



# SG-DRILL SERIES

## HIGH PERFORMANCE HSS-PM DRILLS



CELEBRATE THE POLE POSITION

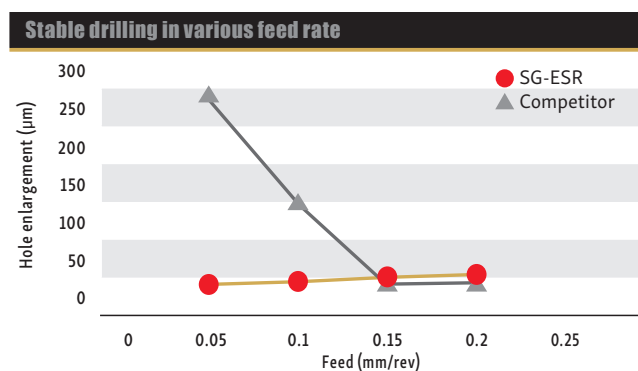


**HSS-PM  
UNIVERSAL  
DRILL**

Universal drill of  
HSS-PM with  
SG-Coating.  
High performance  
under all conditions

# High Performance HSS-PM Drills

- ▶ The combination of powder metal HSS and SG-Coating provides the longest tool life under HSS coated drills.
- ▶ Ideal point and flute geometry with high accuracy will realise stable drilling and excellent hole position.
- ▶ Highly efficient machining with high speed and high feed drilling.



Cutting conditions	
Dia: 6mm	Hole enlargement under 30µm
Speed: 40m/min	
Work material: C50 (180HB)	
Cutting depth: 19mm Through hole	
Cutting fluid: Water-soluble	

## SG-ESS Drill 3D



- ▶ Smooth entering with excellent hole positioning.
- ▶ 0.5 ~ 6mm in 1/100 steps.
- ▶ From 0.5 bis 20.0mm in 635 sizes as standard stock.

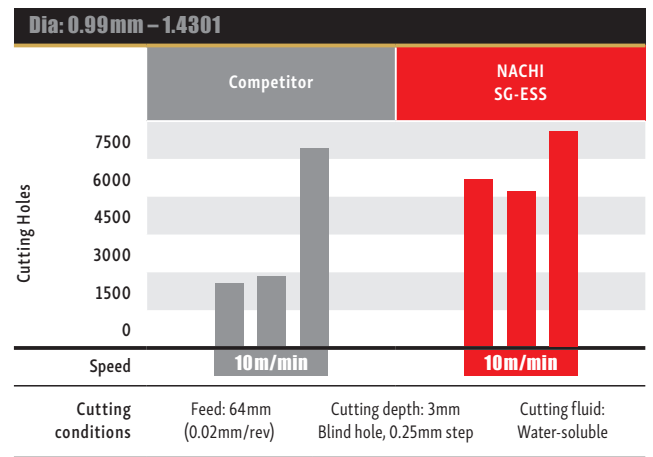
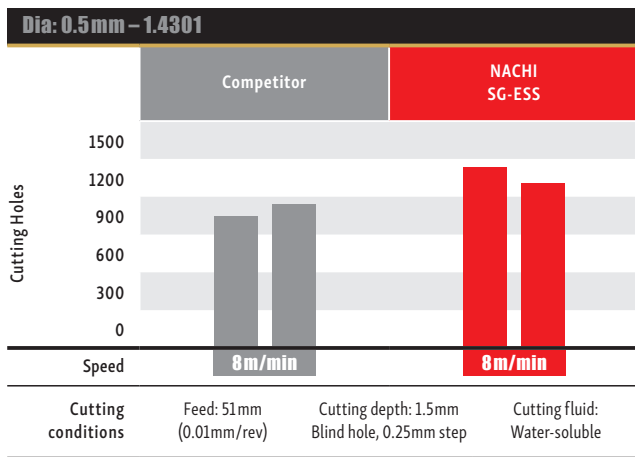
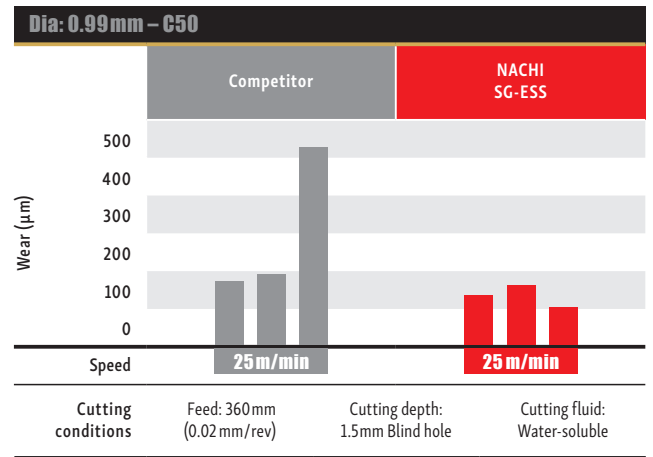
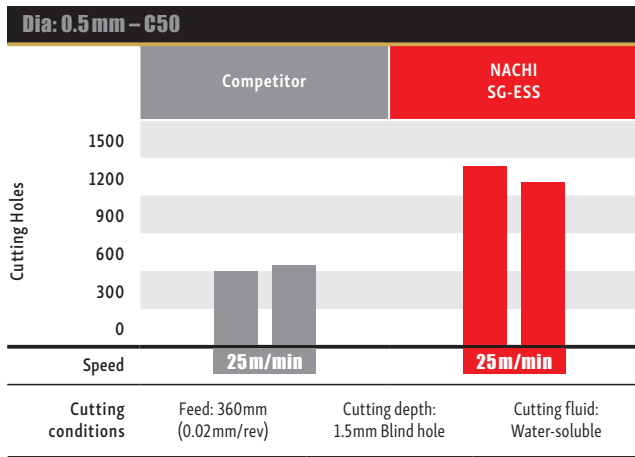
## SG-ESR Drill 5D



- ▶ Improved chip dividing and chip evacuation.
- ▶ Applicable to a wide range of material in 1 drill.
- ▶ From 2.0 bis 32.0mm 149 sizes as standard stock.

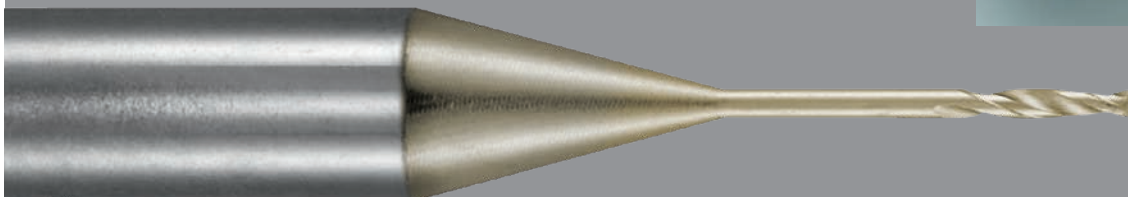


# Drilling performance of SG-ESS micro sizes



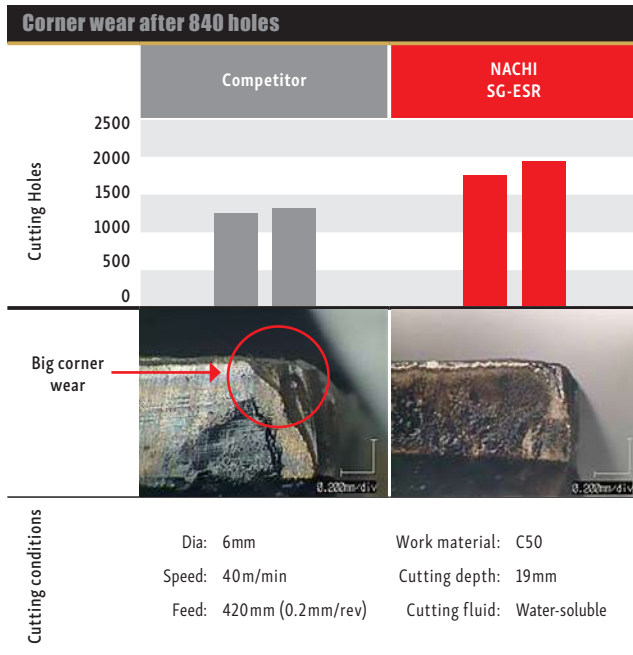
Because of high rigidity design concept, wide ranges of work material are applicable.

