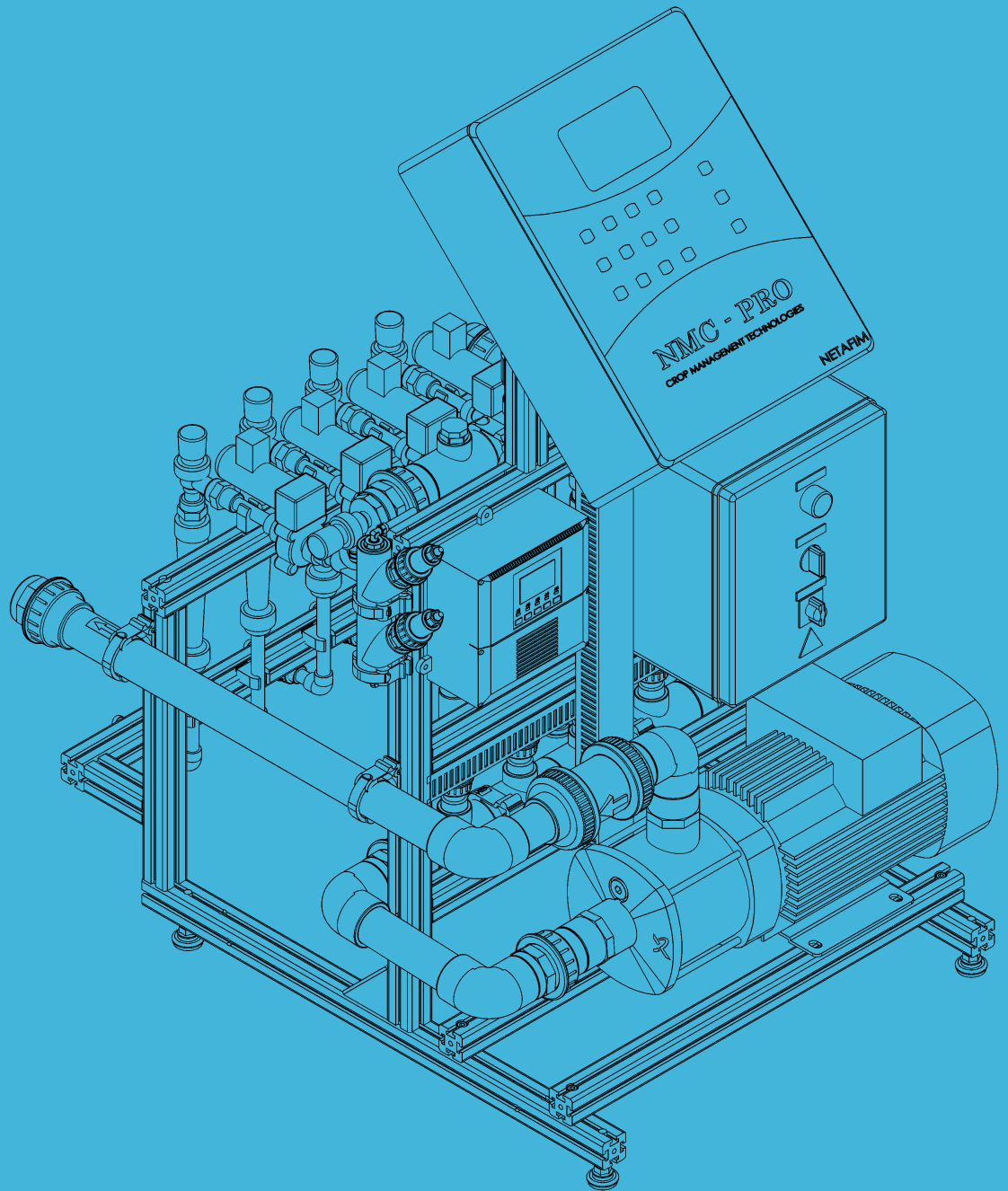


# FERTIKIT 3G

## SALES DOCUMENTATION



## Use of symbols

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 product 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 aspect 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.



### **TIP**

The following text provides clarification, tips or useful information.



### **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.

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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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# THE FERTIKIT 3G

## Description

The FERTIKIT 3G is a fully configurable fertilizer/acid dosing unit - a highly cost-effective solution for precise Nutrigation™.

Based on a standard platform, the FERTIKIT offers 4 different operation modes, selectable according to the site conditions, in order to maximize usage of available water flow rate and pressure on the main irrigation line, ensuring the highest efficiency with minimum investment.

The FERTIKIT can accommodate a variety of dosing channels, dosing boosters, controllers, peripherals and accessories to meet a vast range of applications and infrastructure constraints.

## Advantages

- A modular Nutrigation™ system for soil or substrate applications with minimum investment
- Efficient usage of water, fertilizers and energy
- Unrivaled range of irrigation water capacities
- Designed for any application where quantitative or proportional Nutrigation™ is required
- Highly profitable price/performance ratio
- Venturi operating principle - no moving parts
- Fits easily into any existing irrigation system
- Precise Nutrigation™ based on high-accuracy dosing channels
- Quick action dosing valves
- Available with up to 6 fertilizer/acid dosing channels
- Nutrigation™ recipes can be changed quickly and efficiently
- Can be operated manually or fully computerized
- NMC and other controllers can be assembled on the FERTIKIT for advanced Nutrigation™ control
- A wide variety of accessories and peripherals can be integrated into the FERTIKIT to enhance its functions
- High-quality components and PVC pipe work
- Aluminum, corrosion-resistant frame with adjustable legs
- Easy to install and to maintain
- Made by Netafim

## Specifications

### Capacity range

The FERTIKIT ensures a satisfactory mixture in an extremely vast range of flow capacities.

Examples:

It will accommodate a 0.1 Ha (0.25 Acres) nursery or a 400 Ha (1000 Acres) sugar cane plantation.

To select a specific flow capacity consult the [Selecting a FERTIKIT](#) chapter, page 10.

### Fertilizer dosing capacity

The FERTIKIT's basic platform accommodates up to 6 dosing channels of various types:

- 50 l/hr (13 GPH)
- 150 l/hr (40 GPH)
- 400 l/hr (106 GPH)
- 600 l/hr (158 GPH)
- 1000 l/hr (265 GPH)

\* For applications requiring more than 6 dosing channels - consult netafim.

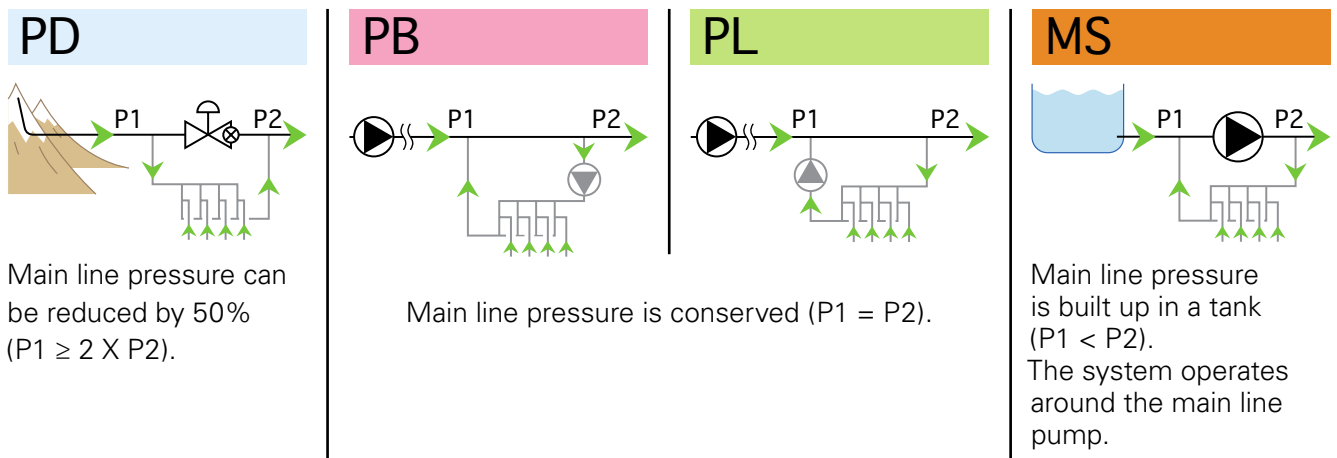
# THE FERTIKIT 3G

## Main line pressure range and conditions

Typical main line pressure ranges and conditions, by mode:

