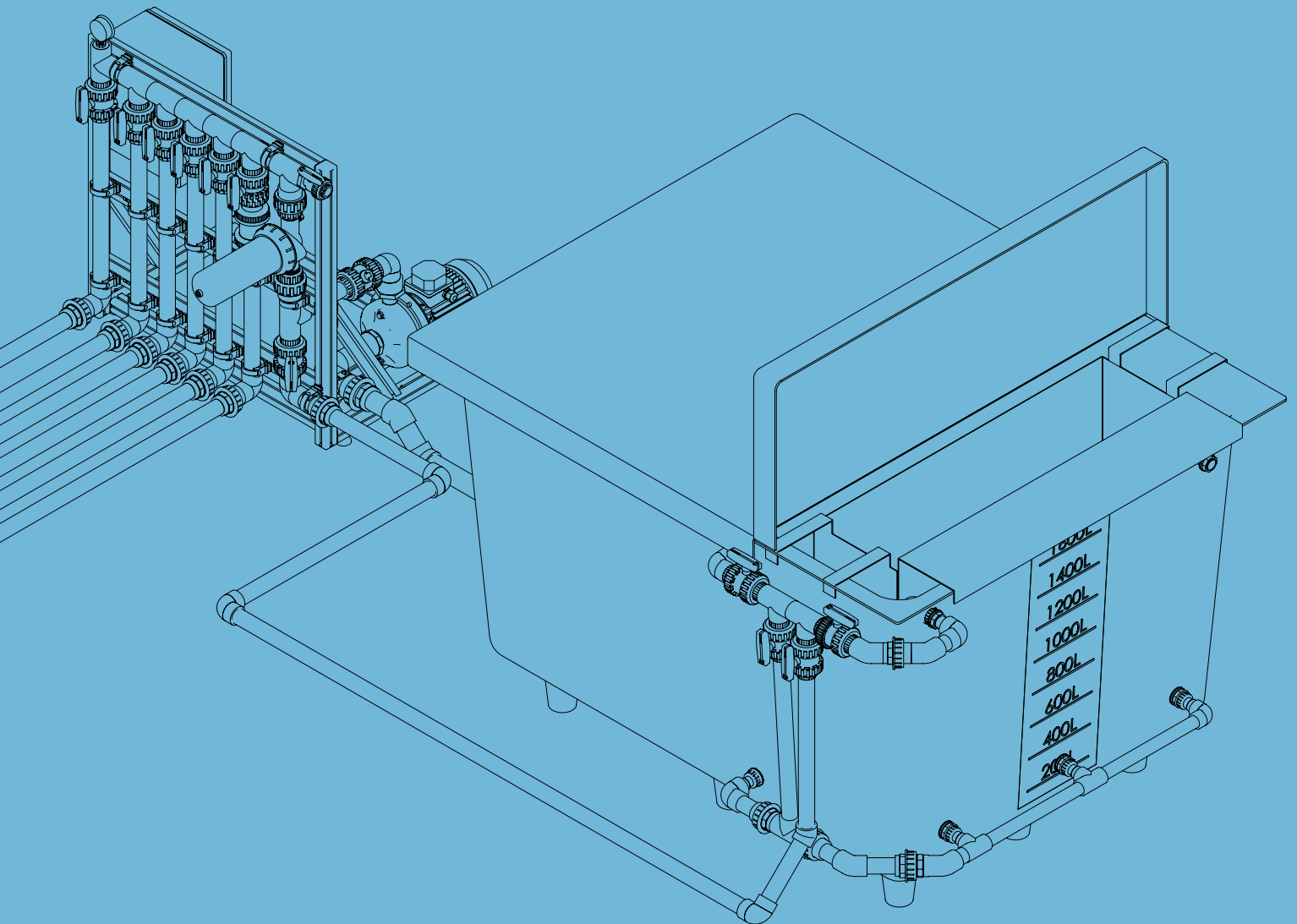


NUTRISOLVE™

FERTILIZER-DISSOLVING SYSTEM

INSTALLATION AND OPERATION MANUAL



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NOTE

All the drawings in this document are for the purpose of illustration only. The actual product details and infrastructure condition may differ in any actual application.



FOREIGN LANGUAGES

In the event that you are reading this manual in a language other than the English language, you acknowledge and agree that the English language version shall prevail in case of inconsistency or contradiction in interpretation or translation.

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USE OF SYMBOLS

The symbols used in this manual refer to the following:



WARNING

Contains instructions aimed at preventing bodily injury or direct damage to the crops, the NutriSolve and/or the infrastructure.



CAUTION

Contains instructions aimed at preventing unwanted system operation, installation or conditions that, if not followed, might void the warranty.



ATTENTION

Contains instructions aimed at enhancing the efficiency of usage of the instructions in the manual.



NOTE

Contains instructions aimed at emphasizing certain aspects of operation or installation of the system.



ELECTRICAL HAZARD

Contains instructions aimed at preventing bodily injury or direct damage to the NutriSolve and/or the infrastructure in the presence of electricity.



SAFETY FOOTWEAR

Contains instructions aimed at preventing foot injury.



PROTECTIVE EQUIPMENT

Contains instructions aimed at preventing damage to health or bodily injury in the presence of fertilizers, acid or other chemicals.

INTRODUCTION



CAUTION

Read the safety instructions below before beginning installation of the NutriSolve fertilizer-dissolving system.

General instructions

- Installation should be performed on a hard, leveled floor or on a flat, hard leveled plate.
- Do not apply force or pressure to the components during the installation or operation.
- Verify that all the infrastructure components work properly.

Electricity

- Ensure that a suitable electrical power supply is available in the vicinity of the installation for the NutriSolve electrical connection (see - [Electrical connection to the mains](#), page 11).

Safety instructions

- All safety regulations must be applied.
- Ensure that the installation is carried out in a manner that prevents leaks from the NutriSolve, the fertilizer/acid tanks and lines, the peripherals and the accessories, which could contaminate the environment, soil or ambient area.
- Electrical installation must be performed by an authorized electrician only.
- The electrical installation must comply with the local safety standards and regulations.
- Protection provided by the equipment could be impaired if the equipment is used in a manner other than that specified by the manufacturer.



WARNING

In an agricultural environment - always wear protective footwear.



WARNING

Measures must be taken to prevent fertilizer infiltration of the water source, to avoid water pollution.



CAUTION

When opening or closing any manual valve, always do it gradually, to prevent damage to the system by water hammer.



WARNING

Always use protective equipment, gloves and goggles when handling fertilizers, acid and other chemicals!



NOTE

The maximum sound level produced by the equipment does not exceed 70dB.

DESCRIPTION

Introduction

Netafim's NutriSolve fertilizer-dissolving system offers better fertilizer mixing with less labor. It is intended for farmers who currently dissolve and dilute solid fertilizers with water to obtain the desired concentration.

Features

- Designed to optimally mix solid fertilizers with water, using minimum time and labor.
- The system operates on the principle of hydraulic mixing, using only water pressure.
- The mixing process can be operated either manually or automatically.
- 1600-liter fertilizer-mixing tank without moving parts.
- Maintenance is very simple and easy - only the filter needs to be cleaned once a day or as many times as necessary, based on the fertilizer used.

