Member IMC Group Tungaloy

Keeping the Customer First

Tungaloy Report No. 405-E

DRILLLINE Coated solid carbide drill

SOLIDDRILL

NEW

DSW type

New solid drill series that delivers the ultimate performance!

Ideal combination of drill geometry and carbide composition for exceptional performance on a wide range of drilling applications!

Features

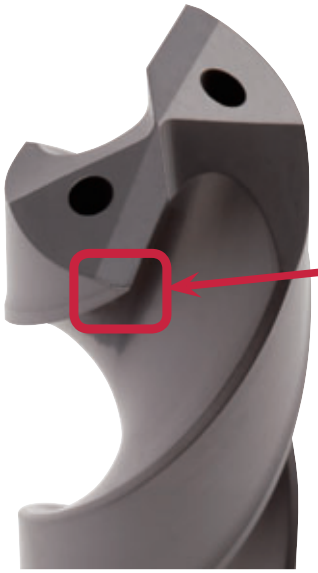
New coated grade with highly improved wear resistance

● New coated carbide grade with a high level of versatility. Perfect grade for stable and long tool life on a wide range of materials.

New flute design provides smooth chip flow

● Well-designed cutting edge creates compact chips while the new flute style smoothly evacuates the chips.

Innovative cutting edge offers reliable drilling



● Non-conventional edge shape reduces cutting forces and improves adhesion strength of the coating to prevent sudden edge breakage.

■ Close-up of edges (new tool)

World-wide standard shank style - Standardized with DIN6535-Form HA

● Only 6 sizes of shank diameter available - ø6, ø8, ø10, ø12, ø14, ø16 mm. This reduces the number of collets required.

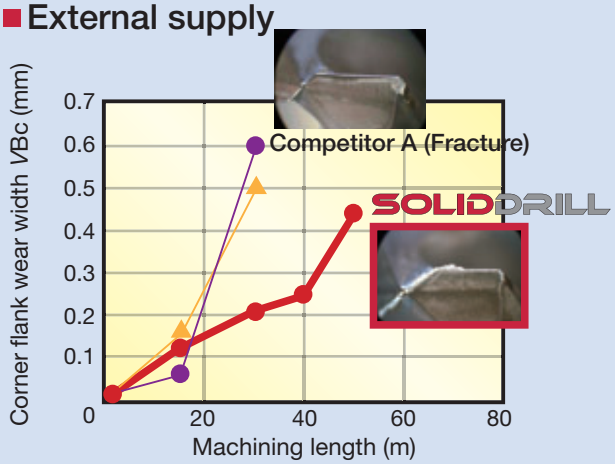
Cutting performance

Drilling of carbon steel, S45C / C45 (220HB)

Excellent adhesion strength reduces sudden chipping on the corner and decreases flank wear. The adhesion strength of the coating is essential when drilling carbon steel.

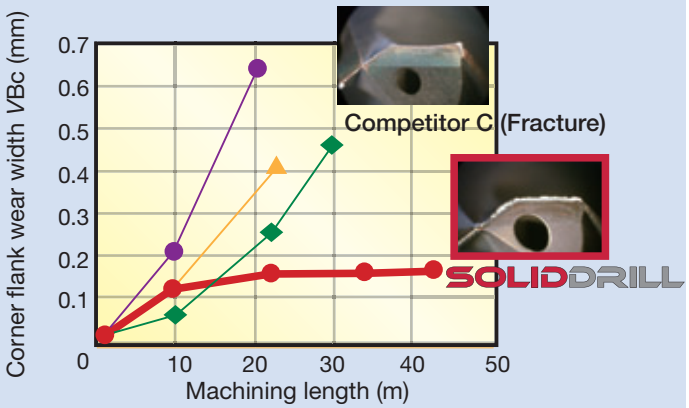
Competitor A Competitor C
Competitor B SOLIDDRILL

External supply



Drill	: ø*Dc* = ø8 mm
Cutting speed	: *Vc* = 60 m/min
Feed	: *f* = 0.2 mm/rev
Drilling depth	: *H* = 24 mm (Blind)
Coolant	: Wet
Machine	: Vertical M/C

Internal supply



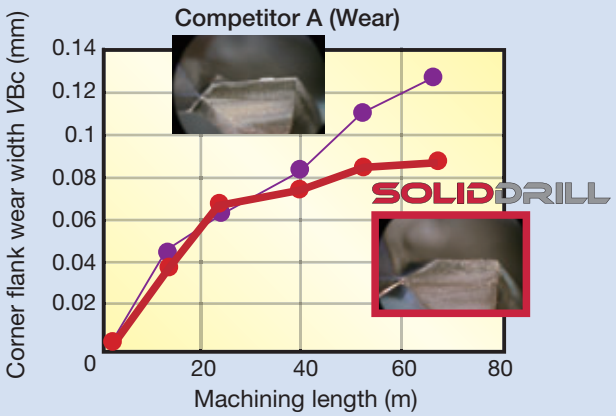
Drill	: ø*Dc* = ø8 mm
Cutting speed	: *Vc* = 80 m/min
Feed	: *f* = 0.2 mm/rev
Drilling depth	: *H* = 40 mm (Blind)
Coolant	: Wet
Machine	: Vertical M/C

Drilling of alloy steel, SCM440 / 42CrMo4 (320HB)

Reduced edge wear prolongs tool life while the internal coolant supply reduces chipping and extends tool life. The wear resistance of the coating is important when drilling alloy steels.

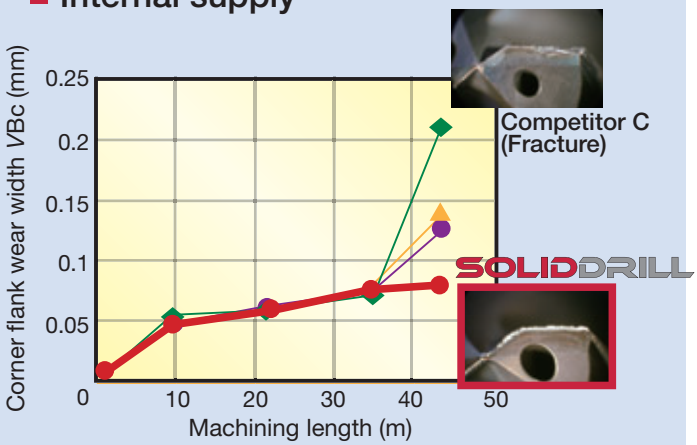
Competitor A Competitor C
Competitor B SOLIDDRILL

External supply



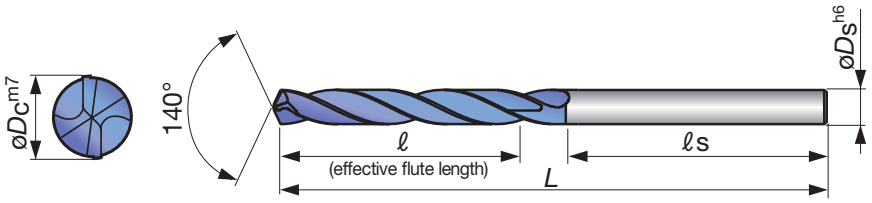
Drill	: ø*Dc* = ø8 mm
Cutting speed	: *Vc* = 60 m/min
Feed	: *f* = 0.2 mm/rev
Drilling depth	: *H* = 24 mm (Blind)
Coolant	: Wet
Machine	: Vertical M/C

Internal supply



Drill	: ø*Dc* = ø8 mm
Cutting speed	: *Vc* = 100 m/min
Feed	: *f* = 0.2 mm/rev
Drilling depth	: *H* = 40 mm (Blind)
Coolant	: Wet
Machine	: Vertical M/C

Drills



Drill dia. *øDc* (mm)	Tolerance m7 (mm)
3.00 ~ 6	0.004 ~ 0.016
6.01 ~ 10	0.006 ~ 0.021
10.01 ~ 18	0.007 ~ 0.025
18.01 ~ 21	0.008 ~ 0.029

