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| <br>LDM, spol. s r.o.<br>Czech Republic | <b>INSTRUCTION FOR INSTALLATION AND MAINTENANCE</b> | <b>UV 526</b>     |
|   | <b>SHUT-OFF (CONTROL) VALVE</b>                     | PM - 211/17/05/GB |

The instructions for installation and maintenance of valves UV 526 are binding for users to ensure proper function of valves. The user must keep the rules said here while installation, operation and maintenance. If the usage of the valves is different from mentioned herein, the guarantee terms are not valid any more.

## 1. TECHNICAL DESCRIPTION AND VALVE FUNCTION

### 1.1 Description

It is a single-seat shut-off (control) valve equipped with a stuffing box consisting of moulded graphite rings. The valve design is of a yoke type with a non-rotating stem prevented from rotating with a pin passing through a groove in the yoke. The body is forged and connected to the yoke with a bayonet lock prevented from rotating with a screw and nut.

The shutting-off mechanism, with a higher resistance to wear, consists of the stem with the cone (made from one piece) hard faced, and the body seat also hard faced. A sealing conical surface of the spherical cone surface fits against the seat, which guarantees a high tightness of the valve.

The valves are controlled with a hand wheel or a multi-speed electric drive. The control torque (force) is minimised by ball bearings mounted in an upper part of the yoke.

### 1.2 Application

The valves UV 526 are suitable for shutting off water, water vapour and other liquids and gases which are compatible with materials used for the valve body, and internal materials. The medium has to be cleared of mechanical impurities. If you are not sure of the valve suitability for the given medium, ask the manufacturer's technical department for assistance.

In making decisions on the valve application, the fact has to be taken into account that it is the valve with a higher loss coefficient. That's why this valve is above all suitable for applications where the shutting-off mechanism is mostly in the closed position. The permanent valve operation with the shutting-off characteristic and a partially opened valve is forbidden.

The control characteristic valves (a shaped cone) are intended for the coarse control of the media flow.

### 1.3 Technical data

|                                    |   |          |          |          |          |          |          |          |          |          |          |  |
|------------------------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|
| Series                             | UV 526  |          |          |          |          |          |          |          |          |          |          |  |
| Execution                          | Shut-off (Control) valve, single-seated, straight-through, two-way  |          |          |          |          |          |          |          |          |          |          |  |
| Nominal size                       | DN 10 to 65   |          |          |          |          |          |          |          |          |          |          |  |
| Nominal pressure                   | PN 63, 100, 160, 250  |          |          |          |          |          |          |          |          |          |          |  |
| Body material (ČSN; EN)            | 11416   | 12020    | 1.0460   | 15128    | 1.4571   | 1.4903   | 1.5415   | 1.7335   | 1.7380   | 1.7383   | 1.4541   |  |
| Operating temperature (from -10°C) | to 400°C  | to 350°C | to 450°C | to 575°C | to 600°C | to 600°C | to 550°C | to 550°C | to 600°C | to 600°C | to 600°C |  |
| Seat material                      | Body mat. + hard metal overlay Stellite 6   |          |          |          |          |          |          |          |          |          |          |  |
| Plug material                      | 1.4923 + hard metal Real 096  |          |          |          |          |          |          |          |          |          |          |  |
| Weld ends connection               | Acc. to ČSN EN 12627 (9/2000), DIN 3229-1; DIN 2559 list1, ČSN 131075 (03/1991)   |          |          |          |          |          |          |          |          |          |          |  |
| Flange ends connection             | Acc. to ČSN EN 1092-1 (7/2014)  |          |          |          |          |          |          |          |          |          |          |  |
| Available types of flanges         | Type B1 (raised-face flange); type B2 (plain flange), type C (tongue flange); type D (flange with groove); type E (male flange); typ F (female flange) acc. to ČSN EN 1092-1 (7/2014) |          |          |          |          |          |          |          |          |          |          |  |
| Flow characteristic                | On-Off; control   |          |          |          |          |          |          |          |          |          |          |  |
| Leakage rate                       | Class A (On-Off characteristic) acc. to ČSN EN 12266-1 (11/2003)  |          |          |          |          |          |          |          |          |          |          |  |
|                                    | Class D (Control characteristic) acc. to ČSN EN 12266-1 (11/2003)   |          |          |          |          |          |          |          |          |          |          |  |
| Packing                            | Graphite  |          |          |          |          |          |          |          |          |          |          |  |

### 1.4 Torques

|          | Nut of packing cover | Tightening torque |
|----------|----------------------|-------------------|
| DN 10-15 | 15Nm                 | 20Nm              |
| DN 20-15 | 25Nm                 | 40Nm              |
| DN 32-40 | 55Nm                 | 80Nm              |
| DN 50-65 | 80Nm                 | 180Nm             |

## 2. INSTALLATION OF VALVE INTO PIPELINE

### 2.1 Preparation before installation

The valves are delivered completely assembled and tested. Prior to the valve installation, it is necessary to compare the data on the valve tag with data from accompanying documents. It is also necessary to verify whether the nameplate data corresponds to parameters of the pipeline the valve is to be installed in. The valves shall be inspected for mechanical damage or impurities.

