

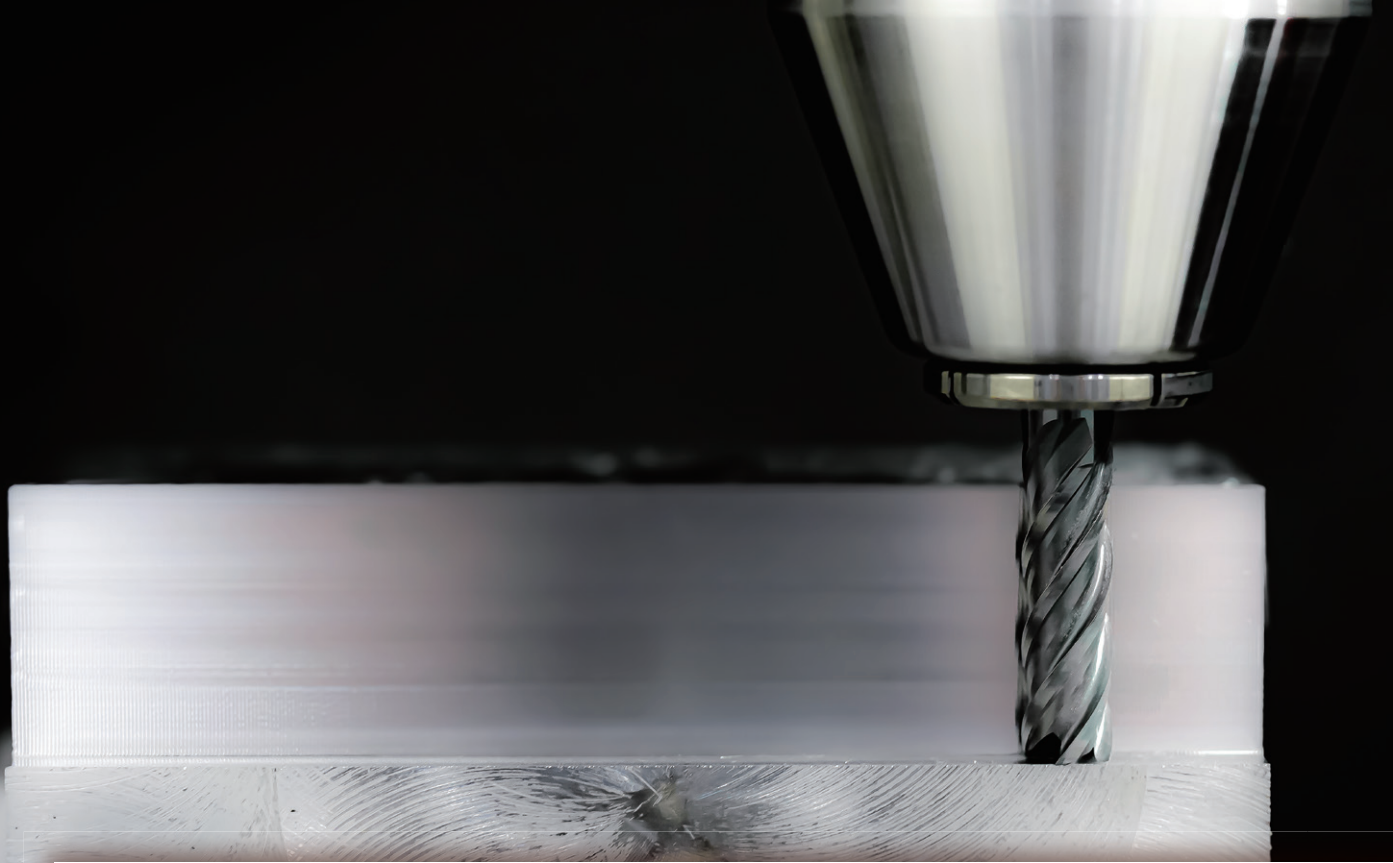
DYNAMIC
DYNAMIC
DYNAMIC
DYNAMIC
DYNAMIC
DYNAMIC
DYNAMIC

EXT
series

For Dynamic Milling

High Feed, High Efficiency





Code key for Dynamic Milling tools

4EXT-100-C015-220-A70-HSA

1 2 3 4 5 6 7 8 9

1	No. of flutes	4 : 4 flutes
2	Series	EXT : Ultra EXcellenT High Efficiency tools
3	Cutting Diameter	020 : 2mm 030 : 3mm 040 : 4mm 050 : 5mm 060 : 6mm 080 : 8mm 100 : 10mm 120 : 12mm 140 : 14mm 160 : 16mm 180 : 18mm 200 : 20mm
4	Chamfer	C010 : 0.1mm C015 : 0.15mm C020 : 0.2mm
5	Depth of cut maximum	050 : 5mm 070 : 7mm 090 : 9mm 110 : 11mm 135 : 13.5mm 175 : 17.5mm 220 : 22mm 260 : 26mm 300 : 30mm 320 : 32mm 440 : 44mm 500 : 50mm
6	Shank diameter	6 : 4mm 8 : 8mm A : 10mm C : 12mm E : 14mm G : 16mm
7	Overall length	54 : 54mm 60 : 60mm 80 : 80mm 93 : 93mm A1 : 101mm B2 : 112mm
8	Function	HS : High feed Side milling (Dynamic Milling)
9	Shank type	A : Cylindrical B : Weldon


A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30


Icon

Coating |  EXT-X coating

Corner shape |  Chamfer

Shank type |  Cylindrical

No. of flutes |  4 flutes

Helix angle |  37°, 39°
Double

B |  Weldon

WE DESIGN THE FUTURE BY ENDMILL

Dynamic endmill

