DVD VALVES

OPERATION MANUAL

DPT BASKET STRAINERS

GENERAL SAFETY INSTRUCTIONS

This Operation Manual is created for you to use DVD Basket Strainers effectively and to reduce potential risks regarding faulty use of the mentioned Strainers. With this Manual, potential accidents and damages can be prevented and life time of the Strainer 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, Strainers hold potential risks and can cause danger in case of faulty use or faulty assembly. Therefore, **everyone, who somehow gets in contact with the Strainer, 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 Strainers, general regulations and standards shall be followed. Some of these regulations are defined in EN Standards. Installation of the Strainers shall be done by qualified and experienced technical personnel. For detailed information regarding the Strainers, DVD Documentation (Catalogs, if appropriate Special Specifications and Technical Drawings, related DVD Order Confirmation etc.) shall be used and followed.

Before disassembling the Strainer from the pipeline or any of its parts from the Strainer, 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 Strainer can move unintentionally, without any control.**

Do not remove any Plug on the Filter Body without making sure that the body is depressurized. Severe injuries can occur if not done so.

After commissioning, consequently the Strainers are working under pressure; the Strainers 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.

During dismantling of the Strainer from the pipeline, medium can flow out from the pipe or the Strainer 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 Basket Strainers are designed to be installed on pipelines to collect & remove particles and debris from the pipeline.

Operating limits such as Nominal Size, Pressure, Temperature of the Strainer can be found in DVD Documentation. Furthermore; Operating Size, Operating Pressure, Strainer Body Material and Production Date can be found on the marking of the Strainer 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 Strainer should never be faced with a higher pressure than the defined Nominal Pressure.

Strainers 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 Strainer chambers by isolation material, or fully draining of pipelines before freezing conditions occur. If no precaution is taken, due to expansion of water, Strainer body or other parts of the Strainer can be permanently damaged. DVD Valves cannot be held liable from such damages.

TRANSPORTATION AND STORAGE

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

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

Positioning of the Strainer on the pallet is done in two ways:

1. Transportation and Storage Purpose: Strainer is positioned on its inlet flange. - **Caution: center of weight is not on the flange center. Make sure to fix the Strainer to prevent tilting.**
2. Transportation and Storage Purpose: Strainer is positioned on its feet

Transportation & Storage Purpose

Transportation & Storage Purpose

PICTURE 1: Positioning the Strainer on the Pallet

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

extreme care and Center of Gravity of the Strainer should be determined before lifting operation.

If the Strainer has any accessories such as David Arm etc. be cautious about the extra weight of these devices and their effect on the center of gravity. Furthermore, bottom neck of the Strainer moves the body weight center away from the center of the flange. Therefore, during storage on the flange surface, bottom neck of the Strainer should be reinforced by durable material to prevent tilting of the Strainer.

Lifting Belts and Lugs which are according to safety norms shall be used. They have to be suitable for the Strainer weight. Strainer should be lifted only from the Lifting Bores. **Lifting from the David Arm or Manometer Connections should not be done at all times.** These parts are not designed to carry the weight of the Strainer and lifting from these parts can cause breaking, tumbling or dropping.

During Storage and Transportation, Strainers should never be faced with direct sunlight. Under direct sunlight; seals or Strainer coating can get damaged. Strainers 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 Strainer; the Strainer should be heated up to 5°C.

Strainers should never be in direct contact with the ground, and should be protected by a pallet. Strainer 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 Strainer operation. Flange Protection Covers should only be dismantled right before assembly to the pipeline.

USE AND APPLICATON

DVD DPT Basket Strainers 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 sludge (sewage applications etc.), the Strainer can be clogged easily. Basket Strainers should not be used in such applications. For special applications other than clean water systems, please get in contact with the manufacturer and request a written approval.

