

## How to select internal turning tools

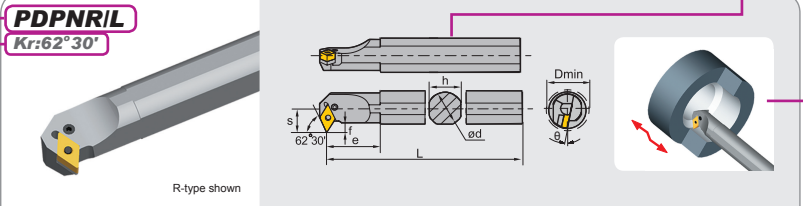
### How to select internal turning tools

#### Explanation of internal turning tools detailed table

- Listed according to clamping types.

- Approach angle of tools
- Tools type  
The first 4 letters in the type description stands for tool shape and applicatio.
- Insert type
- Specification chart
- Application chart  
The arrow shows suitable applications such as internal turning, profiling and end turning, etc.

#### Corresponding tool holders of insert DN□□ P-type clamping

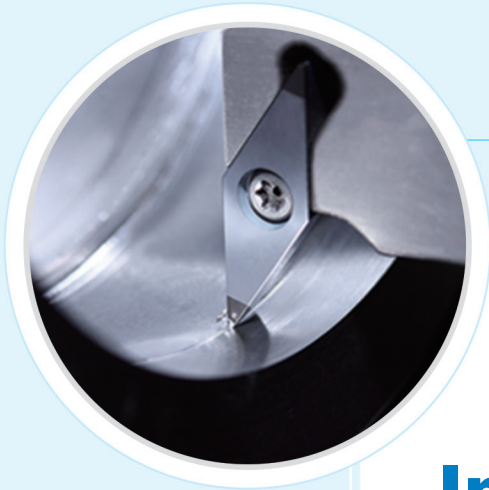


Type	Stock		Basic dimensions(mm)					Screw	Wrench	Lever	Shim	Shim pin
	R	L	Dmin	ød	h	L	S					
S32T-PDPNR/L15-3	▲	▲	40	32	30	300	22	LEM8×21	WH30L	L4	D15AP	SP4
S40U-PDPNR/L15-3	▲	▲	50	40	38	350	27					
S32T-PDPNR/L15	△	△	40	32	30	300	22	LEM8×21	WH30L	L4B	D15AP	SP4
S40U-PDPNR/L15	△	△	50	40	38	350	27					

▲ Stock available    △ Make-to-order

Applicable inserts		For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN/PCD inserts
Inserts shape	DF		WGM Wiper	DR Double side	HDR	Without chipbreaker	A121 -A122
	WGF Wiper		PM	DR Single-side			A122 -A123
	SF		DM	ER Double side			A123
	EF		EM	ER Single-side			
	NF		NM	SNR Double side			
	NGF		LR Single-side				
Tool holder type	□□-PDPNR/L15-3	DN□□1504□□	DN□□1504□□	DN□□1504□□		DN□□1504□□	DN□□1504□□
	□□-PDPNR/L15	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□

- Tool holders with oil hole
- Products specification  
Including product description, stock (left and right hand), basic dimensions and applicable spare parts.
- Applicable inserts  
Including applications of inserts, reference page, insert shape and corresponding tool holders.



# TURNING



## Internal turning tools



**Internal turning tools overview** ● A209

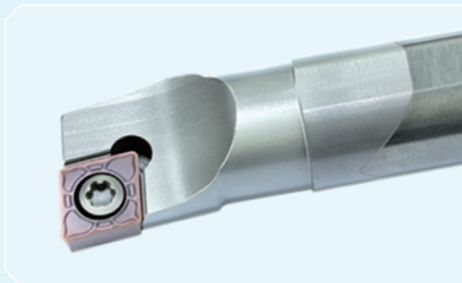
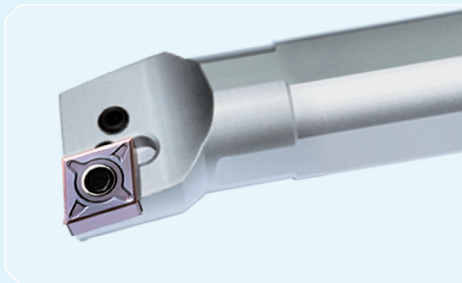
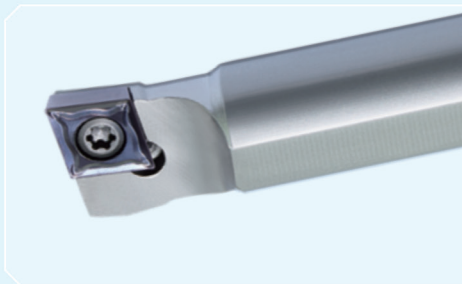
**Internal turning tools code key** ● A210-A211

**Detailed table of internal turning tools** ● A212-A240

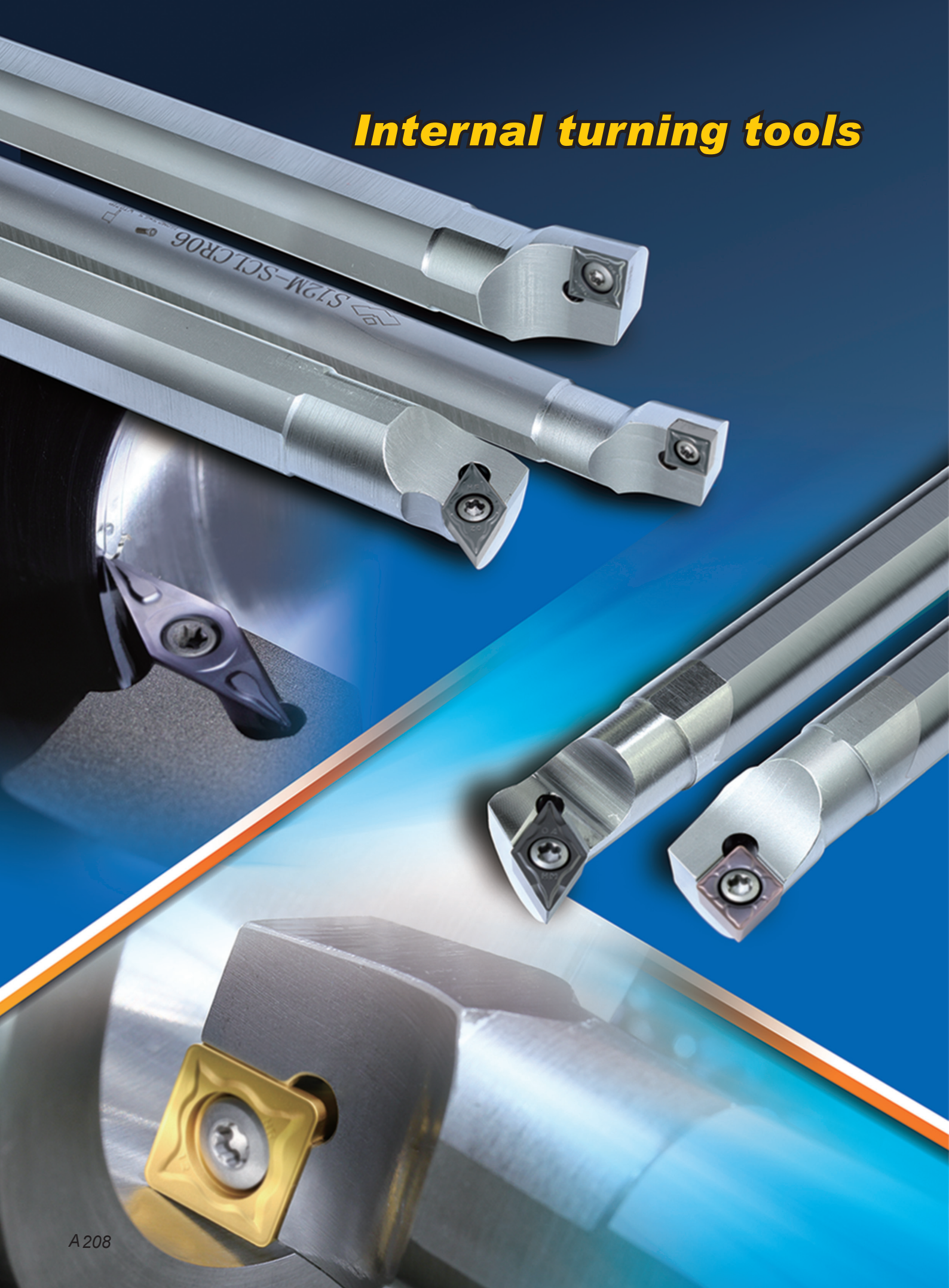
Internal turning Tools by P-type clamping A212-A217

Internal turning tools by S-type clamping A218-A233

Damping internal turning tools and their features ● A234-A240



# ***Internal turning tools***





Name	Feature	62°30'	75°	90°	90°	93°	93°	95°	95°	107°30'
P-type internal turning tools	<ul style="list-style-type: none"> <li>The minimum machining diameter is 20mm.</li> <li>Applicable inserts are economic negative inserts.</li> <li>Hole clamping</li> </ul>	<b>PDPN</b>  A213	<b>PSKN</b>  A215	<b>PTFN</b>  A216			<b>PDUN</b>  A214		<b>PCLN</b>  A212	
									<b>PWLN</b>  A217	
S-type internal turning tools	<ul style="list-style-type: none"> <li>The minimum machining diameter is 10mm.</li> <li>Applicable inserts are 5°, 7° and 11° positive inserts.</li> <li>Screw clamping.</li> </ul>		<b>SSKC</b>  A222	<b>SCFC</b>  A232	<b>STFC</b>  A223	<b>STUP</b>  A231	<b>SDUC</b>  A220	<b>SDZC</b>  A221		<b>SDQC</b>  A219
							<b>SDUP</b>  A230		<b>SCLC</b>  A218	<b>SDQP</b>  A229
							<b>SVUC</b>  A225		 A233	<b>SVQB</b>  A226
							<b>SVUB</b>  A227		<b>SCLP</b>  A228	<b>SVQC</b>  A224
Damping internal turning tools	<ul style="list-style-type: none"> <li>The minimum diameter can be machined is 12mm.</li> <li>Applicable inserts are 7°, 11° positive inserts.</li> <li>Good Performance on reducing shake.</li> </ul>				<b>STUP</b>  A238	<b>SDUP</b>  A237		<b>SCLP</b>  A235	<b>SDQP</b>  A236	
							<b>SVUC</b>  A240			<b>SVQC</b>  A239



# TURNING / General Turning Tools

## Internal turning tools code key





General turning






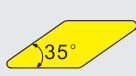

Internal turning tools code key

Type of tool holder	
Code	Type
A	Steel tool holder with oil-hole
C	Cemented carbide tool holder
E	Cemented carbide tool holder with oil hole
S	Steel tool holder
X	Special inserts applied

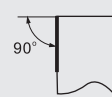


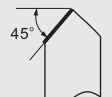


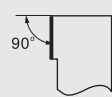

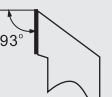


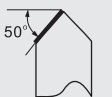



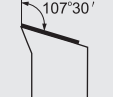
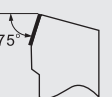
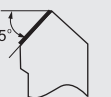

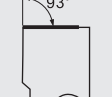



Diameter of tool holder	
Code	Diameter
08	08
10	10
16	16
20	20
25	25
32	32
40	40
50	50

Length of tool holder	
Code	Length
H	100
K	125
M	150
N	160
Q	180
R	200
S	250
T	300
U	350
V	400

Clamping system
 P-Hole clamping
 M-Top and hole clamping
 S-Screw on
 C-Top clamping

Inserts shape	
 80° C	 55° D
 R	 S
 60° T	 35° V
 80° W	

**S 16 R - S D U**

Tool holder style and approach angle							
A	B	C	D	E	F	G	H
 90°	 75°	 90°	 45°	 60°	 90°	 90°	 107°30'
 93°	 75°	 95°	 50°	 63°	 117°30'	 62°30'	 107°30'
 75°	 45°	 60°	 93°	 72°30'	 60°	 120°	



Clearance angle of insert	
5°	<b>B</b>
7°	<b>C</b>
15°	<b>D</b>
20°	<b>E</b>
0°	<b>N</b>
11°	<b>P</b>

Cutting direction
 <b>L - Left hand</b>
 <b>R - Right hand</b>

Manufacture option	
<b>D</b>	Increase offset f size+1.0mm
<b>E</b>	Increase offset f size+2.0mm
<b>R</b>	Round shank
<b>W</b>	Wedge clamping
<b>X</b>	Back boring

