

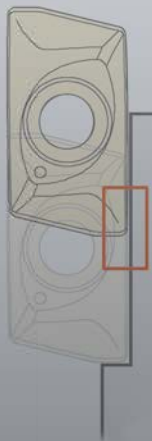
AHU High-Feed Ultra End Mill
AHUM High-Feed Ultra End Mill Modular Type
AHUB High-Feed Ultra End Mill Bore Type
High Feed Cutting (HFC)

D16 mm ~ D63 mm

- Shank, Modular & Bore Types

FW Fine Wall Finishing

- Improved wall surface accuracy



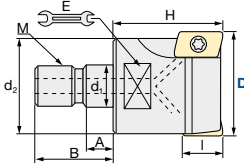
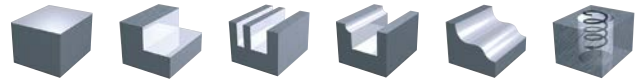
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AHUM | High-Speed Ultra End Mill Modular

Q max
High Efficient

▽
Roughing

No. of Teeth
2-5



Diameter Holder only [mm]	Fastening Torque [Nm]
-0.1/-0.2 mm	1.3 Nm

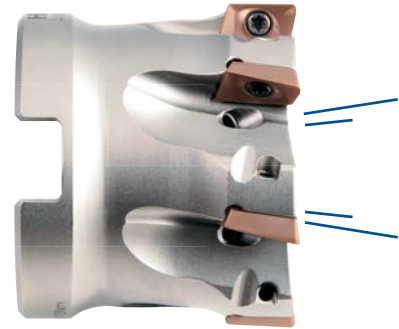
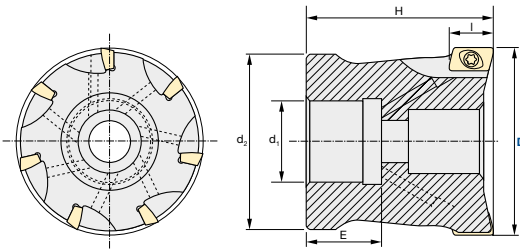
Modular Type												
ID Code	Item Code	Flutes	D	I	H	d ₁	M	d ₂	A	B	E	Inserts
FH 525	AHUM-1016R-2	2	16	9	25	8.5	M8	13	5.5	16	10	JDMT-1003-R../-FW JDET-1003-R../-FA
FH 526	AHUM-1020R-3	3	20		30	10.5	M10	18		18	15	
FH 527	AHUM-1025R-4	4	25		35	12.5	M12	21		20	17	
FH 528	AHUM-1032R-5	5	32		40	17	M16	29	6	22	22	

AHUB | High-Speed Ultra Bore Type

Q max
High Efficient

▽
Roughing

No. of Teeth
6-8



Diameter Holder only [mm]	Fastening Torque [Nm]
-0.1/-0.2 mm	1.3 Nm

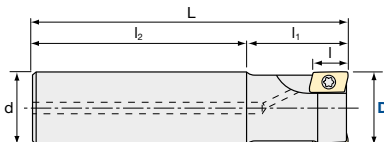
Bore Type										
ID Code	Item Code	Flutes	D	I	H	d ₁	d ₂	E	Inserts	
FH 534	AHUB-1040RM-6	6	40	9	40	16	32	19	JDMT-1003-R../-FW JDET-1003-R../-FA	
FH 535	AHUB-1050RM-7	7	50			22	47	20		
FH 536	AHUB-1063RM-8	8	63							

AHU | High-Speed Ultra End Mill

Q max
High Efficient

▽
Roughing

No. of Teeth
2-5

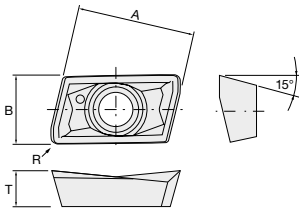


Diameter Holder only [mm]	Fastening Torque [Nm]
-0.1/-0.2 mm	1.3 Nm

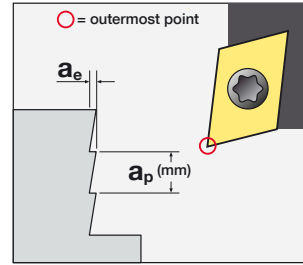
Shank Type										
ID Code	Item Code	Flutes	D	I	l ₁	l ₂	L	d	Inserts	
FH 506	AHU-1016R-2	2	16	9	30	70	100	16	JDMT-1003-R../-FW JDET-1003-R../-FA	
FH 507	AHU-1020R-3	3	20			80	110	20		
FH 508	AHU-1025R-4	4	25		35	85	120	25		
FH 509	AHU-1032R-5	5	32		45		130	32		