High Water Velocity can cause damage to the Strainer. To prevent such damage, please check the Water Velocity. Maximum operating velocity for DVD Basket Strainers is as follows:

Nominal Pressure	Max Water Velocity
10 bar	3 m/s
16 bar	4 m/s
25 bar	5 m/s
40 bar	6 m/s

An Air Valve installation is recommended at the top of the Cover. DVD Basket Strainers are available optionally with readily installed Air Strainers if mentioned in DVD Order Confirmation. **Make sure to discharge the air inside the Strainer while filling the line with water. Otherwise, air can accumulate inside the Strainer and can decrease the filtration capacity of the filter.**

PICTURE 2 – Optional Air Valve installation at the top of the Strainer

INSTALLATION TO THE PIPELINE

Pipeline flanges, which the Strainer 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 Strainer can face high load forces that can cause failures in long time. Load forces transmitted to the Strainer from the pipeline should not go beyond what is defined in EN 1074-2 standard. Not to do so can cause Strainer failure.

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

Strainer flange to pipeline flange connection should be done by bolts and nuts; and washers must be used to protect the Strainer 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 Strainer.

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

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 Strainers cannot be held liable from such damages.

If the Strainer 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.

STRAINER POSITIONING

If the Strainer is to be installed underground, installation inside a Strainer Chamber is needed. No buried application is possible with Strainers.

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 Strainer for ease of dismantling the Strainer. Dismantling Pieces are recommended to be installed in the upstream of the Strainer. Furthermore, a Lifting Device should be available on the site that is in line with the weight of the Strainer. Otherwise, dismantling and re-installing of the Strainer for maintenance purposes will not be possible.

Cleaning process is an essential part of the Strainers. Therefore make sure to provide enough space to take out the whole filter from the body. Furthermore, a Lifting Device should be available on the site that is in line with the weight of the Cover and Filter of the Strainer. Otherwise, cleaning of the filter will not be possible.

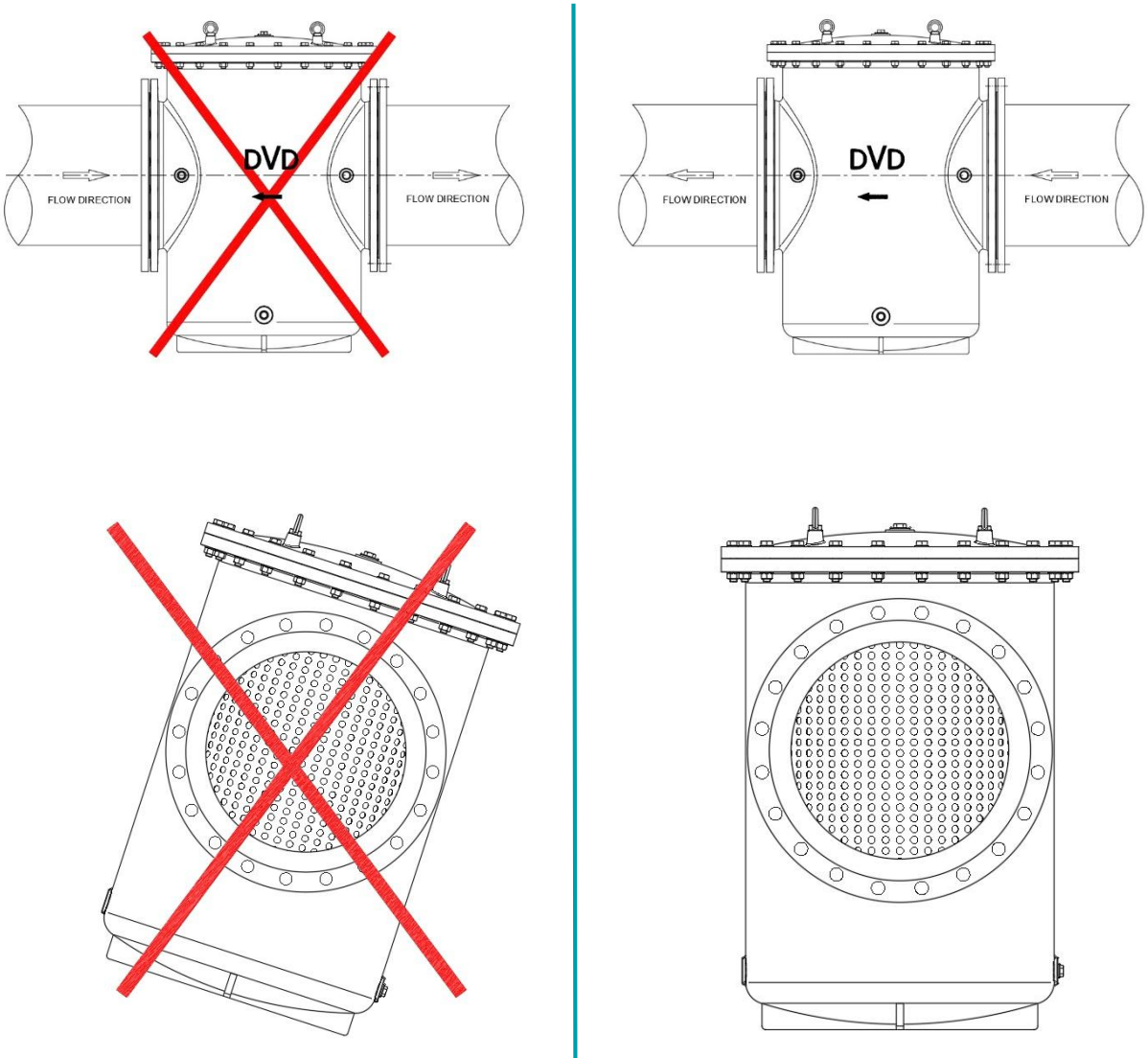
PICTURE 3 – Basket Strainer + Dismantling Piece Connection

