

Introducing...

Kennametal's Backturning Solutions for Small Parts Machining

*...specifically engineered to maximize
productivity in small parts turning
applications!*

- Two insert clamping systems available:
 - Production-friendly side actuated clamp
 - Conventional top screw
- Quick and easy insert replacement for enhanced productivity.
- Toolholders available in 8mm to 20mm shank sizes.
- PVD-coated micro-grain inserts:
 - Edge width — 2,8mm to 4,7mm
 - Depth of cut — 4mm to 8mm



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Markets and Applications

- Engineered for high metal-removal rates and longer tool life in difficult roughing applications.
- Use in General Engineering applications on steel and stainless steel workpieces.
- Well-suited for difficult-to-machine titanium components in Aerospace applications.
- Ramp, slot, helical ramp, profile, and plunge with one cutter.
- Ideal for all roughing and semi-finishing applications in steel, stainless steel, and titanium, with or without coolant.

Kennametal Tooling for Small Parts Machining Applications

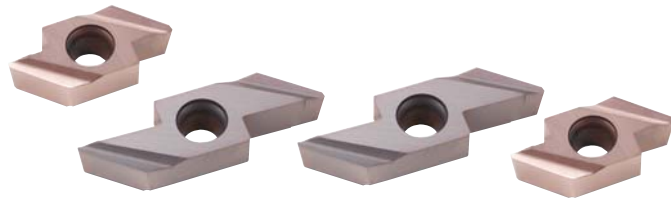
Kennametal is your single source for proven small parts machining solutions. Whether you are turning, boring, grooving, face grooving, profiling, threading, drilling, or milling, Kennametal's complete range of high-performance O.D. and I.D. products will significantly enhance the performance of your Swiss-style machines, gang-type machines, and small lathes.

In addition to the new backturning insert styles and toolholders featured in this brochure, we are also pleased to offer an expanded line of inserts and toolholders for cutoff and O.D. small parts applications.

To find out more, please contact your Kennametal Representative or Authorized Kennametal Distributor today!

Kennametal® KC5020P™ Grade Backturning Inserts

- type:** PVD-coated carbide
- composition:** TiCN PVD coating with a tough micro-grain carbide substrate.
- application:** The KC5020P grade is applicable for a wide range of precision machining applications requiring stability, long tool life, and good surface finish.



Recommended for use in carbon steels, alloy steels, and stainless steels.

Recommended Feed Rates for Backturning Inserts

insert type	mm/rev (inch/rev)											
	steel		stainless steel		cast iron		non-ferrous materials		high-temp alloys		hardened materials	
	grooving	side turning	grooving	side turning	grooving	side turning	grooving	side turning	grooving	side turning	grooving	side turning
BT15	0,02 (.0008)	0,02 - 0,07 (.0008 - .0028)	0,02 (.0008)	0,02 - 0,07 (.0008 - .0028)	0,02 (.0008)	0,02 - 0,07 (.0008 - .0028)	0,02 (.0008)	0,02 - 0,07 (.0008 - .0028)	0,01 (.0004)	0,01 - 0,035 (.00074 - .0014)	—	—
BTN15	0,02 (.0008)	0,02 - 0,05 (.0008 - .0020)	0,02 (.0008)	0,02 - 0,05 (.0008 - .0020)	0,02 (.0008)	0,02 - 0,05 (.0008 - .0020)	0,02 (.0008)	0,02 - 0,05 (.0008 - .0020)	0,01 (.0004)	0,02 - 0,025 (.0004 - .0010)	—	—
BT23	0,02 (.0008)	0,02 - 0,10 (.008 - .004)	0,02 (.0008)	0,02 - 0,10 (.008 - .004)	0,02 (.0008)	0,02 - 0,10 (.008 - .004)	0,02 (.0008)	0,02 - 0,10 (.008 - .004)	0,01 (.0004)	0,01 - 0,05 (.0004 - .002)	—	—

Recommended Starting Conditions

Low-Carbon (< 0,3% C) and Free-Machining Steel
 AISI: 1008, 1010, 1018, 1020, 1026, 10L18, 10L45, 10L50, 1108, 1117, 1141, 1151, 11L44, 1200 series, and 12L14

