DVD VALVES

OPERATION MANUAL

IVN NEEDLE VALVE

GENERAL SAFETY INSTRUCTIONS

This Operation Manual is created for you to use DVD Needle Valves effectively and to reduce potential risks regarding faulty use of the mentioned valves. With this Manual, potential accidents and damages can be prevented and life time of the valve can be increased.

The product you will be using is designed and manufactured according to highest quality standards and has passed DVD quality procedures 100%. However, Valves hold potential risks and can cause danger in case of faulty use or faulty assembly. Therefore, **everyone, who somehow gets in contact with the valve, is responsible for reading and fully understanding this Operation Manual.**

Unauthorized revision, change or application on the product or any of its parts shall be prevented at all times. In case of incompliance to this Operation Manual, DVD Valves cannot be hold directly or indirectly responsible or liable.

During the use of the Valves, general regulations and standards shall be followed. Some of these regulations are defined in EN Standards. Installation of the Valves shall be done by qualified and experienced technical personnel. For detailed information regarding the Valves, DVD Documentation (Catalogs, if appropriate Special Specifications and Technical Drawings, related DVD Order Confirmation etc.) shall be used and followed.

Before disassembling the Valve from the pipeline or any of its parts from the valve, make sure that the pipeline is de-pressurized and necessary safety cautions are taken. **If the line (water or air) is pressurized, any part of the Valve can move unintentionally, without any control.**

After commissioning, consequently the Valves are working under pressure; the Valves shall be monitored at all times and should be inspected regularly. Furthermore; laws, regulations and standards about Occupational Health and Safety should be taken into consideration.

If the Valve is installed as a drainage valve, operation of the valve shall be done with extreme caution. In such an installation, any movement can result in pressurized water discharge. Moreover, since the Valve disc mechanism is reachable, precaution must be taken for trapping or squeezing.

During dismantling of the Valve from the pipeline, medium can flow out from the pipe or the valve in a fast and uncontrolled way. Before dismantling, the pipeline must be emptied to prevent such an incident. Along with the medium; foreign objects (stone, sand, debris etc.) can be flowing out that can cause damage to personnel. Necessary precautions shall be taken to prevent such damage.

DVD Needle Valves are designed to be installed on pipelines and can be used in different applications. These applications can be seen in related DVD Product Documentation (Catalog, if appropriate related specifications, technical drawings, related DVD Order Confirmation etc.). **DVD Needle Valves can only be used under defined operating conditions (operating pressure, differential pressure, flow rate, temperature, medium type etc.). Noncompliance to these operating conditions for any reason is only possible by written approval of the manufacturer.** Noncompliance to these operating conditions can cause permanent damage to the Valve. Operating conditions are calculated and defined individually for every project. If you do not have any knowledge of these Operating Conditions, or if the conditions of the project are changed, please contact the manufacturer immediately.

Operating limits such as Nominal Size, Pressure, Temperature of the Valve can be found in DVD Documentation. Furthermore; Operating Size, Operating Pressure, Valve Body Material and Production Date can be found on the marking of the Valve Body. Any operating condition that is incompliant with these operating limits shall be approved by the Manufacturer in written. Pipeline Operating Pressure can be fluctuating (due to surge, water hammer, air regulation problems etc.). Therefore, such fluctuations should be considered, and the Valve should never be faced with a higher pressure than the defined Nominal Pressure.

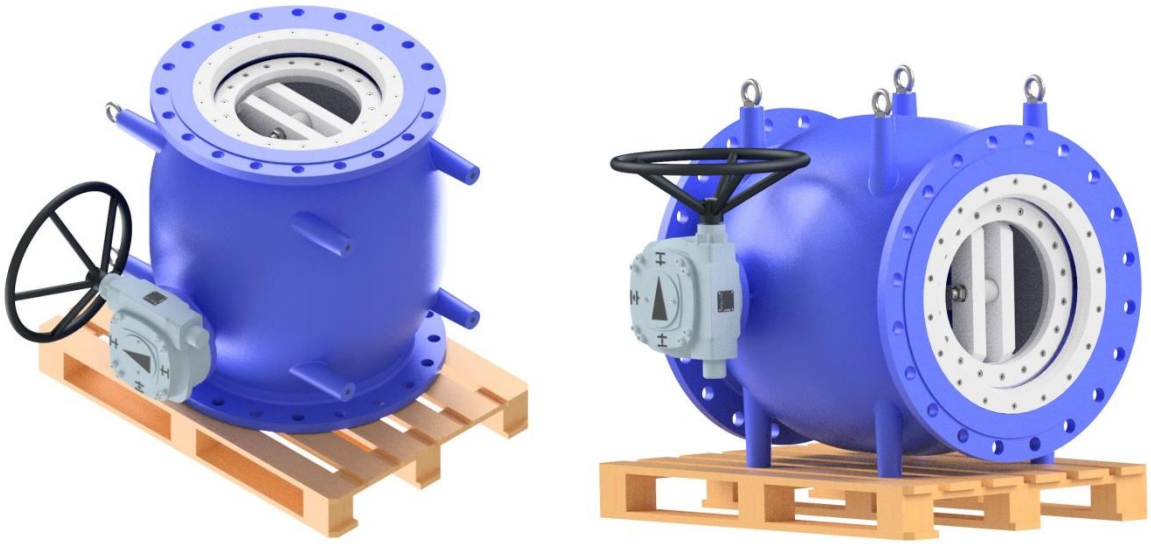
Valves should be projected from frosting at all times. Especially in locations that have high risk, protective measures should be taken such as; burying of pipelines in more depth, protecting the valve chambers by isolation material, or fully draining of pipelines before freezing conditions occur. If no precaution is taken, due to expansion of water, Valve body or other parts of the Valve can be permanently damaged. DVD Valves cannot be held liable from such damages.

