12.0	8	12.6
22	20	25	30	35	40	8.0~14.0	8	14.6
25	20	25	30	35	40	10.0~16.0	8	16.6



Tolerance	
b, T	0, +0.5
D, P, d	+/-0.02
L	+/-0.5
H	0, -0.2

HEAD DIA "H" (mm)	BODY DIA "D" (mm)	OVERALL LEN "L" (mm)					TIP DIA "P" (0.1 mm increments) min. "P" max.	"b" (mm)	"d" (mm)
9	6	20	25	30	35	40	2.0~3.0	3	3.4
11	8	20	25	30	35	40	2.0~4.0	4	4.4
13	10	20	25	30	35	40	2.0~6.0	6	6.4
16	13	20	25	30	35	40	3.0~8.0	8	8.4
19	16	20	25	30	35	40	5.0~10.0	8	10.6
23	20	20	25	30	35	40	7.0~12.0	8	12.6
25	22	20	25	30	35	40	8.0~14.0	8	14.6
28	25	20	25	30	35	40	10.0~16.0	8	16.6

5



Step Drill Form

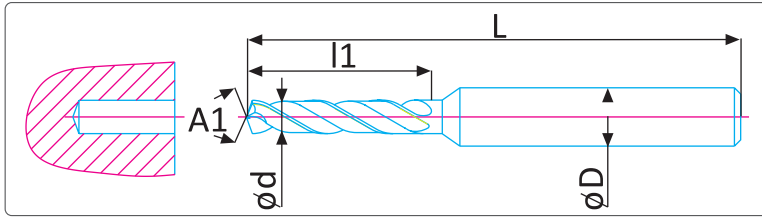
1. Fill in information requested on drawing. (*Required Fields)

2. E-mail to RIGPL at : sales@rigpl.com

Request Approval Drawing

Step Drill

NOTE: Specify TOLERANCES for ALL Length(s) and Diameter(s).



d :

l1 :

A° :

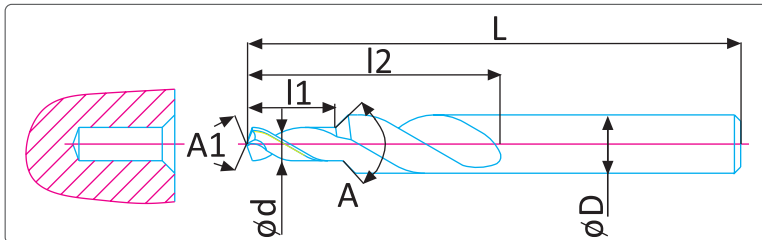
d1 :

l2 :

A1° :

D :

L :

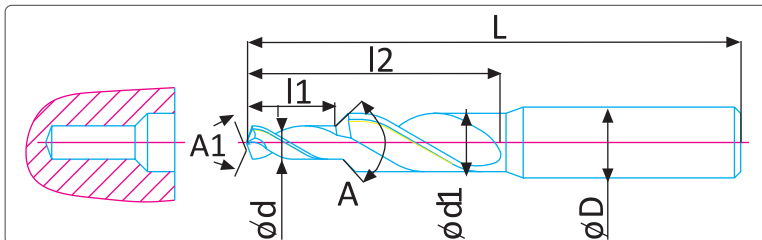


No. of flute :

Helix :

Coating :

Quantity, pcs :



