



# Hole Finishing

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# ➤ Hole Finishing with Kennametal

Owning the entire process chain from raw materials to reconditioning makes Kennametal one of the few sources in the metalworking industry where you can get complete hole finishing tooling, from reaming and fine boring to motion tooling. Kennametal provides customised solutions that are the best fit for any application or machining challenge, without limitations from product portfolio or capacity.

## PCD Tooling

- Extremely productive and tailored for satisfying your high-volume production needs.
- Several standard PCD grades, like KD1415™ and KD1425™, are available to provide the highest tool life and cutting data as well as unmatched surface and diameter tolerance quality.
- Platforms are available depending on your application and preference from steel to carbide based, adjustable pocket seats, fine-boring components like Romicron™ or FB cartridges, spindle couplings, or SIF™ steerable adaptors.



## Multi-flute Reaming

- RMR™, RMB™, and RMB-E™ tipped reaming.
- RHR™, RHM™, and RHM-E™ modular reaming.
- Highly productive and easy to apply.
- Large, standard, off-the-shelf portfolio of solid carbide, cermet, carbide-tipped, and modular reaming tools, all ground to achieve H7 without any customisation.
- Complex specials with multiple steps, coupling, and length variations are available.
- Intermediate sizes, grades, and lead chamfers available with short delivery.



## Motion Tooling

- Sophisticated tooling achieves most challenging tasks.
- Large, customised complex solution portfolio of:
  - Linear feed-out heads.
  - Eccentric actuating heads.
  - Pivot heads.
  - Cylinder boring tools.
  - Line boring bars.
  - Bottle boring tools.
  - Valve seat and guide tools.
  - Machining centre tools.
- Depending on your application and preference, tools are based on the positive-stop principle; use drawbars, like with engineered solution machines; or don't require machining centre modification.



## Padded Reaming

- RIQ™ Quattro Cut™ and RIR™ reaming systems.
- Highest precision and surface quality achievable but still easy to apply.
- RIQ is the market-leading reaming technology that eliminates back taper adjustment, dramatically reduces setup time while still offering highest accuracy and surface quality, and offers four cutting edges with PCD, CBN, carbide, or cermet.
- RIR provides the most stable pocket seat and fail-safe clamping, from smallest to largest diameters.
- Combine the large, standard RIQ and RIR insert offering with your customised tool body.



## Fine Boring

- Romicron™ and ModBORE™ systems.
- Extremely flexible, with an extensive diameter and length range.
- Offers the latest grade technology using standard turning inserts.
- Romicron enables diameter modifications by hand directly at the machine without setup equipment or affecting lock screw accuracy.
- The ModBORE system offers a very large diameter range with each tool along, with roughing to finishing tooling, and can be easily and safely adapted to every KM™ spindle.



								standard diameter		custom solution diameter				
		P	M	K	N	S	H	range	accuracy	range	accuracy			
reaming tools	RMS™ Solid Carbide	●	●	●	●	●	○	5–14mm	IT7	1,4–25,4mm	IT6 >10mm	10 µm	7 µm	
	RMR™ Disc Style Carbide	●	●	●	●	●	○	14–20mm	IT7	14–42mm	IT6	10 µm	7 µm	
	RMB™ Cermet Tipped Cermet	●		○	○			14–20mm	IT7	14–65mm	IT6	10 µm	7 µm	
	RMB-E™ Expandable Reamer Carbide/Cermet	●	●	●	●	●	○	14–42mm	IT6	14–42mm	IT5–IT6	10 µm	7 µm	
	RHR™ Modular Disc Style Carbide	●	●	●	●	●	○	14–42mm	IT7	14–42mm	IT6	10 µm	7 µm	
	RHM™ Modular Cermet Tipped Cermet	●		○	○			14–42mm	IT7	14–50mm	IT6	10 µm	7 µm	
	RHM-E™ (Expandable) Modular Expandable Reamer Carbide/Cermet	●	●	●	●	●	○	14–42mm	IT6	14–42mm	IT5–IT6	10 µm	7 µm	
	RIR™ Reamer Insert Rectangular Carbide	●	●	●	●	●	●	–	–	6–300mm	IT5	10 µm	4 µm	
	Quattro Cut™ RIQ™ Reamer Insert Quattro Cut Carbide/Cermet/PCD/CBN	●	●	●	●	●	●	–	–	16–300mm	IT5	10 µm	4 µm	
boring/fine-boring tools	Romicron SVU BB Fine Boring Carbide/Cermet/PCD/CBN	●	●	●	●	●	●	○	4–100mm	IT6	1,6–100mm	IT6	5 µm	5–10 µm
	Romicron AVS00B–3B/SVS4B–6B Fine Boring Carbide/Cermet/PCD/CBN	●	●	●	●	●	●	●	25–139mm	IT6	25–183mm	IT6	5 µm	5–10 µm
	Romicron SVU65/92 Fine Boring Carbide/Cermet/PCD/CBN	●	●	●	●	●	●	○	71–213mm	IT6	10–326mm	IT6	5 µm	5–10 µm
	Romicron SVS M Fine Boring Carbide/Cermet/PCD/CBN	●	●	●	●	○	●	○	>40mm	IT6	40–1600mm	IT6	5 µm	5–10 µm
	ModBORE™ RBHT Roughing Carbide/Cermet/PCD/CBN	●	●	●	●	●	●		23,5–153mm	IT9	23,5–153mm	IT9	10 µm	>20 µm
	ModBORE FBHO Fine Boring Carbide/Cermet/PCD/CBN	●	●	●	●	●	●	○	9,75–88,1mm	IT7	3,0–88,1mm	IT7	5 µm	5–10 µm
	ModBORE FBHM Fine Boring Carbide/Cermet/PCD/CBN	●	●	●	●	●	●	○	9,75–320mm	IT7	3,0–320mm	IT7	5 µm	5–10 µm
	ModBORE FBHS Fine Boring Carbide/Cermet/PCD/CBN	●	●	●	●	●	●	○	23,5–153mm	IT7	23,5–153mm	IT7	5 µm	5–10 µm
	ModBORE Bridge Tools Roughing Carbide/Cermet/PCD/CBN	●	●	●	●	●	●		150–2205mm	IT9	150–2205mm	IT9	10 µm	>20 µm
	ModBORE Bridge Tools Fine Boring Carbide/Cermet/PCD/CBN	●	●	●	●	●	●		150–2205mm	IT7	150–2205mm	IT7	5 µm	>10 µm
PCD	Fine Boring Cartridges Fine Boring Carbide/Cermet/PCD/CBN	●	○	●	●	●	○		>28mm	IT7	>28mm	IT7	5 µm	5–10 µm
	PCD Round Tools Steel Base					●			–	–	10–100mm	IT6	10 µm	10 µm
	PCD Round Tools Carbide Base					●			–	–	5–25mm	IT6	5 µm	7 µm



Cylindricity

NOTE: Process- and application-dependent.

Highly dependent on the pre-machine hole accuracy.  
Use of high-performance drilling/pre-machining tools  
mandatory to reach values.



Position

NOTE: Process- and application-dependent.

Highly dependent on the pre-machine hole accuracy.  
Use of high-performance drilling/pre-machining tools  
mandatory to reach values.

achievable surface quality Ra							capability				cost/part	cycle time	required operator experience	page(s)
0,5–1,0 µm	0,5–1,0 µm	0,5–1,5 µm	–	0,5–1,0 µm	–	–	●	●	●	●	moderate	low	low	K6–K10
0,2–0,6 µm	0,5–1,0 µm	0,5–1,0 µm	–	0,5–1,0 µm	–	–	●	●	●	●	low	low	low	K12, K15–K16, K22
0,2–0,6 µm	–	0,5–1,5 µm	0,1–0,6 µm	–	–	–	●	●	●	●	moderate	low	low	K13, K17–K18, K22
0,5–1,0 µm	0,5–1,0 µm	0,5–1,5 µm	–	0,5–1,0 µm	–	–	●	●	●	●	moderate	low	moderate	K14, K19–K22
0,2–0,6 µm	0,5–1,0 µm	0,5–1,0 µm	–	0,5–1,0 µm	–	–	●	●	●	●	moderate	low	low	K24, K27–K28, K36
0,2–0,6 µm	–	0,5–1,5 µm	0,1–0,6 µm	–	–	–	●	●	●	●	moderate	low	low	K25, K29–K32, K36
0,5–1,0 µm	0,5–1,0 µm	0,5–1,5 µm	–	0,5–1,0 µm	–	–	●	●	●	●	moderate	low	moderate	K26, K33–K36
0,2–0,6 µm	0,5–1,6 µm	0,5–1,8 µm	0,1–0,6 µm	<08 µm	<08 µm	–	●	●	●	●	low	moderate	high	K50–K54, K57–K61
0,2–0,6 µm	0,5–1,6 µm	0,5–1,8 µm	0,1–0,6 µm	<08 µm	<08 µm	–	●	●	●	●	low	moderate	moderate	K50–K52, K54–K61
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	<1,2 µm	–	●	●	○	○	low	moderate	low	K72–K76
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	<1,2 µm	–	●	●	●	●	low	moderate	low	K78–K82
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	<1,2 µm	–	●	●	○	○	low	moderate	low	K84–K85
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	<1,2 µm	–	●	●	●	●	low	moderate	low	please contact us
1,0–5,0 µm	1,0–5,0 µm	1,0–5,0 µm	1,0–2,0 µm	1,0–5,0 µm	–	–	●	●	●	●	low	low	low–moderate	K118–K122
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	<1,2 µm	–	●	●	●	●	low	moderate	low–moderate	K124–K125
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	<1,2 µm	–	●	●	●	●	low	moderate	low–moderate	K128–K132
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	<1,2 µm	–	●	●	●	●	low	moderate	low–moderate	K133–K137
1,0–5,0 µm	1,0–5,0 µm	1,0–5,0 µm	1,0–2,0 µm	1,0–5,0 µm	–	–	●	●	●	●	low	low	low–moderate	K137–K141
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	–	–	●	●	●	●	low	moderate	low–moderate	K137–K141
0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	0,8–2,0 µm	–	–	●	●	○	○	low	moderate	low–moderate	K111–K113
–	–	–	0,1–0,8 µm	–	–	–	●	●	●	●	low	very low	moderate	K146–K150
–	–	–	0,1–0,8 µm	–	–	–	●	●	●	●	low	very low	moderate	K146–K150

Ra Surface roughness

NOTE: Surface roughness values are guidelines and depend on the application, coolant situation, machine, and cutting data applied.

# ➤ RMS™ Multi-Flute Reaming Tools

RMS™ multi-flute reaming tools achieve the highest metal removal rates in 5–14mm (.197–.551") diameters. All standard reamers are ground to an ISO H7 tolerance class hole to address common applications. Specific coatings and lead configurations enable high-speed machining of steel, stainless steel, cast iron, and non-ferrous materials at accelerated speeds.

## Primary Application

Use standard SIF™ steerable hydraulic chucks or SIF adaptors for easy compensation of radial runout and angular inaccuracies of the spindle to achieve the highest possible hole straightness and surface quality.

## Features and Benefits

### Higher Productivity and Profitability

- Longer tool life with increased hole and surface quality due to lapped ground leads.
- Highest metal removal rates at higher speeds and feeds due to reaming-specific grades and substrates.
- Improved straightness and cylindrical form compared to competitive tools, and reduced vibration due to unequal flutes.
- All RMS reamers have internal coolant capability.



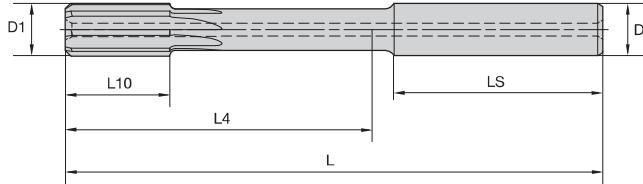
## RMS™ multi-flute reaming tools achieve highest metal removal rates from 5–14mm (.197–.551").



### Customisation

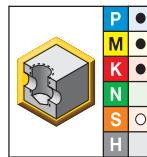
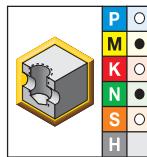
- Diameters 1,40–14,15mm (.055–.557") available with and without internal coolant in 0,001mm (.00004") steps.
- Intermediate diameters of standard programme available as simple specials with short delivery time.
- Solid cermet reaming tools and tooling for heat-resistant materials are available on request.

- For hole tolerance H7.
- Intermediate sizes ground to achieve IT7 hole tolerance class available.
- Starting with Ø 10mm in IT6 hole tolerance available.



### RMS • Blind Hole Solid Carbide Reamer with Internal Coolant

Hole Finishing



● first choice  
○ alternate choice

K605	KC6305	D1	D	L	L4	L10	LS	Z
RMS05000H7SF	RMS05000H7SF	5,00	6,00	74,0	32,0	12,0	36,0	4
RMS05500H7SF *	RMS05500H7SF	5,50	6,00	74,0	32,0	12,0	36,0	4
RMS06000H7SF	RMS06000H7SF	6,00	6,00	74,0	32,0	12,0	36,0	4
RMS06500H7SF	RMS06500H7SF	6,50	8,00	91,0	49,0	16,0	36,0	4
RMS07000H7SF	RMS07000H7SF	7,00	8,00	91,0	49,0	16,0	36,0	4
RMS08000H7SF	RMS08000H7SF	8,00	8,00	91,0	49,0	16,0	36,0	6
RMS09000H7SF	RMS09000H7SF	9,00	10,00	103,0	57,0	20,0	40,0	6
RMS10000H7SF	RMS10000H7SF	10,00	10,00	103,0	57,0	20,0	40,0	6
RMS11000H7SF	RMS11000H7SF	11,00	12,00	118,0	67,0	24,0	45,0	6
RMS12000H7SF	RMS12000H7SF	12,00	12,00	118,0	67,0	24,0	45,0	6
RMS13000H7SF	RMS13000H7SF	13,00	14,00	132,0	81,0	28,0	45,0	6
RMS14000H7SF	RMS14000H7SF	14,00	14,00	132,0	81,0	28,0	45,0	6

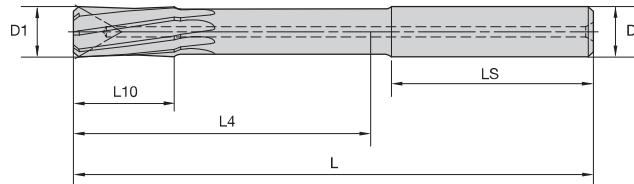
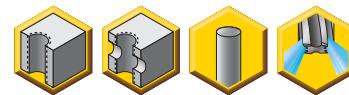
NOTE: \*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

### Dimensions for Engineered-Solution Reamers

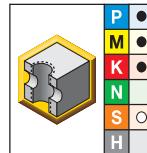
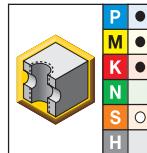
D1 min mm	D1 max mm	D mm	L mm	L4 mm	L10 mm	LS mm		Z
14,000	15,999	16	147,4	92,4	7,5	49		6
16,000	17,999	20	159,4	102,4	7,5	51		6
18,000	20,000	20	173,4	116,4	7,5	51		6
20,001	22,499	20	202,4	145,4	7,5	51		6
22,500	24,999	20	212,4	155,4	7,5	51		6
25,000	27,499	25	232,4	169,4	7,5	57		8
27,500	29,999	25	242,4	179,4	7,5	57		8
30,000	32,499	25	272,4	209,4	7,5	57		8
32,500	34,999	32	272,4	205,4	7,5	61		8
35,000	37,499	32	272,4	205,4	7,5	61		8
37,500	39,999	32	272,4	205,4	7,5	61		8
40,000	42,500	32	272,4	205,4	7,5	61		8

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

- For hole tolerance H7.
- Intermediate sizes ground to achieve IT7 hole tolerance class available.
- Starting with Ø 10mm in IT6 hole tolerance available.



### ■ RMS • Through Hole Solid Carbide Reamer with Internal Coolant



● first choice  
○ alternate choice

K605	KC6305	D1	D	L	L4	L10	LS	Z
RMS05000H7HF	RMS05000H7HF	5,00	6,00	74,0	32,0	12,0	36,0	4
RMS05500H7HF	RMS05500H7HF	5,50	6,00	74,0	32,0	12,0	36,0	4
RMS06000H7HF	RMS06000H7HF	6,00	6,00	74,0	32,0	12,0	36,0	4
RMS06500H7HF	RMS06500H7HF	6,50	8,00	91,0	49,0	16,0	36,0	4
RMS07000H7HF	RMS07000H7HF	7,00	8,00	91,0	49,0	16,0	36,0	4
RMS08000H7HF	RMS08000H7HF	8,00	8,00	91,0	49,0	16,0	36,0	6
RMS09000H7HF *	RMS09000H7HF	9,00	10,00	103,0	57,0	20,0	40,0	6
RMS10000H7HF	RMS10000H7HF	10,00	10,00	103,0	57,0	20,0	40,0	6
RMS11000H7HF	RMS11000H7HF	11,00	12,00	118,0	67,0	24,0	45,0	6
RMS12000H7HF	RMS12000H7HF	12,00	12,00	118,0	67,0	24,0	45,0	6
RMS13000H7HF	RMS13000H7HF	13,00	14,00	132,0	81,0	28,0	45,0	6
RMS14000H7HF	RMS14000H7HF	14,00	14,00	132,0	81,0	28,0	45,0	6

NOTE: \*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

### Dimensions for Engineered-Solution Reamers

D1 min mm	D1 max mm	D mm	L mm	L4 mm	L10 mm	LS mm	Z
14,000	15,999	16	147,4	92,4	7,5	49	6
16,000	17,999	20	159,4	102,4	7,5	51	6
18,000	20,000	20	173,4	116,4	7,5	51	6
20,001	22,499	20	202,4	145,4	7,5	51	6
22,500	24,999	20	212,4	155,4	7,5	51	6
25,000	27,499	25	232,4	169,4	7,5	57	8
27,500	29,999	25	242,4	179,4	7,5	57	8
30,000	32,499	25	272,4	209,4	7,5	57	8
32,500	34,999	32	272,4	205,4	7,5	61	8
35,000	37,499	32	272,4	205,4	7,5	61	8
37,500	39,999	32	272,4	205,4	7,5	61	8
40,000	42,500	32	272,4	205,4	7,5	61	8

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

## ■ RMS™ • Metric

Hole Finishing

Material Group														
	straight flute		helical flute											
	K605		KC6305		Metric									
	Cutting Speed – vc						Recommended Feed Rate per Tooth							
	Range – m/min						Tool Diameter (mm)	4,16–7,15mm		7,16–9,59mm		9,60–14,00mm		
	min	Starting Value	max	min	Starting Value	max	Feed/Tooth	min	max	min	max	min	max	
P	1	40	60	70	90	120	155	mm/z	0,05	0,10	0,05	0,12	0,05	0,15
	2	40	60	70	90	120	155	mm/z	0,05	0,10	0,05	0,12	0,05	0,15
	3	35	50	60	75	100	130	mm/z	0,05	0,10	0,05	0,12	0,05	0,15
	4	25	40	45	60	80	105	mm/z	0,05	0,10	0,05	0,12	0,05	0,15
	5	15	20	25	30	40	55	mm/z	0,04	0,08	0,04	0,10	0,04	0,12
	6	15	20	25	30	40	55	mm/z	0,04	0,08	0,04	0,10	0,04	0,12
M	1	8	10	15	15	20	28	mm/z	0,04	0,08	0,04	0,09	0,04	0,10
	2	8	10	15	15	20	28	mm/z	0,04	0,08	0,04	0,09	0,04	0,10
	3	8	10	15	15	20	28	mm/z	0,04	0,08	0,04	0,09	0,04	0,10
K	1	35	50	60	75	100	130	mm/z	0,05	0,16	0,05	0,18	0,05	0,20
	2	25	40	50	60	90	110	mm/z	0,05	0,14	0,05	0,16	0,05	0,18
	3	20	30	45	60	80	105	mm/z	0,05	0,12	0,05	0,14	0,05	0,16
N	1	110	150	195	–	–	–	mm/z	0,06	0,16	0,06	0,18	0,06	0,20
	2	110	150	195	–	–	–	mm/z	0,06	0,16	0,06	0,18	0,06	0,20
	3	110	150	195	–	–	–	mm/z	0,06	0,16	0,06	0,18	0,06	0,20
	4	110	150	195	–	–	–	mm/z	0,06	0,16	0,06	0,18	0,06	0,20
	5	105	140	180	–	–	–	mm/z	0,06	0,16	0,06	0,18	0,06	0,20
S	1	8	10	15	15	20	28	mm/z	0,04	0,08	0,04	0,10	0,04	0,12
	2	8	10	15	15	20	28	mm/z	0,04	0,08	0,04	0,10	0,04	0,12
	3	15	20	30	20	30	40	mm/z	0,05	0,10	0,05	0,12	0,05	0,15
	4	15	20	30	20	30	40	mm/z	0,05	0,10	0,05	0,12	0,05	0,15

# Revolution in Crank Boring

Our asymmetrical line boring bar (LBB) is an ideal solution for crank bore machining. It has the same advantages of a regular LBB, but can be used on machining centres. Setup is done outside of the machine on standard optical presetters. Asymmetrical LBBs feature RI8 inserts made from PCD or carbide, with eight cutting edges per insert for highly economical machining.



Ask your Kennametal specialist about asymmetrical line boring.

Experience the advantages at your Authorised Kennametal Distributor or at [kennametal.com](http://kennametal.com).



Feed in/out



Machining

# ➤ RMR™ Disc Reaming

## Primary Application

In comparison to solid carbide reamers or single-tipped reamers, RMR disc reamers are the economic alternative without disadvantages to productivity or hole quality. Combine RMR disc reamers with the Kennametal SIF™ steerable holder for best results.

## Features and Benefits

- Solid carbide disc at front instead of single-tipped carbide blanks.
- Unique coating specifically for reaming applications.
- High-speed and high-performance ready.
- Superior surface finish due to lapped ground leads.
- Improved hole straightness and roundness due to unequal flute spacing (less vibrations) and runout <3 microns.
- Helical and straight flutes for chip control in through and blind holes.
- Adjustment screw with straight-fluted RMR reamers to change internal coolant supply from axial to radial.



## Customisation

- All diameters between 14–42,5mm (.5512–1.6732").
- Variation of leads and cylindrical margin for application-specific optimisation.

# ➤ RMB™ Cermet Tipped Reamers

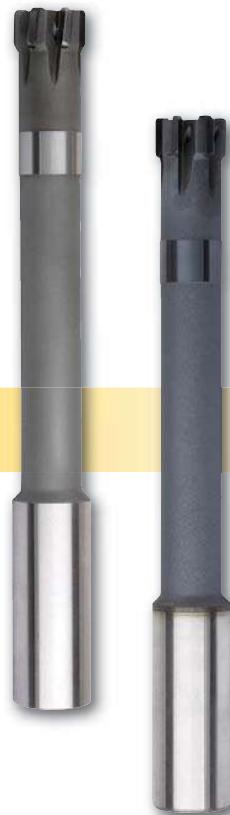
## Primary Application

RMB™ multi-flute reamers are tipped with cermet blanks and are available in 14–20mm (.5512–.7874") diameters off-the-shelf and up to 50mm (1.968") as custom solutions. Cermet reamers provide excellent tool life and surface finishes in steel applications. Combine RMB reamers with the Kennametal SIF™ steerable holder for best results.

## Features and Benefits

### Higher productivity and profitability

- Longer tool life with increased hole and surface quality due to lapped ground leads.
- Cermet enables highest metal removal rates at higher speeds and feeds in steel.
- Improved straightness and cylindrical form compared to competitive tools and reduced vibration due to unequal flutes.
- Adjustment screw with straight-fluted RMB reamers to change internal coolant supply from axial to radial.



### Customisation

- Diameters up to 50mm (1.968") available with and without internal coolant in 0,001mm (.00004") steps.
- Intermediate diameters from standard offering available as simple specials with short delivery time.
- RMB tooling for machining heat-resistant materials available on request.

# ➤ RMB-E™ Expandable Reamers

## Primary Application

The original idea behind an expansion reamer is to achieve more regrinds. The expansion mechanism is designed for this purpose only.

The Kennametal expandable reaming system is different. It offers a completely linear expansion rate of 2 microns per 30° turn, over an expansion rate of 48 microns. The micron adjustability of this system eliminates manufacturing tolerances and enables machining to the tightest tolerances, typically achieved only by using an uncoated tool or guide pad reaming. No presetting equipment is required.



## Features and Benefits

### Precision and Productivity

- Use with SIF™ steerable chucks for KST toolholders for easy compensation of radial runout and angular inaccuracies.
- Tools are preadjusted to hit IT6 tolerance.
- Expansion range of 48 microns.
- Completely linear expansion.
- 2 microns per 30° turn.

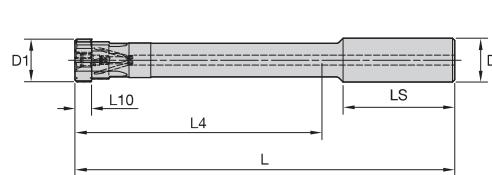
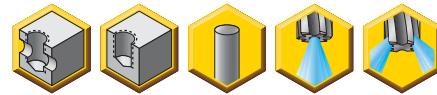
### Increased Tool Life

- Longer tool life at smaller tolerances.

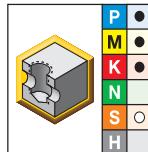
### Customisation

- Diameters up to 42mm (1.65") available with helical and straight flutes in 0,001mm (.00004") increments.

- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Adjustment screw to change internal coolant supply from axial to radial.



### ■ RMR • Disc Style Reamer • Straight Fluted for Blind Holes with Internal Coolant



● first choice  
○ alternate choice

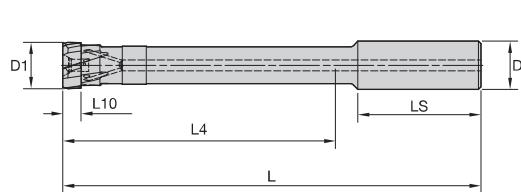
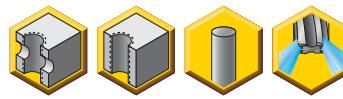
KCU05	D1	D	L	L4	L10	LS	Z
RMR14000H7SF	14,00	16,000	147,4	92,4	7,50	49,00	6
RMR15000H7SF	15,00	16,000	147,4	92,4	7,50	49,00	6
RMR16000H7SF	16,00	20,000	159,4	102,4	7,50	51,00	6
RMR17000H7SF	17,00	20,000	159,4	102,4	7,50	51,00	6
RMR18000H7SF	18,00	20,000	173,4	116,4	7,50	51,00	6
RMR19000H7SF	19,00	20,000	173,4	116,4	7,50	51,00	6
RMR20000H7SF	20,00	20,000	173,4	116,4	7,50	51,00	6

### Dimensions for Engineered-Solution Reamers

D1 min mm	D1 max mm	D mm	L mm	L4 mm	L10 mm	LS mm	Z
14,000	15,999	16	147,4	92,4	7,5	49	6
16,000	17,999	20	159,4	102,4	7,5	51	6
18,000	20,000	20	173,4	116,4	7,5	51	6
20,001	22,499	20	202,4	145,4	7,5	51	6
22,500	24,999	20	212,4	155,4	7,5	51	6
25,000	27,499	25	232,4	169,4	7,5	57	8
27,500	29,999	25	242,4	179,4	7,5	57	8
30,000	32,499	25	272,4	209,4	7,5	57	8
32,500	34,999	32	272,4	205,4	7,5	61	8
35,000	37,499	32	272,4	205,4	7,5	61	8
37,500	39,999	32	272,4	205,4	7,5	61	8
40,000	42,500	32	272,4	205,4	7,5	61	8

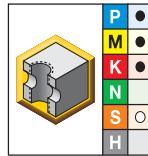
NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.



### RMR • Disc Style Reamer • Helical Fluted for Through Holes with Internal Coolant

Hole Finishing



- first choice
- alternate choice

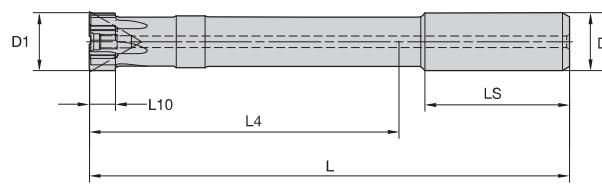
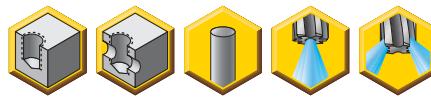
KCU05	D1	D	L	L4	L10	LS	Z
RMR14000H7HF	14,00	16,00	147,4	92,4	7,5	49,00	6
RMR15000H7HF	15,00	16,00	147,4	92,4	7,5	49,00	6
RMR16000H7HF	16,00	20,00	159,4	102,4	7,5	51,00	6
RMR17000H7HF	17,00	20,00	159,4	102,4	7,5	51,00	6
RMR18000H7HF	18,00	20,00	173,4	116,4	7,5	51,00	6
RMR19000H7HF	19,00	20,00	173,4	116,4	7,5	51,00	6
RMR20000H7HF	20,00	20,00	173,4	116,4	7,5	51,00	6

### Dimensions for Engineered-Solution Reamers

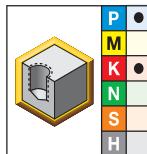
D1 min mm	D1 max mm	D mm	L mm	L4 mm	L10 mm	LS mm	Z
14,000	15,999	16	147,4	92,4	7,5	49	6
16,000	17,999	20	159,4	102,4	7,5	51	6
18,000	20,000	20	173,4	116,4	7,5	51	6
20,001	22,499	20	202,4	145,4	7,5	51	6
22,500	24,999	20	212,4	155,4	7,5	51	6
25,000	27,499	25	232,4	169,4	7,5	57	8
27,500	29,999	25	242,4	179,4	7,5	57	8
30,000	32,499	25	272,4	209,4	7,5	57	8
32,500	34,999	32	272,4	205,4	7,5	61	8
35,000	37,499	32	272,4	205,4	7,5	61	8
37,500	39,999	32	272,4	205,4	7,5	61	8
40,000	42,500	32	272,4	205,4	7,5	61	8

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Adjustment screw to change internal coolant supply from axial to radial.



### ■ RMB • Blind Hole Cermet-Tipped Reamer



● first choice  
○ alternate choice

KT6215	D1	D	L	L4	L10	LS	Z
RMB14000H7SF *	14,00	16,00	145,0	76,0	8,0	49,0	6
RMB15000H7SF	15,00	16,00	145,0	76,0	8,0	49,0	6
RMB16000H7SF	16,00	20,00	157,0	86,0	8,0	51,0	6
RMB17000H7SF *	17,00	20,00	157,0	86,0	8,0	51,0	6
RMB18000H7SF *	18,00	20,00	171,0	100,0	8,0	51,0	6
RMB19000H7SF *	19,00	20,00	171,0	100,0	8,0	51,0	6
RMB20000H7SF *	20,00	20,00	200,0	129,0	8,0	51,0	6

NOTE: Uncoated carbide grade K605™ and uncoated cermet grade KT325™ are available on request.

\*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

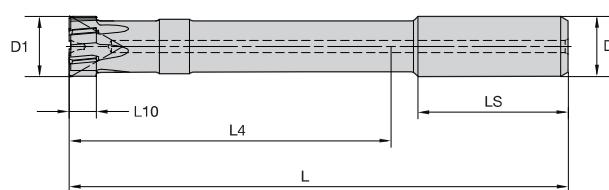
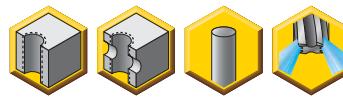
### Dimensions for Engineered-Solution Reamers

D1 min mm	D1 max mm	D mm	L mm	L4 mm	L10 mm	LS mm	Z
14,000	15,999	16	145	76	8	49	6
16,000	17,999	20	157	86	8	51	6
18,000	19,999	20	171	100	8	51	6
20,000	21,999	20	200	129	8	51	6
22,000	25,999	20	210	139	10	51	6
26,000	29,999	25	240	163	10	57	8
30,000	32,000	25	270	193	12	57	8

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

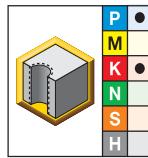


- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Adjustment screw to change internal coolant supply from axial to radial.



### RMB • Through Hole Cermet-Tipped Reamer

Hole Finishing



- first choice
- alternate choice

KT6215	D1	D	L	L4	L10	LS	Z
RMB14000H7HF *	14,00	16,00	145,0	76,0	7,6	49,0	6
RMB15000H7HF *	15,00	16,00	145,0	76,0	7,6	49,0	6
RMB16000H7HF	16,00	20,00	157,0	86,0	7,6	51,0	6
RMB18000H7HF *	18,00	20,00	171,0	100,0	7,6	51,0	6
RMB19000H7HF *	19,00	20,00	171,0	100,0	7,6	51,0	6
RMB20000H7HF *	20,00	20,00	200,0	129,0	7,6	51,0	6

NOTE: Uncoated carbide grade K605™ is available on request.

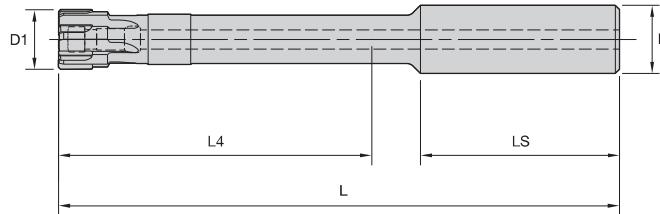
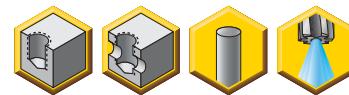
\*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

### Dimensions for Engineered-Solution Reamers

D1 min mm	D1 max mm	D mm	L mm	L4 mm	L10 mm	LS mm	Z
14,000	15,999	16	145	76	8	49	6
16,000	17,999	20	157	86	8	51	6
18,000	19,999	20	171	100	8	51	6
20,000	21,999	20	200	129	8	51	6
22,000	25,999	20	210	139	10	51	6
26,000	29,999	25	240	163	10	57	8
30,000	32,000	25	270	193	12	57	8

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

- For hole tolerance H6.
- Intermediate sizes available.
- Allen expansion screw.



### ■ RMB-E • Blind Hole Expansion Reamer



Hole Finishing



- first choice
- alternate choice

KC6005	KC6305	D1	D	L	L4	LS	Z
RMBE14000H6SF *	RMBE14000H6SF	14,00	16,00	131,5	72,5	49,0	6
RMBE15000H6SF *	RMBE15000H6SF *	15,00	16,00	136,5	77,5	49,0	6
RMBE16000H6SF *	RMBE16000H6SF *	16,00	20,00	143,5	82,5	54,4	6
RMBE17000H6SF *	RMBE17000H6SF *	17,00	20,00	148,5	87,5	51,0	6
RMBE18000H6SF *	RMBE18000H6SF *	18,00	20,00	153,5	92,5	51,0	6
RMBE19000H6SF *	RMBE19000H6SF	19,00	20,00	158,5	97,5	51,0	6
RMBE20000H6SF *	RMBE20000H6SF *	20,00	25,00	169,8	102,5	57,0	6

NOTE: Uncoated carbide grade K605™ and uncoated cermet grade KT325™ are available on request.

\*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

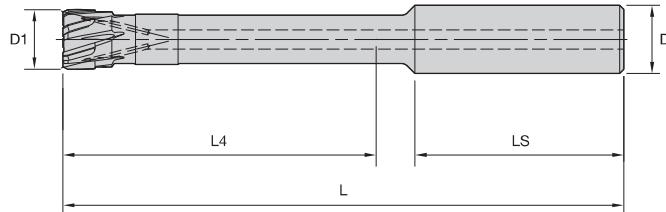
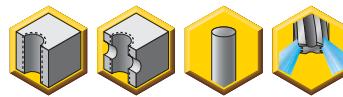
### Dimensions for Engineered-Solution Reamers

D1 min mm	D1 max mm	D mm	L mm	L4 mm	LS mm		Z
14,000	14,499	16	131,5	72,5	49		6
14,500	14,999	16	134,0	75,0	49		6
15,000	15,499	16	136,5	77,5	49		6
15,500	15,999	16	139,0	80,0	49		6
16,000	16,499	20	143,5	82,5	51		6
16,500	16,999	20	146,0	85,0	51		6
17,000	17,499	20	148,5	87,5	51		6
17,500	17,999	20	151,0	90,0	51		6
18,000	18,499	20	153,5	92,5	51		6
18,500	18,999	20	156,0	95,0	51		6
19,000	19,499	20	158,5	97,5	51		6
19,500	19,999	20	161,0	100,0	51		6
20,000	20,499	25	169,8	102,5	57		6

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

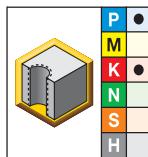
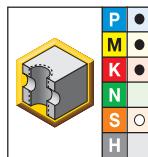
Custom expandable reamers available starting from a diameter of 8mm.

- For hole tolerance H6.
- Intermediate sizes available.
- Allen expansion screw.



### RMB-E • Through Hole Expansion Reamer

Hole Finishing



● first choice

○ alternate choice

KC6005	KC6305	D <sub>1</sub>	D	L	L <sub>4</sub>	L <sub>S</sub>	Z
RMBE14000H6HF	RMBE14000H6HF *	14,00	16,00	131,5	72,5	49,0	6
RMBE15000H6HF *	RMBE15000H6HF	15,00	16,00	136,5	77,5	49,0	6
RMBE16000H6HF *	RMBE16000H6HF	16,00	20,00	143,5	82,5	51,0	6
RMBE17000H6HF *	RMBE17000H6HF *	17,00	20,00	148,5	87,5	51,0	6
RMBE18000H6HF *	RMBE18000H6HF	18,00	20,00	153,5	92,5	51,0	6
RMBE19000H6HF *	RMBE19000H6HF *	19,00	20,00	158,5	97,5	51,0	6
RMBE20000H6HF *	RMBE20000H6HF	20,00	25,00	169,8	102,5	57,0	6

NOTE: Uncoated carbide grade K605™ is available on request.

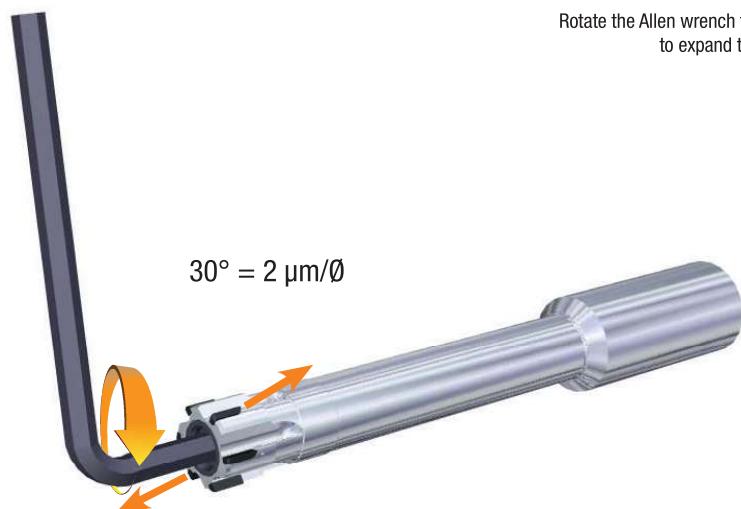
\*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

### Dimensions for Engineered-Solution Reamers

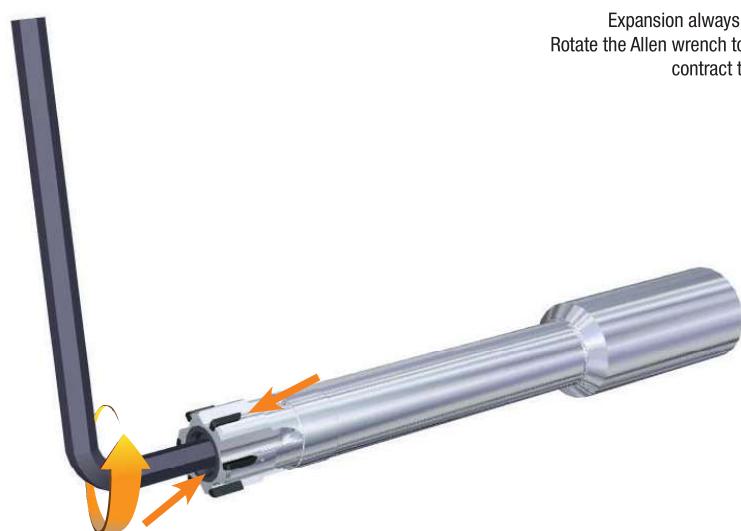
D <sub>1</sub> min mm	D <sub>1</sub> max mm	D mm	L mm	L <sub>4</sub> mm	L <sub>S</sub> mm	Z
14,000	14,499	16	131,5	72,5	49	6
14,500	14,999	16	134,0	75,0	49	6
15,000	15,499	16	136,5	77,5	49	6
15,500	15,999	16	139,0	80,0	49	6
16,000	16,499	20	143,5	82,5	51	6
16,500	16,999	20	146,0	85,0	51	6
17,000	17,499	20	148,5	87,5	51	6
17,500	17,999	20	151,0	90,0	51	6
18,000	18,499	20	153,5	92,5	51	6
18,500	18,999	20	156,0	95,0	51	6
19,000	19,499	20	158,5	97,5	51	6
19,500	19,999	20	161,0	100,0	51	6
20,000	20,499	25	169,8	102,5	57	6

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

Custom expandable reamers available starting with a diameter of 8mm.

**To Expand**

Rotate the Allen wrench to the right  
to expand the reamer.

**To Contract**

Expansion always reversible:  
Rotate the Allen wrench to the left  
to contract the reamer.

- $30^\circ = 2 \mu\text{m}$  linear expansion.
- $720^\circ = 2$  revolutions;  $= 48 \mu\text{m}$  maximum expansion.
- Hard stop after  $720^\circ$  expansion. You cannot over expand!
- The expansion occurs in the elastic material behaviour.
- You cannot reduce the diameter below D1.

## ■ RMR • Metric

Material Group		KCU05				Metric					
		Cutting Speed – vc				Recommended Feed Rate per Tooth					
		Range – m/min				Tool Diameter (mm)	14,00–19,99mm		20,00–32,00mm		
		min	Starting Value	max	Feed/Tooth		min	max	min	max	
P	1	90	120	155	mm/z	0,10	0,22	0,10	0,25		
	2	90	120	155	mm/z	0,10	0,22	0,10	0,25		
	3	75	100	130	mm/z	0,10	0,22	0,10	0,25		
	4	50	80	105	mm/z	0,10	0,22	0,10	0,25		
	5	30	40	60	mm/z	0,10	0,22	0,10	0,25		
	6	30	40	60	mm/z	0,08	0,20	0,08	0,22		
M	1	15	20	40	mm/z	0,08	0,18	0,08	0,20		
	2	15	20	30	mm/z	0,08	0,18	0,08	0,20		
	3	15	20	30	mm/z	0,08	0,18	0,08	0,20		
K	1	80	110	130	mm/z	0,10	0,22	0,10	0,25		
	2	65	90	110	mm/z	0,10	0,22	0,10	0,25		
	3	50	70	90	mm/z	0,10	0,20	0,10	0,25		
S	1	15	20	30	mm/z	0,10	0,18	0,10	0,20		
	2	15	20	30	mm/z	0,10	0,18	0,10	0,20		
	3	20	30	40	mm/z	0,10	0,20	0,10	0,20		
	4	20	30	40	mm/z	0,10	0,20	0,10	0,20		

Hole Finishing  
➤

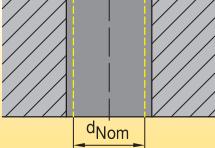
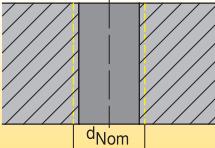
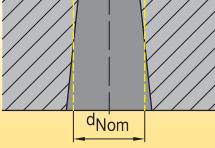
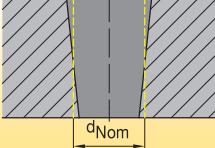
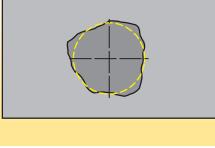
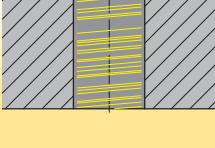
## ■ RMB™ and RMB-E™ • Metric

Material Group		RMB – Cermet Tipped				RMB-E				Metric															
		straight flute	helical flute	straight flute	helical flute																				
		KT6215	KT6215	K605	KC6305	Recommended Feed Rate per Tooth																			
		Cutting Speed – vc																							
		Range – m/min																							
		min	Starting Value	max	min	Starting Value	max	min	Starting Value	max	Feed/Tooth	min	max												
P	1	150	180	210	180	210	240	40	60	70	90	120	155												
	2	150	180	210	180	210	240	40	60	70	90	120	155												
	3	130	160	180	150	180	210	30	40	50	75	100	130												
	4	100	130	150	120	150	170	25	40	45	50	80	105												
	5	80	100	120	100	130	150	10	20	30	30	40	55												
	6	80	100	120	100	130	150	10	20	30	30	40	55												
M	1	—	—	—	—	—	8	10	15	15	20	28	mm/z												
	2	—	—	—	—	—	8	10	15	15	20	28	mm/z												
	3	—	—	—	—	—	8	10	15	15	20	28	mm/z												
K	1	150	180	200	180	210	240	30	50	60	80	110	130												
	2	130	160	180	150	180	210	25	40	45	65	90	110												
	3	100	130	160	120	150	170	20	30	40	50	70	90												
N	1	—	—	—	—	—	110	150	195	—	—	—	mm/z												
	2	—	—	—	—	—	110	150	195	—	—	—	mm/z												
	3	—	—	—	—	—	110	150	195	—	—	—	mm/z												
	4	—	—	—	—	—	110	150	195	—	—	—	mm/z												
	5	—	—	—	—	—	105	140	180	—	—	—	mm/z												
S	1	—	—	—	—	—	8	10	15	15	20	28	mm/z												
	2	—	—	—	—	—	8	10	15	15	20	28	mm/z												
	3	—	—	—	—	—	15	20	30	20	30	40	mm/z												
	4	—	—	—	—	—	15	20	30	20	30	40	mm/z												

### ■ Reaming Allowances for Multi-Blade Reaming

mm	reaming allowances in diameter mm		
	min	middle	max
1,40–4,80	0,08	0,12	0,20
4,81–9,59	0,10	0,15	0,25
9,60–15,00	0,15	0,20	0,30
15,00–20,00	0,15	0,25	0,35
20,00–50,00	0,20	0,30	0,40

### ■ Troubleshooting

Problem	Cause	Possible Remedy
Hole diameter too large.	 <ul style="list-style-type: none"> <li>Reaming tool running out-of-centre.</li> <li>Concentricity of pilot hole and ream machining unsatisfactory.</li> <li>Built-up edge.</li> <li>Unsuitable cooling lubricant.</li> <li>Reaming tool diameter too large.</li> </ul>	<ul style="list-style-type: none"> <li>Use equalising adaptor.</li> <li>Re-align, use floating head.</li> <li>Change cooling lubricant.</li> <li>Change cutting speed.</li> <li>Measure reamers and send for repairs.</li> </ul>
Hole diameter too small.	 <ul style="list-style-type: none"> <li>Ramer worn.</li> <li>Unsuitable cooling lubricant.</li> <li>Reaming allowance too small.</li> </ul>	<ul style="list-style-type: none"> <li>Replace and refit tool.</li> <li>Change cooling lubricant.</li> <li>Increase reaming allowance.</li> </ul>
Conical hole profile wider towards drill runout.	 <ul style="list-style-type: none"> <li>Concentricity of pilot hole and reaming unsatisfactory.</li> <li>Positioning accuracy of pilot hole to reaming.</li> </ul>	<ul style="list-style-type: none"> <li>Re-align, use equalising adaptor.</li> <li>Correct positioning accuracy.</li> </ul>
Conical hole profile wider at drill entry point.	 <ul style="list-style-type: none"> <li>Concentricity of pilot hole and reaming unsatisfactory.</li> <li>Reaming tool skim cutting with ledger.</li> </ul>	<ul style="list-style-type: none"> <li>Re-align, use floating head.</li> <li>Securely clamp reaming tool axially.</li> </ul>
Hole out-of-centre and/or showing chatter marks.	 <ul style="list-style-type: none"> <li>Reaming tool running out-of-centre.</li> <li>Slanted cutting surface/asymmetrical cutting.</li> <li>Workpiece twisted.</li> </ul>	<ul style="list-style-type: none"> <li>Use equalising adaptor.</li> <li>Spot face as drilling preparation.</li> <li>Take the direction of impact into account when clamping the workpiece.</li> </ul>
Surface quality does not meet specification.	 <ul style="list-style-type: none"> <li>Tool cutters worn.</li> <li>Reaming tool running out-of-centre.</li> <li>Incorrect technology data (cutting parameters).</li> <li>Inadequate chip evacuation.</li> </ul>	<ul style="list-style-type: none"> <li>Use equalising adaptor.</li> <li>Re-align, use floating head.</li> <li>Change cooling lubricant.</li> <li>Change cutting speed.</li> <li>Measure reamers and send for repairs.</li> </ul>
Feed grooves.	 <ul style="list-style-type: none"> <li>Built-up edge.</li> </ul>	<ul style="list-style-type: none"> <li>Change cooling lubricant.</li> <li>Change cutting speed.</li> </ul>

# ➤ RHR™ Disc Reaming

## Primary Application

The RHR modular disc reaming system combines the productivity of disc reamers with the idea of interchangeable reaming heads. Only five coupling sizes cover the whole diameter range, a comfortable interchangeable mechanism, and no need for setting fixtures or repeat measurements makes this system very attractive. Combine RHR disc reamers with the Kennametal SIF™ steerable holder for the best results.

## Features and Benefits

- Solid carbide disc at front instead of single-tipped carbide blanks.
- Unique coating specifically for reaming applications.
- Unique patented coupling system enables same runout accuracy as monoblock systems (<3 microns), eliminating repeat runout checking.
- Quick radial clamping change-outs, even in narrow situations.
- No fixture for clamping or dismounting necessary.
- Helical and straight flutes for chip control in through and blind holes.
- Bodies available with straight shank, HSK back end, and SIF connection.



## Customisation

- All diameters between 14–42,5mm (.5512–1.6732").
- Variation of leads and cylindrical margin for application-specific optimisation.

# ➤ RHM™ Modular Cermet-Tipped System

## Primary Application

RHM modular reamers are tipped with cermet blanks and available in diameters from 14–42,5mm (.5512–1.6732") as standards, and up to 50mm (1.968") as custom solutions. Cermet reamers provide excellent tool life and surface finishes in steel applications. Combine RHM modular reamers with the Kennametal SIF™ steerable holder for best results.

Use SIF steerable hydraulic chucks or SIF adapters for easy compensation of radial runout and angular inaccuracies of the spindle to achieve the highest possible hole straightness and surface quality. Radial or axial tool bodies are available at diameter 20mm.

## Features and Benefits

### Taper-Face Contact with KST Coupling

- Symmetrical torque transmission near head.
- Higher feed rate than conventional reaming tools.
- Better surface quality and tool life due to less tendency to vibrate.
- No need for head to body orientation.

### Customisation

- Diameters up to 50mm (1.968") available with and without internal coolant in 0,001mm (.00004") steps.
- Intermediate diameters from standard offering available with short delivery time.
- RHM tooling for machining heat-resistant materials, as well as different lengths and couplings or shanks, available on request.



### Higher productivity and profitability

- Longer tool life with increased hole and surface quality due to lapped ground leads.
- Cermet enables highest metal removal rates at higher speeds and feeds in steel.
- Improved straightness and cylindrical form compared to competitive tools and reduced vibration tendency due to unequal flutes.

# ➤ RHM-E™ Expandable Reamers

## Primary Application

The original idea behind an expansion reamer is to achieve more regrinds. The expansion mechanism is designed for this purpose only.

The Kennametal expandable reaming system is different. Over an expansion range of 48 microns, it comes with a completely linear expansion rate of 2 microns per 30° turn. The micron-adjustability of this system eliminates manufacturing tolerances and thus allows for machining tightest tolerances, usually only achievable by using an uncoated tool or guide pad reaming. No pre-setting equipment is required.



## Features and Benefits

### Precision and Productivity

- Use with SIF™ steerable chucks for KST toolholders for easy compensation of radial runout and angular inaccuracies.
- Tools are preadjusted to hit IT6 tolerance.
- Expansion range of 48 microns.
- Completely linear expansion.
- 2 microns per 30° turn.

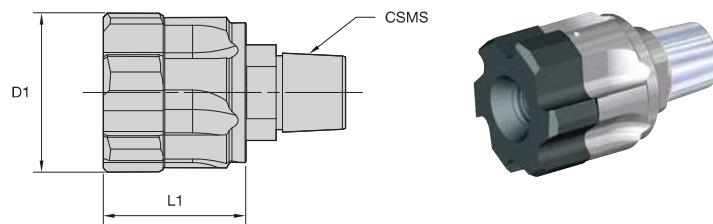
### Increased Tool Life

- Longer tool life at smaller tolerances.

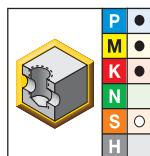
### Customisation

- Diameters up to 42mm (1.65") available with helical and straight flutes in 0,001mm (.00004") increments.

- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Please order lock screw and retention knob separately.



#### ■ RHR • Disc Style Reamer Head • Straight Fluted for Blind Holes with Internal Coolant



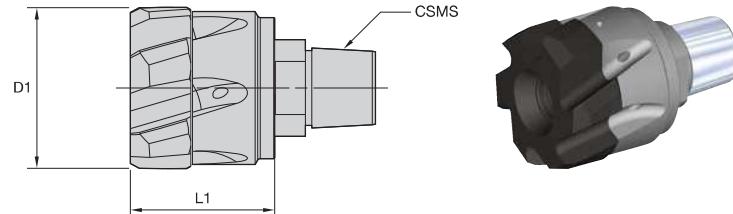
● first choice  
○ alternate choice



Hole Finishing

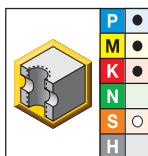
KCU05	CSMS system size	D1	L1	Z
RHR14000KST115H7SF	KST115	14,00	17,90	6
RHR15000KST115H7SF	KST115	15,00	17,90	6
RHR16000KST135H7SF	KST135	16,00	17,90	6
RHR17000KST135H7SF	KST135	17,00	17,90	6
RHR18000KST155H7SF	KST155	18,00	17,90	6
RHR19000KST155H7SF	KST155	19,00	17,90	6
RHR20000KST175H7SF	KST175	20,00	17,90	6
RHR21000KST175H7SF	KST175	21,00	17,90	6
RHR22000KST175H7SF	KST175	22,00	17,90	6
RHR23000KST200H7SF	KST200	23,00	18,90	6
RHR24000KST200H7SF	KST200	24,00	18,90	6
RHR25000KST200H7SF	KST200	25,00	18,90	8
RHR26000KST200H7SF	KST200	26,00	18,90	8
RHR27000KST200H7SF	KST200	27,00	18,90	8
RHR28000KST250H7SF	KST250	28,00	18,90	8
RHR29000KST250H7SF	KST250	29,00	18,90	8
RHR30000KST250H7SF	KST250	30,00	18,90	8
RHR31000KST250H7SF	KST250	31,00	18,90	8
RHR32000KST250H7SF	KST250	32,00	18,90	8
RHR33000KST300H7SF	KST300	33,00	20,40	8
RHR34000KST300H7SF	KST300	34,00	20,40	8
RHR35000KST300H7SF	KST300	35,00	20,40	8
RHR36000KST300H7SF	KST300	36,00	20,40	8
RHR37000KST300H7SF	KST300	37,00	20,40	8
RHR38000KST350H7SF	KST350	38,00	20,40	8
RHR39000KST350H7SF	KST350	39,00	20,40	8
RHR40000KST350H7SF	KST350	40,00	20,40	8
RHR41000KST350H7SF	KST350	41,00	20,40	8
RHR42000KST350H7SF	KST350	42,00	20,40	8

- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Please order lock screw and retention knob separately.



