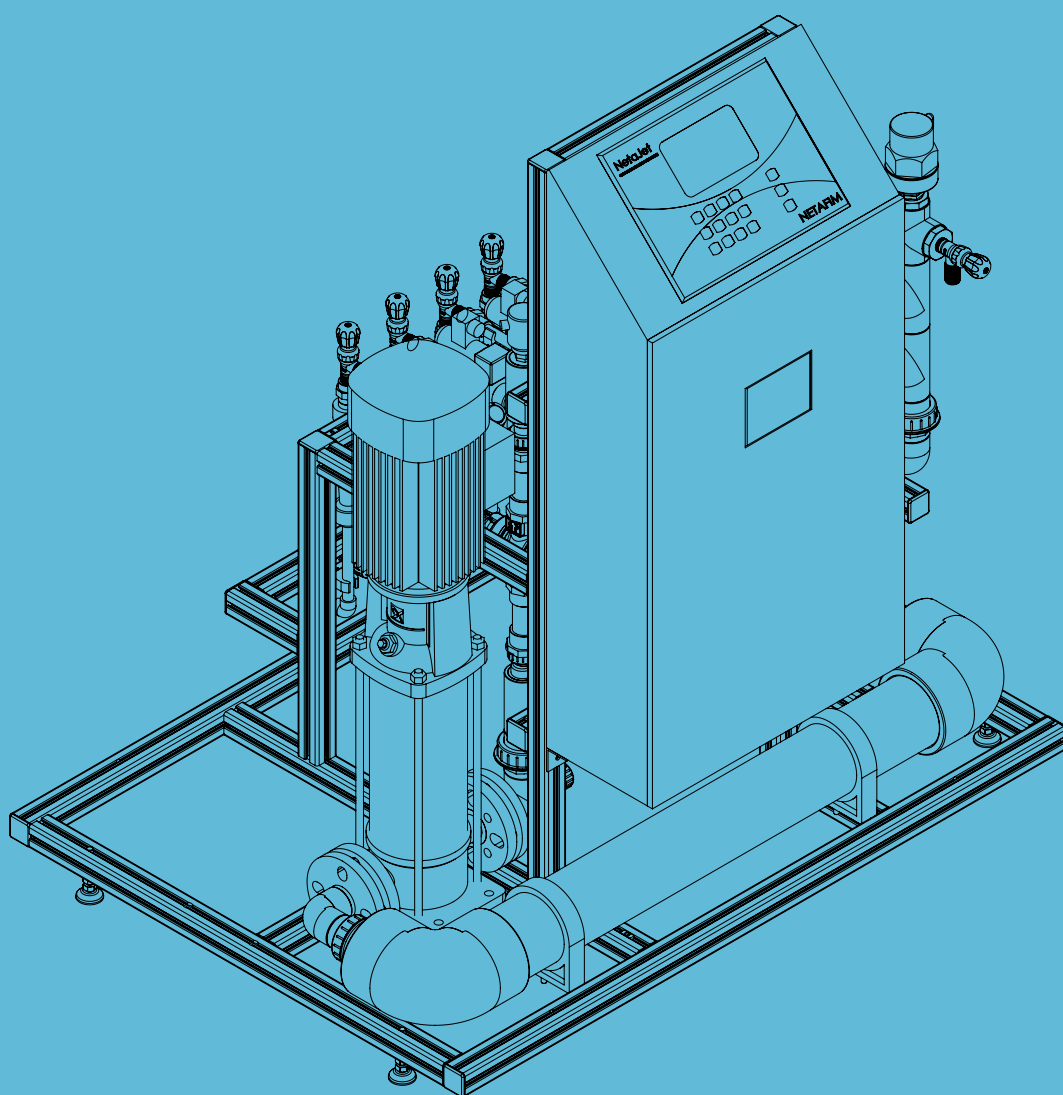


NETAJET™ 4G

INSTALLATION MANUAL



The symbols used in this manual refer to the following:



WARNING

The following text contains instructions aimed at preventing bodily injury or direct damage to the crops, the NetaJet™ 4G and/or the infrastructure.



CAUTION

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



ATTENTION

The following text contains instructions aimed at enhancing the efficiency of usage of the instructions in the manual.



NOTE

The following text contains instructions aimed at emphasizing certain aspects of the operation of the system or installation.



ACID HAZARD

The following text contains instructions aimed at preventing bodily injury or direct damage to the crops, the product and/or the infrastructure in the presence of acid.



ELECTRICAL HAZARD

The following text contains instructions aimed at preventing bodily injury or direct damage to the NetaJet™ 4G and/or the infrastructure in the presence of electricity.



SAFETY FOOTWEAR

The following text contains instructions aimed at preventing foot injury.



PROTECTIVE EQUIPMENT

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



EXAMPLE

The following text provides an example to clarify the operation of the settings, method of operation or installation. The values used in the examples are hypothetical. Do not apply these values to your own situation.



TIP

The following text provides clarification, tips or useful information.

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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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INTRODUCTION



CAUTION

Read the safety instructions section before beginning installation of the NetaJet™ 4G dosing unit.

General instructions

- Installation must be performed by authorized technicians only.
- Refer to your supervisor if problems occur during the installation procedure.
- Installation should be performed on a hard, leveled floor or on a flat, hard, leveled plate.
- Do not apply force or pressure on components during the installation procedure.
- Verify that field components work properly.
- Make sure fertilizers and acid are on site at the time of installation.

Electricity

- Ensure that a suitable electrical power supply is available in the vicinity of the installation for the NetaJet™ 4G electrical connection (see [Electrical preparation](#), page 27).
- Ensure that an electrical socket is available in the NetaJet™ 4G vicinity, for installation and for service purposes.

Safety instructions

- All safety regulations must be applied.
- Ensure that the installation is carried out in a manner that prevents leaks from the NetaJet™ 4G, the fertilizer/acid tanks and lines, the peripherals and the accessories (contaminating the environment, soil or ambient area).
- When using acid, always observe the acid manufacturer's safety instructions.
- Electrical installation and troubleshooting should be performed by an authorized electrician only.
- The electrical installation must comply with the local safety standards and regulations.
- Installation should be performed by authorized technicians only.
- Protection provided by the equipment can be impaired if the equipment is used in a manner other than that specified by the manufacturer.



WARNING

In agricultural environments - always wear protective footwear.



WARNING

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



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 so gradually, to prevent damage to the system by water hammer.



NOTE

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

INTRODUCTION

Safety instructions when using acid/chemicals



ACID HAZARD

When using acid - always observe the acid manufacturer's safety instructions.



WARNING

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



CAUTION

High concentrations of some fertilizer combinations might induce crystallization in the NetaJet's lower manifold and cause clogging of the pipes. **These combinations should never be used in any concentration in the dual dosing channel (Octa mode only)!**

Fertilizer combinations prone to induce crystallization:

- Calcium nitrate + ammonium sulfate => calcium sulfate
- Calcium nitrate + potassium sulfate => calcium sulfate
- MKP + calcium nitrate => calcium phosphate
- MAP + calcium nitrate => calcium phosphate
- Phosphoric acid + calcium nitrate => calcium phosphate

When injecting these fertilizer combinations:

- Make sure to dilute each fertilizer to the allowed concentration in the fertilizer tank prior to injection through the NetaJet™ 4G.
- Immediately after each injection of any of the fertilizer combinations above, flush the NetaJet™ 4G with clean water for at least 2 minutes.

In case of doubt regarding the use of any combination of fertilizers, contact your local Netafim™ representative.



ATTENTION

When dosing acid, use a dosing channel fitted with the appropriate components according to the type and concentration of acid used*:

Type of dosing channel	Diaphragm and O-rings	For pH correction			For maintenance of drippers		
		Nitric (HNO ₃)	Phosphoric (H ₃ PO ₄)	Sulfuric (H ₂ SO ₄)	Hydrochloric (HCl)	Hydrogen peroxide (H ₂ O ₂)	Chlorine (as hypochloride)
For diluted acid	EPDM	<3%	<85%	<30%	<10%	<30%	<1%
For concentrated acid	Viton	<40%	<85%	<90%	<33%	<50%	<10%

% is by weight at 21°C (70°F)

*The table indicates the resistance of the dosing channel components to acid, and is not a recommendation to use the acids mentioned.



WARNING

Exceeding the recommended acid concentrations will damage the dosing channels.



WARNING

Substances such as chemicals for pest/disease control might be corrosive and damage the NetaJet™ 4G. When using any substance other than fertilizers or acids not exceeding the concentrations in the table above, always observe the manufacturer's instructions for corrosivity. In case of any doubt, contact your local Netafim™ representative.

DESCRIPTION

Features

- The NetaJet™ 4G realizes Netafim's "grow more with less" concept. Based on Netafim's unique Nutrigation™ technology, it controls the amount of water and fertilizers used, optimizing resource utilization for each specific crop and soil/substrate type.
- The NetaJet™ 4G is extremely accurate and reliable, preventing water and fertilizer waste while reducing environmental pollution.
- The NetaJet™ 4G ensures very precise and homogeneous nutrient dosing for greenhouse crops.
- The NetaJet™ 4G is a modular CE-compliant dosing system that easily integrates with multiple Netafim™ and third-party control and monitoring systems.
- The NetaJet™ 4G always injects a uniform quantity of nutrients while performing perfect EC and pH control.
- The NetaJet™ 4G can accommodate a wide variety of dosing channels for fertilizer and concentrated/diluted acid.
- The NetaJet™ 4G accommodates a wide variety of system pumps, peripherals and accessories to meet a vast range of applications and infrastructure constraints.

Highlights

- Equipped with Netafim's unique innovative analog dosing channels for very accurate and reliable EC/pH control.
- Provides fast and accurate fertilizer and acid control.
- State-of-the-art technology with unique static mixing chamber
- Short control cycle
- Efficient water, fertilizer and energy consumption
- Guaranteed EC and pH control
- Almost completely maintenance-free Venturi operations – no moving parts
- Highly accurate dosing channels
- Fast and efficient Nutrigation™ recipe adjustments
- Multi-lingual capabilities
- Made by Netafim™

Advantages

- Easy system installation and maintenance
- In-house developed offering
- Versatile flow capacity
- Covers all applications ranging from greenhouse in soil, to very intensive soilless media
- Requires minimal investment with rapid ROI

Operating principle

The NetaJet™ 4G doses the various fertilizers and acids into a homogeneous solution in its unique HidroMix static mixing chamber and injects it into the irrigation water main line.

The suction of the fertilizers and acid in the dosing channels is based on the Venturi principle. This requires a pressure differentiation - available on the main line or supplied by the main line pump or the NetaJet's dosing booster.

Main components

- HydroMix static mixing chamber
- A compensation channel with a pressure regulator
- Factory-installed PRV at the inlet and a PSV at the outlet
- Selectable analog dosing channels
- Dual EC/pH monitoring and control
- Quick-action dosing valves
- Wide range of integrated accessories and peripherals
- High-quality components and PVC piping
- Aluminum, corrosion-resistant frame with adjustable legs

DESCRIPTION

Analog dosing channel

The NetaJet™ 4G is the first fertilizer-dosing system equipped with Netafim's unique innovative analog dosing channel.

The analog dosing channel is the long-awaited solution for very accurate and reliable EC/pH control for Nutrigation™ of high-value greenhouse crops.

The analog dosing channel is equipped with a servo motor capable of continuous variable opening from 0 to 100%. This unique feature allows unprecedented precise and seamless Nutrigation™.

Advantages

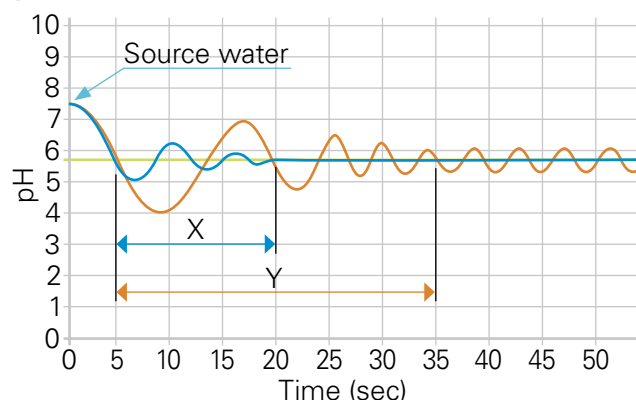
- Ultra-high precision
- Smooth and stable hydraulic operation
- No fluctuations
- Fast EC/pH set-point reaching
- Short stabilization time
- Enables short Nutrigation™ cycles
- No risk of cavitation damage to the booster

Stabilization time

The analog dosing channel offers the benefit of a significantly shorter stabilization time compared with the digital (pulsating) dosing channel (up to 50%). This is particularly beneficial when performing short Nutrigation™ cycles typical of greenhouse crops.

- X = Analog (continuous-variable) dosing channel
- Y = Digital (pulsating) dosing channel

Digital (ON/OFF) vs. analog dosing channel performances

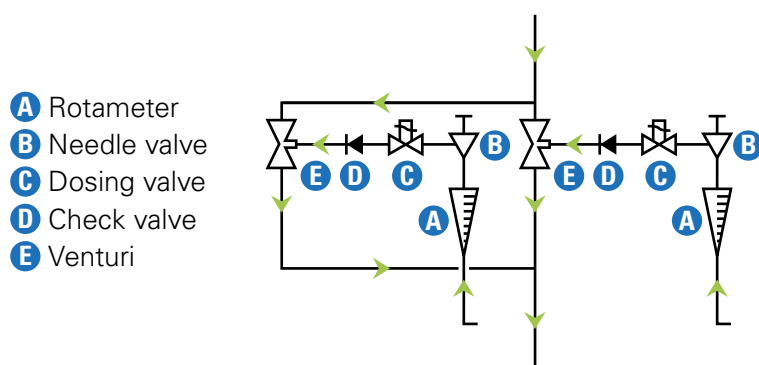


- Analog (continuous-variable) dosing channel
- Digital (pulsating) dosing channel
- pH set point

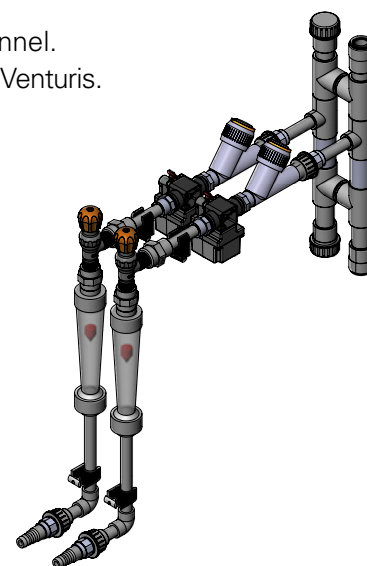
Dual dosing channel

The NetaJet™ 4G Octa mode (8 dosing channels) includes 3 dual dosing channel. The dual dosing channel is applicable with 50 l/h (13 GPH) and 600 l/h (158 GPH) Venturis.

Dual dosing channel schematic diagram



- (A) Rotameter
- (B) Needle valve
- (C) Dosing valve
- (D) Check valve
- (E) Venturi



CAUTION

There are fertilizer combinations that should **never** be used in any concentration in the dual dosing channel! (see [CAUTION](#), page 6)

DESCRIPTION

Capabilities

NetaJet™ 4G modes fed by a pressurised main line are suitable for a vast range of main line pressures

- Standard: 2.5 - 5.8 bar (36.5 - 84.0 PSI)
- High pressure: 5.8 - 7.5 bar (84.0 - 108.5 PSI)

For main line pressures lower than 2.5 bar (36.5 PSI), consult Netafim™.

NetaJet™ 4G modes fed by a storage tank

The water level in the storage tank should not be higher than 5 meters (16.4 feet) above the NetaJet™ 4G inlet.

Various dosing channel configuration options

- Most modes: Up to 5 highly accurate dosing channels of various types, from 50 l/hr (13 GPH) up to 600 l/hr (158 GPH) each.
- Octa mode: Up to 8 highly accurate dosing channels of various types, from 50 l/hr (13 GPH) up to 600 l/hr (158 GPH) each.
- High-flow mode: Up to 5 highly accurate dosing channels of various types, from 50 l/hr (13 GPH) up to 1000 l/hr (264 GPH) each.

Service

The NetaJet™ 4G utilizes modular construction, making servicing a simple and quick process.

The dealer keeps a small quantity of interchangeable components on hand, for replacement on site within a few minutes.

Maintenance

To prevent failures and extend the life cycle of the NetaJet™ 4G, regular maintenance must be carried out by the user, such as periodic rinsing of filters and calibration of the EC and pH sensors.

Regular maintenance of the NetaJet™ 4G is a time- and cost-efficient process requiring no special tools or skills.

Add-ons

You can extend the functionality of your NetaJet™ 4G by means of the the wide variety of useful add-ons. All the add-ons are easy to connect to the NetaJet™ 4G - here are a few examples:

Fertilizer meter with electric output

Enables continuous reading of fertilizer dosing. Useful in applications where the costumer wants a broader indication of fertilizer flow in addition to the EC and pH readings. Installed externally, controlled and monitored by the NetaJet™ 4G NMC Pro controller.

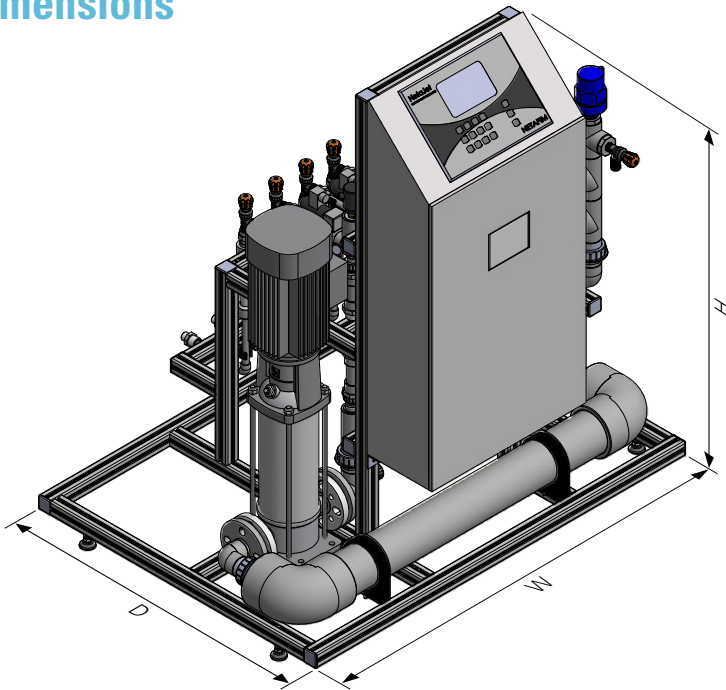
Stock selection

Enables the dosing of multiple fertilizers through a single dosing channel (in cases where simultaneous dosing is not required). Available in a wide variety of configurations, from a single channel with 2 fertilizers to as many channels and fertilizers as required. Installed externally, controlled and monitored by the NetaJet™ 4G NMC Pro controller.

For further information on the NetaJet™ 4G add-ons, consult Netafim™.