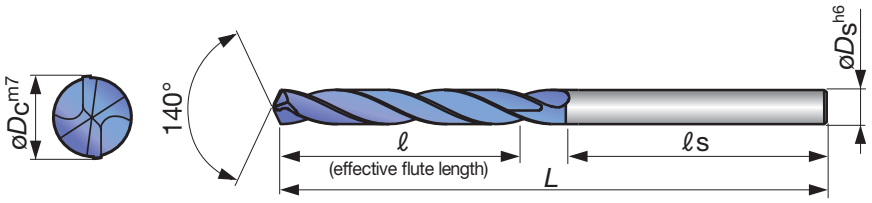
Drill dia. *øDc*	Drilling depth L/D	Coolant Supply	Cat. No.	Stock	Dimensions (mm) *øDs*	*ℓ*	*ℓ s*	*L*
3.0	3	Ext.	DSW030-014-06DE3	●	6	14	42	62
	5	Ext.	DSW030-023-06DE5	●	6	23	38	66
	5	Int.	DSW030-023-06DI5	●	6	23	38	66
	8	Int.	DSW030-029-06DI8	●	6	29	38	72
3.1	3	Ext.	DSW031-014-06DE3	●	6	14	42	62
	5	Ext.	DSW031-023-06DE5	●	6	23	38	66
	5	Int.	DSW031-023-06DI5	●	6	23	38	66
	8	Int.	DSW031-029-06DI8	●	6	29	38	72
3.2	3	Ext.	DSW032-014-06DE3	●	6	14	42	62
	5	Ext.	DSW032-023-06DE5	●	6	23	38	66
	5	Int.	DSW032-023-06DI5	●	6	23	38	66
	8	Int.	DSW032-029-06DI8	●	6	29	38	72
3.3	3	Ext.	DSW033-014-06DE3	●	6	14	42	62
	5	Ext.	DSW033-023-06DE5	●	6	23	38	66
	5	Int.	DSW033-023-06DI5	●	6	23	38	66
	8	Int.	DSW033-029-06DI8	●	6	29	38	72
3.4	3	Ext.	DSW034-014-06DE3	●	6	14	42	62
	5	Ext.	DSW034-023-06DE5	●	6	23	38	66
	5	Int.	DSW034-023-06DI5	●	6	23	38	66
	8	Int.	DSW034-029-06DI8	●	6	29	38	72
3.5	3	Ext.	DSW035-014-06DE3	●	6	14	42	62
	5	Ext.	DSW035-023-06DE5	●	6	23	38	66
	5	Int.	DSW035-023-06DI5	●	6	23	38	66
	8	Int.	DSW035-029-06DI8	●	6	29	38	72
3.6	3	Ext.	DSW036-014-06DE3	●	6	14	42	62
	5	Ext.	DSW036-023-06DE5	●	6	23	38	66
	5	Int.	DSW036-023-06DI5	●	6	23	38	66
	8	Int.	DSW036-029-06DI8	●	6	29	38	72
3.7	3	Ext.	DSW037-014-06DE3	●	6	14	42	62
	5	Ext.	DSW037-023-06DE5	●	6	23	38	66
	5	Int.	DSW037-023-06DI5	●	6	23	38	66
	8	Int.	DSW037-029-06DI8	●	6	29	38	72
3.8	3	Ext.	DSW038-017-06DE3	●	6	17	42	66
	5	Ext.	DSW038-029-06DE5	●	6	29	38	74
	5	Int.	DSW038-029-06DI5	●	6	29	38	74
	8	Int.	DSW038-036-06DI8	●	6	36	38	81
3.9	3	Ext.	DSW039-017-06DE3	●	6	17	42	66
	5	Ext.	DSW039-029-06DE5	●	6	29	38	74
	5	Int.	DSW039-029-06DI5	●	6	29	38	74
	8	Int.	DSW039-036-06DI8	●	6	36	38	81

Drill dia. *øDc*	Drilling depth L/D	Coolant Supply	Cat. No.	Stock	Dimensions (mm) *øDs*	*ℓ*	*ℓ s*	*L*
4.0	3	Ext.	DSW040-017-06DE3	●	6	17	42	66
	5	Ext.	DSW040-029-06DE5	●	6	29	38	74
	5	Int.	DSW040-029-06DI5	●	6	29	38	74
	8	Int.	DSW040-036-06DI8	●	6	36	38	81
4.1	3	Ext.	DSW041-017-06DE3	●	6	17	42	66
	5	Ext.	DSW041-029-06DE5	●	6	29	38	74
	5	Int.	DSW041-029-06DI5	●	6	29	38	74
	8	Int.	DSW041-036-06DI8	●	6	36	38	81
4.2	3	Ext.	DSW042-017-06DE3	●	6	17	42	66
	5	Ext.	DSW042-029-06DE5	●	6	29	38	74
	5	Int.	DSW042-029-06DI5	●	6	29	38	74
	8	Int.	DSW042-036-06DI8	●	6	36	38	81
4.3	3	Ext.	DSW043-017-06DE3	●	6	17	42	66
	5	Ext.	DSW043-029-06DE5	●	6	29	38	74
	5	Int.	DSW043-029-06DI5	●	6	29	38	74
	8	Int.	DSW043-036-06DI8	●	6	36	38	81
4.4	3	Ext.	DSW044-017-06DE3	●	6	17	42	66
	5	Ext.	DSW044-029-06DE5	●	6	29	38	74
	5	Int.	DSW044-029-06DI5	●	6	29	38	74
	8	Int.	DSW044-036-06DI8	●	6	36	38	81
4.5	3	Ext.	DSW045-017-06DE3	●	6	17	42	66
	5	Ext.	DSW045-029-06DE5	●	6	29	38	74
	5	Int.	DSW045-029-06DI5	●	6	29	38	74
	8	Int.	DSW045-036-06DI8	●	6	36	38	81
4.6	3	Ext.	DSW046-017-06DE3	●	6	17	42	66
	5	Ext.	DSW046-029-06DE5	●	6	29	38	74
	5	Int.	DSW046-029-06DI5	●	6	29	38	74
	8	Int.	DSW046-036-06DI8	●	6	36	38	81
4.7	3	Ext.	DSW047-017-06DE3	●	6	17	42	66
	5	Ext.	DSW047-029-06DE5	●	6	29	38	74
	5	Int.	DSW047-029-06DI5	●	6	29	38	74
	8	Int.	DSW047-036-06DI8	●	6	36	38	81
4.8	3	Ext.	DSW048-020-06DE3	●	6	20	38	66
	5	Ext.	DSW048-035-06DE5	●	6	35	38	82
	5	Int.	DSW048-035-06DI5	●	6	35	38	82
	8	Int.	DSW048-048-06DI8	●	6	48	38	95
4.9	3	Ext.	DSW049-020-06DE3	●	6	20	38	66
	5	Ext.	DSW049-035-06DE5	●	6	35	38	82
	5	Int.	DSW049-035-06DI5	●	6	35	38	82
	8	Int.	DSW049-048-06DI8	●	6	48	38	95