It is recommended to have DN x 3 straight pipeline installation in the upstream and downstream of the Strainer. Equipment such as Elbow, T-Connection, Strainer etc. to be

installed directly in the upstream of the Strainer can cause cavitation and can damage the Strainer.

If the Strainer is to be installed in the downstream of a Regulating Valve (Hydraulic Control Valve, Plunger Valve etc.) or a Pump, make sure to leave at least DN x 10 gap. Cavitation risk is higher for Regulating Valves and Pumps compared to stationary equipment.

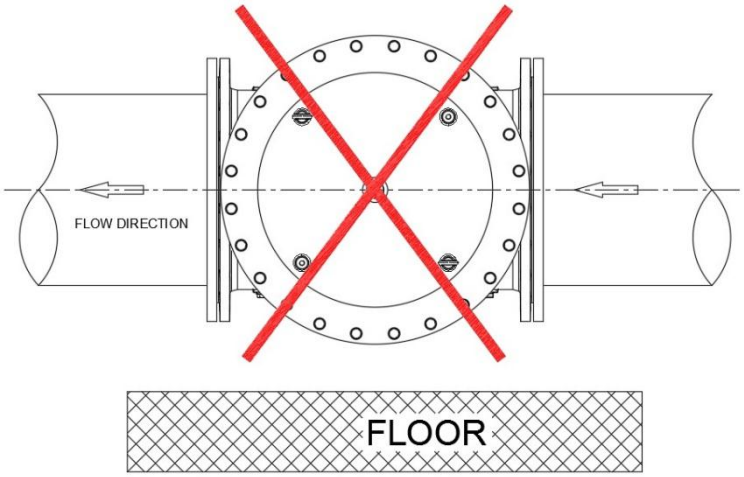
If installation on site is not possible due to chamber restrictions, do not install the Strainer upside-down, sideways or do not tilt the Strainer. Installing the Strainer upside-down, sideways or as tilted can cause high headloss, cleaning problems or reduction of debris collection capability.



