



*Nine*9[®]

Super Power Drill

19mm up to 40mm
5xD up to 10xD as standard
up to 12xD on request

Patented

Taiwan 216309

China EL 02220067.3, EL 02257836.6

Japan 3103139

Germany NR20208062.5, NR20217544.8

USA 7.108.460

2007-02



Main features:

- 5 ~ 10xD deep hole drilling is possible.
- Patented center pilot insert creates the most stability positioning accuracy and cutting condition.
- Good chip breaker design to form cutting chip smaller.
- Optimized cutting chip groove improves chip flow.
- Lateral cutting force can be absorbed by center pilot insert and the special designed insert pocket.

Patented center pilot insert:

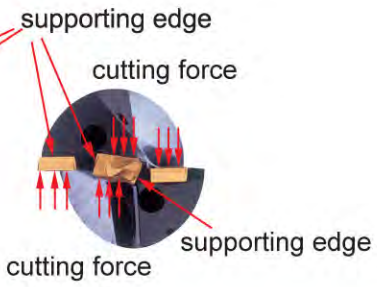


- Fully ground pilot insert with multi-cutting edges to form smaller cutting chips.
- Unique design of the insert pocket, which provides best seating accuracy and rigidity of the center insert.
- Center insert guides the drills for the drilling depth up to 10xD (Standard) and 12xD (Optional).

Special pocket design for center pilot insert.



Backup edge to absorb cutting force.



Periphery insert:

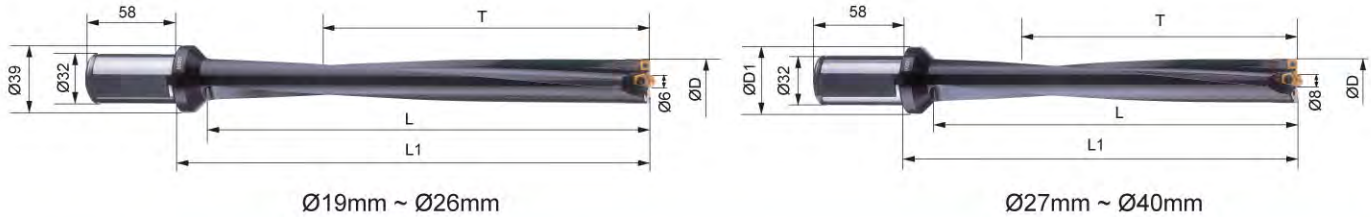


- 4 cutting edges.
- Good chip breaking condition.
- Cutting edge is lapped round for long tool life.
- Dia. 19-26 mm: one periphery insert is required.
- Dia. 27-40 mm: two periphery inserts are required.

Design of chip area of the drills:

- Large cutting chip area which provides enough room for the optimized cutting chips flow.
- Minimum cutting fluid pressure is only 10 bar, it is good for new and old machine tools.
- The drilling length is designed from 5xD, up to 10xD as standard, the best length is selected according to the drilling depth and the required feed rate. The shorter of drilling depth, the higher of feed rate that can be applied.