DESCRIPTION

Dimensions



External dimensions

Mode	NetaJet™ 4G external dimensions (W/D/H*)	Package dimensions (W/D/H**)
BP PL	123/90/134 cm (48/35.5/53")	131/112/158 cm (52/44/62")
BP ST		
High-flow		
Octa - 8-channel		
IL PL	112/125/134 cm (44/49/53")	142/142/158 cm (56/56/62")
IL ST		

*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").



NOTE

Allow 20 cm (8") around the NetaJet™ 4G for inlet, outlet and fertilizer pipes connections.

Weights

Mode	Net weight	Packed weight
BP PL	130-150 kg (287-331 lbs)	180-200 kg (397-441 lbs)
BP ST	90-100 kg (199-221 lbs)	140-150 kg (309-331 lbs)
High-flow	221-235 kg (487-518 lbs)	255-275 kg (562-606 lbs)
Octa - 8-channel	200-215 kg (441-474 lbs)	275-295 kg (606-650 lbs)
IL PL	130-150 kg (287-331 lbs)	180-200 kg (397-441 lbs)
IL ST	150-190 kg (331-419 lbs)	200-240 kg (441-529 lbs)

The weight ranges in the table above are order of magnitude only - final weights, depending on the selected dosing booster, will be issued with the product order.

DESCRIPTION

Modes

- **BP PL:** Bypass system for pressurized-line water source; 5 dosing channels (see [page 12](#))
- **BP ST:** Bypass system for storage-tank water source; 5 dosing channels (see [page 14](#))
- **High-flow:** High-flow bypass system for pressurized-line water source; 5 dosing channels (see [page 16](#))
- **Octa - 8-channel:** Bypass system for pressurized-line water source; 6-8 dosing channels (see [page 18](#))
- **IL PL:** Inline system for pressurized-line water source; 5 dosing channels (see [page 20](#))
- **IL ST:** Inline system for storage-tank water source; 5 dosing channels (see [page 22](#))

Legend:

BP	Bypass
IL	Inline
PL	Pressurized line
ST	Storage tank

Main parts of the NetaJet™ 4G and its infrastructure

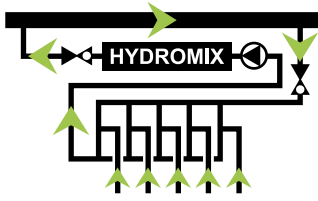
The list below presents the main parts of the NetaJet™ 4G and the parts of the infrastructure required for the operation of the NetaJet™ 4G various modes.

- | | | |
|----------------------------------|------------------------------------|--|
| 1 Dosing channel + Venturi | 12 EC sensor | 23 Main line pump |
| 2 Dual dosing channel + Venturis | 13 Dosing booster | 24 Main line filter |
| 3 Inlet pressure gauge | 14 Check valve | 25 Main line water meter |
| 4 Outlet pressure gauge | 15 Pressure switch | 26 Main line pressure sustaining valve (PSV) |
| 5 Lower manifold pressure gauge | 16 Pressure sustaining valve (PSV) | 27 Manual valve (isolation) |
| 6 Main line pressure gauge | 17 Pressure reducing valve (PRV) | 28 Irrigation valve |
| 7 Sampling outlet | 18 Air release valve | 29 Fertilizer/acid filter |
| 8 Controller | 19 Mixing chamber | 30 Manual valve (fertilizer) |
| 9 EC/pH transducer | 20 Compensation channel | 31 Fertilizer/acid stock tank |
| 10 Dosing booster switchbox | 21 Onboard main line pump | |
| 11 pH sensor | 22 Upper manifold filter | |

Color code: ● Supplied (part of the NetaJet™ 4G) ● Not supplied (part of infrastructure).

DESCRIPTION

BP PL mode



Bypass system for pressurized-line water source.

Operating principle:

The pressure differential required to generate fertilizer suction via the Venturis is produced by a booster pump integrated in the NetaJet™ 4G. This mode of operation, where the lower manifold is under low pressure (around 0 bar/PSI), permits the use of high-efficiency Venturis with high suction capacity and low motive flow consumption.

Suitable for main line flow rate:

20-120 m³/h (90-500 GPM)

Flow limitation depends on the fertilizer injection rate and the size of the Venturis.

Suitable for main line pressure:

Standard: 2.5-5.8 bar (36.5-84.0 PSI)

High pressure: 5.8-7.5 bar (84.0-108.5 PSI)

For main line pressures lower than 2.5 bar (36.5 PSI), consult Netafim™.

Dosing channels:

Accommodates a wide variety of highly accurate dosing channels for fertilizer and concentrated/diluted acid:

- Up to 5 dosing channels of various types, from 50 l/hr (13 GPH) up to 600 l/hr (158 GPH) each.
- Optional - Concentrated acid channel, 50 l/h (13 GPH).

Total fertilizer/acid suction capacity - up to 3000 l/h (792 GPH).

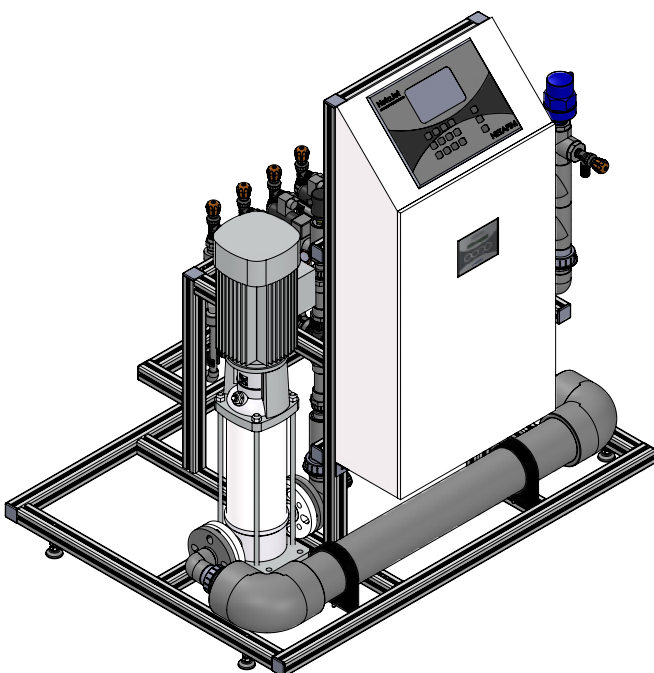
Controller:

NMC-Pro (Operation with third-party controllers is optional. Consult Netafim™.)

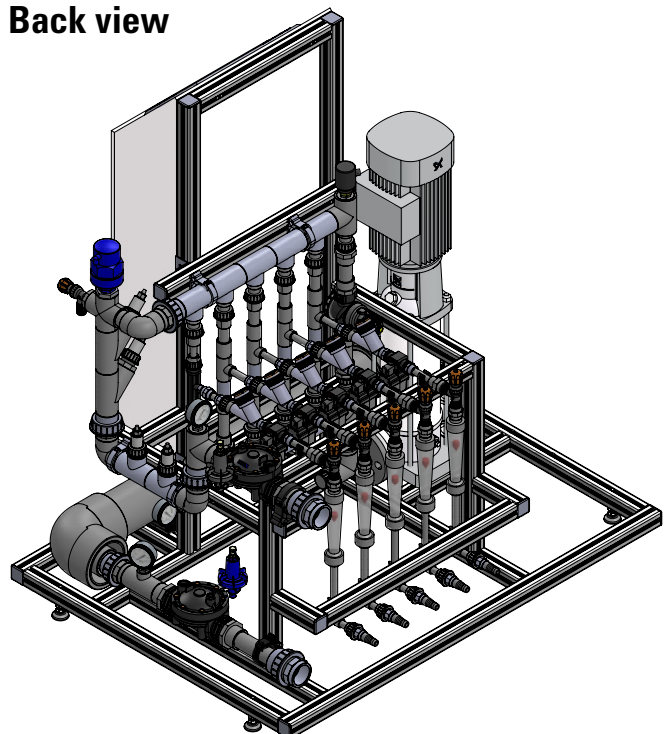
EC/pH:

Dual (single is optional), monitoring and control.

Front view

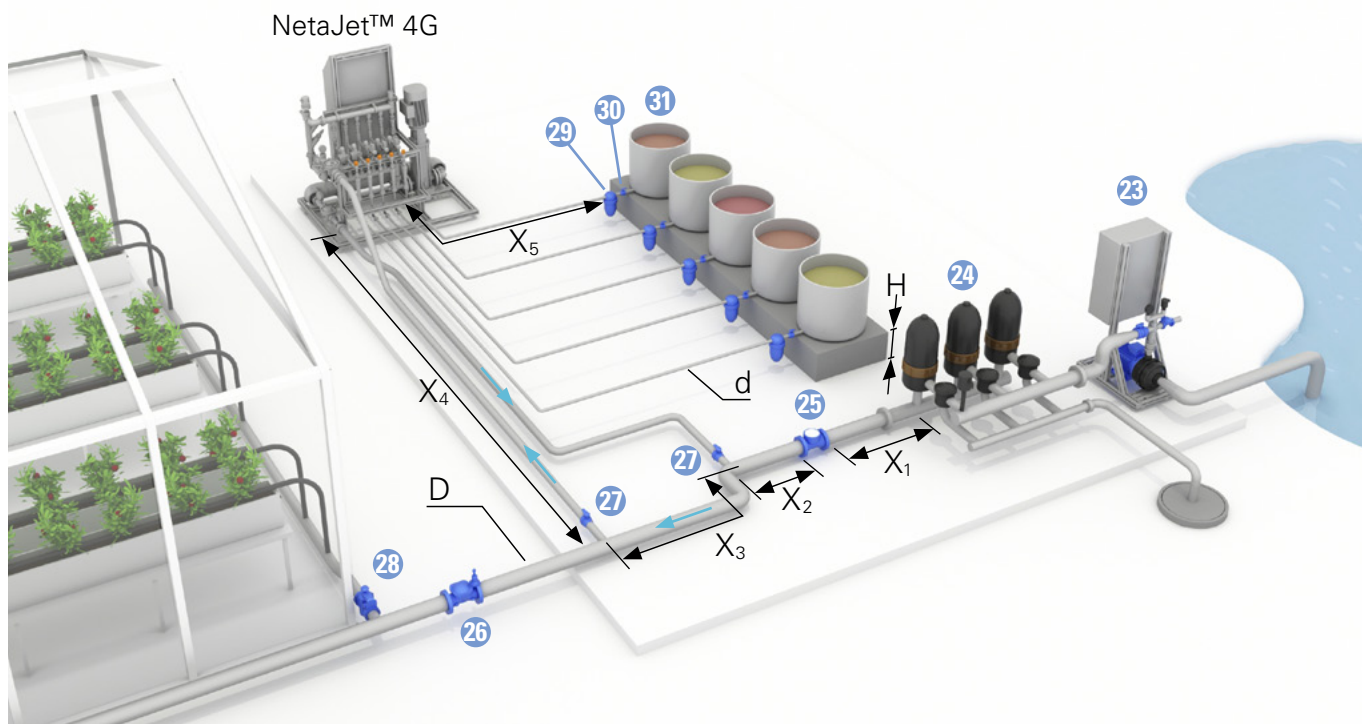


Back view

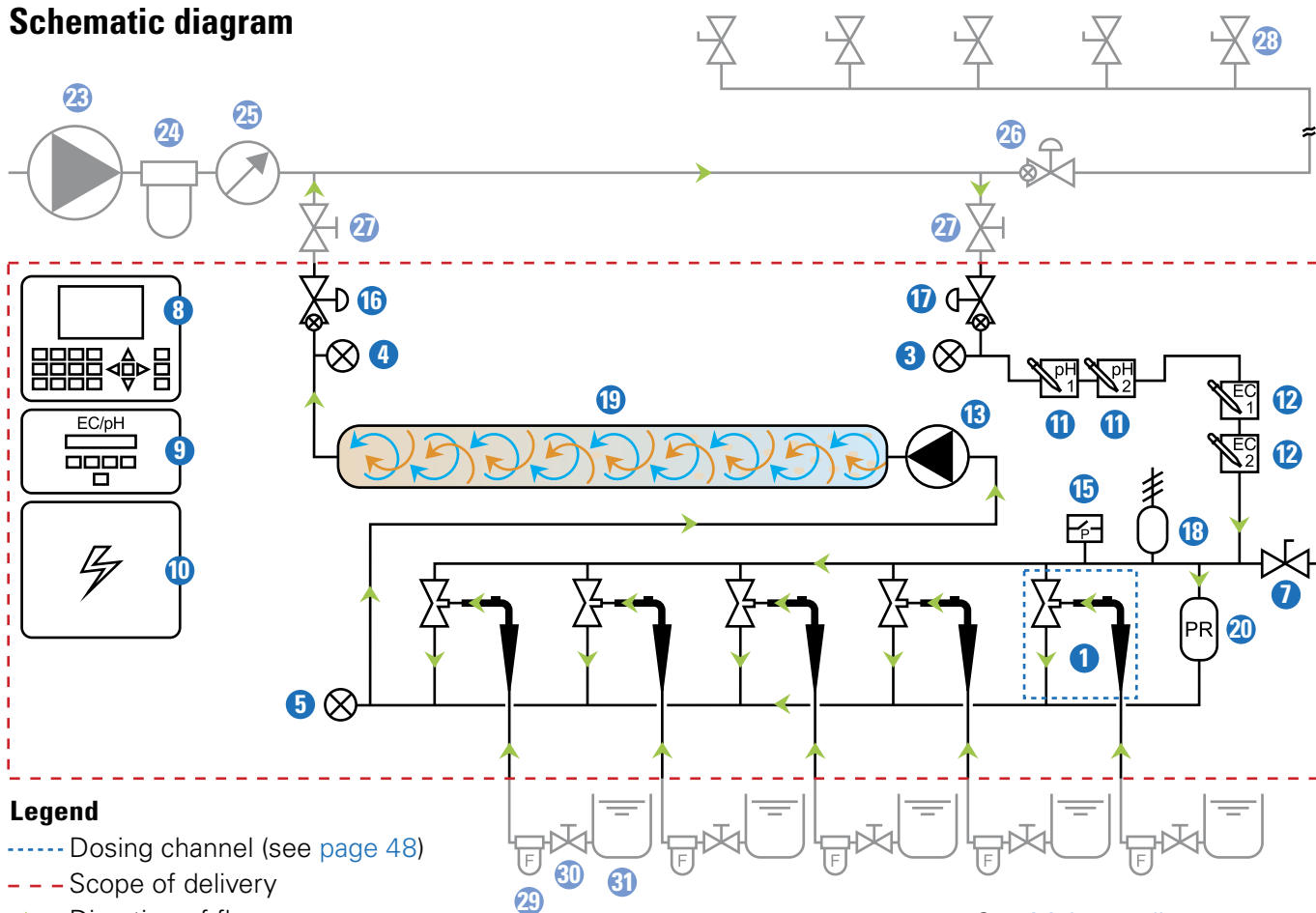


DESCRIPTION

BP PL mode - typical setup



Schematic diagram



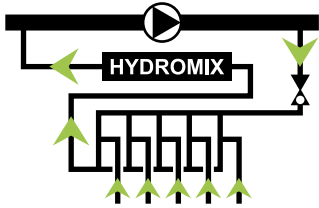
Legend

- - - Dosing channel (see page 48)
- - - Scope of delivery
- Direction of flow

See Main part list on page 11

DESCRIPTION

BP ST mode



Bypass system for storage-tank water source.

Operating principle:

For systems operating at low pressure - from an on-ground reservoir or a storage tank [max. height: 6 meters (20 feet)].

The main line pump also serves as dosing booster pump.

Suitable for main line flow rate:

15-100 m³/h (66-440 GPM)

Flow limitation depends on the fertilizer injection rate and the size of the Venturis.

Suitable for main line pressure:

The water level in the storage tank should not be higher than 5 meters (16.4 feet) above the NetaJet™ 4G inlet.

Dosing channels:

Accommodates a wide variety of highly accurate dosing channels for fertilizer and concentrated/diluted acid:

- Up to 5 x 50-600 l/hr (13-158 GPH)
- Optional - Concentrated acid channel, 50 l/h (13 GPH)

Total fertilizer/acid suction capacity - up to 3000 l/h (792 GPH).

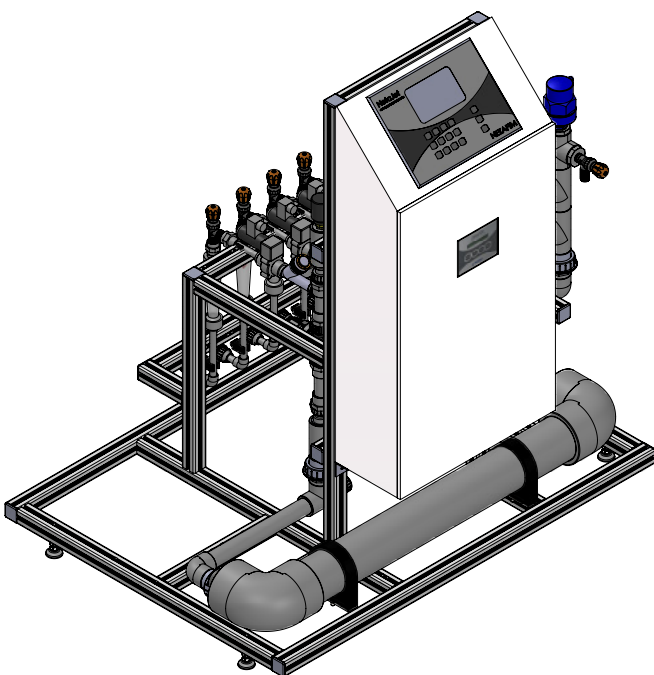
Controller:

NMC-Pro (Operation with third-party controllers is optional. Consult Netafim™.)

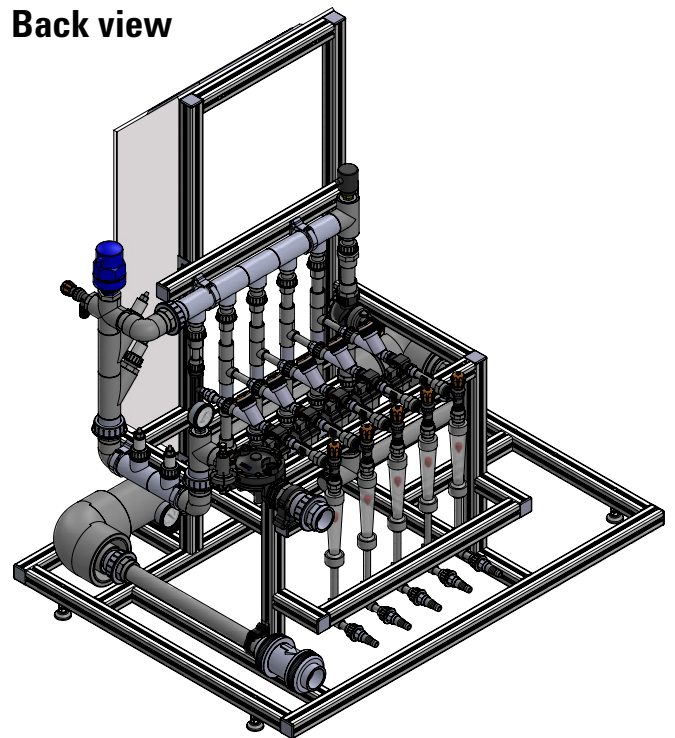
EC/pH:

Dual (single is optional), monitoring and control.