The demands on metal processing-high stable process stability, productivity, and economic efficiency, etc-are continuously increasing. Against this backdrop, the Dynamic endmill is developed as a high performance solid endmill to improve productivity. The Dynamic endmill has high make the metal removal rate(MRR) in the roughing process, and has excellent stability and ease of use.

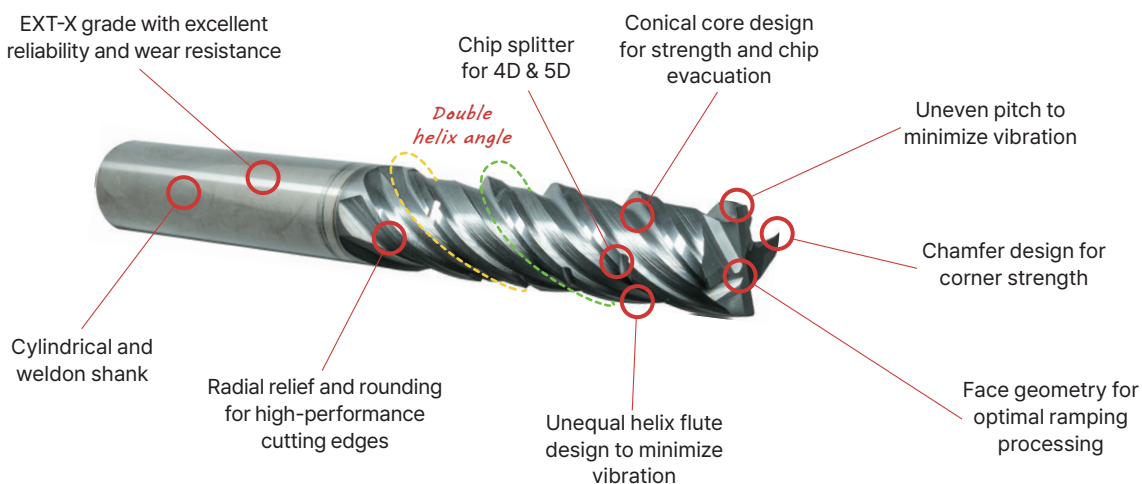
It is possible to stable milling machining thank to the uneven pitch and the unequal helix angle reducing the vibrations effectively, and the tool life is long by applying a wear-resistant PVD coating. A various processing(shoulder milling, ramping, and trochoidal milling, etc.) are possible, and it is specialized for high-feed shoulder milling. The Dynamic endmill provides stability, long tool life and cutting efficiency as well as saves the cutting time.

Applications of Dynamic endmill

- Dynamic milling
- Trochoidal milling
- Slicing
- Linear and circular ramping

DYNAMIC ENDMILL

Features of Dynamic endmill

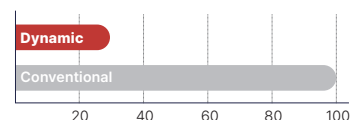


Conventional endmill vs Dynamic endmill

	Conventional endmill	Dynamic endmill
Radial depth(æ)	▲ High	▼ Low
Axial depth(ap)	▼ Low	▲ High
Engagement angle	▲ High(Max180°)	▼ Low
Cutting load	▲ High	▼ Low
Machine	High performance	Dynamic
Programming	CNC control system	CAD/CAM system
Thermal load of tool	▲ High	▼ Low



Comparison machining time by cutting process(%)



Assortment of Dynamic endmill

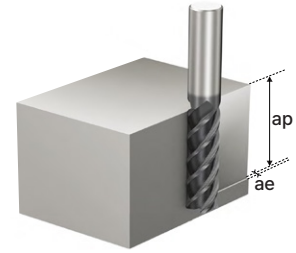


(Unit : mm)

