



INDUSTRIAL ***TOOLS AND GAUGES***

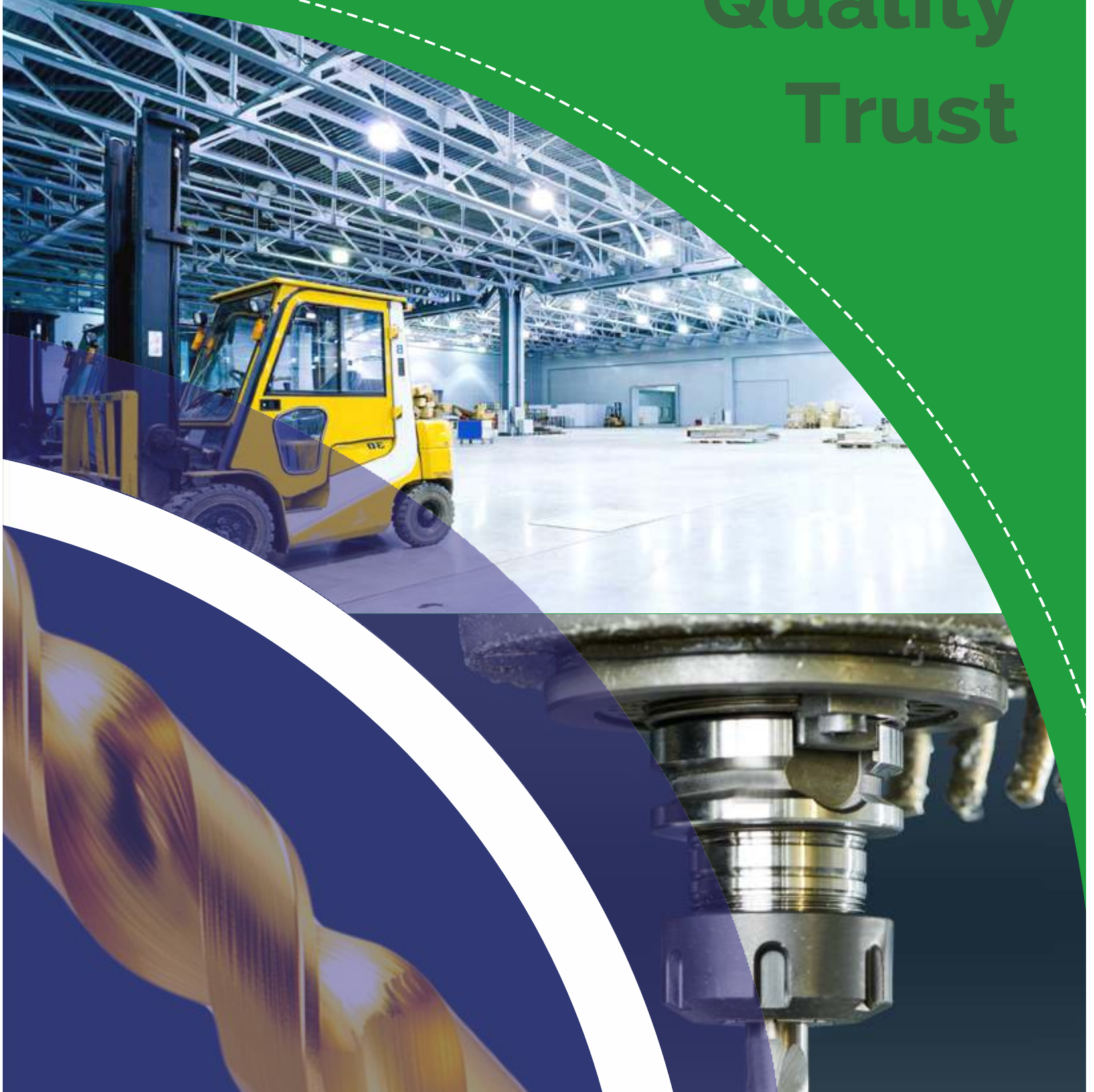
Specialist in Cutting Tools

PRODUCT **CATALOGUE**



www.industrialtools.co.in

Commitment
Quality
Trust



ABOUT

Industrial Tools And Gauges

Industrial Tools & Gauges Was Established In 1996, After Gaining Expertise For Decades & Hands On Experience In Cutting Tools On Varied Jobs & Applications For Various Sectors.

Indian Market Is Growing Very Rapidly In The Field Of Manufacturing Quality Machined Components, Accordingly Industrial Tools & Gauges Has Seen The Need For A Company That Could Meet All Its Customer's Needs Of Quality Solid Carbide Tooling At Costs Often Lower Than Many Competitors Standard Lines & Further Reducing There Costs By Providing Resharpener Facilities.

We Believes In Quality Before Quantity For Which We Have Installed 6 Axis CNC Tools & Cutter Grinding Machines To Manufacture The Tools To Close Tolerance & Sharpen Them To There Original Geometries. Our CNC Grinding Centers & Other Precision Grinding Equipments Provides The Capabilities To Produce Consistent, Repeatable, Quality Products For Today's Value Added Needs. Our State Of Art Inspection Systems Allows Us to Verify The Quality Of Our Work To ISO Standards.

We Are Having Our Corporate Office & Works Housed In Same Building For Effective Co-Operation & Co-Ordination, Supported By Effective Communication & Office Management Facilities.



Management is about
Arranging and telling.
Leadership is about
Nurturing and Enhancing.

Tom Peters

Leadership and Board Of Directors

From the time of its establishment, ITG has been devoting painstaking efforts to develop superior technology and improve quality in order to provide products of the highest quality and services to meet complete customer satisfaction. Today we exist in the world of fierce competition where every second counts and where top notch quality is the ultimate goal.

We thank you for your continuous patronage of ITG and we pledge to maintain our zealous devotion and undertakings into the future.



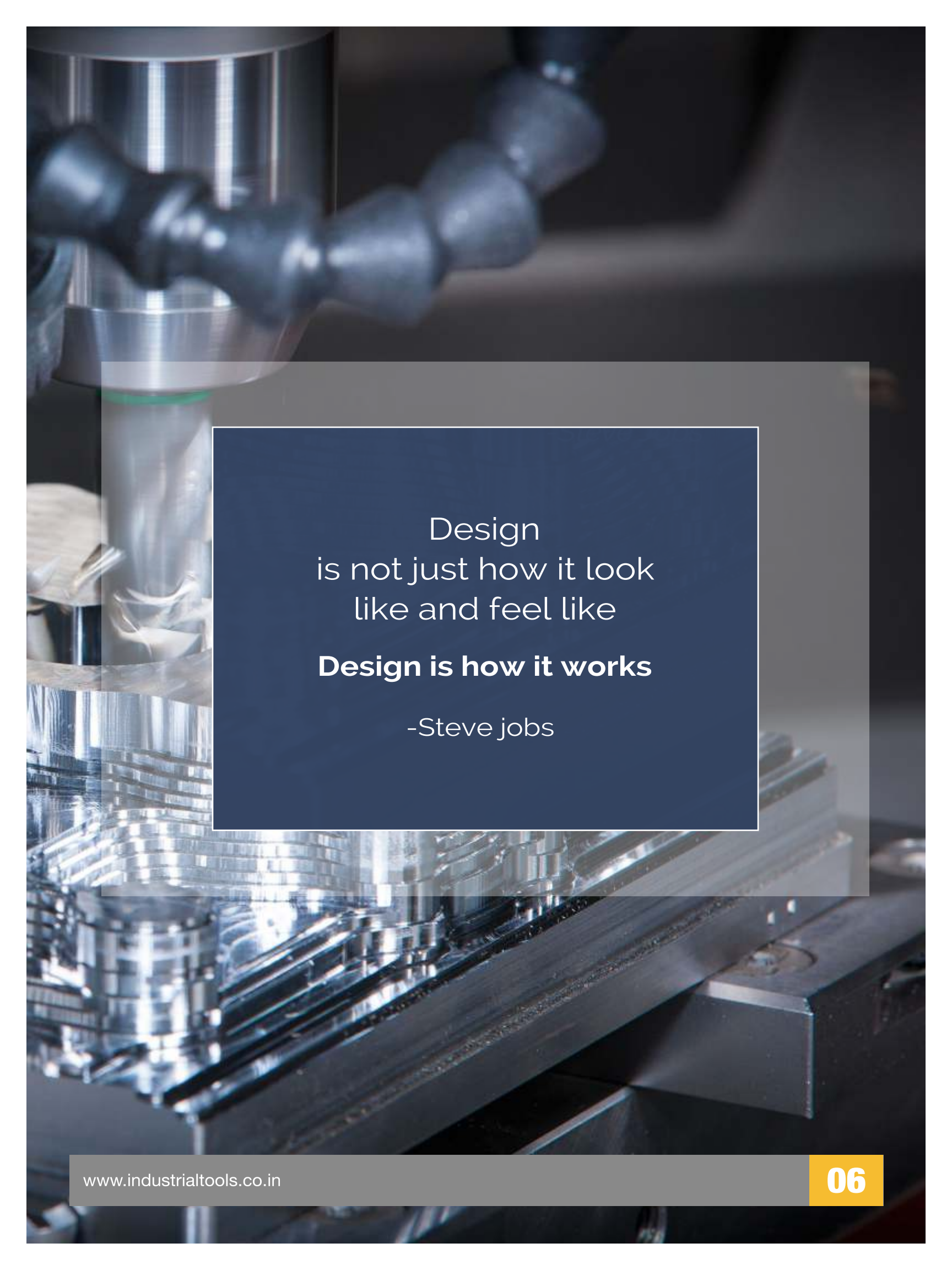
S.K Gupta
Managing Director

At ITG we pride ourselves on being the premier manufacturer of high performance cutting tools. Whether its engineering the exact tolerances or developing the intricate geometries for application specific high **performance** cutting tools, our commitment to innovation, quality and professional service put us a cut above the rest.



Vishal Gupta
Director

We have no problem with low priced competitors because that's they think the product is worth of. Since our values are stronger than carbide. We are ready to take any challenges that may come across.



Design
is not just how it look
like and feel like

Design is how it works

-Steve jobs

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01

— REGULAR DRILLS —

IDRR3

SOLID CARBIDE

REGULAR DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



X40L

TIALn

MV

3XD

ITEM CODE	DIA (d_1)	SH.DIA (d_2) h6	FL (l_2)	OAL (l_1)
IDRR3030	3.0	6	16	60
IDRR3031	3.1	6	16	60
IDRR3032	3.2	6	16	60
IDRR3033	3.3	6	16	60
IDRR3034	3.4	6	16	60
IDRR3035	3.5	6	16	60
IDRR3036	3.6	6	16	60
IDRR3037	3.7	6	24	62
IDRR3038	3.8	6	24	62
IDRR3039	3.9	6	24	62
IDRR3040	4.0	6	24	62
IDRR3041	4.1	6	24	62
IDRR3042	4.2	6	24	62
IDRR3043	4.3	6	24	62
IDRR3044	4.4	6	24	62
IDRR3045	4.5	6	24	62
IDRR3046	4.6	6	24	62
IDRR3047	4.7	6	28	62
IDRR3048	4.8	6	28	62
IDRR3049	4.9	6	28	62
IDRR3050	5.0	6	28	62
IDRR3051	5.1	6	28	62
IDRR3052	5.2	6	28	62
IDRR3053	5.3	6	28	62
IDRR3054	5.4	6	28	62
IDRR3055	5.5	6	28	62
IDRR3056	5.6	6	28	62
IDRR3057	5.7	6	28	62

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDRR3

SOLID CARBIDE

REGULAR DRILLS

ISO 9001:2015
1016QAS 2612

X40L

TIALn

MV

3XD

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IDRR3058	5.8	6	28	62
IDRR3059	5.9	6	28	62
IDRR3060	6.0	6	28	62
IDRR3061	6.1	8	34	75
IDRR3062	6.2	8	34	75
IDRR3063	6.3	8	34	75
IDRR3064	6.4	8	34	75
IDRR3065	6.5	8	34	75
IDRR3066	6.6	8	34	75
IDRR3067	6.7	8	34	75
IDRR3068	6.8	8	34	75
IDRR3069	6.9	8	34	75
IDRR3070	7.0	8	34	75
IDRR3071	7.1	8	41	75
IDRR3072	7.2	8	41	75
IDRR3073	7.3	8	41	75
IDRR3074	7.4	8	41	75
IDRR3075	7.5	8	41	75
IDRR3076	7.6	8	41	75
IDRR3077	7.7	8	41	75
IDRR3078	7.8	8	41	75
IDRR3079	7.9	8	41	75
IDRR3080	8.0	8	41	75
IDRR3081	8.1	10	47	89
IDRR3082	8.2	10	47	89
IDRR3083	8.3	10	47	89
IDRR3084	8.4	10	47	89
IDRR3085	8.5	10	47	89

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDRR3

SOLID CARBIDE

REGULAR DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



X40L

TIALn

MV

3XD

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IDRR3086	8.6	10	47	89
IDRR3087	8.7	10	47	89
IDRR3088	8.8	10	47	89
IDRR3089	8.9	10	47	89
IDRR3090	9.0	10	47	89
IDRR3091	9.1	10	47	89
IDRR3092	9.2	10	47	89
IDRR3093	9.3	10	47	89
IDRR3094	9.4	10	47	89
IDRR3095	9.5	10	47	89
IDRR3096	9.6	10	47	89
IDRR3097	9.7	10	47	89
IDRR3098	9.8	10	47	89
IDRR3099	9.9	10	47	89
IDRR3100	10.0	10	47	89
IDRR3101	10.1	12	55	102
IDRR3102	10.2	12	55	102
IDRR3103	10.3	12	55	102
IDRR3104	10.4	12	55	102
IDRR3105	10.5	12	55	102
IDRR3106	10.6	12	55	102
IDRR3107	10.7	12	55	102
IDRR3108	10.8	12	55	102
IDRR3109	10.9	12	55	102
IDRR3110	11.0	12	55	102
IDRR3111	11.1	12	55	102
IDRR3112	11.2	12	55	102
IDRR3113	11.3	12	55	102

