

# D

## *Drill Insert & Holder*

*Drilling Insert* .....D01

*Drilling Holder* .....D02~D07



### **DIW Series**

- Traditional design with three cutting corners.
- Suitable for Alloy Steel, Stainless Steel and Cast Iron, Hard Steel (Please refer to Catalog).

### **DDR Series**

- New design with four cutting corners, for economical drill.
- With longer sides for prolonged surface of the hole.

## SPMG, WCMT

SPMG			<b>P</b> Alloy Steel <b>M</b> Stainless Steel <b>K</b> Cast Iron <b>H</b> Hard Steel				<b>F</b> Finishing <b>S</b> Semi Finishing <b>M</b> Medium <b>R</b> Roughing								
Type	Designation		Dimension (mm)				Grade	Application				Material			
			lc	S	r	d1		<b>F</b>	<b>S</b>	<b>M</b>	<b>R</b>	<b>P</b>	<b>M</b>	<b>K</b>	<b>H</b>
	SPMG	050204-MG	5.0	2.38	0.4	2.30	CP3020				★★★	◎	◎	◎	
							CP3050				★★★	◎	◎	◎	
	SPMG	060204-MG	6.0	2.38	0.4	2.65	CP3020				★★★	◎	◎	◎	
							CP3050				★★★	◎	◎	◎	

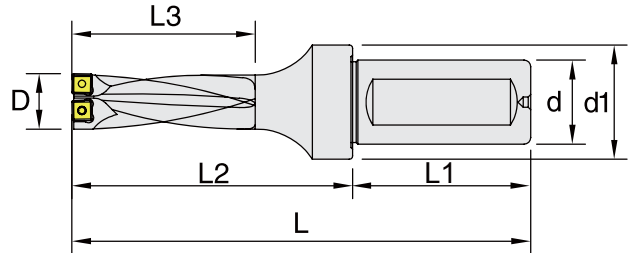
★ Acceptable    ★★ Recommended    ★★★ Excellent    ◎ First Recommend    ○ Second Recommend    **Cutter Page : D02~D04**

WCMT			<b>P</b> Alloy Steel <b>M</b> Stainless Steel <b>K</b> Cast Iron <b>H</b> Hard Steel				<b>F</b> Finishing <b>S</b> Semi Finishing <b>M</b> Medium <b>R</b> Roughing							
Type	Designation		Dimension (mm)			Grade	Application				Material			
			lc	S	r		<b>F</b>	<b>S</b>	<b>M</b>	<b>R</b>	<b>P</b>	<b>M</b>	<b>K</b>	<b>H</b>
	WCMT	030208-MG	5.56	2.38	0.8	CP4020				★★★	◎	◎	◎	
						CP4050				★★★	◎	◎	◎	
		040208-MG	6.35	2.38	0.8	CP4020				★★★	◎	◎	◎	
						CP4050				★★★	◎	◎	◎	
		050308-MG	7.94	3.18	0.8	CP4020				★★★	◎	◎	◎	
						CP4050				★★★	◎	◎	◎	
		06T308-MG	9.53	3.97	0.8	CP4020				★★★	◎	◎	◎	
						CP4050				★★★	◎	◎	◎	
		080412-MG	12.7	4.76	1.2	CP4020				★★★	◎	◎	◎	
						CP4050				★★★	◎	◎	◎	

★ Acceptable    ★★ Recommended    ★★★ Excellent    ◎ First Recommend    ○ Second Recommend    **Cutter Page : D05~D07**