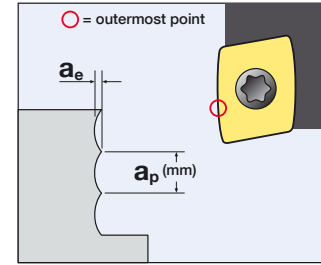
INSERTS | Improved cutting surface



Conventional (JDMT.....R)



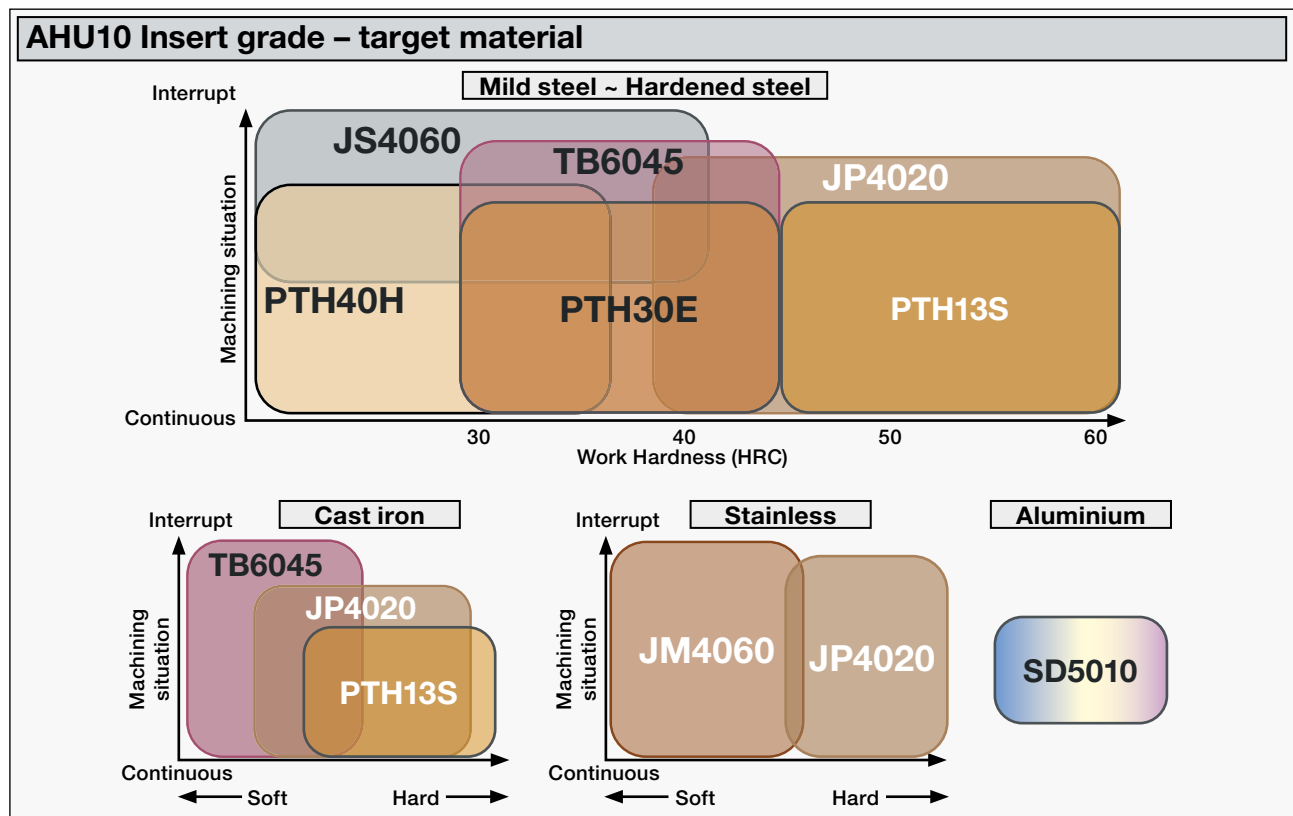
Fine Wall type **JDMT.....R-FW**



<div>Soft<div>Target Hardness of Workpiece</div>Hard</div>													
Inserts	Tolerance Class	Corner-R	Grade								Size (mm)		
			SD5010	JM4060	JS4060	PTH40H	PTH30E	TB6045	PTH13S	JP4020			
Item Code			ID-Code								A	B	T
JDMT-1003-R04	M	0.4					WF633	WF634	WF637		11	6.1	3.5
JDMT-1003-R04-FW		0.4-FW		WF696						WF695			
JDMT-1003-R08		0.8		WF702	WF701	WF636	WF631	WF635	WF638	WF700			
JDMT-1003-R08-FW		0.8-FW		WF699	WF698					WF697			
JDMT-1003-R20		2.0		WF705	WF704		WF632			WF703			
JDET-1003-R04-FA	E	0.4-FA	WF706										

SD5010	PVD · DLC coated grade for Aluminium
JM4060	PVD · For stainless steels & carbon steels < 35HRC
JS4060	PVD · For carbon steels < 35HRC
PTH40H	PVD · For carbon steels < 35HRC

PTH30E	PVD · General steels for 30–40 HRC
TB6045	PVD · General steels for 30–40 HRC / Recommended for dry cutting
PTH13S	PVD · For pre-hardened steels 40–55 HRC
JP4020	PVD · For pre-hardened steels 40–55 HRC



Clamp Screw		Wrench	
ID Code	Item-Code	ID Code	Item-Code
ET175	250-141	ET013	104-T8

Cutting Conditions Schnittwerte Condizioni di taglio Condiciones de Corte Conditions de coupe Valores de corte:			
D 16 (Z2) – D 63 (Z8):			Page 6–7

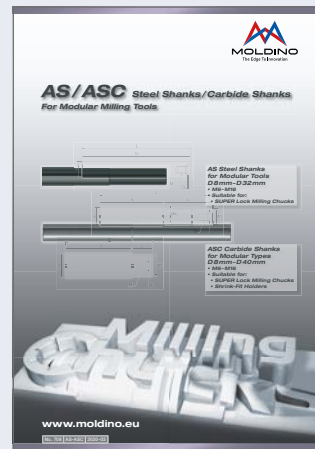
AHUM | High-Feed Ultra End Mill Modular

➔ For more information about Modular Tools and available Shanks please check our brochures:

Indexable Modular No. 328.x





AS/ASC Shanks No. 708





AHU + AHUM + AHUB | Recommended Cutting Conditions





-  1. Please choose the best conditions from the table
2. Reduce feed rate by 30% from the above table for slotting operations