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDRR3

SOLID CARBIDE

REGULAR DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



X40L

TIALn

MV

3XD

ITEM CODE	DIA ($d1$)	SH.DIA ($d2$) h6	FL ($l2$)	OAL ($l1$)
IDRR3114	11.4	12	55	102
IDRR3115	11.5	12	55	102
IDRR3116	11.6	12	55	102
IDRR3117	11.7	12	55	102
IDRR3118	11.8	12	55	102
IDRR3119	11.9	12	55	102
IDRR3120	12.0	12	55	102
IDRR3125	12.5	14	60	105
IDRR3128	12.8	14	60	105
IDRR3130	13.0	14	60	105
IDRR3135	13.5	14	60	105
IDRR3138	13.8	14	60	105
IDRR3140	14.0	14	60	105
IDRR3145	14.5	16	65	105
IDRR3148	14.8	16	65	105
IDRR3150	15.0	16	65	105
IDRR3155	15.5	16	65	105
IDRR3158	15.8	16	65	105
IDRR3160	16.0	16	65	105
IDRR3165	16.5	18	73	123
IDRR3170	17.0	18	73	123
IDRR3175	17.5	18	73	123
IDRR3180	18.0	18	73	123
IDRR3185	18.5	20	79	131
IDRR3190	19.0	20	79	131
IDRR3195	19.5	20	79	131
IDRR3200	20	20	79	131

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDRR5

SOLID CARBIDE

REGULAR DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



X40L

TIALn

MV

5XD

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IDRR5030	3.0	6	26	62
IDRR5031	3.1	6	26	62
IDRR5032	3.2	6	26	62
IDRR5033	3.3	6	26	62
IDRR5034	3.4	6	26	62
IDRR5035	3.5	6	26	62
IDRR5036	3.6	6	26	62
IDRR5037	3.7	6	26	62
IDRR5038	3.8	6	34	75
IDRR5039	3.9	6	34	75
IDRR5040	4.0	6	34	75
IDRR5041	4.1	6	34	75
IDRR5042	4.2	6	34	75
IDRR5043	4.3	6	34	75
IDRR5044	4.4	6	34	75
IDRR5045	4.5	6	34	75
IDRR5046	4.6	6	34	75
IDRR5047	4.7	6	34	75
IDRR5048	4.8	6	40	75
IDRR5049	4.9	6	40	75
IDRR5050	5.0	6	40	75
IDRR5051	5.1	6	40	75
IDRR5052	5.2	6	40	75
IDRR5053	5.3	6	40	75
IDRR5054	5.4	6	40	75
IDRR5055	5.5	6	40	75
IDRR5056	5.6	6	40	75

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDRR5

SOLID CARBIDE

REGULAR DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



X40L

TIALn

MV

5XD

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IDRR5057	5.7	6	40	75
IDRR5058	5.8	6	40	75
IDRR5059	5.9	6	40	75
IDRR5060	6.0	6	40	75
IDRR5061	6.1	6	40	75
IDRR5062	6.2	8	53	91
IDRR5063	6.3	8	53	91
IDRR5064	6.4	8	53	91
IDRR5065	6.5	8	53	91
IDRR5066	6.6	8	53	91
IDRR5067	6.7	8	53	91
IDRR5068	6.8	8	53	91
IDRR5069	6.9	8	53	91
IDRR5070	7.0	8	53	91
IDRR5071	7.1	8	53	91
IDRR5072	7.2	8	53	91
IDRR5073	7.3	8	53	91
IDRR5074	7.4	8	53	91
IDRR5075	7.5	8	53	91
IDRR5076	7.6	8	53	91
IDRR5077	7.7	8	53	91
IDRR5078	7.8	8	53	91
IDRR5079	7.9	8	53	91
IDRR5080	8.0	8	53	91
IDRR5081	8.1	10	61	103
IDRR5082	8.2	10	61	103
IDRR5083	8.3	10	61	103

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDRR5

SOLID CARBIDE

REGULAR DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



X40L

TIALn

MV

5XD

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IDRR5084	8.4	10	61	103
IDRR5085	8.5	10	61	103
IDRR5086	8.6	10	61	103
IDRR5087	8.7	10	61	103
IDRR5088	8.8	10	61	103
IDRR5089	8.9	10	61	103
IDRR5090	9.0	10	61	103
IDRR5091	9.1	10	61	103
IDRR5092	9.2	10	61	103
IDRR5093	9.3	10	61	103
IDRR5094	9.4	10	61	103
IDRR5095	9.5	10	61	103
IDRR5096	9.6	10	61	103
IDRR5097	9.7	10	61	103
IDRR5098	9.8	10	61	103
IDRR5099	9.9	10	61	103
IDRR5100	10.0	10	61	103
IDRR5101	10.1	12	65	105
IDRR5102	10.2	12	65	105
IDRR5103	10.3	12	65	105
IDRR5104	10.4	12	65	105
IDRR5105	10.5	12	65	105
IDRR5106	10.6	12	65	105
IDRR5107	10.7	12	65	105
IDRR5108	10.8	12	65	105
IDRR5109	10.9	12	65	105
IDRR5110	11.0	12	65	105

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDRR5

SOLID CARBIDE

REGULAR DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



X40L

TIALn

MV

5XD

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IDRR5111	11.1	12	65	105
IDRR5112	11.2	12	65	105
IDRR5113	11.3	12	65	105
IDRR5114	11.4	12	65	105
IDRR5115	11.5	12	65	105
IDRR5116	11.6	12	65	105
IDRR5117	11.7	12	65	105
IDRR5118	11.8	12	65	105
IDRR5119	11.9	12	65	105
IDRR5120	12.0	12	65	105
IDRR5125	12.5	14	77	124
IDRR5130	13.0	14	77	124
IDRR5135	13.5	14	77	124
IDRR5140	14.0	14	77	124
IDRR5145	14.5	16	83	133
IDRR5150	15.0	16	83	133
IDRR5155	15.5	16	83	133
IDRR5160	16.0	16	83	133
IDRR5165	16.5	18	93	143
IDRR5170	17.0	18	93	143
IDRR5175	17.5	18	93	143
IDRR5180	18.0	18	93	143
IDRR5185	18.5	20	101	153
IDRR5190	19.0	20	101	153
IDRR5195	19.5	20	101	153
IDRR5200	20.0	20	101	153

Special Sizes can be manufactured on request

All the dimensions are in mm.

02

— **HIGH PERFORMANCE DRILLS** —

IDRHP3

SOLID CARBIDE

HIGH PERFORMANCE DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



X20F

HLC

MR

3XD

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IDRHP3030	3.0	6	16	60
IDRHP3031	3.1	6	16	60
IDRHP3032	3.2	6	16	60
IDRHP3033	3.3	6	16	60
IDRHP3034	3.4	6	16	60
IDRHP3035	3.5	6	16	60
IDRHP3036	3.6	6	16	60
IDRHP3037	3.7	6	16	60
IDRHP3038	3.8	6	24	62
IDRHP3039	3.9	6	24	62
IDRHP3040	4.0	6	24	62
IDRHP3041	4.1	6	24	62
IDRHP3042	4.2	6	24	62
IDRHP3043	4.3	6	24	62
IDRHP3044	4.4	6	24	62
IDRHP3045	4.5	6	24	62
IDRHP3046	4.6	6	24	62
IDRHP3047	4.7	6	24	62
IDRHP3048	4.8	6	28	62
IDRHP3049	4.9	6	28	62
IDRHP3050	5.0	6	28	62
IDRHP3051	5.1	6	28	62
IDRHP3052	5.2	6	28	62
IDRHP3053	5.3	6	28	62
IDRHP3054	5.4	6	28	62
IDRHP3055	5.5	6	28	62
IDRHP3056	5.6	6	28	62
IDRHP3057	5.7	6	28	62

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDRHP3

SOLID CARBIDE

HIGH PERFORMANCE DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



X20F

HLC

MR

3XD

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IDRHP3058	5.8	6	28	62
IDRHP3059	5.9	6	28	62
IDRHP3060	6.0	6	28	62
IDRHP3061	6.1	8	34	75
IDRHP3062	6.2	8	34	75
IDRHP3063	6.3	8	34	75
IDRHP3064	6.4	8	34	75
IDRHP3065	6.5	8	34	75
IDRHP3066	6.6	8	34	75
IDRHP3067	6.7	8	34	75
IDRHP3068	6.8	8	34	75
IDRHP3069	6.9	8	34	75
IDRHP3070	7.0	8	34	75
IDRHP3071	7.1	8	41	75
IDRHP3072	7.2	8	41	75
IDRHP3073	7.3	8	41	75
IDRHP3074	7.4	8	41	75
IDRHP3075	7.5	8	41	75
IDRHP3076	7.6	8	41	75
IDRHP3077	7.7	8	41	75
IDRHP3078	7.8	8	41	75
IDRHP3079	7.9	8	41	75
IDRHP3080	8.0	8	41	75
IDRHP3081	8.1	10	47	89
IDRHP3082	8.2	10	47	89
IDRHP3083	8.3	10	47	89
IDRHP3084	8.4	10	47	89
IDRHP3085	8.5	10	47	89

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDRHP3

SOLID CARBIDE

HIGH PERFORMANCE DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



X20F

HLC

MR

3XD

ITEM CODE	DIA ($d1$)	SH.DIA ($d2$) h6	FL ($l2$)	OAL ($l1$)
IDRHP3086	8.6	10	47	89
IDRHP3087	8.7	10	47	89
IDRHP3088	8.8	10	47	89
IDRHP3089	8.9	10	47	89
IDRHP3090	9.0	10	47	89
IDRHP3091	9.1	10	47	89
IDRHP3092	9.2	10	47	89
IDRHP3093	9.3	10	47	89
IDRHP3094	9.4	10	47	89
IDRHP3095	9.5	10	47	89
IDRHP3096	9.6	10	47	89
IDRHP3097	9.7	10	47	89
IDRHP3098	9.8	10	47	89
IDRHP3099	9.9	10	47	89
IDRHP3100	10.0	10	47	89
IDRHP3101	10.1	12	55	102
IDRHP3102	10.2	12	55	102
IDRHP3103	10.3	12	55	102
IDRHP3104	10.4	12	55	102
IDRHP3105	10.5	12	55	102
IDRHP3106	10.6	12	55	102
IDRHP3107	10.7	12	55	102
IDRHP3108	10.8	12	55	102
IDRHP3109	10.9	12	55	102
IDRHP3110	11.0	12	55	102
IDRHP3111	11.1	12	55	102
IDRHP3112	11.2	12	55	102
IDRHP3113	11.3	12	55	102

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDRHP3

SOLID CARBIDE

HIGH PERFORMANCE DRILLS



ISO 9001:2015
1016QAS 2612



X20F

HLC

MR

3XD

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IDRHP3114	11.4	12	55	102
IDRHP3115	11.5	12	55	102
IDRHP3116	11.6	12	55	102
IDRHP3117	11.7	12	55	102
IDRHP3118	11.8	12	55	102
IDRHP3119	11.9	12	55	102
IDRHP3120	12.0	12	55	102
IDRHP3125	12.5	14	60	105
IDRHP3130	12.8	14	60	105
IDRHP3135	13.0	14	60	105
IDRHP3138	13.5	14	60	105
IDRHP3140	13.8	14	60	105
IDRHP3145	14.0	14	60	105
IDRHP3148	14.5	16	65	105
IDRHP3150	14.8	16	65	105
IDRHP3155	15.0	16	65	105
IDRHP3158	15.5	16	65	105
IDRHP3160	15.8	16	65	105
IDRHP3165	16.0	16	65	105
IDRHP3168	16.5	18	73	123
IDRHP3170	17.0	18	73	123
IDRHP3175	17.5	18	73	123
IDRHP3180	18.0	18	73	123
IDRHP3185	18.5	20	79	131
IDRHP3190	19.0	20	79	131
IDRHP3195	19.5	20	79	131
IDRHP3200	20.0	20	79	131

Special Sizes can be manufactured on request

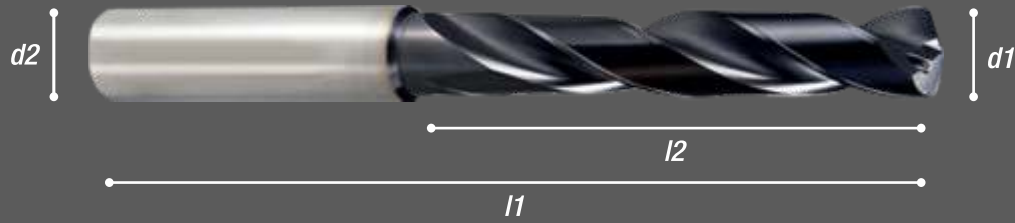
All the dimensions are in mm.