SG-ESS 0.5 mm SUS304 (1.4301)

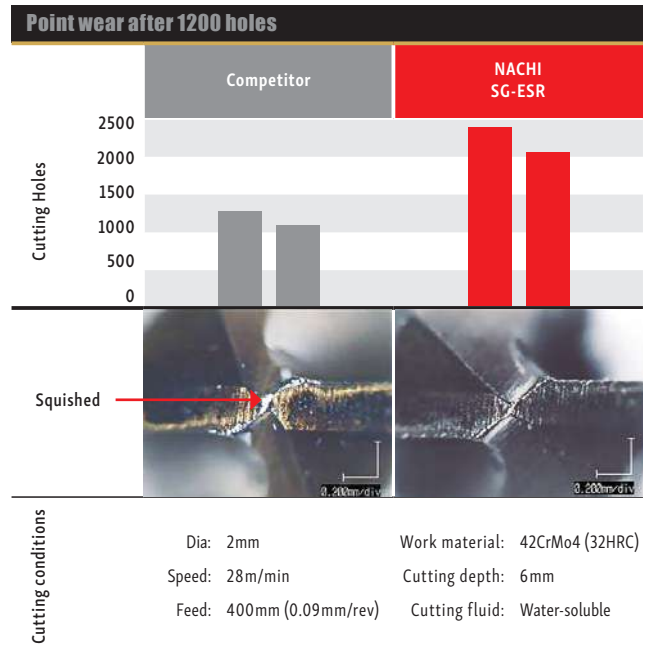


## SG-ESR applicable to wide work material

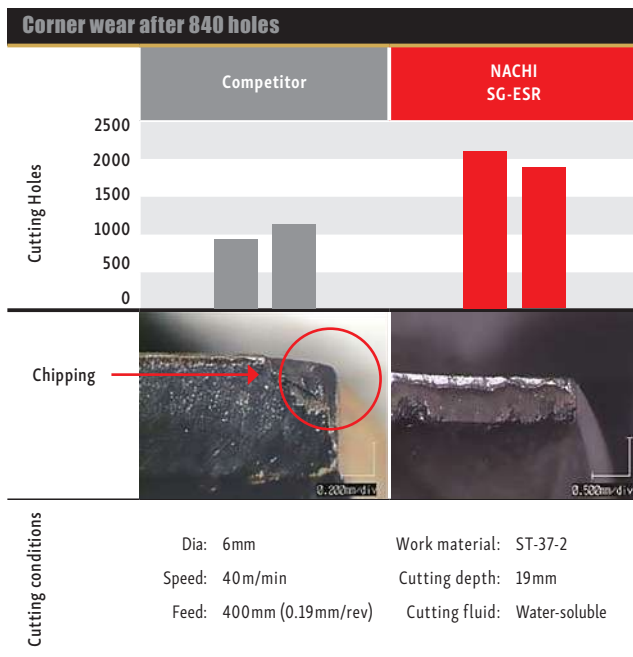
### C50 Carbon Steel Drilling



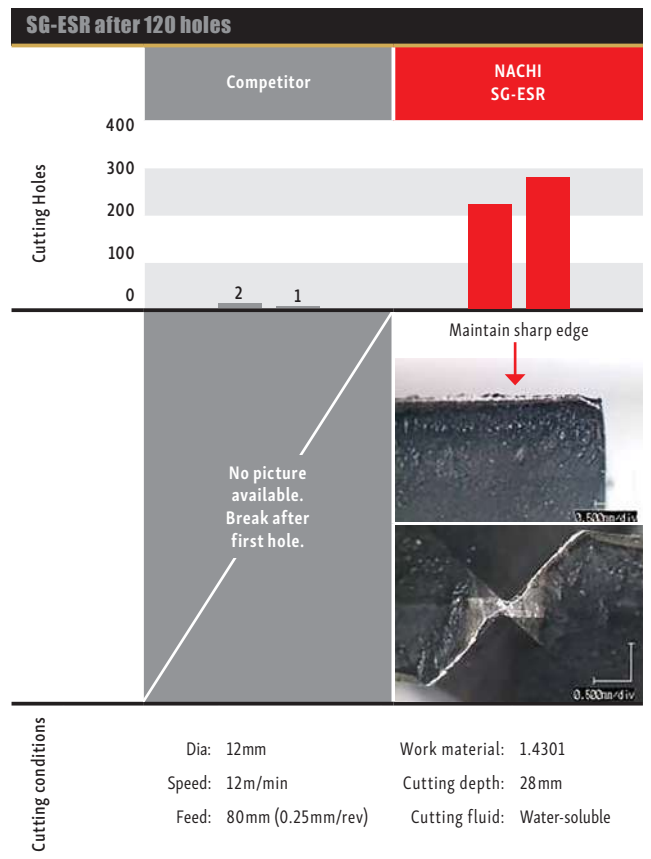
### Drilling in Alloy Steel 42CrMo4



### Drilling in Structure Steel ST37-2

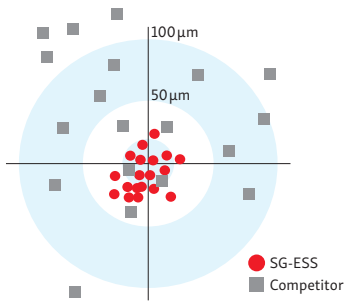


### Drilling in Stainless Steel 1.4301

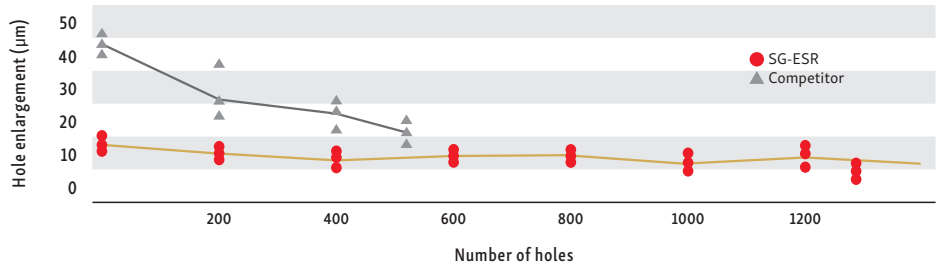


# High-accuracy drilling

## Hole positioning accuracy



## Hole enlargement



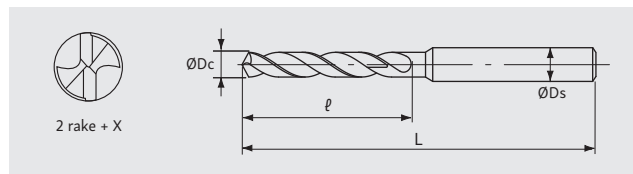
## Applicable work materials

Tool	Structural Steel	Carbon Steels	Pre-Hardened Steels Alloy Steels	Hardened Steels Mold Steels	Hardened Steels		Stainless Steels		Titanium Alloys Nickel Alloys	Cast Irons	Aluminium Alloys	Copper Alloys
	ST-37-2	C45/ C50	SCR/ NAK	30-40 HRC	40- 50HRC	50- 65HRC	Austenitic SUS304/316	Martensitic SUS420		GG/ GGG	Al/ ADC	Cu
SGESS	●	●	●	●	X	X	●	●	●	●	○	○
SGESR	●	●	●	○	X	X	●	●	○	●	○	○