Hole Finishing

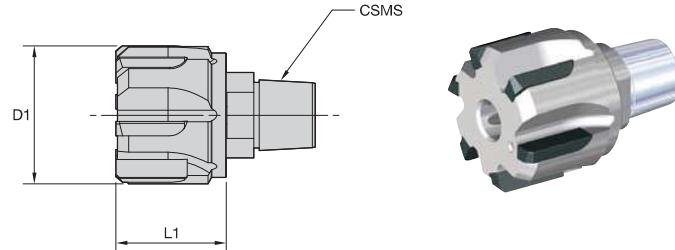
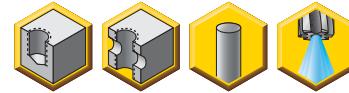
### ■ RHR • Disc Style Reamer Head • Helical Fluted for Through Holes with Internal Coolant



● first choice  
○ alternate choice

KCU05	CSMS system size	D1	L1	Z
RHR14000KST115H7HF	KST115	14,00	17,90	6
RHR15000KST115H7HF	KST115	15,00	17,90	6
RHR16000KST135H7HF	KST135	16,00	17,90	6
RHR17000KST135H7HF	KST135	17,00	17,90	6
RHR18000KST155H7HF	KST155	18,00	17,90	6
RHR19000KST155H7HF	KST155	19,00	17,90	6
RHR20000KST175H7HF	KST175	20,00	17,90	6
RHR21000KST175H7HF	KST175	21,00	17,90	6
RHR22000KST175H7HF	KST175	22,00	17,90	6
RHR23000KST200H7HF	KST200	23,00	18,90	6
RHR24000KST200H7HF	KST200	24,00	18,90	6
RHR25000KST200H7HF	KST200	25,00	18,90	8
RHR26000KST200H7HF	KST200	26,00	18,90	8
RHR27000KST200H7HF	KST200	27,00	18,90	8
RHR28000KST250H7HF	KST250	28,00	18,90	8
RHR29000KST250H7HF	KST250	29,00	18,90	8
RHR30000KST250H7HF	KST250	30,00	18,90	8
RHR31000KST250H7HF	KST250	31,00	18,90	8
RHR32000KST250H7HF	KST250	32,00	18,90	8
RHR33000KST300H7HF	KST300	33,00	20,40	8
RHR34000KST300H7HF	KST300	34,00	20,40	8
RHR35000KST300H7HF	KST300	35,00	20,40	8
RHR36000KST300H7HF	KST300	36,00	20,40	8
RHR37000KST300H7HF	KST300	37,00	20,40	8
RHR38000KST350H7HF	KST350	38,00	20,40	8
RHR39000KST350H7HF	KST350	39,00	20,40	8
RHR40000KST350H7HF	KST350	40,00	20,40	8
RHR41000KST350H7HF	KST350	41,00	20,40	8
RHR42000KST350H7HF	KST350	42,00	20,40	8

- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Please order lock screw for axial use or retention knob separately.



### ■ RHM • Blind Hole Cermet Tipped Reamer

KT325	KT6215	CSMS system size	D1	L1	Z
RHM14000KST115H7SF *	RHM14000KST115H7SF	KST115	14,00	13,50	6
RHM14288KST115H7SF *	RHM14288KST115H7SF	KST115	14,29	13,50	6
RHM15000KST115H7SF *	-	KST115	15,00	13,50	6
RHM15875KST115H7SF *	RHM15875KST115H7SF	KST115	15,88	13,50	6
RHM16000KST135H7SF *	RHM16000KST135H7SF	KST135	16,00	13,50	6
RHM17000KST135H7SF *	RHM17000KST135H7SF *	KST135	17,00	15,50	6
RHM17463KST135H7SF *	-	KST135	17,46	15,50	6
RHM18000KST155H7SF	RHM18000KST155H7SF	KST155	18,00	15,50	6
RHM19000KST155H7SF *	-	KST155	19,00	15,50	6
RHM19050KST155H7SF *	RHM19050KST155H7SF *	KST155	19,05	15,50	6
RHM20000KST175H7SF	RHM20000KST175H7SF	KST175	20,00	15,50	6
RHM20640KST175H7SF *	RHM20640KST175H7SF *	KST175	20,64	15,50	6
RHM21000KST175H7SF *	RHM21000KST175H7SF	KST175	21,00	15,50	6
-	RHM22000KST175H7SF *	KST175	22,00	15,50	6
RHM22230KST175H7SF *	RHM22230KST175H7SF *	KST175	22,23	15,50	6
RHM22500KST200H7SF *	RHM22500KST200H7SF *	KST200	22,50	16,50	6
RHM23000KST200H7SF *	RHM23000KST200H7SF *	KST200	23,00	16,50	6
RHM23810KST200H7SF *	RHM23810KST200H7SF *	KST200	23,81	16,50	6
RHM24000KST200H7SF *	RHM24000KST200H7SF *	KST200	24,00	16,50	6
RHM25000KST200H7SF *	RHM25000KST200H7SF	KST200	25,00	16,50	6
RHM25400KST200H7SF *	RHM25400KST200H7SF *	KST200	25,40	16,50	6
RHM26000KST200H7SF *	-	KST200	26,00	16,50	8
RHM26990KST200H7SF *	RHM26990KST200H7SF *	KST200	26,99	16,50	8
RHM27000KST200H7SF	RHM27000KST200H7SF *	KST200	27,00	16,50	8

● first choice  
○ alternate choice

  
**Hole Finishing**
*(continued)*

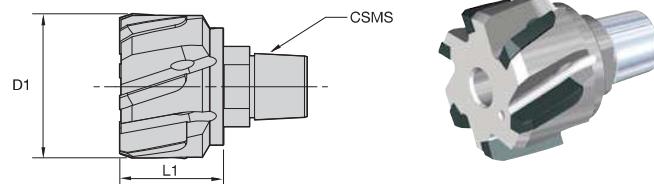
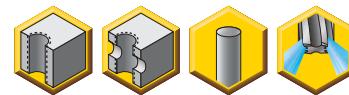
(RHM • Blind Hole Cermet Tipped Reamer – continued)

➤ Hole Finishing

KT325	KT6215	CSMS system size	D1	L1	Z
RHM27500KST250H7SF *	RHM27500KST250H7SF *	KST250	27,50	16,50	8
RHM28000KST250H7SF *	RHM28000KST250H7SF	KST250	28,00	16,50	8
RHM28580KST250H7SF *	RHM28580KST250H7SF *	KST250	28,58	16,50	8
RHM29000KST250H7SF	RHM29000KST250H7SF *	KST250	29,00	16,50	8
RHM30000KST250H7SF	RHM30000KST250H7SF *	KST250	30,00	16,50	8
RHM30160KST250H7SF *	-	KST250	30,16	16,50	8
RHM31000KST250H7SF *	RHM31000KST250H7SF *	KST250	31,00	16,50	8
RHM31750KST250H7SF *	RHM31750KST250H7SF *	KST250	31,75	16,50	8
RHM32000KST250H7SF *	-	KST250	32,00	16,50	8
RHM32500KST300H7SF *	RHM32500KST300H7SF *	KST300	32,50	18,00	8
RHM33000KST300H7SF *	RHM33000KST300H7SF *	KST300	33,00	18,00	8
RHM33340KST300H7SF *	RHM33340KST300H7SF *	KST300	33,34	18,00	8
RHM34000KST300H7SF *	-	KST300	34,00	18,00	8
RHM34930KST300H7SF *	RHM34930KST300H7SF *	KST300	34,93	18,00	8
RHM35000KST300H7SF *	RHM35000KST300H7SF *	KST300	35,00	18,00	8
RHM36000KST300H7SF *	RHM36000KST300H7SF *	KST300	36,00	18,00	8
RHM36510KST300H7SF *	RHM36510KST300H7SF *	KST300	36,51	18,00	8
RHM37000KST300H7SF *	-	KST300	37,00	18,00	8
RHM37500KST350H7SF *	RHM37500KST350H7SF *	KST350	37,50	18,00	8
RHM38000KST350H7SF *	RHM38000KST350H7SF *	KST350	38,00	18,00	8
RHM38100KST350H7SF *	RHM38100KST350H7SF *	KST350	38,10	18,00	8
RHM39000KST350H7SF *	RHM39000KST350H7SF *	KST350	39,00	18,00	8
RHM39690KST350H7SF *	RHM39690KST350H7SF *	KST350	39,69	18,00	8
-	RHM40000KST350H7SF *	KST350	40,00	18,00	8
RHM41000KST350H7SF *	RHM41000KST350H7SF *	KST350	41,00	18,00	8
RHM41280KST350H7SF *	RHM41280KST350H7SF *	KST350	41,28	18,00	8
RHM42000KST350H7SF	RHM42000KST350H7SF *	KST350	42,00	18,00	8

NOTE: \*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Please order lock screw for axial use or retention knob separately.



### ■ RHM • Through Hole Cermet Tipped Reamer

KT325	KT6215	CSMS system size	D1	L1	Z
RHM14000KST115H7HF *	RHM14000KST115H7HF	KST115	14,00	13,50	6
RHM14288KST115H7HF *	RHM14288KST115H7HF *	KST115	14,29	13,50	6
RHM15875KST115H7HF *	-	KST115	15,88	13,50	6
RHM16000KST135H7HF	RHM16000KST135H7HF	KST135	16,00	13,50	6
RHM17000KST135H7HF *	RHM17000KST135H7HF	KST135	17,00	15,50	6
RHM17463KST135H7HF *	RHM17463KST135H7HF *	KST135	17,46	15,50	6
RHM18000KST155H7HF *	RHM18000KST155H7HF	KST155	18,00	15,50	6
RHM19000KST155H7HF *	RHM19000KST155H7HF	KST155	19,00	15,50	6
RHM19050KST155H7HF *	RHM19050KST155H7HF	KST155	19,05	15,50	6
RHM20000KST175H7HF	RHM20000KST175H7HF	KST175	20,00	15,50	6
RHM20640KST175H7HF *	RHM20640KST175H7HF	KST175	20,64	15,50	6
RHM21000KST175H7HF	RHM21000KST175H7HF	KST175	21,00	15,50	6
RHM22000KST175H7HF	RHM22000KST175H7HF *	KST175	22,00	15,50	6
RHM22230KST175H7HF *	RHM22230KST175H7HF *	KST175	22,23	15,50	6
RHM22500KST200H7HF *	RHM22500KST200H7HF *	KST200	22,50	16,50	6
RHM23000KST200H7HF *	RHM23000KST200H7HF *	KST200	23,00	16,50	6
RHM23810KST200H7HF *	RHM23810KST200H7HF *	KST200	23,81	16,50	6
RHM24000KST200H7HF	RHM24000KST200H7HF *	KST200	24,00	16,50	6
RHM25000KST200H7HF	RHM25000KST200H7HF	KST200	25,00	16,50	6
RHM25400KST200H7HF *	RHM25400KST200H7HF	KST200	25,40	16,50	6
RHM26000KST200H7HF *	-	KST200	26,00	16,50	8
RHM26990KST200H7HF *	RHM26990KST200H7HF *	KST200	26,99	16,50	8
RHM27000KST200H7HF *	RHM27000KST200H7HF *	KST200	27,00	16,50	8
RHM27500KST250H7HF *	RHM27500KST250H7HF *	KST250	27,50	16,50	8

● first choice  
○ alternate choice



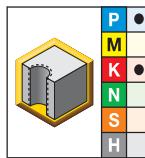
Hole Finishing

(continued)

(RHM • Through Hole Cermet Tipped Reamer — continued)



KT325



KT6215

		CSMS system size	D1	L1	Z
RHM28000KST250H7HF	RHM28000KST250H7HF	KST250	28,00	16,50	8
RHM28580KST250H7HF *	-	KST250	28,58	16,50	8
RHM29000KST250H7HF *	RHM29000KST250H7HF *	KST250	29,00	16,50	8
RHM30000KST250H7HF	RHM30000KST250H7HF	KST250	30,00	16,50	8
RHM30160KST250H7HF *	RHM30160KST250H7HF *	KST250	30,16	16,50	8
RHM31000KST250H7HF *	RHM31000KST250H7HF *	KST250	31,00	16,50	8
RHM31750KST250H7HF *	RHM31750KST250H7HF *	KST250	31,75	16,50	8
RHM32000KST250H7HF *	RHM32000KST250H7HF *	KST250	32,00	16,50	8
RHM32500KST300H7HF *	RHM32500KST300H7HF *	KST300	32,50	18,00	8
RHM33000KST300H7HF *	RHM33000KST300H7HF *	KST300	33,00	18,00	8
RHM33340KST300H7HF *	RHM33340KST300H7HF *	KST300	33,34	18,00	8
-	RHM34000KST300H7HF	KST300	34,00	18,00	8
RHM34930KST300H7HF *	RHM34930KST300H7HF *	KST300	34,93	18,00	8
RHM35000KST300H7HF	RHM35000KST300H7HF	KST300	35,00	18,00	8
RHM36000KST300H7HF	-	KST300	36,00	18,00	8
RHM36510KST300H7HF *	RHM36510KST300H7HF *	KST300	36,51	18,00	8
RHM37000KST300H7HF *	RHM37000KST300H7HF	KST300	37,00	18,00	8
RHM37500KST350H7HF *	RHM37500KST350H7HF *	KST350	37,50	18,00	8
RHM38100KST350H7HF *	-	KST350	38,10	18,00	8
RHM39000KST350H7HF *	RHM39000KST350H7HF *	KST350	39,00	18,00	8
RHM39690KST350H7HF *	RHM39690KST350H7HF *	KST350	39,69	18,00	8
RHM40000KST350H7HF	RHM40000KST350H7HF	KST350	40,00	18,00	8
RHM41000KST350H7HF *	RHM41000KST350H7HF *	KST350	41,00	18,00	8
RHM41280KST350H7HF *	RHM41280KST350H7HF *	KST350	41,28	18,00	8
RHM42000KST350H7HF	RHM42000KST350H7HF *	KST350	42,00	18,00	8

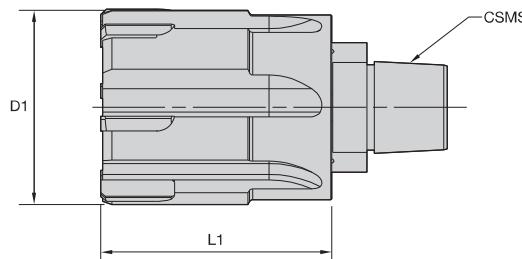
NOTE: Uncoated carbide grade K605™ is available on request.

\*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.



Hole Finishing

- For hole tolerance H6.
- Intermediate sizes available.
- Lock screw for axial use or retention knob comes with holder.
- Allen expansion screw.



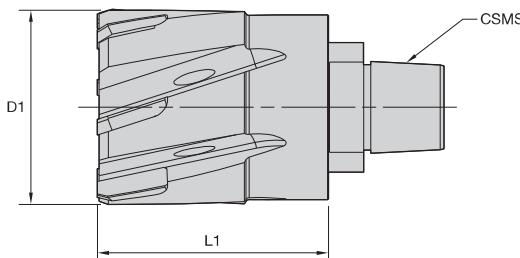
### ■ RHM-E • Blind Hole Expansion Reamer

KC6005	KC6305	CSMS system size	D1	L1	Z
RHME14000KST115H6SF *	RHME14000KST115H6SF	KST115	14,00	25,00	6
RHME14288KST115H6SF *	RHME14288KST115H6SF *	KST115	14,29	25,00	6
RHME15000KST115H6SF *	RHME15000KST115H6SF	KST115	15,00	25,00	6
RHME16000KST135H6SF	RHME16000KST135H6SF	KST135	16,00	25,00	6
RHME17000KST135H6SF *	RHME17000KST135H6SF	KST135	17,00	25,00	6
RHME17463KST135H6SF *	RHME17463KST135H6SF *	KST135	17,46	25,00	6
RHME18000KST155H6SF *	RHME18000KST155H6SF *	KST155	18,00	25,00	6
RHME19000KST155H6SF *	RHME19000KST155H6SF *	KST155	19,00	25,00	6
RHME19050KST155H6SF *	RHME19050KST155H6SF *	KST155	19,05	25,00	6
RHME20000KST175H6SF *	RHME20000KST175H6SF	KST175	20,00	25,00	6
RHME21000KST175H6SF	RHME21000KST175H6SF *	KST175	21,00	25,00	6
RHME22000KST175H6SF *	RHME22000KST175H6SF *	KST175	22,00	25,00	6
RHME22225KST175H6SF *	RHME22225KST175H6SF	KST175	22,23	25,00	6
RHME23000KST200H6SF *	RHME23000KST200H6SF *	KST200	23,00	25,00	6
RHME23813KST200H6SF *	RHME23813KST200H6SF *	KST200	23,81	25,00	6
RHME24000KST200H6SF	RHME24000KST200H6SF *	KST200	24,00	25,00	6
RHME25000KST200H6SF	RHME25000KST200H6SF	KST200	25,00	30,00	6
RHME25400KST200H6SF *	RHME25400KST200H6SF *	KST200	25,40	30,00	6
RHME26000KST200H6SF *	RHME26000KST200H6SF *	KST200	26,00	30,00	8
RHME27000KST200H6SF *	RHME27000KST200H6SF	KST200	27,00	30,00	8
RHME28000KST250H6SF	RHME28000KST250H6SF	KST250	28,00	36,00	8
RHME30000KST250H6SF	RHME30000KST250H6SF	KST250	30,00	36,00	8
RHME31750KST250H6SF *	RHME31750KST250H6SF *	KST250	31,75	36,00	8
RHME32000KST250H6SF *	RHME32000KST250H6SF *	KST250	32,00	36,00	8
RHME34000KST300H6SF *	RHME34000KST300H6SF *	KST300	34,00	36,00	8
RHME36000KST300H6SF *	RHME36000KST300H6SF *	KST300	36,00	36,00	8
RHME38000KST350H6SF *	RHME38000KST350H6SF *	KST350	38,00	36,00	8
RHME40000KST350H6SF *	RHME40000KST350H6SF *	KST350	40,00	36,00	8
RHME42000KST350H6SF *	RHME42000KST350H6SF *	KST350	42,00	36,00	8

NOTE: Uncoated carbide grade K605™ is available on request.

\*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- For hole tolerance H6.
- Intermediate sizes available.
- Lock screw for axial use or retention knob comes with holder.
- Allen expansion screw.



Hole Finishing

### ■ RHM-E • Through Hole Expansion Reamer

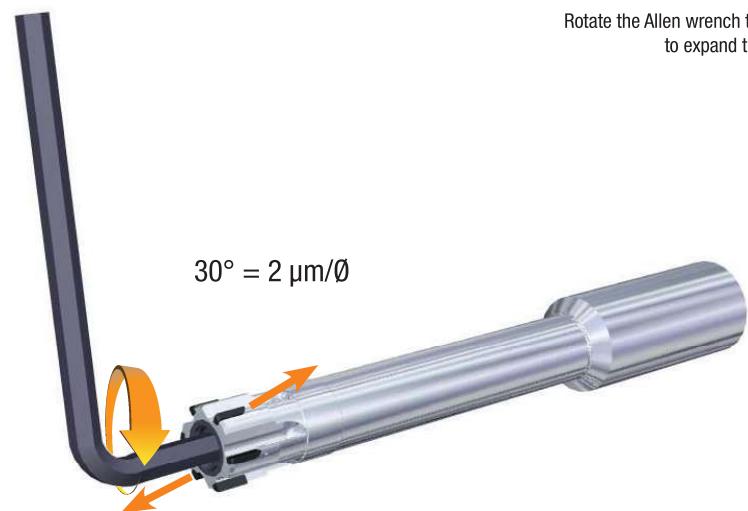
KC6005	KC6305	CSMS system size	D1	L1	Z
RHME14000KST115H6HF *	RHME14000KST115H6HF *	KST115	14,00	25,00	6
RHME14288KST115H6HF *	RHME14288KST115H6HF *	KST115	14,29	25,00	6
RHME15000KST115H6HF *	RHME15000KST115H6HF *	KST115	15,00	25,00	6
RHME16000KST135H6HF	RHME16000KST135H6HF	KST135	16,00	25,00	6
RHME17000KST135H6HF	RHME17000KST135H6HF *	KST135	17,00	25,00	6
RHME17463KST135H6HF	RHME17463KST135H6HF *	KST135	17,46	25,00	6
RHME18000KST155H6HF *	RHME18000KST155H6HF	KST155	18,00	25,00	6
RHME19000KST155H6HF *	RHME19000KST155H6HF *	KST155	19,00	25,00	6
RHME19050KST155H6HF *	RHME19050KST155H6HF	KST155	19,05	25,00	6
RHME20000KST175H6HF	RHME20000KST175H6HF	KST175	20,00	25,00	6
RHME21000KST175H6HF *	RHME21000KST175H6HF *	KST175	21,00	25,00	6
RHME22000KST175H6HF	RHME22000KST175H6HF	KST175	22,00	25,00	6
RHME22225KST175H6HF *	RHME22225KST175H6HF	KST175	22,23	25,00	6
RHME23000KST200H6HF *	RHME23000KST200H6HF *	KST200	23,00	25,00	6
RHME23813KST200H6HF *	RHME23813KST200H6HF *	KST200	23,81	25,00	6
RHME24000KST200H6HF *	RHME24000KST200H6HF *	KST200	24,00	25,00	6
RHME25000KST200H6HF *	RHME25000KST200H6HF	KST200	25,00	30,00	6
RHME25400KST200H6HF	RHME25400KST200H6HF	KST200	25,40	30,00	6
RHME26000KST200H6HF *	RHME26000KST200H6HF	KST200	26,00	30,00	8
RHME27000KST200H6HF *	RHME27000KST200H6HF	KST200	27,00	30,00	8
RHME28000KST250H6HF	RHME28000KST250H6HF	KST250	28,00	36,00	8
RHME30000KST250H6HF	RHME30000KST250H6HF	KST250	30,00	36,00	8
RHME31750KST250H6HF *	RHME31750KST250H6HF	KST250	31,75	36,00	8
RHME32000KST250H6HF *	RHME32000KST250H6HF *	KST250	32,00	36,00	8
RHME34000KST300H6HF *	RHME34000KST300H6HF *	KST300	34,00	36,00	8
RHME36000KST300H6HF *	RHME36000KST300H6HF *	KST300	36,00	36,00	8
RHME38000KST350H6HF *	RHME38000KST350H6HF *	KST350	38,00	36,00	8
RHME40000KST350H6HF *	—	KST350	39,99	36,00	8
—	RHME40000KST350H6HF *	KST350	40,00	36,00	8
RHME42000KST350H6HF *	RHME42000KST350H6HF *	KST350	42,00	36,00	8

NOTE: Uncoated carbide grade K605™ is available on request.

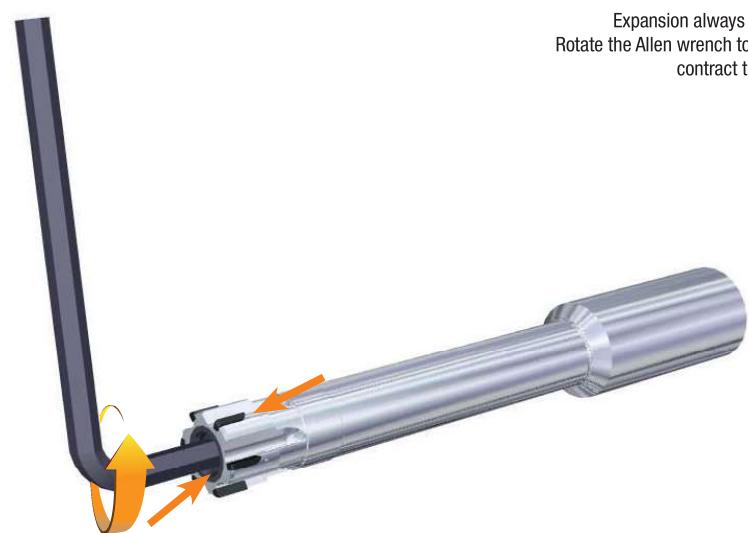
\*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

**To Expand**

Rotate the Allen wrench to the right to expand the reamer.

**To Contract**

Expansion always reversible:  
Rotate the Allen wrench to the left to contract the reamer.



- 30° = 2 μm linear expansion.
- 720° = 2 revolutions; = 48μm maximum expansion.
- Hard stop after 720° expansion. You cannot over expand!
- The expansion occurs in the elastic material behaviour.
- You cannot reduce the diameter below D1.

## ■ RHR • Metric

Material Group		KCU05			Metric						
		Cutting Speed – vc			Recommended Feed Rate per Tooth						
		Range – m/min			Tool Diameter (mm)	14,00–19,99mm		20,00–32,00mm		32,50–42,00mm	
P	1	min	Starting Value	max		Feed/Tooth	min	max	min	max	min
	2	90	120	155	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	3	75	100	130	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	4	50	80	105	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	5	30	40	60	mm/z	0,08	0,18	0,08	0,20	0,08	0,22
	6	30	40	60	mm/z	0,08	0,18	0,08	0,20	0,08	0,22
M	1	15	20	40	mm/z	0,08	0,15	0,08	0,18	0,08	0,20
	2	15	20	30	mm/z	0,08	0,15	0,08	0,18	0,08	0,20
	3	15	20	30	mm/z	0,08	0,15	0,08	0,18	0,08	0,20
K	1	80	110	130	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	2	65	90	110	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	3	50	70	90	mm/z	0,10	0,18	0,10	0,20	0,10	0,22
S	1	15	20	30	mm/z	0,06	0,15	0,10	0,18	0,10	0,20
	2	15	20	30	mm/z	0,06	0,15	0,10	0,18	0,10	0,20
	3	20	30	40	mm/z	0,08	0,18	0,10	0,20	0,10	0,20
	4	20	30	40	mm/z	0,08	0,18	0,10	0,20	0,10	0,20

Hole Finishing

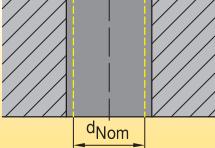
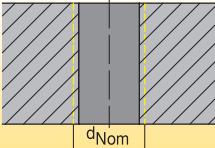
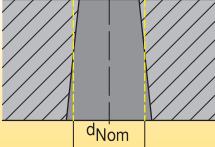
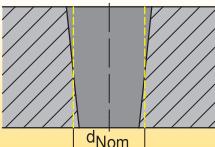
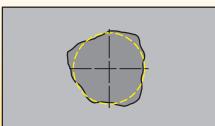
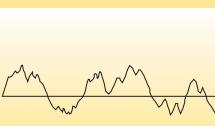
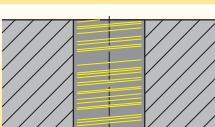
## ■ RHM™ and RHM-E™ • Metric

Material Group		Cermet Tipped				Carbide Tipped				Metric																	
		straight flute		helical flute		straight flute		helical flute																			
		KT325		KT6215		K605		KC6305																			
		Cutting Speed – vc																									
		Range – m/min																									
		min	Starting Value	max	min	Starting Value	max	min	Starting Value	max	min	max	min	max	min	max											
P	1	150	180	210	180	210	240	40	60	70	90	120	155	mm/z	0,10	0,20	0,10	0,22	0,10	0,25							
	2	150	180	210	180	210	240	40	60	70	90	120	155	mm/z	0,10	0,20	0,10	0,22	0,10	0,25							
	3	130	160	180	150	180	210	30	40	50	75	100	130	mm/z	0,10	0,20	0,10	0,22	0,10	0,25							
	4	100	130	150	120	150	170	25	40	45	50	80	105	mm/z	0,10	0,20	0,10	0,22	0,10	0,25							
	5	80	100	120	100	130	150	10	20	30	30	40	55	mm/z	0,08	0,18	0,08	0,20	0,08	0,22							
	6	80	100	120	100	130	150	10	20	30	30	40	55	mm/z	0,08	0,18	0,08	0,20	0,08	0,22							
M	1	—	—	—	—	—	—	8	10	15	15	20	28	mm/z	0,08	0,15	0,08	0,18	0,08	0,20							
	2	—	—	—	—	—	—	8	10	15	15	20	28	mm/z	0,08	0,15	0,08	0,18	0,08	0,20							
	3	—	—	—	—	—	—	8	10	15	15	20	28	mm/z	0,08	0,15	0,08	0,18	0,08	0,20							
K	1	150	180	200	180	210	240	30	50	60	80	110	130	mm/z	0,10	0,20	0,10	0,22	0,10	0,25							
	2	130	160	180	150	180	210	25	40	45	65	90	110	mm/z	0,10	0,20	0,10	0,22	0,10	0,25							
	3	100	130	160	120	150	170	20	30	40	50	70	90	mm/z	0,10	0,18	0,10	0,20	0,10	0,22							
N	1	—	—	—	—	—	—	—	110	150	195	—	—	mm/z	0,10	0,30	0,10	0,30	0,10	0,30							
	2	—	—	—	—	—	—	—	110	150	195	—	—	mm/z	0,10	0,30	0,10	0,30	0,10	0,30							
	3	—	—	—	—	—	—	—	110	150	195	—	—	mm/z	0,10	0,30	0,10	0,30	0,10	0,30							
	4	—	—	—	—	—	—	—	110	150	195	—	—	mm/z	0,10	0,30	0,10	0,30	0,10	0,30							
	5	—	—	—	—	—	—	—	105	140	180	—	—	mm/z	0,10	0,30	0,10	0,30	0,10	0,30							
S	1	—	—	—	—	—	—	8	10	15	15	20	28	mm/z	0,06	0,15	0,10	0,18	0,10	0,20							
	2	—	—	—	—	—	—	8	10	15	15	20	28	mm/z	0,06	0,15	0,10	0,18	0,10	0,20							
	3	—	—	—	—	—	—	15	20	30	20	30	40	mm/z	0,08	0,18	0,10	0,20	0,10	0,20							
	4	—	—	—	—	—	—	15	20	30	20	30	40	mm/z	0,08	0,18	0,10	0,20	0,10	0,20							

### ■ Reaming Allowances for Multi-Blade Reaming

mm	reaming allowances in diameter mm		
	min	middle	max
1,40–4,80	0,08	0,12	0,20
4,81–9,59	0,10	0,15	0,25
9,60–15,00	0,15	0,20	0,30
15,00–20,00	0,15	0,25	0,35
20,00–50,00	0,20	0,30	0,40

### ■ Troubleshooting

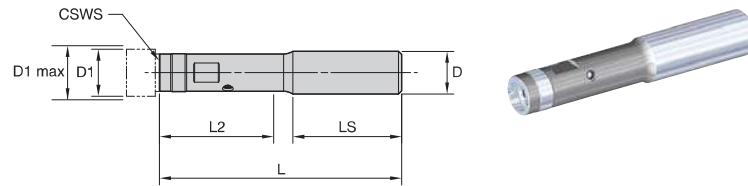
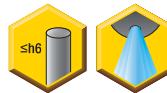
Problem	Cause	Possible Remedy
Hole diameter too large.	 <ul style="list-style-type: none"> <li>Reaming tool running out-of-centre.</li> <li>Concentricity of pilot hole and ream machining unsatisfactory.</li> <li>Built-up edge.</li> <li>Unsuitable cooling lubricant.</li> <li>Reaming tool diameter too large.</li> </ul>	<ul style="list-style-type: none"> <li>Use equalising adaptor.</li> <li>Re-align, use floating head.</li> <li>Change cooling lubricant.</li> <li>Change cutting speed.</li> <li>Measure reamers and send for repairs.</li> </ul>
Hole diameter too small.	 <ul style="list-style-type: none"> <li>Ramer worn.</li> <li>Unsuitable cooling lubricant.</li> <li>Reaming allowance too small.</li> </ul>	<ul style="list-style-type: none"> <li>Replace and refit tool.</li> <li>Change cooling lubricant.</li> <li>Increase reaming allowance.</li> </ul>
Conical hole profile wider towards drill runout.	 <ul style="list-style-type: none"> <li>Concentricity of pilot hole and reaming unsatisfactory.</li> <li>Positioning accuracy of pilot hole to reaming.</li> </ul>	<ul style="list-style-type: none"> <li>Re-align, use equalising adaptor.</li> <li>Correct positioning accuracy.</li> </ul>
Conical hole profile wider at drill entry point.	 <ul style="list-style-type: none"> <li>Concentricity of pilot hole and reaming unsatisfactory.</li> <li>Reaming tool skim cutting with ledger.</li> </ul>	<ul style="list-style-type: none"> <li>Re-align, use floating head.</li> <li>Securely clamp reaming tool axially.</li> </ul>
Hole out-of-centre and/or showing chatter marks.	 <ul style="list-style-type: none"> <li>Reaming tool running out-of-centre.</li> <li>Slanted cutting surface/asymmetrical cutting.</li> <li>Workpiece twisted.</li> </ul>	<ul style="list-style-type: none"> <li>Use equalising adaptor.</li> <li>Spot face as drilling preparation.</li> <li>Take the direction of impact into account when clamping the workpiece.</li> </ul>
Surface quality does not meet specification.	 <ul style="list-style-type: none"> <li>Tool cutters worn.</li> <li>Reaming tool running out-of-centre.</li> <li>Incorrect technology data (cutting parameters).</li> <li>Inadequate chip evacuation.</li> </ul>	<ul style="list-style-type: none"> <li>Use equalising adaptor.</li> <li>Re-align, use floating head.</li> <li>Change cooling lubricant.</li> <li>Change cutting speed.</li> <li>Measure reamers and send for repairs.</li> </ul>
Feed grooves.	 <ul style="list-style-type: none"> <li>Built-up edge.</li> </ul>	<ul style="list-style-type: none"> <li>Change cooling lubricant.</li> <li>Change cutting speed.</li> </ul>

# Modular Reaming Bodies

Straight Shank Bodies • Axial Clamping



- Tool body shipped with lock screw and wrench.
- Order reamer head separately.



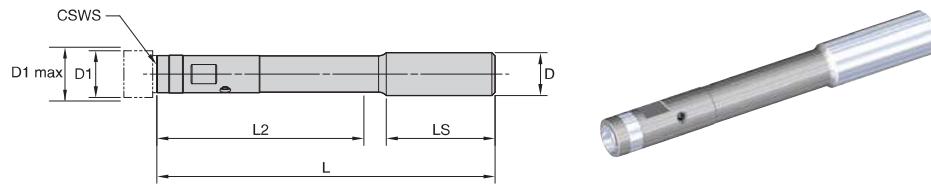
## ■ Straight Shank • Axial Clamping • 3 x D



Hole Finishing

order number	catalogue number	CSWS system size	D1	D1 max	D	L	L2	LS	central lock screw	Torx wrench	Nm	ft. lbs.
4056174	SS16KST115AR3M	KST115	14,00	15,999	16,00	91,00	36,00	48,00	KST115115AS	FT8	3,0	2.2
4056175	SS20KST135AR3M	KST135	16,00	17,999	20,00	99,00	39,00	51,00	KST135155AS	FT10	4,0	3.0
4056176	SS20KST155AR3M	KST155	18,00	19,999	20,00	106,00	45,00	51,00	KST135155AS	FT10	4,0	3.0
3861185	SS20KST175AR3M	KST175	20,00	22,499	20,00	113,50	51,50	51,00	KST175200AS	TT15	5,0	3.7
3861186	SS20KST200AR3M	KST200	22,50	27,499	20,00	130,50	65,50	51,00	KST175200AS	TT15	5,0	3.7
3861187	SS25KST250AR3M	KST250	27,50	32,499	25,00	152,50	80,50	56,00	KST250250AS	TT25	9,0	6.7
3861188	SS32KST300AR3M	KST300	32,50	37,499	32,00	174,00	94,00	61,00	KST300350AS	TT30	13,0	9.7
3861189	SS32KST350AR3M	KST350	37,50	42,000	32,00	190,00	108,00	61,00	KST300350AS	TT30	13,0	9.7

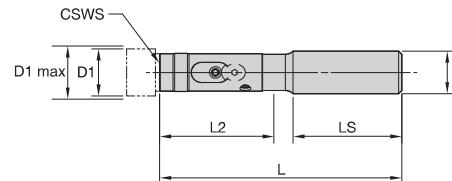
- Tool body shipped with lock screw and wrench.
- Order reamer head separately.



## ■ Straight Shank • Axial Clamping • 5 x D

order number	catalogue number	CSWS system size	D1	D1 max	D	L	L2	LS	central lock screw	Torx wrench	Nm	ft. lbs.
4056177	SS16KST115AR5M	KST115	14,00	15,999	16,00	123,00	68,00	48,00	KST115115AS	FT8	3,0	2.2
4056178	SS20KST135AR5M	KST135	16,00	17,999	20,00	135,00	75,00	51,00	KST135155AS	FT10	4,0	3.0
4056179	SS20KST155AR5M	KST155	18,00	19,999	20,00	146,00	85,00	51,00	KST135155AS	FT10	4,0	3.0
3861190	SS20KST175AR5M	KST175	20,00	22,499	20,00	158,50	96,50	51,00	KST175200AS	TT15	5,0	3.7
3861191	SS20KST200AR5M	KST200	22,50	27,499	20,00	185,50	120,50	51,00	KST175200AS	TT15	5,0	3.7
3861192	SS25KST250AR5M	KST250	27,50	32,499	25,00	217,50	145,50	56,00	KST250250AS	TT25	9,0	6.7
3861193	SS32KST300AR5M	KST300	32,50	37,499	32,00	249,00	169,00	61,00	KST300350AS	TT30	13,0	9.7
3861194	SS32KST350AR5M	KST350	37,50	42,000	32,00	274,00	192,00	61,00	KST300350AS	TT30	13,0	9.7

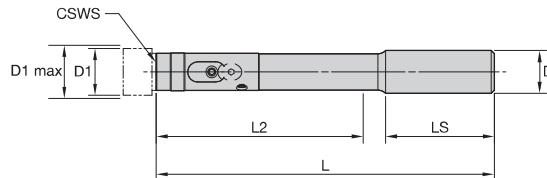
- Tool body shipped with retention knob, clamp set, and wrench.
- Order reamer head separately.



### ■ Straight Shank • Radial Clamping • 3 x D

order number	catalogue number	CSWS system size	D1	D1 max	D	L	L2	LS	retention knob	clamp set	Torx wrench	Nm	ft. lbs.
3861195	SS20KST175RR3M	KST175	20,00	22,499	20,00	113,50	51,50	51,00	KST175200RK	KST175CS	TT15	5,0	3.7
3861196	SS20KST200RR3M	KST200	22,50	27,499	20,00	130,50	65,50	51,00	KST175200RK	KST200CS	TT15	5,0	3.7
3861197	SS25KST250RR3M	KST250	27,50	32,499	25,00	152,50	80,50	56,00	KST250250RK	KST250CS	TT25	9,0	6.7
3861198	SS32KST300RR3M	KST300	32,50	37,499	32,00	174,00	94,00	61,00	KST300350RK	KST300CS	TT30	13,0	9.7
3861199	SS32KST350RR3M	KST350	37,50	42,000	32,00	190,00	108,00	61,00	KST300350RK	KST350CS	TT30	13,0	9.7

- Tool body shipped with retention knob, clamp set, and wrench.
- Order reamer head separately.

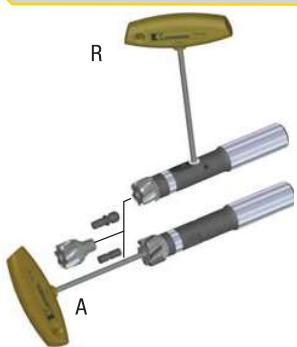


### ■ Straight Shank • Radial Clamping • 5 x D

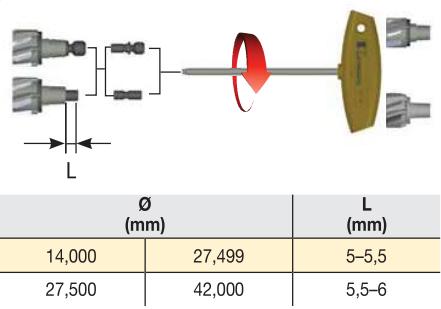
order number	catalogue number	CSWS system size	D1	D1 max	D	L	L2	LS	retention knob	clamp set	Torx wrench	Nm	ft. lbs.
3861200	SS20KST175RR5M	KST175	20,00	22,499	20,00	158,50	96,50	51,00	KST175200RK	KST175CS	TT15	5,0	3.7
3861201	SS20KST200RR5M	KST200	22,50	27,499	20,00	185,50	120,50	51,00	KST175200RK	KST200CS	TT15	5,0	3.7
3861202	SS25KST250RR5M	KST250	27,50	32,499	25,00	217,50	145,50	56,00	KST250250RK	KST250CS	TT25	9,0	6.7
3861203	SS32KST300RR5M	KST300	32,50	37,499	32,00	249,00	169,00	61,00	KST300350RK	KST300CS	TT30	13,0	9.7
3861204	SS32KST350RR5M	KST350	37,50	42,000	32,00	274,00	192,00	61,00	KST300350RK	KST350CS	TT30	13,0	9.7

## Assemble

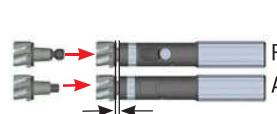
1



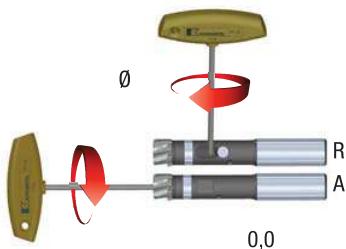
2



3



4



Ø (mm)			
14,000	15,999	DT - 8	2
16,000	19,999	DT - 10	3
20,000	27,499	TT - 15	4
27,500	32,499	TT - 25	5
32,500	42,000	TT- 30	13

Disassemble

4

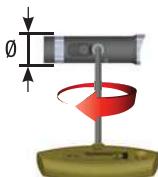
3

2

1

## Disassemble

1



$\varnothing$ (mm)	$\varnothing$ (in)				(Nm)	
17,5	0.686	KST175CS	2,5	2,5	1.9	
20	0.784	KST200CS	2,5	2,5	1.9	
25	0.980	KST250CS	3	5	3.7	
30	1.176	KST300CS	4	9	6.7	
35	1.373	KST350CS	4	9	9.7	

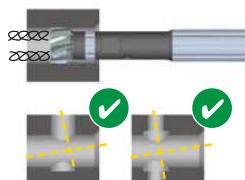
Assemble

3 → 2 → 1

2



3

**SIF™****Coolant flow****Application**

# ➤ SIF™ Steerable Toolholder

## Primary Application

SIF steerable toolholders should be used for easy compensation of radial runout and angular inaccuracies caused by the machine spindle or gravity. SIF tooling improves hole roundness for highest possible hole straightness and surface quality. Runout-optimised reaming tools provide higher process stability and longer tool life.

Use a separate SIF tooling package for each machine to ensure best configuration between reaming tool and spindle and HSK bushes. This enables faster tool change to avoid repeating adjustments.



## Features and Benefits

### Higher Productivity and Profitability

- Easy compensation of radial runout and angular inaccuracies increases process control and tool life.
- Less time-consuming adjustment due to eight radial screws.
- Increased rigidity by using a SIF back-end as a monoblock solution with the reamer.

### Versatility

- Use standard DV, BT, CV, and HSK adaptors in combination with SIF hydraulic chucks for precise concentric clamping, highest accuracy, and flexible clamping using hydraulic chuck sleeves.
- HSK bushes with SIF coupling enable fast tool exchange and eliminate repeated runout adjustment, reducing adjustment and downtime.

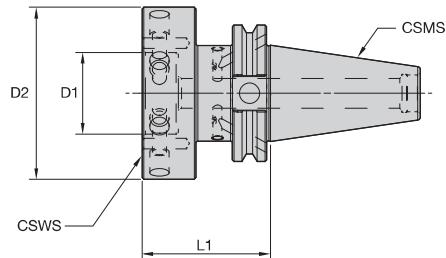
**SIF™ adaptation practically eliminates all spindle errors in terms of runout and angular misalignment.**



#### Customisation

- Different length versions and coupling size combinations are available.

- Through-the-toolholder coolant capability — form AD or form B.
- Suitable for SIF adaptors.



### ■ SIF-CV50 Form B/AD

Hole Finishing

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738506	CV50BSIF70236	CV50	SIF70	70	38	60	121.808	170.004	170.005	125.625	3,49	7.700
3738507	CV50BSIF100236	CV50	SIF100	100	58	60	121.812	170.004	170.006	—	4,14	9.140



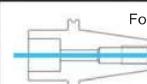
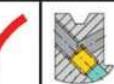
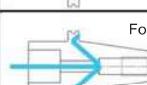
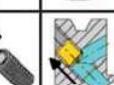
### ■ SIF-CV40 Form B/AD

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738505	CV40BSIF80248	CV40	SIF80	80	38	63	121.812	170.004	170.005	125.625	1,77	3.900

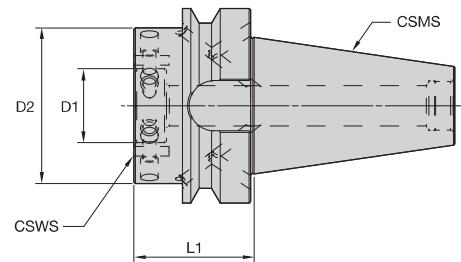


### ■ SIF-BT40 Form B/AD

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738492	BT40BSIF80063M	BT40	SIF80	80	38	63	121.812	170.004	170.005	125.625	1,86	4.110

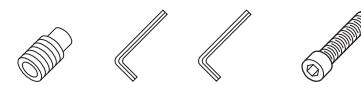
	Form AD					
	Form B			40	(2x) MS2221S	2,5mm
				50	(2x) MS1296S	3mm

- Through-the-toolholder coolant capability — form AD or form B.
- Suitable for SIF adaptors.



### ■ SIF-BT50 Form B/AD

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738503	BT50BSIF70063M	BT50	SIF70	70	38	63	121.808	170.004	170.005	125.625	4,08	9.000
3738504	BT50BSIF100068M	BT50	SIF100	100	58	68	121.812	170.004	170.006	—	4,94	10.890

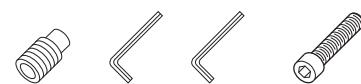


Hole Finishing



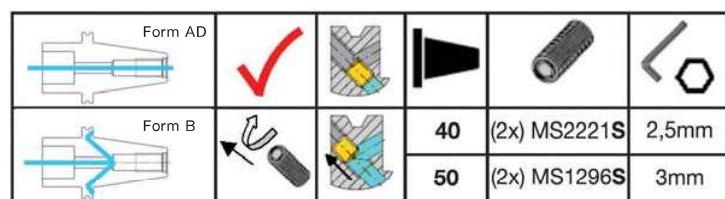
### ■ SIF-DV40 Form B/AD

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738488	DV40BSIF80061M	DV40	SIF80	80	38	61	121.812	170.004	170.005	125.625	1,83	4.020

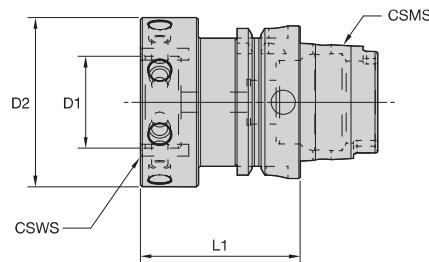


### ■ SIF-DV50 Form B/AD

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738490	DV50BSIF70060M	DV50	SIF70	70	38	60	121.808	170.004	170.005	125.625	3,60	7.930
3738491	DV50BSIF100060M	DV50	SIF100	100	58	60	121.812	170.004	170.006	—	4,30	9.480



- Through-the-toolholder coolant capability.
- Suitable for SIF adaptors.



### ■ SIF-HSK63 Form A

Hole Finishing

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738508	HSK63ASIF70066M	HSK63A	SIF70	70	38	66	121.808	170.004	170.005	125.625	1,44	3.180
3878347	HSK63ASIF80063M	HSK63A	SIF80	80	38	63	121.812	170.004	170.005	125.625	1,48	3.250

### ■ SIF-HSK80 Form A

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738510	HSK80ASIF70066M	HSK80A	SIF70	70	38	66	121.808	170.004	170.005	125.625	2,05	4.520

NOTE: HSK coolant unit and wrench are available and must be ordered separately.

### ■ SIF-HSK100 Form A

order number	catalogue number	CSMS system size	CSWS system size	D2	D1	L1	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738511	HSK100ASIF70050M	HSK100A	SIF70	70	38	50	121.808	170.004	170.005	125.625	2,43	5.360
3738512	HSK100ASIF100070M	HSK100A	SIF100	100	58	70	121.812	170.004	170.006	—	3,84	8.460

NOTE: HSK coolant unit and wrench are available and must be ordered separately.

- Runout < 0,003mm.
- External side actuation adjustment stop, giving 10mm axial adjustment.



### ■ HC HP Line • SIF70

order number	catalogue number	CSMS system size	D1	D2	D21	L1	L2	L9	V	hex wrench	T-handle hex wrench	kg	lbs
3667056	<b>SIF70HC12090M</b>	SIF70	12	32	44	90	45	36	10	170.002	170.135	1,13	2.49
3667057	<b>SIF70HC20100M</b>	SIF70	20	42	44	100	58	41	10	170.003	170.135	2,00	4.41

NOTE: HSK coolant unit and wrench are available and must be ordered separately.

IMPORTANT: Do not overtorque clamp screw. Use supplied wrench and tighten by hand until stop is felt.


  
Hole Finishing

### ■ HC HP Line • SIF80

order number	catalogue number	CSMS system size	D1	D2	D21	L1	L2	L9	V	hex wrench	T-handle hex wrench	kg	lbs
3667058	<b>SIF80HC12090M</b>	SIF80	12	32	50	90	45	36	10	170.002	170.135	9,00	19.84
3667059	<b>SIF80HC20100M</b>	SIF80	20	42	50	100	58	41	10	170.003	170.135	1,60	3.53
3667060	<b>SIF80HC25100M</b>	SIF80	25	50	54	100	51	47	10	170.003	170.136	1,83	4.03

NOTE: HSK coolant unit and wrench are available and must be ordered separately.

IMPORTANT: Do not overtorque clamp screw. Use supplied wrench and tighten by hand until stop is felt.



### ■ HC HP Line • SIF100

order number	catalogue number	CSMS system size	D1	D2	D21	L1	L2	L9	V	hex wrench	T-handle hex wrench	kg	lbs
3667061	<b>SIF100HC12090M</b>	SIF100	12	32	50	90	45	36	10	170.002	170.135	1,98	4.37
3667062	<b>SIF100HC20100M</b>	SIF100	20	42	50	100	58	41	10	170.003	170.135	2,19	4.84
3668023	<b>SIF100HC25100M</b>	SIF100	25	50	63	100	51	47	10	170.004	170.136	2,56	5.64

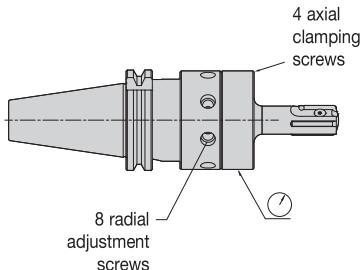
NOTE: HSK coolant unit and wrench are available and must be ordered separately.

IMPORTANT: Do not overtorque clamp screw. Use supplied wrench and tighten by hand until stop is felt.

## SIF Tooling Setup

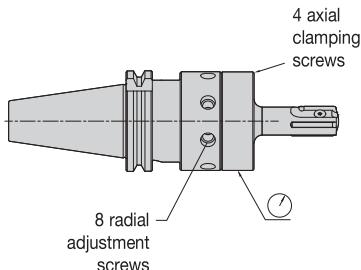
### Step 1: Rough setup of runout at flange

- 1 • Set gage (TIR) at SIF flange.
- Tight axial clamping screws 6–8 Nm.
- Use radial adjustment screws to achieve 5 µm runout.



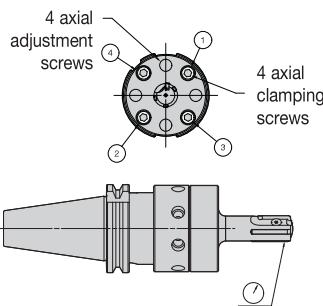
### Step 2: Fine setup of runout at the flange

- 2 • Tight axial clamping screws crosswise:  
SIF70/80 18 Nm.  
SIF100 32 Nm.
- Use radial adjustment screws to achieve 2 µm runout.
- All radial adjustment screws to be clamped tight at 4 Nm.



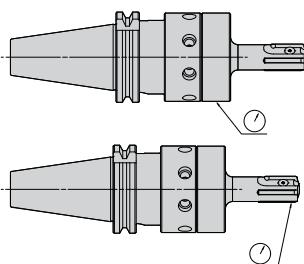
### Step 3: Adjustment of runout at front

- 3 • Set gage (TIR) at control grind, cylindrical land, or guide pads.
- Use axial adjustment screws to achieve a maximum runout error of 2 µm.
- All axial adjustment screws to be clamped tight at 4 Nm.



### Step 4: Final runout check

- 4 • Check using gage (TIR) at flange; no deviation by theory.
- If needed, use radial adjustment screws to set runout below 2 µm.
- Any modification of radial setup demands an axial runout check and adjustment, if necessary.



# Engineered Solutions

## You Won't Find These Solutions in a Catalogue

Kennametal engineered solutions pinpoint and address specific needs of customers, workpiece materials, or workpiece configurations. Solutions include standard products, custom designs, and old-fashioned process know-how that can only come from many decades of tooling expertise.

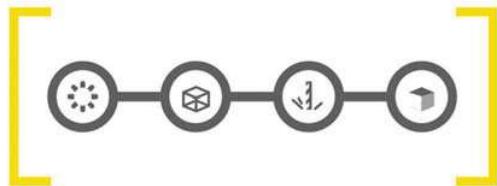
They are the result of coordinated global resources and are available anywhere in the world, no matter how small or large the project.



## MANUFACTURING PROCESS

### We Look at the Entire Production Process, Not Just Portions of It

From the machine tool to the last stop in production, we can optimise the manufacturing process throughout every step. The result is low implementation time and costs, and rapid return on investment.



# ➤ RIQ™ (Quattro Cut™) and RIR™ Padded Reamers

## Primary Application

Master the highest precision reaming with standard inserts in almost all materials with two unique systems:  
RIR padded reamers for small-diameter applications and RIQ padded reamers for easy setup in large-diameters applications.

RIQ reamers are available starting at diameter 16mm (.630") with four cutting edges for lowest cost per hole. The proprietary pocket seat only requires setup of the diameter, which is a huge benefit in simplicity compared to systems that require the diameter and back taper to be adjusted simultaneously. RIR padded reamers are also proprietary and available starting at diameter 6mm (.236") with one cutting edge, and diameter 8mm (.315") with two edges.

## Features and Benefits

### Higher Productivity and Profitability

- Longer tool life with Kennametal grades.
- User friendly — RIQ padded reamers reduce setup time.
- Use four full edges even in PCD or PcbN styles of RIQ inserts.

### Complete Insert Portfolio

- Large standard offering of lead geometries — E13, EDS, EDR, EGU, EGR, radius, and taper inserts.
- Large offering of grades — coated and uncoated carbide, cermet, PcbN, and PCD.