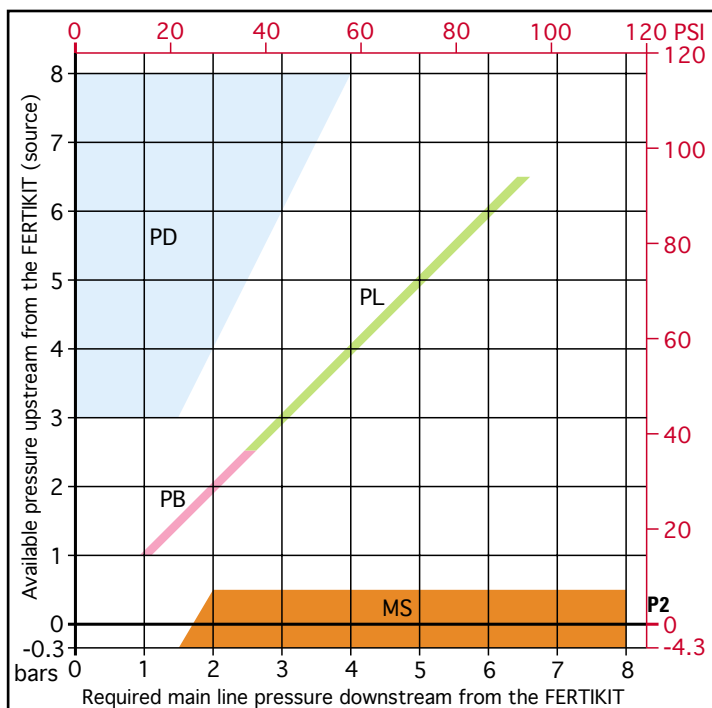
- PD** - For applications where there is sufficient pressure differentiation on the main line between the source pressure and the required pressure downstream from the FERTIKIT.
- PL** - For applications where the main line pressure is between 2.5 and 6.5 bars (36-94 PSI) and sufficient for irrigation with no excess.
- PB** - For applications where the main line pressure is between 1 and 2.5 bars (14.5-36 PSI) and sufficient for irrigation with no excess.
- MS** - For applications where the pressure downstream the main line pump is between 1.5 and 8 bars (22-116 PSI).

## Mode selection diagram

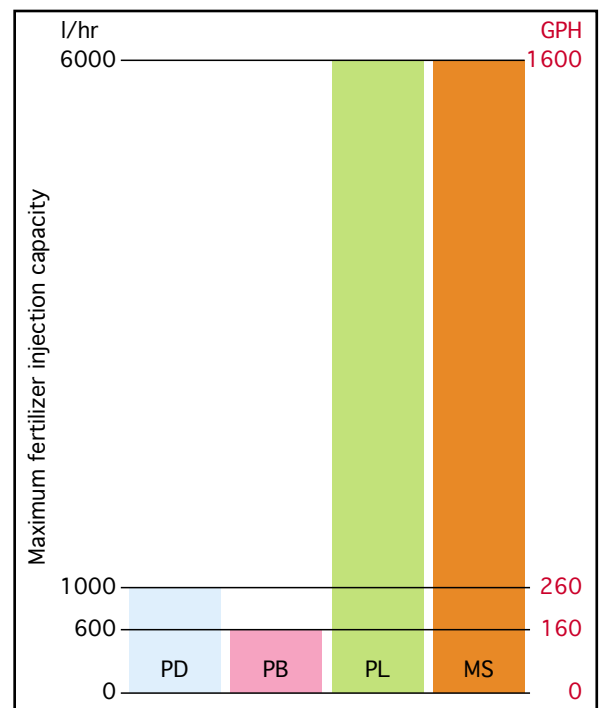


P1 = Available pressure    P2 = Required pressure

## Operational pressure range (Chart 1)



## Fertilizer injection capacity (Chart 2)



# THE FERTIKIT 3G

## Basic functions

The FERTIKIT supports the following Nutrigation™ functions:

- Fully controlled dosing and mixing of fertilizers/acid with source water into a homogenous nutrient solution.
- EC/pH correction of the nutrient solution.
- Water pre-treatment

## Operating principle

The FERTIKIT doses the various fertilizers and acid into a homogeneous solution 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 FERTIKIT's dosing booster.

## Modularity

The modular FERTIKIT 3G concept is based upon an array of interchangeable components that enables rapid assembly of a wide range of configurations.

Each FERTIKIT is delivered according to the precise customer's order, either fully factory assembled or assembled by the local dealer.

The dealer stocks the assortment of the FERTIKIT interchangeable components.

This concept enables the dealer to assemble any specific FERTIKIT according to the customer's order, saving the need to stock a large quantity of fully assembled FERTIKITs of various common configurations.

The modular FERTIKIT 3G concept ensures prompt delivery schedules without delays!

## Service

Servicing the FERTIKIT 3G is a prompt and simple process. The dealer keeps a small quantity of interchangeable components on hand, for replacement on site within a few minutes.

## Maintenance

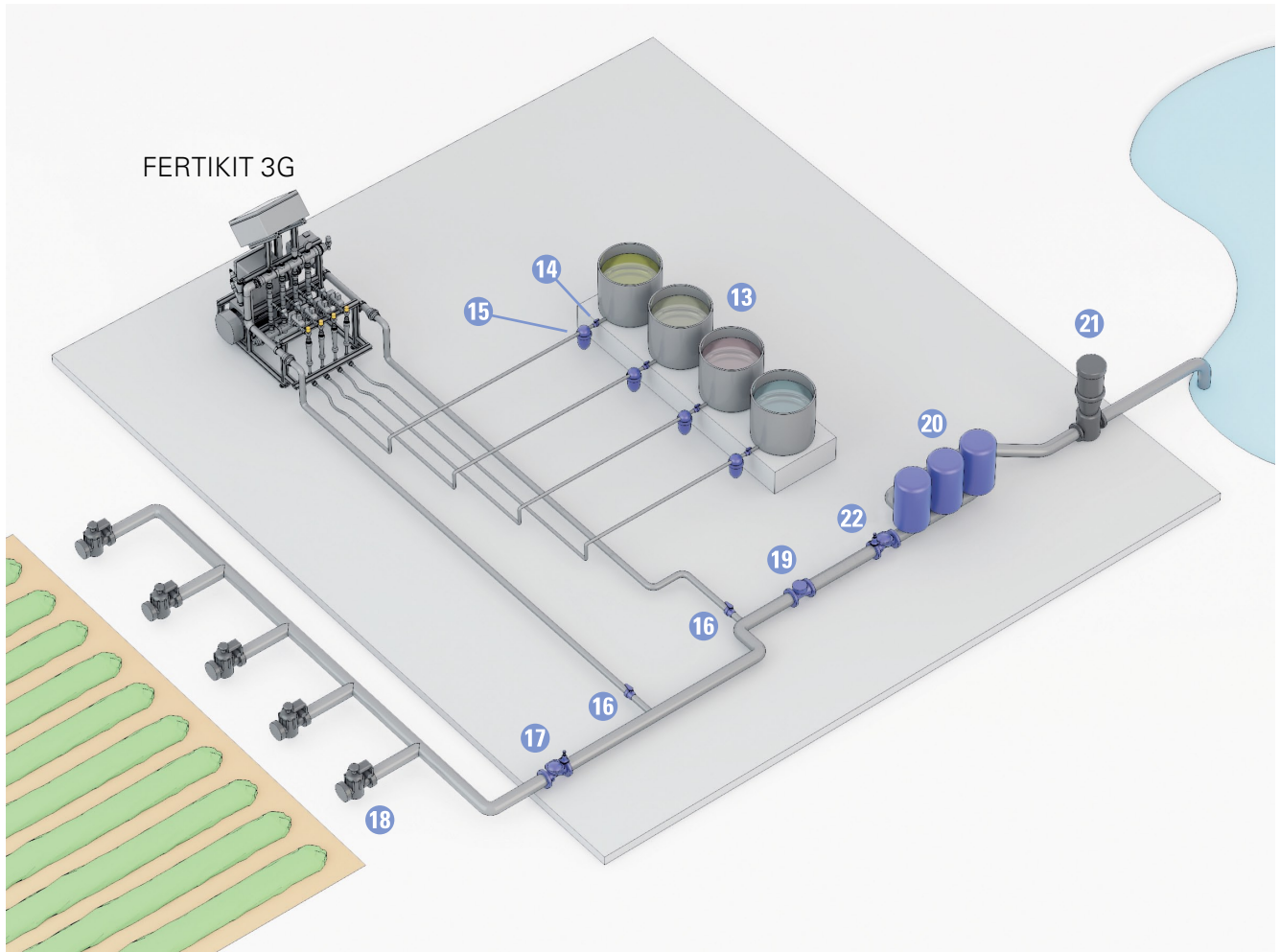
To prevent failures and extend the life cycle of the FERTIKIT, regular maintenance must be carried out by the user, such as periodic rinsing of filters and calibration of the EC/pH sensors. For full maintenance instructions, see [Maintenance](#) in the [User Manual](#).

