SUMITOMO
CARBIDE - CBN - DIAMOND
Global Support, Global Solutions.

Internal Grooving Tool

SEC-Grooving Tool Holders SSH series

Rev. 4

Suppresses chattering with a tough carbide body Supports internal grooving from ø8mm

New

SSHF type Holders for Bottom Facing Grooving
SSHFI type Inserts for Bottom Facing Grooving
SSHT type Inserts for Threading
Now available as a series with a
total of 15 items

Small Lathe/Autolathe Tool series
SumiSmall

P M K N S H

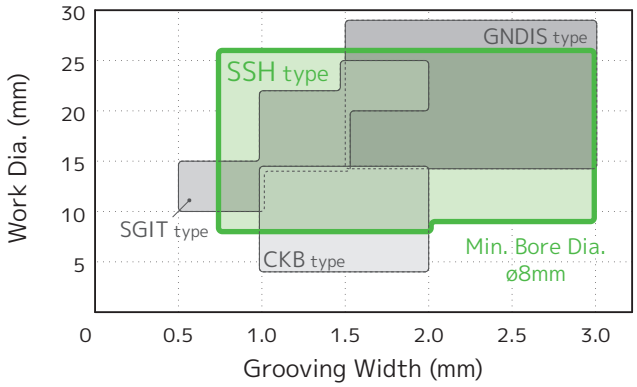
SUMITOMO ELECTRIC GROUP

SSH series

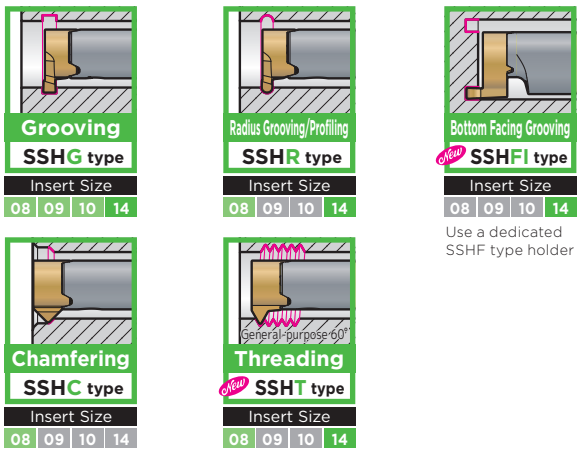
■ Features

- Internal coolant supply for outstanding chip evacuation
- Tough carbide body for stable turning even with small diameters, suppressing chatter
- Adopts AC1030U for excellent machined surface quality
- Min. bore diameter from ø8mm
- Wide range of grooving widths
  In addition to grooving applications, the lineup includes inserts for threading and circlip groove machining
- Holders and inserts supporting bottom facing grooving now available as a series

■ Application Range (Grooving)



■ Insert Lineup



08 : Pitch 0.50 to 1.75mm
14 : Pitch 0.50 to 2.00mm

■ Product Range (Grooving)

Grooving/Radius Shape | Grooving/C-Chamfering | Radius Grooving/Profiling | Chamfering

Applications	Insert Type	Insert Size	Min. Bore Dia. (mm)	Max. Grooving Depth (mm)	Width of Cut / Cutting Edge Corner Shape (mm)																Applicable Holder
					0.74	0.80	0.84	0.94	1.00	1.19	1.20	1.39	1.50	1.69	1.80	2.00	2.20	2.50	3.00	Chamfering	
Grooving	SSHG	08	8	1.0	C0.05		C0.05	C0.05	C0.05 R0.1	C0.05		C0.05	C0.05 R0.1	C0.05		C0.05 R0.1 R0.2					EOO□-SSHMNOOO-08
		09	9	2.0					R0.1				R0.1			R0.1 R0.2		R0.1 R0.2	R0.1 R0.2		
		10	10	3.0					R0.1				R0.1			R0.1 R0.2		R0.1 R0.2	R0.1 R0.2		
		14	14	1.2	C0.05																EOO□-SSHMNOOO-14
				1.3			C0.05														
				1.5				C0.05													
				1.6					C0.05 R0.1												
				4.0						C0.05		C0.05	C0.05 R0.1	C0.05		C0.05 R0.1 R0.2		C0.05 R0.1 R0.2	C0.05 R0.1 R0.2		
Radius Grooving/ Profiling	SSHR	08	8	1.0		R0.4			R0.5		R0.6		R0.75		R0.9	R1.0					EOO□-SSHMNOOO-08
		14	14	1.6					R0.5												EOO□-SSHMNOOO-14
				4.0							R0.6		R0.75		R0.9	R1.0	R1.1	R1.25	R1.5		
Bottom Facing Grooving	New SSHFI	14	14	1.5					C0.05												EOO□-SSHFROOO-14※
				2.5									R0.2								
				3.0												R0.2		R0.2	R0.2		
Chamfering	SSHC	08	8	1.4																C	EOO□-SSHMNOOO-08

SSHG type 09/10 sized inserts and SSHFI inserts are right-handed only. *The applicable holder for SSHFI type inserts is the SSHF type.

