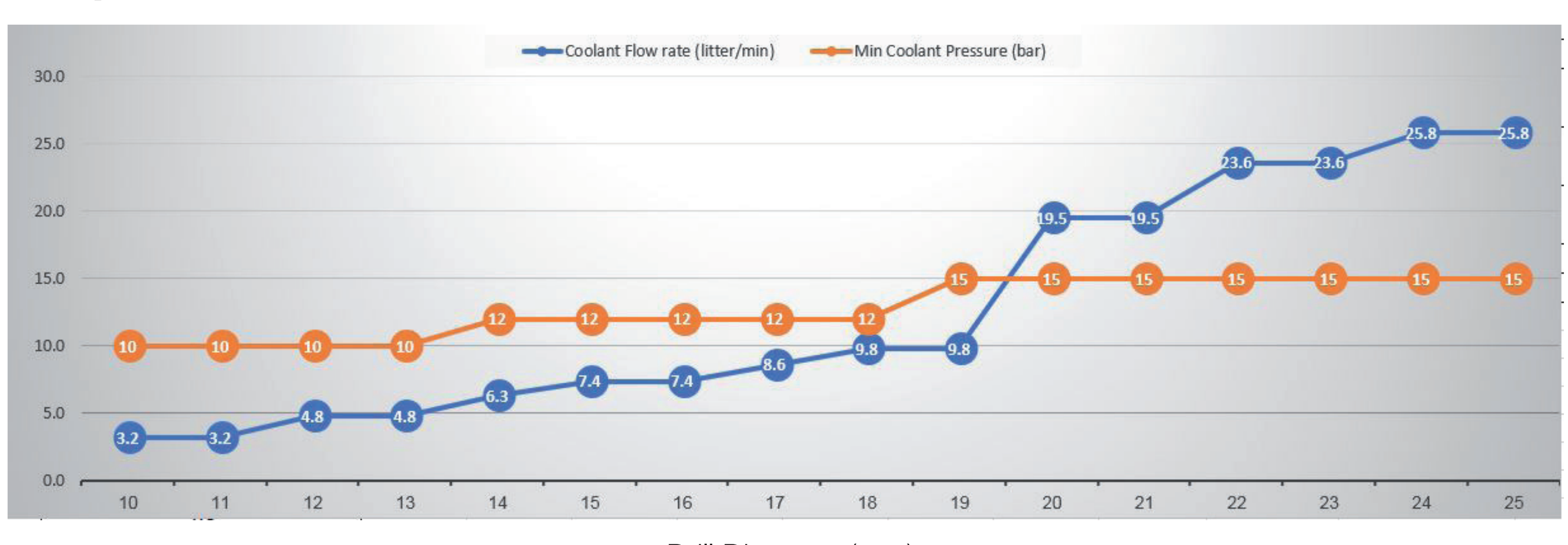
LOGIQ3CHAM
THREE FLUTE CHAMDRILL

General Recommendations:

- Dry drilling should not be performed under any **circumstances**
- Semi-synthetic or emulsion lubricants are recommended to be used for extended tool life
- It is essential to use internal coolant in all LOGIQ3CHAM applications
- In cases of low coolant pressure or when used in a stationary application, adding an external coolant can improve tool life
- When only external coolant can be applied, it is recommended to drill to a maximum depth of 2xD
- An optional plug with internal thread for coolant connection can be used on stationary machines. It can be pressed into the back-end hole of the drill

Shank Diameter	Plug	Internal Thread
12	DL-12	G 1/16
16	DL-16	G 1/16
20	DL-20	G 1/8
25	DL-25	G 1/8

Following are the recommended ranges for coolant flow rate and pressure for each drill diameter



Drill Diameter (mm)

- For optimal performance, it is recommended to adjust runout of outer points and chisel with a maximum of 0.02 mm exceeded runout will have influence on drill performance, tool life and hole quality.
- **LOGIQ3CHAM** drills can be used either on milling centers or lathe machines
- **LOGIQ3CHAM** drills can be used on sloped surfaces up to 12°. When drilling sloped surfaces of up to 12°, reduce feed rate by 30-50% during penetration up to 5 mm depth; or use a spot or pre-hole drill to avoid drill deviation or poor drill performance
- Interrupted cut has a direct influence on hole accuracy, quality and tool life

Cutting conditions and machine power:

