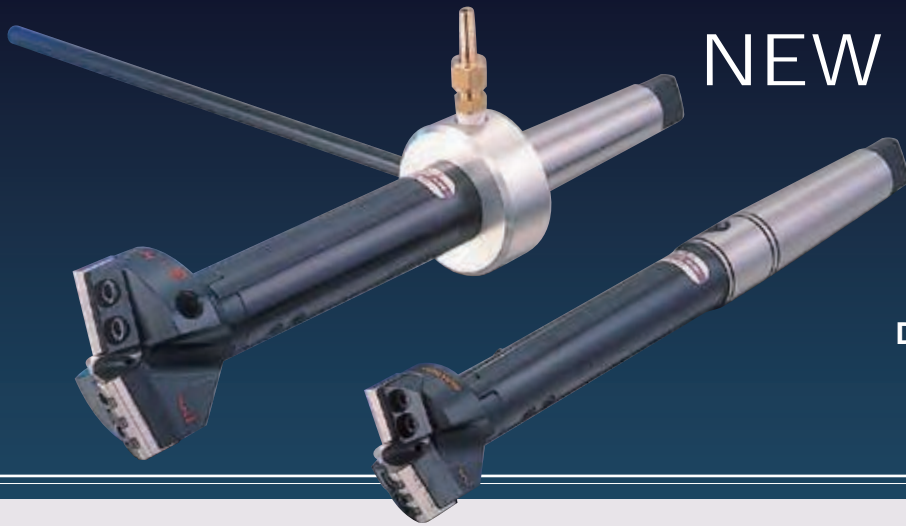


# NEW SUPER DRILL



Deep boring up to 15 times diameter !

## High Reliability and Proven Performance

SUPER DRILL was put on the market by SHOWA TOOL CO. Since that time, it was continuously improved through in-the-field experiences. In response to customer's demands, NEW SUPER DRILL has been developed to increase its flexibility, employing a modular system. The basic set consists of a head and a shank. And, extension arbors are added for deeper holes. SUPER DRILL's ease-of-use is further enhanced by this modular construction.

POINT

1

## Single Pass, precision boring of 50mm-270mm diameters

No center drilling or pilot hole required. Super Drill's built-in center drill acts as an axis for precision drilling. New Super drill is available in 10 standard head sizes, A1S-55, A2-65, B-80, C-100, D-120, E-150, F-180, G-210, H-240 and I-270, for drilling 50mm to 270mm diameters.

POINT

2

## Specialty of deep hole drilling

Combination of roughing and finishing blades form small chips, providing efficient chip removal. No pecking or dwelling required, even for deep holes.

POINT

3

## Able to drill even in hard metals

New Super Drill cutting blades are manufactured from sintered HSS, providing excellent drilling performance even in hard metals.



## Reusable blades and center drill

The cutting edge of New Super Drill consists of a center drill, a roughing (R) blade and a finishing (S) blade. Different diameter of holes can be bored by changing blades within the capacity of each drill holder. The blades and center drill can be resharpened which reduces tool cost.



### Re-sharpening fixture



A pair of roughing and finishing blades, can be resharpened utilizing the resharpening fixture on the surface grinder.

### Oil ring



Oil ring is used to supply coolant through the drill in rotational applications.