IDRHP5

SOLID CARBIDE

HIGH PERFORMANCE DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



X20F

HLC

MR

5XD

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IDRHP5030	3.0	6	26	62
IDRHP5031	3.1	6	26	62
IDRHP5032	3.2	6	26	62
IDRHP5033	3.3	6	26	62
IDRHP5034	3.4	6	26	62
IDRHP5035	3.5	6	26	62
IDRHP5036	3.6	6	26	62
IDRHP5037	3.7	6	26	62
IDRHP5038	3.8	6	34	75
IDRHP5039	3.9	6	34	75
IDRHP5040	4.0	6	34	75
IDRHP5041	4.1	6	34	75
IDRHP5042	4.2	6	34	75
IDRHP5043	4.3	6	34	75
IDRHP5044	4.4	6	34	75
IDRHP5045	4.5	6	34	75
IDRHP5046	4.6	6	34	75
IDRHP5047	4.7	6	34	75
IDRHP5048	4.8	6	40	75
IDRHP5049	4.9	6	40	75
IDRHP5050	5.0	6	40	75
IDRHP5051	5.1	6	40	75
IDRHP5052	5.2	6	40	75
IDRHP5053	5.3	6	40	75
IDRHP5054	5.4	6	40	75
IDRHP5055	5.5	6	40	75
IDRHP5056	5.6	6	40	75

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDRHP5

SOLID CARBIDE

HIGH PERFORMANCE DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



X20F

HLC

MR

5XD

ITEM CODE	DIA ($d1$)	SH.DIA ($d2$) h6	FL ($l2$)	OAL ($l1$)
IDRHP5057	5.7	6	40	75
IDRHP5058	5.8	6	40	75
IDRHP5059	5.9	6	40	75
IDRHP5060	6.0	6	40	75
IDRHP5061	6.1	6	40	75
IDRHP5062	6.2	8	53	91
IDRHP5063	6.3	8	53	91
IDRHP5064	6.4	8	53	91
IDRHP5065	6.5	8	53	91
IDRHP5066	6.6	8	53	91
IDRHP5067	6.7	8	53	91
IDRHP5068	6.8	8	53	91
IDRHP5069	6.9	8	53	91
IDRHP5070	7.0	8	53	91
IDRHP5071	7.1	8	53	91
IDRHP5072	7.2	8	53	91
IDRHP5073	7.3	8	53	91
IDRHP5074	7.4	8	53	91
IDRHP5075	7.5	8	5	91
IDRHP5076	7.6	8	53	91
IDRHP5077	7.7	8	53	91
IDRHP5078	7.8	8	53	91
IDRHP5079	7.9	8	53	91
IDRHP5080	8.0	8	53	91
IDRHP5081	8.1	10	61	103
IDRHP5082	8.2	10	61	103
IDRHP5083	8.3	10	61	103

Special Sizes can be manufactured on request

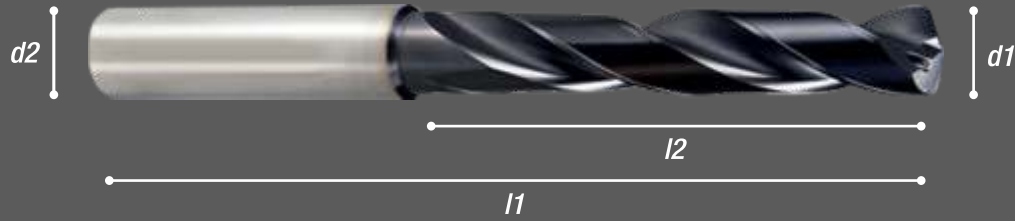
All the dimensions are in mm.

IDRHP5

SOLID CARBIDE

HIGH PERFORMANCE DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



X20F

HLC

MR

5XD

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IDRHP5084	8.4	10	61	103
IDRHP5085	8.5	10	61	103
IDRHP5086	8.6	10	61	103
IDRHP5087	8.7	10	61	103
IDRHP5088	8.8	10	61	103
IDRHP5089	8.9	10	61	103
IDRHP5090	9.0	10	61	103
IDRHP5091	9.1	10	61	103
IDRHP5092	9.2	10	61	103
IDRHP5093	9.3	10	61	103
IDRHP5094	9.4	10	61	103
IDRHP5095	9.5	10	61	103
IDRHP5096	9.6	10	61	103
IDRHP5097	9.7	10	61	103
IDRHP5098	9.8	10	61	103
IDRHP5099	9.9	10	61	103
IDRHP5100	10.0	10	61	103
IDRHP5101	10.1	12	65	105
IDRHP5102	10.2	12	65	105
IDRHP5103	10.3	12	65	105
IDRHP5104	10.4	12	65	105
IDRHP5105	10.5	12	65	105
IDRHP5106	10.6	12	65	105
IDRHP5107	10.7	12	65	105
IDRHP5108	10.8	12	65	105
IDRHP5109	10.9	12	65	105
IDRHP5110	11.0	12	65	105

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDRHP5

SOLID CARBIDE

HIGH PERFORMANCE DRILLS

ISO 9001:2015
1016QAS 2612

X20F

HLC

MR

5XD

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IDRHP5111	11.1	12	65	105
IDRHP5112	11.2	12	65	105
IDRHP5113	11.3	12	65	105
IDRHP5114	11.4	12	65	105
IDRHP5115	11.5	12	65	105
IDRHP5116	11.6	12	65	105
IDRHP5117	11.7	12	65	105
IDRHP5118	11.8	12	65	105
IDRHP5119	11.9	12	65	105
IDRHP5120	12.0	12	65	105
IDRHP5125	12.5	14	77	124
IDRHP5130	13.0	14	77	124
IDRHP5135	13.5	14	77	124
IDRHP5140	14.0	14	77	124
IDRHP5145	14.5	16	83	133
IDRHP5150	15.0	16	83	133
IDRHP5155	15.5	16	83	133
IDRHP5160	16.0	16	83	133
IDRHP5165	16.5	18	93	143
IDRHP5170	17.0	18	93	143
IDRHP5175	17.5	18	93	143
IDRHP5180	18.0	18	93	143
IDRHP5185	18.5	20	101	153
IDRHP5190	19.0	20	101	153
IDRHP5195	19.5	20	101	153
IDRHP5200	20.0	20	101	153

Special Sizes can be manufactured on request

All the dimensions are in mm.



03

— **THROUGH COOLANT DRILLS** —

IDR3TC

SOLID CARBIDE THROUGH COOLANT DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



K200F

HLC

MR

3XD

ITEM CODE	DIA ($d1$)	SH.DIA ($d2$) h6	FL ($l2$)	OAL ($l1$)
IDR3030TC	3.0	6	16	60
IDR3031TC	3.1	6	16	60
IDR3032TC	3.2	6	16	60
IDR3033TC	3.3	6	16	60
IDR3034TC	3.4	6	16	60
IDR3035TC	3.5	6	16	60
IDR3036TC	3.6	6	16	60
IDR3037TC	3.7	6	16	60
IDR3038TC	3.8	6	24	62
IDR3039TC	3.9	6	24	62
IDR3040TC	4.0	6	24	62
IDR3041TC	4.1	6	24	62
IDR3042TC	4.2	6	24	62
IDR3043TC	4.3	6	24	62
IDR3044TC	4.4	6	24	62
IDR3045TC	4.5	6	24	62
IDR3046TC	4.6	6	24	62
IDR3047TC	4.7	6	24	62
IDR3048TC	4.8	6	28	62
IDR3049TC	4.9	6	28	62
IDR3050TC	5.0	6	28	62
IDR3051TC	5.1	6	28	62
IDR3052TC	5.2	6	28	62
IDR3053TC	5.3	6	28	62
IDR3054TC	5.4	6	28	62
IDR3055TC	5.5	6	28	62
IDR3056TC	5.6	6	28	62
IDR3057TC	5.7	6	28	62

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDR3TC

SOLID CARBIDE

THROUGH COOLANT DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



K200F

HLC

MR

3XD

ITEM CODE	DIA ($d1$)	SH.DIA ($d2$) h6	FL ($l2$)	OAL ($l1$)
IDR3058TC	5.8	6	28	62
IDR3059TC	5.9	6	28	62
IDR3060TC	6.0	6	28	62
IDR3061TC	6.1	8	34	75
IDR3062TC	6.2	8	34	75
IDR3063TC	6.3	8	34	75
IDR3064TC	6.4	8	34	75
IDR3065TC	6.5	8	34	75
IDR3066TC	6.6	8	34	75
IDR3067TC	6.7	8	34	75
IDR3068TC	6.8	8	34	75
IDR3069TC	6.9	8	34	75
IDR3070TC	7.0	8	34	75
IDR3071TC	7.1	8	41	75
IDR3072TC	7.2	8	41	75
IDR3073TC	7.3	8	41	75
IDR3074TC	7.4	8	41	75
IDR3075TC	7.5	8	41	75
IDR3076TC	7.6	8	41	75
IDR3077TC	7.7	8	41	75
IDR3078TC	7.8	8	41	75
IDR3079TC	7.9	8	41	75
IDR3080TC	8.0	8	41	75
IDR3081TC	8.1	10	47	89
IDR3082TC	8.2	10	47	89
IDR3083TC	8.3	10	47	89
IDR3084TC	8.4	10	47	89
IDR3085TC	8.5	10	47	89

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDR3TC

SOLID CARBIDE THROUGH COOLANT DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



K200F

HLC

MR

3XD

ITEM CODE	DIA ($d1$)	SH.DIA ($d2$) h6	FL ($l2$)	OAL ($l1$)
IDR3086TC	8.6	10	47	89
IDR3087TC	8.7	10	47	89
IDR3088TC	8.8	10	47	89
IDR3089TC	8.9	10	47	89
IDR3090TC	9.0	10	47	89
IDR3091TC	9.1	10	47	89
IDR3092TC	9.2	10	47	89
IDR3093TC	9.3	10	47	89
IDR3094TC	9.4	10	47	89
IDR3095TC	9.5	10	47	89
IDR3096TC	9.6	10	47	89
IDR3097TC	9.7	10	47	89
IDR3098TC	9.8	10	47	89
IDR3099TC	9.9	10	47	89
IDR3100TC	10.0	10	47	89
IDR3101TC	10.1	12	55	102
IDR3102TC	10.2	12	55	102
IDR3103TC	10.3	12	55	102
IDR3104TC	10.4	12	55	102
IDR3105TC	10.5	12	55	102
IDR3106TC	10.6	12	55	102
IDR3107TC	10.7	12	55	102
IDR3108TC	10.8	12	55	102
IDR3109TC	10.9	12	55	102
IDR3110TC	11.0	12	55	102
IDR3111TC	11.1	12	55	102
IDR3112TC	11.2	12	55	102
IDR3113TC	11.3	12	55	102

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDR3TC

SOLID CARBIDE THROUGH COOLANT DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



K200F

HLC

MR

3XD

ITEM CODE	DIA ($d1$)	SH.DIA ($d2$) h6	FL ($l2$)	OAL ($l1$)
IDR3114TC	11.4	12	55	102
IDR3115TC	11.5	12	55	102
IDR3116TC	11.6	12	55	102
IDR3117TC	11.7	12	55	102
IDR3118TC	11.8	12	55	102
IDR3119TC	11.9	12	55	102
IDR3120TC	12.0	12	55	102
IDR3125TC	12.5	14	60	105
IDR3128TC	12.8	14	60	105
IDR3130TC	13.0	14	60	105
IDR3135TC	13.5	14	60	105
IDR3138TC	13.8	14	60	105
IDR3140TC	14.0	14	60	105
IDR3145TC	14.5	16	65	105
IDR3148TC	14.8	16	65	105
IDR3150TC	15.0	16	65	105
IDR3155TC	15.5	16	65	105
IDR3158TC	15.8	16	65	105
IDR3160TC	16.0	16	65	105
IDR3165TC	16.5	18	73	123
IDR3170TC	17.0	18	73	123
IDR3175TC	17.5	18	73	123
IDR3180TC	18.0	18	73	123
IDR3185TC	18.5	20	79	131
IDR3190TC	19.0	20	79	131
IDR3195TC	19.5	20	79	131
IDR3200TC	20.0	20	79	131

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDR5TC

SOLID CARBIDE THROUGH COOLANT DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



K200F

HLC

MR

5XD

ITEM CODE	DIA ($d1$)	SH.DIA ($d2$) h6	FL ($l2$)	OAL ($l1$)
IDR5030TC	3.0	6	26	62
IDR5031TC	3.1	6	26	62
IDR5032TC	3.2	6	26	62
IDR5033TC	3.3	6	26	62
IDR5034TC	3.4	6	26	62
IDR5035TC	3.5	6	26	62
IDR5036TC	3.6	6	26	62
IDR5037TC	3.7	6	26	62
IDR5038TC	3.8	6	34	75
IDR5039TC	3.9	6	34	75
IDR5040TC	4.0	6	34	75
IDR5041TC	4.1	6	34	75
IDR5042TC	4.2	6	34	75
IDR5043TC	4.3	6	34	75
IDR5044TC	4.4	6	34	75
IDR5045TC	4.5	6	34	75
IDR5046TC	4.6	6	34	75
IDR5047TC	4.7	6	34	75
IDR5048TC	4.8	6	40	75
IDR5049TC	4.9	6	40	75
IDR5050TC	5.0	6	40	75
IDR5051TC	5.1	6	40	75
IDR5052TC	5.2	6	40	75
IDR5053TC	5.3	6	40	75
IDR5054TC	5.4	6	40	75
IDR5055TC	5.5	6	40	75
IDR5056TC	5.6	6	40	75

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDR5TC

SOLID CARBIDE THROUGH COOLANT DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