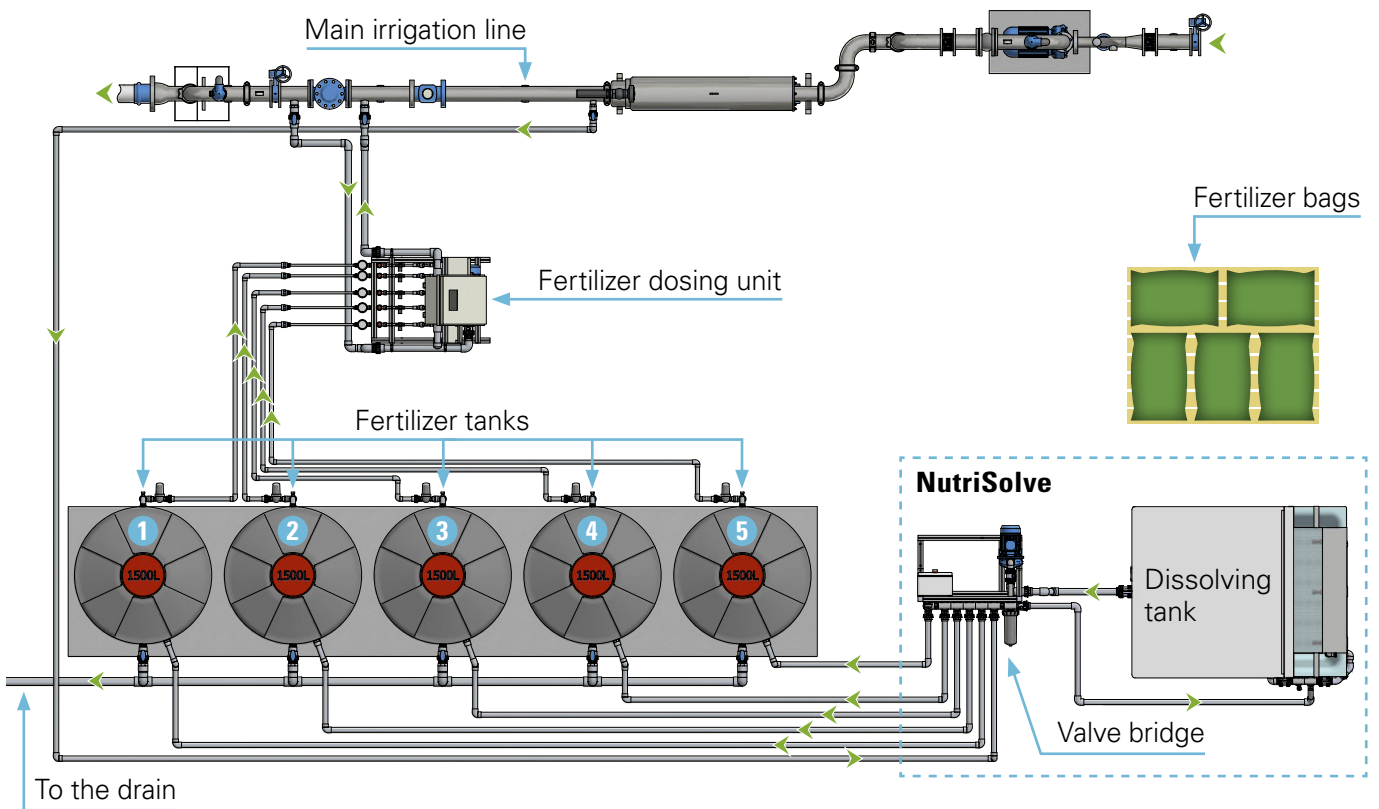
Selection

Different NutriSolve configurations are available to suit different territories and requirements:

- 3-phase, 400 V/50 Hz, metric piping
- Single phase, 220 V/60 Hz, metric piping
- Single phase, 220 V/60 Hz, ASTM piping

See part list on [page 17](#).