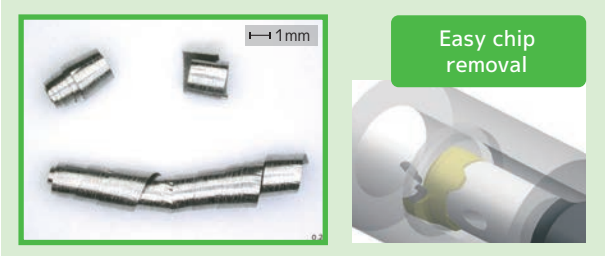
■ Product Range (Threading)

Applications	Insert Type	Insert Size	Min. Bore Dia. (mm)	Thread type	Pitch (mm)									Applicable Holder
					0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	
Threading	New SSHT	08	8	General-purpose 60°										EOO□-SSHMNOOO-08
		14	14	General-purpose 60°										EOO□-SSHMNOOO-14

SSHT type is right-handed only.

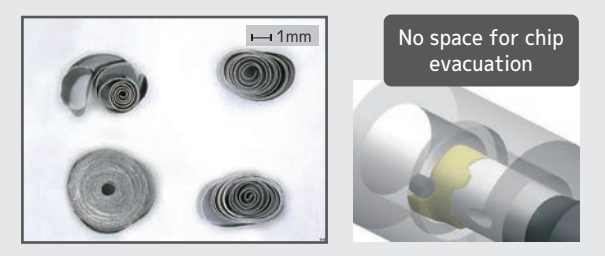
■ Chip Evacuation

Stable and smooth evacuation of curled chips even in small bore diameters



SSH type

Evacuation is poor, may cause sudden tool fracture

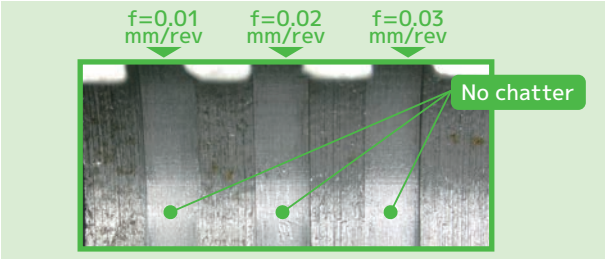


Competitor's Product A

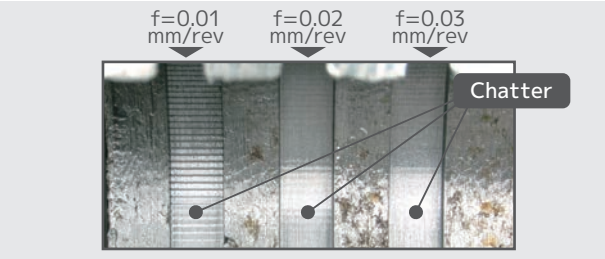
Work Material: S45C Cutting Diameter: ø13mm Insert: SSHGR0820000 Cutting Conditions: vc = 50m/min f = 0.02mm/rev ap = 1.0mm Wet (Oil-based)

■ Chatter Resistance

Outstanding sharpness and carbide shank suppress chatter



SSH type

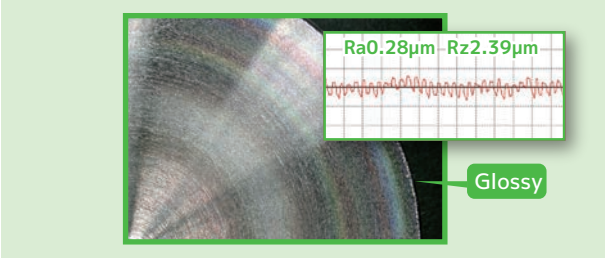


Competitor's Product B

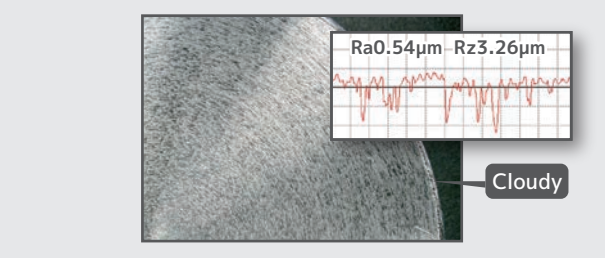
Work Material: S45C Cutting Diameter: ø13mm Insert: SSHGR0820000 Cutting Conditions: vc = 100m/min f = 0.01, 0.02, 0.03mm/rev ap = 0.2mm Wet (Oil-based)