Customer Name: _____

Phone: _____

*Work Material Machined: _____

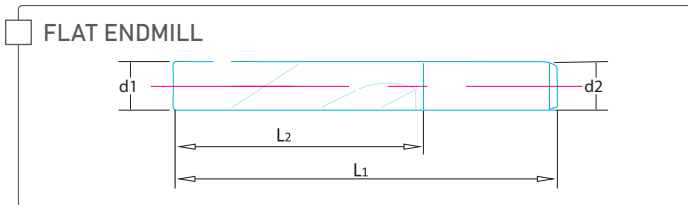
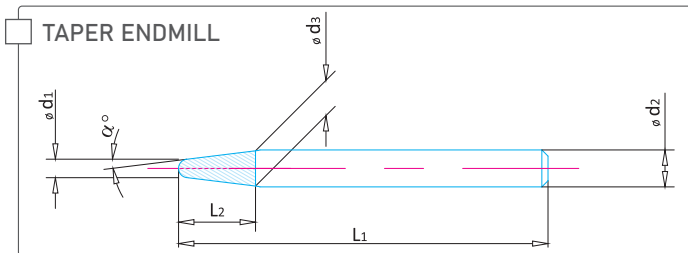
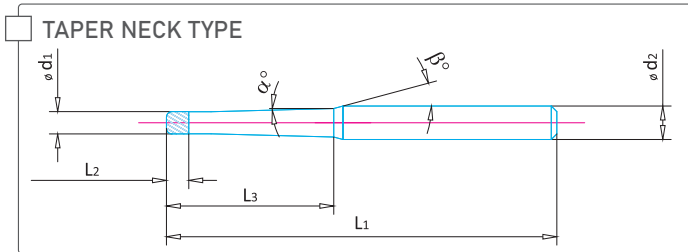
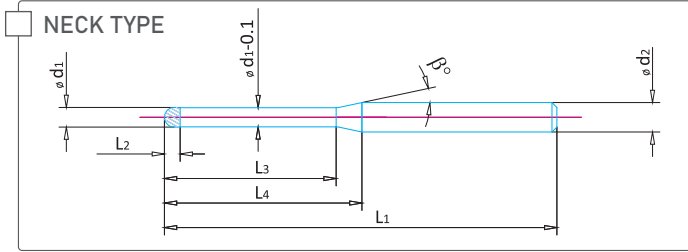
Hardness: _____

Dealer: _____

Quantities: _____

Special End Mill Form

1. Fill in information requested on drawing. (*Required Fields)
2. E-mail to RIGPL at : sales@rigpl.com



d1 =

d2 =

α° =

β° =

L1 =

L2 =

L3 =

L4 =

Helix :

No. of flute :

Coating :

Quantity, pcs :

Corner Radius :

Customer Name: _____

Phone: _____

*Work Material Machined: _____

Hardness: _____

Dealer: _____

Quantities: _____

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Ball Nose
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GO GREEN**



TiN

Titanium Nitride or TiN coating has shown good results in low carbon steels and many iron-based applications. It is a very popular coating used in the industry today. Used in HSS Tool Bits, Punches & HSS End Mills.

TiAlN

Titanium Aluminum Nitride or TiAlN is the original high performance coating, also commonly known as LATUMA. This coating allows tools to be run at higher speeds and feeds in a wide array of materials in milling & drilling applications.

HYPERLOX

Aluminum Titanium Supernitride : NanoComposite or HYPERLOX is especially designed for milling hardened steels above 40 Rc. This coating is mainly for milling hardened steel applications.

NOVA

AlTiN/TiSiXN-based material composition with multi layer coating up to 2~4 microns thickness. This coating is versatile in its use for drilling and milling materials up to hardness of 60HRC. This coating can be used for both wet & dry machining applications.

AL-PRO / ALP

The AlCrN-based material composition with multi layer coating up to 2~4 microns thickness. This coating is suitable for milling Exotic materials like titanium and NiCr alloys and Die Steel up to hardness of 55HRc. This coating is preferable to use for both Dry and Wet milling applications.

PEROX

The nanocrystalline AlTiN-based coating features excellent hot hardness, resistance to oxidation and thermal insulating properties which provides tool protection at elevated temperatures while machining or drilling Exotic Materials and Martensitic Stainless Steel. This coating combine with excellent Finishing (MMP) is best suited for effective Chip Evacuation in Drilling.

COATING PROPERTIES

Coating	RIGPL Tool Number	Vicker Hardness (HV)	Coating Hardness HIT (GPa)	Coefficient of Friction	Max. Working Temperature (°C)	Coating Color
TiN	- T	1,800~2,000	30 +/- 3	0.3 - 0.4	600 °C	Golden Yellow
TiAlN	- F	2,000~3,000	35 +/- 3	0.3 - 0.4	800 °C	Black Grey
HYPERLOX	- H	2,500~3,700	36 +/- 3	0.3 - 0.35	1000 °C	Black Grey
NOVA	- N	3,200~4,200	37 +/- 3	0.35 - 0.4	1100 °C	Bronze
AL-PRO	- A	3,000~4,000	36 +/- 3	0.3 - 0.35	1000 °C	Bright Grey
PEROX	- P	3,400~4,400	38 +/- 3	0.35 - 0.4	1100 °C	Aubergine Grey

See something you like to try?