### Customisation

- All RIQ tooling engineered to specific needs in diameters 16–245mm (.630–9.645") with internal coolant.
- All RIR tooling engineered to specific needs in diameters 6–245mm (.236–9.645") with internal coolant.
- RIR taper reamers available upon request.
- Multiflute and step reaming applications and special blade shapes available upon request.
- Measuring and adjustment equipment available as standard.



Application recommendation	RIR	RIQ
	Bore tolerances less than 10 µm (can be greater). Geometric tolerances down to 2 µm. Skilled workforce experience required. 	Bore tolerances less than 10 µm. Geometric tolerances down to 2 µm. Lower skilled workforce, easier adjustment. Multidiameter bores. 
Pocket seat	Flat with clamping groove in blade.	Serrated. Greater insert stability.
Cutting edges	2 (1 with PCD or CBN and 1 within diameter range 6–8mm [236–315°])	4 (SC, cermet, PCD, CBN)
Special blade forms	yes	yes
Multiple inserts on diameter	no	yes
Blade adjustment	Diameter and back taper.	Diameter only (back taper defined by serration).
Blade adjusting screws	2	1
Chamfer or valve seat machining	Yes, but adjustment required on position and angle.	Yes, only adjustment of position. Angle adjustment not required due to precision of serrated pocket seat.
General comments	For small diameters with high setup effort.	For larger diameters with low setup effort.



RIR™ Reamer



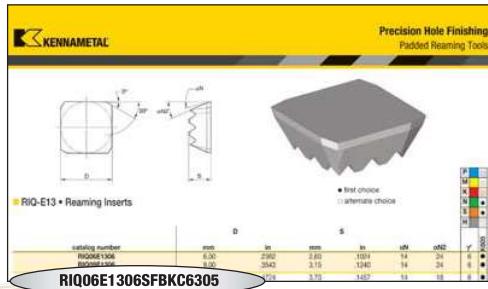
RIQ™ Reamer



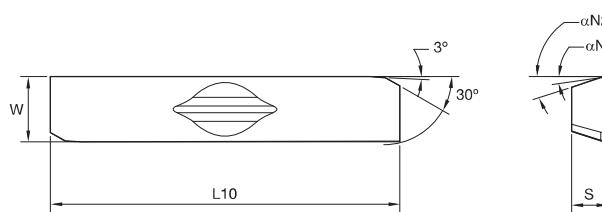
RIQ™ Valve Seat Tool

## How Do Catalogue Numbers Work?

Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



RIQ	06	E13	06	S	FB	KC6305
Type	Size	Lead	Rake	Edge	Chipbreaker	Grade
<b>RIR</b> = Reamer Insert Rectangular	<b>Blade Size</b>	<b>Cutting Lead</b>	<b>Rake Angle</b>	<b>S</b>	<b>FB</b>	<b>Grade</b>
<b>RIQ</b> = Reamer Insert Quattro Cut™	<b>Ø [mm] RIQ</b>			Chamfered and Rounded	<b>FT</b> = Finishing Through Hole	Carbide KC6005
	16,0–24,99 <b>06</b> 6,0 x 6,0mm		<b>00</b>			Carbide KC6105
	Valve Seat <b>B6</b> 6,0 x 6,0mm		<b>06</b>			Carbide KC6305
	Valve Seat <b>B7</b> 6,5 x 6,5mm		<b>12</b>			Cermet KT6225
	Valve Seat <b>07</b> 7,0 x 7,0mm					Cermet KT6315
	Valve Seat <b>08</b> 8,0 x 8,0mm					PCD KD1415
	>25 <b>09</b> 9,0 x 9,0mm					CBN KB1610
	>25 <b>12</b> 12,0 x 12,0mm					
	<b>Ø [mm] RIR</b>					
	6,0–7,99 <b>A0</b> 10,5 x 2,50mm					
	8,0–10,99 <b>01</b> 15,0 x 2,80mm					
	11,0–13,99 <b>02</b> 18,0 x 4,00mm					
	14,0–17,99 <b>03</b> 20,0 x 4,76mm					
	18,0–45,99 <b>04</b> 27,0 x 5,56mm					
	>46 <b>05</b> 27,0 x 6,75mm					
	Taper Reamer <b>T4</b> 45,0 x 5,56mm					
	<b>E13</b>	<b>C45</b>				
	<b>EDS</b>	<b>EDR</b>				
	<b>EGU</b>	<b>EGR</b>				
			<b>R</b> = Radius Blade R02 R04 R05			

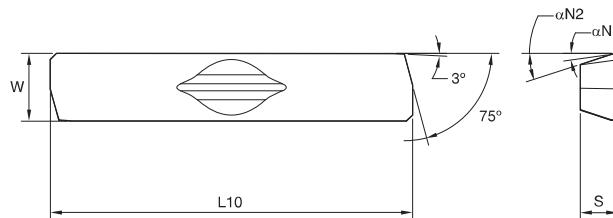

● first choice  
○ alternate choice

P	●	●	○
M	○	○	●
K	●	●	●
N	○	○	○
S	○	○	○
H	●	●	●

### ■ RIR-E13 • Reaming Inserts

ISO catalogue number	L10	S	W	$\alpha N^\circ$	$\alpha N2^\circ$	$\gamma^\circ$	KC6005	KC6105	KC6305
RIR01E1306 *	15,00	1,53	2,80	8	18	6	-	●	-
RIR01E1312 *	15,00	1,53	2,80	8	18	12	-	●	-
RIR02E1312 *	18,00	1,93	4,00	8	18	12	-	●	●
RIR03E1312 *	20,00	2,33	4,76	8	18	12	-	-	●
RIR04E1312	27,00	3,13	5,56	8	18	12	●	-	-
RIR04E1312 *	27,00	3,13	5,56	8	18	12	-	●	-

NOTE: \*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.


● first choice  
○ alternate choice

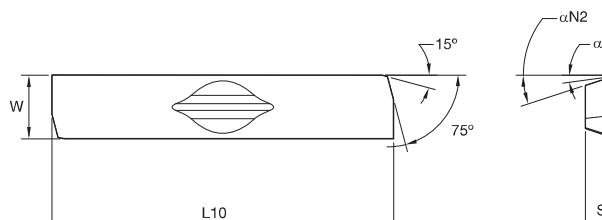
P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	●	●

### ■ RIR-EDS • Reaming Inserts

ISO catalogue number	L10	S	W	$\alpha N^\circ$	$\alpha N2^\circ$	$\gamma^\circ$	KD1415
RIR04EDS06 *	27,00	3,15	5,56	8	18	6	●

NOTE: All KD1415™ inserts are single tipped except full face at size RIR01.

\*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

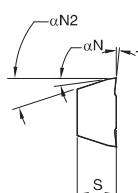
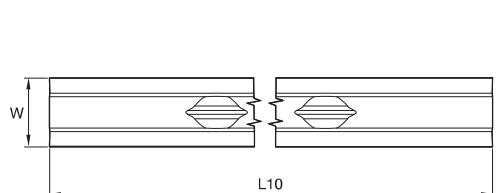

● first choice  
○ alternate choice

P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	●	●

### ■ RIR-EGU • Reaming Inserts

ISO catalogue number	L10	S	W	$\alpha N^\circ$	$\alpha N2^\circ$	KC6105
RIR01EGU00	14,48	1,55	2,80	8	18	●
RIR05EGU00 *	27,00	3,15	6,75	8	18	●

NOTE: \*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.



- first choice
- alternate choice

P	●
M	○
K	●
N	○
S	○
H	○

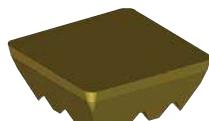
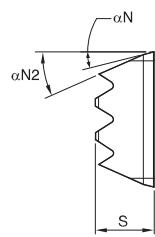
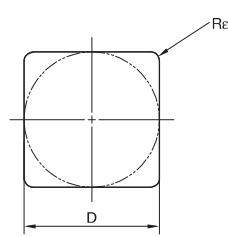
### ■ RIR-C45 • Reaming Inserts

ISO catalogue number	L10	S	W	$\alpha N^\circ$	$\alpha N2^\circ$	$\gamma^\circ$	
RIRT4C4512	45,00	3,15	5,56	8	18	12	KC6005 ●

NOTE: For use with taper reamer bodies.



Hole Finishing



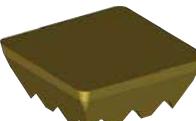
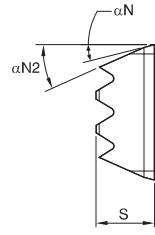
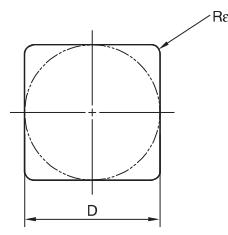
- first choice
- alternate choice

P	●
M	○
K	○
N	●
S	○
H	○

### ■ RIQ-R02 • Reaming Inserts

ISO catalogue number	D	S	Rε	$\alpha N^\circ$	$\alpha N2^\circ$	$\gamma^\circ$	
RIQ06R0200 *	6,00	2,60	0,20	8	18	0	KD1415 ●

NOTE: \*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

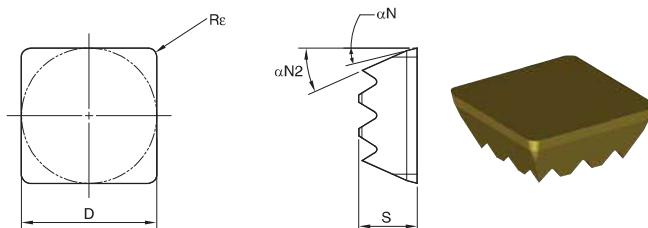


- first choice
- alternate choice

P	●
M	○
K	○
N	○
S	○
H	●

### ■ RIQ-R04 • Reaming Inserts

ISO catalogue number	D	S	Rε	$\alpha N^\circ$	$\alpha N2^\circ$	$\gamma^\circ$	
RIQ06R0400S	6,00	2,60	0,40	8	18	0	KB1610 ● -
RIQ09R0400S	9,00	3,15	0,40	8	18	0	KT6225 ● -


• first choice  
○ alternate choice

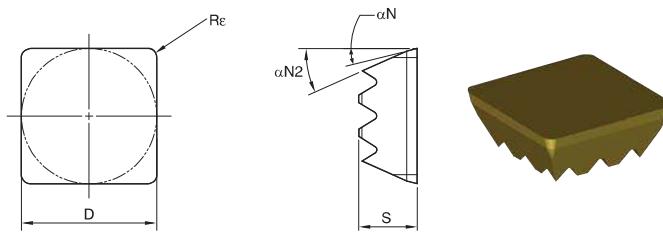
P		●	
M	■	○	
K	■	○	
N	■	○	
S	■	○	
H	■	●	

**■ RIQ-R04-FB • Reaming Inserts • With Chipbreaker • For Blind Holes**

ISO catalogue number	D	S	Re	$\alpha N^\circ$	$\alpha N2^\circ$	$\gamma^\circ$	
RIQ06R0400FB	6,00	2,60	0,40	3	18	12	- ●
RIQ09R0400FB	9,00	3,15	0,40	3	18	12	- ●



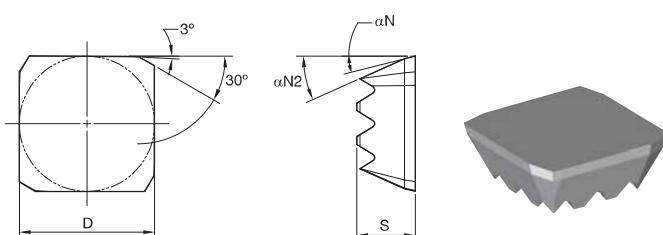
Hole Finishing


• first choice  
○ alternate choice

P		●	
M	■	○	
K	■	○	
N	■	○	
S	■	○	
H	■	○	

**■ RIQ-R05 • Reaming Inserts • With Chipbreaker • For Through Holes**

ISO catalogue number	D	S	Re	$\alpha N^\circ$	$\alpha N2^\circ$	$\gamma^\circ$	
RIQ06R0500FT	6,00	2,60	0,50	8	18	0	●
RIQ09R0506FT	9,00	3,15	0,50	14	24	6	●

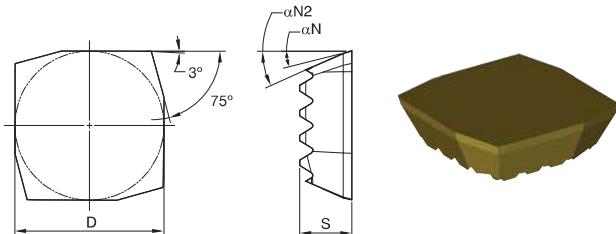

• first choice  
○ alternate choice

P		●	●	●
M	■	○	○	●
K	■	●	●	●
N	■	○	○	○
S	■	○	○	○
H	■	○	○	○

**■ RIQ-E13 • Reaming Inserts**

ISO catalogue number	D	S	$\alpha N^\circ$	$\alpha N2^\circ$	$\gamma^\circ$	
RIQ06E1300 *	6,00	2,60	8	18	0	● ● ●
RIQ06E1306 *	6,00	2,60	14	24	6	● ● ● ●
RIQ06E1312 *	6,00	2,60	20	30	12	● ● ● ●
RIQ09E1300 *	9,00	3,15	8	18	0	● ● ● ●
RIQ09E1306 *	9,00	3,15	14	24	6	● ● ● ●
RIQ09E1312 *	9,00	3,15	20	30	12	● ● ● ●

NOTE: \*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.



● first choice  
○ alternate choice

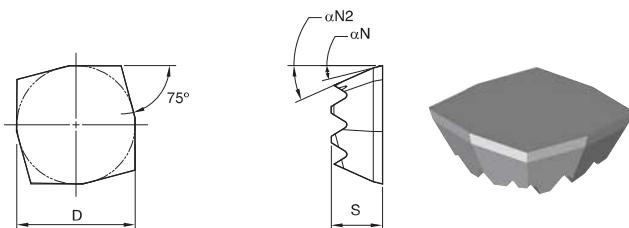
P	●	●	○			
M	●	○	○	●		
K	●	●	●			
N	○	○	○	●		
S	●					
H						

### ■ RIQ-EDR • Reaming Inserts

ISO catalogue number	D	S	$\alpha N^\circ$	$\alpha N2^\circ$	$\gamma^\circ$	KC6005	KC6105	KC6305	KD1415
RIQ06EDR00	6,00	2,60	8	18	0	●	—	●	—
RIQ06EDR00 *	6,00	2,60	8	18	0	—	●	—	—
RIQ06EDR06 *	6,00	2,60	14	24	6	●	—	—	—
RIQ06EDR06	6,00	2,60	14	24	6	—	●	●	●
RIQ06EDR12 *	6,00	2,60	20	30	12	●	●	●	—
RIQ09EDR00 *	9,00	3,15	8	18	0	●	●	●	—
RIQ09EDR06 *	9,00	3,15	14	24	6	●	●	●	●
RIQ09EDR12 *	9,00	3,15	20	30	12	●	●	●	—

NOTE: \*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

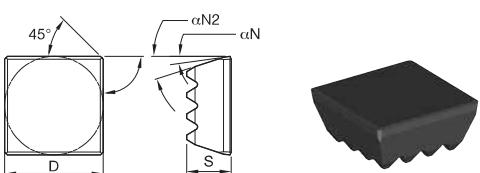
Hole Finishing



### ■ RIQ-EGR • Reaming Inserts

ISO catalogue number	D	S	$\alpha N^\circ$	$\alpha N2^\circ$	$\gamma^\circ$	KC6005	KC6105	KC6305	KD1415
RIQ06EGR00	6,00	2,60	8	18	0	●	—	—	—
RIQ06EGR00 *	6,00	2,60	8	18	0	—	●	●	—
RIQ06EGR06	6,00	2,60	14	24	6	●	●	●	●
RIQ06EGR06 *	6,00	2,60	14	24	6	—	●	●	—
RIQ06EGR12 *	6,00	2,60	20	30	12	●	●	●	—
RIQ09EGR00	9,00	3,15	8	18	0	●	—	—	—
RIQ09EGR00 *	9,00	3,15	8	18	0	—	●	●	—
RIQ09EGR06 *	9,00	3,15	14	24	6	●	●	●	—
RIQ09EGR06 *	9,00	3,15	14	24	6	—	—	●	●
RIQ09EGR12 *	9,00	3,15	20	30	12	●	●	●	—

NOTE: \*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.



● first choice  
○ alternate choice

P	●			
M	●			
K	●	●	●	
N	○			
S	●			
H	●	●		

### ■ RIQ-C45 • Valve Seat Finishing

ISO catalogue number	D	S	$\alpha N^\circ$	$\alpha N2^\circ$	KBHK10	KBHK15
RIQB6C4500S	6,00	2,60	8	18	●	●
RIQB7C4500S	6,50	2,60	8	18	●	●
RIQ07C4500S	7,00	3,15	8	18	●	●
RIQ08C4500S	8,00	3,15	8	18	●	●
RIQ09C4500S	9,00	3,15	8	18	●	●

■ RIR™/RIQ™ • Metric

Material Group	Grade	Cutting Speed – vc Range – m/min			Hole Types	1	2	3	4	5				
						Metric								
		min	Starting Value	max			E13	EDS	EDR	EGR	EGU	R0X	C45*	
<b>P</b>	1	KC6005	30	60	100	mm/r	0,10–0,20	–	–	–	–	–	0,20–0,30	
	2	KC6005	20	50	90	mm/r	0,10–0,20	–	–	–	–	–	0,20–0,30	
	3	KC6005	20	40	80	mm/r	0,05–0,20	–	–	–	–	–	0,20–0,30	
		KT6225	120	180	240	mm/r	–	–	–	–	–	0,15–0,20	–	
	4	KT6315	120	180	240	mm/r	–	–	–	–	–	0,15–0,20	–	
		KC6005	15	30	50	mm/r	0,05–0,20	–	–	–	–	–	0,20–0,30	
		KC6105	15	30	50	mm/r	0,05–0,20	–	–	–	–	–	–	
		KT6225	120	180	240	mm/r	–	–	–	–	–	0,15–0,20	–	
	5	KT6315	120	180	240	mm/r	–	–	–	–	–	0,15–0,20	–	
	6	KC6105	10	25	40	mm/r	0,05–0,20	–	–	–	–	–	–	
<b>M</b>	1	KC6305	10	25	40	mm/r	0,05–0,20	–	–	–	–	–	–	
	2	KC6305	10	25	40	mm/r	0,05–0,20	–	–	–	–	–	–	
	3	KC6305	10	25	40	mm/r	0,05–0,20	–	–	–	–	–	–	
<b>K</b>	1	KC6005	20	70	100	mm/r	0,10–0,20	0,15–0,20	0,15–0,20	0,18–0,20	–	–	0,20–0,30	
	2	K6105	20	70	100	mm/r	–	–	–	–	0,20	–	–	
		KC6005	20	60	100	mm/r	0,10–0,20	0,15–0,20	0,15–0,20	0,18–0,20	–	–	0,20–0,30	
	3	K6105	20	60	100	mm/r	–	–	–	–	0,20	–	–	
<b>N</b>	1	KD1415	100	250	600+	mm/r	–	0,10–0,20	0,10–0,20	0,10–0,20	–	–	–	
	2	KD1415	100	250	600+	mm/r	–	0,10–0,20	0,10–0,20	0,10–0,20	–	–	–	
	3	KD1415	100	250	600+	mm/r	–	0,10–0,20	0,10–0,20	0,10–0,20	–	–	–	
	4	KD1415	100	250	600+	mm/r	–	0,10–0,20	0,10–0,20	0,10–0,20	–	–	–	
<b>S</b>	1	–	–	–	–	mm/r	Recommendations available on request							
	2	–	–	–	–	mm/r								
	3	–	–	–	–	mm/r								
	4	–	–	–	–	mm/r								
<b>H</b>	<b>1</b>	KB1610	150	180	200	mm/r	–	–	–	–	–	0,05–0,10	–	

\*For taper reamers vc min 5 m/min, starting vc 10 m/min, max. vc 20 m/min

## Overview of RIR and RIQ insert leads

Alternative insert lead that can be used

	E06	E13	EDS	EGS	EKS	EGU	EGR	EDR	EKR	ESR	EUR	R02	R04	R06	R08
Tool designed for below listed lead															
E06	●	—	—	—	—	—	—	—	—	—	—	●	—	—	—
E13	●	●	—	—	—	—	○	○	○	○	○	●	○	—	—
EDS	●	—	●	●	—	—	●	●	○	—	—	●	○	—	—
EGS	○	—	—	●	—	—	●	—	—	—	—	●	○	—	—
EKS	●	—	—	—	●	—	●	●	●	—	—	●	○	—	—
EGU	○	—	○	○	○	●	●	○	○	○	○	●	○	○	—
EGR	●	—	—	—	—	—	●	—	—	—	—	●	○	—	—
EDR	●	—	—	○	—	—	●	●	●	●	●	●	○	●	—
EKR	●	—	—	○	—	—	●	●	●	●	●	●	○	●	—
ESR	●	—	—	○	—	—	●	●	●	●	●	●	○	●	—
EUR	●	—	—	○	—	—	●	●	●	●	●	●	●	●	—
R02	—	—	—	—	—	—	○	—	—	—	—	●	—	—	—
R04	—	—	—	—	—	—	○	—	—	—	—	●	●	—	—
R06	●	—	—	—	—	—	●	●	●	●	●	●	●	●	—
R08	●	—	—	—	—	—	●	●	●	●	●	●	●	●	●

## Insert Lead

Surface finish	●●●	●●●	●●	●	●●	●●	●●	●●	●●	●●	●●	●●●	●●●	●●●
Positioning accuracy	—	—	●●	●●●	●●	●●	●●●	●●	●●	●●	●●	●●	●●	●●

## Legend

	Delivery condition of tool. Insert lead = tool lead.
	90% compatible. Later support of guide pads at the bore entrance can happen, if leads are not identical.
	Under certain circumstances compatible. Refer to a Kennametal expert for further support.
—	Do not use in this tool. Can lead to tool damage.

●●●	Surface/ Positioning	Excellent results
●●		Good results
●		Sufficient results
—		Not given

General advice: To mount an insert, where the lead is not identical to the tool lead, the rake angle and insert size have to be identical.

coolant selection		
material type	recommended	alternative
	mineral-oil-based emulsions	semi-synthetic
steel	6%	10%
nickel chrome steel	6%	12%
stainless steel	6%	12%
cast iron	6%	6%
aluminium	6%	12%
zinc alloys	6%	12%
copper	6%	12%
brass	6%	6%

pressure and flow rates					
cut diameter (mm)	cut diameter (in)	flow rate (L/min)	flow rate (gal/min)	pressure (bar)	pressure (psi)
6-12	.25-.468	15-20	55-75	>10	>150
12-16	.468-.625	20-40	75-150	>8	>120
16-20	.625-.781	30-50	115-190	>7	>100
20-32	.781-1.25	40-75	150-285	>5	>75
32-50	1.25-2.0	65-250	245-950	>4	>50
50-100	2.0-4.0	175-350	660-1325	>3	>40

## Basic Principle

The Kennametal padded reaming tools follow two basic rules. The result, perfectly cylindrical bores with exceptional straightness and superior surface finishes combined with a bore diameter tolerance held to microns:

1. A SINGLE-POINT BORING TOOL SUPPORTED BY BEARING PADS, FLOATING ON A COOLANT FILM.
2. A TOOL MUST DEFLECT ONTO THE PADS, ON ENTERING THE HOLE, IN ORDER TO OBTAIN THE CORRECT SIZE.

Each padded reamer hosts a selection of guide pads that are positioned to resist the cutting forces created during machining. A minimum of two guide pads are necessary guiding the reamer in the predrilled hole.

The lubricant, in the form of coolant, gets between the pad and component surface, resulting in frictionless stability during cutting.

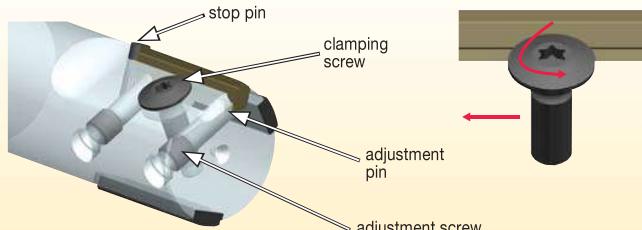
Guide pads are ground slightly smaller than the targeted diameter, this allows for blade/insert wear. Most common is a 10 µm overhang but can vary depending on the material to be cut.

As padded reamers are specifically ground, relative to diameter and tolerance, guide pads are not flexible or adjustable. The pad below the insert ensures hole roundness while the pad opposite the insert defines the bore diameter. Each further pad improves the roundness, straightness, and bridges interruptions within the bore.

These carbide, cermet, PCD, and ceramic guide pads are selected and brazed or bonded to the body depending on coolant availability/type and abrasiveness of the material to be cut. Especially with high L/D ratio tooling (e.g., cam and crank boring bars), bonding of guide pads offers higher precision due to less thermal influence to the steel base body.

material	first choice		alternate choice				
	P	M	K	N	S	H	MQL
carbide	●	○	●	●		○	○
cermet	●	○	●			○	●
PCD			○		●		●

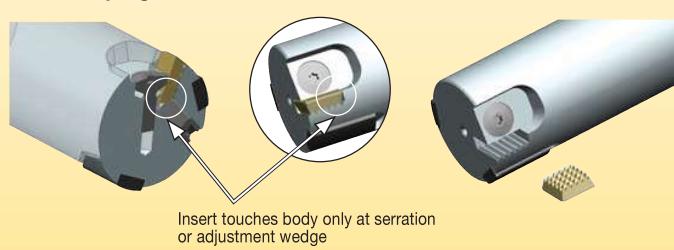
## RIR Clamping



RIR reaming inserts are clamped by a single screw to avoid weakening of the pocket seat against common clamping wedges. This clamp screw has a left hand thread to move and securely hold the blade against the stop pin. The stop pin ensures correct advancement of cutting insert to guiding pad.

Like other types of padded reamers using rectangular reaming inserts, two adjustment screws and wedges are required to adjust diameter and back taper accurately. Therefore, RIR is the preferred solution for diameters below RIQ range.

## RIQ Clamping



There is no need to adjust back taper as this is already predefined by the serrations. Only the overhang of the cutting edge, relative to the guide pads, needs to be adjusted.

The right-hand clamp screw locks the insert securely onto the high-precision serration. The three cutting edges that are not in use are completely protected by the body while not touching them. All four cutting edges of full-face CBN and PCD inserts can be completely used without the danger of accidentally damaging one of them.

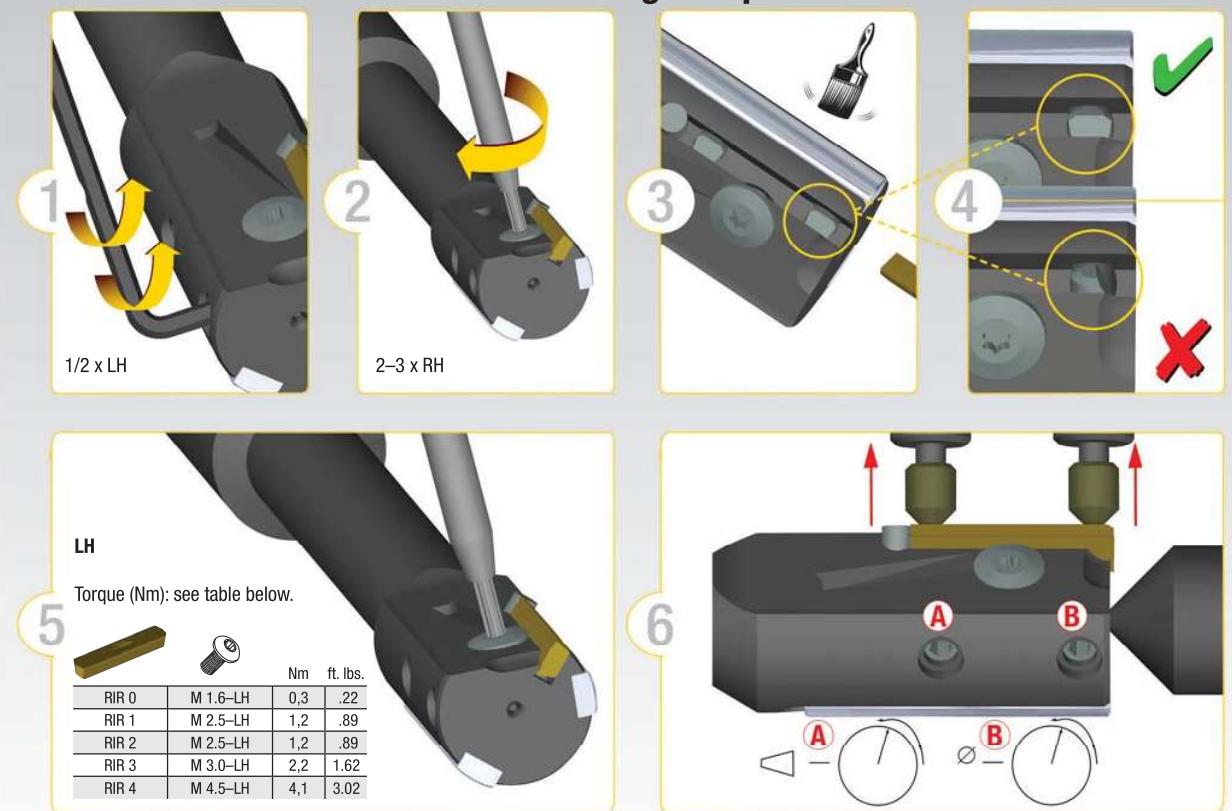
The special form of the clamp screw provides the highest clamping forces enabling less loss of diameter by bedding in effects than known on finger-clamp systems

The proprietary adjustment wedge prevents any unpredictable rotation. This avoids errors during setup that cause tool damages.

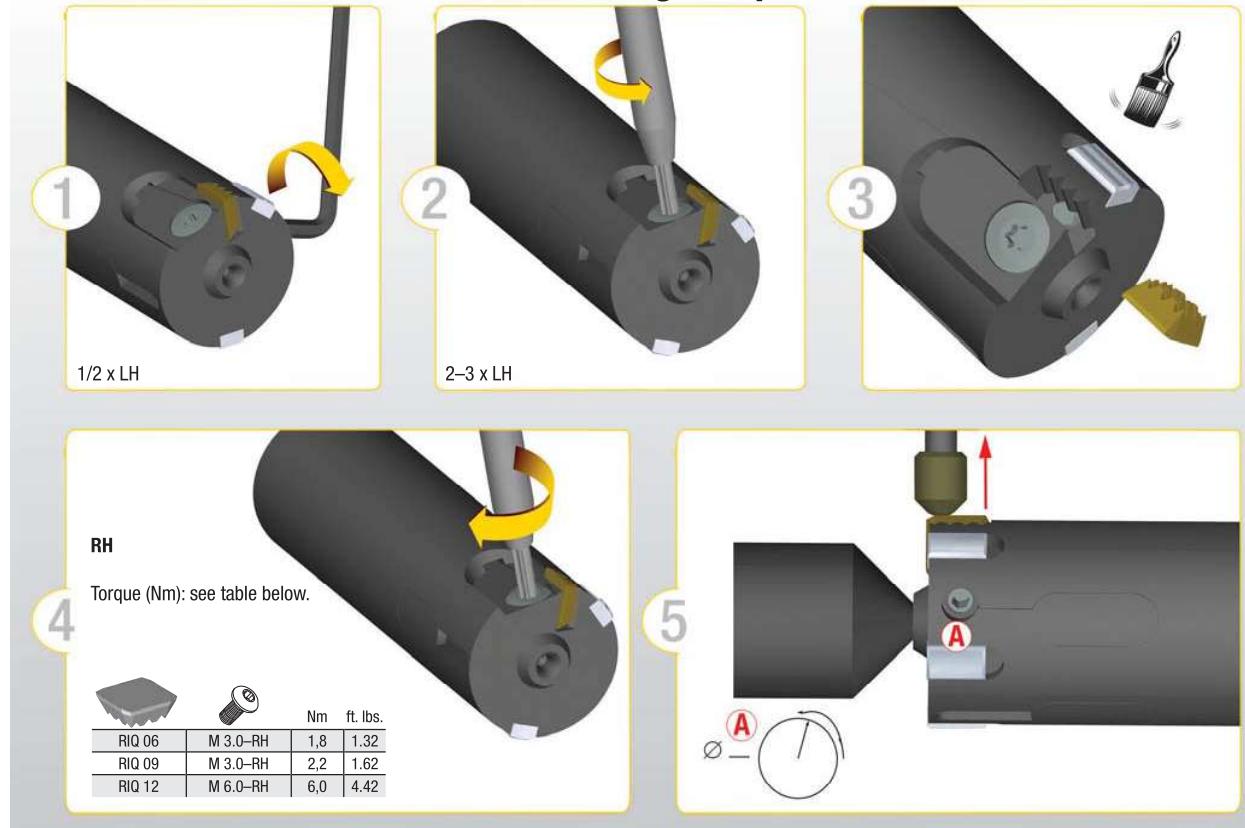
## Adjustment Pin and Screw



## RIR Tooling Setup

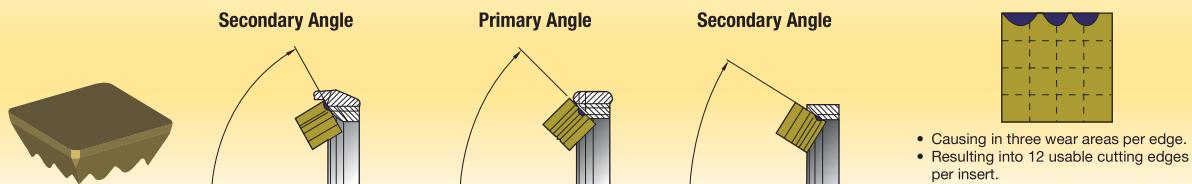


## RIQ Tooling Setup



## Valve Seat Tools • RIQ™ Quattro Cut™ Based Tooling

RIQ technology enables bypassing any angular adjustment of the insert and provides up to 12 cutting edges.



## Valve Seat Tools • Machining Centre Solutions

RIQ valve seat tooling with integrated hydraulic chuck to clamp multiflute RMS™ or RIR™ guide pad reamer.

### Machining Centre • Integrated Hydraulic Chuck

**RMS Multiflute Reamer**  
for regular runout accuracy of valve seat to value guide demands



**RIR Guide Pad Reamer**  
for highest requests regarding valve guide roundness and cylindricity



### Machining Centre Process • All Angles Formed to Finish Specifications in TWO Passes

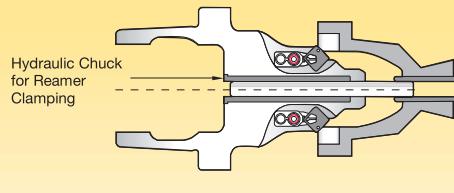
#### Process A (Preferred)

##### Tool 1 • Semi-Finish:

- Finish of secondary angles.
- Semi-finish of primary angles.
- Create pilot bore (short version of RMS or RIR reamer).

##### Tool 2 • Finish:

- Finish of primary angles.
- Finish of guide bore (long version of RMS or RIR reamer).



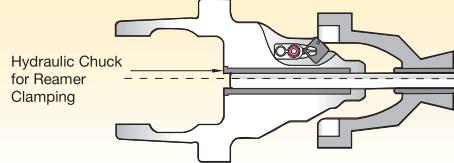
#### Process B (Alternate)

##### Tool 1 • Finish Valve Seat:

- Finish of primary and secondary angles.
- Create pilot bore (short version of RMS or RIR reamer).

##### Tool 2 • Finish Valve Guide:

- Finish of guide bore (long version of RMS or RIR reamer).



## Valve Seat Tools • Transfer Line Solutions

RIQ valve seat tooling with carbide bushing guiding RMS or RIR reamer machining the valve guide on transfer lines.

### Transfer Line • Integrated Carbide Bushing

**Multiflute Reamer RMS**  
for regular runout accuracy of valve seat to value guide demands



**RIR Guide Pad Reamer**  
for highest requests regarding valve guide roundness and cylindricity



### Transfer Line Process • All Angles Formed to Finish Specifications in TWO Passes/ONE Pass

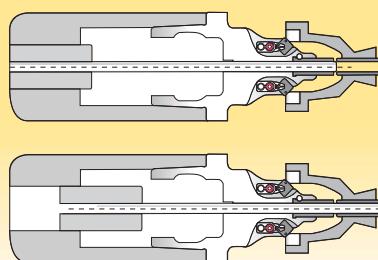
#### Process A (Preferred)

##### Tool 1 • Semi-Finish:

- Semi-finish of secondary angles.
- Semi-finish of primary angles.

##### Tool 2 • Finish:

- Finish of primary angles.
- Finish of secondary angles.
- Finish of guide bore with feed out multiflute or guide pad reamer (squirt-through type).



#### Process B (Alternate)

##### Tool 1 • Semi-Finish and Finish Combined:

- Finish of primary and secondary seat angles.
- Finish of guide bore with feed out multiflute or guide pad reamer (squirt-through type).

### Fine Boring Application Sheet

Feature tolerances, surface finishes, and geometric tolerances have to be content of the workpiece drawing

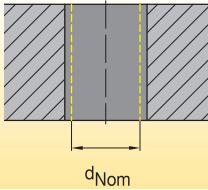
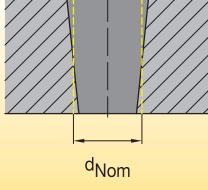
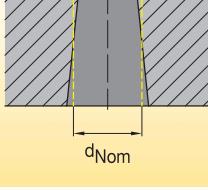
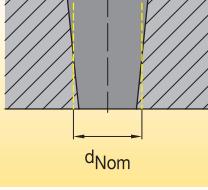
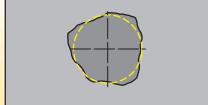
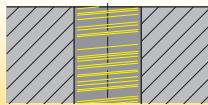
Q-Number:	Date:		
Customer:	Sales eng.:		
Location:	Application eng.:		
Contact person:	Competitors:		
<b>General</b>			
Status:	<input type="checkbox"/> Launch	<input type="checkbox"/> Running progress	<input type="checkbox"/> Process change
Volume:	Holes/Year	Similar tool:	
<b>Workpiece</b>			
Operation name:			
Diameters/features to be machined	1:	2:	3: 4: 5: 6:
Tolerance target:	<input type="checkbox"/> Upper third <input type="checkbox"/> Middle third (e.g., if CpK is needed) <input type="checkbox"/> Lower third (e.g., if Go/NoGo Gage)	Interrupted cut:	<input type="checkbox"/> Yes <input type="checkbox"/> No
CpK-value:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Facing included:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Workpiece material:	Max lead length: _____ Hole type: <input type="checkbox"/> Blind <input type="checkbox"/> Through Hardness/strength: _____ (N/mm <sup>2</sup> , HRC,...)		
Premachining: (detailed description including stock amounts)			
<b>Machine/Fixture/Hole Gaging</b>			
Machine type:	<input type="checkbox"/> Machining centre	<input type="checkbox"/> Transfer line	<input type="checkbox"/> Lathe <input type="checkbox"/> Special purpose machine
Machine name:			
Tool:	<input type="checkbox"/> Rotating <input type="checkbox"/> Stationary	Spindle connection:	(HSK80A, DV50, BT40,...)
Spindle orientation:	<input type="checkbox"/> Horizontal <input type="checkbox"/> Vertical	Number of spindles:	(for same operation on same machine)
Workpiece clamping:	<input type="checkbox"/> Rigid <input type="checkbox"/> Weak	M/C spindle adjustment:	<input type="checkbox"/> Radial runout <input type="checkbox"/> Axial runout <input type="checkbox"/> No
Setting device available: (only for adjustable tools)	<input type="checkbox"/> Yes:	Description	<input type="checkbox"/> No
Gauging method:	<input type="checkbox"/> Go/NoGo-gage <input type="checkbox"/> Air or electronic gage <input type="checkbox"/> Other		
Coolant type	<input type="checkbox"/> Soluble <input type="checkbox"/> Semi-synthetic <input type="checkbox"/> Synthetic	<input type="checkbox"/> MQL	
Coolant supply:	<input type="checkbox"/> Internal <input type="checkbox"/> External <input type="checkbox"/> None		
Coolant pressure:	bar	Coolant concentration:	%
		Coolant flow:	l/min
Additional Information: (e.g. interferences, weight or dimensional restrictions, customer reason for change, known issues,...)			

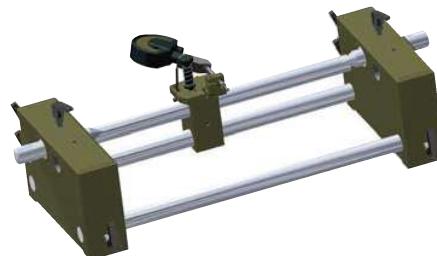
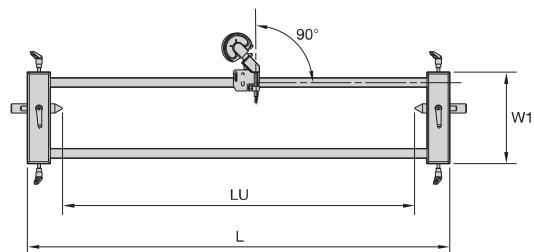
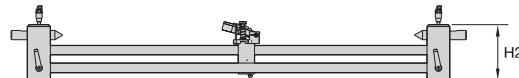
Quotation Processing Only with Workpiece Drawing and Filled Out Form

### ■ Reaming Allowances for Single Blade Reaming

mm	reaming allowance in diameter		
	min	middle	max
6,01–9,59	0,10	0,15	0,25
9,60–15,00	0,15	0,20	0,30
15,00–20,00	0,15	0,25	0,35
20,00–50,00	0,20	0,30	0,40

### ■ Causes of and Remedies for Reaming Problems

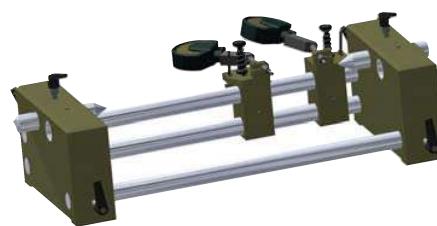
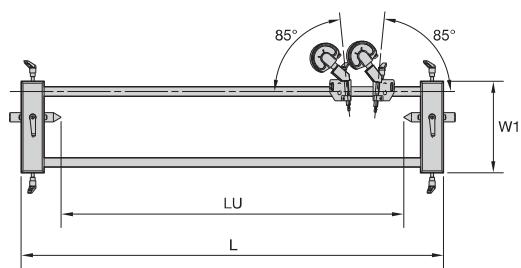
Problem	Cause	Possible Remedy
Drill diameter too large	 <p>1. Reaming tool running out-of-centre. 2. Concentricity of pilot hole and ream machining unsatisfactory. 3. Built-up edge. 4. Unsuitable cooling lubricant. 5. Reaming tool Ø too large.</p>	<ul style="list-style-type: none"> <li>• Use SIF™ equalising adaptor.</li> <li>• Re-align, use floating head.</li> <li>• Change cooling lubricant.</li> <li>• Change cutting speed.</li> <li>• Measure reamers and send for repairs.</li> </ul>
Drill diameter too small	 <p>1. Reamer worn. 2. Unsuitable cooling lubricant. 3. Reaming allowance too small.</p>	<ul style="list-style-type: none"> <li>• Replace and refit tool.</li> <li>• Change cooling lubricant.</li> <li>• Increase reaming allowance.</li> </ul>
Conical drill profile wider towards drill runout	 <p>1. Concentricity of pilot hole and reaming unsatisfactory. 2. Positioning accuracy of pilot hole to reaming.</p>	<ul style="list-style-type: none"> <li>• Re-align, use SIF equalising adaptor.</li> <li>• Correct positioning accuracy.</li> </ul>
Conical drill profile wider at drill entry point	 <p>1. Concentricity of pilot hole and reaming unsatisfactory. 2. Reaming tool skim cutting with ledger.</p>	<ul style="list-style-type: none"> <li>• Re-align, use floating head.</li> <li>• Securely clamp reaming tool axially.</li> </ul>
Hole out-of-centre and/or showing chatter marks	 <p>1. Reaming tool running out-of-centre. 2. Slanted cutting surface/asymmetrical cutting. 3. Workpiece twisted.</p>	<ul style="list-style-type: none"> <li>• Use SIF equalising adaptor.</li> <li>• Flatten surface before drilling or reaming.</li> <li>• Take the direction of impact into account when clamping the workpiece.</li> </ul>
Surface quality does not meet specification	 <p>1. Tool cutters worn. 2. Reaming tool running out-of-centre. 3. Incorrect technology data (cutting parameters). 4. Inadequate chip evacuation.</p>	<ul style="list-style-type: none"> <li>• Replace and refit tool.</li> <li>• Use SIF equalising adaptor.</li> <li>• Change cutting parameters in machining range.</li> <li>• Optimise coolant supply; increase coolant pressure and volume.</li> </ul>
Feed grooves	 <p>1. Built-up edge.</p>	<ul style="list-style-type: none"> <li>• Change cooling lubricant.</li> <li>• Change cutting speed.</li> </ul>



 ■ Setting Fixture • One Gage

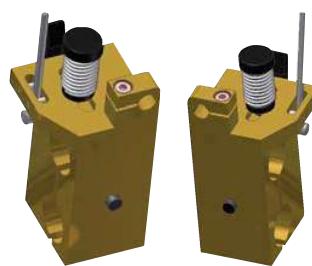
Hole Finishing

order number	catalogue number	H2	L	LU	W1
5025599	SF300M1RS	118	450	300	195
5025670	SF750M1RS	118	900	750	195



■ Setting Fixture • Two Gage

order number	catalogue number	H2	L	LU	W1
5025597	SF300M1LA1RA	118	450	300	195
5025598	SF750M1LA1RA	118	900	750	195



Left Hand

Right Hand

**■ Axial Slide • 90° with Angle Fine Adjustment**

order number

5025672

5025671

catalogue number

SFSLLS

SFSLRS



Left Hand

Right Hand

**■ Axial Slide • 85°**

order number

5025674

5025673

catalogue number

SFSLLA

SFSLRA

SM Screw Sets  
for Slides
**■ Axial Slides**

order number

5025683

catalogue number

SFSLSS


**■ Base Plate for Vertical Setup**

order number

5025680

catalogue number

SFVB





SM Clamp Handle



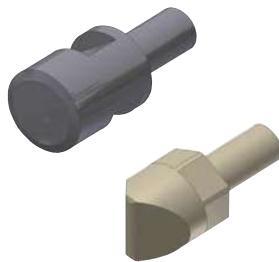
SM End Block

■ Clamp Handle for End Blocks and Axial Slides

order number	catalogue number
5025682	SFEBCH

■ End Block Including Screws

order number	catalogue number
5025681	SFEBS



■ Contact Pins Set

order number	catalogue number
5025686	SFCPS



■ Support Bars (450mm and 900mm)

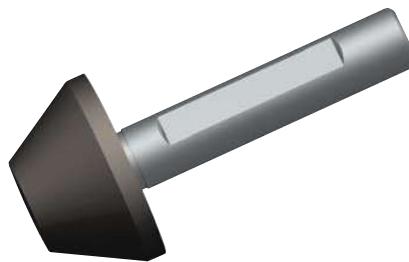
order number	catalogue number
5025684	SFSB450
5025685	SFSB900


**■ Gage Set**

order number	catalogue number
5025675	SFMGS


**■ Spring-Loaded Centre Ø 20mm**

order number	catalogue number
5025679	SFCR20S


**■ HSK Centre**

order number	catalogue number
5025677	SFCRHSK3263
5025678	SFCRHSK63100


**■ Standard Centre Ø 20mm**

order number	catalogue number
5025676	SFCR20



Hole Finishing

# ➤ Romicron™ Fine-Boring System

## Primary Application

The Romicron tooling portfolio has a diameter range of 4–213mm (.1575–8.3858") and reduces setup time and scrap rates while increasing overall equipment efficiency. This premium fine-boring system can be used in most materials in metalcutting applications by applying the latest Kennametal standard ISO turning inserts. Its closed loop boring (CLB) provides a unique opportunity to automate insert wear compensation with minimal investment due to the precise 2 µm diameter adjustment per increment.

The Romicron system should be used where extremely close tolerances are critical to the overall process or where fast and easy diameter adjustments are needed.



## Features and Benefits

### Higher Productivity and Profitability

- Reduce scrap rates and setup time with backlash-free adjustment.
- Diameter adjustment can be done inside the machine, avoiding routine insert changes in the setup room.
- Avoid time-consuming control cuts or sister tooling.
- No training or experience needed for use, resulting in less stressful adjustments.

### Versatility

- Retrofit existing machines to automated wear compensation using standard CLB pin. No electronic equipment needed, except hole measuring device.
- AVS00B-SVS6B prebalanced heads are preferred solution for diameter 25–139mm (.984–5.472").
- SVUBB1 tooling for high-speed applications 4–16.5mm (.157–.650").
- Broad diameter range of 6–100mm (.236–3.937") using SVUBB2 tooling.
- SVU65 and SVU92 for larger diameters of 71–213mm (2.79–8.386").

# 100% mechanical system with micron adjustment by hand or fully automated.



## Ease of Adjustment

- No tools are needed so adjustment is done on the machine tool. Eliminates need to remove and return boring head to the presetting area, increasing productivity.
- SEE, FEEL, and HEAR the adjustment mechanism for fail-safe size control.

## Customisation

- Engineered solutions available for multistep or high length-to-diameter tooling.
- Anti-chatter devices and various non-standard machine spindle coupling sizes available.

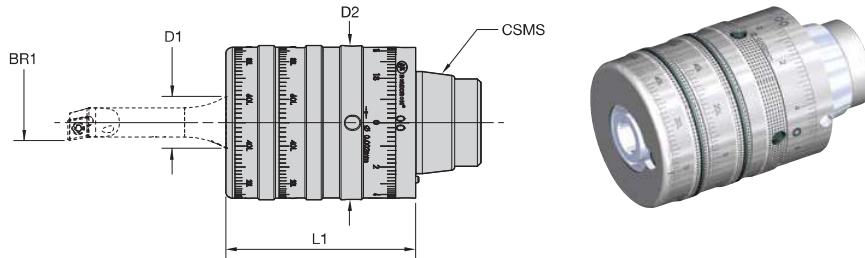


Boring range, coolant capacity, and maximum RPM features for all Romicron boring heads.

head size		bore range
<ul style="list-style-type: none"> <li>• 25,000 RPM max.</li> <li>• Balanceable.</li> <li>• 1,050 psi coolant capacity.</li> <li>• 1,050 psi/70 bar coolant capacity.</li> <li>• Movable zero reference.</li> </ul>	<b>SVUBB1</b>  4mm      16,5mm	
<ul style="list-style-type: none"> <li>• 10,000 RPM max.</li> <li>• Balanceable.</li> <li>• 1,050 psi coolant capacity.</li> <li>• 1,050 psi/70 bar coolant capacity.</li> <li>• Movable zero reference.</li> </ul>	<b>SVUBB2</b>  6mm      25,5mm	
<ul style="list-style-type: none"> <li>• 20,000 RPM.</li> <li>• Prebalanced.</li> <li>• 1740 psi/120 bar coolant capacity.</li> </ul>	<b>AVS00B</b>  25mm      32mm	
<ul style="list-style-type: none"> <li>• 20,000 RPM.</li> <li>• Prebalanced.</li> <li>• 1740 psi/120 bar coolant capacity.</li> </ul>	<b>AVS0B</b>  31,5mm      42,5mm	
<ul style="list-style-type: none"> <li>• 20,000 RPM.</li> <li>• Prebalanced.</li> <li>• 1740 psi/120 bar coolant capacity.</li> </ul>	<b>AVS1B</b>  42mm      53mm	
<ul style="list-style-type: none"> <li>• 20,000 RPM.</li> <li>• Prebalanced.</li> <li>• 1740 psi/120 bar coolant capacity.</li> </ul>	<b>AVS2B</b>  52mm      66mm	
<ul style="list-style-type: none"> <li>• 20,000 RPM.</li> <li>• Prebalanced.</li> <li>• 1740 psi/120 bar coolant capacity.</li> </ul>	<b>AVS3B</b>  65mm      79mm	
<ul style="list-style-type: none"> <li>• 4,500 RPM.</li> <li>• Prebalanced.</li> <li>• 300 psi/20 bar coolant capacity.</li> </ul>	<b>SVS4B</b>  78mm      98mm	
<ul style="list-style-type: none"> <li>• 4,500 RPM.</li> <li>• Prebalanced.</li> <li>• 300 psi/20 bar coolant capacity.</li> </ul>	<b>SVS5B</b>  97mm      117mm	
<ul style="list-style-type: none"> <li>• 3,500 RPM.</li> <li>• Prebalanced.</li> <li>• 300 psi/20 bar coolant capacity.</li> </ul>	<b>SVS6B</b>  116mm      139mm	
<ul style="list-style-type: none"> <li>• 6,000 RPM.</li> <li>• Balanceable.</li> <li>• 300 psi/20 bar coolant capacity.</li> <li>• Movable zero reference.</li> </ul>	<b>SVU65</b>  71mm      111mm	
<ul style="list-style-type: none"> <li>• 6,000 RPM.</li> <li>• Balanceable.</li> <li>• 300 psi/20 bar coolant capacity.</li> <li>• Movable zero reference.</li> </ul>	<b>SVU92</b>  101mm      213mm	
<ul style="list-style-type: none"> <li>• 6,000 RPM.</li> <li>• Balanceable.</li> <li>• 300 psi/20 bar coolant capacity.</li> <li>• Movable zero reference.</li> </ul>	<b>SVU120</b>  139mm      326mm	

range mm	order number	catalogue number	content	
4,00–16,50	4046076	SVUBB1KR32KIT	KR32SVUBB1060M KRBB10FADRS102C KRBB10SCLDRS4060C KRBB10SCFPR06085C KRBB10SCFPR06110C KRBB10SCFPR06135C	
6,00–25,50	4046077	SVUBB2KR32KITD025M	KR32SVUBB2085M KRBB16SCLDRS4060A KRBB16SCFPR06085A KRBB16SCFPR06110A KRBB16SCFPR06135A KRBB16SCFPR06160A KRBB16SCFPR06190A KRBB16SCFPR06220A	
6,00–25,50	4046078	SVUBB2KR50KITD025M	KRBB16SCFPR06220A KR50SVUBB2075M KRBB16SCLDRS4060A KRBB16SCFPR06085A KRBB16SCFPR06110A KRBB16SCFPR06135A KRBB16SCFPR06160A KRBB16SCFPR06190A KRBB16SCFPR06220A	
6,00–100,00	4052608	SVUBB2KR32KITD100M	KR32SVUBB2085M KRBB16SCLDRS4060A KRBB16SCFPR06085A KRBB16SCFPR06110A KRBB16SCFPR06135A KRBB16SCFPR06160A KRBB16SCFPR06190A KRBB16SCFPR06220A	KRDEA046AM KRDE025010M KRDE033010M KRDEA051AM KRDE043010M KRDEA012AM KRDE065012M KRCW032A 
6,00–100,00	4052609	SVUBB2KR50KITD100M	KR50SVUBB2075M KRBB16SCLDRS4060A KRBB16SCFPR06085A KRBB16SCFPR06110A KRBB16SCFPR06135A KRBB16SCFPR06160A KRBB16SCFPR06190A KRBB16SCFPR06220A	KRDEA046AM KRDE025010M KRDE033010M KRDEA051AM KRDE043010M KRDEA012AM KRDE065012M KRCW032A 

- For correct balance ring settings, see pages K96–K97.
- Order boring bar separately; see page K74.
- Order taper shank separately; see page K86.