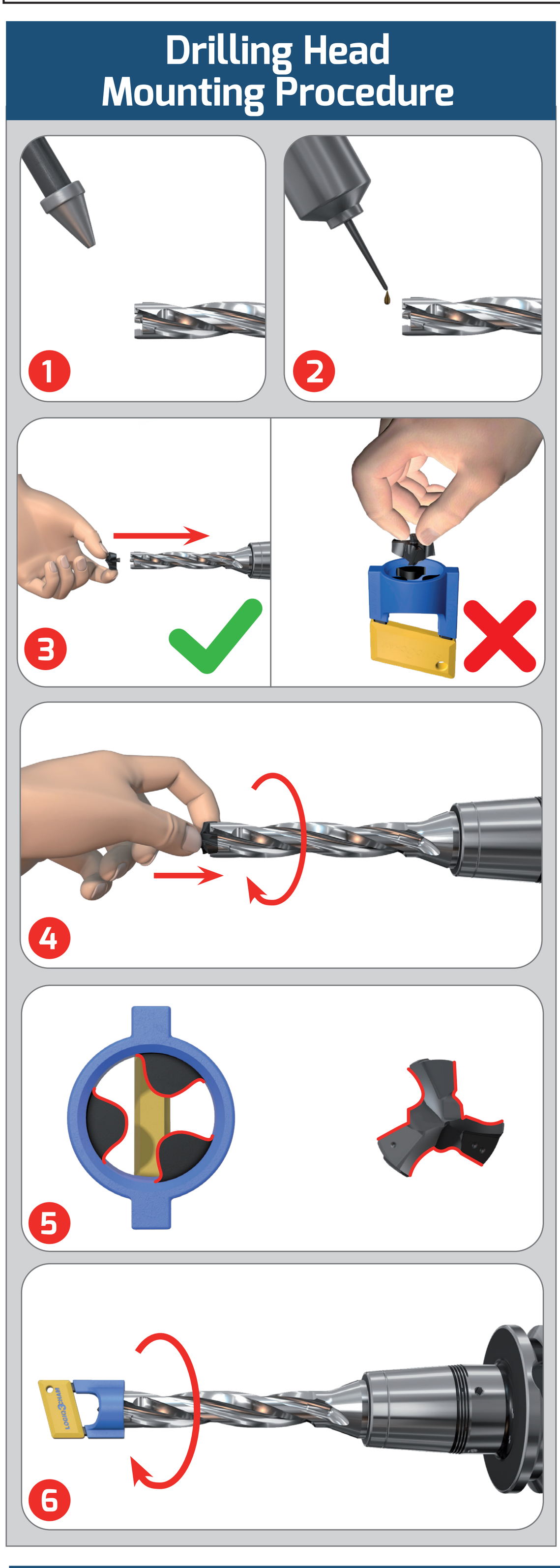
The below table show calculated machine power, Torque and Axial Force using recomended cutting conditions.

