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).

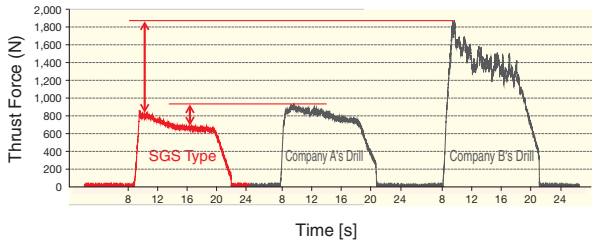
Series

Cat. No.	Diameter Range (mm)	Drilling Depth ($^{L}/_{D}$)
MDW□□□□SGS3 Type	ø3.0 to 12.0	Up to 3

Performance

Comparison of Cutting Resistance (Thrust)

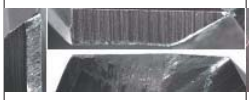
Low Resistance [Reduced Load On Cutting Edge]



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]

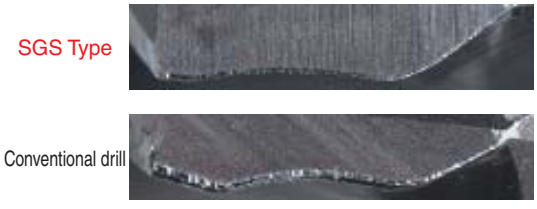
Tool	SGS Type	Comp. A Drill	Comp. B Drill
Output	Able To Continue After 50 Holes	Breakage After 30 Holes	Breakage After 5 Holes
Photo			

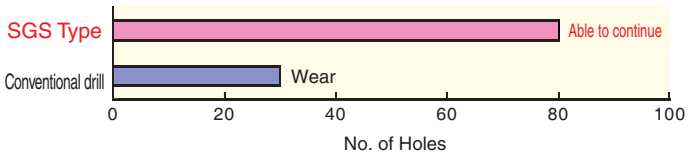
Tool: ø6.0
Work Material: Inconel718
Cutting Conditions: v_c=10m/min f=0.08mm/rev H=16mm (Stop Hole)
External Coolant

Application Examples

Comparison of Edge Wear After 30 Holes

Significantly Reduced Flank Wear



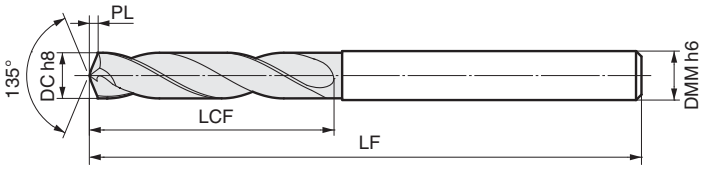


Tool: MDW0600SGS3
Work Material: Inconel718 (Aeronautic Components)
Cutting Conditions: v_c=10m/min f=0.06mm/rev H=3mm (Through)
External Coolant

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	Aluminum Alloy	Copper Alloy	Composite CFRP
Up to 0.28%	From 0.29%		Up to 45HRC	From 45HRC								
						○	◎					

● SGS Type



PVD Coat 3D

■ Body Diameter ø3.0 to 12.0mm

Diameter DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm) Effective Length LU	Flute Length LCF	Total length OAL	Tip PL	Shank DMM (mm)
3.0	3	●	**MDW 0300SGS3**	16.1	18.1	49.6	0.6	3.0
3.5	3	●	**MDW 0350SGS3**	18.5	20.7	60.7	0.7	4.0
4.0	3	●	**0400SGS3**	20.8	23.3	60.8	0.8	
4.5	3	●	**MDW 0450SGS3**	23.2	25.9	76.9	0.9	5.0
5.0	3	●	**0500SGS3**	25.5	28.5	77.0	1.0	
5.5	3	●	**MDW 0550SGS3**	27.9	28.6	82.1	1.1	6.0
6.0	3	●	**0600SGS3**	30.2	31.2	82.2	1.2	
6.5	3	●	**MDW 0650SGS3**	32.6	33.8	84.3	1.3	7.0
7.0	3	●	**0700SGS3**	34.9	36.4	84.4	1.4	
7.5	3	●	**MDW 0750SGS3**	37.4	39.1	91.6	1.6	8.0
8.0	3	●	**0800SGS3**	39.7	41.7	91.7	1.7	
8.5	3	●	**MDW 0850SGS3**	42.1	44.3	99.8	1.8	9.0
9.0	3	●	**0900SGS3**	44.4	46.9	99.9	1.9	
9.5	3	●	**MDW 0950SGS3**	46.8	49.5	107.0	2.0	10.0
10.0	3	●	**1000SGS3**	49.1	52.1	107.1	2.1	
10.5	3	●	**MDW 1050SGS3**	51.5	54.7	116.2	2.2	11.0
11.0	3	●	**1100SGS3**	53.8	57.3	116.3	2.3	
11.5	3	●	**MDW 1150SGS3**	56.2	59.9	123.4	2.4	12.0
12.0	3	●	**1200SGS3**	58.5	62.5	123.5	2.5	

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

Drill Diameter DC (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.