Application area	Product code	Cutting diameter	No. of flutes	Chamfer	Depth of cut maximum	Shank diameter	Overall length	Shank type	
2D	4EXT-020-C010-050-654-HSA 4EXT-020-C010-050-654-HSB	2	4	0.1	5	6	54	Cylindrical Weldon	
	4EXT-030-C010-070-654-HSA 4EXT-030-C010-070-654-HSB	3	4	0.1	7	6	54	Cylindrical Weldon	
	4EXT-040-C010-090-654-HSA 4EXT-040-C010-090-654-HSB	4	4	0.1	9	6	54	Cylindrical Weldon	
	4EXT-050-C010-110-654-HSA 4EXT-050-C010-110-654-HSB	5	4	0.1	11	6	54	Cylindrical Weldon	
	4EXT-060-C010-135-654-HSA 4EXT-060-C010-135-654-HSB	6	4	0.1	13.5	6	54	Cylindrical Weldon	
	4EXT-080-C010-175-860-HSA 4EXT-080-C010-175-860-HSB	8	4	0.1	17.5	8	60	Cylindrical Weldon	
	4EXT-100-C015-220-A70-HSA 4EXT-100-C015-220-A70-HSB	10	4	0.15	22	10	70	Cylindrical Weldon	
	4EXT-120-C015-260-C81-HSA 4EXT-120-C015-260-C81-HSB	12	4	0.15	26	12	81	Cylindrical Weldon	
	4EXT-140-C020-300-E87-HSA 4EXT-140-C020-300-E87-HSB	14	4	0.2	30	14	87	Cylindrical Weldon	
	4EXT-160-C020-340-G96-HSA 4EXT-160-C020-340-G96-HSB	16	4	0.2	34	16	96	Cylindrical Weldon	
	* 4EXT-200-C020-420-KB0-HAS * 4EXT-200-C020-420-KB0-HSB	20	4	0.2	42	20	110	Cylindrical Weldon	
	3D	4EXT-020-C010-070-660-HSA 4EXT-020-C010-070-660-HSB	2	4	0.1	7	6	60	Cylindrical Weldon
		4EXT-030-C010-100-660-HSA 4EXT-030-C010-100-660-HSB	3	4	0.1	10	6	60	Cylindrical Weldon
		4EXT-040-C010-130-660-HSA 4EXT-040-C010-130-660-HSB	4	4	0.1	13	6	60	Cylindrical Weldon
		4EXT-050-C010-160-660-HSA 4EXT-050-C010-160-660-HSB	5	4	0.1	16	6	60	Cylindrical Weldon
		4EXT-060-C010-195-660-HSA 4EXT-060-C010-195-660-HSB	6	4	0.1	19.5	6	60	Cylindrical Weldon
4EXT-080-C010-255-868-HSA 4EXT-080-C010-255-868-HSB		8	4	0.1	25.5	8	68	Cylindrical Weldon	
4EXT-100-C015-320-A80-HSA 4EXT-100-C015-320-A80-HSB		10	4	0.15	32	10	80	Cylindrical Weldon	
4EXT-120-C015-380-C93-HSA 4EXT-120-C015-380-C93-HSB		12	4	0.15	38	12	93	Cylindrical Weldon	
4EXT-140-C020-440-EA1-HSA 4EXT-140-C020-440-EA1-HSB		14	4	0.2	44	14	101	Cylindrical Weldon	
4EXT-160-C020-500-GB2-HSA 4EXT-160-C020-500-GB2-HSB		16	4	0.2	50	16	112	Cylindrical Weldon	
* 4EXT-180-C020-560-IC0-HAS * 4EXT-180-C020-560-IC0-HSB		18	4	0.2	56	18	120	Cylindrical Weldon	
* 4EXT-200-C020-620-KD0-HSA * 4EXT-200-C020-620-KD0-HSB		20	4	0.2	62	20	130	Cylindrical Weldon	
4D Chip splitter		4EXT-060-C010-255-666-HSB	6	4	0.1	25.5	6	66	Weldon
		4EXT-080-C010-335-876-HSB	8	4	0.1	33.5	8	76	Weldon
		4EXT-100-C015-420-A90-HSB	10	4	0.15	42	10	90	Weldon
		4EXT-120-C015-500-CA5-HSB	12	4	0.15	50	12	105	Weldon
	* 4EXT-160-C020-660-GC8-HSB	16	4	0.2	66	16	128	Weldon	
	* 4EXT-200-C020-820-KF0-HSB	20	4	0.2	82	20	150	Weldon	
5D Chip splitter	4EXT-060-C010-315-672-HSB	6	4	0.1	31.5	6	72	Weldon	
	4EXT-080-C010-415-884-HSB	8	4	0.1	41.5	8	84	Weldon	
	4EXT-100-C015-520-AA0-HSB	10	4	0.15	52	10	100	Weldon	
	* 4EXT-120-C015-620-CB7-HSB	12	4	0.15	62	12	117	Weldon	