● Excellent | ○ Good | X Not Applicable



## SGESR 5D



**FAX**
**SG**
**h7**
**135°**
**31°-32°**
**h7**
**2.0 32.0**

TOOL MATERIAL
POINT ANGLE
HELIX ANGLE

### LIST: 7574

Code	Dc	ℓ	L	Ds	Stock
SGESR2.0	2.0	24	56	3	●
SGESR2.1	2.1	24	56	3	●
SGESR2.2	2.2	25	56	3	●
SGESR2.3	2.3	25	56	3	●
SGESR2.4	2.4	30	61	3	●
SGESR2.5	2.5	30	61	3	●
SGESR2.6	2.6	30	61	3	●
SGESR2.7	2.7	33	64	3	●
SGESR2.8	2.8	33	64	3	●
SGESR2.9	2.9	33	64	3	●
SGESR3.0	3.0	33	64	3	●
SGESR3.1	3.1	36	68	4	●
SGESR3.2	3.2	36	68	4	●
SGESR3.3	3.3	36	68	4	●
SGESR3.4	3.4	39	71	4	●
SGESR3.5	3.5	39	71	4	●
SGESR3.6	3.6	39	71	4	●
SGESR3.7	3.7	39	71	4	●
SGESR3.8	3.8	43	75	4	●
SGESR3.9	3.9	43	75	4	●
SGESR4.0	4.0	43	75	4	●
SGESR4.1	4.1	43	85	6	●
SGESR4.2	4.2	43	85	6	●
SGESR4.3	4.3	47	89	6	●
SGESR4.4	4.4	47	89	6	●
SGESR4.5	4.5	47	89	6	●
SGESR4.6	4.6	47	89	6	●
SGESR4.7	4.7	47	89	6	●
SGESR4.8	4.8	52	94	6	●
SGESR4.9	4.9	52	94	6	●
SGESR5.0	5.0	52	94	6	●
SGESR5.1	5.1	52	94	6	●
SGESR5.2	5.2	52	94	6	●
SGESR5.3	5.3	52	94	6	●
SGESR5.4	5.4	57	99	6	●
SGESR5.5	5.5	57	99	6	●
SGESR5.6	5.6	57	99	6	●
SGESR5.7	5.7	57	99	6	●
SGESR5.8	5.8	57	99	6	●
SGESR5.9	5.9	57	99	6	●
SGESR6.0	6.0	57	99	6	●
SGESR6.1	6.1	63	107	8	●
SGESR6.2	6.2	63	107	8	●
SGESR6.3	6.3	63	107	8	●
SGESR6.4	6.4	63	107	8	●
SGESR6.5	6.5	63	107	8	●

Code	Dc	ℓ	L	Ds	Stock
SGESR6.6	6.6	63	107	8	●
SGESR6.7	6.7	63	107	8	●
SGESR6.8	6.8	69	113	8	●
SGESR6.9	6.9	69	113	8	●
SGESR7.0	7.0	69	113	8	●
SGESR7.1	7.1	69	113	8	●
SGESR7.2	7.2	69	113	8	●
SGESR7.3	7.3	69	113	8	●
SGESR7.4	7.4	69	113	8	●
SGESR7.5	7.5	69	113	8	●
SGESR7.6	7.6	75	119	8	●
SGESR7.7	7.7	75	119	8	●
SGESR7.8	7.8	75	119	8	●
SGESR7.9	7.9	75	119	8	●
SGESR8.0	8.0	75	119	8	●
SGESR8.1	8.1	75	125	10	●
SGESR8.2	8.2	75	125	10	●
SGESR8.3	8.3	75	125	10	●
SGESR8.4	8.4	75	125	10	●
SGESR8.5	8.5	75	125	10	●
SGESR8.6	8.6	81	131	10	●
SGESR8.7	8.7	81	131	10	●
SGESR8.8	8.8	81	131	10	●
SGESR8.9	8.9	81	131	10	●
SGESR9.0	9.0	81	131	10	●
SGESR9.1	9.1	81	131	10	●
SGESR9.2	9.2	81	131	10	●
SGESR9.3	9.3	81	131	10	●
SGESR9.4	9.4	81	131	10	●
SGESR9.5	9.5	81	131	10	●
SGESR9.6	9.6	87	137	10	●
SGESR9.7	9.7	87	137	10	●
SGESR9.8	9.8	87	137	10	●
SGESR9.9	9.9	87	137	10	●
SGESR10.0	10.0	87	137	10	●
SGESR10.1	10.1	87	144	12	●
SGESR10.2	10.2	87	144	12	●
SGESR10.3	10.3	87	144	12	●
SGESR10.4	10.4	87	144	12	●
SGESR10.5	10.5	87	144	12	●
SGESR10.6	10.6	87	144	12	●
SGESR10.7	10.7	94	151	12	●
SGESR10.8	10.8	94	151	12	●
SGESR10.9	10.9	94	151	12	●
SGESR11.0	11.0	94	151	12	●
SGESR11.1	11.1	94	151	12	●

**LIST: 7574**

Code	Dc	ℓ	L	Ds	Stock
SGESR11.2	11.2	94	151	12	●
SGESR11.3	11.3	94	151	12	●
SGESR11.4	11.4	94	151	12	●
SGESR11.5	11.5	94	151	12	●
SGESR11.6	11.6	94	151	12	●
SGESR11.7	11.7	94	151	12	●
SGESR11.8	11.8	94	151	12	●
SGESR11.9	11.9	101	158	12	●
SGESR12.0	12.0	101	158	12	●
SGESR12.1	12.1	101	158	12	●
SGESR12.2	12.2	101	158	12	●
SGESR12.3	12.3	101	158	12	●
SGESR12.4	12.4	101	158	12	●
SGESR12.5	12.5	101	158	12	●
SGESR12.6	12.6	101	158	12	●
SGESR12.7	12.7	101	158	12	●
SGESR12.8	12.8	101	158	12	●
SGESR12.9	12.9	101	158	12	●
SGESR13.0	13.0	101	158	12	●
SGESR13.5	13.5	108	168	16	●
SGESR14.0	14.0	108	168	16	●
SGESR14.5	14.5	114	173	16	●
SGESR15.0	15.0	114	180	20	●
SGESR15.5	15.5	120	185	20	●
SGESR16.0	16.0	120	185	20	●
SGESR16.5	16.5	125	189	20	●
SGESR17.0	17.0	125	189	20	●
SGESR17.5	17.5	130	194	20	●
SGESR18.0	18.0	130	194	20	●

Code	Dc	ℓ	L	Ds	Stock
SGESR18.5	18.5	135	198	20	●
SGESR19.0	19.0	135	206	25	●
SGESR19.5	19.5	140	210	25	●
SGESR20.0	20.0	140	210	25	●
SGESR20.5	20.5	145	214	25	●
SGESR21.0	21.0	145	214	25	●
SGESR21.5	21.5	150	218	25	●
SGESR22.0	22.0	150	218	25	●
SGESR22.5	22.5	155	223	25	●
SGESR23.0	23.0	155	223	25	●
SGESR23.5	23.5	155	223	25	●
SGESR24.0	24.0	160	237	32	●
SGESR24.5	24.5	160	237	32	●
SGESR25.0	25.0	165	241	32	●
SGESR25.5	25.5	165	241	32	●
SGESR26.0	26.0	165	241	32	●
SGESR26.5	26.5	165	241	32	●
SGESR27.0	27.0	170	245	32	●
SGESR27.5	27.5	170	245	32	●
SGESR28.0	28.0	170	245	32	●
SGESR28.5	28.5	175	248	32	●
SGESR29.0	29.0	175	248	32	●
SGESR29.5	29.5	175	248	32	●
SGESR30.0	30.0	175	248	32	●
SGESR30.5	30.5	180	252	32	●
SGESR31.0	31.0	180	252	32	●
SGESR31.5	31.5	180	252	32	●
SGESR32.0	32.0	185	255	32	●

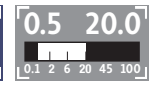
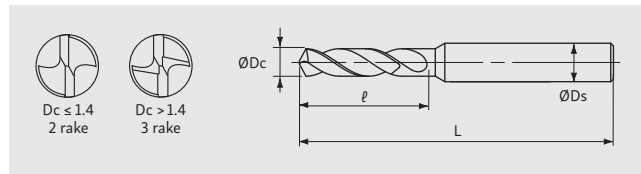
●: Standard stock item