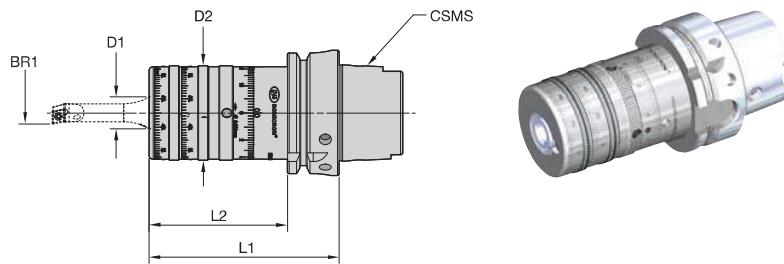


### ■ SVU BB1 • KR Back End with CLB Capability

Hole Finishing

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	Torx wrench	hex wrench	kg	lbs
4054737	KR32SVUBB1060MCLB	4,000-16,500	KR32	10,0	46,5	58,6	KT8	170.000	0,94	2.07

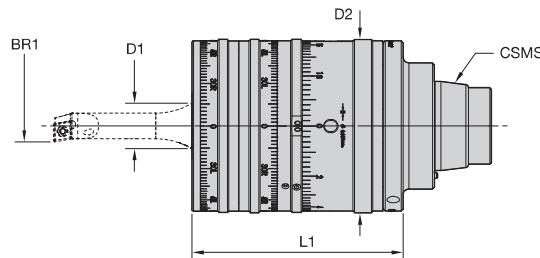
- For correct balance ring settings, see pages K96–K97.
- Order boring bar separately; see page K74.



### ■ SVU BB1 • HSK Back End with CLB Capability

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	L2	Torx wrench	radial adjusting screw	kg	lbs
4054734	HSK63ASVUBB1095MCLB	4,000-16,500	HSK63A	10,0	46,5	95,5	69,4	KT15	191.282	1,45	3.20

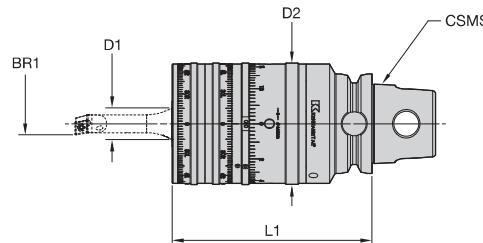
- For correct balance ring settings, see pages K98–K103.
- Order boring bar separately; see page K75.
- Order taper shank separately; see page K86.



#### ■ SVU BB2 • KR Back End with CLB Capability

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	Torx wrench	kg	lbs
4054738	KR32SVUBB2085MCLB	6,000-25,500	KR32	16,0	60,0	85,0	KT27	1,81	3.99
4054739	KR50SVUBB2075MCLB	6,000-25,500	KR50	16,0	60,0	75,0	KT27	1,61	3.55

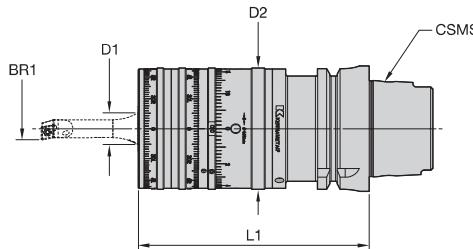
- For correct balance ring settings, see pages K98–K103.
- Order boring bar separately; see page K75.



#### ■ SVU BB2 • KM™ Back End with CLB Capability

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	Torx wrench	kg	lbs
4054736	KM50TSSVUBB2100MCLB	6,000-25,500	KM50TS	16,0	60,0	100,0	KT27	1,91	4.21

- For correct balance ring settings, see page K98–K103.
- Order boring bar separately; see page K75.

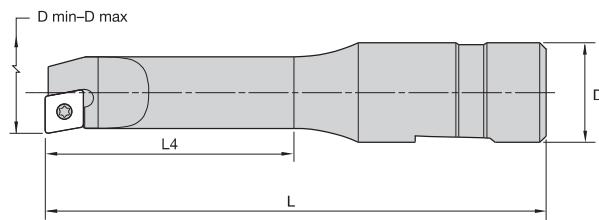


### ■ SVU BB2 • HSK Back End with CLB Capability

Hole Finishing

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	Torx wrench	kg	lbs
4054735	HSK63ASVUBB2116MCLB	6,000-25,500	HSK63A	16,0	60,0	116,0	KT27	2,52	5.56
4054733	HSK100ASVUBB2124MCLB	6,000-25,500	HSK100A	16,0	60,0	124,4	KT27	4,21	9.28

- Order inserts separately.

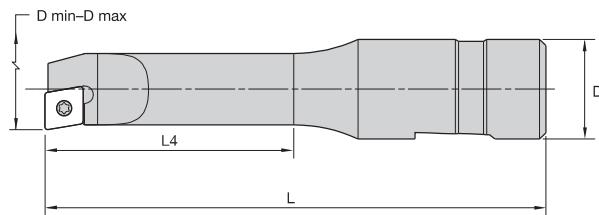


### ■ SVU BB1 • Universal Boring Bars

order number	catalogue number	D min	D max	D	L	L4	gage insert	insert screw	Torx wrench	kg	lbs
2202438	KRBB10FABDRS204C	4,00	7,00	10	57	14	—	—	—	0,05	.11
2202439	KRBB10SCLDR4060C	6,00	9,00	10	53	22	CD..S4T004	MS1454	FT5	0,05	.11
2202440	KRBB10SCFPR06085C	8,50	11,50	10	58	31	CP..060204	MS2005	FT7	0,08	.17
2202450	KRBB10SCFPR06110C	11,00	14,00	10	60	33	CP..060204	MS2005	FT7	0,08	.18
2202451	KRBB10SCFPR06135C	13,50	16,50	10	65	39	CP..060204	MS1153	FT7	0,09	.20

NOTE: Carbide shank and customised boring bars are available upon request to meet your specific requirements.  
Please contact Kennametal for a design and quotation.

- Order inserts separately.



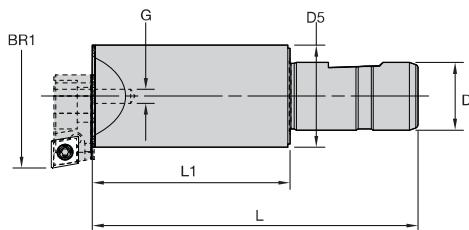
### ■ SVU BB2 • Universal Boring Bars

order number	catalogue number	D min	D max	D	L	L4	gage insert	insert screw	Torx wrench	kg	lbs
1522063	KRBB16SCFPR06085A	8,50	12,00	16	68	26	CP..060204	MS1153	FT7	0,06	.14
1522062	KRBB16SCLDRS406A	6,00	9,50	16	62	20	CD..S4T004	MS1454	FT6	0,06	.13
1522064	KRBB16SCFPR0611A	11,00	14,50	16	78	36	CP..060204	MS1153	FT7	0,08	.17
1522068	KRBB16SCFPR06135A	13,50	17,00	16	80	40	CP..060204	MS1153	FT7	0,09	.20
1522069	KRBB16SCFPR0616A	16,00	19,50	16	90	55	CP..060204	MS1153	FT7	0,11	.25
1522070	KRBB16SCFPR0619A	19,00	22,50	16	90	60	CP..060204	MS1153	FT7	0,12	.27
1522071	KRBB16SCFPR0622A	22,00	25,50	16	90	60	CP..060204	MS1153	FT7	0,15	.32

NOTE: Carbide shank and customised boring bars are available upon request to meet your specific requirements.  
Please contact Kennametal for a design and quotation.



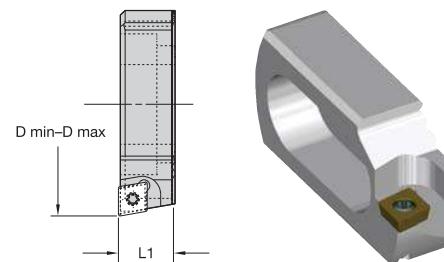
Hole Finishing



### ■ SVU BB2 • Universal Adaptors

order number	catalogue number	BR1 bore range	D	D5	G	L	L1	kg	lbs
2541200	KRDEA046AM	25,500-43,500	16	24,0	M4X0.70	76,4	46,4	0,2	.50
2541201	KRDEA051AM	43,000-65,000	16	25,0	M6X1.00	81,7	51,7	0,2	.52
2541202	KRDEA012AM	65,000-100,000	16	63,5	M8X1.25	42,5	12,5	0,2	.42

- Order inserts separately.

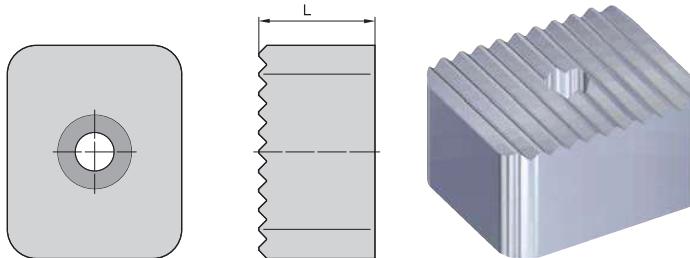


### ■ SVU BB2 • Universal Diameter Extenders



Hole Finishing

order number	catalogue number	D min	D max	L1	gage insert	insert screw	Torx wrench	kg	lbs
2541213	KRDE025010M	25,50	33,50	10,0	CP..0602../CP..215...	MS1153	FT7	0,02	.04
2541214	KRDE033010M	33,50	43,50	10,0	CP..0602../CP..215...	MS1153	FT7	0,02	.05
2541215	KRDE043010M	43,00	65,00	10,0	CP..0602../CP..215...	MS1153	FT7	0,03	.07
2541216	KRDE065012M	65,00	100,00	12,0	CP..0602../CP..215...	MS1153	FT7	0,05	.10



### ■ SVU BB2 • Counterweight

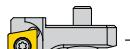
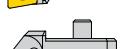
order number	catalogue number	L	kg	lbs
2541217	KRCW032A	12,0	0,04	.08

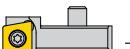
NOTE: Counterweight must be used with KRDEA012M adaptor and KRDEA065012M extender.

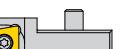
**AVS and SVS Systems • Tooling Tree**

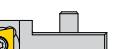
cartridge range	cartridge size	bore range	head size
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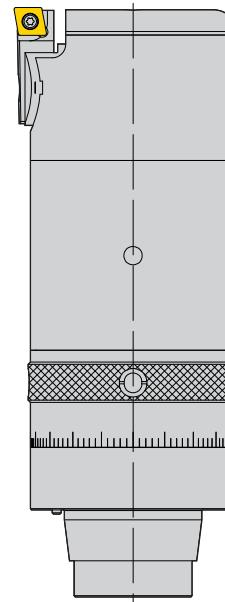
25–27,5mm		1Y	
27,25–29,75mm		2Y	25–32mm AVS00B
29,5–32mm		3Y	

31,5–35,5mm		1X	
35–39mm		2X	31,5–42,5mm AVS0B
38,5–42,5mm		3X	

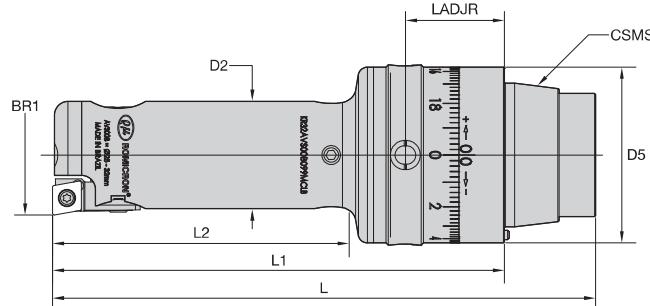
42–46mm		1X	
45,5–49,5mm		2X	42–53mm AVS1B
49–53mm		3X	

52–57mm		1W	
56,5–61,5mm		2W	52–66mm AVS2B
61–66mm		3W	

65–70mm		1W	
69,5–74,5mm		2W	65–79mm AVS3B
74–79mm		3W	



- Order cartridges separately.
- Order taper shark separately.

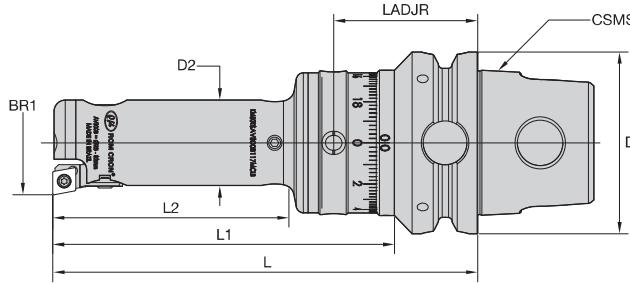


### ■ AVS • KR Back End with CLB Capability

Hole Finishing

order number	catalogue number	BR1 bore range	CSMS system size	D2	D5	L	L1	L2	LADJR	kg	lbs
5124812	KR32AVS00B099MCLB	25,000-32,000	KR32	23,5	39,5	119,0	99,0	64,0	21,7	0,6	1.20
5124814	KR32AVS0B116MCLB	31,500-42,500	KR32	30,0	39,5	136,0	116,0	85,0	21,7	0,8	1.81
5124816	KR32AVS1B100MCLB	42,000-53,000	KR32	38,5	39,5	120,0	100,0	100,0	21,7	1,0	2.13
5124818	KR32AVS2B115MCLB	52,000-66,000	KR32	47,0	48,0	135,0	115,0	115,0	29,2	1,5	3.27
5124820	KR32AVS3B115MCLB	65,000-79,000	KR32	47,0	48,0	135,0	115,0	115,0	29,2	1,5	3.36

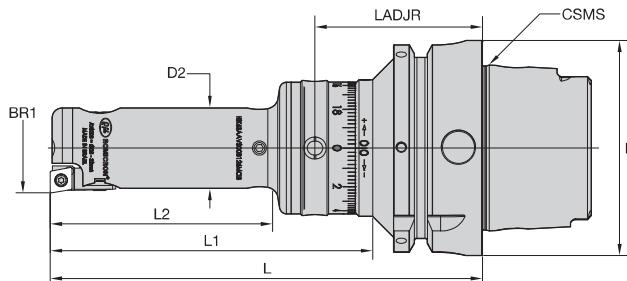
- Order cartridges separately.



### ■ AVS • KM™ Back End with CLB Capability

order number	catalogue number	BR1 bore range	CSMS system size	D	D2	L	L1	L2	LADJR	kg	lbs
5124801	KM40TSAVS00B111MCLB	25,000-32,000	KM40TS	40,000	23,5	136,0	111,0	63,5	34,0	0,6	1.36
5124802	KM40TSAVS0B128MCLB	31,500-42,500	KM40TS	40,000	30,0	153,0	128,0	—	34,0	0,8	1.82
5124803	KM40TSAVS1B112MCLB	42,000-53,000	KM40TS	40,000	38,5	137,0	112,0	112,0	34,0	1,0	2.18
5124804	KM40TSAVS2B127MCLB	52,000-66,000	KM40TS	40,000	47,0	152,0	127,0	127,0	41,3	1,6	3.41
5124805	KM50TSAVS00B117MCLB	25,000-32,000	KM50TS	50,000	23,5	149,0	117,0	63,5	39,7	0,8	1.79
5124807	KM50TSAVS0B134MCLB	31,500-42,500	KM50TS	50,000	30,0	166,0	134,0	83,0	39,7	1,0	2.25
5124808	KM50TSAVS1B118MCLB	42,000-53,000	KM50TS	50,000	38,5	150,0	118,0	—	39,6	1,2	2.57
5124809	KM50TSAVS2B128MCLB	52,000-66,000	KM50TS	50,000	47,0	160,0	128,0	128,0	42,3	1,7	3.67
5124810	KM50TSAVS3B128MCLB	65,000-79,000	KM50TS	50,000	47,0	160,0	128,0	128,0	42,3	1,7	3.82
5124811	KM63TSAVS3B130MCLB	65,000-79,000	KM63TS	63,000	47,0	170,0	130,0	130,0	44,3	2,0	4.46

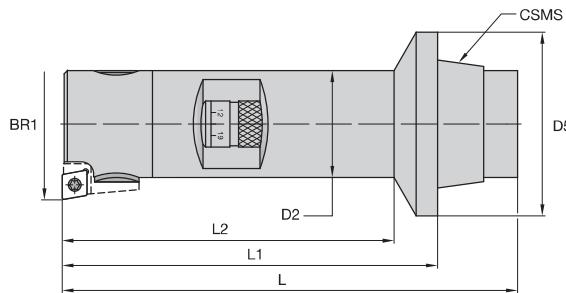
- Order cartridges separately.



#### ■ AVS • HSK Back End with CLB Capability

order number	catalogue number	BR1 bore range	CSMS system size	D	D2	L	L1	L2	LADJR	kg	lbs
5124576	HSK63AAVS00B126MCLB	25.000-32.000	HSK63A	63,000	23,5	158,0	126,0	63,5	49,0	1,2	2.71
5124577	HSK63AAVS0B143MCLB	31.500-42.500	HSK63A	63,000	30,0	175,0	143,0	83,0	49,0	1,4	3.17
5124578	HSK63AAVS1B127MCLB	42.000-53.000	HSK63A	63,000	38,5	159,0	127,0	95,0	49,0	1,6	3.53
5124579	HSK63AAVS2B139MCLB	52.000-66.000	HSK63A	63,000	47,0	171,0	139,0	109,0	53,5	2,2	4.73
5124800	HSK63AAVS3B139MCLB	65.000-79.000	HSK63A	63,000	47,0	171,0	139,0	109,0	53,5	2,2	4.85

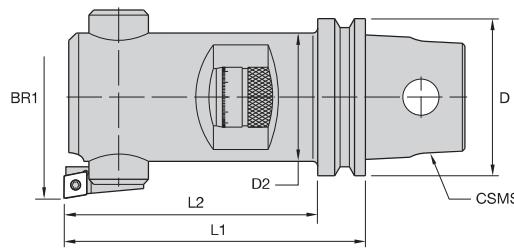
- Order cartridges separately; see page K82.
- Order taper shank separately; see page K86.



#### ■ SVS • KR Back End

order number	catalogue number	BR1 bore range	CSMS system size	D2	L	L1	kg	lbs
1192281	KR50SVS4B094M	78,000-98,000	KR50	65,0	119,0	94,0	2,4	5.21
1279787	KR50SVS5B094M	97,000-117,000	KR50	65,0	119,0	94,0	3,0	6.49
1279793	KR63SVS6B126M	116,000-139,000	KR63	85,0	162,0	126,0	5,7	12.63

- Order cartridges separately; see page K82.

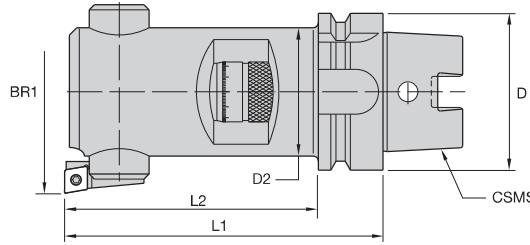


### ■ SVS • KM™ Back End

Hole Finishing

order number	catalogue number	BR1 bore range	CSMS system size	D	D2	L1	L2	kg	lbs
1763375	KM50SVS4B125M	78,000-98,000	KM50	50,000	65,0	125,0	110,0	2,2	4.90
1763378	KM50SVS5B125M	97,000-117,000	KM50	50,000	65,0	125,0	110,0	3,2	7.10
1763376	KM63SVS4B110M	78,000-98,000	KM63	63,000	65,0	110,0	92,0	2,4	5.30
1763379	KM63SVS5B110M	97,000-117,000	KM63	63,000	65,0	110,0	92,0	3,2	7.10
1763382	KM80SVS6B150M	116,000-139,000	KM80	80,000	85,0	150,0	128,0	7,8	17.20

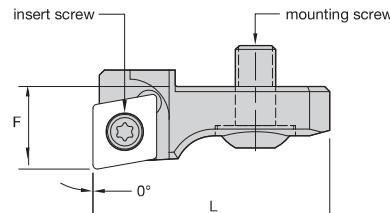
- Order cartridges separately.



### ■ SVS • HSK Back End

order number	catalogue number	BR1 bore range	CSMS system size	D	D2	L1	L2	kg	lbs
1763116	HSK63ASVS4B139M	78,000-98,000	HSK63A	63,000	65,0	139,0	113,0	3,6	8.00
1763118	HSK63ASVS5B139M	97,000-117,000	HSK63A	63,000	65,0	139,0	113,0	5,9	13.00

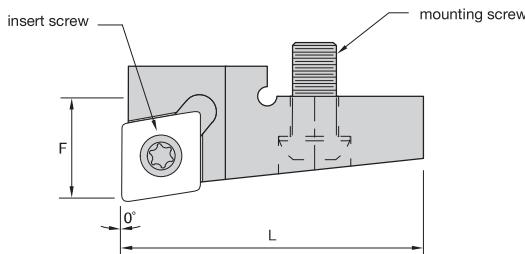
- Order inserts separately.



### ■ AVS • Cartridges SCF

order number	catalogue number	L	F	gage insert	reference head	cartridge size	mounting screw	Torx wrench	insert screw	Torx wrench	kg	lbs
5124822	KRCSCFPR061Y	19,20	4,76	CP..0602../CP..215...	AVS00B	1Y	MS2006	FT8	MS2005	FT7	0,00	.010
5124823	KRCSCFPR062Y	19,20	5,88	CP..0602../CP..215...	AVS00B	2Y	MS2006	FT8	MS2005	FT7	0,00	.010
5124824	KRCSCFPR063Y	19,20	7,01	CP..0602../CP..215...	AVS00B	3Y	MS2006	FT8	MS2005	FT7	0,00	.010
5124825	KRCSCFPR061X	23,75	6,46	CP..0602../CP..215...	AVS1B,AVS0B	1X	MS-1896	FT15	MS1153	FT7	0,01	.020
5124826	KRCSCFPR062X	23,60	8,21	CP..0602../CP..215...	AVS1B,AVS0B	2X	MS-1896	FT15	MS1153	FT7	0,01	.020
5124827	KRCSCFPR063X	23,60	9,96	CP..0602../CP..215...	AVS1B,AVS0B	3X	MS-1896	FT15	MS1153	FT7	0,01	.020
5124828	KRCSCFPR061W	26,60	6,45	CP..0602../CP..215...	AVS3B1,AVS2B1	1W	MS-1896	FT15	MS1153	FT7	0,01	.030
5124829	KRCSCFPR062W	26,75	8,70	CP..0602../CP..215...	AVS2B1,AVS3B1	2W	MS-1896	FT15	MS1153	FT7	0,01	.030
5124850	KRCSCFPR063W	26,60	10,95	CP..0602../CP..215...	AVS3B1,AVS2B1	3W	MS-1896	FT15	MS1153	FT7	0,01	.020

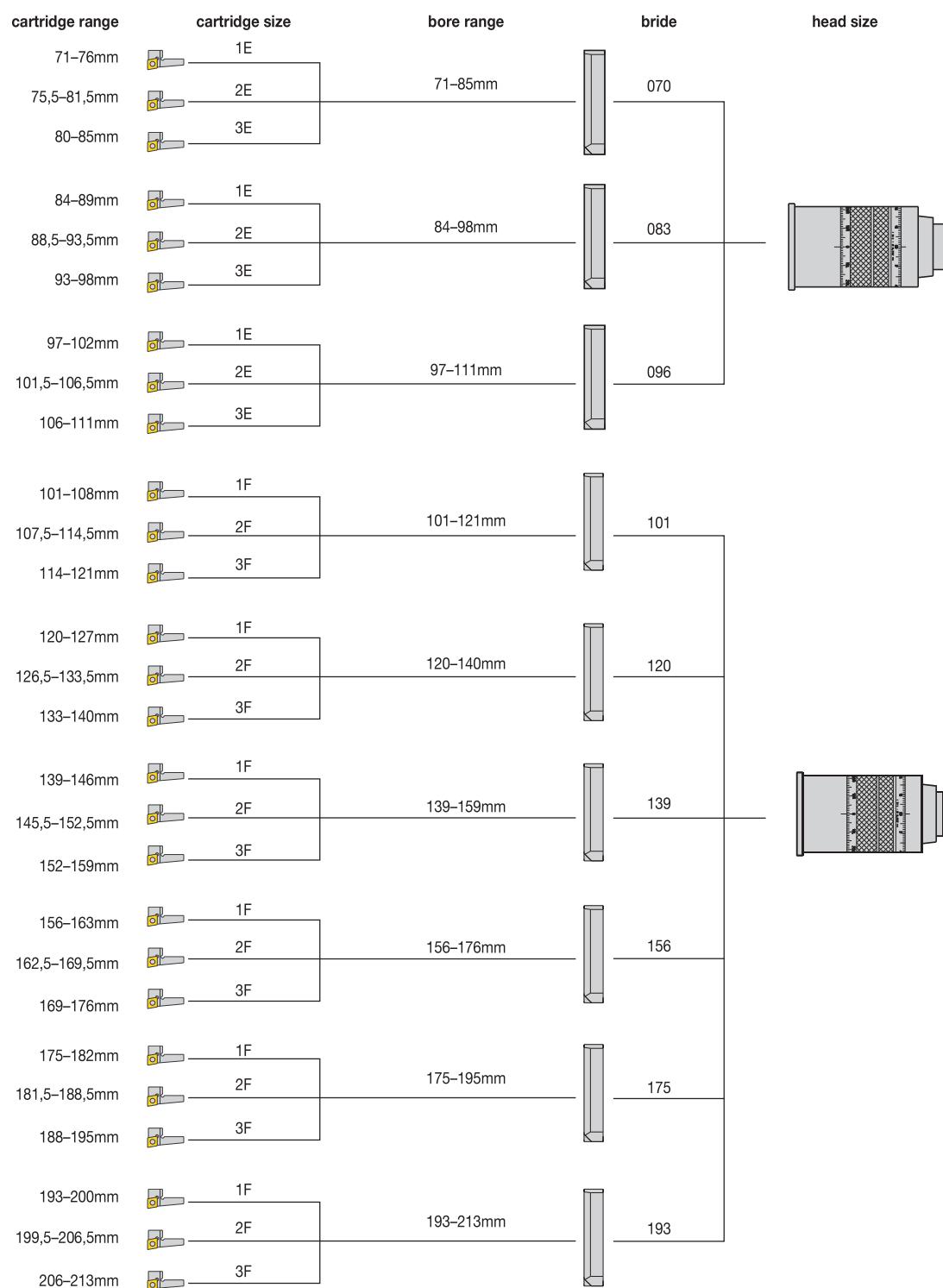
- Order inserts separately.



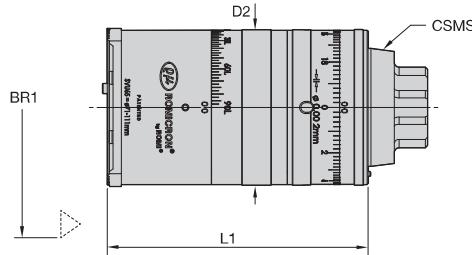
## ➤ ■ SVS • Cartridges SCF

Hole Finishing

order number	catalogue number	L	F	gage insert	reference head	cartridge size	kg	lbs
1501356	KRCSCFPR061L	19,15	4,76	CP..0602../CP..215...	AVS00B	1L.	0,01	.02
1500650	KRCSCFPR062L	19,15	5,89	CP..0602../CP..215...	KRMSVS00M50049M,AVS00B	2L.	0,01	.02
1501357	KRCSCFPR063L	19,15	7,01	CP..0602../CP..215...	AVS00B	3L.	0,01	.03
1099162	KRCSCFPR061A	23,65	6,45	CP..0602../CP..215...	AVS0B,AVS1B,AVS1B	1A.	0,01	.02
1099163	KRCSCFPR062A	23,70	8,20	CP..0602../CP..215...	AVS0B,AVS1B,AVS1B	2A.	0,01	.02
1099164	KRCSCFPR063A	23,70	9,95	CP..0602../CP..215...	AVS0B,AVS1B,AVS1B	3A.	0,01	.03
1099166	KRCSCFPR062B	24,65	8,70	CP..0602../CP..215...	SVS3B,SVS2B	2B.	0,01	.03
1099167	KRCSCFPR063B	24,65	10,95	CP..0602../CP..215...	SVS3B,SVS2B	3B.	0,02	.04
1099165	KRCSCFPR061B	24,70	6,45	CP..0602../CP..215...	SVS3B,SVS2B	1B.	0,01	.02
1099168	KRCSCFPR061C	30,70	8,45	CP..0602../CP..215..	SVS5B,SVS4B	1C.	0,02	.05
1099169	KRCSCFPR062C	30,70	11,70	CP..0602../CP..215...	SVS5B,SVS4B	2C.	0,03	.06
1099170	KRCSCFPR063C	30,70	14,95	CP..0602../CP..215...	SVS5B,SVS4B	3C.	0,04	.08
1099171	KRCSCFPR061D	38,70	8,45	CP..0602../CP..215...	SVS8B,SVS7B,SVS6B	1D.	0,03	.07
1099172	KRCSCFPR062D	38,70	12,20	CP..0602../CP..215...	SVS8B,SVS7B,SVS6B	2D.	0,05	.10
1099173	KRCSCFPR063D	38,70	15,95	CP..0602../CP..215...	SVS8B,SVS7B,SVS6B	3D.	0,06	.13

**■ SVU System • Tooling Tree**


- For correct balance ring settings, see page K104–K105.
- Order diameter extenders, cartridges, and taper shanks separately.

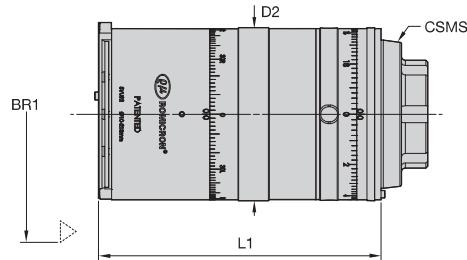


### ➤ ■ SVU65 • KR Boring Head with CLB Capability

Hole Finishing

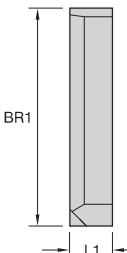
order number	catalogue number	BR1 bore range	CSMS system size	D2	L1	Torx wrench	kg	lbs
1582600	KR50SVU65110MCLB	71,000-111,000	KR50	65,0	110,0	KT27	2,8	6.20

- For correct balance ring settings, see page K106–K110.
- Order diameter extenders, cartridges, and taper shanks separately.



### ■ SVU92 • KR Boring Head with CLB Capability

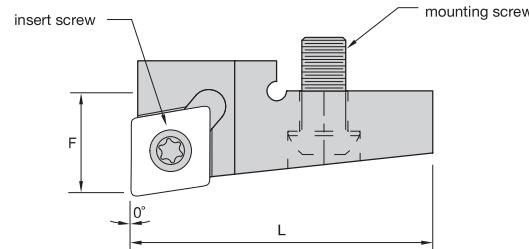
order number	catalogue number	BR1 bore range	CSMS system size	D2	L1	Torx wrench	kg	lbs
4054740	KR80SVU92152MCLB	101,000-213,000	KR80	92,0	152,0	KT27	7,5	16.54



### ■ SVU • Diameter Extenders

order number	catalogue number	BR1 bore range	L1 assy	kg	lbs
1279736	KRDE070019M	70,000-85,000	19,2	0,2	.48
1279739	KRDE083019M	83,000-98,000	19,2	0,3	.62
1279740	KRDE096019M	96,000-111,000	19,2	0,3	.76
1279741	KRDE101023M	101,000-121,000	23,2	0,6	1.25
1279742	KRDE120023M	120,000-140,000	23,2	0,7	1.54
1279743	KRDE139026M	139,000-159,000	26,2	1,0	2.15
1279745	KRDE156026M	156,000-176,000	26,2	1,1	2.51
1279746	KRDE175026M	175,000-195,000	26,2	1,3	2.83
1279748	KRDE193026M	193,000-213,000	26,2	1,4	3.14

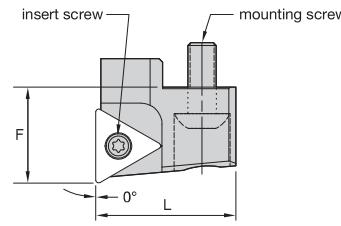
- Order inserts separately.



### ■ SVU • Cartridges SCF



order number	catalogue number	reference head	F	L	gage insert	insert screw	mounting screw	insert Torx wrench	Torx wrench	cartridge size	kg	lbs
1099174	KRCSCFPR061E	SVU65	6,75	19,70	CP..0602./CP..215...	MS1375	MS1153	FT7	KT15	1E.	0,01	.02
1099175	KRCSCFPR062E	SVU65	9,00	19,70	CP..0602./CP..215...	MS1375	MS1153	FT7	KT15	2E.	0,01	.02
1099176	KRCSCFPR063E	SVU65	11,25	19,70	CP..0602./CP..215...	MS1375	MS1153	FT7	KT15	3E.	0,01	.03
1099177	KRCSCFPR061F	SVU92	6,75	19,70	CP..0602./CP..215...	MS1375	MS1153	FT7	KT15	1F.	0,01	.02
1099178	KRCSCFPR062F	SVU92	10,00	19,70	CP..0602./CP..215...	MS1375	MS1153	FT7	KT15	2F.	0,01	.03
1099179	KRCSCFPR063F	SVU92	13,25	19,70	CP..0602./CP..215...	MS1375	MS1153	FT7	KT15	3F.	0,02	.03

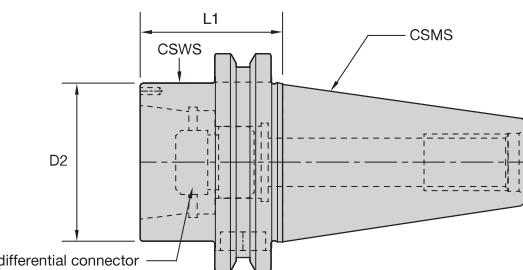


### ■ SVU92 • Cartridges STF 90° Lead Angle



order number	catalogue number	reference head	F	L	gage insert	insert screw	mounting screw	insert Torx wrench	Torx wrench	kg	lbs
1279732	KRCSTFPR113F	SVU92	13,25	19,70	TP..1102./TP..215...	MS1375	MS1153	FT7	KT15	0,02	.03

- Differential connector included.



### ■ CV to KR Adaptors AD/B



Hole Finishing

order number	catalogue number	CSMS system size	CSWS system size	D2	L1	differential connector	kg	lbs	reference head
3554366	CV40BKR32157	CV40	KR32	47	40	KRDCKR32M	1,08	2.40	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
3554367	CV40BKR50236	CV40	KR50	65	60	KRDCKR50M	1,23	2.70	SVS4B,5B,SVU65,SVUBB2
3554368	CV50BKR32157	CV50	KR32	50	40	KRDCKR32M	3,25	7.20	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
3554369	CV50BKR50157	CV50	KR50	65	40	KRDCKR50M	3,05	6.70	SVS4B,5B,SVU65,SVUBB2
3554370	CV50BKR63236	CV50	KR63	85	60	KRDCKR63M	3,50	7.70	SVS6B,7B,8B
3554371	CV50BKR80275	CV50	KR80	95	70	KRDCKR80M	4,28	9.40	SVU92,120



### ■ DV to KR DIN 69871 AD/B

order number	catalogue number	CSMS system size	CSWS system size	D2	L1	differential connector	kg	lbs	reference head
1539005	DV40BKR32041M	DV40	KR32	44	41	KRDCKR32M	1,00	2.20	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
1263816	DV40BKR50060M	DV40	KR50	65	60	KRDCKR50M	1,40	3.08	SVS4B,5B,SVU65,SVUBB2
1528328	DV50BKR32041M	DV50	KR32	50	41	KRDCKR32M	2,80	6.16	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
1191970	DV50BKR32040M	DV50	KR32	50	40	KRDCKR32M	2,80	6.16	AVS0B, AVS2B, AVS3B
1191971	DV50BKR50040M	DV50	KR50	65	40	KRDCKR50M	2,80	6.16	SVS4B,5B,SVU65,SVUBB2
1264135	DV50BKR63060M	DV50	KR63	85	60	KRDCKR63M	3,30	7.26	SVS6B,7B,8B
1264136	DV50BKR80070M	DV50	KR80	95	70	KRDCKR80M	4,10	9.02	SVU92,120

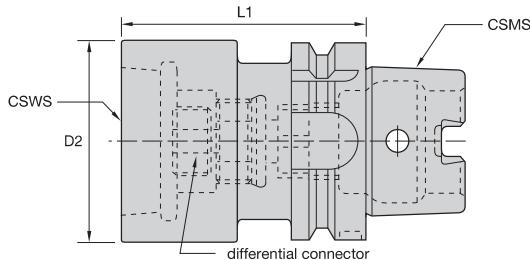


### ■ BT to KR JIS B6339 Adaptors AD/B

order number	catalogue number	CSMS system size	CSWS system size	D2	L1	differential connector	kg	lbs	reference head
3554372	BT40BKR32030M	BT40	KR32	50	30	KRDCKR32M	1,20	2.63	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
3554373	BT40BKR50050M	BT40	KR50	63	50	KRDCKR50M	1,26	2.80	SVS4B,5B,SVU65,SVUBB2
3554374	BT50BKR32040M	BT50	KR32	50	40	KRDCKR32M	3,90	8.60	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
3554375	BT50BKR50040M	BT50	KR50	65	40	KRDCKR50M	3,17	7.00	SVS4B,5B,SVU65,SVUBB2
3554376	BT50BKR63060M	BT50	KR63	85	60	KRDCKR63M	4,31	9.50	SVS6B,7B,8B
3554377	BT50BKR80060M	BT50	KR80	95	60	KRDCKR80M	4,53	9.98	SVU92,120

Form AD				40 (2x) MS2221S	2,5mm
Form B				50 (2x) MS1296S	3mm

- Differential connector included.



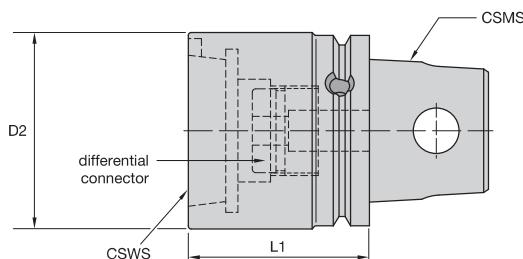
**ERICKSON™**

#### ■ HSK Form A to KR Adaptors

order number	catalogue number	CSMS system size	CSWS system size	D2	L1	differential connector	kg	lbs	reference head
1153403	HSK63AKR32075M	HSK63A	KR32	50	75	KRDCKR32M	1,20	2.64	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
1153604	HSK63AKR50080M	HSK63A	KR50	65	80	KRDCKR50M	1,60	3.52	SVS4B,5B,SVU65,SVUBB2
1153606	HSK100AKR32075M	HSK100A	KR32	50	75	KRDCKR32M	2,56	5.64	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
1107188	HSK100AKR50085M	HSK100A	KR50	65	85	KRDCKR50M	3,12	6.87	SVS4B,5B,SVU65,SVUBB2
1173988	HSK100AKR63100M	HSK100A	KR63	85	100	KRDCKR63M	4,26	9.40	SVS6B,7B,8B
1153612	HSK100AKR80090M	HSK100A	KR80	95	90	KRDCKR80M	4,36	9.62	SVU92,120

NOTE: Plug may need to be removed to access the differential screw drive through the HSK taper.

- Differential connector included.



**KM™  
QUICK  
CHANGE**

#### ■ KM63XMZ to KR Adaptors

order number	catalogue number	CSMS system size	CSWS system size	D2	L1	differential connector	kg	lbs	reference head
1831590	KM63XMZKR5060Y	KM63XMZ	KR50	65	60	KRDCKR50M	1,37	3.02	SVS4B,5B,SVU65,SVUBB2

NOTE: Do not overtighten lock screw; use torque recommendations above.

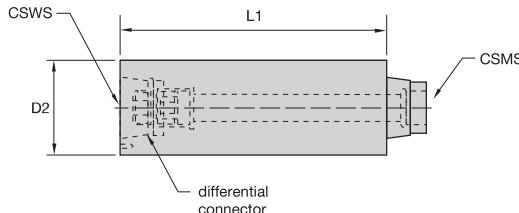
Supplied with lock screw.

Lock screw wrench not included.



Hole Finishing

- Differential connector included.

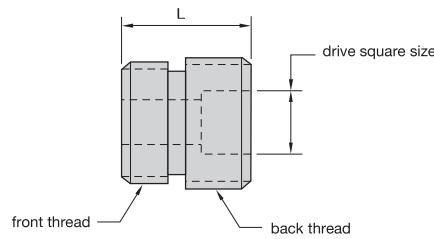


### Length Extenders and Spare Differential Connectors



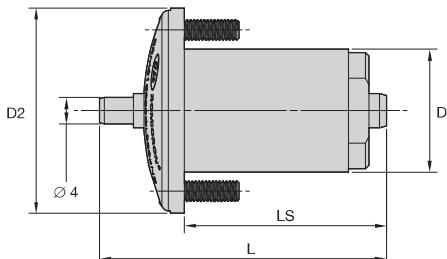
Hole Finishing

order number	catalogue number	CSWS system size	CSMS system size	D2	L1	differential connector	kg	lbs	reference head
1279772	KR32KR32038050M	KR32	KR32	38	50	KRDCKR32M	0,45	.99	AVS00B,1B
1192275	KR32KR32038100M	KR32	KR32	38	100	KRDCKR32M	0,82	1.81	AVS00B,1B
1279775	KR32KR32047050M	KR32	KR32	47	50	KRDCKR32M	0,69	1.52	AVS0B,2B,3B,SVUBB1
1192276	KR32KR32047100M	KR32	KR32	47	100	KRDCKR32M	1,28	2.82	AVS0B,2B,3B,SVUBB1
1279785	KR50KR50065050M	KR50	KR50	65	50	KRDCKR50M	1,16	2.56	SVS4B,5B,SVU65,SVUBB2
1192280	KR50KR50065100M	KR50	KR50	65	100	KRDCKR50M	2,25	4.96	SVS4B,5B,SVU65,SVUBB2
1279791	KR63KR63085050M	KR63	KR63	85	50	KRDCKR63M	2,00	4.41	SVS6B,7B,8B
1279792	KR63KR63085100M	KR63	KR63	85	100	KRDCKR63M	4,02	8.86	SVS6B,7B,8B
1279797	KR80KR80095050M	KR80	KR80	95	50	KRDCKR80M	2,50	5.51	SVU92,120
1279798	KR80KR80095100M	KR80	KR80	95	100	KRDCKR80M	5,00	11.02	SVU92,120



### Spare Differential Connectors

order number	catalogue number	L	back thread	front thread	drive square size
1192295	KRDCKR32M	22	M20 X 2	M18 X 1	3/8 SQ
1192296	KRDCKR50M	22	M28 X 2	M26 X 1	3/8 SQ
1279733	KRDCKR63M	25	M36 X 2	M32 X 1	1/2 SQ
1279734	KRDCKR80M	28	M42 X 2	M38 X 1	1/2 SQ

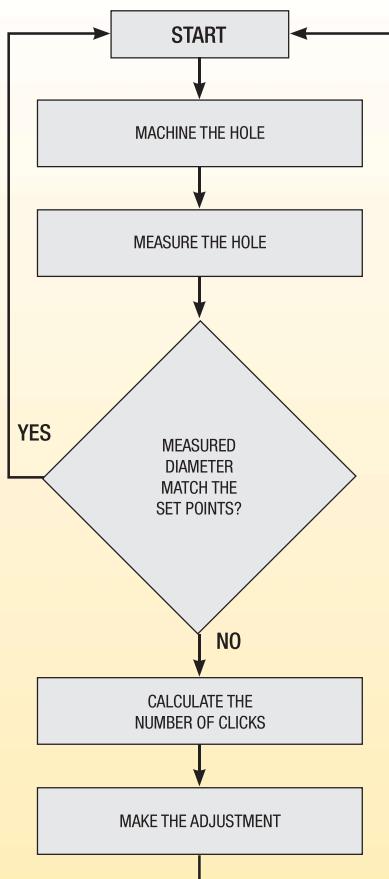

**■ KRM • CLB Pin**

order number	catalogue number	D	D2	LS	L	kg	lbs
4052592	KRM018030CLB004NE	18,0	30,0	29,6	42,0	0,1	.15

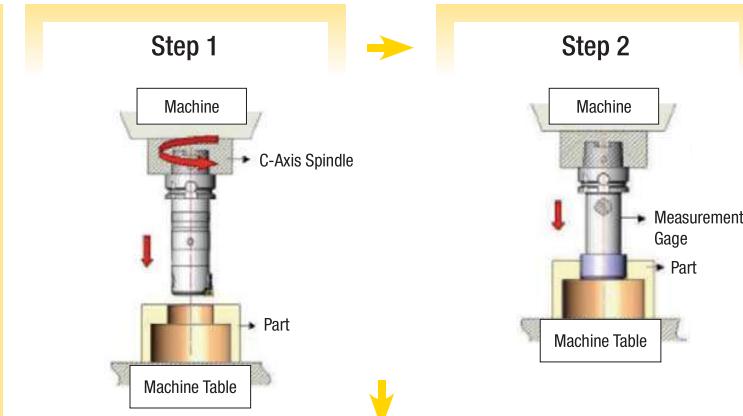

  
Hole Finishing

### The Romicron Closed Loop Boring Process

Closed Loop Boring (CLB) provides the unique possibility to automate the insert wear compensation with minimal investment due to the precise 2 µm adjustment in diameter of these tools per increment. Retrofit existing machines to automated wear compensation using the standard CLB pin without any electronic equipment needed besides a measuring device of holes produced.



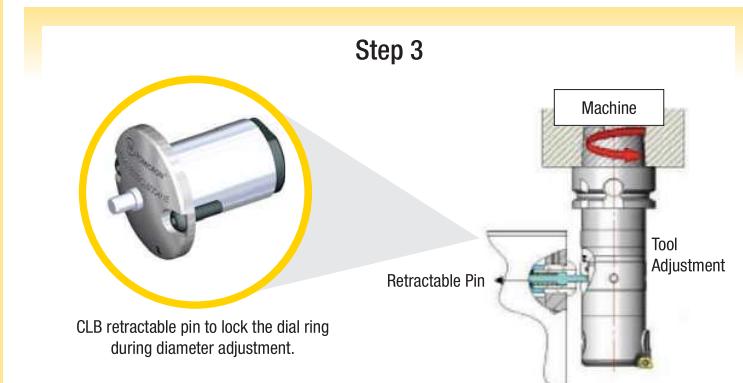
1. A precision system measures the holes after the machine process. The data is sent to the CNC.
2. The values are compared to the set points.
3. If the diameter is in the range of the specified set points, the machine goes to the next hole. Otherwise, the software calculates the necessary increment and automatically adjusts the Romicron using the CLB pin.



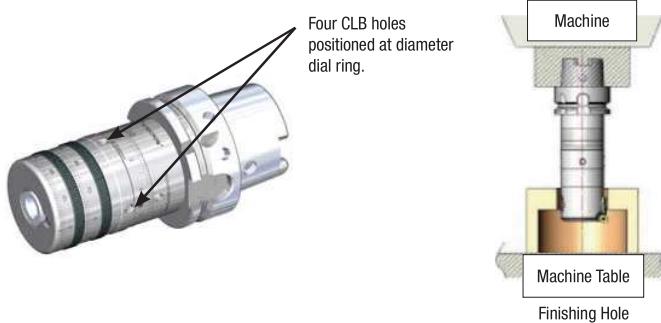
#### CNC Machine Command



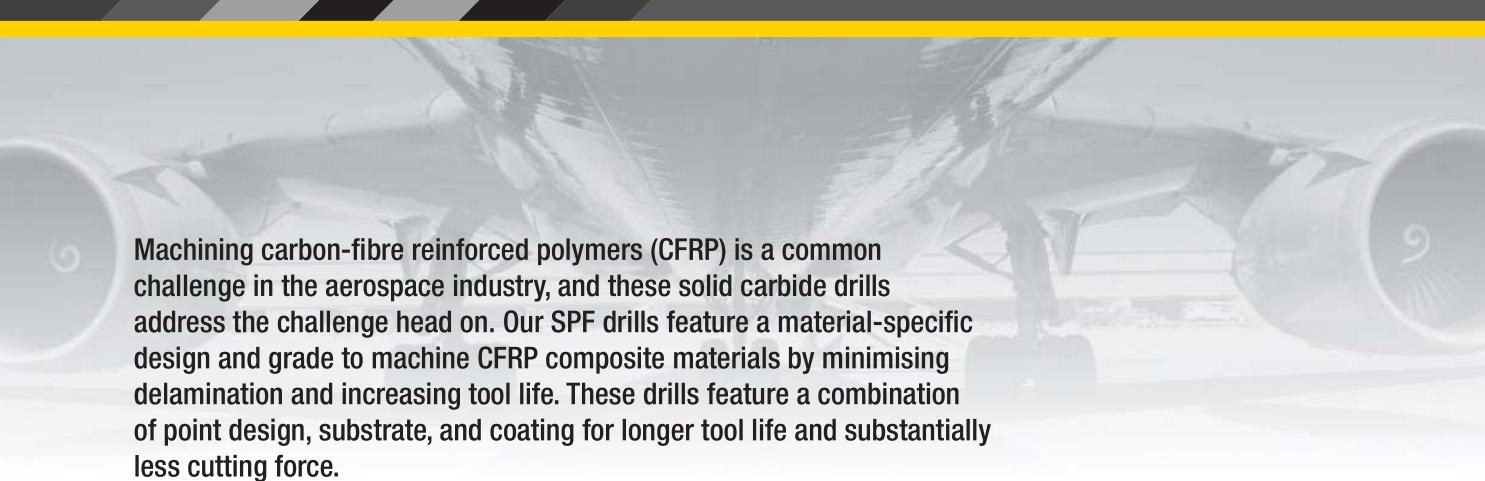
CNC calculates the correction and commands the tool.



#### Step 4



# Ready for Takeoff



Machining carbon-fibre reinforced polymers (CFRP) is a common challenge in the aerospace industry, and these solid carbide drills address the challenge head on. Our SPF drills feature a material-specific design and grade to machine CFRP composite materials by minimising delamination and increasing tool life. These drills feature a combination of point design, substrate, and coating for longer tool life and substantially less cutting force.

The new PCD-tipped PDC251\_ drill provides outstanding wear resistance and tool life, and withstands the most abrasive CFRP materials with high-fibre content. Multiple regrinds are possible with these drills, making them extremely economical to use.

**SPF DRILL**  
For composite exits



**FULL PCD-TIP DRILL**  
For composite/metal stacks

Experience the advantages at your Authorised Kennametal Distributor or at [kennametal.com](http://kennametal.com).

## ■ Romicron™ • Cutting Data

Hole Finishing

Material Group	Condition	Geometry				Cutting Speed – vc m/min			Feed Rate mm/r				
		-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW	
P	1		KCP05		–	180	435	495	0,06–0,25	0,04–0,16	0,06–0,25	–	
			–	–	KTP10	–	435	495	–	–	0,06–0,25	–	
			KT315	–	–	KT315	180	400	495	0,06–0,25	–	–	
			KCP10		–	180	395	465	0,06–0,25	0,04–0,16	0,06–0,25	–	
	2		KC9110		–	–	180	395	495	0,06–0,25	0,04–0,16	–	–
			KC9125		–	–	140	280	360	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KCP25			140	280	360	0,06–0,10	0,04–0,08	–	–	
			KCP05		–	180	265	400	0,06–0,25	0,04–0,16	0,06–0,25	–	
	3		–	–	KTP10	–	265	400	–	–	0,06–0,25	–	
			KT315	–	–	KT315	190	270	390	0,06–0,25	–	–	0,08–0,30
			KCP10		–	180	240	330	0,06–0,25	0,04–0,16	0,06–0,25	–	
			KC9110		–	–	180	240	330	0,06–0,25	0,04–0,16	–	–
	4		KCP25			145	195	320	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16	
			KC9125		–	–	145	195	320	0,06–0,10	0,04–0,08	–	–
			KCP05		–	180	205	275	0,06–0,25	0,04–0,16	0,06–0,25	–	
			–	–	KTP10	–	205	275	–	–	0,06–0,25	–	
	5		KT315	–	–	KT315	180	210	275	0,06–0,25	–	–	0,08–0,30
			KCP10		–	160	190	250	0,06–0,25	0,04–0,16	0,06–0,25	–	
			KC9110		–	–	155	190	240	0,06–0,25	0,04–0,16	–	–
			KCP25			135	155	225	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16	
	6		KC9125		–	–	135	155	225	0,06–0,10	0,04–0,08	–	–
			KCP05		–	90	160	220	0,06–0,25	0,04–0,16	0,06–0,25	–	
			–	–	KTP10	–	160	220	–	–	0,06–0,25	–	
			KT315	–	–	KT315	90	180	220	0,06–0,25	–	–	0,08–0,30
			KCP10		–	90	145	195	0,06–0,25	0,04–0,16	0,06–0,25	–	
			KC9110		–	–	90	145	195	0,06–0,25	0,04–0,16	–	–
			KCP25			75	105	180	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16	
			KC9125		–	–	75	105	180	0,06–0,10	0,04–0,08	–	–
			KCP05		–	150	240	315	0,06–0,25	0,04–0,16	0,06–0,25	–	
			–	–	KTP10	–	240	315	–	–	0,06–0,25	–	
			KT315	–	–	KT315	150	250	315	0,06–0,25	–	–	0,08–0,30
			KCP10		–	150	215	300	0,06–0,25	0,04–0,16	0,06–0,25	–	
			KC9110		–	–	150	215	300	0,06–0,25	0,04–0,16	–	–
			KCP25			120	195	255	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16	
			KC9125		–	–	120	195	255	0,06–0,10	0,04–0,08	–	–
			KCP05		–	140	200	300	0,06–0,25	0,04–0,16	0,06–0,25	–	
			–	–	KTP10	–	200	300	–	–	0,06–0,25	–	
			KT315	–	–	KT315	140	200	300	0,06–0,25	–	–	0,08–0,30
			KCP10		–	120	180	275	0,06–0,25	0,04–0,16	0,06–0,25	–	
			KC9110		–	–	120	180	225	0,06–0,25	0,04–0,16	–	–
			KCP25			105	150	225	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16	
			KC9125		–	–	105	150	225	0,06–0,10	0,04–0,08	–	–

Material Group	Condition	Geometry				Cutting Speed – vc m/min			Feed Rate mm/r				
		-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW	
M	1		–	–	KTP10	–	140	230	315	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	230	315	0,06–0,25	–	–	0,08–0,30
			KC5010	–	–	KC5010	130	215	245	0,06–0,25	–	–	0,08–0,30
			KCM15	–	KCM15	–	105	180	240	0,06–0,12	–	0,06–0,12	–
	2		KC9225	–	–	KC9225	105	180	240	0,06–0,12	–	–	0,08–0,16
			–	–	KTP10	–	140	215	295	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	215	295	0,06–0,25	–	–	0,08–0,30
			KC5010	–	–	KC5010	130	200	245	0,06–0,25	–	–	0,08–0,30
	3		KCM15	–	KCM15	–	105	165	250	0,06–0,12	–	0,06–0,12	–
			KC9225	–	–	KC9225	100	160	230	0,06–0,12	–	–	0,08–0,16
			–	–	KTP10	–	140	200	300	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	200	300	0,06–0,25	–	–	0,08–0,30
			KC5010	–	–	KC5010	130	185	230	0,06–0,25	–	–	0,08–0,30
			KCM15	–	KCM15	–	115	150	255	0,06–0,12	–	0,06–0,12	–
			KC9225	–	–	KC9225	110	150	230	0,06–0,12	–	–	0,08–0,16

**■ Romicron™ • Cutting Data**

Material Group	Condition	Geometry				Cutting Speed – vc m/min			Feed Rate mm/r			
		-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
<b>K</b>	1	○	KCK20	–	KCK20	200	300	540	0,06–0,25	–	0,06–0,25	0,08–0,30
		○	KT315	–	KT315	165	275	490	0,06–0,25	–	–	0,08–0,30
		○	KC9315	–	–	110	275	450	0,06–0,25	–	–	–
	2	○	KC9320	–	–	100	240	400	0,06–0,12	–	–	–
		○	KCK20	–	KCK20	150	240	420	0,06–0,25	–	0,06–0,25	0,08–0,30
		○	KT315	–	KT315	180	275	360	0,06–0,25	–	–	0,08–0,30
	3	○	KC5010	–	KC5010	100	200	265	0,06–0,25	0,04–0,16	–	0,08–0,30
		○	KC9315	–	–	145	260	360	0,06–0,25	–	–	–
		○	KC9320	–	–	140	240	330	0,06–0,12	–	–	–
	4	○	KCK20	–	KCK20	140	210	350	0,06–0,25	–	0,06–0,25	0,08–0,30
		○	KT315	–	KT315	180	230	320	0,06–0,25	–	–	0,08–0,30
		○	KC5010	–	KC5010	120	150	225	0,06–0,25	0,04–0,16	–	0,08–0,30
		○	KC9315	–	–	145	215	275	0,06–0,25	–	–	–
		○	KC9320	–	–	140	210	260	0,06–0,12	–	–	–


**Hole Finishing**

Material Group	Condition	Geometry				Cutting Speed – vc m/min			Feed Rate mm/r			
		-LF	-FWL20	-	-	min	Starting Value	max	-LF	-FWL20	-	-
<b>N</b>	1	○○	KC5410	–	–	200	550	1000	0,10–0,40	0,20–0,50	–	–
		○	KC5410	–	–	200	550	1000	0,10–0,20	–	–	–
		○	–	–	KD1400	–	450	765	3000	–	–	0,06–0,15
	2	○○	–	–	KD1425	–	375	580	1150	–	–	0,06–0,25
		○○	–	–	KD1400	–	400	650	1250	–	–	0,06–0,15
		○○	–	–	KC5410	–	125	275	525	0,10–0,40	0,20–0,50	–
	3	○○	–	–	KD1425	–	250	500	875	–	–	0,06–0,25
		○○	–	–	KC5410	–	125	275	525	0,10–0,20	–	–
		○○	–	–	KD1400	–	375	520	1000	–	–	0,06–0,12
	5	○○	KC5410	–	–	125	200	375	0,10–0,40	–	–	–
		○○	KC5410	–	–	125	200	375	0,10–0,20	–	–	–

Material Group	Condition	Geometry				Cutting Speed – vc m/min			Feed Rate mm/r			
		-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
<b>S</b>	1	○	–	–	KCU10	–	30	55	125	–	–	0,06–0,25
		○	K313	–	–	10	30	60	0,06–0,25	–	–	–
		○	KC5010	–	KC5010	30	55	120	0,06–0,25	0,04–0,16	–	0,08–0,30
		○	–	–	KCU10	–	30	55	125	–	–	0,06–0,25
		○	KC5010	–	KC5010	30	55	120	0,06–0,25	0,04–0,16	–	0,08–0,30
		○	–	–	KCU25	–	10	40	50	–	–	0,06–0,12
	2	○	–	–	KCU10	–	30	35	125	–	–	0,06–0,25
		○	K313	–	–	10	35	60	0,06–0,25	–	–	–
		○	KC5010	–	KC5010	30	60	120	0,06–0,25	0,04–0,16	–	0,08–0,30
		○	–	–	KCU10	–	30	35	125	–	–	0,06–0,25
		○	KC5010	–	KC5010	30	60	120	0,06–0,25	0,04–0,16	–	0,08–0,30
		○	–	–	KCU25	–	10	30	50	–	–	0,06–0,12
	3	○	–	–	KCU10	–	30	70	125	–	–	0,06–0,25
		○	K313	–	–	10	40	60	0,06–0,25	–	–	–
		○	KC5010	–	KC5010	30	70	120	0,06–0,25	0,04–0,16	–	0,08–0,30
		○	–	–	KCU10	–	30	35	125	–	–	0,06–0,25
		○	KC5010	–	KC5010	30	70	120	0,06–0,25	0,04–0,16	–	0,08–0,30
		○	–	–	KCU25	–	25	40	60	–	–	0,06–0,12
	4	○	–	–	KCU10	–	45	70	140	–	–	0,06–0,25
		○	K313	–	–	15	45	65	0,06–0,25	–	–	–
		○	KC5010	–	KC5010	45	70	140	0,06–0,25	0,04–0,16	–	0,08–0,30
		○	–	–	KCU10	–	45	70	140	–	–	0,06–0,25
		○	KC5010	–	KC5010	45	70	140	0,06–0,25	0,04–0,16	–	0,08–0,30
		○	–	–	KCU25	–	25	55	90	–	–	0,06–0,12

## Romicron Assembly Instructions

The required parts for the adaptor assembly are identified on Figures 1 and 2. The SVS model is shown. The instructions are also valid to the SVU and SVUBB models.