**C** **R** **07**  

Length of cutting edge							
Inserts shape	<b>C</b>	<b>D</b>	<b>R</b>	<b>S</b>	<b>T</b>	<b>V</b>	<b>W</b>
Inscribed circle	Length of cutting edge(mm)						
5.556	---	---	---	---	09	---	---
6.350	06	07	---	---	11	---	---
9.525	09	11	09	09	16	16	06
12.700	12	15	12	12	22	22	08
15.875	16	19	15	15	27	---	---
19.050	19	---	19	19	33	---	---
25.400	25	---	25	25	44	---	---

General turning

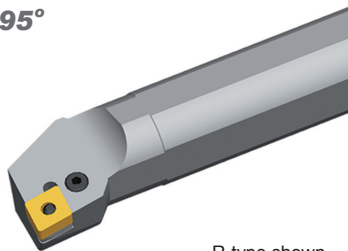
Internal turning tools code key



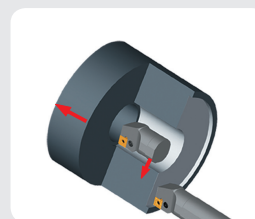
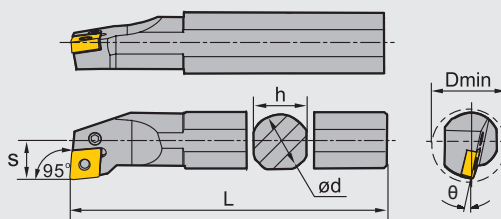
### Corresponding tool holders of insert **CN** P-type clamping

#### PCLNR/L

Kr:95°

























R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Lever	Shim	Shim pin
	R	L	Dmin	ød	h	L	S					
S16Q-PCLNR/L09	△	△	20	16	15	180	10	LEM5×12	WH20L	L3C	---	---
S20R-PCLNR/L09	△	△	25	20	19	200	12.5					
S25S-PCLNR/L09	△	△	32	25	24	250	15					
S25S-PCLNR/L12	△	△	32	25	24	250	16	LEM6×14	WH25L	L4A	---	---
S32T-PCLNR/L12	▲	▲	40	32	30	300	21					
S40U-PCLNR/L12	▲	▲	50	40	38	350	26	LEM8×21	WH30L	L4	C12APB	SP4
S50V-PCLNR/L12	▲	▲	63	50	48	400	31					
S50V-PCLNR/L16	△	△	63	50	48	400	31	LEM8×25	WH30L	L5	C16AP	SP5
S50S-PCLNR/L19	△	△	63	50	47	250	35					
S50W-PCLNR/L19	▲	▲	63	50	47	450	35	LEM10×27	WH40L	L6	C19AP	SP6

▲Stock available    △Make-to-order

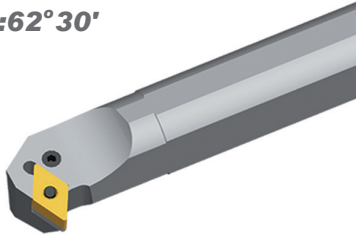
#### Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN/PCD inserts
Inserts shape	DF  A54	WGM Wiper  A55	DR Double-side  A58	HDR  A59	Without chipbreaker  A59	 A118
	WGF Wiper  A54	PM  A55	DR Single-side  A58	HPR  A59		 A118 -A119
	SF  A54	DM  A56	ER Double-side  A58			 A119
	EF  A54	EM  A56	ER Single-side  A58			
	NF  A55	NM  A57	SNR Double-side  A58			
			LR Single-side  A57			
Tool holder type	□□-PCLNR/L09	CN□□0903□□	CN□□0903□□			
	□□-PCLNR/L12	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□	CN□□1204□□
	□□-PCLNR/L16	CN□□1606□□	CN□□1606□□	CN□□1606□□	CN□□1606□□	CN□□1606□□
	□□-PCLNR/L19		CN□□1906□□	CN□□1906□□	CN□□1906□□	CN□□1906□□

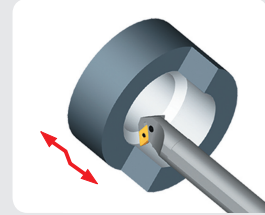
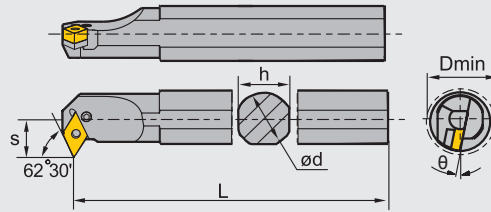


Corresponding tool holders of insert **DN**   P-type clamping

**PDPNR/L**  
Kr:62°30'



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Lever	Shim	Shim pin
	R	L	Dmin	ød	h	L	S					
S32T-PDPNR/L15-3	▲	▲	40	32	30	300	22	LEM8×21	WH30L	L4	D15AP	SP4
S40U-PDPNR/L15-3	▲	▲	50	40	38	350	27					
S32T-PDPNR/L15	△	△	40	32	30	300	22	LEM8×21	WH30L	L4B	D15AP	SP4
S40U-PDPNR/L15	△	△	50	40	38	350	27					

▲Stock available    △Make-to-order

General turning

Internal turning tools

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN/PCD inserts	
Inserts shape	<b>DF</b>  A61	<b>WGM</b> Wiper  A63	<b>DR</b> Double-side  A65	<b>HDR</b>  A66	Without chipbreaker  A66	 A121 -A122	
	<b>WGF</b> Wiper  A61	<b>PM</b>  A63	<b>DR</b> Single-side  A65			 A122 -A123	
	<b>SF</b>  A62	<b>DM</b>  A64	<b>ER</b> Double-side  A65			 A123	
	<b>EF</b>  A62	<b>EM</b>  A64	<b>ER</b> Single-side  A65				
	<b>NF</b>  A62	<b>NM</b>  A64	<b>SNR</b> Double-side  A65				
	<b>NGF</b>  A62		<b>LR</b> Single-side  A65				
Tool holder type	<input type="checkbox"/> -PDPNR/L15-3	DN <input type="checkbox"/> 1504 <input type="checkbox"/>	DN <input type="checkbox"/> 1504 <input type="checkbox"/>	DN <input type="checkbox"/> 1504 <input type="checkbox"/>		DN <input type="checkbox"/> 1504 <input type="checkbox"/>	DN <input type="checkbox"/> 1504 <input type="checkbox"/>
	<input type="checkbox"/> -PDPNR/L15	DN <input type="checkbox"/> 1506 <input type="checkbox"/>	DN <input type="checkbox"/> 1506 <input type="checkbox"/>	DN <input type="checkbox"/> 1506 <input type="checkbox"/>	DN <input type="checkbox"/> 1506 <input type="checkbox"/>	DN <input type="checkbox"/> 1506 <input type="checkbox"/>	DN <input type="checkbox"/> 1506 <input type="checkbox"/>

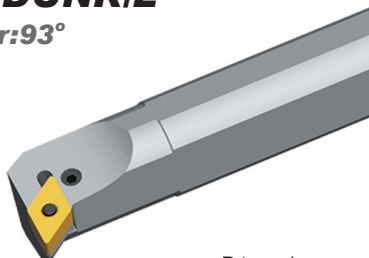




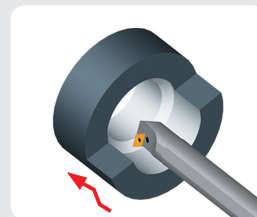
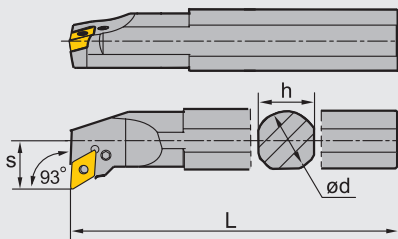
### Corresponding tool holders of insert **DN** P-type clamping

#### PDUNRIL

Kr:93°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Lever	Shim	Shim pin
	R	L	Dmin	ød	h	L	S					
S20R-PDUNR/L11	△	△	25	20	19	200	13	LEM5×12	WH20L	L3D	---	---
S25S-PDUNR/L11	△	△	32	25	24	250	17					
S32T-PDUNR/L15	△	△	40	32	30	300	23	LEM8×21	WH30L	L4B	D15AP	SP4
S32T-PDUNR/L15-3	△	△	40	32	30	300	23	LEM8×21	WH30L	L4	D15AP	SP4
S40U-PDUNR/L15	△	△	50	40	38	350	27	LEM8×21	WH30L	L4B	D15AP	SP4
S40U-PDUNR/L15-3	▲	▲	50	40	38	350	27	LEM8×21	WH30L	L4	D15AP	SP4

▲Stock available    △Make-to-order

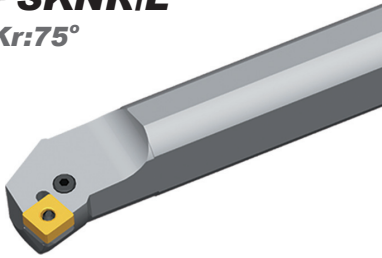
### Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN/PCD inserts
Inserts shape	DF  A61	WGM Wiper  A63	DR Double-side  A65	HDR  A66	Without chipbreaker  A66	A121-A122
	WGF Wiper  A61	PM  A63	DR Single-side  A65			A122-A123
	SF  A62	DM  A64	ER Double-side  A65			A123
	EF  A62	EM  A64	ER Single-side  A65			
	NF  A62	NM  A64	SNR Double-side  A65			
	NGF  A62		LR Single-side  A65			
Tool holder type	□□-PDUNR/L11	DN□□1104□□	DN□□1104□□	DN□□1104□□		
	□□-PDUNR/L15-3	DN□□1504□□	DN□□1504□□	DN□□1504□□	DN□□1504□□	DN□□1504□□
	□□-PDUNR/L15	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□	DN□□1506□□

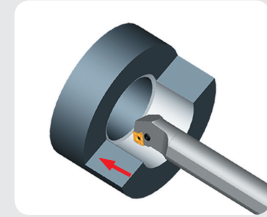
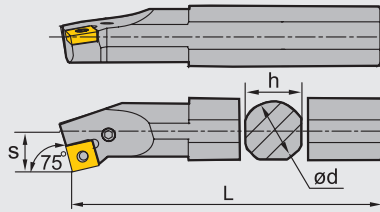







Corresponding tool holders of insert **SN**   P-type clamping

**PSKNR/L**  
Kr:75°



R-type shown














Type	Stock		Basic dimensions(mm)					Screw	Wrench	Lever	Shim	Shim pin
	R	L	Dmin	ød	h	L	S					
<b>S25S-PSKNR/L12</b>	▲	▲	32	25	24	250	17	LEM6×14	WH25L	L4A	---	---
<b>S32T-PSKNR/L12</b>	△	△	41	32	30	300	22	LEM8×21	WH30L	L4	S12APB	SP4
<b>S40U-PSKNR/L12</b>	△	△	50	40	38	350	27					

▲Stock available    △Make-to-order

General turning  
Internal turning tools

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For heavy machining	For roughing	PCBN/PCD inserts
Inserts shape	<b>DF</b>  A67	<b>PM</b>  A68	<b>DR</b> Double-side  A70	<b>HDR</b>  A72	Without chipbreaker  A74	 A126
	<b>EF</b>  A67	<b>DM</b>  A68	<b>DR</b> Single-side  A70-71	<b>HPR</b>  A72		 A127
	<b>SF</b>  A67	<b>EM</b>  A69	<b>ER</b> Double-side  A71			 A128
		<b>NM</b>  A69	<b>ER</b> Single-side  A71			
			<b>SNR</b> Double-side  A71			
			<b>LR</b> Single-side  A69			

Tool holder type	<input type="checkbox"/> -PSKNR/L12	SN <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	SN <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	SN <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	SN <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	SN <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	SN <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>

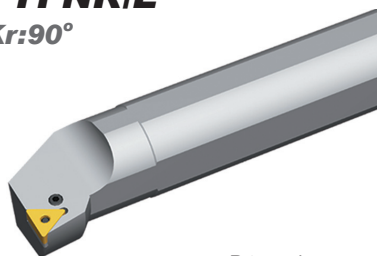


## Internal turning tools

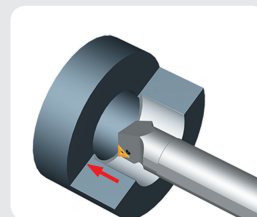
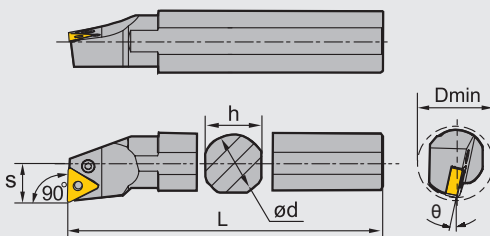
### Corresponding tool holders of insert **TN** P-type clamping