Material No.	V m/min	D=12-13.9 mm/rev	Net Power (KW)	Mean torque (Nm)	Axial Force (kN)	D=14-15.9 mm/rev	Net Power (KW)	Mean torque (Nm)	Axial Force (kN)	D=16-17.9 mm/rev	Net Power (KW)	Mean torque (Nm)	Axial Force (kN)	D=18-19.9 mm/rev	Net Power (KW)	Mean torque (Nm)	Axial Force (kN)
1	80-100-120	0.30 0.39 0.45	3.76	14.66	3.11	0.36 0.45 0.51	5.35	24.06	6.009	0.45 0.51 0.57	6.69	34.12	7.52	0.48 0.57 0.63	8.16	46.53	9.17
2			4.34	16.92	3.59		6.16	27.72	6.922		7.7	39.25	8.65		9.38	53.48	10.54
3			4.97	19.38	4.11		7.04	31.66	7.907		8.77	44.72	9.86		10.67	60.79	11.99
4	70-85-100		4.22	19.38	4.11		5.98	31.66	7.907		7.45	44.72	9.86		9.07	60.79	11.99
5	50-65-80		3.66	21.98	4.66		5.19	35.91	8.969		6.47	50.73	11.18		7.86	68.96	13.60
6	70-90-110	0.33 0.39 0.42	4.74	20.54	4.34	0.36 0.42 0.48	6.37	31.84	7.951	0.39 0.48 0.54	7.99	45.26	9.97	0.42 0.51 0.60	9.35	59.2	11.67
7	70-85-100		4.48	20.54	4.34		6.01	31.84	7.951		7.54	45.26	9.97		8.83	59.2	11.67
8	50-65-80		3.33	19.96	4.23		4.47	30.94	7.727		5.61	43.99	9.69		6.56	57.53	11.34
9	40-50-60		2.67	20.83	4.42		3.59	32.28	8.063		4.5	45.9	10.11		5.27	60.04	11.84
10	50-70-90	0.27 0.33 0.36	4.38	24.41	5.18	0.30 0.36 0.39	5.95	38.24	9.55	0.33 0.39 0.42	7.17	52.24	11.51	0.36 0.42 0.45	8.48	69.09	13.62
11	40-60-80		3.83	24.9	5.28		5.2	39.02	9.745		6.27	53.31	11.75		7.42	70.5	13.90
15	90-125-160	0.40 0.60 0.78	5.53	17.27	3.66	0.45 0.66 0.84	7.58	27.3	6.819	0.54 0.72 0.90	9.22	37.6	8.29	0.60 0.78 0.96	10.98	50.07	9.87
16	80-110-140		6.53	23.17	4.91		8.89	272.25	9.08		10.72	49.72	10.96		12.7	65.79	12.97
17	90-135-180		6.92	19.9	4.24		9.44	31.47	7.859		11.42	43.15	9.51		13.55	57.23	11.28
18	80-110-140		6.53	23.17	4.91		8.89	36.36	9.08		10.72	49.72	10.96		12.7	65.79	12.97
19	90-125-160		6.41	19.9	4.24		8.74	31.47	7.859		10.58	43.15	9.51		12.55	57.23	11.28
20	80-110-140		7.11	25.2	5.34		9.65	39.47	9.857		11.62	53.88	11.87		13.74	71.18	14.04