Standard Drilling Conditions														
Work material	Structural Steels Carbon Steels ST-37-2, C50		Alloy Steels Pre-Hardened Steels 42CrMo4, NAK, HPM		Mold Steels Hardened Steels X40MoV51, NAK, HPM		Stainless Steels SUS304, SUS316, 1.4301, 1.4401		Cast Irons GG/GGG		Aluminium Alloys Copper Alloys Al5052, C1100		Nickel Alloys Titanium Alloys 30~40HRC	
	mm	min <sup>-1</sup>	mm/min	min <sup>-1</sup>	mm/min	min <sup>-1</sup>	mm/min	min <sup>-1</sup>	mm/min	min <sup>-1</sup>	mm/min	min <sup>-1</sup>	mm/min	min <sup>-1</sup>
2	5700	300	4600	200	3200	120	1600	55	6300	410	9700	630	800	23
3	4200	380	3400	260	2100	120	1100	60	4700	530	7200	820	530	25
5	2500	360	2000	240	1250	120	760	75	2800	500	4300	770	320	23
8	1600	310	1300	210	800	115	480	80	1800	440	2700	660	200	22
10	1300	280	1000	190	650	110	380	80	1400	390	2200	610	160	22
12	1100	260	850	180	530	105	320	80	1200	360	1800	560	130	21
16	800	240	640	160	400	100	240	70	880	330	1400	500	100	20
20	640	220	510	150	320	90	190	60	700	300	1100	460	80	19
25	510	200	410	140	250	80	150	50	560	270	870	420	64	18
32	400	150	320	110	200	65	120	45	440	210	680	330	50	15

**Warnings on using the drilling condition tables**

- 1) Adjust the drilling condition according to the rigidity of the machine, work clamping situation and shape of the workpiece.
- 2) The table values are for drilling with water-soluble cutting fluid.
- 3) Provide sufficient amount of cutting fluid to the cutting point and in the flute.
- 4) Reduce 20% of the RPM and Feed, when drilling over 3D depth.
- 5) When drilling over 3D depth, add step feed. However, up to the work material and drilling condition, the chip evacuation may be worse. In this case, even when the cutting depth is under 3D, add step feed.
- 6) Add step feeding for stainless steel.
- 7) When step feeding, return to the entrance of the hole each step.
- 8) Step feed interval is around 0.5-1D. Small diameters are around 0.2-0.5D.
- 9) Use collet chuck or milling chuck.

# SGESS 3D



TOOL MATERIAL

POINT ANGLE  
DC ≤ 1,4

POINT ANGLE  
DC > 1,4

POINT ANGLE

## LIST: 7572P

Code	Dc	ℓ	L	Ds	Stock
SGESS0.5	0.50	3	38	3	●
SGESS0.51	0.51	3	38	3	●
SGESS0.52	0.52	3	38	3	●
SGESS0.53	0.53	3	38	3	●
SGESS0.54	0.54	3	38	3	●
SGESS0.55	0.55	3	38	3	●
SGESS0.56	0.56	3	38	3	●
SGESS0.57	0.57	3	38	3	●
SGESS0.58	0.58	3	38	3	●
SGESS0.59	0.59	3	38	3	●
SGESS0.6	0.60	3.5	38	3	●
SGESS0.61	0.61	3.5	38	3	●
SGESS0.62	0.62	3.5	38	3	●
SGESS0.63	0.63	3.5	38	3	●
SGESS0.64	0.64	3.5	38	3	●
SGESS0.65	0.65	3.5	38	3	●
SGESS0.66	0.66	3.5	38	3	●
SGESS0.67	0.67	3.5	38	3	●
SGESS0.68	0.68	3.5	38	3	●
SGESS0.69	0.69	3.5	38	3	●
SGESS0.7	0.70	4.5	38	3	●
SGESS0.71	0.71	4.5	38	3	●
SGESS0.72	0.72	4.5	38	3	●
SGESS0.73	0.73	4.5	38	3	●
SGESS0.74	0.74	4.5	38	3	●
SGESS0.75	0.75	4.5	38	3	●
SGESS0.76	0.76	4.5	38	3	●
SGESS0.77	0.77	4.5	38	3	●
SGESS0.78	0.78	4.5	38	3	●
SGESS0.79	0.79	4.5	38	3	●
SGESS0.8	0.80	5	38	3	●
SGESS0.81	0.81	5	38	3	●
SGESS0.82	0.82	5	38	3	●
SGESS0.83	0.83	5	38	3	●
SGESS0.84	0.84	5	38	3	●
SGESS0.85	0.85	5	38	3	●
SGESS0.86	0.86	5	38	3	●
SGESS0.87	0.87	5	38	3	●
SGESS0.88	0.88	5	38	3	●
SGESS0.89	0.89	5	38	3	●
SGESS0.9	0.90	5.5	38	3	●
SGESS0.91	0.91	5.5	38	3	●
SGESS0.92	0.92	5.5	38	3	●

Code	Dc	ℓ	L	Ds	Stock
SGESS0.93	0.93	5.5	38	3	●
SGESS0.94	0.94	5.5	38	3	●
SGESS0.95	0.95	5.5	38	3	●
SGESS0.96	0.96	5.5	38	3	●
SGESS0.97	0.97	5.5	38	3	●
SGESS0.98	0.98	5.5	38	3	●
SGESS0.99	0.99	5.5	38	3	●
SGESS1.0	1.00	6	38	3	●
SGESS1.01	1.01	6	38	3	●
SGESS1.02	1.02	6	38	3	●
SGESS1.03	1.03	6	38	3	●
SGESS1.04	1.04	6	38	3	●
SGESS1.05	1.05	6	38	3	●
SGESS1.06	1.06	6	38	3	●
SGESS1.07	1.07	7	39	3	●
SGESS1.08	1.08	7	39	3	●
SGESS1.09	1.09	7	39	3	●
SGESS1.1	1.10	7	39	3	●
SGESS1.11	1.11	7	39	3	●
SGESS1.12	1.12	7	39	3	●
SGESS1.13	1.13	7	39	3	●
SGESS1.14	1.14	7	39	3	●
SGESS1.15	1.15	7	39	3	●
SGESS1.16	1.16	7	39	3	●
SGESS1.17	1.17	7	39	3	●
SGESS1.18	1.18	7	39	3	●
SGESS1.19	1.19	8	40	3	●
SGESS1.2	1.2	8	40	3	●
SGESS1.21	1.21	8	40	3	●
SGESS1.22	1.22	8	40	3	●
SGESS1.23	1.23	8	40	3	●
SGESS1.24	1.24	8	40	3	●
SGESS1.25	1.25	8	40	3	●
SGESS1.26	1.26	8	40	3	●
SGESS1.27	1.27	8	40	3	●
SGESS1.28	1.28	8	40	3	●
SGESS1.29	1.29	8	40	3	●
SGESS1.3	1.3	8	40	3	●
SGESS1.31	1.31	8	40	3	●
SGESS1.32	1.32	8	40	3	●
SGESS1.33	1.33	9	41	3	●
SGESS1.34	1.34	9	41	3	●
SGESS1.35	1.35	9	41	3	●