Material Group	grade	Speed – sfm (m/min)														Starting Conditions		
		25 (8)	50 (15)	100 (30)	150 (46)	200 (61)	250 (76)	300 (91)	350 (107)	400 (122)	450 (137)	500 (152)	550 (168)	600 (183)	650 (198)	700 (213)	sfm	m/min
P 1	KC5020P																320	100

Medium- and High-Carbon Steels (> 0,3% C)
 AISI: 1035, 1040, 1045, 1055, 1080, 1085, 1090, 1095, 1525, 1541, 1548, 1551, 1561, and 1572

Material Group	grade	Speed – sfm (m/min)														Starting Conditions		
		25 (8)	50 (15)	100 (30)	150 (46)	200 (61)	250 (76)	300 (91)	350 (107)	400 (122)	450 (137)	500 (152)	550 (168)	600 (183)	650 (198)	700 (213)	sfm	m/min
P 2	KC5020P																320	100

Alloy Steels and Tool Steels (≤ 330 HB) (≤ 35 HRC)
 Alloy Steels: AISI 1300, 2000, 3000, 4000, 5000, 6000, 7000, and 8000 series steels. Tool Steels: SAE classes: M and T;
 hot and cold work SAE classes: A, D, H, O, and S; wrought high carbon / low alloy W1, W2, L2, P1, P6, and P20

Material Group	grade	Speed – sfm (m/min)														Starting Conditions		
		25 (8)	50 (15)	100 (30)	150 (46)	200 (61)	250 (76)	300 (91)	350 (107)	400 (122)	450 (137)	500 (152)	550 (168)	600 (183)	650 (198)	700 (213)	sfm	m/min
P 3	KC5020P																320	100

Ferritic, Martensitic, and PH Stainless Steels (≤ 330 HB) (≤ 35 HRC)
 400 and 500 series, and precipitation hardening (PH) AISI: 410, 416, 416F, 416Se, 420F, 430F, 4389F Se, 440, 440C, 502, 504, 17-4PH, PH 13-8 Mo, and 15-5 PH

Material Group	grade	Speed – sfm (m/min)														Starting Conditions		
		25 (8)	50 (15)	100 (30)	150 (46)	200 (61)	250 (76)	300 (91)	350 (107)	400 (122)	450 (137)	500 (152)	550 (168)	600 (183)	650 (198)	700 (213)	sfm	m/min
P 5	KC5020P																60	18

Ferritic, Martensitic, and PH Stainless Steels (340–50 HB) (36–48 HRC)
 400 and 500 series, and precipitation hardening (PH) AISI: 410, 416, 416F, 416Se, 420F, 430F, 4389F Se, 440, 440C, 502, 504, 17-4PH, PH 13-8 Mo, and 15-5 PH

Material Group	grade	Speed – sfm (m/min)														Starting Conditions		
		25 (8)	50 (15)	100 (30)	150 (46)	200 (61)	250 (76)	300 (91)	350 (107)	400 (122)	450 (137)	500 (152)	550 (168)	600 (183)	650 (198)	700 (213)	sfm	m/min
P 6	KC5020P																50	15

Austenitic Stainless Steel: AISI: 200, 201, 202, 209, 219, 301, 302, 303, 304, 304L, 305, 309



Material Group	grade	Speed – sfm (m/min)														Starting Conditions		
		25 (8)	50 (15)	100 (30)	150 (46)	200 (61)	250 (76)	300 (91)	350 (107)	400 (122)	450 (137)	500 (152)	550 (168)	600 (183)	650 (198)	700 (213)	sfm	m/min
M 1	KC5020P																288	90

Austenitic Stainless Steel: AISI: 310, 314, 316, 316L, 317, 321, 347, 384 ASTM Cast: XM-1, XM-5, XM-7, XM-21



Material Group	grade	Speed – sfm (m/min)														Starting Conditions		
		25 (8)	50 (15)	100 (30)	150 (46)	200 (61)	250 (76)	300 (91)	350 (107)	400 (122)	450 (137)	500 (152)	550 (168)	600 (183)	650 (198)	700 (213)	sfm	m/min
M 2	KC5020P																288	90