● : Stocked items

Drill dia. øDc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock	Dimensions (mm)			
					øDs	ℓ	ℓ s	L
5.0	3	Ext.	DSW050-020-06DE3	●	6	20	38	66
	5	Ext.	DSW050-035-06DE5	●	6	35	38	82
	5	Int.	DSW050-035-06DI5	●	6	35	38	82
	8	Int.	DSW050-048-06DI8	●	6	48	38	95
5.1	3	Ext.	DSW051-020-06DE3	●	6	20	38	66
	5	Ext.	DSW051-035-06DE5	●	6	35	38	82
	5	Int.	DSW051-035-06DI5	●	6	35	38	82
	8	Int.	DSW051-048-06DI8	●	6	48	38	95
5.2	3	Ext.	DSW052-020-06DE3	●	6	20	38	66
	5	Ext.	DSW052-035-06DE5	●	6	35	38	82
	5	Int.	DSW052-035-06DI5	●	6	35	38	82
	8	Int.	DSW052-048-06DI8	●	6	48	38	95
5.3	3	Ext.	DSW053-020-06DE3	●	6	20	38	66
	5	Ext.	DSW053-035-06DE5	●	6	35	38	82
	5	Int.	DSW053-035-06DI5	●	6	35	38	82
	8	Int.	DSW053-048-06DI8	●	6	48	38	95
5.4	3	Ext.	DSW054-020-06DE3	●	6	20	38	66
	5	Ext.	DSW054-035-06DE5	●	6	35	38	82
	5	Int.	DSW054-035-06DI5	●	6	35	38	82
	8	Int.	DSW054-048-06DI8	●	6	48	38	95
5.5	3	Ext.	DSW055-020-06DE3	●	6	20	38	66
	5	Ext.	DSW055-035-06DE5	●	6	35	38	82
	5	Int.	DSW055-035-06DI5	●	6	35	38	82
	8	Int.	DSW055-048-06DI8	●	6	48	38	95
5.6	3	Ext.	DSW056-020-06DE3	●	6	20	38	66
	5	Ext.	DSW056-035-06DE5	●	6	35	38	82
	5	Int.	DSW056-035-06DI5	●	6	35	38	82
	8	Int.	DSW056-048-06DI8	●	6	48	38	95
5.7	3	Ext.	DSW057-020-06DE3	●	6	20	38	66
	5	Ext.	DSW057-035-06DE5	●	6	35	38	82
	5	Int.	DSW057-035-06DI5	●	6	35	38	82
	8	Int.	DSW057-048-06DI8	●	6	48	38	95
5.8	3	Ext.	DSW058-020-06DE3	●	6	20	38	66
	5	Ext.	DSW058-035-06DE5	●	6	35	38	82
	5	Int.	DSW058-035-06DI5	●	6	35	38	82
	8	Int.	DSW058-048-06DI8	●	6	48	38	95
5.9	3	Ext.	DSW059-020-06DE3	●	6	20	38	66
	5	Ext.	DSW059-035-06DE5	●	6	35	38	82
	5	Int.	DSW059-035-06DI5	●	6	35	38	82
	8	Int.	DSW059-048-06DI8	●	6	48	38	95
6.0	3	Ext.	DSW060-020-06DE3	●	6	20	38	66
	5	Ext.	DSW060-035-06DE5	●	6	35	38	82
	5	Int.	DSW060-035-06DI5	●	6	35	38	82
	8	Int.	DSW060-048-06DI8	●	6	48	38	95
6.1	3	Ext.	DSW061-024-08DE3	●	8	24	45	79
	5	Ext.	DSW061-043-08DE5	●	8	43	38	91
	5	Int.	DSW061-043-08DI5	●	8	43	38	91
	8	Int.	DSW061-064-08DI8	●	8	64	38	114
6.2	3	Ext.	DSW062-024-08DE3	●	8	24	45	79
	5	Ext.	DSW062-043-08DE5	●	8	43	38	91
	5	Int.	DSW062-043-08DI5	●	8	43	38	91
	8	Int.	DSW062-064-08DI8	●	8	64	38	114
6.3	3	Ext.	DSW063-024-08DE3	●	8	24	45	79
	5	Ext.	DSW063-043-08DE5	●	8	43	38	91
	5	Int.	DSW063-043-08DI5	●	8	43	38	91
	8	Int.	DSW063-064-08DI8	●	8	64	38	114
6.4	3	Ext.	DSW064-024-08DE3	●	8	24	45	79
	5	Ext.	DSW064-043-08DE5	●	8	43	38	91
	5	Int.	DSW064-043-08DI5	●	8	43	38	91
	8	Int.	DSW064-064-08DI8	●	8	64	38	114
6.5	3	Ext.	DSW065-024-08DE3	●	8	24	45	79
	5	Ext.	DSW065-043-08DE5	●	8	43	38	91
	5	Int.	DSW065-043-08DI5	●	8	43	38	91
	8	Int.	DSW065-064-08DI8	●	8	64	38	114
6.6	3	Ext.	DSW066-024-08DE3	●	8	24	45	79
	5	Ext.	DSW066-043-08DE5	●	8	43	38	91
	5	Int.	DSW066-043-08DI5	●	8	43	38	91
	8	Int.	DSW066-064-08DI8	●	8	64	38	114
6.7	3	Ext.	DSW067-024-08DE3	●	8	24	45	79
	5	Ext.	DSW067-043-08DE5	●	8	43	38	91
	5	Int.	DSW067-043-08DI5	●	8	43	38	91
	8	Int.	DSW067-064-08DI8	●	8	64	38	114
6.8	3	Ext.	DSW068-024-08DE3	●	8	24	45	79
	5	Ext.	DSW068-043-08DE5	●	8	43	38	91
	5	Int.	DSW068-043-08DI5	●	8	43	38	91
	8	Int.	DSW068-064-08DI8	●	8	64	38	114
6.9	3	Ext.	DSW069-024-08DE3	●	8	24	45	79
	5	Ext.	DSW069-043-08DE5	●	8	43	38	91
	5	Int.	DSW069-043-08DI5	●	8	43	38	91
	8	Int.	DSW069-064-08DI8	●	8	64	38	114
7.0	3	Ext.	DSW070-024-08DE3	●	8	24	45	79
	5	Ext.	DSW070-043-08DE5	●	8	43	38	91
	5	Int.	DSW070-043-08DI5	●	8	43	38	91
	8	Int.	DSW070-064-08DI8	●	8	64	38	114
7.1	3	Ext.	DSW071-029-08DE3	●	8	29	38	79
	5	Ext.	DSW071-043-08DE5	●	8	43	38	91
	5	Int.	DSW071-043-08DI5	●	8	43	38	91
	8	Int.	DSW071-064-08DI8	●	8	64	38	114
7.2	3	Ext.	DSW072-029-08DE3	●	8	29	38	79
	5	Ext.	DSW072-043-08DE5	●	8	43	38	91
	5	Int.	DSW072-043-08DI5	●	8	43	38	91
	8	Int.	DSW072-064-08DI8	●	8	64	38	114
7.3	3	Ext.	DSW073-029-08DE3	●	8	29	38	79
	5	Ext.	DSW073-043-08DE5	●	8	43	38	91
	5	Int.	DSW073-043-08DI5	●	8	43	38	91
	8	Int.	DSW073-064-08DI8	●	8	64	38	114

● : Stocked items



Drill dia. *øDc* (mm)	Tolerance m7 (mm)
3.00 ~ 6	0.004 ~ 0.016
6.01 ~ 10	0.006 ~ 0.021
10.01 ~ 18	0.007 ~ 0.025
18.01 ~ 21	0.008 ~ 0.029