Dimensions and ordering code















Diameter D mm(inch)	Ordering Code	Type No.	T	L	L1	Insert					
						Center	Periphery				
19 (0.748")	00-99307-19100	SPD19-100S32	100	119	134	 00-99307-CD6 1 pc.	 01-N9GX04T002 1 pc.				
	00-99307-19150	SPD19-150S32	150	169	184		 01-N9GX05T103 1 pc.				
	00-99307-19200	SPD19-200S32	200	219	239						
20 (0.787")	00-99307-20100	SPD20-100S32	100	120	134			 01-N9GX06T024 1 pc.			
	00-99307-20150	SPD20-150S32	150	170	184						
	00-99307-20200	SPD20-200S32	200	220	239						
21 (0.827")	00-99307-21100	SPD21-100S32	100	120	134				 00-99307-CD8 1 pc.	 01-N9GX06T024 1 pc.	
	00-99307-21150	SPD21-150S32	150	170	184						
	00-99307-21200	SPD21-200S32	200	220	239						
22 (0.866")	00-99307-22100	SPD22-100S32	100	125	139						 01-N9GX06T024 1 pc.
	00-99307-22150	SPD22-150S32	150	175	189						
	00-99307-22200	SPD22-200S32	200	225	239						
23 (0.905")	00-99307-23100	SPD23-100S32	100	125	139	 01-N9GX06T024 1 pc.					
	00-99307-23150	SPD23-150S32	150	175	189						
	00-99307-23200	SPD23-200S32	200	225	239						
24 (0.945")	00-99307-24100	SPD24-100S32	100	126	139		 01-N9GX06T024 1 pc.				
	00-99307-24150	SPD24-150S32	150	176	189						
	00-99307-24200	SPD24-200S32	200	226	239						
25 (0.984")	00-99307-24250	SPD24-250S32	250	276	289			 01-N9GX06T024 1 pc.			
	00-99307-25100	SPD25-100S32	100	126	139						
	00-99307-25150	SPD25-150S32	150	176	189						
26 (1.024")	00-99307-25200	SPD25-200S32	200	226	239				 01-N9GX06T024 1 pc.		
	00-99307-25250	SPD25-250S32	250	276	289						
	00-99307-26150	SPD26-150S32	150	176	189						
27 (1.630")	00-99307-26200	SPD26-200S32	200	226	239	 01-N9GX06T024 1 pc.					
	00-99307-26250	SPD26-250S32	250	276	289						
	00-99307-27150	SPD27-150S32	150	181	198						
28 (1.102")	00-99307-27200	SPD27-200S32	200	231	248		 01-N9GX06T024 1 pc.				
	00-99307-27250	SPD27-250S32	250	281	298						
	00-99307-28150	SPD28-150S32	150	181	198						
29 (1.142")	00-99307-28200	SPD28-200S32	200	231	248			 01-N9GX06T024 2 pcs.			
	00-99307-28250	SPD28-250S32	250	281	298						
	00-99307-29150	SPD29-150S32	150	182	198						
29 (1.142")	00-99307-29200	SPD29-200S32	200	232	248				 01-N9GX06T024 2 pcs.		
	00-99307-29250	SPD29-250S32	250	282	298						
	00-99307-29300	SPD29-300S32	300	332	348						



Super Power Drills

With patented center pilot insert, up to 10xD

Diameter D mm(inch)	Ordering Code	Type No.	T	L	LI	Insert																			
						Center	Periphery																		
30 (1.181")	00-99307-30150	SPD30-150S32	150	182	198		00-99307-CD8 1 pc.																		
	00-99307-30200	SPD30-200S32	200	232	248																				
	00-99307-30250	SPD30-250S32	250	282	298																				
	00-99307-30300	SPD30-300S32	300	332	348																				
31 (1.220")	00-99307-31150	SPD31-150S32	150	188	198				00-99307-CD8 1 pc.																
	00-99307-31200	SPD31-200S32	200	238	248																				
	00-99307-31250	SPD31-250S32	250	288	298																				
	00-99307-31300	SPD31-300S32	300	338	348																				
32 (1.260")	00-99307-32150	SPD32-150S32	150	188	203						00-99307-CD8 1 pc.														
	00-99307-32200	SPD32-200S32	200	238	253																				
	00-99307-32250	SPD32-250S32	250	288	303																				
	00-99307-32300	SPD32-300S32	300	338	353																				
33 (1.300")	00-99307-33150	SPD33-150S32	150	189	203								00-99307-CD8 1 pc.												
	00-99307-33200	SPD33-200S32	200	239	253																				
	00-99307-33250	SPD33-250S32	250	289	303																				
	00-99307-33300	SPD33-300S32	300	339	353																				
34 (1.339")	00-99307-34150	SPD34-150S32	150	189	203										00-99307-CD8 1 pc.										
	00-99307-34200	SPD34-200S32	200	239	253																				
	00-99307-34250	SPD34-250S32	250	289	303																				
	00-99307-34300	SPD34-300S32	300	339	353																				
35 (1.378")	00-99307-34350	SPD34-350S32	350	389	403												00-99307-CD8 1 pc.								
	00-99307-35200	SPD35-200S32	200	245	258																				
	00-99307-35250	SPD35-250S32	250	295	308																				
	00-99307-35300	SPD35-300S32	300	345	358																				
36 (1.417")	00-99307-35350	SPD35-350S32	350	395	408														00-99307-CD8 1 pc.						
	00-99307-36200	SPD36-200S32	200	245	258																				
	00-99307-36250	SPD36-250S32	250	295	308																				
	00-99307-36300	SPD36-300S32	300	345	358																				
37 (1.457")	00-99307-36350	SPD36-350S32	350	395	408																00-99307-CD8 1 pc.				
	00-99307-37200	SPD37-200S32	200	246	258																				
	00-99307-37250	SPD37-250S32	250	296	308																				
	00-99307-37300	SPD37-300S32	300	346	358																				
38 (1.496")	00-99307-37350	SPD37-350S32	350	396	408																		00-99307-CD8 1 pc.		
	00-99307-38200	SPD38-200S32	200	246	258																				
	00-99307-38250	SPD38-250S32	250	296	308																				
	00-99307-38300	SPD38-300S32	300	346	358																				
39 (1.535")	00-99307-38350	SPD38-350S32	350	396	408																				00-99307-CD8 1 pc.
	00-99307-39200	SPD39-200S32	200	247	258																				
	00-99307-39250	SPD39-250S32	250	297	308																				
	00-99307-39300	SPD39-300S32	300	346	358																				
40 (1.575")	00-99307-39350	SPD39-350S32	350	397	408		00-99307-CD8 1 pc.																		
	00-99307-40200	SPD40-200S32	200	247	258																				
	00-99307-40250	SPD40-250S32	250	297	308																				
	00-99307-40300	SPD40-300S32	300	347	358																				
40 (1.575")	00-99307-40350	SPD40-350S32	350	397	408				00-99307-CD8 1 pc.																



