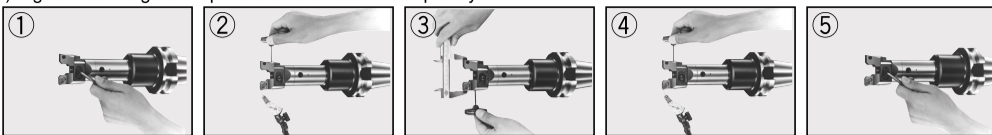


How to preset boring diameter

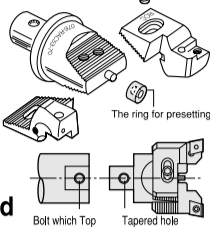
- 1) Loosen Cartridge Clamping Bolts on both sides first and tighten them slightly.
- 2) Put dial gauge at the edge of insert tip, centralize and preset the diameter at just smaller than the diameter you need with L wrench. (If you need ϕ 48mm boring diameter, preset them approx. ϕ 46mm.)
- 3) Turn the adjusting screw clockwise and extend the cartridges of both sides. (The diameter you need should be measured by caliper.)
- 4) Centre the cartridges of both sides again. The difference between cartridges should be within ± 0.05 mm.
- 5) Tighten Cartridge Clamp Bolts on both sides completely.



In case of RAC Head is used for always same boring diameter such as repeating operation, the ring, which internal diameter is equal to the diameter of boss (ϕ 3mm) located on RAC Head top, for presetting is recommended. The indicator of each 1mm on the cartridge body is the indicator for adjusting the diameter as a guide line. Please measure the diameter on the tool presetter after adjusting the diameter.

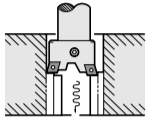
Modular Connection

- Connection system is the Face Contact System by drawing into with the bolt, which top shape is gentle taper.
- 1) Insert a Head by adjusting the position of a hole.
 - 2) Tighten the bolt temporarily, then loosen slightly.
 - 3) Tighten the bolt again by moving a Head clockwise and counterclockwise. This operation is to centralize the each other.
 - 4) Then, tighten the bolt completely until face contact.



Example of 2 Stepped Balance Cut

Approx. double removal of below cutting condition is possible by -0.3Cartridge.



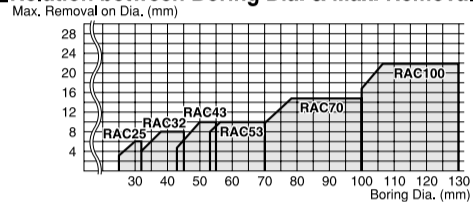
Selection of Tips and Proper Cutting Speed

◎ : best ○ : good — : inadequate

Tip	Code No.	Grade	SS41	S55C	SCM	SKD	SC	FC,FCD	SUS	AL,ALC
			60~120	60~150	60~150	50~80	50~80	60~150	40~80	—
CC	Coated	CC	60~120	60~150	60~150	50~80	50~80	60~150	40~80	—
AEG	K10	AEG	—	—	—	—	—	60~150	—	200~500
SC	Coated	SC	60~120	60~80	60~80	50~60	50~60	80~100	40~50	—

- ★ CC type is recommended for boring on steel and stainless steel.
- ★ Interrupted Boring Cutting Speed should be reduced to approx. 50%.
- ★ AEG type cartridges are highly recommended for the extended length boring of cast iron.
- ★ Feed (mm/rev.) is highly recommended to be reduced to approx. 60~70% at the entrance of the extended length boring.

Relation between Boring Dia. & Max. Removal



Cutting Condition (Removal & Feed)

These figures are based on the application of L/D=3~3.5times (Cast Iron). In case of large stock removal, the height of the cutting edges are recommended to be within 0.02mm to change the insert tips.