TRANSPORTATION AND STORAGE

During transportation and storage, Valves shall be packed with material that can withstand to its size and weight, and should be fully fixed on a pallet. If the Valves are not fully fixed on the pallet, the Valve can move during transportation and can cause severe damage. The Valve should be protected from environmental conditions and physical impacts from outside. Any part of the Valve body should not exceed the pallet dimension and shall be wrapped by protective cover (stretch film, insulation material etc).

Valve coating and Valve accessories shall be protected at all times during transportation and assembly.

For Valves of sizes DN300 and above, Positioning of the Valve on the pallet is on its feet, gearbox handwheel facing top. In this position, Valve can be stabilized by screwing the Valve feet to the pallet. For Valves of sizes below DN300, Positioning of the Valve on the pallet is on its inlet flange.



<DN300 >DN300

PICTURE 1: Positioning of the Valve on the Pallet

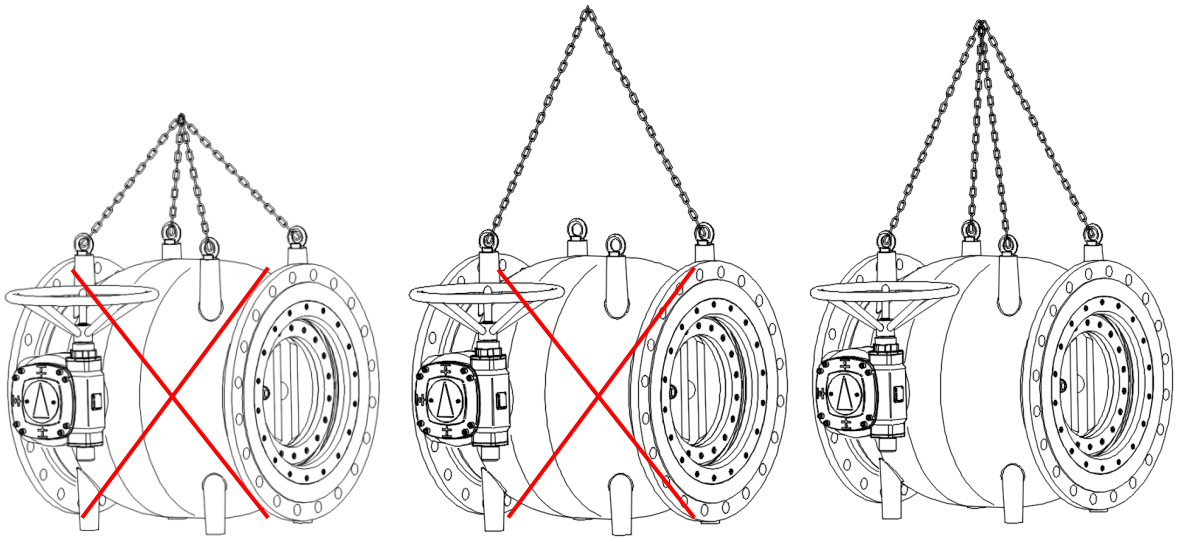
Center of Gravity of the Valve can be away from the Valve Center. Therefore, during lifting the Valve, it can swing around. Such incidents can cause damage on the lifting device, the Valve itself, and to personnel around the Valve. **Lifting operation should be done with extreme care and Center of Gravity of the Valve should be determined before lifting operation.**

If the Valve has any accessories such as Electric, Hydraulic, Pneumatic Actuator or Lever & Counterweight; be cautious about the extra weight of these devices and their effect on the center of gravity. These devices can cause the Valve to tilt down, especially at smaller sizes. Therefore, during storage, bottom of the gearbox shall be reinforced by durable material to prevent tilting of the valve.

Lifting Belts and Lugs which are according to safety norms shall be used. They have to be suitable for the Valve weight. Valve should be lifted only from the Eye-Bolts. There are four Eye-Bolts located on each of four Valve Top Feet. Lifting should only be done by using all the four Eye-Bolts, making sure that equal weight distribution is achieved on each of them. **Not using all four Eye-Bolts or not having equal weight distribution on the four Eye-Bolts can cause the Valve to tumble or drop; or the Eye-Bolts to fail.**

Eye-Bolts are only suitable to carry the weight vertically, and are not suitable to carry horizontal forces. Therefore, Lifting Belts with appropriate length should be used. **Use of Short Lifting Belts can cause horizontal force on the Eye-Bolts that can damage and fail the Eye-Bolts.**

Lifting from the Gearbox or the Actuator should not be done at all times. These parts are not designed to carry the weight of the Valve and lifting from these parts can cause breaking, tumbling or dropping.



Short Connection
Horizontal Force is Acting on the Eye-Bolts

WRONG

Unequal Weight Distribution
Valve is not Stable
Excessive Force Acting on Some of the Eye-Bolts

WRONG

Equal Weight Distribution
Valve is Stable
Equal Weight Distribution on the Eye-Bolts

CORRECT

PICTURE 2 –Needle Valve Lifting Method – Horizontal Forces on the Eye-Bolt Should be Prevented and Equal Weight Distribution should be Achieved.

During Storage and Transportation, Valves should never be faced with direct sunlight. Under direct sunlight; seals or valve coating can get damaged. Valves should be protected and stored in a dry and aerated environment and should be protected from environmental effects. Storage should be done @ -20°C/+50°C temperature range. If the temperature is below 0°C, before assembling the Valve; the Valve should be heated up to 5°C.

DVD Needle Valves should be transported and stored with a disc of minimum 5 cm opening. Otherwise, sealing can get damaged.

PICTURE 3 – Transportation and Storage Disc Position: 5 cm Opening

Valves should never be in direct contact with the ground, and should be protected by a pallet. Valve internal surface and moving parts should be protected from foreign particles, sand, dirt, debris etc. Debris collected on moving parts can cause these parts to get stuck and prevent valve operation. Flange Protection Covers should only be dismantled right before assembly to the pipeline.