Before installing the valve, protect it against damage. In particular protect welding ends, sealing surfaces of flanges and the valve stem. After protective plastic plugs have been removed from the welding ends, it is necessary to properly clean these ends from any preservative agent, i.e., the best just before their welding in the pipeline.

Before installing the valve, clear the pipeline system of impurities.

### 2.2 Installation in pipeline

All the works connected with the valve installation shall be performed by a worker appropriately qualified, which guarantees good quality execution of works, and thoroughly acquainted with the valve design and this manual.

The valve can be installed in the pipeline in any position.

The valve installation shall be performed so as to exclude any force effects of the pipeline on the valve. The valve must not serve as a pipeline support. To exclude any thermal deformations of the valve, it is necessary to open it a little before welding. Before welding the valve in the pipeline, thoroughly clean the welding ends from any preservative agent and rub with sandpaper. The pipeline straight piece length upstream and downstream of the valve is recommended min. 6x DN. Perform welding using a filler material corresponding to that of the valve body and the pipeline.

The shutting-off characteristic valves are designed to be able to close the total pressure gradient in the medium flow direction from both sides. However, with a view to a longer life of the shutting-off mechanism, the manufacturer recommends the medium flow direction under the cone.

The control characteristic valves are designed for the medium flow control with a pressure gradient up to 5 MPa. The medium flow direction shall be under the cone. For reasons of maintenance and repairs, it is useful to leave sufficient space around the valve for handling. It is recommended for space above the hand wheel to be larger than the total height of the valve.

At higher operating temperatures of the medium, it is necessary to properly insulate the pipeline and the valve. Insulation must terminate under the valve yoke.

### 2.3 Check after installation

After installation, it is necessary to perform the pipeline pressure test. Check welding or flange connections and the stuffing box for leakage. Furthermore, check the function of the valve that has to operate throughout its stroke. In doing so, perform several strokes. If no defects are detected, the valve is ready for commissioning.

## 3. VALVE CONTROL

### 3.1 Control and operation

The valves controlled with the hand wheel:

The hand wheel may heat up during operation. Hence, before using the hand wheel, check its temperature. Protective devices (gloves) must be used in case of an increased temperature of the hand wheel. Turn the hand wheel clockwise to close the valve. The stem pin serves as an indicator for the valve opening. The pin at the mark 0 indicates the closed position, at the mark 1 the opened position.

It is strictly forbidden to attempt to forcibly achieve the valve tightness by using a higher tightening torque than that specified in Article 1.4. It is strictly forbidden to use various extension arms, etc., placed on the hand wheel.

The valves controlled with the electric drive:

These works can only be executed by a professionally qualified person. It is necessary to observe all the safety regulations related to the electric machines. Furthermore, it is necessary to follow the installation manual containing instructions for operation and maintenance of electric drives published by the drive manufacturer. A resistance transmitter of positions and signalling switches, if supplied, are mounted under the drive cover.

Before commissioning the unit, check the drive nameplate data, in particular verify that the supply voltage value or the control signal value corresponds to the required specification, thereby enabling connection to a superior controller.

Considering that the valve is supplied from the factory with the drive as a whole, the basic adjustment of the drive is performed as well. The drive switching off in the closed position is realised by a torque switch (so that the valve is really closed tight), while the drive switching off in the opened position is realised by a position switch.

If the drive has to be removed from the valve during installation or for any other reason, it is necessary, after its reinstallation, to check adjustment of above switches or readjust the drive.

The manufacturer is not liable for damages arising from incorrect drive adjustment. If required, it is possible to ask for assistance during these works at the service organisation of the manufacturer.

Select the cable length so as to enable removal of the drive from the valve without having to disconnect the cables from the drive terminal board.

Attention: While opening or closing the valve using the hand wheel, watch the mechanical indicator of the OPENED/CLOSED position mounted on the valve and be careful while reaching these limiting values.

When the unit is controlled with the electric drive hand wheel, no electric switches are enabled and there is a danger of damage to the valve or the electric drive

## **3.2 Maintenance**

All the works connected with the valve maintenance shall be performed by a worker appropriately qualified, which guarantees good quality execution of works, and thoroughly acquainted with the valve design and this manual.