■ Machined Surface Quality

Glossy, beautiful surface finish



SSH type

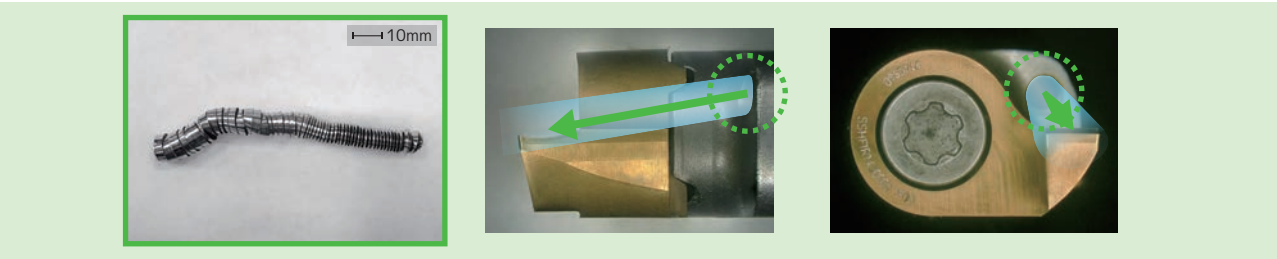


Competitor's Product C

Work Material: SCM440 Cutting Diameter: ø30mm Insert: SSHGR0820000 Cutting Conditions: vc = 180m/min f = 0.02mm/rev ap = 0.2mm Wet (Oil-based)

■ Chip Control (Holders for Bottom Facing Grooving)

Stable chip control is possible with a coolant ejection port dedicated for bottom facing grooving



SSH type

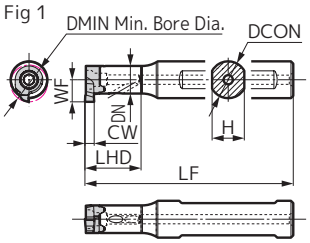
Reliable coolant supply near the cutting edge

Work Material: SS400 Bore Insert: SSHFIR1430020 Cutting Conditions: vc = 100m/min f = 0.02mm/rev ap = 3.0mm Wet (Oil-based)

SSH series

Internal

Fig 1



Holders

Parts

Dimensions (mm)

Cat. No.	Stock	Shank Diameter DCON	Neck Dia. DN	Width H	Overall Length LF	Head Length LHD	Min. Bore Dia. DMIN	Width of Cut CW	Applicable Inserts	Fig	Flat Screw	N·m	Wrench
E08D-SSHM N125-08	●	8	6	7	60(60.4)	12.5(12.9)	8~	**0.74~3.00**	SSH□ R/L **08** · · · SSH□ R **09** · · · SSH□ R **10** · · ·	1	BFTX02608IPS	**1.2**	TRX08IP
E08E-SSHM N210-08	●	8	6	7	70(70.4)	21.0(21.4)	8~	**0.74~3.00**		1			
E12E-SSHM N125-08	●	12	6	11	70(70.4)	12.5(12.9)	8~	**0.74~3.00**		1	BFTX02608IPS	**1.2**	TRX08IP
E12F-SSHM N210-08	●	12	6	11	80(80.4)	21.0(21.4)	8~	**0.74~3.00**		1			
E12G-SSHM N300-08	●	12	6	11	90(90.4)	30.0(30.4)	8~	**0.74~3.00**		1			
E12H-SSHM N420-08	●	12	6	11	100(100.4)	42.0(42.4)	8~	**0.74~3.00**		1			

Overall Length LF and Head Length LHD are dimensions with SSHG type / SSHR type inserts mounted. Parentheses show dimensions with SSHG R 09 ··· type (09 size) / SSHG R 10 ··· type (10 size) mounted. Min. Bore Dia. DMIN above is the dimension when 08 sized inserts are mounted; it is 9mm with 09 sized inserts and 10mm with 10 sized inserts. Refer to the Insert Stock Table on page 5 for cutting edge distance WF dimensions.