### T/C Guides(for through hole)



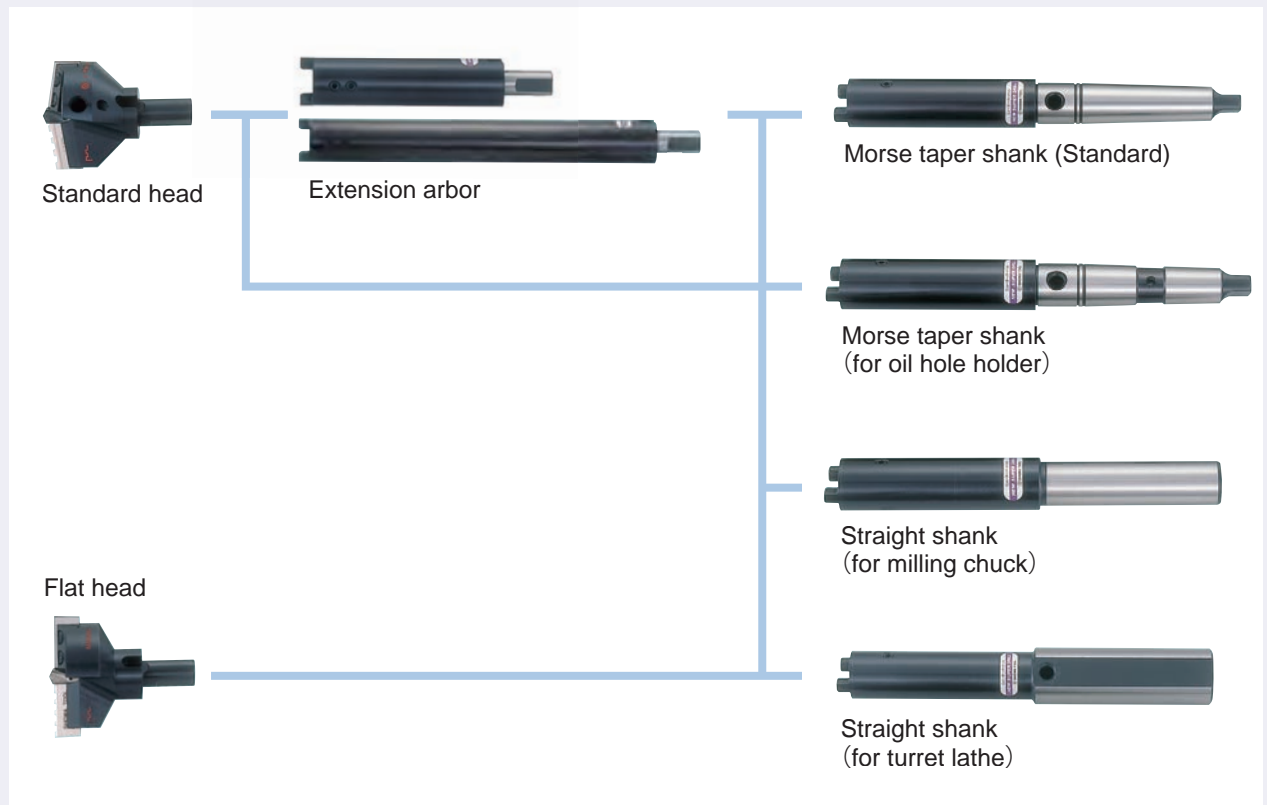
In case of through hole drilling, the drill may vibrate immediately before breaking through, depending on hole diameter, cutting speed and feed rate, and rigidity of the machine spindle. This can result in damage of the cutting blades. Using T/C guides when boring through holes will minimize vibration and help prevent tool damage.

### Sharpening the blades



- ① "R" and "S" blades are ground to the same height.
- ② Both blades are ground in straight line, making first and second clearance.
- ③ Grind the center drill to the point angle of  $140^\circ$  with thinning.

## Easy Assembly, Flexible for Various Applications



## Assembly

New Super Drill's cutting edge consists of three cutters a roughing (R) blade, a finishing (S) blade and a center drill. This combination of cutters gives outstanding drilling efficiency.

### ■ Procedure



- ① Insert the center drill in the center of the head.
- ② Clamp the roughing(R) blade in the seat marked with R. The inside edge of the roughing blade must contact tightly against the side slot of the center drill, to prevent the center drill turning free.
- ③ Clamp the finishing(S) blade in the seat marked S.
- ④ Finally, tighten the center drill setting screw.

# Guide Values for New Super Drill

Speed (min<sup>-1</sup>) Feed (mm/rev.)