# THE FERTIKIT 3G

## Typical installation overview

The drawing below represents the infrastructure suitable for the **PB** and **PL** modes.

The infrastructure for the **PD** and **MS** modes is slightly different (see [Installation requirements](#), page 22)



- 13 Fertilizer/acid stock tank
- 14 Manual valve (fertilizer)
- 15 Fertilizer/acid filter
- 16 Manual valve (isolation)

- 17 Pressure sustaining valve
- 18 Irrigation valve
- 19 Water meter
- 20 Main line filter

- 21 Main line pump
- 22 Pressure reducing valve



# THE FERTIKIT 3G

## Add-ons

The FERTIKIT functionality can be extended by means of the many add-ons offering a wide variety of useful functions. All the add-ons are easy to connect to the FERTIKIT - here are a few examples:

### **Fertilizer meter**

Enables continuous reading of fertilizer dosing. Useful in applications where EC/pH control is not performed.

### **Anti-siphon valve**

Prevents gravitational flow of fertilizers to the main line when the system is idle.

### **Head control**

A kit consisting of a water filter, a water meter and a main valve - installable on the main line, providing assigned connectors to the FERTIKIT's inlet and outlet, and assuring full integration with the FERTIKIT.

### **Stock selection**

Enables the dosing of multiple fertilizers through a single dosing channel (in cases they where simultaneous dosing is not required).

Available in a wide variety of configurations, from a single dosing channel with 2 fertilizers to as many dosing channels and fertilizers as required.

For further information on the FERTIKIT add-ons, consult Netafim.

# SELECTING A FERTIKIT

## Introduction

The FERTIKIT 3G can be incorporated in an existing or a planned project; in either case it offers a highly cost-effective solution for Nutrigation™ by taking maximum advantage of the infrastructure conditions. Any available pressure surplus can be used for the FERTIKIT's operation. In order to configure the most cost-effective FERTIKIT, making the maximum use of available pressure, follow the steps below.



### ATTENTION

Calculations are either in metric or in US units - consistency in the type of units used is essential.



### ATTENTION

Each mode can accommodate a specific range of Venturis - see [Venturis table](#), page 17.

## Hydraulic infrastructure

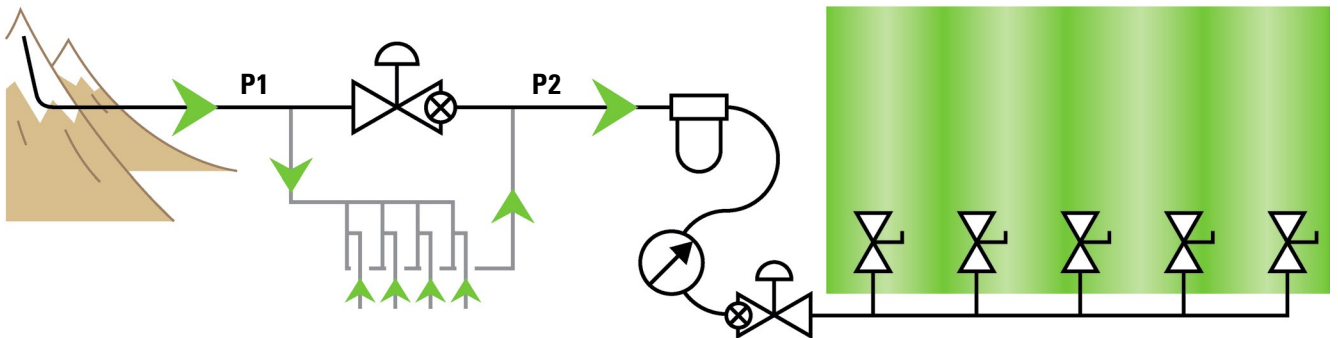
There are three basic types of hydraulic infrastructure.

Identify the type of hydraulic infrastructure and select the appropriate mode of FERTIKIT:

### Type 1 - With main line pressure excess

- There is sufficient pressure differentiation on the main line between the source pressure and the required pressure downstream from the FERTIKIT.
- The pressure upstream from the PRV is at least twice the pressure downstream from the PRV ( $P1 \geq 2 \times P2$ ).

If these conditions are met - select the **PD** mode and save the cost of a dosing booster and its operating expenses. If not - proceed to type 2 below.



### Type 2 - No pressure excess on the main line

- The maximum main line pressure is between 1 and 6.5 bars (14.5-94 PSI)
- Main line pressure is sufficient for irrigation.
- No main line pressure excess for the operation of the Venturis.
- You tried the other types of hydraulic infrastructure, but they failed to meet the conditions for selecting the corresponding mode.

