Operating and Maintenance Instructions for

Tapping Machine “Hawlomat”

Order No. 830-00, 830-01

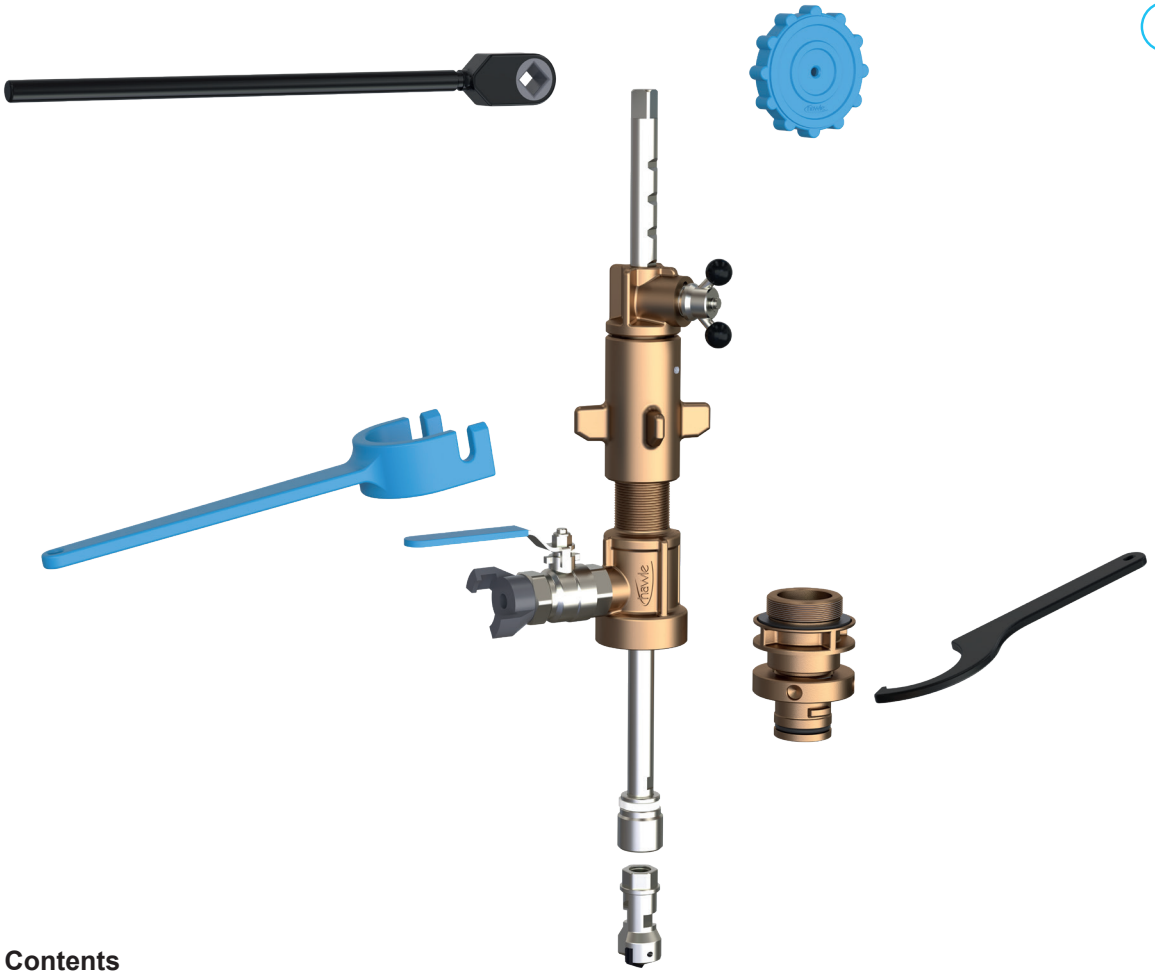


Table of Contents

1. Intended Use / Product Description

Medium:	Potable water / municipal wastewater (per EN1085)
Operating temperature:	0°- 40°C
Max. operating pressure:	16 bar
Material:	see parts list UBA-BWGL metals**

