INSTRUCTIONS FOR INSTALLATION,
OPERATION & MAINTENANCE

VHP & VHP-NTRS

FORGED HIGH PRESSURE GLOBE VALVE

TERMOVENT SC
since1963

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1. INSTRUCTIONS for INSTALLATION, OPERATION & MAINTENANCE

1.1 General safety information

- Instructions for installation, start-up and maintenance during the period of exploitation of valves manufactured by TERMOVENT SC should be used as a manual intended for all personnel directly or indirectly involved in dealing with the products.
- Operators in charge of installation, operation and maintenance of VHP & VHP-NTRS during the period of use should be fully trained for the correct/optimal performance of these tasks. If VHP & VHP-NTRS are equipped with mechanical actuators, the operator should be trained for the adequate operation of such valves.
- Information about temperatures and allowable working pressures are shown in Table B.8, Table B.9 and Table B.10 according to EN 12516-1 and Table B.11 according to ASME B16.34. Under no circumstances should the valves be operated under conditions outside these tables.
- Before the service or reinstallation of the VHP & VHP-NTRS, the plant or installation should be taken out of operation (pressure 0 bar, temperature of valves should be the same temperature as the environment).
- Because valves in working conditions have hot parts (handwheel, body and bonnet) and may cause burns, the operator is required to undertake all necessary precautions to avoid this by using protective equipment.
- These products are recyclable. No ecological hazard is anticipated with the disposal of these products providing due care is taken.

1.2 Storage & handling

VHP & VHP-NTRS are delivered in their disc in closed position with protective covers on their ends. During storage period protective covers shall not be removed.

1.2.1 Recommended storage conditions

- Storage conditions shall be: ambient temperature between +10ºC and +35ºC and the humidity up to 85%
- The valves must be stored in closed, clean, dry and ventilated storage facilities.
- Do not store the valves outside.
- Store the valves in their original shipped packaging.
- Protect the valve from contact with solvents, lubricants, fuels or other chemicals.
- Store the valve in vibration-free conditions.
- Valve should be taken out of crates or removed from the covering of a pallet just before installation.
- Spare parts such as soft sealing elements, plastic or lubricants should be stored in a dry place at room temperature protected from light.

1.2.2 Storage inspection

- Periodical inspection should be performed on all stored valves. At the minimum, all valves should be inspected every 3-4 months for dirt, moisture or any other type of contamination. If any of this is found the valves are to be thoroughly cleaned and dried.
- Slight external rusting may occur on valves. This will not affect their performance.
- If valves are stored for more than 6 months we recommend the following:
  - ➔ Valves should be cycled open to close 2-3 times every 6 months to keep packing from adhering to the stem and help lubricate the stem and stem nut.
  - ➔ Preservation of inner surfaces, inner parts, stem, flange facing, butt welding ends and threads shall be repeated every 6 months with appropriate corrosion preventive coating

1.2.3 Handling requirements

- For valve handling and/or lifting the lifting equipment must be sized and selected while taking into consideration the valve weight indicated on the packing list.
- Do not use the lifting points located on the actuator (Figure B.14).
- Do not lift VHP & VHP-NTRS via the handwheel (Figure B.15).
- If possible, lift VHP & VHP-NTRS via bonnet (Figure B.16).
- Caution must be taken during the handling to avoid that this equipment passing over the workers' heads.
- For valve handling or lifting, the lifting equipment must be sized and selected while taking or over any other place where a possible fall could cause damage.