Identification Table

E 08 D - SSHM N 125 - 08

E	08	D	SSHM	N	125	08
Shank Material Code	Shank Dia. (mm)	Shank Length Code	Series	Feed Direction	Head Length Reference (mm) × 10	Min. Bore Dia. (mm) *With 08 size insert mounted

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item

Inserts for Grooving/Radius Grooving/Profiling/Chamfering (for E08□-SSHMN○○○-08 / E12□-SSHMN○○○-08) (Coated Carbide)

Dimensions (mm)

Applications	Cat. No.	AC1030U R	AC1030U L	Width of Cut CW	Maximum Grooving Depth CDX	Corner Radius RE	Cutting Edge Distance WF3	Cutting Edge Distance WF	Thickness S	Cutting Edge Distance E2	Applicable Holder	Fig
Grooving (08 size)	SSHG R/L 0807400	●	●	0.74	1.0	—	3.2	4.8	3.6	0.4	E08□-SSHMN○○○-08 E12□-SSHMN○○○-08	1
	SSHG R/L 0808400	●	●	0.84	1.0	—	3.2	4.8	3.6	0.4		1
	SSHG R/L 0809400	●	●	0.94	1.0	—	3.2	4.8	3.6	0.4		1
	SSHG R/L 0810000	●	●	1.00	1.0	—	3.2	4.8	3.1	—		1
	SSHG R/L 0810010	●	●	1.00	1.0	0.10	3.2	4.8	3.1	—		2
	SSHG R/L 0811900	●	●	1.19	1.0	—	3.2	4.8	3.1	—		1
	SSHG R/L 0813900	●	●	1.39	1.0	—	3.2	4.8	3.0	—		1
	SSHG R/L 0815000	●	●	1.50	1.0	—	3.2	4.8	3.0	—		1
	SSHG R/L 0815010	●	●	1.50	1.0	0.10	3.2	4.8	3.0	—		2
	SSHG R/L 0816900	●	●	1.69	1.0	—	3.2	4.8	3.0	—		1
	SSHG R/L 0820000	●	●	2.00	1.0	—	3.2	4.8	3.0	—		1
	SSHG R/L 0820010	●	●	2.00	1.0	0.10	3.2	4.8	3.0	—		2
	SSHG R/L 0820020	●	●	2.00	1.0	0.20	3.2	4.8	3.0	—		2
Grooving (09 size)	SSHG R 0910010	●	—	1.00	2.0	0.10	3.6	5.5	3.5	—		2
	SSHG R 0915010	●	—	1.50	2.0	0.10	3.6	5.5	3.4	—		2
	SSHG R 0920010	●	—	2.00	2.0	0.10	3.6	5.5	3.4	—		2
	SSHG R 0920020	●	—	2.00	2.0	0.20	3.6	5.5	3.4	—		2
	SSHG R 0925010	●	—	2.50	2.0	0.10	3.6	5.5	3.4	—		2
	SSHG R 0925020	●	—	2.50	2.0	0.20	3.6	5.5	3.4	—		2
	SSHG R 0930010	●	—	3.00	2.0	0.10	3.6	5.5	3.4	—		2
	SSHG R 0930020	●	—	3.00	2.0	0.20	3.6	5.5	3.4	—		2
Grooving (10 size)	SSHG R 1010010	●	—	1.00	3.0	0.10	3.6	6.5	3.5	—		2
	SSHG R 1015010	●	—	1.50	3.0	0.10	3.6	6.5	3.4	—		2
	SSHG R 1020010	●	—	2.00	3.0	0.10	3.6	6.5	3.4	—		2
	SSHG R 1020020	●	—	2.00	3.0	0.20	3.6	6.5	3.4	—		2
	SSHG R 1025010	●	—	2.50	3.0	0.10	3.6	6.5	3.4	—		2
	SSHG R 1025020	●	—	2.50	3.0	0.20	3.6	6.5	3.4	—		2
	SSHG R 1030010	●	—	3.00	3.0	0.10	3.6	6.5	3.4	—		2
	SSHG R 1030020	●	—	3.00	3.0	0.20	3.6	6.5	3.4	—		2
Radius Grooving/ Profiling (08 size)	SSHR R/L 08080	●	●	0.80	1.0	0.40	3.2	4.8	3.1	—		3
	SSHR R/L 08100	●	●	1.00	1.0	0.50	3.2	4.8	3.1	—		3
	SSHR R/L 08120	●	●	1.20	1.0	0.60	3.2	4.8	3.1	—		3
	SSHR R/L 08150	●	●	1.50	1.0	0.75	3.2	4.8	3.0	—		3
	SSHR R/L 08180	●	●	1.80	1.0	0.90	3.2	4.8	3.0	—		3
	SSHR R/L 08200	●	●	2.00	1.0	1.00	3.2	4.8	3.0	—		3
Chamfering (08 size)	SSHC R/L 08454502	●	●	—	1.4	0.20	1.8	4.65	3.6	—		4

