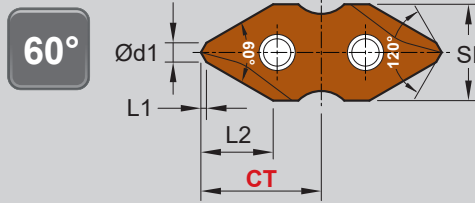


# ACE Spot Drill 60°

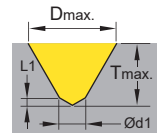
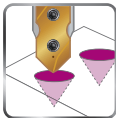


## ► Inserts >>

**NC2057:** • Universal grade for alloy steel and cast iron.  
• Each insert has 2 cutting edges.

**NC5254:** • For stainless steel.  
• Each insert has 2 cutting edges.

**XP9000:** • High positive geometry and sharp edge produces excellent surface finish.  
• For non-ferrous material such as aluminum, titanium, brass, copper and long cutting chip metal.  
• Each insert has 2 cutting edges.

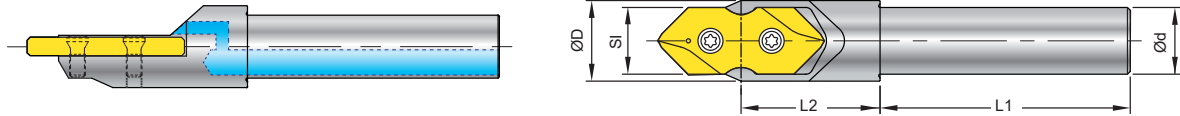


Angle ±0.5	SI	Code	Parts No.	Coating	Grade	Ød1	*L1	L2	Dmax.	Tmax.	S	CT ±0.025	
60°	06	06A021		NC2057	AlTiN+TiSiN	P35	1.2	0.35	5.0	5.5	4.1	1.8	7.5
		06A023	S9MT06T1-060	NC5254	Helica								
		06A022		XP9000	Uncoated								
	08	06A121		NC2057	AlTiN+TiSiN	P35	1.6	0.46	6.0	7.5	5.6	2.4	10
		06A125	S9MT0802-060	NC5254	Helica								
		06A122		XP9000	Uncoated								
	10	06A221		NC2057	AlTiN+TiSiN	P35	2	0.58	7.5	9.5	7.1	3.0	12.50
		06A223	S9MT1003-060	NC5254	Helica								
		06A222		XP9000	Uncoated								
	12	06A321		NC2057	AlTiN+TiSiN	P35	2.4	0.69	9.0	11.5	8.6	3.0	15
		06A323	S9MT1203-060	NC5254	Helica								
		06A322		XP9000	Uncoated								
	16	06A421		NC2057	AlTiN+TiSiN	P35	3.2	0.92	12	15.5	11.6	3.18	16
		06A423	S9MT1603-060	NC5254	Helica								
		06A422		XP9000	Uncoated								
	20	06A521		NC2057	AlTiN+TiSiN	P35	4.0	1.16	15	19.5	14.6	4.76	20
		06A523	S9MT2004-060	NC5254	Helica								
		06A522		XP9000	Uncoated								

# ACE Spot Drill 60°

## ► Cylindrical Shank >>

- Made of hardened high alloy steel, 53 HRC.
- Internal coolant.

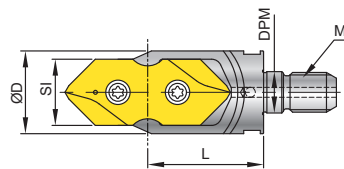


SI	Code	Parts No.	Ød	L1	L2	ØD	Screw	Key
06	6A0001	00-99688-SI06-06	6	27	14	8	*NS-18037 / 0.6Nm	NK-T6
08	6A0101	00-99688-SI08-08	8	36	19	10.5	*NS-20045 / 0.6Nm	NK-T6
10	6A0201	00-99688-SI10-10	10	40	22.5	13	*NS-25060 / 0.9Nm	NK-T7
12	6A0301	00-99688-SI12-12	12	45	25	15.5	NS-30072 / 2.0Nm	NK-T9
16	6A0401	00-99688-SI16-16	16	48	32	21	NS-35080 / 2.5Nm	NK-T15
20	6A0501	00-99688-SI20-20	20	50	35	26	NS-50125 / 5.5Nm	NK-T20

\*Torque screwdriver is recommended.