K200F

HLC

MR

5XD

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IDR5057TC	5.7	6	40	75
IDR5058TC	5.8	6	40	75
IDR5059TC	5.9	6	40	75
IDR5060TC	6.0	6	40	75
IDR5061TC	6.1	6	40	75
IDR5062TC	6.2	8	53	91
IDR5063TC	6.3	8	53	91
IDR5064TC	6.4	8	53	91
IDR5065TC	6.5	8	53	91
IDR5066TC	6.6	8	53	91
IDR5067TC	6.7	8	53	91
IDR5068TC	6.8	8	53	91
IDR5069TC	6.9	8	53	91
IDR5070TC	7.0	8	53	91
IDR5071TC	7.1	8	53	91
IDR5072TC	7.2	8	53	91
IDR5073TC	7.3	8	53	91
IDR5074TC	7.4	8	53	91
IDR5075TC	7.5	8	53	91
IDR5076TC	7.6	8	53	91
IDR5077TC	7.7	8	53	91
IDR5078TC	7.8	8	53	91
IDR5079TC	7.9	8	53	91
IDR5080TC	8.0	8	53	91
IDR5081TC	8.1	10	61	103
IDR5082TC	8.2	10	61	103
IDR5083TC	8.3	10	61	103

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDR5TC

SOLID CARBIDE THROUGH COOLANT DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



K200F

HLC

MR

5XD

ITEM CODE	DIA ($d1$)	SH.DIA ($d2$) h6	FL ($l2$)	OAL ($l1$)
IDR5084TC	8.4	10	61	103
IDR5085TC	8.5	10	61	103
IDR5086TC	8.6	10	61	103
IDR5087TC	8.7	10	61	103
IDR5088TC	8.8	10	61	103
IDR5089TC	8.9	10	61	103
IDR5090TC	9.0	10	61	103
IDR5091TC	9.1	10	61	103
IDR5092TC	9.2	10	61	103
IDR5093TC	9.3	10	61	103
IDR5094TC	9.4	10	61	103
IDR5095TC	9.5	10	61	103
IDR5096TC	9.6	10	61	103
IDR5097TC	9.7	10	61	103
IDR5098TC	9.8	10	61	103
IDR5099TC	9.9	10	61	103
IDR5100TC	10.0	10	61	103
IDR5101TC	10.1	10	61	103
IDR5102TC	10.2	12	65	105
IDR5103TC	10.3	12	65	105
IDR5104TC	10.4	12	65	105
IDR5105TC	10.5	12	65	105
IDR5106TC	10.6	12	65	105
IDR5107TC	10.7	12	65	105
IDR5108TC	10.8	12	65	105
IDR5109TC	10.9	12	65	105
IDR5110TC	11.0	12	65	105

Special Sizes can be manufactured on request

All the dimensions are in mm.

IDR5TC

SOLID CARBIDE THROUGH COOLANT DRILLS

JAS-ANZ
ISO 9001:2015
1016QAS 2612



K200F

HLC

MR

5XD

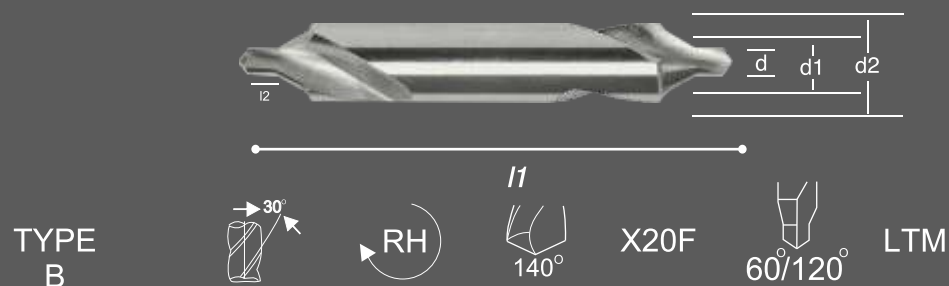
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IDR5113TC	11.3	12	65	105
IDR5114TC	11.4	12	65	105
IDR5115TC	11.5	12	65	105
IDR5116TC	11.6	12	65	105
IDR5117TC	11.7	12	65	105
IDR5118TC	11.8	12	65	105
IDR5119TC	11.9	12	65	105
IDR5120TC	12.0	12	65	105
IDR5125TC	12.5	14	77	124
IDR5130TC	13.0	14	77	124
IDR5135TC	13.5	14	77	124
IDR5140TC	14.0	14	77	124
IDR5145TC	14.5	16	83	133
IDR5150TC	15.0	16	83	133
IDR5155TC	15.5	16	83	133
IDR5160TC	16.0	16	83	133
IDR5165TC	16.5	18	93	143
IDR5170TC	17.0	18	93	143
IDR5175TC	17.5	18	93	143
IDR5180TC	18.0	18	93	143
IDR5185TC	18.5	20	101	153
IDR5190TC	19.0	20	101	153
IDR5195TC	19.5	20	101	153
IDR5200TC	20.0	20	101	153

Special Sizes can be manufactured on request

All the dimensions are in mm.



PILOT DIAMETER (d1)	BODY DIAMETER (d2)	OAL (l2)	PILOT LENGHT (l1)
2.0	5.0	38	2.5
2.5	6.3	43	3.1
3.15	8.0	48	3.9
4.0	10.0	53	5.0
5.0	12.5	60	6.3
6.3	16.0	68	8.0
8.0	20.0	77	10.1
10.0	25.0	97	12.8



PILOT DIAMETER (d)	ANGLE DIAMETER (d1)	BODY DIAMETER (d2)	OAL (l1)	PILOT LENGHT (l2)
2.0	4.25	8.0	48	2.5/3.3
2.5	5.3	10.0	53	3.1/4.1
3.15	6.7	11.2	57	3.9/4.9
4.0	8.5	14.0	64	5.0/6.2
5.0	10.6	18.0	72	6.3/7.5
6.3	13.2	20.0	77	8.0/9.2
8.0	17.0	25.0	97	10.1/11.5

Special Sizes can be manufactured on request

All the dimensions are in mm.

04

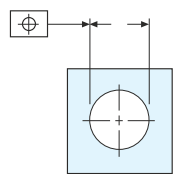
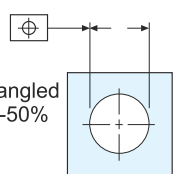
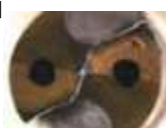
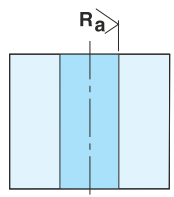
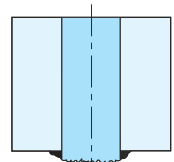
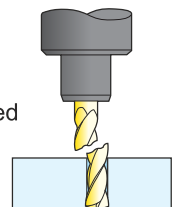
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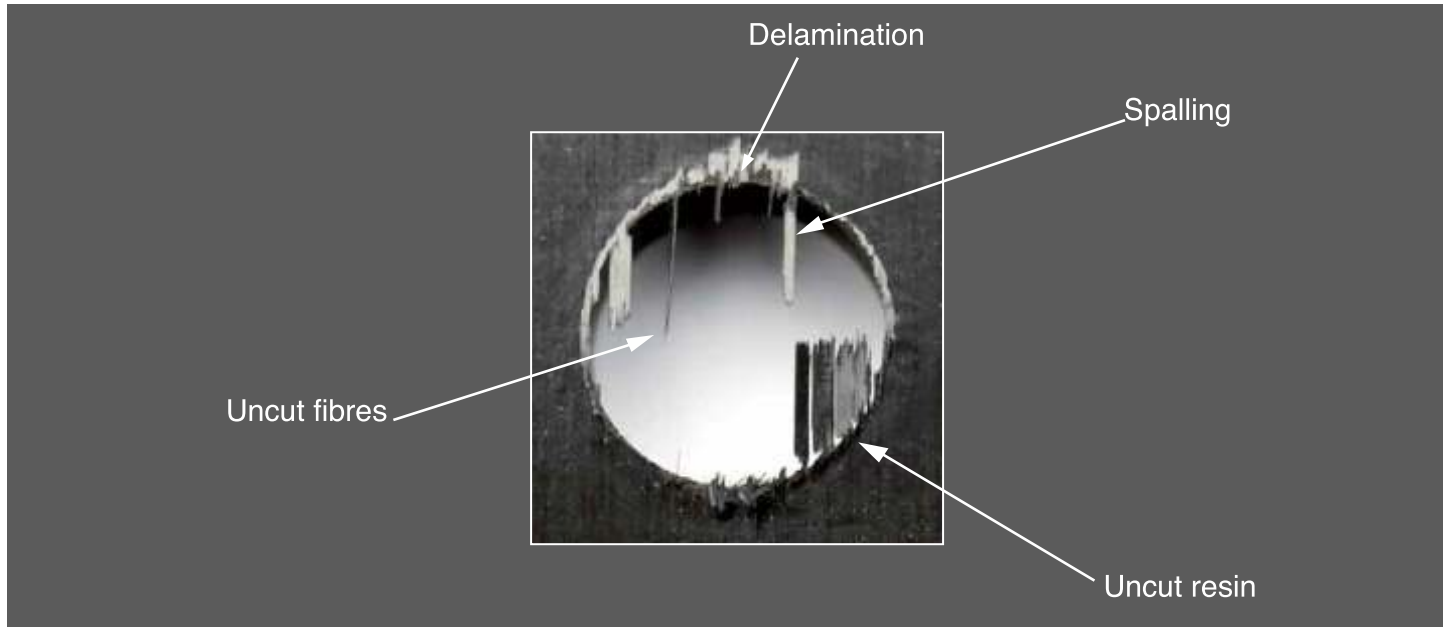
Troubleshooting – Initial check points:

- Fixturing stability
- Machine spindle condition
- Tool holder condition

Clamping of tool:

- Run-out within 0,04 TIR
- If using pre drilling within 0,04 TIR

Rapid flank wear • Reduce the cutting speed • Increase coolant concentration 	Unsatisfactory diameter tolerance • Increase the feed/rev • Use a reaming operation • Use a boring operation, 
Wear / Periphery land • Reduce the cutting speed • Increase coolant concentration 	Unsatisfactory positioning of the hole • Reduce feed/rev. on entrance • Reduce feed/rev • Use a boring operation • If drilling through rough, hard and angled surfaces - reduce the feed by 30%-50% during entrance and exit • Centre drill with a 140° point angle 
Chipping / Centre • Reduce feed during entrance • Increase coolant pressure and adjust the feed to optimize the chip formation 	Unsatisfactory surface finish • Reduce the feed/rev • Increase the cutting speed • Use a reaming operation 
Chipping / Outer corner, cutting edge • Reduce feed during entrance/exit • Reduce the cutting speed • Increase coolant concentration • Regrind the drill 	Burrs on exit • Reduce the feed/rev. on exit • Reduce the width of edge preparation 
Built-up edge • If closer to the periphery increase the cutting speed • If closer to centre increase feed/rev • If the drill is worn, regrind it 	Breakage on contact / at hole bottom • Reduce the feed/rev. during entrance/exit • Adjust cutting data for improved chip evacuation 



Problem:	Delaminating (peel up / push down)	Spalling	Uncut fibers	Uncut fibres
Solution:	Peel up • Use tool with more negative geometry • Reduce feed/rev.	• Use tool with more negative geometry • Reduce feed/rev.	• Use tool with more negative geometry • Reduce feed/rev.	• Use tool with a sharper geometry • Reduce feed/rev. • Reduce cutting speed
	Push down • Reduce feed/rev.			
Problem:	Melted resin Too much heat	Poor tool life		
Solution:	• Reduce cutting speed	• Reduce cutting speed		

05



REAMERS



LTM

H7

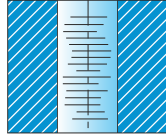
X20F

ITEM CODE	DIA (d1)	FL (l2)	Flutes	OAL (l1)	Sh.DIA(d2)
IRM030	3	16	4	57	3
IRM040	4	19	4	62	4
IRM050	5	25	4	74	5
IRM060	6	25	6	74	6
IRM070	7	29	6	74	7
IRM080	8	29	6	74	8
IRM090	9	32	6	74	9
IRM100	10	38	6	102	10
IRM120	12	38	6	102	12

Troubleshooting

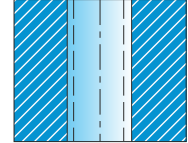
Poor surface finish

- Check material allowance.
- Improve coolant conditions (outlet type, pressure, quality).
- Reduce feed rate.



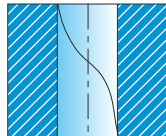
Too large diameter

- Improve centring (part/tool).



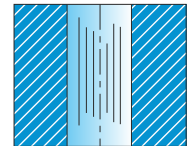
Retraction marks

- Improve coolant conditions (outlet type, pressure, quality).
- Improve centring (part/tool).
- Reduce feed-out speed.



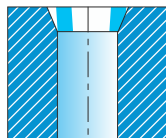
Facets

- Improve centring (part/tool).
- Check material allowance.



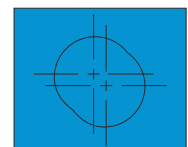
Tapered entry

- Reduce feed rate.
- Improve centring (part/tool).
- Reduce radial run-out



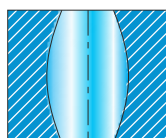
Off center / Ovality

- Improve clamping (workpiece deformation).
- Check material allowance.
- Improve centring (part/tool).



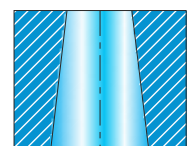
Deformed hole

- Improve clamping (workpiece deformation).



Tapered hole

- Improve centring (part/tool).





06

— **STIIM ONE** —

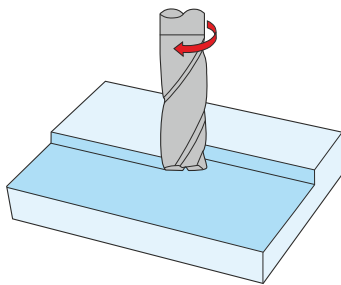
Basic operations:

- Face milling
- Slot milling
- Side milling
- Copy milling

Definitions, basic operations:

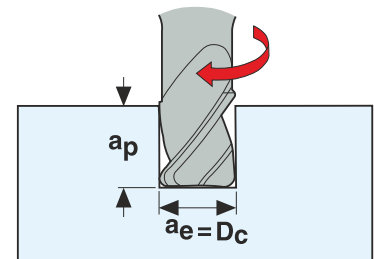
Face milling

Operation where the tool is in engagement with less than 180° arc of contact. Tool engagement: Small a_p and large a_e .