Figure 1 — Parts to be assembled

1	Boring head
2	Taper shank
3	Square extension (3/8" or 1/2")
4	Torque wrench
5	Differential connector
6	Positioning pin
7	Lubricant ASL-3G

**WARNING:**

Before starting the assembly procedure, ensure that all surfaces to be assembled together are free of dirt and completely clean.



Figure 2 — Assembled Tool

A



A. Remove the Differential Connector (5) from the Taper Shank (2).

B



B. Lubricate the thread on the Differential Connector (5) with Lubricant ASL-3G (7), supplied with the Taper Shank (2).

C



C. Screw the Differential Connector (5) into the rear thread on the Boring Head (1) until the end of the thread. At this time it is not necessary to tighten the Differential Connector (5). Remember that the Differential Connector (5) has two different screws, so there is no way to assemble the wrong side.

## Romicron Assembly Instructions

**D**


D. Screw the front end of the Taper Shank (2) onto the Differential Connector (5), now located at the back on the Boring Head (1). Screw carefully until the Positioning Pin (6) gently touches the Taper (2) face. Stop!

**F**


F. Insert the square end of the Extension (3) through the Taper Shank (2) and into the Differential Connector (5). Keeping the Positioning Pin (6) and the positioning slot aligned, turn the Extensions (3) anti-clockwise until you see that two Romicron faces are meshing. Ensure that the Positioning Pin (6) is inserted into the slot on the Taper Shank (2).

**E**


E. Unscrew the Taper Shank (2) a little bit until the Positioning Pin (6) is aligned with the positioning slot mark in the Taper Shank (2) face.

**G**

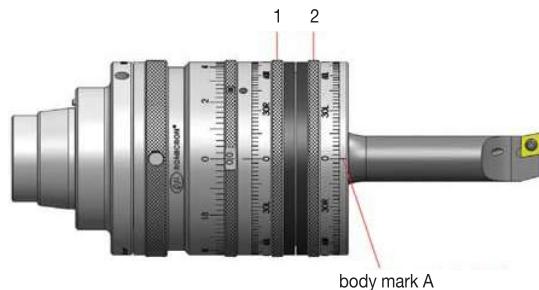

G. Tighten the Differential Connector (5) with the specified required torque, as shown on the table below. Use the Torque Wrench (4) to do this.

Tightening Torque Specifications

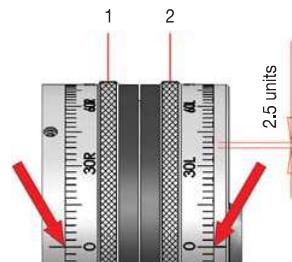
joint size	Torque Nm	drive square
KR32	30	3/8"
KR50	40	3/8"
KR63	55	1/2"
KR80	65	1/2"

Following these procedures will result in a rigid surface contact between the taper and the boring head face.

1. There are 2 balancing dials on the SVUBB system. Align ring 2 "zero" with the body mark A. Align "zero" mark of ring 1 with the "zero" mark of ring 2.



2. Look up your diameter in the table below and read the setting values for ring 1 and ring 2.



### ■ Balancing Table • SVU-BB1 Boring Head

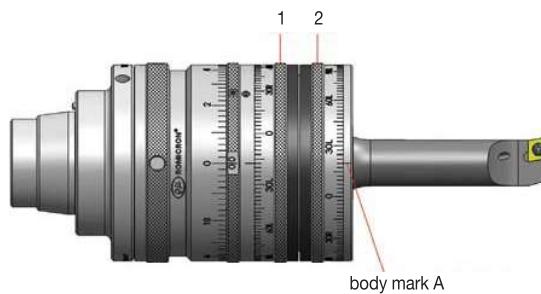
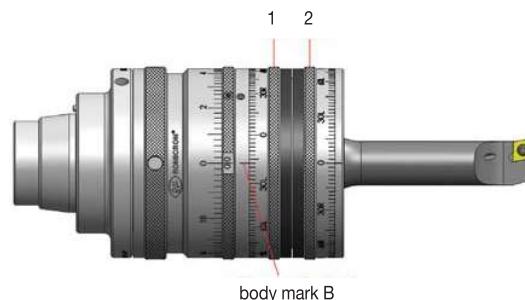
KRBB10FABDRS204C 4–6,4mm					KRBB10SCLDR4060C 6–9mm					KRBB10SCFPR06085C 8,5–11,5mm				
diameter					diameter					diameter				
mm		ring 1		ring 2	mm		ring 1		ring 2	mm		ring 1		ring 2
4	40	L	58	L	6	34	L	66	L	8,5	34	L	66	L
4,1	42	L	58	L	6,1	36	L	66	L	8,6	36	L	68	L
4,2	42	L	54	L	6,2	36	L	64	L	8,7	36	L	64	L
4,3	44	L	54	L	6,3	38	L	62	L	8,8	38	L	62	L
4,4	44	L	50	L	6,4	38	L	62	L	8,9	36	L	60	L
4,5	46	L	50	L	6,5	40	L	60	L	9	40	L	60	L
4,6	46	L	48	L	6,6	40	L	58	L	9,1	40	L	58	L
4,7	46	L	46	L	6,7	40	L	56	L	9,2	42	L	56	L
4,8	46	L	42	L	6,8	40	L	54	L	9,3	40	L	54	L
4,9	46	L	40	L	6,9	42	L	52	L	9,4	42	L	52	L
5	22	R	20	R	7	42	L	54	L	9,5	42	L	50	L
5,1	32	R	26	R	7,1	54	R	60	R	9,6	40	L	46	L
5,2	40	R	32	R	7,2	54	R	60	R	9,7	38	L	42	L
5,3	44	R	34	R	7,3	60	R	60	R	9,8	30	L	32	L
5,4	48	R	36	R	7,4	70	R	72	R	9,9	24	R	22	R
5,5	50	R	36	R	7,5	42	R	40	R	10	24	R	22	R
5,6	52	R	34	R	7,6	48	R	44	R	10,1	26	R	22	R
5,7	54	R	34	R	7,7	50	R	42	R	10,2	44	R	38	R
5,8	56	R	32	R	7,8	50	R	42	R	10,3	48	R	38	R
5,9	58	R	32	R	7,9	52	R	40	R	10,4	52	R	38	R
6	60	R	30	R	8	54	R	40	R	10,5	52	R	38	R
6,1	62	R	30	R	8,1	54	R	38	R	10,6	56	R	36	R
6,2	64	R	28	R	8,2	56	R	38	R	10,7	56	R	36	R
6,3	66	R	28	R	8,3	58	R	36	R	10,8	58	R	34	R
6,4	68	R	24	R	8,4	58	R	34	R	10,9	58	R	32	R
-	-	-	-	-	8,5	60	R	36	R	11	62	R	32	R
-	-	-	-	-	8,6	62	R	34	R	11,1	60	R	30	R
-	-	-	-	-	8,7	62	R	32	R	11,2	62	R	28	R
-	-	-	-	-	8,8	62	R	32	R	11,3	62	R	28	R
-	-	-	-	-	8,9	66	R	28	R	11,4	68	R	26	R
-	-	-	-	-	9	66	R	28	R	11,5	68	R	26	R

(continued)

*(Balancing Table • SVU-BB1 Boring Head — continued)*

3. Set ring 1 first, referencing to body mark B (one dial mark equals 2.5 units).

4. Set ring 2, referencing to body mark A (one dial mark equals 2.5 units).


**KRBB10SCFPR06110C**

11-14mm

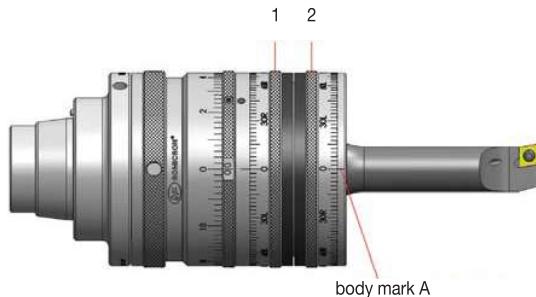
diameter mm	ring 1		ring 2	
11	32	L	66	L
11,1	34	L	64	L
11,2	34	L	62	L
11,3	36	L	60	L
11,4	36	L	58	L
11,5	38	L	58	L
11,6	38	L	56	L
11,7	40	L	54	L
11,8	40	L	52	L
11,9	40	L	52	L
12	38	L	46	L
12,1	34	L	42	L
12,2	26	L	30	L
12,3	24	R	22	R
12,4	28	L	26	L
12,5	44	L	38	R
12,6	44	R	36	R
12,7	50	R	40	R
12,8	50	R	38	R
12,9	52	R	36	R
13	52	R	36	R
13,1	54	R	34	R
13,2	54	R	32	R
13,3	56	R	32	R
13,4	56	R	30	R
13,5	60	R	28	R
13,6	60	R	28	R
13,7	62	R	26	R
13,8	64	R	26	R
13,9	68	R	24	R
14	68	R	24	R

**KRBB10SCFPR06135C**

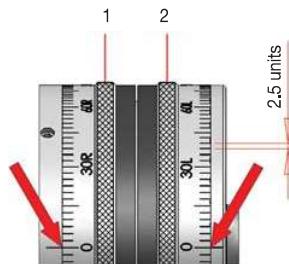
13,5-16,5mm

diameter mm	ring 1		ring 2	
13,5	34	L	62	L
13,6	36	L	60	L
13,7	38	L	58	L
13,8	38	L	56	L
13,9	40	L	56	L
14	42	L	44	L
14,1	42	L	52	L
14,2	44	L	50	L
14,3	42	L	46	L
14,4	34	L	36	L
14,5	18	L	20	L
14,6	10	R	6	R
14,7	18	R	10	R
14,8	40	R	30	R
14,9	44	R	32	R
15	48	R	34	R
15,1	48	R	32	R
15,2	50	R	30	R
15,3	52	R	30	R
15,4	56	R	32	R
15,5	54	R	28	R
15,6	58	R	28	R
15,7	60	R	26	R
15,8	64	R	26	R
15,9	64	R	26	R
16	66	R	24	R
16,1	66	R	22	R
16,2	70	R	20	R
16,3	74	R	18	R
16,4	76	R	16	R
16,5	78	R	14	R

1. There are 2 balancing dials on the SVUBB system. Align ring 2 "zero" with the body mark A. Align "zero" mark of ring 1 with the "zero" mark of ring 2.



2. Look up your diameter in the table below and read the setting values for ring 1 and ring 2.



### ■ Balancing Table • SVU-BB2 Boring Head

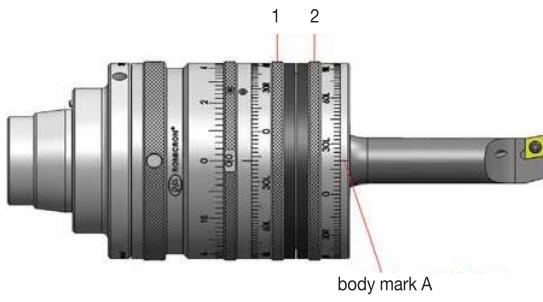
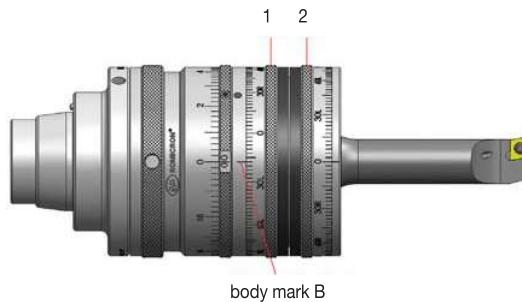
KRBB16SCLDRS406A 6-9,5mm			KRBB16SCFPR06085A 8,5-12mm			KRBB16SCFPR0611A 11-14,5mm			KRBB16SCFPR06135A 13,5-17mm		
diameter	ring 1	ring 2	diameter	ring 1	ring 2	diameter	ring 1	ring 2	diameter	ring 1	ring 2
mm			mm			mm			mm		
6	67,5	L	67,5	L		8,5	67,5	L	67,5	L	
6,1	62,5	L	62,5	L		8,6	62,5	L	62,5	L	
6,2	57,5	L	57,5	L		8,7	57,5	L	57,5	L	
6,3	55	L	55	L		8,8	52,5	L	55	L	
6,4	50	L	50	L		8,9	50	L	50	L	
6,5	47,5	L	47,5	L		9	47,5	L	47,5	L	
6,6	45	L	45	L		9,1	42,5	L	45	L	
6,7	40	L	40	L		9,2	40	L	40	L	
6,8	37,5	L	37,5	L		9,3	37,5	L	37,5	L	
6,9	35	L	35	L		9,4	35	L	35	L	
7	32,5	L	32,5	L		9,5	30	L	32,5	L	
7,1	30	L	30	L		9,6	27,5	L	30	L	
7,2	27,5	L	27,5	L		9,7	25	L	27,5	L	
7,3	25	L	25	L		9,8	22,5	L	25	L	
7,4	22,5	L	22,5	L		9,9	20	L	22,5	L	
7,5	20	L	20	L		10	17,5	L	20	L	
7,6	17,5	L	17,5	L		10,1	15	L	17,5	L	
7,7	15	L	15	L		10,2	12,5	L	15	L	
7,8	12,5	L	12,5	L		10,3	10	L	15	L	
7,9	10	L	12,5	L		10,4	7,5	L	12,5	L	
8	7,5	L	10	L		10,5	5	L	10	L	
8,1	5	L	7,5	L		10,6	0	L	10	L	
8,2	2,5	L	5	L		10,7	5	R	10	L	
8,3	2,5	R	5	L		10,8	45	R	45	L	
8,4	10	L	12,5	R		10,9	10	L	15	R	
8,5	0	R	5	R		11	2,5	L	10	R	
8,6	2,5	R	7,5	R		11,1	2,5	R	10	R	
8,7	7,5	R	7,5	R		11,2	5	R	12,5	R	
8,8	10	R	10	R		11,3	10	R	12,5	R	
8,9	12,5	R	12,5	R		11,4	12,5	R	15	R	
9	12,5	R	15	R		11,5	15	R	17,5	R	
9,1	15	R	17,5	R		11,6	17,5	R	20	R	
9,2	17,5	R	20	R		11,7	20	R	22,5	R	
9,3	20	R	22,5	R		11,8	22,5	R	25	R	
9,4	22,5	R	25	R		11,9	25	R	27,5	R	
9,5	25	R	27,5	R		12	27,5	R	30	R	

(continued)

*(Balancing Table • SVU-BB2 Boring Head — continued)*

3. Set ring 1 first, referencing to body mark B (one dial mark equals 2.5 units).

4. Set ring 2, referencing to body mark A (one dial mark equals 2.5 units).



Hole Finishing

KRBB16SCFPR0616A				KRBB16SCFPR0619A				KRBB16SCFPR0622A						
16–19,5mm				19–22,5mm				22–25,5mm						
diameter	mm	ring 1	ring 2	diameter	mm	ring 1	ring 2	diameter	mm	ring 1	ring 2			
16	65	L	72,5	L	19	60	L	75	L	22	57,5	L	80	L
16,1	57,5	L	65	L	19,1	55	L	70	L	22,1	50	L	72,5	L
16,2	52,5	L	62,5	L	19,2	50	L	65	L	22,2	45	L	70	L
16,3	47,5	L	57,5	L	19,3	45	L	60	L	22,3	37,5	L	65	L
16,4	42,5	L	52,5	L	19,4	40	L	57,5	L	22,4	32,5	L	62,5	L
16,5	40	L	50	L	19,5	35	L	52,5	L	22,5	27,5	L	60	L
16,6	35	L	47,5	L	19,6	30	L	50	L	22,6	22,5	L	57,5	L
16,7	32,5	L	45	L	19,7	27,5	L	47,5	L	22,7	20	L	55	L
16,8	27,5	L	42,5	L	19,8	22,5	L	45	L	22,8	15	L	52,5	L
16,9	25	L	40	L	19,9	20	L	42,5	L	22,9	10	L	52,5	L
17	20	L	37,5	L	20	15	L	42,5	L	23	5	L	50	L
17,1	17,5	L	35	L	20,1	10	L	40	L	23,1	0	R	50	L
17,2	12,5	L	32,5	L	20,2	5	L	40	L	23,2	7,5	R	52,5	L
17,3	10	L	30	L	20,3	0	L	40	L	23,3	12,5	R	52,5	L
17,4	5	L	30	L	20,4	5	R	40	L	23,4	20	R	55	L
17,5	0	L	30	L	20,5	10	R	40	L	23,5	30	R	60	L
17,6	5	R	30	L	20,6	17,5	R	42,5	L	23,6	40	R	65	L
17,7	12,5	R	32,5	L	20,7	27,5	R	47,5	L	23,7	52,5	R	75	L
17,8	22,5	R	37,5	L	20,8	40	R	57,5	L	23,8	67,5	R	90	L
17,9	35	R	47,5	L	20,9	57,5	R	72,5	L	23,9	77,5	L	97,5	R
18	60	R	67,5	L	21	80	R	92,5	L	24	60	L	82,5	R
18,1	75	L	82,5	R	21,1	65	L	77,5	R	24,1	47,5	L	72,5	R
18,2	45	L	55	R	21,2	45	L	60	R	24,2	35	L	62,5	R
18,3	25	L	40	R	21,3	30	L	50	R	24,3	25	L	57,5	R
18,4	15	L	32,5	R	21,4	20	L	45	R	24,4	17,5	L	55	R
18,5	7,5	L	30	R	21,5	12,5	L	40	R	24,5	10	L	52,5	R
18,6	2,5	L	30	R	21,6	5	L	40	R	24,6	5	L	50	R
18,7	2,5	R	30	R	21,7	0	L	40	R	24,7	2,5	R	50	R
18,8	7,5	R	30	R	21,8	5	R	40	R	24,8	7,5	R	50	R
18,9	12,5	R	32,5	R	21,9	10	R	40	R	24,9	12,5	R	52,5	R
19	15	R	35	R	22	12,5	R	42,5	R	25	17,5	R	52,5	R
19,1	20	R	35	R	22,1	17,5	R	42,5	R	25,1	20	R	55	R
19,2	22,5	R	37,5	R	22,2	22,5	R	45	R	25,2	25	R	57,5	R
19,3	27,5	R	40	R	22,3	25	R	47,5	R	25,3	30	R	60	R
19,4	30	R	42,5	R	22,4	30	R	50	R	25,4	35	R	62,5	R
19,5	35	R	45	R	22,5	35	R	52,5	R	25,5	40	R	67,5	R

*(continued)*

(Balancing Table • SVU-BB2 Boring Head — continued)

**KRDEA046AM • KRDE025010M 25,5-33,5mm**

diameter					diameter					diameter				
mm	ring 1		ring 2		mm	ring 1		ring 2		mm	ring 1		ring 2	
25,5	62,5	L	65	L	28,5	57,5	L	60	L	31,5	52,5	L	55	L
25,6	57,5	L	60	L	28,6	52,5	L	55	L	31,6	47,5	L	50	L
25,7	50	L	52,5	L	28,7	45	L	50	L	31,7	42,5	L	45	L
25,8	45	L	47,5	L	28,8	40	L	45	L	31,8	37,5	L	42,5	L
25,9	40	L	45	L	28,9	37,5	L	40	L	31,9	32,5	L	37,5	L
26,0	35	L	40	L	29,0	32,5	L	37,5	L	32,0	27,5	L	35	L
26,1	32,5	L	35	L	29,1	27,5	L	32,5	L	32,1	25	L	30	L
26,2	27,5	L	32,5	L	29,2	25	L	30	L	32,2	20	L	27,5	L
26,3	22,5	L	30	L	29,3	20	L	27,5	L	32,3	17,5	L	22,5	L
26,4	20	L	25	L	29,4	15	L	25	L	32,4	12,5	L	22,5	L
26,5	62,5	L	65	L	29,5	55	L	57,5	L	32,5	50	L	55	L
26,6	55	L	57,5	L	29,6	50	L	52,5	L	32,6	45	L	50	L
26,7	50	L	52,5	L	29,7	45	L	47,5	L	32,7	40	L	45	L
26,8	45	L	47,5	L	29,8	40	L	45	L	32,8	37,5	L	40	L
26,9	40	L	42,5	L	29,9	35	L	40	L	32,9	32,5	L	37,5	L
27,0	35	L	40	L	30,0	32,5	L	35	L	33,0	27,5	L	32,5	L
27,1	30	L	35	L	30,1	27,5	L	32,5	L	33,1	22,5	L	30	L
27,2	25	L	32,5	L	30,2	22,5	L	30	L	33,2	20	L	25	L
27,3	22,5	L	27,5	L	30,3	20	L	25	L	33,3	15	L	22,5	L
27,4	17,5	L	25	L	30,4	15	L	22,5	L	33,4	12,5	L	20	L
27,5	60	L	62,5	L	30,5	55	L	57,5	L	33,5	50	L	52,5	L
27,6	52,5	L	55	L	30,6	47,5	L	52,5	L	33,6	45	L	47,5	L
27,7	47,5	L	50	L	30,7	42,5	L	47,5	L	33,7	40	L	42,5	L
27,8	42,5	L	45	L	30,8	37,5	L	42,5	L	33,8	35	L	40	L
27,9	37,5	L	42,5	L	30,9	35	L	37,5	L	33,9	30	L	35	L
28,0	32,5	L	37,5	L	31,0	30	L	35	L	34,0	27,5	L	32,5	L
28,1	30	L	35	L	31,1	25	L	32,5	L	34,1	22,5	L	27,5	L
28,2	25	L	30	L	31,2	22,5	L	27,5	L	34,2	20	L	25	L
28,3	20	L	27,5	L	31,3	17,5	L	25	L	34,3	15	L	22,5	L
28,4	17,5	L	25	L	31,4	12,5	L	22,5	L	34,4	10	L	20	L

**KRDEA046AM • KRDE033010M 33,5-44,4mm**

diameter					diameter					diameter				
mm	ring 1		ring 2		mm	ring 1		ring 2		mm	ring 1		ring 2	
33,5	55	L	57,5	L	36,5	47,5	L	52,5	L	39,5	42,5	L	47,5	L
33,6	50	L	52,5	L	36,6	42,5	L	47,5	L	39,6	37,5	L	42,5	L
33,7	45	L	47,5	L	36,7	37,5	L	42,5	L	39,7	32,5	L	37,5	L
33,8	40	L	42,5	L	36,8	35	L	37,5	L	39,8	27,5	L	35	L
33,9	35	L	40	L	36,9	30	L	35	L	39,9	25	L	30	L
34,0	30	L	35	L	37,0	25	L	32,5	L	40,0	20	L	27,5	L
34,1	25	L	32,5	L	37,1	22,5	L	27,5	L	40,1	15	L	25	L
34,2	22,5	L	27,5	L	37,2	17,5	L	25	L	40,2	10	L	22,5	L
34,3	17,5	L	25	L	37,3	12,5	L	22,5	L	40,3	7,5	L	20	L
34,4	12,5	L	22,5	L	37,4	7,5	L	20	L	40,4	2,5	L	17,5	L
34,5	52,5	L	57,5	L	37,5	47,5	L	50	L	40,5	40	L	45	L
34,6	47,5	L	50	L	37,6	42,5	L	45	L	40,6	35	L	40	L
34,7	42,5	L	47,5	L	37,7	37,5	L	40	L	40,7	30	L	37,5	L
34,8	37,5	L	42,5	L	37,8	32,5	L	37,5	L	40,8	27,5	L	32,5	L
34,9	32,5	L	37,5	L	37,9	27,5	L	35	L	40,9	22,5	L	30	L
35,0	27,5	L	35	L	38,0	25	L	30	L	41,0	17,5	L	27,5	L
35,1	25	L	30	L	38,1	20	L	27,5	L	41,1	15	L	22,5	L
35,2	20	L	27,5	L	38,2	15	L	25	L	41,2	10	L	20	L
35,3	15	L	25	L	38,3	10	L	22,5	L	41,3	5	L	20	L
35,4	10	L	22,5	L	38,4	5	L	20	L	41,4	0	R	17,5	L
35,5	50	L	55	L	38,5	45	L	47,5	L	41,5	37,5	L	42,5	L
35,6	45	L	50	L	38,6	40	L	42,5	L	41,6	35	L	37,5	L
35,7	40	L	45	L	38,7	35	L	40	L	41,7	30	L	35	L
35,8	35	L	40	L	38,8	30	L	35	L	41,8	25	L	32,5	L
35,9	30	L	37,5	L	38,9	25	L	32,5	L	41,9	22,5	L	27,5	L
36,0	27,5	L	32,5	L	39,0	22,5	L	27,5	L	42,0	17,5	L	25	L
36,1	22,5	L	30	L	39,1	17,5	L	25	L	42,1	12,5	L	22,5	L
36,2	17,5	L	27,5	L	39,2	15	L	22,5	L	42,2	7,5	L	20	L
36,3	15	L	22,5	L	39,3	10	L	20	L	42,3	2,5	L	17,5	L
36,4	10	L	20	L	39,4	5	L	17,5	L	42,4	5	R	20	L

(continued)

*(Balancing Table • SVU-BB2 Boring Head — continued)*
**KRDEA051AM • KRDE043010M 43–65,9mm**

diameter			diameter			diameter			diameter		
mm	ring 1	ring 2									
43,0	55	L	65	L		46,0	42,5	L	55	L	
43,1	47,5	L	57,5	L		46,1	37,5	L	50	L	
43,2	40	L	52,5	L		46,2	30	L	45	L	
43,3	35	L	47,5	L		46,3	25	L	42,5	L	
43,4	30	L	42,5	L		46,4	20	L	37,5	L	
43,5	22,5	L	40	L		46,5	15	L	35	L	
43,6	17,5	L	37,5	L		46,6	7,5	L	32,5	L	
43,7	12,5	L	32,5	L		46,7	2,5	L	30	L	
43,8	5	L	32,5	L		46,8	7,5	R	32,5	L	
43,9	2,5	R	32,5	L		46,9	17,5	R	35	L	
44,0	50	L	60	L		47,0	40	L	52,5	L	
44,1	42,5	L	55	L		47,1	35	L	47,5	L	
44,2	37,5	L	50	L		47,2	27,5	L	42,5	L	
44,3	32,5	L	45	L		47,3	22,5	L	40	L	
44,4	25	L	42,5	L		47,4	17,5	L	35	L	
44,5	20	L	37,5	L		47,5	12,5	L	32,5	L	
44,6	15	L	35	L		47,6	5	L	32,5	L	
44,7	10	L	32,5	L		47,7	2,5	R	32,5	L	
44,8	2,5	L	30	L		47,8	12,5	R	35	L	
44,9	7,5	R	32,5	L		47,9	27,5	R	42,5	L	
45,0	47,5	L	57,5	L		48,0	37,5	L	50	L	
45,1	40	L	52,5	L		48,1	30	L	45	L	
45,2	35	L	47,5	L		48,2	25	L	40	L	
45,3	30	L	42,5	L		48,3	20	L	37,5	L	
45,4	22,5	L	40	L		48,4	15	L	35	L	
45,5	17,5	L	35	L		48,5	7,5	L	32,5	L	
45,6	12,5	L	32,5	L		48,6	0	L	32,5	L	
45,7	5	L	32,5	L		48,7	7,5	R	32,5	L	
45,8	2,5	R	32,5	L		48,8	20	R	37,5	L	
45,9	12,5	R	35	L		48,9	40	R	52,5	L	
55,0	17,5	L	35	L		58,0	7,5	L	32,5	L	
55,1	10	L	32,5	L		58,1	0	R	30	L	
55,2	2,5	L	32,5	L		58,2	10	R	32,5	L	
55,3	5	R	32,5	L		58,3	22,5	R	40	L	
55,4	15	R	35	L		58,4	47,5	R	57,5	L	
55,5	32,5	R	45	L		58,5	75	L	82,5	R	
55,6	65	R	75	L		58,6	35	L	47,5	R	
55,7	55	L	65	R		58,7	17,5	L	37,5	R	
55,8	27,5	L	42,5	R		58,8	5	L	32,5	R	
55,9	12,5	L	35	R		58,9	2,5	R	32,5	R	
56,0	12,5	L	35	L		59,0	2,5	L	32,5	L	
56,1	7,5	L	32,5	L		59,1	5	R	32,5	L	
56,2	0	R	32,5	L		59,2	15	R	35	L	
56,3	10	R	32,5	L		59,3	35	R	47,5	L	
56,4	22,5	R	40	L		59,4	72,5	R	80	L	
56,5	47,5	R	57,5	L		59,5	52,5	L	62,5	R	
56,6	80	L	87,5	R		59,6	25	L	40	R	
56,7	37,5	L	50	R		59,7	10	L	32,5	R	
56,8	17,5	L	35	R		59,8	2,5	L	32,5	R	
56,9	7,5	L	32,5	R		59,9	5	R	32,5	R	
57,0	10	L	32,5	L		60,0	0	R	30	L	
57,1	2,5	L	32,5	L		60,1	10	R	32,5	L	
57,2	5	R	32,5	L		60,2	25	R	40	L	
57,3	15	R	35	L		60,3	50	R	60	L	
57,4	32,5	R	45	L		60,4	72,5	L	80	R	
57,5	67,5	R	77,5	L		60,5	35	L	47,5	R	
57,6	52,5	L	62,5	R		60,6	15	L	35	R	
57,7	25	L	40	R		60,7	5	L	32,5	R	
57,8	10	L	32,5	R		60,8	2,5	R	32,5	R	
57,9	2,5	L	32,5	R		60,9	10	R	32,5	R	

*(continued)*

(Balancing Table • SVU-BB2 Boring Head — continued)

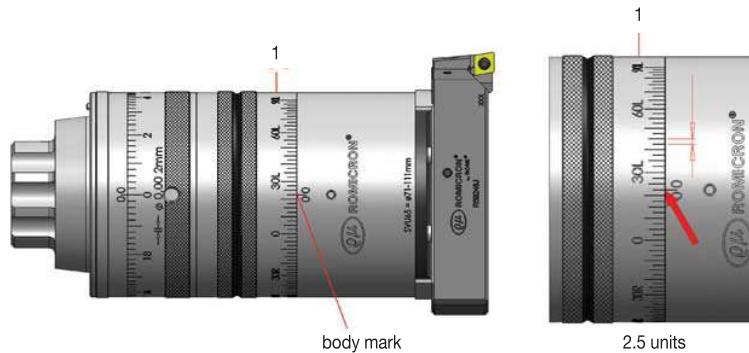
KRDEA012AM • KRDE065012M 65–82,9mm								
diameter			diameter			diameter		
mm	ring 1	ring 2	mm	ring 1	ring 2	mm	ring 1	ring 2
65,0	5	L	37,5	R		68,0	12,5	R
65,1	2,5	R	37,5	R		68,1	17,5	R
65,2	10	R	37,5	R		68,2	22,5	R
65,3	15	R	40	R		68,3	27,5	R
65,4	20	R	42,5	R		68,4	32,5	R
65,5	25	R	45	R		68,5	40	R
65,6	30	R	47,5	R		68,6	45	R
65,7	35	R	52,5	R		68,7	52,5	R
65,8	42,5	R	57,5	R		68,8	60	R
65,9	47,5	R	62,5	R		68,9	70	R
66,0	2,5	R	35	R		69,0	17,5	R
66,1	7,5	R	37,5	R		69,1	22,5	R
66,2	12,5	R	40	R		69,2	27,5	R
66,3	20	R	40	R		69,3	32,5	R
66,4	25	R	45	R		69,4	37,5	R
66,5	30	R	47,5	R		69,5	45	R
66,6	35	R	52,5	R		69,6	50	R
66,7	40	R	55	R		69,7	57,5	R
66,8	47,5	R	60	R		69,8	67,5	R
66,9	55	R	67,5	R		69,9	67,5	R
67,0	7,5	R	37,5	R		70,0	22,5	R
67,1	12,5	R	40	R		70,1	27,5	R
67,2	17,5	R	42,5	R		70,2	32,5	R
67,3	22,5	R	45	R		70,3	37,5	R
67,4	30	R	47,5	R		70,4	42,5	R
67,5	35	R	50	R		70,5	50	R
67,6	40	R	55	R		70,6	57,5	R
67,7	45	R	60	R		70,7	65	R
67,8	52,5	R	65	R		70,8	65	R
67,9	60	R	72,5	R		70,9	65	R
74,0	40	R	55	R		77,0	55	R
74,1	45	R	60	R		77,1	65	R
74,2	52,5	R	65	R		77,2	65	R
74,3	60	R	72,5	R		77,3	65	R
74,4	70	R	82,5	R		77,4	65	R
74,5	70	R	82,5	R		77,5	65	R
74,6	70	R	82,5	R		77,6	65	R
74,7	70	R	82,5	R		77,7	65	R
74,8	70	R	82,5	R		77,8	65	R
74,9	70	R	82,5	R		77,9	65	R
75,0	52,5	R	65	R		78,0	62,5	R
75,1	57,5	R	70	R		78,1	82,5	R
75,2	70	R	82,5	R		78,2	82,5	R
75,3	70	R	82,5	R		78,3	82,5	R
75,4	70	R	82,5	R		78,4	82,5	R
75,5	70	R	82,5	R		78,5	82,5	R
75,6	70	R	82,5	R		78,6	82,5	R
75,7	70	R	82,5	R		78,7	82,5	R
75,8	70	R	82,5	R		78,8	82,5	R
75,9	70	R	82,5	R		78,9	82,5	R
76,0	50	R	62,5	R		79,0	75	R
76,1	57,5	R	70	R		79,1	75	R
76,2	67,5	R	80	R		79,2	75	R
76,3	67,5	R	80	R		79,3	75	R
76,4	67,5	R	80	R		79,4	75	R
76,5	67,5	R	80	R		79,5	75	R
76,6	67,5	R	80	R		79,6	75	R
76,7	67,5	R	80	R		79,7	75	R
76,8	67,5	R	80	R		79,8	75	R
76,9	67,5	R	80	R		79,9	75	R

(continued)

*(Balancing Table • SVU-BB2 Boring Head — continued)*
**KRDEA012AM • KRDE065012M 65–100mm**

diameter				diameter				diameter			
mm	ring 1	ring 2		mm	ring 1	ring 2		mm	ring 1	ring 2	
83,0	10	L	40	L	86,0	10	R	40	L	89,0	42,5
83,1	2,5	L	37,5	L	86,1	20	R	45	L	89,1	72,5
83,2	5	R	40	L	86,2	35	R	52,5	L	89,2	62,5
83,3	15	R	42,5	L	86,3	57,5	R	72,5	L	89,3	37,5
83,4	27,5	R	47,5	L	86,4	75	L	87,5	R	89,4	22,5
83,5	47,5	R	62,5	L	86,5	45	L	60	R	89,5	10
83,6	77,5	R	90	L	86,6	27,5	L	47,5	R	89,6	0
83,7	55	L	70	R	86,7	15	L	42,5	R	89,7	5
83,8	32,5	L	50	R	86,8	5	L	40	R	89,8	12,5
83,9	17,5	L	42,5	R	86,9	2,5	R	40	R	89,9	17,5
84,0	5	L	37,5	L	87,0	17,5	R	42,5	L	90,0	65
84,1	2,5	R	37,5	L	87,1	30	R	50	L	90,1	70
84,2	12,5	R	40	L	87,2	52,5	R	67,5	L	90,2	40
84,3	25	R	47,5	L	87,3	82,5	L	95	R	90,3	22,5
84,4	42,5	R	57,5	L	87,4	50	L	65	R	90,4	12,5
84,5	72,5	R	85	L	87,5	30	L	50	R	90,5	2,5
84,6	62,5	L	75	R	87,6	17,5	L	42,5	R	90,6	5
84,7	37,5	L	55	R	87,7	7,5	L	40	R	90,7	10
84,8	22,5	L	45	R	87,8	2,5	R	37,5	R	90,8	17,5
84,9	10	L	40	R	87,9	7,5	R	40	R	90,9	22,5
85,0	2,5	R	40	L	88,0	27,5	R	47,5	L	91,0	75
85,1	10	R	40	L	88,1	47,5	R	62,5	L	91,1	47,5
85,2	22,5	R	45	L	88,2	77,5	R	90	L	91,2	27,5
85,3	37,5	R	55	L	88,3	55	L	70	R	91,3	15
85,4	65	R	77,5	L	88,4	35	L	52,5	R	91,4	5
85,5	70	L	82,5	R	88,5	17,5	L	42,5	R	91,5	2,5
85,6	40	L	57,5	R	88,6	7,5	L	40	R	91,6	10
85,7	22,5	L	45	R	88,7	0	R	40	R	91,7	15
85,8	12,5	L	40	R	88,8	7,5	R	40	R	91,8	22,5
85,9	2,5	L	37,5	R	88,9	12,5	R	42,5	R	91,9	27,5
92,0	50	L	65	R	95,0	12,5	L	40	R	98,0	7,5
92,1	30	L	50	R	95,1	2,5	L	37,5	R	98,1	12,5
92,2	17,5	L	42,5	R	95,2	5	R	37,5	R	98,2	20
92,3	7,5	L	40	R	95,3	10	R	40	R	98,3	25
92,4	2,5	R	37,5	R	95,4	17,5	R	42,5	R	98,4	30
92,5	7,5	R	40	R	95,5	22,5	R	45	R	98,5	37,5
92,6	15	R	40	R	95,6	27,5	R	47,5	R	98,6	42,5
92,7	20	R	45	R	95,7	35	R	52,5	R	98,7	50
92,8	25	R	47,5	R	95,8	40	R	57,5	R	98,8	57,5
92,9	32,5	R	50	R	95,9	47,5	R	62,5	R	98,9	70
93,0	35	L	52,5	R	96,0	5	L	40	R	99,0	12,5
93,1	17,5	L	42,5	R	96,1	2,5	R	40	R	99,1	17,5
93,2	7,5	L	40	R	96,2	10	R	40	R	99,2	25
93,3	0	R	37,5	R	96,3	15	R	42,5	R	99,3	30
93,4	7,5	R	40	R	96,4	22,5	R	45	R	99,4	35
93,5	12,5	R	42,5	R	96,5	27,5	R	47,5	R	99,5	42,5
93,6	20	R	42,5	R	96,6	32,5	R	52,5	R	99,6	47,5
93,7	25	R	47,5	R	96,7	40	R	55	R	99,7	55
93,8	30	R	50	R	96,8	45	R	60	R	99,8	67,5
93,9	37,5	R	55	R	96,9	52,5	R	67,5	R	99,9	67,5
94,0	22,5	L	45	R	97,0	2,5	R	37,5	R	100,0	17,5
94,1	10	L	40	R	97,1	7,5	R	40	R	100,1	22,5
94,2	2,5	L	40	R	97,2	15	R	40	R	100,2	27,5
94,3	5	R	40	R	97,3	20	R	45	R	100,3	35
94,4	12,5	R	40	R	97,4	25	R	47,5	R	100,4	40
94,5	17,5	R	42,5	R	97,5	32,5	R	50	R	100,5	47,5
94,6	25	R	45	R	97,6	37,5	R	55	R	100,6	55
94,7	30	R	50	R	97,7	45	R	60	R	100,7	65
94,8	35	R	52,5	R	97,8	50	R	65	R	100,8	65
94,9	42,5	R	57,5	R	97,9	60	R	72,5	R	100,9	65

**■ Balancing Table • SVU-65 Boring Head**



1. There is 1 balancing dial on the SVU system.
2. Look up your diameter in the table below and read the setting values for ring 1.
3. Set ring 1, referencing to the body mark (one dial mark equals 2.5 units).

Hole Finishing

KRDE070019M				KRDE083019M								
KRCSCFPR061E 71–76mm		KRCSCFPR062E 75,5–81,5mm		KRCSCFPR063E 80–85mm		KRCSCFPR061E 84–89mm		KRCSCFPR062E 88,5–93,5mm				
diameter mm	balancing ring setting	diameter mm	balancing ring setting	diameter mm	balancing ring setting	diameter mm	balancing ring setting	diameter mm	balancing ring setting			
70,99	40	L	75,49	35	L	80,01	30	L	84,00	47,5	L	
71,12	37,5	L	75,59	32,5	L	80,16	27,5	L	84,12	45	L	
71,27	35	L	75,77	30	L	80,34	25	L	84,25	42,5	L	
71,42	32,5	L	75,95	27,5	L	80,52	22,5	L	84,38	40	L	
71,60	30	L	76,10	25	L	80,70	20	L	84,51	37,5	L	
71,78	27,5	L	76,28	22,5	L	80,87	17,5	L	84,66	35	L	
71,96	25	L	76,48	20	L	81,08	15	L	84,81	32,5	L	
72,14	22,5	L	76,66	17,5	L	81,25	12,5	L	84,96	30	L	
72,31	20	L	76,84	15	L	81,46	10	L	85,12	27,5	L	
72,49	17,5	L	77,04	12,5	L	81,64	7,5	L	85,27	25	L	
72,69	15	L	77,22	10	L	81,84	5	L	85,42	22,5	L	
72,87	12,5	L	77,42	7,5	L	82,02	2,5	L	85,60	20	L	
73,08	10	L	77,62	5	L	82,22	0	-	85,78	17,5	L	
73,25	7,5	L	77,80	2,5	L	82,42	2,5	R	85,93	15	L	
73,46	5	L	78,00	0	-	82,60	5	R	86,11	12,5	L	
73,66	2,5	L	78,21	2,5	R	82,80	7,5	R	86,28	10	L	
73,86	0	-	78,38	5	R	82,98	10	R	86,46	7,5	L	
74,04	2,5	R	78,59	7,5	R	83,19	12,5	R	86,64	5	L	
74,24	5	R	78,77	10	R	83,36	15	R	86,82	2,5	L	
74,45	7,5	R	78,97	12,5	R	83,57	17,5	R	87,00	0	-	
74,63	10	R	79,15	15	R	83,74	20	R	87,17	2,5	R	
74,83	12,5	R	79,35	17,5	R	83,92	22,5	R	87,33	5	R	
75,01	15	R	79,53	20	R	84,10	25	R	87,50	7,5	R	
75,21	17,5	R	79,71	22,5	R	84,28	27,5	R	87,68	10	R	
75,39	20	R	79,88	25	R	84,46	30	R	87,86	12,5	R	
75,57	22,5	R	80,06	27,5	R	84,61	32,5	R	88,04	15	R	
75,74	25	R	80,24	30	R	84,79	35	R	88,21	17,5	R	
75,92	27,5	R	80,42	32,5	R	84,94	37,5	R	88,37	20	R	
76,00	30	R	80,49	35	R	84,99	40	R	88,54	22,5	R	
-	-	-	-	-	-	-	-	-	88,70	25	R	
-	-	-	-	-	-	-	-	-	88,85	27,5	R	
-	-	-	-	-	-	-	-	-	89,00	30	R	
-	-	-	-	-	-	-	-	-	-	93,27	32,5	R
-	-	-	-	-	-	-	-	-	-	93,42	35	R
-	-	-	-	-	-	-	-	-	-	93,50	37,5	R

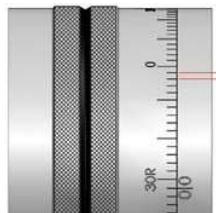
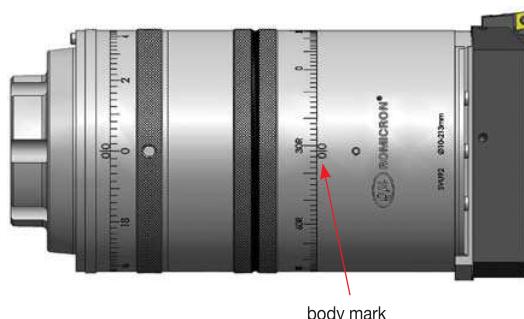
(continued)

*(Balancing Table • SVU-65 Boring Head — continued)*

KRDE083019M			KRDE096019M					
KRCSCFPR063E 93–98mm			KRCSCFPR061E 97–102mm		KRCSCFPR062E 101.5–106.5mm		KRCSCFPR063E 106–111mm	
diameter mm	balancing ring setting		diameter mm	balancing ring setting		diameter mm	balancing ring setting	
92,99	35	L	97,00	55	L	101,50	45	L
93,14	32.5	L	97,05	52.5	L	101,60	42.5	L
93,29	30	L	97,16	50	L	101,73	40	L
93,45	27.5	L	97,28	47.5	L	101,85	37.5	L
93,60	25	L	97,38	45	L	101,98	35	L
93,78	22.5	L	97,51	42.5	L	102,13	32.5	L
93,93	20	L	97,61	40	L	102,26	30	L
94,11	17.5	L	97,74	37.5	L	102,41	27.5	L
94,26	15	L	97,87	35	L	102,54	25	L
94,44	12.5	L	98,02	32.5	L	102,69	22.5	L
94,62	10	L	98,15	30	L	102,84	20	L
94,79	7.5	L	98,30	27.5	L	103,00	17.5	L
94,95	5	L	98,45	25	L	103,15	15	L
95,12	2.5	L	98,58	22.5	L	103,30	12.5	L
95,30	0	-	98,73	20	L	103,48	10	L
95,48	2.5	R	98,88	17.5	L	103,63	7.5	L
95,66	5	R	99,06	15	L	103,78	5	L
95,83	7.5	R	99,21	12.5	L	103,96	2.5	L
96,01	10	R	99,36	10	L	104,11	0	-
96,19	12.5	R	99,52	7.5	L	104,27	2.5	R
96,34	15	R	99,70	5	L	104,44	5	R
96,52	17.5	R	99,85	2.5	L	104,60	7.5	R
96,67	20	R	100,03	0	-	104,75	10	R
96,85	22.5	R	100,18	2.5	R	104,90	12.5	R
97,00	25	R	100,33	5	R	105,08	15	R
97,16	27.5	R	100,51	7.5	R	105,23	17.5	R
97,31	30	R	100,66	10	R	105,38	20	R
97,46	32.5	R	100,81	12.5	R	105,54	22.5	R
97,61	35	R	100,97	15	R	105,69	25	R
97,76	37.5	R	101,14	17.5	R	105,82	27.5	R
97,89	40	R	101,30	20	R	105,97	30	R
97,99	42.5	R	101,45	22.5	R	106,10	32.5	R
-	-	-	101,57	25	R	106,25	35	R
-	-	-	101,73	27.5	R	106,38	37.5	R
-	-	-	104,39	30	R	106,43	40	R
-	-	-	102,01	32.5	R	106,53	42.5	R
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## ■ Balancing Table • SVU-92 Boring Head



1. There is 1 balancing dial on the SVU system.

2. Look up your diameter in the table below and read the setting values for ring 1.

3. Set ring 1, referencing to the body mark (one dial mark equals 2.5 units)

KRDE101023M				KRDE120023M			
KRCSCFPR061F 101-108mm		KRCSCFPR062F 107,5-114,5mm		KRCSCFPR063F 114-121mm		KRCSCFPR061F 120-127mm	
diameter mm	balancing ring setting	diameter mm	balancing ring setting	diameter mm	balancing ring setting	diameter mm	balancing ring setting
100,99	36	L	107,49	34	L	114,00	30
101,19	34	L	107,62	32	L	114,22	28
101,40	32	L	107,80	30	L	114,40	26
101,57	30	L	108,00	28	L	114,60	24
101,78	28	L	108,20	26	L	114,81	22
101,98	26	L	108,41	24	L	115,01	20
102,18	24	L	108,61	22	L	115,24	18
102,39	22	L	108,81	20	L	115,44	16
102,59	20	L	109,02	18	L	115,67	14
102,79	18	L	109,25	16	L	115,87	12
103,02	16	L	109,45	14	L	116,10	10
103,23	14	L	109,68	12	L	116,31	8
103,45	12	L	109,88	10	L	116,54	6
103,66	10	L	110,11	8	L	116,76	4
103,89	8	L	110,34	6	L	116,97	2
104,11	6	L	110,57	4	L	117,20	0
104,32	4	L	110,77	2	L	117,42	2
104,55	2	L	111,00	0	-	117,65	4
104,78	0	-	111,23	2	R	117,86	6
105,00	2	R	111,46	4	R	118,08	8
105,23	4	R	111,66	6	R	118,31	10
105,44	6	R	111,89	8	R	118,52	12
105,66	8	R	112,12	10	R	118,75	14
105,89	10	R	107,19	12	R	118,95	16
106,10	12	R	112,55	14	R	119,18	18
106,32	14	R	112,75	16	R	119,38	20
106,53	16	R	112,98	18	R	119,58	22
106,76	18	R	113,18	20	R	119,79	24
106,96	20	R	113,39	22	R	119,99	26
107,16	22	R	113,59	24	R	120,19	28
107,37	24	R	113,79	26	R	120,37	30
107,57	26	R	114,00	28	R	120,57	32
107,77	28	R	114,20	30	R	120,75	34
107,98	30	R	114,38	32	R	120,93	36
108,00	32	R	114,50	34	R	121,01	38
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

(continued)