## DDR 2×D HIGH SPEED DRILL HOLDER

DDR



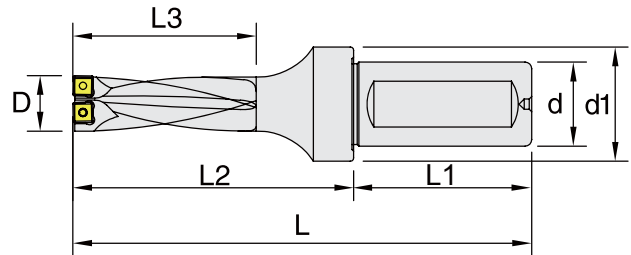
Item Code	Dimensions, mm							Teeth	Insert	Screw	Wrench
	D	d	d1	L	L3	L2	L1				
IDDR2125-20T2-05	12.5	20	25	94	26	44	50	2	SPMG0502...	TS2003	TF6
IDDR2130-20T2-05	13			96	28	46		2			
IDDR2135-20T2-05	13.5			96	28	46		2			
IDDR2140-20T2-05	14			96	28	46		2			
IDDR2145-20T2-05	14.5			96	28	46		2			
IDDR2150-20T2-05	15			96	28	46		2			
IDDR2155-25T2-06	15.5	25	33	108	32	52	56	2	SPMG0602...	TS2202	TF6
IDDR2160-25T2-06	16			110	34	54		2			
IDDR2165-25T2-06	16.5			110	34	54		2			
IDDR2170-25T2-06	17			110	34	54		2			
IDDR2175-25T2-06	17.5			110	34	54		2			
IDDR2180-25T2-06	18			110	34	54		2			
IDDR2185-25T2-06	18.5			110	34	54		2			
IDDR2190-25T2-06	19			110	34	54		2			
IDDR2195-25T2-06	19.5			110	34	54		2			
IDDR2200-25T2-06	20			110	34	54		2			
IDDR2205-25T2-06	20.5			110	34	54		2			
IDDR2210-25T2-06	21			110	34	54		2			
IDDR2215-25T2-06	21.5			110	34	54		2			

SPMG		<p><b>P</b> Alloy Steel      <b>F</b> Finishing</p> <p><b>M</b> Stainless Steel      <b>S</b> Semi Finishing</p> <p><b>K</b> Cast Iron      <b>M</b> Medium</p> <p><b>H</b> Hard Steel      <b>R</b> Roughing</p>												
Type	Designation	Dimension (mm)				Grade	Application				Material			
		lc	S	r	d1		<b>F</b>	<b>S</b>	<b>M</b>	<b>R</b>	<b>P</b>	<b>M</b>	<b>K</b>	<b>H</b>
	SPMG 050204-MG	5.0	2.38	0.4	2.30	CP3020				★★★	◎	◎	◎	◎
						CP3050				★★★	◎	◎	◎	◎
	SPMG 060204-MG	6.0	2.38	0.4	2.65	CP3020				★★★	◎	◎	◎	◎
						CP3050				★★★	◎	◎	◎	◎

★ Acceptable    ★★ Recommended    ★★★ Excellent    ◎ First Recommend    ○ Second Recommend

## DDR 3×D HIGH SPEED DRILL HOLDER

### DDR



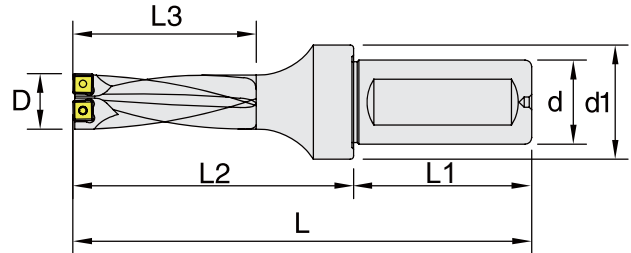
Item Code	Dimensions, mm							Teeth	Insert	Screw	Wrench
	D	d	d1	L	L3	L2	L1				
IDDR3125-20T2-05	12.5	20	25	107	39	57	50	2	SPMG0502...	TS2003	TF6
IDDR3130-20T2-05	13			110	42	60		2			
IDDR3135-20T2-05	13.5			114	45	64		2			
IDDR3140-20T2-05	14			2							
IDDR3145-20T2-05	14.5			2							
IDDR3150-20T2-05	15			2							
IDDR3155-25T2-06	15.5	25	33	124	48	68	56	2	SPMG0602...	TS2202	TF6
IDDR3160-25T2-06	16			127	51	71		2			
IDDR3165-25T2-06	16.5			131	54	75		2			
IDDR3170-25T2-06	17			2							
IDDR3175-25T2-06	17.5			2							
IDDR3180-25T2-06	18			2							
IDDR3185-25T2-06	18.5			134	57	78		2			
IDDR3190-25T2-06	19			2							
IDDR3195-25T2-06	19.5			139	60	83		2			
IDDR3200-25T2-06	20			2							
IDDR3205-25T2-06	20.5			142	63	86		2			
IDDR3210-25T2-06	21			2							
IDDR3215-25T2-06	21.5			145	66	89		2			