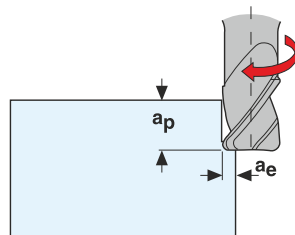
Slot milling:

Operation where the full diameter is in engagement, a_e is equal to D_c and a_p up to $1\frac{1}{2}$ times D_c depending on the machining strategy in use.



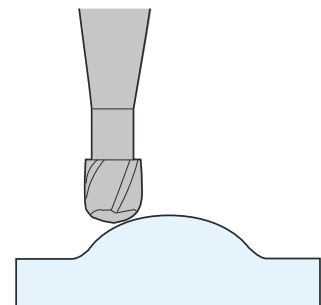
Side milling:

Operation where the side of the tool is in engagement, a_p is large and a_e is small.



Copy milling:

Operation where the radius is in engagement. a_p and a_e are both small.



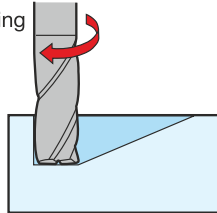
Advanced Machining Methods

- Ramping
- Advanced roughing / Optirough
- Helical interpolation
- Trochoidal milling
- Push-pull
- Plunge milling
- Z-leveling
- Drilling

Definitions, basic operations:

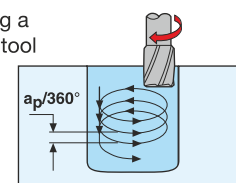
Rampin

Opening up a pocket by making a Z axis at an angle.



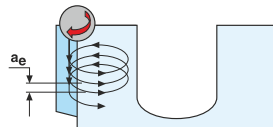
Helical interpolation

Opening a pocket by making a circular movement with the tool while ramping in Z axis.



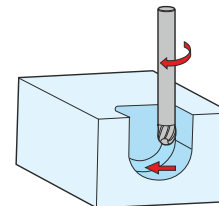
Trochoidal

Opening a slot by using side milling, making a partial circular movement in X- or Y-axis. (changing slot milling into side milling).



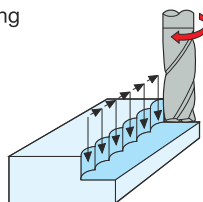
Push-p

Machining a 3D form by making a down and up copying movement following the profile of the form.



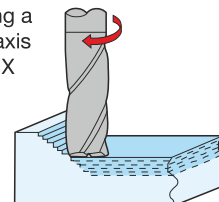
Plunge milling:

Opening up a deep slot by using drilling (Z) axis.



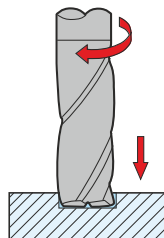
Z-leve

Machining a surface by making a small drilling or ramping in Z axis then opening the pocket with X and Y movements.



Drilling:

Making a hole with movement in Z axis.



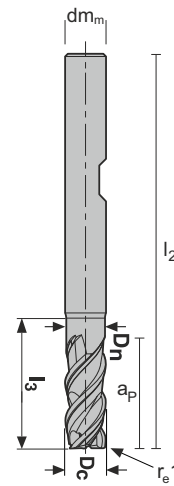
Advanced roughing/Optirough

Well defined tool paths with constant arc of contact for reliable roughing of simple & complex shapes. The large axial depths (a_p) & small radial depths (a_e) of cut combined with high feeds per tooth (f_z) and cutting speeds (V_d) results in high productivity.



Measurement drawing should be read as follows:

- dm_m = Shank diameter
- D_c = Milling cutting diameter
- m = Minimum clamping length
- l_2 = Total length
- l_3 = Maximum milling cutter depth
- a_p = Effective cutting length
- r_{e1} = Corner radius
- r_{e2} = Radius behind the cutting edge
- e = OD reduction per side
- D_n = Neck reduction

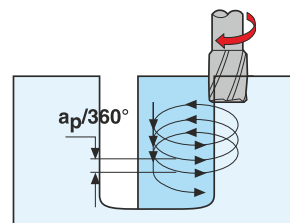


Ramping

The table below shows the feed rate percentage to use at certain ramping angles

Recommended diameter of hole for helical interpolation ramping

Diameter of end mill D_c	Diameter of hole
1-2,5	$1,4 \times D_c$
3-6	$1,3 \times D_c$
8-12	$1,2 \times D_c$
16-32	$1,15 \times D_c$

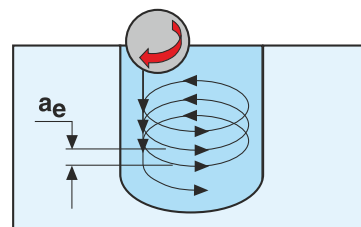


Trochoidal method

The figure below shows a method often called the trochoidal method for milling slots

Recommendation of width of slot

Diameter of end mill D_c	Slot width
1-2,5	$1,8 \times D_c$
3-6	$1,6 \times D_c$
8-12	$1,4 \times D_c$
16-32	$1,2 \times D_c$

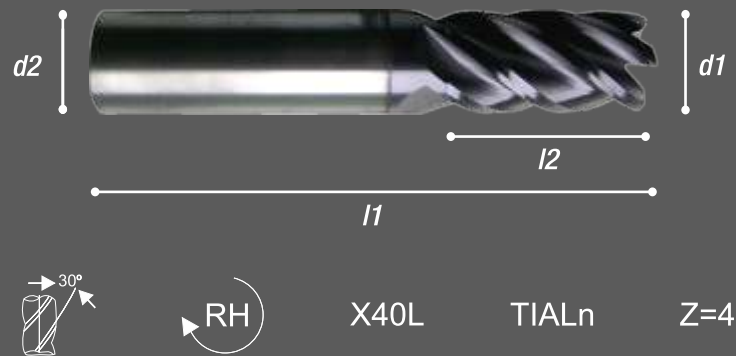




ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IREM4020	2	3	7	50
IREM4020-6	2	6	7	50
IREM4030	3	3	10	50
IREM4030-6	3	6	10	50
IREM4030L	3	3	19	60
IREM4030L-6	3	6	19	60
IREM4030XL	3	3	25	74
IREM4030XL-6	3	6	25	74
IREM4040	4	4	14	50
IREM4040-6	4	6	14	50
IREM4040L	4	4	19	60
IREM4040L-6	4	6	19	60
IREM4040XL	4	4	28	74
IREM4040XL-6	4	6	28	74
IREM4050	5	5	16	51
IREM4050L	5	5	25	62
IREM4050XL	5	5	32	74
IREM4060	6	6	19	62
IREM4060L	6	6	28	74
IREM4060XL	6	6	39	102
IREM4080	8	8	21	74
IREM4080L	8	8	29	102
IREM4080XL	8	8	42	150
IREM4100	10	10	32	74
IREM4100L	10	10	45	102
IREM4100XL	10	10	76	150

Other Sizes, number of flutes, lengths can be manufactured on request

All the dimensions are in mm.



ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IREM4120	12	12	25	74
IREM4120L	12	12	51	102
IREM4120XL	12	12	76	150
IREM4140	14	14	30	80
IREM4140L	14	14	51	102
IREM4140XL	14	14	76	150
IREM4160	16	16	32	80
IREM4160L	16	16	51	102
IREM4060XL	16	16	76	150
IREM4180	18	18	35	80
IREM4180L	18	18	51	102
IREM4180XL	18	18	76	150
IREM4200	20	20	35	80
IREM4200L	20	20	51	102
IREM4200XL	20	20	76	150
IREM4220	22	22	35	80
IREM4220L	22	22	51	102
IREM4220XL	22	22	76	150
IREM4250	25	25	35	80
IREM4250L	25	25	51	102
IREM4250XL	25	25	76	150



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...30

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IHPEM4020	2	3	7	50
IHPEM4020-6	2	6	7	50
IHPEM4030	3	3	10	50
IHPEM4030-6	3	6	10	50
IHPEM4030L	3	3	19	60
IHPEM4030L-6	3	6	19	60
IHPEM4030XL	3	3	25	74
IHPEM4030XL-6	3	6	25	74
IHPEM4040	4	4	14	50
IHPEM4040-6	4	6	14	50
IHPEM4040L	4	4	19	60
IHPEM4040L-6	4	6	19	60
IHPEM4040XL	4	4	28	74
IHPEM4040XL-6	4	6	28	74
IHPEM4050	5	5	16	51
IHPEM4050L	5	5	25	62
IHPEM4050XL	5	5	32	74
IHPEM4060	6	6	19	62
IHPEM4060L	6	6	28	74
IHPEM4060XL	6	6	39	102
IHPEM4080	8	8	21	74
IHPEM4080L	8	8	29	102
IHPEM4080XL	8	8	42	150
IHPEM4100	10	10	32	74
IHPEM4100L	10	10	45	102
IHPEM4100XL	10	10	76	150

Other Sizes, number of flutes, lengths can be manufactured on request

All the dimensions are in mm.



X20F

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Z=4

HRC
...30

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IHPEM4120	12	12	25	74
IHPEM4120L	12	12	51	102
IHPEM4120XL	12	12	76	150
IHPEM4140	14	14	30	80
IHPEM4140L	14	14	51	102
IHPEM4140XL	14	14	76	150
IHPEM4160	16	16	32	80
IHPEM4160L	16	16	51	102
IHPEM4060XL	16	16	76	150
IHPEM4180	18	18	35	80
IHPEM4180L	18	18	51	102
IHPEM4180XL	18	18	76	150
IHPEM4200	20	20	35	80
IHPEM4200L	20	20	51	102
IHPEM4200XL	20	20	76	150
IHPEM4220	22	22	35	80
IHPEM4220L	22	22	51	102
IHPEM4220XL	22	22	76	150
IHPEM4250	25	25	35	80
IHPEM4250L	25	25	51	102
IHPEM4250XL	25	25	76	150



HSC

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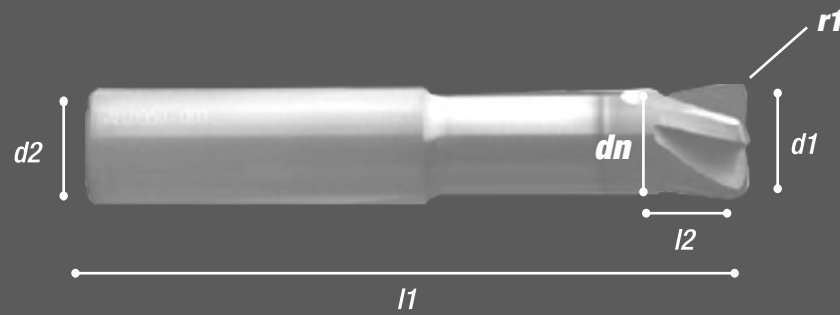
Z=4

HRC
...63

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IHMEM4020	2	2	7	50
IHMEM4020-6	2	2	7	50
IHMEM4030	3	3	10	50
IHMEM4030-6	3	3	10	50
IHMEM4030L	3	3	10	60
IHMEM4030L-6	3	3	10	60
IHMEM4030XL	3	3	15	74
IHMEM4030XL-6	3	3	15	74
IHMEM4040	4	4	10	50
IHMEM4040-6	4	4	10	50
IHMEM4040L	4	4	10	60
IHMEM4040L-6	4	4	10	60
IHMEM4040XL	4	4	15	74
IHMEM4040XL-6	4	4	15	74
IHMEM4050	5	5	10	51
IHMEM4050L	5	5	10	62
IHMEM4050XL	5	5	15	74
IHMEM4060	6	6	15	62
IHMEM4060L	6	6	15	74
IHMEM4060XL	6	6	20	102
IHMEM4080	8	8	15	74
IHMEM4080L	8	8	25	102
IHMEM4080XL	8	8	30	150
IHMEM4100	10	10	20	74
IHMEM4100L	10	10	30	102
IHMEM4100XL	10	10	30	150
IHMEM4120	12	12	20	74
IHMEM4120L	12	12	30	102
IHMEM4120XL	12	12	30	150
IHMEM4160	16	16	25	80
IHMEM4160L	16	16	30	102
IHMEM4160XL	16	16	40	150

Other Sizes, number of flutes, lengths can be manufactured on request

All the dimensions are in mm.