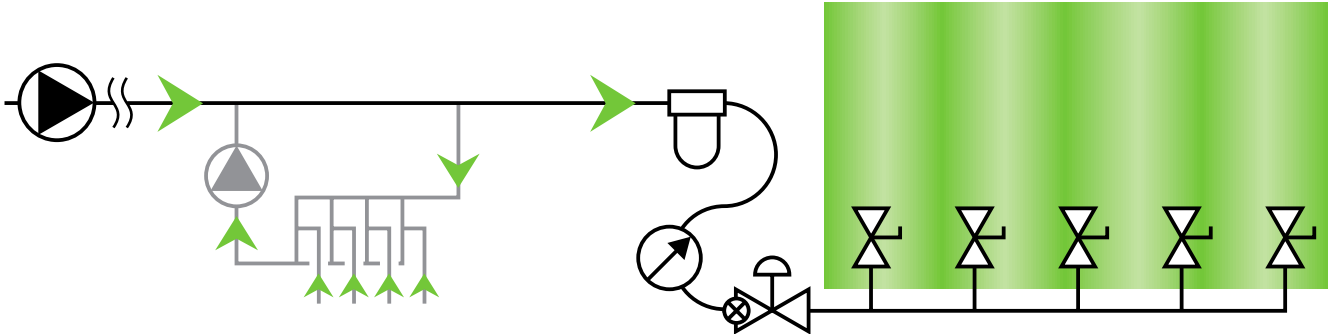


### ATTENTION

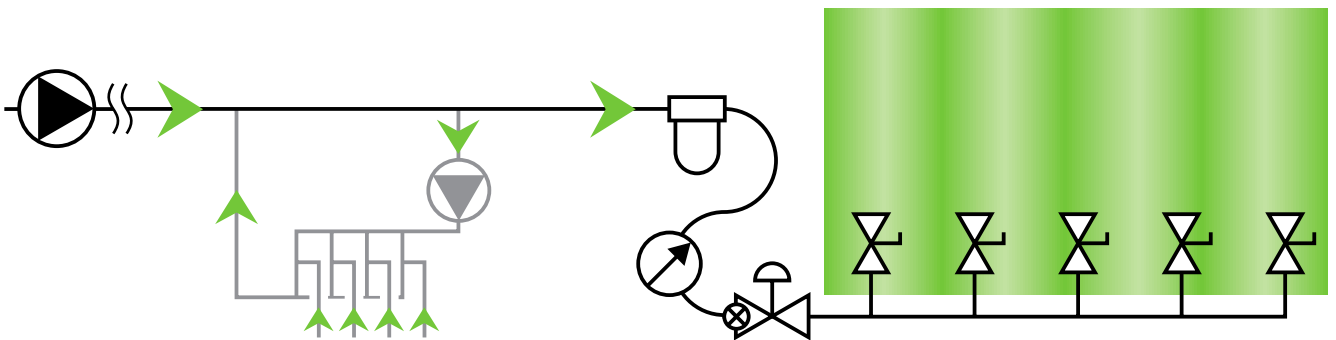
If the pressure on the main line is under 1 bar (14.5 PSI) or over 6.5 bars (94 PSI), or if the maximum pressure on the main line is under 2.5 bars (36 PSI) and your installation requires 1000 l/hr (265 GPH) Venturis, consult Netafim.

# SELECTING A FERTIKIT

- If the pressure on the main line is between 2.5 and 6.5 bars (36-94 PSI), select the **PL** mode.



- If the pressure on the main line is between 1 and 2.5 bars (14.5-36 PSI), select the **PB** mode.



## Type 3 - With main line pump flow surplus

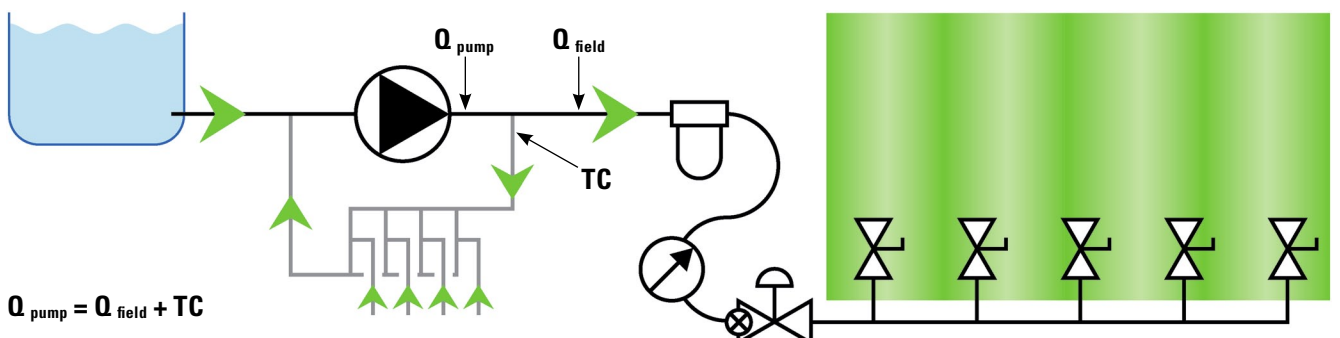
- There is a pump on the main line.
- It is possible to connect the FERTIKIT's outlet upstream from the main line pump.
- The main line pump capacity  $\geq$  flow rate required for the field + TC (total consumption of the FERTIKIT).



### WARNING

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

If these conditions are met - select the **MS** mode and save the cost of a dosing booster and its operating expenses. If not - proceed to type 2 above.

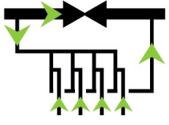


$$Q_{pump} = Q_{field} + TC$$

# SELECTING A FERTIKIT

## Modes

### PD



For applications where there is sufficient pressure differentiation on the main line between the source pressure and the required pressure downstream from the FERTIKIT.

Applicable also in cases where there is no electricity on the site.

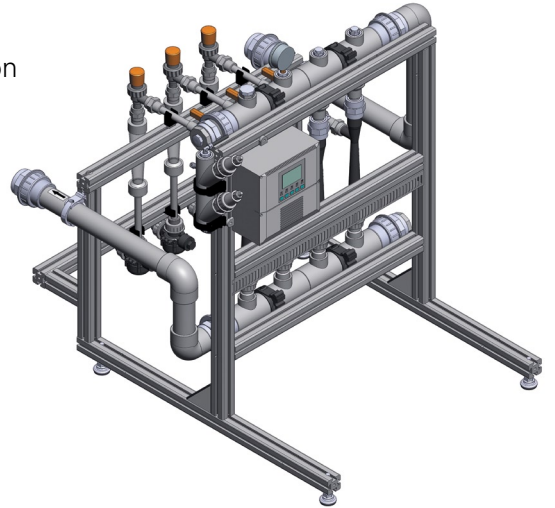
Can be controlled by a DC latch controller, fed by a 12 VDC battery with a solar panel.

Saves the need for a dosing booster.

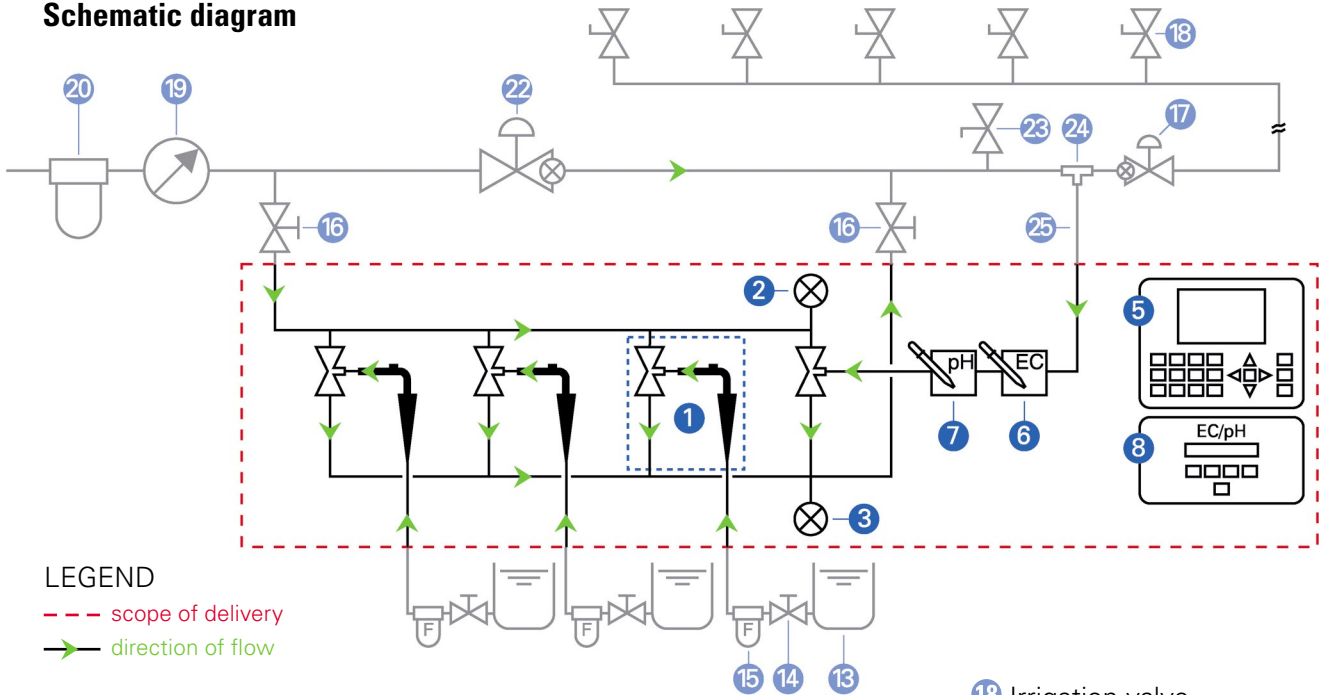
Total fertilizer/acid suction capacity - up to 1000 l/hr (265 GPH)

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

Up to 4 dosing channels, from 50 l/hr (13 GPH) each, up to 250 l/hr (66 GPH) each.



