evoqua
WATER TECHNOLOGIES

WALLACE & TIERNAN® VACUUM GAS FEEDER FOR Cl_2 AND SO_2, V10K AUTOMATIC

INSTRUCTION MANUAL

Please note

Original manual!

Contents

1. Introduction

1.1 Documentation

1.1.1 Target groups

This instruction manual is intended to provide assembly, operating, and maintenance personnel with the information they need for running and servicing the V10k remote vacuum gas metering system.

This instruction manual contains important information which will enable the operator to run the system in a safe, reliable, trouble-free, and economical way. Carefully observing these instructions will help to avoid dangers, reduce repair costs and down times, improve the system's reliability, and prolong its service life.

The chapter „Installation“ and parts of the chapter „Maintenance“ are intended exclusively for Evoqua-authorized technicians or specialists trained and authorized by Evoqua. These sections contain important information on assembling, configuring, and commissioning the system and on maintenance and repair work.

All persons working with the system must have read and understood the instruction manual, in particular the safety instructions it contains.

Please consult the table of contents and the index to quickly find the information you require.

1.2 Conventions

Notes This Instruction manual contains a number of notes with different priorities marked with symbols.

Picto-gram	Note	Meaning
	*Warning!*	Danger to life and limb! If the situation is not handled properly, death or serious injury may be the result.
	*Caution!*	If this warning is not observed, medium or slight injury or damage to the equipment may the result.
	*Warning!*	Electrical hazard.
	*Note*	These notes assist in the operation of the system.

2. Safety

2.1 Intended use

The V10k chlorinator is the central item of a disinfection system which doses chlorine gas or sulphur dioxide gas into a flow of water. For the use with carbon dioxide a separate instruction manual is available.

The V10k vacuum gas metering system must be connected to a vacuum gas supply.

Action time is up to 100%.

Other use is prohibited without permission from Evoqua.

The operational safety of the system can only be guaranteed if it is used in accordance with its intended purpose. It may only be used for the purpose defined in the contract and under the installation, operating and environmental conditions stated in this operating manual. No substances (chemicals) may be used other than those described in this instruction manual. All inspection and maintenance work must be carried out at the prescribed intervals.

Compliance with the intended use also includes reading this operating manual and observing all the instructions it contains.

The operator bears full and sole responsibility if this unit is put to any use which does not comply strictly and exclusively with this intended use.

Not intended use

Not intended use is especially

- use of other media (other gases)
- gas supply under pressure

2.2 General safety instructions

Evoqua Water Technologies GmbH attaches great importance to the safety of all work relating to the system. This was already taken into account in the design of the system, by the integration of safety features.

Safety instructions

The safety instructions in this documentation must always be observed. These do not affect the validity of any additional national or company safety instructions.

Safety instructions printed on the system

All safety instructions attached to the system must be observed. They must always be complete and easily legible.

Technical standard

The system has been constructed using the best available technology and according to the accepted safety regulations. However, danger to the life and limbs of users or third parties or damage to the system or other property cannot be ruled out if the system, if the system is used by unqualified persons. Installation and maintenance, as well as any work that is not described in this operating manual may only be performed by authorized personnel.

Personnel

The operator of the overall system must ensure that only authorized and qualified technicians can work on or with the system, and within their specified area of responsibility.

"Authorized and qualified personnel" include:

Operation and Maintenance leve 1

Personnel of the operator who have been trained and instructed by Evoqua or a service partner.

Installation, Commissioning and Maintenance level 2

Only Evoqua service personnel or personnel who have been trained and authorized by Evoqua

Electrical work

Authorized and qualified electrical technicians

Spare parts / components

The trouble-free operation of the system can only be guaranteed, if original spare parts and components are used in the combination described in this instruction manual. Otherwise there is a danger of malfunction or damage to the system.

Modifications and extensions

Never attempt to rebuild, modify or extend the system without written approval from the manufacturer!

Electrical power

Connect cables in accordance with the wiring diagram.
During normal operation, the positioner must remain closed.
Switch off the plant before starting mounting, inspection, maintenance or repair, secure against switching-on.

Waste disposal

Ensure safe and environmentally-friendly disposal of agents and replaced parts.

2.3 Safety instructions specific to the V10k system

Warning!

Danger due to chlorine gas/sulphur dioxide!
Chlorine gas or sulphur dioxide gas irritates the respiratory tracts. Contact with chlorine or sulphur dioxide gas in high concentrations irritates and damages the membranes, respiratory system and the skin. In extreme cases death can result due to suffocation.

Note

In this manual the use of the V10k system with chorine gas is described. The safety instructions for chlorine are similar to those for sulphur dioxide. When sulphur dioxide is used refer to the safety informations of the gas supplier (e.g. the safety data sheet).

- This unit may only be installed and serviced by qualified personnel who are familiar with the contents of the operating instructions, works directives and regulations for handling chlorine.
- The operators of the gas feed system must be instructed in safe use of the unit.
- All personnel coming in contact with the unit must be in full knowledge of the site operation and emergency procedures and also regulations for accident prevention.
- The gas control unit V10k must be connected to a vacuum gas supply only, never connect to a pressurized gas line.
- The discharge of chlorine gas from chlorine containers should not exceed one percent of the nominal container contents per hour, as otherwise there is the risk that the chlorine container and the vacuum control valve become iced. Therefore ensure that a sufficient number of chlorine containers are connected and open at the same time.
- When changing the gas cylinders always wear a suitable and functional gas mask. Practice use of the mask regularly. If chlorine gas is discharged, only use a breathing system which is independent of ambient air!
- Do not tolerate any leakages in the chlorine system. Leakage points must be sealed immediately as they will become larger with time if they remain unattended. When inspecting the system for leakage always keep your gas mask to hand.
- All connections and system components must be carefully inspected for leaks during commissioning, when chlorine pipes have been released and re-connected and also regularly during routine daily inspection, and any leaks must be sealed correctly. If there are any traces of chlorine in the air the cause must be determined and remedied immediately.
- When locating leaks with ammonia, never pour, spray or drip

liquid ammonia over metal components (corrosion).

- One of the most common causes for leaks on chlorine pipes are seals which have been used more than once. For this reason never re-use seals which have been removed from the system, but dispose of these immediately (also when changing the gas cylinders!). Ensure that a sufficient supply of new seals of the right size and correct material is always available (refer to overhaul kits or spare parts).
- Gaskets must always be stored in a dry place! Damp seals lose their stability permanently, increase the danger of corrosion and should never be re-used!
- If a gas pipe is interrupted or opened, close the openings immediately with a rubber plug or similar material to prevent the ingress of moisture. Moisture must be kept away from all parts of the system which only come in contact with dry chlorine during operation. Dry chlorine is not corrosive below 100°C. However, chlorine in combination with moisture is extremely corrosive and corrodes most metals such as bronze or steel.
- Before servicing the system the gas supply must be closed off directly on the gas cylinders or tank and the chlorine gas in the system must be consumed completely (exception: leakage location or calibration)
- Only use original Evoqua spare parts. Employment of non-specified parts can cause faults which can have dangerous consequences. Evoqua does not accept any liability in such cases.
- After installation always keep this instruction manual in a safe, easily accessible place. It is important for safe operation and correct servicing.
- Secure loose warning signs and replace when illegible.
- Safety inspection once annually by a competent technician.
- Servicing of the system at least once annually by a competent technician. We recommend concluding a servicing contract with Evoqua to this purpose.

3. Description

3.1 Principle of operation

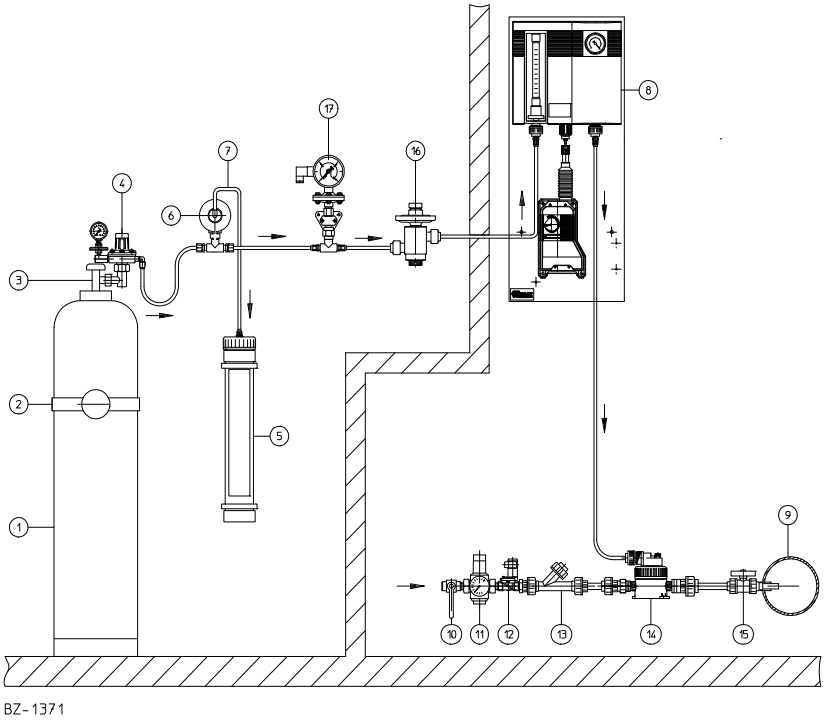
Operating water passes through an injector (14) and creates a vacuum. This vacuum makes the vacuum control valve (4) on the chlorine tank (1) open. Chlorine gas enters the control unit (8) under the influence of the vacuum and passes through the flowmeter and further to the injector. There it mixes with the operating water which then passes to the solution distribution system.

If the operating water is shut off, the vacuum breakes down and the vacuum control valve interrupts the chlorine flow. In case of a leak in the tubing from the vacuum control valve to the injector or in the chlorinator, only air can enter into the system, but no chlorine can escape. If the vacuum control valve leakes and pressurized chlorine flows into the vacuum lines, a relief valve (6) blows the chlorine into the vent line and into an activated carbon filter (5).

It is highly recommended to have the sensor of a gas monitoring system installed in the chlorine room.

3.2 Design

Example for basic chlorinator installation



1	Chlorine gas cylinder
2	Mounting bracket
3	Cylinder valve
4	Vacuum control valve
5	Activated carbon filter
6	Pressure relief valve
7	Pressure relief tube
8	Chlorinator V10k
9	Point of application
10-13	Operating water supply
14	Injector
15	Stop valve and injection tube
16	Safety valve (optional)
17	Contact pressure gauge (optional)

3.3 Control possibilities

The gas flow is directly indicated on the flow meter in g/h or kg/h. Within the dosing range, limited by the v-notch, every dosage rate can be adjusted (max. 15 kg/h).

automatic: Dosage rate is adjusted by the positioner. The positioner is controlled depending on water flow and/or chlorine residue.

semi-automatic:

- Dosage rate is adjusted manually. The injector is switched on and off by solenoid valves in the water supply line or by booster pump.
- Dosage rate is adjusted by the positioner switched up and down via an external controller. The injector is switched on and off by solenoid valves in the water supply line or by booster pump.

manual: Pull out the knob on the positioner and turn to adjust the dosing rate (e.g. in case of failure on the automatic control). To turn back to automatic control push back the knob and slightly turn it until it snaps in.

3.4 Technical Data

Chlorinator with positioner on mounting plate

with short flowmeter (5") or long flowmeter (10")	part no. W3T159301
Regulating range of the V notch *)	refer to the shipping documents
Display range of the flowmeter *)	refer to the shipping documents
Flowmeter	Accuracy class 4
Operating temperature	0°C to +50°C
Operating vacuum	approx. 200 mbar
Operating pressure of the 1“ injectors	max. 21 bar g up to 20°C, max. 16 bar g up to 30°C, max. 12 bar g up to 40°C, max. 8 bar g up to 50°C
Operating pressure of the ¾“ injectors	max. 16 bar g up to 20°C, max. 13 bar g up to 30°C, max. 10 bar g up to 40°C, max. 5,9 bar g up to 50°C
Noise	< 70 dB (A)

Positioner 230 V, 50 Hz	19 mA, positioning time approx. 80 sec. potentiometer 1 kOhm ± 10%
Positioner 115 V, 60 Hz	46 mA, positioning time approx. 66 sec. potentiometer 1 kOhm ± 10%
Dimensions incl. mounting plate (W x H x D)	
V10k with positioner	369 x 880 x 185, weight approx. 15 kg

The chlorinator can be equipped with different flowmeter tubes and V-notches. By changing these parts and if necessary the injector, the dosing range can be changed.

4. Installation

4.1 Scope of supply

The scope of supply includes according to the selected version:

- Chlorinator with positioner
- Injector
- Operating water supply
- Point of injection

also necessary

- Gas supply with
  - Vacuum control valve
  - Release valve with release line and activated carbon filter
  - Vacuum safety valve

(refer to separate instruction manual „Gas supply“)

4.2 Transport and storage

The chlorinator is shipped in a cardboard box.

1 Check that the box is not damaged.

2 Immediately report any damage to the freight forwarder.
If the chlorinator is damaged, immediately inform Evoqua.

3 Check all items against the packing note.

4.2.1 Unpacking

1 Unpack the equipment in a clean, dry area, preferably at the installation site.

2 Open the packing only on the upper side.

3 Take the accessories out of the cardboard pocket above the chlorinator.

4 Hold the chlorinator at the mounting plate or at the positioner, but not at the red regulator shaft or the positioner rack and lift out of the packing.

5 To prevent damage during transport the flowmeter glas is packed separately. Handle this glas tube very carefully. Cracks make the glas tube useless.
Preferably mount the flowmeter just before commissioning.

6 Check all items against the packing note to ensure that none is discarted with the packing materials.

7 Retain the packing until the system has been completely installed.

4.2.2 Location requirements

For drawings of typical installations refer to 7.1

- Unauthorized persons must be excluded from the installation.
- Adequate access should be available to permit ease of operation and maintenance of all plant items.
- The gas control unit should be mounted at eye's height.
- The ambient temperature around the gas control unit should be at least 0°C (install a heater if necessary) with a maximum at 50°C (preferably 15 - 20°C).
- The system shall be protected against direct exposure to sun and moisture.
- Gas containers are heavy and the location should be choosen to give the shortest possible gas supply line, consistent with safe handling of the containers.
- Position and equipment of the chlorine storage and operation room must correspond to the resp. regulations.

Warning!

Danger due to chlorine gas (gas escape)!
To avoid the risk of injuries due to chlorine gas, the system must be installed in such a way that gas is only able to escape into the room where the gas tanks are stored or into a separate plant room in the event of a gas leak. All parts of the system that are liable to be pressurized (e.g. chlorine tanks, vacuum control valves, safety pressure relief valves with activated carbon filters) must therefore be installed in these rooms. The parts of the system that are under vacuum may be installed in another room that is not subject to specific regulations.

4.3 Mounting

Warning!

To avoid possible severe personal injury or damage to the plant this equipment should be installed, operated and serviced only by

trained qualified personnel. Do not modify the installation beyond what is described in this manual without explicit consent of Evoqua.

(See mounting drawing chapter 7.2.)

4.3.1 Gas Control Unit

1 Mount the gas control unit to a vertical surface, wall, etc. with the dowels and screws supplied loose. The flowmeter should be at a height suitable for reading.
Make shure that the mounting plate is exactly level and not distorted when tightening the nuts.
The mounting plate should not touch the wall.

4.3.2 Injector

When installed with rigid pipes the injectors need not to be fixed elsewhere. When connected to flexible tubes the injectors have to be fixed as shown in chapter 7.2.

Nozzle (with stamped number) and tailway (with stamped letter) are supplied loose.

1 Place the o-rings on both and apply some vacuum grease (do not use mineral grease).

2 When assembling nozzle and tailway into the injector body pay attention to the flow direction (see arrows on the injector body). Turn only by hand up to the stop.

For measuring the injector vacuum a 1/4" connection is provided.

Operation range:

Up to 4 kg/h:
standard injector W3T171369 (3/4") or anti-syphon injector W3T171370

Above 4 kg/h:
standard injector W3T171367 (1") or anti-syphon injector W3T171368

The anti-syphon injectors are necessary, when depression can occur in the water pipe, e.g. by water flowing downwards.

Injector W3T171369 W3T171370

Connection at the throat:
3/4“ hose or threaded tube

If connected to 3/4" rigid tube, the part of the nozzle that is prepared for accepting flexible tube can be removed. Carefully deburr and remove the residues.

The gas connection can be turned in 45° steps after loosening the union nut. Lock before tightening the union nut. Tighten only by

hand!

Injector W3T171367
W3T171368

Connection at the throat:
PVC tube DN 25 (Ø32 mm)

Connection at the tailway:
PVC tube with 3/4“ inner thread

The gas connection can be turned in 60° steps.
To do so remove the 6 bolts, remove the upper part of the housing and fix again in the desired position. Tighten the bolts equally.

Note

Never shorten the tailway. The tube connected to the tailway must be straight for at least 0,30 m more. Otherways the flow in the pressure-recovery zone will be interrupted and prevent normal performance.

4.3.3 Point-of-application

If the point-of-application is a pressurized main or is higher than the injector, the solution line should incorporate a check valve and terminate in a solution injection tube assembly.

The injection tube consists of a pvc stop valve and a tube with threaded connection, that extends to approx. 1/3 of the mains diameter when extended.

It is recommended that all solution delivery lines be fitted with a suitable valve and drain pipe to enable any pressure build up to be safely released prior to maintenance work.

Note

Behind the point-of-application a pipe length of at least 10...15 x pipe diameter is necessary for a homogenious mixing of the solution into the main water. After that, samples can be taken for residue control etc. If the point-of-application is into a basin, channel etc. a diffusor can be supplied (refer to the project documentation.

4.3.4 Water supply

To operate the injector, a water supply pipe of at least 3/4“ diameter is necessary according to the operating conditions.

There must always be sufficient operating water available at an adequate supply pressure (see Technical Data for details). The operating water must not contain any particulates (potable water quality).

Water pressure and quantity depend on the maximum dosing capacity, the counterpressure at the point of application, the difference in geodetic altitude between chlorinator and point of application and the friction in the dosage line. On these values depend the selection of the injector.

If the operating water pressure is too low, a booster pump is required.

The water line should include a suitable shut-off valve, strainer, pressure gauge, pressure reducing valve check-valve and solenoid valve (see chapter 7.1).

It is recommended that all solution delivery lines lines be fitted with a suitable valve and drain pipe to enable any pressure build up to be safely released prior to maintenance work.

4.4 Gas supply line

Warning!

Danger due to chlorine gas !
The gas control unit must be connected to a vacuum gas supply only.
Do not open the cylinder or drum valve until the system has been fully installed and the pre-start checks are being carried out.
Refer to the safety information of the gas supplier and the safety data sheet!

For reducing the pressure from the chlorine tanks, a vacuum control valve and a safety relief valve are necessary (see also typical installation).

For the vacuum control valves a separate instruction manual „Gas supply“ is available.

4.4.1 Gas suction line

The diameter of the suction line between vacuum control valve, control unit and injector depends on the the gas flow and the distance (see table below).

Caution!

When using polyethylene pipes don't install them in narrow, badly vented protection pipes or in the ground to prevent the pipe from fast embrittling under the influence of chlorine.