**PTFNRL**

Kr:90°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Lever	Shim	Shim pin
	R	L	Dmin	ød	h	L	S					
<b>S25S-PTFNR/L16</b>	▲	▲	32	25	24	250	16	LEM5×12	WH20L	L3B	---	---
<b>S32T-PTFNR/L16</b>	△	△	41	32	30	300	21	LEM6×17	WH25L	L3	T16APB	SP3
<b>S40U-PTFNR/L16</b>	△	△	50	40	38	350	26					

▲Stock available    △Make-to-order

### Applicable inserts

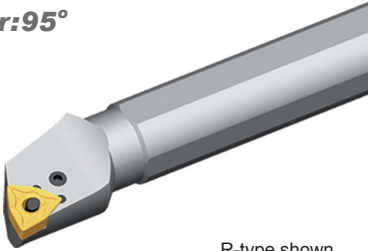
Application	For finishing	For semi-finishing	For roughing	For heavy machining	For cast iron machining	PCBN/PCD inserts
Inserts shape	<b>DF</b> A75	<b>WGM</b> Wiper A76	<b>DR</b> Double-side A78	<b>HDR</b> A79	Without chipbreaker A80	A130
	<b>WG</b> Wiper A75	<b>PM</b> A76	<b>DR</b> Single-side A78			A130 -A131
	<b>SF</b> A75	<b>DM</b> A77	<b>ER</b> Double-side A78			A131
	<b>EF</b> A76	<b>EM</b> A77	<b>SN</b> Double-side A78			
			<b>LR</b> Single-side A77			

Tool holder type	<input type="checkbox"/> -PTFNR/L16	TN <input type="checkbox"/> 1604 <input type="checkbox"/>	TN <input type="checkbox"/> 1604 <input type="checkbox"/>	TN <input type="checkbox"/> 1604 <input type="checkbox"/>	TN <input type="checkbox"/> 1604 <input type="checkbox"/>	TN <input type="checkbox"/> 1604 <input type="checkbox"/>	TN <input type="checkbox"/> 1604 <input type="checkbox"/>

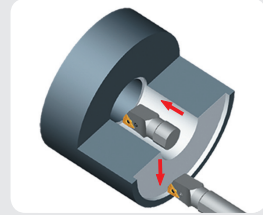
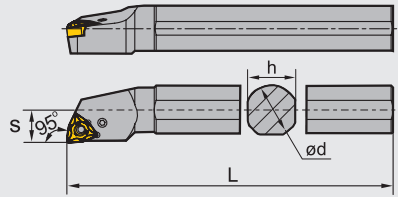


Corresponding tool holders of insert **WN**   P-type clamping

**PWLNRL**  
Kr:95°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Lever	Shim	Shim pin
	R	L	Dmin	ød	h	L	S					
S16R-PWLNRL/L06	△	△	20	16	15	200	10	LEM5X12	WH20L	L3D	---	---
S20R-PWLNRL/L06	△	△	25	20	19	200	12			L3B	---	---
S25S-PWLNRL/L06	△	△	35	25	24	250	15			---	---	---
S20R-PWLNRL/L08	△	△	23	20	19	200	12.5	LEM6X14	WH25L	L4A	---	---
S25S-PWLNRL/L08	△	△	32	25	24	250	16			---	---	---
S32T-PWLNRL/L08	△	△	41	32	30	300	21			LEM8X21	WH30L	L4

▲ Stock available    △ Make-to-order

General turning  
Internal turning tools

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For cast iron machining	PCBN/PCD inserts
Inserts shape	<b>DF</b> A83	<b>WGM</b> Wiper A84	<b>DR</b> Double-side A86	Without chipbreaker A86	A136
	<b>WGF</b> Wiper A83	<b>PM</b> A85	<b>SNR</b> Double-side A86		A136 -A137
	<b>SF</b> A83	<b>DM</b> A85			A137
	<b>EF</b> A84	<b>EM</b> A85			
	<b>NF</b> A84	<b>NM</b> A86			

Tool holder type	WN□□0604□□	WN□□0604□□	WN□□0604□□	WN□□0604□□	WN□□0804□□
□□-PWLNRL/L06	WN□□0604□□	WN□□0604□□	WN□□0604□□	WN□□0604□□	WN□□0804□□
□□-PWLNRL/L08	WN□□0804□□	WN□□0804□□	WN□□0804□□	WN□□0804□□	WN□□0804□□

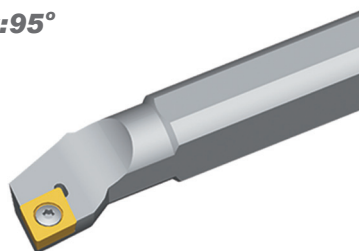


## Internal turning tools

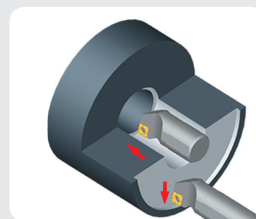
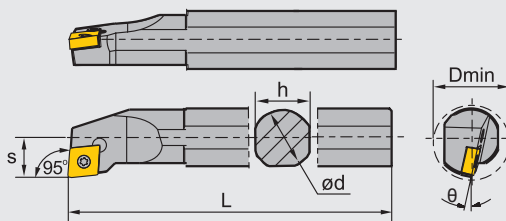
### Corresponding tool holders of insert **CC** S-type clamping

#### SCLCRIL

Kr:95°















R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S				
S08K-SCLCR/L06	▲	▲	10	8	7.4	125	5	I60M2.5×5.5	WT07IP	---	---
S10K-SCLCR/L06	▲	▲	13	10	9	125	6.5				
S12M-SCLCR/L06	▲	▲	16	12	11	150	9				
S12M-SCLCR/L09	▲	▲	16	12	11	150	9	I60M3.5×8	WT15IP	---	---
S14N-SCLCR/L09	△	△	18	14	13	160	9				
S16Q-SCLCR/L09	△	△	20	16	15	180	10				
S20R-SCLCR/L09	△	△	25	20	19	200	12	I60M3.5×10	WT15IP	---	---
S25S-SCLCR/L09	△	△	32	25	24	250	15.5				
S20R-SCLCR/L12	△	△	25	20	19	200	12.5	I60M4×11X	WT15IP	---	---
S25S-SCLCR/L12	▲	▲	32	25	24	250	15.5	I60M4×11X	WT15IP	---	---
S32T-SCLCR/L12	△	△	39	32	30	300	20	I60M4×11X	WH40L WT15IP	C12BS	SM6×10×A
S40U-SCLCR/L12	△	△	50	40	38	350	24.5				

▲Stock available    △Make-to-order

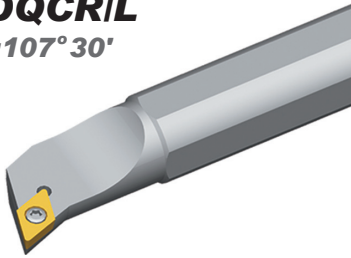
### Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining Without chipbreaker	PCBN/PCD inserts	
Inserts shape	<b>USF</b>  A89	<b>HF</b>  A89	<b>HM</b>  A90	<b>HR</b>  A91	<b>LH</b>  A91-92	 A92	 A139	
	<b>SF</b>  A89	<b>EF</b>  A90	<b>EM</b>  A90		<b>LC</b>  A91		 A144	
Tool holder type	<input type="checkbox"/> -SCLCR/L06	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CCGX0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -SCLCR/L09	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CCGX09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -SCLCR/L12		CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	CCGX1204 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>

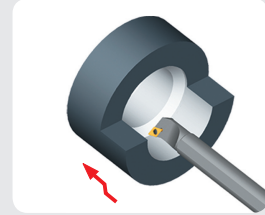
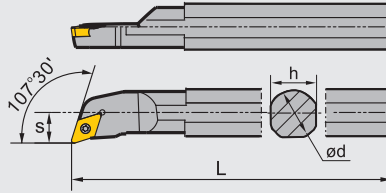


Corresponding tool holders of insert **DC**   S-type clamping

**SDQCR/L**  
Kr:107°30'



R-type shown

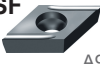






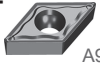






Type	Stock		Basic dimensions(mm)					Screw	Wrench	---	---
	R	L	Dmin	ød	h	L	S				
S10K-SDQCR/L07	▲	▲	13	10	9	125	7	I60M2.5×5.5	WT07IP	---	---
S12M-SDQCR/L07	▲	▲	16	12	11	150	9				
S16Q-SDQCR/L07	△	△	20	16	15	180	11	I60M2.5×6.5	WT07IP	---	---
S20R-SDQCR/L11	△	△	25	20	19	200	13				
S25S-SDQCR/L11	△	△	32	25	24	250	17	I60M3.5×10	WT15IP	---	---
S32T-SDQCR/L11	△	△	40	32	30	300	22				
S40T-SDQCR/L11	△	△	50	40	38	350	27				

▲Stock available    △Make-to-order

General turning  
Internal turning tools

Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts
Inserts shape	USF  A93	HF  A93	HM  A94	HR  A95	LH  A95	Without chipbreaker  A95	 A140
	SF  A93	EF  A94	EM  A94		LC  A95		 A145
Tool holder type	<input type="checkbox"/> -SDQCR/L07	DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/> DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/> DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/>				DCGX0702 <input type="checkbox"/> <input type="checkbox"/> DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -SDQCR/L11	DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/> DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/> DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/> DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/> DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/> DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>	DCGX11T3 <input type="checkbox"/> <input type="checkbox"/> DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>	DCGX11T3 <input type="checkbox"/> <input type="checkbox"/> DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>

## Internal turning tools

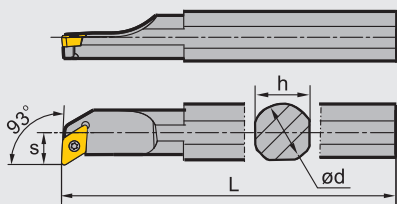
### Corresponding tool holders of insert **DC** S-type clamping

**SDUCR/L**

Kr:93°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	---	---
	R	L	Dmin	ød	h	L	S				
<b>S10K-SDUCR/L07</b>	▲	▲	13	10	9	125	7	I60M2.5×5.5	WT07IP	---	---
<b>S12M-SDUCR/L07</b>	▲	▲	16	12	11	150	9				
<b>S16Q-SDUCR/L07</b>	△	△	20	16	15	180	11	I60M2.5×6.5	WT07IP	---	---
<b>S20R-SDUCR/L11</b>	△	△	25	20	19	200	13				
<b>S25S-SDUCR/L11</b>	△	△	32	25	24	250	17	I60M3.5×10	WT15IP	---	---
<b>S32T-SDUCR/L11</b>	△	△	40	32	30	300	22				
<b>S40U-SDUCR/L11</b>	△	△	50	40	38	350	27				

▲Stock available    △Make-to-order

### Applicable inserts

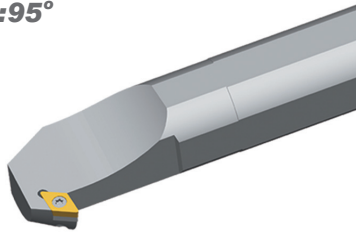
Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts	
Inserts shape	<b>USF</b> 	<b>HF</b> 	<b>HM</b> 	<b>HR</b> 	<b>LH</b> 	<b>Without chipbreaker</b> 		
	<b>SF</b> 	<b>EF</b> 	<b>EM</b> 		<b>LC</b> 			
Tool holder type	<input type="checkbox"/> -SDUCR/L07	DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/>	DCGX0702 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -SDUCR/L11	DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>	DCGX11T3 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>	DC <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>



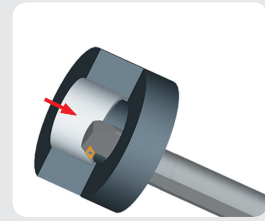
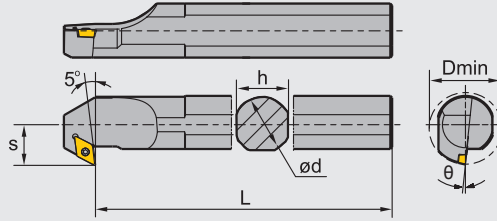
Corresponding tool holders of insert **DC**   S-type clamping