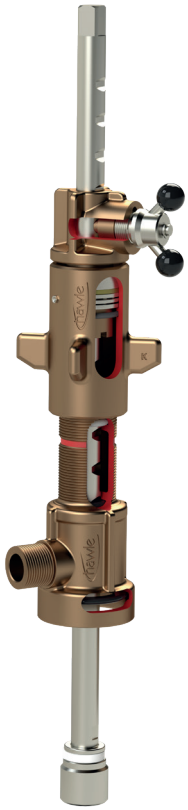
The tapping machine “Hawlomat” is used as standard for tapping water and wastewater pipes made of cast iron, cast iron with cement lining, steel, steel with cement lining, PVC, PE, and AC. Tapping diameters from Ø 24 mm up to max. Ø 65 mm (or Ø 68 mm when using an HSS bimetal hole saw) are permitted.
In combination with a suitable tapping fitting, tapping is possible while the line remains in service.

⚠ The components and seals of the tapping machine “Hawlomat” are rated for a maximum pressure of 16 bar. However, for reasons of occupational safety, we recommend a max. working pressure of 8 bar.

Tapping of the Free Flow Underground Hydrant Order No. 490-00, the Air Release Valve Set Order No. 993-00, the Hawlinger for subsequent tapping Order No. 245-02, and the 45° ZAK69 tapping Order No. 524-00 is also possible. In addition, the tapping machine “Hawlomat” can be used for special applications such as fitting tapping hole sleeves Order No. 835-01 or tapping hole sealing sleeves Order No. 835-00. Please observe the respective operating instructions for this.

The applicable standards and codes of practice, accident prevention regulations, and the requirements of the relevant trade associations must be observed and complied with during the tapping process.
The tapping machine and its associated tools may only be used by qualified and instructed skilled personnel.
For tapping in the drinking water sector, please also observe DVGW technical bulletin W 333 “Tapping Fittings and Tapping Procedure in Water Supply”.
When used in the municipal wastewater sector, the relevant regulations must be observed.
For work with asbestos cement pipes, the current regulations must be observed. (DGUV low-emission procedures for activities with low exposure per No. 2.9 TRGS 519 / BT 1 asbestos cement (AC) water pipelines – tapping procedure).

2. Delivery Variants

		
Order No. 830 000 0000 (830-00) Tapping Machine “Hawlomat”	Order No. 830 010 0000 (830-01) Tapping Machine “Hawlomat” Drinking Water **Base unit in Systainer case with:** Feed key, ratchet, hook wrench, ball valve, and GEKA threaded piece	Order No. 830 010 0020 (830-01) Tapping Machine “Hawlomat” Wastewater **Base unit in Systainer case with:** Feed key, ratchet, hook wrench, ball valve, and GEKA threaded piece

3. Accessories

3.1 Tapping adapter for tapping machine “Hawlomat” / special tapping adapter Order No 831-00

Example images: Tapping adapter ZAK46

Tapping adapter Thread 1 ½"

Order No. 831-00 Tapping Adapter – see separate overview table

3.2 Drilling tool and accessories for tapping machine “Hawlomat” Order No. 831-01

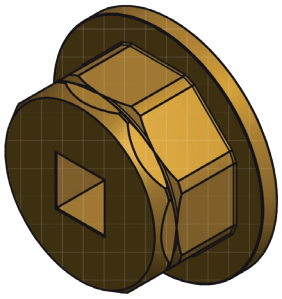
Typ 100 Typ 101 Typ 102 Typ 103 Typ 104 Typ 105 Typ 106 Typ 107

Order No. 831-01 Drilling Tool and Accessories – see separate overview table

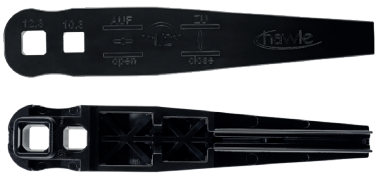
3.3 Further accessories Order No. 831-00

