
HOT TAPPING INSTRUCTIONS

Vexve Oy
Pajakatu 11
FI-38200 Sastamala
Finland

Puhelin - Telephone
+358 10 7340 800
Faksi - Telefax
+358 10 7340 839

www.vexve.com
vexve.customer@vexve.com

VAT
FI 22060151
Y-tunnus - Business ID
2206015-1



NAVAL HOT TAPPING TOOL / HOT TAPPING VALVES:

Operating instructions for the NAVAL hot tapping tool when used with NAVAL hot tapping valves.

- Locate the exact point for the joint on the main pipe line and prepare the main pipe for welding of the valve.
- Check the place of the joint on the main pipe (if the main pipe is a weld seam tube, avoid welding the hot tapping valve on the weld seam)
- Prepare the weld end of the hot tapping valve to match the radius (“R”) of the main pipe and taper the edges as required for the best welding result (see figure 1).

The weld seam has to comply with the local requirements for size and strength. A support collar is to be used when necessary.

Note: The threaded end of the valve may be prepared for welding or shortened only after drilling through the main pipe.

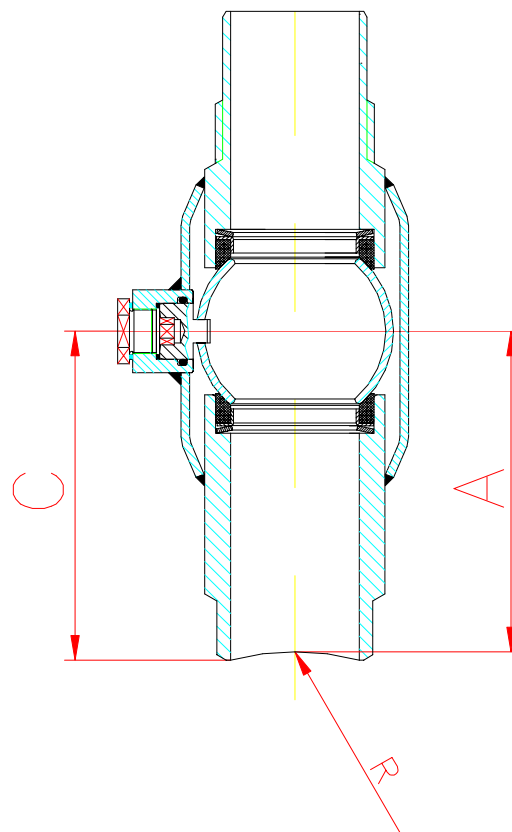


Figure 1

- The valve may be welded to the main pipe at any angle between 0° and 360° (see figure 2), but it must be at a 90° angle to the longitudinal axis of the main pipe (see figure 3).

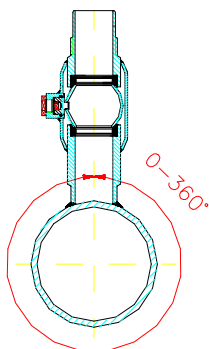


Figure 2

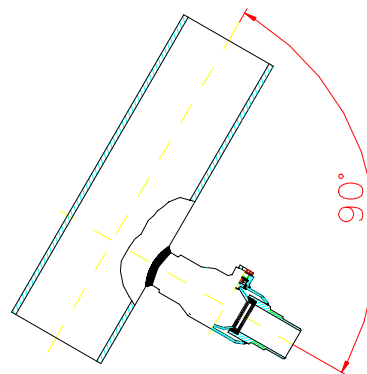


Figure 3

- After welding, the tightness of the seam can be tested e.g. by pressure testing the joint with compressed air through the hot tapping tool's draining valve.
- Now select a hole saw that corresponds to the valve's DN size. Also select a socket and adapter of corresponding size from the case. First install the adapter to the tool and after that install the socket assembly (socket + center drill bit + hole saw) on the shaft of the tool.
- Check that the edge of Frame I is aligned with the groove on Frame II (see figure 4, the groove is on the threaded area of Frame II). This setup corresponds to the maximum feeding distance. This position must not be exceeded under any circumstances when the tool is pressurized. Make sure that the valve is fully OPEN. Attach the complete tool assembly to the threads on the valve and test that the hole saw can freely slide through the ball in the valve.