**SDZCRIL**

Kr:95°



R-type shown















Type	Stock		Basic dimensions(mm)					Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S				
<b>S25S-SDZCR/L11</b>	△	△	33	25	24	250	18	I60M3.5×10	WT15IP	---	---
<b>S32T-SDZCR/L11</b>	△	△	40	32	30	300	22	I60M3.5×12	WT15IP	D11BS	SM5×8.65XA
<b>S40U-SDZCR/L11</b>	△	△	48	40	38	350	27		WH35L		

▲Stock available    △Make-to-order

General turning

Internal turning tools

Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts
Inserts shape	<b>USF</b>  A93	<b>HF</b>  A93	<b>HM</b>  A94	<b>HR</b>  A95	<b>LH</b>  A95	<b>Without chipbreaker</b>  A95	 A140
	<b>SF</b>  A93	<b>EF</b>  A94	<b>EM</b>  A94		<b>LC</b>  A95		 A145
Tool holder type	□□-SDZCR/L11    DC□□11T3□□    DC□□11T3□□    DC□□11T3□□    DC□□11T3□□    DCGX11T3□□    DC□□11T3□□    DC□□11T3□□						



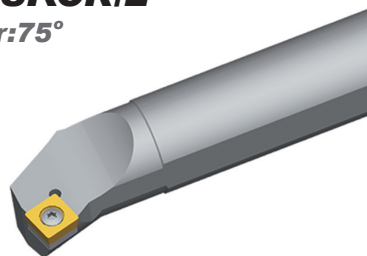


## Internal turning tools

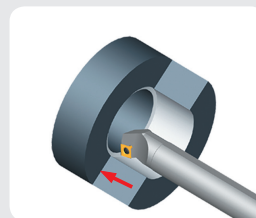
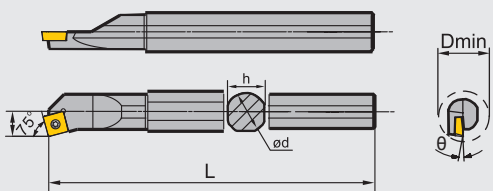
### Corresponding tool holders of insert **SC** S-type clamping

#### SSKCRIL

Kr:75°



R-type shown











General turning

Internal turning tools

Type	Stock		Basic dimensions(mm)					Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S				
S12M-SSKCR/L09	▲	△	16	12	11	150	9	I60M3.5×8	WT15IP	---	---
S16Q-SSKCR/L09	△	△	20	16	15	180	11				
S20R-SSKCR/L09	△	△	25	20	19	200	13				
S25S-SSKCR/L12	△	△	32	25	24	250	17	I60M4×11X	WT15IP	---	---
S32T-SSKCR/L12	△	△	40	32	30	300	22		WT15IP WH40L	S12BS	SM6×10XA

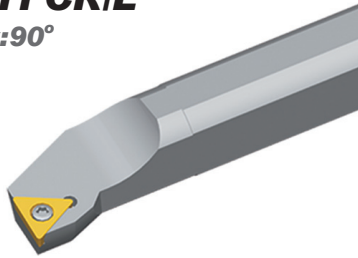
▲Stock available    △Make-to-order

#### Applicable inserts

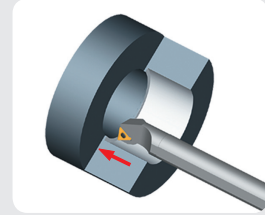
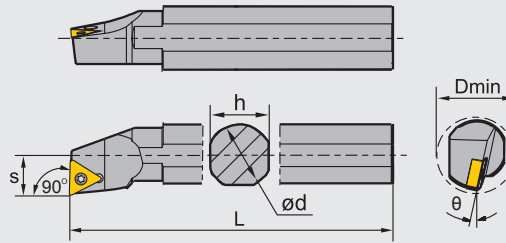
Application	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	
Inserts shape	<b>HF</b>  A98	<b>HM</b>  A98	<b>HR</b>  A99	<b>LH</b>  A99	Without chipbreaker  A99	
	<b>EF</b>  A98	<b>EM</b>  A98		<b>LC</b>  A99		
Tool holder type	<input type="checkbox"/> -SSKCR/L09	SC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	SC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	SC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	SCGX09T3 <input type="checkbox"/> <input type="checkbox"/>	SC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -SSKCR/L12		SC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	SC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	SCGX1204 <input type="checkbox"/> <input type="checkbox"/>	SC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>

Corresponding tool holders of insert **TC**   S-type clamping

**STFCRIL**  
Kr:90°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S				
<b>S12M-STFCR/L11</b>	▲	▲	16	12	11	150	9	I60M2.5×6.5		---	---
<b>S16Q-STFCR/L11</b>	△	△	20	16	15	180	10				
<b>S20R-STFCR/L11</b>	△	△	25	20	19	200	12				
<b>S25S-STFCR/L16</b>	△	△	32	25	24	250	16	I60M3.5×10	WT15IP	---	---
<b>S32T-STFCR/L16</b>	△	△	40	32	30	300	21	I60M3.5×12	WT15IP WH35L	T16BS	SM5×8.65XA
<b>S40U-STFCR/L16</b>	△	△	50	40	38	350	25				

▲Stock available    △Make-to-order

General turning  
Internal turning tools

Applicable inserts

Application	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts	
Inserts shape	<b>HF</b> A101	<b>HM</b> A103	<b>HR</b> A103	<b>LH</b> A104	Without chipbreaker A104	A141	
	<b>EF</b> A102	<b>EM</b> A102		<b>LC</b> A103			
Tool holder type	<input type="checkbox"/> -STFCR/L11	TC <input type="checkbox"/> 1102 <input type="checkbox"/>	TC <input type="checkbox"/> 1102 <input type="checkbox"/>	TC <input type="checkbox"/> 1102 <input type="checkbox"/>	TCGX1102 <input type="checkbox"/>	TC <input type="checkbox"/> 1102 <input type="checkbox"/>	TC <input type="checkbox"/> 1102 <input type="checkbox"/>
	<input type="checkbox"/> -STFCR/L16	TC <input type="checkbox"/> 16T3 <input type="checkbox"/>	TC <input type="checkbox"/> 16T3 <input type="checkbox"/>	TC <input type="checkbox"/> 16T3 <input type="checkbox"/>	TCGX16T3 <input type="checkbox"/>	TC <input type="checkbox"/> 16T3 <input type="checkbox"/>	TC <input type="checkbox"/> 16T3 <input type="checkbox"/>



## Internal turning tools

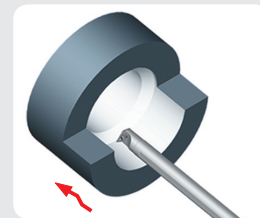
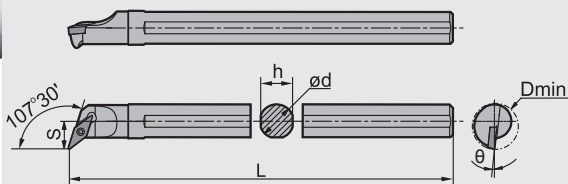
### Corresponding tool holders of insert VC□□ S-type clamping


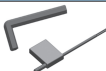


**SVQCR/L**

Kr:107°30'











R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S				
<b>S16Q-SVQCR/L11</b>	▲	▲	22	16	15	180	13	I60M2.5×6.5  I60M3.5×12	WT07IP  WT15IP WH35L	---	---
<b>S20R-SVQCR/L16</b>	△	△	27	16	19	200	14				
<b>S25S-SVQCR/L16</b>	△	△	35	25	24	250	20				
<b>S32T-SVQCR/L16</b>	△	△	42	32	30	300	23				

▲Stock available    △Make-to-order

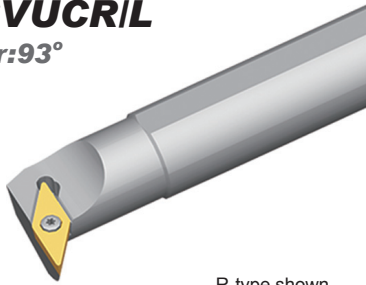
### Applicable inserts

Application	For extra finishing	For finishing	For AI machining	PCBN/PCD inserts
Inserts shape	<b>USF</b>  A105	<b>HF</b>  A105	<b>LH</b>  A106	 A143
	<b>SF</b>  A105	<b>NF</b>  A105	<b>LC</b>  A106	 A148
Tool holder type	□□-SVQCR/L11	VC□□1103□□	VCGX1103□□	
	□□-SVQCR/L16		VCGX1604□□	VC□□1604□□

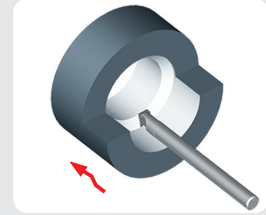
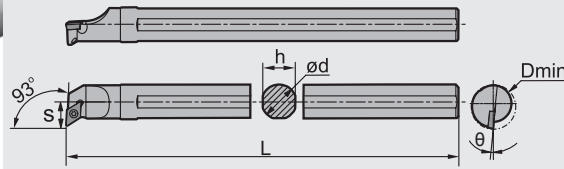


Corresponding tool holders of insert **VC**   S-type clamping

**SVUCRIL**  
Kr:93°



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S				
<b>S16Q-SVUCR/L11</b>	△	△	24	16	15	180	15	I60M2.5×6.5		---	---
<b>S20R-SVUCR/L11</b>	△	△	28	20	19	200	17				
<b>S25S-SVUCR/L16</b>	△	△	35	25	24	250	20	I60M3.5×12		V16BS	SM5×8.65×A
<b>S32T-SVUCR/L16</b>	△	△	42	32	30	300	23				

▲Stock available    △Make-to-order

General turning  
Internal turning tools



Applicable inserts

Application	For extra finishing	For finishing	For AI machining	PCBN/PCD inserts
Inserts shape	<b>USF</b>  A105	<b>HF</b>  A105	<b>LH</b>  A106	 A143
	<b>SF</b>  A105	<b>NF</b>  A105	<b>LC</b>  A106	 A148
Tool holder type	<input type="checkbox"/> -SVUCR/L11	VC <input type="checkbox"/> 1103 <input type="checkbox"/>	VC <input type="checkbox"/> 1103 <input type="checkbox"/>	VCGX1103 <input type="checkbox"/>
	<input type="checkbox"/> -SVUCR/L16	VC <input type="checkbox"/> 1604 <input type="checkbox"/>	VC <input type="checkbox"/> 1604 <input type="checkbox"/>	VC <input type="checkbox"/> 1604 <input type="checkbox"/>

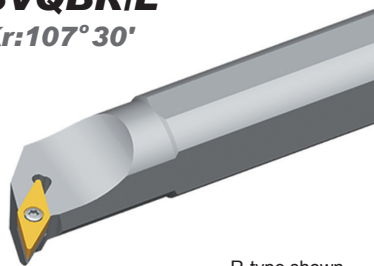


## Internal turning tools

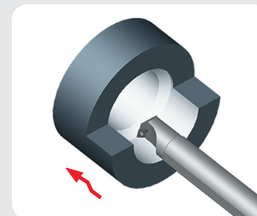
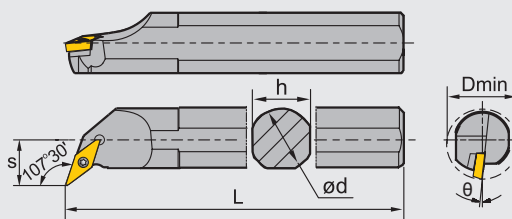
### Corresponding tool holders of insert **VB** S-type clamping

#### SVQBR/L

Kr:107°30'



R-type shown



Type	Stock		Basic dimensions(mm)					Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S				
<b>S20R-SVQBR/L16</b>	△	△	27	20	19	200	14	I60M3.5×12		V16BS	SM5×8.65XA
<b>S25S-SVQBR/L16</b>	△	△	35	25	24	250	20				
<b>S32T-SVQBR/L16</b>	▲	▲	42	32	30	300	23				