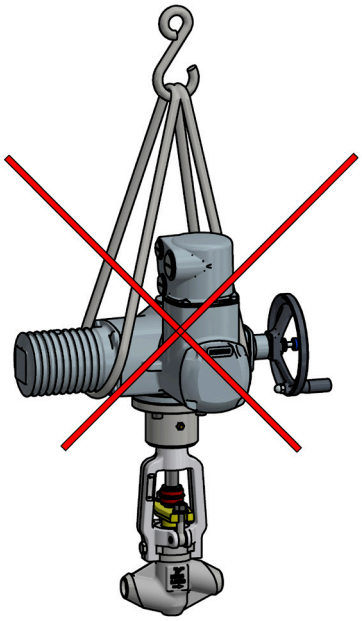


Figure B.14

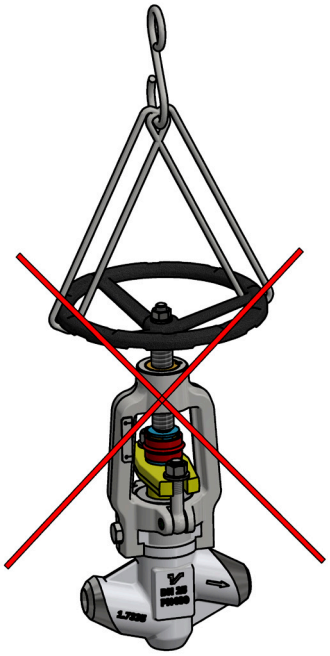


Figure B.15

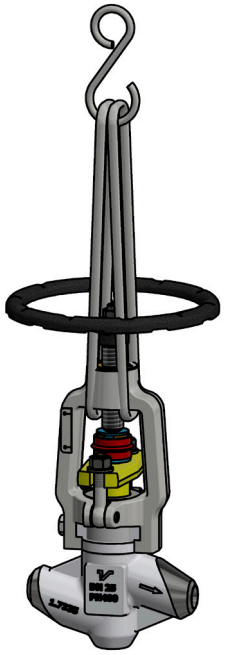


Figure B.16

WARNING!!!

➔ Lifting and handling must be performed by qualified personnel only.
➔ You must not remove the protection covers from the valve connection ends.
➔ Store the valves in the 'closed' position.
➔ You must not lift the valves using the connection flange holes, handwheel or actuators.

1.3 Installation & Start-up

- VHP & VHP-NTRS are delivered with their disc in the closed position, and they are ready for use. After the removal of the protection covers it is necessary to thoroughly clean inside the valve with compressed air without first opening the valve.
- Do not disassemble or modify a valve in any way prior to installation. This will void the factory warranty if it occurs.
- Closure of the valve is performed by turning the handwheel in a CW (clockwise) direction. On the handwheel there is an arrow and the letter “C” indicating the closing direction, and another arrow and the letter “O” indicating the opening direction.
- When installing valves with flanged ends it is necessary to take into consideration the selection of adequate bolt material and the appropriate type of gasket depending on the type of working fluid, pressure, temperature, and the type of flange facing. It is necessary to install gaskets strictly in accordance with the instructions given by the manufacturer of the gaskets.
- VHP & VHP-NTRS with flanged ends shall be installed in a slightly open to fully open position.
- VHP & VHP-NTRS with welding ends should be welded on the pipeline in the **CLOSED** position.
- Welding must be performed by an expert and with appropriate WPS.
- After welding, if necessary, local normalization should be performed and the inside of the pipeline should be cleaned to remove possible welding remains.
- At the moment of installation, the influence of pipeline load on the valve should be reduced. The same also applies to temperature oscillation, hydraulic impact and similar. The valve should not be used as a support for a pipeline.
- It is important to take care about the flow direction at the time of installation. The flow direction is indicated with the arrow mark on the body of the valve.
- After the installation, start-up and operating parameters are set, it is possible to detect a leakage on the stem packing. In this case, it is necessary to tighten the gland nuts equally. The tightness should not go beyond more than necessary to allow comfortable manipulation of VHP & VHP-NTRS (opening/closing).
- Recommendation: VHP & VHP-NTRS should be installed with a minimum of 5x nominal diameter of straight pipeline in front of and behind the VHP & VHP-NTRS.

WARNING!!!

- ➔ Do not disassemble or modify a valve in any way prior to installation. This will void the factory warranty if it occurs.
- ➔ Before installation, the impurities should be removed from the pipeline or from the appliance.
- ➔ Remove protecting covers from the valve ends, degrease and clean the inside of the valve, and in case of a flanged connection, carefully clean the sealing surfaces.
- ➔ During the installation, check if there is enough space for normal and safe manipulation.
- ➔ During the installation take care about the flow direction.
- ➔ The valve should not be used as support for a pipeline.

1.4 Usage & maintenance

- The globe valve stem packing should be the subject of particular attention as it is important for the qualitative maintenance of tightness and shall be checked every 3 months. If leakage at the stem packing is detected, the gland nuts should be tightened slowly (Figure B.17). Torque for tightness gland nuts shown in Table B.13. When gland nuts are tightened, if the gland falls down more than twice the packing ring height, new packing rings should be added to the stem packing.