Fig 1 (Grooving - Sizes 08/09/10)

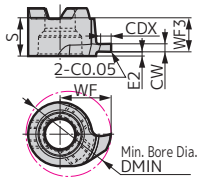


Fig 2 (Grooving - Sizes 08/09/10)

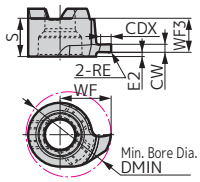


Fig 3 (Radius Grooving/Profiling - Size 08)

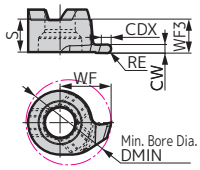


Fig 4 (Chamfering - Size 08)

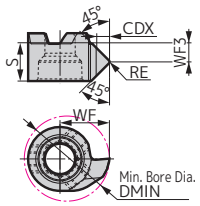


Figure shows right-handed (R) tool.

Min. Bore Dia. DMIN dimension for 08 size: 8mm, 09 size: 9mm, 10 size: 10mm.

Inserts for Threading (for E08□-SSHMN○○○-08 / E12□-SSHMN○○○-08) (Coated Carbide)

Dimensions (mm)

Applications	Cat. No.	AC1030U R	AC1030U L	Pitch (mm)	Flat CF	Cutting Edge Distance WF3	Cutting Edge Distance WF	Included Angle PNA	Thickness S	Applicable Holder	Fig
Threading (08 size)	SSHT R 086005 New	●	—	0.50 - 0.75	0.04	2.8	4.8	60	3.6	E08□-SSHMN○○○-08 E12□-SSHMN○○○-08	1
	SSHT R 086010 New	●	—	1.00 - 1.25	0.09	2.8	4.8	60	3.6		1
	SSHT R 086015 New	●	—	1.50 - 1.75	0.14	2.6	4.8	60	3.6		1

Fig 1 (Threading - Size 08)

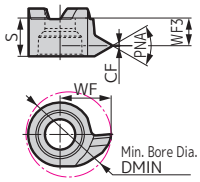


Figure shows right-handed (R) tool.

Min. Bore Dia. DMIN dimension for 08 size: 8mm.

■ Recommended Cutting Conditions (Grooving)

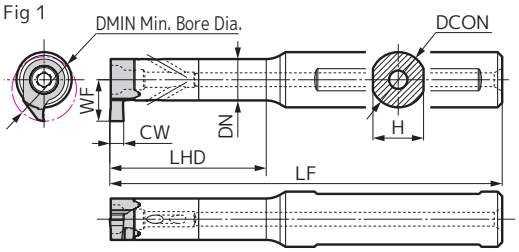
Work Material	P Carbon Steel / Alloy Steel	M Stainless Steel	K Cast Iron
Cutting Speed vc (m/min)	20-200	15-80	20-160
Feed Rate f (mm/rev)	0.01-0.03	0.01-0.03	0.01-0.03

● mark: Standard stocked item ● mark: Standard stock (expanded item) — mark: Not available

SSH series

Internal

Fig 1



Holders

Parts

Dimensions (mm)

Cat. No.	Stock	Shank Diameter DCON	Neck Dia. DN	Width H	Overall Length LF	Head Length LHD	Min. Bore Dia. DMIN	Width of Cut CW	Applicable Inserts	Fig	Flat Screw	N·m	Wrench
E12X-SSHM N195-14	●	12	9	11	75	19.5	14	**0.74~3.00**	SSH□ R/L **14** · · ·	1	BFTX0412IPS	**5.0**	LT15IP
E12H-SSHM N340-14	●	12	9	11	100	34.0	14	**0.74~3.00**		1			
E12J-SSHM N450-14	●	12	9	11	110	45.0	14	**0.74~3.00**		1			
E12X-SSHM N640-14	●	12	9	11	130	64.0	14	**0.74~3.00**		1			
E16F-SSHM N195-14	●	16	9	14	80	19.5	14	**0.74~3.00**		1	BFTX0412IPS	**5.0**	LT15IP
E16H-SSHM N340-14	●	16	9	14	100	34.0	14	**0.74~3.00**		1			
E16J-SSHM N450-14	●	16	9	14	110	45.0	14	**0.74~3.00**		1			
E16X-SSHM N640-14	●	16	9	14	130	64.0	14	**0.74~3.00**		1			

Refer to the Insert Stock Table on page 7 for cutting edge distance WF dimensions.