▲Stock available    △Make-to-order

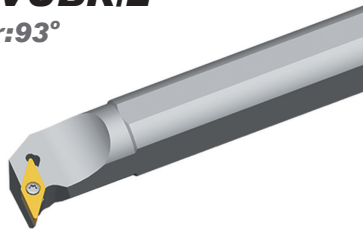
### Applicable inserts

Application	For finishing	For semi-finishing	For roughing	PCBN/PCD inserts
Inserts shape	<b>EF</b>  A108	<b>HM</b>  A109	<b>HR</b>  A109	 A147
	<b>NF</b>  A108	<b>EM</b>  A109	<b>SNR</b>  A109	 A147
	<b>NGF</b>  A108			
Tool holder type	<input type="checkbox"/> <input type="checkbox"/> -SVQBR/L16	VB <input type="checkbox"/> <input type="checkbox"/> 1604 <input type="checkbox"/> <input type="checkbox"/>	VB <input type="checkbox"/> <input type="checkbox"/> 1604 <input type="checkbox"/> <input type="checkbox"/>	VB <input type="checkbox"/> <input type="checkbox"/> 1604 <input type="checkbox"/> <input type="checkbox"/>

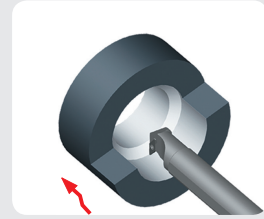
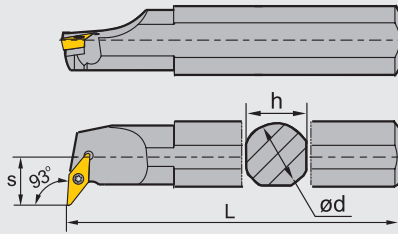



Corresponding tool holders of insert **VB**   S-type clamping

**SVUBRIL**  
Kr:93°



R-type shown

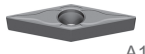




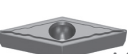





Type	Stock		Basic dimensions(mm)					Screw	Wrench	Shim	Shim screw
	R	L	Dmin	ød	h	L	S				
<b>S25S-SVUBR/L16</b>	△	△	35	25	24	250	20	I60M3.5×12	WT15IP WH35L	V16BS	SM5×8.65XA
<b>S32T-SVUBR/L16</b>	△	△	42	32	30	300	23				

▲Stock available    △Make-to-order

General turning  
Internal turning tools

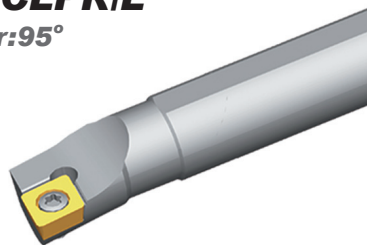
Applicable inserts

Application	For finishing	For semi-finishing	For roughing	PCBN/PCD inserts
Inserts shape	<b>EF</b>  A108	<b>HM</b>  A109	<b>HR</b>  A109	 A147
	<b>NF</b>  A108	<b>EM</b>  A109	<b>SNR</b>  A109	 A147
	<b>NGF</b>  A108			
Tool holder type	<input type="checkbox"/> <input type="checkbox"/> -SVUBR/L16	VB <input type="checkbox"/> <input type="checkbox"/> 1604 <input type="checkbox"/> <input type="checkbox"/>	VB <input type="checkbox"/> <input type="checkbox"/> 1604 <input type="checkbox"/> <input type="checkbox"/>	VB <input type="checkbox"/> <input type="checkbox"/> 1604 <input type="checkbox"/> <input type="checkbox"/>

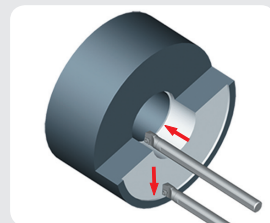
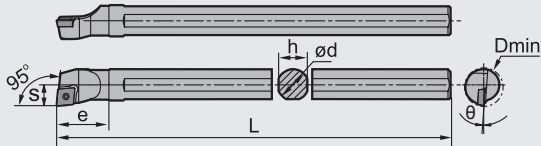
### Corresponding tool holders of insert **CP** S-type clamping

#### SCLPR/L

Kr:95°



R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	h	L	S	θ	e				
<b>S10K-SCLPR/L06</b>	▲	▲	12	10	9	125	6	-7°	17	I60M2.5×5.5	WT07IP	---	---
<b>S12M-SCLPR/L06</b>	▲	▲	16	12	11	150	8	-4°	20				
<b>S16Q-SCLPR/L09</b>	▲	▲	20	16	15	180	10	-4°	29	I60M3.5×8	WT15IP	---	---
<b>S20R-SCLPR/L09</b>	△	△	25	20	18	200	13	-4°	35				

▲Stock available    △Make-to-order

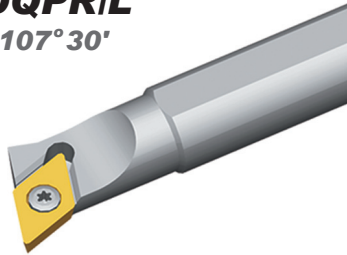
#### Applicable inserts

Application	For extra finishing
Inserts shape	<b>SF</b>  A110
Tool holder type	<input type="checkbox"/> -SCLPR/L06      CP <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> -SCLPR/L09      CP <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>

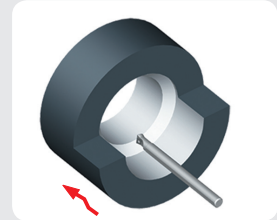
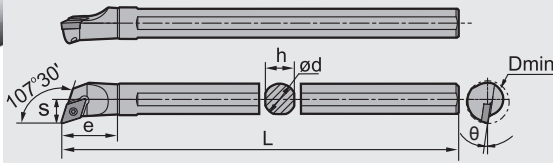






Corresponding tool holders of insert **DP**   S-type clamping

**SDQPR/L**  
Kr:107°30'



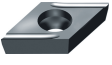
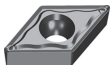
R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---	
	R	L	Dmin	ød	h	L	S	θ	e			---	---	
S10K-SDQPR/L07	△	△	13	10	9	125	7	-8°	20	I60M2.5×5.5		---	---	
S12M-SDQPR/L07	▲	△	16	12	11	150	9	-8°	22			WT071P	---	---
S16Q-SDQPR/L07	▲	△	20	16	15	180	11	-6°	27			I60M2.5×6.5	---	---
S16Q-SDQPR/L11	▲	△	20	16	15	180	11	-6°	32	I60M3.5×8		---	---	
S16Q-SDQPR/L11	△	△	25	20	18	200	13	-6°	33			WT151P	---	---

▲Stock available    △Make-to-order

Applicable inserts

Application	For extra finishing
Inserts shape	<b>USF</b>  A111
	<b>SF</b>  A111
Tool holder type	<input type="checkbox"/> -SDQPR/L07      DP <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -SDQPR/L11      DP <input type="checkbox"/> <input type="checkbox"/> 11T3 <input type="checkbox"/> <input type="checkbox"/>



General turning

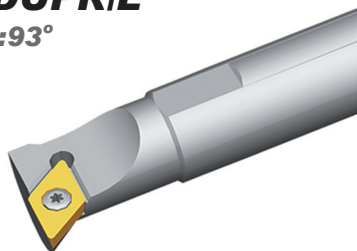
Internal turning tools



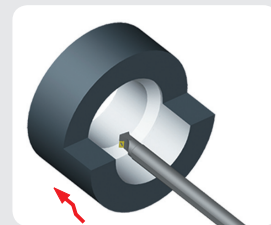
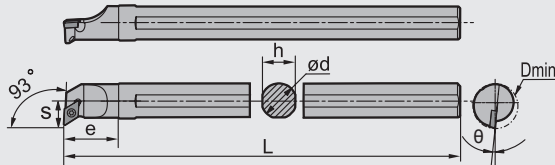
### Corresponding tool holders of insert **DP** S-type clamping

#### SDUPRIL

Kr:93°



R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	h	L	S	θ	e				
S10K-SDUPR/L07	▲	▲	15	10	9	125	9	-8°	18	I60M2.5×5.5	WT071P	---	---
S12M-SDUPR/L07	▲	△	16	12	11	150	9	-8°	19				
S16Q-SDUPR/L07	△	△	20	16	15	180	11	-6°	25	I60M2.5×6.5			

▲ Stock available    △ Make-to-order

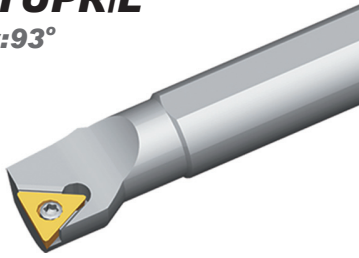
#### Applicable inserts

Application	For extra finishing
Inserts shape	<b>SF</b>  A111
Tool holder type	DP□□0702□□

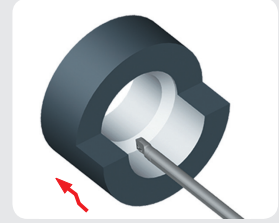
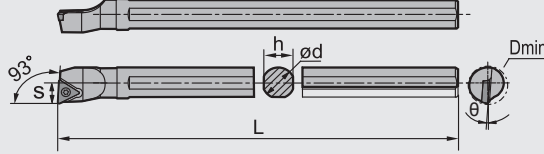


Corresponding tool holders of insert TP   S-type clamping

**STUPRIL**  
Kr:93°



R-type shown




Type	Stock		Basic dimensions(mm)					Screw	Wrench	---	---
	R	L	Dmin	ød	h	L	S				
<b>S10M-STUPR/L09</b>	△	△	13	10	9.4	150	6	I60M2.2×5.5	WT07IP	---	---
<b>S10M-STUPR/L11</b>	△	△	13	10	9.4	150	6				
<b>S12Q-STUPR/L11</b>	△	△	16	12	11.4	180	7.5	I60M2.5×6.5	WT07IP	---	---
<b>S16R-STUPR/L11</b>	△	△	20	16	15	200	10				

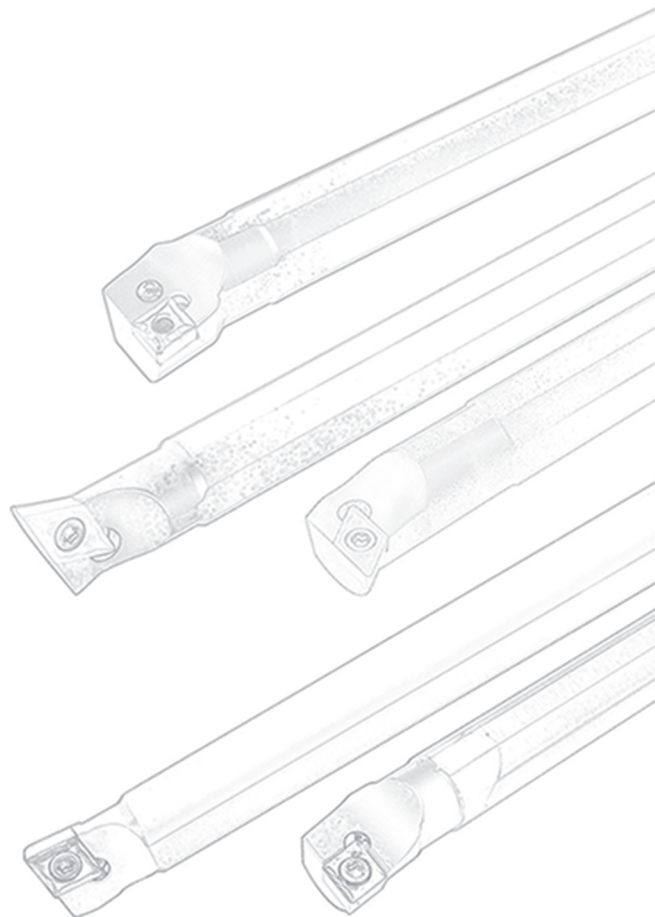
▲Stock available    △Make-to-order

General turning

Internal turning tools

Applicable inserts

Application	For extra finishing
Inserts shape	<b>SF</b>  A113
Tool holder type	<input type="checkbox"/> -STUPR/L09      TP <input type="checkbox"/> <input type="checkbox"/> 0902 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -STUPR/L11      TP <input type="checkbox"/> <input type="checkbox"/> 1103 <input type="checkbox"/> <input type="checkbox"/>



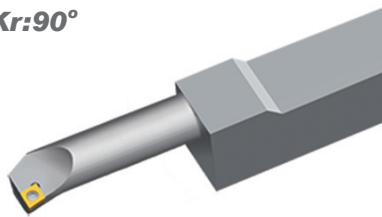


## Internal turning tools

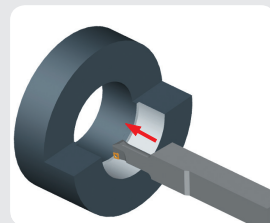
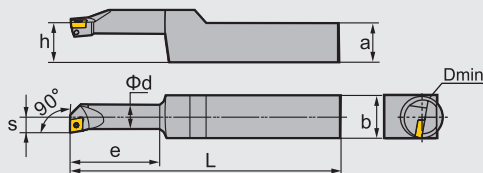
### Corresponding tool holders of insert **CC** S-type clamping