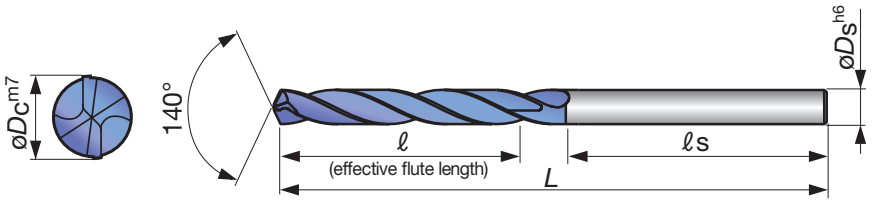
Drill dia. *øDc*	Drilling depth L/D	Coolant Supply	Cat. No.	Stock	Dimensions (mm) *øDs*	*ℓ*	*ℓ s*	*L*
7.4	3	Ext.	DSW074-029-08DE3	●	8	29	38	79
	5	Ext.	DSW074-043-08DE5	●	8	43	38	91
	5	Int.	DSW074-043-08DI5	●	8	43	38	91
	8	Int.	DSW074-064-08DI8	●	8	64	38	114
7.5	3	Ext.	DSW075-029-08DE3	●	8	29	38	79
	5	Ext.	DSW075-043-08DE5	●	8	43	38	91
	5	Int.	DSW075-043-08DI5	●	8	43	38	91
	8	Int.	DSW075-064-08DI8	●	8	64	38	114
7.6	3	Ext.	DSW076-029-08DE3	●	8	29	38	79
	5	Ext.	DSW076-043-08DE5	●	8	43	38	91
	5	Int.	DSW076-043-08DI5	●	8	43	38	91
	8	Int.	DSW076-064-08DI8	●	8	64	38	114
7.7	3	Ext.	DSW077-029-08DE3	●	8	29	38	79
	5	Ext.	DSW077-043-08DE5	●	8	43	38	91
	5	Int.	DSW077-043-08DI5	●	8	43	38	91
	8	Int.	DSW077-064-08DI8	●	8	64	38	114
7.8	3	Ext.	DSW078-029-08DE3	●	8	29	38	79
	5	Ext.	DSW078-043-08DE5	●	8	43	38	91
	5	Int.	DSW078-043-08DI5	●	8	43	38	91
	8	Int.	DSW078-064-08DI8	●	8	64	38	114
7.9	3	Ext.	DSW079-029-08DE3	●	8	29	38	79
	5	Ext.	DSW079-043-08DE5	●	8	43	38	91
	5	Int.	DSW079-043-08DI5	●	8	43	38	91
	8	Int.	DSW079-064-08DI8	●	8	64	38	114
8.0	3	Ext.	DSW080-029-08DE3	●	8	29	38	79
	5	Ext.	DSW080-043-08DE5	●	8	43	38	91
	5	Int.	DSW080-043-08DI5	●	8	43	38	91
	8	Int.	DSW080-064-08DI8	●	8	64	38	114
8.1	3	Ext.	DSW081-035-10DE3	●	10	35	42	89
	5	Ext.	DSW081-049-10DE5	●	10	49	42	103
	5	Int.	DSW081-049-10DI5	●	10	49	42	103
	8	Int.	DSW081-080-10DI8	●	10	80	47	142
8.2	3	Ext.	DSW082-035-10DE3	●	10	35	42	89
	5	Ext.	DSW082-049-10DE5	●	10	49	42	103
	5	Int.	DSW082-049-10DI5	●	10	49	42	103
	8	Int.	DSW082-080-10DI8	●	10	80	47	142
8.3	3	Ext.	DSW083-035-10DE3	●	10	35	42	89
	5	Ext.	DSW083-049-10DE5	●	10	49	42	103
	5	Int.	DSW083-049-10DI5	●	10	49	42	103
	8	Int.	DSW083-080-10DI8	●	10	80	47	142
8.4	3	Ext.	DSW084-035-10DE3	●	10	35	42	89
	5	Ext.	DSW084-049-10DE5	●	10	49	42	103
	5	Int.	DSW084-049-10DI5	●	10	49	42	103
	8	Int.	DSW084-080-10DI8	●	10	80	47	142
8.5	3	Ext.	DSW085-035-10DE3	●	10	35	42	89
	5	Ext.	DSW085-049-10DE5	●	10	49	42	103
	5	Int.	DSW085-049-10DI5	●	10	49	42	103
	8	Int.	DSW085-080-10DI8	●	10	80	47	142
8.6	3	Ext.	DSW086-035-10DE3	●	10	35	42	89
	5	Ext.	DSW086-049-10DE5	●	10	49	42	103
	5	Int.	DSW086-049-10DI5	●	10	49	42	103
	8	Int.	DSW086-080-10DI8	●	10	80	47	142
8.7	3	Ext.	DSW087-035-10DE3	●	10	35	42	89
	5	Ext.	DSW087-049-10DE5	●	10	49	42	103
	5	Int.	DSW087-049-10DI5	●	10	49	42	103
	8	Int.	DSW087-080-10DI8	●	10	80	47	142
8.8	3	Ext.	DSW088-035-10DE3	●	10	35	42	89
	5	Ext.	DSW088-049-10DE5	●	10	49	42	103
	5	Int.	DSW088-049-10DI5	●	10	49	42	103
	8	Int.	DSW088-080-10DI8	●	10	80	47	142
8.9	3	Ext.	DSW089-035-10DE3	●	10	35	42	89
	5	Ext.	DSW089-049-10DE5	●	10	49	42	103
	5	Int.	DSW089-049-10DI5	●	10	49	42	103
	8	Int.	DSW089-080-10DI8	●	10	80	47	142
9.0	3	Ext.	DSW090-035-10DE3	●	10	35	42	89
	5	Ext.	DSW090-049-10DE5	●	10	49	42	103
	5	Int.	DSW090-049-10DI5	●	10	49	42	103
	8	Int.	DSW090-080-10DI8	●	10	80	47	142
9.1	3	Ext.	DSW091-035-10DE3	●	10	35	42	89
	5	Ext.	DSW091-049-10DE5	●	10	49	42	103
	5	Int.	DSW091-049-10DI5	●	10	49	42	103
	8	Int.	DSW091-080-10DI8	●	10	80	47	142
9.2	3	Ext.	DSW092-035-10DE3	●	10	35	42	89
	5	Ext.	DSW092-049-10DE5	●	10	49	42	103
	5	Int.	DSW092-049-10DI5	●	10	49	42	103
	8	Int.	DSW092-080-10DI8	●	10	80	47	142
9.3	3	Ext.	DSW093-035-10DE3	●	10	35	42	89
	5	Ext.	DSW093-049-10DE5	●	10	49	42	103
	5	Int.	DSW093-049-10DI5	●	10	49	42	103
	8	Int.	DSW093-080-10DI8	●	10	80	47	142

● : Stocked items

Drill dia. øDc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock	Dimensions (mm)			
					øDs	ℓ	ℓs	L
9.4	3	Ext.	DSW094-035-10DE3	●	10	35	42	89
	5	Ext.	DSW094-049-10DE5	●	10	49	42	103
	5	Int.	DSW094-049-10DI5	●	10	49	42	103
	8	Int.	DSW094-080-10DI8	●	10	80	47	142
9.5	3	Ext.	DSW095-035-10DE3	●	10	35	42	89
	5	Ext.	DSW095-049-10DE5	●	10	49	42	103
	5	Int.	DSW095-049-10DI5	●	10	49	42	103
	8	Int.	DSW095-080-10DI8	●	10	80	47	142
9.6	3	Ext.	DSW096-035-10DE3	●	10	35	42	89
	5	Ext.	DSW096-049-10DE5	●	10	49	42	103
	5	Int.	DSW096-049-10DI5	●	10	49	42	103
	8	Int.	DSW096-080-10DI8	●	10	80	47	142
9.7	3	Ext.	DSW097-035-10DE3	●	10	35	42	89
	5	Ext.	DSW097-049-10DE5	●	10	49	42	103
	5	Int.	DSW097-049-10DI5	●	10	49	42	103
	8	Int.	DSW097-080-10DI8	●	10	80	47	142
9.8	3	Ext.	DSW098-035-10DE3	●	10	35	42	89
	5	Ext.	DSW098-049-10DE5	●	10	49	42	103
	5	Int.	DSW098-049-10DI5	●	10	49	42	103
	8	Int.	DSW098-080-10DI8	●	10	80	47	142
9.9	3	Ext.	DSW099-035-10DE3	●	10	35	42	89
	5	Ext.	DSW099-049-10DE5	●	10	49	42	103
	5	Int.	DSW099-049-10DI5	●	10	49	42	103
	8	Int.	DSW099-080-10DI8	●	10	80	47	142
10.0	3	Ext.	DSW100-035-10DE3	●	10	35	42	89
	5	Ext.	DSW100-049-10DE5	●	10	49	42	103
	5	Int.	DSW100-049-10DI5	●	10	49	42	103
	8	Int.	DSW100-080-10DI8	●	10	80	47	142
10.1	3	Ext.	DSW101-040-12DE3	●	12	40	47	102
	5	Ext.	DSW101-056-12DE5	●	12	56	47	118
	5	Int.	DSW101-056-12DI5	●	12	56	47	118
10.2	3	Ext.	DSW102-040-12DE3	●	12	40	47	102
	5	Ext.	DSW102-056-12DE5	●	12	56	47	118
	5	Int.	DSW102-056-12DI5	●	12	56	47	118
10.3	3	Ext.	DSW103-040-12DE3	●	12	40	47	102
	5	Ext.	DSW103-056-12DE5	●	12	56	47	118
	5	Int.	DSW103-056-12DI5	●	12	56	47	118
10.4	3	Ext.	DSW104-040-12DE3	●	12	40	47	102
	5	Ext.	DSW104-056-12DE5	●	12	56	47	118
	5	Int.	DSW104-056-12DI5	●	12	56	47	118
10.5	3	Ext.	DSW105-040-12DE3	●	12	40	47	102
	5	Ext.	DSW105-056-12DE5	●	12	56	47	118
	5	Int.	DSW105-056-12DI5	●	12	56	47	118
10.6	3	Ext.	DSW106-040-12DE3	●	12	40	47	102
	5	Ext.	DSW106-056-12DE5	●	12	56	47	118
	5	Int.	DSW106-056-12DI5	●	12	56	47	118
10.7	3	Ext.	DSW107-040-12DE3	●	12	40	47	102
	5	Ext.	DSW107-056-12DE5	●	12	56	47	118
	5	Int.	DSW107-056-12DI5	●	12	56	47	118