SPMG		<ul style="list-style-type: none"> <li><span style="border: 1px solid black; padding: 2px;">P</span> Alloy Steel</li> <li><span style="border: 1px solid black; padding: 2px;">M</span> Stainless Steel</li> <li><span style="border: 1px solid black; padding: 2px;">K</span> Cast Iron</li> <li><span style="border: 1px solid black; padding: 2px;">H</span> Hard Steel</li> <li><span style="border: 1px solid black; padding: 2px;">F</span> Finishing</li> <li><span style="border: 1px solid black; padding: 2px;">S</span> Semi Finishing</li> <li><span style="border: 1px solid black; padding: 2px;">M</span> Medium</li> <li><span style="border: 1px solid black; padding: 2px;">R</span> Roughing</li> </ul>												
Type	Designation	Dimension (mm)				Grade	Application				Material			
		lc	S	r	d1		<span style="border: 1px solid black; padding: 2px;">F</span>	<span style="border: 1px solid black; padding: 2px;">S</span>	<span style="border: 1px solid black; padding: 2px;">M</span>	<span style="border: 1px solid black; padding: 2px;">R</span>	<span style="border: 1px solid black; padding: 2px;">P</span>	<span style="border: 1px solid black; padding: 2px;">M</span>	<span style="border: 1px solid black; padding: 2px;">K</span>	<span style="border: 1px solid black; padding: 2px;">H</span>
	SPMG 050204-MG	5.0	2.38	0.4	2.30	CP3020				★★★	○	○	○	○
						CP3050				★★★	○	○	○	○
	SPMG 060204-MG	6.0	2.38	0.4	2.65	CP3020				★★★	○	○	○	○
						CP3050				★★★	○	○	○	○

★ Acceptable    ★★ Recommended    ★★★ Excellent    ○ First Recommend    ○ Second Recommend

## DDR 4×D HIGH SPEED DRILL HOLDER

### DDR



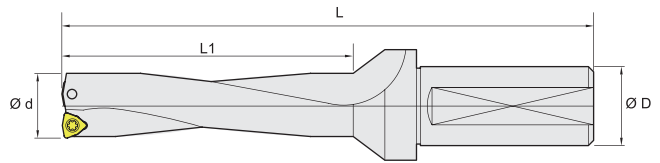
Item Code	Dimensions, mm							Teeth	Insert	Screw	Wrench
	D	d	d1	L	L3	L2	L1				
IDDR4125-20T2-05	12.5	20	25	120	52	70	50	2	SPMG0502...	TS2003	TF6
IDDR4130-20T2-05	13			124	56	74		2			
IDDR4135-20T2-05	13.5			129	60	79		2			
IDDR4140-20T2-05	14			2							
IDDR4145-20T2-05	14.5			2							
IDDR4150-20T2-05	15			2							
IDDR4155-25T2-06	15.5	25	33	140	64	84	56	2	SPMG0602...	TS2202	TF6
IDDR4160-25T2-06	16			144	68	88		2			
IDDR4165-25T2-06	16.5			148	72	92		2			
IDDR4170-25T2-06	17			152	76	96		2			
IDDR4175-25T2-06	17.5			156	80	100		2			
IDDR4180-25T2-06	18			160	84	104		2			
IDDR4185-25T2-06	18.5			164	88	108		2			
IDDR4190-25T2-06	19			2							
IDDR4195-25T2-06	19.5			2							
IDDR4200-25T2-06	20			2							
IDDR4205-25T2-06	20.5			2							
IDDR4210-25T2-06	21			2							
IDDR4215-25T2-06	21.5			2							

