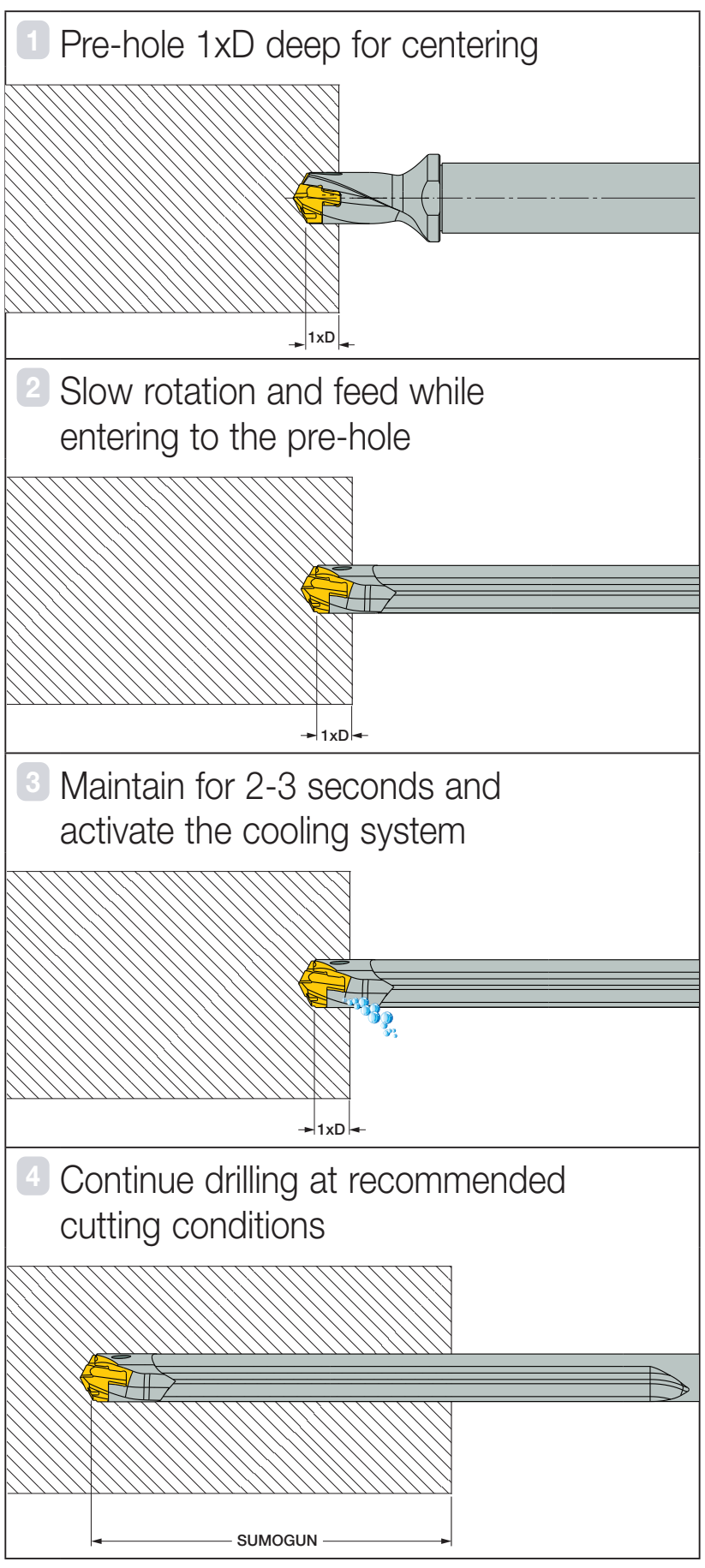
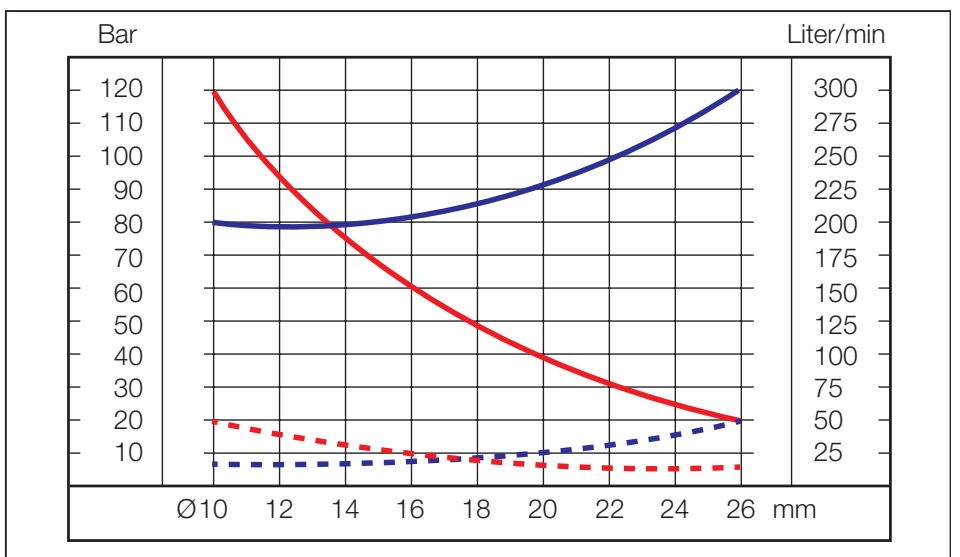
Drill Penetration Instructions on Horizontal Milling and Lathe machines

Note: The following procedure (1-4) is recommended for up to 400 mm hole depths using MNSNT ...-400... drill.