Order No. 849 000 0024
Handwheel blue, internal square 16 mm

Order No. 831 003 9991
Adapter for cordless drill



Order No. 831 700 0851
Adapter for electric drive Rems, Ridgid



Order No. 249 000 0005
Wedge wrench

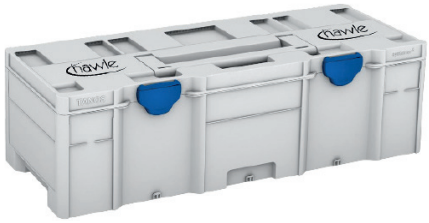
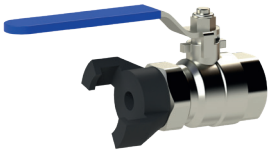
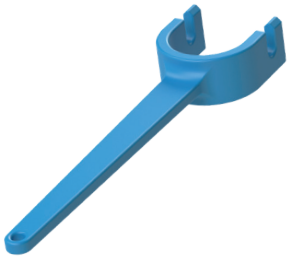
Order No. 600 000 0015
Spindle grease

Order No. 831 700 0100
Hex key SW 2.5

Order No. 835 011 0005 Drill spindle length 580 mm (included in tapping machine “Hawlomat” Order No. 830-00, 830-01)

Special lengths:
Order No. 831 200 1003 Drill spindle length 780 mm
Order No. 831 200 1006 Drill spindle length 1000 mm
Order No. 831 900 0002 Drill spindle length 1800 mm

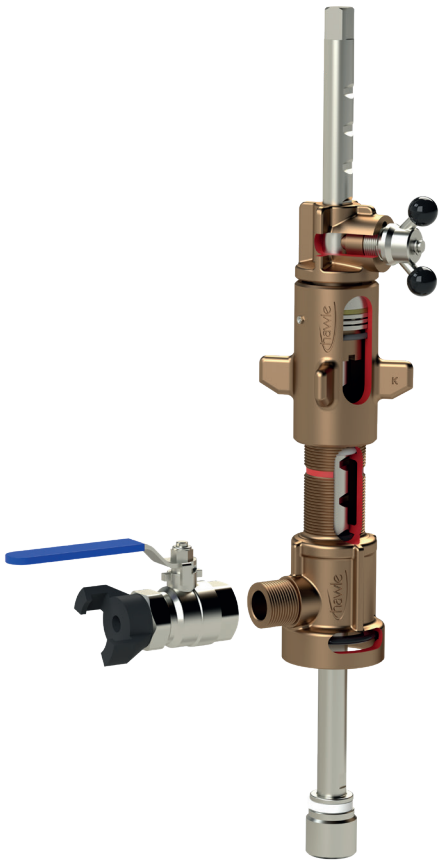
Order No. 831 200 1050 Extension 800 mm for drill spindle
Order No. 831 200 1055 Extension 1000 mm for drill spindle

		
Order No. 8 317 0100 Systainer water Order No. 8 317 0110 Insert for Systainer water Systainer and matching insert included in base unit Order No. 830-01 for drinking water	Order No. 8 317 0120 Systainer wastewater Order No. 8 317 0130 Insert for Systainer wastewater Systainer and matching insert included in base unit Order No. 830-01 for wastewater	Order No. 831 009 0000 Ball valve 1" Order No. 9 850 0004 Geka threaded piece Ball valve and Geka threaded piece included in base unit Order No. 830-01
		
Order No. 831 700 0500 Feed key Included in base unit Order No. 830-01	Order No. 831 700 0400 Ratchet, square 16 mm Included in base unit Order No. 830-01	Order No. 831 700 0601 Hook wrench Included in base unit Order No. 830-01

4. Preparation / Assembly / Tapping Process

	Depending on pipe type: motor drive for tapping machine “Hawlomat”. See the overview table for drilling tool and accessories Order No. 831-01.

4.1 Preparation



Fit the valve onto the pipe in accordance with its operating instructions and carry out a pressure test.