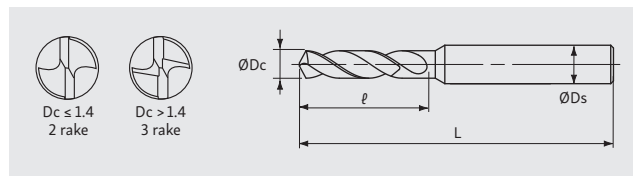


**LIST: 7572P**

Code	Dc	ℓ	L	Ds	Stock
SGESS1.36	1.36	9	41	3	●
SGESS1.37	1.37	9	41	3	●
SGESS1.38	1.38	9	41	3	●
SGESS1.39	1.39	9	41	3	●
SGESS1.4	1.4	9	41	3	●
SGESS1.41	1.41	9	41	3	●
SGESS1.42	1.42	9	41	3	●
SGESS1.43	1.43	9	41	3	●
SGESS1.44	1.44	9	41	3	●
SGESS1.45	1.45	9	41	3	●
SGESS1.46	1.46	9	41	3	●
SGESS1.47	1.47	9	41	3	●
SGESS1.48	1.48	9	41	3	●
SGESS1.49	1.49	9	41	3	●
SGESS1.5	1.5	9	41	3	●
SGESS1.51	1.51	10	42	3	●
SGESS1.52	1.52	10	42	3	●
SGESS1.53	1.53	10	42	3	●
SGESS1.54	1.54	10	42	3	●
SGESS1.55	1.55	10	42	3	●
SGESS1.56	1.56	10	42	3	●
SGESS1.57	1.57	10	42	3	●
SGESS1.58	1.58	10	42	3	●
SGESS1.59	1.59	10	42	3	●
SGESS1.6	1.6	10	42	3	●
SGESS1.61	1.61	10	42	3	●
SGESS1.62	1.62	10	42	3	●
SGESS1.63	1.63	10	42	3	●
SGESS1.64	1.64	10	42	3	●
SGESS1.65	1.65	10	42	3	●
SGESS1.66	1.66	10	42	3	●
SGESS1.67	1.67	10	42	3	●
SGESS1.68	1.68	10	42	3	●
SGESS1.69	1.69	10	42	3	●
SGESS1.7	1.7	10	42	3	●
SGESS1.71	1.71	11	43	3	●
SGESS1.72	1.72	11	43	3	●
SGESS1.73	1.73	11	43	3	●
SGESS1.74	1.74	11	43	3	●
SGESS1.75	1.75	11	43	3	●
SGESS1.76	1.76	11	43	3	●
SGESS1.77	1.77	11	43	3	●
SGESS1.78	1.78	11	43	3	●
SGESS1.79	1.79	11	43	3	●
SGESS1.8	1.8	11	43	3	●
SGESS1.81	1.81	11	43	3	●
SGESS1.82	1.82	11	43	3	●
SGESS1.83	1.83	11	43	3	●
SGESS1.84	1.84	11	43	3	●
SGESS1.85	1.85	11	43	3	●

Code	Dc	ℓ	L	Ds	Stock
SGESS1.86	1.86	11	43	3	●
SGESS1.87	1.87	11	43	3	●
SGESS1.88	1.88	11	43	3	●
SGESS1.89	1.89	11	43	3	●
SGESS1.9	1.9	11	43	3	●
SGESS1.91	1.91	12	44	3	●
SGESS1.92	1.92	12	44	3	●
SGESS1.93	1.93	12	44	3	●
SGESS1.94	1.94	12	44	3	●
SGESS1.95	1.95	12	44	3	●
SGESS1.96	1.96	12	44	3	●
SGESS1.97	1.97	12	44	3	●
SGESS1.98	1.98	12	44	3	●
SGESS1.99	1.99	12	44	3	●
SGESS2.0	2.0	12	44	3	●
SGESS2.01	2.01	12	44	3	●
SGESS2.02	2.02	12	44	3	●
SGESS2.03	2.03	12	44	3	●
SGESS2.04	2.04	12	44	3	●
SGESS2.05	2.05	12	44	3	●
SGESS2.06	2.06	12	44	3	●
SGESS2.07	2.07	12	44	3	●
SGESS2.08	2.08	12	44	3	●
SGESS2.09	2.09	12	44	3	●
SGESS2.1	2.1	12	44	3	●
SGESS2.11	2.11	12	44	3	●
SGESS2.12	2.12	12	44	3	●
SGESS2.13	2.13	13	45	3	●
SGESS2.14	2.14	13	45	3	●
SGESS2.15	2.15	13	45	3	●
SGESS2.16	2.16	13	45	3	●
SGESS2.17	2.17	13	45	3	●
SGESS2.18	2.18	13	45	3	●
SGESS2.19	2.19	13	45	3	●
SGESS2.2	2.2	13	45	3	●
SGESS2.21	2.21	13	45	3	●
SGESS2.22	2.22	13	45	3	●
SGESS2.23	2.23	13	45	3	●
SGESS2.24	2.24	13	45	3	●
SGESS2.25	2.25	13	45	3	●
SGESS2.26	2.26	13	45	3	●
SGESS2.27	2.27	13	45	3	●
SGESS2.28	2.28	13	45	3	●
SGESS2.29	2.29	13	45	3	●
SGESS2.3	2.3	13	45	3	●
SGESS2.31	2.31	13	45	3	●
SGESS2.32	2.32	13	45	3	●
SGESS2.33	2.33	13	45	3	●
SGESS2.34	2.34	13	45	3	●
SGESS2.35	2.35	13	45	3	●

## SGESS 3D



### LIST: 7572P

Code	Dc	ℓ	L	Ds	Stock
SGESS2.36	2.36	13	45	3	●
SGESS2.37	2.37	14	46	3	●
SGESS2.38	2.38	14	46	3	●
SGESS2.39	2.39	14	46	3	●
SGESS2.4	2.4	14	46	3	●
SGESS2.41	2.41	14	46	3	●
SGESS2.42	2.42	14	46	3	●
SGESS2.43	2.43	14	46	3	●
SGESS2.44	2.44	14	46	3	●
SGESS2.45	2.45	14	46	3	●
SGESS2.46	2.46	14	46	3	●
SGESS2.47	2.47	14	46	3	●
SGESS2.48	2.48	14	46	3	●
SGESS2.49	2.49	14	46	3	●
SGESS2.5	2.5	14	46	3	●
SGESS2.51	2.51	14	46	3	●
SGESS2.52	2.52	14	46	3	●
SGESS2.53	2.53	14	46	3	●
SGESS2.54	2.54	14	46	3	●
SGESS2.55	2.55	14	46	3	●
SGESS2.56	2.56	14	46	3	●
SGESS2.57	2.57	14	46	3	●
SGESS2.58	2.58	14	46	3	●
SGESS2.59	2.59	14	46	3	●
SGESS2.6	2.6	14	46	3	●
SGESS2.61	2.61	14	46	3	●
SGESS2.62	2.62	14	46	3	●
SGESS2.63	2.63	14	46	3	●
SGESS2.64	2.64	14	46	3	●
SGESS2.65	2.65	14	46	3	●
SGESS2.66	2.66	16	48	3	●
SGESS2.67	2.67	16	48	3	●
SGESS2.68	2.68	16	48	3	●
SGESS2.69	2.69	16	48	3	●
SGESS2.7	2.7	16	48	3	●
SGESS2.71	2.71	16	48	3	●
SGESS2.72	2.72	16	48	3	●
SGESS2.73	2.73	16	48	3	●
SGESS2.74	2.74	16	48	3	●
SGESS2.75	2.75	16	48	3	●
SGESS2.76	2.76	16	48	3	●
SGESS2.77	2.77	16	48	3	●
SGESS2.78	2.78	16	48	3	●