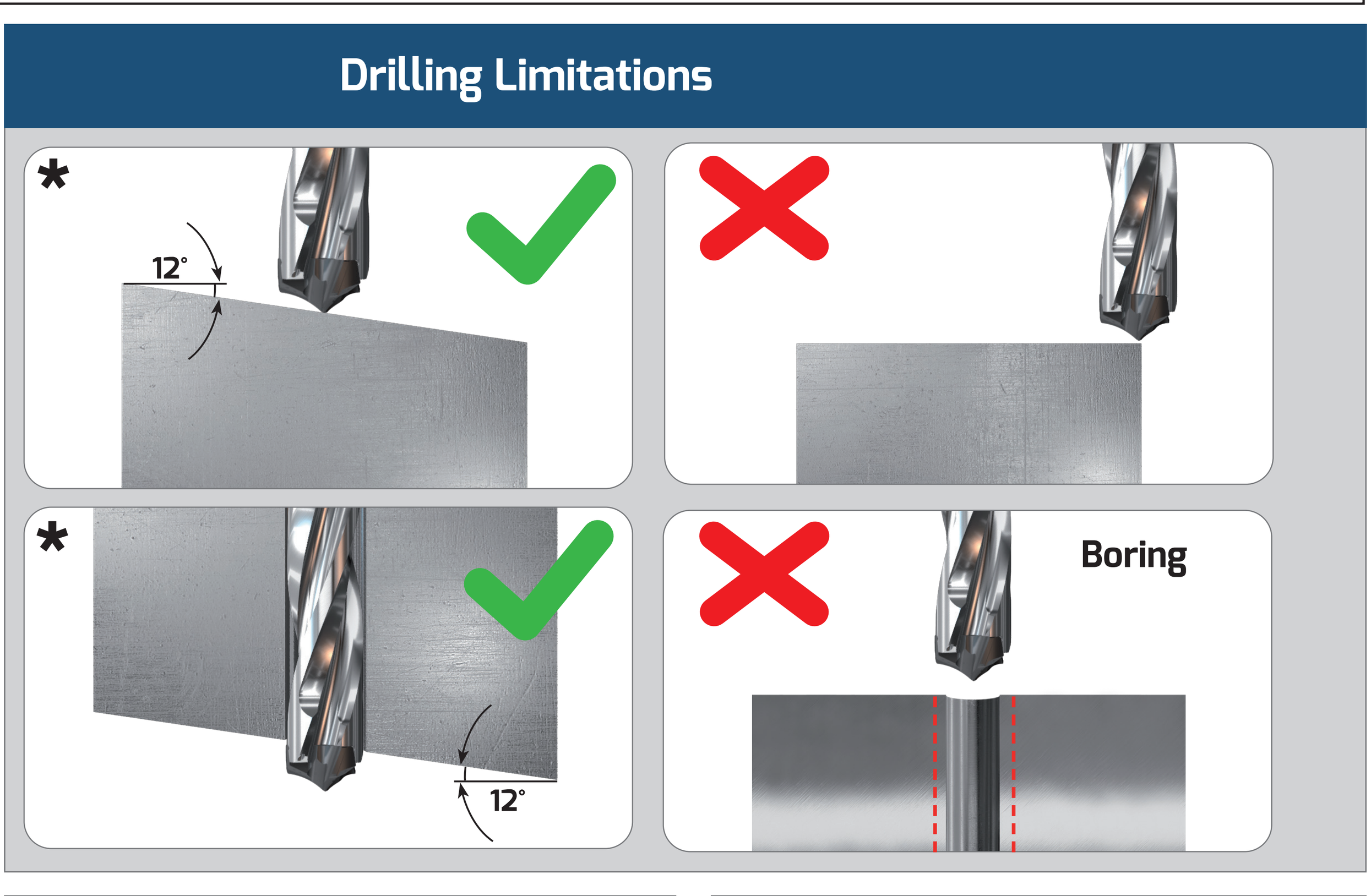
Material No.	V m/min	D=20-21.9 mm/rev	Net Power (KW)	Mean torque (Nm)	Axial Force (kN)	D=22-23.9 mm/rev	Net Power (KW)	Mean torque (Nm)	Axial Force (kN)	D=24-25.9 mm/rev	Net Power (KW)	Mean torque (Nm)	Axial Force (kN)
1	80-100-120	0.51 0.60 0.66	9.4	59.19	10.56	0.54 0.63 0.69	10.69	73.79	12.02	0.57 0.66 0.72	12.06	90.45	13.55
2			10.79	67.99	12.13		12.28	84.72	13.80		13.84	103.8	15.55
3			12.26	77.22	13.78		13.93	96.13	15.66		15.69	117.66	17.63
4	70-85-100		10.42	77.22	13.78		11.84	96.13	15.66		13.33	117.66	17.63
5	50-65-80		9.04	87.59	15.63		10.27	109.04	17.76		11.57	133.46	20.00
6	70-90-110	0.45 0.54 0.63	10.79	75.53	13.47	0.48 0.57 0.66	12.31	94.4	15.38	0.51 0.60 0.69	13.92	115.97	17.38
7	70-85-100		10.19	75.53	13.47		11.63	94.4	15.38		13.14	115.97	17.38
8	50-65-80		7.57	73.4	13.09		8.64	91.75	14.94		9.77	112.7	16.89
9	40-50-60		6.08	76.6	13.66		6.94	95.73	15.59		7.84	117.6	17.62
10	50-70-90	0.39 0.45 0.48	9.89	89	15.88	0.42 0.48 0.51	11.38	112.2	18.28	0.45 0.51 0.54	12.96	138.9	20.81
11	40-60-80		8.65	90.82	16.20		9.96	114.49	18.65		11.34	141.74	21.24
15	90-125-160	0.66 0.84 1.02	12.88	64.9	11.58	0.72 0.90 1.08	14.9	82.27	13.40	0.78 0.96 1.14	17.06	102.35	15.34
16	80-110-140		14.8	84.78	15.12		17.04	106.88	17.41		19.4	132.28	19.82
17	90-135-180		15.84	73.91	13.18		18.27	93.37	15.21		20.84	115.78	17.35
18	80-110-140		14.8	84.78	15.12		17.04	106.88	17.41		19.4	132.28	19.82
19	90-125-160		14.66	73.91	13.18		16.91	93.37	15.21		19.3	115.78	17.35
20	80-110-140		15.99	9159	16.34		18.38	115.3	18.78		20.9	142.52	21.36