Front view

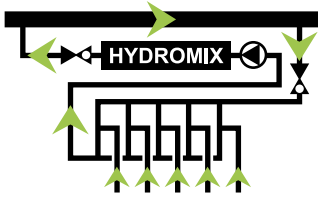


Back view



DESCRIPTION

High-flow mode



High-flow bypass system for pressurized-line water source

Operating principle:

The pressure differential required to generate fertilizer suction via the Venturis is produced by a booster pump integrated in the NetaJet™ 4G. This mode of operation, where the lower manifold is under low pressure (around 0 bar/PSI), permits the use of high-efficiency Venturis with high suction capacity and low motive flow consumption.

Suitable for main line flow rate:

80-400 m³/h (350-1760 GPM)

Flow limitation depends on the fertilizer injection rate and the size of the Venturis.

Suitable for main line pressure:

Standard: 2.5-5.8 bar (36.5-84.0 PSI)

High pressure: 5.8-7.5 bar (84.0-108.5 PSI)

Dosing channels:

Accommodates a wide variety of highly accurate dosing channels for fertilizer and concentrated/diluted acid:

- Up to 5 x 50-1000 l/h (13-265 GPH)
- Optional - Concentrated acid channel, 50 l/h (13 GPH)

Total fertilizer/acid suction capacity - up to 5000 l/h (1320 GPH).

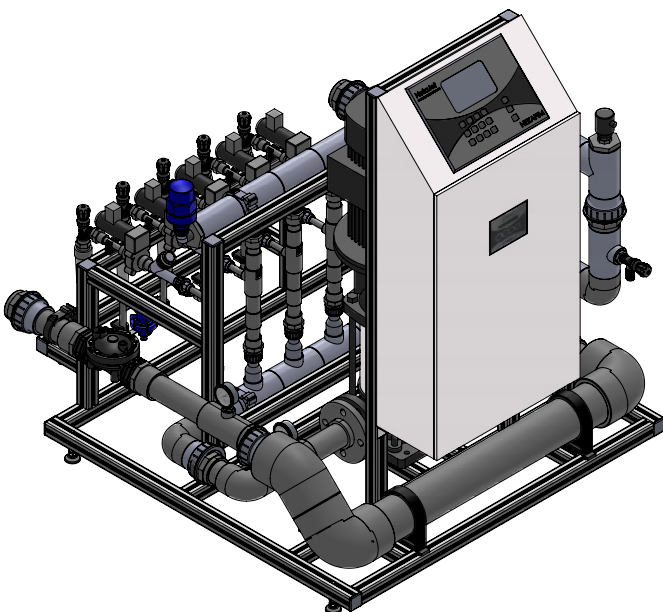
Controller:

NMC-Pro (Operation with third-party controllers is optional. Consult Netafim™.)

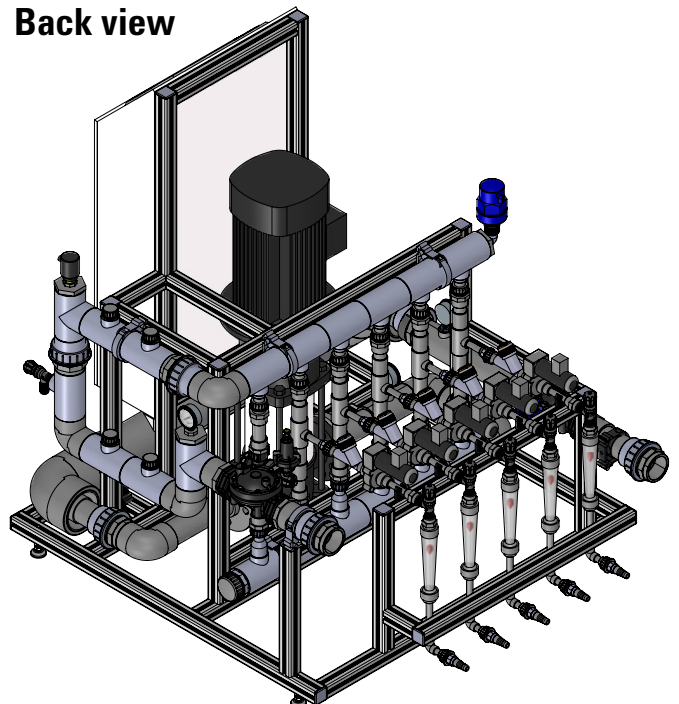
EC/pH:

Dual (single is optional), monitoring and control.

Front view

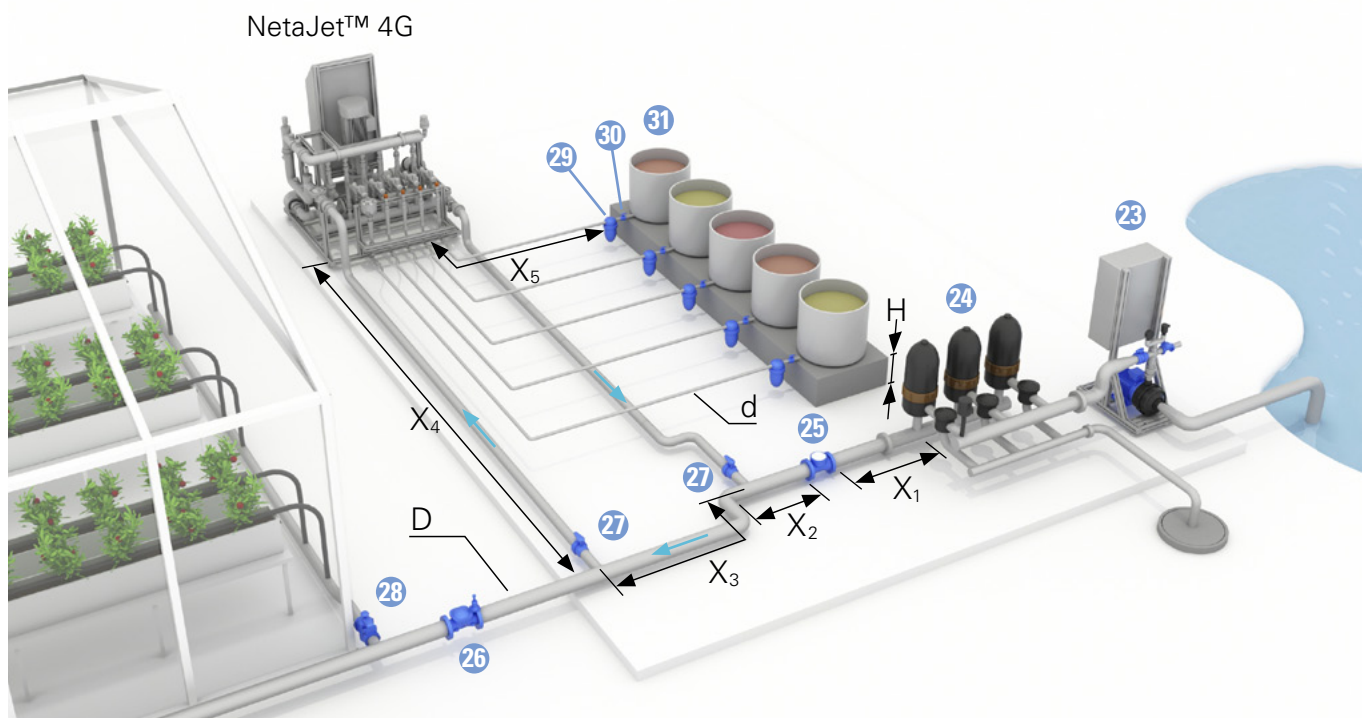


Back view

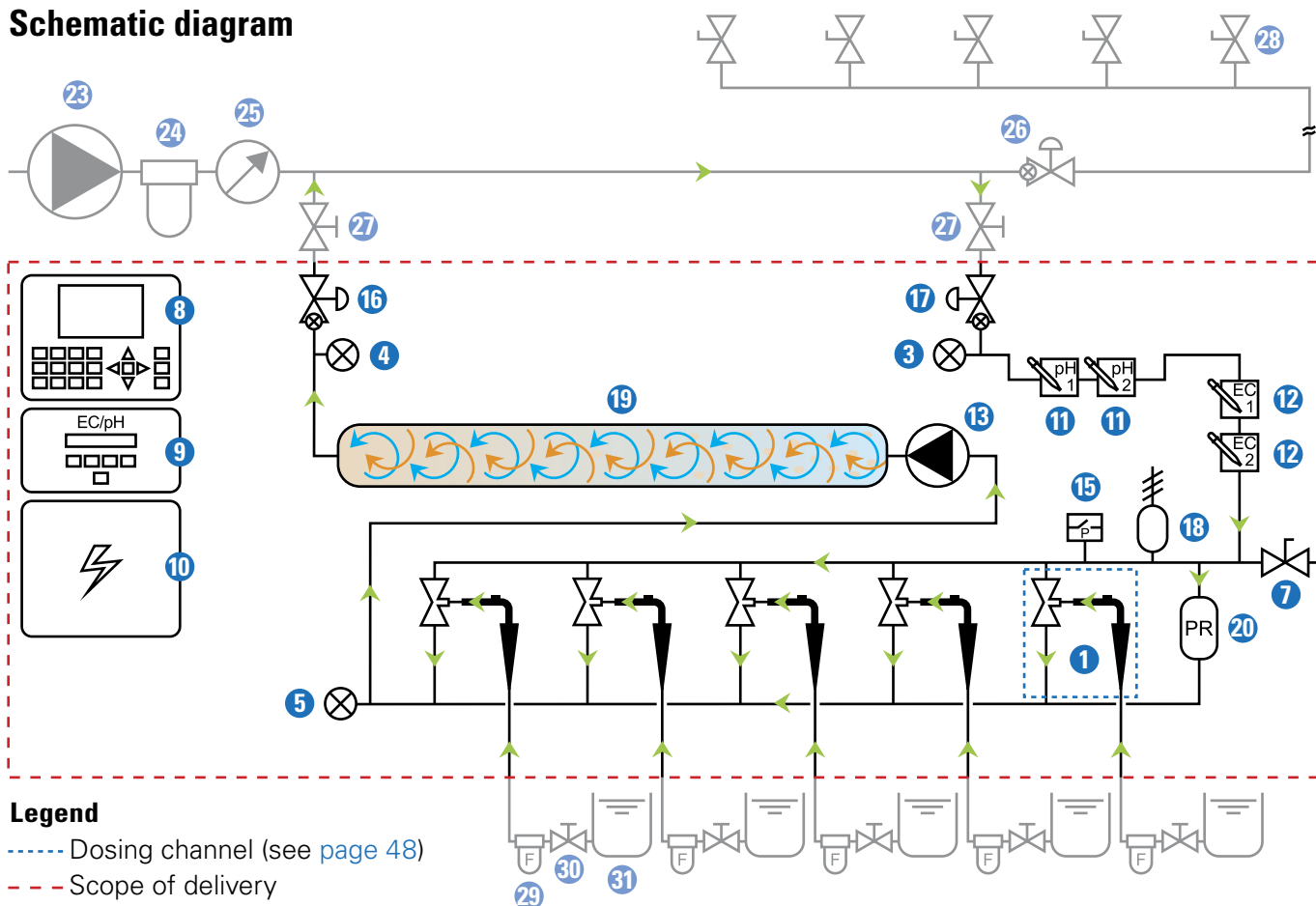


DESCRIPTION

High-flow mode - typical setup



Schematic diagram



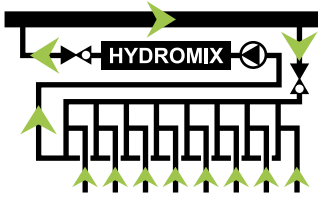
Legend

- Dosing channel (see page 48)
- - - - - Scope of delivery
- ➔ Direction of flow

See Main part list on page 11

DESCRIPTION

Octa - 8-channel mode



Bypass system for pressurized-line water source, with 8 dosing channels.

Operating principle:

The pressure differential required to generate fertilizer suction via the Venturis is produced by a booster pump integrated in the NetaJet™ 4G. This mode of operation, where the lower manifold is under low pressure (around 0 bar/PSI), permits the use of high-efficiency Venturis with high suction capacity and low motive flow consumption.

Suitable for main line flow rate:

20-120 m³/h (90-500 GPM). Flow limitation depends on the fertilizer injection rate and the size of the Venturis.

Suitable for main line pressure:

Standard: 2.5-5.8 bar (36.5-84.0 PSI)

High pressure: 5.8-7.5 bar (84.0-108.5 PSI)

Dosing channels:

Accommodates a wide variety of highly accurate dosing channels for fertilizer and concentrated/diluted acid:

- Up to 8 x 50-600 l/h (13-158 GPH)
- Optional - Concentrated acid channel, 50 l/h (13 GPH)

Total fertilizer/acid suction capacity - up to 4800 l/h (1268 GPH).



CAUTION

The Octa mode (8 dosing channels) includes 3 dual dosing channels. There are fertilizer combinations that should **never** be used in any concentration in the dual dosing channel! (see [CAUTION](#), page 6)

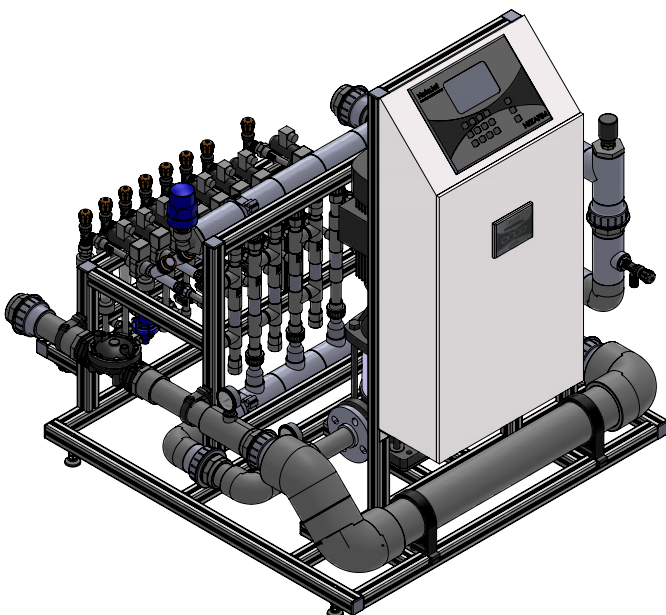
Controller:

NMC-Pro (Operation with third-party controllers is optional. Consult Netafim™.)

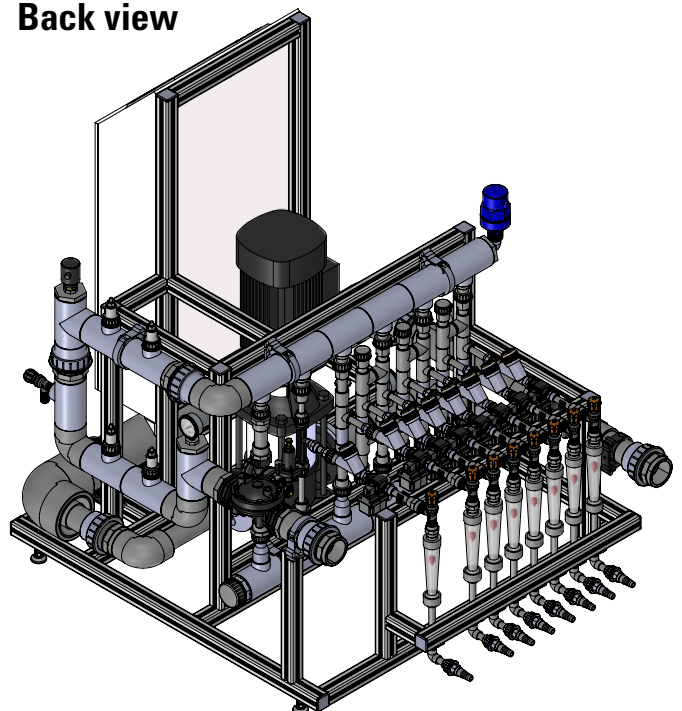
EC/pH:

Dual (single is optional), monitoring and control.