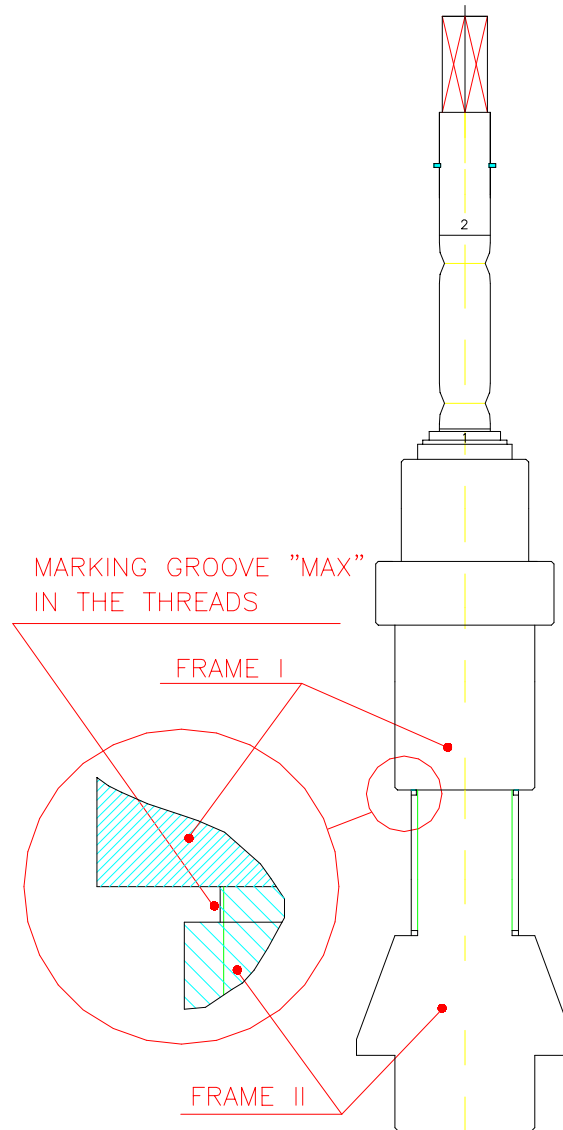


Figure 4

Attach the draining valve with hose to Frame II and close the draining valve.

- Before drilling through the main pipe, test that the valve can be closed:
Release the shaft's locking mechanism by pulling the spring loaded part # 400012 (see appendix 1) and slide out the shaft until it mechanically stops at the outermost position.
Close and open the hot tapping valve to verify it is working properly.
- Select a locking position that corresponds to the size of the hot tapping valve and lock the shaft to the selected position (three alternatives -> see appendix 1)

- Before drilling, check the following details on your drill:
 - the rotation direction must be clockwise
 - the percussion function must not be on under any circumstances
 - select rotation speed: area 1 or 2 (see figure 5)
 - set RPM, scale A – F (see figure 6)

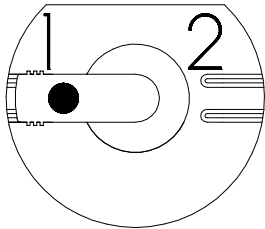


Figure 5

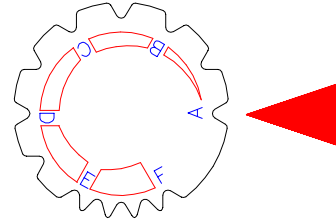
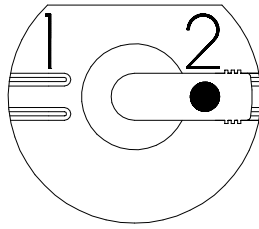


Figure 6

When starting the drilling, i.e. when drilling the center hole, use high RPM (460 RPM), area 2 and scale F. Feed the drill through steadily and smoothly. During drilling, it is recommended to keep the draining valve open to remove the cuttings.