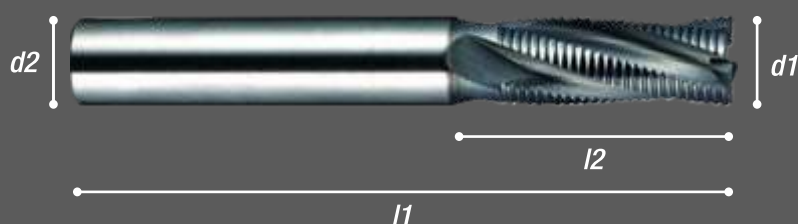

 HRC
 ...45


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Z=4

ITEM CODE	(d1)	d2	l1	l2	dn	r1
IHFEM040Z4	4.0	6.0	50	8	3.6	1
IHFEM040LZ4	4.0	6.0	65	16	3.6	1
IHFEM060Z4	6.0	6.0	65	24	5.6	1.5
IHFEM060LZ4	6.0	6.0	80	32	5.6	1.5
IHFEM080Z4	8.0	8.0	65	32	7.6	2
IHFEM080LZ4	8.0	8.0	100	40	7.6	2
IHFEM0100Z4	10.0	10.0	65	22	9.6	2
IHFEM0100LZ4	10.0	10.0	100	40	9.6	2
IHFEM0120Z4	12.0	12.0	75	24	11.6	3
IHFEM0120LZ4	12.0	12.0	100	48	11.6	3
IHFEM0160Z4	16.0	16.0	75	24	15.6	3
IHFEM0160LZ4	16.0	16.0	100	48	15.6	3



X20F

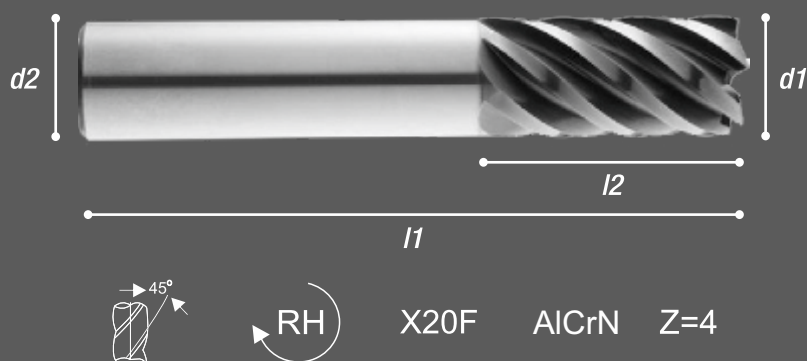
AlCrN

Z=4

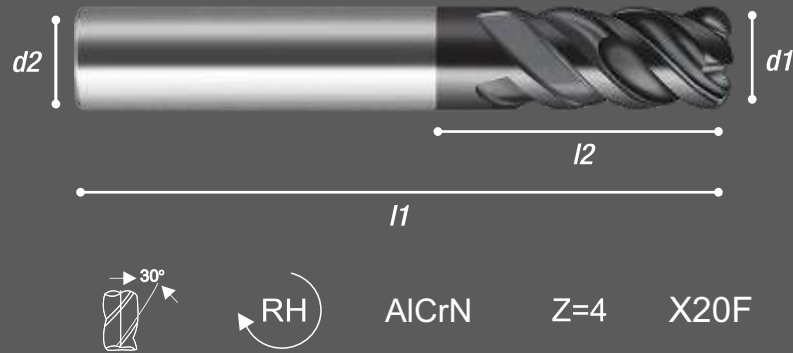
ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
ISMEMR100	10	10	25	70
ISMEMR100L	10	10	32	74
ISMEMR100XL	10	10	45	102
ISMEMR120	12	12	25	74
ISMEMR120L	12	12	51	102
ISMEMR120XL	12	12	76	153
ISMEMR140	14	14	30	90
ISMEMR140L	14	14	57	107
ISMEMR140XL	14	14	76	153
ISMEMR160	16	16	32	90
ISMEMR160L	16	16	57	107
ISMEMR160XL	16	16	76	153
ISMEMR180	18	18	35	90
ISMEMR180L	18	18	57	107
ISMEMR180XL	18	18	76	153
ISMEMR200	20	20	38	90
ISMEMR200L	20	20	57	107
ISMEMR200XL	20	20	76	153
ISMEMR220	22	22	38	90
ISMEMR220L	22	22	57	107
ISMEMR220XL	22	22	76	153
ISMEMR250	25	25	38	90
ISMEMR250L	25	25	57	107
ISMEMR250XL	25	25	76	153

Other Sizes, number of flutes, lengths can be manufactured on request

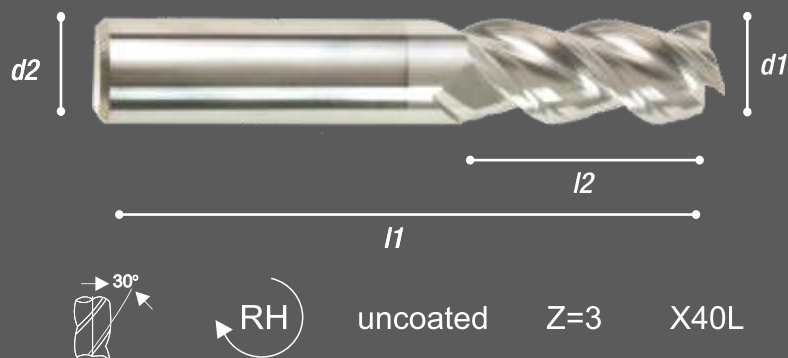
All the dimensions are in mm.



ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
ISMEMF100	10	10	25	70
ISMEMF100L	10	10	32	74
ISMEMF100XL	10	10	45	102
ISMEMF120	12	12	25	74
ISMEMF120L	12	12	51	102
ISMEMF120XL	12	12	76	153
ISMEMF140	14	14	30	80
ISMEMF140L	14	14	57	107
ISMEMF140XL	14	14	76	153
ISMEMF160	16	16	32	80
ISMEMF160L	16	16	57	107
ISMEMF160XL	16	16	76	153
ISMEMF180	18	18	35	80
ISMEMF180L	18	18	57	107
ISMEMF180XL	18	18	76	153
ISMEMF200	20	20	38	80
ISMEMF200L	20	20	57	107
ISMEMF200XL	20	20	76	153
ISMEMF220	22	22	38	80
ISMEMF220L	22	22	57	107
ISMEMF220XL	22	22	76	153
ISMEMF250	25	25	38	80
ISMEMF250L	25	25	57	107
ISMEMF250XL	25	25	76	153



ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)	CR
ICREM4030	3	3	8	50	0.5/1.0
ICREM4040	4	4	11	50	0.5/1.0
ICREM4050	5	5	13	50	0.5/1.0
ICREM4060	6	6	16	50	0.5/1.0
ICREM4080	8	8	21	60	0.5/1.0
ICREM4100	10	10	30	75	1.0/2.0
ICREM4120	12	12	32	75	1.0/2.0
ICREM4140	14	14	35	75	1.0/2.0
ICREM4160	16	16	46	100	1.0/2.0
ICREM4180	18	18	46	100	1.0/2.0
ICREM4200	20	20	46	100	1.0/2.0



ITEM CODE	DIA ($d1$)	SH.DIA ($d2$) h6	FL ($l2$)	OAL ($l1$)
IALEM3030	3	3	9	50
IALEM3030L	3	3	12	60
IALEM3040	4	4	12	50
IALEM3040L	4	4	16	60
IALEM3050	5	5	15	50
IALEM3050L	5	5	20	60
IALEM3060	6	6	18	50
IALEM3060L	6	6	25	75
IALEM3080	8	8	20	60
IALEM3080L	8	8	32	75
IALEM3100	10	10	30	75
IALEM3100L	10	10	45	100
IALEM3120	12	12	32	75
IALEM3120L	12	12	45	100
IALEM3160	16	16	45	100
IALEM3160L	16	16	65	150
IALEM3200	20	20	45	100
IALEM3200L	20	20	75	150



07

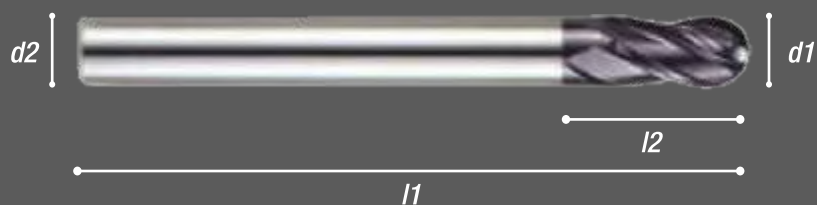
— BALL NOSE —

IRBN4

SOLID CARBIDE

4 FL REGULAR BALL NOSE

JAS-ANZ
ISO 9001:2015
1016QAS 2612



TIALn

Z=4

K40L

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l1)	OAL (l1)
IHMEM4020	2	3	7	50
IHMEM4020-6	2	6	7	50
IHMEM4030	3	3	10	50
IHMEM4030-6	3	6	10	50
IHMEM4030L	3	3	19	60
IHMEM4030L-6	3	6	19	60
IHMEM4030XL	3	3	25	74
IHMEM4030XL-6	3	6	25	74
IHMEM4040	4	4	14	50
IHMEM4040-6	4	6	14	50
IHMEM4040L	4	4	19	60
IHMEM4040L-6	4	6	19	60
IHMEM4040XL	4	4	28	74
IHMEM4040XL-6	4	6	28	74
IHMEM4050	5	5	16	51
IHMEM4050L	5	5	25	62
IHMEM4050XL	5	5	32	74
IHMEM4060	6	6	19	62
IHMEM4060L	6	6	28	74
IHMEM4060XL	6	6	39	102
IHMEM4080	8	8	21	74
IHMEM4080L	8	8	29	102
IHMEM4080XL	8	8	42	150
IHMEM4100	10	10	32	74
IHMEM4100L	10	10	45	102
IHMEM4100XL	10	10	76	150

Other Sizes, number of flutes, lengths can be manufactured on request

All the dimensions are in mm.

IRBN4

SOLID CARBIDE

4 FL REGULAR BALL NOSE

JAS-ANZ
ISO 9001:2015
1016QAS 2612



ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l1)	OAL (l1)
IRBN4120	12	12	25	74
IRBN4120L	12	12	51	102
IRBN4120XL	12	12	76	150
IRBN4140	14	14	30	80
IRBN4140L	14	14	51	102
IRBN4140XL	14	14	76	150
IRBN4160	16	16	32	80
IRBN4160L	16	16	51	102
IRBN4160XL	16	16	76	150

Other Sizes, number of flutes, lengths can be manufactured on request

All the dimensions are in mm.



AlCrN

Z=4

X20F

HRC
...30

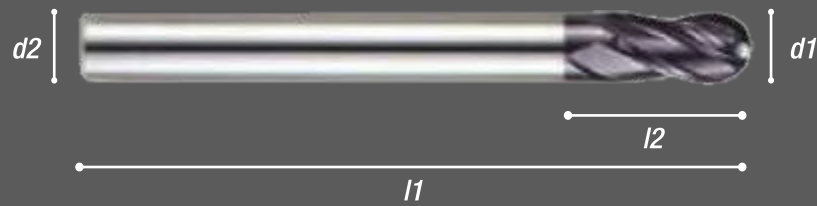
ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l1)	OAL (l1)
IHPBN4020	2	3	7	50
IHPBN4020-6	2	6	7	50
IHPBN4030	3	3	10	50
IHPBN4030-6	3	6	10	50
IHPBN4030L	3	3	19	60
IHPBN4030L-6	3	6	19	60
IHPBN4030XL	3	3	25	74
IHPBN4030XL-6	3	6	25	74
IHPBN4040	4	4	14	50
IHPBN4040-6	4	6	14	50
IHPBN4040L	4	4	19	60
IHPBN4040L-6	4	6	19	60
IHPBN4040XL	4	4	28	74
IHPBN4040XL-6	4	6	28	74
IHPBN4050	5	5	16	51
IHPBN4050L	5	5	25	62
IHPBN4050XL	5	5	32	74
IHPBN4060	6	6	19	62
IHPBN4060L	6	6	28	74
IHPBN4060XL	6	6	39	102
IHPBN4080	8	8	21	74
IHPBN4080L	8	8	29	102
IHPBN4080XL	8	8	42	150
IHPBN4100	10	10	32	74
IHPBN4100L	10	10	45	102
IHPBN4100XL	10	10	76	150

IHPBN4

SOLID CARBIDE

4 FL HIGH PERFORMANCE BALL NOSE

JAS-ANZ
ISO 9001:2015
1016QAS 2612



AlCrN

Z=4

X20F

HRC
...30

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)
IHPBN4120	12	12	25	74
IHPBN4120L	12	12	51	102
IHPBN4120XL	12	12	76	150
IHPBN4140	14	14	30	80
IHPBN4140L	14	14	51	102
IHPBN4140XL	14	14	76	150
IHPBN4160	16	16	32	80
IHPBN4160L	16	16	51	102
IHPBN4160XL	16	16	76	150

Other Sizes, number of flutes, lengths can be manufactured on request

All the dimensions are in mm.