01-N9GX060204
2 pcs.



00-99307-CD8
1 pc.

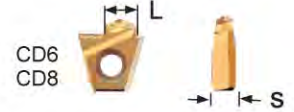


01-N9GX090308
2 pcs.

Patented center pilot insert and periphery inserts

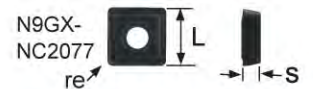
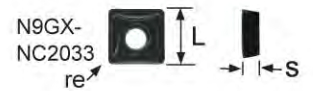
Centering Pilot insert:

- Tungsten Carbide insert, P35 grade, TiN coated, fully ground, fine polished on the cutting edge.
- Patented design of the insert pocket for absorbing cutting force.
- Pilot center insert to guide drilling for increasing drilling depth.



Periphery insert:

- Patented Dual-relief angle insert.
- Square insert, 4 cutting edges, low cost.
- Fine lapping on the cutting edge, good chip breaking condition.
- Fully ground carbide insert, multi-layer TiAlN coated.
 - **Grade NC2033:** K20F grade, TiAlN coated, higher hardness, for high carbon steel, high alloy steel, hardened steel and casting iron.
 - **Grade NC2077:** P35 grade, TiAlN coated, tough and sharp cutting edge, for long cutting chip material, such as low carbon steel, low carbon alloy steel, stainless steel and non-ferrous metal.
 - **Grade NC40 (31 type):** P35 grade, TiN coated, tougher for higher feed rate, good for high alloy steel with higher carbon contain(above 0.3%) and casting iron. Special chip breaker for NC40, only available for N9GX060204 and N9GX090308.



Ordering code			Dimensions			Insert Screw		Screw Key	
Code of insert	Grade		L	S	re	Ordering code	Torque	Ordering code	
Centering pilot inserts									
00-99307-CD6	NC40		6	4	-	00-NS-35080	3.8 Nm	00-NK-T15	
00-99307-CD8	NC40		8	6	-	00-NS-35120	3.8 Nm	00-NK-T15	
Periphery inserts									
01-N9GX04T002	-	NC2033	NC2077	4.0	1.8	0.2	00-NS-18037	0.4 Nm	00-NK-T6
01-N9GX05T103	-	NC2033	NC2077	5.0	2.0	0.2	00-NS-20045	0.6 Nm	00-NK-T6
01-N9GX060204	-	NC2033	NC2077	6.35	2.38	0.4	00-NS-22055	0.9 Nm	00-NK-T7
01-N9GX06020431	NC40	-	-	6.35	2.38	0.4	00-NS-22055	0.9 Nm	00-NK-T7
01-N9GX090308	-	NC2033	NC2077	9.52	3.18	0.8	00-NS-30072	2.0 Nm	00-NK-T9
01-N9GX09030831	NC40	-	-	9.52	3.18	0.8	00-NS-30072	2.0 Nm	00-NK-T9

Important information

- The cutting speed relates to the periphery inserts.
- **Reduce feed rate 50% at the beginning of 3-5 mm.**
- The feed rate depends on the load of the center pilot insert. The best condition will create short cutting chips. The feed rate can be applied $\pm 25\%$ of the recommended value depended on the shape of the cutting chips.
- Be careful the spindle power ! It should be less than 70%. Once the spindle load is 15% higher than beginning, please change the periphery insert to next new cutting edge and change a new center pilot insert.
- Minimum coolant pressure is 10 bar (about 150 psi.). **Internal coolant is required.**
- Increase 20% of the cutting speed and the feed rate for horizontal spindle machine.
- For the CNC lathes, maximum miss-alignment of drill center and spindle center is ± 0.05 mm, it is not necessary to drill center hole in advance.



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With patented center pilot insert, up to 10xD

Cutting Data

• NC2033: K20F, TiAlN coated, for diameter 19~40 mm.