Max. tube/pipe length from vacuum control valve to the V10k

Feed of Cl2, SO2 in g/h	PE hose 6,35 mm (1/4“)	PE hose 9,5 mm (3/8“)	PE hose 12 mm (1/2“)	PVC pipe DN 15	PVC pipe DN 20	PVC pipe DN 25
200	250 m	1200 m	3000 m	-	-	-
400	146 m	670 m	1510 m	3600 m	-	-
1000	24 m	88 m	852 m	1710 m	-	-
2000	6 m	33 m	107 m	320 m	1094 m	-
3000	3 m	16 m	53 m	179 m	607 m	1853 m
4000	-	9 m	28 m	91 m	364 m	1042 m
6000	-	5 m	15 m	43 m	145 m	479 m
8000	-	2 m	8 m	25 m	98 m	294 m
10000	-	1, 5 m	5 m	16 m	73 m	206 m

Max. tube/pipe length from V10k to injector

Feed of Cl2, SO2 in g/h	PE hose 6,35 mm (1/4“)	PE hose 9,5 mm (3/8“)	PE hose 12 mm (1/2“)	PVC pipe DN15	PVC pipe DN20	PVC pipe DN25
200	415 m	2000 m	-	-	-	-
400	243 m	1115 m	2515 m	-	-	-
1000	40 m	146 m	1420 m	2850 m	-	-
2000	10 m	55 m	178 m	532 m	1748 m	-
3000	5 m	26 m	88 m	298 m	1010 m	3088 m
4000	-	15 m	46 m	151 m	606 m	1736 m
6000	-	7 m	25 m	71 m	240 m	798 m
8000	-	4 m	13 m	40 m	163 m	490 m
10000	-	2, 5 m	8 m	26 m	121 m	343 m

4.5 Electric connection

Warning!

To avoid personal injury by electrical energy only authorized and qualified electrical personnel may carry out works on electrical parts of the system.
Connect the control cabinet according to the wiring diagrams and the national and local codes.
Before opening positioner or electric control unit, ensure that mains supply is switched off.

4.5.1 Connecting solenoid valve / booster pump

refer to Typical Installations in chapter 7.1

Warning!

Danger of over-chlorination!
The water through the injector may flow only when the water in the main water line flows.

Booster pump

A booster pump is necessary if the operation water pressure is too low.

1 Lock the booster pump to the flow in the main water line (e.g. by using a flow sensor)

Solenoid valve

When using a solenoid valve in the main water line:

1 Lock the solenoid valve to the flow in the main water line (e.g. by using a flow sensor)

4.5.2 Connecting the positioner

The positioner can be connected to a Evoqua control unit, other controls or a remote control panel.

Connect the positioner according to wiring diagram 30-E-7693 (see chapter 8. and the instructions of the control).

Movement direction:

- CLOSE/DEC: connecting rod moves out, chlorinator flow decreases,
- OPEN/INC: connecting rod moves in, chlorinator flow increases.

The positioner is supplied with three cable glands and two plug screws. Insert as applicable. The following bores are provided:

- for 230 V positioners: ø 20.5 mm
- for 115 V positioners: ø 22 mm

1 To open the cover:
Remove the knob (Allen key 2 mm),

2 Unscrew the upper part of the housing.
Lift the lateral brackets and pull the cover away.

3 Connect the positioner.
Make sure that the gear case of the positioner is safely connected to protection ground.

4 In order to separate the positioner from the mains during service or repair, install a 2 pole switch between the control unit and the positioner not far from the positioner.

5 Check the function.

4.5.3 Adjusting the positioner

The positioner is supplied pre-adjusted to the chlorinator. Adjusting can become necessary e.g. if the system should be adjusted to a different '0'-position or after repair.

The lower limit can be shifted upwards up to 60% of the range (e.g. for basic chlorination).

Preparation

1 Switch off the mains to the positioner and to the limit switches and ensure that the wires are free of voltage.

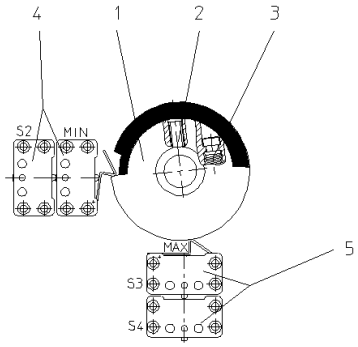
2 Disengage the motor by pulling the knob out.

3 Remove the knob (set screw, Allan key 2 mm)

4 Unscrew the cover, lift the side clips and remove the cover.

5 Replace the knob or turn the knob shaft with a screw driver.

Adjust the MIN limit



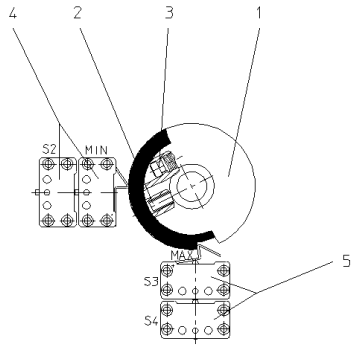
1 Move the connecting rod fully outside and then 2 mm back.

2 Loosen the set screw (pos. 2) of the cam disk (pos. 1). The corresponding key is fixed in the cover.

3 Turn the cam disk until both MIN-limit switches (pos. 4) are switched by the upper part of the cam disk.

4 Press the cam disk to the stop and fasten the setscrew without turning the cam disk.

Adjust the MAX limit



1 Move the connecting rod fully inside and then 2 mm back.

2 Turn the lower part of the cam disk by turning the set screw (Pos. 3) so far that both MAX switches (Pos. 5) are switching. Don't loosen or turn the whole cam disk.

3 Check by moving the connecting rod.

Adjust the feedback potentiometer

Adjustment is necessary, when a new board is mounted in the positioner or the motor-gear-unit has been removed or changed.

1 Open the cover (see preparation)

2 Pull off connectors 13/14/15

3 Move the connecting rod fully outside to the stop.

4 Connect an ohmmeter to the terminals 13 and 14 on the board.

5 Loosen the great output tooth wheel on the shaft below the cam wheel.

6 Turn the tooth wheel until the ohmmeter displays between 10 and 30 ohm.

7 Fix the tooth wheel without turning it.

8 Move the connecting rod fully inside to the stop.

9 Ohmmeter must display resistance smaller than the total resistance of 1kohm measured between the terminals 13 and 15.

10 Check both adjustments by moving the connecting rod.

11 Remove the ohmmeter and connect the terminals 13/14/15 again.

Close the cover

1 Remove the knob, if mounted.

2 Place the cover without damaging the shaft sealing.

3 Move the connecting rod fully outside.

4 Place the knob on the shaft, turn that the arrow points to the minimum and fix.

5 Switch to automatic operation (press in the knob), if necessary turn slightly to let the tooth wheels match.

6 Switch on and check for function.

4.6 Insert the flowmeter

(preferably only immediately before commissioning to avoid damage to the flowmeter)

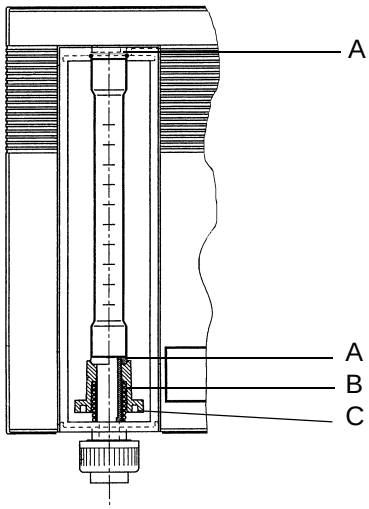
1 Mount the spring and the socket from the accessories set.

2 Apply some silicone grease to the two 'O'-rings and place them into the grooves.

3 Hold the flowmeter tube in the middle, the high values at the top, the tip of the float pointing to the bottom.

4 Place the flowmeter tube onto the lower 'O'-ring, the high values of the scale on top, press down the lower seat with two fingers of the other hand, if necessary press down the lower 'O'-ring with the flowmeter tube.

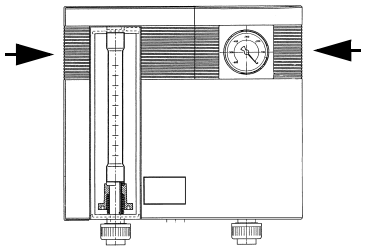
5 Position the tube into the upper seat, turn the tube until the scale is in front and slowly release the lower seat. Hold the tube until the tube safely rests on the o-rings.



A 'O-ring
B Lower seat
C Socket and spring

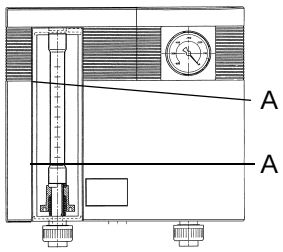
4.7 Remove and mount the cover

Remove the cover



1 Hold the cover at both sides, press your thumb on the manometer and pull away the cover at both sides at the same time.

Mount the cover



1 Slide the cover over the T-shape rails (A) of the body.

2 Press left and right until the cover is level with the manometer and locked.

4.8 Preparation

Chlorination plants should be checked by a specialist for condition according to the rules before being taken into operation. Especially the chlorine parts of the plant must be checked for leaks.

When all the connections have been made, the following pre-start checks must be carried out before the plant can be taken into operation.

4.8.1 Check for water leaks

1 Close the regulating knob of the positioner by hand or by the control.

2 Ensure that the gas cylinder or drum valves are closed.

3 Open the stop valve at the point of application.

4 Open the stop valve and the solenoid valve in the water supply.

5 If installed start the booster pump.

6 Adjust the injector inlet pressure so that the operation vacuum of 200 mbar is displayed at the pressure gauge of the V10k.

7 Check the water supply and the chlorine solution line for leaks. Repair if necessary.

4.8.2 Check for gas leaks

Warning!

Danger due to chlorine gas !
Chlorine gas irritates the respiratory tracts. Contact with chlorine gas in high concentrations irritates and damages the membranes, respiratory system and the skin. In extreme cases death can result due to suffocation.
When inspecting the system for leakage always keep your gas mask to hand.Practice use of the mask regularly.
If chlorine gas is discharged, only use a gas mask which is independent of ambient air!
Do not tolerate any leakages in the chlorine system.
Before servicing the system the gas supply must be closed off directly on the gas cylinders or tank and the chlorine gas in the system must be consumed completely.
In case of strong chlorine smell put on your gas mask.

Warning!

Danger due to chemicals !
Testing for chlorine or SO2 gas leaks is accomplished by introducing ammonia fumes to the area under test. Any escaping gas will combine with the ammonia to form dense white clouds. Liquid ammonia solution must not be applied directly to the part being tested. Hold a bottle of 25% ammonia solution in the vicinity of the part under test.
Ammonia must not be inhaled, splashed or spilled.

1 Keep the valves on the chlorine cylinder or drum closed.

2 Open the valves in the water supply line to the injector and at the point of application.
A vacuum of min. 200 mbar must be indicated on the manometer of the control unit.

3 Check that the flowmeter float remains at his bottom stop. Any movement of the float indicates an ingress of air on one of the following locations:

- through the safety relief valve
- through the o-ring on the bottom of the flowmeter or
- through cracks in the flowmeter
- through the o-rings at the pipe connections

- through any incorrectly cemented joints or slack unions in the pipework.
  Repair any leaks immediately.

4 Open the valves on the chlorine cylinder or drum carefully and close again.

5 Check for leaks.
Hold a bottle of 25% ammonia solution in the vicinity of the part under test. In case of a leak the escaping gas will form dense white clouds.

6 In case of a leak check that the cylinder or drum valve is closed.
Open the auxiliary valve(s).
Let the operating water flow.
Open the regulating knob of the positioner and let the gas from the gas lines be sucked away until the float in the flowmeter of the V10k is down on the lower stop.
Immediately tighten the leak.

7 When all parts have been checked:
Open the valve on the chlorine cylinder or drum again.

8 Adjust the desired dosing capacity. The operation vacuum is shown on the pressure gauge of the V10k.

9 Close the valves on the chlorine cylinder or drum.
Within a minute the float in the flowmeter of the V10k should be down on the lower stop. Otherwise refer to step 2.

4.9 Commissioning

4.9.1 General

When the water and gas leak test have been performed successfully, the system can be started as follows
(the positions refer to the drawing in chapter 3.2)

1 Activate the gas warning device.

2 Open the point-of-application

3 Open the operating water valve incl solenoid valve.

4 If necessary start the booster pump.

5 Adjust the injector water pressure at the reducing valve

6 Open the gas cylinder valve (3) one turn.

7 Open the vacuum control valve (4).

8 Adjust the dosage manually, read the dosing rate at the flowmeter of the V10k.

9 Switch the positioner to automatic operation (knob pushed in), set the control to the suitable dosage rate.

10 Check that the dosage rate on the control corresponds with the display on the flowmeter. For further information see the instruction manual of the control.

4.9.2 Training the operator

1 Train the operator for understanding at least in safety, operation and fault finding.

Note

The operator of the overall system must ensure that only authorized and qualified personnel can work on or with the system, and within their specified area of responsibility.
All personnel who work on the system must have read and understood the instruction manual, especially the safety instructions.

5. Operation

5.1 General

If the chlorinator is installed and adjusted correctly, only the following measures are necessary during operation:

- Check and adjustment of the dosage rate
- Dayly check of tightness
- Function check of the gas warning device
- Change of the gas containers
- Cleaning the strainer in the operation water line.
- When testing the sprinkler system take care that the gas cylinders and armatures don't get wet unnecessarily. Slip a hose over the spray nozzles and lead the water into the sink.

5.2 Start dosing

1 Check that the gas monitoring system is activated.

2 Open the operating water valves and the point-of-application.

3 Open the gas supply valves.

4 Open the vacuum control valve.

5 Adjust the dosage

- manually with the knob on the positioner
- or with the control (the knob must be pressed).

5.3 Stop dosing

- Close the operating water valves or
- Close the gas supply valves or
- Close the vacuum control valve or
- Stop the dosage
  - manually with the knob on the positioner
  - or with the control (the knob must be pressed).

5.4 Changing gas containers

Warning!

Danger due to chlorine gas !
Chlorine gas irritates the respiratory tracts. Contact with chlorine gas in high concentrations irritates and damages the membranes, respiratory system and the skin. In extreme cases death can result due to suffocation.
When changing gas containers always put on your gas mask.

Warning!

Danger due to chemicals !
Testing for chlorine or SO2 gas leaks is accomplished by introducing ammonia fumes to the area under test. Any escaping gas will combine with the ammonia to form dense white clouds. Liquid ammonia solution must not be applied directly to the part being tested. Hold a bottle of 25% ammonia solution in the vicinity of the part under test.
Ammonia must not be inhaled, splashed or spilled.

1. Close the valve of the empty chlorine cylinder.
2. Close the vacuum control valve (or the auxiliary valve).
3. Remove the vacuum control valve (or the auxiliary valve) from the chlorine cylinder.
4. Remove the empty chlorine cylinder, place and secure a full cylinder.
5. Connect the vacuum control valve (or the auxiliary valve) to the cylinder valve, using a new gasket.
6. Open the cylinder valve for a moment and close again, check for leaks.
7. Open the cylinder valve if the connections are tight.
8. Open the vacuum control valve (or the auxiliary valve).

5.5 To stop for extended periods or maintenance

1. Turn off the gas cylinder valve.
2. Allow the control unit to operate until the flowmeter float remains on the bottom stop.
3. Turn off the water supply to the injector. The manometer pointer comes down to 0.

4 Against frost remove all the water from the water supply and solution line.

5.6 Fault finding

Warning!

Danger due to chlorine gas !
Chlorine gas irritates the respiratory tracts. Contact with chlorine gas in high concentrations irritates and damages the membranes, respiratory system and the skin. In extreme cases death can result due to suffocation.
Before carrying out any fault finding operations involving dismantling, the system should be cleared of gas. Follow procedure at chapter 5.5.
When disassembling the system always put on your gas mask.

Warning!

To avoid personal injury by electrical energy only authorized and qualified electrical personnel may carry out works on electrical parts of the system.
Make sure that the system is free from voltage during the time of maintenance or repair.
Pay attention to external voltage even if the main swith is off.

5.6.1 Fault on the chlorinator, valves, injector

No.	Symptoms	Probable cause	Remedy
1	Gas control unit will not feed.	Chlorine supply exhausted.	Change chlorine container.
		Chlorine supply is turned off.	Open valves.
		Closed or clogged solution tube at point of application.	Open or clean both corporation cock and solution tube.
		Leakage in the pipe lines.	Check pipes and unions for leaks.
		Insufficient injector vacuum.	Check operating water pressure. Check pressure at point of application.
		Clogged injector.	Clean injector parts. Replace injector parts when worn or damaged.
		Clogged strainer in operating water line.	Clean stainer insert.
		Gas filter in vacuum control valve clogged.	Replace the filter.
		Diaphragm in the vacuum control valve broken.	Repair the valve (specialist).
		V-notch orifice clogged.	Clean orifice.
2	Chlorine residual too low in spite of sufficient chlorine feed rate indication.	Air is sucked into the chlorine gas stream.	Check for leakage upstream of flowmeter. Change and grease o-rings on flowmeter.
		Increased chlorine demand.	Check chlorine demand.
		Pressure relief valve not tight.	Check valve.
3	Gas control unit will not run up to full capacity.	Insufficient injector vacuum.	see 1.
		Injector does not meet requirements.	Change injector parts.
		Gas filter in vacuum control valve clogged.	Replace the filter.
4	Flowmeter float moves erratically.	Deposits on flowmeter parts.	Clean flowmeter.
5	Odour of chlorine in chlorinator room or vicinity.	Pressure relief valve blows.	Clean resp. replace vacuum control valve. Replace the filling of the activated carbon filter.
6	Water in flowmeter	Defective check valve in injector.	Dry the system, check injector.

No.	Symptoms	Probable cause	Remedy
7	Gas feed rate cannot be adjusted properly	V-notch stem worn.	Replace V-notch stem.
		V-notch orifice worn.	Replace orifice.
		Vacuum control valve defective.	Replace regulator.
8	Feed rate too high	Membrane in differential control valve broken.	replace W3T165515 (specialist).

5.6.2 Fault at the positioner and the control

No.	Symptoms	Probable cause	Remedy
1	Rack does not move, although the positioner receives signal from the control.	Positioner is in manual operation (knob is pulled).	Switch to automatic operation (push the knob).
		External separation switch (optional) is set to OFF or manual.	Switch to AUTO.
		No mains	Check the mains from control unit, mains supply, switches, fuses.
		Rack is blocked	Check load (max. 135 N).
		Limit switch in the positioner has switched	Check the limits, adjust if necessary.
		Motor defective	Check the wire resistance.
		Gear defective (chattering noise)	Replace Motor and gear.
		Board defective (switches, capacitor)	Replace board 230 V: part no. W3T173185, 115 V: part no. W3T173203
2	Rack does not move, although knob turns.	Rack defective (wear)	Replace rack.
		Tooth wheel defective	Check toothes and clamping of the tooth wheel, replace motor-gear if necessary.
3	Rack moves to the wrong direction.	Wrong electric wiring	Check the terminals connections (change terminal 2 and 3)
4	Rack moves to the stop.	Limit switch misadjusted or defective	Adjust positioner
5	Feedback signal cannot be aligned.	Potentiometer misadjusted	Check potentiometer adjustment
		Potentiometer defective (1kOhm ±10%)	Replace board (Note: special potentiometer, may not be replaced by a standard potentiometer)
		Wiring and terminals defective	Check wiring and terminals to the board
		Toothed wheels or potentiometer shaft loose	Adjust potentiometer and clamp toothed wheels
6	Positioner moves without finding the right position.	Potentiometer defect or loose	Check potentiometer resistance while moving the rack by hand, if necessary replace potentiometer.

No.	Symptoms	Probable cause	Remedy
		Cable to the control unit loose	Check the cables.
		Capacitor defective	Replace the board.
7	Positioner moves fore and back.	Positioner not correctly fixed to the mounting plate or potentiometer loose	Check mounting.
8	Movement too slow	Load too great, e.g. by bad alignment	Check load, check positioner without load, check alignment.