TOOL MATERIAL

POINT ANGLE  
DC ≤ 1,4

POINT ANGLE  
DC > 1,4

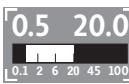
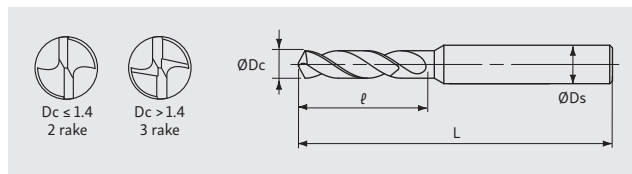
Code	Dc	ℓ	L	Ds	Stock
SGESS2.79	2.79	16	48	3	●
SGESS2.8	2.8	16	48	3	●
SGESS2.81	2.81	16	48	3	●
SGESS2.82	2.82	16	48	3	●
SGESS2.83	2.83	16	48	3	●
SGESS2.84	2.84	16	48	3	●
SGESS2.85	2.85	16	48	3	●
SGESS2.86	2.86	16	48	3	●
SGESS2.87	2.87	16	48	3	●
SGESS2.88	2.88	16	48	3	●
SGESS2.89	2.89	16	48	3	●
SGESS2.9	2.9	16	48	3	●
SGESS2.91	2.91	16	48	3	●
SGESS2.92	2.92	16	48	3	●
SGESS2.93	2.93	16	48	3	●
SGESS2.94	2.94	16	48	3	●
SGESS2.95	2.95	16	48	3	●
SGESS2.96	2.96	16	48	3	●
SGESS2.97	2.97	16	48	3	●
SGESS2.98	2.98	16	48	3	●
SGESS2.99	2.99	16	48	3	●
SGESS3.0	3.0	16	48	3	●
SGESS3.01	3.01	18	50	4	●
SGESS3.02	3.02	18	50	4	●
SGESS3.03	3.03	18	50	4	●
SGESS3.04	3.04	18	50	4	●
SGESS3.05	3.05	18	50	4	●
SGESS3.06	3.06	18	50	4	●
SGESS3.07	3.07	18	50	4	●
SGESS3.08	3.08	18	50	4	●
SGESS3.09	3.09	18	50	4	●
SGESS3.1	3.1	18	50	4	●
SGESS3.11	3.11	18	50	4	●
SGESS3.12	3.12	18	50	4	●
SGESS3.13	3.13	18	50	4	●
SGESS3.14	3.14	18	50	4	●
SGESS3.15	3.15	18	50	4	●
SGESS3.16	3.16	18	50	4	●
SGESS3.17	3.17	18	50	4	●
SGESS3.18	3.18	18	50	4	●
SGESS3.19	3.19	18	50	4	●
SGESS3.2	3.2	18	50	4	●
SGESS3.21	3.21	18	50	4	●

**LIST: 7572P**

Code	Dc	ℓ	L	Ds	Stock
SGESS3.22	3.22	18	50	4	●
SGESS3.23	3.23	18	50	4	●
SGESS3.24	3.24	18	50	4	●
SGESS3.25	3.25	18	50	4	●
SGESS3.26	3.26	18	50	4	●
SGESS3.27	3.27	18	50	4	●
SGESS3.28	3.28	18	50	4	●
SGESS3.29	3.29	18	50	4	●
SGESS3.3	3.3	18	50	4	●
SGESS3.31	3.31	18	50	4	●
SGESS3.32	3.32	18	50	4	●
SGESS3.33	3.33	18	50	4	●
SGESS3.34	3.34	18	50	4	●
SGESS3.35	3.35	18	50	4	●
SGESS3.36	3.36	20	52	4	●
SGESS3.37	3.37	20	52	4	●
SGESS3.38	3.38	20	52	4	●
SGESS3.39	3.39	20	52	4	●
SGESS3.4	3.4	20	52	4	●
SGESS3.41	3.41	20	52	4	●
SGESS3.42	3.42	20	52	4	●
SGESS3.43	3.43	20	52	4	●
SGESS3.44	3.44	20	52	4	●
SGESS3.45	3.45	20	52	4	●
SGESS3.46	3.46	20	52	4	●
SGESS3.47	3.47	20	52	4	●
SGESS3.48	3.48	20	52	4	●
SGESS3.49	3.49	20	52	4	●
SGESS3.5	3.5	20	52	4	●
SGESS3.51	3.51	20	52	4	●
SGESS3.52	3.52	20	52	4	●
SGESS3.53	3.53	20	52	4	●
SGESS3.54	3.54	20	52	4	●
SGESS3.55	3.55	20	52	4	●
SGESS3.56	3.56	20	52	4	●
SGESS3.57	3.57	20	52	4	●
SGESS3.58	3.58	20	52	4	●
SGESS3.59	3.59	20	52	4	●
SGESS3.6	3.6	20	52	4	●
SGESS3.61	3.61	20	52	4	●
SGESS3.62	3.62	20	52	4	●
SGESS3.63	3.63	20	52	4	●
SGESS3.64	3.64	20	52	4	●
SGESS3.65	3.65	20	52	4	●
SGESS3.66	3.66	20	52	4	●
SGESS3.67	3.67	20	52	4	●
SGESS3.68	3.68	20	52	4	●
SGESS3.69	3.69	20	52	4	●
SGESS3.7	3.7	20	52	4	●
SGESS3.71	3.71	20	52	4	●

Code	Dc	ℓ	L	Ds	Stock
SGESS3.72	3.72	20	52	4	●
SGESS3.73	3.73	20	52	4	●
SGESS3.74	3.74	20	52	4	●
SGESS3.75	3.75	20	52	4	●
SGESS3.76	3.76	22	54	4	●
SGESS3.77	3.77	22	54	4	●
SGESS3.78	3.78	22	54	4	●
SGESS3.79	3.79	22	54	4	●
SGESS3.8	3.8	22	54	4	●
SGESS3.81	3.81	22	54	4	●
SGESS3.82	3.82	22	54	4	●
SGESS3.83	3.83	22	54	4	●
SGESS3.84	3.84	22	54	4	●
SGESS3.85	3.85	22	54	4	●
SGESS3.86	3.86	22	54	4	●
SGESS3.87	3.87	22	54	4	●
SGESS3.88	3.88	22	54	4	●
SGESS3.89	3.89	22	54	4	●
SGESS3.9	3.9	22	54	4	●
SGESS3.91	3.91	22	54	4	●
SGESS3.92	3.92	22	54	4	●
SGESS3.93	3.93	22	54	4	●
SGESS3.94	3.94	22	54	4	●
SGESS3.95	3.95	22	54	4	●
SGESS3.96	3.96	22	54	4	●
SGESS3.97	3.97	22	54	4	●
SGESS3.98	3.98	22	54	4	●
SGESS3.99	3.99	22	54	4	●
SGESS4.0	4.0	22	54	4	●
SGESS4.01	4.01	22	66	6	●
SGESS4.02	4.02	22	66	6	●
SGESS4.03	4.03	22	66	6	●
SGESS4.04	4.04	22	66	6	●
SGESS4.05	4.05	22	66	6	●
SGESS4.06	4.06	22	66	6	●
SGESS4.07	4.07	22	66	6	●
SGESS4.08	4.08	22	66	6	●
SGESS4.09	4.09	22	66	6	●
SGESS4.1	4.1	22	66	6	●
SGESS4.11	4.11	22	66	6	●
SGESS4.12	4.12	22	66	6	●
SGESS4.13	4.13	22	66	6	●
SGESS4.14	4.14	22	66	6	●
SGESS4.15	4.15	22	66	6	●
SGESS4.16	4.16	22	66	6	●
SGESS4.17	4.17	22	66	6	●
SGESS4.18	4.18	22	66	6	●
SGESS4.19	4.19	22	66	6	●
SGESS4.2	4.2	22	66	6	●
SGESS4.21	4.21	22	66	6	●

## SGESS 3D



### LIST: 7572P

Code	Dc	ℓ	L	Ds	Stock
SGESS4.22	4.22	22	66	6	●
SGESS4.23	4.23	22	66	6	●
SGESS4.24	4.24	22	66	6	●
SGESS4.25	4.25	22	66	6	●
SGESS4.26	4.26	24	68	6	●
SGESS4.27	4.27	24	68	6	●
SGESS4.28	4.28	24	68	6	●
SGESS4.29	4.29	24	68	6	●
SGESS4.3	4.3	24	68	6	●
SGESS4.31	4.31	24	68	6	●
SGESS4.32	4.32	24	68	6	●
SGESS4.33	4.33	24	68	6	●
SGESS4.34	4.34	24	68	6	●
SGESS4.35	4.35	24	68	6	●
SGESS4.36	4.36	24	68	6	●
SGESS4.37	4.37	24	68	6	●
SGESS4.38	4.38	24	68	6	●
SGESS4.39	4.39	24	68	6	●
SGESS4.4	4.4	24	68	6	●
SGESS4.41	4.41	24	68	6	●
SGESS4.42	4.42	24	68	6	●
SGESS4.43	4.43	24	68	6	●
SGESS4.44	4.44	24	68	6	●
SGESS4.45	4.45	24	68	6	●
SGESS4.46	4.46	24	68	6	●
SGESS4.47	4.47	24	68	6	●
SGESS4.48	4.48	24	68	6	●
SGESS4.49	4.49	24	68	6	●
SGESS4.5	4.5	24	68	6	●
SGESS4.51	4.51	24	68	6	●
SGESS4.52	4.52	24	68	6	●
SGESS4.53	4.53	24	68	6	●
SGESS4.54	4.54	24	68	6	●
SGESS4.55	4.55	24	68	6	●
SGESS4.56	4.56	24	68	6	●
SGESS4.57	4.57	24	68	6	●
SGESS4.58	4.58	24	68	6	●
SGESS4.59	4.59	24	68	6	●
SGESS4.6	4.6	24	68	6	●
SGESS4.61	4.61	24	68	6	●
SGESS4.62	4.62	24	68	6	●
SGESS4.63	4.63	24	68	6	●
SGESS4.64	4.64	24	68	6	●