Work piece material	T= Length/ Diameter	Cutting Speed Vc	Feed rate mm/rev.			
			N9GX04T002 Dia. 19	N9GX05T103 Dia. 20~21	N9GX060204 Dia. 22~34	N9GX090308 Dia. 35~40
Carbon steel C>0.3%	T<7D	120-135-150	0.08-0.09-0.10	0.08-0.09-0.10	0.10-0.11-0.12	0.10-0.13-0.15
	T>7D	80-100-120	0.08-0.09-0.10	0.08-0.09-0.10	0.10-0.11-0.12	0.10-0.13-0.15
Low alloy steel C>0.3%	T<7D	120-135-150	0.08-0.09-0.10	0.08-0.09-0.10	0.10-0.11-0.12	0.10-0.13-0.15
	T>7D	80-100-120	0.08-0.09-0.10	0.08-0.09-0.10	0.10-0.11-0.12	0.10-0.13-0.15
High alloy steel, casting steel	T<7D	80-100-120	0.08-0.09-0.10	0.06-0.07-0.08	0.08-0.09-0.10	0.10-0.11-0.12
	T>7D	60-70-80	0.04-0.06-0.08	0.06-0.07-0.08	0.08-0.09-0.10	0.10-0.11-0.12
Stainless steel (Martensitic)	T<7D	120-135-150	0.04-0.05-0.06	0.06-0.07-0.08	0.08-0.09-0.10	0.10-0.11-0.12
	T>7D	60-70-80	0.04-0.05-0.06	0.06-0.07-0.08	0.08-0.09-0.10	0.10-0.11-0.12
Casting Iron, Malleable casting iron.	T<7D	90-100-110	0.06-0.07-0.08	0.08-0.09-0.10	0.10-0.11-0.12	0.10-0.13-0.15
	T>7D	60-70-80	0.06-0.07-0.08	0.08-0.09-0.10	0.10-0.11-0.12	0.10-0.13-0.15

• NC2077: P35, TiAlN coated, for diameter 19~40 mm.

Work piece material	T= Length/ Diameter	Cutting Speed Vc	Feed rate mm/rev.			
			N9GX04T002 Dia. 19	N9GX05T103 Dia. 20~21	N9GX060204 Dia. 22~34	N9GX090308 Dia. 35~40
Carbon steel C<0.3%	T<7D	100-115-130	0.07-0.08-0.09	0.07-0.08-0.09	0.08-0.09-0.10	0.09-0.11-0.13
	T>7D	60-80-100	0.07-0.08-0.09	0.07-0.08-0.09	0.08-0.09-0.10	0.09-0.11-0.13
Low alloy steel C<0.3%	T<7D	90-100-110	0.07-0.08-0.09	0.07-0.08-0.09	0.08-0.09-0.10	0.09-0.11-0.13
	T>7D	70-85-100	0.07-0.08-0.09	0.07-0.08-0.09	0.08-0.09-0.10	0.09-0.11-0.13
Stainless steel (Ferrite, Austenitic)	T<7D	90-100-110	0.04-0.05-0.06	0.06-0.07-0.08	0.07-0.08-0.09	0.07-0.08-0.09
	T>7D	60-70-80	0.04-0.05-0.06	0.06-0.07-0.08	0.07-0.08-0.09	0.07-0.08-0.09

• 31-NC40: P35, TiN coated, for diameter 23~40 mm.

Work piece material	T= Length/ Diameter	Cutting Speed Vc	Feed rate mm/rev.			
			N9GX04T002 Dia. 19	N9GX05T103 Dia. 20~21	N9GX060204 Dia. 22~34	N9GX090308 Dia. 35~40
Low alloy steel	T<7D	120-135-150	-	-	0.12-0.14-0.16	0.12-0.14-0.16
	T>7D	80-100-120	-	-	0.12-0.14-0.16	0.12-0.14-0.16
High alloy Steel, Casting steel	T<7D	80-100-120	-	-	0.10-0.11-0.12	0.10-0.11-0.12
	T>7D	60-70-80	-	-	0.10-0.11-0.12	0.10-0.11-0.12
Casting Iron, Malleable casting iron.	T<7D	80-100-120	-	-	0.12-0.14-0.16	0.15-0.17-0.20
	T>7D	60-70-80	-	-	0.10-0.12-0.14	0.10-0.14-0.18

Attention :

- The middle value of each recommended cutting data are the initial choice for the regular condition, the optimized value should be changed according to the shape of the cutting chips after initial test cut.
- The favorable shape of cutting chip is spiral chip pieces of fragmental helical chip (no more than one turn). If the shape of cutting chip is unfavorable snarl chip, please adjust feed rate to make cutting chip shorter at first.



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