IHMBN2

SOLID CARBIDE

2 FL HARD MACHINING BALL NOSE

JAS-ANZ
ISO 9001:2015
1016QAS 2612



ALD

HSC

Z=2

K44UF

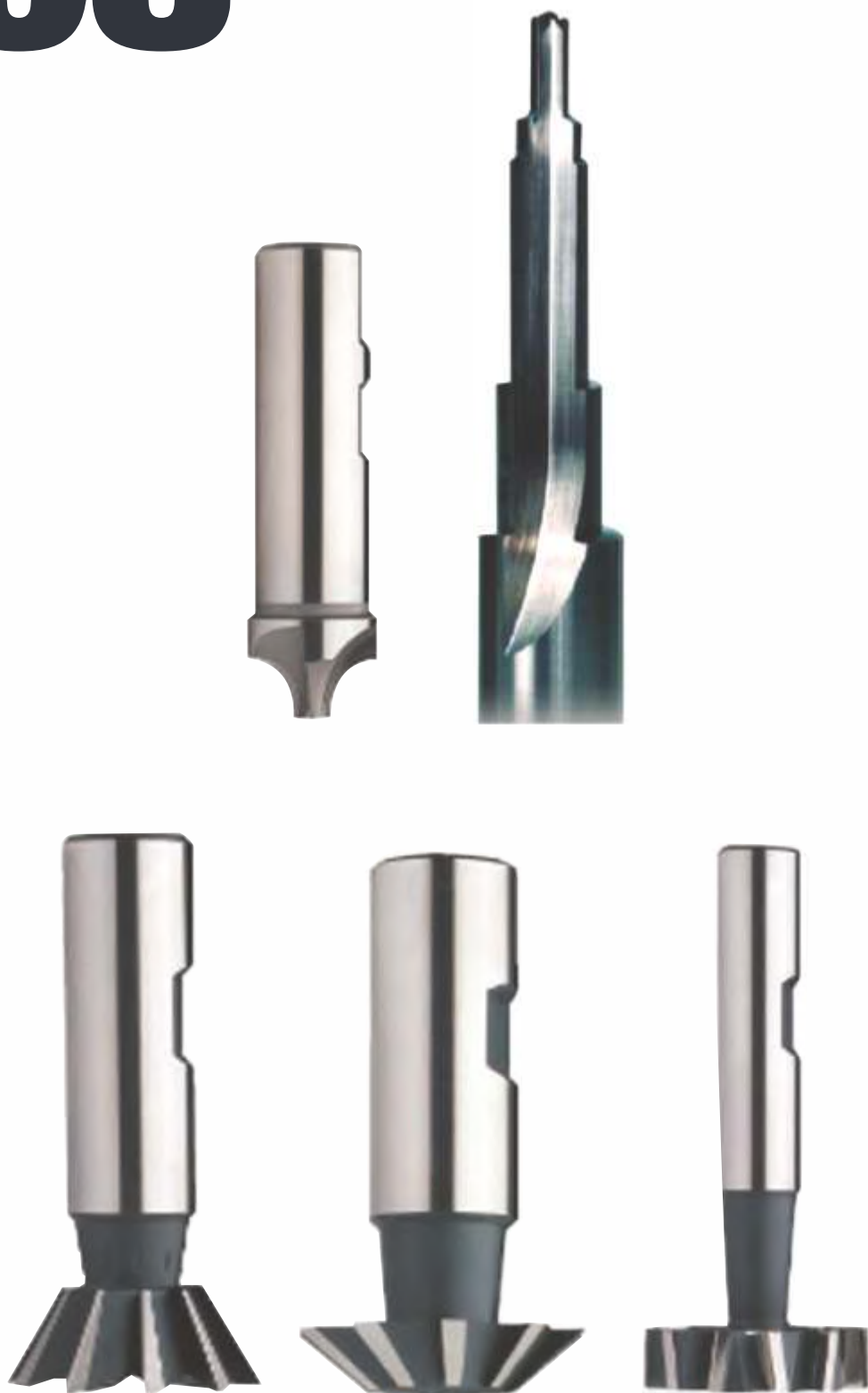
HRC
...63

ITEM CODE	DIA (d1)	SH.DIA (d2) h6	FL (l2)	OAL (l1)	Angle
IHMBN2020-6	2	6	5	65	3°
IHMBN2030-6	3	6	5	65	3°
IHMBN2030L-6	3	6	10	80	3°
IHMBN2030XL-6	3	6	15	100	3°
IHMBN2040-6	4	6	6	65	3°
IHMBN2040L-6	4	6	10	80	3°
IHMBN2040XL-6	4	6	15	100	3°
IHMBN2050-6	5	6	6	65	-
IHMBN2050L-6	5	6	10	80	-
IHMBN2050XL-6	5	6	15	100	-
IHMBN2060	6	6	9	65	-
IHMBN2060L	6	6	15	80	-
IHMBN2060XL	6	6	20	100	-
IHMBN2080	8	8	15	80	-
IHMBN2080L	8	8	20	100	-
IHMBN2080XL	8	8	30	150	-
IHMBN2100	10	10	15	80	-
IHMBN2100L	10	10	20	100	-
IHMBN2100XL	10	10	30	150	-
IHMBN2120	12	12	15	80	-
IHMBN2120L	12	12	20	100	-
IHMBN2120XL	12	12	30	150	-

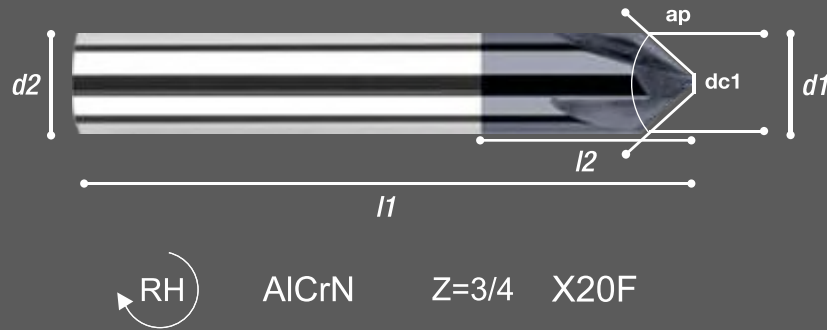
Other Sizes, number of flutes, lengths can be manufactured on request

All the dimensions are in mm.

08



— MISCELLANEOUS TOOLS —



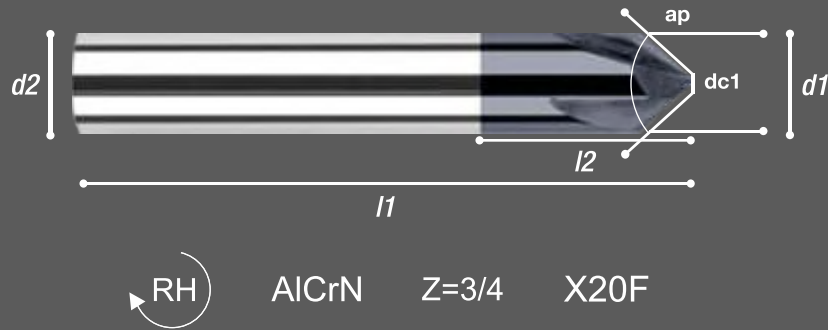
ITEM CODE	d1	dc1	d2	ap	l1	Angle	Zn
ITCH903060	3	0.6	3	1.2	50	90	3
ITCH904080	4	0.8	4	1.6	50	90	3
ITCH906120	6	1.2	6	2.4	57	90	4
ITCH908160	8	1.6	8	3.2	63	90	4
ITCH9010200	10	2.0	10	4.0	72	90	4
ITCH9012240	12	2.4	12	4.8	83	90	4

ITCH60

SOLID CARBIDE

CHAMFER CUTTER 60°

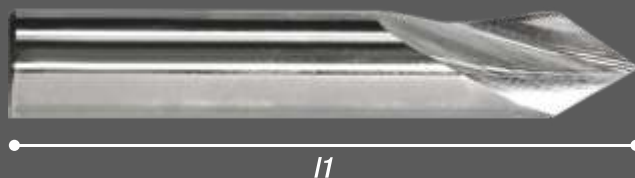
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ITEM CODE	$d1$	$dc1$	$d2$	ap	$l1$	Angle	Zn
ITCH603060	3	0.6	3	2.0	50	60	3
ITCH604080	4	0.8	4	2.7	50	60	3
ITCH606012	6	1.2	6	4.1	57	60	4
ITCH608016	8	1.6	8	5.5	63	60	4
ITCH6010020	10	2.0	10	6.9	72	60	4
ITCH6012024	12	2.4	12	8.3	83	60	4

Other Sizes, number of flutes, lengths can be manufactured on request

All the dimensions are in mm.



AlCrN

Z=1

K44F

ITEM CODE	D ₂	(FL)	OAL (l ₁)	Z	Angle
ITEC030	3	2.6	60	1	60°
ITEC040	4	3.5	60	1	60°
ITEC060	6	5.2	60	1	60°

SOLID CARBIDE

Special Tool As per Customer Requirements

JAS-ANZ
ISO 9001:2015
1016QAS 2612



Regrinding is the process of sharpening a used carbide cutting tool to a like new condition. You may be more familiar with drill sharpening, or regrinding, but that is only one step in the process of reconditioning. Properly sharpening a carbide drill involves the four basic steps listed below...



Tool Identification: Today there are a multitude of drill point designs, which creates myriad opportunities to misidentify a drill point. At ITG, we are highly trained on correctly identifying all major brands of drill points and the various coatings that are used.

Regrinding: When carbide drills are sharpened, a new point is ground onto the end of the tool. At ITG, we take great care to assure that the new point meets the OEM standards. We also thoroughly examine the tool for thermal cracks and other types of damage that may cause a field failure. If we find such damage we continue to grind until a quality point is achieved.



Edge Preparation: Carbide drills generally do not perform very well if the cutting edges are left sharp. At ITG, we are highly trained on applying the right edge preparation to each drill. This may consist of a t-land or a hone or both. We do whatever the OEM specifies or we can even modify the edge prep to improve performance.

Recoating: Most high performance carbide drills have a PVD coating which increases their tool life. At ITG, we recoat nearly 95% of all the drills we receive.



ISO Tolerance Table

ISO TOLERANCES FOR HOLES (MM)													
HOLE DIA (MM)	D10	E9	F7	F8	G7	G9	H6	H7	H8	H9	H10	H11	H12
≤ 3	+60 +20	+39 +14	+16 +6	+20 +6	+12 +2	+27 +2	+6 0	+10 0	+14 0	+25 0	+40 0	+60 0	+100 0
3 ≥ 6	+78 +30	+50 +20	+22 +10	+28 +10	+16 +4	+34 +4	+8 0	+12 0	+18 0	+30 0	+48 0	+75 0	+120 0
6 ≥ 10	+98 +40	+61 +25	+28 +13	+35 +13	+20 +5	+41 +5	+9 0	+15 0	+22 0	+36 0	+58 0	+90 0	+150 0
10 ≥ 18	+120 +50	+75 +32	+34 +16	+43 +16	+28 +7	+49 +6	+11 0	+18 0	+27 0	+43 0	+70 0	+110 0	+180 0
18 ≥ 30	+149 +65	+92 +40	+41 +20	+53 +20	+34 +9	+59 +7	+13 0	+21 0	+33 0	+52 0	+84 0	+130 0	+210 0
30 ≥ 50	+180 +80	+112 +50	+50 +25	+64 +25	+40 +10	+71 +9	+16 0	+25 0	+39 0	+62 0	+100 0	+160 0	+250 0
50 ≥ 65	+220 +100	+134 +60	+60 +30	+76 +30	+61 +15	-	+19 0	+30 0	+46 0	+74 0	+120 0	+190 0	+300 0
65 ≥ 80													
80 ≥ 100	+260 +120	+159 +72	+71 +36	+90 +36	+69 +17	-	+22 0	+35 0	+54 0	+87 0	+140 0	+220 0	+350 0
100 ≥ 120													
120 ≥ 140													
140 ≥ 160	+305 +145	+185 +85	+83 +43	+122 +50	+75 +18	-	+25 0	+40 0	+63 0	+100 0	+160 0	+250 0	+400 0
160 ≥ 180													
180 ≥ 200													
200 ≥ 225	+355 +170	+215 +110	+96 +50	+96 +50	+96 +50	-	+29 0	+46 0	+72 0	+115 0	+185 0	+290 0	+460 0
225 ≥ 250													
250 ≥ 280	+400 +190	+240 +110	+108 +56	+137 +56	+137 +56	-	+32 0	0 -52	+81 0	+130 0	210 0	+320 0	+520 0
280 ≥ 315													
315 ≥ 355	+440 +210	+265 +125	+119 +62	+151 +62	+151 +62	-	+36 0	0 -57	+89 0	+140 0	+230 0	+360 0	+570 0
355 ≥ 400													

ISO Tolerance Table

ISO TOLERANCES FOR HOLES (MM)												
HOLE DIA (MM)	H13	Js7	Js9	K6	K7	M6	M7	N7	N91	P7	P9	R7
≤ 3	+140 0	+/-5	+/-12,5	0 -6	0 -10	-2 -8	-2 -12	-4 -14	-4 -29	-6 -16	-6 -31	-10 -20
3 ≥ 6	+180 0	+/-6	+/-15	+2 -6	+3 -9	-1 -9	0 -12	-4 -16	0 -30	-8 -20	-12 -42	-11 -23
6 ≥ 10	+220 0	+/-7.5	+/-18	+2 -7	+5 -10	-3 -12	0 -15	-4 -19	0 -36	-9 -24	-15 -51	-13 -28
10 ≥ 18	+270 0	+/-9	+/-21.5	+2 -9	+6 -12	-4 -15	0 -18	-5 -23	0 -43	-11 -29	-18 -61	-16 -34
18 ≥ 30	+330 0	+/-10.5	+/-26	+2 -11	+6 -15	-4 -17	0 -21	-7 -28	0 -52	-14 -35	22 -74	-20 -41
30 ≥ 50	+390 0	+/-12.5	+/-31	+3 -13	+7 -18	-4 -20	0 -25	-8 -33	0 -62	-17 -42	-26 -88	-25 -50
50 ≥ 65	+460 0	+/-15	+/-37	+4 -15	+9 -21	-5 -24	0 -33	-9 -39	0 -74	21 -51	-32 -106	-30 -62
65 ≥ 80												-32 -62
80 ≥ 100	+540 0	+/-17.5	+/-43.5	+4 -18	+10 -15	-6 -28	0 -35	-10 -45	0 -87	-24 -59	-37 -124	-38 -73
100 ≥ 120												-41 -76
120 ≥ 140	+630 0	+/-20	+/-50	+4 -21	+12 -28	-8 -33	0 -40	-12 -52	0 -100	-28 -68	-43 -143	-48 -88
140 ≥ 160												-50 -90
160 ≥ 180												-53 -93
180 ≥ 200	+720 0	+/-23	+/-57.5	+5 -24	+13 -33	-8 -37	0 -46	-14 -60	0 -115	-33 -79	+50 +165	-60 -106
200 ≥ 225												-63 -109
225 ≥ 250												-67 -113
250 ≥ 280	+810 0	+/-26	+/-65	+5 -27	+16 -36	-9 -41	0 -52	-14 -66	0 -130	-36 -88	-56 -186	-74 -126
280 ≥ 315												-78 -130
315 ≥ 355	+890 0	+/-28.5	+/-70	+7 -29	+17 -40	-10 -46	0 -57	-16 -73	0 -140	-41 -98	-62 -202	-87 -144
355 ≥ 400												-93 -150