- Stop after only drilling through with the center drill bit. Adjust the speed of rotation area (1 or 2) and scale (A-F) for the actual hole cutting and close the draining valve.
- Feed the hole saw through steadily and smoothly. During cutting, you may keep the draining valve open; close it after finishing.
- Release the shaft locking mechanism and slide the shaft to its outermost position (due to pressure in the valve, the shaft slides out automatically), then close the hot tapping valve.
- Open the draining valve to release the pressure from the hot tapping valve.

NOTE! Before removing the drilling tool from the hot tapping valve, make sure that the valve is fully closed; check the markings at the stem. The tightness of the hot tapping valve must be verified by using the draining valve: no water must flow through the draining valve after the hot tapping valve is closed.

- Disassemble the drilling tool: first, remove the draining valve and after that remove the tool (incl. adapter) from the hot tapping valve. Then remove the parts from the drill.
- Closing the stem by welding:
If required, the stem can be permanently closed by welding. Remove the PTFE sealing underneath the cap. Make sure the stem is properly cooled to avoid damaging its O-rings.

- We recommend the following drills:

MILWAUKEE PD2E 24RS
BOSCH GSB20 – 2 RCE

WHEN USING OTHER DRILLS (brand, type) MAKE SURE THAT THEY FULFILL THE FOLLOWING CRITERIA:

- input power min. 1000 W
- speed of rotation areas Area 1: 0 – 1000 RPM
 Area 2: 0 – 3000 RPM
- required speed adjustments are available for differently-sized hole saws
- the drill's neck diameter must be 43 mm

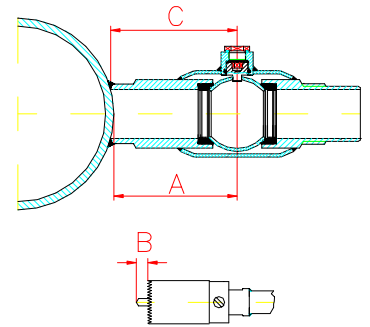
If you select another brand or model, please check with the manufacturer that it fulfills these criteria.

DN 25 – INSTALLATION DIMENSIONS AND RPM SETTING

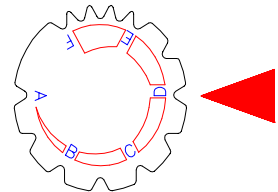
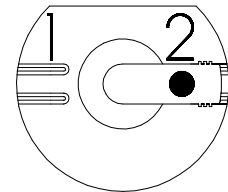
LOCKING GROOVE Nr 1

HOLE SAW Ø 24 mm

MAIN PIPELINE NOMINAL SIZE	A	B	C
DN 32	99 ⁺² ₋₂	20	105
DN40	100 ⁺⁰ ₋₁₀	20	105
DN 50	101 ⁺⁰ ₋₁₀	20	105
DN 65	102 ⁺⁰ ₋₁₀	20	105
DN 80	102 ⁺⁰ ₋₁₀	20	105
DN 100	103 ⁺⁰ ₋₁₀	20	105
DN 125	103 ⁺⁰ ₋₁₀	20	105
DN 150	103 ⁺⁰ ₋₁₀	20	105
DN ≥ 200	105 ⁺⁰ ₋₁₀	20	105



ROTATION SPEED: 370 RPM
AREA 2
SCALE D



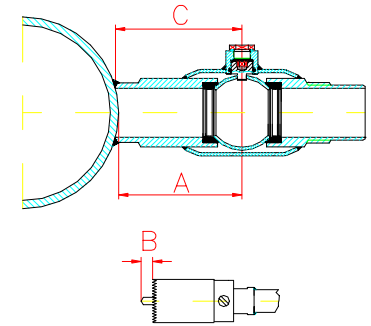
THE ABOVE “A” DIMENSIONS MUST NOT BE EXCEEDED.
WITH MAIN PIPELINE SIZES DN 32-40, THE FEEDING OF THE SAW MUST BE STOPPED
AT LEAST 10 mm BEFORE THE MAXIMUM FEEDING DISTANCE.
THE “A” DIMENSIONS ARE VALID FOR HOLE SAWS MANUFACTURED BY LENOX AND
SANDVIK.