3. To reduce tool breakage index the inserts earlier than the maximum edge life
4. Chips can become hot and can cause burns or damage to eyes. Please ensure machine guards are used, and safety specs and gloves worn at all times when carrying out work near to the tool or work-piece
5. Please ensure caution when using neat cutting oil due to the risk of fire

-  1. Bitte wählen Sie aus der Tabelle die für Ihre Anwendung am besten geeigneten Bedingungen
2. Für Nutenbearbeitungen sollte der Vorschub um 30% reduziert werden
3. Um die Gefahr des Werkzeugbruchs zu reduzieren, sollten die Wende-schneidplatten gewechselt werden, bevor die maximale Standzeit der Schneide erreicht ist
4. Die während der Bearbeitung entstehenden Späne können sehr heiß werden und können zu Verbrennungen oder Verletzungen von Haut und Augen führen. Bitte stellen Sie sicher, dass während der Bearbeitung die Maschinentüren geschlossen sind. Bei Arbeiten in der Nähe oder direkt am Werkzeug oder Werkstück, sollten immer eine Schutzbrille und Handschuhe getragen werden
5. Erhöhte Vorsicht ist geboten beim Einsatz von purem Schneidöl, da es sich während der Bearbeitung entzünden kann

-  1. Scegliere le condizioni migliori della tabella indicata.
2. Ridurre l'avanzamento (mm/min) di circa 30% da questa tabella per esecuzioni di cave dal pieno
3. Per evitare la rottura dell'utensile cambiate l'inserto prima di arrivare all'usura massima.
4. I trucioli possono essere molto caldi durante il lavoro. Usate sempre i mezzi di sicurezza (Occhiali, guanti, vetri di sicurezza...) durante il lavoro vicino all'utensile o al materiale.
5. Attenzione al rischio di fiamma se durante il lavoro usate refrigerante a base di olio.