Wrong Installation

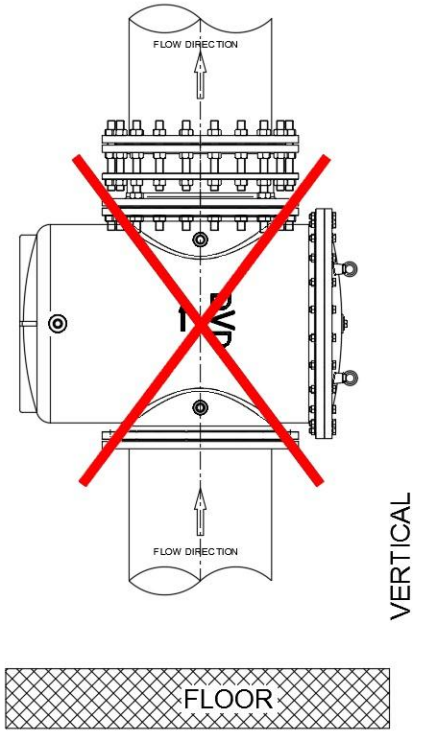
Correct Installation

PICTURE 4 – Installation – Strainer should not be installed upside-down or as tilted.



PICTURE 5 – Wrong Installation – Sideways Connection

Strainer can be installed to vertical and horizontal pipelines, meeting the constraints mentioned above. However in vertical pipelines, debris collection is not possible due to the gravity effect. Furthermore, cleaning capability becomes harder and can cause higher risk to the personnel doing the cleaning. Therefore vertical pipeline installation is not recommended by DVDValves. Further measures should be taken if such an installation is necessary.

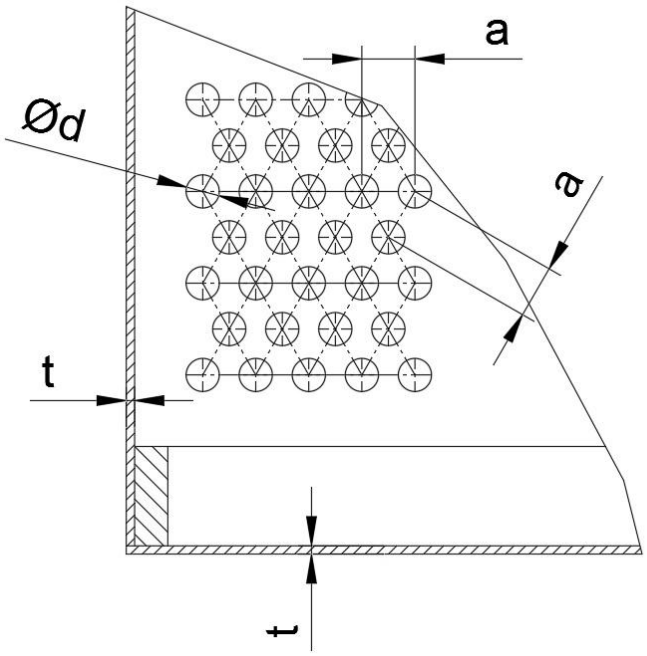


PICTURE 6 –Strainers to Vertical Pipelines are not recommended – Debris collection is not possible in Vertical Pipeline installation

DVD DPT Basket Strainers are manufactured to have one direction water flow. Make sure to install the Strainer according to the Water Flow Arrow indication. Installing the Strainer opposite to the Arrow indication will prevent the collection of debris.

MAINTANANCE & CLEANING

Filtration capacity of the Basket Strainer is determined by the Mesh Size and Mesh Diameter of the Filter. Mesh Size, Mesh Diameter and Filter Thickness is as according to DVD Documentation (DVD Catalog or Datasheet) or to DVD Order Confirmation. If not mentioned on the Order Conformation, DVD reserves the right to manufacture the filter according to its standard production. Make sure to mention the above mentioned details in full and receive a written approval from the manufacturer, if a special configuration is needed.