DN 32 – INSTALLATION DIMENSIONS AND RPM SETTING

LOCKING GROOVE Nr 1

HOLE SAW Ø 30 mm

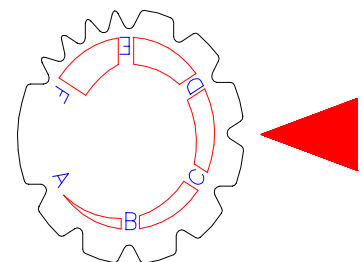
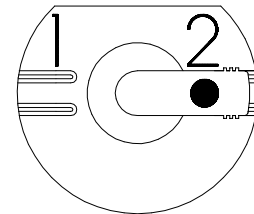
MAIN PIPELINE NOMINAL SIZE	A	B	C
DN 40	85 ⁺² ₋₀	20	93
DN 50	87 ⁺⁰ ₋₁₀	20	93
DN 65	89 ⁺⁰ ₋₁₀	20	93
DN 80	90 ⁺⁰ ₋₁₀	20	93
DN 100	91 ⁺⁰ ₋₁₀	20	93
DN 125	91 ⁺⁰ ₋₁₀	20	93
DN 150	92 ⁺⁰ ₋₁₀	20	93
DN 200	92 ⁺⁰ ₋₁₀	20	93
DN 300	92 ⁺⁰ ₋₁₀	20	93
DN 400	92 ⁺⁰ ₋₁₀	20	93
DN ≥500	93 ⁺⁰ ₋₁₀	20	93



ROTATION SPEED: 285 RPM

AREA 2

SCALE D



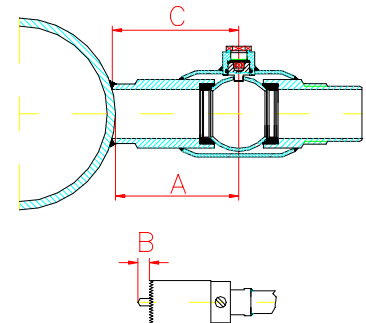
IF THE “A” DIMENSION FOR DN 40 IS, AFTER WELDING, SMALLER THAN THE GIVEN SETTING VALUE OF 85 mm, THE FEEDING DISTANCE MUST BE SHORTENED RESPECTIVELY IN ORDER TO AVOID DRILLING THROUGH THE OTHER SIDE OF THE PIPE WITH THE CENTER DRILL. WITH BIGGER PIPE SIZES THERE IS NO RISK OF DRILLING THROUGH. THE “A” DIMENSIONS ARE VALID FOR HOLE SAWS MANUFACTURED BY LENOX AND SANDVIK.

DN 40 – INSTALLATION DIMENSIONS AND RPM SETTING

LOCKING GROOVE Nr 1

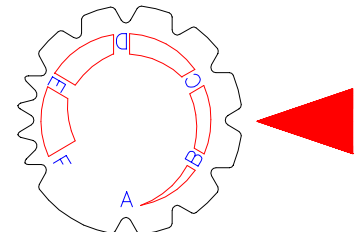
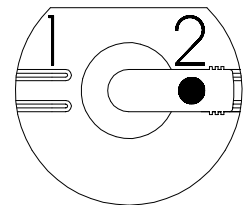
HOLE SAW Ø 38 mm

MAIN PIPELINE NOMINAL SIZE	A	B	C
DN 50	90 ⁺⁰ ₋₁₀	20	111
DN 65	93 ⁺⁰ ₋₁₀	20	111
DN 80	94 ⁺⁰ ₋₁₀	20	111
DN 100	95 ⁺⁰ ₋₁₀	20	111
DN 125	96 ⁺⁰ ₋₁₀	20	111
DN 150	96 ⁺⁰ ₋₁₀	20	111
DN 200	97 ⁺⁰ ₋₁₀	20	111
DN ≥300	98 ⁺⁰ ₋₁₀	20	111



ROTATION SPEED: 230 RPM

AREA 2
SCALE B1



FOR MAIN LINE SIZES ≥ DN100 WITH WALL THICKNESS ≥10mm, IT IS RECOMMENDED TO DEDUCT 10 mm FROM THE ABOVE “A” DIMENSIONS TO GUARANTEE THAT THE HOLE SAW GOES FULLY THROUGH THE WALL OF THE MAIN PIPE.