TOOL MATERIAL

POINT ANGLE  
Dc ≤ 1,4

POINT ANGLE  
Dc > 1,4

POINT ANGLE

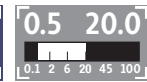
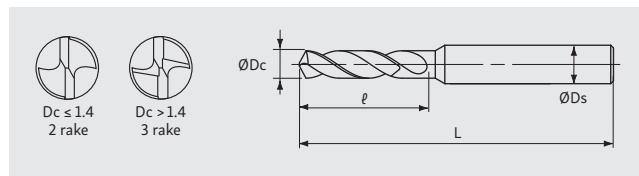
Code	Dc	ℓ	L	Ds	Stock
SGESS4.65	4.65	24	68	6	●
SGESS4.66	4.66	24	68	6	●
SGESS4.67	4.67	24	68	6	●
SGESS4.68	4.68	24	68	6	●
SGESS4.69	4.69	24	68	6	●
SGESS4.7	4.7	24	68	6	●
SGESS4.71	4.71	24	68	6	●
SGESS4.72	4.72	24	68	6	●
SGESS4.73	4.73	24	68	6	●
SGESS4.74	4.74	24	68	6	●
SGESS4.75	4.75	24	68	6	●
SGESS4.76	4.76	26	70	6	●
SGESS4.77	4.77	26	70	6	●
SGESS4.78	4.78	26	70	6	●
SGESS4.79	4.79	26	70	6	●
SGESS4.8	4.8	26	70	6	●
SGESS4.81	4.81	26	70	6	●
SGESS4.82	4.82	26	70	6	●
SGESS4.83	4.83	26	70	6	●
SGESS4.84	4.84	26	70	6	●
SGESS4.85	4.85	26	70	6	●
SGESS4.86	4.86	26	70	6	●
SGESS4.87	4.87	26	70	6	●
SGESS4.88	4.88	26	70	6	●
SGESS4.89	4.89	26	70	6	●
SGESS4.9	4.9	26	70	6	●
SGESS4.91	4.91	26	70	6	●
SGESS4.92	4.92	26	70	6	●
SGESS4.93	4.93	26	70	6	●
SGESS4.94	4.94	26	70	6	●
SGESS4.95	4.95	26	70	6	●
SGESS4.96	4.96	26	70	6	●
SGESS4.97	4.97	26	70	6	●
SGESS4.98	4.98	26	70	6	●
SGESS4.99	4.99	26	70	6	●
SGESS5.0	5.0	26	70	6	●
SGESS5.01	5.01	26	70	6	●
SGESS5.02	5.02	26	70	6	●
SGESS5.03	5.03	26	70	6	●
SGESS5.04	5.04	26	70	6	●
SGESS5.05	5.05	26	70	6	●
SGESS5.06	5.06	26	70	6	●
SGESS5.07	5.07	26	70	6	●

**LIST: 7572P**

Code	Dc	ℓ	L	Ds	Stock
SGESS5.08	5.08	26	70	6	●
SGESS5.09	5.09	26	70	6	●
SGESS5.1	5.1	26	70	6	●
SGESS5.11	5.11	26	70	6	●
SGESS5.12	5.12	26	70	6	●
SGESS5.13	5.13	26	70	6	●
SGESS5.14	5.14	26	70	6	●
SGESS5.15	5.15	26	70	6	●
SGESS5.16	5.16	26	70	6	●
SGESS5.17	5.17	26	70	6	●
SGESS5.18	5.18	26	70	6	●
SGESS5.19	5.19	26	70	6	●
SGESS5.2	5.2	26	70	6	●
SGESS5.21	5.21	26	70	6	●
SGESS5.22	5.22	26	70	6	●
SGESS5.23	5.23	26	70	6	●
SGESS5.24	5.24	26	70	6	●
SGESS5.25	5.25	26	70	6	●
SGESS5.26	5.26	26	70	6	●
SGESS5.27	5.27	26	70	6	●
SGESS5.28	5.28	26	70	6	●
SGESS5.29	5.29	26	70	6	●
SGESS5.3	5.3	26	70	6	●
SGESS5.31	5.31	28	72	6	●
SGESS5.32	5.32	28	72	6	●
SGESS5.33	5.33	28	72	6	●
SGESS5.34	5.34	28	72	6	●
SGESS5.35	5.35	28	72	6	●
SGESS5.36	5.36	28	72	6	●
SGESS5.37	5.37	28	72	6	●
SGESS5.38	5.38	28	72	6	●
SGESS5.39	5.39	28	72	6	●
SGESS5.4	5.4	28	72	6	●
SGESS5.41	5.41	28	72	6	●
SGESS5.42	5.42	28	72	6	●
SGESS5.43	5.43	28	72	6	●
SGESS5.44	5.44	28	72	6	●
SGESS5.45	5.45	28	72	6	●
SGESS5.46	5.46	28	72	6	●
SGESS5.47	5.47	28	72	6	●
SGESS5.48	5.48	28	72	6	●
SGESS5.49	5.49	28	72	6	●
SGESS5.5	5.5	28	72	6	●
SGESS5.51	5.51	28	72	6	●
SGESS5.52	5.52	28	72	6	●
SGESS5.53	5.53	28	72	6	●
SGESS5.54	5.54	28	72	6	●
SGESS5.55	5.55	28	72	6	●
SGESS5.56	5.56	28	72	6	●
SGESS5.57	5.57	28	72	6	●

Code	Dc	ℓ	L	Ds	Stock
SGESS5.58	5.58	28	72	6	●
SGESS5.59	5.59	28	72	6	●
SGESS5.6	5.6	28	72	6	●
SGESS5.61	5.61	28	72	6	●
SGESS5.62	5.62	28	72	6	●
SGESS5.63	5.63	28	72	6	●
SGESS5.64	5.64	28	72	6	●
SGESS5.65	5.65	28	72	6	●
SGESS5.66	5.66	28	72	6	●
SGESS5.67	5.67	28	72	6	●
SGESS5.68	5.68	28	72	6	●
SGESS5.69	5.69	28	72	6	●
SGESS5.7	5.7	28	72	6	●
SGESS5.71	5.71	28	72	6	●
SGESS5.72	5.72	28	72	6	●
SGESS5.73	5.73	28	72	6	●
SGESS5.74	5.74	28	72	6	●
SGESS5.75	5.75	28	72	6	●
SGESS5.76	5.76	28	72	6	●
SGESS5.77	5.77	28	72	6	●
SGESS5.78	5.78	28	72	6	●
SGESS5.79	5.79	28	72	6	●
SGESS5.8	5.8	28	72	6	●
SGESS5.81	5.81	28	72	6	●
SGESS5.82	5.82	28	72	6	●
SGESS5.83	5.83	28	72	6	●
SGESS5.84	5.84	28	72	6	●
SGESS5.85	5.85	28	72	6	●
SGESS5.86	5.86	28	72	6	●
SGESS5.87	5.87	28	72	6	●
SGESS5.88	5.88	28	72	6	●
SGESS5.89	5.89	28	72	6	●
SGESS5.9	5.9	28	72	6	●
SGESS5.91	5.91	28	72	6	●
SGESS5.92	5.92	28	72	6	●
SGESS5.93	5.93	28	72	6	●
SGESS5.94	5.94	28	72	6	●
SGESS5.95	5.95	28	72	6	●
SGESS5.96	5.96	28	72	6	●
SGESS5.97	5.97	28	72	6	●
SGESS5.98	5.98	28	72	6	●
SGESS5.99	5.99	28	72	6	●
SGESS6.0	6.0	28	72	6	●
SGESS6.1	6.1	31	75	8	●
SGESS6.2	6.2	31	75	8	●
SGESS6.3	6.3	31	75	8	●
SGESS6.4	6.4	31	75	8	●
SGESS6.5	6.5	31	75	8	●
SGESS6.6	6.6	31	75	8	●
SGESS6.7	6.7	31	75	8	●