For more information see the manual of the control unit.

Maintenance and inspection plan for V10k

Interval	Main-tenance level	Work to beperformed	resources	o.k.	not o.k.	remedied
daily	1	• Visual check for function and leaks				
weekly	1	• Check the chlorine lines for leaks • Check the function of the system				
monthly	1	• Clean the strainer in the operation water line. • Check the water level in the syphon of the sink				
every 3 months	1	• Check the auxiliary valves for smooth operation, replace if necessary				
every 6 months	1	• Check the gas monitoring system, replace the electrolyte				
	1	• Check the system for leaks				
yearly	2	• Maintenance of the system, replace the gaskets				
2-yearly	2	• Replace the copper pipes				
3-yearly	2	• Replace the auxiliary valves				
5-yearly	2	• Replace the pressure gauges of the vacuum control valves				

* Maintenance level 1 can be performed by the operator/operating personnel.
Maintenance level 2 must be performed by specialist technicians trained by Evoqua or the Evoqua customer service technicians.
Any work over and above this may only be performed subject to prior consultation with Evoqua customer service.

6. Maintenance

Warning!

Danger due to chlorine gas !
Chlorine gas irritates the respiratory tracts. Contact with chlorine gas in high concentrations irritates and damages the membranes, respiratory system and the skin. In extreme cases death can result due to suffocation.
Before carrying out any maintenance operations involving dismantling, the system should be cleared of gas. Follow procedure at chapter 5.5.
When disassembling the system always put on your gas mask.

Warning!

To avoid personal injury by electrical energy only authorized and qualified electrical personnel may carry out works on electrical parts of the system.
Before opening positioner, vacuum switch or electric control unit, ensure that mains supply is switched off.
Assign repairs to the Evoqua service.

- Maintenance of the gas control unit is simplified if the following general precautions are taken. These are easily followed and will reduce costly maintenance and repairs by providing good operating conditions.
- Chlorine and sulphur dioxide gas, when moist, are extremely corrosive. All metal parts which normally come into contact with moist gas are made from materials which will withstand the corrosive action; common metals are used only where the part is exposed to dry gas. All connections should be checked daily for signs of leaks. Every leak must be rectified as soon as it is discovered.
- The presence of a leak of chlorine or sulphur dioxide will be indicated by odour and/or fume detection equipment, if supplied. The exact location may be determined by ammonia vapour. Dense white clouds of ammonium chloride form near the leak in the presence of ammonia.
- When a connection is broken, if only for a short time, the opening should be plugged immediately to prevent the ingress of moisture which should be excluded from any part of the equipment normally exposed only to dry gas.
- Water leaks must not be tolerated and should be rectified as soon as they are discovered.

- Whenever threaded plastic parts are assembled, silicone type grease should be used used to prevent the parts locking together. In general, tools should not be used to make up plastic connections, this type of connection should be made up by hand only.
- If the flowmeter tube, float, V-notch plug or any valve seat becomes contaminated with impurities sometimes found in gases, it should be removed and cleaned.
- Replace all chlorine lines made of copper every 2 years.
- Replace the auxiliary valves every 3 years.
- For safety reasons, we recommend that you replace the chlorine pressure gauge on the vacuum control valves (used to display the pressure in the chlorine cylinder) every 5 years of operation.
  If the chlorine pressure gauge leaks, is blocked, corroded or damaged in any other way it needs to be replaced immediately.
- Replace chlorine lines including the unions when they are damaged or corroded.
- Check the chlorine lines for leaks at least every 6 months.
- Replace all o-rings and gaskets of the chlorine system at least every year.
- Store the gaskets in a dry place. Wet gaskets lose their solidity forever and must not be used again.

6.1 Changing the activated carbon filter

Warning!

Danger due to chemicals !
Chlorine loaded carbon reacts with water generating hydrochloric acid. Don't pour into water or pour water on it, but neutralize first! Wear breathing equipment, eye protection and protecting clothing!

The carbon has to be replaced when smelling to chlorine or when lumped.

1 Remove the filter and open carefully.

2 If there is no smell of chlorine, stir the carbon powder and the ceramic rings and check for lumps. If the powder is still in order, shut the filter and place again.

If necessary replace the carbon as follows:

Cl2 loaded carbon

1 Carry the filter to the open air.

2 Mix 300 g sodium thiosulphate with 8 l of water.

3 Remove upper cover of the filter.

4 Pour the carbon carefully into the solution.

5 Dilute with more water and pour away.

6 Dispose the ceramic rings.

7 Fill the filter with new carbon and ceramic rings (part no. W3T161729) and put in place.

SO2 loaded carbon As above, but use caustic soda solution.

6.2 Cleaning the parts

General Most of the residue which accumulates can usually be removed with warm water and a soft brush, deposits can usually be removed by watering.

- Plastic and hard rubber parts should be cleaned only with warm water (not over 40°C). If necessary add ethyl alcohol.
- To clean the flowmeter tube use clean cloth strips.

Warning!

Carbon tetrachloride is a satisfactory cleaning agent, but its use is not recommend because of the possible toxic effect of exposure to its fumes.
Do not use wood alcool, petrol or petroleum distillates.
Do not use pvc solvent to clean the cover.

All traces of moisture must be removed from parts which come in contact with the gas before being returned to service. Do not use heat on plastic or hard rubber parts.

All cleaning should be carried out in an open area or in a well ventilated room.

Water filter

1 Check and if necessary clean the filter in the water supply.

6.3 Maintenance of the chlorinator

(at least once a year)

Note

When removing o-rings: Pick with a needle and pull the o-ring out, don't damage the tightening faces.
Apply a thin coat of silicone grease to o-rings and threads.

Position numbers refer to the drawing in chapter 7.3

1 Shut down the chlorinator as described in chapter 5.5 .

2 Remove the cover (see 4.7).

3 Remove the flowmeter carefully.
Clean with warm water and detergent and soft cloth.
Dry completely.

4 Replace o-rings (24). Remove socket (26), replace the spring (27).

5 Remove the coupling (109), move the connecting rod downwards.

6 Remove the V-notch plug with the extension chamber (98), replace the o-ring (99).

7 Remove the seal clamping screw (95), unscrew the stem plug (104) from the v-notch plug.

8 Replace the shaft seal (97, pay attention for the orientation) and the o-ring (96).

9 Remove the V-notch plug (101), orifice (100) and washer (102) and clean.
After 5 years replace the V-notch plug and the washer.

10 Insert stem plug (104) with o-ring (96), shaft seal (97), seal clamping screw (95) and coupling into the extension chamber (98).

11 Tighten the seal clamping screw by hand.

12 Place the washer (102) onto the stud (103) and screw the V-notch plug (101) onto it.
Tighten by hand.

13 Place the orifice (100) with the ring groove on the lower side.

14 Clean the bore in the body (1) with warm water and detergent and soft cloth. Dry completely.

15 Drive the extension chamber assembly (95-109) into the body.
Tighten by hand.

Differential control valve

1 Remove the flexible tube (16) from the manometer

2 Remove the plug (15).

3 Remove the valve body assembly (11), replace every 2 years.

4 Replace gasket (13) and spring (14).

5 Press out stem assembly (5, 6, 7, 10) from above.
Replace o-ring (10), replace stem every 2 years.

6 Clean bore in the diaphragm with soft cloth.

7 Press in the stem.

8 Screw the valve body assembly (11) in by hand.

9 Screw plug (15) in, connect the tube to the manometer.

10 Replace the o-rings (28) in the gas inlet and outlet (when flexible tubes are used also 37, 49, 41, 53)

11 Put all parts in place, check for tightness.

The hexagon nut pos. 108 should be locked and secured with red locking varnish.

The positioner is maintenance-free.

6.4 Maintenance of the injector

(at least once a year)

Note

Removing the o-rings: Pick with a needle and pull the o-ring out, don't damage the tightening surfaces! Apply some acid-free grease (silicon grease) to the new o-rings and to the threads.

6.4.1 Injector W3T171367 (1")

The position numbers refer to the drawing WAE9688.

1 Put the chlorinator out of service, remove all the chlorine gas out of the tubing. Refer to 5.5.

2 Drain the operation water tubes.

3 Remove gas tubes from the injector. Remove operation water tubes as far as necessary for removing the tailway from the injector.
Screw out the tailway (marked with a letter)

4 Replace both o-rings. If necessary, screw away the die from

the tip of the tailway and tighten again.

5 Loosen the 6 bolts (width 13 mm, Pos. 15), take away the cover (13) and put aside, the bolts still in the holes.

6 Remove diaphragm (11) with clamping nut (10, 6) and spring (9).

7 Unscrew the clamping nut (10) from the valve seat (6).

8 Replace the diaphragm (11), spring (9) and the o-rings (5 and 7). Every two years replace the valve seat (6), every 5 years replace the clamping nut (10).

9 Assemble diaphragm, valve seat and clamping nut, place spring. Put aside on a clean cloth.

10 Replace o-ring (12)

11 Replace valve stem with ball head (16) and o-ring (7). Pay attention not to damage the ball head!

12 Place the diaphragm assembly with spring over the bolts (15) of the cover and press down to the body (3), turn the gas inlet to the desired direction and make the bolt holes fit.
Insert the bolts and tighten equally.

13 Turn out the plug (17), replace the o-ring (18).

14 Take out the valve stem (21), replace spring (19) and o-ring (20), every 2 years replace also stem (21).

15 Turn out plug (22) with large screw driver. Replace o-ring (8).

16 Press out valve seat (1), replace together with o-ring (2). Press in new seat with o-ring to the stop using a round rod or plastic tube Ø16 mm with even front, pay attention that the cone is on the side of plug (17).

17 Place the stem (21) into the plug (17) and screw the plug in. Check the stem for free movement.

18 Screw in the plug (22) with o-ring (8).

19 Replace the o-ring (27) in the gas inlet.

20 Screw in the tailway and connect to the operation water tube. Connect the gas line.

21 Check for tightness and function.

6.4.2 Anti-syphon-injector W3T171368 (1")

The position numbers refer to the drawing WAE9689.

1 Put the chlorinator out of service, remove all the chlorine gas out of the tubing. Refer to 5.5.

2 Drain the operation water tubes.

3 Proceed with actions described in 6.4.1 Injector W3T171367 up to 12. incl.

4 Screw out the clamping nut (17) with the parts connected.

5 Remove the valve stem (21), replace the o-ring (20).

6 Replace the valve stem (21) every 2 years.

7 Remove the securing clip (47).

8 Remove the clamping screw (17) and spring (43).

9 Remove the clamping disc (44) and replace o-ring (18)

10 Replace diaphragm assembly (41, 46, 40, 42, 45). Assemble with clamping screw (17) and spring (43) and secure with clip (47).

11 Remove plug (22), replace o-ring (8).

12 Press out valve seat (1) using a round rod, replace together with o-ring (2).
Press in new seat with o-ring to the stop using a round rod or plastic tube Ø16 mm with even front, pay attention that the cone is on the side of plug (17).

13 Place the stem (21) into the valve stem guide (42) and screw in the clamping screw (17) with assembled parts.

14 Screw in plug (22).

15 Replace the o-ring (27) in the gas inlet.

16 Screw in the tailway and connect to the operation water tubing. Connect the gas line.

17 Check for tightness and function.

6.4.3 Injector W3T171369 (3/4")

The position numbers refer to the drawing WAE9828.

1 Put the chlorinator out of service, remove all the chlorine gas out of the tubing. Refer to 5.5.

2 Drain the operation water tubes.

3 Remove gas tubes from the injector. Remove operation water tubes as far as necessary for removing tailway and nozzle from the injector.

4 Screw out tailway and nozzle.

5 Replace the o-rings.

6 Screw out inlet screw (1), remove valve stem (4), replace o-ring (3) and spring (12).
Every two years replace the valve stem (4)

7 Unscrew union nut (15), if necessary use a strap wrench.
On this injector the thread of the union nut and the corresponding thread on the body must not be greased. Remove existing grease with alcohol.

8 Remove upper body (5).

9 Replace valve stem with ball head (13). Pay attention not to damage the ball head!

10 Remove diaphragm assembly (6, 9, 10)

11 Unscrew clamping nut (10) from the valve seat (6), replace diaphragm (9), o-rings (7 and 14) and spring (11).
Replace the valve seat (6).
Assemble (10, 6, 9, 7, 14, and 11), tighten slightly with tongs.

12 Replace o-ring (8)

13 Place spring (11) on the clamping nut (10) and place together with the diaphragm assembly (6, 7, 9, 10, 14) into the body (16).

14 Place upper body (5) and union nut (15). Tighten slightly.

15 Turn upper body (5) with the gas inlet to the desired direction, lock and tighten the union nut.

16 Place the valve stem with spring (4 with 3 and 12), place o-ring (2) and screw the inlet screw (1) in.

17 Screw in the nozzle (black with number) and tailway (white with letter), pay attention for the flow direction!

18 Connect operation water lines.

19 Replace the o-ring (19) in the gas inlet.
Connect the gas line.

20 Check for tightness and function.

6.4.4 Injector W3T171370 (3/4")

The position numbers refer to the drawing WAE9829.

1 Put the chlorinator out of service, remove all the chlorine gas out of the tubing.

2 Drain the operation water tubes.

3 Proceed with actions described in 6.4.3. Injector W3T171369 up to 12. incl.

4 Unscrew lower union nut (15), if necessary use a strap wrench.

5 Remove bottom cover (20) and spring (21).

6 Pull out diaphragm assembly with guide pins (16), if necesary press equally on both pins from the opposite side.

7 Replace o-rings (17)

8 Unscrew lower clamping nut (10) from the disk (22).

9 Replace diaphragms (9, 2x) and o-ring (7)

10 Assemble diaphragms with o-ring, disk and clamping nut.
Every 5 years or when worn out or stiffy replace the pins (16).

11 Replace o-ring (8, between 20 and 23).

12 Place spring (11) on the clamping nut (10) and place together with the diaphragm assembly (6, 7, 9, 10, 14) into the body

(23).

13 Place upper body (5) and union nut (15). Tighten slightly.

14 Turn upper body (5) with the gas inlet to the desired direction, lock and tighten the union nut by hand..

15 Place the valve stem with spring (4 with 3 and 12), place o-ring (2) and screw the inlet screw (1) in.

16 Place diaphragm assembly (9, 10, 7) with disk (22) and pins (16) into the body.

17 Place spring (21) and bottom cover (20) and screw on lower union nut (15) by hand.

18 Screw in the nozzle (black with number) and tailway (white with letter), pay attention for the flow direction!

19 Connect operation water lines

20 Replace the o-ring (25) in the gas inlet.
Connect the gas line

21 Check for tightness and function.

6.5 Preventive maintenance kits

Replace the gaskets of the system at least every year to have troublefree operation for a long time. We recommend to have a complete set of gaskets at hand to be able to replace single gaskets if necessary.

Parts that have to be replaced after 1, 2 or 5 years are supplied in preventive maintenance kits. In the parts lists (chapter 7.) these parts are marked. The standard kit includes parts to be replaced after one year of operation, the 2-years kit for replacement within 2 years etc.

Sets of gaskets and preventive maintenance kits

for	Sets of gaskets	Preventive maintenance kits 1 year	Preventive maintenance kits 2 years	Preventive maintenance kits 5 years
Chlorinator V10k automatic	W3T159881	W3T167494	W3T167022	W3T167024
Injector 1” W3T171367	W3T167500	W3T167501	W3T167029	W3T167030
Injector 1” anti-syphon W3T171368	W3T167500	W3T167502	W3T167031	W3T167032

Sets of gaskets and preventive maintenance kits

for	Sets of gaskets	Preventive maintenance kits 1 year	Preventive maintenance kits 2 years	Preventive maintenance kits 5 years
Injector ¾" W3T171369	W3T167496	W3T167497	W3T167025	W3T167026
Injector ¾" anti-syphon W3T171370	W3T167498	W3T167499	W3T167027	W3T167028

For spare parts for vacuum control valves and relief valves refer to the instruction manual „Gas supply".

Note

Parts included in the kits can be replaced by competent personnel referring to the maintenance and safety instructions.
Repairs going further may only be carried out by personnel being especially instructed by Evoqua.
Only use original Evoqua spare parts!

6.5.1 Set of gaskets W3T159881 for chlorinator V10k, automatic

Pos.	Part No.	Description	Quant.
0001	W2T507221	o-ring d 5,28 x 1,78	1
0002	W3T165176	Gasket; d 20,5 x 14,3 x 1	1
0003	W3T161334	Gasket d 32 x 25,4 x 3	3
0004	W3T168911	o-ring d 16,6 x 5,1	2
0005	W3T164993	o-ring d 20,22 x 3,53	2
0006	W3T165447	o-ring d 12,37 x 2,62	2
0007	W3T172796	o-ring d 15,54 x 2,62	2
0008	W3T169197	o-ring d 9,25 x 1,78	1
0009	W3T170894	Shaft seal	1
0010	W3T168909	o-ring d 23,39 x 3,53	1

6.5.2 Maintenance kit W3T167494 for chlorinator V10k, automatic, 1 year

Pos.	Part No.	Description	Quant.
0001	W2T507221	o-ring d 5,28 x 1,78	1
0002	W3T161334	Gasket d 32 x 25,4 x 3	3
0003	W3T165193	Spring Inconel 625	1
0004	W3T168911	o-ring d 16,6 x 5,1	2
0005	W3T161297	Spring	1
0006	W3T172724	o-ring d 20,22 x 3,53	2
0007	W3T165447	o-ring d 12,37 x 2,62CSM	2
0008	W3T172796	o-ring d 15,54 x 2,62	2
0009	W3T169197	o-ring d 9,25 x 1,78	1
0010	W3T170894	Shaft seal	1
0011	W3T168909	o-ring d 23,39 x 3,53	1
0012	W3T161292	Orifice, V-notch plug; 20,62 mm	1
0013	W3T165077	Silicone grease KORASILON Paste MV, 35 g	1

6.5.3 Maintenance kit W3T167022

for chlorinator V10k, automatic, 2 years

Pos.	Part No.	Description	Quant.
0001	W2T507221	o-ring d 5,28 x 1,78	2
0002	W3T165515	Valve body	1
0003	W3T165176	Gasket d 20,5 x 14,3 x1	1
0004	W3T161334	Gasket d 32 x 25,4 x 3	6
0005	W3T165193	Spring Inconel 625	1
0006	W3T168911	o-ring d 16,6 x 5,1	4
0007	W3T161297	Spring	1
0008	W3T164993	o-ring d 20,22 x 3,53	4
0009	W3T165447	o-ring d 12,37 x 2,62	4
0010	W3T172796	o-ring d 15,54 x 2,62	4
0011	W3T169197	o-ring d 9,25 x 1,78	2
0012	W3T170894	Shaft seal	2
0013	W3T168909	o-ring d 23,39 x 3,53	2
0014	W3T161292	Orifice, V-notch plug, 20,62 mm	2
0015	W3T159801	Seat unit d 6,7	1
0016	W3T167443	Valve stem, complete.	1
0017	W3T165077	Silicone grease KORASILON Paste MV, 35 g	1

6.5.4 Maintenance kit W3T167024 for chlorinator V10k, automatic, 5 years

Pos.	Part No.	Description	Quantity
0001	W2T507221	o-ring d 5,28 x 1,78	2
0002	W3T165515	Valve body assembly	1
0003	W3T165176	Gasket d 20,5 x 14,3 x 1	1
0004	W3T161334	Gasket d 32 x 25,4 x 3	6
0005	W3T165193	Spring Inconel 625	1
0006	W3T169056	Plug	1
0007	W3T161473	Hose connector	1
0008	W3T168305	Gauge	1
0009	W3t171125	Hose	1