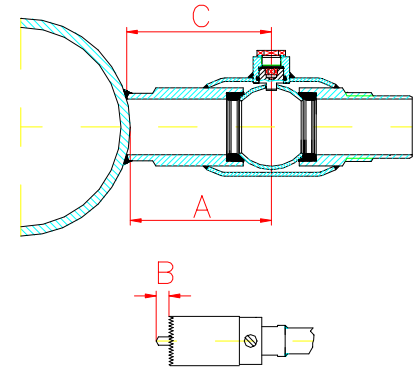
THE ABOVE “A” DIMENSIONS ARE VALID FOR LENOX HOLE SAWS. WHEN USING A SANDVIK HOLE SAW, AN ADDITIONAL 10mm MUST BE DEDUCTED FROM ALL THE ABOVE “A” DIMENSIONS (A 38mm DIAMETER SANDVIK HOLE SAW IS 10mm SHORTER THAN THE RESPECTIVE LENOX HOLE SAW). E.G. DEDUCT 20 mm (10 + 10 mm) FROM THE “A” DIMENSION WHEN A DN 100 PIPELINE WITH WALL THICKNESS ≥ 10 mm IS USED.

DN 50 – INSTALLATION DIMENSIONS AND RPM SETTING

LOCKING GROOVE Nr 2

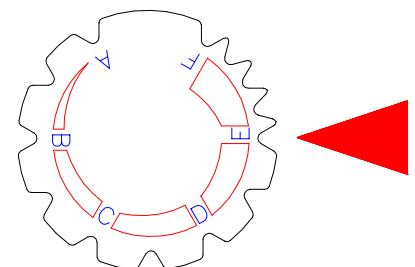
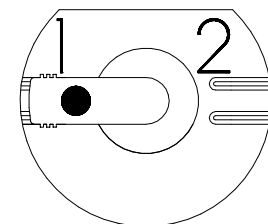
HOLE SAW Ø 48 mm

MAIN PIPELINE NOMINAL SIZE	A	B	C
DN 65	+0 120 -0	20	131
DN 80	+0 121 -10	20	131
DN 100	+0 124 -10	20	131
DN 125	+0 126 -10	20	131
DN 150	+0 127 -10	20	131
DN 200	+0 128 -10	20	131
DN 300	+0 129 -10	20	131
DN 400	+0 129 -10	20	131
DN ≥ 500	+0 131 -10	20	131



ROTATION SPEED:180 RPM

**AREA 1
SCALE E**



THE ABOVE “A” DIMENSIONS MUST NOT BE EXCEEDED.

WITH MAIN PIPELINE SIZES DN 65-80, FEEDING MUST BE STOPPED AT LEAST 10 mm BEFORE THE MAXIMUM FEEDING DISTANCE!

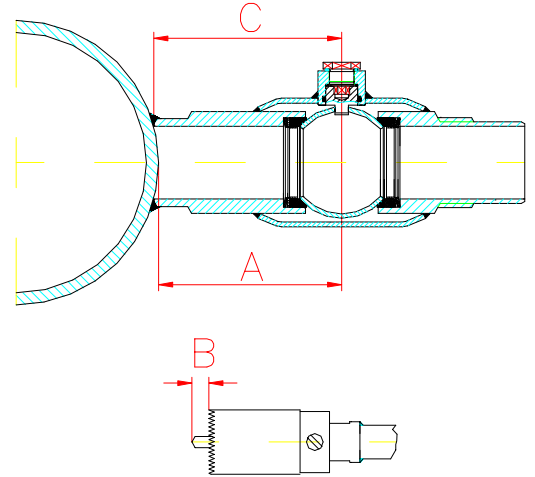
THE “A” DIMENSIONS ARE VALID FOR HOLE SAWS MANUFACTURED BY LENOX AND SANDVIK.