Schematic system view



➤ Direction of flow

DESCRIPTION

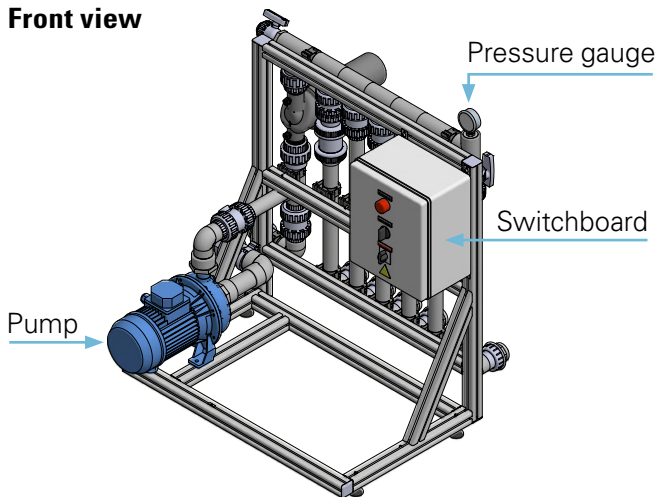
Main parts

The NutriSolve is supplied in 2 separate packages

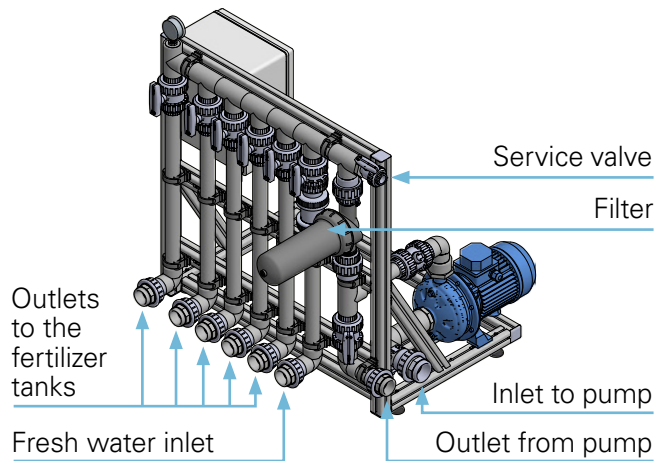
- Valve bridge
- Dissolving tank

Valve bridge

Front view

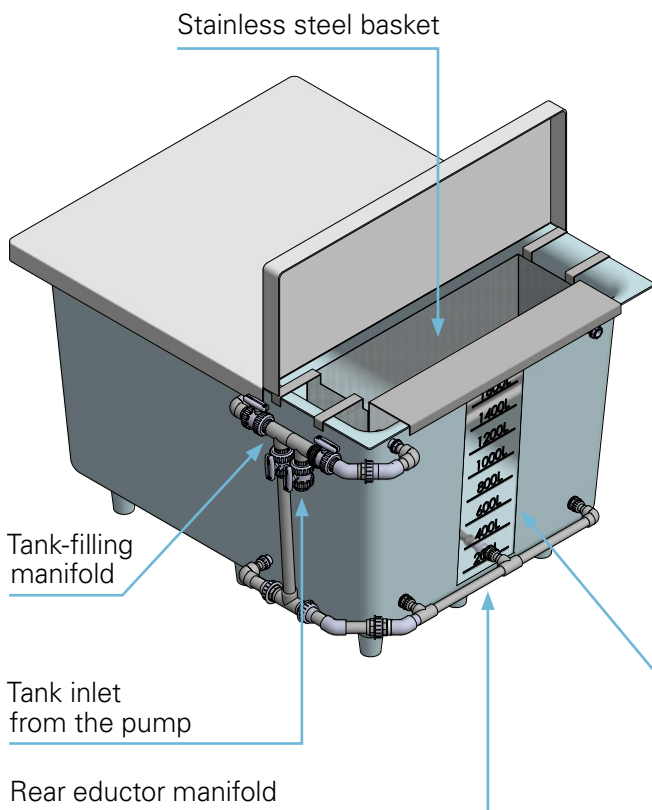


Back view

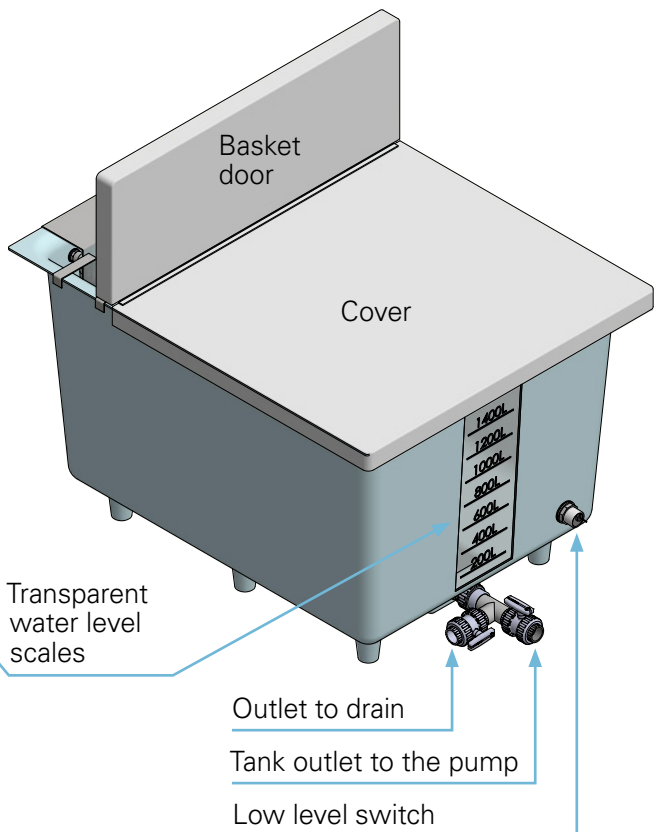


Dissolving tank

Front view

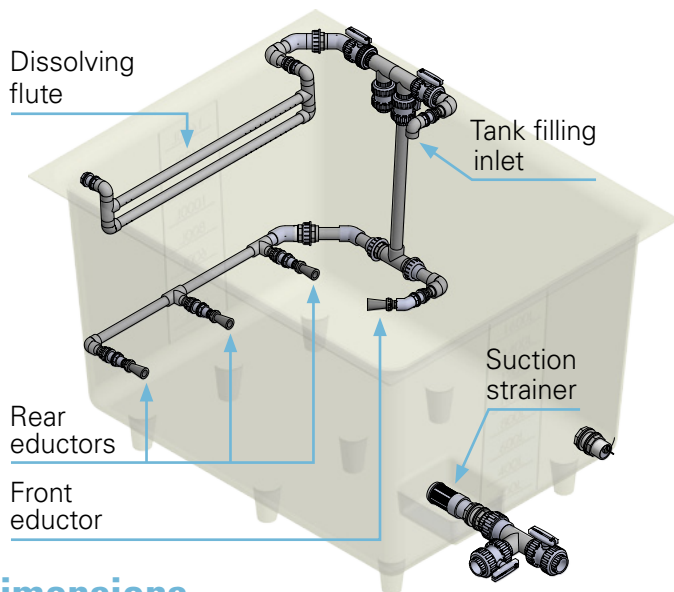


Back view



DESCRIPTION

Dissolving tank - inside view



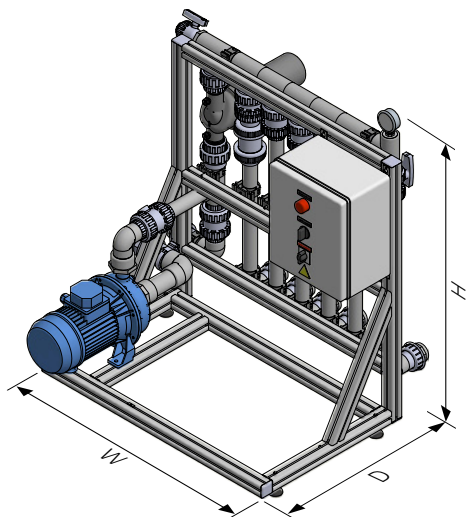
Pipe connectors

See illustration on page 12

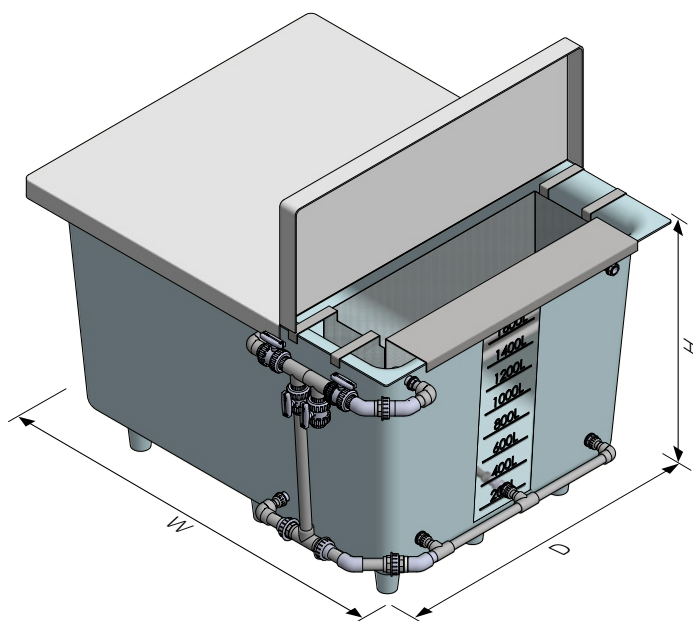
| Part | Description | Tread |
|------|-----------------------------|--------------------|
| 1 | Pump inlet | 50mm / ASTM 1.5" |
| 2 | Outlets to fertilizer tanks | 40mm / ASTM 1.25" |
| 3 | Outlet to dissolving tank | 40mm / ASTM 1.25" |
| 4 | Service valve | Female thread 3/4" |

Dimensions

Valve bridge



Dissolving tank



| | External dimensions (W/D/H) | Package dimensions (W/D/H) |
|------------------------|------------------------------|-------------------------------|
| Valve bridge | 91/76/95 cm (36/30/37.5)* | 103/117/115 cm (40.5/46/45)** |
| Dissolving tank | 170/135/110 cm (67/53/43.5") | 170/135/110 cm (67/53/43.5") |

*The height varies by ± 1 cm (± 0.5 ") according to the adjustment of the legs.

**The package height includes the pallet height of 15 cm (6").

Weight

| | Net weight* | Packed weight* |
|------------------------|---------------------|---------------------|
| Valve bridge | 70 kg. (154.5 lbs.) | 95 kg. (209.5 lbs.) |
| Dissolving tank | 85 kg. (187.5 lbs.) | 85 kg. (187.5 lbs.) |

*Order of magnitude only - final weights are issued with the product order.

INSTALLATION



NOTE

A flexible hose (not supplied) should be readily available near the system for maintenance.

Unpacking and placement

Check the ShockWatch label attached to the valve bridge packaging and ensure the indicator is white. If the indicator is red - follow the instructions on the ShockWatch label.

Place the NutriSolve packages close to the irrigation system using a forklift.

Gently open each package.

Remove the 2 screws and bolts connecting the valve bridge to the wooden pallet.

Place the valve bridge and the dissolving tank in their position.

Adjust the valve bridge legs so that it is level and steady.



Connect the valve bridge to the dissolving tank



NOTE

The piping and accessories that connect the valve bridge to the dissolving tank are not supplied. Order them according to your specific layout. It is recommended to use glue-type connection piping.