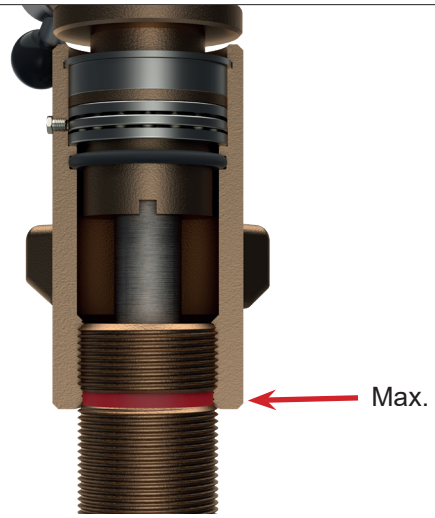
Check the tapping machine for proper technical condition (see item 7, Maintenance and Servicing)

Screw on the ball valve and Geka threaded piece.

Select the tapping adapter (see item 3.1) according to the valve to be tapped.

Select a suitable drilling tool and accessories (see item 3.2) according to pipe type and diameter.

Please check the drilling tool and accessories are in proper technical condition. Have defective drill bits/cutters reground or replace them before use.



Turn the feed nut (4) to the red-marked notch.

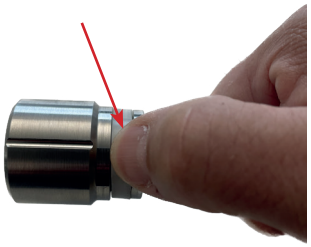
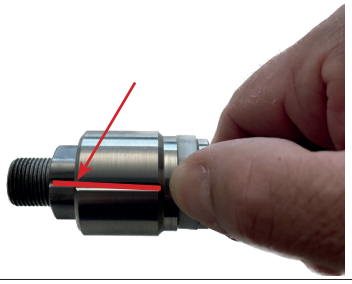
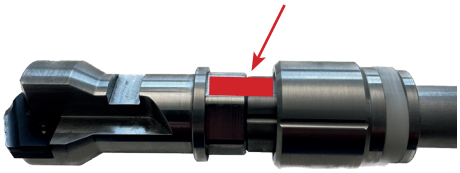
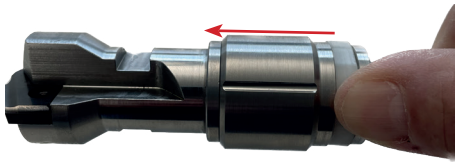
⚠ **CAUTION**: The mark is the max. permitted feed range

4.2 Fitting the Drilling Tool

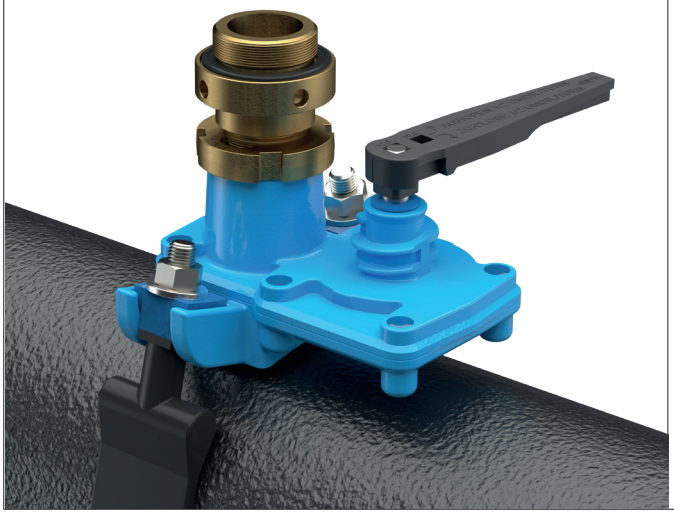
Example:
Carbide indexable-insert bit with hex shank.

Fit the drilling tool, with or without adapter, onto the drill spindle (1).

Please note: if the locking sleeve system is not used, the locking sleeve together with the locking ring can be pulled off the drill spindle.

	Unlock the locking sleeve by pressing the locking ring (POM) at the notch (mark on the locking sleeve).
	Pull back the locking sleeve, making sure that the notches on the drill spindle and locking sleeve align.
	Screw the drilling tool (and any accessories) with a hex shank hand-tight until it seats fully, then back it off only far enough that the flats of the drill/adapter and the drill spindle align.
	Unlock the locking sleeve by pressing the locking ring (POM) at the notch.
	Push the sliding sleeve fully over both hex sections and allow it to lock. Check that the lock is secure!