Identification Table

E 12 X - SSHM N 195 - 14

E	12	X	SSHM	N	195	14
Shank Material Code	Shank Dia. (mm)	Shank Length Code	Series	Feed Direction	Head Length Reference (mm) × 10	Min. Bore Dia. (mm)

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item

Inserts for Grooving/Radius Grooving/Profiling (for E12□-SSHMNOOO-14 / E16□-SSHMNOOO-14) (Coated Carbide)

Dimensions (mm)

Applications	Cat. No.	AC1030U R	AC1030U L	Width of Cut CW	Maximum Grooving Depth CDX	Corner Radius RE	Cutting Edge Distance WF3	Cutting Edge Distance WF	Thickness S	Cutting Edge Distance E2	Applicable Holder	Fig
Grooving (14 size)	**SSHG R/L 1407400**	●	●	**0.74**	**1.2**	—	5.3	9.0	5.5	0.2	E12□-SSHMNOOO-**14** E16□-SSHMNOOO-**14**	1
	SSHG R/L 1408400	●	●	**0.84**	**1.3**	—	5.3	9.0	5.5	0.2		1
	SSHG R/L 1409400	●	●	**0.94**	**1.5**	—	5.3	9.0	5.5	0.2		1
	SSHG R/L 1410000	●	●	**1.00**	**1.6**	—	5.3	9.0	5.5	0.2		1
	SSHG R/L 1410010	●	●	**1.00**	**1.6**	0.10	5.3	9.0	5.5	0.2		2
	SSHG R/L 1411900	●	●	**1.19**	**4.0**	—	5.3	9.0	5.2	—		1
	SSHG R/L 1413900	●	●	**1.39**	**4.0**	—	5.3	9.0	5.1	—		1
	SSHG R/L 1415000	●	●	**1.50**	**4.0**	—	5.3	9.0	5.1	—		1
	SSHG R/L 1415010	●	●	**1.50**	**4.0**	0.10	5.3	9.0	5.1	—		2
	SSHG R/L 1416900	●	●	**1.69**	**4.0**	—	5.3	9.0	5.1	—		1
	SSHG R/L 1420000	●	●	**2.00**	**4.0**	—	5.3	9.0	5.1	—		1
	SSHG R/L 1420010	●	●	**2.00**	**4.0**	0.10	5.3	9.0	5.1	—		2
	SSHG R/L 1420020	●	●	**2.00**	**4.0**	0.20	5.3	9.0	5.1	—		2
	SSHG R/L 1425000	●	●	**2.50**	**4.0**	—	5.3	9.0	5.1	—		1
	SSHG R/L 1425010	●	●	**2.50**	**4.0**	0.10	5.3	9.0	5.1	—		2
	SSHG R/L 1425020	●	●	**2.50**	**4.0**	0.20	5.3	9.0	5.1	—		2
	SSHG R/L 1430000	●	●	**3.00**	**4.0**	—	5.3	9.0	5.1	—		1
	SSHG R/L 1430010	●	●	**3.00**	**4.0**	0.10	5.3	9.0	5.1	—		2
	SSHG R/L 1430020	●	●	**3.00**	**4.0**	0.20	5.3	9.0	5.1	—		2
Radius Grooving/ Profiling (14 size)	**SSHR R/L 14100**	●	●	**1.00**	**1.6**	0.50	5.3	9.0	5.2	—		3
	SSHR R/L 14120	●	●	**1.20**	**4.0**	0.60	5.3	9.0	5.2	—		3
	SSHR R/L 14150	●	●	**1.50**	**4.0**	0.75	5.3	9.0	5.1	—		3
	SSHR R/L 14180	●	●	**1.80**	**4.0**	0.90	5.3	9.0	5.1	—		3
	SSHR R/L 14200	●	●	**2.00**	**4.0**	1.00	5.3	9.0	5.1	—		3
	SSHR R/L 14220	●	●	**2.20**	**4.0**	1.10	5.3	9.0	5.1	—		3
	SSHR R/L 14250	●	●	**2.50**	**4.0**	1.25	5.3	9.0	5.1	—		3
	SSHR R/L 14300	●	●	**3.00**	**4.0**	1.50	5.3	9.0	5.1	—		3