USE AND APPLICATON

DVD IVN Needle Valves in standard configuration are designed to be used in clean potable water systems. Operation in medium containing gas, oil etc. is only possible with written manufacturer approval and with special material selections suitable to the medium.

In systems that contain foreign particles (dirt, sand, debris etc.), the Valve can be clogged or sealing problems can occur. Needle Valves should not be used in such applications. If the particle level is very low, Strainers should be used in the upstream of the Needle Valves. For special applications other than clean water systems, please get in contact with the manufacturer and request a written approval.

DVD Needle Valve Size and Disc Design are selected individually for every single project. This selection is done based on the Operating Conditions (Flow Rate, Pressure, DeltaP, Application, Medium Type, Temperature etc.) indicated to DVD Valves; and the Valve is manufactured accordingly. DVD Needle Valves can do regulation applications within these Operating Conditions. **If Operating Conditions are not indicated on the Order, DVD Valves cannot guarantee trouble-free operation of the Valve.**

Not being in line with the Operating Conditions can result in cavitation damage. If vibration or noise occurs during the operation of the Valve, please check the Operating Conditions and their compliance to what is defined to the manufacturer. Also, please check the Valve Disc Opening. Operating the Valve below 10% Disc Opening is not recommended since cavitation damage potential is high in such disc opening. If Operating Conditions are as defined to the manufacturer, please get in contact with the manufacturer immediately. Providing such information late can cause the Cavitation Damage to get bigger and can cause it to be permanent.

High Water Velocity can cause damage to the Valve. To prevent such damage, please check the Water Velocity. Maximum operating velocity for DVD Needle Valves is 5 m/sec. Bottom Outlet Valves should be analyzed individually for each project. For such applications, please follow DVD Valve Maximum Operating Velocity determined for the project.

DVD Needle Valve disc opening and closing limits are set at the Gearbox. These limits are factory-set and should not be changed with the permission of the manufacturer. These limits can be sensed easily by opening/closing the valve. **Do not force the Valve to further opening or closing beyond the Valve Disc Limit.** Such force does not increase the sealing capability of the valve; on the contrary, due to excessive torque, damages can occur on the Valve. If there is a sealing problem, please get in contact with the manufacturer before applying excessive torque.

DVD Needle Valves are provided with a Worm Gearbox Handwheel for manual applications; and with Actuator Handwheel for automation applications. Handwheels are designed to operate the Valve easily and can provide sufficient force on the Valve. **For any reason, do not use a bigger Handwheel or do not use a device (crank, lever etc.) to increase the force acting on the Valve.** If there is a torque problem, please get in contact with the manufacturer.

INSTALLATION TO THE PIPELINE

Pipeline flanges, which the valve will be installed to should be in the same axis and flange surfaces should be parallel to each other. Sealing problems can be seen if this is not obtained, and/or the Valve can face high load forces that can cause failures in long time. Load forces transmitted to the Valve from the pipeline should not go beyond what is defined in EN 1074-2 standard. Not to do so can cause Valve failure.

For Valve installation, enough distance should be provided between two connecting pipeline flanges. Shorter distance than needed can damage the Valve flange or the Valve coating. If there is longer distance than needed, do not try to pull the pipeline flanges and Valve flanges towards each other. During installation, make sure that flange surfaces are clean and smooth.

Valve flange to pipeline flange connection should be done by bolts and nuts; and washers must be used to protect the Valve coating. Opposing bolts should be screwed equally, preventing high load forces, strain and failure. Steel reinforced gaskets should be used between the

flanges. Make sure that the gaskets are correctly positioned on the sealing surface of the flanges. Flange bolting should be selected according to EN 1591 Standard requirements. Excessive screwing of the bolts can cause permanent damage on the Valve.

Valve should be protected from outside effects (construction work, coating, concrete work etc.) at all times. Welding work should be concluded before Valve installation, and welding burrs should be cleaned beforehand.

Pipeline should be flushed and cleaned from all foreign particles, before Valve installation. Even though the pipeline can seem to be clean around the Valve installation area, during filling the line, particles from long distances can be carried to the installation area and can cause permanent damage on the Valve. DVD Valves cannot be held liable from damages occurred due to foreign particles such as debris, dirt, stones, wooden sticks etc.

Especially at steel pipeline applications, make sure to have full cathodic protection. In the absence of cathodic protection or non-active protection, Galvanic Corrosion can occur very fast. DVD Valves cannot be held liable from such damages.

Inspect the Valve before installation and make sure that there are no foreign particles inside the Valve. Check the sealing surfaces of the Valve and confirm that they are clean. Open and close the Valve at least one time and check the functionality of the Valve before installation. For Valves that are stored for a long period of time, please check the sealing gasket for any deformation and please contact the manufacturer if you see any problems.

If the Needle Valve is with Special Disc such as Cavitation Cage, Slotted Cylinder etc.; the Special Disc can go beyond the Valve Body. Therefore, before installation and dismantling of the Valve from the line, the Valve should be fully opened beforehand.

If the Valve needs to be re-coated on site, for maintenance purposes, be sure to protect the sealing surfaces (gaskets, o-rings, stainless steel surfaces etc.) If these surfaces are coated, sealing problems can occur.

VALVE POSITIONING

If the Valve is to be installed underground, installation inside a Valve Chamber is highly recommended. If the Valve is to be buried, additional Gearbox protection is needed. Therefore, please inform the manufacturer for such an application, on the order.

During installation, take into consideration possible inspection and maintenance circumstances and provide enough space for such intervention. Quick Couplings such as Dismantling Pieces should be used together with the Valve for ease of dismantling the Valve. Dismantling Pieces are recommended to be installed in the upstream of the Valve. Furthermore, a Lifting Device should be available on the site that is in line with the weight of the Valve. Otherwise, dismantling and re-installing of the Valve for maintenance purposes will not be possible.