4.3 Fitting the Tapping Machine onto the Valve

	Check the valve to be tapped for proper function and bring it to the open position. Fit the tapping adapter onto the valve and tighten with the hook wrench. If possible, fill the valve with potable water. This cools the drilling tool at the start of tapping and increases its service life (not necessary for PE pipes).

Fully retract the drill spindle (1) with the fitted drilling tool into the tapping machine and secure it with the clamping screw (3) (to prevent it falling out unintentionally).

Screw the tapping machine with adapter onto the valve. Make sure it is seated correctly and securely.

Connect the flushing hose and bring the ball valve to the open position.

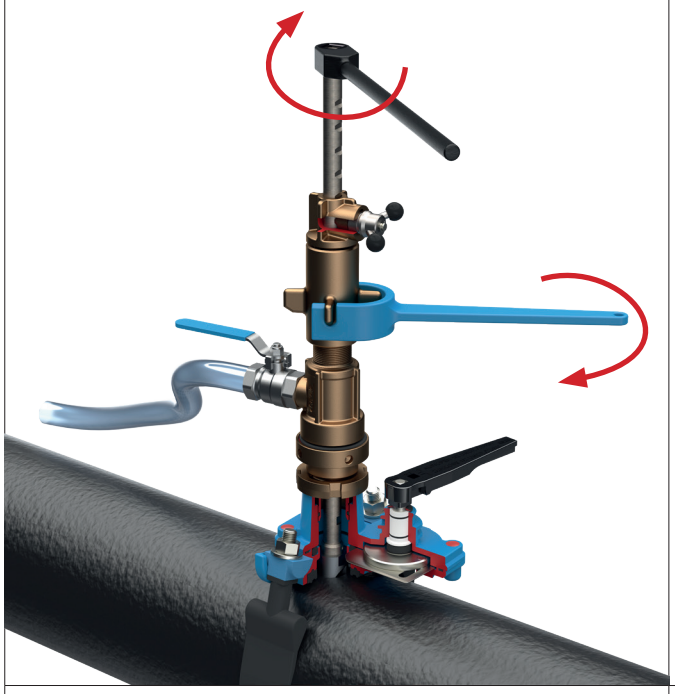
4.4 Tapping Process

Open the clamping screw (3) and carefully lower the drill spindle with fitted drilling tool onto the crown of the pipe. Avoid striking the drilling tool against the pipe.
Choose the position of the notches on the drill spindle so that they align with the clamping screw.
Let the clamping screw (3) engage in the nearest notch and secure it by hand. If necessary, turn the feed nut (4) to help find the notch. If the drill spindle (1) had to be moved away from the pipe to do this, carefully bring the drilling tool back to the pipe crown using the feed nut (4).
Fit a ratchet or suitable motor drive (for matching accessories see the separate overview table for drilling tool and accessories Order No. 831-01).

Before starting the tapping process, ensure a firm and secure stance at the workplace!

CAUTION: Power-driven tapping must only ever be carried out with slow-running drives (no-load speed up to 100 rpm). Excessive speed can damage the tapping machine and drill bits. There is also a risk of injury. For electric drives, the relevant VDE guidelines (e.g. isolating transformer) must be observed without fail. Danger to life!
The tapping machine is designed for manual operation. There is no CE declaration of conformity under the Machinery Directive for motor-driven operation.

For low drilling forces, e.g. with PE or PVC pipes, the feed nut (4) can be operated by hand. For cast iron, steel, and AC pipes, the feed key must be used to operate the feed nut (4). To do so, it is held from below against the drive dogs of the feed nut.