SPMG			<ul style="list-style-type: none"> <li><span style="border: 1px solid black; padding: 2px;">P</span> Alloy Steel</li> <li><span style="border: 1px solid black; padding: 2px;">M</span> Stainless Steel</li> <li><span style="border: 1px solid black; padding: 2px;">K</span> Cast Iron</li> <li><span style="border: 1px solid black; padding: 2px;">H</span> Hard Steel</li> <li><span style="border: 1px solid black; padding: 2px;">F</span> Finishing</li> <li><span style="border: 1px solid black; padding: 2px;">S</span> Semi Finishing</li> <li><span style="border: 1px solid black; padding: 2px;">M</span> Medium</li> <li><span style="border: 1px solid black; padding: 2px;">R</span> Roughing</li> </ul>												
Type	Designation		Dimension (mm)				Grade	Application				Material			
			lc	S	r	d1		<span style="border: 1px solid black; padding: 2px;">F</span>	<span style="border: 1px solid black; padding: 2px;">S</span>	<span style="border: 1px solid black; padding: 2px;">M</span>	<span style="border: 1px solid black; padding: 2px;">R</span>	<span style="border: 1px solid black; padding: 2px;">P</span>	<span style="border: 1px solid black; padding: 2px;">M</span>	<span style="border: 1px solid black; padding: 2px;">K</span>	<span style="border: 1px solid black; padding: 2px;">H</span>
	SPMG	050204-MG	5.0	2.38	0.4	2.30	CP3020				★★★	<span style="border: 1px solid black; border-radius: 50%; padding: 1px;">○</span>	<span style="border: 1px solid black; border-radius: 50%; padding: 1px;">○</span>	<span style="border: 1px solid black; border-radius: 50%; padding: 1px;">○</span>	<span style="border: 1px solid black; border-radius: 50%; padding: 1px;">○</span>
							CP3050				★★★	<span style="border: 1px solid black; border-radius: 50%; padding: 1px;">○</span>	<span style="border: 1px solid black; border-radius: 50%; padding: 1px;">○</span>	<span style="border: 1px solid black; border-radius: 50%; padding: 1px;">○</span>	<span style="border: 1px solid black; border-radius: 50%; padding: 1px;">○</span>
	SPMG	060204-MG	6.0	2.38	0.4	2.65	CP3020				★★★	<span style="border: 1px solid black; border-radius: 50%; padding: 1px;">○</span>	<span style="border: 1px solid black; border-radius: 50%; padding: 1px;">○</span>	<span style="border: 1px solid black; border-radius: 50%; padding: 1px;">○</span>	<span style="border: 1px solid black; border-radius: 50%; padding: 1px;">○</span>
							CP3050				★★★	<span style="border: 1px solid black; border-radius: 50%; padding: 1px;">○</span>	<span style="border: 1px solid black; border-radius: 50%; padding: 1px;">○</span>	<span style="border: 1px solid black; border-radius: 50%; padding: 1px;">○</span>	<span style="border: 1px solid black; border-radius: 50%; padding: 1px;">○</span>

★ Acceptable    ★★ Recommended    ★★★ Excellent    ◎ First Recommend    ○ Second Recommend