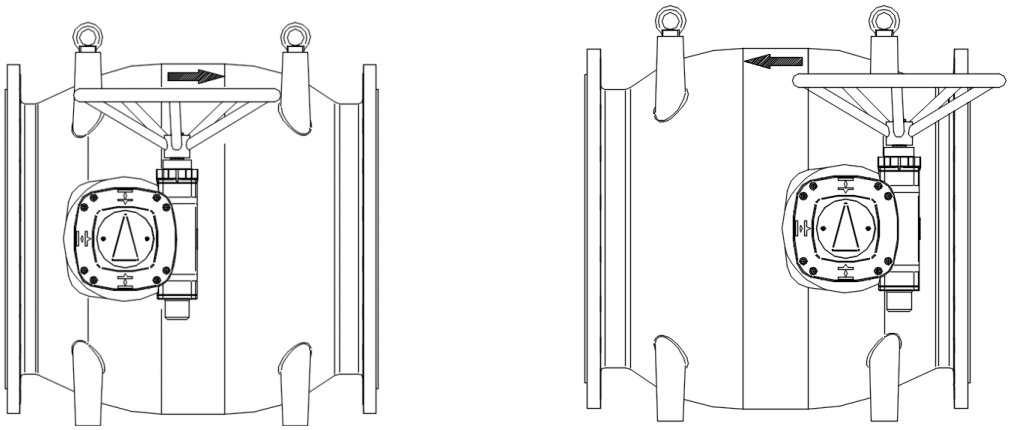
PICTURE 4 – Needle Valve + Dismantling Piece Connection

It is recommended to have DN x 5 straight pipeline installation in the upstream and DN x 10 in the downstream of the Valve. Equipment such as Elbow, T-Connection, Strainer etc. to be installed directly in the upstream of the Valve can cause cavitation and can damage the Valve.

In case of not leaving the above mentioned straight pipeline, due to regulation of the Needle Valve, turbulent flow can go inside the equipment and cause cavitation, noise or vibration which can damage the equipment in the downstream.

If the Needle Valve is with Special Disc such as Cavitation Cage, Slotted Cylinder etc.; the Special Disc can go beyond the Valve Body. Therefore, if there is a restriction for not installing a straight pipeline in the upstream and downstream of the Valve; make sure that equipment around the Valve is not preventing the Valve Disc Movement.

DVD IVN Needle Valves is provided with two different configurations. These configurations are as follows:



Configuration A
Gearbox on the left of water flow direction.

STANDARD

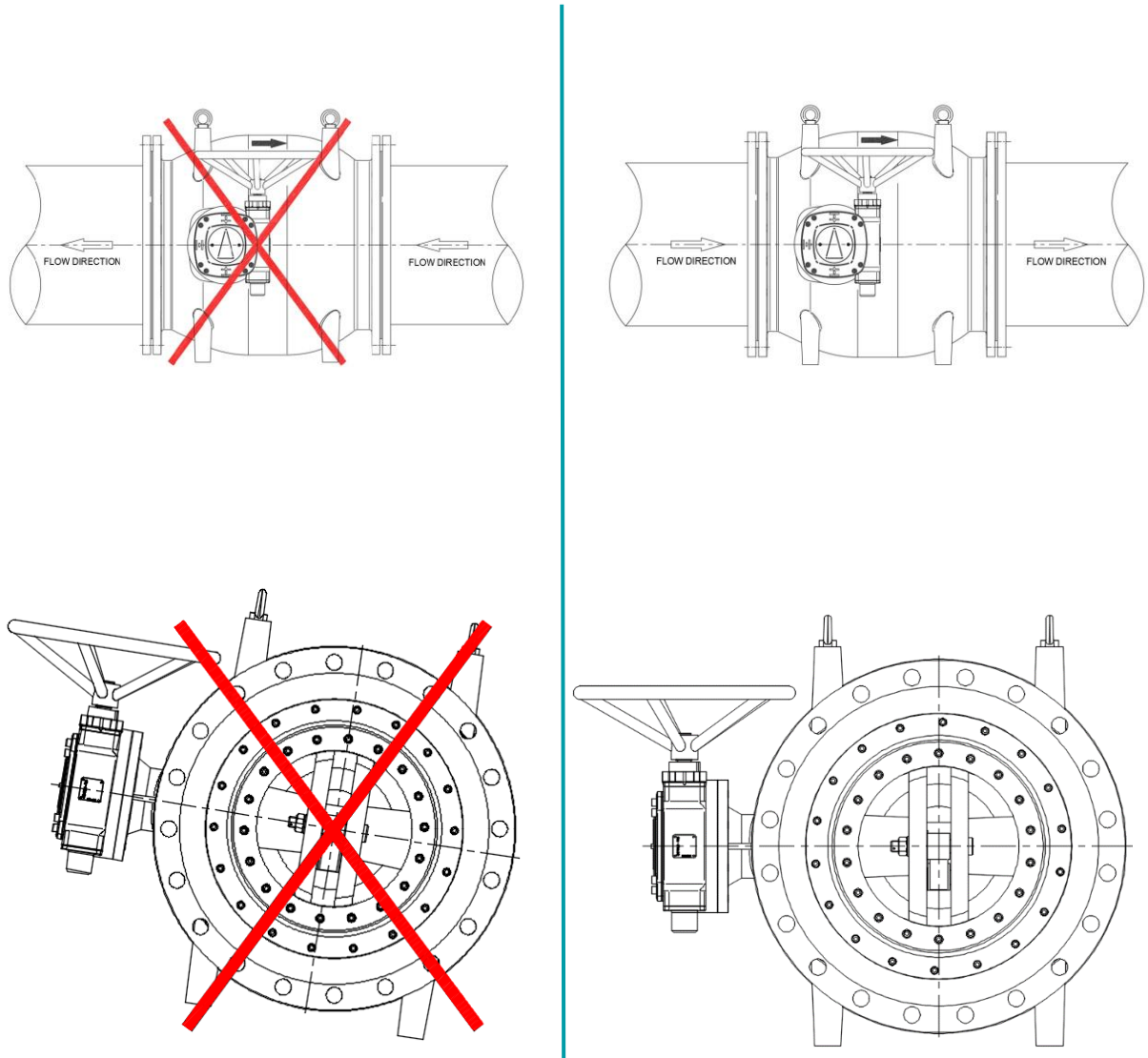
Configuration B
Gearbox on the right of water flow direction.