The valve has been designed with minimum requirements for maintenance. It is not necessary to relubricate the valve in operation. Lubrication in the stem motion thread is intended for more than 1,500 operating cycles provided that the specified operating conditions are followed. The stem axial force is absorbed by axial ball bearings (lubricated with Matrix Grease CAS 2 Green lubricant) that don't have to be relubricated until the major overhaul.

The valve maintenance most commonly consists in dealing with leakage of the stuffing box (see Article 3.2.1). If the valve leakage appears, a cause can be in the seat area (see Article 3.2.2) or the motion thread (see Article 3.2.3). To remove the valve leakage, we recommend to call for the manufacturer's expert service.

In case of the yoke removal, check and if required, refill the separating lubricant Molykote G-rapid Plus in contact points of all the parts.

### **3.2.1 Stuffing box**

The stuffing box consists of moulded graphite rings that are tightened via the stuffing box gland with two screws or nuts. Watch the stuffing box tightness during operation and if required, tighten it up. If a stuffing box tube shoulder reaches the housing due to gradual "run-out" of graphite, refill the stuffing box with another graphite ring. This can be performed only if the valve is shut down (there must be no pressure in the valve inner space). A back seat is not locked axially, thus the medium leakage could occur followed by an injury of persons staying in the vicinity of the valve.

In case of emergency, it is possible to replace the stuffing box ring with a cord from the expanded graphite with a corresponding square section. This can only be used as temporary solution until the nearest shutdown when the stuffing box cord has to be replaced with a moulded ring.

Tighten the stuffing box gland nuts uniformly using the tightening torque specified in Article 1.4 so that the stuffing box gland is normal to the stem. There must be no gap on any side between the stuffing box gland and tube. Having added the ring, verify smooth running of the stem in the stuffing box gland hole by performing several strokes. It is still useful to visually check the stem.

The screw (nut) threads are lubricated with the Molykote G-rapid Plus lubricant.

### **3.2.2 Stem (cone) and seat**

Sealing surfaces of the stem (cone) and the seat gradually get worn out during their life. A defect reveals itself through the valve leakage. In this case we recommend to call for the manufacturer's expert service that shall provide the valve repair (the body seat lapping, and replacement of the worn stem with a new stem).

### **3.2.3 Stem threads and nuts**

In performing the regular valve revision, pay special attention to the most exposed valve parts, i.e., a threaded part of the stem and stem nuts. This area must be kept clean and properly lubricated. Apply the Matrix Grease CAS 2 Green lubricant.

The lubricating ability of the lubricant can decrease during operation resulting in non-smooth running of the motion thread (thread "biting"). This shall result in excessive wear of the thread accompanied by a reduction of the sealing force of the cone that can give rise to the valve leakage.

If a considerable wear of the stem thread does not appear yet, the problem can be solved by reapplying the above lubricant. If leakage persists, the thread is excessively worn and the stem must be replaced as well as the stem nut, if required.

## **3.3 Alternative lubricants**

The Molykote G-rapid Plus and Matrix Grease CAS 2 Green lubricants used by the manufacturer can be substitute by other recommended and approved lubricants with the same or better lubricating ability and the same or higher thermal resistance. However, it is forbidden to mix two different lubricant types! The original lubricant must be properly removed!

## **4. REGULAR MAINTENANCE OF VALVE**

### **4.1 Preventive inspections (once a year)**

The inspection consists in a detailed visual inspection of the valve for mechanical damage. If the stuffing box becomes untight during operation, it must be removed according to Article 3.2.1. Furthermore, check the valve for correct function by performing several strokes. In carrying out the inspection, close the valve using the tightening torque specified in Article 1.4. The stem must move throughout the stroke smoothly without biting.

### **4.2 Major overhaul**

We recommend to call for the manufacturer's expert service to execute the major overhaul. The major overhaul shall include replacement of the stem (with the cone) and relapping of the body seat. The stuffing box rings shall be completely replaced. The stuffing box gland screws and nuts shall be thoroughly checked and replaced if required. If the motion thread of the stem is worn, the stem nut shall be replaced. Lubricants shall be refilled. If a functional defect of other parts is found out, these parts shall be replaced.

## **5. SPARE PARTS**

### **5.1 Ordering**

The spare parts are not included in the delivery of valves and have to be ordered separately. In ordering, please specify the following data:

- Spare part name
- Valve type number
- Valve serial number (for determination of welding end geometry)
- Number of pieces

## **6. TRANSPORTATION AND STORAGE**

During transport and storage, the valve must not be exposed to water or placed in environment with relative humidity exceeding 90 %.

With respect to used actuators, the temperature during transport and storing shall be within the range of -20 to 55°C. Inlet flanges must be protected with blinds (these are part of delivery).