Fig 1 (Grooving - Size 14)

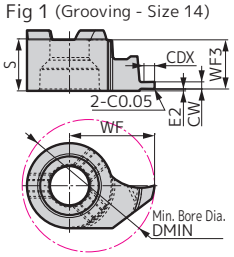


Fig 2 (Grooving - Size 14)

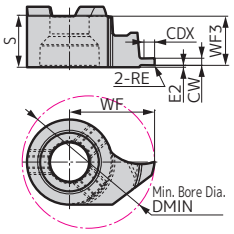


Fig 3 (Radius Grooving/Profiling - Size 14)

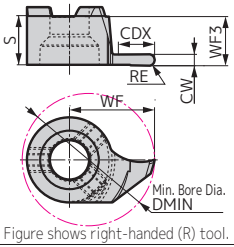


Figure shows right-handed (R) tool.

Min. Bore Dia. DMIN dimension for 14 size: 14mm. Not usable with SSHF type holders.

Inserts for Threading (for E12□-SSHMNOOO-14 / E16□-SSHMNOOO-14) (Coated Carbide)

Dimensions (mm)

Applications	Cat. No.	AC1030U R	AC1030U L	Pitch (mm)	Flat CF	Cutting Edge Distance WF3	Cutting Edge Distance WF	Included Angle PNA	Thickness S	Applicable Holder	Fig
Threading (14 size)	**SSHT R 146005** New	●	—	0.50 - 0.75	0.04	4.8	9.0	60	5.5	E12□-SSHMNOOO-**14** E16□-SSHMNOOO-**14**	1
	SSHT R 146010 New	●	—	1.00 - 1.25	0.09	4.7	9.0	60	5.5		1
	SSHT R 146015 New	●	—	1.50 - 1.75	0.14	4.5	9.0	60	5.5		1
	SSHT R 146020 New	●	—	2.00	0.20	4.2	9.0	60	5.5		1
	SSHT R 146025 New	●	—	2.50	0.25	4.2	9.0	60	5.5		1

Fig 1 (Threading - Size 14)

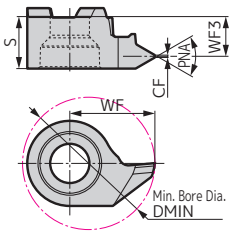


Figure shows right-handed (R) tool.

Min. Bore Dia. DMIN dimension for 14 size: 14mm. Not usable with SSHF type holders.

■ Recommended Cutting Conditions (Grooving)

Work Material	P Carbon Steel / Alloy Steel	M Stainless Steel	K Cast Iron
Cutting Speed vc (m/min)	20-200	15-80	20-160
Feed Rate f (mm/rev)	0.01-0.03	0.01-0.03	0.01-0.03

● mark: Standard stocked item ● mark: Standard stock (expanded item) — mark: Not available

SSH series New

Facing

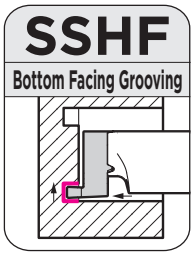
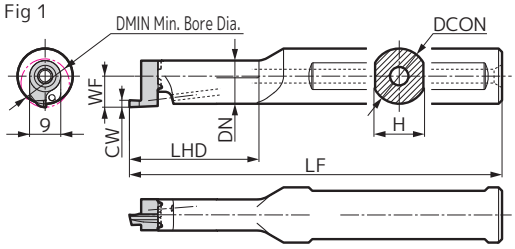


Fig 1



Holders

Parts

Dimensions (mm)

Cat. No.	Stock	Shank Diameter DCON	Neck Dia. DN	Width H	Overall Length LF	Head Length LHD	Head Length DMIN	Width of Cut CW	Applicable Inserts	Fig	Flat Screw	N·m	Wrench
E16H-SSHF R370-14	●	16	9	14	108	37	14	**1.0~3.0**	SSHFI R/L 14···	1	BFTX0412IPS	5.0	LT15IP
E16J-SSHF R480-14	●	16	9	14	118	48	14	**1.0~3.0**		1			

Refer to the Insert Stock Table for cutting edge distance WF dimensions.