OPTIONAL

PICTURE 5 –DVD Needle Valve Configurations

In case nothing is mentioned with the Order, DVD factory set Configuration is "Configuration A". Configuration B is an optional configuration, and such demand should be mentioned in the order, and written approval should be received from the manufacturer.

If installation on site is not possible due to Gearbox position of the Valve, do not install the Valve upside-down or do not tilt the Valve. In such a problem, please contact the manufacturer immediately and request a Configuration Change. Installing the Valve upside-down or as tilted can cause sealing problems or cause permanent damage on the Valve.

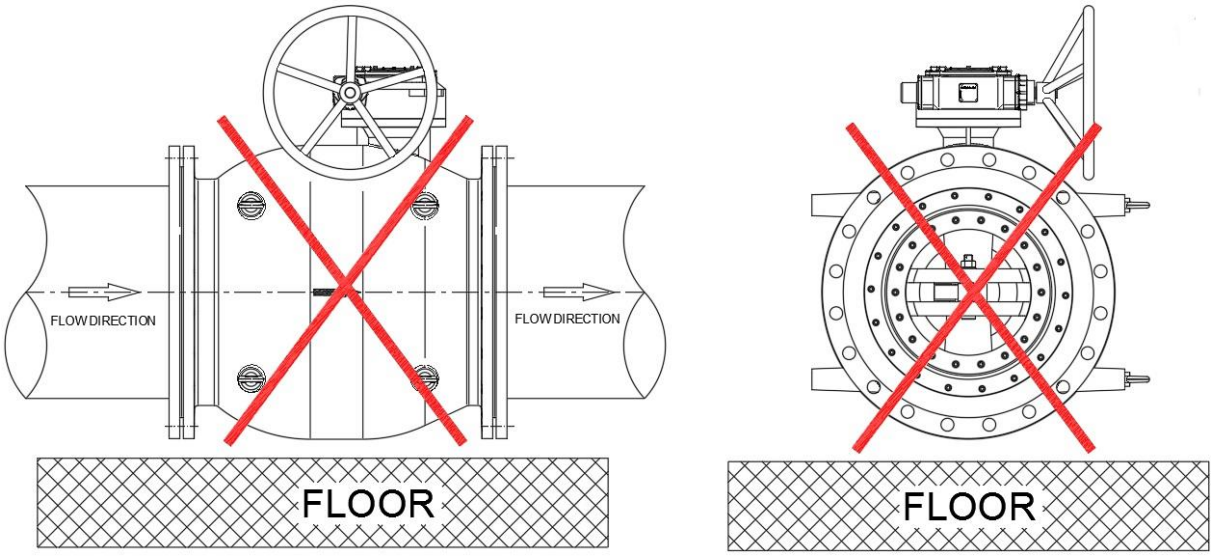


Wrong Installation

Correct Installation

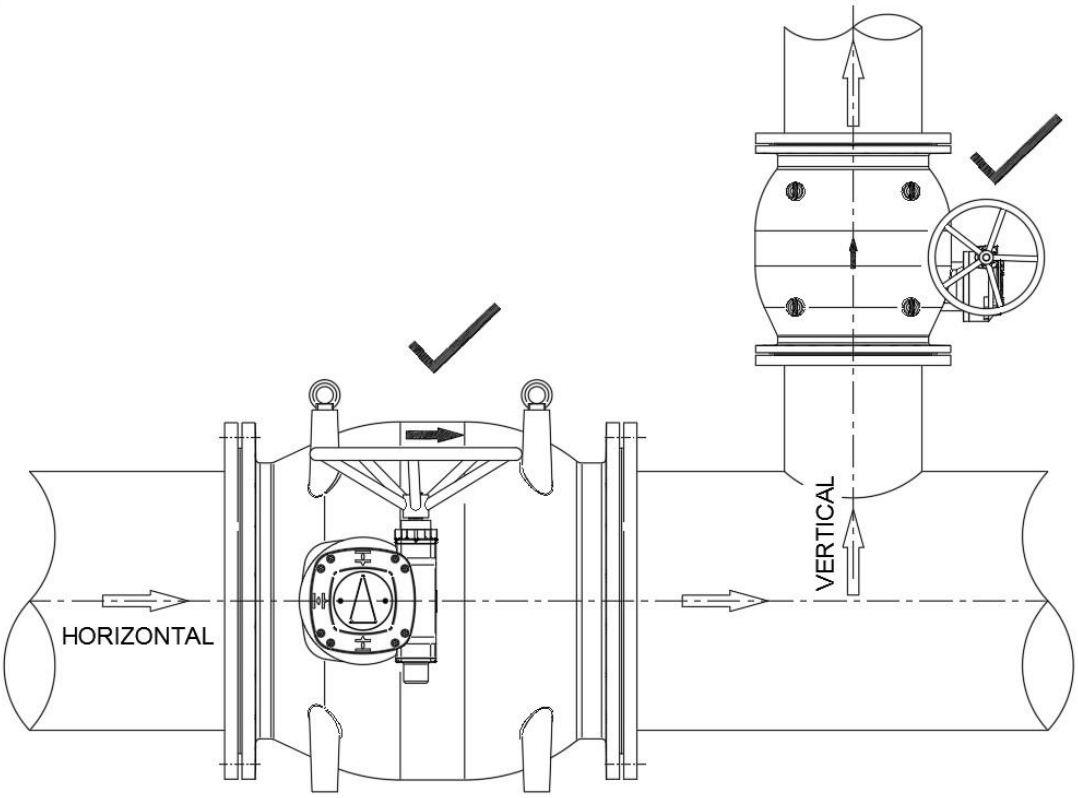
PICTURE 6 – Installation – Valve should not be installed upside-down or as tilted.