RIGPL

Application Mapper

Customer Details		Application #1		Application #2	
Date:					
Customer & Location:					
Contact Person: Name, Dept, Desig, Mob, Mail					
# of VMC / SPM Machines		Solid Carbide (₹/Month)			
Dealer Name & Location					
Dealer Representative					
RIGPL Representative					
Sr No		Application #1		Application #2	
Application (Dia, Tool & Operation Type)					
Component Name					
Material & Hardness					
M/c Type, m/c Make & Model, Holding Device, M/c Coolant is (Through/Flood), M/c-ing condition is (Poor/Fair/Good).					
Production/Month					
Cycle Time on m/c (sec)					
Application Time on m/c (sec)					
Current Tool Avg Life					
Current Tool Make, Details Engraved, (ØxFLxOALxSH; xRxZ), Coating & Shank Type.					
Current Tool Price					
Feed					
RPM					
if drill		if mill			
D		ap			
L		L			
L/D		W			
# of Holes/Passes per comp					
Remarks					
Cost Per Component (₹)					
Calc Details					
Cost Per Component (₹)					
Tool Life (m)					
Tools req / Month (nos)					
m/c-ing Vol/Comp (cm3)					
m/c-ing Vol/Tool (m3)					
ChipFlowRate (cm3/min)					
RIGPL Suggested Tool					
Image					
Component					
Current Tool					

NOTE: All requests subject to approval. An RIGPL representative will contact you to discuss your application.

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 Unit-II : Plot #: 337, MIE Part-A, Bahadurgarh, Haryana-124507, India
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Hardness Conversion Chart

Rockwell			Brinell (HB) or BHN		Vickers (HV)	Tensile Strength (N/mm ²) or Mpa
A	B	C	3000 kg	500 kg	136	
60kg Brale	100kg 1/16" Ball	150kg Brale	10mm Ball Steel	10mm Ball Steel	Diamond Pyramid	
86.5	-	70	-	-	1076	-
86	-	69	-	-	1044	-
85.6	-	68	-	-	940	-
85	-	67	-	-	900	-
84.5	-	66	-	-	865	-
83.9	-	65	739	-	832	-
83.4	-	64	722	-	800	-
82.8	-	63	705	-	772	-
82.3	-	62	688	-	746	-
81.8	-	61	670	-	720	-
81.2	-	60	654	-	697	2,207
80.7	-	59	634	-	674	2,138
80.1	-	58	615	-	653	2,069
79.6	-	57	595	-	633	2,000
79	-	56	577	-	613	1,945
78.5	120	55	560	-	595	1,890
78	120	54	543	-	577	1,834
77.4	119	53	525	-	560	1,772
76.8	119	52	500	-	544	1,690
76.3	118	51	487	-	528	1,648
75.9	117	50	475	-	513	1,607
75.2	117	49	464	-	498	1,566
74.7	116	48	451	-	484	1,524
74.1	116	47	442	-	471	1,497
73.6	115	46	432	-	458	1,462
73.1	115	45	421	-	446	1,421
72.5	114	44	409	-	434	1,379
72	113	43	400	-	423	1,352
71.5	113	42	390	-	412	1,317
70.9	112	41	381	-	402	1,290
70.4	112	40	371	-	392	1,255
69.9	111	39	362	-	382	1,221
69.4	110	38	353	-	372	1,193
68.9	110	37	344	-	363	1,166
68.4	109	36	336	-	354	1,138
67.9	109	35	327	-	345	1,103
67.4	108	34	319	-	336	1,076
66.8	108	33	311	-	327	1,048
66.3	107	32	301	-	318	1,014
65.8	106	31	294	-	310	993
65.3	105	30	286	-	302	966
64.7	104	29	279	-	294	945
64.3	104	28	271	-	286	917