-  1. Veuillez choisir les conditions de coupes les mieux adaptées grâce au tableau.
2. Pour des opérations de rainurage, il faut réduire de 30% les avances énoncées dans le tableau ci-dessus.
3. Pour réduire les risques de rupture de l'outil, changez l'insert avant d'avoir atteint la durée de vie maximale de l'arrête de coupe.
4. Les copeaux peuvent devenir chauds et causer des lésions oculaires ou des brûlures. Veuillez vous assurer que les protections de la machines sont correctement utilisées, et que des lunettes et des gants soient portés pour tout travail à proximité de l'outil ou de la pièce à usiner.
5. Prenez vos précautions lors d'utilisation d'huiles de coupes à cause des risques d'incendie

-  1. Seleccionar las condiciones de la tabla de indicada
2. En operaciones de ranurado hay que reducir el avance un 30%.
3. Para reducir el riesgo de rotura de la herramienta hay cambiar la plaquita antes de agotar la vida máxima del filo
4. Las virutas pueden saltar candentes y pueden causar quemaduras o daño en los ojos.
5. Por favor, asegúrese de cerrar las protecciones de la máquina y de que son utilizados gafas y guantes en todo momento al realizar trabajos cerca de la herramienta o la pieza.
6. Por favor, tome precaución al utilizar aceite de corte debido al riesgo de ignición.

-  1. Escolha as melhores condições da tabela
2. Reduzir o avanço em 30% da tabela em cima em operações de rasgos
3. Para evitar que a ferramenta se destrua substituir as plaquetas mais cedo que o seu desgaste limite.
4. As aparas quentes podem provocar queimaduras ou danos nos olhos, verifique se as protecções da máquina são usadas e todas as especificações de segurança são respeitadas perto da máquina e ferramenta.
5. Cuidado ao utilizar óleo de corte puro, devido ao risco de incêndio.

Ramping / Helical Milling



Ramping

Ramping is possible please use the following data for direct milling without pre-drilling any starter holes.

Fräsoptionen über Rampe

Für Fräsoptionen über Rampe nutzen Sie bitte die nachfolgend abgebildeten Schnittwerte für die direkte Bearbeitung ohne Startlochbohrung.

Lavorazioni in rampa

È possibile lavorare in rampa senza alcun preforo. Usate per questa lavorazione i seguenti dati.

Rampa

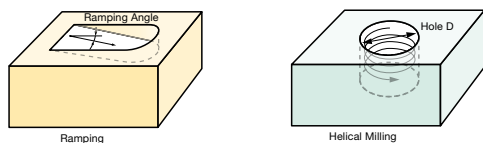
El mecanizado en rampa es posible. Por favor, utilizar las condiciones siguientes para mecanizado directo sin pretaladrado.

Usinage de rampes

Cette application est possible, utilisez, les données suivantes pour un fraisage direct, sans avant trou.

Rampa

A fresagem em rampa é possível. Por favor utilizar as condições seguintes em maquinação directa sem pré-furo.




Tool Diameter D mm	D 16	D 20	D 25	D 32	D 40	D 50	D 63
Max Ramp Angle°	4°	3°	2.5°	2°	1.5°	1°	1°
Hole D (mm)	21~29	29~37	39~47	53~61	68~80	85~100	107~126