DVD IVN Needle Valves cannot be installed with the Gearbox positioned at the top of the Valve. Such installation can cause sealing problems or cause permanent damage on the Valve. Such an installation positioning should be mentioned in the Order.



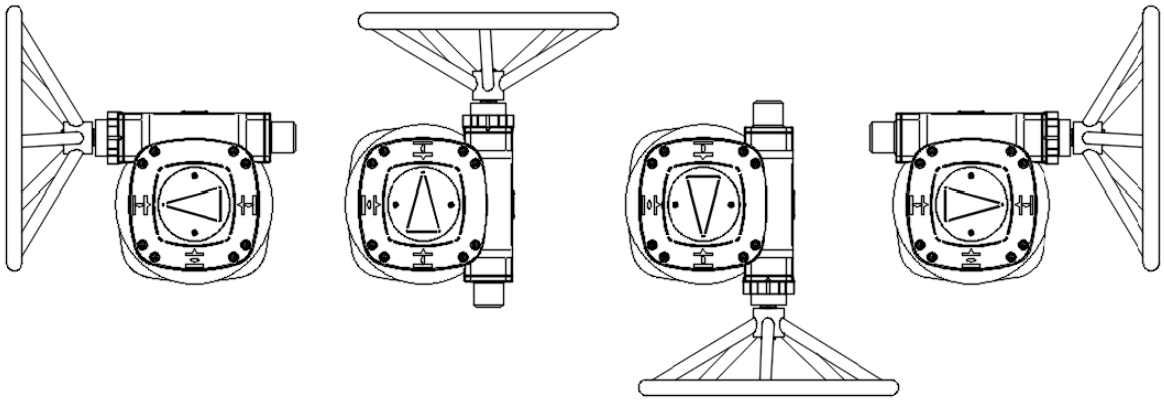
PICTURE 7 – Wrong Installation – Gearbox at the Top of the Valve

Valve can be installed to vertical and horizontal pipelines, meeting the constraints mentioned above.



PICTURE 8 – Correct Installation of Needle Valves to Horizontal and Vertical Pipelines

Gearbox on the Valve can be rotated on the shaft in 90 degree intervals. With such rotation, Gearbox Handwheel can be arranged to face top, bottom, water flow direction and opposite water flow direction. If handwheel position is not mentioned on the order, the handwheel is facing top.



ŞEKİL 9 – Gearbox Positioning on the Valve

GENERAL INFORMATION REGARDING ACTUATORS

This section is related to DVD IVN Needle Valves with Actuator. For Manual Needle Valves, please move on to the next section.

For more information, please check the Operation Manual of the Actuator Manufacturer and follow its requirements. If Actuator Brand and Model is unknown, please get in contact with DVD Valves.

DVD Needle Valves are shipped from the factory as Actuators set and tested. Therefore, do not change Actuator Settings and Limits. Such a change can cause excessive force to be applied on the Gearbox and can wear it. If you feel that there is a problem with the settings, please contact DVD Valves and get a written approval for change of setting on site.

DVD IVN Manual Needle Valves are provided with Top Flange ready for Actuator assembly. If an Actuator installation is to be done on an existing Manual Needle Valve, please contact with DVD Valves and receive a written approval for such an installation.

For Actuator adaptation, correct Actuator type and model has to be selected. Wrong selection can cause problems regarding with assembly, or can cause permanent Valve damage. **DVD Valves cannot be held liable for damages due to unapproved actuator selection and installation.**

After Actuator installation, Open – Close Limit Settings and Torque Limit Settings should be done. Not to do so can cause excessive force on the Gearbox and can cause permanent damage on the Valve. Please check the Operation Manual of the Actuator Manufacturer for the Settings. DVD Valves cannot be held liable for damages due to not doing the setting, or wrong setting of the Actuator.

MAINTANANCE

Before starting the maintenance, make sure that the Valve is isolated; upstream and downstream pipelines of the Valve are drained and de-pressurized. In case pipeline is not de-pressurized fully; potential dangers such as sudden disc movement, part movement or pressurized water outflow etc. can occur.

After maintenance is done, please re-install the Valve to the pipeline according to the related section in this Operation Manual.

If the Needle Valve is with Special Disc such as Cavitation Cage, Slotted Cylinder etc.; the Special Disc can go beyond the Valve Body. Therefore before dismantling the Valve, make sure to fully open the Valve beforehand.