#### SCFCRIL

Kr:90°















R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	L	s	a	b	e				
S10M-SCFCR/L06S25	▲	▲	13	10	150	7	27	25	30	I60M2.5×5.5	WT07IP	---	---
S12P-SCFCR/L06S25	▲	▲	16	12	170	9	27	25	35	I60M2.5×6.5		---	---
S16Q-SCFCR/L09S25	▲	▲	20	16	180	11	27	25	40	I60M3.5×8	WT15IP	---	---
S20R-SCFCR/L09S25	△	△	25	20	200	13	27	25	45			---	---
S25R-SCFCR/L12S25	△	△	30	25	200	16	27	25	50	I60M4×11X	---	---	

▲Stock available    △Make-to-order

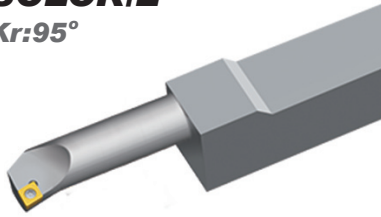
### Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts	
Inserts shape	USF  A89	HF  A89	HM  A90	HR  A91	LH  A91-92	 A92 Without chipbreaker	 A139	
	SF  A89	EF  A90	EM  A90		LC  A91		 A144	
Tool holder type	<input type="checkbox"/> -SCFCR/L06S25	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CCGX0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -SCFCR/L09S25	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CCGX09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -SCFCR/L12S25		CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	CCGX1204 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 1204 <input type="checkbox"/> <input type="checkbox"/>

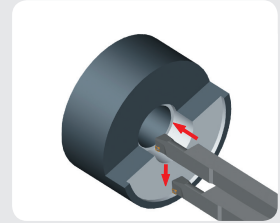
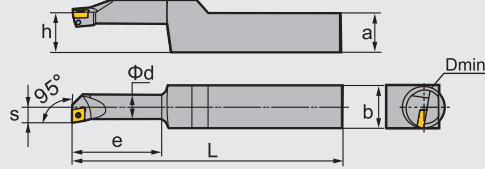


Corresponding tool holders of insert **CC**   S-type clamping

**SCLCRIL**  
Kr:95°



R-type shown















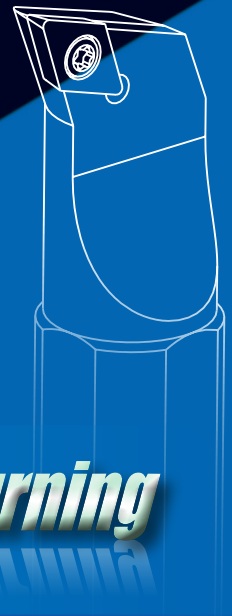
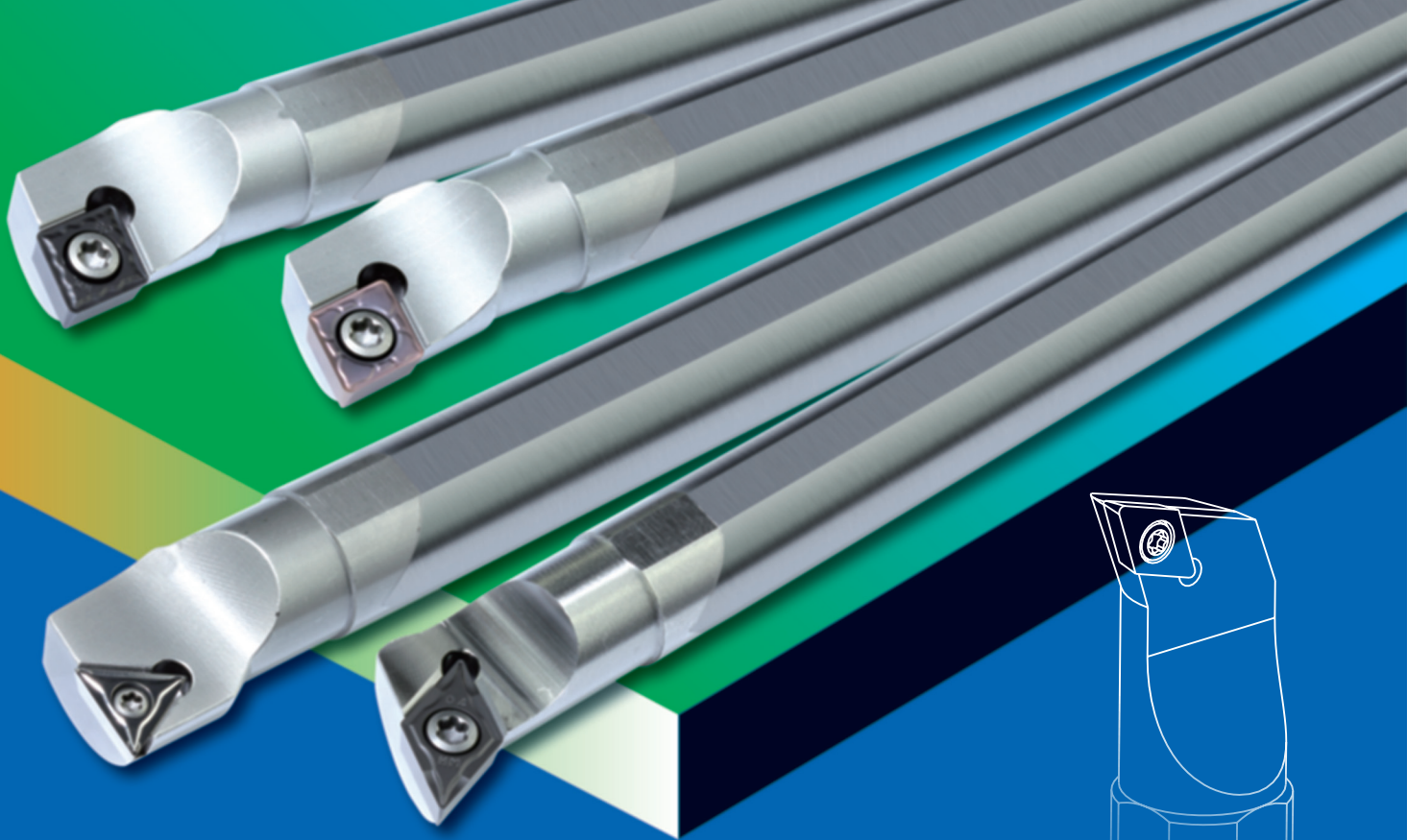
Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	L	s	a	b	e				
<b>S10M-SCLCR/L06S20</b>	▲	▲	13	10	150	7	22	20	30	I60M2.5×5.5	WT07IP	---	---
<b>S12P-SCLCR/L06S20</b>	▲	▲	16	12	170	9	22	20	35				
<b>S16Q-SCLCR/L09S20</b>	▲	▲	20	16	180	11	22	20	40	I60M3.5×8	WT15IP	---	---
<b>S20R-SCLCR/L09S20</b>	△	△	25	20	200	13	22	20	60				

▲Stock available    △Make-to-order

General turning  
Internal turning tools

Applicable inserts

Application	For extra finishing	For finishing	For semi-finishing	For roughing	For Al machining	For cast iron machining	PCBN/PCD inserts	
Inserts shape	<b>USF</b>  A89	<b>HF</b>  A89	<b>HM</b>  A90	<b>HR</b>  A91	<b>LH</b>  A91-92	 A92 Without chipbreaker	 A139	
	<b>SF</b>  A89	<b>EF</b>  A90	<b>EM</b>  A90		<b>LC</b>  A91		 A144	
Tool holder type	<input type="checkbox"/> -SCLCR/L06S20	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CCGX0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -SCLCR/L09S20	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CCGX09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>	CC <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>



## *Damping tool holders for internal turning*

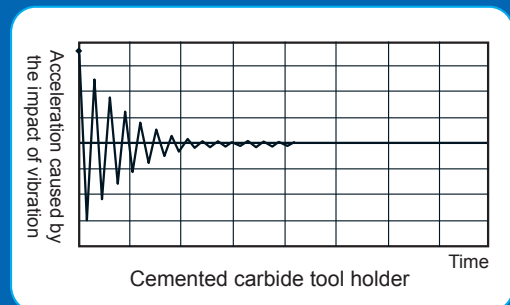
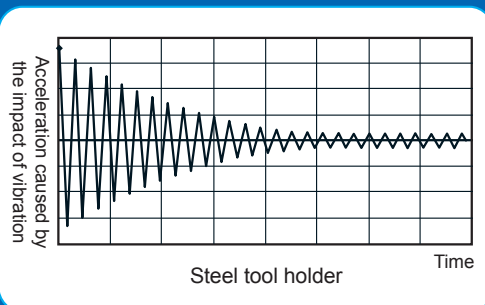
### Technical features

Increasing material rigidity of tool holder can reduce the amplitude, or obtain larger overhang under the condition of same systemic stability. Therefore, compared with steel tool holder, cemented carbide tool holder has better dampening effect, smaller amplitude and reaches convergence point sooner. As for machining under the condition of long overhang and easy vibration, they can exert excellent performance and achieve higher dimensional accuracy and surface quality.



Under the same machining condition

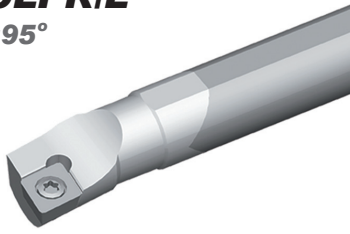
the maximum overhang of cemented carbide tool holder can reach  $L \leq 6D$ , while the recommended maximum overhang of steel tool holder is  $L \leq 3D$ .



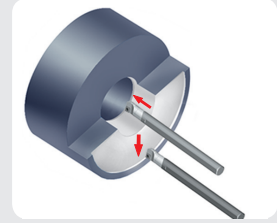
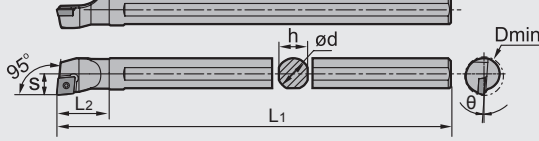


Corresponding tool holders of insert **CP**   (Damping tool holder) S-type clamping

**SCLPRIL**  
Kr:95°




R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	s	L <sub>1</sub>	L <sub>2</sub>	h	θ				
<b>C10M-SCLPR/L06</b>	▲	△	12	10	6	150	17	9	-7°	I60M2.5×5.5	WT07IP	--	--
<b>C12Q-SCLPR/L06</b>	△	△	16	12	8	180	20	11	-4°				
<b>C16R-SCLPR/L09</b>	▲	△	20	16	10	200	29	15	-4°	I60M3.5×8	WT15IP	--	--
<b>C20S-SCLPR/L09</b>	△	△	25	20	13	250	35	18	-4°				

▲Stock available    △Make-to-order

Applicable inserts

Application	For extra finishing
Inserts shape	<b>SF</b>  A110
Tool holder type	<input type="checkbox"/> -SCLPR/L06      CP <input type="checkbox"/> <input type="checkbox"/> 0602 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> -SCLPR/L09      CP <input type="checkbox"/> <input type="checkbox"/> 09T3 <input type="checkbox"/> <input type="checkbox"/>

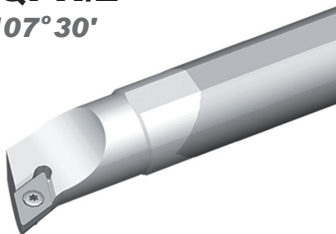
General turning  
Internal turning tools



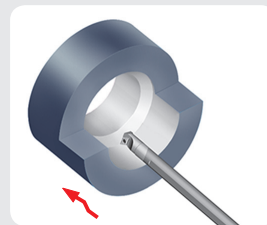
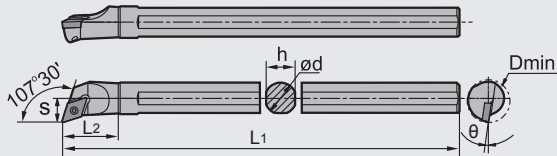
#### Corresponding tool holders of insert **DP** (Damping tool holder) S-type clamping

### SDQPR/L

Kr:107°30'