AHU + AHUM + AHUB | Recommended Cutting Conditions


Work piece material	Recommend grade & Target hardness (HRC)	Emulsion	Mist	Air	Parameter	D 16 (Z2)		D 20 (Z3)		D 25 (Z4)		D 32 (Z5)	
						Side milling	Slotting	Side milling	Slotting	Side milling	Slotting	Side milling	Slotting
I	Mild steel <200HB	JS4060	PTH40H	TB6045	V _c m/min	300	180	300	180	300	180	300	180
					n min ⁻¹	5970	3580	4770	2860	3820	2290	2980	1790
					f _t mm/t	0,2	0,16	0,25	0,2	0,25	0,2	0,25	0,2
					V _f mm/min	2390	1150	3580	1720	3820	1830	3730	1790
					a _p mm	3,5	3	4	3,5	4	3,5	4	3,5
					a _e mm	5	16	6	20	8	25	10	32
					Q cm ³ /min	42	55	86	120	122	160	149	200
II	Carbon-Steel Alloy-Steel <30HRC	JS4060	PTH40H	PTH30E	TB6045	V _c m/min	250	150	250	150	250	150	250
					n min ⁻¹	4970	2980	3980	2390	3180	1910	2490	1490
					f _t mm/t	0,2	0,16	0,25	0,2	0,25	0,2	0,25	0,2
					V _f mm/min	1990	950	2980	1430	3180	1530	3110	1490
					a _p mm	3	2,5	3,5	3	3,5	3	3,5	3
					a _e mm	5	16	6	20	8	25	10	32
					Q cm ³ /min	30	38	63	86	89	115	109	143
III	Alloy-Steel Tool-Steel 30~40HRC	PTH30E	TB6045	JP4020	V _c m/min	180	120	180	120	180	120	180	120
					n min ⁻¹	3580	2390	2860	1910	2290	1530	1790	1190
					f _t mm/t	0,15	0,12	0,18	0,15	0,18	0,15	0,18	0,15
					V _f mm/min	1070	570	1550	860	1650	920	1610	900
					a _p mm	2,5	2	3	2,5	3	2,5	3	2,5
					a _e mm	5	16	6	20	8	25	10	32
					Q cm ³ /min	13	18	28	43	40	58	48	72
IV	Hardened steel 40~50HRC	PTH13S	JP4020		V _c m/min	120	80	120	80	120	80	120	80
					n min ⁻¹	2390	1590	1910	1270	1530	1020	1190	800
					f _t mm/t	0,1	0,08	0,12	0,1	0,12	0,1	0,12	0,1
					V _f mm/min	480	250	690	380	730	410	720	400
					a _p mm	1,5	1,2	2	1,5	2	1,5	2	1,5
					a _e mm	5	16	6	20	8	25	10	32
					Q cm ³ /min	4	5	8	11	12	15	14	19
V	Stainless steel (wet condition)*	JM4060		JP4020	V _c m/min	110	70	110	70	110	70	110	70
					n min ⁻¹	2190	1390	1750	1110	1400	890	1090	700
					f _t mm/t	0,15	0,12	0,18	0,15	0,18	0,15	0,18	0,15
					V _f mm/min	660	330	950	500	1010	530	980	520
					a _p mm	2,5	2	3	2,5	3	2,5	3	2,5
					a _e mm	5	16	6	20	8	25	10	32
					Q cm ³ /min	8	11	17	25	24	33	29	42
VI	Cast-Iron GG EN-GJL	JS4060	PTH40H	PTH30E	TB6045	V _c m/min	180	150	180	150	180	150	180
					n min ⁻¹	3580	2980	2860	2390	2290	1910	1790	1490
					f _t mm/t	0,15	0,12	0,2	0,15	0,2	0,15	0,2	0,15
					V _f mm/min	1070	720	1720	1070	1830	1150	1790	1120
					a _p mm	2,5	2	3	2,5	3	2,5	3	2,5
					a _e mm	5	16	6	20	8	25	10	32
					Q cm ³ /min	13	23	31	54	44	72	54	90
VII	Cast-Iron GGG EN-GJS EN-JS	TB6045	PTH13S	JP4020	V _c m/min	150	120	150	120	150	120	150	120
					n min ⁻¹	2980	2390	2390	1910	1910	1530	1490	1190
					f _t mm/t	0,15	0,12	0,2	0,15	0,2	0,15	0,2	0,15
					V _f mm/min	900	570	1430	860	1530	920	1490	900
					a _p mm	2,5	2	3	2,5	3	2,5	3	2,5
					a _e mm	5	16	6	20	8	25	10	32
					Q cm ³ /min	11	18	26	43	37	58	45	72
VIII	Aluminium	SD5010			V _c m/min	600	400	600	400	600	400	600	400
					n min ⁻¹	11940	7960	9550	6370	7640	5090	5970	3980
					f _t mm/t	0,12	0,1	0,15	0,12	0,15	0,12	0,15	0,12
					V _f mm/min	2860	1590	4300	2290	4580	2440	4480	2390
					a _p mm	2,5	2	3	2,5	3	2,5	3	2,5
					a _e mm	5	16	6	20	8	25	10	32
					Q cm ³ /min	36	51	77	115	110	153	134	191
IX	Titanium			JP4020	V _c m/min	60	40	50	30	50	30	50	30
					n min ⁻¹	1190	800	800	480	640	380	500	300
					f _t mm/t	0,12	0,1	0,15	0,12	0,15	0,12	0,15	0,12
					V _f mm/min	290	160	360	170	380	180	370	180
					a _p mm	0,8	0,65	1	0,8	1	0,8	1	0,8
					a _e mm	5	16	6	20	8	25	10	32
					Q cm ³ /min	1	2	2	3	3	4	4	5
X	Inconel Heat resistant alloy			JP4020	V _c m/min	20	18	20	18	20	18	20	18
					n min ⁻¹	400	360	320	290	250	230	200	180
					f _t mm/t	0,1	0,08	0,12	0,1	0,12	0,1	0,12	0,1
					V _f mm/min	80	60	110	90	120	90	120	90
					a _p mm	0,8	0,65	1	0,8	1	0,8	1	0,8
					a _e mm	5	16	6	20	8	25	10	32
					Q cm ³ /min	0,3	1	1	1	1	2	1	2