## ► Screw Fit Cutter >> **NEW**

- Made of hardened high alloy steel, 53 HRC.
- Internal coolant.



SI	Code	Parts No.	ØD	L	M	DPM	Screw	Key
06	6A2001	00-99688-SI06-M04	8	14.5	M4xP0.7	4.5	*NS-18037 / 0.6Nm	NK-T6
08	6A2101	00-99688-SI08-M05	10	19	M5xP0.8	5.5	*NS-20045 / 0.6Nm	NK-T6
10	6A2201	00-99688-SI10-M06	12	22	M6xP1.0	6.5	*NS-25060 / 0.9Nm	NK-T7
12	6A2301	00-99688-SI12-M08	16	25	M8xP1.25	8.5	NS-30072 / 2.0Nm	NK-T9
16	6A2401	00-99688-SI16-M10	20	31	M10xP1.5	10.5	NS-35080 / 2.5Nm	NK-T15
20	6A2501	00-99688-SI20-M12	25	35	M12xP1.75	12.5	NS-50125 / 5.5Nm	NK-T20

\*Torque screwdriver is recommended.

## From spot diameter "d" to get spotting depth "t".

Insert Spec.	S9MT06T1				S9MT0802				S9MT1003				S9MT1203				S9MT1603				S9MT2004			
	60°	90°	120°	142°	60°	90°	120°	142°	60°	90°	120°	142°	60°	90°	120°	142°	60°	90°	120°	142°	60°	90°	120°	142°
Tmax.	4.1	2.5	1.6	0.95	5.6	3.4	2.2	1.29	7.1	4.4	2.7	1.64	8.6	5.3	3.3	1.98	11.6	7.0	4.4	2.67	14.6	8.9	5.6	3.36
Ød1	1.2	-	-	-	1.6	-	-	-	2	-	-	-	2.4	-	-	-	3.2	-	-	-	4.0	-	-	-
L1	0.35	-	-	-	0.46	-	-	-	0.58	-	-	-	0.69	-	-	-	0.92	-	-	-	1.16	-	-	-

**60°**

$$t = (\text{Ød} - \text{Ød1}) \times 0.866 + L1$$

**90°**

$$t = (\text{Ød} - \text{Ød1}) \times 0.5 + L1$$

**120°**

$$t = 0.289 \times \text{Ød}$$

**142°**

$$t = 0.172 \times \text{Ød}$$

## ! For 60° spotting (S9MTxxx-060), peck drilling cycle is necessary.

- Step 1** Get "t" (spotting depth) from above.
- Step 2** Calculate T (depth factor):  $T = \frac{t}{T_{max}}$   
If  $T < 0.3$ , no need peck drilling.  
If  $T \geq 0.3$ , peck drilling is necessary.
- Step 3** According to material, refer to the table and find Q (each pecking depth).

Material \ Q T	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
<b>P</b>	0.5	0.4	0.35	0.3	0.25	0.2	0.15	0.1
<b>M</b>	0.2	0.2	0.15	0.15	0.15	0.1	0.1	0.1
<b>K</b>	0.5	0.4	0.35	0.3	0.25	0.2	0.15	0.1
<b>N</b>	1.0	0.8	0.7	0.6	0.5	0.4	0.3	0.2

## Calculate spindle speed and feed rate

Metric	Inch
$S = \frac{Vc \times 1000}{\pi \times d}$	$S = \frac{(3.82 \times SFM)}{d}$
$F = S \times f$	$F = r.p.m. \times IPR$

d = diameter -mm / -inch  
 S = Spindle Speed -r.p.m.  
 Vc = Cutting Speed -m/min. / -ft./min.  
 f = mm/rev. / inch/rev.  
 F = mm/min. / inch/min.

## STEP files



or Search on internet.