Front view

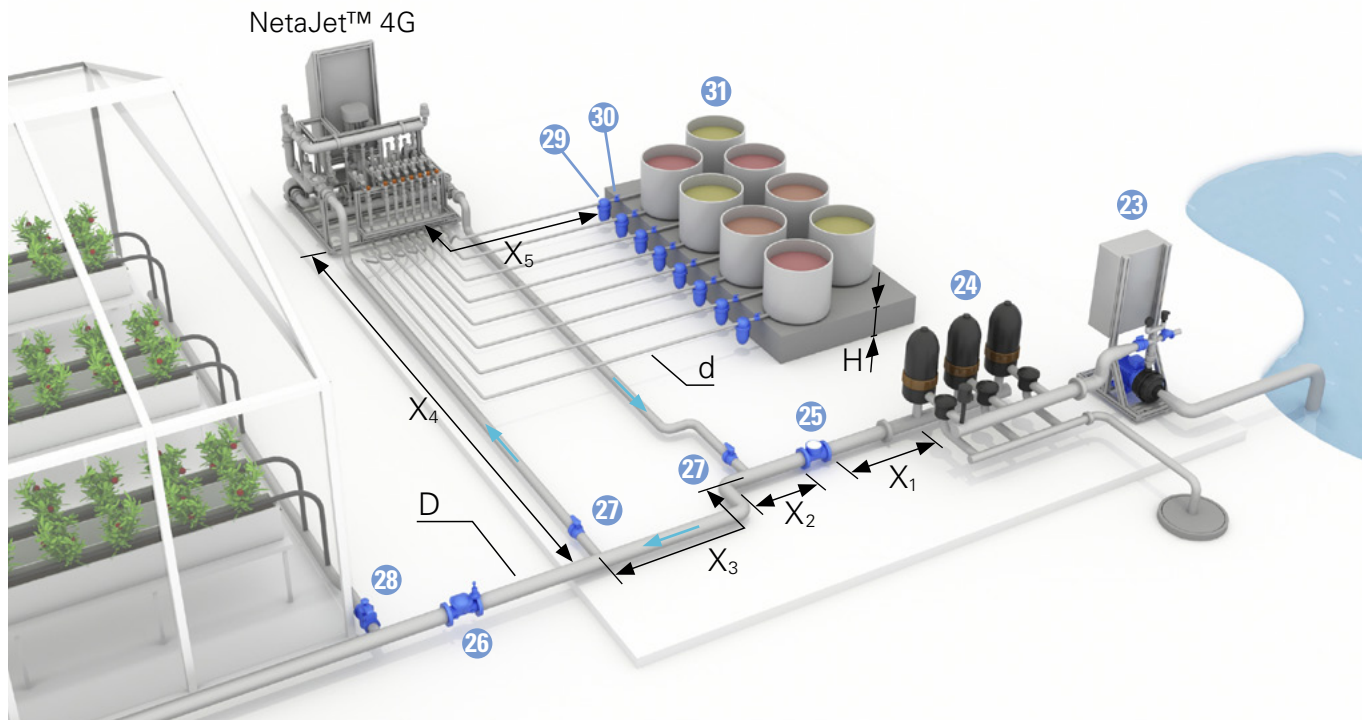


Back view

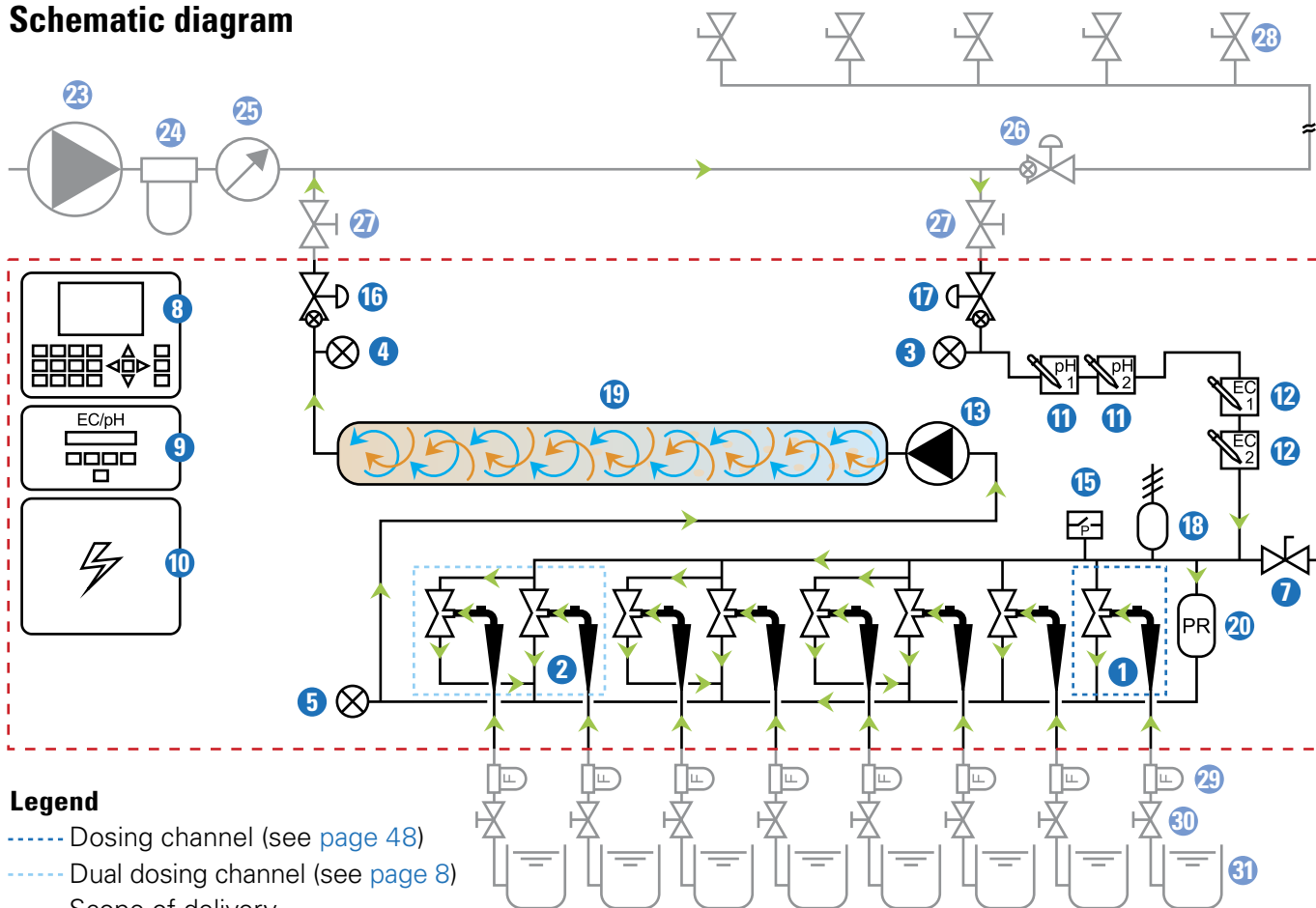


DESCRIPTION

Octa - 8-channel mode - typical setup



Schematic diagram



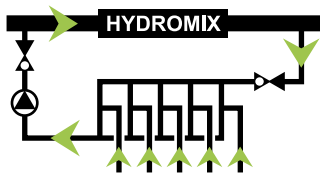
Legend

- - - - Dosing channel (see page 48)
- - - - Dual dosing channel (see page 8)
- - - - Scope of delivery
- Direction of flow

See Main part list on page 11

DESCRIPTION

IL PL mode



Inline system for pressurized line water source

Operating principle:

The pressure differential required to generate fertilizer suction via the Venturis is produced by a booster pump integrated in the NetaJet™ 4G. This mode of operation, where the lower manifold is at low pressure (around 0 bar/psi), allows the use of high-efficiency Venturis with high suction capacity and low motive flow consumption. Since all the main line water flows through the system, slight pressure losses at the NetaJet™ 4G outlet should be considered (see the table below).

Suitable for main line flow rate:

Up to 20 m³/h (90 GPM)

Suitable for main line pressure:

Standard: 2.5-5.8 bar (36.5-84.0 PSI)

High pressure: 5.8-7.5 bar (84.0-108.5 PSI)

Dosing channels:

Accommodates a wide variety of highly accurate dosing channels for fertilizer and concentrated/diluted acid:

- Up to 5 x 50-400 l/hr (13-105.5 GPH)
- Optional - Concentrated acid channel, 50 l/h (13 GPH)

Total fertilizer/acid suction capacity - up to 2000 l/h (528 GPH).

Controller:

NMC-Pro (Operation with third-party controllers is optional. Consult Netafim™.)

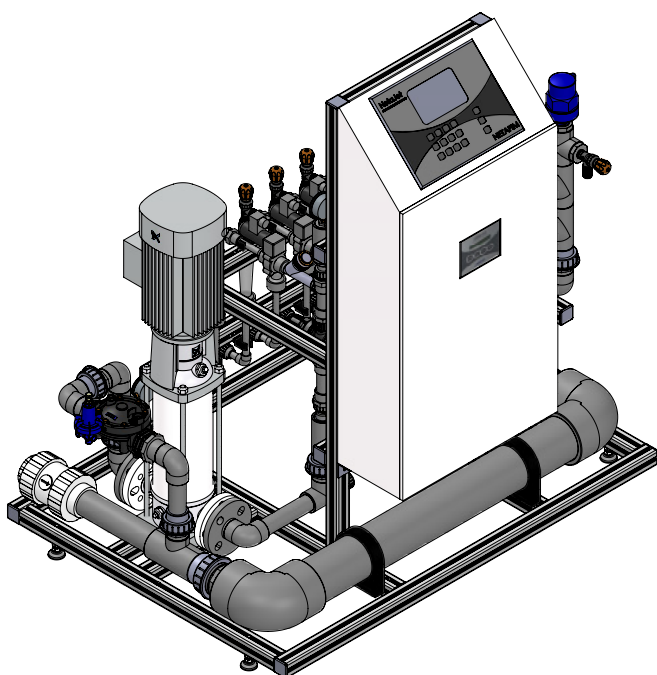
EC/pH:

Dual (single is optional), monitoring and control.

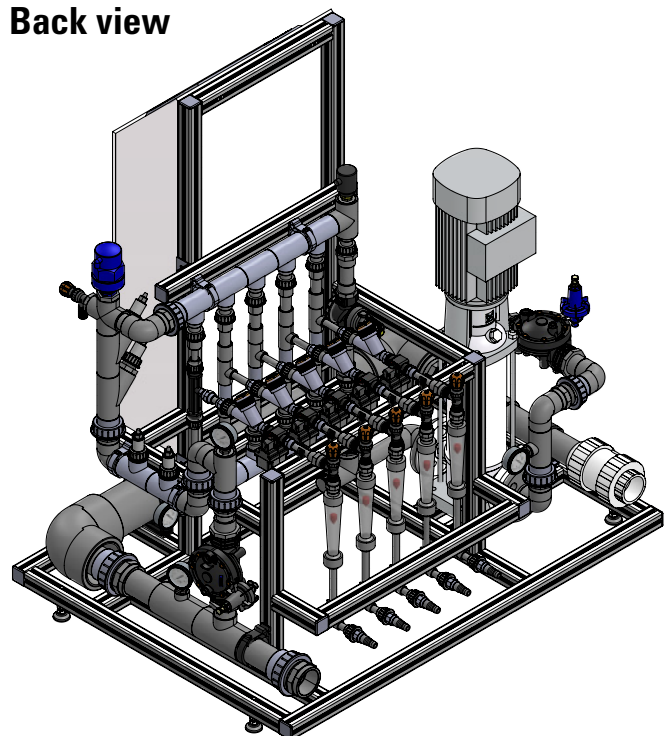
Pressure losses

Flow rate m ³ /h (GPM)	Pressure loss bar (PSI)
5 (22)	0.3 (4.35)
10-20 (44-88)	0.4 (5.8)

Front view

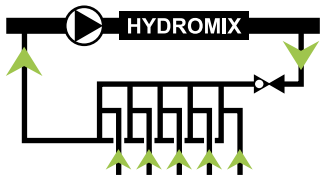


Back view



DESCRIPTION

IL ST mode



Inline system for storage-tank water source

Operating principle:

The pressure differential required to generate fertilizer suction via the Venturis is produced by a booster pump integrated in the NetaJet™ 4G. This mode of operation, where the lower manifold is at low pressure (around 0 bar/psi), allows the use of high-efficiency Venturis with high suction capacity and low motive flow consumption. Since all the main line water flows through the system, slight pressure losses at the NetaJet™ 4G outlet should be considered (see the table below).

Suitable for main line flow rate:

Up to 20 m³/h (90 GPM)

Suitable for main line pressure:

The water level in the storage tank should not be higher than 5 meters (16.4 feet) above the NetaJet™ 4G inlet.

Pressure losses

Flow rate m ³ /h (GPM)	Pressure loss bar (PSI)
5 (22)	0.8 (11.6)
10 (44)	0.9 (13.05)
15-20 (66-88)	1.0 (14.5)

Dosing channels:

Accommodates a wide variety of highly accurate dosing channels for fertilizer and concentrated/diluted acid:

- Up to 5 x 50-400 l/hr (13-105.5 GPH)
- Optional - Concentrated acid channel, 50 l/h (13 GPH)

Total fertilizer/acid suction capacity - up to 2000 l/h (528 GPH).

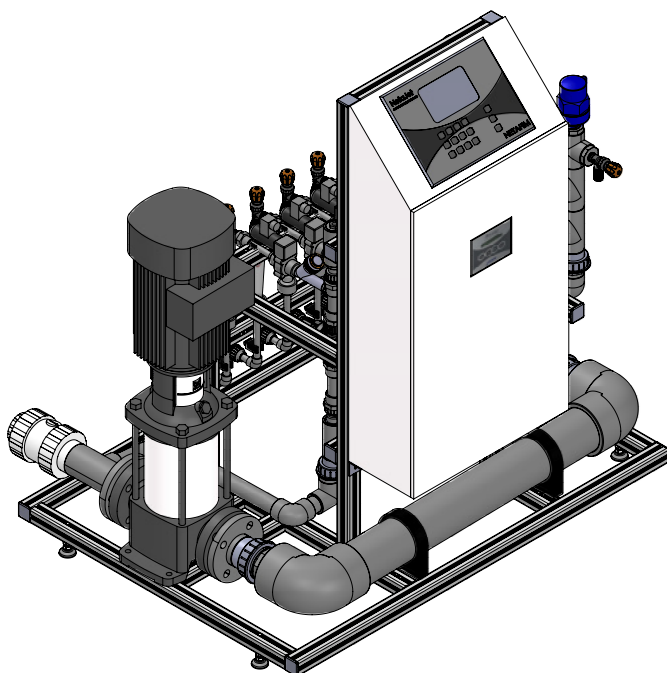
Controller:

NMC-Pro (Operation with third-party controllers is optional. Consult Netafim™.)

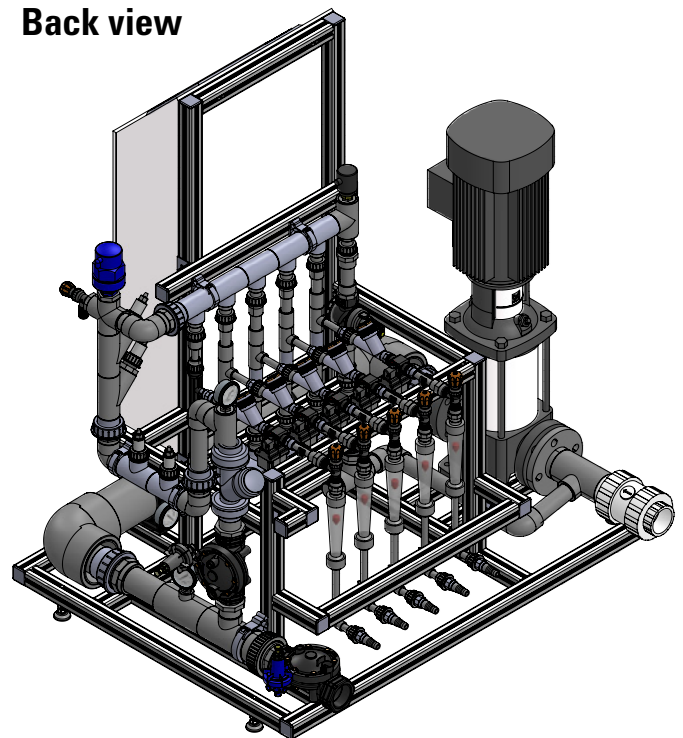
EC/pH:

Dual (single is optional), monitoring and control.

Front view



Back view



ON-SITE PREPARATIONS

Infrastructure requirements

In order to enable the operation of the NetaJet™ 4G it is essential to meet the specific requirements for each mode such as main line pressure and infrastructure conditions. See the relevant mode description ([pages 12-22](#)).



NOTE

To ensure flow rate stability, the consumption of the different irrigation shifts should be as equal as possible. Each changeover between shifts with different consumption will result in consumption fluctuation, affecting the EC and pH stability. The consumption of the smallest shift should not be less than 75% of the consumption of the largest shift.

Pump house (Filter house / Fertilizer house) requirements

Sufficient space should be available between the fertilizer/acid tanks and the NetaJet™ 4G to allow inspection and maintenance operations.



CAUTION

The NetaJet™ 4G should be:

- placed in a roofed building
- protected from direct sunlight
- kept at an ambient temperature between 10°C and 40°C (50°F and 104°F)
- kept at a maximum relative air humidity of 85%
- properly ventilated
- protected from dust
- protected from splashes or direct spraying with water or chemicals



NOTE

In order to prevent penetration of fertilizer or acid into the soil, it is recommended that the floor of the pump house have a minimum slope of 1% towards a gutter at its lower edge and an underground tank at the lower end of the gutter, enabling drainage of any spill or excess.

The water distribution system

For the setup of the water distribution system, the following components should be installed according to the mode of the NetaJet™ 4G. See the relevant mode description ([pages 12-22](#))

Components of the water distribution system

Component	Specifications
23 Main line pump	Suitable for flow rate satisfying the maximum field requirement (ensure stable pressure).
24 Main line filter	≤ 130 μm (≥ 120 mesh).
25 Main line water meter	With electrical pulses. The pulse should be as short as possible according to the filling line diameter and the controller's limitations. (See Recommended flow meter pulse rate table , page 27)
26 Main line PSV	Installed on the main line upstream from the irrigation valves.
27 Manual valve (isolation)	Manual ball valves at the NetaJet™ 4G inlet and outlet. For isolation of the NetaJet™ 4G during maintenance
28 Irrigation valve	
29 Fertilizer/acid filter	≤ 130 μm (≥ 120 mesh)
30 Manual valve (fertilizer)	A manual ball valve on each fertilizer/acid line at the stock tank outlet
31 Fertilizer/acid stock tank	Up to 8 fertilizer/acid solution stock tanks.

ON-SITE PREPARATIONS

The fertilizer/acid tanks and lines

For the setup of the fertilizer/acid tanks and lines, the following components should be installed:

Items of the fertilizer/acid tanks and lines

Component	Specifications
13 Fertilizer/acid stock tank	Between 1 and 6 fertilizer/acid solution stock tanks
14 Manual valve (fertilizer)	A manual ball valve on each fertilizer/acid line at the stock tank outlet
15 Fertilizer/acid filter	≤ 130 μm (≥ 120 mesh)

The following aspects should be taken into account:

- Ensure the stock tanks are of sufficient size for storage of at least one day's consumption.
- Sufficient space should be available between the fertilizer/acid tanks and the NetaJet™ 4G, to enable inspection and maintenance operations.
- For the connection of fertilizer supply lines to the NetaJet™ 4G, use a transparent, chemical-resistant, reinforced PVC water hose with an internal diameter of 16 mm that will not contract when there is a vacuum in the system.
- Use properly sealing stainless steel band clamps for the fertilizer/acid hose connection, type SS 316.



CAUTION

After completion of the hydraulic infrastructure, before the installation of the NetaJet™ 4G, rinse the hydraulic infrastructure and fertilizer/acid lines and tanks by running water through them in order to wash away any residues (chips, shavings, sawdust) from the setup work.

Hydraulic infrastructure preparation

The hydraulic infrastructure preparations should be performed according to the mode of the NetaJet™ 4G to be installed. Before performing the infrastructure installation, see the typical setup for the specific mode of NetaJet™ 4G to be installed (pages 12-22).