### Schematic diagram



#### LEGEND

- scope of delivery
- direction of flow

- 1** Dosing channel + Venturi
- 2** Upper manifold pressure gauge
- 3** Lower manifold pressure gauge
- 5** Controller
- 6** EC sensor
- 7** pH sensor

- 8** EC/pH transducer
- 13** Fertilizer/acid stock tank
- 14** Manual valve (fertilizer)
- 15** Fertilizer/acid filter
- 16** Manual valve (isolation)
- 17** Pressure sustaining valve

- 18** Irrigation valve
- 19** Water meter
- 20** Main line filter
- 22** Pressure reducing valve
- 23** Sampling valve
- 24** Saddle fitting
- 25** Command tube

# SELECTING A FERTIKIT

## PL



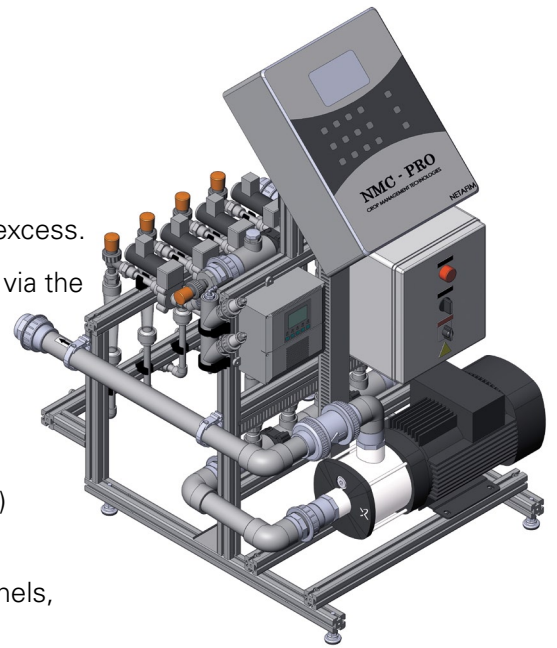
For applications where the main line pressure is between 2.5 and 6.5 bars (36-94 PSI) and is sufficient for irrigation with no excess.

The pressure differentiation required to generate fertilizer suction via the Venturis is produced by a suction pump integrated in the Fertikit.

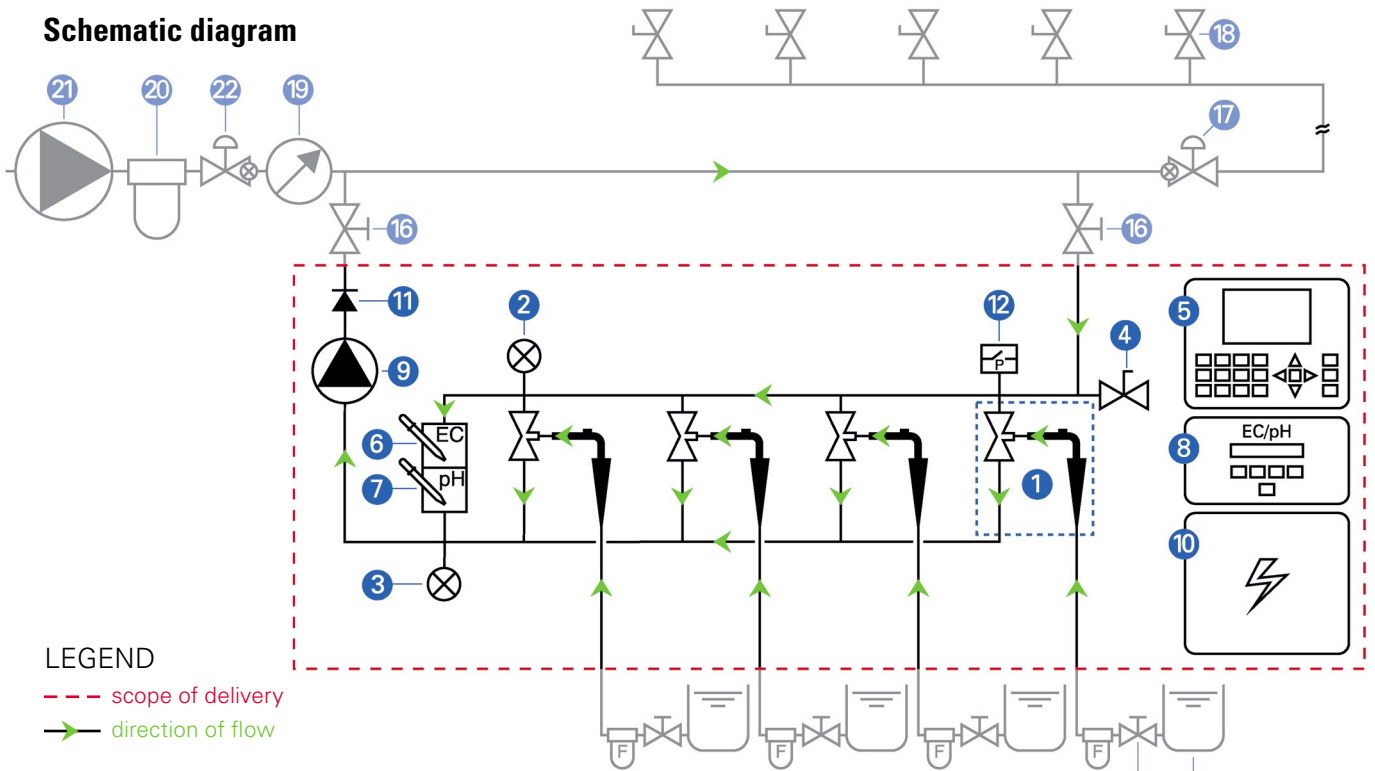
This mode of operation, where the lower manifold is under low pressure (around 0 bar), permits the use of high-efficiency Venturis with high suction capacity and low consumption.

Total fertilizer/acid suction capacity - up to 6000 l/hr (1585 GPH)

Accommodates a wide variety of dosing channels for fertilizer and concentrated/diluted acid: Up to 6 dosing channels, from 50 l/hr (13 GPH) each, up to 1000 l/hr (265 GPH) each.