S106 - S9MT06T1	Vc (m/min)	60°				Grade of insert	
		Peck drilling depth	f (mm/rev.)				
<b>P</b>	Carbon steel C<0.3%	120 ~ 250	0.1 ~ 0.5mm	0.01 ~ 0.05	0.02 ~ 0.08	0.02 ~ 0.10	NC2057
	Carbon steel C>0.3%	100 ~ 220		0.01 ~ 0.04	0.02 ~ 0.07	0.02 ~ 0.08	
	Low alloy steel C<0.3%	100 ~ 200		0.01 ~ 0.03	0.02 ~ 0.06	0.02 ~ 0.07	
	High alloy steel C>0.3%	80 ~ 180		0.01 ~ 0.02	0.01 ~ 0.03	0.01 ~ 0.03	
<b>M</b>	Stainless Steel	30 ~ 80	0.1 ~ 0.2mm	0.01 ~ 0.02	0.01 ~ 0.03	0.01 ~ 0.03	NC5254
<b>K</b>	Casting Iron	80 ~ 180	0.1 ~ 0.5mm	0.01 ~ 0.05	0.02 ~ 0.08	0.02 ~ 0.10	NC2057
<b>N</b>	Al, and non-ferrous metal	150 ~ 300	0.2 ~ 1.0mm	0.01 ~ 0.06	0.03 ~ 0.10	0.03 ~ 0.12	XP9000

S108 - S9MT0802	Vc (m/min)	60°				Grade of insert	
		Peck drilling depth	f (mm/rev.)				
<b>P</b>	Carbon steel C<0.3%	120 ~ 250	0.1 ~ 0.5mm	0.02 ~ 0.08	0.03 ~ 0.10	0.03 ~ 0.12	NC2057
	Carbon steel C>0.3%	100 ~ 220		0.02 ~ 0.07	0.03 ~ 0.08	0.03 ~ 0.10	
	Low alloy steel C<0.3%	100 ~ 200		0.02 ~ 0.06	0.03 ~ 0.07	0.03 ~ 0.08	
	High alloy steel C>0.3%	80 ~ 180		0.01 ~ 0.03	0.01 ~ 0.04	0.01 ~ 0.04	
<b>M</b>	Stainless Steel	30 ~ 80	0.1 ~ 0.2mm	0.01 ~ 0.03	0.01 ~ 0.04	0.01 ~ 0.04	NC5254
<b>K</b>	Casting Iron	80 ~ 180	0.1 ~ 0.5mm	0.02 ~ 0.08	0.03 ~ 0.10	0.03 ~ 0.12	NC2057
<b>N</b>	Al, and non-ferrous metal	150 ~ 300	0.2 ~ 1.0mm	0.03 ~ 0.10	0.03 ~ 0.12	0.03 ~ 0.15	XP9000

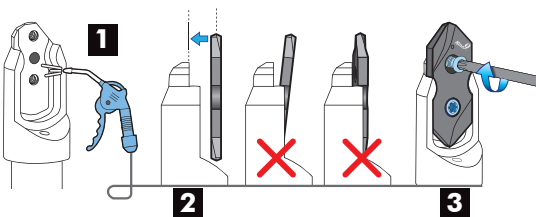
SI10 - S9MT1003		Vc (m/min)	60°	90°	120°	142°	Grade of insert
			Peck drilling depth	f (mm/rev.)			
P	Carbon steel C<0.3%	120 ~ 250	0.1 ~ 0.5mm	0.03 ~ 0.08	0.04 ~ 0.15	0.05 ~ 0.20	NC2057
	Carbon steel C>0.3%	100 ~ 220		0.03 ~ 0.07	0.03 ~ 0.12	0.05 ~ 0.15	
	Low alloy steel C<0.3%	100 ~ 200		0.02 ~ 0.06	0.03 ~ 0.10	0.04 ~ 0.12	
	High alloy steel C>0.3%	80 ~ 180		0.01 ~ 0.03	0.01 ~ 0.04	0.01 ~ 0.04	
M	Stainless Steel	30 ~ 80	0.1 ~ 0.2mm	0.01 ~ 0.03	0.01 ~ 0.04	0.01 ~ 0.04	NC5254
K	Casting Iron	80 ~ 180	0.1 ~ 0.5mm	0.02 ~ 0.08	0.03 ~ 0.12	0.05 ~ 0.15	NC2057
N	Al, and non-ferrous metal	150 ~ 300	0.2 ~ 1.0mm	0.03 ~ 0.10	0.04 ~ 0.20	0.05 ~ 0.25	XP9000