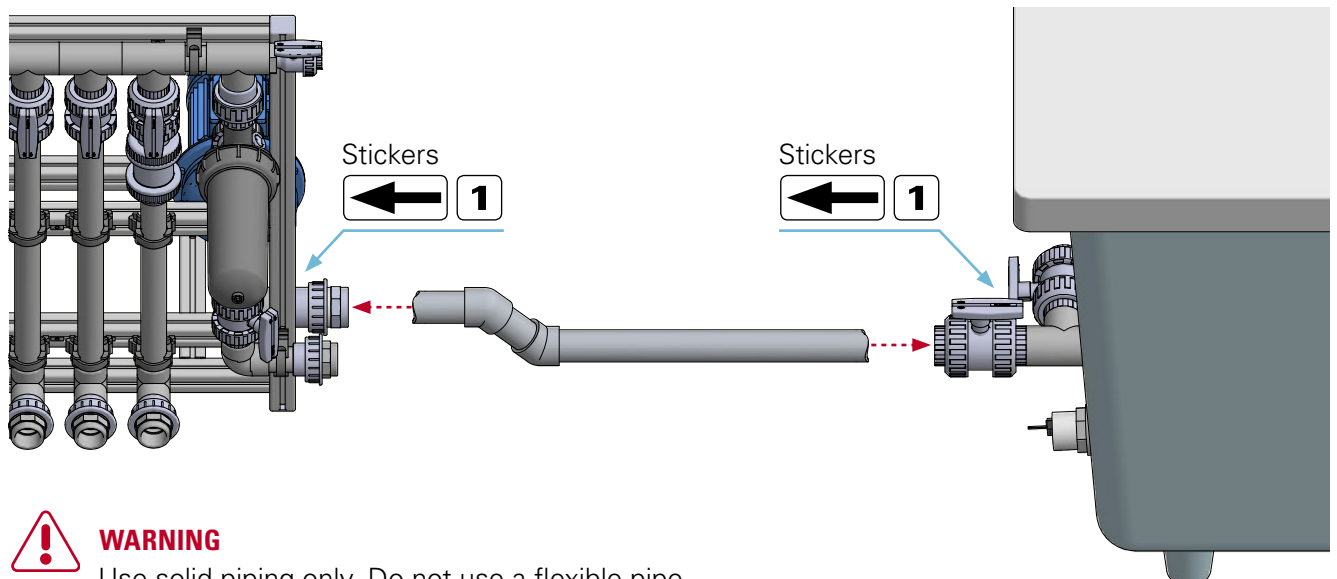


NOTE

Each connecting point is identified by a number sticker and an arrow sticker that indicates flow direction.

Connect the inlet of the valve bridge to the outlet of the dissolving tank

Use 50 mm-diameter PVC pipes and accessories.



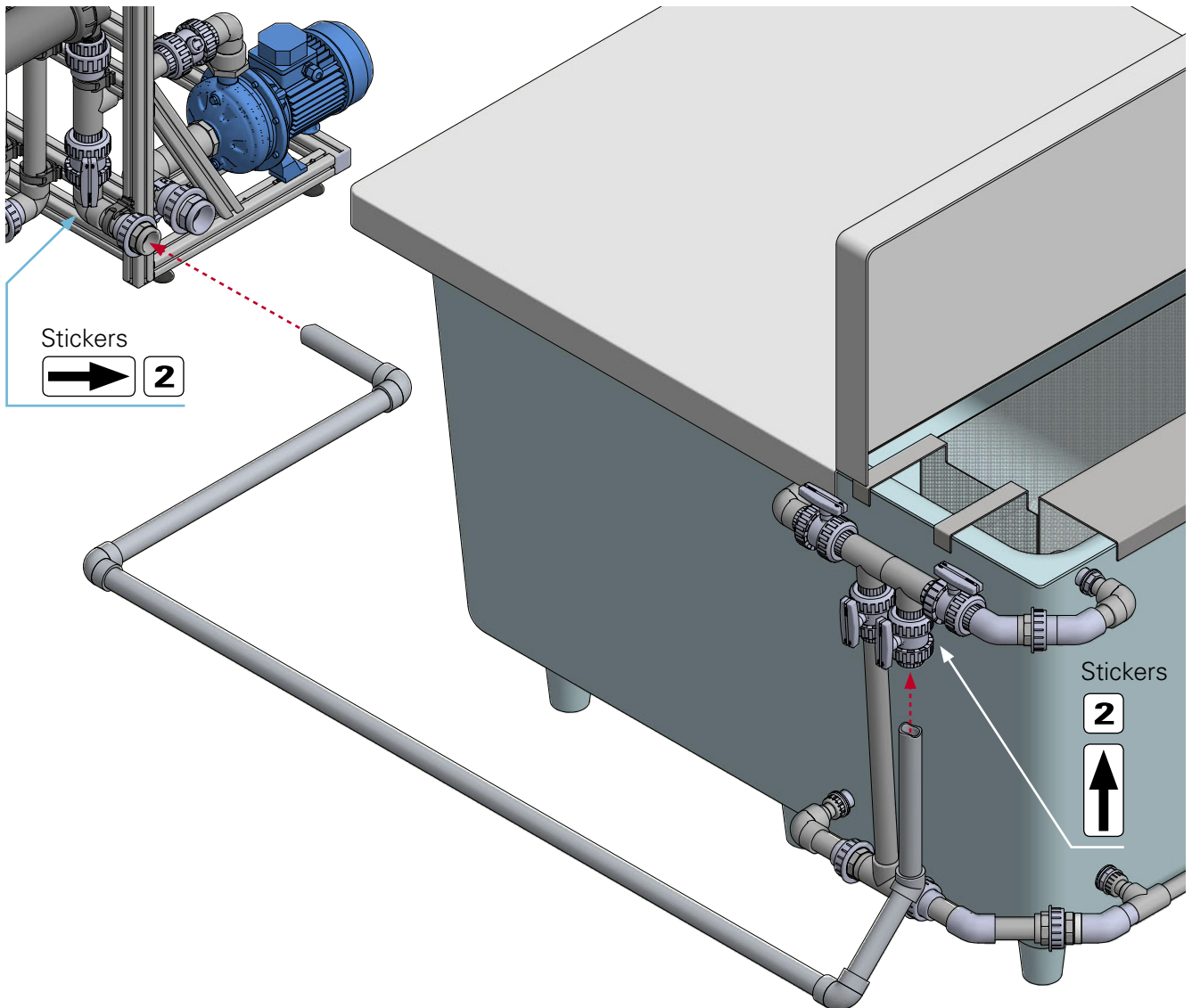
WARNING

Use solid piping only. Do not use a flexible pipe.

INSTALLATION

Connect the outlet of the valve bridge to the inlet of the dissolving tank

Use 40 mm-diameter PVC pipes and accessories.



Connect the valve bridge to the Nutrigation™ system



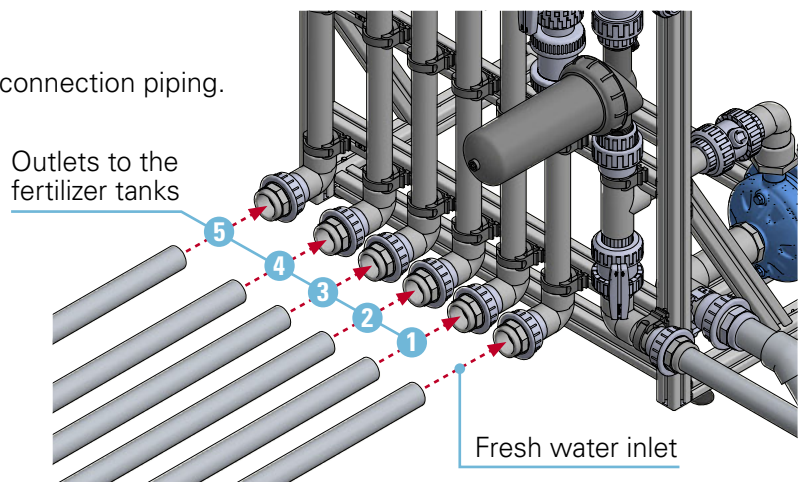
NOTE

It is recommended to use glue-type connection piping.