Boring Range	Type	Best Condition		Max. Condition	
		Removal mm/rev	Feed mm/rev	Removal mm/rev	Feed mm/rev
ϕ 25~32	RAC 25	2.0~4.0	0.2~0.3	0.5~6.0	0.1~0.4
32~43	RAC 32	3.0~5.0	0.2~0.3	1.0~8.0	0.1~0.4
43~53	RAC 43	4.0~7.0	0.2~0.3	1.0~10.0	0.1~0.5
53~70	RAC 53	4.0~7.0	0.2~0.3	1.0~10.0	0.1~0.5
70~100	RAC 70	5.0~10.0	0.3~0.4	1.0~15.0	0.1~0.5
100~130	RAC 100	7.0~12.0	0.3~0.4	1.0~22.0	0.1~0.5

- △ Please confirm that the insert chip and the other parts are clamped properly.
- △ And please never use other than the proper insert chip and parts, otherwise the danger that it is injured by the dropping and/or flying parts will occur during cutting.
- △ In case that the usage is mistaken, or the operating condition is unsuitable, it will be injured by causing breakage and scattering of a tool. Please use it within the range of the recommended conditions with a safety cover, an eye shield, etc.
- △ In case that it is used by high-speed spindle, if dynamic balance is not maintained, there is a danger that it is injured by damaging tool by deflection or vibration. Please be sure to make a test run and confirm of no deflection, vibration and unusual sound.
- △ Quotation fee of the repair is always necessary whether repair or not.

This manual is for basic instruction and information for safety use of our product. Please contact with us for the further details. Please note that we could not take a responsibility of the accidental damage on our product which is modified the specifications by the customer without our approval.

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Insert Tip for RAC (Standard and Steel & Stainless)

Insert Tip Code No.			Dimension	Grade	Material	Applicable Arbor
R 0.2	R 0.4	R 0.8				
CC07-C4	CC07-C8			Coated	Alloy Steel, Stainless, Cast Iron	RAC025
CC08-C4	CC08-C8			Coated	Alloy Steel, Stainless, Cast Iron	ZMAC07R, ZMAC85R, RAC25, RAC32
	CN08-C8			Coated	Alloy Steel, Stainless, Cast Iron	RAC43~RAC530
CC12-C4	CC12-C8			Coated	Alloy Steel, Stainless, Cast Iron	ZMAC100R, ZMAC140R, RAC43E~RAC100E

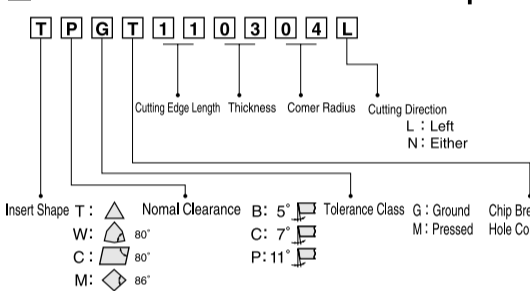
- ★ Minimum order quantity of CBN insert: 1pcs All other inserts: 10pcs
- ★ Code No. of Coated CCMT type inserts are now prefixed with a "C".

Insert Tip for RAC (Aluminum & Cast Iron and Multi Sheet & Through Hole)

Insert Tip Code No.				Dimension	Grade	Material	Applicable Arbor
R 0.1	R 0.2	R 0.4	R 0.8				
AEG12-1	AEG12-2	AEG12-4			K10	Aluminum, Cast Iron	RAC25A, RAC32A
AEG16-1	AEG16-2	AEG16-4			K10	Aluminum, Cast Iron	RAC43A~RAC100A
		SC09-4			Coating	Alloy Steel	RAC25K, RAC32K
		SC12-8			Coating	Alloy Steel	RAC43K~RAC100K

- ★ Smaller Nose Radius Inserts for Aluminium are available.
- ★ Minimum order quantity: 10pcs
- ★ The Inserts surrounded by () are Nikken original type.