Table B.13

	M10	M12	M16
Torque /Nm/	15÷40	26÷65	64÷150

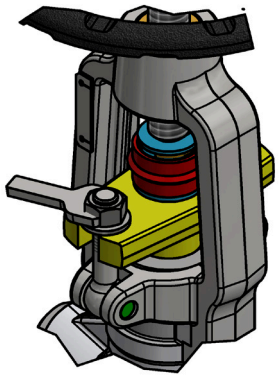


Figure B.17 – Stem packing gland tightening

- Stem packing must be replaced, depending on the working conditions and maintenance level. During packing replacement, special care must be taken to remove all old packing from the packing chamber. The preparation of new packing rings is shown in Figure B.18 Packing rings replacement is shown in Figure B.19 with a general note that every next packing ring must be rotated relative to the previous one (not less than 90°).

Figure B.18 – Stem packing ring

Figure B.19

- For VHP lubrication of thread between stem (Pos.7 – Figure B.1) / stem nut (Pos.8 – Figure B.1) is highly important. To lubricate the bearings electric-operated valves, we suggest using quality-level grease, as shown in the following Table B.14. Lubrication shall be performed every month, or twice a year if they are rarely used. Valves used in high-temperature applications use appropriate lubricants to support the temperature range. Lubrication is performed with lubrication nipples (Pos.26 – Figure B.1) on the carrier (Pos.27 – Figure B.1).
- For VHP-NTRS lubrication of thread between stem (Pos.2 – Figure B.2) / stem nut (Pos.7 – Figure B.2) is highly important. To lubricate the bearings (Pos.21 – Figure B.2) on manual or electric-operated valves, we suggest using quality-level grease, as shown in the following Table B.14. Lubrication shall be performed every month, or twice a year if they are rarely used. Valves used in high-temperature applications use appropriate lubricants to support the temperature range. Lubrication is performed with lubrication nipples (Pos.24 – Figure B.2) on the carrier (Pos.16 – Figure B.2).
- It is recommended to replace the grease in bushes during every general overhaul or during the pipeline revision. The type of grease depends on the temperature in the plant. Remote controls and bushing should be lubricated depending on how frequently they are used every 3 months. For the lubrication of the actuator (Pos.23 – Figure B.1 and Pos. 23 – Figure B.2) it is necessary to remove the protective tube then grease the stem (Pos.7 – Figure B.1 and Pos.2 – Figure B.2) and return the protective tube. Some of the lubricants we use for lubrication are in Table B.14

Table B.14

Manufacturer	Quality level
AGIP, SHELL, MOBIL, TOTAL	*ISO 6743-9: L-X CCHA 2 / DIN 51 502: K 2K-30*

- VHP & VHP-NTRS delivered with an actuator is adjusted for proper work. VHP & VHP-NTRS delivered with connection for later build on it the electric actuator must be adjusted. The closing of VHP & VHP-NTRS should be adjusted by the torque switch and the opening by the limit switch. The torque and limit switch settings must be in accordance with the instructions from “TERMOVENT SC”.

WARNING!!!

- ➔ During usage, VHP & VHP-NTRS must be completely in an open or closed position.
- ➔ Valve opening and closing by handwheel should be done without the use of auxiliary means such as a rod or similar.
- ➔ VHP & VHP-NTRS cannot be used for flow control.
- ➔ A Strainer being installed before the valve will increase its reliability and proper working.

1.5 Service & Repair

- Only authorized persons should perform service and repair with appropriate tools and, if possible, use original spare parts. Personal protection should be applied in accordance with valid regulations and legalizations.
- Using the wrong or defective spare parts may pose a hazard for personnel, or result in damage, malfunctions or even total failure.
- For VHP & VHP-NTRS standard spare part is stem packing rings.
- Contact “TERMOVENT SC” if You need other spare parts like a Stem, Disc, Stem nut, etc.
- Every VHP & VHP-NTRS serviced or repaired should be subject to all necessary tests usually performed for a newly produced valve.

WARNING!!!