*(Balancing Table • SVU-92 Boring Head — continued)*

KRDE120023M			KRDE139026M								
KRCSCFPR063F 133-140mm			KRCSCFPR061F 139-146mm			KRCSCFPR062F 145,5-152,5mm			KRCSCFPR063F 152-159mm		
diameter mm	balancing ring setting	L	diameter mm	balancing ring setting	L	diameter mm	balancing ring setting	L	diameter mm	balancing ring setting	
132,99	34	L	138,99	50	L	145,49	44	L	151,99	40	L
133,10	32	L	139,09	48	L	145,67	42	L	152,12	38	L
133,27	30	L	139,22	46	L	145,80	40	L	152,27	36	L
133,45	28	L	139,34	44	L	145,95	38	L	152,40	34	L
133,63	26	L	139,47	42	L	146,08	36	L	152,55	32	L
133,81	24	L	139,60	40	L	146,23	34	L	152,70	30	L
133,99	22	L	139,73	38	L	146,35	32	L	152,86	28	L
134,19	20	L	139,88	36	L	146,51	30	L	153,01	26	L
134,37	18	L	140,00	34	L	146,66	28	L	153,16	24	L
134,57	16	L	140,16	32	L	146,81	26	L	153,31	22	L
134,77	14	L	140,31	30	L	146,99	24	L	153,49	20	L
134,98	12	L	140,46	28	L	147,14	22	L	153,64	18	L
135,18	10	L	140,61	26	L	147,29	20	L	153,82	16	L
135,36	8	L	140,77	24	L	147,47	18	L	153,97	14	L
135,56	6	L	140,92	22	L	147,62	16	L	154,15	12	L
135,76	4	L	141,10	20	L	147,80	14	L	154,33	10	L
135,97	2	L	141,25	18	L	147,96	12	L	154,48	8	L
136,17	0	-	141,43	16	L	148,13	10	L	154,66	6	L
136,37	2	R	141,58	14	L	148,31	8	L	154,84	4	L
136,58	4	R	141,76	12	L	148,49	6	L	155,02	2	L
162,18	6	R	141,94	10	L	148,64	4	L	155,19	0	-
136,98	8	R	142,11	8	L	148,82	2	L	155,35	2	R
137,19	10	R	142,27	6	L	149,00	0	-	155,52	4	R
137,39	12	R	142,44	4	L	149,17	2	R	155,70	6	R
137,59	14	R	142,62	2	L	149,35	4	R	155,88	8	R
137,80	16	R	142,80	0	-	149,53	6	R	156,03	10	R
137,97	18	R	142,98	2	R	149,68	8	R	156,21	12	R
138,18	20	R	143,15	4	R	149,86	10	R	156,39	14	R
138,38	22	R	143,31	6	R	150,04	12	R	156,54	16	R
138,56	24	R	143,48	8	R	150,19	14	R	156,72	18	R
138,73	26	R	143,66	10	R	150,37	16	R	156,87	20	R
138,91	28	R	143,84	12	R	150,55	18	R	157,05	22	R
139,09	30	R	143,99	14	R	150,70	20	R	157,20	24	R
139,27	32	R	144,17	16	R	150,85	22	R	157,35	26	R
139,45	34	R	144,32	18	R	151,03	24	R	157,51	28	R
139,60	36	R	144,50	20	R	151,18	26	R	157,66	30	R
139,78	38	R	144,65	22	R	151,33	28	R	157,81	32	R
139,93	40	R	144,83	24	R	151,49	30	R	157,96	34	R
140,00	42	R	144,98	26	R	151,64	32	R	158,09	36	R
-	-	-	145,14	28	R	151,79	34	R	158,24	38	R
-	-	-	145,29	30	R	151,92	36	R	158,37	40	R
-	-	-	145,44	32	R	152,07	38	R	158,50	42	R
-	-	-	145,57	34	R	152,20	40	R	158,62	44	R
-	-	-	145,72	36	R	152,32	42	R	158,75	46	R
-	-	-	145,87	38	R	152,45	44	R	158,88	48	R
-	-	-	145,97	40	R	152,50	46	R	158,98	50	R
-	-	-	146,00	42	R	-	-	-	159,00	52	R

*(continued)*

(Balancing Table • SVU-92 Boring Head — continued)

## KRDE156026M

KRCSCFPR061F 156–163mm			KRCSCFPR062F 162,5–169,5mm			KRCSCFPR063F 169–176mm		
diameter mm	balancing ring setting		diameter mm	balancing ring setting		diameter mm	balancing ring setting	
156,01	56	L	162,51	50	L	169,01	44	L
156,11	54	L	162,61	48	L	169,11	42	L
156,21	52	L	162,71	46	L	169,24	40	L
156,31	50	L	162,81	44	L	169,37	38	L
156,41	48	L	162,94	42	L	169,49	36	L
156,51	46	L	163,07	40	L	169,62	34	L
156,62	44	L	163,20	38	L	169,75	32	L
156,74	42	L	163,32	36	L	169,90	30	L
156,87	40	L	163,45	34	L	170,03	28	L
157,00	38	L	163,58	32	L	170,18	26	L
157,12	36	L	163,70	30	L	170,33	24	L
157,25	34	L	163,86	28	L	170,46	22	L
157,38	32	L	164,01	26	L	170,61	20	L
157,53	30	L	164,13	24	L	170,76	18	L
157,66	28	L	164,29	22	L	170,92	16	L
157,81	26	L	164,44	20	L	171,07	14	L
157,94	24	L	164,59	18	L	171,22	12	L
158,09	22	L	164,74	16	L	171,37	10	L
158,24	20	L	164,90	14	L	171,55	8	L
158,39	18	L	165,05	12	L	171,70	6	L
158,55	16	L	165,20	10	L	171,86	4	L
158,70	14	L	165,35	8	L	172,01	2	L
158,85	12	L	165,53	6	L	172,19	0	-
159,00	10	L	165,68	4	L	172,34	2	R
159,18	8	L	165,84	2	L	172,49	4	R
159,33	6	L	165,99	0	-	172,64	6	R
159,49	4	L	166,17	2	R	172,82	8	R
159,64	2	L	166,32	4	R	172,97	10	R
159,82	0	-	166,47	6	R	173,13	12	R
159,97	2	R	166,62	8	R	173,28	14	R
160,12	4	R	166,80	10	R	173,43	16	R
160,27	6	R	166,95	12	R	173,58	18	R
160,45	8	R	167,11	14	R	173,74	20	R
160,60	10	R	167,26	16	R	173,89	22	R
160,76	12	R	167,41	18	R	174,04	24	R
160,91	14	R	167,56	20	R	174,17	26	R
161,06	16	R	167,72	22	R	174,32	28	R
161,21	18	R	167,87	24	R	174,45	30	R
161,37	20	R	168,00	26	R	174,60	32	R
161,52	22	R	168,15	28	R	174,73	34	R
161,67	24	R	168,28	30	R	174,85	36	R
161,82	26	R	168,43	32	R	174,98	38	R
161,95	28	R	168,55	34	R	175,11	40	R
162,10	30	R	168,68	36	R	175,23	42	R
162,23	32	R	168,81	38	R	175,34	44	R
162,36	34	R	168,94	40	R	175,46	46	R
162,51	36	R	169,06	42	R	175,56	48	R
162,64	38	R	169,16	44	R	175,67	50	R
162,74	40	R	169,29	46	R	175,77	52	R
162,86	42	R	169,39	48	R	175,87	54	R
162,99	44	R	169,49	50	R	175,95	56	R
162,99	46	R	169,49	52	R	176,00	58	R

(continued)



*(Balancing Table • SVU-92 Boring Head — continued)*
**KRDE175026M**

KRCSCFPR061F 175–182mm			KRCSCFPR062F 181,5–188,5mm			KRCSCFPR063F 188–195mm		
diameter mm	balancing ring setting		diameter mm	balancing ring setting		diameter mm	balancing ring setting	
175,01	64	L	181,51	56	L	188,0108	48	L
175,06	62	L	181,56	54	L	188,1124	46	L
175,13	60	L	181,64	52	L	188,2114	44	L
175,21	58	L	181,74	50	L	188,3156	42	L
175,29	56	L	181,84	48	L	188,4426	40	L
175,36	54	L	181,94	46	L	188,5442	38	L
175,46	52	L	182,04	44	L	188,6712	36	L
175,56	50	L	182,14	42	L	188,7982	34	L
175,64	48	L	182,27	40	L	188,8998	32	L
175,74	46	L	182,37	38	L	189,0268	30	L
175,87	44	L	182,50	36	L	189,1792	28	L
175,97	42	L	182,63	34	L	189,3062	26	L
176,07	40	L	182,75	32	L	189,4332	24	L
176,20	38	L	182,88	30	L	189,5602	22	L
176,30	36	L	183,01	28	L	189,7126	20	L
176,43	34	L	183,13	26	L	189,8396	18	L
176,56	32	L	183,26	24	L	189,992	16	L
176,68	30	L	183,41	22	L	190,1444	14	L
176,81	28	L	183,54	20	L	190,2714	12	L
176,96	26	L	183,69	18	L	190,4238	10	L
177,09	24	L	183,82	16	L	191,3762	8	L
177,22	22	L	183,97	14	L	191,7286	6	L
177,37	20	L	184,12	12	L	190,8556	4	L
177,50	18	L	184,25	10	L	191,008	2	L
177,65	16	L	184,40	8	L	191,1604	0	—
177,80	14	L	184,56	6	L	191,3128	2	R
177,93	12	L	184,71	4	L	191,4652	4	R
178,08	10	L	184,86	2	L	191,6176	6	R
178,23	8	L	184,99	0	—	191,7446	8	R
178,38	6	L	185,14	2	R	191,897	10	R
178,54	4	L	185,29	4	R	192,0494	12	R
178,66	2	L	185,45	6	R	192,2018	14	R
178,82	0	—	185,60	8	R	192,3288	16	R
178,97	2	R	185,75	10	R	192,4812	18	R
179,12	4	R	185,88	12	R	192,6082	20	R
179,27	6	R	186,03	14	R	192,7606	22	R
179,43	8	R	186,18	16	R	192,8876	24	R
179,55	10	R	186,31	18	R	193,04	26	R
179,71	12	R	186,46	20	R	193,167	28	R
179,86	14	R	186,59	22	R	193,294	30	R
180,01	16	R	186,74	24	R	193,421	32	R
180,14	18	R	186,87	26	R	193,548	34	R
180,29	20	R	186,99	28	R	193,675	36	R
180,42	22	R	187,12	30	R	193,7766	38	R
180,57	24	R	187,25	32	R	193,9036	40	R
180,70	26	R	187,38	34	R	194,0052	42	R
180,82	28	R	187,50	36	R	194,1068	44	R
180,95	30	R	187,63	38	R	194,2338	46	R
181,08	32	R	187,73	40	R	194,3354	48	R
181,20	34	R	187,86	42	R	194,4116	50	R
181,33	36	R	187,96	44	R	194,5132	52	R
181,46	38	R	188,06	46	R	194,6148	54	R
181,56	40	R	188,16	48	R	194,691	56	R
181,69	42	R	188,26	50	R	194,7672	58	R
181,79	44	R	188,37	52	R	194,8434	60	R
181,89	46	R	188,44	54	R	194,9196	62	R
181,99	48	R	188,49	56	R	194,9958	64	R
181,99	50	R	—	—	—	194,9958	66	R

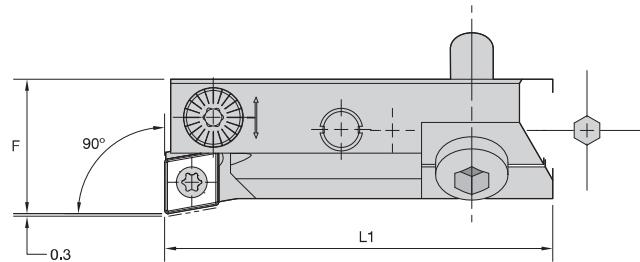
*(continued)*

(Balancing Table • SVU-92 Boring Head — continued)

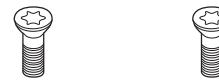
## KRDE193026M

KRCSCFPR061F 193–200mm			KRCSCFPR062F 199,5–206,5mm			KRCSCFPR063F 206–213mm		
diameter mm	balancing ring setting		diameter mm	balancing ring setting		diameter mm	balancing ring setting	
192,99	64	L	199,49	54	L	205,994	46	L
193,07	62	L	199,62	52	L	206,1464	44	L
193,14	60	L	199,72	50	L	206,248	42	L
193,22	58	L	199,80	48	L	206,375	40	L
193,29	56	L	199,90	46	L	206,4766	38	L
193,37	54	L	200,03	44	L	206,6036	36	L
193,47	52	L	200,13	42	L	206,7306	34	L
193,57	50	L	200,23	40	L	206,8576	32	L
193,65	48	L	200,36	38	L	206,9846	30	L
193,75	46	L	200,48	36	L	207,1116	28	L
193,88	44	L	200,61	34	L	207,2386	26	L
193,98	42	L	200,71	32	L	207,391	24	L
194,08	40	L	200,86	30	L	207,518	22	L
194,21	38	L	200,99	28	L	207,6704	20	L
194,34	36	L	201,12	26	L	207,7974	18	L
194,46	34	L	201,24	24	L	207,9498	16	L
194,59	32	L	201,40	22	L	208,1022	14	L
194,72	30	L	201,52	20	L	208,2292	12	L
194,84	28	L	201,68	18	L	208,3816	10	L
194,97	26	L	201,80	16	L	208,534	8	L
195,10	24	L	201,96	14	L	208,6864	6	L
195,25	22	L	202,11	12	L	208,8388	4	L
195,38	20	L	202,26	10	L	208,9912	2	L
195,53	18	L	202,41	8	L	209,1182	0	—
195,68	16	L	202,54	6	L	209,2706	2	R
195,81	14	L	202,69	4	L	209,423	4	R
195,96	12	L	202,84	2	L	209,5754	6	R
196,11	10	L	203,00	0	—	209,7278	8	R
196,27	8	L	203,15	2	R	209,8802	10	R
196,42	6	L	203,30	4	R	210,0326	12	R
196,57	4	L	203,45	6	R	210,1596	14	R
196,70	2	L	203,61	8	R	210,312	16	R
196,85	0	—	203,76	10	R	210,4644	18	R
197,00	2	R	203,89	12	R	210,5914	20	R
197,15	4	R	204,04	14	R	210,7438	22	R
197,31	6	R	204,19	16	R	210,8708	24	R
197,46	8	R	204,32	18	R	210,9978	26	R
197,61	10	R	204,47	20	R	211,1502	28	R
197,76	12	R	204,60	22	R	211,2772	30	R
197,89	14	R	204,75	24	R	211,4042	32	R
198,04	16	R	204,88	26	R	211,5312	34	R
198,20	18	R	205,03	28	R	211,6582	36	R
198,32	20	R	205,16	30	R	211,7598	38	R
198,48	22	R	205,28	32	R	84,8868	40	R
198,60	24	R	205,41	34	R	211,9884	42	R
198,76	26	R	205,54	36	R	212,1154	44	R
198,88	28	R	205,64	38	R	212,217	46	R
199,01	30	R	205,77	40	R	212,3186	48	R
199,14	32	R	205,87	42	R	212,4202	50	R
199,26	34	R	205,99	44	R	212,4964	52	R
199,39	36	R	206,10	46	R	212,598	54	R
199,52	38	R	206,20	48	R	212,6742	56	R
199,62	40	R	206,30	50	R	212,7758	58	R
199,75	42	R	206,38	52	R	212,852	60	R
199,85	44	R	206,48	54	R	212,9028	62	R
199,95	46	R	206,50	56	R	212,979	64	R
200,00	48	R	—	—	—	213,0044	66	R

- All cartridges have internal coolant supply directed to the cutting edge.
- 0,01mm diameter adjustment respective 2 µm with vernier scale within a range of 0,3mm.
- Radial adjustment without influence on axial position.
- Axial adjustment range of 1mm.
- Smallest diameters can be machined starting from 28,0mm.



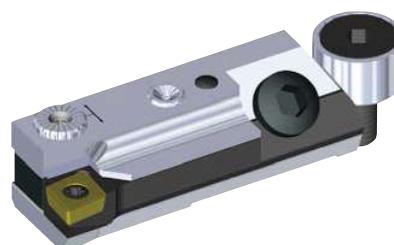
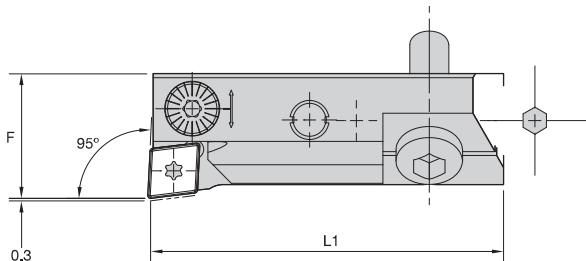
#### ■ 90° Lead • Micro-Adjustable Cartridge • C-Style



order number	catalogue number	F	L1	gage insert	insert screw	set screw
right hand 3784474	FBSCFCR09CA06F	16,15	45,50	CCMT060204	12148068700	12147629800
left hand 3784475	FBSCFCL09CA06F	16,15	45,50	CCMT060204	12148068700	12147629800

NOTE: For use with custom solution fine-boring and countersinking tools.

- All cartridges have internal coolant supply directed to the cutting edge.
- 0,01mm diameter adjustment respective 2 µm with vernier scale within a range of 0,3mm.
- Radial adjustment without influence on axial position.
- Axial adjustment range of 1mm.
- Smallest diameters can be machined starting from 28,0mm.



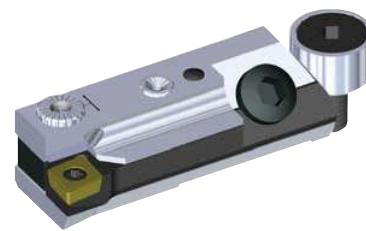
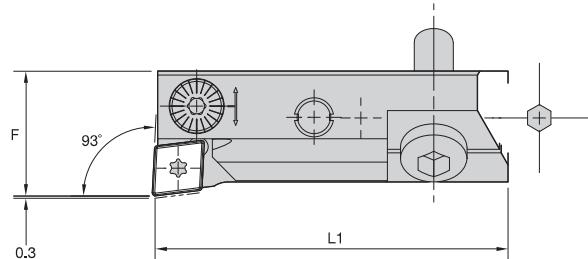
#### ■ 95° Lead • Micro-Adjustable Cartridge • C-Style



order number	catalogue number	F	L1	gage insert	insert screw	set screw
right hand 3784476	FBSCLCR09CA06F	16,15	45,50	CCMT060204	12148068700	12147629800
left hand 3784477	FBSCLCL09CA06F	16,15	45,50	CCMT060204	12148068700	12147629800

NOTE: For use with custom solution fine-boring and countersinking tools.

- All cartridges have internal coolant supply directed to the cutting edge.
- 0,01mm diameter adjustment respective 2 µm with vernier scale within a range of 0,3mm.
- Radial adjustment without influence on axial position.
- Axial adjustment range of 1mm.
- Smallest diameters can be machined starting from 28,0mm.



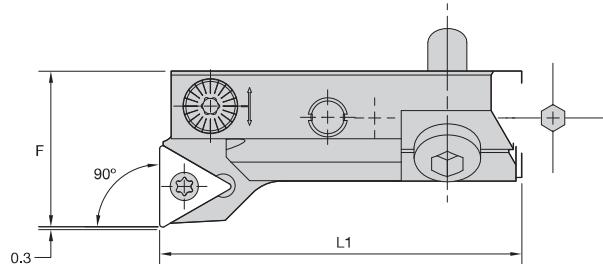
Hole Finishing

## ■ 93° Lead • Micro-Adjustable Cartridge • C-Style

order number	catalogue number	F	L1	gage insert	insert screw	set screw
right hand 2907289	FBSCUCR09CA06F	16,15	45,50	CCMT060204	12148068700	12147629800

NOTE: For use with custom solution fine-boring and countersinking tools.

- All cartridges have internal coolant supply directed to the cutting edge.
- 0,01mm diameter adjustment respective 2 µm with vernier scale within a range of 0,3mm.
- Radial adjustment without influence on axial position.
- Axial adjustment range of 1mm.
- Smallest diameters can be machined starting from 28,0mm.



Hole Finishing

**■ 90° Lead • Micro-Adjustable Cartridge • T-Style**

order number	catalogue number	F	L1	gage insert	insert screw	set screw
right hand 2907291	FBSTFCR09CA11F	20,15	45,50	TCMT110204	12148068700	12147629800

NOTE: For use with custom solution fine-boring and countersinking tools.

# ➤ ModBORE™

One system includes highly flexible roughing and fine-boring heads to large bridge tooling with optimum amount of tooling components.

## Primary Application

This premium boring line enables roughing to fine-boring operations using one system with a large diameter range from 9,75–2,205mm (.384–86.8"). The ModBORE system can be used in most workpiece materials in metalcutting applications along with the latest Kennametal standard ISO turning inserts.

## Features and Benefits

### Complete System

- Twin blade heads for roughing to semi-finishing operations starting from diameter 23,5mm (.925").
- Fine-boring heads for finishing in diameters 9,75–2,205mm (.384–86.8").
- Bridge tooling for large diameters up to 2,205mm (86.8") standard with both roughing and fine-finishing heads.
- Through-coolant capability in all styles.

### Resolution

- Fine adjustable roughing heads.
- 0,01mm (.0004") diameter adjustment respective 2 µm (.00008") with easy-to-read large vernier scale with fine-boring heads.

**Highest versatility possible on the shop floor with the ModBORE™ roughing and fine boring systems.**



### Product Variety

- KM™ shanks for use in all spindles with compatible adaptors.
- HSK shanks for use without adaptors.
- Inch shanks are most economical to use with compatible adaptors.

### Customisation

- Engineered solutions available.
- Anti-chatter devices available.
- Cartridges can be designed into standard boring heads for added versatility.



# ➤ ModBORE™ Fine-Boring System

Based on KM™, HSK, and inch SSF couplings, match all spindle specifications direct or indirect via adaptors. The ModBORE fine-boring system uses standard ISO/ANSI turning inserts for maximum performance and flexibility.

## **RBHT • Twin Cutters for Rough and Semi-Finish Boring**

- Diameters 23,5–153mm (.925–6.024").
- KM, HSK, and inch straight shank back end versions available.
- Preloaded serration and ground support face for stable connection, minimal vibration, and maximum accuracy, with easy diameter adjustment.
- Large selection of blades sets:
  - Staggered — efficient machining of large depths of cut.
  - 70° — for challenging applications requiring stable corner radii and full use of inserts.
  - 90° — most precise machining results.
- Generous clearance and through coolant enable free chip flow and improved tool life.
- All toolholders accept positive standard inserts. Toolholders in diameter 65,5mm (2.58") and greater for negative standard inserts.



## **FBHM • Offset Boring Bar and Cartridge Heads for Fine Finishing**

- Diameters 9,75–320mm (.384–12.59").
- KM-TS™, HSK, CV, DV, and BT steep taper back end styles available.
- Precision-ground micrometric screw enables fine adjustment of 2 µm (.00008"). Large TiN-coated dial is easy to adjust and read.
- Standard steel and carbide boring bars adjust in length for maximum stability.
- Aluminium diameter extender with insert cartridges and counterweight used for diameters starting at 86mm (3.38") for maximum flexibility.
- Through coolant at the cutting edge improves tool life, surface finish, and chip evacuation.



## **FBHO • Offset Boring Bar Heads for Fine Finishing**

- Diameters 9,75–88,1mm (.384–3.46").
- KM™, HSK, and inch straight shank back end styles available.
- Precision-ground micrometric screw enables fine adjustment of 2 µm (.00008") via easy-to-read vernier scale.
- Standard steel and carbide boring bars can be adjusted in length for maximum stability.
- Through coolant at the cutting edge improves tool life, surface finish, and chip evacuation.



## **FBHS • Cartridge Boring Heads for Fine Finishing**

- Diameters 23,5–153mm (.925–6.024").
- KM, HSK, and inch straight shank back end styles available.
- Precision-ground micrometric screw enables fine adjustment of 2 µm (.00008") via easy-to-read vernier scale.
- Large selection of insert holders:
  - 95° — for use with wiper turning inserts.
  - 90° regular diameter — for efficient machining in large depths of cut.
  - 90° oversized diameter — for enhanced boring head diameter capabilities.
- Generous clearance and through coolant at the cutting edge improve tool life, surface finish, and chip evacuation.

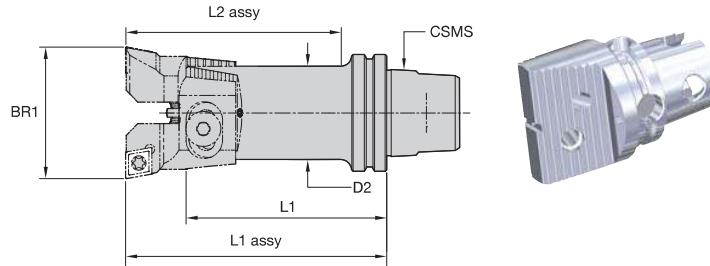


## **BT • Bridge Tools for Rough and Finish Boring**

- Diameters 150–2,205mm (5.91–86.81").
- Sophisticated ground serration and T-style bolt clamping provide high cutting forces, and prevent diameter changes when heads are clamped.
- Only 10 bridge consoles are needed for diameters up to 655mm (25.7").
- KM, HSK, and some steep taper adaptors with ground serration available as standard. Through coolant at the cutting edge improves tool life and surface finish.
- Diameters 650–2,205mm (25.5–86.81") covered by three aluminium-based consoles and two sets of steel slides for mounting rough and finish boring heads.
- 90° roughing head sets ensure precise height alignment, and negative standard inserts enable high metal removal rates.
- Counterweight for better balancing and fine-boring head with precision-ground micrometric screw for adjustments of 2 µm (.00008").



- Order blade sets separately; see pages K120–K122.



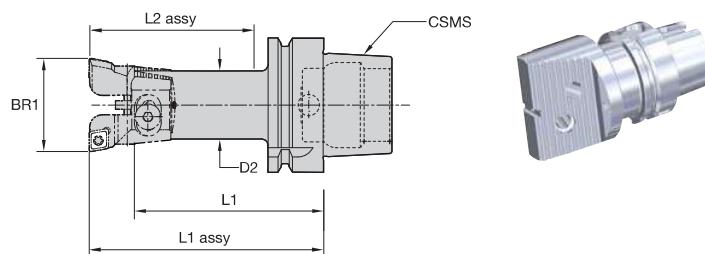
### ■ RBHT • KM™ Rough-Boring Twin Cutters



Hole Finishing

order number	catalogue number	BR1 bore range	CSMS system size	D2	L1	L1 assy	L2 assy	blade screw	washer	pin
3586519	KM32RBHT24	23.500-30.500	KM32	20,0	75,4	90,0	76,0	840.142.200	841.142.200	841.342.200
3586520	KM32RBHT30	29.500-40.000	KM32	25,0	83,8	100,0	86,0	840.142.250	841.142.250	841.342.200
3586521	KM40RBHT40	39.500-50.500	KM40	32,0	68,8	90,0	74,0	840.142.320	841.142.320	841.342.200
3586522	KM50RBHT50	49.500-66.500	KM50	42,0	62,2	90,0	70,0	840.142.420	841.142.200	841.342.420
3586543	KM50RBHT66	65.500-87.500	KM50	55,0	63,0	100,0	100,0	840.142.550	841.142.550	841.342.420
3586544	KM50RBHT87	86.500-115.500	KM50	72,0	70,5	120,0	120,0	840.142.720	841.142.720	841.342.420
3586545	KM63UTRBHT87	86.500-115.500	KM63UT	72,0	70,5	120,0	120,0	840.142.720	841.142.720	841.342.420
3586546	KM63UTRBHT115	114.500-153.000	KM63UT	94,0	83,2	150,0	150,0	840.142.940	841.142.940	841.342.420

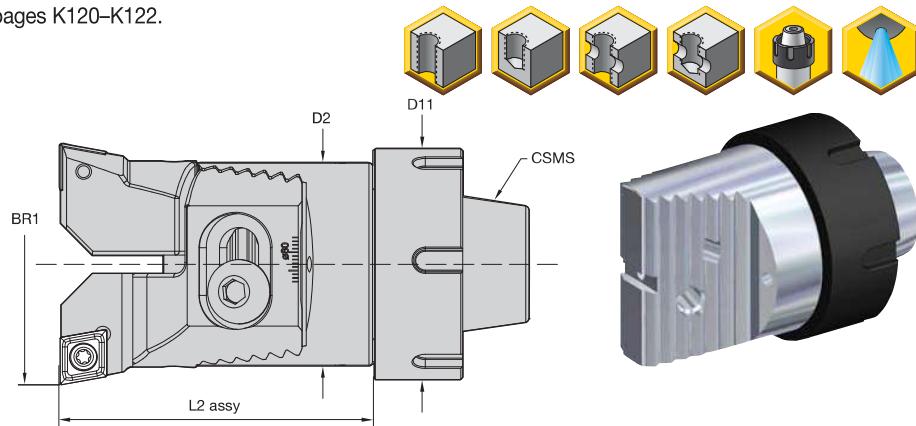
- Order blade sets separately; see pages K120–K122.



### ■ RBHT • HSK Rough-Boring Twin Cutters

order number	catalogue number	BR1 bore range	CSMS system size	D2	L1	L1 assy	L2 assy	blade screw	washer	pin
3586547	HSK63RBHT24	23.500-30.500	HSK63A	20,0	75,4	90,0	64,1	840.142.200	841.142.200	841.342.200
3586548	HSK63RBHT30	29.500-40.000	HSK63A	25,0	88,8	105,0	79,1	840.142.250	841.142.250	841.342.200
3586549	HSK63RBHT40	39.500-50.500	HSK63A	32,0	92,2	110,0	84,1	840.142.320	841.142.320	841.342.200
3586550	HSK63RBHT50	49.500-66.500	HSK63A	42,0	92,2	120,0	94,1	840.142.420	841.142.420	841.342.200
3586551	HSK63RBHT66	65.500-87.500	HSK63A	55,0	95,5	125,0	125,0	840.142.550	841.142.720	841.342.420
3586563	HSK63RBHT87	86.500-115.500	HSK63A	72,0	95,5	145,0	145,0	840.142.720	841.142.720	841.342.420

- Order blade sets separately; see pages K120-K122.



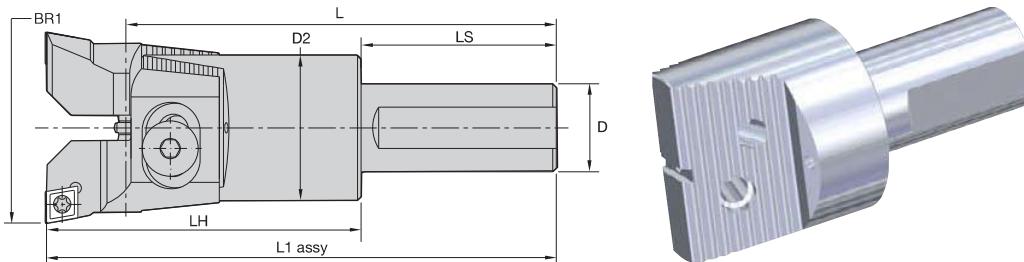
#### ■ RBHT • ER Rough-Boring Twin Cutters



Hole Finishing

order number	catalogue number	BR1 bore range	CSMS system size	D11	D2	L2 assy	blade screw	washer	pin
5544148	ER25RBHT40	39,500-50,500	ER25	39,0	32,0	65,5	840.142.320	841.142.320	841.342.200
5544190	ER32RBHT50	49,500-66,500	ER32	49,5	42,0	75,5	840.142.420	841.142.200	841.342.420
5544192	ER40RBHT66	65,500-87,500	ER40	62,7	55,0	85,5	840.142.550	841.142.550	841.342.420

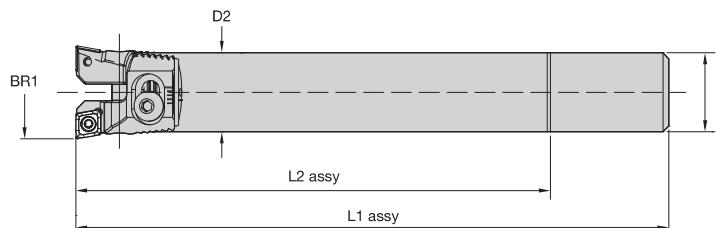
- Order blade sets separately; see pages K120-K122.



#### ■ RBHT • Steel Straight Shank Rough Boring Twin Cutters

order number	catalogue number	BR1 bore range	D	D2	L	LH	L1 assy	LS	blade screw	washer	pin
3586564	SF075RBHT24	23,500-30,500	19,1	20,0	135,4	27,8	150,0	107,6	840.142.200	841.142.200	841.342.200
3586565	SF100RBHT30	29,500-40,000	25,4	25,0	153,8	30,6	170,0	123,2	840.142.250	841.142.250	841.342.200
3586566	SF125RBHT40	39,500-50,500	31,8	32,0	168,8	31,3	190,0	137,5	840.142.320	841.142.320	841.342.200
3586567	SF100RBHT50	49,500-66,500	25,4	42,0	118,1	62,2	145,9	55,9	840.142.420	841.142.420	841.342.420
3586569	SF125RBHT66	65,500-87,500	31,8	55,0	123,7	63,0	160,7	60,7	840.142.550	841.142.720	841.342.420
3586570	SF150RBHT87	86,500-115,500	38,1	72,0	142,1	70,5	191,6	71,6	840.142.720	841.142.720	841.342.420
3586571	SF200RBHT115	114,500-153,000	50,8	94,0	169,1	82,6	235,9	86,5	840.142.940	841.142.940	841.342.420

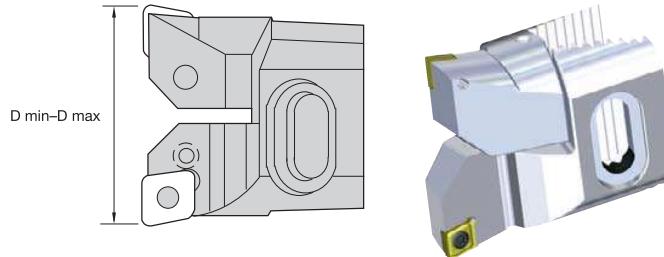
- Order blade sets separately; see pages K120–K122.



### RBHT • Straight Shank Rough-Boring Twin Cutters • Metric

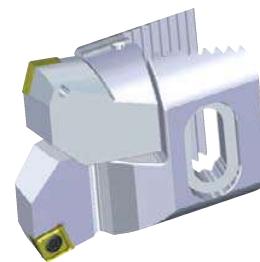
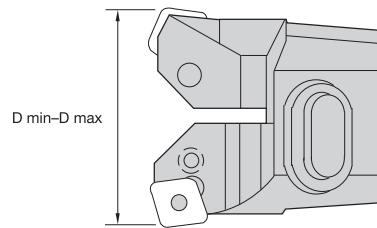
Hole Finishing

order number	catalogue number	BR1 bore range	D	D2	L1 assy	L2 assy	blade screw	washer	pin
5544143	SS20RBHT24	23,500-30,500	20,0	20,0	150,0	120,0	840.142.200	841.142.200	841.342.200
5544145	SS25RBHT30	29,500-40,000	25,0	25,0	170,0	140,0	840.142.250	841.142.250	841.342.200



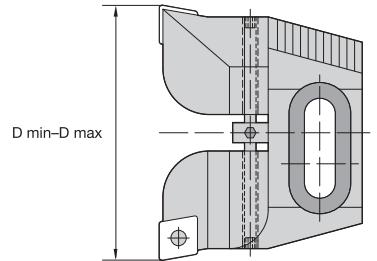
### 90° Lead Blade Sets

order number	catalogue number	D min	D max	gage insert	adjusting screw	insert screw	shim	shim pin	toggle lever	Torx wrench	Torx size
3556346	MB24RBHT06F	23,50	30,50	CC..0602..//CC..215..	848.200.407	843.006.000	—	—	—	FT7	T7
3556347	MB30RBHT06F	29,50	40,10	CC..0602..//CC..215..	848.250.409	843.006.000	—	—	—	FT7	T7
3556348	MB40RBHT09F	39,50	50,50	CC..09T3..//CC..325..	848.320.413	843.009.000	—	—	—	FT15	T15
3556349	MB50RBHT09F	49,50	66,50	CC..09T3..//CC..325..	848.420.614	843.009.000	—	—	—	FT15	T15
3556350	MB66RBHT12F	65,50	87,50	CC..1204..//CC..43..	848.550.620	843.012.000	—	—	—	FT20	T20
3556352	MB66RBHT12LF	65,50	87,50	CN..1204..//CN..43..	847.012.000	—	845.012.000	844.012.000	846.012.000	—	—
3556393	MB87RBHT12F	86,50	115,50	CC..1204..//CC..43..	848.720.000	843.012.000	—	—	—	FT20	T20
3556394	MB87RBHT16LF	86,50	115,50	CN..1606..//CN..54..	847.016.000	—	845.016.000	844.016.000	846.016.000	—	—
3556395	MB115RBHT12F	114,50	153,00	CC..1204..//CC..43..	848.940.640	843.012.000	—	—	—	FT20	T20
3556396	MB115RBHT16LF	114,50	153,00	CN..1606..//CN..54..	847.016.000	—	845.016.000	844.016.000	846.016.000	—	—



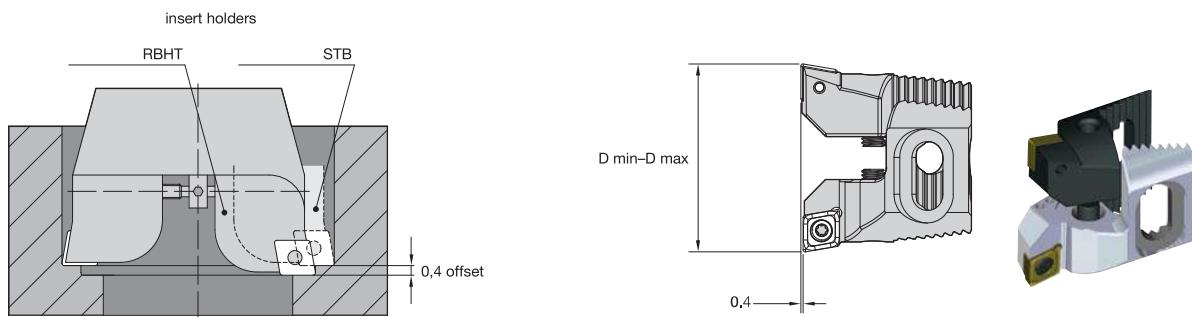
### ■ 70° Lead Blade Sets

order number	catalogue number	D min D max	gage insert	adjusting screw	insert screw	shim	shim pin	toggle lever	Torx wrench	Torx size	hex size
3556397	MB24RBHT06K	23,50 30,50	CC..0602./.CC..215..	848.200.407	843.006.000	—	—	—	FT7	T7	—
3556398	MB30RBHT06K	29,50 40,10	CC..0602./.CC..215..	848.250.409	843.006.000	—	—	—	FT7	T7	—
3556399	MB40RBHT09K	39,50 50,50	CC..09T3./.CC..325..	848.320.413	843.009.000	—	—	—	FT15	T15	—
3556400	MB50RBHT09K	49,50 66,50	CC..09T3./.CC..325..	848.420.614	843.009.000	—	—	—	FT15	T15	—
3556401	MB66RBHT12K	65,50 87,50	CC..1204./.CC..43..	848.550.620	843.012.000	—	—	—	FT20	T20	—
3556402	MB66RBHT12LK	65,50 87,50	CN..1204./.CN..43..	847.012.000	—	845.012.000	844.012.000	846.012.000	—	—	3 mm
3556403	MB87RBHT12K	86,50 115,50	CC..1204./.CC..43..	848.720.000	843.012.000	—	—	—	FT20	T20	—
3556404	MB87RBHT16LK	86,50 115,50	CN..1606./.CN..54..	847.016.000	—	845.016.000	844.016.000	846.016.000	—	—	3 mm
3556405	MB115RBHT16LK	114,50 153,00	CN..1606./.CN..54..	847.016.000	—	845.016.000	844.016.000	846.016.000	—	—	3 mm


  
Hole Finishing


### ■ 90° Lead Simultaneous Adjusting Blade Sets

order number	catalogue number	D min D max	gage insert	adjusting screw	insert screw	simultaneous adj spindle	shim	shim pin	toggle lever
2652965	SYB24RBHT06F	23,50 30,50	CC..0602./.CC..215..	848.200.407	843.006.000	848.200.005	—	—	—
2652967	SYB30RBHT06F	29,50 40,10	CC..0602./.CC..215..	848.250.409	843.006.000	848.250.005	—	—	—
2652968	SYB40RBHT09F	39,50 50,50	CC..09T3./.CC..325..	848.320.413	843.009.000	848.320.005	—	—	—
2652969	SYB50RBHT09F	49,50 66,50	CC..09T3./.CC..325..	848.420.614	843.009.000	848.420.005	—	—	—
2652970	SYB66RBHT12F	65,50 87,50	CC..1204./.CC..43..	—	843.012.000	848.550.005	—	—	—
2652971	SYB66RBHT12LF	65,50 87,50	CN..1204./.CN..43..	—	848.550.620	848.550.005	845.012.000	844.012.000	846.012.000
2652972	SYB87RBHT12F	86,50 115,50	CC..1204./.CC..43..	—	843.012.000	848.720.005	—	—	—
2652983	SYB87RBHT16LF	86,50 115,50	CNMG543	847.016.000	—	848.720.005	845.016.000	844.016.000	846.016.000
2652984	SYB115RBHT16LF	114,50 153,00	CNMG543	847.016.000	—	848.720.005	845.016.000	844.016.000	846.016.000



■ 90° Lead Split Depth of Cut Blades



Hole Finishing

order number	catalogue number	D min	D max	gage insert	adjusting screw	insert screw	shim	shim pin	toggle lever
4063996	SDB24RBHT06F	23,50	30,50	CC..0602../CC..215..	848.200.407	843.006.000	—	—	—
4063997	SDB30RBHT06F	29,50	40,10	CC..0602../CC..215..	848.250.409	843.006.000	—	—	—
4063998	SDB40RBHT09F	39,50	50,50	CC..09T3../CC..325..	848.320.413	843.009.000	—	—	—
4063999	SDB50RBHT09F	49,50	66,50	CC..09T3../CC..325..	848.420.614	843.009.000	—	—	—
4064000	SDB66RBHT12F	65,50	87,50	CC..1204../CC..43..	848.550.620	843.012.000	—	—	—
4064001	SDB66RBHT12LF	65,50	87,50	CN..1204../CN..43..	847.012.000	—	845.012.000	844.012.000	846.012.000
4064002	SDB87RBHT12F	86,50	115,50	CC..1204../CC..43..	848.720.000	843.012.000	—	—	—
4064203	SDB87RBHT16LF	86,50	115,50	CN..1606../CN..54..	847.016.000	—	845.016.000	844.016.000	846.016.000
4064204	SDB115RBHT16LF	114,50	153,00	CN..1606../CN..54..	847.016.000	—	845.016.000	844.016.000	846.016.000
4064205	SDB115RBHT12F	114,50	153,00	CC..1204../CC..43..	848.940.640	843.012.000	—	—	—

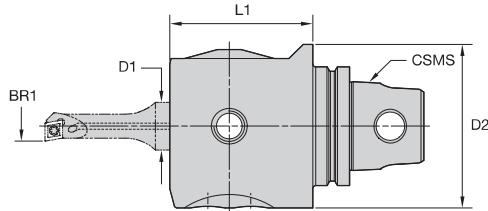
**■ FBHM • Fine-Boring Kits**

order number	catalogue number	range	contents
4057101	<b>KM50TSFBHMKIT164M</b>	9,75–164,0	KM50TSFBHM1677 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09
4057098	<b>HSK63FBHMKIT164M</b>	9,75–164,0	HSK63FBHM1696 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09
4057099	<b>DV40FBHMKIT164M</b>	9,75–164,0	DV40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09
4057100	<b>BT40FBHMKIT164M</b>	9,75–164,0	BT40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09
4167882	<b>CV40FBHMKIT645</b>	9,75–164,0	CV40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09

NOTE: Counterweight 886038045 is not part of the kits and needs to be ordered separately.



- Order boring bars separately for required diameter; see pages K130–K131.
- 0,01mm diameter adjustment respective 2 µm with vernier scale.

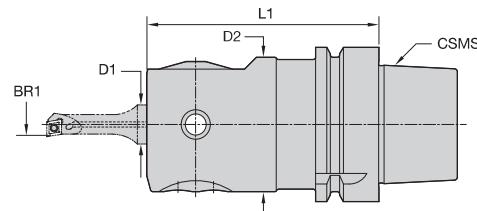
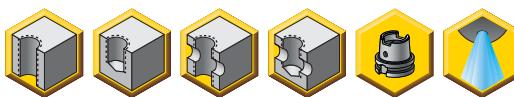


### ► FBHO • KM™ Offset Boring Head

Hole Finishing

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	ModBORE FBHO parts package
1131111	KM40FBHO1660	9.750-53.100	KM40	16	55,0	60,0	PKG7001
1132036	KM50FBHO1670	9.750-53.100	KM50	16	55,0	70,0	PKG7001

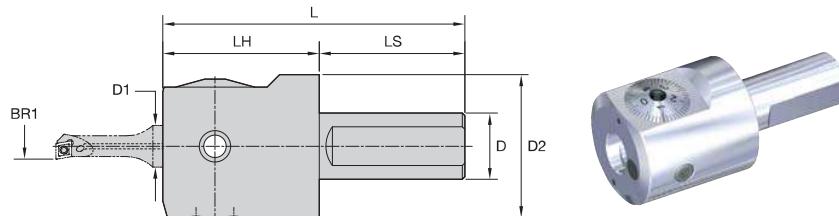
- Order boring bars separately for required diameter; see pages K130–K131.
- 0,01mm diameter adjustment respective 2 µm with vernier scale.



### ► FBHO • HSK Boring Head

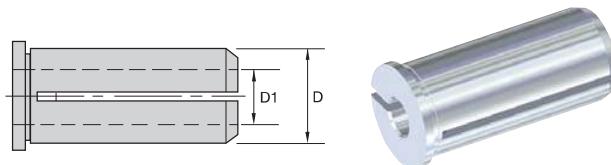
order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	ModBORE FBHO parts package
2651037	HSK63FBHO1695	9.750-53.100	HSK63A	16	55,0	95,0	PKG7001

- Order boring bars separately for required diameter; see pages K130-K131.



### ■ FBHO • Straight Shank Boring Head

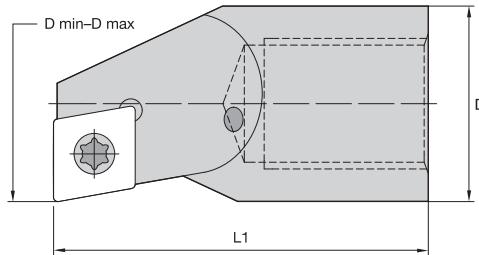
order number	catalogue number	BR1 bore range	D	D1	D2	L	LH	LS
3077141	SF100FBHO1660	3.000-88.100	25	16	55,0	115,9	60,0	55,9
3077140	SF150FBHO1660	3.000-88.100	38	16	55,0	131,6	60,0	71,6


  
Hole Finishing


### ■ RS Series Sleeves • Metric I.D.

order number	catalogue number	D	D1
2651042	RS1605	16	5
1125092	RS1606	16	6
1133914	RS1608	16	8
1135642	RS1610	16	10
1135662	RS1612	16	12

- Match boring head diameter to carbide bar diameter.
- Order inserts separately.

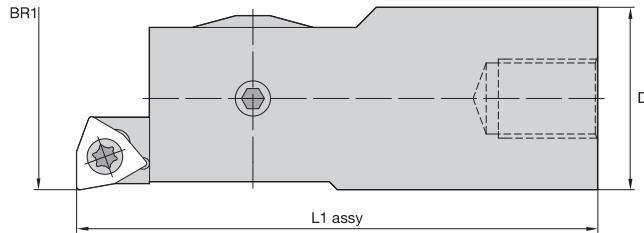


#### ► Fixed Pocket Boring Head

Hole Finishing

order number	catalogue number	D min	D max	D	L1	gage insert	insert screw	Torx size
2651168	HFB1023SCFPR06	10,75	16,10	10	23	CC..0602./CC..215..	PKG0011	T7
2651169	HFB1223SCFPR06	12,75	18,10	12	23	CC..0602./CC..215..	PKG0011	T7
2651170	HFB1627SCFPR06	16,75	22,10	16	27	CC..0602./CC..215..	PKG0011	T7
2651171	HFB2127SCFPR06	21,75	27,10	16	27	CC..0602./CC..215..	PKG0011	T7
2651172	HFB2427SCFPR06	24,75	30,10	16	27	CC..0602./CC..215..	PKG0011	T7
2651173	HFB2727SCFPR06	27,75	33,10	16	27	CC..0602./CC..215..	PKG0011	T7
2651174	HFB3127SCFPR06	31,75	37,10	16	27	CC..0602./CC..215..	PKG0011	T7
2651175	HFB3427SCFPR06	34,75	40,10	16	27	CC..0602./CC..215..	PKG0011	T7

- Match boring head diameter to carbide bar diameter.
- Order insert cartridge separately.



#### ► Fine Adjustable Screw On Boring Head for Carbide Bars

order number	catalogue number	BR1 bore range	L1 assy	D	cartridge mounting screw
2651176	HFB14FBHS1440	14.700-17.100	40,0	14	PKG1402
2651177	HFB16FBHS1640	16.700-20.100	40,0	16	PKG1602
2651178	HFB19FBHS1840	19.700-24.100	40,0	18	PKG1802

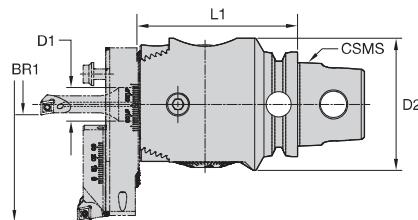
**■ FBHM Fine-Boring Kits**

order number	catalogue number	range	contents
4057101	<b>KM50TSFBHMKIT164M</b>	9,75-164,0	KM50TSFBHM1677 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09  HSK63FBHM1696 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09
4057098	<b>HSK63FBHMKIT164M</b>	9,75-164,0	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4057099	<b>DV40FBHMKIT164M</b>	9,75-164,0	DV40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09  BT40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09
4057100	<b>BT40FBHMKIT164M</b>	9,75-164,0	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4167882	<b>CV40FBHMKIT645</b>	9,75-164,0	CV40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09



Hole Finishing

- Order boring bars, diameter extension bridge, and cartridges separately.
- 0,01mm diameter adjustment respective 2 µm with vernier scale.

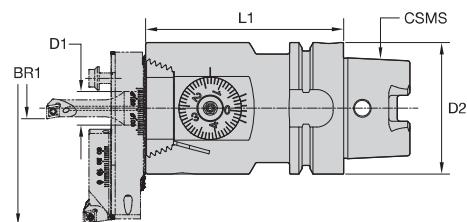


## ➤ ■ FBHM • KM™ Boring Head

Hole Finishing

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	ModBORE FBHS parts package	kg	lbs
4057060	KM50TSFBHM1677	9,750-164,000	KM50TS	16,0	63,0	76,6	PKG-8001	1,5	3.31

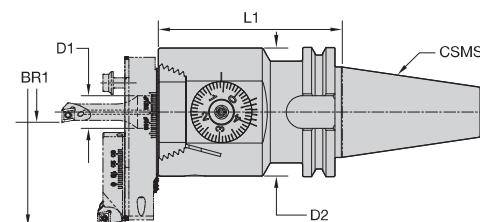
- Order boring bars, diameter extension bridge, and cartridges separately.
- 0,01mm diameter adjustment respective 2 µm with vernier scale.



## ■ FBHM • HSK Boring Head

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	ModBORE FBHS parts package	kg	lbs
4057057	HSK63FBHM1696	9,750-164,000	HSK63A	16,0	63,0	95,0	PKG-8001	2,0	4.30

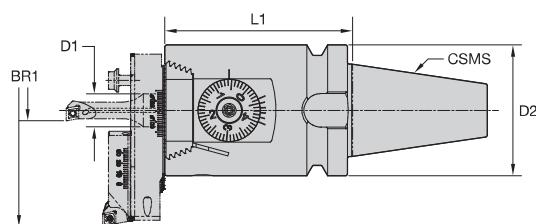
- Order boring bars, diameter extension bridge, and cartridges separately.
- 0,01mm diameter adjustment respective 2 µm with vernier scale.



### ■ FBHM • DV40 Boring Head

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	ModBORE FBHS parts package	kg	lbs
4057058	DV40FBHM1691	9,750-154,000	DV40	16,0	63,0	90,0	PKG-8001	2,1	4.64

- Order boring bars, diameter extension bridge, and cartridges separately.
- 0,01mm diameter adjustment respective 2 µm with vernier scale.

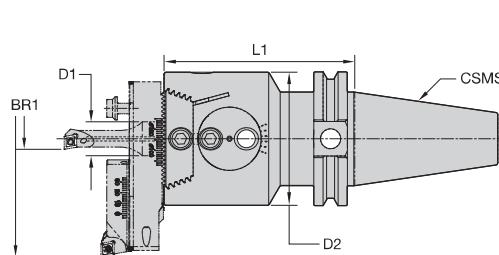


### ■ FBHM • BT40 Boring Head

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	ModBORE FBHS parts package	kg	lbs
4057059	BT40FBHM1691	9,750-164,000	BT40	16,0	63,0	90,0	PKG-8001	2,2	4.94



- Order boring bars, diameter extension bridge, and cartridges separately.
- 0,01mm diameter adjustment respective 2 µm with vernier scale.



### ■ FBHM • CV40 Boring Head

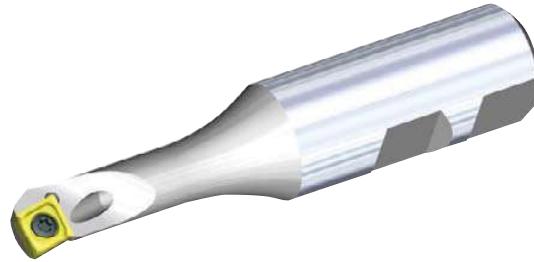
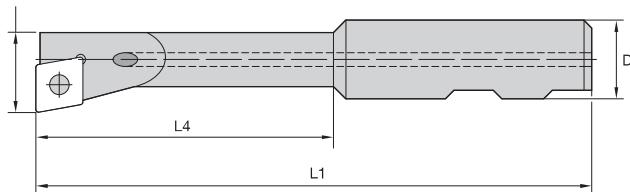
Hole Finishing

order number	catalogue number	BR1 bore range	CSMS system size	D1	D2	L1	ModBORE FBHS parts package	kg	lbs
4167881	CV40FBHM1691	9,750-164,000	CV40	16,0	63,0	91,2	PKG-8001	2,1	4.52

- Order inserts separately.



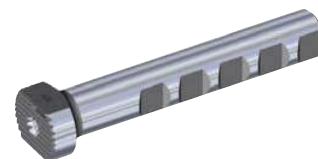
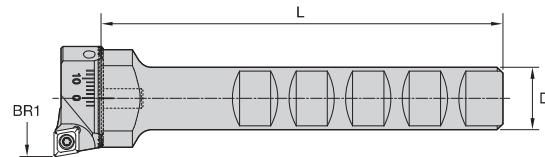
D min-D max



### ■ FBHO/FBHM • Universal Boring Bars

order number	catalogue number	D min	D max	D	L1	L4	gage insert	insert screw	Torx size
1125110	AFB09075SCFCR06	9,75	14,75	16	75,0	30,0	CC..0602..//CC..215..	PKG2025	T7
1133883	AFB13085SCFCR06	13,75	18,75	16	85,0	40,0	CC..0602..//CC..215..	PKG2025	T7
1133894	AFB17100SCFCR06	17,75	22,75	16	100,0	55,0	CC..0602..//CC..215..	PKG2025	T7
1137835	AFB21110SCFCR09	21,75	26,75	16	110,0	60,0	CC..09T3..//CC..325..	PKG3242	T15
1128324	AFB24115SCFCR09	24,75	29,75	16	115,0	65,0	CC..09T3..//CC..325..	PKG3242	T15
1126838	AFB27115SCFCR09	27,75	32,75	16	115,0	70,0	CC..09T3..//CC..325..	PKG3242	T15
1120731	AFB31115SCFCR09	31,75	36,75	16	115,0	70,0	CC..09T3..//CC..325..	PKG3242	T15
1127271	AFB34115SCFCR09	34,75	39,75	16	115,0	70,0	CC..09T3..//CC..325..	PKG3242	T15
2651038	AFB38115SCFPR09	38,75	44,10	16	115,0	85,0	CC..09T3..//CC..325..	PKG3242	T15
2651039	AFB42115SCFPR09	42,75	48,10	16	115,0	85,0	CC..09T3..//CC..325..	PKG3242	T15
2651040	AFB47115SCFPR09	47,75	53,10	16	115,0	85,0	CC..09T3..//CC..325..	PKG3242	T15

- Order AFM insert cartridge separately.