* Custom made products

Speed and Feed recommendations



ISO	Material	HB	ap=2xDC			ap=3xDC			ap=4xDC			ap=5xDC		
			ae	fz	vc m/min (feet/min)	ae	fz	vc m/min (feet/min)	ae	fz	vc m/min (feet/min)	ae	fz	vc m/min (feet/min)
P	Unalloyed steel	190	0.12xDC	F01	200(656)	0.1xDC	F04	200(656)	0.1xDC	F07	180(630)	0.08xDC	F07	180(630)
	Low-alloyed steel	240	0.1xDC	F01	180(630)	0.1xDC	F04	180(630)	0.1xDC	F07	160(560)	0.08xDC	F07	160(560)
	High-alloyed steel	320	0.08xDC	F01	140(459)	0.08xDC	F04	140(459)	0.05xDC	F07	120(394)	0.05xDC	F07	120(394)
M	Ferritic/ martensitic stainless steel	200	0.08xDC	F01	120(394)	0.08xDC	F04	120(394)	0.05xDC	F07	110(361)	0.05xDC	F07	110(361)
	Austenitic stainless steel	200	0.1xDC	F02	150(492)	0.1xDC	F05	140(459)	0.1xDC	F08	125(410)	0.08xDC	F08	125(410)
	Duplex stainless steel	260	0.08xDC	F02	120(394)	0.08xDC	F05	120(394)	0.08xDC	F08	110(361)	0.05xDC	F08	110(361)
K	Malleable cast iron	200	0.12xDC	F01	170(557)	0.1xDC	F04	170(557)	0.1xDC	F07	150(492)	0.08xDC	F07	150(492)
	Grey cast iron	180	0.12xDC	F01	180(630)	0.1xDC	F04	180(630)	0.1xDC	F07	160(560)	0.08xDC	F07	160(560)
	Nodular cast iron	215	0.12xDC	F01	200(656)	0.1xDC	F04	200(656)	0.1xDC	F07	160(560)	0.08xDC	F07	160(560)
S	Iron based superalloys	280	0.05xDC	F06	60(197)	0.05xDC	F06	60(197)	0.05xDC	F09	50(164)	0.05xDC	F09	50(164)
	Nikel based superalloys	350	0.05xDC	F06	50(164)	0.05xDC	F06	50(164)	0.05xDC	F09	45(148)	0.05xDC	F09	45(148)
	Titanium based alloys	320	0.05xDC	F06	100(327)	0.05xDC	F06	100(327)	0.05xDC	F09	90(296)	0.05xDC	F09	90(296)

Feed recommendations

(Unit : mm/tooth)

	DC	2	3	4	6	8	10	12	14	16	18	20
fz	F01	0.015	0.022	0.03	0.07	0.09	0.15	0.18	0.2	0.22	0.25	0.3
	F02	0.01	0.015	0.02	0.05	0.08	0.13	0.15	0.18	0.2	0.22	0.25
	F03	0.008	0.01	0.015	0.03	0.045	0.07	0.09	0.1	0.12	0.13	0.15
	F04	-	-	-	0.07	0.08	0.12	0.14	0.16	0.18	0.2	0.24
	F06	-	-	-	0.03	0.04	0.05	0.07	0.08	0.09	0.1	0.12
	F07	-	-	-	0.05	0.08	0.08	0.09	0.1	0.1	0.15	0.16
	F08	-	-	-	0.06	0.06	0.07	0.07	0.08	0.08	0.13	0.14
	F09	-	-	-	0.04	0.05	0.05	0.06	0.07	0.07	0.12	0.13

Tolerance





2D	DC	Tolerance
	2~3mm	-0.02mm
	4~8mm	h9
	10mm~	h10

3D	DC	Tolerance
	2~3mm	-0.02mm
	4~6mm	h9
	8mm~	h10

4D	DC	Tolerance
5D	2~20mm	h10

WE DESIGN THE FUTURE BY ENDMILL



 82-31-419-4441  82-31-419-4445  hsinfo@hsmnt.com  www.han-song.co.kr
 (18487) 15-12, Dongtansandan 6-gil, Hwaseong-si, Gyeonggi-do, Republic of Korea