PICTURE 7 – Filter Mesh Size (a), Mesh Diameter (d) and Filter Thickness (t)

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

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

A Drain Plug is found at the bottom neck of the Basket Strainers. If required and mentioned on the DVD Order Confirmation, an optional Isolation Valve can be provided for ease of draining. **While removing the Drain Plug, make sure that the Strainer is not pressurized.**

PICTURE 8 – Optional Isolation Valve found in the Drain Plug of the Strainer

Standard DVD DPT Basket Strainers do not have a Manometer installation. Manometer connections allows the user to understand if the Filter is blocked or not. In case the differential pressure reading between the upstream and downstream manometers are high, it means the filter has been clogged by debris. In such a case, make sure to start the cleaning process immediately. Clogged filters can cause high headloss and can result in excessive pumping energy costs. DVD Basket Strainers are available optionally with readily installed Manometers if mentioned in DVD Order Confirmation.

PICTURE 9 – Optional factory installed Manometers

A David Arm feature is possible, if mentioned in DVD Order Confirmation. David Arm allows the user to slide the Cover so that no lifting of the Cover is necessary. **Make sure not the use the David Arm before connecting the Strainer to the pipeline rigidly. Otherwise, sliding the Cover may cause the center of the weight to change and tilt the body.**

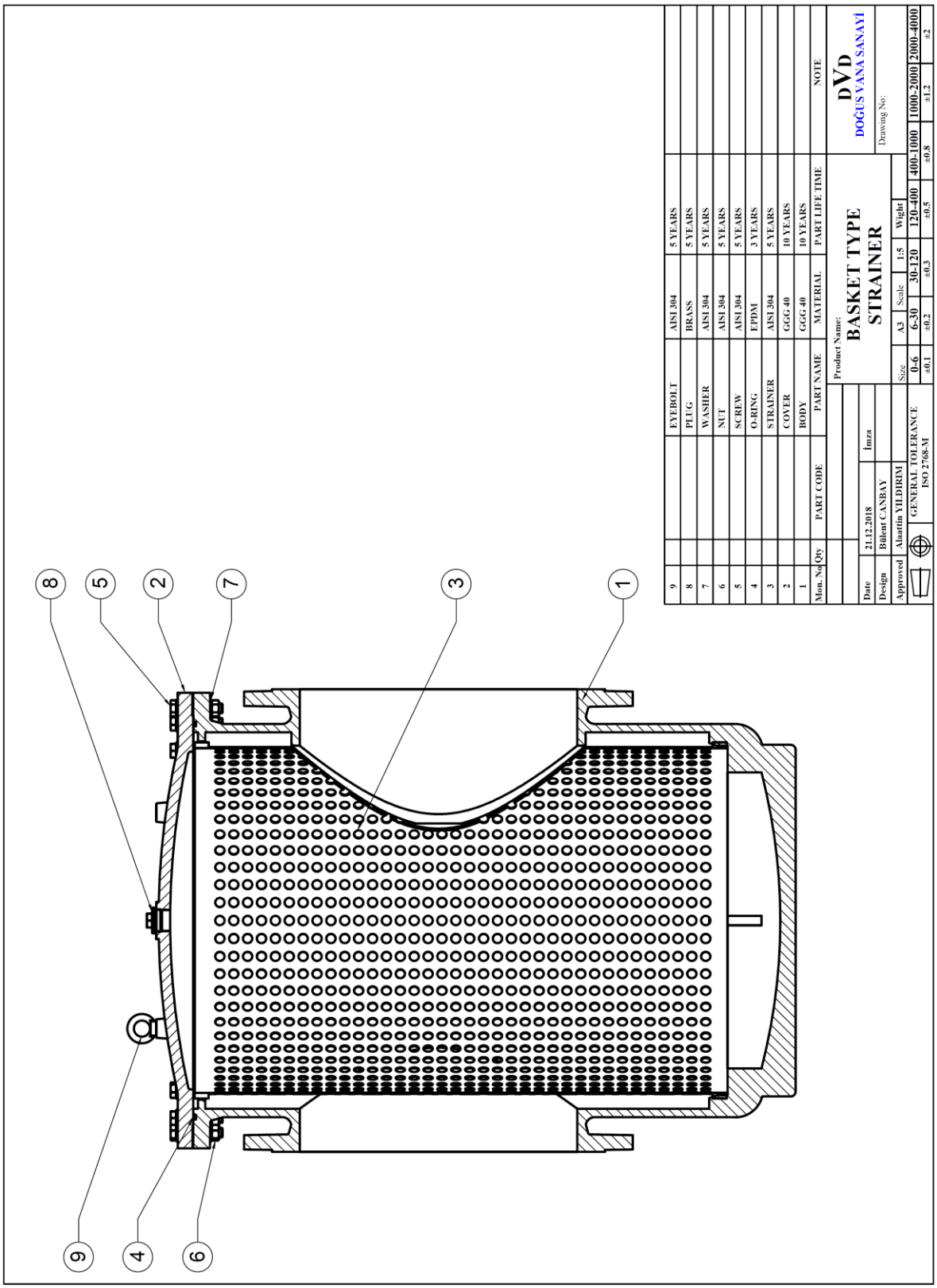
PICTURE 10 – Optional David Arm feature for easy cover dismantling