1 Drill a pilot hole 1xD deep with a short drill in the same diameter as of the **SUMOGUN** drill.
2 Enter the pre-hole at slow speed, feed and 50 RPM until 1-2 mm before reaching the bottom.
3 Activate the cooling system and increase rotation speed to recommended drilling speed, maintain for 2-3 seconds, then continue at recommended drilling feed. No pecking is required. Apply maximum possible coolant flow rate.
4 After having reached the required depth, reduce speed to 50-100 RPM while exiting from the hole.



Pressure and Coolant Flow Rate for SUMOGUN



SUMOGUN Drilling Range

Q (L/min) P (Bar)

Gundrill Machines
Milling and Turning Machines

Gundrill Lubrication and Cooling

The best performance is obtained by using oil. On equipment that uses water-soluble fluids (i.e. machining centers and CNC machines) a concentration between 10% and 15% is recommended.

Guidelines for Optimal Gundrill Performance

- Coolant pressure and flow
- It is recommended to use a strong coolant flow for efficient chip flushing and cooling of the cutting edge
- Filtration It is recommended to use a filter under 20 µm.
- Note: Improper filtration may result in interrupted flow of the lubricating oil. This creates a sticky surface on the bearing pads and leads to premature wear of the tool and overloading the coolant pump and spindle seals.
- Temperature of the coolant The coolant temperature should be between 20 and 22º C.

Note: Above 50º C the viscosity of the coolant is reduced by 50% and becomes ineffective.

Machining Conditions for MNSNT

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material Group No.	V (m/min)	SUMOGUN Feed vs. Drill Diameter mm/rev D=10-11.9	D=12-13.9	D=14-15.9	D=16-19.9	D=20-25.9
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	420	125	1	80-110-140	0.15	0.18	0.20	0.25	0.25
		>= 0.25 %C	Annealed	650	190	2	80-105-130	0.18	0.21	0.23	0.30	0.30
		< 0.55 %C	Quenched and tempered	850	250	3	80-100-120	0.21	0.24	0.27	0.35	0.35
		>= 0.55 %C	Annealed	750	220	4	70-90-110					
			Quenched and tempered	1000	300	5	50-70-90					
	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	600	200	6	80-100-120	0.14	0.16	0.18	0.23	0.25
			Quenched and tempered	930	275	7	70-90-110	0.17	0.20	0.22	0.27	0.30
				1000	300	8	50-70-90	0.21	0.24	0.26	0.31	0.35
				1200	350	9	40-55-70					
	High alloyed steel, cast steel, and tool steel		Annealed	680	200	10	50-70-90	0.12	0.15	0.18	0.20	0.22
			Quenched and tempered	1100	325	11	40-60-80	0.14	0.17	0.20	0.22	0.24
								0.17	0.20	0.23	0.25	0.27
	Stainless steel and cast steel		Ferritic/ martensitic.	680	200	12	40-55-70	0.12	0.14	0.16	0.16	0.18
								0.13	0.15	0.18	0.19	0.21
			Martensitic	820	240	13		0.15	0.17	0.20	0.21	0.24
K	Cast iron nodular (GG)		Ferritic/pearlitic		180	15	90-125-160	0.20	0.25	0.30	0.35	0.35
			Pearlitic/ martensitic		260	16	80-110-140	0.23	0.28	0.33	0.40	0.42
	Grey cast iron (GGG)		Ferritic		160	17	90-135-180	0.27	0.32	0.37	0.45	0.47
			Pearlitic		250	18	80-110-140					
	Malleable cast iron		Ferritic		130	19	90-125-160					
			Pearlitic		230	20	80-110-140					
N	Aluminum-wrought alloys		Not hardenable		60	21	90-155-220	0.25	0.30	0.35	0.40	0.45
			Hardenable		100	22		0.28	0.33	0.38	0.45	0.50
	Aluminum-cast alloys	<=12% Si	Not hardenable		75	23		0.32	0.37	0.42	0.50	0.57
			Hardenable		90	24						
		>12% Si	High temperature		130	25	80-120-160					

Recommended cutting data
- Mandatory use of emulsion or oil when drilling
- For the 400mm long tools please reduce the cutting speed by 20%.