Recommended Cutting Conditions


***Comments:** We recommend to reduce f_z to 70% of standard condition when you use FW type. * Stainless Steel: We recommend to increase V_c 30% more in dry condition.


 In case of wear: reduce V_c – In case of chipping: reduce a_p and f_z
If no wear or chipping problems and low spindle load it is possible to increase a_p to achieve a higher metal removal rate (cm^3/min)

 Falls zu hohe Abnutzung: Reduzierung von V_c
Falls Ausbrüche: Reduzierung von a_p und f_z
Bei geringer Abnutzung und niedriger Spindellast ist es möglich a_p zu erhöhen, um das Zerspanungsvolumen zu maximieren (cm^3/min)

 Nel caso si verificano fenomeni di usura: ridurre V_c
Nel caso si verificano scheggiature: ridurre a_p e f_z
Nel caso non si abbiano problemi di usura o scheggiatura è possibile aumentare l' a_p per ottenere un incremento del volume di truciolo asportato (cm^3/min)

 En caso de desgaste prematuro: reducir V_c
En caso de microrotura: reducir a_p y f_z
Si no hay desgaste prematuro ni microrotura y la potencia absorbida por el cabezal es baja es posible aumentar el a_p para conseguir un mayor caudal de viruta (cm^3/min)

 En cas d'usure: réduire l'avance V_c
En cas d'effritement: réduire la profondeur de passe a_p et l'avance par dent f_z
Si aucun problème d'usure ou d'effritement n'apparaît, et que la puissance de broche est faible, il est possible d'augmenter la profondeur de passe a_p . (cm^3/min)

 Em caso de desgaste prematuro reduzir V_c – No caso de microrroturas a_p e f_z
Se não têm desgaste prematuro nem micro roturas e a potência absorvida pela cabeça da máquina é baixa é possível aumentar o a_p para conseguir uma maior taxa remoção material em (cm^3/min).