Required infrastructure proportions*

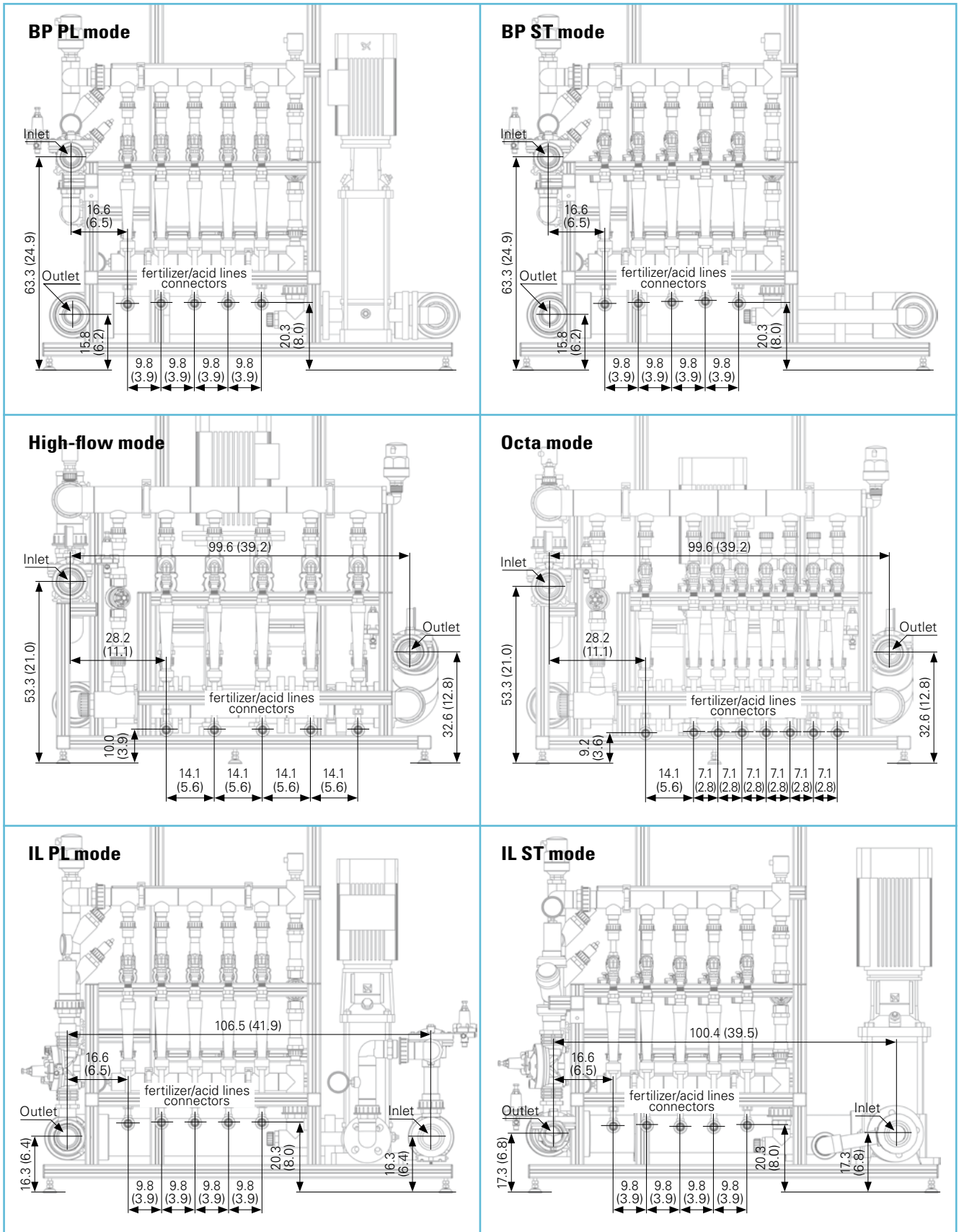
To enable optimal operation of the NetaJet™ 4G, piping must maintain the following proportions.

Description	Required proportions
D Main line - pipe diameter	
d Fertilizer/acid lines - pipe diameter: <ul style="list-style-type: none"> • 32 mm (1¼") for dosing channels of up to 400 l/h (106 GPH) • 40 mm (1½") for dosing channels of over 400 l/h (106 GPH) 	
X ₁ Distance upstream from water meter. Pipe must be straight, of uniform inside diameter and without any accessory that may cause turbulence	10 x D
X ₂ Distance downstream from water meter. Pipe must be straight, of uniform inside diameter and without any accessory that may cause turbulence	5 x D
X ₃ Distance between inlet and outlet locations on the main line. "L" shape recommended for better mixing	Min. 2 m (6.5 ft)
X ₄ Length of inlet and outlet pipes	Less than 3 m (10 ft)
X ₅ Length of fertilizers or acid lines	Less than 10 m (33 ft)
H Elevation of the fertilizer/acid tanks	Higher than 30 cm (12")
W Water level allowed in the storage tank	Max. 5 m (16.5 ft)

*Refer to the typical setup illustration for each mode, pages 12-22).

ON-SITE PREPARATIONS

Location of inlet, outlet and fertilizer/acid line connectors - cm (in)



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

ON-SITE PREPARATIONS

Recommended flow meter pulse rate*

Flow rate m ³ /hr	Flow meter output l/pulse	Flow rate GPM	Flow meter output US gal/pulse
Up to 6	1	Up to 88	1
6-60	10	88-1000	10

*Compatible with Netafim™ NMC controllers. In cases where the NetaJet™ 4G is to be controlled by a third-party controller, consult Netafim™.

Electrical preparation

Mains connection



CAUTION

Only qualified electricians are permitted to perform electrical installations!

The following components must be provided for the installation:

- A readily accessible circuit breaker, rated according to the NetaJet™ 4G total rated power, certified as a branch circuit over current protector (see [Dosing boosters](#), page 50), compliant with the national code and requirements.
- Grounding connection: $\leq 10 \Omega$.

Mains wire size

For all modes that include a dosing booster

For the selection of the wire size - consider the NetaJet™ 4G total rated power (see [Dosing boosters](#), page 50):
5 wires: GND, N, L1, L2, L3

Power source required (kW)	3 X 220-277 VAC	3 X 380-480 VAC
Up to 3	$\geq 2.5 \text{ mm}^2 (\leq 13 \text{ awg})$	$\geq 2.5 \text{ mm}^2 (\leq 13 \text{ awg})$
3-4	$\geq 4 \text{ mm}^2 (\leq 11 \text{ awg})$	
4-6	$\geq 6 \text{ mm}^2 (\leq 9 \text{ awg})$	
6-8	$\geq 10 \text{ mm}^2 (\leq 7 \text{ awg})$	$\geq 4 \text{ mm}^2 (\leq 11 \text{ awg})$

For the BP ST mode

The BP ST mode does not include a dosing booster. The mains feeds the controller only.

3 wires: GND, N, L

Power source required (W)	1 X 100-115 VAC	1 X 200-250 VAC
250	$\geq 1.5 \text{ mm}^2 (\leq 15 \text{ awg})$	$\geq 1.5 \text{ mm}^2 (\leq 15 \text{ awg})$

INSTALLATION

Unpacking and placement

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

Using forklift, place the NetaJet™ 4G package close to the irrigation system.

Carefully open the packaging.

Remove the 4 screws and bolts connecting the NetaJet™ 4G to the wooden pallet.

Remove the plastic cover (if there is one) from the controller.

Place the NetaJet™ 4G in its position.

Adjust the legs so that the NetaJet™ 4G is steady.



Hydraulic installation



WARNING

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

Main line inlet/outlet connection

Connect the appropriate pipes to the inlet and the outlet of the NetaJet™ 4G according to the mode of the system (see [Location of inlet, outlet and fertilizer/acid line connectors](#), page 26).

Mode	Diameter	
	PVC, adaptor union - glue connector (installed)	PVC, BSP or NPT nipple - male thread connector (supplied)
BP PL	50 mm	1.5"
BP ST		
High-flow	63 mm	2"
Octa - 8-channel		
IL PL		
IL ST		

Stock tank connection

Connect the fertilizer lines to the NetaJet™ 4G according to the mode of the system (see [Location of inlet, outlet and fertilizer/acid line connectors](#), page 26).

Three types of connection are available

Fittings (interchangeable)	Diameter
PVC, hose nozzle insert connector (installed)	16 mm
PVC, nipple - male thread connector (supplied)	1/2"
PVC, half union - female thread connector (supplied)	3/4"

INSTALLATION

Before connecting the flexi-tube, thread a stainless steel band clamp **A** on each flexi-tube hose.

Heat the tip of each flexi-tube hose in boiling water to make it flexible for insertion.

Connect the flexi-tube hose from the fertilizer lines to the hose-nozzle-insert connectors of the dosing channels **B**, ensuring 1/2 meter (1.7 feet) of transparent, chemical-resistant, reinforced PVC water hose with an internal diameter of 16 mm that will not contract when there is a vacuum in the system.

Attach the stainless steel band clamp on each flexi-tube connection **C** and secure tightly.

Flexi-tube specification:

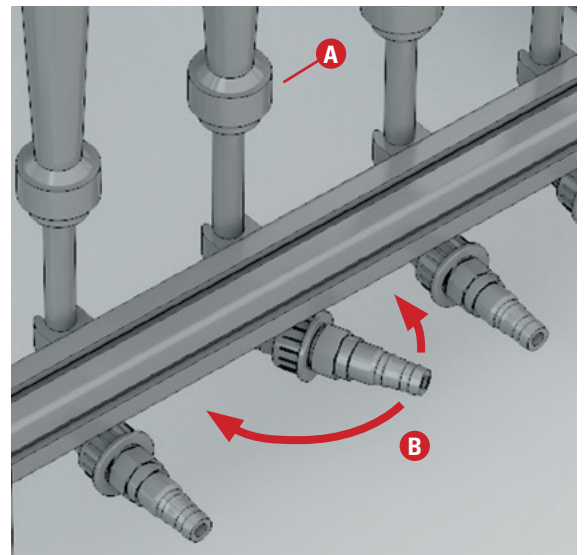
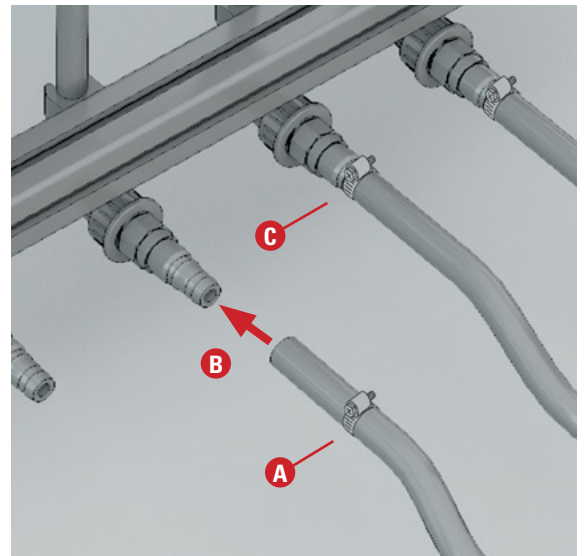
- 16 mm (1/2") reinforced EVA tubing.
- Material: EVA (ethylene vinyl acetate) tube compound specially formulated to meet USDA requirements.
- Polyester cord reinforcement with color tracer.
- Pressure: 18 to 20 Bar (250 to 300 PSI).
- Recommended temperature range: -23°C to +65°C (-10°F to +150°F).



TIP

You can rotate the hose connectors of the dosing channels to face the desired direction according to the location of the stock tanks.

Loosen the Rotameter's lower connector **A**, rotate the hose connector to the desired direction **B** and fasten the Rotameter's lower connector **A**.



Electrical installation



CAUTION

Only qualified electricians are permitted to perform electrical installations!

Have a qualified electrician connect the NetaJet™ 4G to the mains.

Follow the instructions in the enclosed [Switchboard Diagram](#).



ATTENTION

Make sure all the wire connectors and terminals are tightened before switching on the power!

SYSTEM OPERATION



NOTE

The following procedure describes the operations that should be performed, regardless of the type of controller in use. For the operation of a specific controller interface, see the [Controller Manual](#).

Preparations for running the NetaJet™ 4G

For NetaJet™ 4G with a controller (onboard or external):

Run the controller and enter preliminary general settings (see the [Controller Manual](#)).

Ensure that the INPUT for protection against lack of pressure in the system is connected to the controller and defined. Set a delay of 15 seconds (see the [Controller Manual](#)).

Connect all the elements (valves, pumps, filters, sensors, etc.) to the controller (see the [Controller Manual](#)).

Manual test of controller outputs

Perform the test to make sure that all the elements (valves, pumps, filters, sensors, etc.) function properly upon command from the controller.

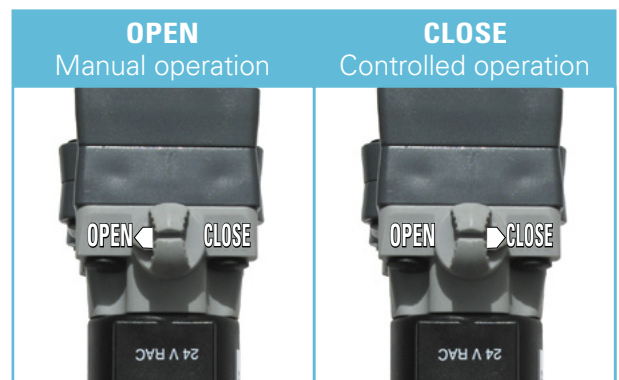
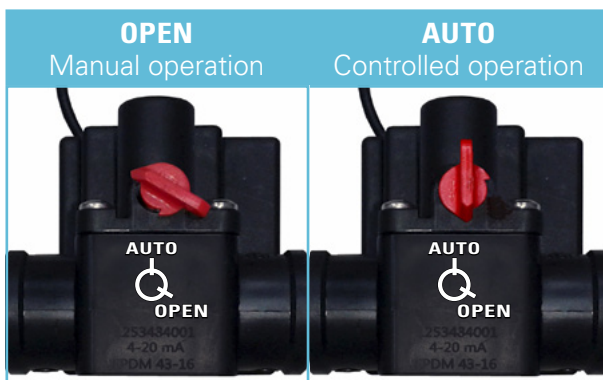
Run the test using the controller's TEST menu (see the [Controller Manual](#)).

Set the relay status of the dosing channels to MANUAL and make sure that the irrigation program is not defined (see the [Controller Manual](#)).



NOTE

- When using an analog dosing valve, make sure the dosing valve selector is in the AUTO position.
- When using a digital dosing valve (S22), make sure the dosing valve selector is in the CLOSED position.



To check that the dosing channels are working:

Analog dosing channel

Suction should be visible in the Rotameter.

Digital dosing channel

When the OPEN command from the controller is given - the LED on the dosing valve is lit.

SYSTEM OPERATION

Calibration of EC and pH sensors

Calibrate the EC and pH sensors (see the [EC/pH Transducer Manual](#)).



CAUTION

Do not operate the NetaJet™ 4G if the manual isolation valves installed at the inlet and outlet of the system are closed!



ATTENTION

Unions tend to get loose during transit.

Before operating the NetaJet™ 4G, tighten all the unions of the NetaJet™ 4G by hand.

Check for leaks



CAUTION

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

- Make sure all the field valves are closed.
- Gradually open the isolation valves installed at the inlet and outlet of the system until the required main line pressure is attained.
Keep the system under static pressure for 10 minutes and check visually for leaks.
- Perform a simulation test with a 10-liter (2-US-gallon) bucket of water (see [page 33](#)).

Check the dosing booster operation



CAUTION

If isolation valves are installed at the NetaJet™ 4G inlet and outlet, ensure that they are open before running the dosing booster.

- Switch the dosing booster to ON.
- Check that the dosing booster is rotating in the correct direction (see the [Dosing Booster Manual](#)).



HIGH VOLTAGE ELECTRICAL HAZARD

Before unplugging the system from the main power source, switch the unit and the main power source OFF!

Running the NetaJet™ 4G

- Define a program in the controller for one valve or multiple valves (SHIFT) as defined in the irrigation plan (see the [Controller Manual](#)).
- In the first stage, it is recommended that you define a program with quantitative or proportional fertilization only, without EC/pH control (see the [Controller Manual](#)).
- Temporarily deactivate all alarms in the system - EC/pH, flow control, etc. (see the [Controller Manual](#)).
- Start the program and wait for the lines to be filled
(this takes a few minutes, depending on the size of the installation).
- Check that the flow and the pressure on the main line are stabilized (see the [Controller Manual](#)).
- Activate the dosing booster and the dosing channels.

SYSTEM OPERATION

- Check the main line flow meter and pressure gauge, the upper manifold and lower manifold pressure gauges and make sure all the hydraulic conditions are in range according to the main line pressure and flow conditions of the specific mode (see [page 37](#)).
- If the system cannot reach the hydraulic conditions, it is possible that there is an air pocket in the dosing booster's impeller chamber (see the [Dosing Booster Manual](#)):
- Open the NetaJet™ 4G sampling valve until a stable flow, free of air bubbles, is obtained.
- If the system still cannot reach the hydraulic conditions - loosen the dosing booster's bleeding screw and wait until a stable flow, free of air bubbles, is obtained and then retighten the bleeding screw (see the [Dosing Booster Manual](#)).
- Check the suction of the dosing channels from the stock tanks, and tune the desired flow rate for each dosing channel by adjusting the needle valve (see [Calibration of the NetaJet™ 4G while irrigating](#), page 35).
- Let the system run for about ten minutes and make sure it works properly.
- After setting the flow rate for each dosing channel, adjust the cursors on each Rotameter.



NOTE

The Rotameter's scale is calibrated by the manufacturer for measurement of the flow rate of water (H₂O). Certain inaccuracies may be observed when measuring the flow rate of liquids with different densities, such as fertilizers and acids.

- If EC/pH measuring equipment is installed, measure the control cycle and enter the data into the controller - (see the [Controller Manual](#)).
- Stop the program.



ATTENTION

Restore the settings of all the alarms back to the state where adequate protection to the system and the crop is provided (see the [Controller Manual](#)).

If there is any problem during the process, see [Troubleshooting](#) in the NetaJet™ 4G [User Manual](#) provided with the NetaJet™ 4G and downloadable at <http://www.netafim.com/product-category/multi---channel-injection-automated>



DOSING CALIBRATION

The process of calibrating the NetaJet™ 4G dosing channels is carried out in three stages:

1. Calculation of dosing channel opening percentage

To finely calibrate the NetaJet™ 4G dosing channels in order to achieve homogeneous and stable dosing, perform the following calculation for each dosing channel (fertilizers and acids) to determine the amount of suction reduction needed to attain the required fertilizer/acid flow rate.

Metric units

Flow rate of the largest irrigation shift m³/hr
 X
 Dosing ratio of a single fertilizer/acid l/m³
 =
 Result: a single fertilizer/acid flow rate l/hr
 X 1.25 =
 Result: target Rotameter reading l/hr

EXAMPLE

<input type="text" value="120"/>	m ³ /hr
X	
<input type="text" value="3"/>	l/m ³
=	
<input type="text" value="360"/>	l/hr
X 1.25 =	
<input type="text" value="450"/>	l/hr

DEFINITION

Dosing ratio = $\frac{\text{The quantity of fertilizer/acid (l)}}{1 \text{ m}^3 \text{ irrigation water}}$

US units

Flow rate of the largest irrigation shift GPM
 X
 Dosing ratio of a single fertilizer/acid US gal/1000 US gal
 X 0.06 =
 Result: a single fertilizer/acid flow rate GPH
 X 1.25 =
 Result: target Rotameter reading GPH

EXAMPLE

<input type="text" value="500"/>	GPM
X	
<input type="text" value="15"/>	US gal/1000 US gal
X 0.06 =	
<input type="text" value="45"/>	GPH
X 1.25 =	
<input type="text" value="56"/>	GPH

DEFINITION

Dosing ratio = $\frac{\text{The quantity of fertilizer/acid (US gal)}}{1 \text{ THG (1000 US gal) irrigation water}}$



NOTE

The Rotameter's scale is calibrated by the manufacturer for measurement of the flow rate of water (H₂O). Certain inaccuracies may be observed when measuring the flow rates of liquids with different densities, such as fertilizers and acids.

2. Simulation test with a 10-liter (2-US-gallon) bucket of water

Instruments needed

- Good-quality portable EC and pH sensors, finely calibrated
- Calibration solutions for EC and pH
- Bucket with a scale for up to 10 liters (2 US gallons)
- Measuring tube or syringe with a scale for up to 100 cc (1 oz)
- Clean (preferably distilled) water for cleaning sensors during calibration
- Blotting paper for cleaning and drying

The client prepares the fertilizer solutions and the acid solution (if required) in the stock tanks according to the recipe advised by the agronomist/consultant.