- ➔ Before the service or reinstallation of the valves, the plant or installation should be taken out of operation (pressure 0 bar, temperature of valves should be the same temperature as the environment).
- ➔ Manipulation with stem packing should be with high precautions because they could contain stainless steel wire which can cause severe injuries.

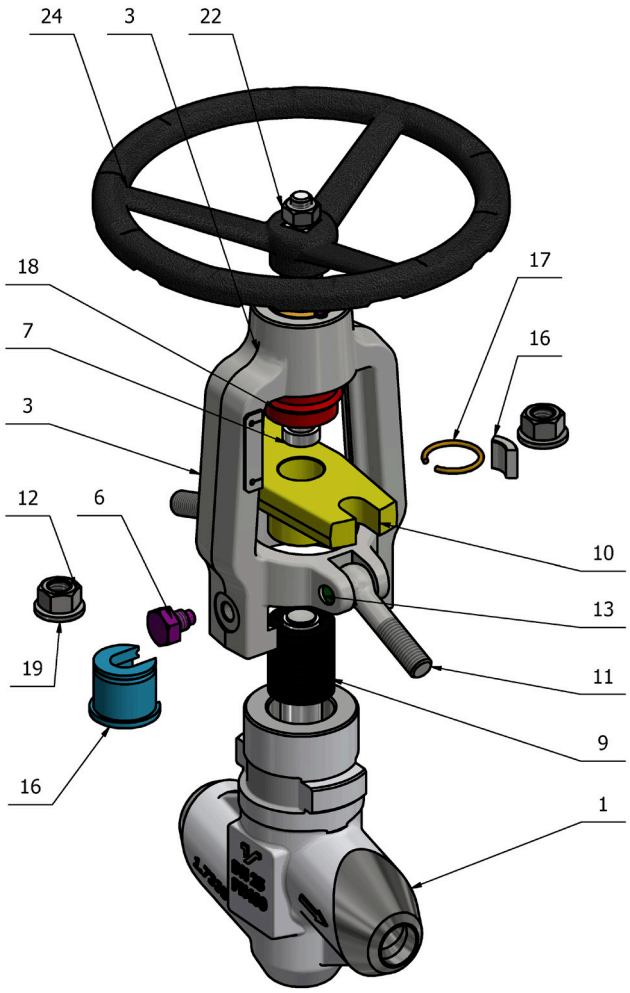
1.5.1 VHP stem packing rings replacement

Only authorized persons should perform service and repair with appropriate tools and, if possible, using original spare parts. Personal protection should be applied in accordance with valid regulations and legalizations.

Requirements before disassembling:

- ➔ The plant or installation should be taken out of operation (pressure 0 bar, temperature of valves should be the same temperature as the environment).
- ➔ VHP must be completely opened.

Disassembling



Assembling

Figure B.20 – VHP Stem packing rings replacement

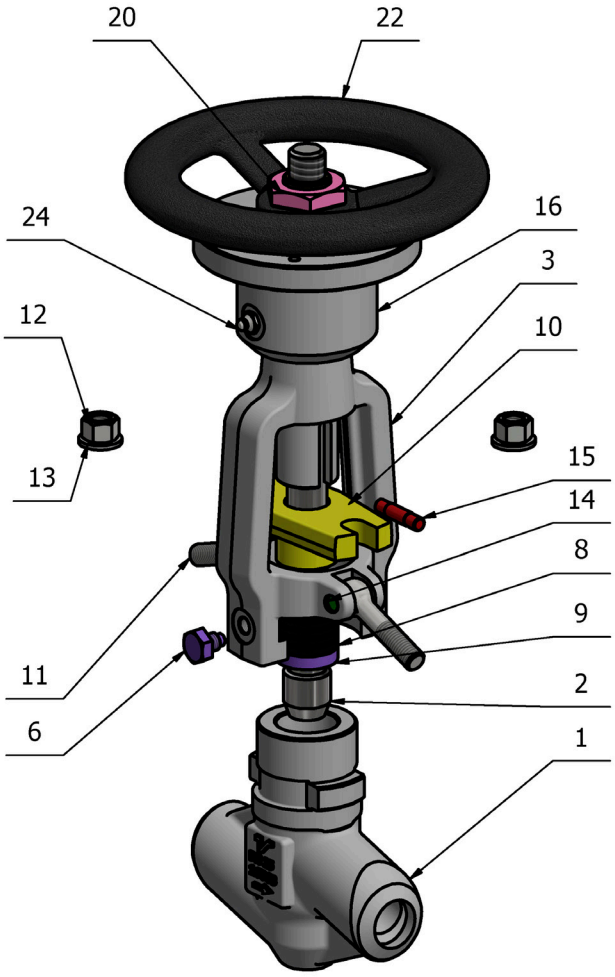
1.5.2 VHP-NTRS stem packing rings replacement