Pos.	Part No.	Description	Quantity
0010	W3T168911	o-ring d 16,6 x 5,1	10
0011	W3T161297	Spring	1
0012	W3T164993	o-ring d 20,22 x 3,53	4
0013	W3T165447	o-ring d 12,37 x 2,62	4
0014	W3T172796	o-ring d 15,54 x 2,62	4
0015	W3T169197	o-ring d 9,25 x 1,78	2
0016	W3T170894	Shaft seal	2
0017	W3T168909	o-ring d 23,39 x 3,53	2
0018	W3T161292	Orifice, V-notch plug, 20,62 mm	2
0021	W3T168899	Washer d 12,7 x 4,9	1
0022	W3T159801	Seat unit d 6,7	1
0023	W3T167443	Valve stem, compl.	1
0024	W3T159882	Extension shaft	1
0025	W3T159883	Rack, compl. with grease	1
0026	W3T172913	Bellow	1
0027	W3T165077	Silicone grease KORASILON Paste MV, 35 g	1
0028	W3T169844	Extension chamber, autom.	1
0029	W3T166236	Knurled nut	1

6.5.5 Set of gaskets W3T167500 for Injector 1” (W3T171367) and Injector 1” anti-syphon (W3T171368)

Pos.	Part No.	Description	Quant.
0001	W3T161480	o-ring d 13 x 2	1
0002	W3T172921	o-ring d 10 x 4	1
0003	W3T172822	o-ring d 15,54 x 2,62	2
0004	W3T172899	o-ring d 23,47 x 2,62	1
0005	W3T168917	o-ring d 75,87 x 2,62	1
0006	W3T168867	o-ring d 40 x 3	1
0007	W3T161434	o-ring d 8 x 2	1
0008	W3T172724	o-ring d 20,22 x 3,53	1
0009	W3T167439	Set of o-rings	1
0010	W3T169066	o-ring d 12,37 x 2,62	1
0011	W3T172796	o-ring d 15,54 x 2,62	1

6.5.6 Maintenance set W3T167501

for Injector 1” (W3T171367), 1 year

Pos.	Part No.	Description	Quant.
0001	W3T159661	Valve seat	1
0002	W3T161480	o-ring d 13 x 2	1
0003	W3T172921	o-ring d 10 x 4	1
0004	W3T172822	o-ring d 15,54 x 2,62	2
0005	W3T172899	o-ring d 23,47 x 2,62	1
0007	W3T172902	Diaphragm	1
0008	W3T168917	o-ring d 75,87 x 2,62	1
0009	W3T159664	Valve stem	1
0010	W3T168867	o-ring d 40 x 3	1
0012	W3T161434	o-ring d 8 x 2	1
0013	W3T172724	o-ring d 20,22 x 3,53	1
0014	W3T167439	Set of o-rings	1
0015	W3T169066	o-ring d 12,37 x 2,62	1
0016	W3T172796	o-ring d 15,54 x 2,62	1

6.5.7 Maintenance kit W3T167029

for Injector 1” (W3T171367), 2 years

Pos.	Part No.	Description	Quant.
0001	W3T159661	Valve seat	2
0002	W3T161480	o-ring d 13 x 2	2
0003	W3T172921	o-ring d 10 x 4	2
0004	W3T172822	o-ring d 15,54 x 2,62	4
0005	W3T172899	o-ring d 23,47 x 2,62	2
0007	W3T172902	Diaphragm	2
0008	W3T168917	o-ring d 75,87 x 2,62	2
0009	W3T159664	Valve stem	2
0010	W3T168867	o-ring d 40 x 3	2
0012	W3T161434	o-ring d 8 x 2	2
0013	W3T172724	o-ring d 20,22 x 3,53	2
0014	W3T167439	Set of o-rings	2
0015	W3T169066	o-ring d 12,37 x2,62	2
0016	W3T172822	o-ring d 15,54 x 2,62	2
0017	W3T170187	Valve seat	1
0018	W3T159656	Valve stem	1

6.5.8 Maintenance kit W3T167030

for Injector 1” (W3T171367), 5 years

Pos.	Part No.	Description	Quant.
0001	W3T159661	Valve seat	5
0002	W3T161480	o-ring d 13 x 2	5
0003	W3T172921	o-ring d 10 x 4	2
0004	W3T170187	Valve seat	2
0005	W3T172822	o-ring d 15,54 x 2,62	10
0006	W3T172899	o-ring d 23,47 x 2,62	5
0007	W3T161113	Spring	1
0008	W3T159663	Clamping nut M 16 x 1,5	1
0009	W3T172902	Diaphragm	5
0010	W3T168917	o-ring d 75,87 x 2,62	5
0011	W3T159664	Valve stem	5
0012	W3T168867	o-ring d 40 x 3	5
0013	W3T168914	Spring d 6,3 x 11,9	1
0014	W3T161434	o-ring d 8 x 2	5
0015	W3T159656	Valve stem	1
0016	W3T172724	o-ring d 20,22 x 3,53	5
0017	W3T163614	Set of o-rings	5
0018	W2T506089	Injector throat, Nr. 140 W 3,57 mm	1
0019	W2T507416	Injector tailway 'F'	1
0020	W3T169066	o-ring d 12,37 x2,62	5
0021	W3T172796	o-ring d 15,54 x 2,62	5

6.5.9 Maintenance kit W3T167502

for Injector 1” anti-syphon (W3T171368), 1 year

Pos.	Part No	Description	Quant.
0001	W3T159661	Valve seat	1
0002	W3T161480	o-ring d 13 x 2	1
0003	W3T172921	o-ring d 10 x 4	1
0004	W3T172822	o-ring d 15,54 x 2,62	2
0005	W3T172899	o-ring d 23,47 x 2,62	1
0007	W3T172902	Diaphragm	1
0008	W3T168917	o-ring d 75,87 x 2,62	1
0009	W3T159664	Valve stem	1
0010	W3T168867	o-ring d 40 x 3	1
0012	W3T161434	o-ring d 8 x 2	1
0013	W3T172724	o-ring d 20,22 x 3,53	1
0014	W3T159674	Diaphragm	2
0015	W3T173063	Snap ring d 12	1
0016	W3T167439	Set of o-rings	1
0017	W3T169066	o-ring d 12,37 x 2,62	1
0018	W3T172822	o-ring d 15,54 x 2,62	1

6.5.10 Maintenance kit W3T167031

for Injector 1” anti-syphon (W3T171368), 2 years

Pos.	Part No.	Description	Quant.
0001	W3T159661	Valve seat	2
0002	W3T161480	o-ring d 13x 2	2
0003	W3T172921	o-ring d 10 x 4	2
0004	W3T172822	o-ring d 15,54 x 2,62	6
0005	W3T172899	o-ring d 23,47 x 2,62	2
0007	W3T172902	Diaphragm	2
0008	W3T168917	o-ring d 75,87 x 2,62	2
0009	W3T159664	Valve stem	2
0010	W3T168867	o-ring d 40 x 3	2
0012	W3T161434	o-ring d 8 x 2	2
0013	W3T172724	o-ring d 20,22 x 3,53	2
0014	W3T159674	Diaphragm	4
0015	W3T173063	Snap ring	2
0016	W3T167439	Set of o-rings	2
0017	W3T169066	o-ring d 12,37 x 2,62	2
0018	W3T172822	o-ring d 15,54 x 2,62	2
0019	W3T170187	Valve seat	1
0020	W3T159656	Valve stem	1
0021	W3T172796	o-ring d 15,54 x 2,62	2

6.5.11 Maintenance kit W3T167032 for Injector 1” anti-syphon (W3T171368), 5 years

Pos.	Part No.	Description	Quant.
0001	W3T159661	Valve seat	5
0002	W3T161480	o-ring d 13 x 2	5
0003	W3T172921	o-ring d 10 x 4	2
0004	W3T170187	Valve seat	2
0005	W3T172822	o-ring d 15,54 x 2,62	10
0006	W3T172899	o-ring d 23,47 x 2,62	5

Pos.	Part No.	Description	Quant.
0007	W3T161113	Spring TANTALOY 61, D24	1
0008	W3T159663	Clamping nut M 16x1,5	1
0009	W3T172902	Diaphragm	5
0010	W3T168917	o-ring d 75,87 x 2,62	5
0011	W3T159664	Valve stem	5
0012	W3T168867	o-ring d 40 x 3	5
0013	W3T168914	Spring d 6,3 x 11,9	1
0014	W3T161434	o-ring d 8 x 2	5
0015	W3T159656	Valve stem	1
0016	W3T172724	o-ring d 20,22 x 3,53	5
0017	W3T159674	Diaphragm	8
0018	W3T172903	Spring	1
0019	W3T173063	Snap ring	5
0020	W3T159880	Anti-syphon unit	1
0021	W3T163614	Set of o-rings	5
0022	W2T506089	Injector throat, Nr. 140 W 3,57 mm	1
0023	W2T507416	Injector tailway 'F'	1
0024	W3T169066	o-ring d 12,37 x 2,62	5
0025	W3T172796	o-ring d 15,54 x 2,62	5

6.5.12 Set of gaskets W3T167496 for Injector ¾" (W3T171369)

Pos.	Part No.	Description	Quant.
0001	W3T168861	o-ring d 25 x 2,5	1
0002	W3T161434	o-ring d 8 x 2	1
0003	W3T169066	o-ring d 12,37 x 2,62	2
0004	W3T168988	o-ring d 68 x 2	1
0005	W3T172921	o-ring d 10 x 4	1
0006	W3T172724	o-ring d 20,22 x 3,53	1
0007	W3T169068	o-ring d 13,94 x 2,62	2
0008	W3T172720	o-ring d 28,17 x 3,53	1
0009	W3T172721	o-ring d 32,92 x 3,53	1

6.5.13 Maintenance kit W3T167497 for Injector ¾" (W3T171369), 1 year

Pos.	Part No.	Desctription	Quant.
0001	W3T168861	o-ring d 25 x 2,5	1
0002	W3T161434	o-ring d 8 x 2	1
0003	W3T169066	o-ring d 12,37 x 2,62	2
0004	W3T168988	o-ring d 68 x 2	1
0005	W3T172921	o-ring d 10 x 4	1
0006	W3T172724	o-ring d 20,22 x 3,53	1
0007	W3T169068	o-ring d13,94 x 2,62	2
0008	W3T172720	o-ring d 28,17 x 3,53	1
0009	W3T172721	o-ring d 32,92 x 3,53	1
0010	W3T161483	Diaphragm	1
0013	W3T159657	Valve stem	1
0014	W3T171695	Diaphragm D 74,5 x d12,7	1
0015	W3T158460	Valve seat	1

6.5.14 Maintenance kit W3T167025 for Injector ¾" (W3T171369), 2 years

Pos.	Part No	Description	Quant.
0001	W3T168861	o-ring d 25 x 2,5	2
0002	W3T161434	o-ring d 8 x 2	2
0003	W3T169066	o-ring d 12,37 x 2,62	4
0004	W3T168988	o-ring d 68 x 2	2
0005	W3T172921	o-ring d 10 x 4	2
0006	W3T172724	o-ring d 20,22 x 3,53	2
0007	W3T169068	o-ring d 13,94 x 2,62	4
0008	W3T172720	o-ring d 28,17 x 3,53	2
0009	W3T172721	o-ring d 32,92 x 3,53	2
0010	W3T161483	Diaphragm	2
0013	W3T159657	Valve stem	2
0014	W3T159656	Valve stem	1
0015	W3T158460	Valve seat	2
0016	W3T171695	Diaphragm d 74,5 x 12,7	2
0022	W2T503995	Special grease BARRIERTA L25DL, 9 gr	1

6.5.15 Maintenance kit W3T167026 für Injector ¾" (W3T171369), 5 years

Pos.	Article-No.	Description	Quant.
0001	W3T159655	Inlet screw	1
0002	W3T168861	o-ring d 25 x 2,5	5
0003	W3T161434	o-ring d 8 x 2	5
0004	W3T159656	Valve stem	1
0005	W3T158460	Valve seat	5
0006	W3T169066	o-ring d 12,37 x 2,62	10
0007	W3T168988	o-ring d 68 x 2	5
0008	W3T161483	Diaphragm	5
0009	W3T158461	Clamping nut	1
0010	W3T165194	Spring	1
0011	W3T168914	Spring	1
0012	W3T159657	Valve stem	5
0013	W3T172921	o-ring d 10 x 4	5
0014	W3T172724	o-ring d 20,22 x 3,53	5
0015	W3T169068	o-ring d 13,94 x 2,62	10
0018	W3T172720	o-ring d 28,17 x 3,53	5
0019	W3T172721	o-ring d 32,92 x 3,53	5
0022	W2T503995	Special grease BARRIERTA L25DL, 9 gr	1
0023	W3T171695	Diaphragm	5
0024	W3T173060	Injector nozzle, No. 140	1
0025	W2T507600	Tailway 'F'	1

6.5.16 Set of gaskets W3T167498 for Injector ¾" anti-syphon (W3T171370)

Pos.	Part No.	Description	Quant.
0001	W3T168861	o-ring d 25 x 2,5	1
0002	W3T161434	o-ring d 8 x 2	1
0003	W3T169066	o-ring d 12,37 x 2,62	3
0004	W3T168988	o-ring d 68 x 2	2
0005	W3T172921	o-ring d 10x4	1
0006	W3T169065	o-ring d 6,07 x 1,78	2
0007	W3T172724	o-ring d 20,22 x 3,53	1
0008	W3T169068	o-ring d 13,94 x 2,62	2
0009	W3T169073	o-ring d 21,89 x 2,62	1
0010	W3T172720	o-ring d 28,17 x 3,53	1
0011	W3T172721	o-ring d 32,92 x 3,53	1

6.5.17 Maintenance kit W3T167499 for Injector ¾" anti-syphon (W3T171370), 1 year

Pos.	Part. No.	Description	Quant.
0001	W3T168861	o-ring d 25 x 2,5	1
0002	W3T161434	o-ring d 8 x 2	1
0003	W3T169066	o-ring d 12,37 x 2,62	3
0004	W3T168988	o-ring d 68 x 2	2
0005	W3T161483	Diaphragm	3
0008	W3T159657	Valve stem	1
0009	W3T172921	o-ring d 10 x 4	1
0010	W3T169065	o-ring d 6,07 x 1,78	2
0011	W3T172724	o-ring d 0,22 x 3,53	1
0012	W3T169068	o-ring d 13,94 x 2,62	2
0013	W3T169073	o-ring d 21,89 x 2,62	1
0014	W3T172720	o-ring d 28,17 x 3,53	1
0015	W3T172721	o-ring d 32,92 x 3,53	1
0016	W3T171695	Diaphragm	1
0017	W3T158460	Valve seat	1

6.5.18 Maintenance kit W3T167027 für Injector ¾" anti-syphon (W3T171370), 2 years

Pos.	Part No.	Description	Quant.
0001	W3T168861	o-ring d 25 x 2,5	2
0002	W3T161434	o-ring d 8 x 2	2
0003	W3T169066	o-ring d 12,37 x 2,62	6
0004	W3T168988	o-ring d 68 x 2	4
0005	W3T161483	Diaphragm	6
0008	W3T159657	Valve stem	2
0009	W3T172921	o-ring d 10 x 4	2
0010	W3T169065	o-ring d 6,07 x 1,78	4
0011	W3T172724	o-ring d 20,22 x 3,53	2
0012	W3T169068	o-ring d 13,94 x 2,62	4
0013	W3T169073	o-ring d 21,89 x 2,62	2
0014	W3T172720	o-ring d 28,17 x 3,53	2
0015	W3T172721	o-ring d 32,92 x 3,53	2
0016	W3T159656	Valve stem	1
0017	W3T158460	Valve seat	2
0018	W3T171695	Diaphragm	2
0019	W2T503995	Special grease BARRIERTA L25DL, 9 gr	1

6.5.19 Maintenance kit W3T167028 for Injector ¾" anti-syphon (W3T171370), 5 years

Pos.	Part No.	Description	Quant.
0001	W3T159655	Inlet screw	1
0002	W3T168861	o-ring d 25 x 2,5	5
0003	W3T161434	o-ring d 8 x 2	5
0004	W3T159656	Valve stem	1
0005	W3T158460	Valve seat	5
0006	W3T169066	o-ring d 12,37 x 2,62	15
0007	W3T168988	o-ring d 68 x2	10
0008	W3T161483	Diaphragm	15
0009	W3T158461	Clamping nut	1
0010	W3T165194	Spring	1
0011	W3T168914	Spring	1
0012	W3T159657	Valve stem	5
0013	W3T172921	o-ring d 10 x 4	5
0014	W3T158545	Guide pin	2
0015	W3T169065	o-ring d 6,07 x 1,78	10
0018	W3T161484	Spring d 21,3	1
0019	W3T172724	o-ring d 20,22 x 3,53	5
0020	W3T169068	o-ring d 13,94 x 2,62	10
0021	W3T169073	o-ring d 21,89 x 2,62	5
0022	W2T503995	Special grease BARRIERTA L25DL, 9 gr	1
0024	W3T172720	o-ring d 28,17 x 3,53	5
0025	W3T172721	o-ring d 32,92 x 3,53	5
0026	W3T171695	Diaphragm	5
0027	W3T171257	Injector nozzle No.140 anti-syphon	1
0028	W2T507600	Tailway 'F'	1

6.6 Positioner

Warning!

To avoid personal injury by electrical energy only authorized and qualified electrical personnel may carry out works on electrical parts of the system.
Make sure that the system is free from voltage during the time of maintenance or repair.
Pay attention to external voltage even if the main switch is off.

6.6.1 Checking the positioner motor

(only by electrical specialists)

Check the motor winding with an ohmmeter:

1 Make sure the positioner is free from voltage

2 Remove knob and screws, lift the cover (see also 4.5.3)

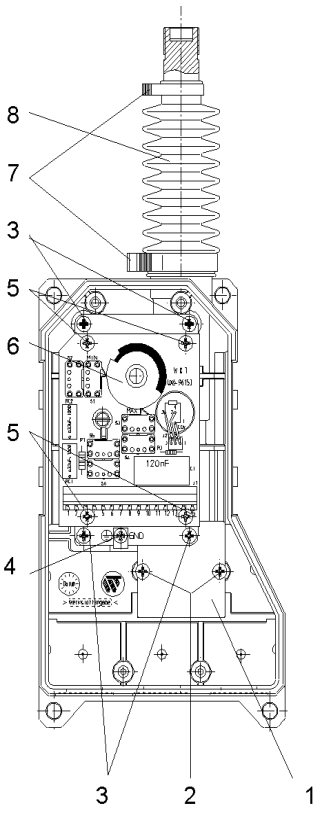
3 Pull off the terminals 4/5/6

4 Measure the winding resistance::

terminals	4-6	5-6	4-5
230 V motor	8500 Ohm	8500 Ohm	17000 Ohm
115 V motor	1960 Ohm	1960 Ohm	3920 Ohm
		tolerance	±10%

5 If the tolerance is exceeded replace the motor-gear-assembly (refer to 6.6.4.)

6.6.2 Replacing the rack



The position numbers (...) refer to the drawing below.