Use 40 mm-diameter PVC pipes and accessories.

Connect the valve bridge outlets to the fertilizer tanks

Connect the fresh water inlet



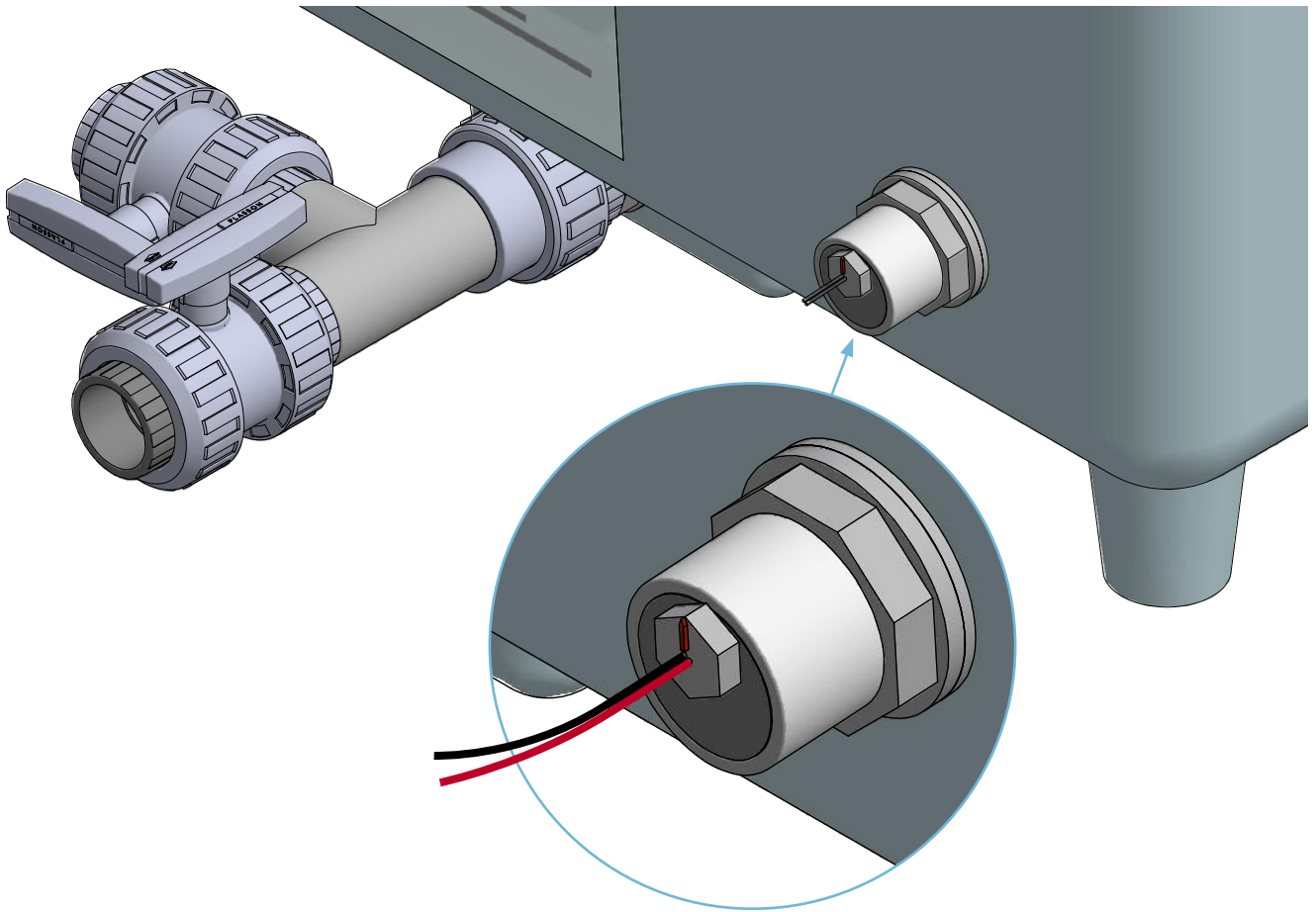
INSTALLATION

Low-level-switch electrical connection to the switchboard



WARNING

Only qualified electricians are permitted to perform electrical installations!



Connect the cable to the switchboard FLOAT IN terminals (see the switchboard diagram).

The low-level switch is supplied with a 2 m (6.6 ft)-long cable. If the distance to the switchboard is greater, extend the cable and make sure the extension connection is properly insulated.

Electrical connection to the mains



ATTENTION

The following components are necessary for the installation (not supplied):

- A readily accessible circuit breaker, rated according to the NutriSolve's total rated power for peak demand - 1.5 kW, certified as a branch circuit overcurrent protector, compliant with the national code and requirements.
- Grounding connection: $\leq 10 \Omega$.

OPERATION

Introduction

Operation of the NutriSolve consists of a number of steps, each involving a specific valve setting, pump operation and valve throttling.



WARNING

Air in the pump impeller chamber may damage the pump. Before operating the system, perform air bleeding from the system. See instructions on [page 16](#).



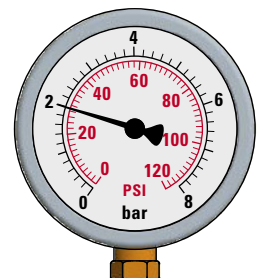
CAUTION

- In each of the steps below, make sure all the valves except for those mentioned are closed.
- In each of the steps, first set the valves and then activate the pump.
- Immediately after completing each step below, turn the pump OFF and then close all the valves.