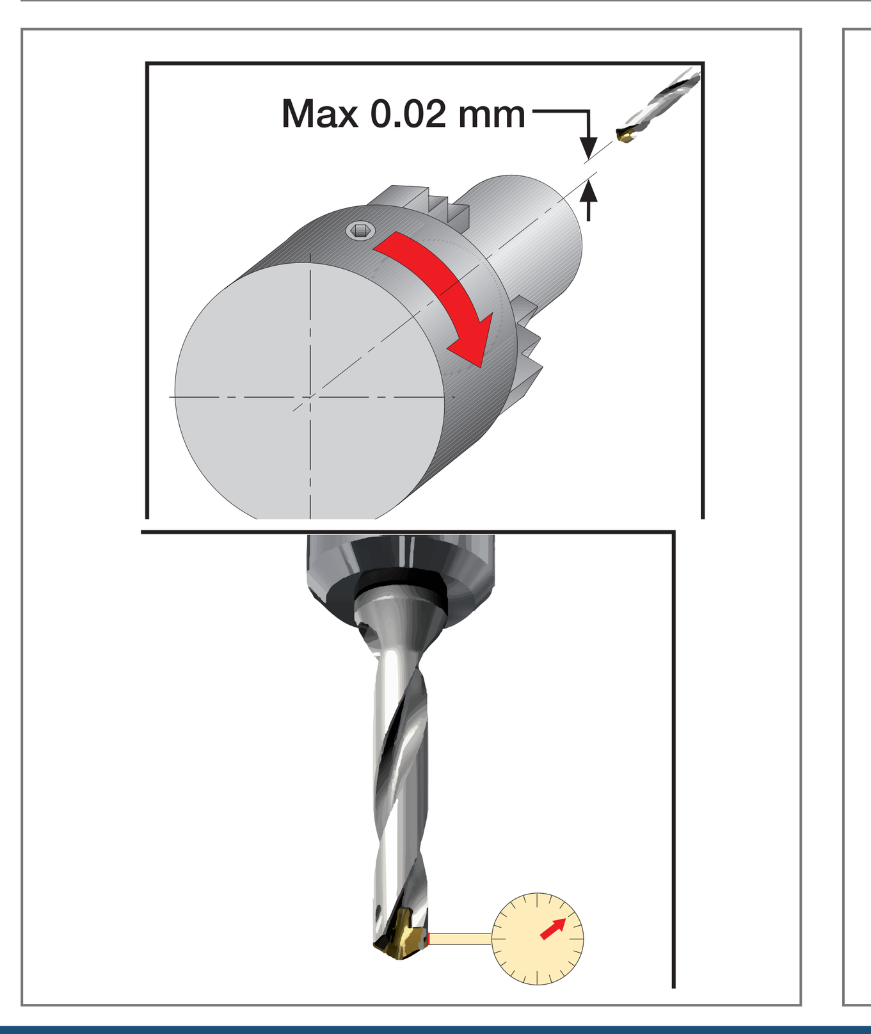
* The calculation of power, torue and axial force were done for the higer round diameter in each range (for example, range of 12-13.9 were calculate with dia. 13.00)