1 Disconnect the positioner from the mains.

2 Remove the coupling between the positioner and the chlorinator.

3 Remove the knob and the cover

4 Remove all connectors at the board, disconnect the ground (4) from the gear.

5 Remove the 4 screws (3) and remove the motor-gear assembly incl. board.

6 Remove the two screws (2) and remove the cover (1)

7 Remove the clamps (7) and bellow (8)

8 Remove the Seeger circlip ring

9 Pull out the rack

10 Apply enough plastic compatible grease to the new rack:
8 ml: W2T504248; 60 ml: W2T504249

11 Insert the rack into the housing

12 Place the Seeger circlip ring on the rack

13 Place the cover (1)

14 Mount motor-gear-assembly with board and fix, pay attention to the toothed wheel matching with the rack.

15 Pull the bellows over the rack and fix the clamps (7)

16 Switch to manual by pulling the knob shaft, pull out the rack.

17 Place the coupling to the chlorinator

18 Connect the cables on the board and the ground to the gear (4).

19 Adjust the limit switches and the potentiometer

20 Close the cover and check for function.

1 Cover plate
2 Bolts
3 Bolts
4 Earth connection
5 Bolts
6 Cam
7 Clips
8 Bellow

6.6.3 Replacing the board

1 Disconnect the positioner from the mains.

2 Remove the knob and the cover.

3 Remove all connectors from the board

4 Remove cam wheel (6) (Allan key 1,5 mm)

5 Remove all 4 screws (5)

6 Remove the board with transparent cover

7 Remove the toothed wheel from the potentiometer shaft

8 Place the transparent cover onto the new board

9 Place the toothed wheel onto the potentiometer shaft, push to the stop and fix.

10 Fix the new board with the wheels matching

11 Place the cam wheel.

12 Place the connectors, adjust the limit switches and the potentiometer, close the cover.

13 Check for function.

6.6.4 Replacing the motor-gear-assembly

1 Disconnect the positioner from the mains.

2 Remove the knob and the cover.

3 Remove all connectors from the board and the ground

4 Remove screws (3)

5 Take out the motor-gear-assembly.

6 Remove the board and place onto the new motor-gear-assembly.

7 Mount motor-gear-assembly with the toothed wheel matching with the rack.

8 Place the connectors, adjust the limit switches and the potentiometer, close the cover.

9 Check for function.

6.6.5 Spare parts for the positioner

		Part no.
Bellow		W3T172913
Rack	incl. grease	W3T159883
Board	230 V	W3T343350
	115 V	W3T343531
Motor-gear assembly	230 V	W3T353676
	115 V	W3T353677

The part numbers are valid for positioners supplied in or after December 2016. For all positioners supplied before please give the serial number of the positioner when ordering spare parts.

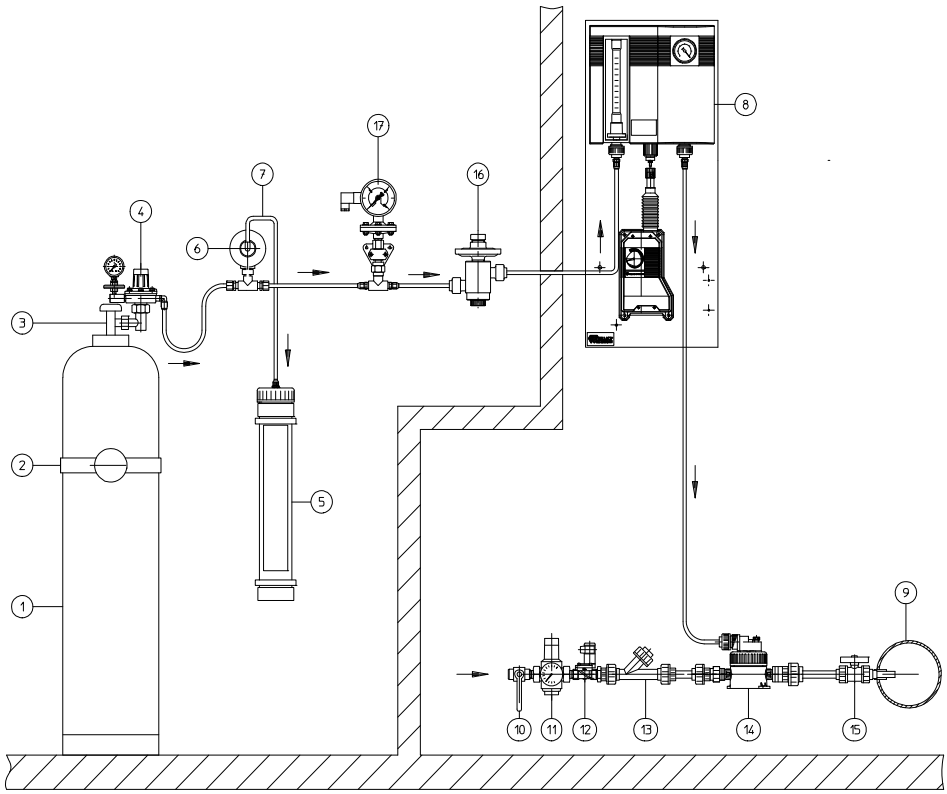
7. Drawings

7.1 Typical installations

Note

The gas monitoring system is not always displayed in the following drawings.

7.1.1 Basic chlorinator installation

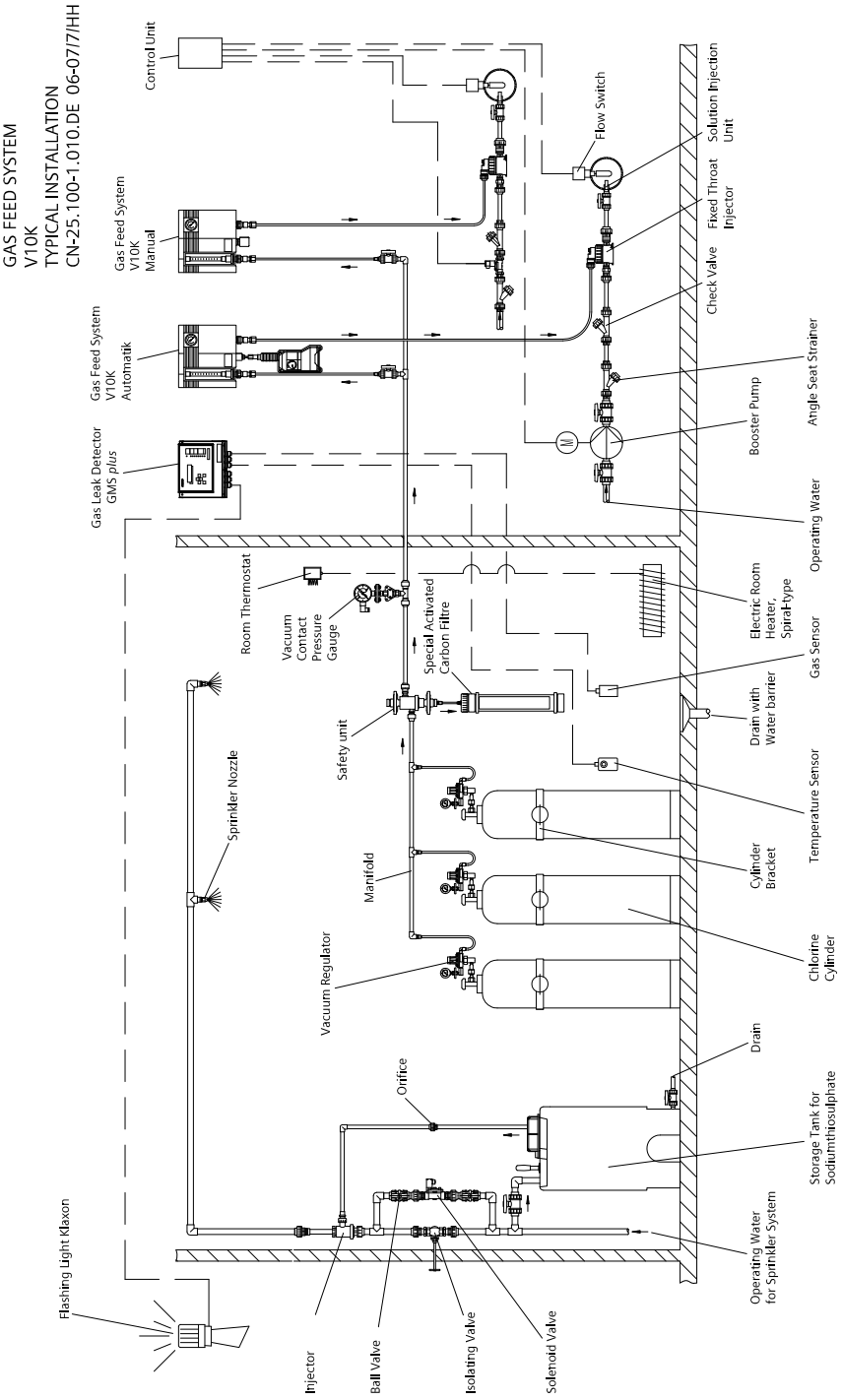


BZ-1371

Pos.	Description
1	Chlorine cylinder
2	Holding bracket
3	Cylinder main valve
4	Vacuum control valve
5	Activated carbon filter
6	Safety relief valve
7	Vent line
8	Gas control unit V10k
9	Main line being treated
10-13	Operating water supply
14	Injector
15	Point of application
16	Vacuum safety valve
17	Contact vacuum pressure gauge

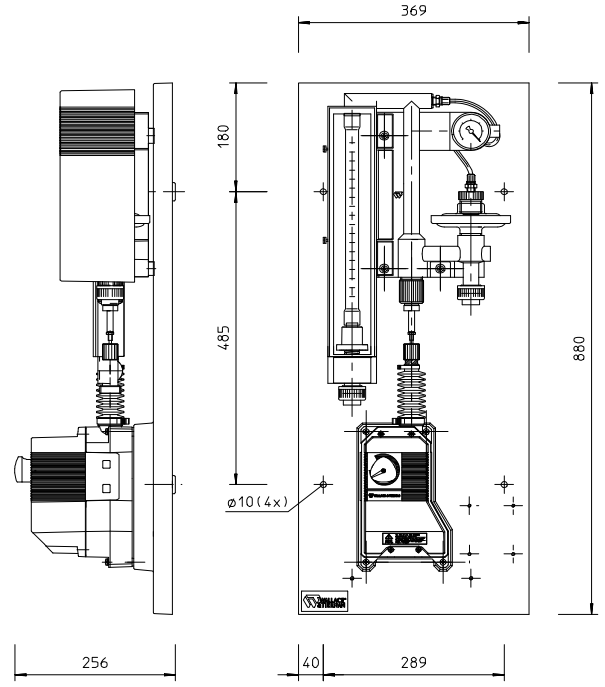
7.1.2 Chlorinator with remote vacuum chlorine manifold

Chlorine supply with several chlorine cylinders with one vacuum control valve each and a vacuum manifold.
Chlorine gas monitoring system with horn, warning flash light and sprinkler system



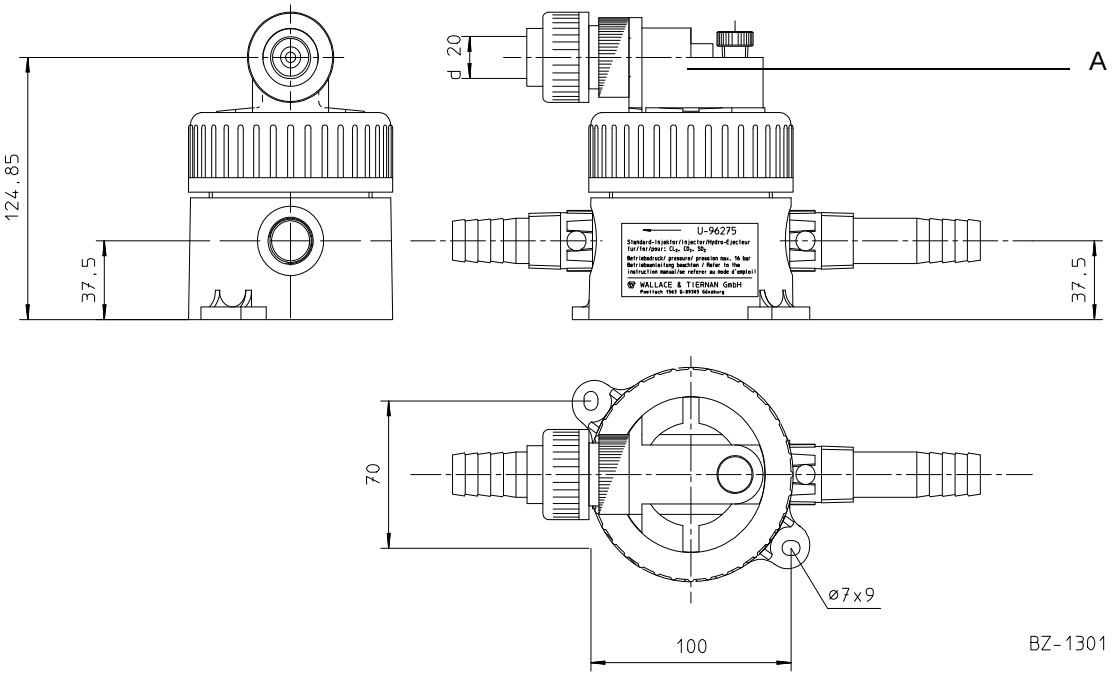
7.2 Mounting drawings

7.2.1 Mounting of chlorinator V10K (with positioner)



Cover removed

7.2.2 Mounting of standard injector 3/4“ W3T171369



A Gas inlet can be turned in 45° steps

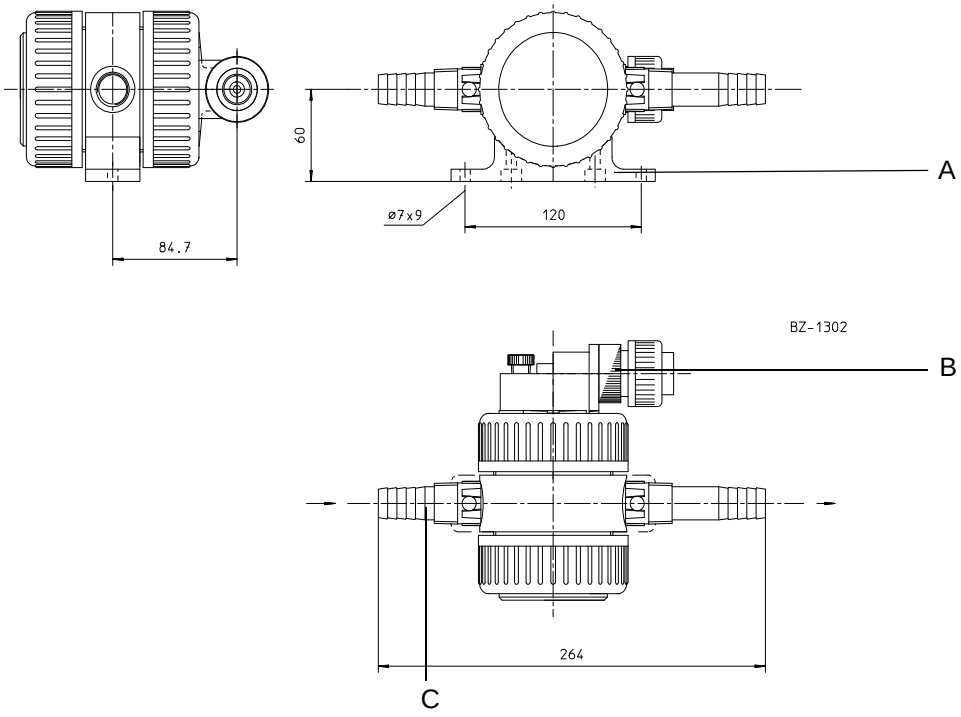
Note

Install the injector vertically (direction of flow upward!) or horizontally. Do not install hanging overhead!

Nozzle and tailway for injector W3T171369

Nozzle		Tailway	
99	W3T161564	D	W2T507599
140	W3T173060	E	W2T507618
193	W3T173078	F	W2T507600
242	W3T173080	G	W2T507601
70	W3T172990	H	W2T507602
120	W2T507210	J	W2T507603
165	W3T173070	S	W3T173099
		C	W2T507614

7.2.3 Mounting of anti-syphon injector 3/4“ W3T171370



A Console (W3T161479), screws (2x W2T504542) (not included in W3T171370)
B Gas inlet can be turned in 45° steps
C Nozzle with cross-hole!

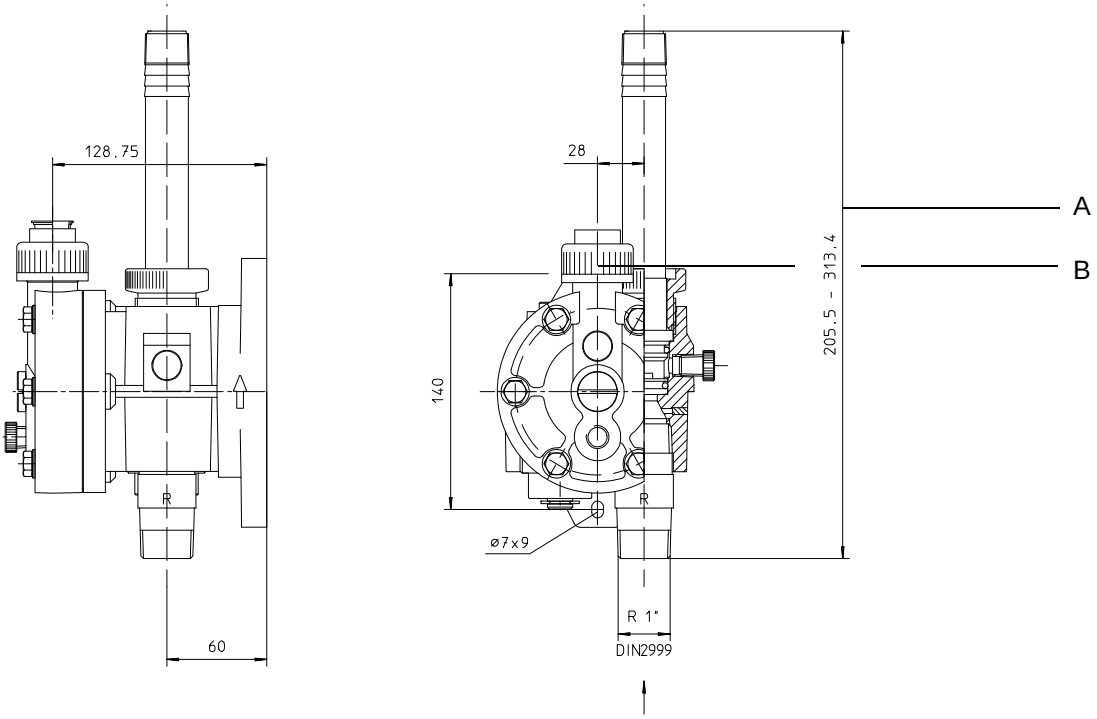
Note

Install the injector vertically (direction of flow upward!) or horizontally. Do not install hanging overhead!