DN 65 – INSTALLATION DIMENSIONS AND RPM SETTING

LOCKING GROOVE Nr 3

HOLE SAW Ø 64 mm

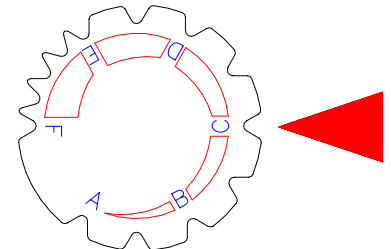
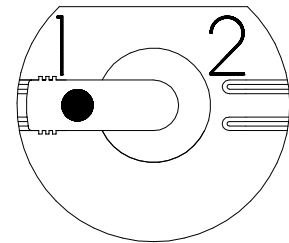
MAIN PIPELINE NOMINAL SIZE	A	B	C
DN 80	+2 123 -0	20	140
DN 100	+0 127 -10	20	140
DN 125	+0 130 -10	20	140
DN 150	+0 132 -10	20	140
DN 200	+0 134 -10	20	140
DN 300	+0 136 -10	20	140
DN 400	+0 137 -10	20	140
DN 500	+0 138 -10	20	140
DN 600	+0 139 -10	20	140
DN ≥800	+0 140 -10	20	140



ROTATION SPEED: 135 RPM

AREA 1

SCALE C



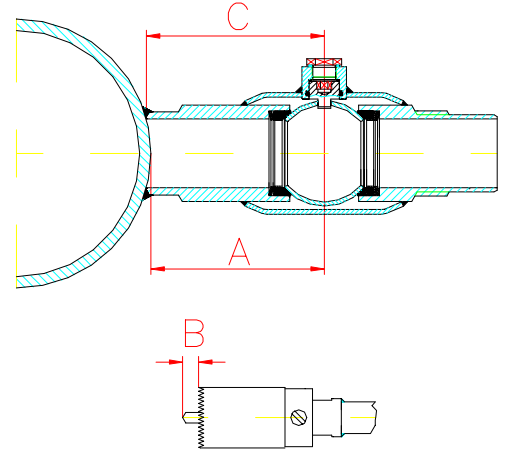
THE “A” DIMENSIONS ARE VALID FOR HOLE SAWS MANUFACTURED BY LENOX AND SANDVIK.

DN 80 – INSTALLATION DIMENSIONS AND RPM SETTING

LOCKING GROOVE Nr 3

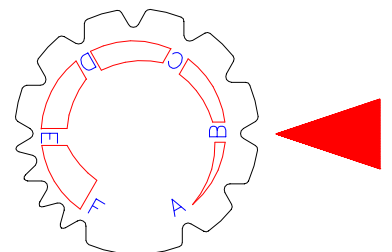
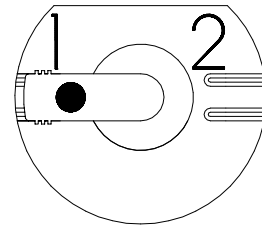
HOLE SAW Ø 76 mm

MAIN PIPELINE NOMINAL SIZE	A	B	C
DN 100	138-10	+0 20	154
DN 125	+0 142-10	20	154
DN 150	+0 145-10	20	154
DN 200	+0 147-10	20	154
DN 250	+0 149-10	20	154
DN 300	+0 150-10	20	154
DN 400	+0 151-10	20	154
DN 500	+0 152-10	20	154
DN 600	+0 153 -10	20	154
DN ≥800	+0 154 -10	20	154