## DIW 2xD HIGH SPEED DRILL HOLDER

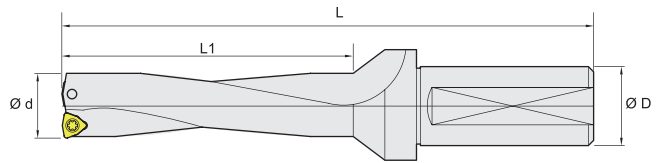
DIW



Item Code	Dimensions, mm			Teeth	Insert	Screw	Wrench
	d	L1	D				
IDIWHB215003	15	30	25	2	WCMT0302...	M256333	T8
IDIWHB216003	16	32	25	2	WCMT0302...	M256333	T8
IDIWHB217003	17	34	25	2	WCMT0302...	M256333	T8
IDIWHB218003	18	36	25	2	WCMT0302...	M256333	T8
IDIWHB219003	19	38	25	2	WCMT0302...	M256333	T8
IDIWHB220004	20	40	32	2	WCMT0402...	M256333	T8
IDIWHB221004	21	42	32	2	WCMT0402...	M256333	T8
IDIWHB222004	22	44	32	2	WCMT0402...	M256333	T8
IDIWHB223004	23	46	32	2	WCMT0402...	M256333	T8
IDIWHB224004	24	48	32	2	WCMT0402...	M256333	T8
IDIWHB225005	25	50	32	2	WCMT0503...	M308044	T10
IDIWHB226005	26	52	32	2	WCMT0503...	M308044	T10
IDIWHB227005	27	54	32	2	WCMT0503...	M308044	T10
IDIWHB228005	28	56	32	2	WCMT0503...	M308044	T10
IDIWHB229005	29	58	32	2	WCMT0503...	M308044	T10
IDIWHB230005	30	60	32	2	WCMT0503...	M308044	T10
IDIWHB231006	31	62	32	2	WCMT06T3...	M308050	T15
IDIWHB232006	32	64	32	2	WCMT06T3...	M308050	T15
IDIWHB233006	33	66	32	2	WCMT06T3...	M308050	T15
IDIWHB234006	34	68	32	2	WCMT06T3...	M308050	T15
IDIWHB235006	35	70	32	2	WCMT06T3...	M308050	T15
IDIWHB236006	36	72	32	2	WCMT06T3...	M308050	T15
IDIWHB237006	37	74	32	2	WCMT06T3...	M308050	T15
IDIWHB238006	38	76	32	2	WCMT06T3...	M308050	T15
IDIWHB239006	39	78	32	2	WCMT06T3...	M308050	T15
IDIWHB240006	40	80	32	2	WCMT06T3...	M308050	T15
IDIWHB241006	41	82	32	2	WCMT06T3...	M308050	T15
IDIWHB242006	42	84	32	2	WCMT06T3...	M308050	T15
IDIWHB245006	45	90	40	2	WCMT0804...	M40A055	T15
IDIWHB250006	50	100	40	2	WCMT0804...	M40A055	T15

## DIW 3×D HIGH SPEED DRILL HOLDER

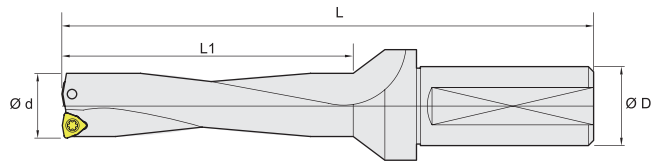
DIW



Item Code	Dimensions, mm			Teeth	Insert	Screw	Wrench
	d	L1	D				
IDIWHC215003	15	45	25	2	WCMT0302...	M256333	T8
IDIWHC216003	16	48	25	2	WCMT0302...	M256333	T8
IDIWHC217003	17	51	25	2	WCMT0302...	M256333	T8
IDIWHC218003	18	54	25	2	WCMT0302...	M256333	T8
IDIWHC219003	19	57	25	2	WCMT0302...	M256333	T8
IDIWHC220004	20	60	32	2	WCMT0402...	M256333	T8
IDIWHC221004	21	63	32	2	WCMT0402...	M256333	T8
IDIWHC222004	22	66	32	2	WCMT0402...	M256333	T8
IDIWHC223004	23	69	32	2	WCMT0402...	M256333	T8
IDIWHC224004	24	72	32	2	WCMT0402...	M256333	T8
IDIWHC225005	25	75	32	2	WCMT0503...	M308044	T10
IDIWHC226005	26	78	32	2	WCMT0503...	M308044	T10
IDIWHC227005	27	81	32	2	WCMT0503...	M308044	T10
IDIWHC228005	28	84	32	2	WCMT0503...	M308044	T10
IDIWHC229005	29	87	32	2	WCMT0503...	M308044	T10
IDIWHC230005	30	90	32	2	WCMT0503...	M308044	T10
IDIWHC231006	31	93	32	2	WCMT06T3...	M308050	T15
IDIWHC232006	32	96	32	2	WCMT06T3...	M308050	T15
IDIWHC233006	33	99	32	2	WCMT06T3...	M308050	T15
IDIWHC234006	34	102	32	2	WCMT06T3...	M308050	T15
IDIWHC235006	35	105	32	2	WCMT06T3...	M308050	T15
IDIWHC236006	36	108	32	2	WCMT06T3...	M308050	T15
IDIWHC237006	37	111	32	2	WCMT06T3...	M308050	T15
IDIWHC238006	38	114	32	2	WCMT06T3...	M308050	T15
IDIWHC239006	39	117	32	2	WCMT06T3...	M308050	T15
IDIWHC240006	40	120	32	2	WCMT06T3...	M308050	T15
IDIWHC241006	41	123	32	2	WCMT06T3...	M308050	T15
IDIWHC242006	42	126	32	2	WCMT06T3...	M308050	T15
IDIWHC245006	45	135	32	2	WCMT0804...	M40A055	T15
IDIWHC250006	50	150	32	2	WCMT0804...	M40A055	T15