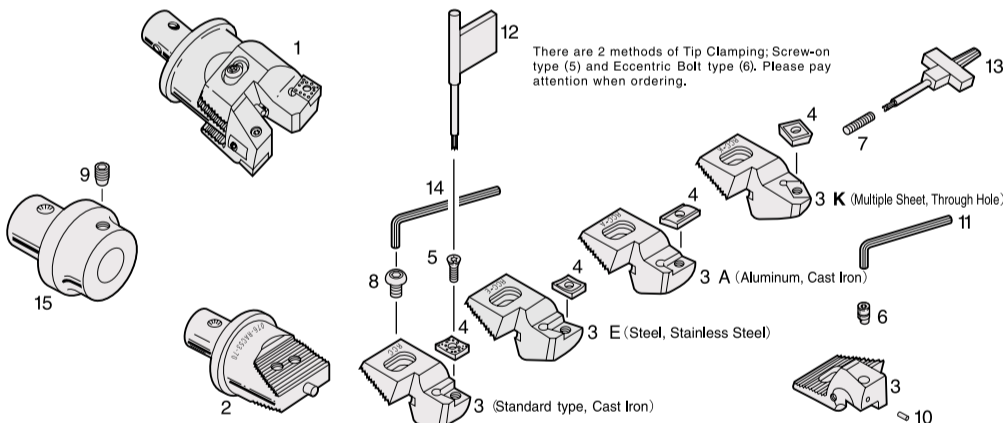
Code No. of ISO standard Insert Tip



The majority of ISO inserts available are designed for turning where the workpiece rotates and are not recommended for use in boring as it's the tool which is rotating, however these inserts can be fitted on to the cartridge if the size is the same.

Diameters of centre holes on ISO standard insert can vary and you may, therefore have to change the clamp screw to suit the insert.

BALANCE-CUT BORING UNIT PARTS LIST (1) NIKKEN



There are 2 methods of Tip Clamping; Screw-on type (5) and Eccentric Bolt type (6). Please pay attention when ordering.

Boring Range	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Purpose	RAC Head	RAC Base	Cartridge	Tip	Tip Clamping Bolt	Eccentric Bolt	Adjusting Screw	Cartridge Clamping Bolt	Set Screw	Copper Pin	Tip Clamping Wrench	Tip Clamping Handle	Wrench for Adjustment	Wrench for Cartridge	Stepped Spacer
ϕ 25~32	Cast Iron	12-RAC 25-55	RCC-025	CC07											
	Steel	-55		CC07											
	Aluminum	-55A	12-RAC025-55B	-25A	AEG12	M3070		M508	G-25	B12					M3
ϕ 32~45	Cast Iron	16-RAC 32-55	RCC-32	CC08											
	Steel	-55		CC08											
	Aluminum	-55A	16-RAC 32-55B	-32A	AEG12	M4090		M512	G-32	B16					M4
ϕ 43~55	Cast Iron	20-RAC 43-70	RCC-43	CN08	CSM-70	CSM-43				R12	M3	20S			
	Steel	-70E		CC12	M5100										
	Aluminum	-70A	20-RAC 43-70B	-43A	AEG16	M4090		M514	G-43	B20					M5
ϕ 53~70	Cast Iron	26-RAC 53-70	RCC-53	CN08	CSM-70	CSM-43				R12	M3	20S			
	Steel	-70E		CC12	M5100										
	Aluminum	-70A	26-RAC 53-70B	-53A	AEG16	M4090		M518	G-53						M2.5
ϕ 70~100	Cast Iron	26-RAC 70-70	RCC-70	CN08	CSM-70	CSM-43				R12	M3	20S			
	Steel	-70E		CC12	M5100										
	Aluminum	-70A	26-RAC 70-70B	-70A	AEG16	M4090		M528	G-70						M6
ϕ 100~130	Cast Iron	42-RAC100-100	RCC-100	CN08	CSM-70	CSM-43				R12	M3	20S			
	Steel	-100E		CC12	M5100										
	Aluminum	-100A	42-RAC100-100B	-100A	AEG16	M4090		M538	G-70						M6

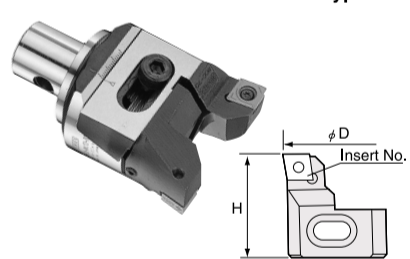
- ★ You can use only one Type RAC Base irrespective of material and work piece. Suitable Cartridge and Carbide Insert must be selected.
- ★ Carbide insert Tip is not included.
- ★ There are 2 methods of Tip Clamping; Screw-on type (5) and Eccentric Bolt type (6).
- ★ Please pay attention when ordering for spare parts. Please add "Q" at the end of Cartridge Code No. for eccentric bolt type (6). e.g. RCC-025Q
- ★ Code No. of Cartridge is for Cartridge only. When ordering for set, please use Code No. e.g. S.RCC-025. ★ Cartridge can not be supplied alone, please order RAC Head.
- ★ Please add "-C" at the end of Head Code No. for centre through tool coolant type, e.g. 26-RAC53-70A-C
- ★ The centre through tool coolant type can not be supplied for 26-RAC70-70.