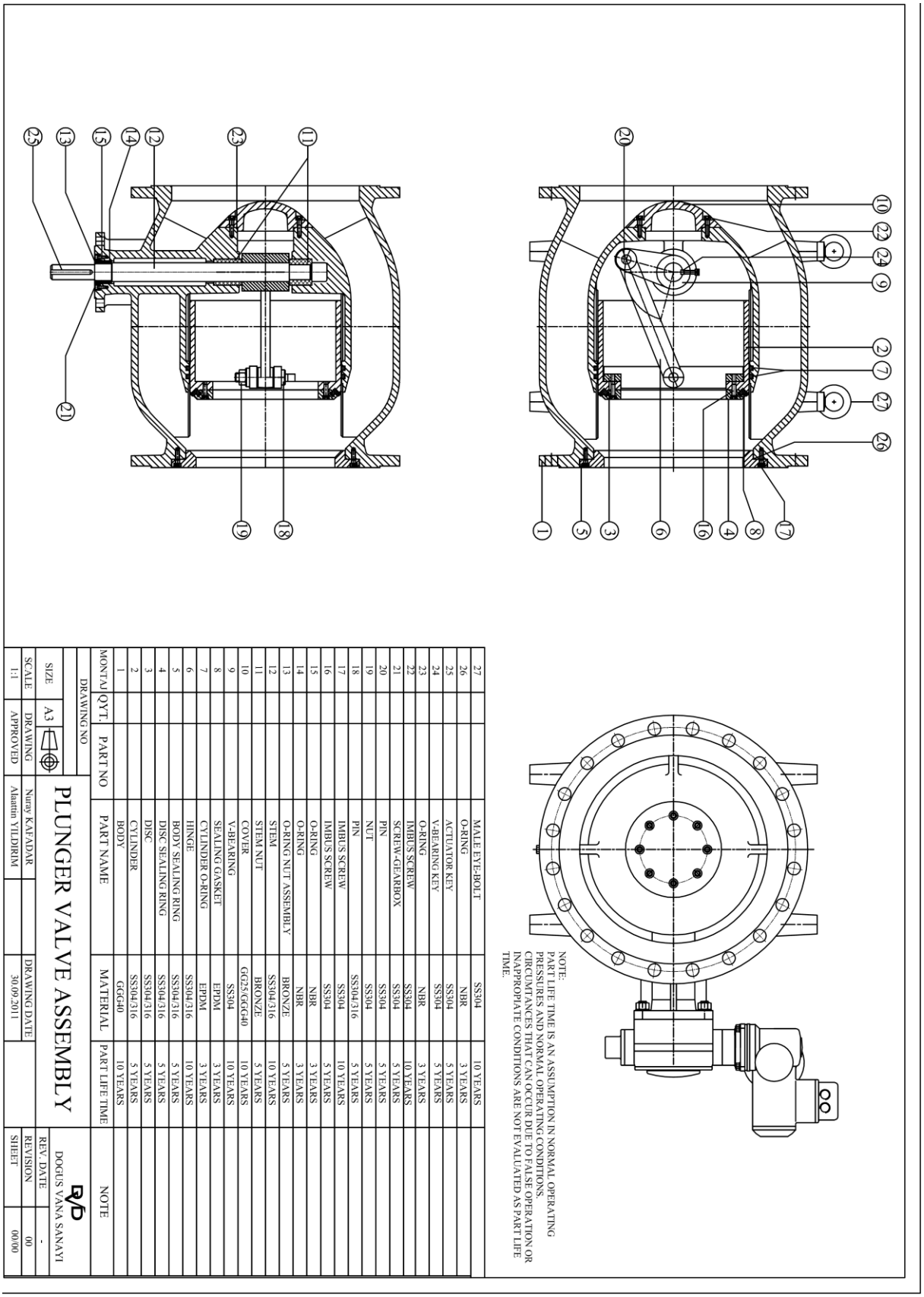
DVD IVN Needle Valves do not have a Disc Locking Mechanism. **Therefore, Gearbox cannot be dismantled from the Valve while the pipeline is pressurized or filled with water.**

For any reason, if the Gearbox is dismantled from the Valve, the Valve Disc can move suddenly with the line pressure and cause slamming in the pipeline. Furthermore, it can cause permanent damage on the Valve itself.

Maintenance work should be done by experienced and skilled personnel. If there is no such personnel, please get in contact with DVD Valves and request your maintenance need. All personnel who will do the maintenance work should read and fully understand this Operation Manual.

Maintenance personnel should follow Occupational Health and Safety requirements and should use the necessary protective accessories (Work shoes, glasses, helmet, gloves etc.).

DVD IVN Needle Valve Spare Part lists and predicted life time of these parts are indicated as below:



MONTAJ QYT.	PART NO	PART NAME	MATERIAL	PART LIFE TIME	NOTE
27		MALE EYE-BOLT	SS304	10 YEARS	
26		O-RING	NBR	3 YEARS	
25		ACTUATOR KEY	SS304	5 YEARS	
24		V-BEARING KEY	SS304	5 YEARS	
23		O-RING	NBR	3 YEARS	
22		IMBUS SCREW	SS304	10 YEARS	
21		SCREW-GEARBOX	SS304	5 YEARS	
20		PIN	SS304	5 YEARS	
19		NUT	SS304	5 YEARS	
18		PIN	SS304/316	5 YEARS	
17		IMBUS SCREW	SS304	10 YEARS	
16		IMBUS SCREW	SS304	5 YEARS	
15		O-RING	NBR	3 YEARS	
14		O-RING	NBR	3 YEARS	
13		O-RING NUT ASSEMBLY	BRONZE	5 YEARS	
12		STEM	SS304/316	10 YEARS	
11		STEM NUT	BRONZE	5 YEARS	
10		COVER	GG25/GGG40	10 YEARS	
9		V-BEARING	SS304	10 YEARS	
8		SEALING GASKET	EPDM	3 YEARS	
7		CYLINDER O-RING	EPDM	3 YEARS	
6		HINGE	SS304/316	10 YEARS	
5		BODY SEALING RING	SS304/316	5 YEARS	
4		DISC SEALING RING	SS304/316	5 YEARS	
3		DISC	SS304/316	5 YEARS	
2		CYLINDER	SS304/316	5 YEARS	
1		BODY	GGG40	10 YEARS	

DRAWING NO

SIZE A3 — PLUNGER VALVE ASSEMBLY — DOGUS VANA SANAYI

SCALE	DRAWING	APPROVED		DRAWING DATE	REV. DATE
1:1	Nuray KAFADAR	Alaattin YILDIRIM		30.09.2011	-
					REVISION 00
					SHEET 00/00

NOTE:
PART LIFE TIME IS AN ASSUMPTION IN NORMAL OPERATING PRESSURES AND NORMAL OPERATING CONDITIONS. CIRCUMSTANCES THAT CAN OCCUR DUE TO FALSE OPERATION OR INAPPROPIATE CONDITIONS ARE NOT EVALUATED AS PART LIFE TIME.

PICTURE 11 – DVD Needle Valve Spare Part List and Predicted Life Time

This table is to provide a general idea to users, and life times can vary according to site conditions, application and operational conditions. Sealings should be changed when they are worn out or damaged.

All gasket and o-rings should be lubricated after renewal (w/ de-mineralized lubricant). If the Valve is potable water approved, potable water approved lubricants should be used.