ATTENTION

Ensure that the fertilizers and acid solutions in the stock tanks have been thoroughly agitated before starting the simulation.

DOSING CALIBRATION

Note the required dosing ratio of each fertilizer solution and the dosing ratio of the acid solution (if used).

Fill a bucket with 10 liters (2 US gallons) of the client's supply water (without fertilizer or acid).

Measure the EC and the pH levels of the water in the bucket using calibrated portable sensors.

EXAMPLE

	EC	pH
Supply water (without fertilizer or acid)	0.3	7.8

Using a measuring tube or a syringe, take a dose from each fertilizer solution and from the acid solution (if used) according to the proportions determined by the dosing ratio (see example below) and **mix thoroughly** with the water in the bucket.

EXAMPLE

Metric units

For a fertilizer dosing ratio of 5 l/m³ each and an acid dosing ratio of 2 l/m³, the quantities for 10 liters of water in the bucket-simulation test will be 50 cc of each fertilizer solution and 20 cc of the acid solution

US units

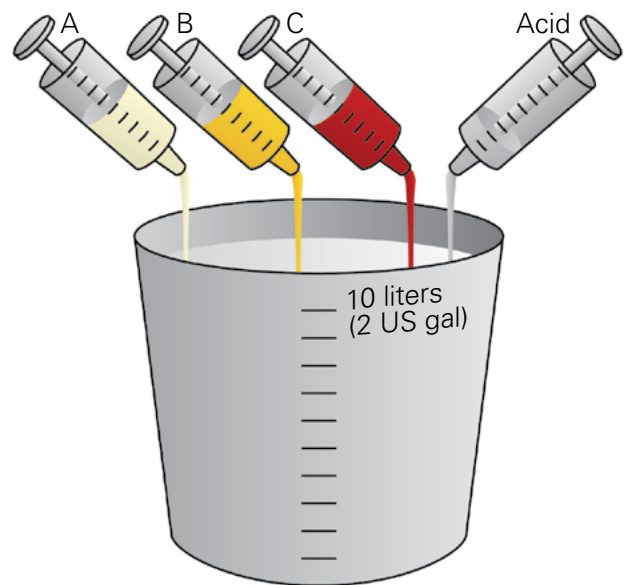
For a fertilizer dosing ratio of 1.5 US gal/THG each and an acid dosing ratio of 1.1 US gal/THG, the quantities for 2 US gallons of water in the bucket-simulation test will be 0.38 oz* of each fertilizer solution and 0.28 oz** of the acid solution

DEFINITIONS

1 US gal = 128 oz

$$* \frac{1.5 \times 2}{1000} = 0.003 \text{ US gal} = 0.384 \text{ oz}$$

$$** \frac{1.1 \times 2}{1000} = 0.0022 \text{ US gal} = 0.28 \text{ oz}$$



Measure the EC and the pH levels of the mixture in the bucket using calibrated portable sensors.

Compare the measured EC and pH values to the target values set by the agronomist/consultant.

EXAMPLE

	EC	pH
After adding the fertilizers and acid	1.6	5.5
Target values	1.8	5.8
Deviation from target value	11%	5%



DOSING CALIBRATION

With the controller set to operate according to EC/pH values - if the EC and pH values measured in the bucket are within a range of $\pm 30\%$ deviation from the target values, the system will be able to correct them automatically.

If the values are out of the $\pm 30\%$ range, check the data and consult the agronomist/consultant.

3. Calibration of the NetaJet™ 4G while irrigating



WARNING

Extreme EC or pH values may damage the crop.

Perform the following procedure only after completing stage 2 above ([Simulation test with a 10-liter or 2-US-gallon bucket of water](#) - page 33) with satisfactory results.



NOTE

The following steps explain the operations to be performed, regardless of the type of controller used. For the operation of your controller's interface, consult the [Controller Manual](#).

However, since the NMC Pro controller is widely used - its interface screens for the execution of each step are noted.



NOTE

Before the calibration, confirm that the EC and the pH sensors of the NetaJet™ 4G have been calibrated according to the instructions in the [EC/pH Installation Manual](#).

Define the dosing configuration, while the EC and pH controls are in the OFF position (**NMC Pro - screen 7.7**).

In the EC and pH alarm definitions, set the EC and pH alarm to the OFF position (deactivated) (**NMC Pro - screen 3.6**).

Enter the data for the irrigation valves, and the dosing ratio for each dosing channel (**NMC Pro - screens 1.1-1.2-1.3**).

Run the program (**NMC Pro - screen 2.2**).

Allow a few minutes for the pipes to fill up and the flow rate to stabilize.

Reduce the suction of the dosing channels by adjusting the manual needle valve of each dosing channel until the "target Rotameter reading" calculated in stage 1 (page 30) is attained.



NOTE

The Rotameter's scale is calibrated by the manufacturer for measurement of the flow rate of water (H₂O). Certain inaccuracies may be observed when measuring the flow rates of liquids with different densities, such as fertilizers and acids.

Check the appropriate controller screen for the measured EC and pH values (**NMC Pro - hot screen 4**).

If the desired values have been reached, check opening percentages of the dosing valves.

The EC and pH target values should be attained with the dosing valves opened to 50% - 80% of their capacity.

If the EC and pH target values are attained with the dosing valves opened less than 50%, reduce the dosing channel suction rate, until the EC and pH target values are reached.



NOTE

Every change in the flow rate of the needle valve must be updated afterwards in the controller (**NMC Pro - screen 7.6**).

DOSING CALIBRATION

If the EC and pH target values cannot be attained, and the dosing valves are opened more than 85%, measures should be taken to increase the dosing ratio - if feasible, slightly increase the concentration of the fertilizer solution and/or reduce the water flow rate to the field during irrigation.

If not - consult the agronomist/consultant.

In a field where the flow rate changes significantly from one irrigation shift to the next, try to be at a minimum of 50% opening of the dosing valve for the low-flow-rate shift, and a maximum of 80% for the high-flow-rate shift.

When the calibration process is completed, return to the EC and pH control screen in the controller, define the deviation in EC and pH values for the channels and switch the EC and pH control to ON

(NMC Pro - screen 7.7-7.6).

In the EC and pH alarm definitions, define the EC and pH deviation from the target values that, if attained, will trigger the alarm and set the EC and pH alarm to the ON position (activated) **(NMC Pro - screen 3.5-3.6).**



NOTE

EC and pH values must not exceed a $\pm 30\%$ deviation from the target values.



ATTENTION

Once a month, read the measured flow rates of the dosing channels and compare them with the flow rates defined in the controller, in order to check whether changes have occurred

(NMC Pro - screen 7.6).

After completing the calibration process, fill in the [NetaJet™ 4G Hydraulic Conditions Checklist](#) in three copies. Make sure to fill in all the boxes in the reference row.

SYSTEM CALIBRATION

Each NetaJet™ 4G is supplied fully calibrated according to the main irrigation line flow rate and pressure reported by the client, and does not require any additional calibration during installation.

The proper pressure regime of the NetaJet™ 4G

Mode	Required pressure - bar (PSI)			
	A Inlet PRV	B Lower manifold	C Outlet PSV	D Main line
BP PL, IL PL, High-flow, Octa	3.5-4.0 (50.7-58.0)	0+0.5 (0-7.2)	4.0 (58.0)	Standard: 2.5-5.8 (36.5-84.0) High pressure: 5.8-7.5 (84.0-108.5)
BP ST, IL ST	3.5-4.0 (50.7-58.0)	0+0.5 (0-7.2)		0+0.5 (0-7.2)

In the rare event that the main line pressure **D** is out of the NetaJet™ 4G working range (higher or lower):

- 1) Restore the main line pressure to the original value according to the reference data in the [NetaJet™ 4G Hydraulic Conditions Checklist](#).
- 2) If it is impossible to restore the main line pressure according to the reference data - alter the system calibration according to the actual main line pressure.

The calibration process involves checking the pressure at several points on the NetaJet™ 4G and readjusting the system pressure regime.

Contact your local Netafim™ representative for guidance.

Each mode has between 2 to 3 points to attend to. At each point there is a pressure gauge and a valve (PSV or PRV) to adjust.

A Inlet PRV, **C** Outlet PSV

1. Release the pilot lock-nut.
2. Gently rotate the pilot calibration bolt with a spanner.
3. After completing recalibration of the system, tighten the pilot lock-nut.



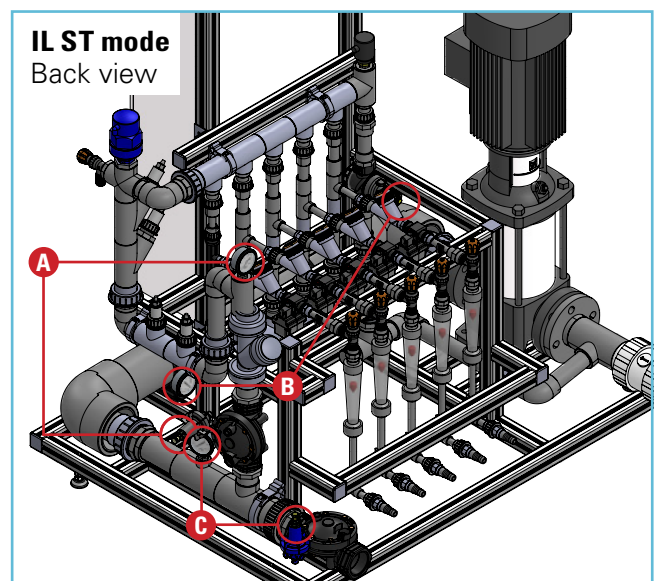
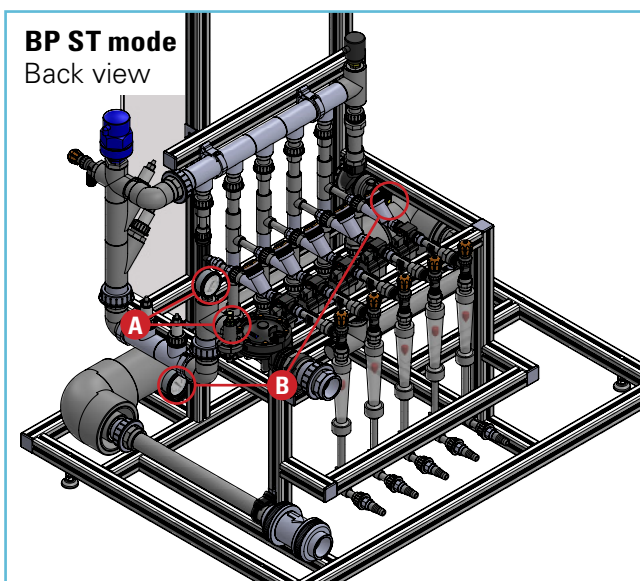
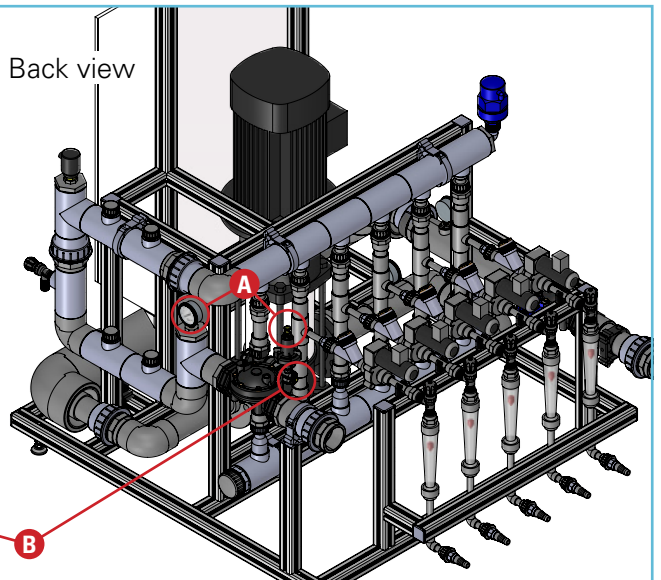
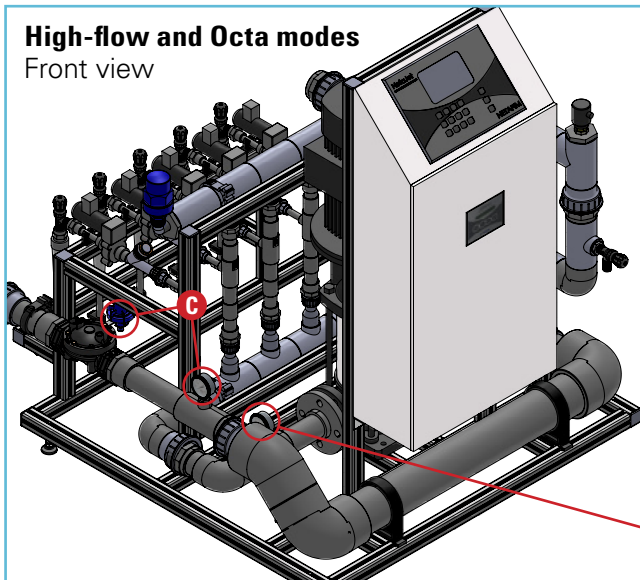
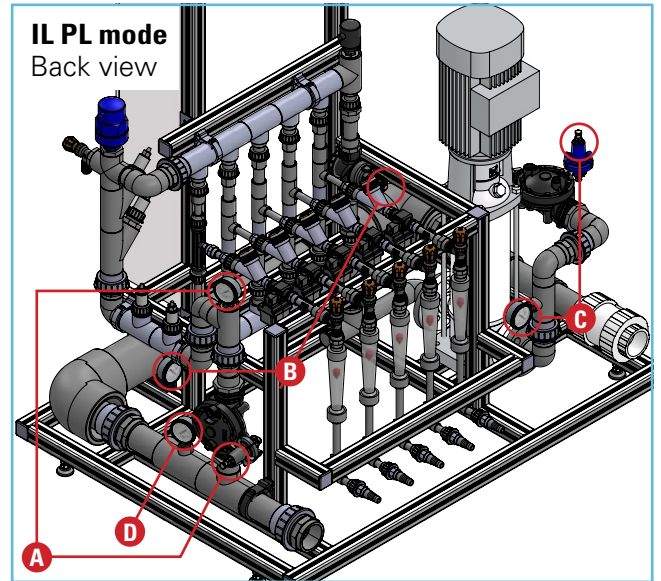
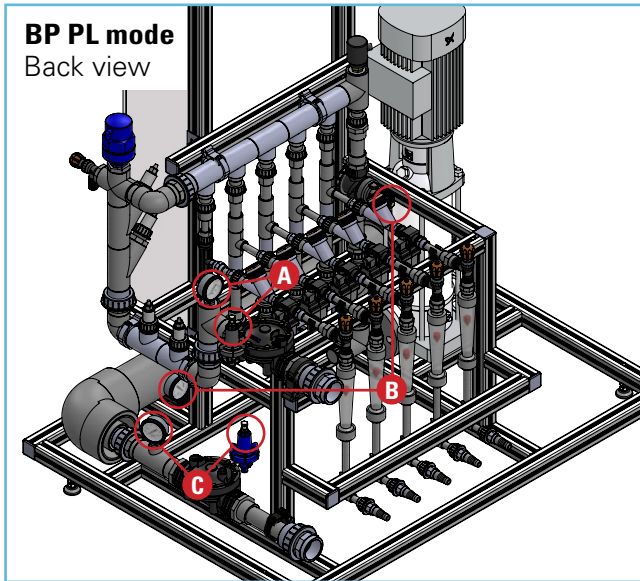
B Lower manifold (compensation channel PRV)

1. Remove the yellow/white cap.
2. Gently rotate the pilot calibration screw with a screwdriver.
3. After completing recalibration of the system, replace the yellow/white cap.



The illustrations on the next page will assist you in locating each calibration-point pressure gauge and valve for each NetaJet™ 4G mode.

SYSTEM CALIBRATION



COMMISSIONING

After completing the calibration process, the NetaJet™ 4G is ready for commissioning.

Familiarize the client with the NetaJet™ 4G, the user manual and the accompanying documents and emphasize the following points:

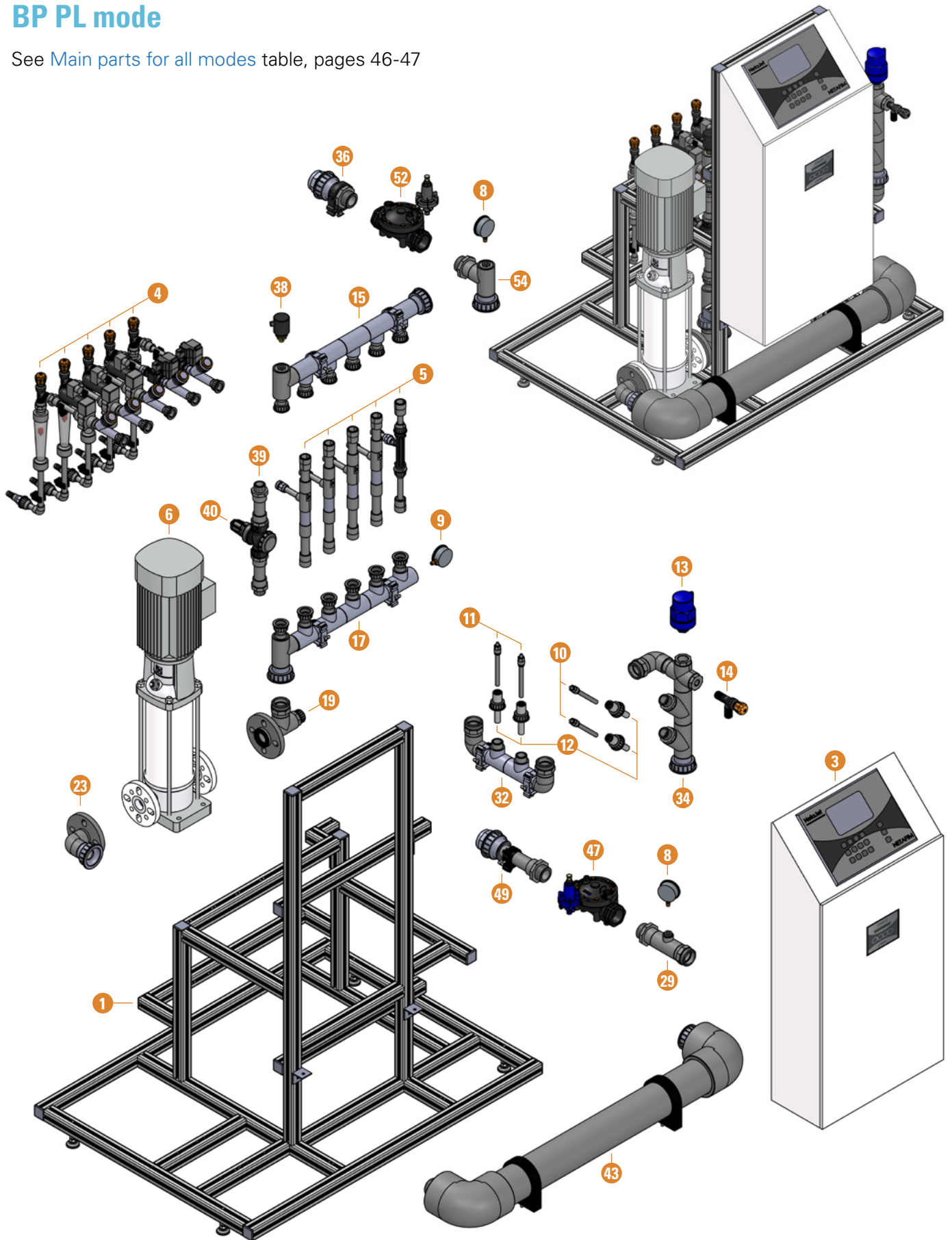
- The importance of following all the safety instructions (see [User Manual](#), page 4).
- The warranty and its restrictions (see [User Manual](#), page 34).
- Dosing calibration - review this chapter with the client and emphasize the importance of thorough knowledge of the processes it describes for the current operation of the NetaJet™ 4G (see [User Manual](#), page 30).
- Proper dissolving of fertilizers for optimal utilization of the dosing channel's capacity (see [User Manual](#), page 30).
- The importance of regular maintenance and its impact on the warranty (see [User Manual](#), page 23).
- The importance of periodic comparison of the hydraulic data with the references in the [NetaJet™ 4G Hydraulic Conditions Checklist](#) (see [User Manual](#), page 23).
- Troubleshooting - review this chapter with the client (see [User Manual](#), page 25).
- Make sure the [NetaJet™ 4G Hydraulic Conditions Checklist](#) has been properly filled.
- Fill out the [NetaJet™ 4G Commissioning Report](#).
- Keep one copy of both documents, give a copy to the client as reference for calibration of the NetaJet™ 4G in the future and send a copy to cmt.support@netafim.com