SI12 - S9MT1203		Vc (m/min)	60°	90°	120°	142°	Grade of insert
			Peck drilling depth	f (mm/rev.)			
P	Carbon steel C<0.3%	120 ~ 250	0.1 ~ 0.5mm	0.03 ~ 0.08	0.05 ~ 0.20	0.06 ~ 0.25	NC2057
	Carbon steel C>0.3%	100 ~ 220		0.03 ~ 0.07	0.04 ~ 0.15	0.05 ~ 0.20	
	Low alloy steel C<0.3%	100 ~ 200		0.02 ~ 0.06	0.04 ~ 0.12	0.05 ~ 0.16	
	High alloy steel C>0.3%	80 ~ 180		0.01 ~ 0.03	0.01 ~ 0.04	0.01 ~ 0.04	
M	Stainless Steel	30 ~ 80	0.1 ~ 0.2mm	0.01 ~ 0.03	0.01 ~ 0.04	0.01 ~ 0.04	NC5254
K	Casting Iron	80 ~ 180	0.1 ~ 0.5mm	0.02 ~ 0.08	0.04 ~ 0.15	0.05 ~ 0.20	NC2057
N	Al, and non-ferrous metal	150 ~ 300	0.2 ~ 1.0mm	0.03 ~ 0.10	0.05 ~ 0.22	0.06 ~ 0.25	XP9000

SI16 - S9MT1603		Vc (m/min)	60°	90°	120°	142°	Grade of insert
			Peck drilling depth	f (mm/rev.)			
P	Carbon steel C<0.3%	120 ~ 250	0.1 ~ 0.5mm	0.04 ~ 0.10	0.05 ~ 0.20	0.06 ~ 0.25	NC2057
	Carbon steel C>0.3%	100 ~ 220		0.03 ~ 0.08	0.04 ~ 0.15	0.05 ~ 0.20	
	Low alloy steel C<0.3%	100 ~ 200		0.02 ~ 0.07	0.04 ~ 0.12	0.05 ~ 0.16	
	High alloy steel C>0.3%	80 ~ 180		0.01 ~ 0.03	0.01 ~ 0.04	0.01 ~ 0.04	
M	Stainless Steel	30 ~ 80	0.1 ~ 0.2mm	0.01 ~ 0.03	0.01 ~ 0.04	0.01 ~ 0.04	NC5254
K	Casting Iron	80 ~ 180	0.1 ~ 0.5mm	0.03 ~ 0.08	0.04 ~ 0.15	0.05 ~ 0.20	NC2057
N	Al, and non-ferrous metal	150 ~ 300	0.2 ~ 1.0mm	0.04 ~ 0.12	0.05 ~ 0.25	0.06 ~ 0.25	XP9000

SI20 - S9MT2004		Vc (m/min)	60°	90°	120°	142°	Grade of insert
			Peck drilling depth	f (mm/rev.)			
P	Carbon steel C<0.3%	120 ~ 250	0.1 ~ 0.5mm	0.04 ~ 0.10	0.05 ~ 0.25	0.06 ~ 0.30	NC2057
	Carbon steel C>0.3%	100 ~ 220		0.03 ~ 0.08	0.04 ~ 0.20	0.05 ~ 0.25	
	Low alloy steel C<0.3%	100 ~ 200		0.02 ~ 0.07	0.04 ~ 0.15	0.05 ~ 0.20	
	High alloy steel C>0.3%	80 ~ 180		0.01 ~ 0.03	0.01 ~ 0.04	0.01 ~ 0.04	
M	Stainless Steel	30 ~ 80	0.1 ~ 0.2mm	0.01 ~ 0.03	0.01 ~ 0.04	0.01 ~ 0.04	NC5254
K	Casting Iron	80 ~ 180	0.1 ~ 0.5mm	0.03 ~ 0.08	0.04 ~ 0.20	0.05 ~ 0.25	NC2057
N	Al, and non-ferrous metal	150 ~ 300	0.2 ~ 1.0mm	0.04 ~ 0.12	0.05 ~ 0.30	0.06 ~ 0.30	XP9000

### Clamping insert



### Loosen insert