## SGESS 3D



### LIST: 7572P

Code	Dc	ℓ	L	Ds	Stock
SGESS6.8	6.8	34	78	8	●
SGESS6.9	6.9	34	78	8	●
SGESS7.0	7.0	34	78	8	●
SGESS7.1	7.1	34	78	8	●
SGESS7.2	7.2	34	78	8	●
SGESS7.3	7.3	34	78	8	●
SGESS7.4	7.4	34	78	8	●
SGESS7.5	7.5	34	78	8	●
SGESS7.6	7.6	37	81	8	●
SGESS7.7	7.7	37	81	8	●
SGESS7.8	7.8	37	81	8	●
SGESS7.9	7.9	37	81	8	●
SGESS8.0	8.0	37	81	8	●
SGESS8.1	8.1	37	87	10	●
SGESS8.2	8.2	37	87	10	●
SGESS8.3	8.3	37	87	10	●
SGESS8.4	8.4	37	87	10	●
SGESS8.5	8.5	37	87	10	●
SGESS8.6	8.6	40	90	10	●
SGESS8.7	8.7	40	90	10	●
SGESS8.8	8.8	40	90	10	●
SGESS8.9	8.9	40	90	10	●
SGESS9.0	9.0	40	90	10	●
SGESS9.1	9.1	40	90	10	●
SGESS9.2	9.2	40	90	10	●
SGESS9.3	9.3	40	90	10	●
SGESS9.4	9.4	40	90	10	●
SGESS9.5	9.5	40	90	10	●
SGESS9.6	9.6	43	93	10	●
SGESS9.7	9.7	43	93	10	●
SGESS9.8	9.8	43	93	10	●
SGESS9.9	9.9	43	93	10	●
SGESS10.0	10.0	43	93	10	●
SGESS10.1	10.1	43	100	12	●
SGESS10.2	10.2	43	100	12	●
SGESS10.3	10.3	43	100	12	●
SGESS10.4	10.4	43	100	12	●
SGESS10.5	10.5	43	100	12	●
SGESS10.6	10.6	43	100	12	●

TOOL MATERIAL

POINT ANGLE  
DC ≤ 1,4

POINT ANGLE  
DC > 1,4

POINT ANGLE

Code	Dc	ℓ	L	Ds	Stock
SGESS10.7	10.7	47	104	12	●
SGESS10.8	10.8	47	104	12	●
SGESS10.9	10.9	47	104	12	●
SGESS11.0	11.0	47	104	12	●
SGESS11.1	11.1	47	104	12	●
SGESS11.2	11.2	47	104	12	●
SGESS11.3	11.3	47	104	12	●
SGESS11.4	11.4	47	104	12	●
SGESS11.5	11.5	47	104	12	●
SGESS11.6	11.6	47	104	12	●
SGESS11.7	11.7	47	104	12	●
SGESS11.8	11.8	47	104	12	●
SGESS11.9	11.9	51	108	12	●
SGESS12.0	12.0	51	108	12	●
SGESS12.1	12.1	51	108	12	●
SGESS12.2	12.2	51	108	12	●
SGESS12.3	12.3	51	108	12	●
SGESS12.4	12.4	51	108	12	●
SGESS12.5	12.5	51	108	12	●
SGESS12.6	12.6	51	108	12	●
SGESS12.7	12.7	51	108	12	●
SGESS12.8	12.8	51	108	12	●
SGESS12.9	12.9	51	108	12	●
SGESS13.0	13.0	51	108	12	●
SGESS13.5	13.5	72	132	16	●
SGESS14.0	14.0	72	132	16	●
SGESS14.5	14.5	76	136	16	●
SGESS15.0	15.0	76	142	20	●
SGESS15.5	15.5	80	146	20	●
SGESS16.0	16.0	80	146	20	●
SGESS16.5	16.5	84	150	20	●
SGESS17.0	17.0	84	150	20	●
SGESS17.5	17.5	87	153	20	●
SGESS18.0	18.0	87	153	20	●
SGESS18.5	18.5	90	156	20	●
SGESS19.0	19.0	90	164	25	●
SGESS19.5	19.5	94	168	25	●
SGESS20.0	20.0	94	168	25	●

●: Standard stock item

Standard Drilling Conditions														
Work material	Structural Steels Carbon Steels ST-37-2, C50		Alloy Steels Pre-Hardened Steels 42CrMo4, NAK, HPM		Mold Steels Hardened Steels X40MoV51, NAK, HPM		Stainless Steels SUS304, SUS316, 1.4301, 1.4401		Cast Irons GG/GGG		Aluminium Alloys Copper Alloys Al5052, C1100		Nickel Alloys Titanium Alloys	
	~200HB		20~30HRC		30~40HRC								30~40HRC	
mm	min <sup>-1</sup>	mm/min	min <sup>-1</sup>	mm/min	min <sup>-1</sup>	mm/min	min <sup>-1</sup>	mm/min	min <sup>-1</sup>	mm/min	min <sup>-1</sup>	mm/min	min <sup>-1</sup>	mm/min
0.5	16000	240	13000	150	9500	80	5100	50	20000	300	23000	300	2500	18
1	9500	280	8000	190	6400	140	3500	65	12000	400	15000	500	1600	25
2	5700	360	4600	240	3200	160	1900	80	6300	490	9700	760	800	27
3	4200	430	3400	290	2100	165	1300	85	4700	600	7200	900	530	28
5	2500	430	2000	290	1250	165	760	80	2800	600	4300	920	320	29
8	1600	370	1300	250	800	150	480	75	1800	530	2700	790	200	26
10	1300	340	1000	230	650	140	380	73	1400	460	2200	730	160	26
12	1100	310	850	210	530	130	320	70	1200	430	1800	670	130	25
16	800	290	640	200	400	120	240	63	880	390	1400	610	100	23
20	640	260	510	180	320	110	190	57	700	350	1100	550	80	21
25	510	240	410	160	250	95	150	50	560	330	870	510	64	19
32	400	180	320	120	200	70	120	40	440	250	680	380	50	16

**Warnings on using the drilling condition tables**

- Adjust the drilling condition according to the rigidity of the machine, work clamping situation and shape of the workpiece.
- The table values are for drilling with water-soluble cutting fluid
- Provide sufficient amount of cutting fluid to the cutting point and in the flute.
- Add step feeding for stainless steel.
- Up to the work material and drilling condition, the chip evacuation may be worse. In this case, add step feed.
- When step feeding, return to the entrance of the hole each step.
- Step feed interval is around 0.5-1D. Small diameters are around 0.2-0.5D.
- Use collet chuck or milling chuck.

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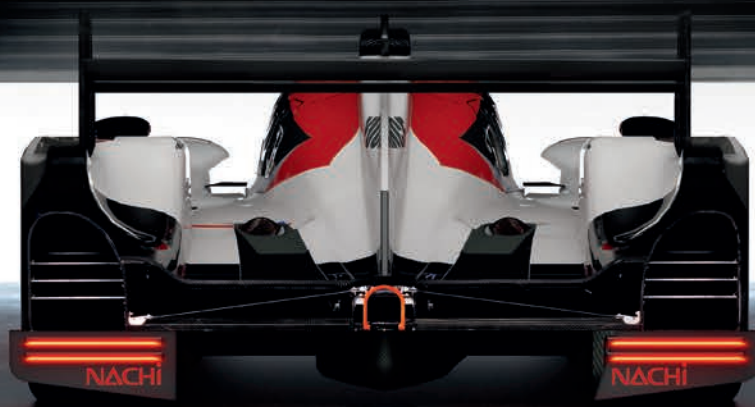
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