Nozzle and tailway for injector W3T171370

Nozzle		**Tailway**	
99	W3T171246	D	W2T507599
140	W3T171257	F	W2T507600
193	W3T171271	G	W2T507601
242	W3T171273	H	W2T507602
		J	W2T507603
		S	W3T173099

7.2.4 Mounting of injector 1“ W3T171367 and W3T171368



A Total length depending on tailway
B Gas inlet can be turned in 60° steps

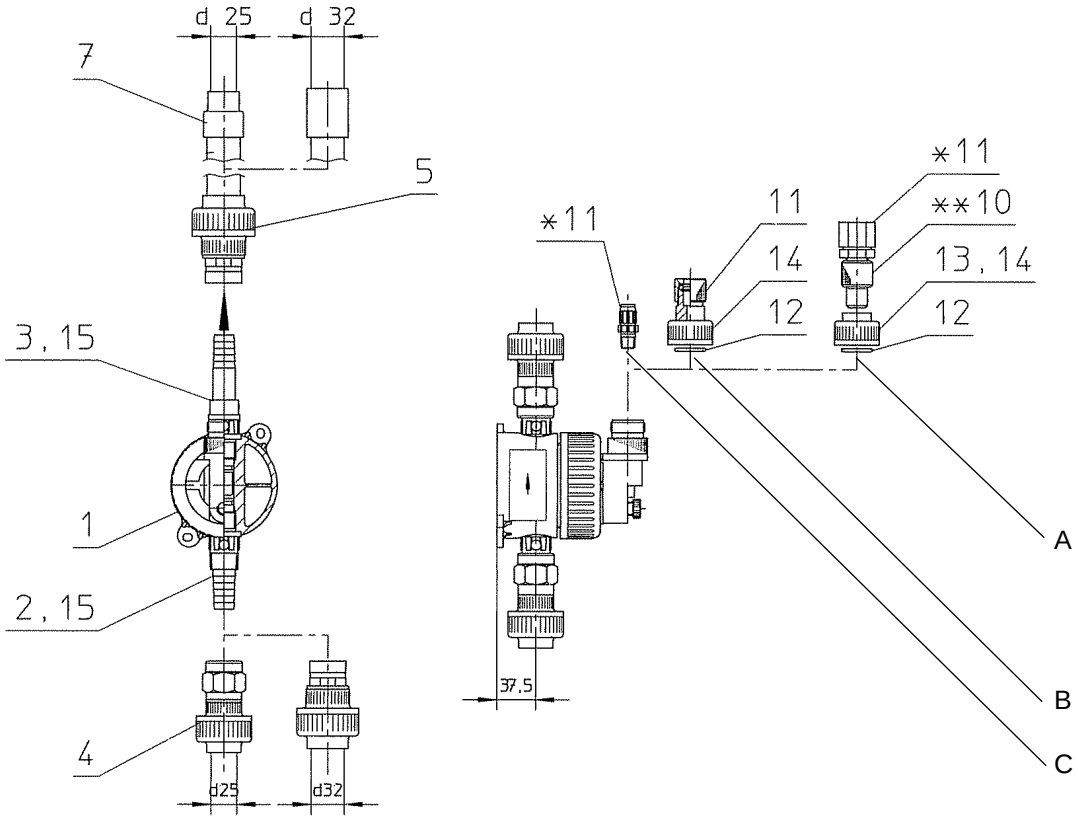
Note

Install the injector vertically (direction of flow upward!) or horizontally. Do not install hanging overhead!

Throat and tailway for injector W3T171367 and W3T171368

Throat		**Tailway**	
99	W2T506230	C	W2T507414
120	W2T506088	D	W3T165389
140	W2T506089	E	W2T507415
165	W2T506090	F	W2T507416
193	W2T506091	G	W2T507417
242	W2T506092	H	W2T507418
312	W2T506093	J	W2T507419
70	W2T506229	K	W2T507420
		L	W2T507421
		B	W3T165342

7.2.5 Injector 3/4" with accessory



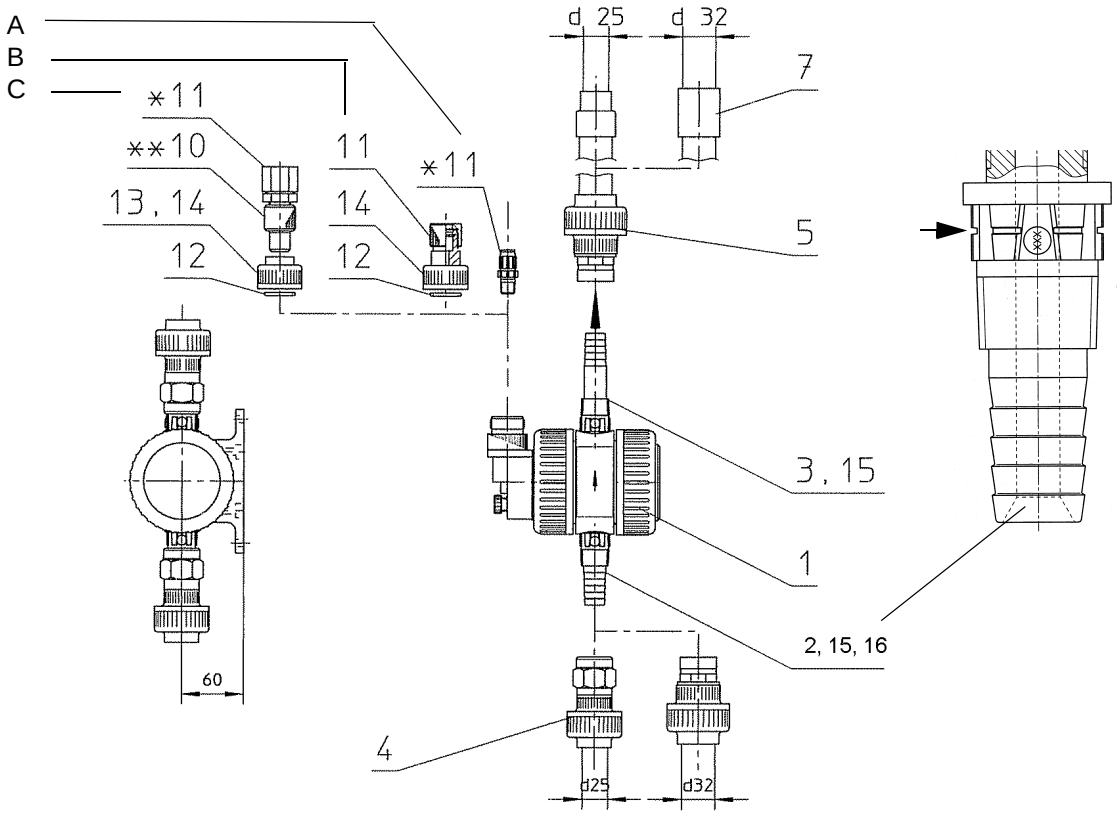
A for hose ID12x2 (W2T505677)
B for hose ID9,5x1,6 (W2T505672)
C for hose ID6,35x1,6 (W2T505671)

Pos. 4 and 5 tightened with teflon tape.
** tightened with silicone grease (W3T165077).*
*** cemented (PVC)*

Injector 3/4" with accessory

Pos	Part no.	Description		Qty.	
1	W3T171369	Injector 3/4"	PVC-U	1	each
2		Nozzle		1	each
3		Tailway		1	each
4	W3T167396	Adaptor union incl. o-ring W3T172721	DN25-R 3/4" d32.92 x 3.52	1	each
	W3T163750	Adaptor union incl. o-ring W3T172720	DN 20-R 3/4 d28.17 x 3.52	1	each
5	W3T163705	Adaptor union incl. o-ring W3T172721	DN25-R 3/4" d32.92 x 3.52	1	each
7	W2T505599	Reduction	d32+40-20+25	1	each
	W2T507634	Socket	PVC-U; d32	1	each
	W2T505442	Reduction	d32+40-25+32	1	each
	W2T505599	Reduction	d32+40-20+25	1	each
10	W3T167194	Reduction nipple	PVC, 1/2"NPT x DN 15	1	each
11	W3T171372	Connector	for hose 3/8 x 1/2"	1	each
	W3T161698	Connector	1/2-14NPT	1	each
	W3T171353	Connector	for hose D3/8" d1/4"	1	each
12	W3T172724	O-ring	d20.22 x 3.53/FPM	1	each
13	W2T507291	Union end	PVC-U; d20	1	each
14	W2T506920	Union end	PVC-U; d20	1	each
15	W3T169068	O-ring	d13.94 x 2.62/FPM	2	each
20	W3T173049	Fixing set	2 x dowel S8, 2 x screw 6x45 with washer	1	each

7.2.6 Anti-syphon-injector 3/4" with accessory



A for hose ID6,35x1,6 (W2T505671).
B for hose ID9,5x1,6 (W2T505672).
C for hose ID12x2 (W2T505677).

Pos. 4 and 5 tightened with teflon tape.
** tightened with silicone grease (W3T165077).*
*** cemeted (PVC)*

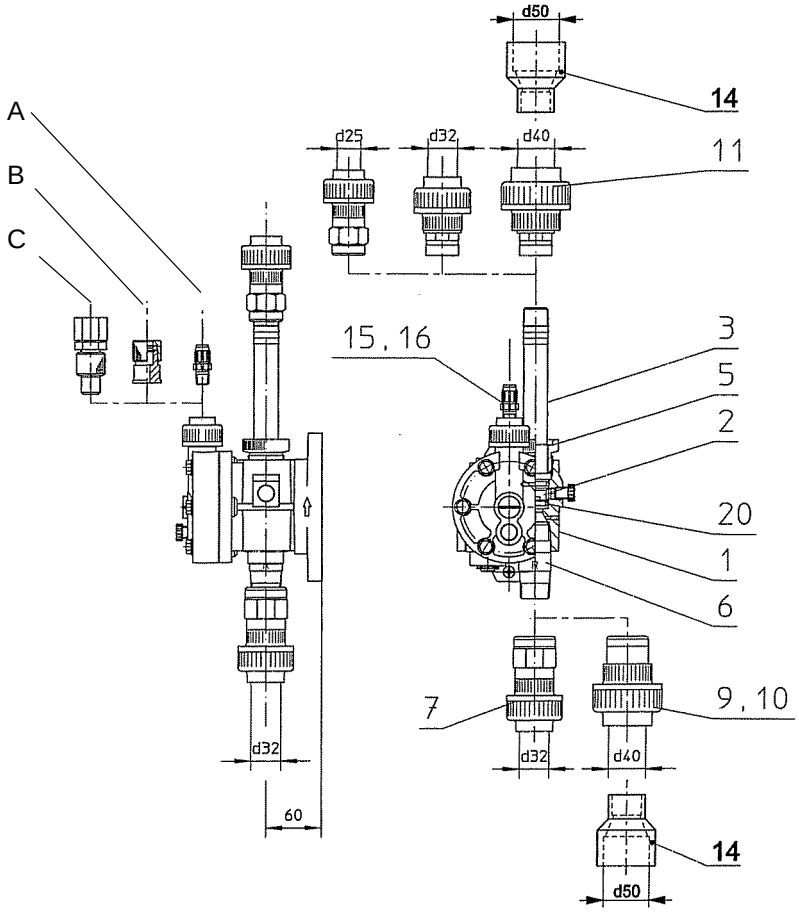
Note

Pos. 2: Only use nozzle with groove (see arrow)!

Anti-syphon-Injector 3/4" with accessory

Pos	Part no.	Description		Qty.	
1	W3T171370	Injector 3/4"	PVC-U	1	each
2		Nozzle		1	each
3		Tailway		1	each
4	W3T167396	Adaptor union incl. o-ring	DN25-R 3/4" d32.92 x 3.52	1	each
	W3T163750	Adaptor union incl. o-ring	DN 20-R 3/4 d28.17 x 3.52	1	each
5	W3T163705	Adaptor union incl. o-ring	DN25-R 3/4" d32.92 x 3.52	1	each
7	W2T505599	Reduction	d32+40-20+25	1	each
	W2T507634	Socket	PVC-U;d32	1	each
	W2T505442	Reduction	d32+40-25+32	1	each
	W2T505599	Reduction	d32+40-20+25	1	each
10	W3T167194	Adaptor nipple	PVC, 1/2"NPT x DN 15	1	each
11	W3T171372	Connector	for hose 3/8 x 1/2"	1	each
	W3T161698	Connector	1/2-14NPT	1	each
	W3T171353	Connector	for hose D3/8" d1/4"	1	each
12	W3T172724	O-ring	d20,22 x 3,53/FPM	1	each
13	W2T507291	Union end	PVC-U; d20	1	each
14	W2T506920	Union end	PVC-U; d20	1	each
15	W3T169068	O-ring	d13,94 x 2,62/FPM	1	each
16	W3T169073	O-ring	d21,89 x 2,62/FPM	1	each
20	W3T163692	Console		1	each

7.2.7 Injector 1" with accessory



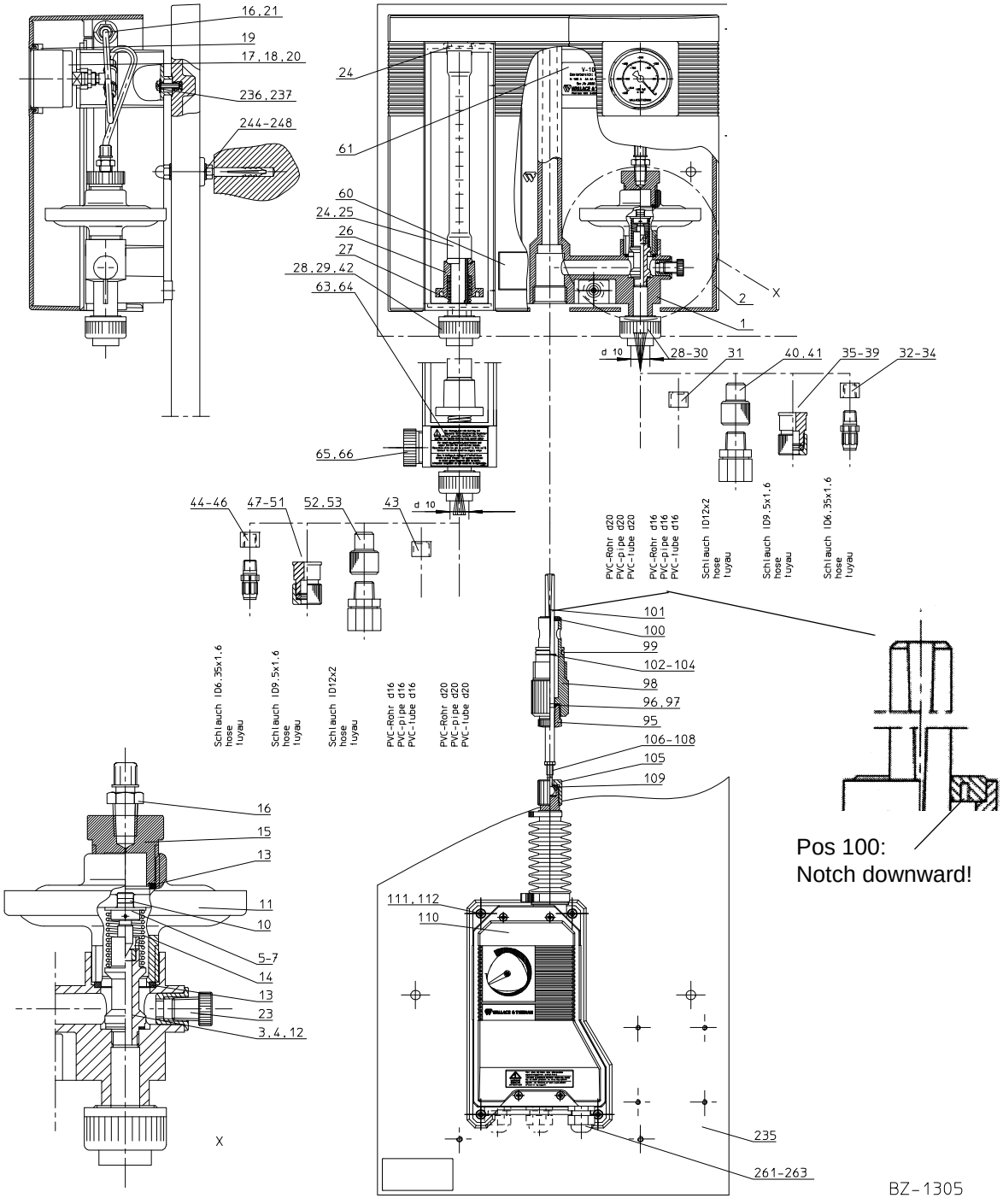
A for hose ID6,35x1,6 (W2T505671).
B for hose ID9,5x1,6 (W2T505672).
C for hose ID12x2 (W2T505677).

Pos. 6, 7, 9, 10, 11 tightened with teflon tape.
Pos. 15, 16 tightened with silicone grease (W3T165077).
Pos. 14 supplied loose

Injector 1" with accessory

Pos	Part No.	Description		Quant.	
1	W3T171367	Injector 1"	PVC/PTFE/FPM	1	each
	W3T171368	Injector 1"	PVC/PTFE/FPM	1	each
2		Injector throat		1	each
3		Tailway		1	each
5	W3T170897	Clamping screw	PVC	1	each
6	W3T159484	Adaptor nipple	PVC;R1"x1"NPT;80lg.	1	each
7	W3T163793	Adaptor union incl. o-ring W3T172721	DN 25-R 1 d32,92x3,53	1	each
8	W2T506782	Reducing bush	PVC;d32-25	1	each
9	W2T505893	Reducing bush	PVC-U; d40-Rp1	1	each
10	W2T504882	Union incl. o-ring W2T507049	PVC-U;d40; d40,64x5,33	1	each
11	W2T505689	Reducing bush	PVC-U;d32-Rp3/4	1	each
	W3T163749	Adaptor union incl. o-ring W3T172720	DN 20-R 3/4 d28,17x3,53	1	each
	W3T167396	Adaptor union incl. o-ring W3T172721	DN25-R 3/4" d32,92x3,53	1	each
	W2T505689	Reducing bush	PVC-U;d32-Rp3/4	1	each
12	W2T506786	Reduktion kurz	PVC;d40-32	1	each
13	W2T504882	Union incl. o-ring W2T507049	PVC-U;d40; d40,64x5,33	1	each
14	W2T505446	Reducing bush	d50+63-32+40	1	each
15	W3T167194	Reducing bush	PVC, 1/2"NPT x DN 15	1	each
	W3T172961	Threaded socket	1/4-18 NPT;d20;PVC	1	each
16	W3T161698	Clamping union	1/2-14NPT;	1	each
	W3T171353	Clamping union	for hose D3/8" d1/4"	1	each
	W3T171372	Clamping union	for hose 3/8 x 1/2"	1	each
20	W3T163614	Set of o-rings	CSM	1	each
25	W3T171383	Fixing set		1	each

7.3 V10k chlorinator



Pos. 106-108:
After adjusting the nut pos. 108 lock the nut and secure with red locking varnish.