Drill dia. øDc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock	Dimensions (mm)			
					øDs	ℓ	ℓs	L
10.8	3	Ext.	DSW108-040-12DE3	●	12	40	47	102
	5	Ext.	DSW108-056-12DE5	●	12	56	47	118
	5	Int.	DSW108-056-12DI5	●	12	56	47	118
10.9	3	Ext.	DSW109-040-12DE3	●	12	40	47	102
	5	Ext.	DSW109-056-12DE5	●	12	56	47	118
	5	Int.	DSW109-056-12DI5	●	12	56	47	118
11.0	3	Ext.	DSW110-040-12DE3	●	12	40	47	102
	5	Ext.	DSW110-056-12DE5	●	12	56	47	118
	5	Int.	DSW110-056-12DI5	●	12	56	47	118
11.1	3	Ext.	DSW111-040-12DE3	●	12	40	47	102
	5	Ext.	DSW111-056-12DE5	●	12	56	47	118
	5	Int.	DSW111-056-12DI5	●	12	56	47	118
11.2	3	Ext.	DSW112-040-12DE3	●	12	40	47	102
	5	Ext.	DSW112-056-12DE5	●	12	56	47	118
	5	Int.	DSW112-056-12DI5	●	12	56	47	118
11.3	3	Ext.	DSW113-040-12DE3	●	12	40	47	102
	5	Ext.	DSW113-056-12DE5	●	12	56	47	118
	5	Int.	DSW113-056-12DI5	●	12	56	47	118
11.4	3	Ext.	DSW114-040-12DE3	●	12	40	47	102
	5	Ext.	DSW114-056-12DE5	●	12	56	47	118
	5	Int.	DSW114-056-12DI5	●	12	56	47	118
11.5	3	Ext.	DSW115-040-12DE3	●	12	40	47	102
	5	Ext.	DSW115-056-12DE5	●	12	56	47	118
	5	Int.	DSW115-056-12DI5	●	12	56	47	118
11.6	3	Ext.	DSW116-040-12DE3	●	12	40	47	102
	5	Ext.	DSW116-056-12DE5	●	12	56	47	118
	5	Int.	DSW116-056-12DI5	●	12	56	47	118
11.7	3	Ext.	DSW117-040-12DE3	●	12	40	47	102
	5	Ext.	DSW117-056-12DE5	●	12	56	47	118
	5	Int.	DSW117-056-12DI5	●	12	56	47	118
11.8	3	Ext.	DSW118-040-12DE3	●	12	40	47	102
	5	Ext.	DSW118-056-12DE5	●	12	56	47	118
	5	Int.	DSW118-056-12DI5	●	12	56	47	118
11.9	3	Ext.	DSW119-040-12DE3	●	12	40	47	102
	5	Ext.	DSW119-056-12DE5	●	12	56	47	118
	5	Int.	DSW119-056-12DI5	●	12	56	47	118
12.0	3	Ext.	DSW120-040-12DE3	●	12	40	47	102
	5	Ext.	DSW120-056-12DE5	●	12	56	47	118
	5	Int.	DSW120-056-12DI5	●	12	56	47	118
12.1	3	Ext.	DSW121-043-14DE3	●	14	43	47	107
	5	Ext.	DSW121-060-14DE5	●	14	60	47	124
	5	Int.	DSW121-060-14DI5	●	14	60	47	124
12.2	3	Ext.	DSW122-043-14DE3	●	14	43	47	107
	5	Ext.	DSW122-060-14DE5	●	14	60	47	124
	5	Int.	DSW122-060-14DI5	●	14	60	47	124
12.3	3	Ext.	DSW123-043-14DE3	●	14	43	47	107
	5	Ext.	DSW123-060-14DE5	●	14	60	47	124
	5	Int.	DSW123-060-14DI5	●	14	60	47	124

● : Stocked items



Drill dia. *øDc* (mm)	Tolerance m7 (mm)
3.00 ~ 6	0.004 ~ 0.016
6.01 ~ 10	0.006 ~ 0.021
10.01 ~ 18	0.007 ~ 0.025
18.01 ~ 21	0.008 ~ 0.029