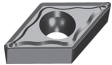
R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	s	L <sub>1</sub>	L <sub>2</sub>	h	θ				
C10M-SDQPR/L07	▲	△	13	10	7	150	20	9	-8°	I60M2.5×5.5	WT071P	---	---
C12Q-SDQPR/L07	△	△	16	12	9	180	22	11	-8°				
C16R-SDQPR/L07	△	△	20	16	11	200	27	15	-6°	I60M2.5×6.5	WT071P	---	---
C16R-SDQPR/L11	△	△	20	16	11	200	32	15	-6°				
C20S-SDQPR/L11	▲	△	25	20	13	250	33	18	-6°	I60M3.5×8	WT151P	---	---

▲Stock available    △Make-to-order

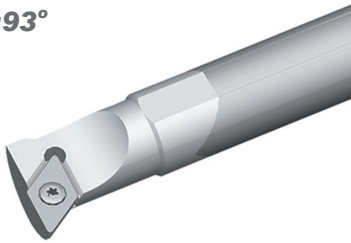
#### Applicable inserts

Application	For extra finishing
Inserts shape	<b>SF</b>  A111
Tool holder type	□□-SDQPR/L07      DP□□0702□□ □□-SDQPR/L11      DP□□11T3□□

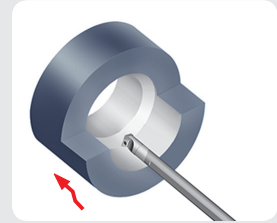
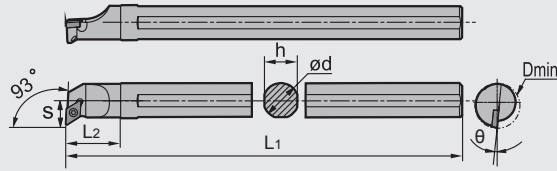





Corresponding tool holders of insert **DP**   (Damping tool holder) S-type clamping

**SDUPRIL**  
Kr:93°



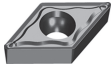
R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---	
	R	L	Dmin	ød	s	L <sub>1</sub>	L <sub>2</sub>	h	θ			---	---	
<b>C10M-SDUPR/L07</b>	△	△	15	10	9	150	18	9	-8°	I60M2.5×5.5		---	---	
<b>C12Q-SDUPR/L07</b>	△	△	16	12	9	180	19	11	-8°			WT071P	---	---
<b>C16R-SDUPR/L07</b>	△	△	20	16	11	200	25	15	-6°			---	---	

▲Stock available    △Make-to-order

**Applicable inserts**

Application	For extra finishing
Inserts shape	<b>SF</b>  A111
Tool holder type	DP <input type="checkbox"/> <input type="checkbox"/> 0702 <input type="checkbox"/> <input type="checkbox"/>

General turning  
Internal turning tools

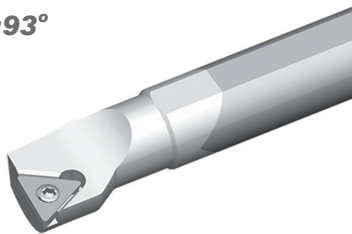




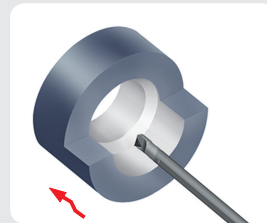
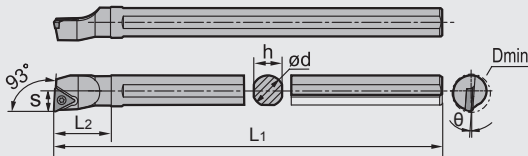
### Corresponding tool holders of insert **TP** (Damping tool holder) S-type clamping

#### STUPRIL

Kr:93°





R-type shown



General turning


Internal turning tools

Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	s	L <sub>1</sub>	L <sub>2</sub>	h	θ			---	---
<b>C10M-STUPR/L09</b>	▲	△	12	10	6	150	20	9	-6°	I60M2.2×5.5	WT07IP	---	---
<b>C12Q-STUPR/L09</b>	▲	△	16	12	8	180	22	11	-4°				
<b>C12Q-STUPR/L11</b>	▲	△	16	12	8	180	25	11	-4°	I60M2.5×6.5	WT07IP	---	---
<b>C16R-STUPR/L11</b>	▲	△	20	16	10	200	27	15	-3°				

▲ Stock available

△ Make-to-order

#### Applicable inserts

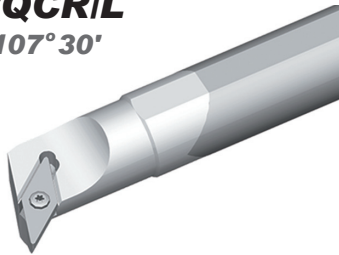
Application	For extra finishing	
Inserts shape	<b>SF</b>  A113	
Tool holder type	<input type="checkbox"/> <b>-STUPR/L09</b>	TP <input type="checkbox"/> <input type="checkbox"/> 0902 <input type="checkbox"/> <input type="checkbox"/>
	<input type="checkbox"/> <b>-STUPR/L11</b>	TP <input type="checkbox"/> <input type="checkbox"/> 1103 <input type="checkbox"/> <input type="checkbox"/>



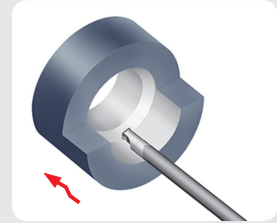
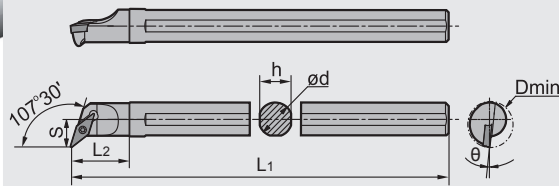




Corresponding tool holders of insert **VC**   (Damping tool holder) S-type clamping

**SVQCR/L**  
Kr:107°30'



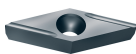




R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	s	L1	L2	h	θ			---	---
<b>C16R-SVQCR/L11</b>	△	△	22	16	13	200	28	15	-6°	I60M2.5×6.5	WT071P	---	---
<b>C20S-SVQCR/L11</b>	△	△	26	20	15	250	32	18	-4°			---	---

▲Stock available    △Make-to-order

Applicable inserts

Application	For extra finishing	For finishing	For AI machining
Inserts shape	<b>USF</b>  A105	<b>HF</b>  A105	<b>LH</b>  A106
	<b>SF</b>  A105		<b>LC</b>  A106
Tool holder type	<input type="checkbox"/> -SVQCR/L11	VC <input type="checkbox"/> <input type="checkbox"/> 1103 <input type="checkbox"/> <input type="checkbox"/>	VC <input type="checkbox"/> <input type="checkbox"/> 1103 <input type="checkbox"/> <input type="checkbox"/> VCGX1103 <input type="checkbox"/> <input type="checkbox"/>

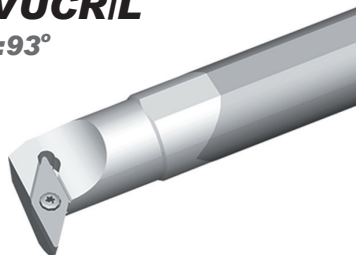
General turning  
Internal turning tools



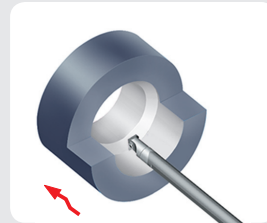
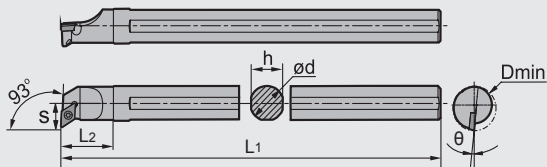
#### Corresponding tool holders of insert VC (Damping tool holder) S-type clamping

**SVUCRIL**

Kr:93°



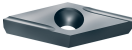




R-type shown



Type	Stock		Basic dimensions(mm)							Screw	Wrench	---	---
	R	L	Dmin	ød	s	L1	L2	h	θ				
<b>C16R-SVUCR/L11</b>	△	△	24	16	15	200	25	15	-6°	I60M2.5×6.5	WT07IP	---	---
<b>C20S-SVUCR/L11</b>	△	△	28	20	17	250	30	18	-4°				

▲Stock available    △Make-to-order

#### Applicable inserts

Application	For extra finishing	For finishing	For Al machining
Inserts shape	<b>USF</b>  A105	<b>HF</b>  A105	<b>LH</b>  A106
	<b>SF</b>  A105		<b>LC</b>  A106
Tool holder type	<input type="checkbox"/> -SVUCR/L11	VC <input type="checkbox"/> <input type="checkbox"/> 1103 <input type="checkbox"/> <input type="checkbox"/>	VC <input type="checkbox"/> <input type="checkbox"/> 1103 <input type="checkbox"/> <input type="checkbox"/> VCGX1103 <input type="checkbox"/> <input type="checkbox"/>



**Table of recommended cutting parameters for general turning**

ISO	Materials	Hardness HB	CVD Coating					PVD Coating			Cermet	Coated cermet	Cemented carbide			
			YBC151	YBC251	YBC152	YBC252	YBC351	YBC352	YBG102	YBG202	YBG302	YNG151	YNG151C	YC10	YC40	
			Feed rate (mm/rev)													
			0.1-0.6	0.1-0.8	0.1-0.6	0.1-0.8	0.2-1.0	0.2-1.0	0.2-0.4	0.1-0.6	0.05-0.8	0.05-0.2	0.05-0.2	0.1-0.4	0.1-0.5	
			Cutting speed (m/min)													
<b>P</b>	Carbon steel	C=0.15%	125	430-200	430-190	500-270	480-240	380-165	430-220	460-220	380-180	360-165	550-350	580-350	360-165	300-145
		C=0.35%	150	380-180	410-180	460-250	460-230	300-150	350-200	440-210	300-170	280-150	500-300	520-300	280-150	220-130
		C=0.60%	200	330-150	350-150	400-220	400-200	260-130	310-180	380-180	260-150	240-130	460-260	480-260	240-130	180-80
	Alloy steel	Anneal	180	350-170	350-150	400-180	400-200	200-100	250-150	380-180	200-120	180-100	410-240	430-240	180-100	160-80
		Hardened	275	230-100	210-100	280-150	260-140	140-70	200-120	240-120	140-90	120-70	300-180	320-180	120-70	120-50
		Hardened	300	210-100	190-70	260-150	240-120	125-60	180-110	220-100	125-80	100-60	250-170	270-170	100-60	80-40
	High alloy steel	Hardened	350	180-80	170-70	230-120	220-120	110-55	160-100	200-100	110-75	90-55	230-150	250-150	90-55	70-45
		Anneal	200	320-150	260-120	360-190	310-170	175-80	220-130	290-150	175-100	155-80	350-200	370-200	155-80	135-60
	Cast steel	Hardene	325	140-90	100-50	190-130	150-100	85-40	140-90	130-80	85-60	65-40	170-110	190-110	65-40	45-30
		Non-Alloy	180	240-120	200-100	280-160	250-140	135-75	190-130	230-125	135-95	115-75	260-170	280-170	115-75	95-55
		Low alloy	200	230-70	170-60	280-110	220-110	120-80	170-130	200-90	120-100	100-80	260-170	280-170	100-80	80-60
		High alloy	225	160-70	140-50	210-110	190-100	95-55	150-110	170-80	95-55	95-55	260-100	280-100	95-55	75-35

ISO	Materials	Hardness HB	CVD Coating				PVD Coating			Cermet	Coated cermet		
			YBM151	YBM153	YBM251	YBM253	YBM215	YBG202	YBG205	YBG302	YNG151	YNG151C	
			Feed rate (mm/rev)										
			0.2-0.6	0.2-0.6	0.2-0.6	0.2-0.6	0.2-0.4	0.1-0.4	0.2-0.4	0.2-0.6	0.1-0.3	0.1-0.3	
			Cutting speed (m/min)										
<b>M</b>	Stainless steel	Ferrite	180	280-180	280-180	250-140	260-140	290-190	300-190	290-190	250-150	330-220	350-210
		Austenite	260	250-150	250-150	200-110	210-110	240-160	250-160	240-160	220-120	250-150	270-140
		Martensite	330	200-140	200-140	210-130	220-130	250-170	260-170	250-170	210-120	270-170	290-160