Pos	Part no.	Description		Qty.	
1	W3T169313	Body (5")	PVC, V10k	1	each
	W3T161817	Body (10")	PVC, V10k	1	each
2+ 19+ 60	W3T167495	Cover complete		1	each
3+4	W3T159801	Seat assembly	PTFE; d6,7; above 3 kg/h	1	each
	W3T171294	Seat assembly	PTFE; d2,6; up to 2 kg/h	1	each
5-7	W3T167443	Valve stem complete		1	each
10	W2T507221	O-ring	d5,28x1,78/CSM	1	each
11	W3T165515	Valve body assembly		1	each
12	W3T165176	Gasket	PVC-P;D20,5 x 14,3x1	1	each
13	W3T161334	Gasket	CSM;D32 x 25,4 x 3	2	each
14	W3T161294	Spring	up to 60 g/h Cl2	1	each
	W3T165193	Spring	more than 60 g/h Cl2		
15	W3T169056	Throttle plug	PVC,Tr13/8"x8x38 (*W)	1	each
16	W3T161473	Hose connector	PVDF,1/4-18 NPT-Id4xAd6	1	each
17	W3T168305	Gauge	0 mbar/Cl2/M14x1	1	each
18	W3T166236	Nut	PVC-U, M14x1	1	each
20	W2T503950	T-Hose connector	18 NPT- Id 4 x Ad 6 (PVDF)	1	each
21	W3T171125	PTFE hose	230 lg	2	each
23	W3T168893	Plug	PVC-U; 1/4-18NPT x 21	1	each
24	W3T168911	O-ring	d16,6 x 5,1/FPM	2	each
25		Flowmeter	see separate table	1	each
26	W3T169050	Base	PVC; V10k	1	each
27	W3T161297	Spring		1	each
28	W3T164993	O-ring	d20,22 x 3,53/CSM	2	each
29	W2T506920	Union nut	PVC-U; d20	2	each
30	W2T507291	Union end	PVC-U; d20	1	each
31	W2T506780	Reducing bush	PVC; d20-16	1	each
32	W3T172961	Threaded insert	1/4-18 NPT; d20;PVC	1	each
33	W3T169110	Union	PVC; 1/4NPT x 1/2-20UNF-2A	1	each
34	W3T169111	Union nut	PVC; 1/2-20UNF-2B	1	each
35	W3T171126	Hose connector	for hose RP-684821	1	each

Pos	Part no.	Description		Qty.	
36	W3T169009	Nut	PVC	1	each
37	W3T165447	O-ring	d12,37 x 2,62/CSM	1	each
38	W3T163379	Insert	PVC	1	each
39	W3T168933	Support ring	0,8 thick	1	each
40	W3T167194	Reducing nipple	PVC, 1/2"NPT x DN 15	1	each
41	W3T161698	Connector, male	1/2-14NPT	1	each
42	W2T507291	Union end	PVC-U; d20	1	each
43	W2T506780	Reducing bush	PVC; d20-16	1	each
44	W3T172961	Threaded insert	1/4-18 NPT; d20; PVC	1	each
45	W3T169110	Union	PVC;1/4NPT x 1/2-20UNF-2A	1	each
46	W3T169111	Union nut	PVC; 1/2-20UNF-2B	1	each
47	W3T171126	Hose connector	for hose RP-684821	1	each
48	W3T169009	Union nut	PVC	1	each
49	W3T165447	O-ring	d12,37 x 2,62/CSM	1	each
50	W3T163379	Insert	PVC	1	each
51	W3T168933	Support ring	0,8	1	each
52	W3T167194	Reducing nipple	PVC, 1/2" NPT x DN 15	1	each
53	W3T161698	Connector, male	1/2-14NPT	1	each
54	W3T165335	Plug	GPN 620 U 10B	1	each
61	W2T507548	Name plate	68 x 35	1	each
95	W3T169846	Seal clamping screw	PVC; 7/8-14NF x 23	1	each
96	W3T169197	O-ring	d9,25 x 1,78/CSM	1	each
97	W3T170894	Shaft seal	PTFE;D19/10,5; d8,9; x 4/0,8	1	each
98	W3T169844	Extension chamber	PVC	1	each
99	W3T168909	O-ring	d23,39 x 3,53/CSM	1	each
100	W3T161292	Orifice	PTFE	1	each
101		V-notch plug linear	see separate table	1	each
102	W3T168899	Washer	d=12,7 x 4,9; PTFE	1	each
103	W3T163275	Stud	Silver	1	each
104	W3T163273	Stem plug	/D	1	each
105	W3T171121	Clamp-nut	M20; PVC	1	each
106	W3T163456	Coupling	Monel 400; 1/4-20 UNC	1	each
108	W3T172738	Hexagon nut	PVC;1/4"	1	each

Pos	Part no.	Description		Qty.	
109	W3T171122	Guiding washer	Id7,5 x Ad16,5; PVC	1	each
110	W3T173187	Positioner	230V; EU version	1	each
	W3T173205	Positioner	115V; US version	1	each
111	W2T505723	Screw	M5 x 50/DIN 7985/V2A	4	each
112	W2T506019	Washer	DIN 125 A, 5,3 mm, A 2	4	each
235	W3T172956	Panel V10k		1	each
236	W3T165423	Washer	DIN 9021-A - 5,3 - A2-70	3	each
237	W2T505771	Screw	M5 x 20/DIN 7985/V2A	3	each
244	W2T504780	Anchor bolt	M8 x 110, A2	4	each
245	W3T172730	Washer	DIN 125 A, 8,4 mm, A 2	8	each
246	W2T507594	Dowel	Nylon S 10	4	each
247	W3T172818	Nut	DIN 934, M 8, A 2	4	each
248	W2T505532	Cap nut	DIN 1587, M 8, Ms vern.	4	each
250	W2T505779	Plug	GPN 500 B41; for M5	4	each
260	W3T165077	Silicone grease		1	each
251	W2T505780	Plug	GPN 500 B47; for M6	2	each
261	W2T503920	Cable gland PG13,5	grey; d6-12; type Skintop	3	each
262	W2T505380	Nut PG13,5		3	each
263	W3T161275	Plug	GPN 610 U 7	3	each

7.3.1 Flowmeters

Length 5" range (for chlorine gas)	Spare flowmeter		Length 10", range (for chlorine gas)	Spare flowmeter
1 - 22,5 g/h	W3T173096		1 - 30 g/h	W3T168366
3 - 60 g/h	W3T165334		3 - 60 g/h	W3T169102
10 - 200 g/h	W3T165357		10 - 200 g/h	W3T165358
20 - 400 g/h	W3T165381		20 - 400 g/h	W3T165382
30 - 600 g/h	W3T165402		30 - 600 g/h	W3T165403
50 - 1000 g/h	W3T165418		50 - 1000 g/h	W3T165419
75 - 1500 g/h	W3T165433		75 - 1500 g/h	W3T165434
100 - 2000 g/h	W3T165444		100 - 2000 g/h	W3T165445
0,15 - 3 kg/h	W3T165459		0,15 - 3 kg/h	W3T165460
0,20 - 4 kg/h	W3T165462		0,20 - 4 kg/h	W3T165463
0,25 - 5 kg/h	W3T165470		0,25 - 5 kg/h	W3T165471
0,30 - 6 kg/h	W3T165476		0,30 - 6 kg/h	W3T165477
0,40 - 8 kg/h	W3T165480		0,40 - 8 kg/h	W3T165481
0,50 - 10 kg /h	W3T165484		0,50 - 10 kg/h	W3T165485
1 - 15 kg/h	W3T165494		1 - 15 kg/h	W3T165495

The spare flowmeters include the flowmeter tube incl. float and the float stops.

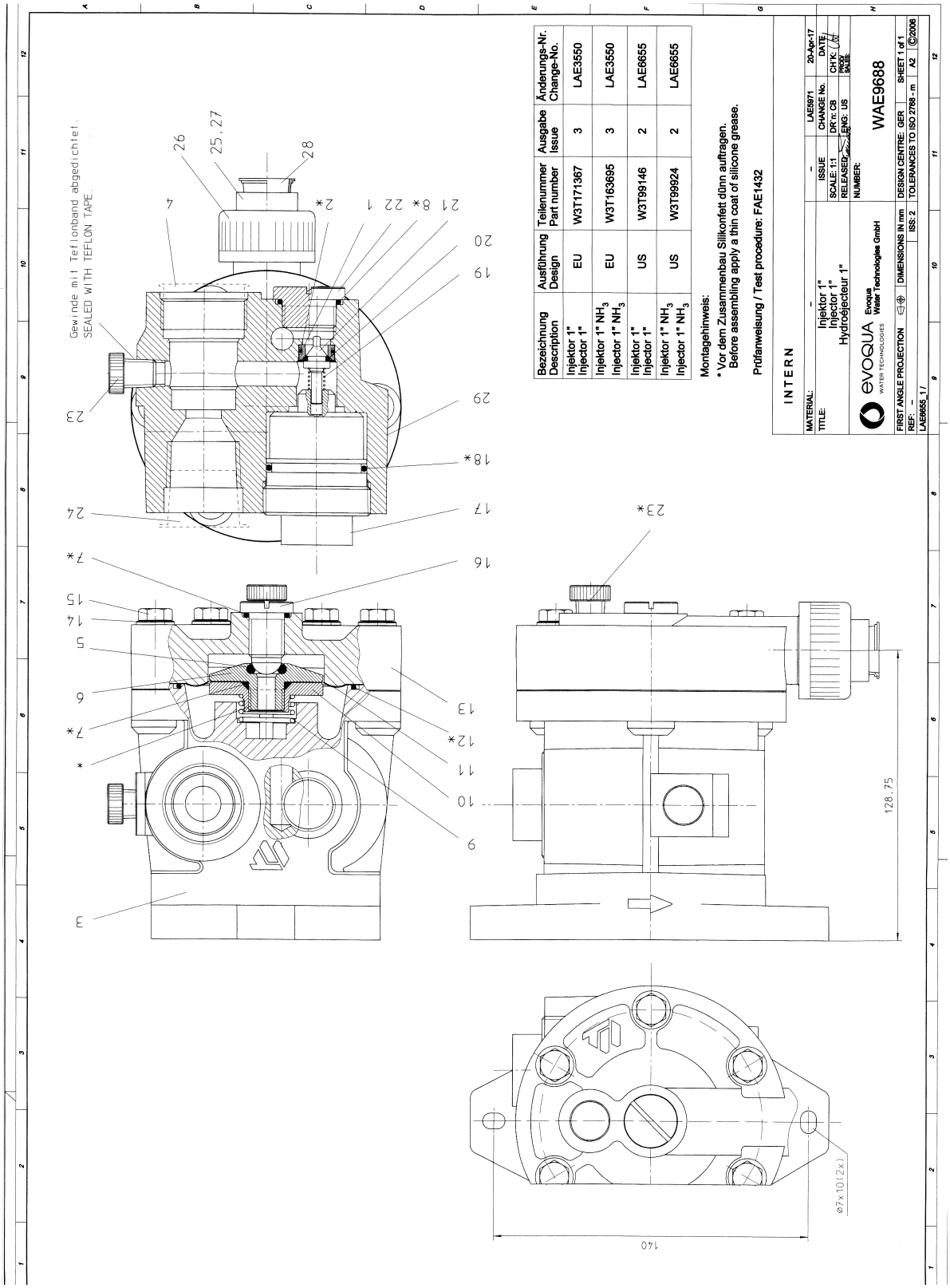
7.3.2 V-notch

Control range (for chlorine gas)	Spare V-notch		Control range (for chlorine gas) with shock chlori-nation (lin. control range / shock chlorination)	Spare V-notch
2 - 25 g/h	W3T171181 *			
3 - 60 g/h	W3T171282 *		3 - 60 / 120 g/h	W3T167312 *
10 - 200 g/h	W3T171215		10 - 200 / 400 g/h	W3T167326
20 - 400 g/h	W3T171231		20 - 400 / 800 g/h	W3T167337
30 - 600 g/h	W3T171242		30 - 600 / 1200 g/h	W3T167348
50 - 1000 g/h	W3T171251		50 - 1000 / 2000 g/h	W3T167358
75 - 1500 g/h	W3T171254		75 - 1500 / 3000 g/h	W3T167363
100 - 2000 g/h	W3T171260		100 - 2000 / 4000 g/h	W3T167367
0.15 - 3 kg/h	W3T171266		150 - 3000 / 6000 g/h	W3T167369
0.20 - 4 kg/h	W3T171270		200 - 4000 / 8000 g/h	W3T167370
0.25 - 5 kg/h	W3T171272		250 - 5000/ 10000 g/h	W3T167371
0.30 - 6 kg/h	W3T171275			
0.40 - 8 kg/h	W3T171277			
0.50 - 10 kg /h	W3T171279			
1 - 15 kg/h	W3T171281			

* with spring W3T161294 (pos. 14)

7.4 Injectors

7.4.1 Injector W3T171367 (1")

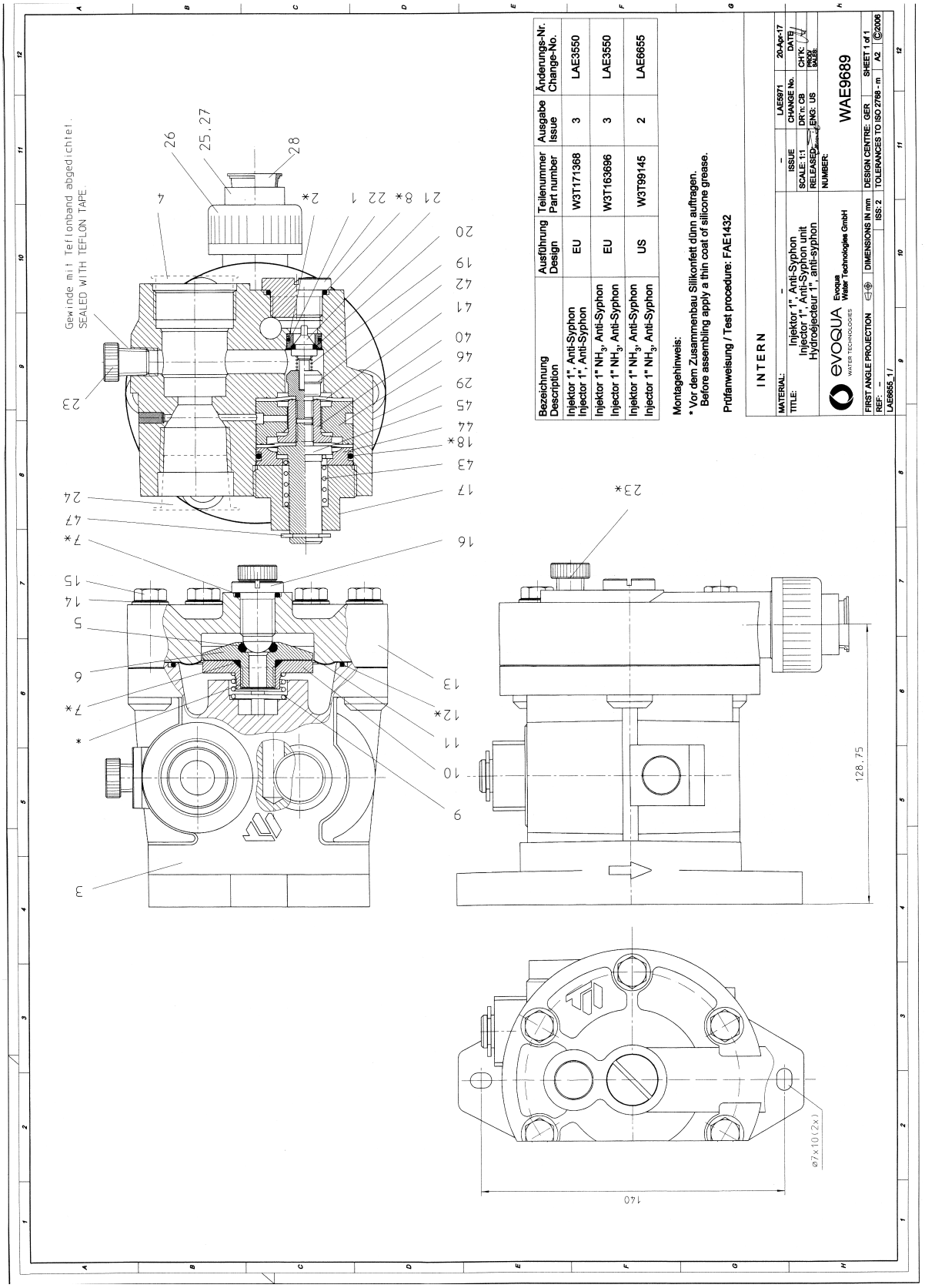


Injector W3T171367 (1")

Pos	Part no.	Description		Qty.	
1	W3T159661	Seat	PVC, 1" Injector	1	each
2	W3T161480	O-ring	d13x2/FPM	1	each
3	W3T171124	Body	PVC, 1" Injector	1	each
4	W3T161296	Plug	GPN 610 U 28	1	each
5	W3T172921	O-ring	d10x4/75FPM602	1	each
6	W3T170187	Seat	PVC, 1" Injector	1	each
7	W3T172822	O-ring	d15,54x2,62/FPM	2	each
8	W3T172899	O-ring	d23,47x2,62/75FPM602	1	each
9	W3T161113	Spring	TANTALOY 61,d24	1	each
10	W3T159663	Clamping nut	PVC, M16x1,5 , 1" Injector	1	each
11	W3T172902	Diaphragm	PTFE, 1" Injector	1	each
12	W3T168917	O-ring	75FPM602, ø75,87x2,62	1	each
13	W3T171119	Cover	PVC, 1" Injector	1	each
14	W3T172900	Washer	DIN 125 A, 8,4 mm, Monel	6	each
15	W3T172901	Screw	DIN 931/M8 x 40/Monel	6	each
16	W3T159664	Valve stem	PVC, 1" Injector	1	each
17	W3T159665	Plug	PVC, 1" Injector	1	each
18	W3T168867	O-ring	d40x3/FPM	1	each
19	W3T168914	Spring		1	each
20	W3T161434	O-ring	d8x2/75FPM602	1	each
21	W3T159656	Valve stem	PVC, 1" Injector	1	each
22	W3T159666	Plug	PVC, 1" Injector	1	each
23	W3T168893	Plug	PVC-U; 1/4-18NPTx21	2	each
24	W3T161279	Plug	GPN 610 U 25	1	each
25	W2T507291	Union end	PVC-U; d20	1	each
26	W2T506920	Union nut	PVC-U; d20	1	each
27	W3T172724	O-ring	d20,22x3,53/FPM	1	each
28	W3T161278	Plug	GPN 610 U 18	1	each
29	W2T507548	Name plate		1	each

*) Silicone grease W3T165077;
pos. 23 sealed with teflon tape.