WARNING

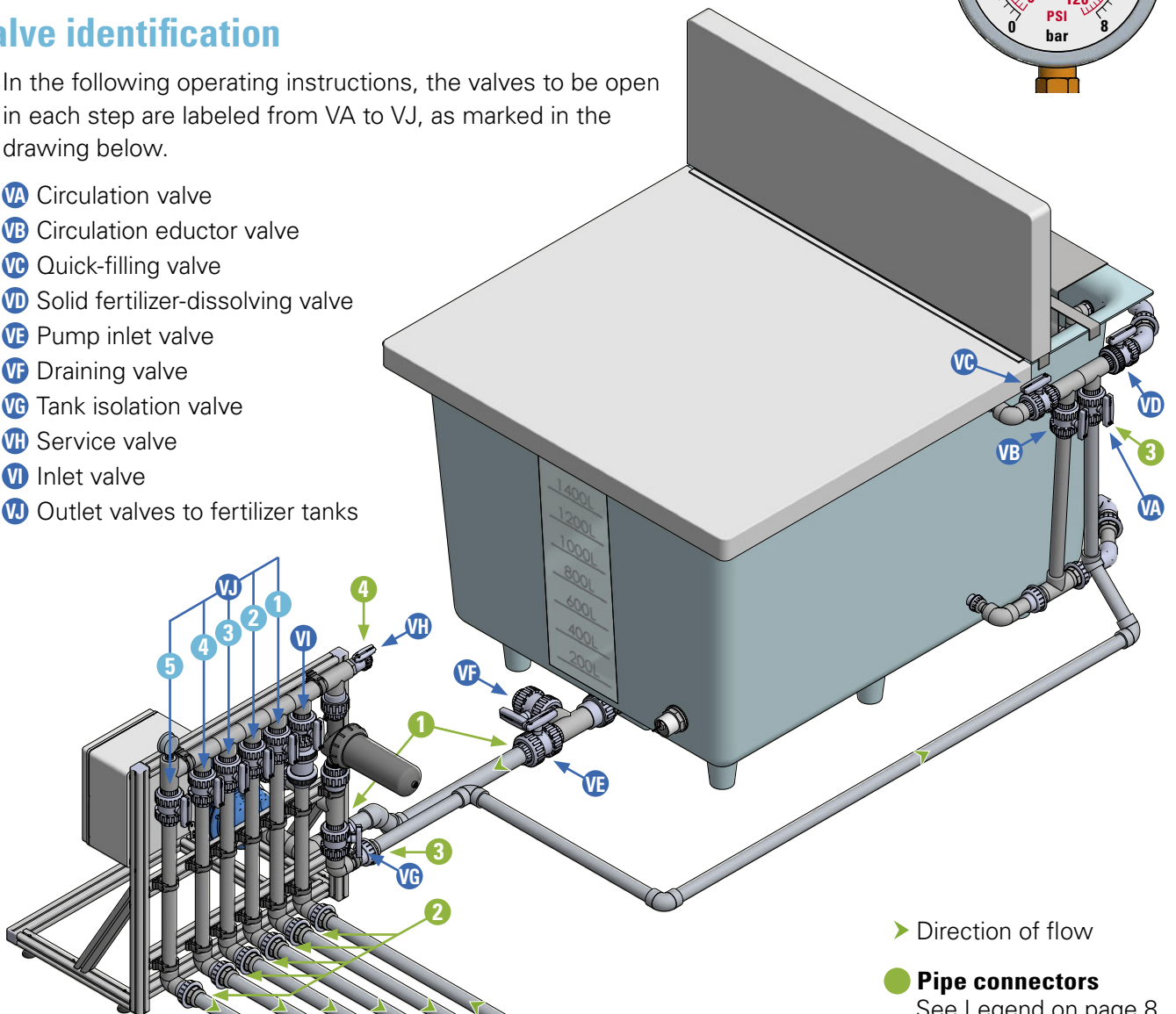
To avoid cavitation damage to the pump during operation, make sure the pressure gauge on the valve bridge displays a minimum of 2.0 bar (29 PSI). Make sure to throttle the relevant outlet valve according to the action being performed (in each step, check the number of the valve to be throttled).



Valve identification

In the following operating instructions, the valves to be open in each step are labeled from VA to VJ, as marked in the drawing below.

- VA Circulation valve
- VB Circulation eductor valve
- VC Quick-filling valve
- VD Solid fertilizer-dissolving valve
- VE Pump inlet valve
- VF Draining valve
- VG Tank isolation valve
- VH Service valve
- VI Inlet valve
- VJ Outlet valves to fertilizer tanks



➤ Direction of flow

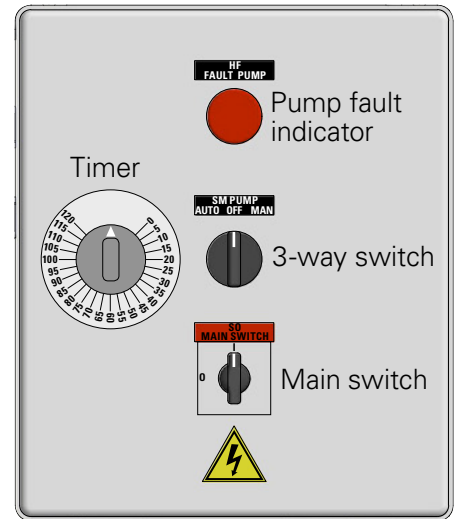
● Pipe connectors
See Legend on page 8

OPERATION

Switchboard description

The pump switchboard is fitted with:

- Main switch
- 3-way switch:
 - AUTO (timer-operated)
 - OFF
 - MANUAL (spring-loaded, low-level switch bypass)
- Pump fault indicator
- Timer - up to 120 minutes



Operating instructions - step by step

Follow the agronomist's instructions for each fertilizer recipe - quantity of each type of solid fertilizer, and the quantity of water to add to the solution.

1. Fill the tank with fresh water to half its volume (by main line pressure).



CAUTION

Make sure the valve at the inlet of the fresh water line is open.

| | |
|-----------------------|---|
| Valve setting | Open valves VA, VC, VG and VI. All the other valves must be closed. |
| Pump operation | Main switch = OFF. |



WARNING

Perform air bleeding from the system, see instructions on [page 16](#).

2. Activate the process of dissolving the solid fertilizer in the stainless steel basket.

| | |
|-----------------------|---|
| Valve setting | Open valves VA, VD and VG. All the other valves must be closed. |
| Pump operation | Set the timer to the required time, turn the main switch ON and set the 3-way switch to AUTO. |
| Throttle valve | Throttle valve VD to reach the desired pressure (see cavitation WARNING on page 12). |

3. While step 2 above is in process, pour the prescribed number of bags of solid fertilizer into the stainless steel basket, according to the defined fertilizer recipe.

Manually remove any foreign objects from the stainless steel basket

As soon as the entire quantity of solid fertilizer is completely dissolved, switch the pump OFF.

4. Add water to the tank to reach the amount defined in the fertilizer recipe.



CAUTION

Make sure the valve at the inlet of the fresh water line is open.

| | |
|-----------------------|---|
| Valve setting | Open valves VA, VC, VG and VI. All the other valves must be closed. |
| Pump operation | Main switch = OFF. |

OPERATION

5. Activate the mixing/circulation process for water + fertilizer, until the fertilizer is completely dissolved in the water (the duration of this process depends on the type of fertilizers and temperature conditions).

| | |
|-----------------------|---|
| Valve setting | Open valves VA, VB, VE and VG. All the other valves must be closed. |
| Pump operation | Set the timer to the required time, turn the main switch ON and set the 3-way switch to AUTO. |
| Throttle valve | Throttle valve VB to reach the desired pressure (see cavitation WARNING on page 12). |

If fertilizer residues are accumulated in the corners of the tank use the flexible hose (not supplied) readily available near the system, connect it to the service valve (VH) of the NutruSolve valve bridge and wash fertilizer residues away.

It is recommended to close the basket door during this step.

6. Send the prepared solution to the selected fertilizer tank.

| | |
|-----------------------|---|
| Valve setting | Open valves VE and VJ (1, 2, 3, 4 or 5 according to the target fertilizer tank). |
| Pump operation | Set the timer to the required time, turn the main switch ON and set the 3-way switch to AUTO. |
| Throttle valve | Throttle valve VJ (1, 2, 3, 4 or 5 according to the target fertilizer tank) to reach the desired pressure (see cavitation WARNING on page 12). |

The mixing tank will be emptied down to the level of the low-level switch.



NOTE

To further empty the tank (for instance, before using a fertilizer that may adversely react to a previously used fertilizer), hold the 3-way switch on the MANUAL position.



CAUTION

When emptying the mixing tank beyond the low-level switch limit, monitor the suction strainer visually or by listening. To avoid air getting into the pump impellers, release the 3-way switch as soon as the level of the solution reaches the strainer.