DVD IVN Needle Valve Body Sealing (26) can be removed without removing the Disc (2) – Cylinder (3) mechanism from the Valve Body. Please follow the below steps to renew the Body Sealing (26):

1. Remove the Valve from the line, in line with the above mentioned requirements.
2. In order to prevent straining of the Cylinder (2), position the Valve on its inlet flange.
3. Bring the Valve to semi-open position.
4. Remove the bolts on the Body Retaining Ring (5).
5. Remove the Body Retaining Ring (5) and take out the Body Sealing (26).
6. Clean the Body (1) sealing channel and Body Retaining Ring (4) sealing surface.
7. Install the new Body Sealing (26) on the body. Make sure that the sealing is correctly fit to the channel.
8. Install the Body Retaining Ring (5) on the Body Sealing (26). Make sure that the sealing is correctly fit with the Body Retaining Ring (5).
9. Screw the Body Retaining Ring (5) bolts in opposing order.
10. Check the functionality of the Valve.
11. After installing the Valve, check the Body Retaining Ring (5) for good sealing.

Please follow the below steps to renew the Sealing Gasket (8):

1. Remove the Valve from the line, in line with the above mentioned requirements.
2. In order to prevent straining of the Cylinder (2), position the Valve on its inlet flange.
3. Bring the Valve to semi-open position.
4. Remove the bolts on the Body Retaining Ring (5).
5. Remove the Body Retaining Ring (5) and take out the Body Sealing (26).
6. Remove the bolts on the Disc Retaining Ring (4).
7. Remove the Disc Retaining Ring (4) and take out the Sealing Gasket (8).
8. Clean the Cylinder (2) sealing channel and Disc Retaining Ring (4) sealing surface.
9. Install the new Sealing Gasket (8) on the Cylinder (2) channel. Make sure that the sealing is correctly fit to the channel.
10. Install the Disc Retaining Ring (4) on the Sealing Gasket (8). Make sure that the sealing is correctly fit with the Disc Retaining Ring (4).
11. Screw the Disc Retaining Ring (4) bolts in opposing order.
12. Clean the Body (1) sealing channel and Body Retaining Ring (4) sealing surface.
13. Install the new Body Sealing (26) on the body. Make sure that the sealing is correctly fit to the channel.
14. Install the Body Retaining Ring (5) on the Body Sealing (26). Make sure that the sealing is correctly fit with the Body Retaining Ring (5).
15. Screw the Body Retaining Ring (5) bolts in opposing order.
16. Check the functionality of the Valve.
17. After installing the Valve, check the Sealing Gasket (8) and Body Retaining Ring (5) for good sealing.

Cylinder O-ring (7) renewal should be done by competent personnel only. It is recommended to get in contact with the manufacturer for this process. Please follow the below steps to renew the Cylinder O-rings (7):

1. Remove the Valve from the line, in line with the above mentioned requirements.
2. In order to prevent straining of the Cylinder (2), position the Valve on its inlet flange.
3. Bring the Valve to semi-open position.
4. Remove the bolts on the Body Retaining Ring (5).
5. Remove the Body Retaining Ring (5) and take out the Body Sealing (26).
6. Bring the Valve to fully closed position.
7. Remove the Feather Keys on the Pin (18).
8. Remove the Nuts (19) connecting the Disc (3) and Hinge (6) and take out the Pin (18).
9. Take out the Cylinder (2) from the Valve.
10. Remove the Cylinder O-rings (7) and clean the O-ring channels.
11. Install the new Cylinder O-rings (7) on the channels. Make sure that the O-rings are correctly fit to the O-ring channels.
12. Install the Cylinder (2) back on the body. Make sure not to damage the Cylinder O-rings (7).
13. Install the Pin (18) and tighten the Nuts (19).
14. To prevent the loosing of the Nuts (19), install Feather Keys on the Nuts (19).
15. Install the new Body Sealing (26) on the body. Make sure that the sealing is correctly fit to the channel.
16. Install the Body Retaining Ring (5) on the Body Sealing (26). Make sure that the sealing is correctly fit with the Body Retaining Ring (5).
17. Screw the Body Retaining Ring (5) bolts in opposing order.
18. Check the functionality of the Valve.
19. After installing the Valve, check the Cylinder (2) movement and Cylinder O-rings (7), Sealing Gasket (8) and Body Retaining Ring (5) for good sealing.

Gearbox renewal should be done by competent personnel only. It is recommended to get in contact with the manufacturer for this process. Please follow the below steps to renew the Gearbox:

1. Remove the Valve from the line, in line with the above mentioned requirements.
2. Bring the Valve to fully-open position.
3. Remove the bolting of the Gearbox and take it out. Make sure that the Key (25) on the Stem (12) is not out of its place.
4. Renew the Gearbox and install the new one on the Stem (12), by fixing the Key (25); and screw the bolting in opposing order, back again.
5. Check the functionality of the Valve.
6. After installing the Valve, check the body shell for good sealing.

Renewal of the O-rings (14, 15) located on the Nut (13) should be done by competent personnel only. It is recommended to get in contact with the manufacturer for this process. Please follow the below steps to renew the O-rings (14, 15):

1. Remove the Valve from the line, in line with the above mentioned requirements.
2. Bring the Valve to fully-open position.
3. Remove the bolting of the Gearbox and take it out. Make sure that the Key (25) on the Stem (12) is not out of its place.
4. Remove the bolting of the O-ring Assembly Nut (13) and take it out.
5. Renew the O-rings (14, 15) located on the O-ring Assembly Nut (13). Make sure that the O-rings are correctly fit to the O-ring channels.
6. Clean the O-ring (14, 15) surfaces and O-ring sealing surfaces on the body.
7. Screw the Nut (13) bolts in opposing order.
8. Screw the Gearbox bolting in opposing order.
9. Check the functionality of the Valve.
10. After installing the Valve, check the body shell for good sealing.

CONTACT INFORMATION

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