The User Manual is provided with the NetaJet™ 4G and can be downloaded at <http://www.netafim.com/product-category/multi---channel-injection-automated>

LIST OF PARTS

BP PL mode

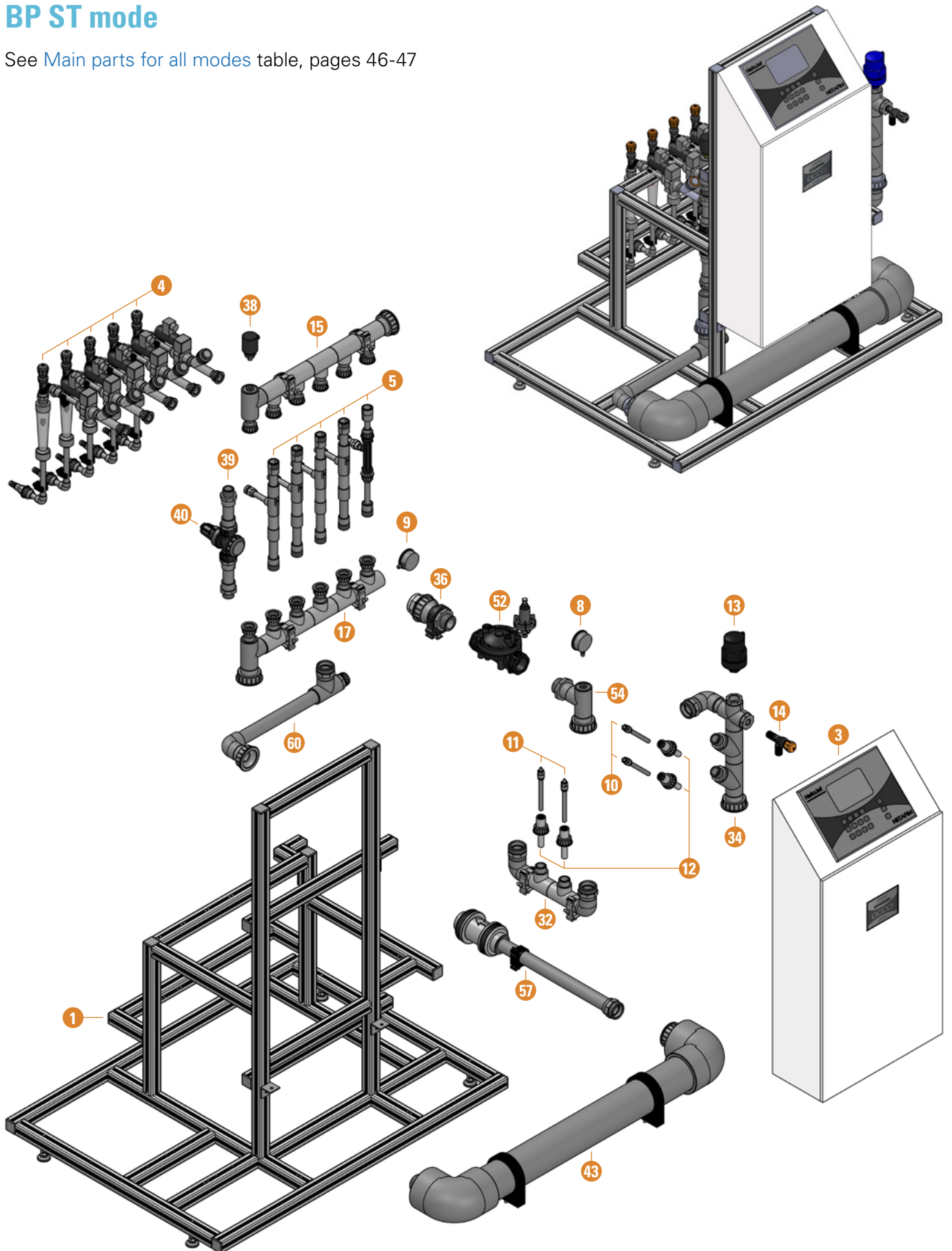
See Main parts for all modes table, pages 46-47



LIST OF PARTS

BP ST mode

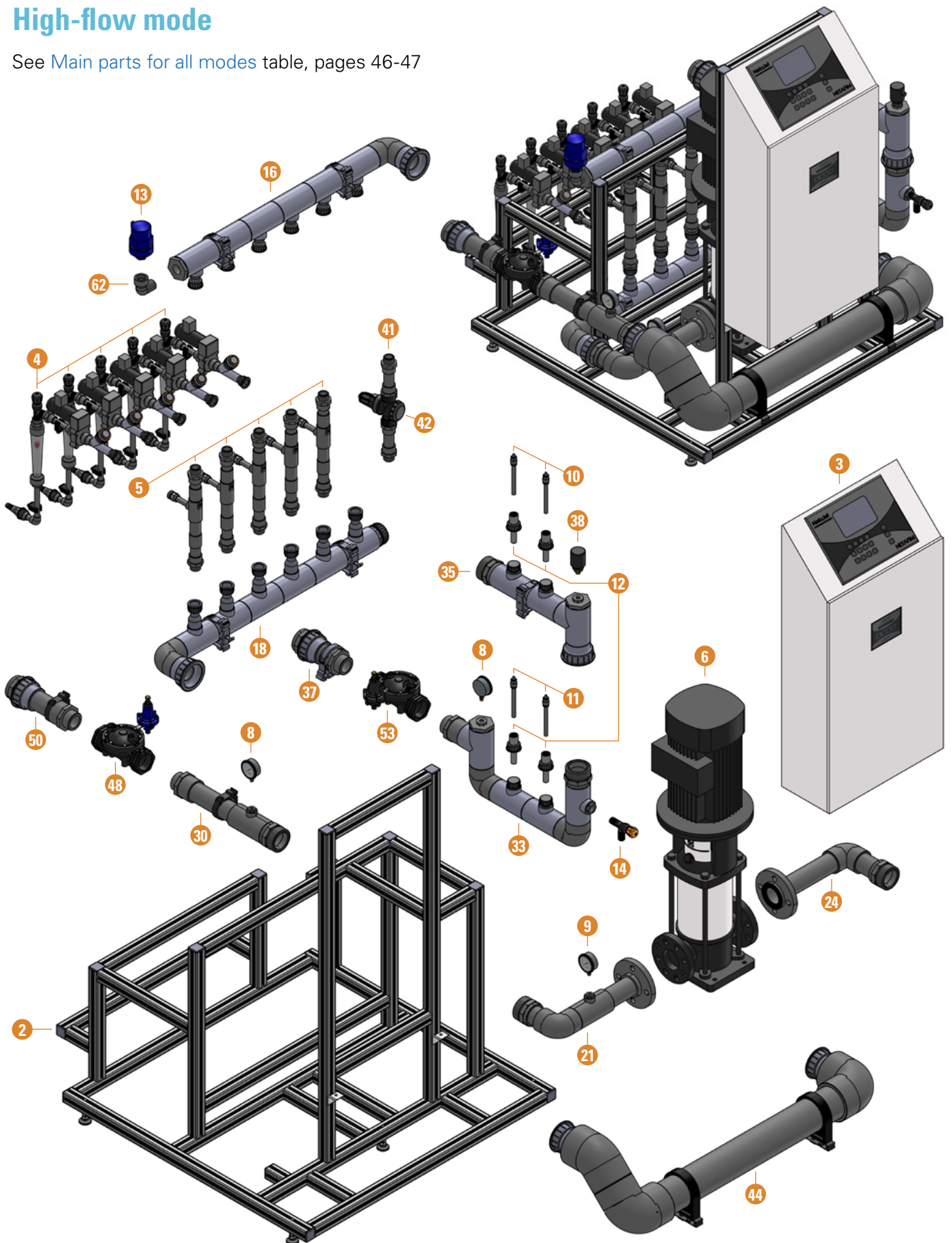
See Main parts for all modes table, pages 46-47



LIST OF PARTS

High-flow mode

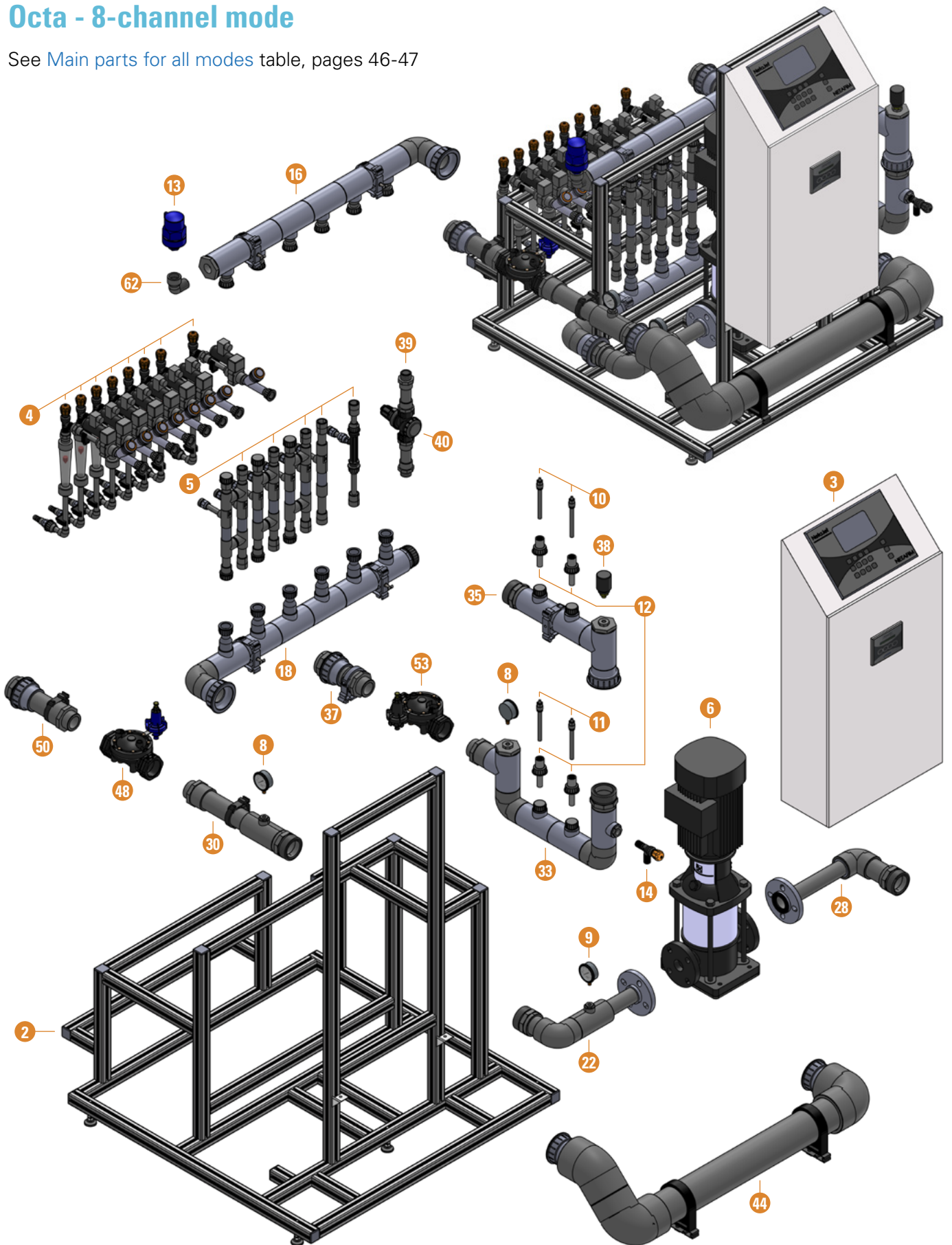
See Main parts for all modes table, pages 46-47



LIST OF PARTS

Octa - 8-channel mode

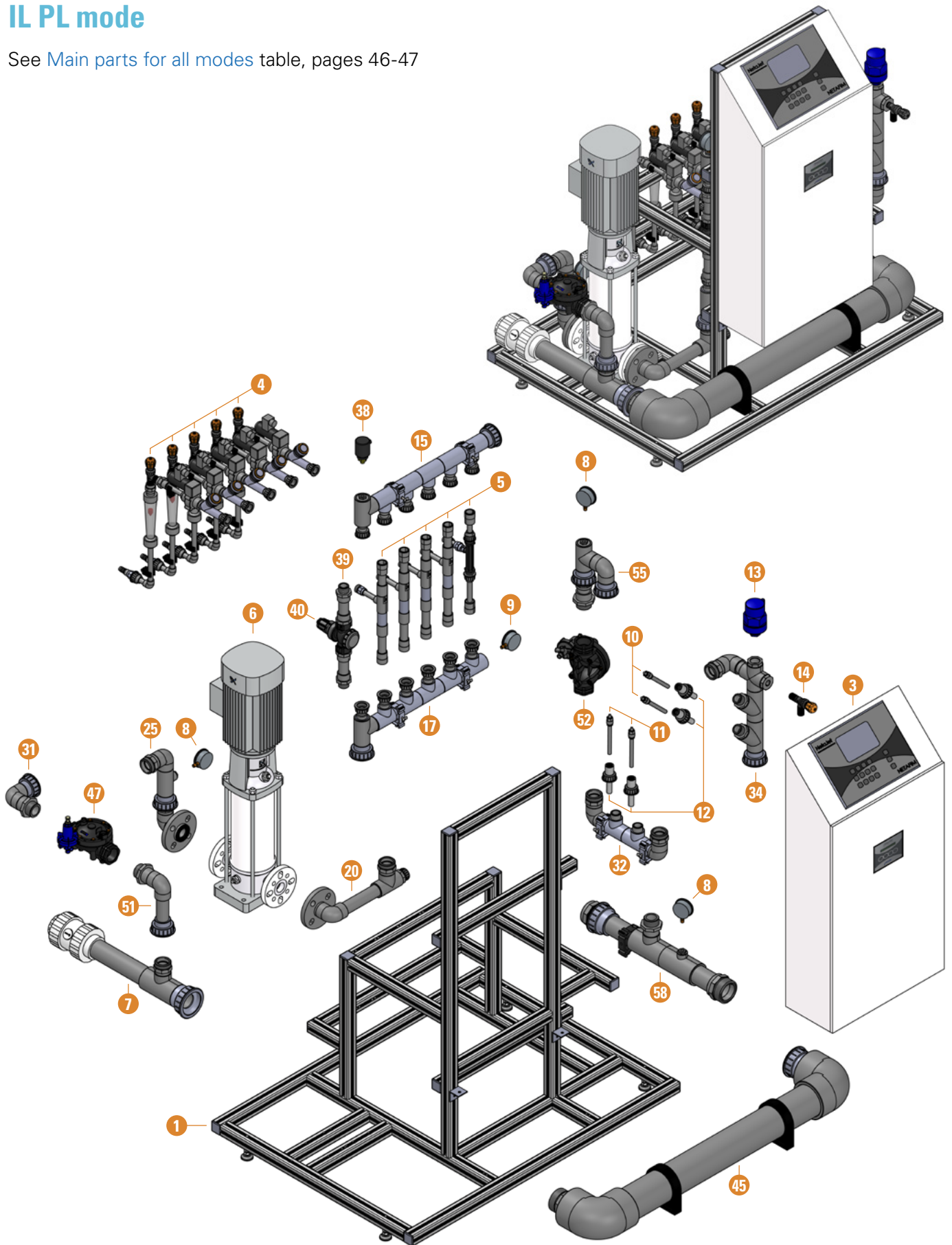
See Main parts for all modes table, pages 46-47



LIST OF PARTS

IL PL mode

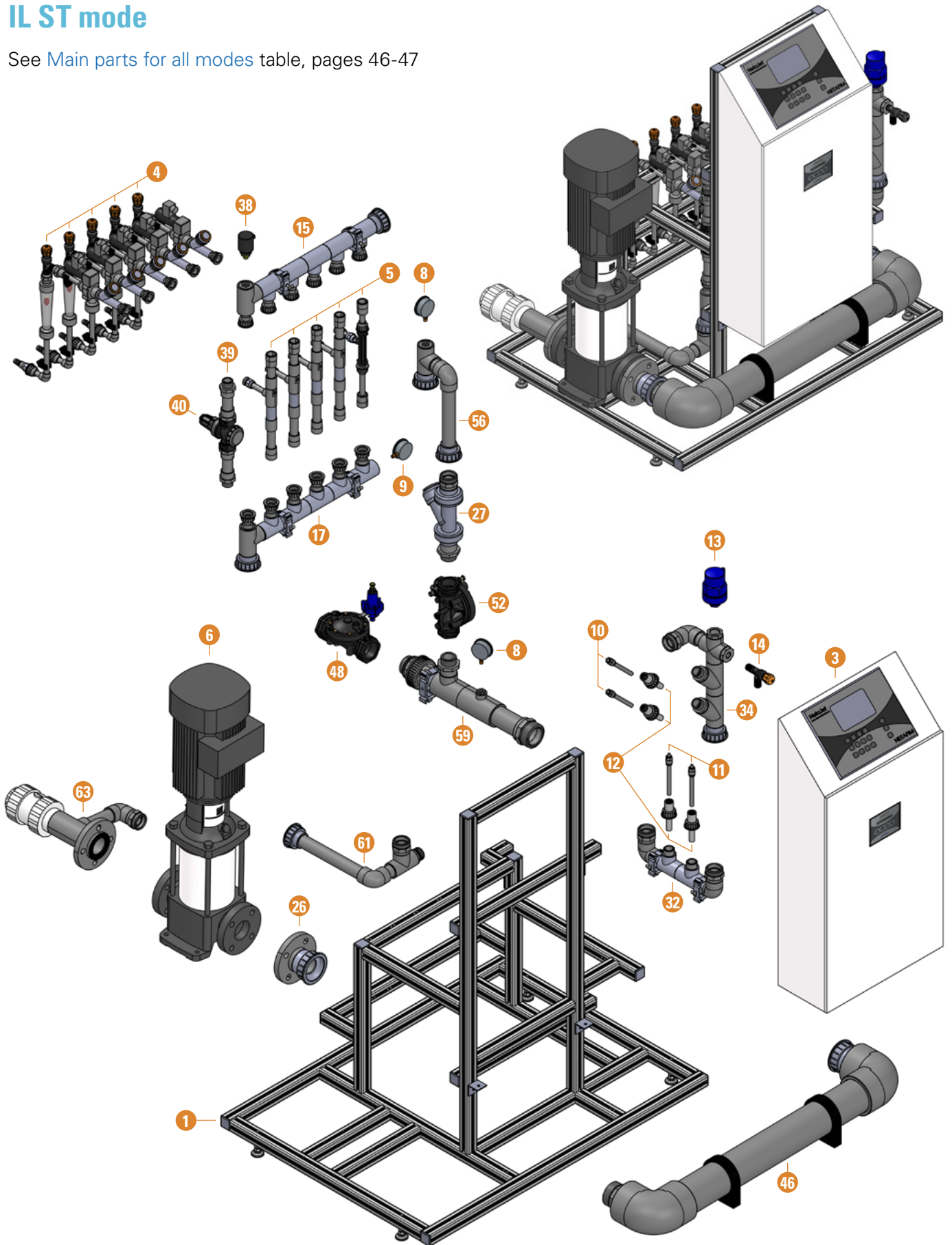
See Main parts for all modes table, pages 46-47