Material	DIN	42CrMo4		CK35-55		1025		ST		W1-10		D2		40-50		ALUMINUM		
	USA	4140		S35C-55C		S25C		SS		SK3		SKD11		FC25-40		SUS27		
	JIS	SCM440		S35C-55C		S25C		SS		SK3		SKD11		FC25-40		SUS27		
Dia.	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed
50-60	160-180	0.1 0.15	160-180	0.1 0.15	190-210	0.1 0.15	210-240	0.1 0.18	80-90	0.08 0.15	70-80	0.06 0.1	140-150	0.15 0.25	75-90	0.06 0.12	450-500	0.15 0.25
60-70	140-160		150-160		170-190		190-210		80-85		55-70		120-140		60-75		400-450	
70-80	110-140	0.1 0.18	120-140	0.06 0.12	155-170	0.1 0.18	170-190	0.1 0.15	70-80	0.06 0.1	50-55	0.06 0.1	100-120	0.15 0.35	55-70	0.06 0.13	350-400	0.15 0.35
80-90	100-120		110-120		140-155		155-170		60-70		45-50		90-100		50-60		300-350	
90-100	90-110		100-110		125-140		140-155		55-60		40-50		80-90		45-50		300-330	
100-110	80-100		90-100		110-125		130-140		50-55		35-40		70-80		40-45		280-300	
110-120	70-90		80-90		100-110		120-130		45-50		30-35		65-70		35-40		250-290	
120-130	70-80		70-80		90-100		105-120		40-45		30-35		60-65		30-35		230-250	
130-140	65-70		65-70		80-90		90-100		35-40		25-30		50-60		25-30		200-230	
140-150	50-60		50-60		75-80		80-90		30-35		25-30		40-50		20-30		180-200	
150-160	50-60		50-60		70-75		75-85		25-35		20-25		35-45		20-25		170-180	
160-170	50-60		50-60		65-70		70-80		25-30		20-25		35-45		15-25		160-170	
170-180	45-50	45-50	60-65	65-75	25-30	20-25	35-40	15-25	150-160									
180-190	45-50	45-50	60-65	60-70	20-30	20-25	30-40	15-25	140-150									
190-200	40-45	0.06 0.15	45-50	0.06 0.12	55-60	0.06 0.16	60-65	0.06 0.15	20-25	0.06 0.1	15-20	0.05 0.1	30-40	0.10 0.25	15-20	0.06 0.12	135-140	0.15 0.2
200-210	40-45		40-45		55-60		55-65		20-25		15-20		30-35		10-20		130-135	
210-220	40-45		40-45		50-55		55-60		15-25		15-20		25-35		10-20		120-130	
220-230	35-40		40-45		50-55		50-60		15-20		15-20		25-35		10-20		115-120	
230-240	35-40		35-40		45-50		50-55		15-20		15-20		25-30		10-20		110-115	
240-250	30-35		35-40		45-50		45-55		15-20		15-20		25-30		10-20		105-110	
250-260	30-35		30-35		45-50		45-50		15-20		15-20		20-25		10-20		100-110	
260-270	30-35		30-35		40-45		40-50		15-20		10-15		20-25		10-15		100-110	

NOTE : Reduce drill speed by 30%~50% in case of quenched and tempered Chromoly, structural steel, etc. depending on their hardness.

## New Super Drill Drilling Data

Item	Nominal	Dia. (mm)	Speed (min <sup>-1</sup> )	Material S50C		
				Cut.torque (kN·m)	Cut.power (kW)	Thrust force (kN)
A1-50~55		50	127	0.17	2.2	4.8
		55	116	0.20	2.3	5.2
A2-55~65		60	106	0.23	2.5	5.6
		65	98	0.26	2.6	6.0
B-65~80		70	91	0.30	2.8	6.4
		75	85	0.33	2.9	6.8
C-80~100		80	80	0.37	3.1	7.2
		85	75	0.41	3.2	7.5
D-100~120		90	71	0.46	3.4	7.9
		95	67	0.50	3.5	8.3
E-120~150		100	64	0.55	3.6	8.6
		105	61	0.60	3.8	9.0
F-150~180		110	58	0.64	3.9	9.3
		115	55	0.70	4.0	9.7
G-180~210		120	53	0.75	4.2	10.0
		125	51	0.80	4.3	10.4
		130	49	0.86	4.4	10.7
		135	47	0.92	4.6	11.1
		140	45	0.97	4.7	11.4
		145	44	1.03	4.8	11.8
		150	42	1.10	4.9	12.1
		155	41	1.16	5.0	12.4
		160	40	1.22	5.2	12.8
		165	39	1.29	5.3	13.1
H-210~240		170	37	1.36	5.4	13.4
		175	36	1.43	5.5	13.7
		180	35	1.50	5.6	14.1
		185	34	1.57	5.8	14.4
		190	34	1.64	5.9	14.7
		195	33	1.72	6.0	15.1
		200	32	1.79	6.1	15.4
		205	31	1.87	6.2	15.7
		210	30	1.95	6.3	16.0
		215	30	2.03	6.4	16.3
I-240~270		220	29	2.11	6.5	16.6
		225	28	2.19	6.7	17.0
		230	28	2.28	6.8	17.3
		235	27	2.36	6.9	17.6
		240	27	2.45	7.0	17.9
		245	26	2.54	7.1	18.2
		250	25	2.63	7.2	18.5
		255	25	2.72	7.3	18.8
		260	24	2.81	7.4	19.1
		265	24	2.90	7.5	19.4
270	24	3.00	7.6	19.7		

NOTE : The above values are not ones measured in actual drilling. It is recommended to use New Super Drill on a machine having 50% or more bigger capacity than these values for efficient drilling.