SGS Type

■ General Features

SGS type drills for heat-resistant alloys employ a sharp cutting edge to reduce heat during drilling (reduced cutting resistance) and provide stable and long tool life.

■ Characteristics · Applications

● Stable and long tool life

· Combination of optimised cutting edge design and special grade significantly reduces wear.

· Minute honing (edge treatment) amount and special thinning shape reduce cutting resistance. This reduces cutting edge breakage.

· Perfect for drilling Ni-based heat resistant alloys (Inconel/Waspaloy/Hastelloy).

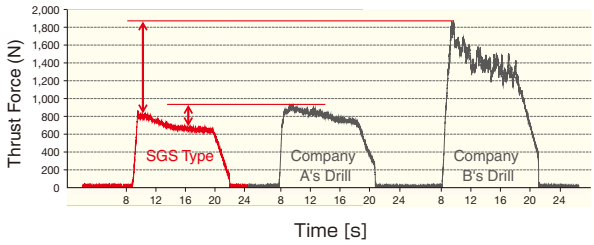
■ Series

Type	Diameter Range (mm)	Hole Depth ($^{L}/_{D}$)
MDW□□□□SGS3 Type	ø3.0 to 12.0	Up to 3

■ Performance

Comparison of Cutting Resistance (Thrust)

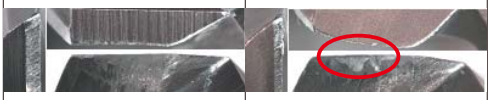
Low Resistance [Reduced Load On Cutting Edge]



Tool: ø6.0
Work Material: Inconel718
Cutting Conditions: v_c=10m/min f=0.08mm/rev H=8mm (Through)
External Coolant

Tool Life Comparison

Long Life [No Fracturing or Breakage]

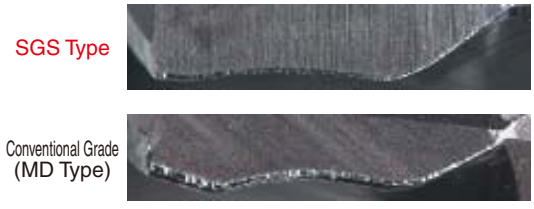
Tool	SGS Type	Company A's Drill	Company B's Drill
Output	Able To Continue After 50 Holes	Breakage After 30 Holes	Breakage After 5 Holes
Photo			

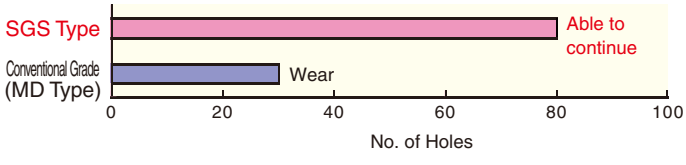
Tool: ø6.0
Work Material: Inconel718
Cutting Conditions: v_c=10m/min f=0.08mm/rev H=16mm (Stop Hole)
External Coolant

■ Application Examples

Comparison of Edge Wear After 30 Holes

Significantly Reduced Flank Wear





Tool: MDW0600SGS3
Work Material: Inconel718 (Aeronautic Components)
Cutting Conditions: v_c=10m/min f=0.06mm/rev H=3mm (Through)
External Coolant

SGS Type

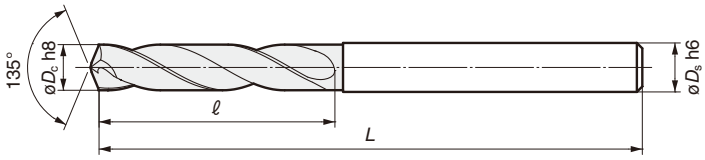
External Coolant Supply (SGS Type)

Carbon Steel, Alloy Steel		Tempered Steel	Hardened Steel		Stainless steel	Ti Alloy	Heat-resistant steels	Cast Iron	Ductile Cast Iron	Aluminium Alloy	Copper alloy	Composite CFRP
Up to 0.28%	From 0.29%		Up to 45HRC	From 46HRC								
						○	◎					

PVD Coat

3D

● SGS Type



● Diameter ø3.0 to ø12.0mm

Diameter øDc (mm)	Shank øDs (mm)	Cat. No.	Stock	Dimensions (mm) L	Dimensions (mm) ℓ
3.0	3.0	MDW 0300SGS3	●	49	17.5
3.5	4.0	MDW 0350SGS3	●	60	20.0
4.0		0400SGS3	●		22.5
4.5	5.0	MDW 0450SGS3	●	76	25.0
5.0		0500SGS3	●		27.5
5.5	6.0	MDW 0550SGS3	●	81	27.5
6.0		0600SGS3	●		30.0
6.5	7.0	MDW 0650SGS3	●	83	32.5
7.0		0700SGS3	●		35.0
7.5	8.0	MDW 0750SGS3	●	90	37.5
8.0		0800SGS3	●		40.0
8.5	9.0	MDW 0850SGS3	●	98	42.5
9.0		0900SGS3	●		45.0
9.5	10.0	MDW 0950SGS3	●	105	47.5
10.0		1000SGS3	●		50.0
10.5	11.0	MDW 1050SGS3	●	114	52.5
11.0		1100SGS3	●		55.0
11.5	12.0	MDW 1150SGS3	●	121	57.5
12.0		1200SGS3	●		60.0

■ Recommended Cutting Conditions

(v_c: Cutting Speed m/min f: Feed Rate mm/rev)

Drill Diameter øDc (mm)	Cutting Conditions	Ti Alloy Ti	Heat-Resistant Alloy Inconel
Up to ø6.0	v_c	10 - **20** - 30	10 - **10** - 30
	f	0.05 - **0.08** - 0.10	0.05 - **0.08** - 0.10
Up to ø10.0	v_c	10 - **20** - 30	10 - **15** - 30
	f	0.07 - **0.10** - 0.12	0.07 - **0.10** - 0.12
Up to ø12.0	v_c	10 - **20** - 30	15 - **20** - 30
	f	0.07 - **0.10** - 0.12	0.07 - **0.10** - 0.12

Min. - **Optimum** - Max.