7. If necessary, evacuate solution residues remaining at the bottom of the tank to the drain (by gravity).

| | |
|-----------------------|---|
| Valve setting | Open valve VF. All the other valves must be closed. |
| Pump operation | Main switch = OFF. |

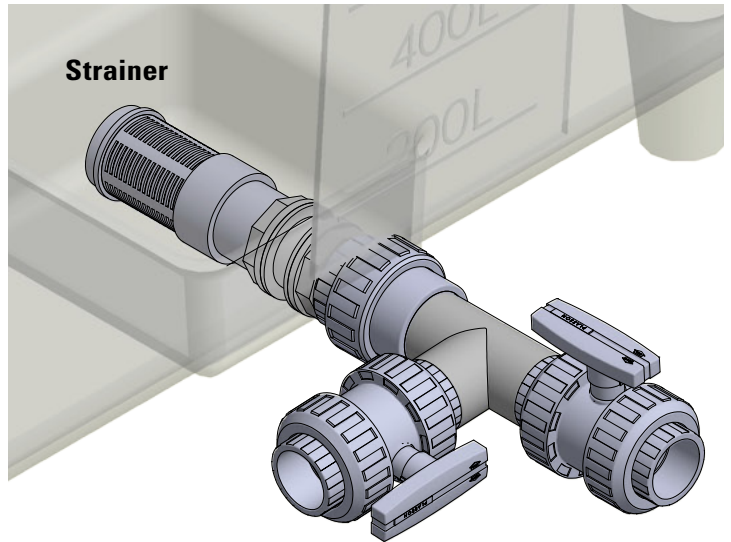
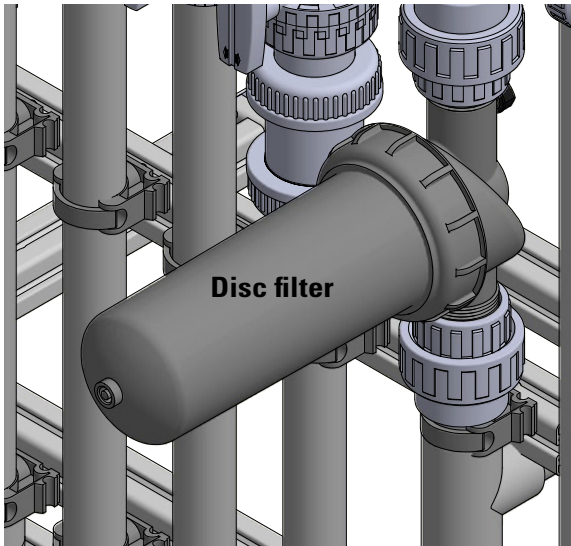
If fertilizer residues are accumulated in the corners of the tank, use the flexible hose (not supplied) that is readily available near the system and wash the fertilizer residues away.

MAINTENANCE

Cleaning the filters

There are 2 filters:

- A disc filter at the valve bridge water inlet
- A non-detachable suction strainer at the bottom of the dissolving tank



Clean both filters at least once a day or as many times as needed according to the fertilizer used.

- Clean the disc filter according to the instructions in the filter manual.
- Clean the suction strainer with pressurized water [use the flexible hose (not supplied) that is readily available near the system].

TROUBLESHOOTING

Air bleeding from the system



WARNING

Air in the pump impeller chamber may damage the pump. Before operating the system, perform air bleeding from the system.

Perform air bleeding from the system (step-by-step):

1. Perform step 1 on [page 13](#) - Fill the tank with fresh water to half its volume (by main line pressure).
2. Set the valves (as described below).
3. Operate the pump (as described below).
4. As soon as water without air bubbles exits the service valve (VH), release the 3-way switch.

| | |
|-----------------------|--|
| Valve setting | Open valves VD, VE and VG. Open valve VH halfway. All the other valves must be closed. |
| Pump operation | Turn the main switch ON and set the 3-way switch to MANUAL. |

Electricity overload



WARNING

Only qualified electricians are permitted to perform electrical installations!

If the switchboard pump fault indicator (red light) turns on, follow the instructions in the switchboard diagram.

LIST OF PARTS

NutriSolve

Complete NutriSolve

| Description | Cat. No. |
|--------------|--------------|
| 50 Hz Metric | 33800-001020 |
| 60 Hz Metric | 33800-001030 |
| 60 Hz ASTM | 33800-001040 |

Valve bridge

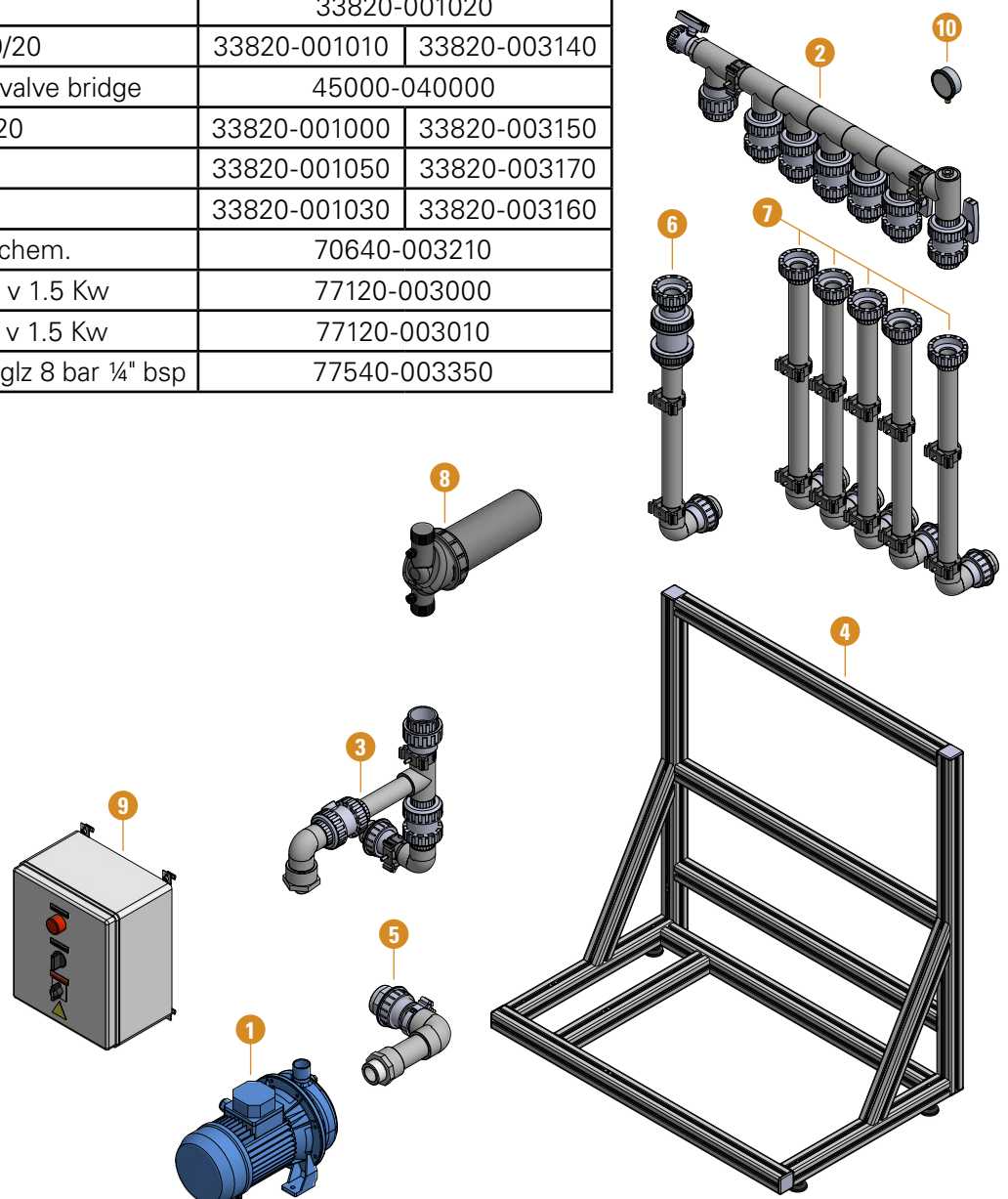
| Description | Cat. No. |
|--------------|--------------|
| 50 Hz Metric | 33800-001200 |
| 60 Hz Metric | 33800-001210 |
| 60 Hz ASTM | 33800-000001 |