Drill dia. *øDc*	Drilling depth L/D	Coolant Supply	Cat. No.	Stock	Dimensions (mm) *øDs*	*ℓ*	*ℓ s*	*L*
12.4	3	Ext.	**DSW124-043-14DE3**	●	14	43	47	107
	5	Ext.	**DSW124-060-14DE5**	●	14	60	47	124
	5	Int.	**DSW124-060-14DI5**	●	14	60	47	124
12.5	3	Ext.	**DSW125-043-14DE3**	●	14	43	47	107
	5	Ext.	**DSW125-060-14DE5**	●	14	60	47	124
	5	Int.	**DSW125-060-14DI5**	●	14	60	47	124
12.6	3	Ext.	**DSW126-043-14DE3**	●	14	43	47	107
	5	Ext.	**DSW126-060-14DE5**	●	14	60	47	124
	5	Int.	**DSW126-060-14DI5**	●	14	60	47	124
12.7	3	Ext.	**DSW127-043-14DE3**	●	14	43	47	107
	5	Ext.	**DSW127-060-14DE5**	●	14	60	47	124
	5	Int.	**DSW127-060-14DI5**	●	14	60	47	124
12.8	3	Ext.	**DSW128-043-14DE3**	●	14	43	47	107
	5	Ext.	**DSW128-060-14DE5**	●	14	60	47	124
	5	Int.	**DSW128-060-14DI5**	●	14	60	47	124
12.9	3	Ext.	**DSW129-043-14DE3**	●	14	43	47	107
	5	Ext.	**DSW129-060-14DE5**	●	14	60	47	124
	5	Int.	**DSW129-060-14DI5**	●	14	60	47	124
13.0	3	Ext.	**DSW130-043-14DE3**	●	14	43	47	107
	5	Ext.	**DSW130-060-14DE5**	●	14	60	47	124
	5	Int.	**DSW130-060-14DI5**	●	14	60	47	124
13.1	3	Ext.	**DSW131-043-14DE3**	●	14	43	47	107
	5	Ext.	**DSW131-060-14DE5**	●	14	60	47	124
	5	Int.	**DSW131-060-14DI5**	●	14	60	47	124
13.2	3	Ext.	**DSW132-043-14DE3**	●	14	43	47	107
	5	Ext.	**DSW132-060-14DE5**	●	14	60	47	124
	5	Int.	**DSW132-060-14DI5**	●	14	60	47	124
13.3	3	Ext.	**DSW133-043-14DE3**	●	14	43	47	107
	5	Ext.	**DSW133-060-14DE5**	●	14	60	47	124
	5	Int.	**DSW133-060-14DI5**	●	14	60	47	124
13.4	3	Ext.	**DSW134-043-14DE3**	●	14	43	47	107
	5	Ext.	**DSW134-060-14DE5**	●	14	60	47	124
	5	Int.	**DSW134-060-14DI5**	●	14	60	47	124
13.5	3	Ext.	**DSW135-043-14DE3**	●	14	43	47	107
	5	Ext.	**DSW135-060-14DE5**	●	14	60	47	124
	5	Int.	**DSW135-060-14DI5**	●	14	60	47	124
13.6	3	Ext.	**DSW136-043-14DE3**	●	14	43	47	107
	5	Ext.	**DSW136-060-14DE5**	●	14	60	47	124
	5	Int.	**DSW136-060-14DI5**	●	14	60	47	124
13.7	3	Ext.	**DSW137-043-14DE3**	●	14	43	47	107
	5	Ext.	**DSW137-060-14DE5**	●	14	60	47	124
	5	Int.	**DSW137-060-14DI5**	●	14	60	47	124
13.8	3	Ext.	**DSW138-043-14DE3**	●	14	43	47	107
	5	Ext.	**DSW138-060-14DE5**	●	14	60	47	124
	5	Int.	**DSW138-060-14DI5**	●	14	60	47	124
13.9	3	Ext.	**DSW139-043-14DE3**	●	14	43	47	107
	5	Ext.	**DSW139-060-14DE5**	●	14	60	47	124
	5	Int.	**DSW139-060-14DI5**	●	14	60	47	124
14.0	3	Ext.	**DSW140-043-14DE3**	●	14	43	47	107
	5	Ext.	**DSW140-060-14DE5**	●	14	60	47	124
	5	Int.	**DSW140-060-14DI5**	●	14	60	47	124
14.1	3	Ext.	**DSW141-045-16DE3**	●	16	45	50	115
	5	Ext.	**DSW141-063-16DE5**	●	16	63	50	133
	5	Int.	**DSW141-063-16DI5**	●	16	63	50	133
14.2	3	Ext.	**DSW142-045-16DE3**	●	16	45	50	115
	5	Ext.	**DSW142-063-16DE5**	●	16	63	50	133
	5	Int.	**DSW142-063-16DI5**	●	16	63	50	133
14.3	3	Ext.	**DSW143-045-16DE3**	●	16	45	50	115
	5	Ext.	**DSW143-063-16DE5**	●	16	63	50	133
	5	Int.	**DSW143-063-16DI5**	●	16	63	50	133
14.4	3	Ext.	**DSW144-045-16DE3**	●	16	45	50	115
	5	Ext.	**DSW144-063-16DE5**	●	16	63	50	133
	5	Int.	**DSW144-063-16DI5**	●	16	63	50	133
14.5	3	Ext.	**DSW145-045-16DE3**	●	16	45	50	115
	5	Ext.	**DSW145-063-16DE5**	●	16	63	50	133
	5	Int.	**DSW145-063-16DI5**	●	16	63	50	133
14.6	3	Ext.	**DSW146-045-16DE3**	●	16	45	50	115
	5	Ext.	**DSW146-063-16DE5**	●	16	63	50	133
	5	Int.	**DSW146-063-16DI5**	●	16	63	50	133
14.7	3	Ext.	**DSW147-045-16DE3**	●	16	45	50	115
	5	Ext.	**DSW147-063-16DE5**	●	16	63	50	133
	5	Int.	**DSW147-063-16DI5**	●	16	63	50	133
14.8	3	Ext.	**DSW148-045-16DE3**	●	16	45	50	115
	5	Ext.	**DSW148-063-16DE5**	●	16	63	50	133
	5	Int.	**DSW148-063-16DI5**	●	16	63	50	133
14.9	3	Ext.	**DSW149-045-16DE3**	●	16	45	50	115
	5	Ext.	**DSW149-063-16DE5**	●	16	63	50	133
	5	Int.	**DSW149-063-16DI5**	●	16	63	50	133

● : Stocked items

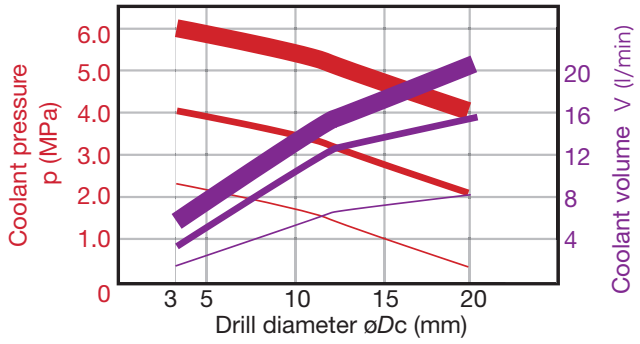
Drill dia. øDc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock	Dimensions (mm)			
					øDs	ℓ	ℓs	L
15.0	3	Ext.	DSW150-045-16DE3	●	16	45	50	115
	5	Ext.	DSW150-063-16DE5	●	16	63	50	133
	5	Int.	DSW150-063-16DI5	●	16	63	50	133
15.1	3	Ext.	DSW151-045-16DE3	●	16	45	50	115
	5	Ext.	DSW151-063-16DE5	●	16	63	50	133
	5	Int.	DSW151-063-16DI5	●	16	63	50	133
15.2	3	Ext.	DSW152-045-16DE3	●	16	45	50	115
	5	Ext.	DSW152-063-16DE5	●	16	63	50	133
	5	Int.	DSW152-063-16DI5	●	16	63	50	133
15.3	3	Ext.	DSW153-045-16DE3	●	16	45	50	115
	5	Ext.	DSW153-063-16DE5	●	16	63	50	133
	5	Int.	DSW153-063-16DI5	●	16	63	50	133
15.4	3	Ext.	DSW154-045-16DE3	●	16	45	50	115
	5	Ext.	DSW154-063-16DE5	●	16	63	50	133
	5	Int.	DSW154-063-16DI5	●	16	63	50	133
15.5	3	Ext.	DSW155-045-16DE3	●	16	45	50	115
	5	Ext.	DSW155-063-16DE5	●	16	63	50	133
	5	Int.	DSW155-063-16DI5	●	16	63	50	133

Drill dia. øDc	Drilling depth L/D	Coolant Supply	Cat. No.	Stock	Dimensions (mm)			
					øDs	ℓ	ℓs	L
15.6	3	Ext.	DSW156-045-16DE3	●	16	45	50	115
	5	Ext.	DSW156-063-16DE5	●	16	63	50	133
	5	Int.	DSW156-063-16DI5	●	16	63	50	133
15.7	3	Ext.	DSW157-045-16DE3	●	16	45	50	115
	5	Ext.	DSW157-063-16DE5	●	16	63	50	133
	5	Int.	DSW157-063-16DI5	●	16	63	50	133
15.8	3	Ext.	DSW158-045-16DE3	●	16	45	50	115
	5	Ext.	DSW158-063-16DE5	●	16	63	50	133
	5	Int.	DSW158-063-16DI5	●	16	63	50	133
15.9	3	Ext.	DSW159-045-16DE3	●	16	45	50	115
	5	Ext.	DSW159-063-16DE5	●	16	63	50	133
	5	Int.	DSW159-063-16DI5	●	16	63	50	133
16.0	3	Ext.	DSW160-045-16DE3	●	16	45	50	115
	5	Ext.	DSW160-063-16DE5	●	16	63	50	133
	5	Int.	DSW160-063-16DI5	●	16	63	50	133

● : Stocked items

Recommended coolant pressure and volume for internal coolant supply:

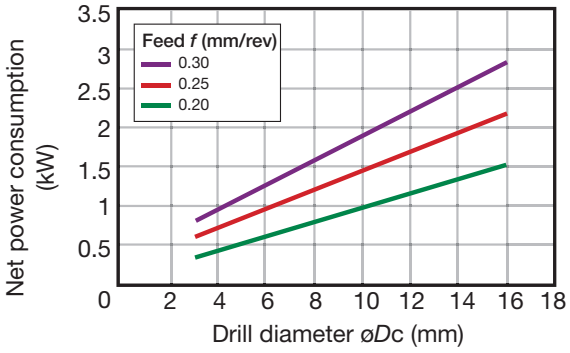
The following graph is a reference guide for pressure and volume. Values should be adjusted according to work material and actual chip evacuation.