## Schematic diagram



## LEGEND

--- scope of delivery  
 → direction of flow

- |                                 |                               |                              |
|---------------------------------|-------------------------------|------------------------------|
| 1 Dosing channel + Venturi      | 9 Dosing booster              | 16 Manual valve (isolation)  |
| 2 Upper manifold pressure gauge | 10 Dosing booster switchbox   | 17 Pressure sustaining valve |
| 3 Lower manifold pressure gauge | 11 Check valve                | 18 Irrigation valve          |
| 4 Sampling valve                | 12 Pressure switch            | 19 Water meter               |
| 5 Controller                    | 13 Fertilizer/acid stock tank | 20 Main line filter          |
| 6 EC sensor                     | 14 Manual valve (fertilizer)  | 21 Main line pump            |
| 7 pH sensor                     | 15 Fertilizer/acid filter     | 22 Pressure reducing valve   |
| 8 EC/pH transducer              |                               |                              |

# SELECTING A FERTIKIT

## PB



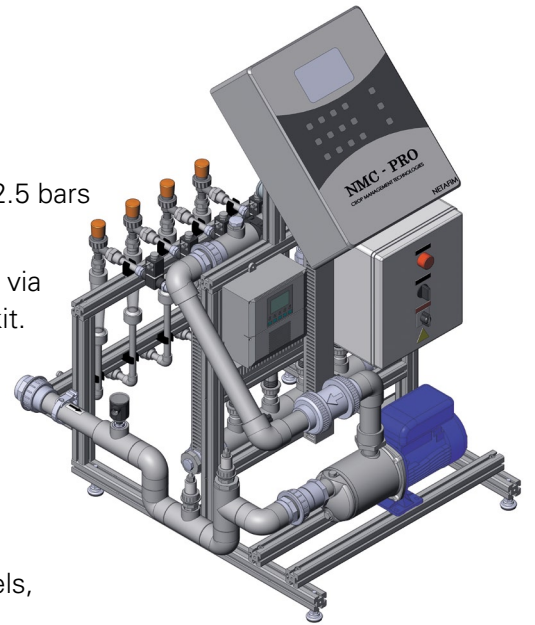
For applications where the main line pressure is between 1 and 2.5 bars (14.5-36 PSI) and is sufficient for irrigation with no excess.

The pressure differentiation required to generate fertilizer suction via the Venturis is produced by a boost pump integrated in the Fertikit.

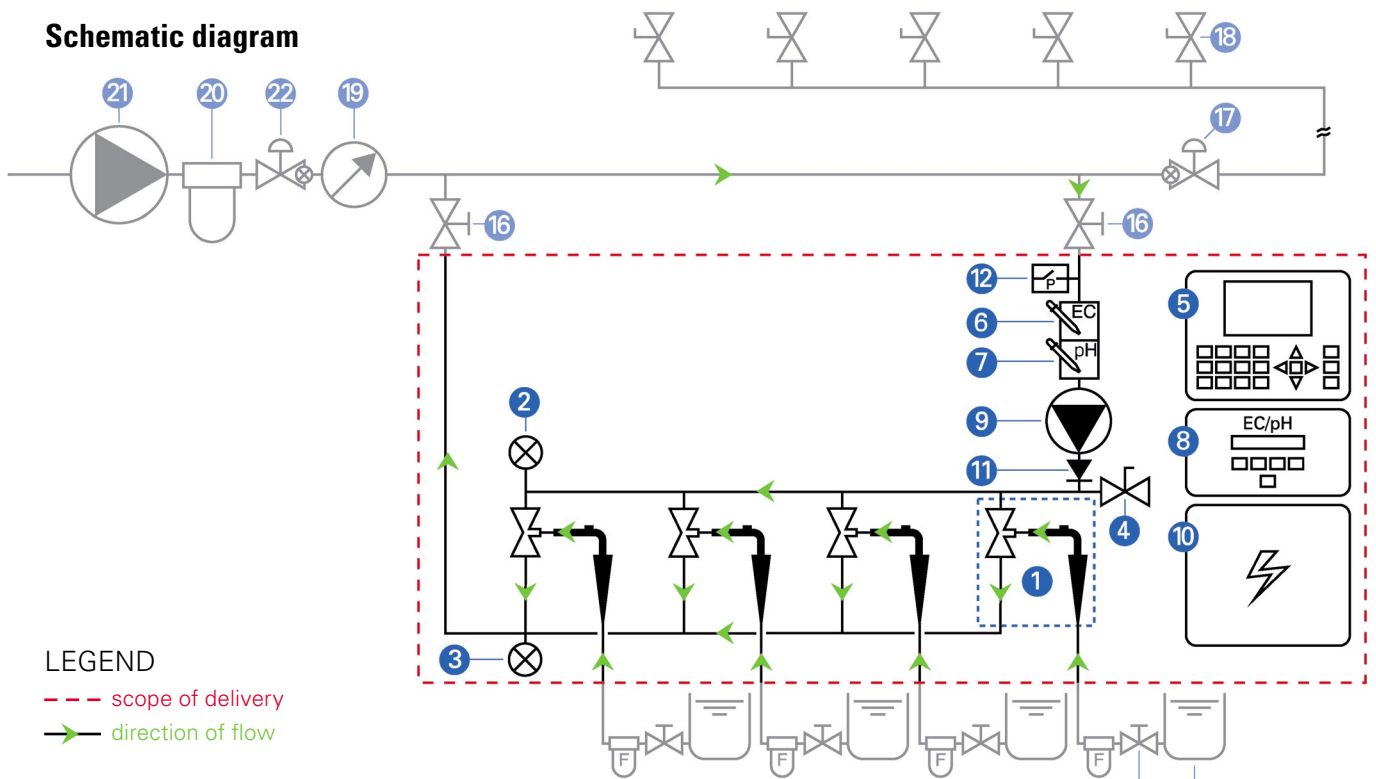
This mode of operation, where the system pump is installed upstream from the Venturis, permits the use of a smaller pump, reducing the investment required and saving energy.

Total fertilizer/acid suction capacity - up to 600 l/hr (158 GPH)

Accommodates a wide variety of dosing channels for fertilizer and concentrated/diluted acid: Up to 4 dosing channels, from 50 l/hr (13 GPH) each, up to 150 l/hr (40 GPH) each.



### Schematic diagram



### LEGEND

- scope of delivery
- direction of flow

- |                                 |                              |                              |
|---------------------------------|------------------------------|------------------------------|
| ① Dosing channel + Venturi      | ⑨ Dosing booster             | ⑬ Fertilizer/acid stock tank |
| ② Upper manifold pressure gauge | ⑩ Dosing booster switchbox   | ⑭ Manual valve (fertilizer)  |
| ③ Lower manifold pressure gauge | ⑪ Check valve                | ⑮ Fertilizer/acid filter     |
| ④ Sampling valve                | ⑫ Pressure switch            | ⑯ Irrigation valve           |
| ⑤ Controller                    | ⑬ Fertilizer/acid stock tank | ⑰ Pressure sustaining valve  |
| ⑥ EC sensor                     | ⑭ Manual valve (fertilizer)  | ⑱ Water meter                |
| ⑦ pH sensor                     | ⑮ Fertilizer/acid filter     | ⑲ Main line filter           |
| ⑧ EC/pH transducer              | ⑯ Irrigation valve           | ⑳ Pressure reducing valve    |
|                                 | ⑰ Pressure sustaining valve  |                              |
|                                 | ⑱ Water meter                |                              |
|                                 | ⑲ Main line filter           |                              |
|                                 | ⑳ Pressure reducing valve    |                              |



# SELECTING A FERTIKIT

## MS



For applications where there is a pump on the main line and it is possible to connect to the main line upstream from the pump.

Saves the need for a dosing booster.