Dissolving tank

| Description | Cat. No. |
|-----------------------------|--------------|
| Tank and metric accessories | 33800-001051 |
| Tank and ASTM accessories | 33800-001052 |

Valve bridge

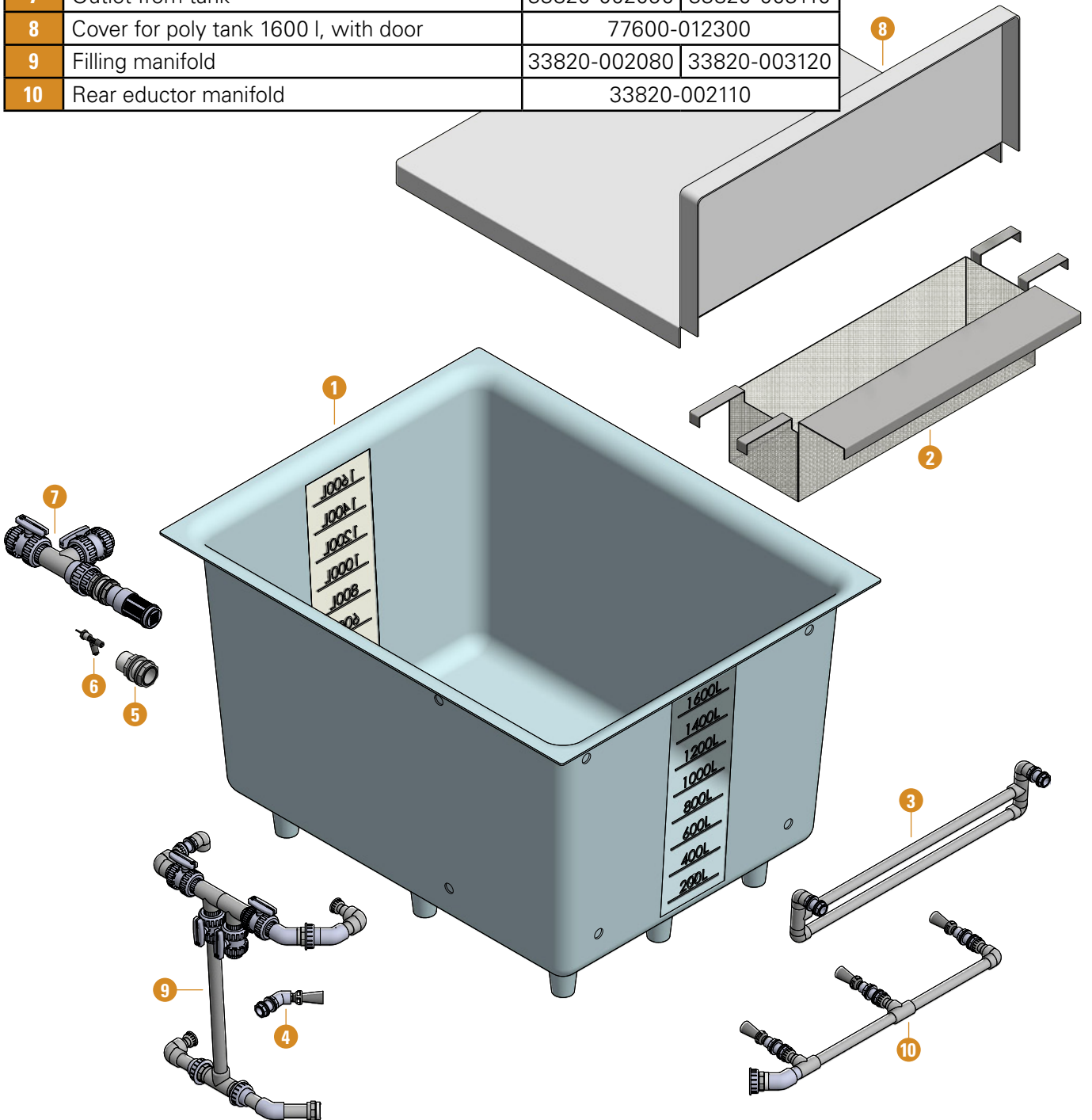
| Part | Description | Cat. No. | |
|------|-------------------------------------|--------------|--------------|
| | | Metric | ASTM |
| 1 | Pump cdx 200/20 50 Hz 3-phase | 77800-023270 | |
| | Pump cdx 200/206 60 Hz 1-phase | 77800-023260 | |
| 2 | Manifold | 33820-001020 | |
| 3 | Pump outlet cdx 200/20 | 33820-001010 | 33820-003140 |
| 4 | Aluminum frame for valve bridge | 45000-040000 | |
| 5 | Pump inlet cdx 200/20 | 33820-001000 | 33820-003150 |
| 6 | Fresh water inlet | 33820-001050 | 33820-003170 |
| 7 | Solution tank outlet | 33820-001030 | 33820-003160 |
| 8 | 1.5 S.Filter 40 mesh chem. | 70640-003210 | |
| 9 | Switchboard 3 x 400 v 1.5 Kw | 77120-003000 | |
| | Switchboard 1 x 220 v 1.5 Kw | 77120-003010 | |
| 10 | Pressure gauge 250 glz 8 bar ¼" bsp | 77540-003350 | |



LIST OF PARTS

Dissolving tank

| Part | Description | Cat. No. | |
|------|--|--------------|--------------|
| | | Metric | ASTM |
| 1 | Poly tank 1600 l w legs, drain, 2 level indicators | 77600-010350 | |
| 2 | Stainless steel basket for 1600-liter tank | 45000-040201 | |
| 3 | Dissolving flute | 33820-002100 | |
| 4 | Eductor set | 33820-002120 | 33820-002120 |
| 5 | Low-level switch casing | 33220-006220 | |
| 6 | Low-level switch | 77100-007930 | |
| 7 | Outlet from tank | 33820-002090 | 33820-003110 |
| 8 | Cover for poly tank 1600 l, with door | 77600-012300 | |
| 9 | Filling manifold | 33820-002080 | 33820-003120 |
| 10 | Rear eductor manifold | 33820-002110 | |



WARRANTY

Netafim™ warrants all the components of the NutriSolve to be free of defects in material and workmanship for 1 (one) year from the date of installation, provided the installation has been reported to Netafim™ within 30 days of installation.

If the installation was not reported or was reported later than 30 days from the date of installation, Netafim™ will warrant the NutriSolve for a period of 18 months from the date of production, according to its serial number.

If a defect is discovered during the applicable warranty period, Netafim™ will repair or replace, at its discretion, the product or the defective part.

This warranty does not extend to repairs, adjustments or replacements of a NutriSolve or part that results from misuse, negligence, alteration, force majeure, lightning, power surge, improper installation or improper maintenance.

If a defect arises in your Netafim™ product during the warranty period, contact your local Netafim™ representative.

Limited warranty

This warranty is subject to the conditions in Netafim's official warranty statement. (For the full text of Netafim's official warranty statement, please contact your local Netafim™ representative).

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