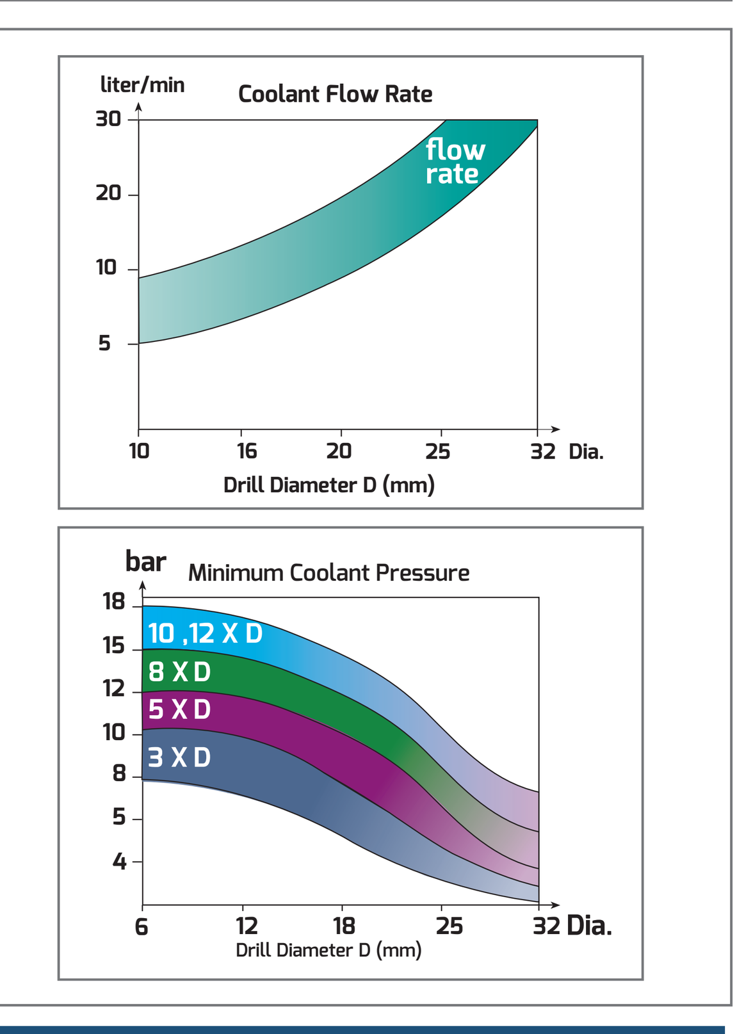
Drilling Head Mounting Procedure



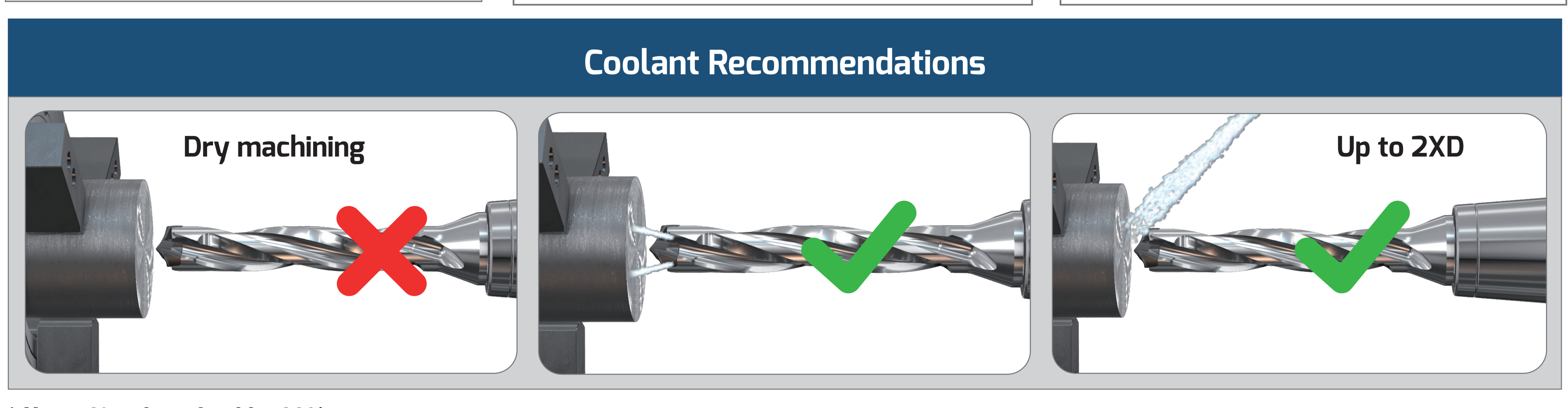
Drilling Limitations





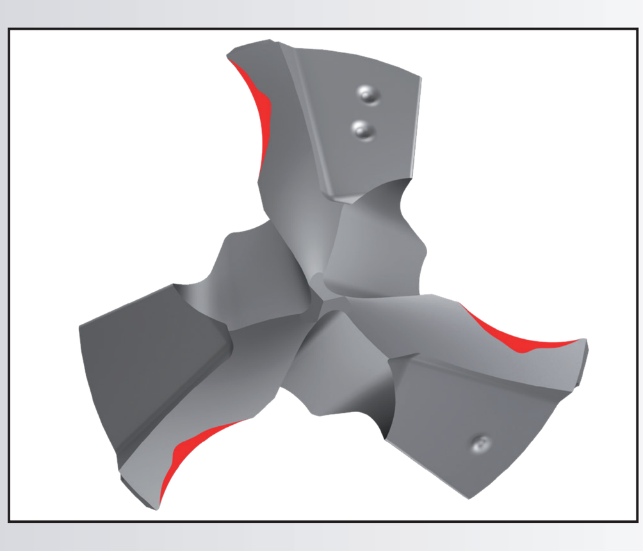


Coolant Recommendations



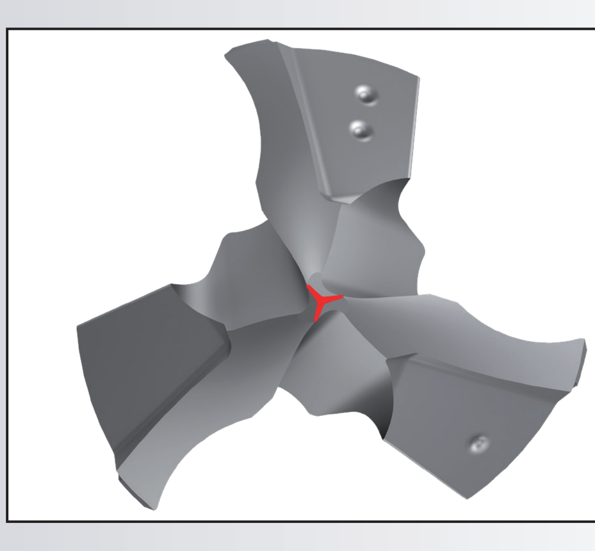
* Up to 6° reduce feed by 20%
* 6°-12° reduce feed by 50%

Troubleshooting



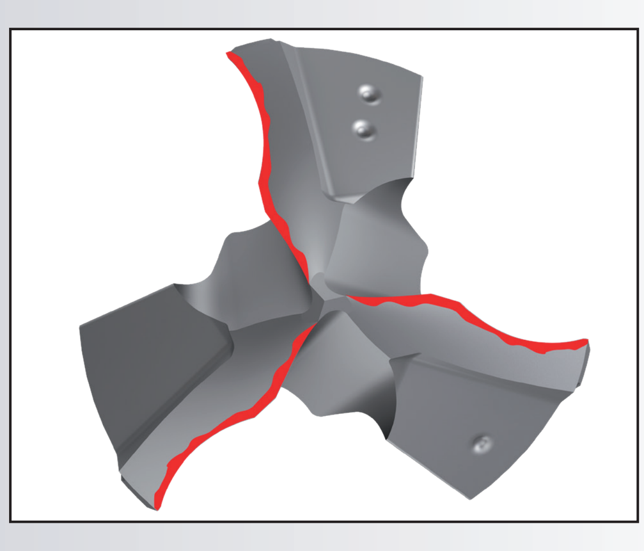
Cutting Edge Chipping

1. Check the stability of the machine spindle, tool and workpiece clamping rigidity.
2. Reduce feed rate, increase speed.
3. If the drill vibrates, reduce cutting speed and increase feed rate.