Rockwell			Brinell (HB) or BHN		Vickers (HV)	Tensile Strength (N/mm ²) or Mpa
A	B	C	3000 kg	500 kg	136	
60kg Brale	100kg 1/16" Ball	150kg Brale	10mm Ball Steel	10mm Ball Steel	Diamond Pyramid	
36.8	103	27	264	-	279	890
63.3	103	26	258	-	272	869
62.8	102	25	253	-	256	855
62.4	101	24	247	-	260	834
62	10	23	240	201	254	814
61.5	99	22	234	195	248	793
61	98	21	228	189	243	772
60.5	97	20	22	184	238	752
59	96	18	216	179	230	731
58	95	16	210	175	222	710
57.5	94	15	205	171	213	690
57	93	13	200	167	208	676
56.5	92	12	195	163	204	662
56	91	10	190	160	196	641
55.5	90	9	185	157	192	628
55	89	8	180	154	188	607
54	88	7	176	151	184	593
53.5	87	6	172	148	180	579
53	86	5	169	145	176	572
52.5	85	4	165	142	173	559
52	84	3	162	140	170	545
51	83	2	159	137	166	538
50.5	82	1	156	135	163	524
50	81	0	153	133	160	517
49.5	80	-	150	130	-	503
49	79	-	147	128	-	495
48.5	78	-	144	126	-	480
48	77	-	141	124	-	470
47	76	-	139	122	-	465
46.5	75	-	137	120	-	460
46	74	-	135	118	-	453
45.5	73	-	133	116	-	445
45	72	-	130	114	-	435
44.5	71	-	127	112	-	425
44	70	-	125	110	-	420
43.5	69	-	123	109	-	410
43	68	-	121	107	-	405
42.5	67	-	119	106	-	400
42	66	-	117	104	-	395
41.8	65	-	116	102	-	390
41.5	64	-	114	101	-	385
41	63	-	112	99	-	378
40.5	62	-	110	98	-	370

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ISO Tolerance Designation	Nominal Diameter of Tool (mm)					
	≤3	>3-6	>6-10	>10-18	>18-30	>30-50
Tolerance (Unit = 0.001 mm)						
d9	-65	-90	-116	-143	-182	-222
d11	-100	-135	-170	-210	-260	-320
e8	-42	-58	-72	-91	-113	-139
e9	-53	-70	-86	-107	-132	-162
f8	-26	-38	-48	-59	-73	-89
f9	-37	-50	-62	-75	-92	-112
h6	0, -6	0, -8	0, -9	0,-11	0,-13	0,-16
h7	0,-10	0,-12	0,-15	0,-18	0,-21	0,-25
h8	0,-14	0,-18	0,-22	0,-27	0,-33	0,-39
h9	0,-25	0,-30	0,-36	0,-43	0,-52	0,-62
h10	0,-40	0,-48	0,-58	0,-70	0,-84	0,-100
h11	0,-60	0,-75	0,-90	0,-110	0,-130	0,-160
h12	0,-100	0,-120	0,-150	0,-180	0,-210	0,-250
h13	0,-140	0,-180	0,-220	0,-270	0,-330	0,-390
js11	+/- 30	+/- 37	+/- 45	+/- 55	+/- 65	+/- 80
js12	+/- 50	+/- 60	+/- 75	+/- 90	+/- 105	+/- 125
js14	+/- 125	+/- 150	+/- 180	+/- 215	+/- 260	+/- 310
js16	+/- 300	+/- 375	+/- 450	+/- 550	+/- 650	+/- 800
k9	+25,0	+30,0	+36,0	+43,0	+52,0	+62,0
k10	+40,0	+48,0	+58,0	+70,0	+84,0	+100,0
k11	+60,0	+75,0	+90,0	+110,0	+130,0	+160,0
k12	+90,0	+120,0	+150,0	+180,0	+210,0	+250,0
H5	+4,0	+5,0	+6,0	+8,0	+9,0	+11,0
H6	+6,0	+8,0	+9,0	+11,0	+13,0	+16,0
H7	+10,0	+12,0	+15,0	+18,0	+21,0	+25,0
H11	+60,0	+75,0	+90,0	+110,0	+130,0	+160,0
H12	+100,0	+120,0	+150,0	+180,0	+210,0	+250,0



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