: Ideal pressure
: Enough pressure
: Minimum pressure
: Ideal volume
: Enough volume
: Minimum volume

Reference for required spindle power:

The required spindle power may vary depending on the type of work material or hardness. A spindle with sufficient power should be used when referring to the below graph.



Work material : Alloy steel (SNCM439)
Cutting speed : *Vc* = 100 m/min

Designation system

The designation for the new solid drill series includes tool dimensions for easy product identification.

DSW ① **088** ② - **035** ③ - **10** ④ - **D** ⑤ **E** ⑥ **3** ⑦

① Series	
DSW	Series name of solid drill

② Drill dia. øDc (mm)	
088	ø8.8

③ Effective flute length ℓe (mm)	
035	35

④ Shank diameter øDs (mm)	
10	ø10

⑤ DIN 6535 - Form HA	

⑥ Coolant Supply	
E	External (without coolant hole)
I	Internal (with coolant hole)

⑦ Drilling depth

Approximate value of L/D ratio.
Caution: Code may be different from the actual length. This is dependent upon the tool diameter.

Caution: "Effective flute length" shows the maximum flute length for effective chip evacuation. The actual drilling depth may be shorter than described depending on the work material or cutting conditions.

Standard cutting conditions

DSW-DE (External supply)

Work materials	Brinell hardness (HB)	Cutting Speed: *Vc* (m/min)			Feed: *f* (mm/rev)		
		ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø16	ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø16
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.)	~ 180	40 - 100	60 - 120	60 - 130	0.15 - 0.3	0.15 - 0.35	0.20 - 0.5
Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	180 ~ 300	40 - 90	50 - 120	60 - 130	0.15 - 0.3	0.15 - 0.35	0.20 - 0.4
High alloy steels SCM440 etc. (42CrMo4 etc.)	250 ~ 350	40 - 80	50 - 100	50 - 100	0.10 - 0.2	0.15 - 0.3	0.15 - 0.35
Stainless steels SUS304 etc. (X5CrNi18-9 etc.)	~ 200	10 - 20	10 - 20	10 - 20	0.05 - 0.15	0.05 - 0.2	0.05 - 0.25
Grey cast irons FC300 etc. (GG30 etc.)	~ 200	40 - 90	50 - 95	50 - 100	0.15 - 0.3	0.20 - 0.4	0.20 - 0.5
Ductile cast irons FCD450 etc. (GGG45 etc.)	~ 300	30 - 80	40 - 90	45 - 90	0.10 - 0.3	0.20 - 0.4	0.20 - 0.4
Aluminium alloys ADC12 etc.		40 - 90	50 - 100	50 - 100	0.15 - 0.3	0.20 - 0.4	0.20 - 0.5
Titanium alloys Ti-6Al-4V etc.		20 - 40	20 - 40	20 - 40	0.10 - 0.2	0.15 - 0.25	0.15 - 0.4
Heat-resistant alloys, Inconel Inconel 718 etc.	250 ~	10 - 30	10 - 30	10 - 30	0.03 - 0.07	0.05 - 0.1	0.07 - 0.12
High hardened steels SKD11 etc.	~ 40HRC	20 - 40	20 - 40	20 - 40	0.05 - 0.15	0.05 - 0.15	0.05 - 0.2

· The cutting parameters shown in the table are merely a starting guideline for general machining. Values should be varied depending on the power or rigidity of the machine to be used. Optimum conditions should be selected depending on the actual chip control or damage on edges.
· When using the smaller diameter tools in each range, set the feed "f" to the lower recommended values.
· The coolant supply is critical for the provision of stable machining conditions and enhanced tool life. A large coolant volume should be supplied, especially when drilling difficult-to-cut materials.
· When drilling stainless steel with low machinability such as austenitic stainless steel with a depth deeper than L/D = 3, a pecking cycle or internal coolant supply is recommended.

DSW-DI (Internal supply)

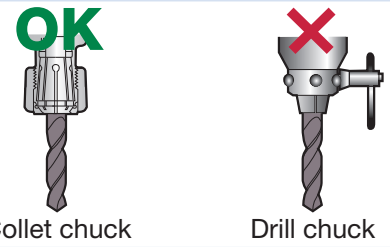
Work materials	Brinell hardness (HB)	Cutting Speed: *Vc* (m/min)			Feed: *f* (mm/rev)		
		ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø16	ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø16
Low carbon steels (C < 0.3) SS400, SM490, S25C etc. (St42-1, St52-3, C25 etc.)	~ 180	70 - 140	80 - 160	90 - 190	0.15 - 0.3	0.15 - 0.35	0.2 - 0.5
Carbon steels (C > 0.3) S45C, S55C etc. (C45, C55 etc.)	180 ~ 300	50 - 130	70 - 160	80 - 170	0.15 - 0.3	0.15 - 0.35	0.2 - 0.4
High alloy steels SCM440 etc. (42CrMo4 etc.)	250 ~ 350	40 - 100	60 - 140	60 - 160	0.10 - 0.2	0.15 - 0.3	0.15 - 0.35
Stainless steels SUS304 etc. (X5CrNi18-9 etc.)	~ 200	25 - 75	50 - 100	50 - 120	0.05 - 0.15	0.05 - 0.2	0.1 - 0.3
Grey cast irons FC300 etc. (GG30 etc.)	~ 200	80 - 140	100 - 160	100 - 180	0.15 - 0.3	0.2 - 0.4	0.2 - 0.5
Ductile cast irons FCD450 etc. (GGG45 etc.)	~ 300	70 - 140	80 - 150	80 - 170	0.10 - 0.3	0.2 - 0.4	0.2 - 0.45
Aluminium alloys ADC12 etc.		60 - 200	60 - 200	60 - 200	0.15 - 0.3	0.2 - 0.4	0.2 - 0.5
Titanium alloys Ti-6Al-4V etc.		20 - 60	30 - 80	30 - 80	0.10 - 0.2	0.1 - 0.25	0.15 - 0.4
Heat-resistant alloys, Inconel Inconel 718 etc.	250 ~	10 - 30	10 - 40	10 - 40	0.03 - 0.07	0.05 - 0.1	0.07 - 0.15
High hardened steels SKD11 etc.	~ 40HRC	20 - 50	30 - 60	30 - 60	0.05 - 0.15	0.05 - 0.15	0.05 - 0.2

· The cutting parameters shown in the table are merely a starting guideline for general machining. Values should be varied depending on the power or rigidity of the machine to be used. Optimum conditions should be selected depending on the actual chip control or damage on edges.
· When using the smaller diameter tools in each range, set the feed "f" to the lower recommended values.
· Oil holes that become blocked may cause drill breakages. A filter to prevent the circulation of chips must be used on the coolant supply system.