Suitable tools/devices should be used for valve lifting during the transport and installation. It is necessary to make sure the valve can not be damaged during transport.

If the valves are stored for more than 3 years under these conditions, the producer recommends to carry out professional inspection of the valves.

## **7. WASTE DISPOSAL**

Packaging material and the valves shall be disposed of in the common way such as by handing over to a specialized enterprise for disposal of (body and metal parts - metal waste, other non-metal parts - communal waste).

## Valve complete specification No. for ordering UV 526

|                                 |                                    | XX                             | XXX | XXX | XXXX | XX | XXX | / | XXX | -     | XXX |
|---------------------------------|------------------------------------|--------------------------------|-----|-----|------|----|-----|---|-----|-------|-----|
| 1. Valve                        | Shut-off valve                     | UV                             |     |     |      |    |     |   |     |       |     |
| 2. Type of valve                | Shut-off globe valve, forged       |                                | 526 |     |      |    |     |   |     |       |     |
| 3. Actuator                     | Electric actuator                  |                                |     | EXX |      |    |     |   |     |       |     |
|                                 | Hand wheel                         |                                |     | RXX |      |    |     |   |     |       |     |
| 4. Connection                   | Flanges with raised faces, type B1 |                                |     |     | 1    |    |     |   |     |       |     |
|                                 | Female flange, type F              |                                |     |     | 2    |    |     |   |     |       |     |
|                                 | Flanges with plain faces, type B2  |                                |     |     | 3    |    |     |   |     |       |     |
|                                 | Weld ends                          |                                |     |     | 4    |    |     |   |     |       |     |
|                                 | Male flange, type E                |                                |     |     | 5    |    |     |   |     |       |     |
|                                 | ongue flange, type C               |                                |     |     | 6    |    |     |   |     |       |     |
|                                 | Flange with groove, type D         |                                |     |     | 7    |    |     |   |     |       |     |
|                                 | Other connection acc. to request   |                                |     |     | 9    |    |     |   |     |       |     |
|                                 | 5. Body material                   | Material 11416 (-10 to 400 °C) |     |     |      | A  |     |   |     |       |     |
| Material 12020 (-10 to 350 °C)  |                                    |                                |     |     | B    |    |     |   |     |       |     |
| Material 15128 (-10 to 575 °C)  |                                    |                                |     |     | C    |    |     |   |     |       |     |
| Material 1.0460 (-10 to 450 °C) |                                    |                                |     |     | D    |    |     |   |     |       |     |
| Material 1.4571 (-10 to 600 °C) |                                    |                                |     |     | E    |    |     |   |     |       |     |
| Material 1.4903 (-10 to 600 °C) |                                    |                                |     |     | F    |    |     |   |     |       |     |
| Material 1.5415 (-10 to 550 °C) |                                    |                                |     |     | G    |    |     |   |     |       |     |
| Material 1.7335 (-10 to 550 °C) |                                    |                                |     |     | H    |    |     |   |     |       |     |
| Material 1.7380 (-10 to 600 °C) |                                    |                                |     |     | I    |    |     |   |     |       |     |
| Material 1.7383 (-10 to 600 °C) |                                    |                                |     |     | J    |    |     |   |     |       |     |
| Material 1.4541 (-10 to 600 °C) |                                    |                                |     |     | K    |    |     |   |     |       |     |
| Other material                  |                                    |                                |     | 9   |      |    |     |   |     |       |     |
| 6. Packing set                  | Grafit                             |                                |     |     | 5    |    |     |   |     |       |     |
| 7. Design                       | Standard                           |                                |     |     | 0    |    |     |   |     |       |     |
| 8. Flow characteristic          | On-Off                             |                                |     |     |      | 0  |     |   |     |       |     |
|                                 | Control                            |                                |     |     |      | 1  |     |   |     |       |     |
| 9. Accessories                  | Without addition                   |                                |     |     |      | 0  |     |   |     |       |     |
| 10. Nominal pressure            | PN 63                              |                                |     |     |      |    | 063 |   |     |       |     |
|                                 | PN 100                             |                                |     |     |      |    | 100 |   |     |       |     |
|                                 | PN 160                             |                                |     |     |      |    | 160 |   |     |       |     |
|                                 | PN 250                             |                                |     |     |      |    | 250 |   |     |       |     |
| 11. Operating temper.°C         | According to the body material     |                                |     |     |      |    |     | / | XXX |       |     |
| 12. Nominal diameter            | DN - acc. to execution             |                                |     |     |      |    |     |   |     | - XXX |     |

### Ordering example:

UV526 R20 4B50 00 063/350-025, weld ends acc. to EN 12627-2-DN20, tube 26,9 x 2,3



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