LIST OF PARTS

IL ST mode

See Main parts for all modes table, pages 46-47



LIST OF PARTS

Main parts for all modes

Part	Description	Cat. No.
1	Aluminum frame for BP PL, BP ST, IL PL, IL ST	Not available as spare part
2	Aluminum frame for High-flow, Octa	Not available as spare part
3	Control unit	Per NetaJet™ 4G serial number*
4	Dosing channels	See Dosing channels , page 48
5	Venturis	See Venturis table, page 49
6	Dosing booster	See Dosing boosters , page 50
7	Inlet for IL PL	33152-002010
8	Pressure gauge, 250 GLZ 8 bar ¼" BSP	77540-003350
9	Vacuum gauge, model 250-1-9 ATM ¼" BSP	77540-004151
10	EC sensor, Jumo - 12 mm ,temp. comp. PT 100	45000-006705
11	pH sensor, Jumo - 12 mm, plastic, bared wires	45000-006692
12	Union adaptor set for EC/pH sensor	33140-008500
13	Barak plastic air valve ¾" BSP (DG-010)	70500-000540
14	Needle valve, ½"	76400-011375
15	Upper manifold for BP PL, BP ST, IL PL, IL ST	33152-001520
16	Upper manifold for High-flow, Octa	33152-001070
17	Lower manifold for BP PL, BP ST, IL PL, IL ST	33152-001530
18	Lower manifold for High-flow, Octa	33152-001000
19	Pump inlet for BP PL	33152-001600
20	Pump inlet for IL PL	33152-002020
21	Pump inlet for High-flow	33152-001200
22	Pump inlet for Octa	33152-001300
23	Pump outlet for BP PL	33152-001610
24	Pump outlet for High-flow	33152-001210
25	Pump outlet for IL PL	33152-002030
26	Pump outlet, 50 mm for IL ST with CRI 10 pump	33152-002270
	Pump outlet, 63 mm for IL ST with CRI 15 / CRI 20 pump	33152-002260
27	Strainer for IL ST	33152-002280
28	Pump outlet for Octa	33152-001310
29	PSV inlet for BP PL	33152-001630
30	PSV inlet for High-flow, Octa	33152-001040
31	PSV inlet for IL PL	33152-002040
32	PH manifold for BP PL, BP ST, IL PL, IL ST	33152-001510
33	PH manifold for High-flow, Octa	33152-001060
34	EC manifold for BP PL, BP ST, IL PL, IL ST	33152-001500
35	EC manifold for High-flow, Octa	33152-001010
36	PRV inlet for BP PL, BP ST	33152-001400
37	PRV inlet for High-flow, Octa	33152-001050
38	Pressure switch 1-3 bar 0.3 bar diff. ¼"	77800-002180

Continued on the next page

LIST OF PARTS

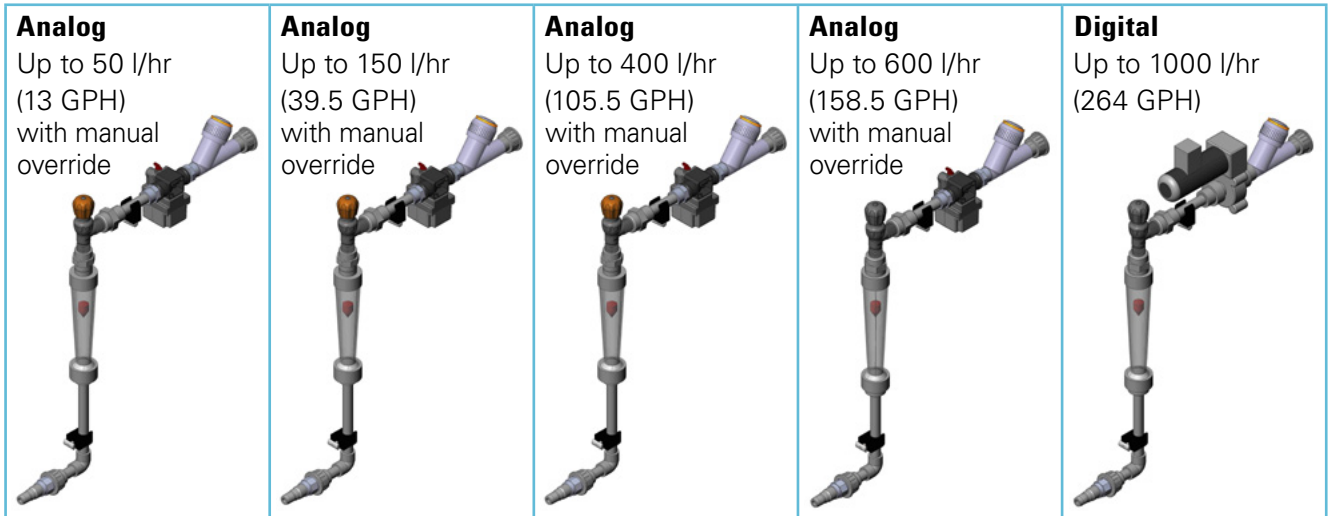
Main parts for all modes (continued)

Part	Description	Cat. No.
39	Low-flow compensation channel set	33240-007000
40	Low-flow 1" PRV P-BSP-FF-A Dir. Act., Yellow cap	71000-016380
41	High-flow compensation channel set	33152-001080
42	High-flow 1" PRV P-SP-FF-B Dir. Act., White cap	71000-016100
43	Mixing chamber for BP PL, BP ST	33152-001700
44	Mixing chamber for High-flow, Octa	33152-001020
45	Mixing chamber for IL PL	33152-002060
46	Mixing chamber for IL ST	33152-002230
47	PSV, 1½" for for BP PL, IL PL	71600-001912
48	PSV, 2" for High-flow, Octa, IL ST	71600-010611
49	PSV outlet for BP PL	33152-001620
50	PSV outlet for High-flow, Octa	33152-001030
51	PSV outlet for IL PL	33152-002050
52	PRV, 1½" for BP PL, BP ST, IL PL, IL ST	71600-001913
53	PRV, 2" for High-flow, Octa	71600-010612
54	PRV outlet for BP PL, BP ST	33152-001410
55	PRV to PH manifold for IL PL	33152-002000
56	PRV to PH manifold for IL ST	33152-002250
57	Outlet for BP ST	33152-001810
58	Outlet for IL PL	33152-002070
59	Outlet for IL ST	33152-002240
60	Outlet from lower manifold for BP ST	33152-001800
61	Outlet from lower manifold for IL ST	33152-002200
	Elbow, 90 deg. 3/4" F x 3/4" M	77300-011400
62	Inlet flange, 50 mm for IL ST with CRI 10 pump	33152-002220
	Inlet flange, 63 mm for IL ST with CRI 15 / CRI 20 pump	33152-002210

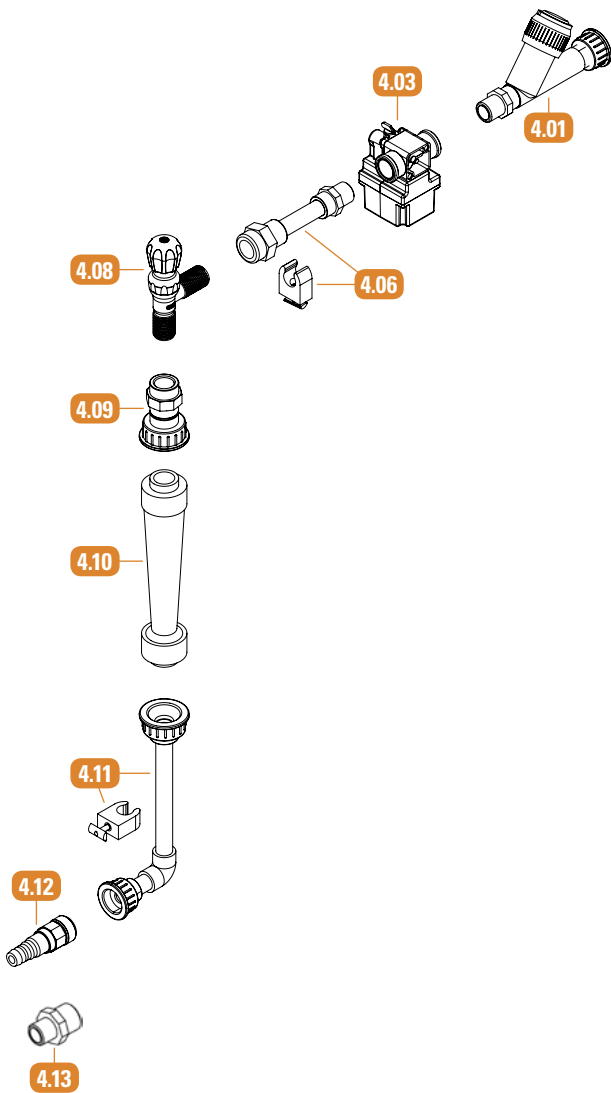
* To order spare parts, call your local Netafim™ local representative the serial number of your NetaJet™ 4G at hand. **Only with this number we can supply the correct part for your specific NetaJet™ 4G.** The serial number is inscribed on the side of the switchbox (3530-_____).

LIST OF PARTS

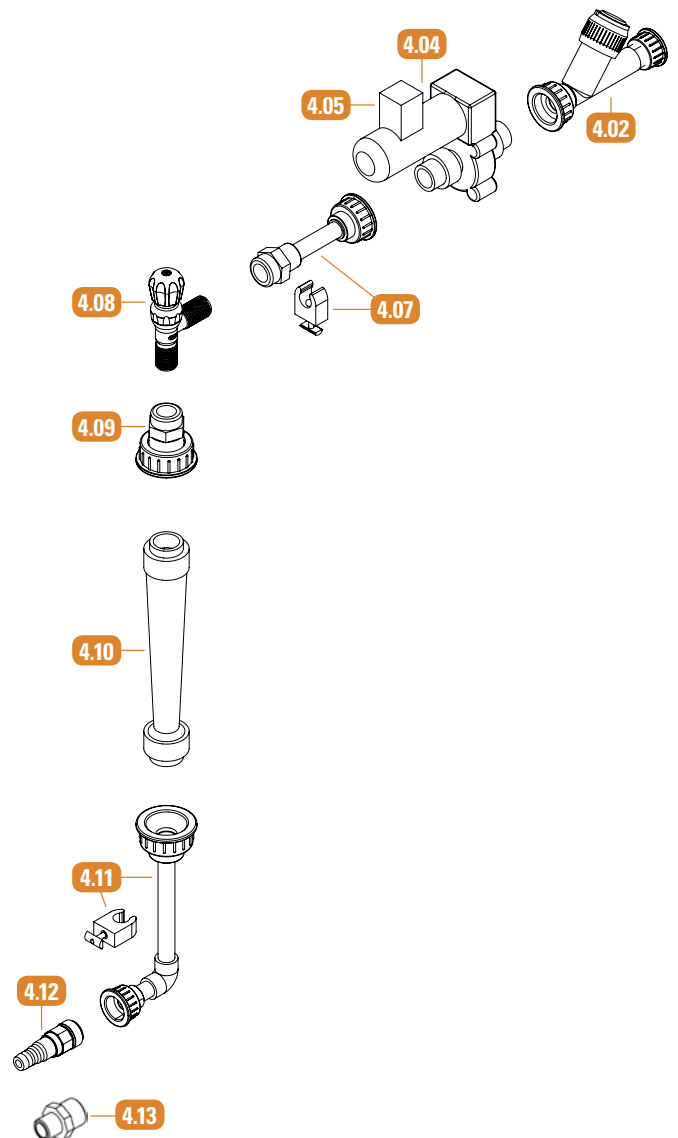
Dosing channels



Analog



Digital

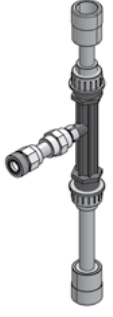
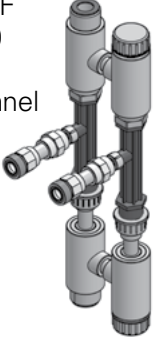
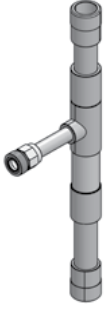
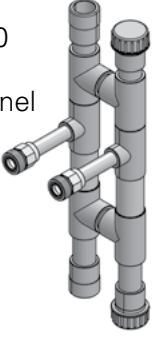
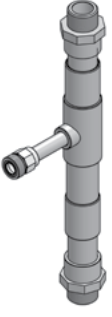


LIST OF PARTS

Dosing channel parts

Part	Description	Cat. No.
4.01	Connection between analog EPDM dosing valve and Venturi with EPDM check valve	33240-004700
	Connection between analog VITON dosing valve and Venturi with VITON check valve	33240-004750
4.02	Connection between S22 digital dosing valve and Venturi with EPDM ISO check valve	33240-004600
4.03	Analog EPDM dosing valve	70800-001795
	Analog VITON dosing valve	70800-001796
4.04	Digital dosing valve, S22 24VAC 50/60 Hz VITON	77540-008500
4.05	Connector and cable for S22 24VAC valve	77540-008520
4.06	Connection between needle valve and analog dosing valve	33240-004650
4.07	Connection between needle valve and S22 ISO dosing valve 1000 l/h (264 GPH)	33240-004450
4.08	Needle valve, 1/2" for 50, 150 and 400 l/h (13, 39.5 and 105.5 GPH) Rotameter	76400-011375
	Needle valve, 1/2" for 600 and 1000 l/h (158.5 and 264 GPH) Rotameter	76400-011376
4.09	Connection between needle valve and DFM170 ISO Rotameter, 50, 150 and 400 l/h (13, 39.5 and 105.5 GPH)	33240-004350
	Connection between needle valve and DFM185 ISO Rotameter, 600 and 1000 l/h (158.5 and 264 GPH)	33240-004400
4.10	Rotameter, DFM170 5-50 l/hr (1.3 - 13 GPH)	77540-007560
	Rotameter, DFM170 15-150 l/hr (4 - 40 GPH)	77540-007575
	Rotameter, DFM170 40-400 l/hr (10.6 - 106 GPH)	77540-007570
	Rotameter, DFM185 60-600 l/hr (15.8 - 158 GPH)	77540-007577
	Rotameter, DFM185 100-1000 l/hr (26.5 - 265 GPH)	77540-007580
4.11	Connection between hoze nozzle and DFM170 ISO Rotameter, 50, 150 and 400 l/h (13, 39.5 and 105.5 GPH)	33240-004250
	Connection between hoze nozzle and DFM185 ISO Rotameter, 600 and 1000 l/h (158.5 and 264 GPH)	33240-004300
4.12	Hoze nozzle for dosing channel	33240-004200
4.13	Nipple, 3/4"-1/2"	77300-010470

Venturis

Part	5.01	5.02	5.03	5.04	5.05
Description	PVDF M50 single channel 	PVDF M50 dual channel 	PVC N600 single channel 	PVC N600 dual channel 	PVC N1000 single channel 
Cat. No.	33240-003200	33152-001315	33240-002370	33152-001320	33240-002390

LIST OF PARTS

Dosing boosters

For 50 Hz installations

Pump	Mode	Mains/ rated voltage (V)	Rated power (kW)	NetaJet™ 4G total rated power (kW)	Rated current (A)	Cat. No.
CRI 5-12	BP/IL PL	3 x 220-240 or 3 x 380-415	2.2	2.35	7.70/4.45	77800-003000
CRI 5-18	BP/IL PL		3	3.15	11.0/6.30	77800-003081
CRI 10-8	Octa / IL ST		3	3.15	11,0/6,30	77800-027410
CRI 20-5	High-flow		5.5	5.65	19,0/11,0	77800-003090
CRI 20-7	High-flow (high P)		7.5	7.65	25.0-24.2/14.4-14.0	77800-003093

For 60 Hz installations

Pump	Mode	Mains/ rated voltage (V)	Rated power (kW)	NetaJet™ 4G total rated power (kW)	Rated current (A)	Cat. No.
CRI 5-7	BP/IL PL	3 x 220-277 or 3 x 380-480	2.2	2.35	7,70-6,35/4,45-3,70	77800-003050
CRI 5-11	BP/IL PL		3	3.15	10,8-9,35/6,20-5,40	Call Netafim™
CRI 10-5	Octa / IL ST		3	3.15	10,8-9,35/6,20-5,40	77800-027420
CRI 20-3	High-flow		5.5	5.65	18,4-16,2/10,6-9,30	77800-003095
CRI 20-4	High-flow (high P)		7.5	7.65	24,6-20,8/14,2-12,0	77800-003097

WARRANTY

Netafim™ warrants all the components of the NetaJet™ 4G 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 NetaJet™ 4G 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.

The above does not apply to EC and pH sensors, since they are wearable. Netafim™ will warrant these items to be free of defects in material and workmanship for 3 months from the date of installation, provided the installation has been reported to Netafim™ within 30 days, or 6 months from date of production if installation was not reported or was reported later than 30 days from the date of installation.



CAUTION

When not installed, the pH sensor must be immersed in KCL solution (supplied with the sensor) or in calibration buffer 4 at a temperature of 18-25°C (64-77°F), protected from freezing and not be exposed to pressure greater than 6 bars (87 PSI).

Damage due to these causes is not covered by the warranty.

This warranty does not extend to repairs, adjustments or replacements of a NetaJet™ 4G 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 Netafim™ supplier.

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 Netafim™).

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