## DIW 4×D HIGH SPEED DRILL HOLDER

DIW



Item Code	Dimensions, mm			Teeth	Insert	Screw	Wrench
	d	L1	D				
IDIWHD217003	17	68	25	2	WCMT0302...	M256333	T8
IDIWHD218003	18	72	25	2	WCMT0302...	M256334	T8
IDIWHD219003	19	76	25	2	WCMT0302...	M256335	T8
IDIWHD220004	20	80	32	2	WCMT0402...	M256336	T8
IDIWHD221004	21	84	32	2	WCMT0402...	M256337	T8
IDIWHD222004	22	88	32	2	WCMT0402...	M256338	T8
IDIWHD223004	23	92	32	2	WCMT0402...	M256339	T8
IDIWHD224004	24	96	32	2	WCMT0402...	M256340	T8
IDIWHD225005	25	100	32	2	WCMT0503...	M308044	T10
IDIWHD226005	26	104	32	2	WCMT0503...	M308045	T10
IDIWHD227005	27	108	32	2	WCMT0503...	M308046	T10
IDIWHD228005	28	112	32	2	WCMT0503...	M308047	T10
IDIWHD229005	29	116	32	2	WCMT0503...	M308048	T10
IDIWHD230005	30	120	32	2	WCMT0503...	M308049	T10
IDIWHD231006	31	124	32	2	WCMT06T3...	M308050	T15
IDIWHD232006	32	128	32	2	WCMT06T3...	M308051	T15
IDIWHD233006	33	132	32	2	WCMT06T3...	M308052	T15
IDIWHD234006	34	136	32	2	WCMT06T3...	M308053	T15
IDIWHD235006	35	140	32	2	WCMT06T3...	M308054	T15

Type	Designation	Dimension (mm)			Grade	Application				Material			
		lc	S	r		F	S	M	R	P	M	K	H
	WCMT	030208-MG	5.56	2.38	0.8	CP4020				★★★	◎	◎	◎
						CP4050				★★★	◎	◎	◎
		040208-MG	6.35	2.38	0.8	CP4020				★★★	◎	◎	◎
						CP4050				★★★	◎	◎	◎
		050308-MG	7.94	3.18	0.8	CP4020				★★★	◎	◎	◎
						CP4050				★★★	◎	◎	◎
	06T308-MG	9.53	3.97	0.8	CP4020				★★★	◎	◎	◎	
					CP4050				★★★	◎	◎	◎	
	080412-MG	12.7	4.76	1.2	CP4020				★★★	◎	◎	◎	
					CP4050				★★★	◎	◎	◎	

★ Acceptable    ★★ Recommended    ★★★ Excellent    ◎ First Recommend    ○ Second Recommend