4. When drilling rough, hard or angled (up to 12° angular surface), reduce the feed rate by 30-50%.
5. Check cooling lubricant. Increase coolant pressure. In case of external coolant supply, improve jet direction and add cooling jets.



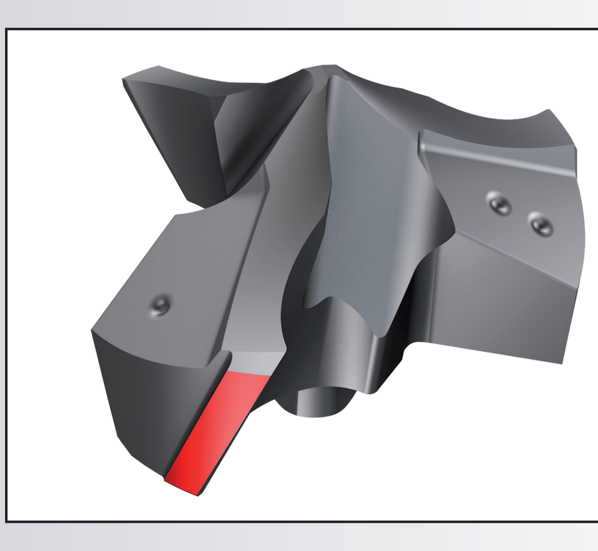
Chisel Area Chipping

1. Reduce feed rate.
2. Increase coolant pressure.
3. Increase workpiece chucking force.



Excessive Flank Wear

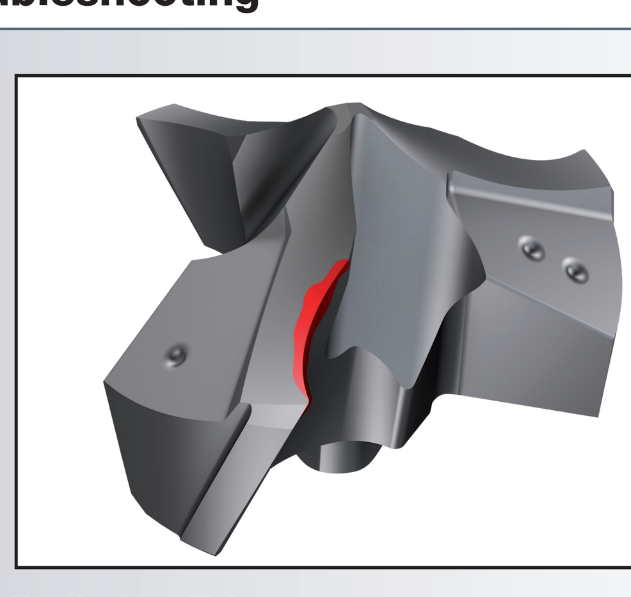
1. Reduce cutting speed.
2. Increase internal coolant pressure.