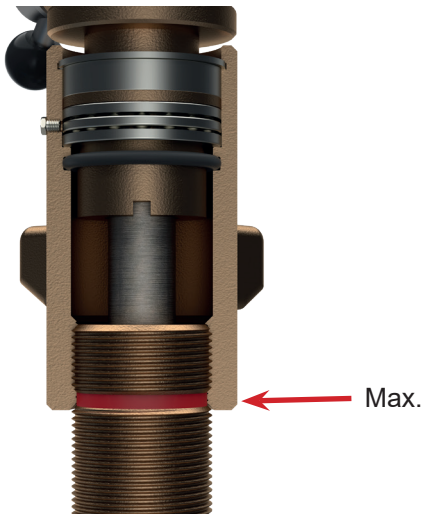
Turn the drill spindle (1) clockwise using the ratchet or motor drive, keeping the speed as constant as possible.

As soon as the drill spindle (1) is moving, turn the feed nut (4) to the right in steps of approx. ¼ turn, depending on the resistance encountered, to advance the feed. This must be done slowly and evenly.

Note: excessive feed causes the drilling tools to wear faster and may result in breakage of the drilling tool.

For cast iron or steel pipes with or without cement lining, and for AC pipes, the feed motion must be paused intermittently during drilling to allow the drilling tool to clear itself.

CAUTION: Risk of injury from rotating parts!



If the feed travel is insufficient and the feed nut (4) reaches the machine's lower housing part (5) before tapping is complete, interrupt the tapping process and proceed as follows:
Remove the ratchet or motor drive and replace it with the handwheel. Secure the drill spindle (1) against extending, hold it in position, and open the clamping screw (3). Turn the feed nut (4) back as far as the red mark and re-secure the spindle (1) at a suitable notch by tightening the clamping screw (3).
Replace the handwheel with the ratchet or motor drive again and continue the tapping process as described.

CAUTION: When opening the clamping screw (3), the pressure of the medium may force the drill spindle (1) upward uncontrollably due to water pressure. This must be watched for throughout the entire tapping process. Standing above the spindle is therefore prohibited throughout the entire tapping process. Risk of injury!

From the moment water emerges through the ball valve, the drilling swarf produced is flushed out and the drilling tool is optimally cooled.
Please note: water emerging does not indicate that the tapping is fully complete!

CAUTION: For tapping wastewater lines, flushing is dispensed with entirely; the ball valve remains closed throughout the entire tapping process. For exceptional cases where flushing is carried out, precautions must be taken in accordance with the applicable regulations! This applies in particular to the tapping of AC pipes!

When tapping drinking water pipes, the ball valve must be held open during and after drilling until all remaining swarf has been flushed out.

When tapping with two-edged tools, the feed must be reduced after breakthrough into the pipe, since the drilling tool then only cuts at two opposing points, which may result in uneven cutting action – risk of “snagging”, which can cause the drilling tool to break!

The tapping hole must be drilled completely clear.

Tapping is complete once the feed resistance has noticeably decreased and no further counterforce can be felt.

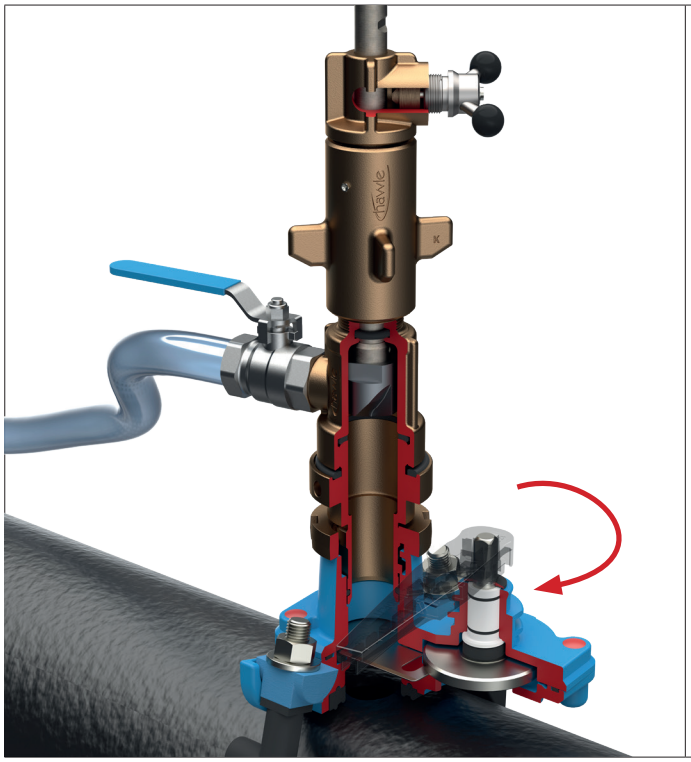
CAUTION:
The drilling tool must not penetrate the pipe beyond its full length. Otherwise there is a risk that the drilling tool cannot be retracted back into the hole!
After drilling, open the clamping screw (3) and fully retract the drill spindle (1).