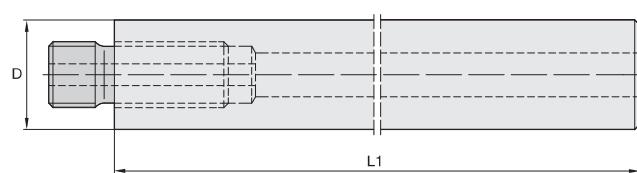


### ■ FBHO/FBHM • AFM Boring Bars

order number	catalogue number	BR1 bore range	D	D2	L
4057061	AFM29115	29.750-48.100	16,0	25,0	103,000
4057062	AFM47115	47.750-88.100	16,0	44,0	101,580



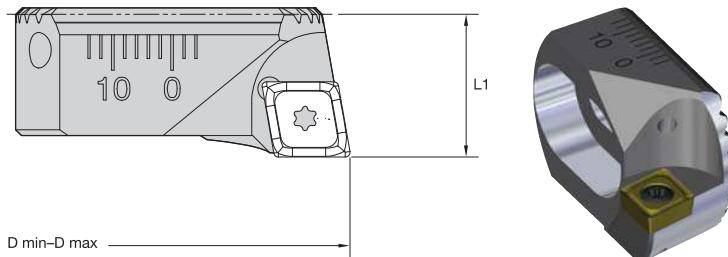
Hole Finishing



### ■ Carbide Shanks for Screw-On Boring Heads

order number	catalogue number	D	L1
2651163	CFB10082	10	82
2651164	CFB12096	12	96
2651165	CFB14110	14	110
2651166	CFB16120	16	120
2651167	CFB18140	18	140

- For use with AFM boring bars.
- Order inserts separately.



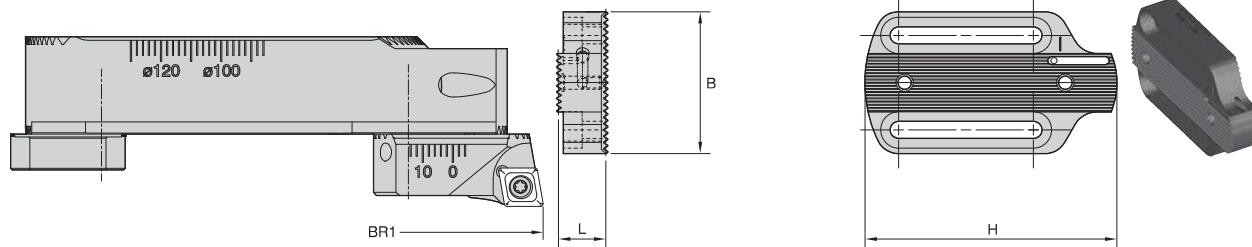
### ■ AFM • Insert Cartridges



Hole Finishing

order number	catalogue number	D min	D max	L1	gage insert	ModBORE parts package	insert screw ID drive size
4057093	AFM29SCFPR06	29,75	48,10	12,0	CC..0602..CC..2151..	PKG2025	T7
4057094	AFM47SCFPR09	47,75	88,10	14,0	CC..09T3..CC..3252..	PKG3242	T15

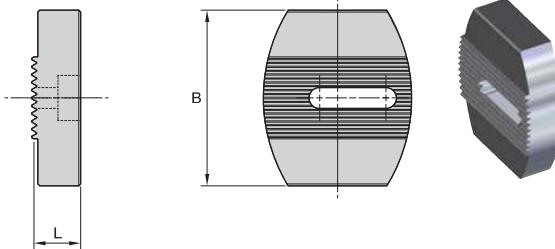
- For use with FBHM insert holders and FBHM counterweight.
- Order AFM47SCFPR09 insert cartridge separately to achieve diameter range.



### ■ FBHM • Extension Bridge

order number	catalogue number	BR1 bore range	B	H	L
4057095	EBM8015086	86.000-164.000	45,0	80,0	15,0
4168063	EBM1580160162	162.000-320.000	45,0	158,0	16,2

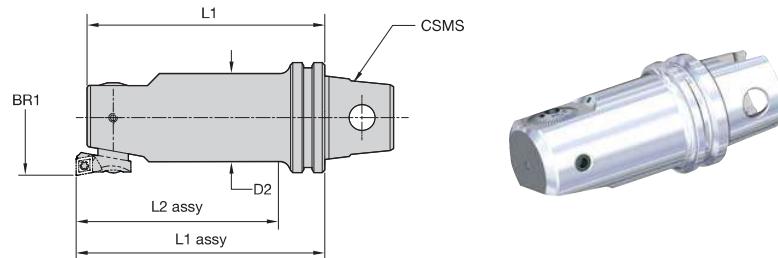
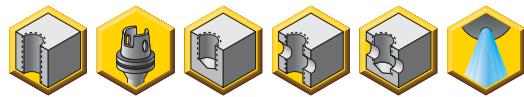
- For use with FBHM extension bridge.



### ■ FBHM • Counterweight

order number	catalogue number	B	L
4057096	886038045	45	12

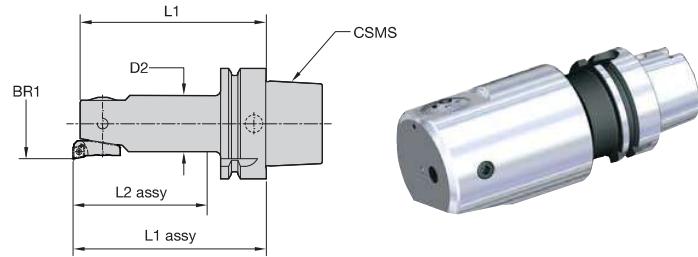
- 0,01mm diameter adjustment respective 2 µm with vernier scale.
- Internal coolant directed to indexable insert.
- Order insert cartridges separately for required bore range; see page K136.



### ■ FBHS • KM™ Fine-Boring Single Cutters

order number	catalogue number	BR1 bore range	CSMS system size	D2	L1	L1 assy	L2 assy	cartridge mounting screw	lock screw
3586572	KM32FBHS24	23,900-37,100	KM32	20,0	86,0	90,0	76,1	880.252.200	881.252.200
3586573	KM32FBHS31	30,900-47,100	KM32	25,0	96,0	100,0	86,1	880.252.250	881.252.250
3586574	KM40FBHS40	39,900-59,100	KM40	32,0	86,0	90,0	74,0	880.252.320	881.252.320
3586575	KM50FBHS51	50,900-81,100	KM50	42,0	86,0	90,0	70,0	880.252.420	881.252.420
3586576	KM50FBHS67	66,900-105,100	KM50	55,0	96,0	100,0	100,0	880.252.550	881.252.550
3586577	KM50FBHS87	86,900-134,100	KM50	72,0	116,0	120,0	120,0	880.252.550	881.252.720
3586578	KM63UTFBHS87	86,900-134,100	KM63UT	72,0	116,0	120,0	120,0	880.252.550	881.252.720
3586579	KM63UTFBHS116	115,900-191,100	KM63UT	94,0	146,0	150,0	150,0	880.252.550	881.252.940

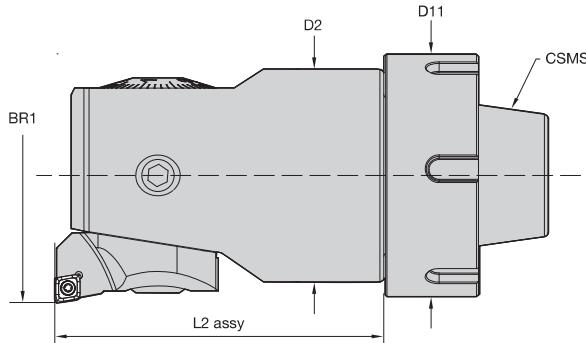
- 0,01mm diameter adjustment respective 2 µm with vernier scale.
- Internal coolant directed to indexable insert.
- Order insert cartridges separately for required bore range; see page K136.



### ■ FBHS • HSK Fine-Boring Single Cutters

order number	catalogue number	BR1 bore range	CSMS system size	D2	L1	L1 assy	L2 assy	cartridge mounting screw	lock screw
3586580	HSK63FBHS24	23,900-37,100	HSK63A	20,0	86,0	90,0	61,1	880.252.200	881.252.200
3586581	HSK63FBHS31	30,900-47,100	HSK63A	25,0	101,0	105,0	76,1	880.252.250	881.252.250
3586582	HSK63FBHS40	39,900-59,100	HSK63A	32,0	106,0	110,0	81,1	880.252.320	881.252.320
3586583	HSK63FBHS51	50,900-81,100	HSK63A	42,0	116,0	120,0	91,1	880.252.420	881.252.420
3586584	HSK63FBHS67	66,900-105,100	HSK63A	55,0	121,0	125,0	99,1	880.252.550	881.252.550
3586585	HSK63FBHS87	86,900-134,100	HSK63A	72,0	141,0	145,0	145,0	880.252.550	881.252.720

- 0,01mm diameter adjustment respective 2 µm with vernier scale.
- Internal coolant directed to indexable insert.
- Order insert cartridges separately for required bore range; see page K136.

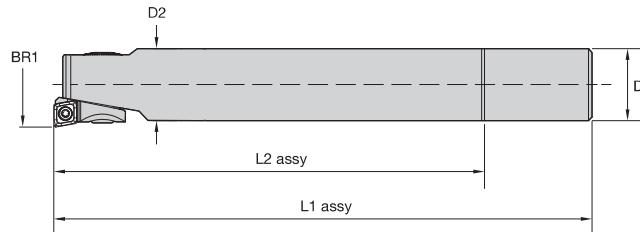


Hole Finishing

■ FBHS • ER Fine-Boring Single Cutters

order number	catalogue number	BR1 bore range	CSMS system size	D11	D2	L2 assy	cartridge mounting screw	lock screw
5544149	<b>ER25FBHS40</b>	39,900-59,100	ER25	39,0	32,0	65,5	880.252.320	881.252.320
5544191	<b>ER32FBHS51</b>	50,900-81,100	ER32	49,5	42,0	75,5	880.252.420	881.252.420
5544193	<b>ER40FBHS67</b>	66,900-105,100	ER40	62,7	55,0	85,5	880.252.550	881.252.550

- 0,01mm diameter adjustment respective 2 µm with vernier scale.
- Internal coolant directed to indexable insert.
- Order insert cartridges separately for required bore range; see page K136.

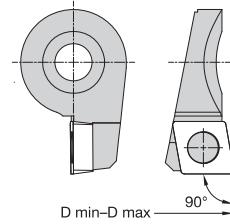


Hole Finishing

**■ FBHS • Straight Shank Fine-Boring Single Cutters • Metric**

order number	catalogue number	BR1 bore range	D	D2	L1 assy	L2 assy	cartridge mounting screw	lock screw
5544144	SS20FBHS24	23,900-37,100	20,0	20,0	150,0	120,0	880.252.200	881.252.200
5544146	SS25FBHS31	30,900-47,100	25,0	25,0	170,0	140,0	880.252.250	881.252.250

- Order inserts separately.



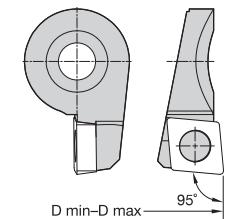
■ 90° Lead • Insert Holders for FBHS Fine-Boring Heads



Hole Finishing

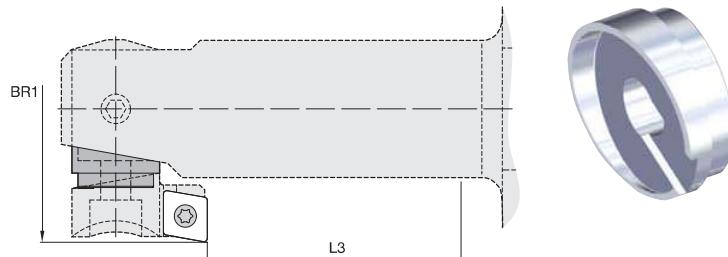
order number	catalogue number	D min	D max	gage insert	Torx size	insert screw
1137487	R24FBHS06	23,9	31,1	CC..0602../CC..215..	T7	843.006.000
2649548	R30FBHS06	29,9	37,1	CC..0602../CC..215..	T7	843.006.000
1133669	R31FBHS06	30,9	40,1	CC..0602../CC..215..	T7	843.006.000
2649549	R38FBHS06	37,9	47,1	CC..0602../CC..215..	T7	843.006.000
1135369	R40FBHS06	39,9	51,1	CC..0602../CC..215..	T7	843.006.000
2649550	R48FBHS06	47,9	59,1	CC..0602../CC..215..	T7	843.006.000
1137479	R51FBHS06	50,9	67,1	CC..0602../CC..215..	T7	843.006.000
2649551	R65FBHS06	64,9	81,1	CC..0602../CC..215..	T7	843.006.000
1834274	R67FBHS06	66,9	153,1	CC..0602../CC..215..	T7	843.006.000
1137505	R67FBHS09	66,9	153,1	CC..09T3../CC..325..	T15	843.009.000
2649552	R85FBHS06	84,9	171,1	CC..0602../CC..215..	T7	843.006.000
2649553	R85FBHS09	84,9	171,1	CC..09T3../CC..325..	T15	843.009.000
2649554	R125FBHS09	153,9	191,1	CC..09T3../CC..325..	T15	843.009.000

- Order inserts separately.



■ 95° Lead • Insert Holders for FBHS

order number	catalogue number	D min	D max	gage insert	insert screw ID drive size	insert screw
2649555	R24FBHS06LF	23,9	31,1	CC..0602../CC..215..	T7	843.006.000
2649556	R31FBHS06LF	30,9	40,1	CC..0602../CC..215..	T7	843.006.000
2649557	R40FBHS06LF	39,9	51,1	CC..0602../CC..215..	T7	843.006.000
2649558	R51FBHS06LF	50,9	67,1	CC..0602../CC..215..	T7	843.006.000
2649559	R67FBHS09LF	66,9	153,1	CC..09T3../CC..325..	T15	843.009.000



## ■ Reversal Adaptors

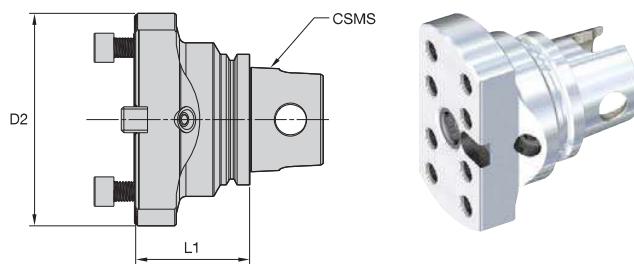
reversal adaptor	use with cartridges				L3	
catalogue number	90° lead	90° lead	95° lead	fine boring head series	mm	inch
R37FBHSRB	R24FBHS06	—	R24FBHS06LF	..FBHS24	13,0	0.512
R40FBHSRB	R30FBHS06	—	—	..FBHS24	13,0	0.512
R44FBHSRB	R31FBHS06	—	R31FBHS06LF	..FBHS31	17,6	0.693
R51FBHSRB	R38FBHS06	—	—	..FBHS31	17,6	0.693
R53FBHSRB	R40FBHS06	—	R40FBHS06LF	..FBHS40	31,3	1.232
R60FBHSRB	R48FBHS06	—	—	..FBHS40	31,3	1.232
R64FBHSRB	R51FBHS06	—	R51FBHS06LF	..FBHS51	49,2	1.937
R75FBHSRB	R65FBHS06	—	—	..FBHS51	49,2	1.937
R87FBHSRB	R67FBHS06	R67FBHS09	R67FBHS09LF	..FBHS-67	62,0	2.441

NOTE: Use the chart above to match the insert holder to the reversal adaptor.



## ModBORE™ Bridge Boring Systems

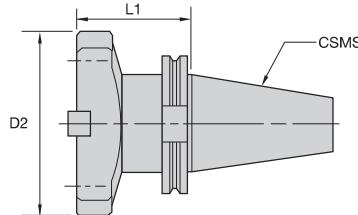
- Extension bridge required.
- Order extension bridge separately; see pages K139–K140.
- Match adaptor and extension bridge series.



## ■ KM™ Bridge Tool Adaptors

order number	catalogue number	CSMS system size	extension bridge series	D2	L1	spare parts package	socket-head cap screw
1135802	KM63BT13065	KM63	A	130,0	65,0	PKG1565	MS1085PKG
1197315	KM80BT13070	KM80	B,A	130,0	70,0	PKG1565	MS1085PKG

- Extension bridge required.
- Order extension bridge separately; see pages K139–K140.
- Order coolant cartridge set separately.
- Match adaptor and extension bridge series.



### CV Bridge Tool Adaptors



Hole Finishing

order number	catalogue number	CSMS system size	extension bridge series	D2	L1	spare parts package	socket-head cap screw
1122185	CV50BT13069	CV50	A,B,C	130,0	69,1	PKG1565	MS1085PKG



### BT Bridge Tool Adaptors

order number	catalogue number	CSMS system size	extension bridge series	D2	L1	spare parts package	socket-head cap screw
1121711	BT50BT13088	BT50	A,B,C	130,0	88,0	PKG1565	MS1085PKG

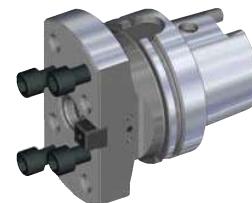
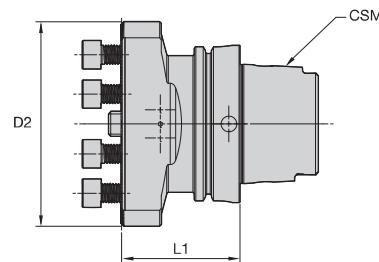


### DV Bridge Tool Adaptors

order number	catalogue number	CSMS system size	extension bridge series	D2	L1	spare parts package	socket-head cap screw
1263825	DV40BT13069	DV40	A	130,0	69,1	PKG1565	MS1085PKG
1133581	DV50BT13069	DV50	A,B,C	130,0	69,1	PKG1565	MS1085PKG



- Extension bridge required.
- Order extension bridge separately; see pages K139–K140.
- Match adaptor and extension bridge series.

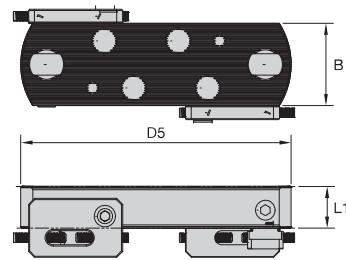
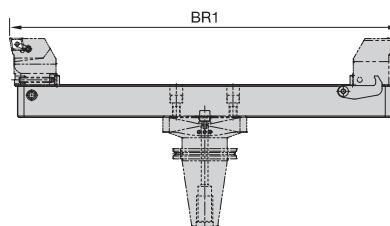


### ■ HSK Bridge Tool Adaptors

order number	catalogue number	CSMS system size	extension bridge series	D2	L1	spare parts package	socket-head cap screw
4062112	HSK100BT13075	HSK100A	A,B,C	130,0	75,0	PKG1565	MS1085PKG

NOTE: Tool adaptors combined with small-scale extension bridges cover boring range 150–655mm.  
Tool adaptors combined with large-scale extension bridge and bridge slides cover boring range from 650–2205mm.

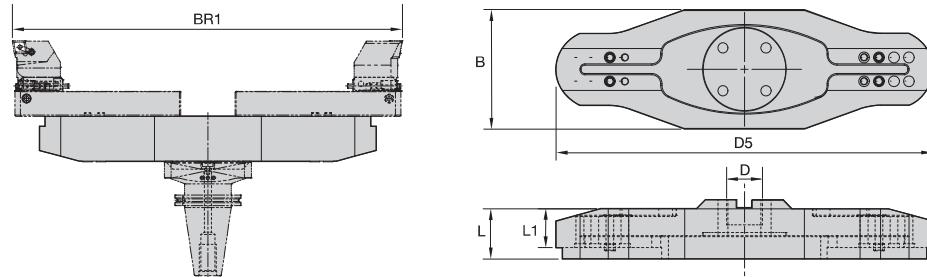
- Match extension bridge series to adaptor.



### ■ Small-Scale Extension Bridges

order number	catalogue number	BR1 bore range	max RPM	extension bridge series	B	D5	L1	spare parts package	hex size	kg	lbs
113280	EB13030150	150.000-205.000	1250	A	70,0	130,0	30,0	PKG156502	8 mm	1,95	4.30
1125085	EB18030200	200.000-255.000	1000	A	70,0	180,0	30,0	PKG156502	8 mm	2,77	6.10
1132857	EB23035250	250.000-305.000	850	B	70,0	230,0	35,0	PKG156502	8 mm	4,00	8.80
1126830	EB28035300	300.000-355.000	700	B	70,0	280,0	35,0	PKG156502	8 mm	5,14	11.30
1121703	EB33040350	350.000-405.000	600	B	70,0	330,0	40,0	PKG156502	8 mm	6,86	15.10
1140602	EB38040400	400.000-455.000	530	C	70,0	380,0	40,0	PKG156502	8 mm	7,95	17.50
1121036	EB43040450	450.000-505.000	480	C	70,0	430,0	40,0	PKG156502	8 mm	9,23	20.30
1270619	EB48040500	500.000-550.000	440	C	70,0	480,0	40,0	PKG156502	8 mm	10,23	22.50
1270620	EB53050550	550.000-605.000	400	C	70,0	530,0	50,0	PKG156502	8 mm	13,91	30.60
1270621	EB58050600	600.000-655.000	370	C	70,0	580,0	50,0	PKG156502	8 mm	15,32	33.70

- For use with shell mill adaptors or direct connection to the machine spindle.
- Order bridge slides separately.



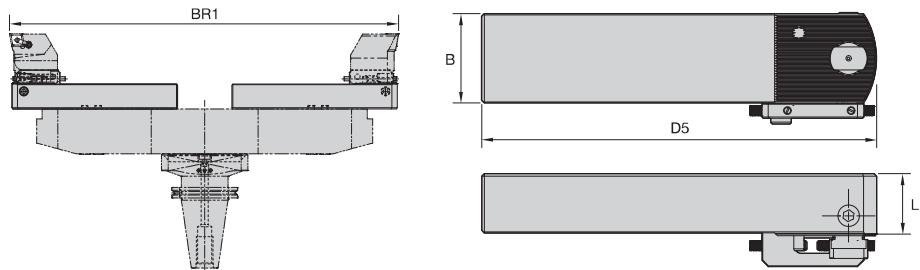
### Large Scale Extension Bridge

Hole Finishing

order number	catalogue number	BR1 bore range	D	D5	B	L	L1	kg	lbs
4057204	EB630128650	650.000-1105.000	60,0	630,0	200,0	99,0	84,0	17,20	37.84
4057205	EB10801281100	1100.000-1655.000	60,0	1080,0	200,0	99,0	84,0	28,10	61.82
4057206	EB16301281650	1650.000-2205.000	60,0	1630,0	200,0	99,0	84,0	43,00	94.60

max RPM			max RPM			max RPM		
BR1 bore range (mm)	BR1 bore range inch	maximum RPM	BR1 bore range (mm)	BR1 bore range inch	maximum RPM	BR1 bore range (mm)	BR1 bore range inch	maximum RPM
650-705	25.59-27.76	300	1100-1155	43.31-45.47	170	1650-1705	64.96-67.13	95
700-755	27.56-29.72	285	1150-1205	45.28-47.44	163	1700-1755	66.93-69.09	90
750-805	29.53-31.69	270	1200-1255	47.24-49.41	156	1750-1805	68.90-71.06	85
800-855	31.50-33.66	255	1250-1305	49.21-51.38	149	1800-1855	70.87-73.03	80
850-905	33.46-35.63	240	1300-1355	51.18-53.35	142	1850-1905	72.83-75.00	75
900-955	35.43-37.60	225	1350-1405	53.15-55.31	135	1900-1955	74.80-76.97	70
950-1005	37.40-39.57	210	1400-1455	55.12-57.28	128	1950-2005	76.77-78.94	65
1000-1055	39.37-41.54	195	1450-1505	57.09-59.25	121	2000-2055	78.74-80.91	60
1050-1105	41.34-43.50	180	1500-1555	59.06-61.22	114	2050-2105	80.71-82.87	55
			1550-1605	61.02-63.19	107	2100-2155	82.68-84.84	50
			1600-1655	62.99-65.16	100	2150-2205	84.65-86.81	45

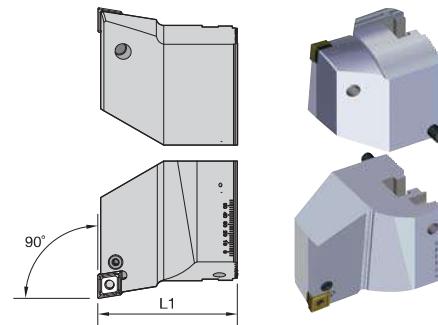
- For use with large-scale bridge extensions.
- Delivered as a set of two.



### Bridge Slides

order number	catalogue number	BR1 bore range	B	D5	L1	spare parts package	kg	lbs
4057207	EBSLD1105	650.000-1105.000	70,0	310,0	48,0	PKG156502	7,00	15.40
4057208	EBSLD2205	1100.000-2205.000	70,0	360,0	48,0	PKG156502	7,90	17.38

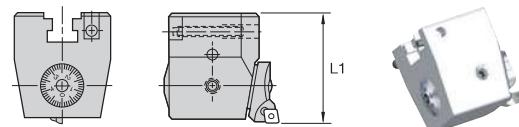
- Packaged as a matched set of two to enable twin cutting operations.



#### ■ 90° Lead • Bridge Tool Rough-Boring Head

order number	catalogue number	L1	gage insert	spare parts package	insert screw ID drive size	kg	lbs
1624878	EBURF1975PKG	75,0	CN..1906../CN..64..	PKG7994	4 mm	1,64	3.60

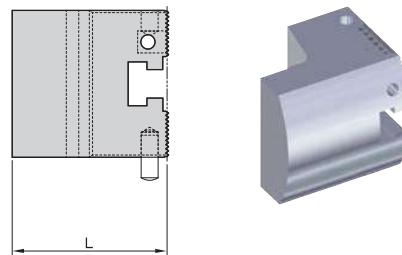
- Insert holder included.
- 0,01mm diameter adjustment respective 2 µm with vernier scale.
- Use with counterweight for balance.



#### ■ 90° Lead • Bridge Tool Fine-Boring Head

order number	catalogue number	L1	cartridge	spare parts package	wrench size-adjusting screw	kg	lbs
1135375	EBUFF0975	75,0	R67-FBHS-09	PKG0002	5 mm	2,14	4.70

- Use to balance the extension bridge when using an EBUFF fine-boring head.



#### ■ Bridge Tool Counterweight

order number	catalogue number	L	kg	lbs
4062443	EBUCW0074	74,0	2,10	4.63

■ ModBORE™ • Roughing • Metric



Hole Finishing

Material Group	Condition	Geometry			Cutting Speed – vc m/min			Feed Rate mm/r		
		-MP	-MN	-MF	min	Starting Value	max	-MP	-MN	-MF
P	1	(O)	–	KCP05	180	435	495	–	0,16–0,63	–
		(O)	KCP10		180	395	360	0,10–0,40	0,16–0,63	0,10–0,40
		(O)	–	KC9110	180	395	360	–	0,16–0,63	0,10–0,40
		(C)	KCP25		125	275	360	0,10–0,20	0,16–0,31	0,10–0,20
	2	(O)	–	KC9125	155	280	360	–	0,16–0,31	0,10–0,20
		(O)	–	KCP05	180	265	400	–	0,16–0,63	–
		(O)	KCP10		180	240	470	0,10–0,40	0,16–0,63	0,10–0,40
		(C)	–	KC9110	180	250	340	–	0,16–0,63	0,10–0,40
	3	KCP25		125	195	280	0,10–0,20	0,16–0,31	0,10–0,20	–
		(O)	–	KC9125	140	200	295	–	0,16–0,31	0,10–0,20
		(O)	–	KCP05	180	205	275	–	0,16–0,63	–
		(O)	KCP10		160	190	350	0,10–0,40	0,16–0,63	0,10–0,40
	4	(O)	–	KC9110	155	190	235	–	0,16–0,63	0,10–0,40
		(C)	KCP25		135	155	225	0,10–0,20	0,16–0,31	0,10–0,20
		(C)	–	KC9125	135	155	225	–	0,16–0,31	0,10–0,20
		(O)	–	KCP05	90	160	220	–	0,16–0,63	–
	5	(O)	KCP10		90	145	235	0,10–0,40	0,16–0,63	0,10–0,40
		(O)	–	KC9110	90	145	195	–	0,16–0,63	0,10–0,40
		(C)	KCP25		75	105	180	0,10–0,20	0,16–0,31	0,10–0,20
		(C)	–	KC9125	75	110	175	–	0,16–0,31	0,10–0,20
	6	(O)	–	KCP05	150	240	315	–	0,16–0,63	–
		KCP10		150	215	300	0,10–0,40	0,16–0,63	0,10–0,40	–
		(O)	–	KC9110	150	215	300	–	0,16–0,63	0,10–0,40
		(C)	KCP25		120	195	260	0,10–0,20	0,16–0,31	0,10–0,20
	7	(O)	–	KC9125	120	195	260	–	0,16–0,31	0,10–0,20
		(O)	–	KCP05	140	200	300	–	0,16–0,63	–
		(O)	KCP10		110	180	270	0,10–0,40	0,16–0,63	0,10–0,40
		(O)	–	KC9110	120	180	225	–	0,16–0,63	0,10–0,40
	8	(C)	KCP25		105	150	225	0,10–0,20	0,16–0,31	0,10–0,20
		(C)	–	KC9125	105	150	225	–	0,16–0,31	0,10–0,20

■ ModBORE • Roughing • Metric

Material Group	Condition	Geometry			Cutting Speed – vc m/min			Feed Rate mm/r		
		-MP	-MF	–	min	Starting Value	max	-MP	-MF	–
M	1	(O)(O)		KCM15	–	100	180	240	0,10–0,40	0,08–0,30
		KC5010	–	–	130	215	250	0,10–0,40	–	–
		(C)		KC9225	–	175	185	250	0,10–0,40	0,08–0,30
		KCM25	–	90	150	200	0,10–0,20	0,08–0,15	–	–
	2	(O)(O)		KC9240	–	90	120	135	0,10–0,20	0,08–0,15
		KCM15	–	110	165	250	0,10–0,40	0,08–0,30	–	–
		KC5010	–	125	200	250	0,10–0,40	–	–	–
		KC9225		–	110	170	230	0,10–0,40	0,08–0,30	–
	3	(C)		KCM25	–	90	150	225	0,10–0,20	0,08–0,15
		KC9240	–	80	105	135	0,10–0,20	0,08–0,15	–	–
		(O)(O)		KCM15	–	110	150	250	0,10–0,40	0,08–0,30
		KC5010	–	110	150	230	0,10–0,40	–	–	–
	(C)	KC9225		–	110	150	230	0,10–0,40	0,08–0,30	–
		KCM25	–	90	120	200	0,10–0,20	0,08–0,15	–	–
	KC9240	–	80	90	135	0,10–0,20	0,08–0,15	–	–	–

**■ ModBORE™ • Roughing • Metric**

Material Group	Condition	Geometry			Cutting Speed – vc m/min			Feed Rate mm/r		
		-MP	-MW	-	min	Starting Value	max	-MP	-MW	-
K	1		KCK20	–	220	300	540	0,10–0,40	0,16–1,00	–
			–	KT315	160	275	490	–	0,16–1,00	–
			KCK20	–	220	275	350	0,10–0,40	0,16–1,00	–
			–	KC9315	150	275	350	–	0,16–1,00	–
	2		KCK20	–	140	210	340	0,10–0,20	0,16–0,45	–
			–	KC9325	70	210	340	–	0,16–0,45	–
			KCK20	–	220	275	350	0,10–0,40	0,16–1,00	–
			–	KT315	180	275	360	–	0,16–1,00	–
	3		KCK20	–	220	275	350	0,10–0,40	0,16–1,00	–
			–	KC9315	130	260	340	–	0,16–1,00	–
			KCK20	–	220	275	350	0,10–0,20	0,16–0,45	–
			–	KC9315	110	150	230	0,10–0,40	0,16–1,00	–
			KCK20	–	110	150	230	0,10–0,40	0,16–1,00	–
			–	KT315	170	230	360	–	0,16–1,00	–
			KCK20	–	110	150	230	0,10–0,40	0,16–1,00	–
			–	KC9315	130	215	350	–	0,16–1,00	–
			KCK20	–	110	150	230	0,10–0,20	0,16–0,45	–

**■ ModBORE • Roughing • Metric**

Material Group	Condition	Geometry			Cutting Speed – vc m/min			Feed Rate mm/r		
		-HP	-	-	min	Starting Value	max	-HP	-	-
N	1		KC5410	–	200	550	1000	0,16–0,63	–	–
			–	KD1400	450	765	2500	–	0,25–0,63	–
			KC5410	–	200	550	1000	0,16–0,31	–	–
			–	KD1425	300	520	900	–	0,25–0,63	–
	2		KD1425	–	300	520	900	–	0,25–0,40	–
			–	KC5410	100	275	500	0,16–0,63	–	–
			K313	–	120	260	490	0,16–0,63	–	–
			–	KC5410	100	275	500	0,16–0,31	–	–
	3		KC5410	–	100	200	350	0,16–0,63	–	–
			–	KC5410	100	200	350	0,16–0,31	–	–
			KC5410	–	100	200	350	0,16–0,63	–	–
			–	KC5410	100	200	350	0,16–0,31	–	–

**■ ModBORE • Roughing • Metric**

Material Group	Condition	Geometry			Cutting Speed – vc m/min			Feed Rate mm/r		
		-MP	-FP	-UP	min	Starting Value	max	-MP	-FP	-UP
S	1		KCU10	–	30	55	115	0,10–0,40	0,06–0,25	–
			KC5010	–	30	55	115	0,10–0,40	0,06–0,25	0,16–0,50
			KCU25	–	10	40	55	0,10–0,20	0,06–0,12	–
			KC9240	–	10	40	60	0,10–0,20	–	0,16–0,27
	2		KCU10	–	30	60	120	0,10–0,40	0,06–0,25	–
			KC5010	–	30	60	115	0,10–0,40	0,06–0,25	0,16–0,50
			KCU25	–	10	30	55	0,10–0,20	0,06–0,12	–
			KC9240	–	10	30	55	0,10–0,20	–	0,16–0,27
	3		KCU10	–	30	70	115	0,10–0,40	0,06–0,25	–
			KC5010	–	30	70	115	0,10–0,40	0,06–0,25	0,16–0,50
			KCU25	–	20	40	55	0,10–0,20	0,06–0,12	–
			KC9240	–	20	40	60	0,10–0,20	–	0,16–0,27
	4		KCU10	–	45	70	140	0,10–0,40	0,06–0,25	–
			KC5010	–	45	70	170	0,10–0,40	0,06–0,25	0,16–0,50
			KCU25	–	20	55	90	0,10–0,20	0,06–0,12	–
			KC9240	–	15	55	90	0,10–0,20	–	0,16–0,27

■ ModBORE™ • Finishing • Metric

Material Group	Condition	Geometry				Cutting Speed – vc m/min			Feed Rate mm/r				
		-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW	
P	1	○	KCP05			–	180	435	495	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	180	435	495	–	–	0,06–0,25	–
			KT315	–	–	KT315	180	400	495	0,06–0,25	–	–	0,08–0,30
		○	KCP10			–	180	395	465	0,06–0,25	0,04–0,16	0,06–0,25	–
	2	○	KC9110			–	180	395	495	0,06–0,25	0,04–0,16	–	–
			KCP25			140	280	360	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16	–
			KC9125	–	–	140	280	360	0,06–0,10	0,04–0,08	–	–	–
		○	KCP05			–	180	265	400	0,06–0,25	0,04–0,16	0,06–0,25	–
	3	○	–	–	KTP10	–	180	265	400	–	–	0,06–0,25	–
			KT315	–	–	KT315	190	270	390	0,06–0,25	–	–	0,08–0,30
		○	KCP10			–	180	240	330	0,06–0,25	0,04–0,16	0,06–0,25	–
		○	KC9110			–	180	240	330	0,06–0,25	0,04–0,16	–	–
	4	○	KCP25			145	195	320	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16	–
			KC9125	–	–	145	195	320	0,06–0,10	0,04–0,08	–	–	–
		○	KCP05			–	180	205	275	0,06–0,25	0,04–0,16	0,06–0,25	–
		○	–	–	KTP10	–	180	205	275	–	–	0,06–0,25	–
	5	○	KT315	–	–	KT315	180	210	275	0,06–0,25	–	–	0,08–0,30
			KCP10			–	160	190	250	0,06–0,25	0,04–0,16	0,06–0,25	–
		○	KC9110			–	155	190	240	0,06–0,25	0,04–0,16	–	–
		○	KCP25			135	155	225	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16	–
	6	○	KC9125	–	–	135	155	225	0,06–0,10	0,04–0,08	–	–	–
			KCP05			–	90	160	220	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	90	160	220	–	–	0,06–0,25	–
		○	KT315	–	–	KT315	90	180	220	0,06–0,25	–	–	0,08–0,30

■ ModBORE • Finishing • Metric

Material Group	Condition	Geometry				Cutting Speed – vc m/min			Feed Rate mm/r				
		-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW	
M	1	○	–	–	KTP10	–	140	230	315	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	230	315	0,06–0,25	–	–	0,08–0,30
			KC5010	–	–	KC5010	130	215	245	0,06–0,25	–	–	0,08–0,30
		○	KCM15	–	KCM15	–	105	180	240	0,06–0,12	–	0,06–0,12	–
	2	○	KC9225	–	–	KC9225	105	180	240	0,06–0,12	–	–	0,08–0,16
			–	–	KTP10	–	140	215	295	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	215	295	0,06–0,25	–	–	0,08–0,30
		○	KC5010	–	–	KC5010	130	200	245	0,06–0,25	–	–	0,08–0,30
	3	○	KCM15	–	KCM15	–	105	165	250	0,06–0,12	–	0,06–0,12	–
			KC9225	–	–	KC9225	100	160	230	0,06–0,12	–	–	0,08–0,16
			–	–	KTP10	–	140	200	300	–	–	0,06–0,25	–
		○	KT315	–	–	KT315	140	200	300	0,06–0,25	–	–	0,08–0,30
		○	KC5010	–	–	KC5010	130	185	230	0,06–0,25	–	–	0,08–0,30
		○	KCM15	–	KCM15	–	115	150	255	0,06–0,12	–	0,06–0,12	–
		○	KC9225	–	–	KC9225	110	150	230	0,06–0,12	–	–	0,08–0,16

**■ ModBORE™ • Finishing • Metric**

Material Group	Condition	Geometry				Cutting Speed – vc m/min			Feed Rate mm/r				
		-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW	
K	1	(O)	KCK20	–	KCK20	200	300	540	0,06–0,25	–	0,06–0,25	0,08–0,30	
		(C)	KT315	–	–	KT315	165	275	490	0,06–0,25	–	–	0,08–0,30
		(O)	KC9315	–	–	–	110	275	450	0,06–0,25	–	–	–
	2	(C)	KC9320	–	–	–	100	240	400	0,06–0,12	–	–	–
		(O)	KCK20	–	KCK20	150	240	420	0,06–0,25	–	0,06–0,25	0,08–0,30	
		(C)	KT315	–	–	KT315	180	275	360	0,06–0,25	–	–	0,08–0,30
	3	(O)	KC5010	–	KC5010	100	200	265	0,06–0,25	0,04–0,16	–	0,08–0,30	
		(C)	KC9315	–	–	145	260	360	0,06–0,25	–	–	–	
		(O)	KC9320	–	–	–	140	240	330	0,06–0,12	–	–	–
	4	(O)	KCK20	–	KCK20	140	210	350	0,06–0,25	–	0,06–0,25	0,08–0,30	
		(C)	KT315	–	–	KT315	180	230	320	0,06–0,25	–	–	0,08–0,30
		(O)	KC5010	–	KC5010	120	150	225	0,06–0,25	0,04–0,16	–	0,08–0,30	
		(C)	KC9315	–	–	145	215	275	0,06–0,25	–	–	–	
		(O)	KC9320	–	–	–	140	210	260	0,06–0,12	–	–	–

**■ ModBORE • Finishing • Metric**

Material Group	Condition	Geometry				Cutting Speed – vc m/min			Feed Rate mm/r				
		-LF	-	-	-	min	Starting Value	max	-LF	-	-	-	
N	1	(O)	KC5410	–	–	–	200	550	1000	0,10–0,40	–	–	–
		(C)	KC5410	–	–	–	200	550	1000	0,10–0,20	–	–	–
		(O)	–	KD1400	–	–	450	765	3000	–	0,06–0,15	–	–
	2	(O)	–	KD1425	–	–	375	580	1150	–	0,06–0,25	–	–
		(C)	–	KD1400	–	–	400	650	1250	–	0,06–0,15	–	–
		(O)	KC5410	–	–	–	125	275	525	0,10–0,40	–	–	–
	3	(O)	–	KD1425	–	–	250	500	875	–	0,06–0,25	–	–
		(C)	KC5410	–	–	–	125	275	525	0,10–0,20	–	–	–
		(O)	–	KD1400	–	–	375	520	1000	–	0,06–0,12	–	–
	5	(O)	KC5410	–	–	–	125	200	375	0,10–0,40	–	–	–
		(C)	KC5410	–	–	–	125	200	375	0,10–0,20	–	–	–

Hole Finishing

**■ ModBORE • Finishing • Metric**

Material Group	Condition	Geometry				Cutting Speed – vc m/min			Feed Rate mm/r			
		-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
S	1	(O)	–	–	KCU10	–	30	55	125	–	–	0,06–0,25
		(C)	K313	–	–	–	10	30	60	0,06–0,25	–	–
		(O)	KC5010	–	KC5010	30	55	120	0,06–0,25	0,04–0,16	–	0,08–0,30
		(O)	–	–	KCU10	–	30	55	125	–	–	0,06–0,25
		(C)	KC5010	–	KC5010	30	55	120	0,06–0,25	0,04–0,16	–	0,08–0,30
	2	(O)	KC5025	–	–	–	10	40	50	0,06–0,10	–	–
		(O)	–	–	KCU10	–	30	35	125	–	–	0,06–0,25
		(C)	K313	–	–	–	10	35	60	0,06–0,25	–	–
		(O)	KC5010	–	KC5010	30	60	120	0,06–0,25	0,04–0,16	–	0,08–0,30
	3	(O)	–	–	KCU10	–	30	35	125	–	–	0,06–0,25
		(O)	KC5010	–	KC5010	30	30	120	0,06–0,25	0,04–0,16	–	0,08–0,30
		(C)	–	–	KCU25	–	10	30	50	0,06–0,10	–	–
	4	(O)	KC5025	–	–	–	10	30	50	0,06–0,10	–	–
		(O)	–	–	KCU10	–	30	70	125	–	–	0,06–0,25
		(C)	K313	–	–	–	10	40	60	0,06–0,25	–	–
		(O)	KC5010	–	KC5010	30	70	120	0,06–0,25	0,04–0,16	–	0,08–0,30
		(O)	–	–	KCU10	–	30	35	125	–	–	0,06–0,25
		(O)	KC5010	–	KC5010	30	70	120	0,06–0,25	0,04–0,16	–	0,08–0,30
		(C)	–	–	KCU25	–	25	40	60	0,06–0,10	–	–
		(O)	KC5025	–	–	–	25	40	60	0,06–0,10	–	–
		(O)	–	–	KCU10	–	45	70	140	–	–	0,06–0,25
		(C)	K313	–	–	–	15	45	65	0,06–0,25	–	–
		(O)	KC5010	–	KC5010	45	70	140	0,06–0,25	0,04–0,16	–	0,08–0,30
		(O)	–	–	KCU10	–	45	70	140	–	–	0,06–0,25
		(O)	KC5010	–	KC5010	45	70	140	0,06–0,25	0,04–0,16	–	0,08–0,30
		(C)	–	–	KCU25	–	25	55	90	–	–	0,06–0,12
		(O)	KC5025	–	–	–	15	55	90	0,06–0,10	–	–

# ➤ PCD Customised Tooling

PCD tooling offers the highest productivity and accuracy, reduced tooling costs due to long tool life, and secure process control due to close tolerances. All of this increases overall quality and reduces scrap rates and inspection costs.

## Primary Application

Use Kennametal PCD tooling for machining aluminium and aluminium alloys, magnesium, copper, brass, bronze, plastics (GFRP, CFRP), MMC (Metal Matrix Composite), graphite, tungsten carbide green-stages, and ceramic. Choose from various PCD products for drilling, counterboring, and reaming. Steel- and solid carbide-based tool body designs are available for direct spindle coupling with or without adjustable PCD pocket seats or with steerable SIF™ backend.



## Features and Benefits

### Higher Productivity and Profitability

- Highest chip removal rates and fewer tool changes using multistep tooling.
- Extremely long tool life while maintaining very tight tolerances.
- Reduced built-up edge and bur formation, improved hole shape with multistep tooling, and better surface finish of the workpiece.

**Choose Kennametal as your trusted partner  
for PCD applications and benefit from our years  
of experience and global presence.**

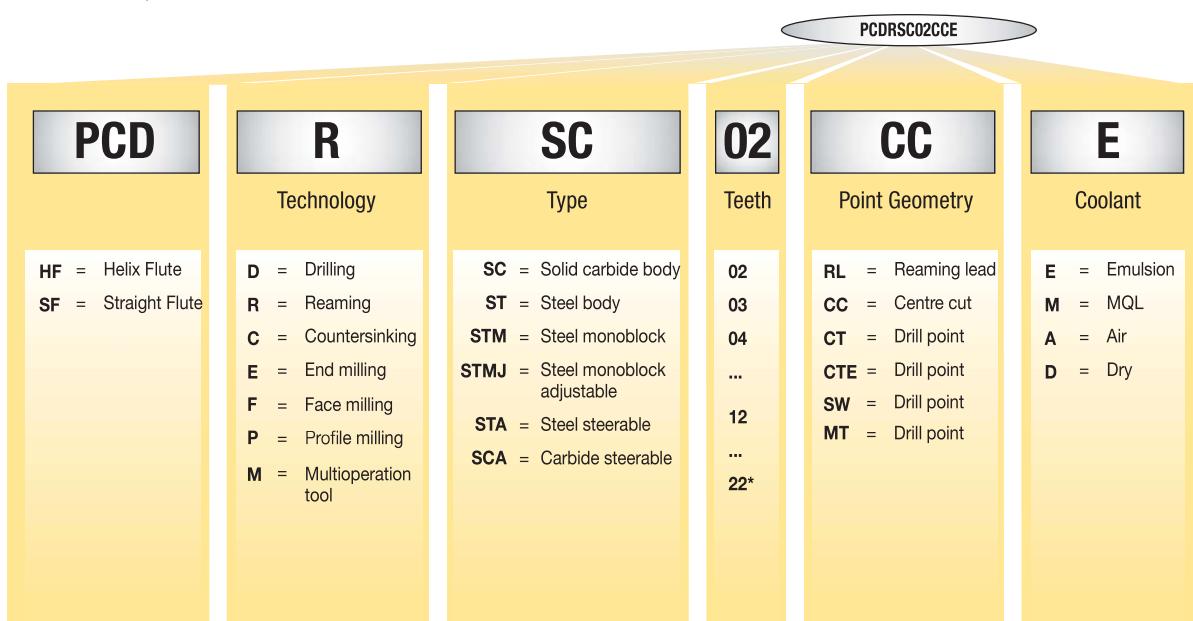
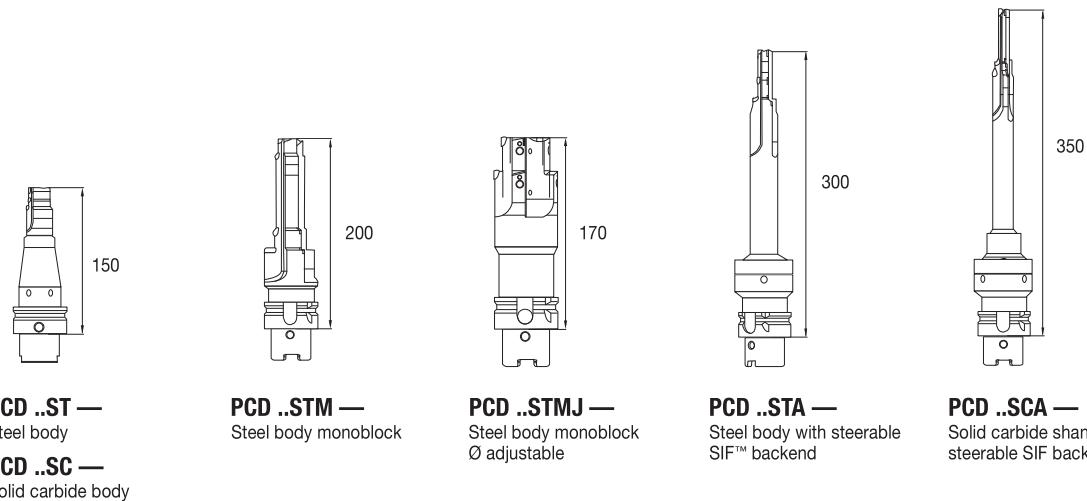


#### **Product Platform Versatility**

- All PCD drilling, counterboring, and reaming tools are designed to specific needs for diameter, shape, radii, and steps.
- Various PCD grades are available to match specific material.
- Multistep drilling, profiling, countersinking, and reaming platforms available.
- Coolant channel for optimised chip evacuation in regular and MQL styles.
- Steel-based tool body designs for direct spindle coupling or adjustable pocket seat for highest accuracy even in larger sizes.
- Carbide-based tool bodies enable highest accuracy and tool life in high L/D ratio applications.
- SIF™ steerable interface optimises runout and enables highest accuracy and tool life.
- All PCD tooling prebalanced by design. Further precision balancing available on request.

## PCD Tooling Basic Design Overview

Kennametal offers you certain PCD design platforms to optimally fulfill your machining task. These basic designs are independent, whether you are drilling, countersinking, profiling, reaming, or milling. All tooling designs are capable of internal coolant, MQL coolant, and are balanced by design.



## Runout of the Spindle

Depending on spindle runout and/or higher L/D ratios

runout ≤ 0,005mm		runout ≥ 0,006mm	
	PCD-ST PCD-SC		PCD-ST or PCD-SC with hydraulic chuck and SIF shank
	PCD-STM		PCD-STA with SIF PCD-SCA with SIF

## PCD Drill-Point Design Overview

**CT**

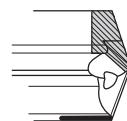
- PCD corner tipped.
- Carbide-based body design.
- Diameter >4,2mm.



Use for general application at moderate cutting speeds up to 12 x D drilling depth.

**CTE**

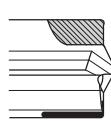
- PCD corner tipped, E point.
- Carbide-based body design.
- Diameter >4,2mm.



Use at precasted holes at moderate cutting speeds up to 12 x D drilling depth.

**SW**

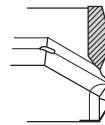
- Full-face sandwich PCD.
- Carbide-based body design.
- Diameter >5mm.



Use at high cutting speeds and abrasive materials up to 5 x D drilling depth.

**MT**

- PCD corner tipped.
- Steel- and carbide-based body design.
- Diameter >12mm.



Use for drilling casted surfaces up to 3 x D drilling depth.

## Cutting Edge and Margin Land Requirements

Determine correlations between spindle to edge overhang, amount of cutting, and margin lands for guidance and increased precision.

		number of cutting edges				
		2 flutes	2 flutes	3 flutes	4 flutes	6 flutes
application/shape of bore	overhang	2 lands	2 lands	3 lands	4 lands	6 lands
	short					
	long					
	short					
	long					
	short					
	long					
	short					
	long					



First Choice



Suitable with Limitations



Not Recommended

## Cutting Grade, Tooling Design

Select cutting data and tooling design based on stability and surface quality demands.

material	coolant	drilling	counterboring	reaming	milling	grade
Al <7%	MQL, emulsion	vc = 350–600 m/min fz = 0,004–0,016 IPR	vc = 650–900 m/min fz = 0,004–0,031 IPR	vc = 400–900 m/min fz = 0,004–0,016 IPR	vc = 1.500–5.000 m/min fz = 0,004–0,010 IPR	KD1415
		vc = 200–800 m/min fz = 0,004–0,016 IPR	vc = 650–900 m/min fz = 0,004–0,010 IPR	vc = 400–600 m/min fz = 0,004–0,010 IPR	vc = 1.500–4.000 m/min fz = 0,004–0,010 IPR	
Al >12%	emulsion	vc = 100–700 m/min fz = 0,004–0,012 IPR	vc = 650–900 m/min fz = 0,004–0,010 IPR	vc = 400–600 m/min fz = 0,004–0,010 IPR	vc = 1.500–3000 m/min fz = 0,004–0,010 IPR	KD1415
		vc = 350–1.000 m/min fz = 0,004–0,016 IPR	vc = 650–900 m/min fz = 0,004–0,010 IPR	vc = 400–600 m/min fz = 0,004–0,010 IPR	vc = 1.500–6.000 m/min fz = 0,004–0,010 IPR	
mg alloys	emulsion	vc = 350–1.800 m/min fz = 0,004–0,010 IPR	vc = 650–900 m/min fz = 0,004–0,010 IPR	vc = 60–200 m/min fz = 0,004–0,010 IPR	vc = 1.500–4.000 m/min fz = 0,004–0,010 IPR	KD1415
CFRP, GFRP	dry, air	vc = 350–1.800 m/min fz = 0,004–0,010 IPR	vc = 650–900 m/min fz = 0,004–0,010 IPR	vc = 60–200 m/min fz = 0,004–0,010 IPR	vc = 1.500–4.000 m/min fz = 0,004–0,010 IPR	KD1425

## Quick-Ship Delivery • Tooling Ranges

Please contact us if this special service is available in your region.

		PCD tool	flutes <sup>1</sup>	chip flute length <sup>2</sup>	cutting diameter	max steps	through coolant	step difference
non-centre cutting	reamer, corner tipped		2–6	max 5 x D	–	2	axial and radial	max 50%
	countersinker, corner tipped		2–4	max 5 x D	Ø 6–32	3		max 40%
	milling tool, corner tipped		1–6	max 5 x D	–	2		max 50%

		PCD tool	flutes <sup>1</sup>	chip flute length <sup>2</sup>	cutting diameter	max steps	through coolant	step difference
centre cutting	drilling tool, corner tipped		2	max 20 x D	Ø 5–32	3	axial and radial	max 50%
	countersinker, centre cut		2–4	max 10 x D				
	drilling tool, centre cut		2	max 12 x D	Ø 5–12			

NOTE: 310mm max overall

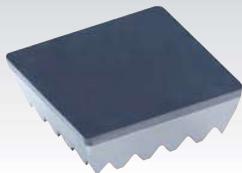
<sup>1</sup>Depending on the diameter

<sup>2</sup>Based on the max diameter

# Valve Seat and Guide Experts



+



## RMS™-BASED SOLID CARBIDE REAMER

- Best stiffness and accuracy.

## CBN-BASED RIQ™ INSERT

- Cross-serration technology for pre-defined guide chamfer angles.
- Same type of insert for all angles.
- 12 effective cutting edges.



+

## OPTIMISED HYDRO CHUCK

- Maximum flexural strength.
- Lowest runout error between seat and guide.



Experience the advantages at your Authorised Kennametal Distributor or at [kennametal.com](http://kennametal.com).

Cylinder Head



#### RIQ™ QUATTRO CUT™ VALVE SEAT & GUIDE PARENT BORE

- Valve seat and guide parent bore machining combined.
- Tolerance range 8 µm.
- Cast iron.
- Machining centre with internal coolant.

#### CHALLENGE

- RIQ padded reamer with integrated hydraulic chuck.
- RIQ Full face CBN KB1630™ insert.
- RMS™ reamer for guide parent bore.

#### SOLUTION

- vc 425 m/min      f 0,10 mm/rev      valve seat.
- vc 130 m/min      f 0,60 mm/rev      valve guide.