7.4.2 Anti-syphon-injector W3T171368 (1")



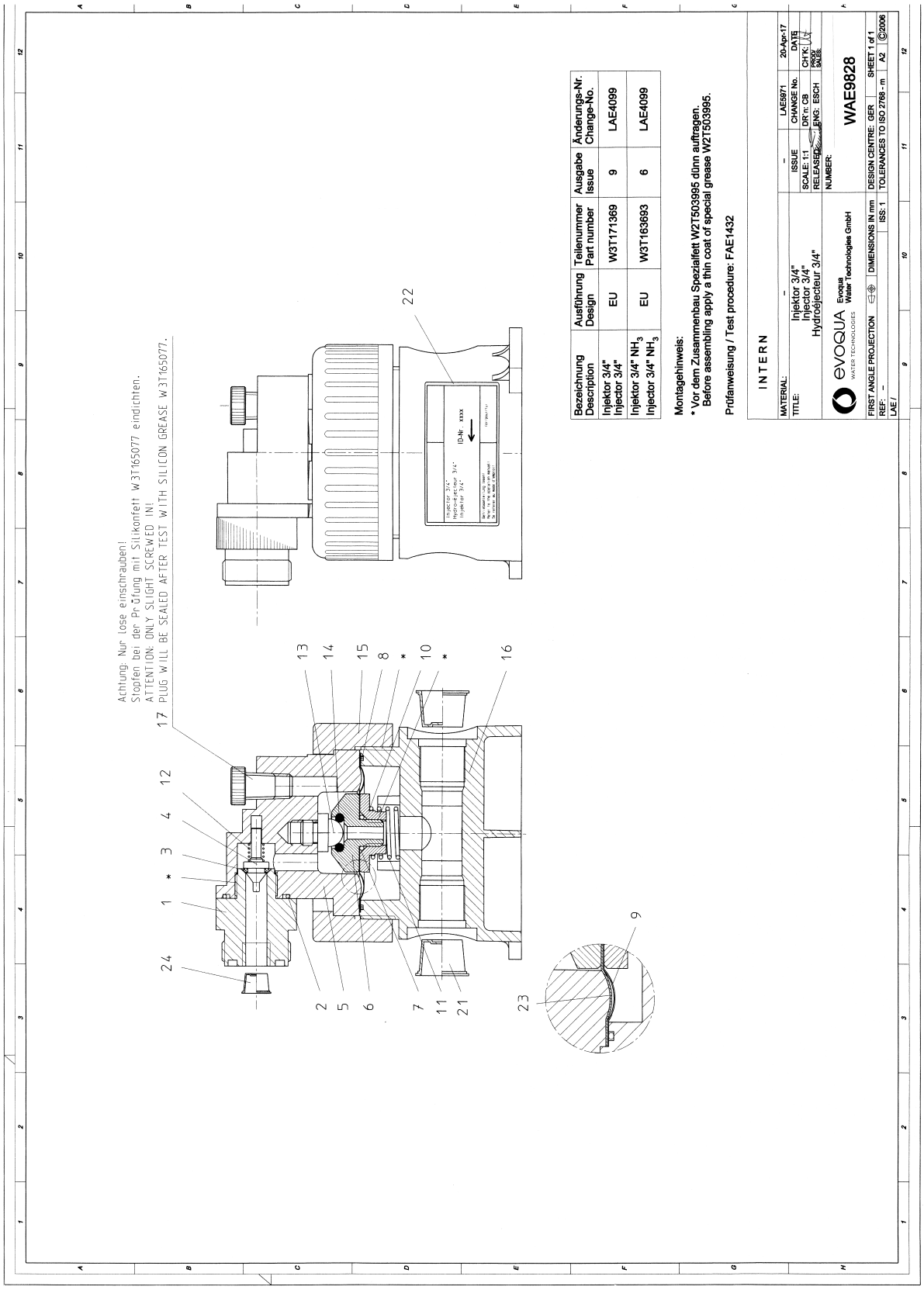
Injector W3T171368 (1")

Pos	Part no.	Description		Qty.	
1	W3T159661	Seat	PVC, 1" Injector	1	each
2	W3T161480	O-ring	d13 x 2/FPM	1	each
3	W3T171118	Body	PVC, 1"Inj., Anti-syph.	1	each
4	W3T161296	Plug	GPN 610 U 28	1	each
5	W3T172921	O-ring	d10 x 4/75FPM602	1	each
6	W3T170187	Seat	PVC, 1" Injector	1	each
7	W3T172822	O-ring	d15,54 x 2,62/FPM	2	each
8	W3T172899	O-ring	d23,47 x 2,62/75FPM602	1	each
9	W3T161113	Spring	TANTALOY 61,d24	1	each
10	W3T159663	Clamping nut	PVC, M16 x 1,5, 1" Injector	1	each
11	W3T172902	Diaphragm	PTFE, 1" Injector	1	each
12	W3T168917	O-ring	75FPM602, ø75,87 x 2,62	1	each
13	W3T171119	Cover	PVC, 1" Injector	1	each
14	W3T172900	Washer	DIN 125 A, 8,4 mm, Monel	6	each
15	W3T172901	Screw	DIN 931/M8 x 40/Monel	6	each
16	W3T159664	Valve stem	PVC, 1" Injector	1	each
17	W3T159667	Clamping screw		1	each
18	W3T168867	O-ring	d40 x 3/FPM	1	each
19	W3T168914	Spring		1	each
20	W3T161434	O-ring	d8 x 2/75FPM602	1	each
21	W3T159656	Valve stem	PVC, 1" Injector	1	each
22	W3T159666	Plug	PVC, 1" Injector	1	each
23	W3T168893	Plug	PVC-U; 1/4-18NPT x 21	2	each
24	W3T161279	Plug	GPN 610 U 25	1	each
25	W2T507291	Union end	PVC-U; d20	1	each
26	W2T506920	Union nut	PVC-U; d20	1	each
27	W3T172724	O-ring	d20,22 x 3,53/FPM	1	each
28	W3T161278	Plug	GPN 610 U 18	1	each
29	W2T507548	Name plate		1	each
40	W3T159669	Collet		1	each
41	W3T159674	Diaphragm		2	each
42	W3T159670	Valve stem guide	PVDF, 1" Injector	1	each

Pos	Part no.	Description		Qty.	
43	W3T172903	Spring	d18,2, V2A	1	each
44	W3T159671	Clamping disk	PVC, 1" Injector	1	each
45	W3T159672	Diaphragm holder	PVDF, 1" Injector	1	each
46	W3T159668	Separator	PVC, 1" Injector	1	each
47	W3T173063	Securing clip	POM-s; d12	1	each

*) Silicone grease W3T165077; pos. 23 sealed with teflon tape.

7.4.3 Injector W3T171369 (3/4")

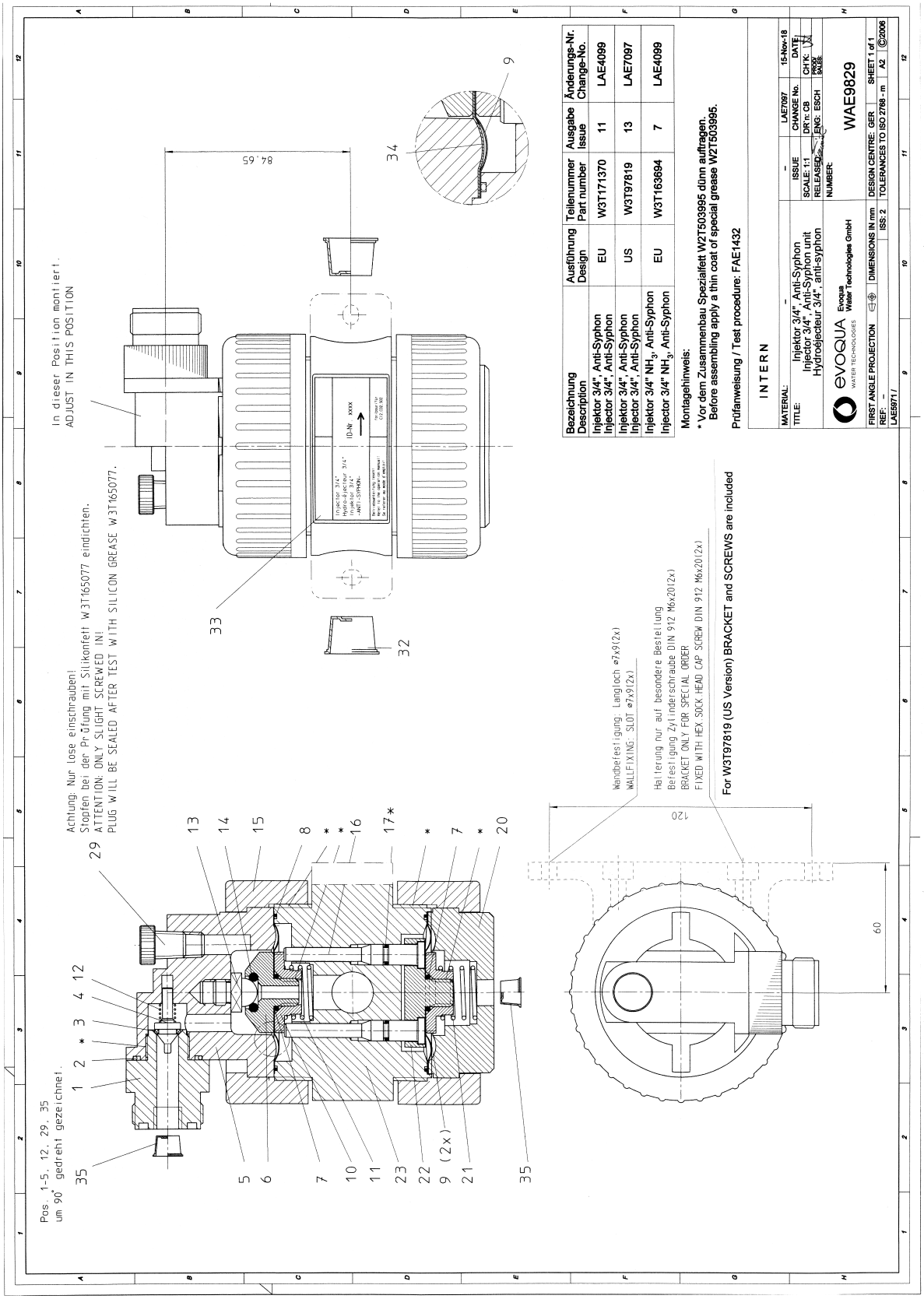


Injector W3T171369 (3/4")

Pos	Part no.	Description		Qty.	
1	W3T159655	Inlet screw	PVC,3/4" Injector	1	each
2	W3T168861	O-ring,	d25 x 2,5/FPM	1	each
3	W3T161434	O-ring	d8 x 2/75FPM602	1	each
4	W3T159656	Valve stem	PVC, 1" Injector	1	each
5	W3T171120	Body	PVC, 3/4" Injector	1	each
6	W3T158460	Valve seat	PVC, UNF½"-20Gg	1	each
7	W3T169066	O-ring	d12,37 x 2,62/FPM	1	each
8	W3T168988	O-ring	d68 x 2/FPM	1	each
9	W3T161483	Diaphragm	PTFE, 3/4" Injector	1	each
10	W3T158461	Clamping nut	PVC, UNF½"-20Gg	1	each
11	W3T165194	Spring	d=1,6; Tantaloy 61	1	each
12	W3T168914	Spring		1	each
13	W3T159657	Valve stem	PVC, 3/4" Injector	1	each
14	W3T172921	O-ring	d10 x 4/75FPM602	1	each
15	W2T506923	Union nut	PVC-U; d63	1	each
16	W3T159654	Body	PVC, 3/4" Injector	1	each
17	W3T168893	Plug	PVC-U; 1/4-18NPT x 21	1	each
21	W3T161278	Plug	GPN 610 U 18	2	each
22	W2T507548	Name plate	68 x 35	1	each
23	W3T171695	Diaphragm	d74,5 x d12,7/67FPM581	1	each
24	W3T161275	Plug	GPN 610 U 7	1	each
	W2T503995	Special grease		8	ml

*) Apply a thin coat of special grease W2T503995
Pos. 17: sealed with silicone grease W3T165077

7.4.4 Anti-syphon-injector W3T171370 (3/4")

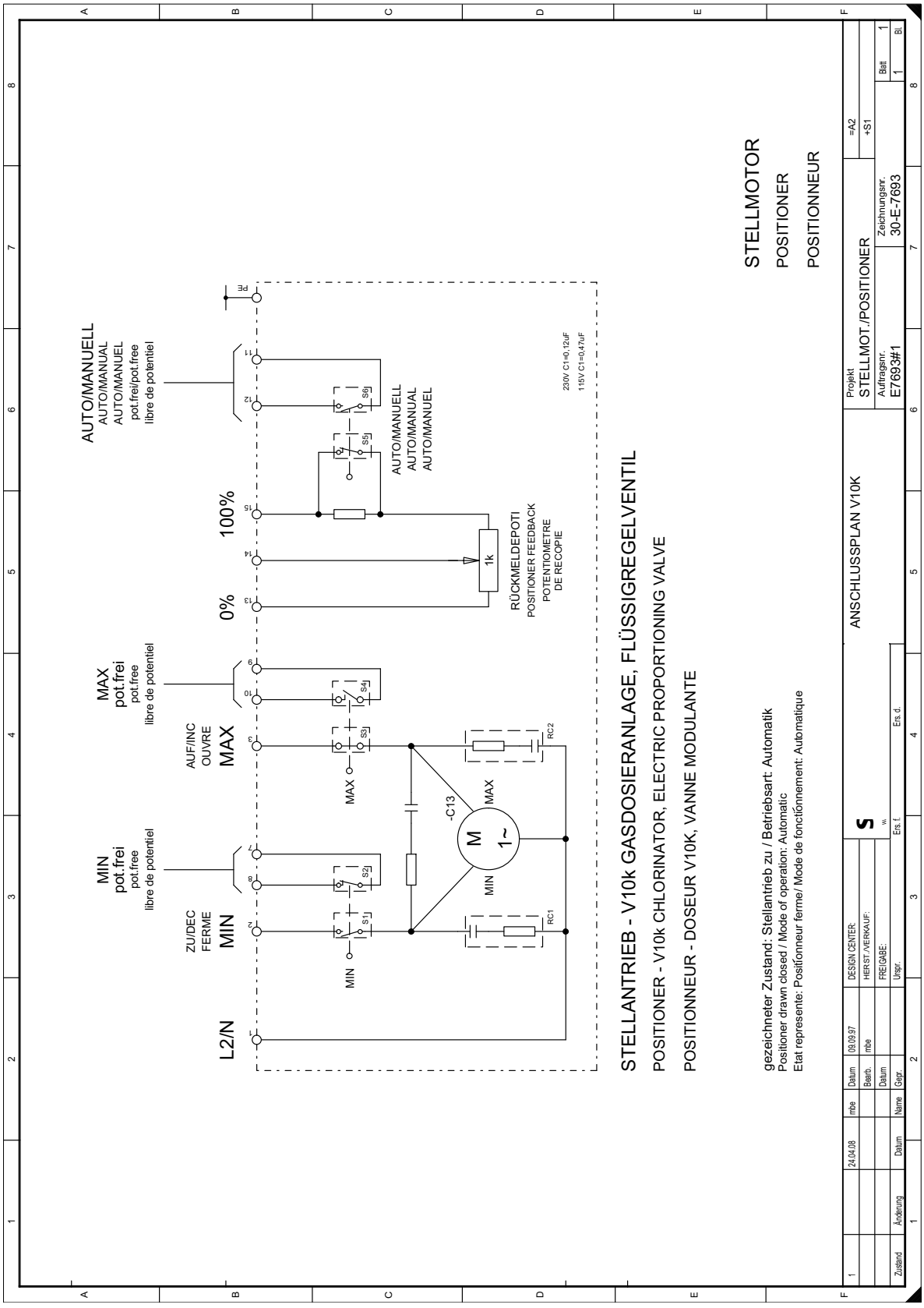


Anti-syphon-Injector W3T171370 (3/4")

Pos	Part no.	Description		Qty.	
1	W3T159655	Inlet screw	PVC, 3/4" Injector	1	each
2	W3T168861	O-ring	d25 x 2,5/FPM	1	each
3	W3T161434	O-ring	d8 x 2/75FPM602	1	each
4	W3T159656	Valve stem	PVC, 1" Injector	1	each
5	W3T171120	Body	PVC, 3/4" Injector	1	each
6	W3T158460	Valve seat	PVC, UNF½"-20Gg	1	each
7	W3T169066	O-ring	d12,37 x 2,62/FPM	2	each
8	W3T168988	O-ring	d68 x 2/FPM	2	each
9	W3T161483	Diaphragm	PTFE, 3/4" Injector	3	each
10	W3T158461	Clamping nut	PVC, UNF½"-20Gg	2	each
11	W3T165194	Spring	d=1,6; Tantaloy 61	1	each
12	W3T168914	Spring		1	each
13	W3T159657	Valve stem	PVC, 3/4" Injector	1	each
14	W3T172921	O-ring	d10 x 4/75FPM602	1	each
15	W2T506923	Union nut	PVC-U; d63	2	each
16	W3T158545	Guide pin	PVDF, 3/4" Injector	2	each
17	W3T169065	O-ring	d6,07 x 1,78/FPM	2	each
20	W3T159658	Bottom cover	PVC, 3/4" Injector	1	each
21	W3T161484	Spring	d21,3 3/4" Injector	1	each
22	W3T158546	Disk	PVC, 3/4" Injector	1	each
23	W3T159673	Body	PVC, 3/4" Injector	1	each
29	W3T168893	Plug	PVC-U; 1/4-18NPT x 21	1	each
32	W3T161278	Plug	GPN 610 U 18	2	each
33	W2T507548	Name plate	68 x 35	1	each
34	W3T171695	Diaphragm	d74,5 x d12,7/67FPM581	1	each
35	W3T161275	Plug	GPN 610 U 7	2	each

*) Apply a thin coat of special grease W2T503995
Pos. 29: sealed with silicone grease W3T165077

8. Wiring diagram



9. Declaration of conformity

EVOQUA WATER TECHNOLOGIES

EG-Konformitätserklärung
EC Declaration of Conformity
Déclaration CE de conformité

No. MAE1004

Ausgabe/*issue*/**édition** 04

Hersteller/*Manufacturer*/**Constructeur:**	Evoqua Water Technologies GmbH
Anschrift/*Address*/**Adresse:**	Auf der Weide 10, D-89312 Günzburg
Produktbezeichnung: *Product description:* **Description du produit:**	Vollvakuum-Gasdosiergerät V10k *Remote vacuum feed system V10k* **Chloromètre V10k**

Das bezeichnete Produkt stimmt in der von uns in Verkehr gebrachten Ausführung mit den Vorschriften folgender europäischer Richtlinien überein:
The product described above in the form as delivered is in conformity with the provisions of the following European Directives:
Le produit désigné est conforme, dans la version que nous avons mise en circulation, avec les prescriptions des directives européennes suivantes :

2006/42/EG — Richtlinie des Europäischen Parlaments und des Rates vom 17. Mai 2006 über Maschinen und zur Änderung der Richtlinie 95/16/EG (Neufassung).
Directive of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/ED (recast).
Directive du Parlement européen et du Conseil du 17 mai 2006 relative aux machines et modifiant la directive 95/16/CE (refonte).

2014/30/EU — Richtlinie des Europäischen Parlaments und des Rates vom 26. Februar 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit.
Directive of the European Parliament and of the Council of 26 February 2014 on the approximation of the laws of the Member States relating to electromagnetic compatibility.
Directive du Parlement européen et du Conseil du 26 février 2014 relative au rapprochement des législations des Etats membres concernant la compatibilité électromagnétique.

2014/35/EU — Richtlinie des Europäischen Parlaments und des Rates vom 26. Februar 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten betreffend elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen.
Directive of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.
Directive du Parlement européen et du Conseil du 26 février 2014 concernant le rapprochement des législations des Etats membres relatives au matériel électrique destiné à être employé dans certaines limites de tension.

CE-Kennzeichnung / *CE marking* / **Marquage CE**: 2016

Ersteller : SR
Ausgabe : 10.03.2016
Dokument: VD130-1_CE_Konformitätserklärung.doc

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Die Konformität mit den Richtlinien wird nachgewiesen durch die Einhaltung der in der Nachweisdokumentation aufgelisteten Normen.
Evidence of conformity to the Directives is assured through the application of the standards listed in the relevant documentation.
La conformité avec les directives est assurée par le respect des normes listés dans la documentation téchnique correspondante.

Benannte Person für technische Unterlagen:
Authorized person for the technical file:
Personne désignée pour la documentation technique:

Name / *name* / **nom:** Evoqua Water Technologies GmbH

Adresse / *address* / **adresse:** Auf der Weide 10, D-89312 Günzburg

Günzburg, den / *the* 2016-07-18

Evoqua Water Technologies GmbH

i.V.

Klaus Andre
Technischer Leiter / *Director Engineering*

Unterschrift
signature / **signature**

i.V.

Helmut Fischer
Leiter QM / *Quality Manager*

Unterschrift
signature / **signature**

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, ist jedoch keine Beschaffenheits- oder Haltbarkeitsgarantie nach §443 BGB. Die Sicherheitshinweise der mitgelieferten Produktdokumentation sind zu beachten.
This declaration certifies the conformity to the specified directives but does not imply any warranty for properties. The safety documentation accompanying the product shall be considered in detail..
La présente déclaration atteste de la concordance avec les directives citées, elle n'offre cependant pas de garantie quant à la nature ou la durabilité selon l'article 443 du code civil allemand. Les consignes de sécurité de la documentation du produit fournie sont à respecter.

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