CAUTION:
When opening the clamping screw (3), the pressure of the medium may force the drill spindle (1) upward uncontrollably due to water pressure. This must be watched for throughout the entire tapping process. Standing above the spindle is therefore prohibited throughout the entire tapping process. Risk of injury!

Secure the drill spindle (1) with the clamping screw (3).

By slowly operating the ball valve, flush all drilling residue completely out of the valve.

4.5 Removing the Tapping Machine from the Valve



Close the valve.

Relieve the pressure in the valve by opening the ball valve.

Unscrew the tapping machine from the tapping adapter. Loosen and remove the tapping adapter from the valve using the hook wrench.

Tapping is complete and the required connection can now be made.

After tapping, the drilling tool must be removed from the tapping machine, and, if a hole cutter or hole saw was used, the core must be removed.

Clean and dry the tapping adapter and drilling tool, and check for wear or damage.

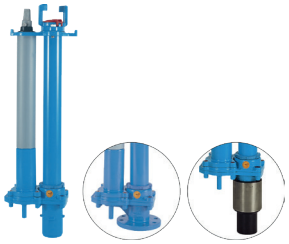
5. Pressure Test

After successful tapping, a pressure test must be carried out in the open pipe trench, observing the maximum operating pressures per the DVGW code of practice. Please also observe the operating instructions for the tapping fitting. Following the leak test, a functional check must be carried out.

6. Special Applications

6.1 Tapping the Free Flow Underground Hydrant Order No. 490-00

See the separate operating instructions for this.



6.2 Tapping the Air Release Valve Set Order No. 993-00

See the separate operating instructions for this.

6.3 Hawlinger “Subsequent Tapping” Order No. 245-02

See the separate operating instructions for this.

6.4 Tapping with Tapping Set ZAK69 for 45° tapping Order No. 831-02 for HAKU Tapping Saddle with ZAK® Outlet (ZAK69) 45° Order No. 524-00

See the separate operating instructions for this.

6.5 Fitting a Tapping Hole Sleeve Order No 835-01

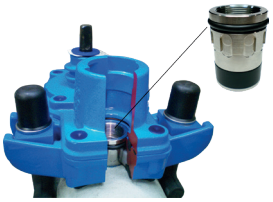
See the separate operating instructions for this.

See also the product video.

6.6 Fitting a Tapping Hole Sealing Sleeve Order No. 835-00

See the separate operating instructions for this.

See also the product video.



7. Maintenance and Servicing

Keep the machine well maintained. Excessive force is not required and damages the tapping machine and the drilling tool. The tapping machine should be cleaned regularly and lubricated via the funnel grease nipple in the feed nut (4) with a grease approved for drinking water.
The drilling tool must be checked before and after each tapping process and reground or replaced as necessary. The drill spindle (1) must be given an even, thin coat of spindle grease. The threads between the feed nut (4) and the lower housing part (5), as well as on the clamping screw (3) and the tapping adapter (6), must be kept clean and regularly given a thin coat of a grease approved for drinking water. Regular maintenance work should also include checking the O-rings (12) and the clamping screw (3).
After tapping, the tapping machine, together with its tools, adapters, and the drilling tool, should be dried completely and stored in the Systainer case.

CAUTION: Risk of injury if parts continue to be used despite damage!