Identification Table

E 16 H - SSHF R 370 - 14

- E: Shank Material Code
- 16: Shank Dia. (mm)
- H: Shank Length Code
- SSHF: Series
- R: Feed Direction
- 370: Head Length Reference (mm) × 10
- 14: Min. Bore Dia. (mm)

Inserts for Face Grooving (for E16□-SSHFR○○○-14) (Coated Carbide)

Dimensions (mm)

Applications	Cat. No.	AC1030U R	AC1030U L	Width of Cut CW	Maximum Grooving Depth CDX	Corner Radius RE	Cutting Edge Distance WF3	Cutting Edge Distance WF	Thickness S	Applicable Holder	Fig
Threading (14 size)	**SSHFI R1410000** New	●	—	**1.0**	**1.5**	(C0.05)	8.3	9.0	5.5	E16□-SSHFR○○○-14	1
	SSHFI R1415020 New	●	—	**1.5**	**2.5**	0.20	8.3	9.0	5.5		1
	SSHFI R1420020 New	●	—	**2.0**	**3.0**	0.20	8.3	9.0	4.9		1
	SSHFI R1425020 New	●	—	**2.5**	**3.0**	0.20	8.3	9.0	4.9		1
	SSHFI R1430020 New	●	—	**3.0**	**3.0**	0.20	8.3	9.0	4.9		1

Fig 1 (Face Grooving - Size 14)

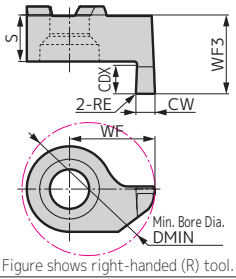


Figure shows right-handed (R) tool.

Min. Bore Dia. DMIN dimension for 14 size: 14mm. We recommend use with SSHF type holders for facing.

■ Recommended Cutting Conditions

Work Material	P Carbon Steel / Alloy Steel	M Stainless Steel	K Cast Iron
Cutting Speed vc (m/min)	20-200	15-80	20-160
Feed Rate f (mm/rev)	0.01-0.03	0.01-0.03	0.01-0.03

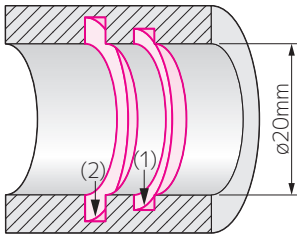
N·m Recommended Tightening Torque (N·m) ● mark: Standard stock (expanded item) — mark: Not available

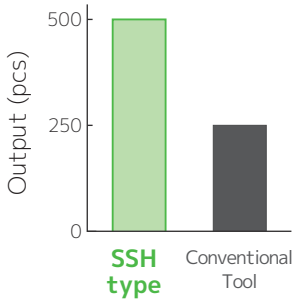
SSH series

■ Application Examples

STKM Bearing Component P

Stable chip evacuation doubles tool life

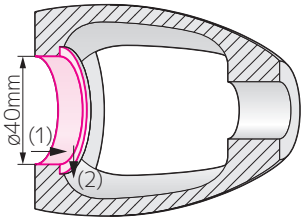


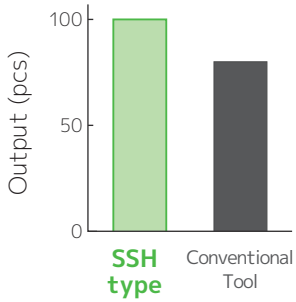


Holder: E16F-SSHMN195-14 Insert: SSHGR1420020 (AC1030U)
Cutting Conditions: vc = 100m/min, f = 0.06mm/rev
(1) ap = 2.0mm (2) ap = 3.5mm Wet

Titanium Alloy Case S

Achieves 1.25x tool life in titanium alloy
Excellent machined surface quality too





Holder: E16F-SSHMN195-14 Insert: SSHGR1416900 (AC1030U)
Cutting Conditions: vc = 60m/min, f = 0.04mm/rev
(1) ap = 0.1 to 0.2mm (2) ap = 3.5mm Wet

MEMO

MEMO

< SAFETY NOTES >

- Very hot or lengthy chips may be discharged while the machine is in operation. Therefore, machine guards, safety goggles or other protective covers must be used. Fire safety precautions must also be considered.
- Please handle with care as this product has sharp edges.
- Improper cutting conditions or mis-handling of the tool may result in breakages or projectiles. Therefore, please use the tool within its recommended conditions.
- When using non-water soluble cutting oil, precautions against fire must be taken and please ensure that a fire extinguisher is placed near the machine.

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https://www.sumitool.com/global

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