Recommended Starting Conditions — continued

Low-Silicon Aluminum Alloys (Hypoeutectic < 12.2% Si) and Magnesium Alloys



Material Group	grade	Speed — sfm (m/min)												Starting Conditions 	
		600 (182)	700 (213)	800 (244)	900 (274)	1000 (305)	1200 (366)	1400 (427)	1600 (488)	1700 (518)	1800 (549)	2000 (610)	sfm	m/min	
N 1	KC5020P													820	250

Copper, Brass, Zinc-Based on a Machinability Index Range of 70–100

Material Group	grade	Speed — sfm (m/min)												Starting Conditions 	
		150 (46)	200 (91)	300 (91)	400 (121)	500 (152)	600 (182)	700 (213)	800 (244)	900 (274)	1000 (305)	1100 (335)	2000 (366)	sfm	m/min
N 3	KC5020P													480	145



Cobalt-Based, Heat-Resistant Alloys (150–425 HB) (≤ 45 HRC)

Wrought: AiResist 213, Haynes 25 (L605), Haynes 188, J-1570, Stellite Cast: AiResist 13, Haynes 21, MAR-M302, MAR-M509, NASA Co-W-Re, WI-52

Material Group	grade	Speed — sfm (m/min)														Starting Conditions 	
		25 (8)	50 (15)	100 (30)	150 (46)	200 (61)	250 (76)	300 (91)	350 (107)	400 (122)	450 (137)	500 (152)	550 (168)	600 (183)	650 (198)	700 (213)	sfm
S 2	KC5020P															192	60



Nickel-Based, Heat-Resistant Alloys (140–475 HB) (≤ 48 HRC)

Astroloy, Hastelloy B/C/C-276/X, Inconel 601/617/625/700/706/718, IN102, Incoloy 901, MAR-M200, Nimonic, Rene 41, Udimet, Waspaloy, Monel

Material Group	grade	Speed — sfm (m/min)														Starting Conditions 	
		25 (8)	50 (15)	100 (30)	150 (46)	200 (61)	250 (76)	300 (91)	350 (107)	400 (122)	450 (137)	500 (152)	550 (168)	600 (183)	650 (198)	700 (213)	sfm
S 3	KC5020P															192	60

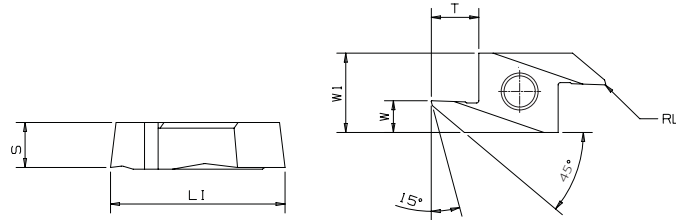
Titanium and Titanium Alloys (110–450 HB) (≤ 48 HRC)

Pure: Ti98.8, Ti99.9 Alloyed: Ti-5Al-2.5Sn, Ti-6Al-4V, Ti-6Al-2Sn-4Zr-2Mo, Ti-3Al-8V-6Cr-4Mo-4Zr, Ti-10V-2Fe-3Al, Ti-13V-11Cr-3Al

Material Group	grade	Speed — sfm (m/min)														Starting Conditions 	
		25 (8)	50 (15)	100 (30)	150 (46)	200 (61)	250 (76)	300 (91)	350 (107)	400 (122)	450 (137)	500 (152)	550 (168)	600 (183)	650 (198)	700 (213)	sfm
S 4	KC5020P															192	60

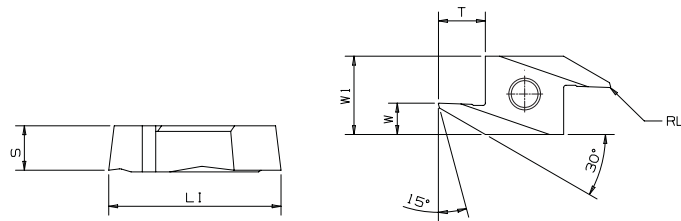
Kennametal Backturning Inserts

■ BT15



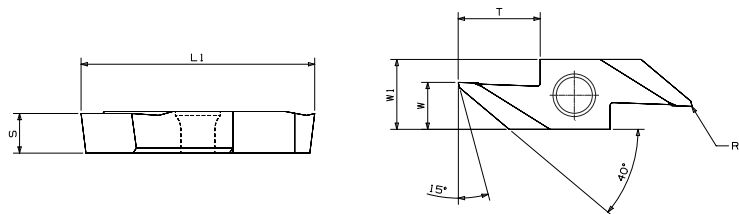
catalog number	W1	W	LI	T	S	RL	KC5020P
right hand							
BT15R405	7,0	4,7	15,4	4,2	3,97	0,05	●
BT15R415	7,0	4,7	15,4	4,2	3,97	0,15	●