** Brass/gunmetal components > 0.1% lead in accordance with Regulation (EU) No. 1907/2006 (REACH Regulation)

If you have any questions or require further information, please contact:

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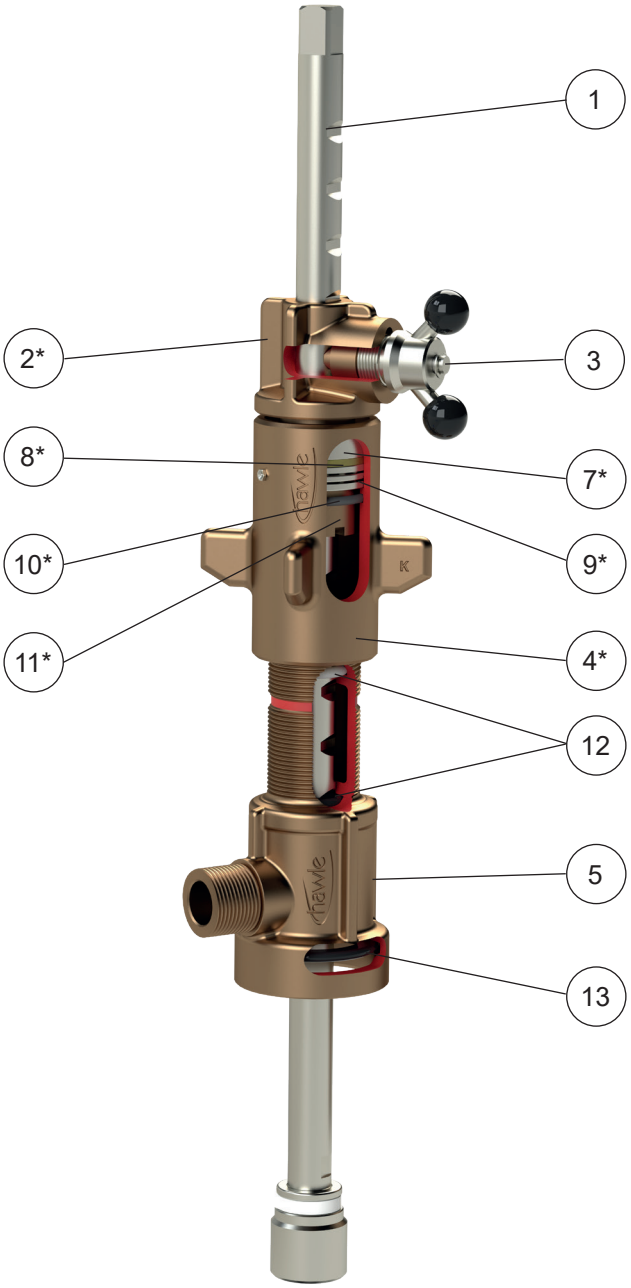
Tapping Machine “Hawlomat”

Parts List



No.	Qty.	Short Description	Material	No.	Qty.	Short Description	Material
1	1	Drill spindle L: 580 mm (Order No. 835 011 0005)	Stainless steel	7*	1	Deep groove ball bearing	
2*	1	Clamping piece	Gunmetal	8*	1	Spacer washer	Brass
3	1	Clamping screw, complete (Order No. 831 800 0003)	Stainless steel / plastic	9*	1	Axial deep groove ball bearing	
4*	1	Feed nut	Gunmetal	10*	1	O-ring	NBR
5	1	Lower housing part (Order No. 831 800 0010)	Gunmetal	11*	1	Safety nut	Brass
6	1	Tapping adapter, see 3.1	Brass	12	2	O-ring (Order No. 831 800 0007)	NBR
				13	1	Profile gasket (Order No. 831 800 0050)	EPDM

* Caution: on-site repair is not recommended! If needed, order the complete upper part (Order No. 831 800 0001), consisting of the following items: 2. Clamping piece, 4. Feed nut, 7. Deep groove ball bearing, 8. Spacer washer, 9. Axial deep groove ball bearing, 10. O-ring, 11. Safety nut When replacing the upper part, it is also recommended to replace both O-rings, item 12.