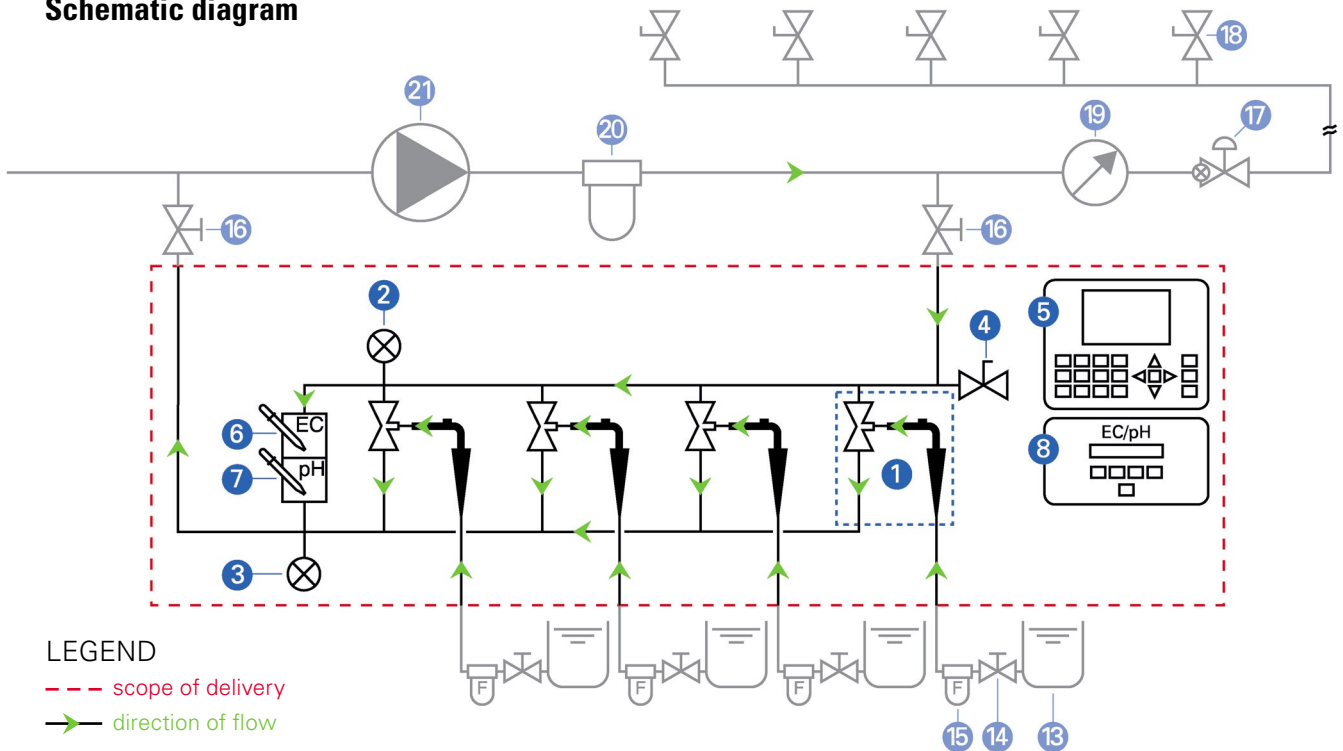
Total fertilizer/acid suction capacity - up to 6000 l/hr (1585 GPH)

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

Up to 6 dosing channels, from 50 l/hr (13 GPH) each, up to 1000 l/hr (265 GPH) each.



## Schematic diagram



### LEGEND

--- scope of delivery  
 → direction of flow

- |                                 |                              |                             |
|---------------------------------|------------------------------|-----------------------------|
| ① Dosing channel + Venturi      | ⑦ pH sensor                  | ⑰ Pressure sustaining valve |
| ② Upper manifold pressure gauge | ⑧ EC/pH transducer           | ⑱ Irrigation valve          |
| ③ Lower manifold pressure gauge | ⑬ Fertilizer/acid stock tank | ⑲ Water meter               |
| ④ Sampling valve                | ⑭ Manual valve (fertilizer)  | ⑳ Main line filter          |
| ⑤ Controller                    | ⑮ Fertilizer/acid filter     | ㉑ Main line pump            |
| ⑥ EC sensor                     | ⑯ Manual valve (isolation)   |                             |

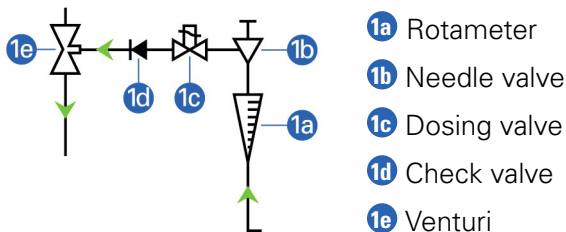
# SELECTING A FERTIKIT

## Venturis and dosing channels

To accommodate a variety of infrastructures, flow rates and Nutrigation™ needs, the FERTIKIT 3G offers a wide range of Venturis and dosing channels for fertilizer and acid.

### Typical Venturi and dosing channel

#### Schematic diagram

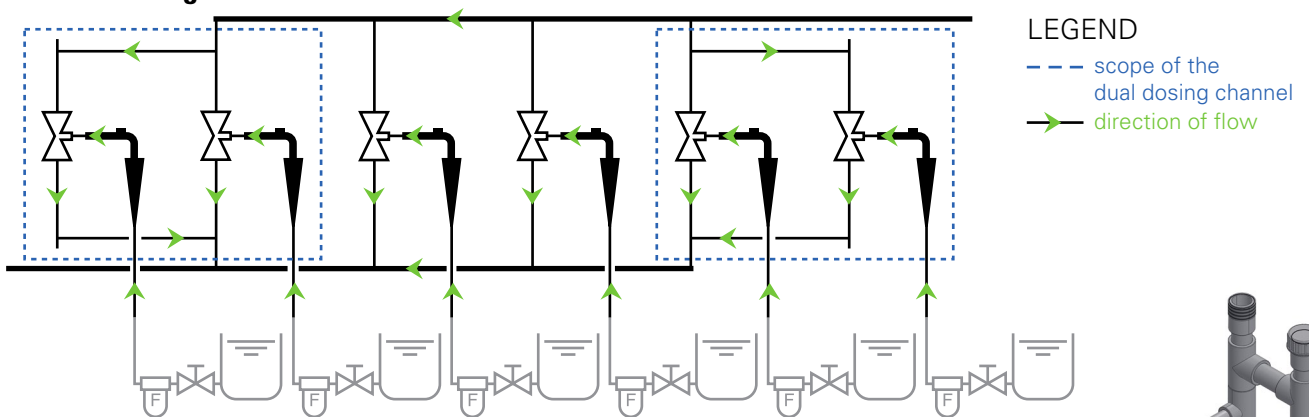


### Dual dosing channel

If more than 4 dosing channels are required (up to 6), the dual dosing channel option can be used.

- Up to 2 dual dosing channels can be installed on the FERTIKIT 3G, at the farthest manifold positions (1 and 4).
- The dual dosing channel option is applicable with 600 l/hr (158 GPH) or 50 l/hr (13 GPH) Venturis.

#### Schematic diagram



#### CAUTION

There are fertilizer combinations that should never be used in the dual dosing channel as they will induce crystallization and cause clogging of the pipes.

- 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

In case of doubt regarding the use of any combination of fertilizers in the dual dosing channel, consult your Netafim™ representative.



# SELECTING A FERTIKIT

## Venturis

**Table 1** - A complete line of Venturis is available to accommodate various flow rates of fertilizer or acid.

Venturi	Applicable for mode	Nominal flow l/hr (GPH)	Typical consumption* m <sup>3</sup> /hr (GPM)	Maximum # of Venturis**
PVDF - M050	Any mode	50 (13)	1 (4.4)	4
PP - N150	Any mode	150 (40)	1.2 (5.3)	4
PP - M250	PB / PD	250 (65)	4 (17.5)	4
PVC - N600	PL / MS	600 (158)	1.2 (5.3)	6
PVC - N1000	PL / MS	1000 (265)	4 (17.5)	6

\* Consumption = the flow of water that needs to pass through the Venturi to enable nominal suction.

\*\* If a combination of Venturis of different sizes is required, consult Netafim.