■ BTN15



catalog number	W1	W	LI	T	S	RL	KC5020P
right hand							
BTN15R405	7,0	2,8	15,4	4,2	3,97	0,05	●
BTN15R415	7,0	2,8	15,4	4,2	3,97	0,15	●

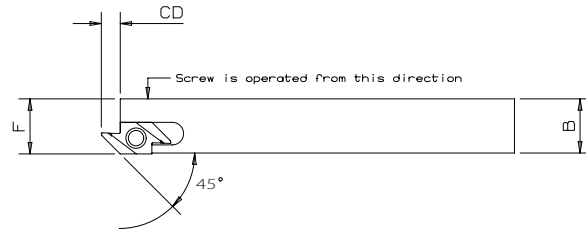
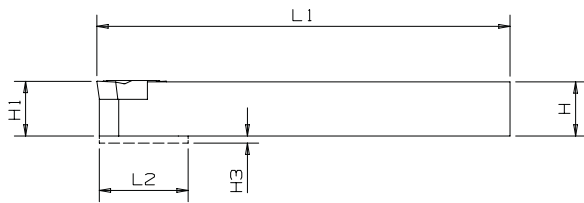
■ BT23



catalog number	W1	W	LI	T	S	RL	KC5020P
right hand							
BT23R805	7,0	4,7	23,4	8,2	3,97	0,05	●
BT23R815	7,0	4,7	23,4	8,2	3,97	0,15	●

Backturning Toolholders

Back Clamp/Screw Clamp for BT15 Style Inserts



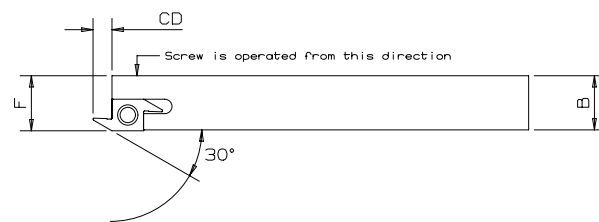
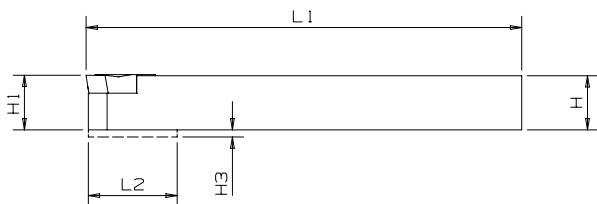
■ PXTR-4 (Back Clamp)

order number	catalog number	H1	H3	B	L1	L2	CD	F	pin	screw	clamp	wrench
right hand												
3607720	PXTR0810K-4	8	2	10	125	18,5	4,2	10,2	LPA11	MS2218	—	FH2
3607722	PXTR1010K-4	10	—	10	125	—	4,2	10,2	LPA11	MS2218	—	FH2
3607734	PXTR1212M-4	12	—	12	150	—	4,2	12,2	LPA13	MS2218	—	FH2
3607736	PXTR1616M-4	16	—	16	150	—	4,2	16,2	LPA17	MS2218	—	FH2

■ SXTR-4 (Screw Clamp)

order number	catalog number	H1	H3	B	L1	L2	CD	F	pin	screw	clamp	wrench
right hand												
3607744	SXTR0810K-4	8	—	10	125	—	4,2	10,2	—	—	MS2215	FH10
3607746	SXTR1010K-4	10	—	10	125	—	4,2	10,2	—	—	MS2215	FH10
3607748	SXTR1212M-4	12	—	12	150	—	4,2	12,2	—	—	MS2215	FH10
3607750	SXTR1616M-4	16	—	16	150	—	4,2	16,2	—	—	MS2215	FH10
3607752	SXTR2020K-4	20	—	20	125	—	4,2	20,2	—	—	MS2215	FH10