ROTATION SPEED: 115 RPM

AREA 1
VALID B



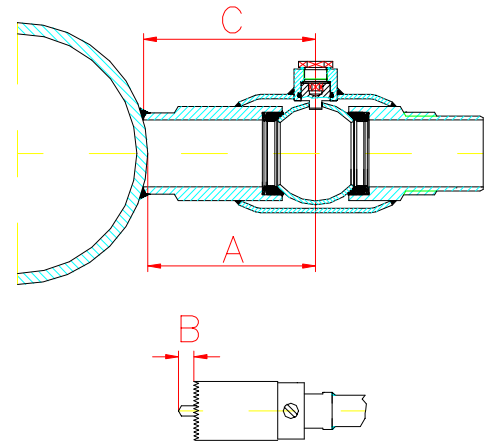
THE “A” DIMENSIONS ARE VALID FOR HOLE SAWS MANUFACTURED BY LENOX AND SANDVIK.

DN 100 – INSTALLATION DIMENSIONS AND RPM SETTING

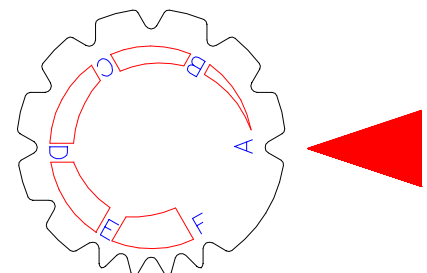
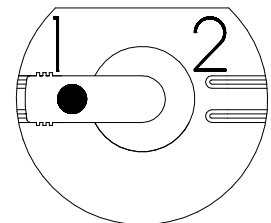
LOCKING GROOVE Nr 3

HOLE SAW Ø 95 mm

MAIN PIPELINE NOMINAL SIZE	A	B	C
DN 125	+0 132-10	20	157
DN 150	+0 138-10	20	157
DN 200	+0 143-10	20	157
DN 250	+0 146-10	20	157
DN 300	+0 148-10	20	157
DN 400	+0 150-10	20	157
DN 500	+0 152-10	20	157
DN 600	+0 154-10	20	157
DN ≥ 800	+0 157-10	20	157



ROTATION SPEED: 90 RPM
AREA 1
SCALE A



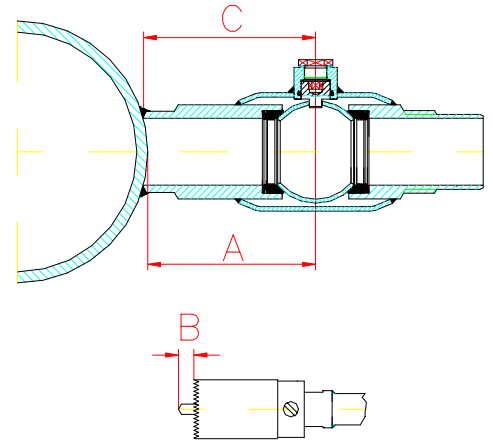
**THE “A” DIMENSIONS ARE VALID FOR HOLE SAWS
 MANUFACTURED BY LENOX AND SANDVIK.**

DN 125/150 – INSTALLATION DIMENSIONS AND RPM SETTING

LOCKING GROOVE Nr 3

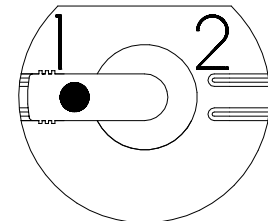
HOLESAW Ø 121 mm

MAIN PIPELINE NOMINAL SIZE	A	B	C
DN 200	+0 153-10	20	175
DN 250	+0 158-10	20	175
DN 300	+0 161-10	20	175
DN 400	+0 165-10	20	175
DN 500	+0 165-10	20	175
DN 600	+0 168-10	20	175
DN ≥ 800	+0 170-10	20	175