Guidelines for correct usage of carbide drills

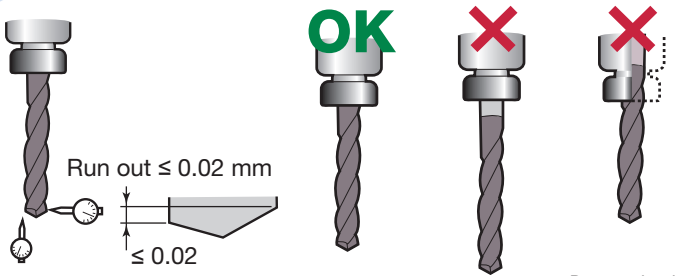
● Holders for solid carbide drills:

A collet chuck holder is recommended for use with carbide drills. When using a milling chuck holder, a collet chuck with a straight shank or straight collet should be used.



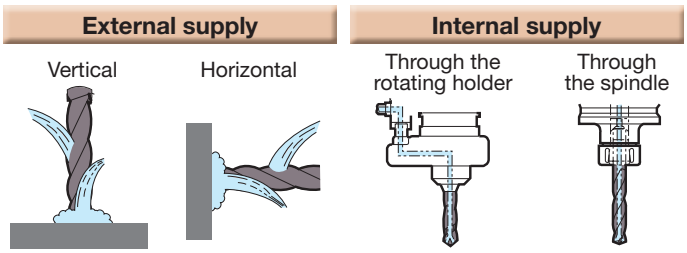
● Chucking drills:

- Radial run out and lip height should be less than 0.02mm. If run out or lip height is larger (close to 0.05mm), machining is possible. However, less accurate holes or short tool life may be a result.
- Overhang length should be as short as possible.



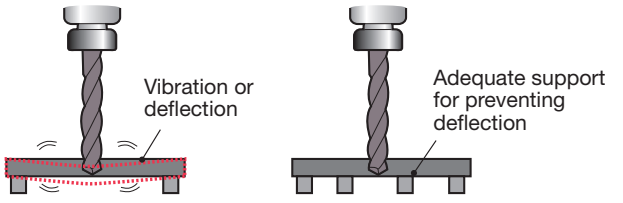
● Coolant Supply:

When using a drill without a coolant hole, such as the DSW-DE type, coolant should always be directed to the entrance of the hole. Maintaining this supplying is very important for stable drilling performance.



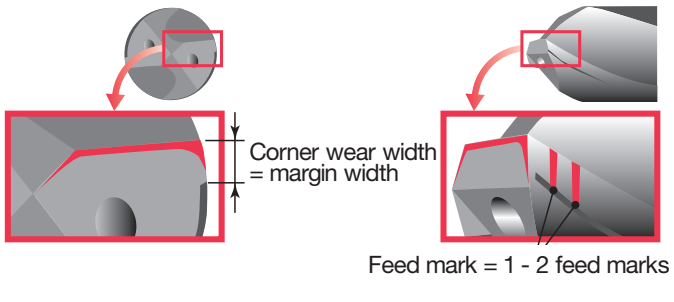
● Clamping workpieces:

As solid carbide drills have a higher thrust force, machining with low rigidity or inadequate support can cause fractures or breakages through vibration. It is important the workpiece is rigidly clamped and has adequate support.



● The criteria of tool life:

- Corner wear width: equal to margin width
- Feed mark: 1 - 2 feed marks on the margin
- Spindle load increase: 30% higher than starting level
- Irregular situation: worse chip control, hole diameter change, worse surface finish, larger burrs, bigger sound.



Regrinding

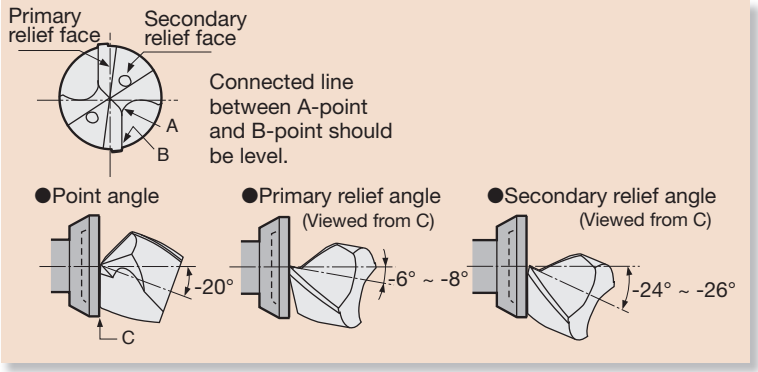
Please refer to the following instructions prior to regrinding DSW type drills.

Before regrinding

● Check the damage on cutting edge
● If large fractures appear on the edges or feed marks are found on margins, please remove these completely.

Relief angle

1. Grinding relief face

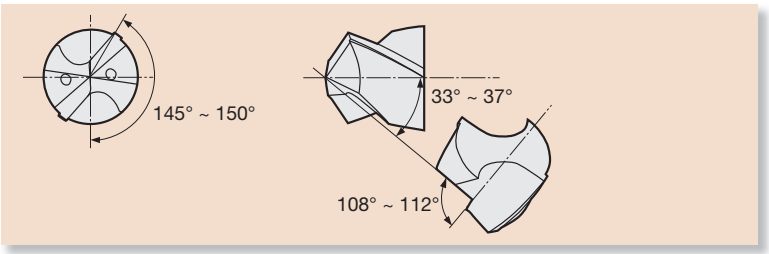


■ Grinding wheel: diamond cup type, D54 (#280) - M63 (#400) grain size, ø100 - ø200 mm, coolant must be used.

Grind primary relief face:
Set the point angle to 140 degrees and primary relief angle to 6 - 8 degrees. Grind the primary relief faces as shown in Fig 1. After grinding both faces, the finish grinding (spark out) must maintain a lip height of less than 0.02 mm.

Grind secondary relief face:
Set the secondary relief angle to 24 - 26 degree. (Point angle should be same.)
Ridge lines between the primary and secondary face on both sides must match at the center.

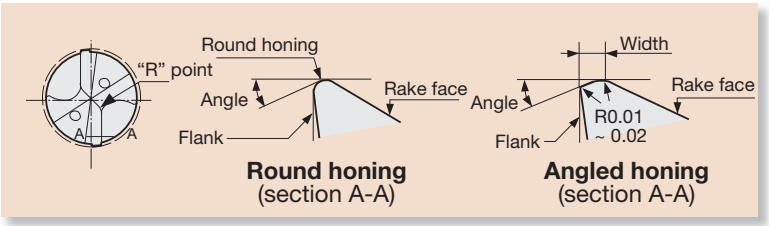
2. Thinning



■ Grinding wheel: diamond flat type, D54 (#280) - M63 (#400) grain size, ø100 - ø200 mm diameter
■ Grind X-thinning

■ After grinding X-thinning on both sides, the finish grinding (spark out) must maintain lip height at less than 0.02 mm.

3. Honing



■ How to hone the cutting edges
1. Grind the "R" point shown in Fig 2 with large radius.
2. Hone the cutting edge roughly from corner to center with diamond file, D91 (#150) - D76 (#180) grain size.
3. Finish honing on all edges with fine diamond file, M63 (#400) - M25 (#600) grain size.
■ Table #1 shows the suggested dimensions of honing on edge. For smaller diameter drills, select the lower recommended value.
■ When drilling material with high hardness, honing width should be smaller.

Table #1: Honing dimensions

Drill diameter (mm)	Round honing R (mm)	Angled honing Width (mm) x Angle
ø*D*c ≤ ø6	0.02 ~ 0.04	0.03 ~ 0.05 x -20°
ø6 < ø*D*c ≤ ø12	0.03 ~ 0.05	0.05 ~ 0.08 x -20°
ø12 < ø*D*c ≤ ø20	0.03 ~ 0.05	0.08 ~ 0.10 x -20°

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