#### CUTTING DATA

- Four usable cutting edges per CBN insert.
- CBN RIQ insert with 28,000 bore tool life.
- 1,400 bores with regrindable RMS reamer.

#### RESULT

- Cost savings due to four-edged full face CBN insert.
- No insert back taper adjustment needed.
- Same RPM at both stages saving time on spindle acceleration and deceleration.

#### BENEFIT



Cylinder Head


**PCD SEAT & GUIDE PARENT BORE PCDRSCO4RLE**
**CHALLENGE**

- Valve seat and guide parent bore machining combined.
- Tolerance range H7.
- Aluminium.
- Machining centre with internal coolant.

**SOLUTION**

- PCD-tipped, steel-based tool (valve seat) with shrink in PCD tip, carbide based reamer (valve guide) with less than 4 µm total runout.

**CUTTING DATA**

- |                |               |              |
|----------------|---------------|--------------|
| • vc 344 m/min | f 0,60 mm/rev | valve seat.  |
| • vc 985 m/min | f 0,60 mm/rev | valve guide. |

**RESULT**

- Tool life of 456,000 bores.

**BENEFIT**

- Productivity increases as same RPM applied to both seat and guide stages.
- Lowest possible runout resulting in higher tool life.

Cylinder Head



RIQ serratation defines valve seat angle

**RIQ™ QUATTRO CUT™ VALVE SEAT & GUIDE MACHINING**

- Valve guide machining combined with primary and secondary seat angles.
- Sinter metal.
- Concentricity of seat to guide less than 50 µm.
- Machining centre with internal coolant.

**CHALLENGE**

- RIQ valve seat tooling with integrated hydraulic chuck.
- RIQ K68™ carbide inserts and solid carbide RMS™ multi-flute reamer.
- Alternative solution with KST coupling for higher stiffness.
- RIQ CBN inserts for valve seat machining available in KBHK10 and KBHK15.

**SOLUTION**

- vc 80 m/min f 0,10 mm/rev valve seat.
- vc 80 m/min f 0,32 mm/rev valve guide.

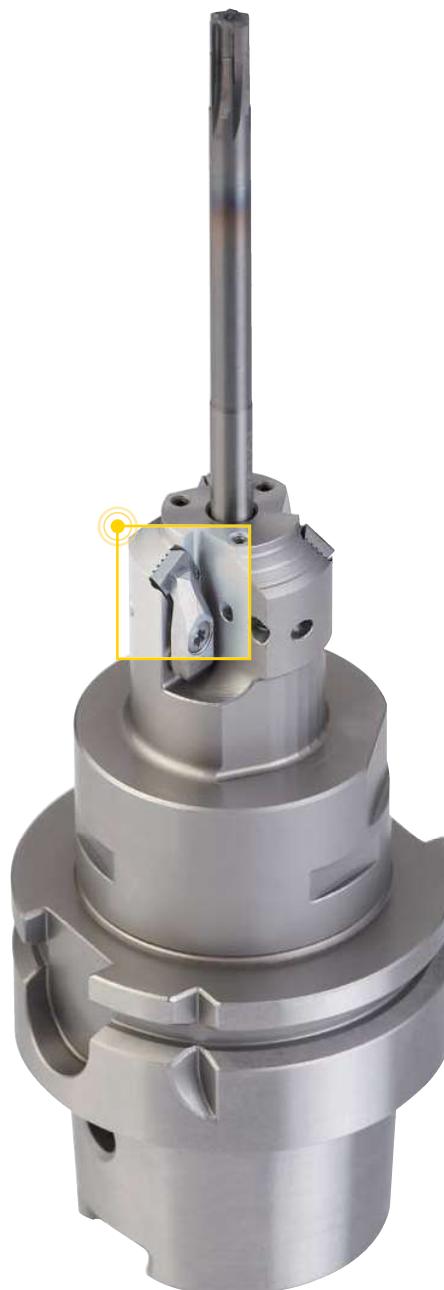
**CUTTING DATA**

- Tool life of 12,000 valve seats per insert.

**RESULT**

- Twelve usable cutting edges per carbide insert.
- Due to high precision RIQ pocket seat there is less setup effort as no angular adjustment of the insert is needed.
- Able to adapt RIR™ padded reamer machining the valve guide.

**BENEFIT**



Cylinder Head



Polished flutes for improved chip evacuation

**PCD STEP REAMING**

- Valve lifter bore Ø 12mm.
- Tolerance range 18 µm G7.
- Aluminium AlSi7Mg.
- Machining centre with internal coolant.

**CHALLENGE**
**SOLUTION**

- PCD-tipped, carbide-based reamer and counter sinker with internal coolant.
- Four effective cutting and chamfering teeth.
- KD1415™.

**CUTTING DATA**

- vc 400 m/min (1.312 SFM).
- f 0,10 mm/rev (.004 IPR).

**RESULT**

- Tool life of 125,000 holes.
- Surface finish better than Rz 1.5 µm.

**BENEFIT**

- Secure process and very good concentricity.

**PCD STEP REAMING**

- Injector bore Ø 7,75–19,5mm.
- Tolerance range 5 µm.
- Aluminium G-AlSi7Mg.
- Machining centre with internal coolant.

**CHALLENGE**
**SOLUTION**

- PCD-tipped, carbide based tool with PCD guide pads at Ø 19,5mm and internal coolant.
- Two effective cutting and chamfering teeth.
- KD1415™.

**CUTTING DATA**

- vc 220 m/min (722 SFM).
- f 0,35 mm/rev (.014 IPR).

**RESULT**

- Tool life of 400,000 bores.
- Surface finish better than Rz 3 µm.

**BENEFIT**

- Secure process due to chipformer in carbide body improving chip formation.

Cylinder Head



Self-aligning  
padded reamer

#### RIQ™ QUATTRO CUT™ PADDED REAMING

- Oil seal bore finishing Ø 56,4mm.
- Tolerance range 30 µm H7.
- Aluminium.
- Cambore to oil seal bore self alignment.
- Transfer line with internal coolant.

#### CHALLENGE



#### SOLUTION

- RIQ padded reamer with two PCD KD1415™ full-face inserts floating on finish machined cam bore.
- Self-aligning reamer body to ensure cam bore to oil seal bore concentricity.

#### CUTTING DATA

- $v_c$  326 m/min (1,070 SFM).
- $f$  0,32 mm/rev (.004 IPR).

#### RESULT

- Tool life of 80,000 cylinder heads.

#### BENEFIT

- No insert back taper adjustment needed.
- Cost savings due to four-edged full face PCD RIQ insert.



Cylinder Head

**RIQ™ QUATTRO CUT™ PADDED REAMING**
**CHALLENGE**

- Cam bore finishing Ø 25mm.
- Tolerance range 21 µm H7.
- Aluminium.
- Deflection less than 20 µm over total length.
- Machining centre with internal coolant.

**SOLUTION**

- RIQ padded reamer with two PCD KD1415™ full-face inserts for semi-finishing and two PCD KD1415 full-face inserts for finishing.

**CUTTING DATA**

- vc 334 m/min (1,096 SFM).
- f 0,16 mm/rev (.006 IPR).

**RESULT**

- Tool life of 160,000 cylinder heads.
- Surface finish Ra 0.3 µm.

**BENEFIT**

- No insert back taper adjustment is needed.
- Cost savings due to four-edged full face PCD RIQ insert.
- Setup time reduction from 8 hours with competitive tooling to less than 1/2 hour with RIQ.

Cylinder Block



#### ASYMMETRICAL LINE BORING BAR

- Oil seal bore finishing Ø 56,4mm.
- Tolerance range 30 µm H7.
- Aluminium.
- Cambore to oil seal bore self alignment.
- Transfer line with internal coolant.

#### CHALLENGE

#### SOLUTION

- Patented asymmetrical LBB, which supports the before finished last journal of the crank bore.
- R18 inserts with 8 cutting edges per inserts in PCD or carbide.
- Hybrid body made of heavy-metal and steel.



#### CUTTING DATA

- vc 326 m/min (1,070 SFM).
- f 0,32 mm/rev (.004 IPR).

#### RESULT

- Roundness measured: 0.005mm.
- Concentricity measured: 0.005mm.

#### BENEFIT

- All advantages of a line boring bar, but applicable on MC.
- No disadvantage of typical line boring bars.
- Setup possible outside the machine on standard optical presetter.

Cylinder Block


CLB screw for  
automatic wear  
compensation

**MOTION TOOLING**
**CHALLENGE**

- Cylinder bore Ø 75mm.
- Cast iron GG25.
- Semi-finish and finish operation combined in one tool with coolant pressure activated finish stage.
- Machining centre with internal coolant.

**SOLUTION**

- Motion tool with feed-out cartridges.
- Two-channel coolant system with coolant supply for inserts and feed-out cartridges.
- Solid CBN inserts with eight cutting edges; KB1340™.

**CUTTING DATA**

- |                |               |              |
|----------------|---------------|--------------|
| • vc 600 m/min | f 0,05 mm/rev | semi-finish. |
| • vc 600 m/min | f 0,11 mm/rev | finish.      |

**RESULT**

- Tool life of 2,000 bores per tooling setup.
- Cylindricity better than 8 µm.

**BENEFIT**

- Higher productivity as roughing at forward and finishing at backward movement — with coolant feed-out.
- Finish diameter adjustable with CLB process.
- Improved cylindricity in more than two separate operations.

Cylinder Block



Bayonet quick-change system

**ROMICRON™ FINE BORING**

- Cylinder bore Ø 78,933mm.
- Cast iron GG25.
- Reduce setup and adjustment effort with roughing and finishing at various cylinder blocks.
- Engineered solutions vertical mill with internal coolant.

**CHALLENGE**

**SOLUTION**

- Romicron engineered solutions tool with quick-change interface and drawbar actuated finish cartridge.
- SNGN090308T00520 KY1615 roughing insert.
- CPMT09T308LF KT315™ finishing insert.

**CUTTING DATA**

- |                |               |            |
|----------------|---------------|------------|
| • vc 580 m/min | f 0,26 mm/rev | roughing.  |
| • vc 580 m/min | f 0,19 mm/rev | finishing. |

**RESULT**

- Tool life of 100 components per setup.
- Cylindricity 13 µm.
- Surface finish Ra 1.5 µm.

**BENEFIT**

- Bore tolerance easily and consistently achieved due to 1 µm per click in radius adjustment.
- Weight reduction from 11 kg to 1.8 kg.
- Setup time reduction from 1.5 hours to 15 minutes.
- Secure process resulting in higher cpk value.





Cylinder Block


Semi-finish and finish  
stage combined

**FINE BORING**
**CHALLENGE**

- Crank bore finishing Ø 37mm.
- Tolerance range 5 µm.
- Cast iron.
- Maintain tolerance for minimum of 50 bores.
- Machining centre with internal coolant.

**SOLUTION**

- Line boring bar with tool bits adjusted by differential screw for more sensitivity.
- Dynamically balanced by design with axial holes ensuring highest stiffness of tool.

**CUTTING DATA**

- |                |               |              |
|----------------|---------------|--------------|
| • vc 160 m/min | f 0,12 mm/rev | semi-finish. |
| • vc 160 m/min | f 0,08 mm/rev | finish.      |

**RESULT**

- Customer proprietary information.

**BENEFIT**

- Use of standard C-style inserts in LF reduce tooling costs in KCK15.
- Reduction of cycle time.
- Easy and fine adjustments ensure a stable process.

Cylinder Block



RIQ™ QUATTRO CUT™ PADDED REAMING

- Balancing shaft bore Ø 31–39mm.
- Cast iron.
- Reaming of three diameters, machining of three chamfers, and one facing operation in one tool.
- Minimum quantity lubrication MQL.

### CHALLENGE



### SOLUTION

- RIQ padded reamer with one effective cutting edge combining chamfering, countersinking, and reaming stage in one tool, using two reaming RIQ and one special RIQ insert.

### CUTTING DATA

- $v_c$  100 m/min (328 SFM).
- $f = 0,14$  mm/rev (.006 IPR).

### RESULT

- Tool life of 8,000 bores per insert.
- Surface finish  $R_z$  10  $\mu\text{m}$ .

### BENEFIT

- No insert back taper adjustment needed.
- Highest angular precision without any adjustment with RIQ at chamfering stage.

Cylinder Block

**RHM™ MODULAR REAMING****CHALLENGE**

- Position bore Ø 20mm.
- Tolerance range 21 µm N7.
- Cast iron GG26Cr.
- Replace padded double-edged reamer.
- Machining centre with internal coolant.

**SOLUTION**

- Special RHM head with six cutting edges.
- Engineered solution KC6105 TiN coated carbide grade.

**CUTTING DATA**

- $v_c$  63 m/min (207 SFM).
- $f$  0,84 mm/rev (.033 IPR).

**RESULT**

- Tool life of 336m.

**BENEFIT**

- 8x higher productivity due to higher feed rate.
- Tool life increased by 240% when compared to previous solution.

Conrod



#### **ROMICRON™ FINE BORING**

- Pin bore Ø 58,033mm.
- Brass.
- Combine finishing of crank and pin bore into one tool to increase productivity.
- Machining centre with internal coolant.

#### **CHALLENGE**

#### **SOLUTION**

- Romicron engineered-solution tool with two Romicron mechanisms in one tool body.
- KC5010™.

#### **CUTTING DATA**

- vc 450 m/min (1.476 SFM).
- f 0,10 mm/rev (.004 IPR).

#### **RESULT**

- Tool life of 350 pin bores per insert.
- Surface finish better than Ra 1.0 µm.
- Cylindricity 5 µm.

#### **BENEFIT**

- Combination tool increases productivity.
- Bore tolerance range of 26 µm easily and consistently achieved due to 1 µm per click in radius adjustment.

#### **ROMICRON FINE BORING**

- Crank bore Ø 93,777mm.
- Steel C70.
- Combine finishing of crank and pin bore into one tool to increase productivity.
- Machining centre with internal coolant.

#### **CHALLENGE**

#### **SOLUTION**

- Romicron engineered solution tool with two Romicron mechanisms in one tool body.
- KT315™.

#### **CUTTING DATA**

- vc 400 m/min (1.312 SFM).
- f 0,10 mm/rev (.004 IPR).

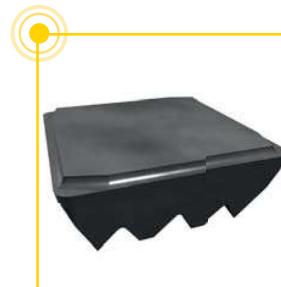
#### **RESULT**

- Tool life of 260 crank bores per insert.
- Surface finish better than Ra 1.0 µm.
- Cylindricity 5 µm.

#### **BENEFIT**

- Combination tool increases productivity.
- Bore tolerance range of 26 µm easily and consistently achieved due to 1 µm per click in radius adjustment.

Conrod


RIQ cermet insert with  
chipformer geometry

**RIQ™ QUATTRO CUT™ PADDED REAMING**
**CHALLENGE**

- Pin bore Ø 19mm.
- Tolerance range 33 µm H8.
- Steel C70.
- Entry/exit inclined and chip control improvement.
- Transfer line with MQL internal coolant.

**SOLUTION**

- RIQ padded reamer with two axial staggered RIQ inserts in microfinishing setup.
- Coated cermet RIQ inserts with four edges and special chip former.

**CUTTING DATA**

- $v_c$  200 m/min (328 SFM).
- $f$  0,20 mm/rev (.006 IPR).

**RESULT**

- Tool life of more than 5,000 components per insert.
- Surface finish  $Rz$  12–14 µm.
- Cylindricity 5 µm.

**BENEFIT**

- No insert back taper adjustment needed.
- High productivity increase due to higher feed rate when compared to previous fine boring tools.
- Very short chips improve chip evacuation.
- Secure process as surface requirement of  $Rz$  8 µm to  $Rz$  16 µm are achieved.



Conrod



#### ROMICRON™ FINE BORING

- Pin bore Ø 16,77mm.
- Crank bore Ø 20,77mm.
- Steel C70.
- Combines roughing, semi-finishing, and finishing operation into one tool.

#### CHALLENGE

- Romicron standard head HSK63ASVUBB2116M with engineered-solution boring bar.
- CPMT060204LF KC5010™.

#### SOLUTION

- vc 120 m/min f 0,10 mm/rev roughing.
- vc 120 m/min f 0,05 mm/rev finishing.

#### CUTTING DATA

- Tool life of 2,500 components per insert edge.
- Surface finish Ra 0.5 µm.
- Cylindricity 3 µm.

#### RESULT

- Productivity increase due to combination tool.
- Bore tolerance range of 20 µm easily and consistently achieved due to 1 µm per click in radius adjustment.

#### BENEFIT



Steering Column



Adjustable cartridge  
with PCD insert

#### PCD COUNTERSINKING

#### CHALLENGE

- Bore Ø 26,2; 37,6; and 44mm.
- Tolerance range 21 µm N7.
- Aluminium G-AISi9Cu3.
- Varying depth of cut ca. 1,5mm.
- Machining centre with internal coolant.

#### SOLUTION

- PCD-tipped, steel-based tool with internal coolant.
- Three effective cutting teeth; KD1415™.
- Standard cartridge SCFCR08CA06 achieves required surface finish range.

#### CUTTING DATA

- vc 1,640 SFM (500 m/min).
- f .012 IPR (0,30 mm/rev).

#### RESULT

- Surface finish Ra 1.6–2.3 µm.

#### BENEFIT

- Secure process.

Steering Column



#### PCD COUNTERSINKING

- Bore Ø 17,07; 39,1; and 50,9mm.
- Tolerance range 21 µm N7.
- Aluminium G-AlSi10Mg.
- Varying depth of cut ca. 2,5mm.
- Machining centre with internal coolant.

#### CHALLENGE

#### SOLUTION

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Three effective cutting and chamfering teeth.
- KD1415™.

#### CUTTING DATA

- $v_c$  600 m/min (1,969 SFM).
- $f$  0,30 mm/rev (.012 IPR).

#### RESULT

- Tool life of 2,000 metres.

#### BENEFIT

- Productivity increased due to higher cutting data.



Gear Housing

**PCD STEP REAMING****CHALLENGE**

- Bearing bore Ø 13,5 and 18mm.
- Tolerance range 18 µm H7.
- Aluminium G-AlSi10Mg.
- Varying depth of cut ca. 0,5mm.
- Machining centre with internal coolant.

**SOLUTION**

- PCD-tipped, carbide-based tool with SIF™ steerable interface with internal coolant.
- Four effective cutting teeth.
- KD1415™.

**CUTTING DATA**

- vc 230 m/min (755 SFM).
- f 0,25 mm/rev (.010 IPR).

**RESULT**

- Surface finish Ra 0.2 µm.

**BENEFIT**

- Secure process.

Gear Housing



Adjustable PCD pocket seat

PCD COUNTERSINKING

- Bearing bore Ø 40, 62, 85mm.
- Tolerance range 25 µm S7.
- Aluminium AISI9Cu3.
- Machine three different diameters with one tool.
- Machining centre with internal coolant.

CHALLENGE

SOLUTION

- PCD-tipped, steel-based tool with adjustable pocket seats, SIF™ steerable interface, and internal coolant.
- Four effective cutting and chamfering teeth; KD1415™.

CUTTING DATA

- $v_c$  630–1,340 m/min       $n$  = 5,010 RPM.
- $f$  0,32 mm/rev      (.013 IPR).

RESULT

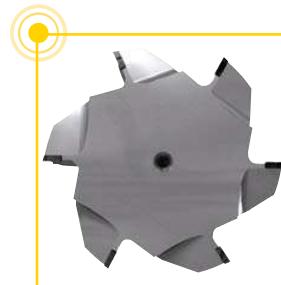
- Tool life of 500 workpieces.

BENEFIT

- Secure process with only 1.2 seconds cutting time per operation.
- Higher productivity due to combining three operations into one tool.
- Very stable process without chip control issues.



Gear Housing



Highly uneven spacing

**PCD STEP REAMING****CHALLENGE**

- Bearing bore Ø 130mm.
- Tolerance range 25 µm S6.
- Aluminium AlSi8Cu3.
- Varying depth of cut ca. 0,5–5mm.
- Machining centre with internal coolant.

**SOLUTION**

- PCD-tipped, steel-based tool with HSK interface and internal coolant.
- Six effective cutting and chamfering teeth in positive cutting position; KD1415™.

**CUTTING DATA**

- $v_c$  350 m/min (1,148 SFM).
- $f$  0,60 mm/rev (.024 IPR).

**RESULT**

- Tool life increase versus previous solution.
- Surface finish Ra 0.2 µm.

**BENEFIT**

- Secure process.

Gear Housing



#### PCD REAMING

- Bearing bore Ø 35mm.
- Tolerance range 21 µm H7.
- Aluminium G-AlSi10Mg.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

#### CHALLENGE



#### SOLUTION

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Three effective cutting and chamfering teeth.
- KD1415™.

#### CUTTING DATA

- vc 235 m/min (771 SFM).
- f 0,30 mm/rev (.012 IPR).

#### RESULT

- Tool life of 100,000 holes.
- Surface finish Ra 0.2 µm.

#### BENEFIT

- Secure process despite high L/D ratio.
- Very good surface quality.

Gear Housing

**PCD REAMING****CHALLENGE**

- Index bore Ø 11,5mm.
- Tolerance range 18 µm H7.
- Aluminium G-AlSi10Mg.
- Varying depth of cut ca. 3mm.
- Machining centre HSK63A with internal coolant.

**SOLUTION**

- PCD-tipped, carbide based tool with shrink in HSK63A adaptor with internal coolant.
- Two effective cutting and chamfering teeth.
- KD1415™.

**CUTTING DATA**

- vc 1,005 m/min (3,297 SFM).
- f 0,16 mm/rev (.024 IPR).

**RESULT**

- Tool life of 200,000 holes.
- Surface finish Ra 0.2 µm.

**BENEFIT**

- Secure process and very good surface quality.
- Very short overhang length resulting in very good stability.

Gear Housing



#### PCD REAMING

- Bearing bore Ø 80mm.
- Tolerance range 30 µm H7.
- Aluminium G-AlSi10Mg.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

#### CHALLENGE



#### SOLUTION

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Four effective cutting and chamfering teeth.
- KD1415™.

#### CUTTING DATA

- $v_c$  400 m/min (1,312 SFM).
- $f$  0,32 mm/rev (.013 IPR).

#### RESULT

- Tool life of more than 30,000 components.
- Surface finish Ra 0.2 µm.

#### BENEFIT

- Secure process and very good surface quality.

## Gear Housing



PCD REAMING

CHALLENGE

- Bearing bore Ø 28 and 90mm.
  - Tolerance range 21 and 35  $\mu\text{m}$  H7.
  - Aluminium G-AlSi10Mg.
  - Pre-drilled hole with 0,5mm depth of cut.
  - Machining centre HSK63A with internal coolant.

## SOLUTION

- PCD-tipped, steel-based tool with two individual adjustable SIF™ steerable interfaces and internal coolant.
  - Four effective cutting teeth.
  - KD1415™.

CUTTING DATA

- vc 1,312 SFM (400 m/min).
  - f .013 IPR (0,32 mm/rev).

## RESULT

- Tool life of more than 95,000 holes.
  - Surface finish Ra 0.2 µm.

BENEFITS

- Secure process and very good surface quality.



Gear Housing



#### PCD STEP REAMING

- Bearing bore Ø 80 and 120mm.
- Tolerance range 30 and 35 µm H7.
- Aluminium G-AlSi7Mg.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

#### CHALLENGE

#### SOLUTION

- PCD-tipped, steel-based tool with HSK63A interface and internal coolant.
- Four effective cutting teeth.
- KD1415™.

#### CUTTING DATA

- $v_c$  800 m/min (2,625 SFM).
- $f$  0,32 mm/rev (.013 IPR).

#### RESULT

- Tool life of more than 400 minutes.
- Surface finish Ra 0.2 µm.

#### BENEFIT

- Secure process and very good surface quality.
- Tool life increase versus previous solution.



Gear Housing

**PCD COUNTERSINKING****CHALLENGE**

- Bearing bore Ø 81,25 and 90,3mm.
- Tolerance range 30 and 35 µm H7.
- Aluminium G-AlSi7Mg.
- Pre drilled hole with 0,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

**SOLUTION**

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Three effective cutting and chamfering teeth.
- KD1415™.

**CUTTING DATA**

- $v_c$  400 m/min (1,312 SFM).
- $f$  0,30 mm/rev (.012 IPR).

**RESULT**

- Tool life of 10,000 components.
- Surface finish Ra 0.2 µm.

**BENEFIT**

- Secure process and very good surface quality.

Gear Housing



#### PCD STEP REAMING

- Bearing bore: 17,984 and 66,037mm.
- Tolerance range 8 and 20 µm.
- Aluminium GD-AISI7.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

#### CHALLENGE

#### SOLUTION

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Three effective cutting teeth.
- KD1415™.

#### CUTTING DATA

- |                  |               |             |
|------------------|---------------|-------------|
| • vc 315 m/min   | f 0,24 mm/rev | Ø 17,984mm. |
| • vc 1.156 m/min | f 0,15 mm/rev | Ø 66,037mm. |

#### RESULT

- Tool life of 35,000 components.
- Surface finish Ra 0.2 µm.

#### BENEFIT

- Secure process and very good surface quality.
- Achieves high concentricity and straightness.



Gear Housing


**PCD PROFILE MILLING**

- Retraining grooves Ø 60,4 and 90,7mm.
- Tolerance range 60 µm.
- Aluminium G-AISI10Mg.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

**CHALLENGE**
**SOLUTION**

- PCD-tipped, steel-based tool with HSK63A interface and internal coolant.
- Four effective cutting teeth.
- KD1415™.

**CUTTING DATA**

- vc 1,500 m/min (4,921 SFM).
- f 0,06 mm/rev (.002 IPR).

**RESULT**

- Tool life of 50,000 parts.
- Surface finish better than Ra 0.4 µm.

**BENEFIT**

- Secure process.
- Combining two operations in one tool increases productivity.
- High accuracy in the distance between the two machined grooves.


**PCD PROFILE MILLING**

- Retraining grooves Ø 60,4 and 90,7mm.
- Tolerance range 60 µm.
- Aluminium G-AISI10Mg.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

**CHALLENGE**
**SOLUTION**

- PCD-tipped, steel-based tool with HSK63A interface and internal coolant.
- Four effective cutting teeth.
- KD1415.

**CUTTING DATA**

- vc 1,500 m/min (4,921 SFM).
- f 0,06 mm/rev (.002 IPR).

**RESULT**

- Tool life of 50,000 parts.
- Surface finish better than Ra 0.4 µm.

**BENEFIT**

- Secure process.
- Combining two operations in one tool increases productivity.
- High accuracy in the distance between the two machined grooves.

Differential Housing



#### REAMING AND BACK BORING

- Bearing seat finishing of gearbox.
- Material: G-AlSi9Cu3.
- Machine: M/C.
- IC 40 bar, 20 l/min.
- Ae = 0,25mm.

#### CHALLENGE

#### SOLUTION

- PCD reaming/back boring combination tool.
- 2 step reapers with 6 PCD teeth.
- Back boring with Romicron™ and PCD insert.

#### CUTTING DATA

- Speed: 350 m/min.
- Feed per tooth: 0,12mm.
- 1500 rev/min and 1080 mm/min.

#### RESULT

- Roughness of Rz < 16 µm.
- One tool-chance saved.

#### BENEFIT

- Finish of 3 diameters with one tool.
- Perfect balanced tool, considering extreme asymmetrical shape.
- Easy adjustment with Romicron.



Differential Housing


**DIFFERENTIAL HOUSING—FINISH BORING**
**CHALLENGE**

- Bearing seat finishing of gearbox.
- Material: GGG40.
- Machine: M/C.
- Diameter: 60H6.
- Surface Finish: Ra 1.6.

**SOLUTION**

- Fine boring tool Romicron™ AVS.
- Cartridge for SPHX inserts.
- SPHX-inserts KC7215 with 2 cutting edges.
- Special back taper grind for similar surface finishes to wiper inserts.

**CUTTING DATA**

- $v_c = 180 \text{ m/min}$
- $f_z = 0.05\text{mm}$

**RESULT**

- All geometric and dimensional tolerances including surface finish achieved.
- Very robust process.
- Tool life with standard SPHX insert 4000 pieces (within this tool life, 3 diameter adjustments with the "Romicron-Click-Mechanism" were required).

**BENEFIT**

- Excellent surface finish similar to wiper inserts.
- Huge portfolio of SPHX-inserts for all kind of workpiece materials.
- Romicron-Click-Mechanism.
- No need for wrench or gage for the diameter adjustment.



Differential Housing



Adjustable pocket seat

**DIFFERENTIAL HOUSING—FINISH BORING**

- Bore Ø 40 and 55mm.
- Tolerance range 30 µm R7.
- Aluminium GD-AISI10Mg.
- Fine boring two diameters with one tool.
- Machining centre with internal coolant.

**CHALLENGE**

- PCD steel-based fine boring tool with four effective cutting edges, adjustable pocket seats at Ø 55mm, SIF™ steerable interface, and internal coolant.
- CCMT060202 KM™ — one uncoated carbide.

**SOLUTION**

- VC 340 and 520 m/min
- f 0,60 mm/rev
- n = 3,000 RPM.
- (.024 IPR).

**CUTTING DATA**

- Tool life of more than 15,000 components per insert.
- Surface finish Rz 10–12 µm.
- Cylindricity better than 20 µm.

**RESULT**

- All requirements regarding perpendicularity, roundness, and surface quality between Rz 8 µm and Rz 16 µm continuously achieved.
- Higher productivity due to combining three operations in one tool.

**BENEFIT**



## Water Pump Housing



PCD COUNTERSINKING

CHALLENGE

- Bore positions of Ø 21 and 24mm.
  - Tolerance range 13 and 33 µm.
  - Aluminium AlSi9Cu3.
  - Pre drilled hole with 0,5mm depth of cut.
  - Machining centre HSK63A with internal coolant.

## SOLUTION

- PCD-tipped, steel-based tool with adjustable pocket seats; SIF™ steerable interface and internal coolant.
  - Four effective cutting teeth; KD1415™.

CUTTING DATA

- vc 1,969 SFM (600 m/min).
  - f .005 IPR (0,12 mm/rev).

## RESULT

- Tool life of 80,000 components.
  - Surface finish Rz 0.8 µm with Ø 21mm and Rz 12 µm with Ø 24mm.

## BENEFITS

- All requirements regarding perpendicularity, roundness, and surface quality between Rz 8 µm and Rz 15 µm at Ø 24mm are continuously achieved.



Water Pump Housing



#### PCD MULTI-OPERATION TOOL

- Position bore Ø 7,9mm.
- Tolerance range 22 µm H8.
- Aluminium AISI9Cu3.
- Combine drilling, back chamfering, and facing.
- Machining centre BT40 with internal coolant.

#### CHALLENGE



#### SOLUTION

- Solid carbide, PCD-tipped, steel-based tool with back chamfering capability and internal coolant.
- Two effective cutting teeth.
- KD1415™.

#### CUTTING DATA

- vc 350 m/min (1,148 SFM).
- f 0,20 mm/rev (.008 IPR).

#### RESULT

- Tool life of 50,000 components.
- Surface finish Rz 0.8 µm.

#### BENEFIT

- Higher productivity due to combining three operations in one tool.

Water Pump Housing

**PCD STEP REAMING****CHALLENGE**

- Bearing bores Ø 10,14–18,45mm.
- Tolerance range 3–10 µm.
- Aluminium GD-AISi9Cu3.
- Pre-casted hole with 0,3mm depth of cut.
- Machining centre HSK32A with internal coolant.

**SOLUTION**

- PCD-tipped, steel-based tool with adjustable pocket seats; SIF™ steerable interface and internal coolant.
- Four effective cutting teeth.
- KD1415™.

**CUTTING DATA**

- vc 89–162 m/min      n = 2800 RPM.
- f 0,4 mm/rev      (.015 IPR).

**RESULT**

- Tool life of 40,000 components.
- Surface finish Rz 0,8 µm.

**BENEFIT**

- The quality criterion with an exact alignment of rightness, concentricity, and a high value of surface quality was reached.

Water Pump Housing



#### PCD END MILLING

- Face milling of connection face Ø 32mm.
- Aluminium AlSi10Mg.
- Casted face with 2,5mm depth of cut.
- Machining centre HSK63A with internal coolant.

#### CHALLENGE



#### SOLUTION

- PCD-tipped, steel-based end mill with HSK63A interface and internal coolant.
- Five effective cutting teeth.
- KD1415™.

#### CUTTING DATA

- vc 1,005 m/min (3,294 SFM).
- f 0,06 mm/rev (.002 IPR).

#### RESULT

- Tool life of 3,000 min.
- Surface finish Ra 0.3 µm.

#### BENEFIT

- Very low bur formation.

Planetary Gear Carrier



Chip control geometry

**RMS™ MULTI-FLUTE REAMING****CHALLENGE**

- Bearing bores Ø 8,8mm.
- Tolerance range 9 µm M6.
- Steel 42CrMo4 and 31CrMoV9.
- Increase tool life with long chipping material.
- Machining centre with internal coolant.

**SOLUTION**

- RMS engineered-solution reamer with four effective cutting edges, internal coolant hole, and coolant channels at shank.
- KC6305™ TiAlN coated carbide.

**CUTTING DATA**

- vc 70 m/min (230 SFM).
- f 0,30 mm/rev (.012 IPR).

**RESULT**

- Tool life of 300 components.
- Surface finish Rz 1.0–2.0 µm.

**BENEFIT**

- All requirements regarding perpendicularity, roundness, and surface quality below Rz 4 µm are continuously achieved.

Planetary Gear Carrier



#### ROMICRON™ FINE BORING

- Bearing bores Ø 35 and 36,5mm.
- Tolerance range 20 µm.
- Steel 20MnCr5.
- Replace padded step reamer.
- Machining centre with internal coolant.

#### CHALLENGE

#### SOLUTION

- Romicron™ standard AVS heads.
- CCMT06020411 KT315™ cermet insert.

#### CUTTING DATA

- $v_c$  290 m/min (230 SFM).
- $f$  0,10 mm/rev (.012 IPR).

#### RESULT

- Surface finish better than Ra 1.0 µm.
- Cylindricity better than 5 µm.

#### BENEFIT

- More than 25% reduction in machining time.
- Removing setup of padded reamer outside of the machine results in increased uptime.
- Bore tolerance range of 20 µm easily and consistently achieved due to 1 µm per click in radius adjustment.





Padded reaming pin machining

**RIQ™ QUATTRO CUT™ PADDED REAMING****CHALLENGE**

- Bearing pin machining Ø 45mm.
- Tolerance range 16 µm k6.
- Ductile cast iron GGG40.
- Surface quality of Rmax 10 µm to achieve.
- Special dimensional accuracy requirement.

**SOLUTION**

- RIQ padded reamer with SIF™ steerable tooling interface and special gashing for external coolant supply.
- Balanced-by-design and fine balanced.

**CUTTING DATA**

- vc 105 m/min (344 SFM).
- f 0,06 mm/rev (.002 IPR).

**RESULT**

- Surface finish better than Rz 2.5 µm.
- Roundness 3 µm.
- Cylindricity 6 µm.

**BENEFIT**

- No insert back taper adjustment needed.
- Faster setup and less scrap.

Brake Caliper



#### BRAKE CALIPER—ROUGHING/FINISHING MAIN BORE

- Component: Brake caliber
- Material: GGG55
- Operation: Cylinder hole
- Coolant: Yes
- Machine: Machine centre
- Objective: Surface finish and roundness

#### CHALLENGE

- HSK100A special tool with radial adjustments and guide pad.
- Fix-Perfect™ insert.
- Internal coolant.
- Decreasing vibration by means of heavy metal shank.

#### SOLUTION

- $v_c = 107 \text{ m/min}$
- $v_f = 300 \text{ mm/min}$
- FPT = 0,13mm

#### CUTTING DATA

- Tool life: 2.238 parts.
- Roundness 0,01mm.
- H8 — Tolerance kept, and even smaller would be feasible if requested.

#### RESULT

- From cast to finish hole in one go, i.e., with one single "One-Shot-Tool".
- 4 effective teeth.
- 4 edges per insert.
- Very fine, consistent adjustment mechanism.

#### BENEFIT



Brake Caliper

**RMS™ MULTIFLUTE REAMING****CHALLENGE**

- Pin hole Ø 12mm.
- Tolerance range 30 µm.
- Cast iron.
- Machining centre HSK63A with internal coolant.

**SOLUTION**

- UpSharp engineered-solution solid carbide reamer with six cutting edges.
- TiCN coated carbide.

**CUTTING DATA**

- vc 75 m/min (246 SFM).
- f 0,8 mm/rev (.031 IPR).

**RESULT**

- Tool life of 5,000 holes.
- Surface finish Ra 1.0 µm.

**BENEFIT**

- Productivity increase.
- Longer tool life than competition.
- Ease of use due to shrink technology.

Brake Caliper



#### RIQ™ QUATTRO CUT™ PADDED REAMING

- Main bore Ø 54,02mm.
- Tolerance range 40 µm.
- Cast iron GGG.
- Reduce setup time and cost per part.

#### CHALLENGE



#### SOLUTION

- RIQ padded reamer with customer specific shank.
- Coated carbide RIQ insert with four edges.
- KC6305™.

#### CUTTING DATA

- vc 80 m/min (262 SFM).
- f 0,40 mm/rev (.016 IPR).

#### RESULT

- Tool life of 16,000 bores per insert.
- Surface finish better than Ra 1.6 µm.

#### BENEFIT

- No insert back taper adjustment needed.
- High cost savings due to more than 100% increase in tool life.

Brake Caliper

**PCD REAMING****CHALLENGE**

- Main bore Ø 42mm.
- Tolerance range 8 µm.
- Aluminium.
- Varying depth of cut between 1–2mm.
- Machining centre with internal coolant.

**SOLUTION**

- PCD-tipped, steel-based tool with HSK63A interface and internal coolant.
- Four effective cutting teeth.
- KD1415™.

**CUTTING DATA**

- $v_c$  500 m/min (1,640 SFM).
- $f$  1 mm/rev (.039 IPR).

**RESULT**

- Tool life of 400,000–600,000 bores.
- Surface finish better than Ra 1.6 µm.

**BENEFIT**

- Secure process and high tool life.
- Productivity increase compared to previous solution.

Brake Caliper



Producing two different diameters



#### RMB™ MULTI-FLUTE REAMING

- Location holes Ø 39 and 40mm.
- Tolerance range 39 µm H8.
- Cast iron GGG60.
- Produces both diameters with one tool.
- Machining centre with internal coolant.

#### CHALLENGE



#### SOLUTION

- RMB engineered-solution carbide tipped reamer with 10 teeth and internal coolant supply.
- KC6305™ TiAlN coated carbide.

#### CUTTING DATA

- $v_c$  70 m/min (230 SFM).
- $f$  3,30 mm/rev (.130 IPR).

#### RESULT

- Tool life of 5,000 holes.
- Surface finish  $Rz$  20 µm better than required  $Rz$  25 µm.

#### BENEFIT

- Very stable and highly productive process as multiple operations are combined at very high cutting data.

Brake Master Cylinder

**RIQ™ QUATTRO CUT™ PADDED REAMING****CHALLENGE**

- Piston bore Ø 25,431mm.
- Tolerance range 10 µm.
- Ductile cast iron.
- Replace honing process with reaming.
- Machining centre with internal coolant.

**SOLUTION**

- RIQ padded reamer in angular micro-finishing setup with semi- and fine-finishing insert.
- RIQ full face PCD KD1415™ as finishing insert.

**CUTTING DATA**

- vc 120 m/min (394 SFM).
- f 0,20 mm/rev (.008 IPR).

**RESULT**

- Tool life of 1,600 bores per insert.
- Surface finish better than Ra 0.4 µm.
- Cylindricity 6 µm.

**BENEFIT**

- No insert back taper adjustment needed.
- Higher productivity due to combining two operations in one tool.

Steering Knuckle



#### ROMICRON™ FINE BORING

- Main bearing bore Ø 82mm.
- Replace setup of padded reamer and cover various diameters with one tool.
- Machining centre with internal coolant.

#### CHALLENGE



#### SOLUTION

- Romicron™ engineered solution. HSK80ASVSB156M SVS4B head.
- CPMT 060204 FW KCK20™.

#### CUTTING DATA

- $v_c$  400 m/min (1,312 SFM).
- $f$  0,20 mm/rev (.008 IPR).

#### RESULT

- Tool life of 1,000 components.
- Surface finish 1.2 µm.
- Cylindricity better than 6 µm.

#### BENEFIT

- Reduce setup time and cost reduction when standard inserts are used.
- Bore tolerance range of 30 µm easily and consistently achieved due to 1 µm per click in radius adjustment.

Suspension Sub-frame


**REAMING PIVOT BEARING**
**CHALLENGE**

- Location hole Ø 18,5–23,0mm.
- Tolerance range 0,1°.
- Steel.
- Improvement in roundness and angularity.
- Transfer line with internal coolant.

**SOLUTION**

- RIR taper reamer with HSK interface.
- R904S00771 KC6005™ with two edges.

**CUTTING DATA**

- vc 400 m/min (1,312 SFM).
- f 0,20 mm/rev (.008 IPR).

**RESULT**

- Tool life of 800 bores per insert.
- Surface finish Ra 1.6 µm.

**BENEFIT**

- Predictable performance and cost savings because inserts can be reconditioned.
- Easy to set with three clock padded reamer setting fixtures.
- Roundness improvement over competitive solid carbide multi-flute reamer.

Mounting Lever



**PCD COUNTERSINKING**

- Reaming pre-casted hole Ø 20mm.
- Tolerance range 21 µm H7.
- Aluminium AISi9Cu3.
- 220mm overhang due to workpiece fixture.
- Machining centre with internal coolant.

**CHALLENGE**



**SOLUTION**

- PCD-tipped, steel-based tool with HSK63A interface and internal coolant.
- Four effective cutting teeth.
- KD1415™.

**CUTTING DATA**

- $v_c$  125 m/min (410 SFM).
- $f$  0,70 mm/rev (.003 IPR).

**RESULT**

- Tool life of 60,000 components.
- Surface finish Ra 0.2 µm.

**BENEFIT**

- Secure process and less scrap than previous competitive solution.
- No adjustment effort due to solid solution.

Turbocharger

**RMS™ MULTI-FLUTE REAMING****CHALLENGE**

- Mounting holes Ø 12mm.
- Tolerance range 18 µm H7.
- Ductile cast iron.
- Machining centre with internal coolant

**SOLUTION**

- RMS standard reamer with six effective cutting edges and internal coolant.
- KC6305™ TiAIN coated carbide.

**CUTTING DATA**

- vc 66 SFM (20 m/min).
- f .012 IPR (0,30 mm/rev).

**RESULT**

- Tool life of 1,000 components.
- Surface finish better than Rz 10 µm.

**BENEFIT**

- Productivity and tool life increase compared to previous solution.

Compressor



#### ROMICRON™ FINE BORING

- Piston bore Ø 23,5mm.
- Tolerance range 18 µm.
- Aluminium 12% Si.
- Machining centre BT40 with external coolant.

#### CHALLENGE

#### SOLUTION

- Standard SVUBB2 head with KR coupling.
- Standard steel boring bar.
- CPGW060204FST KD1400™.

#### CUTTING DATA

- $v_c$  367 m/min (1,204 SFM).
- $f$  0,07 mm/rev (.003 IPR).

#### RESULT

- Surface finish  $R_a$  0.6 µm.
- Roundness better than 5 µm.

#### BENEFIT

- 2x the productivity compared to the current solution.
- 80% less adjustment time needed.
- Bore tolerance range of 18 µm easily and consistently achieved due to 1 µm per click in radius adjustment.





Polished flutes improving chip evacuation

#### PCD COUNTERSINKING

#### CHALLENGE

- Bearing hole Ø 12–31mm.
- Tolerance range 50 µm.
- Aluminium G-AISI12.
- Machining centre HSK40 with internal coolant.

#### SOLUTION

- PCD-tipped, carbide-based tool with four guiding lands, flat-bottom drilling point, and internal coolant.
- Two effective cutting and chamfering teeth; KD1415™.

#### CUTTING DATA

- $v_c$  440 m/min (1,444 SFM).
- $f$  0,20 mm/rev (.008 IPR).

#### RESULT

- Surface finish  $R_z$  1–2 µm.
- Roundness better than 5 µm.

#### BENEFIT

- Productivity increases due to combining different tools in one.
- Tool life increase versus previous solution.

Compressor



**RHM™ MODULAR REAMING**

- Piston bore Ø 23,5mm.
- Tolerance range 10 µm.
- Cast iron GGG60.
- Machining centre HSK63 with internal coolant.

**CHALLENGE**

**SOLUTION**

- RHM modular reamer with six cutting edges.
- KT325™ uncoated cermet.
- Standard lead geometry.
- SIF™ steerable tooling.

**CUTTING DATA**

- vc 125 m/min (410 SFM).
- f 0,75 mm/rev (.030 IPR).

**RESULT**

- Surface finish better than Rz 4 µm.

**BENEFIT**

- Higher productivity than single-edged padded reamer.





Hydraulic Valve Block

**RIR™ PADDED REAMING****CHALLENGE**

- Spool bore Ø 18,5mm.
- Tolerance range 10 µm.
- Cast iron.
- Up to 4mm varying depth of cut.
- Machining centre with internal coolant.

**SOLUTION**

- RIR padded reamer with up to 100mm long cermet guide pads.
- Engineered solution RIR insert with modified chipformer.

**CUTTING DATA**

- vc 70 m/min (230 SFM).
- f 0,125 mm/rev (.005 IPR).

**RESULT**

- Tool life of 400 min per double-edged insert.
- Roundness and straightness within 10 µm.

**BENEFIT**

- Very stable process control and predictable performance.

Hydraulic Valve Block



#### RMS™ MULTI-FLUTE REAMING

- Rinse slider bore Ø 9,534mm.
- Tolerance range 6 µm.
- Ductile cast iron 0.7060.
- Three interrupted cuts at a reaming depth of 100mm.
- Special dimensional accuracy requirement.

#### CHALLENGE

#### SOLUTION

- RMS solid carbide reamer engineered solution.
- Special back taper configuration and support margins lands.
- KC6305™ TiAIN coated carbide.

#### CUTTING DATA

- vc 150 m/min (492 SFM).
- f 0,72 mm/rev (.028 IPR).

#### RESULT

- Tool life of 500 pieces.

#### BENEFIT

- Speed and feed rates are almost 30x faster, resulting in higher productivity.
- Less scrap due to consistent accuracy.



Hydraulic Valve Block

**PCD COUNTERSINKING****CHALLENGE**

- Thread core hole Ø 24mm.
- Tolerance range 21 µm F7.
- Aluminium AlSi9Cu3.
- Pre-drilled hole.
- Machining centre DV40 with internal coolant.

**SOLUTION**

- PCD-tipped, carbide-based tool with internal coolant.
- Two effective cutting and chamfering teeth.
- KD1415™.

**CUTTING DATA**

- $v_c$  360–750 m/min       $n = 7,500$  RPM.  
 $f$  0,20 mm/rev      (.008 IPR).

**RESULT**

- Tool life of 100,000 holes.
- Surface finish Ra 0.1 µm.

**BENEFIT**

- Productivity increase due to combining two operations into one.
- Carbide base increases tool life and accuracy.

ABS Valve Block



#### PCD COUNTERSINKING

- Bearing bores Ø 20,99 and 24,275mm.
- Tolerance range 20 µm.
- Aluminium AISI1.
- Pre-casted hole with 0,15mm depth of cut.
- Machining centre HSK63A with internal coolant.

#### CHALLENGE

#### SOLUTION

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Two effective cutting and chamfering teeth.
- KD1415™.

#### CUTTING DATA

- vc 300 m/min (984 SFM).
- f 0,35 mm/rev (.014 IPR).

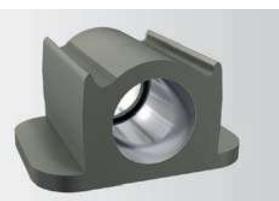
#### RESULT

- Surface finish Ra 0.4–0.6 µm.

#### BENEFIT

- Very stable process control and predictable performance.
- Very favourable chip creation.





Bearing Seat

**CHALLENGE****RHM™ MODULAR REAMING**

- Reaming  $\varnothing$  35mm.
- Tolerance range 20  $\mu\text{m}$ .
- Carbon steel, annealed, long-chipping.
- Blind hole limiting chip evacuation.
- Machining centre with internal coolant.

**SOLUTION**

- RHM modular reamer with eight cutting edges.
- KT325™ uncoated cermet.
- Standard lead geometry.
- Short engineered-solution axial clamping tool body.

**CUTTING DATA**

- $v_c$  120 m/min (394 SFM).
- $f$  1,18 mm/rev (.046 IPR).

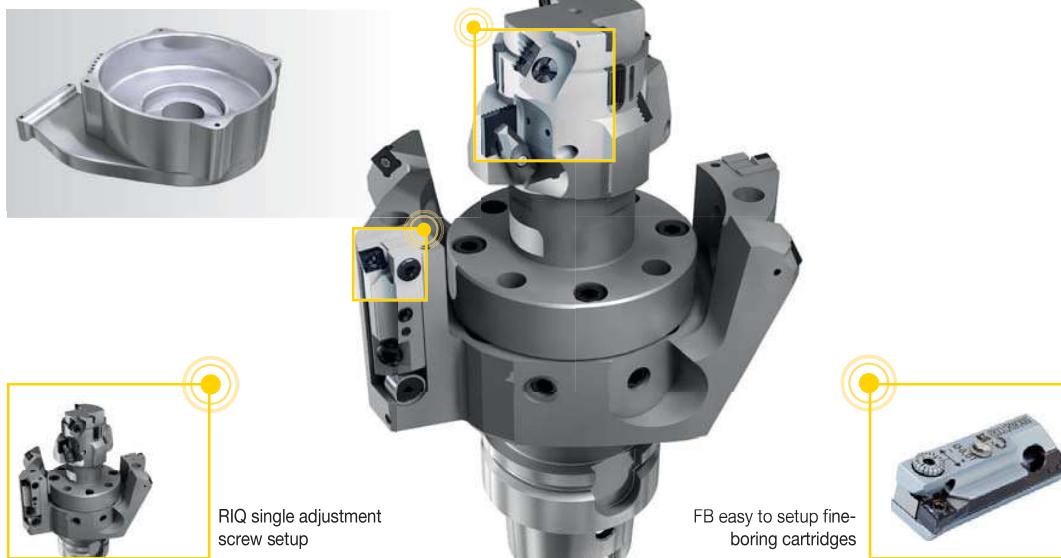
**RESULT**

- Tool life of 145,000 holes.
- Surface finish better than  $Rz$  6.3  $\mu\text{m}$ .

**BENEFIT**

- Predictable tool life as only 2  $\mu\text{m}$  diameter deviation after 10,000 holes.

Bearing Seat



**RIQ™ QUATTRO CUT™ PADDED REAMING**

- Reaming Ø 47mm.
- Tolerance range 19 µm N6.
- Aluminium AISi9Cu3.
- Machine four different diameters, two spot faces, and four different chamfers with one tool.

**CHALLENGE**

**SOLUTION**

- RIQ padded reamer with full-face PCD KD1415™ insert having four cutting edges.
- SIF™ steerable interface between reaming and fine boring section.

**CUTTING DATA**

- vc 236 m/min (774 SFM).
- f 0,08 mm/rev (.003 IPR).

**RESULT**

- Surface finish better than Rz 16 µm.

**BENEFIT**

- No insert back taper adjustment needed.
- Less operations increase productivity.
- Higher accuracy than multiple operations.
- Full-face PCD inserts reduce cost per hole.

**FB CARTRIDGE FINE-BORING**

- Reaming Ø 144mm.
- Tolerance range 40 µm H7.
- Aluminium AISi9Cu3.
- Machine two different diameters.

**CHALLENGE**

**SOLUTION**

- Standard FB fine-boring cartridges with almost backlash-free fine adjustment.
- CCGW060204 KD1415™.

**CUTTING DATA**

- vc 723 m/min (2,372 SFM).
- f 0,08 mm/rev (.003 IPR).

**RESULT**

- Surface finish better than Rz 16 µm.

**BENEFIT**

- Radial adjustment does not influence axial adjustment of inserts resulting in faster setup.
- Productivity increase with less operations.
- More accurate than previous solution.



Pump Housing

Full-face PCD insert with  
chipformer geometry**RIQ™ QUATTRO CUT™ PADDED REAMING****CHALLENGE**

- Piston bore Ø 18,5mm.
- Tolerance range 21 µm H7.
- Aluminium.
- Heavy interrupted cut and surface finish Rz 6.3.
- Machining centre with internal coolant.

**SOLUTION**

- RIQ padded reamer with helical chip flute and helical solid carbide guide pad.
- Full-face KD1415™ insert having four cutting edges.
- Positive wiper insert geometry.

**CUTTING DATA**

- vc 230 m/min (755 SFM).
- f 0,15 mm/rev (.006 IPR).

**RESULT**

- No chip evacuation issues.
- No bur, marks, or scratches at entrance or exit of interruptions.

**BENEFIT**

- No insert back taper adjustment needed.
- Half cycle time compared to previous competitive tooling.

Valve Housing



#### ROMICRON™ FINE BORING

- Various bore Ø 170–480mm.
- Tolerance range 75 µm.
- Cast iron GG25.
- Automated wear compensation at interrupted cut.
- Machining centre HSK100 with internal coolant.

#### CHALLENGE



#### SOLUTION

- Semi-standard SVU120 CLB head with engineered-solution diameter extender and automatic wear compensation with CLB.
- CPGW09T308S01015C KB1630™.

#### CUTTING DATA

- vc 800 m/min (2,625 SFM).
- f 0,12 mm/rev (.005 IPR).

#### RESULT

- Tool life of 1,200 minutes per insert.
- Surface finish better than Rz 16 µm.

#### BENEFIT

- More than 30% reduction in manufacturing lead time.
- Third shift and weekend without operators.
- 1 µm per click in radius adjustment executed by machine.

Wind Energy Housing

1 µm per click in  
radius adjustment**ROMICRON™ FINE BORING****CHALLENGE**

- Flange Ø 1260–1400mm.
- Tolerance range 125 µm H7.
- Cast iron GGG40.
- One base bridge for multiple diameters.
- Machining centre without coolant.

**SOLUTION**

- Romicron standard modular MF40 element with engineered-solution aluminium bridge.
- CPGT060204/08HP KC5410™.

**CUTTING DATA**

- $v_c$  200 m/min (650 SFM).
- $f$  0,12 mm/rev (.005 IPR).

**RESULT**

- Tool life of 73 min.

**BENEFIT**

- Investment saving as only one base bridge needed.
- Use of standard off-the-shelf Romicron tool.
- Ease of use due to Romicron.

Synchronous Joint



Balanced-by-design

**ROMICRON™ FINE BORING**

- Pin machining Ø 13mm.
- Tolerance range 6 µm.
- Steel 42CrMo4 (4140).
- Machining centre with internal coolant.

**CHALLENGE**

**SOLUTION**

- Romicron standard HSK63ASVUBB1095MCLB head with engineered solution pin boring bar.
- TCMT110202FP KTP10™.



**CUTTING DATA**

- vc 160 m/min (525 SFM).
- f 0,1 mm/rev (.004 IPR).

**RESULT**

- Tool life of 300-450 components per insert.
- Surface finish Ra 0.3 µm.
- Cpk value ≥1,33.

**BENEFIT**

- Use of standard off-the-shelf Romicron tooling.
- Bore tolerance of 6 µm consistently achieved due to 1 µm per click in radius adjustment.