Nomenclature and formulae

RPM

$$n = \frac{v_c \cdot 1000}{\pi \cdot D_c} \quad (\text{rev/min})$$

Cutting speed

$$v_c = \frac{n \cdot \pi \cdot D_c}{1000} \quad (\text{m/min})$$

Feed speed

$$V_f = n \cdot Z_n \cdot f_z \quad (\text{mm/min})$$

Feed per revolution

$$f = Z_n \cdot f_z \quad (\text{mm/rev})$$

Metal removal rate

$$Q = \frac{a_e \cdot a_p \cdot V_f}{1000} \quad (\text{cm}^3/\text{min})$$

Cutting speed and RPM for copying

$$v_c = \frac{n \cdot \pi \cdot D_w}{1000} \quad (\text{m/min})$$

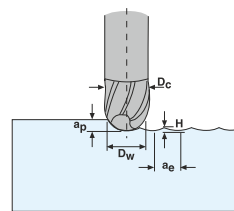
$$n = \frac{v_c \cdot 1000}{\pi \cdot D_w} \quad (\text{RPM})$$

$$D_w = 2 \cdot \sqrt{a_p (D_c - a_p)} \quad (\text{mm})$$

Profile height

$$H = \frac{D_c}{2} - \frac{\sqrt{D_c^2 - a_e^2}}{2}$$

$$D_w = 2 \cdot \sqrt{a_p (D_c - a_p)} \quad (\text{mm})$$



Profile height H (um)

D _c	Pitch a _e (mm)						
	0.06	0.08	0.11	0.15	0.20	0.30	0.45
1	0.90	1.60	3.00	5.70	10.0	23.0	53.0
2	0.45	0.80	1.50	2.80	5.00	11.0	26.0
4	0.23	0.40	0.76	1.40	2.50	5.60	13.0
6	0.15	0.27	0.50	0.94	1.70	3.80	8.40
8	0.11	0.20	0.38	0.70	1.30	2.80	6.30
10	0.09	0.16	0.30	0.56	1.00	2.30	5.10
12	0.08	0.13	0.25	0.47	0.83	1.90	4.20

a_p = Depth of cut mm/axial depth of cut (mm)

a_e = Width of cut mm/radial depth of cut (mm)

D_c = Cutter diameter

f = Feed per revolution (mm/rev)

f_z = Feed per tooth (mm/tooth)

Z_n = No. of teeth

n = RPM (rev/min)

Q = Material removal rate (cm³/min)

v_c = Cutting speed (m/min)

v_f = Feed speed (mm/min)

D_w = Working diameter

Threaded holes – hole size Metric ISO threads and inch threads

Rolled taps (fluteless taps)

THREAD	Inch sizes	Pitch	Hole Ø	Tolerance minimum	Tolerance maximum
M3	-	0.5	2.80	2.82	2.82
M3.5	-	0.6	3.25	3.25	3.28
M4	-	0.7	3.70	3.70	3.73
MF5	-	0.5	4.80	4.80	4.82
M5	-	0.8	4.65	4.65	4.68
M6	-	1	5.55	5.55	5.58
MF6X0.75	-	0.75	5.65	5.65	5.58
MF78	-	0.75	6.65	6.65	5.68
M7	-	1	6.55	6.55	5.68
MF8	-	0.75	7.65	7.65	5.58
MF8	-	1	7.55	7.55	7.68
M8	-	1.25	7.45	7.45	7.58
MF10	-	1	9.55	9.55	7.49
MF10	-	1.25	9.45	9.45	9.58
M10	-	1.5	9.35	9.35	9.49
MF12	-	1	11.55	11.55	11.58
MF12	-	1.25	11.45	11.45	11.49
MF12	-	1.5	11.35	11.35	11.39
M12	-	1.75	11.20	11.20	11.25
MF14	-	1	13.55	13.55	13.58
MF14	-	1.25	13.45	13.45	13.49
MF14	-	1.5	13.35	13.35	13.39
M14	-	2	13.10	13.10	13.15
MF16	-	1.5	15.35	15.35	15.39
M16	-	2	15.10	15.10	15.15
M20	-	2.5	18.90	18.90	18.95
M24	-	3	22.65	22.65	22.70

Threaded holes – hole size Metric ISO threads and inch threads

Rolled taps (fluteless taps)

THREAD	Inch sizes	Pitch	Hole Ø	Tolerance minimum	Tolerance maximum
M2	-	0.4	1.60	1.570	1.670
M2,5	-	0.45	2.05	2.015	2.130
-	UNC4-40	-	2.35	2.160	2.380
M3	-	0.5	2.50	2.470	2.590
-	UNC5-40	-	2.65	2.490	2.690
-	UNC6-32	-	2.85	2.645	2.890
M3,500	-	0.6	2.90	2.850	3.000
M4	-	0.7	3.30	3.250	3.400
-	UNC8-32	-	3.50	3.350	3.530
M4,5	-	0.75	3.70	3.690	3.870
-	UNC10-24	-	3.90	3.685	3.960
M5	-	0.8	4.20	4.140	4.330
-	UNC12-24	-	4.50	4.350	4.590
M6	-	1	5.00	4.920	5.150
-	UNC1/4-20	-	5.10	4.980	5.260
M7	-	1	6.00	5.980	6.260
-	NPT1/16	-	6.15	6.200	TAPER 1:16
-	UNC5/16-18	-	6.60	6.415	6.730
M8	-	1.25	6.80	6.650	6.910
-	UNC3/8-16	-	8.00	7.810	8.160
-	NPT1/8	-	8.40	8.500	TAPER 1:16
M10	-	1.5	8.50	8.380	8.675
-	G1/8	-	8.80	8.570	8.840
-	UNC7/16-14	-	9.40	9.150	9.550
M12	-	1.75	10.20	10.110	10.440
-	UNC1/2-13	-	10.80	10.590	11.010
-	NPT1/4	-	11.10	11.100	TAPER 1:16
-	G1/4	-	11.80	11.445	11.890
M14	-	2	12.00	11.835	12.210
-	UNC5/8-11	-	13.50	13.380	13.860
M16	-	2	14.00	13.835	14.210
-	NPT3/8	-	14.30	14.550	TAPER 1:16
-	G3/8	-	15.25	14.950	15.395
M18	-	2.5	15.50	15.295	15.740
M20	-	2.5	17.50	17.295	17.740
-	NPT1/2	-	17.90	18.000	TAPER 1:16
-	G1/2	-	19.00	18.635	19.170
M22	-	2.5	19.50	19.300	19.740
-	G5/8	-	21.00	20.590	21.120
M24	-	3	21.00	20.760	21.250
-	NPT3/4	-	23.20	23.250	TAPER 1:16
M27	-	3	24.00	23.760	24.250
-	G3/4	-	24.50	24.120	24.650
M30	-	3.5	26.50	26.380	26.670
-	G7/8	-	28.25	27.880	28.415
-	NPT1	-	29.00	29.200	TAPER 1:16
M33	-	3.5	29.50	28.706	29.211
-	G1	-	30.75	30.300	30.930
M36	-	4	32.00	31.670	32.270
M39	-	4	35.00	34.093	35.670
-	G1,1/8	-	35.50	34.940	35.580
M42	-	4.5	37.50	37.220	37.799
-	G1,1/4	-	39.50	38.960	39.590
-	G1,1/2	-	45.25	44.845	45.485

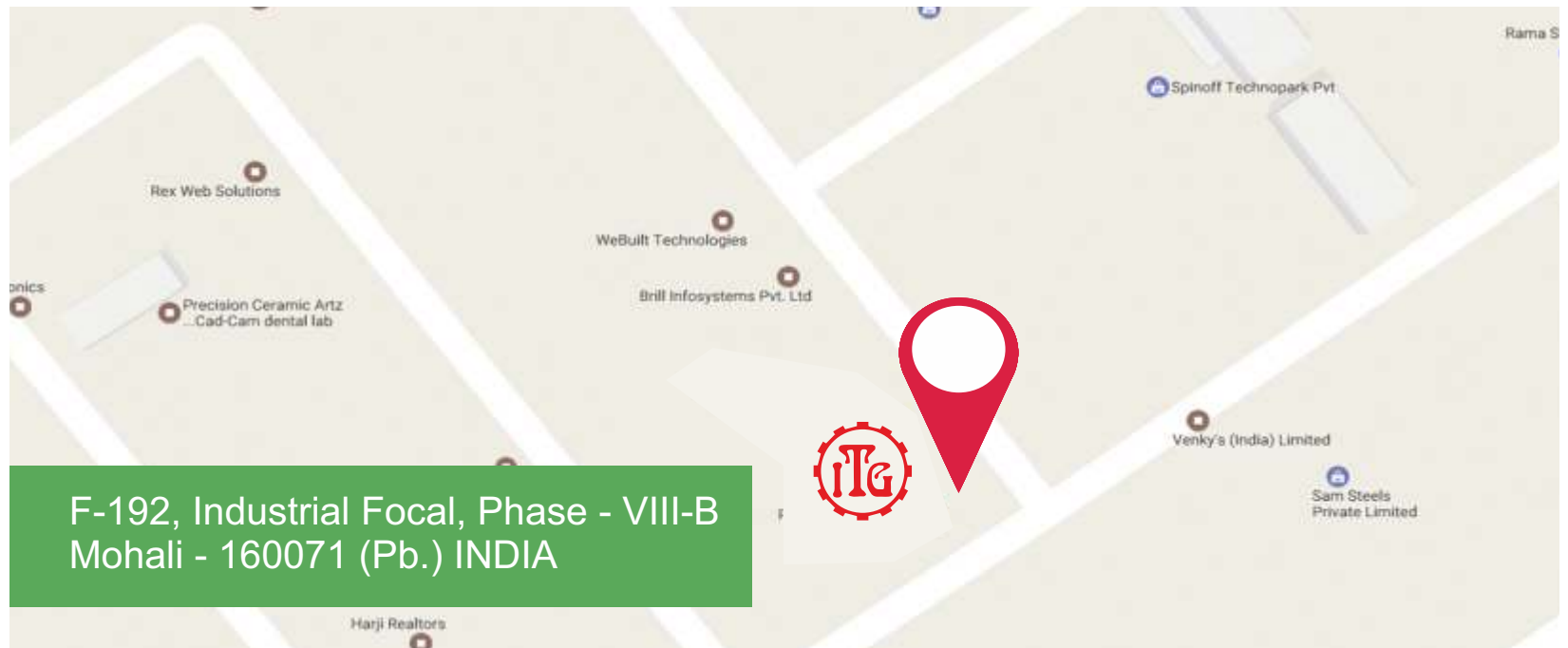
Threaded holes – hole size Metric ISO threads and inch threads

Tap threading – Thread milling – Fine threads

THREAD	Inch sizes	Pitch	Hole Ø	Tolerance minimum	Tolerance maximum
MF4X0.5	-	0.5	3.5	3.459	3.599
-	UNF8-36	-	3.5	3.404	3.607
-	UNF10-32	-	4.1	3.962	4.166
MF5X0.5	-	0.5	4.5	4.459	4.599
MF6X0.75	-	0.75	5.2	5.188	5.378
-	UNF1/4-28	-	5.5	5.367	5.580
-	NPTF1/16	-	6.1	6.200	TAPER 1:16
-	UNF5/16-24	-	6.9	6.792	7.038
MF8X1	-	1	7.0	6.917	7.153
MF8X0.75	-	0.75	7.2	7.188	7.378
-	NPTF1/8	-	8.4	8.500	TAPER 1:16
MF10X1.25	-	1.25	8.8	8.647	8.912
MF10X1	-	1	9.0	8.917	9.153
MF10X0.75	-	0.75	9.2	9.188	9.378
-	UNF7/16-20	-	9.9	9.738	10.030
MF12X1.5	-	1.5	11.0	10.376	10.676
MF12X1.25	-	1.25	12.52	10.647	10.912
MF12X1	-	1	11.0	10.917	11.153
-	NPTF1/4	-	11.0	11.00	TAPER 1:16
-	UNF1/2-20	-	11.5	11.326	11.618
MF14X1.5	-	1.5	12.5	12.376	12.676
MF14X1.25	-	1.25	12.8	12.647	12.912
MF14X1	-	1	13.0	12.917	13.153
-	NPTF3/8	-	14.3	14.500	TAPER 1:16
MF16X1.5	-	1.5	14.5	14.376	14.676
-	UNF5/8-18	-	14.5	14.348	14.671
MF16X1	-	1	15.0	14.917	15.153
MF18X1.5	-	1.5	16.5	16.376	16.676
MF18X1	-	1	17.0	16.917	17.153
-	NPTF1/2	-	17.6	17.800	TAPER 1:16
MF20X1.5	-	1.5	18.5	18.376	18.676
MF20X1	-	1	19.0	18.917	19.153
MF22X1.5	-	1.5	20.5	20.376	20.676
MF24X2	-	2.	22.0	21.385	22.210
MF24X1.5	-	1.5	22.5	22.376	22.676
-	NPTF3/4	-	23.0	23.100	TAPER 1:16
MF25X1.5	-	1.5	23.5	23.376	23.676
MF26X1.5	-	1.5	24.5	24.376	24.676
MF27X2	-	2.	25.0	24.385	25.210
MF27X1.5	-	1.5	25.5	25.376	25.676
MF28X1.5	-	1.5	26.5	26.376	26.676
MF30X2	-	2	28.0	27.835	28.210
MF30X1.5	-	1.5	28.5	28.376	28.676

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Phone no.

(+91)-172-5091889

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E-mail

info@industrialtools.co.in



Distributor:

www.industrialtools.co.in