Only authorized persons should perform service and repair with appropriate tools and, if possible, using original spare parts. Personal protection should be applied in accordance with valid regulations and legalizations.

Requirements before disassembling:

- ➔ The plant or installation should be taken out of operation (pressure 0 bar, temperature of valves should be the same temperature as the environment).
- ➔ VHP-NTRS must be completely opened.

Disassembling



Assembling

Figure B.21 – VHP-NTRS Stem packing rings replacement

1.6 Possible malfunctions & solutions

- During the period of usage of the installed high-pressure globe valve, malfunctions may occur. Only experts in the premises of the user should undertake repairs. The most common cause of malfunctions and how to overcome such situations is listed in Table B.15

Table B.15

Failure	Possible cause	Troubleshooting
Absence of flow	VHP & VHP-NTRS is in closed position	Open the VHP & VHP-NTRS completely with the handwheel (Pos.24 – Figure B.1 and Pos.22 – Figure B.2)
	VHP & VHP-NTRS is not completely open	Open the VHP & VHP-NTRS completely with the handwheel (Pos.24 – Figure B.1 and Pos.22 – Figure B.2)
	Protection covers are not removed	Remove protection covers from connection ends
Difficult manipulation	Dry stem /stem nut	Grease stem (Pos.7 – Figure B.1 and Pos.2 – Figure B.2) or stem nut (Pos.8 – Figure B1 and Pos.7 – Figure B.2)
	Gland nuts are too tight	Slightly loosen Gland nuts (Pos.12 – Figure B.1 and Figure B.2) with precaution to preserve sealing of the stem packing rings (Pos.9 – Figure B.1 and Pos.8 – Figure B.2)
Leakage on stem packing	Gland nuts are not tightened	Tighten gland nuts (Pos.12 – Figure B.1 and Figure B.2)
	Stem packing rings are damaged	Completely open the globe valve, remove the worn stem packing and clean the chamber of the stem packing and install the new stem packing rings, the same or similar quality (Pos.9 – Figure B.1 and Pos.8 – Figure B.)
Leaking on seat	The working medium contains solid dirt particles	Clean the Valve thoroughly. We recommend the installation of a Strainer before the Globe Valve
	The electric actuator does not function	Check the electric actuator as specified in the manufacturer's documentation.
	The pneumatic actuator does not function	Check the pneumatic actuator as specified in the manufacturer's documentation.
The valve does not function	Limit switch (for optional electric or pneumatic) is defective	Have the limit switch checked. Prior to readjustment consult with Termovent SC
	Torque switch (with optional electric or pneumatic) is defective	Have the torque switch checked. Prior to readjustment consult with Termovent SC
Malfunction of the valve	Limit switch (for optional electric or pneumatic) is defective	Have the limit switch checked. Prior to readjustment consult with Termovent SC
	Torque switch (with optional electric or pneumatic) is defective	Have the torque switch checked. Prior to readjustment consult with Termovent SC

1.7 Guarantee

- Termovent SC guarantee that each of its products free from defects and work properly for a period of eighteen (18) months from the date of installation or twenty-four (24) months from the date of shipment from the manufacturer, whichever comes first.
- Manufacturer agree to repair or replace any product which is non-conforming to the Warranty due to defective workmanship or defective material of which the Warranty non-conformance customer notifies the manufacturer in writing during the Warranty Period.
- Warranty does not apply to products that have defects or failures resulting from

  (a) accident, disaster, neglect, misuse, improper handling.

  (b) application of excessive torque to the operating mechanism, presence of foreign matter.

  (c) the products are not being installed or maintained as required by instructions

  (d) modifications or repairs without manufacturer approval.

  (e) natural tears and wear caused by material ageing.

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