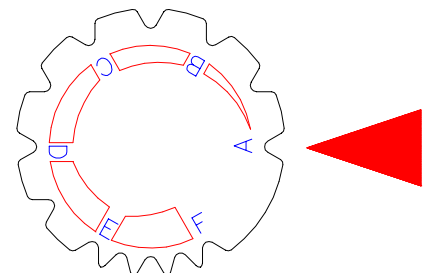


ROTATION SPEED: 90 RPM

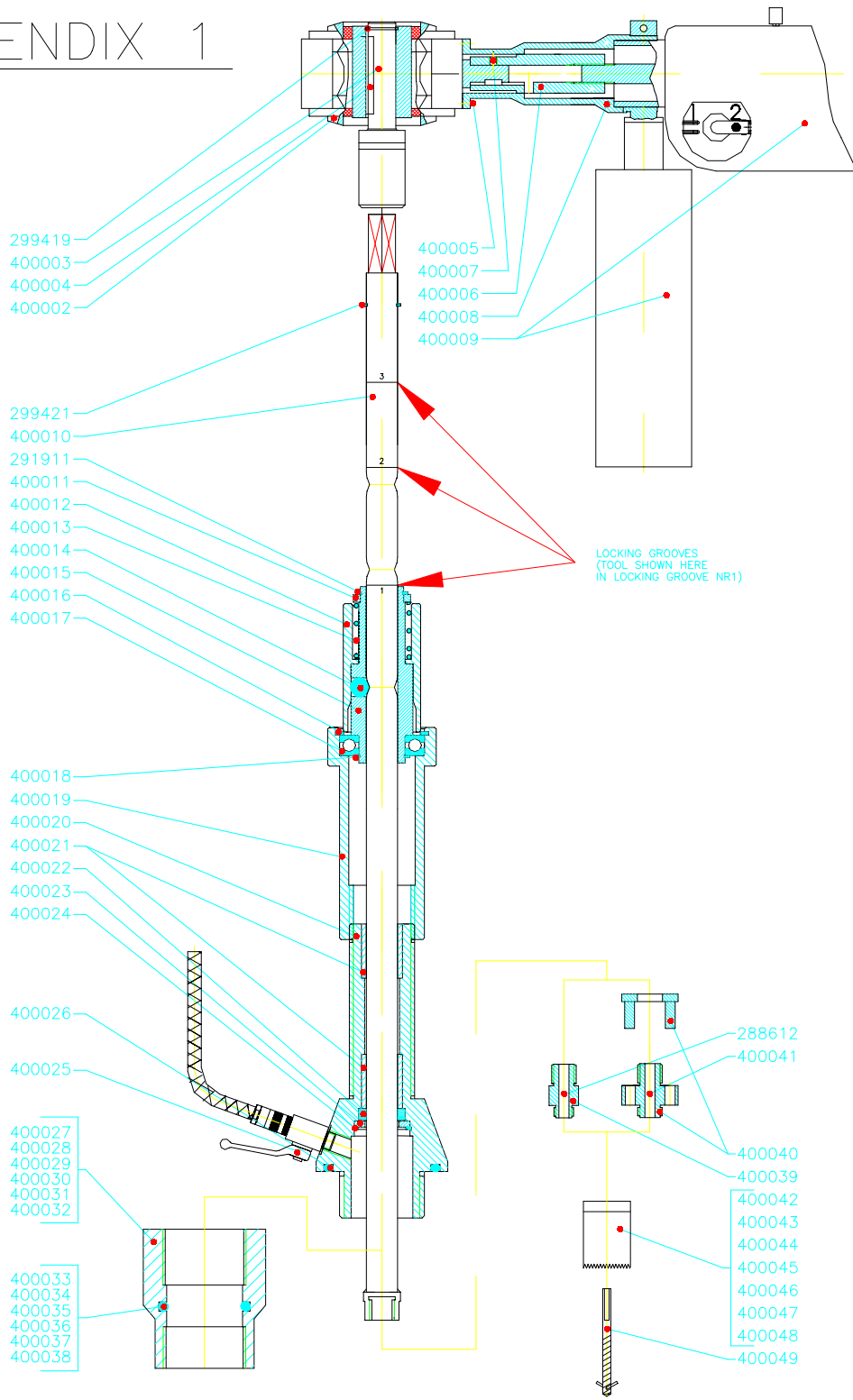
AREA 1
SCALE A



**THE “A” DIMENSIONS ARE VALID FOR HOLE
SAWS
MANUFACTURED BY LENOX AND SANDVIK.**



APPENDIX 1



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