General turning

Application information of general turning



### Recommended table of cutting parameters for general turning

General turning

Application information of general turning

ISO	Materials		Hardness HB	CVD Coating				Cermet	Coated cermet	Ceramics	Cemented carbide		
				YBD052	YBD102	YBD152	YBD252	YNG151	YNG151C	CN3100	YC10	YC40	
				Feed rate (mm/rev)									
				0.1-0.4	0.1-0.4	0.1-0.5	0.1-0.8	0.1-0.4	0.1-0.4	0.1-1.5	0.1-0.3	0.1-0.4	
				Cutting speed (m/min)									
<b>K</b>	Malleable cast iron	Ferrite	130	350-230	330-220	320-105	250-170	280-160	300-180	800-600	150-90	105-45	
		Pearlite	230	250-105	230-100	230-100	180-75	220-120	240-150	700-500	120-70	80-30	
	Low cast iron		180	520-200	480-200	480-190	380-150	400-250	420-270	700-500	170-100	130-60	
	High cast iron		260	230-120	220-115	210-100	170-90	360-240	380-260	800-600	130-70	95-40	
	Nodular cast iron	Ferrite	160	310-150	300-150	290-140	220-110	330-190	350-210	600-450	140-80	115-45	
		Pearlite	250	230-110	220-105	210-100	170-90	310-200	330-220	500-350	110-70	80-30	

ISO	Materials		Hardness HB	PVD Coating					Cemented carbide	Ceramics	
				YBG102	YBG105	YBG202	YBS103	YBG212	YD101	CN3100	
				Feed rate (mm/rev)							
				0.05-0.15	0.05-0.15	0.05-0.2	0.05-0.2	0.05-0.2	0.05-0.35	0.05-0.2	
				Cutting speed (m/min)							
<b>N</b>	Al alloy	No heat treatment	60						1750-800		
		Heat treatment	100						510-250		
	Cast aluminum alloy	No heat treatment	75						460-175		
		Heat treatment	90						300-110		
	Copper alloy	Lead alloy	110						610-205		
		Copper, pure copper	90						310-195		
Copper, nonleaded Copper, electrolytic copper		100						225-115			
<b>S</b>	Ni-base alloy	Ni-base alloy	40	90-30	90-40	90-30	90-20	90-30	70-20	15-260	



**Recommended table of cutting parameters for general turning**

ISO	Materials	PCBN											
		BK1011	BK1021	BK2511	BK2541	BH0121	BH1020	BH2011	BH2511	BH3511	BS1011	BS2011	BS3011
		Feed rate (mm/rev)											
		0.02-0.5		0.1-0.5		0.05-0.5				0.05-0.25			
		Cutting speed (m/min)											
<b>K</b>	Gray cast iron	400-1500		300-600									
	Hard cast iron	80-160		50-150									
<b>S</b>	Powder metallurgy and high temperature alloys									70-180	100-200	50-160	
<b>H</b>	Hardened steel					150-250	140-220	100-170	120-180	80-150			

ISO	Materials	PCD			
		DN0121	DN0511	DN1021	DN3021
		Feed rate (mm/rev)			
		0.05~0.4			
		Cutting speed (m/min)			
<b>N</b>	Silumin ( si≤12% )	500~1000	900~3500	400~1200	300~700
	fibre reinforced composite materials	200~1000			
	Metal base compound		1500~1800		
	Copper and magnesium alloy silumin		400~1260	400~1260	
	Cemented carbide		20~40		
	Unsintered ceramic materials				100~200
	Sintered Ceramic				20~50

General turning

Application information of general turning

#### Table of correctional cutting parameters of internal turning

#### Internal turning tools by P-type clamping

Workpiece material	Hardness HB	Machining category	L/D≤3		L/D=3-4 (Diameter of shank ≥ Φ 16mm)	
			Feed rate (mm/rev)	Cutting depth (mm)	Feed rate (mm/rev)	Cutting depth (mm)
<b>P</b> Carbon steel, Alloy steel 45#, 42CrMo	HB180—280	For semi-finishing	0.1- <b>0.25</b> -0.4	<5.0	0.1- <b>0.2</b> -0.3	<4.0
<b>M</b> Stainless steel 1Cr18Ni9Ti 0Cr18Ni9	≤HB220	For semi-finishing	0.1- <b>0.2</b> -0.3	<4.0	0.1- <b>0.15</b> -0.25	<3.0
<b>K</b> Cast iron HT250	HB170—230	For semi-finishing	0.1- <b>0.25</b> -0.4	<5.0	0.1- <b>0.2</b> -0.3	<4.0

#### Internal turning tools by S-type clamping

Workpiece material	Hardness HB	Machining category	L/D≤3		L/D=4		L/D=5		L/D=6	
			Feed rate (mm/rev)	Cutting depth (mm)	Feed rate (mm/rev)	Cutting depth (mm)	Feed rate (mm/rev)	Cutting depth (mm)	Feed rate (mm/rev)	Cutting depth (mm)
<b>P</b> Carbon steel, Alloy steel 45#, 42CrMo	HB180-280	For finishing	0.05- <b>0.1</b> -0.15	<0.2	0.05- <b>0.1</b> -0.15	<0.2				
		For semi-finishing	0.15- <b>0.25</b> -0.35	<3.0	0.1- <b>0.15</b> -0.2	<1.5				
<b>M</b> Stainless steel 1Cr18Ni9Ti 0Cr18Ni9	≤HB220	For finishing	0.05- <b>0.1</b> -0.15	<0.2	0.05- <b>0.1</b> -0.15	<0.2				
		For semi-finishing	0.15- <b>0.2</b> -0.25	<2.0	0.1- <b>0.15</b> -0.2	<1.0				
<b>N</b> Al alloy	---	For finishing	0.05- <b>0.1</b> -0.15	<0.2	0.05- <b>0.1</b> -0.15	<0.2	0.05- <b>0.1</b> -0.15	-0.15	0.05- <b>0.1</b> -0.15	<0.1
		For semi-finishing	0.05- <b>0.1</b> -0.15	<2.0	0.05- <b>0.1</b> -0.15	<1.5	0.05- <b>0.1</b> -0.15	-1.0	0.05- <b>0.1</b> -0.15	<1.0

#### Damping internal turning tools

Workpiece material	Machining conditions	Chipbreaker	Inserts material	Feed rate (mm/rev)	Cutting depth (mm)
<b>P</b> Steel HB180—280	For finishing	SF	YNG151 YNG151C	0.05- <b>0.2</b> -0.35	0.05- <b>0.1-0.3</b> -0.5
<b>M</b> Stainless steel ≤HB220				0.05- <b>0.2</b> -0.35	0.05- <b>0.1-0.3</b> -0.5
<b>K</b> Cast iron HB170—230				0.05- <b>0.2</b> -0.35	0.05- <b>0.1-0.3</b> -0.5

Blue words are recommended cutting parameters.



Frequent problems of turning and solutions

Common problem	Cause	Tool material		Cutting conditions				Tool shape					Machine clamping system					
		Harder materials	Tougher materials	Cutting speed	Feed rate	Cutting depth	Cutting liquid	Change chipbreaker of inserts	Rake face	Nose radius	Approach angle	Cutting edge strength	Cutting edge inserts	Increase precision of tool holder	Increase rigidity of tool holder	Clamping of tool holder and workpiece	Overhang of tool holder	Power gap
Over abrasion on nose	Bad precision during machining	✓								↑								
				↓	↑													
Surface precision deterioration	Bad surface quality	✓		↓			✓		↑	↑		↓	✓					
			✓		↓	↓		✓		↑		↑			✓	✓	✓	
								✓		↑		↓	✓					
					↑	↓	↓	✓										
			✓		↑	↓	↓	✓	✓	↑	↓	↑	↓		✓	✓	✓	✓
					↑	↑		✓	✓	↑		↓	✓					
Radiation of heat	Effect of cutting heat			↓	↓	↓												
		✓						✓	↑			↓						
Bad precision of dimensions	Dimensions fluctuate during cutting												✓					
								✓	↑	↓	↑			✓	✓	✓	✓	
Breakage	Abrasion on flank and rake face	✓		↓				✓	↑	↑		↓						
		✓		↓	↓	↓		✓	↑		↓							
	Edge chipping		✓		↓	↓		✓			↓	↑		✓	✓	✓	✓	
	Built-up edge			↑	↑		✓	✓	↑			↓	✓					
	Thermal cracking			↓	↓	↓	✓	✓	↑			↓						
	Cutting edge nose deformation	✓		↑	↓	↓	✓	✓	↑	↑	↓	↓						
	Tool life		✓		↓	↓		✓		↑	↓	↑		✓	✓	✓	✓	
Chip controlling	Long, unbroken and snarled chips			↓	↑	↑	✓				↓	↑						
								✓		↓	↑							
	Too short and hard chips				↓	↓	✓											
								✓		↑	↓							
Burr and knockdown flange	Steel and Al, burrs occurring			↑	↓		✓											
		✓						✓	↑	↓	↑	↓						
	Edge break out on cast iron			↓	↑		✓											
		✓						✓	✓	↓	↓	↓						
Heavy burr on soft steel	Unsuitable cutting condition				↓	↓												
	Tool abrasion and unsuitable geometrical shape	✓						✓	↑	↑		↑		✓	✓	✓	✓	

General turning

Application information of general turning





#### Abrasion of tools and various damages

Tool damage type	Phenomenon	Cause	Solution
<b>Flank wear</b>	Cutting resistant force increasing Groove wear on flank	Tool material is too soft. Cutting speed is too high. Clearance angle is too small. Feed rate is too low.	<ul style="list-style-type: none"> <li>◆ Select tool materials with good wear resistance.</li> <li>◆ Reduce cutting speed.</li> <li>◆ Enlarge clearance angle.</li> <li>◆ Increase feed rate.</li> </ul>
<b>Rake face wear (Crater wear)</b>	Bad chip controlling Surface quality deterioration	Tool material is too soft. Cutting speed is too high. Feed rate is too high.	<ul style="list-style-type: none"> <li>◆ Select tool materials with good wear resistance.</li> <li>◆ Reduce cutting speed.</li> <li>◆ Reduce feed rate.</li> </ul>
<b>Cutting edge breakage</b>	Occasional breakage Instability of tool life	Tool material is too hard. Feed rate is high. Cutting edge strength is not high enough. Rigidity of tool holder and tool bar is small.	<ul style="list-style-type: none"> <li>◆ Select tool materials with good toughness.</li> <li>◆ Reduce feed rate.</li> <li>◆ Increase land width (if rounding changes into chamfering).</li> <li>◆ Enlarge tool bar size.</li> </ul>
<b>Breakage</b>	Cutting resistant force increasing Deterioration of surface roughness	Tool material is too hard. Feed rate is high. Cutting edge strength is not high enough. Rigidity of tool holder and tool bar is low.	<ul style="list-style-type: none"> <li>◆ Select tool materials with good toughness.</li> <li>◆ Reduce feed rate.</li> <li>◆ Increase land width (if rounding changes into chamfering).</li> <li>◆ Enlarge tool bar size.</li> </ul>
<b>Plastic deformation (Cutting edge collapse)</b>	Workpiece dimensions change Nose abrasion	Tool material is too soft. Cutting speed is too high. Cutting depth and feed rate are too high. Cutting edge temperature is too high.	<ul style="list-style-type: none"> <li>◆ Select tool material with good wear resistance</li> <li>◆ Reduce cutting speed.</li> <li>◆ Reduce cutting depth and feed rate.</li> <li>◆ Select tool materials with good heat conductivity.</li> </ul>
<b>Built-up edge (Bonding)</b>	Surface quality deterioration during finishing Cutting resistant force increasing	Cutting speed is low. Cutting edge is not sharp enough. Tool material is unsuitable.	<ul style="list-style-type: none"> <li>◆ Increase cutting speed.</li> <li>◆ Enlarge rake angle.</li> <li>◆ Select tool materials that are not easy to adhere together (coating, cermet, etc.)</li> </ul>
<b>Thermal cracking</b>	Damage because of thermal circulation Normally occurring during intermittent machining	Premature edge failure due to thermal cracks. Tool material is too hard.	<ul style="list-style-type: none"> <li>◆ Adopt dry cutting.</li> <li>◆ Select tool materials with good toughness.</li> </ul>
<b>Chattering</b>	burrs occurring Cutting resistant force increasing	Feed rate and cutting speed are too high.	<ul style="list-style-type: none"> <li>◆ Select tool materials with good wear resistance.</li> <li>◆ Sharpen cutting edge by enlarging rake angle.</li> <li>◆ Reduce cutting speed.</li> </ul>
<b>Flaking</b>	Usually occurring when machining super hard materials, which is accompanied with vibration	Bonding occurs on cutting edge. Chip flow is obstructed.	<ul style="list-style-type: none"> <li>◆ Sharpen cutting edge by enlarging rake angle.</li> <li>◆ Enlarge chip pocket.</li> </ul>