Maintenance/Cleaning 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.

PICTURE 11 – Taking out the Filter from the Strainer Body

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

DVD DPT Basket Strainer Spare Part lists and predicted life time of these parts are indicated as below:



PICTURE 11 – DVD Basket Strainer 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 Strainer is potable water approved, potable water approved lubricants should be used.

DVD DPT Basket Strainer Sealing Gasket and Filter can be removed without removing the Body from the line.

Please follow the below steps for cleaning the Filter (3):

1. Isolate the Basket Strainer from the line by using upstream and downstream isolation valves.
2. De-pressurize the Basket Strainer and drain the water inside the Strainer.
3. Remove the Drain Plug for faster draining. Do not remove this Plug before de-pressurizing the system.
4. Remove the Bolts (5/7) on the Cover (2).
5. Remove the Cover (2).
6. Remove the Sealing Gasket (4).
7. Take out the Filter (3) and clean any debris.
8. Install the Filter (3) back to the Body (1). Make sure the direction of Filter (3) is in line with the arrow direction.
9. Clean the Body (1) and Cover (2) gasket channel.
10. Install the new Sealing Gasket (4) on the Body (1). Make sure that gasket is correctly fit to the gasket channel.
11. Install the Cover (2) on the Body (1).
12. Screw the Cover Bolts (5/7) in opposing order.
13. Tighten the Drain Plug and fill the Body (1) with water.
14. Use the Cover Plug (8) to discharge the air inside the Body (1) and tighten it when water fills up.
15. Pressurize the Body (1) and check the sealing & functionality of the Strainer.

Please follow the below steps to renew the Sealing Gasket (4):

1. Isolate the Basket Strainer from the line by using upstream and downstream isolation valves.
2. De-pressurize the Basket Strainer and drain the water inside the Strainer.
3. Remove the Drain Plug for faster draining. Do not remove this Plug before de-pressurizing the system.
4. Remove the Bolts (5/7) on the Cover (2).
5. Remove the Cover (2).
6. Remove the Sealing Gasket (4).
7. Check the Filter (3) and if clogged, clean it as instructed above.
8. Clean the Body (1) and Cover (2) gasket channel.
9. Install the new Sealing Gasket (4) on the Body (1). Make sure that gasket is correctly fit to the gasket channel.
10. Install the Cover (2) on the Body (1).
11. Screw the Cover Bolts (5/7) in opposing order.
12. Tighten the Drain Plug and fill the Body (1) with water.
13. Use the Cover Plug (8) to discharge the air inside the Body (1) and tighten it when water fills up.
14. Pressurize the Body (1) and check the sealing & functionality of the Strainer.

CONTACT INFORMATION

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