D 40 (Z6)		D 50 (Z7)		D 63 (Z8)	
Side milling	Slotting	Side milling	Slotting	Side milling	Slotting
300	180	300	180	300	180
2390	1430	1910	1150	1520	910
0,25	0,2	0,25	0,2	0,25	0,2
3580	1720	3340	1600	3030	1460
4	3,5	4	3,5	4	3,5
12	40	16	50	20	63
172	241	214	280	242	322
250	150	250	150	250	150
1990	1190	1590	950	1260	760
0,25	0,2	0,25	0,2	0,25	0,2
2980	1430	2790	1340	2530	1210
3,5	3	3,5	3	3,5	3
12	40	16	50	20	63
125	172	156	201	177	229
180	120	180	120	180	120
1430	950	1150	760	910	610
0,18	0,15	0,18	0,15	0,18	0,15
1550	860	1440	800	1310	730
3	2,5	3	2,5	3	2,5
12	40	16	50	20	63
56	86	69	100	79	115
120	80	120	80	120	80
950	640	760	510	610	400
0,12	0,1	0,12	0,1	0,12	0,1
690	380	640	360	580	320
2	1,5	2	1,5	2	1,5
12	40	16	50	20	63
17	23	20	27	23	30
110	70	110	70	110	70
880	560	700	450	560	350
0,18	0,15	0,18	0,15	0,18	0,15
950	500	880	470	800	420
3	2,5	3	2,5	3	2,5
12	40	16	50	20	63
34	50	42	59	48	66
180	150	180	150	180	150
1430	1190	1150	950	910	760
0,2	0,15	0,2	0,15	0,2	0,15
1720	1070	1600	1000	1460	910
3	2,5	3	2,5	3	2,5
12	40	16	50	20	63
62	107	77	125	88	143
150	120	150	120	150	120
1190	950	950	760	760	610
0,2	0,15	0,2	0,15	0,2	0,15
1430	860	1340	800	1210	730
3	2,5	3	2,5	3	2,5
12	40	16	50	20	63
51	86	64	100	73	115
600	400	600	400	600	400
4770	3180	3820	2550	3030	2020
0,15	0,12	0,15	0,12	0,15	0,12
4300	2290	4010	2140	3640	1940
3	2,5	3	2,5	3	2,5
12	40	16	50	20	63
155	229	192	268	218	306
50	30	50	30	50	30
400	240	320	190	250	150
0,15	0,12	0,15	0,12	0,15	0,12
360	170	330	160	300	150
1	0,8	1	0,8	1	0,8
12	40	16	50	20	63
4	5	5	6	6	8
20	18	20	18	20	18
160	140	130	110	100	90
0,12	0,1	0,12	0,1	0,12	0,1
110	90	110	80	100	70
1	0,8	1	0,8	1	0,8
12	40	16	50	20	63
1	3	2	3	2	4

Always up to date: Please check our P50 QuickFinder



Attentions on Safety

1. Cautions regarding handling

- (1) When removing the tool from its case (packaging), be careful that the tool does not pop out or is dropped. Be particularly careful regarding contact with the tool flutes.
- (2) When handling tools with sharp cutting flutes, be careful not to touch the cutting flutes directly with your bare hands.

2. Cautions regarding mounting

- (1) Before use, check the outside appearance of the tool for scratches, cracks, etc. and that it is firmly mounted in the collet chuck, etc.
- (2) When preparing for use, be sure that the inserts are firmly mounted in place and that they are firmly mounted on the arbor, etc.
- (3) If abnormal chattering, etc. occurs during use, stop the machine immediately and remove the cause of the chattering.

3. Cautions during use

- (1) Before use, confirm the dimensions and direction of rotation of the tool and milling work material.
- (2) The numerical values in the standard cutting conditions table should be used as criteria when starting new work. The cutting conditions should be adjusted as appropriate when the cutting depth is large, the rigidity of the machine being used is low, or according to the conditions of the work material.
- (3) Cutting tools are made of a hard material. During use, they may break and fly off. In addition, cutting chips may also fly off. Since there is a danger of injury to workers, fire, or eye damage from such flying pieces, a safety cover should be attached when work is performed and safety equipment such as safety goggles should be worn to create a safe environment for work.
- (4) There is a risk of fire or inflammation due to sparks, heat due to breakage, and cutting chips. Do not use where there is a risk of fire or explosion. Please caution of fire while using oil base coolant, fire prevention is necessary.
- (5) Do not use the tool for any purpose other than that for which it is intended.

4. Cautions regarding regrinding

- (1) If regrinding is not performed at the proper time, there is a risk of the tool breaking. Replace the tool with one in good condition, or perform regrinding.
- (2) Grinding dust will be created when regrinding a tool. When regrinding, be sure to attach a safety cover over the work area and wear safety clothes such as safety goggles, etc.
- (3) This product contains the specified chemical substance cobalt and its inorganic compounds. When performing regrinding or similar processing, be sure to handle the processing in accordance with the local laws and regulations regarding prevention of hazards due to specified chemical substances.

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