Excessive Land Wear

1. Check the runout and make sure it is within 0.02 mm T.I.R. (radial and axial).
2. Reduce cutting speed.
3. When drilling rough, hard or angled (up to 12° angular surface), reduce the feed rate by 30-50%.
4. Increase coolant pressure.
5. Check the chisel point runout and make sure it is within 0.02 mm T.I.R.
6. Increase workpiece chucking force stability and rigidity.

Troubleshooting

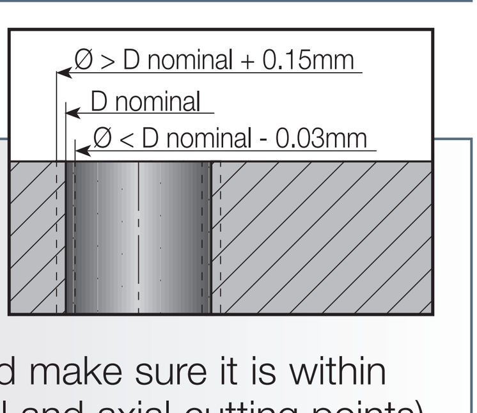


Built-Up Edge

1. Increase cutting speed/feed.
2. Increase coolant pressure.

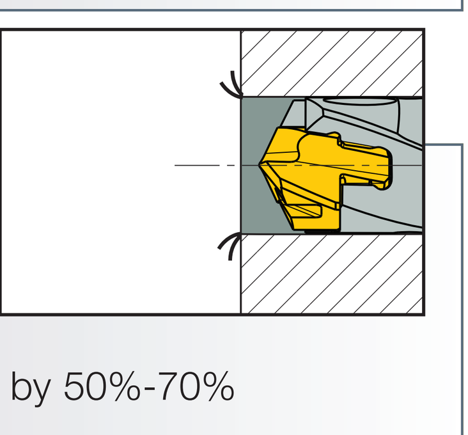
Inaccurate Hole Position

1. Check the runout and make sure it is within 0.02 mm T.I.R. (radial and axial).
2. Check the stability of the machine spindle, tool and workpiece clamping rigidity.
3. When drilling rough, hard or sloped surfaces (up to 12°), reduce the feed rate by 30-50%
4. Drill a pre-hole for centering.
5. Check the chisel point runout and make sure it is within 0.02 mm T.I.R.



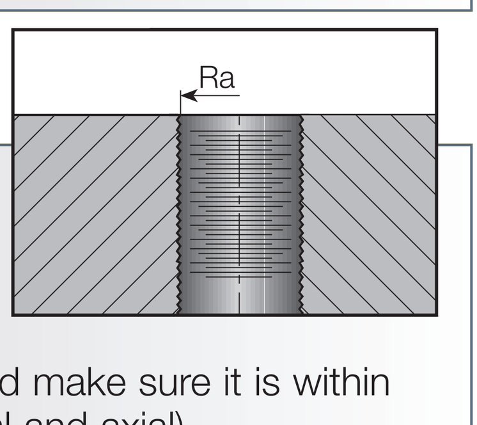
Deviation of Hole Tolerance

1. Check the runout and make sure it is within 0.02 mm T.I.R. (radial and axial cutting points).
2. Reduce feed rate.
3. Check the chisel point runout and make sure it is within 0.02 mm T.I.R.
4. Worn cutting edge. Replace head.
5. Increase workpiece chucking force.
6. Increase internal coolant pressure.



Burr s on Exit

1. Reduce the feed rate by 50%-70% during exit.
2. Replace the worn head.



Surface Finish Too Rough

1. Check the runout and make sure it is within 0.02 mm T.I.R. (radial and axial).
2. Adjust the feed for improved chip formation.
3. In case of chip jamming - increase the coolant flow and/or reduce the cutting speed.
4. Increase the coolant pressure.
5. Check the chisel point runout and make sure it is within 0.02 mm T.I.R.
6. Use pecking cycle.
7. Replace the drilling head