# E

## *Technical Data*

*Troubleshooting in milling.....F01*

*Troubleshooting in drilling.....F02~F03*



## TROUBLESHOOTING IN MILLING

Trouble	Occurrences	Countermeasures
Chipping	Too high feed	Reduce feed
	Up milling	Change down milling
	Sharp cutting edge	Honing at the cutting edge-chamfering or rounding if needed
	Chattering	Check spindle speed down
	Too much overhang	Adjust to minimize overhang
	Unfixed chucking of Endmill	Check the precision of chuck and collet
Wear	High Cutting speed	Decrease cutting speed
	Low feed	Increase feed
	Up milling	Down milling
	High-hardened work piece	Choosing special coating endmill
Tool Breakage	Too much cutting amount	Decrease cutting amount
	High cutting force	Feed down; spindle speed up
	Too much overhang	Adjust to minimize overhang
Surface Roughness	Chattering	Change the cutting condition
	Generation of built-up edge	Increasing cutting speed & Feed rate or down milling
	high feed, low speed	Reduce feed & Increase speed
Accuracy of finished work piece	Incorrect Numbers of flute	Replace more flutes Endmill
	Deflection of Tool	Using big diameter tool & Minimize the overhang

## TROUBLESHOOTING IN DRILLING

Trouble	Occurrences	Countermeasures
Deformation of hole	Becoming thread scratch in the hole	<ol style="list-style-type: none"> <li>1. Check for Suitable Guide-Bush</li> <li>2. Reduce relief angle</li> <li>3. Check for proper point angle &amp; length of lips</li> </ol>
	Generation of chattering & vibration	<ol style="list-style-type: none"> <li>1. Reduce relief angle</li> <li>2. Grind web thinning</li> <li>3. Shortening length of drill</li> <li>4. Check for proper drill</li> <li>5. Check for chuck &amp; collet &amp; socket</li> <li>6. Pre-centering</li> <li>7. Inspect rigidity of the Drill Machine</li> </ol>
	Poor chip evacuation	<ol style="list-style-type: none"> <li>1. Increase Feed</li> <li>2. Check for proper helix angle</li> <li>3. Check for proper chip space</li> <li>4. Using Step feed</li> </ol>
Deflection of hole	Drill won't enter work	<ol style="list-style-type: none"> <li>1. Check for Suitable Guide-Bush</li> <li>2. Reduce Feed</li> <li>3. Pre-centering</li> </ol>
	Insufficient rigidity of drill	Shortening length of drill
	Unsuitable angle	Regrinding
Excessive wear of cutting edge	Cutting speed too high	<ol style="list-style-type: none"> <li>1. Reduce cutting speed</li> <li>2. Check Lip Relief</li> <li>3. Increase Coolant Flow</li> <li>4. Check for proper material</li> </ol>

## TROUBLESHOOTING IN DRILLING

Trouble	Occurrences	Countermeasures
Poor surface conditions of work piece	Excessive wear of cutting edge	Regrinding
	Too much Feed	Decrease feed
	Chips clog in hole	Add number of exit
	the others	<ol style="list-style-type: none"> <li>1.Thin Web</li> <li>2.Check for Proper Guide-bush</li> <li>3.Use the highly rigid spindle</li> </ol>
Breakage	Feed too heavy	Decrease feed rate
	Chips clog in hole	<ol style="list-style-type: none"> <li>1.Check for proper chip space</li> <li>2.Check for proper helix angle</li> </ol>
	Insufficient rigidity of drill	<ol style="list-style-type: none"> <li>1.Reduce feed</li> <li>2.Shortening length of drill</li> <li>3.Increasing Web thickness</li> </ol>
	Unstable in throughout hole drilling	<ol style="list-style-type: none"> <li>1.Reduce feed while throughout drilling</li> <li>2.Check Set Up Rigidity</li> <li>3.Use the highly rigid spindle</li> </ol>
Chipping	Feed speed too high	Decrease feed rate
	Tool High Lip relief Angle	<ol style="list-style-type: none"> <li>1.Reduce Lip Relief Angle</li> <li>2.Reduce feed in drilling</li> <li>3.Check Set up Rigidity</li> </ol>
	During oversize operation	<ol style="list-style-type: none"> <li>1.Properly grind point angle</li> <li>2.Reduce cutting speed</li> </ol>
Hole oversize	Point angle is not properly, large chip of one flute; small chip of other flute	<ol style="list-style-type: none"> <li>1.Regrinding</li> <li>2.Thin Web</li> <li>3.Properly grind point angle</li> <li>4.Guide-bush</li> </ol>