BALANCE-CUT BORING UNIT PARTS LIST (2) NIKKEN

RAC Base () is common to all Cartridges. Please select Cartridges and Insert suitable to the purpose (Material, Work).

Marked ※ : E type cartridges are highly recommended for steel and stainless steel. e.g. RCC-43E

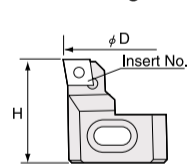
Standard type RCC Cartridge (for Cast Iron, Mild Steel)



Code No.	Boring Range	H	θ	Insert Code No.
Min D	D			for Cast Iron
RCC-25	25~32	41	0°	CC08
-025		38		CC07
-32	32~45	41		CC08
-43※	43~55	46		
-53※	53~70	50		
-70※	70~100	55		CN08
-100※	100~130	57		

- ★ Insert Tip is not included. ★ Pair (2 Cartridges) Code No. e.g. S.RCC-25
- ★ 2 steps Balance-Cut (H=0.3) is also available.

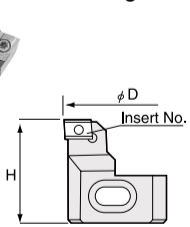
RCC Cartridge for Steel, Stainless Steel



Code No.	D	H	θ	Insert Code No.
Min D				for Steel
RCC-43E	43~55	46		
-53E	53~70	50		CC12
-70E	70~100	55		
-100E	100~130	57		

- ★ ϕ 25~45 Cartridge is common with Standard type. Insert Tip is not included.
- ★ Pair (2 Cartridges) Code No. e.g. S.RCC-43E

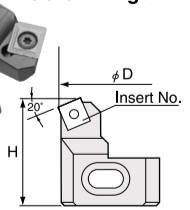
RCC Cartridge for Aluminium, Cast Iron



Code No.	D	H	θ	Insert Code No.
Min D				for Aluminium
RCC-25A	25~32	38		
-32A	32~45	41		AEG12
-43A	43~55	46		
-53A	53~70	50		AEG16
-70A	70~100	55		
-100A	100~130	57		

- ★ Insert Tip is not included. ★ Pair (2 Cartridges) Code No. e.g. S.RCC-25A
- ★ Can be used for bottom face finishing, too.

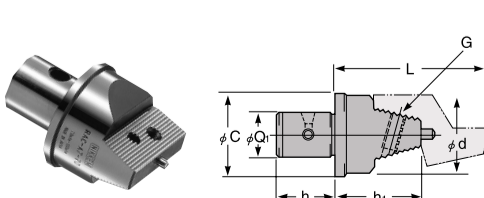
RCC Cartridge for Multiple Sheets, Through Hole



Code No.	D	H	θ	Insert Code No.
Min D				for Through Hole
RCC-25K	25~32	41		
-32K	32~45	46		SC09
-43K	43~55	46		
-53K	53~70	50		SC12
-70K	70~100	55		
-100K	100~130	57		

- ★ Insert Tip is not included. ★ Pair (2 Cartridges) Code No. e.g. S.RCC-25K

Dimension of RAC Base



Code No.	Boring Range	D	h	h ₁	C	G	d
12-RAC-25-55B	25~33	18	31	24	M5	23	
12-RAC-025-55B			34	31			
16-RAC-32-55B	32~45	22	31	31	M6	30	
20-RAC-43-70B	43~55	24	42	40		35	
26-RAC-53-70B	53~70	28	40	50		45	
26-RAC-70-70B			38	60		60	
34-RAC-70-85B	70~100	36	53	64	M8	60	
42-RAC-100-100B	100~130	42	66	83		70	

- ★ Dimension "L" is 58mm in combination of RCC-25K and 12-RAC-55B.
- ★ Please add "-C" at the end of Head Code No. for centre through tool coolant type, e.g. 26-RAC53-70B-C
- ★ The centre through tool coolant type can not be supplied for 26-RAC70-70.