Back Clamp/Screw Clamp for BTN15 Style Inserts



■ PXTNR (Back Clamp)

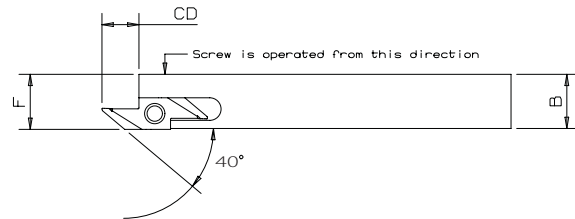
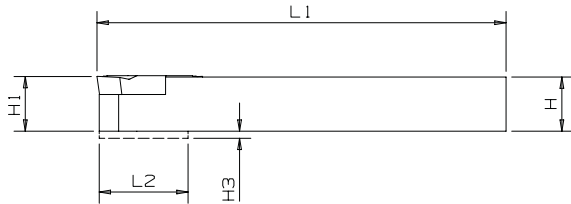
order number	catalog number	H1	H3	B	L1	L2	CD	F	pin	screw	clamp	wrench
right hand												
3607716	PXTNR0810K-4	8	2	10	125	18,5	4,2	10,2	LPA11	MS2218	—	FH2
3607717	PXTNR1010K-4	10	—	10	125	—	4,2	10,2	LPA11	MS2218	—	FH2
3607718	PXTNR1212M-4	12	—	12	125	—	4,2	12,3	LPA13	MS2218	—	FH2
3607719	PXTNR1616M-4	16	—	16	125	—	4,2	16,2	LPA17	MS2218	—	FH2

■ SXTNR (Screw Clamp)

order number	catalog number	H1	H3	B	L1	L2	CD	F	pin	screw	clamp	wrench
right hand												
3607738	SXTNR0810K-4	8	—	10	125	—	4,2	10,2	—	—	MS2215	FH10
3607739	SXTNR1010K-4	10	—	10	125	—	4,2	10,2	—	—	MS2215	FH10
3607740	SXTNR1212F-4	12	—	12	85	—	4,2	12,2	—	—	MS2215	FH10
3607741	SXTNR1212M-4	12	—	12	150	—	4,2	12,2	—	—	MS2215	FH10
3607742	SXTNR1616M-4	16	—	16	150	—	4,2	16,2	—	—	MS2215	FH10
3607743	SXTNR2020K-4	20	—	20	125	—	4,2	20,2	—	—	MS2215	FH10

Backturning Toolholders

Back Clamp/Screw Clamp for BT23 Style Inserts



■ PXTR-8 (Back Clamp)

order number	catalog number	H1	H3	B	L1	L2	CD	F	pin	screw	clamp	wrench
right hand												
3607721	PXTR0810K-8	8	2	10	125	18,5	8,2	10,2	LPA11	MS2218	—	FH2
3607733	PXTR1010K-8	10	—	10	125	—	8,2	10,2	LPA11	MS2218	—	FH2
3607735	PXTR1212M-8	12	—	12	150	—	8,2	12,2	LPA13	MS2218	—	FH2
3607737	PXTR1616M-8	16	—	16	150	—	8,2	16,2	LPA17	MS2218	—	FH2

■ SXTR-8 (Screw Clamp)

order number	catalog number	H1	H3	B	L1	L2	CD	F	pin	screw	clamp	wrench
right hand												
3607745	SXTR0810K-8	8	—	10	125	—	8,2	10,2	—	—	MS2215	FH10
3607747	SXTR1010K-8	10	—	10	125	—	8,2	10,2	—	—	MS2215	FH10
3607749	SXTR1212M-8	12	—	12	150	—	8,2	12,2	—	—	MS2215	FH10
3607751	SXTR1616M-8	16	—	16	150	—	8,2	16,2	—	—	MS2215	FH10
3607753	SXTR2020K-8	20	—	20	125	—	8,2	20,2	—	—	MS2215	FH10

Inch toolholders available July 1, 2008. Visit www.kennametal.com for updated information.
Left-hand toolholders and inserts available upon request.

**For more information or to place an order, contact your
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Backturning

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A07-298

A07-01

A07-297

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