## Dosing channels



### ATTENTION

**Table 2** - When dosing acid, use a dosing channel fitted with the appropriate components according to the type and concentration of the acid used\*:

Type of dosing channel	Diaphragm and O-rings	For pH correction			For maintenance of drippers		
		Nitric (HNO <sub>3</sub> )	Phosphoric (H <sub>3</sub> PO <sub>4</sub> )	Sulfuric (H <sub>2</sub> SO <sub>4</sub> )	Hydrochloric (HCl)	Hydrogen peroxide (H <sub>2</sub> O <sub>2</sub> )	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.

### Dosing channels for fertilizer or diluted acid

Capacity - l/hr (GPH) • 150 (40) • 400 (106) • 600 (158) • 1000 (265)

Each of the above dosing channels is available in any of the following options:

- AC 50 or 60 Hz - according to the electricity frequency.
- Manual - for applications without a controller.
- Hydraulic - for DC latch applications.
- Bio - for applications with high viscosity organic fertilizers, enabling controlled flushing after each irrigation shift.

### Dosing channel for concentrated acid

Capacity - 50 l/hr (13 GPH). AC 50 or 60 Hz - according to the electricity frequency.

# SELECTING A FERTIKIT

## Compute the fertilizer flow rate

To select the appropriate fertilizer dosing channels and Venturis, perform the following calculation:

	Metric units	US units
Enter the flow rate of the largest irrigation shift	<input type="text"/> m <sup>3</sup> /hr	<input type="text"/> GPM
	X	X
Enter the dosing ratio of a single fertilizer (for guidelines see <a href="#">appendix 1</a> , page 29)	<input type="text"/> l/m <sup>3</sup>	<input type="text"/> US gal/1000 US gal
	=	X 0.06 =
Result: a single fertilizer flow rate	<input type="text"/> l/hr	<input type="text"/> GPH

## Matching the Venturis and the dosing channels

**Table 3** - Use the table below to formulate the appropriate combination of Venturis and dosing channels.

Dosing channel - nominal capacity l/hr (GPH)	Venturi				
	PVDF - M050	PP - N150	PP - M250	PVC - N600	PVC - N1000
50 (13) concentrated acid	+				
50 (13)		+			
150 (40)		+		+	
400 (106)			+	+	
600 (158)				+	
1000 (265)					+



### ATTENTION

The maximum fertilizer/acid suction capacity of the dosing channel–Venturi combination is limited to their lowest-capacity component.

The actual fertilizer/acid suction capacity depends on the actual pressure conditions on site.

## Compute the FERTIKIT's total consumption (TC)

In order to assess the applicability of the **MS** mode or to identify the correct dosing booster needed for **PB** or **PL** mode application, it is necessary to know the FERTIKIT's total consumption of water (TC).

The FERTIKIT's total consumption (TC) is the sum of the typical consumption of all the selected Venturis (fertilizers and acid) - see [table 1](#), page 17.

## Electrical mains

To select the proper dosing channels, dosing booster, controller and accessories, it is essential to know the properties of the electricity on site.

The electricity frequency (Hz) and voltage (V) depends on the country (in some countries frequencies and voltages differ by area).



### NOTE

In cases where three-phase electricity is supplied in addition to a single phase, take note:

- The controller is single phase.
- In most cases, a three-phase dosing booster is preferable.



### TIP

If there is no electricity on site, check the possibility of operating under the PD mode fed by a 12 VDC battery (solar panel - optional), consult Netafim.

# SELECTING A FERTIKIT

## Dosing boosters

To select the dosing booster, consult the appropriate graph in appendix 2 - performance curves. Consult the appropriate graph according to the electricity frequency on the site (50 Hz - p. 30) (60 Hz - p. 31) and the mode you selected - **PB** or **PL** only (**PD** and **MS** do not require a dosing booster).

Identify the performance curve where the pressure corresponding to the FERTIKIT's total consumption (TC) is equal to or greater than the maximum main line pressure, and select the appropriate dosing booster.



### ATTENTION

Make sure that the selected dosing booster fits the electricity voltage, phases and frequency on site.

## EC/pH control

In case of flow variations, the EC/pH control set enables the controller to perform precise fertilizer/acid optimization.

There are 2 types of sets:

- Compatible with the NMC junior or the NMC Pro controllers.
- Compatible with the NMC XL controller via the FertMaster\* terminal unit (for further details, consult Netafim).
- For other options, consult netafim.

\***FertMaster** is the terminal unit of the NMC XL controller, used when EC/pH measurement is needed on the FERTIKIT and the NMC XL is used as an outboard controller.

As a standalone, it also offers the capacity to control the FERTIKIT's dosing channels and system pump - a cost-effective solution where the FERTIKIT is used to fill a solution tank.

## Controllers

The FERTIKIT can be controlled by a variety of NMC controllers, offering many useful functions.

- The NMC Junior is the affordable option for small applications.
- The NMC Pro is the solution for mid-range to large applications.
- The NMC XL is the solution for mid-range to large applications where a single controller controls multiple dosing units, there are multiple main lines or water meters, or any of the many NMC XL exclusive features are required (consult Netafim).
- The NMC DC is the option for applications where there is no electricity (consult Netafim).
- In cases where the FERTIKIT is to be connected to another type of controller, consult Netafim.



### ATTENTION

Many parameters should be considered in selecting a controller for the FERTIKIT, depending on various factors such as, operating method, size of the field, and many more.

A comprehensive discussion on selecting a controller is beyond the scope of this document (see the NMC controllers documentation or consult Netafim).

# SELECTING A FERTIKIT

## The NMC controllers

**Table 4**

Typical application	NMC-Junior	NMC-Pro	NMC-XL	NMC-DC
Large-scale open field			+	
Medium-scale open field	+	+	+	+
Greenhouse on soil	+	+		
Greenhouse on soilless		+		

**Table 5**

Features	NMC-Junior	NMC-Pro	NMC-XL	NMC-DC
Digital outputs, 24 VAC	up to 15	up to 256	up to 250	
Digital outputs, DC latch				up to 24
Irrigation programs	15	15	120	15
External condition programs	15	15	120	15
ET (evapo-transpiration) trigger for irrigation			Yes	
Maximum number of valves in the system	15	255	250	24
Maximum number of valves running simultaneously	15	40	30 per program	24
Maximum number of dosing programs running in parallel	1	1	1 per line	1
Type of output, 24 VAC	Relay	Relay	Triac	Latch
Dry contact outputs		Yes		
Number of digital inputs	6	32	250	4
Number of analog inputs	5	22	99	4
RadioNet valve control (RTU)		Yes	Yes	Yes
SingleNet valve control (RTU)		Yes	Yes	Yes
Misting program by time	Yes	Yes	Yes	Yes
Cooling program by temperature/humidity	Yes	Yes	With condition program	Yes
Maximum number of supply pumps	6	6	36	6
Maximum number of main lines	3 (not simultaneously)	6 (not simultaneously)	128	6 (not simultaneously)
Master flow meters	3	6	100	6
Auxiliary flow meters	6	8	100	8
Fertilizer flow meters	6	8	6 (per station)	8
Control by pressure transducer		Yes	Yes	Yes
Filter flushing - number of filters	14	24	100	24
Fertilizer programs	10	10	120	10

# SELECTING A FERTIKIT

**Table 6**

Software	NMC-Junior	NMC-Pro	NMC-XL	NMC-DC
Controller languages	English, Spanish, Italian, Japanese, French, Russian, German, Korean, Chinese	<p><b>Group A (default)</b> English, Spanish, Italian, Japanese, German, French, Turkish, Dutch</p> <p><b>Group B</b> English, Russian, Greek, Serbian, Hungarian, Polish</p>	English, Spanish, Italian, Turkish, Russian	<p><b>Group A (default)</b> English, Spanish, Italian, Japanese, German, French, Turkish, Dutch</p> <p><b>Group B</b> English, Russian, Greek, Serbian, Hungarian, Polish</p>

Updated - January 2012

## General guidelines to help you select a controller

Select the basic configuration of the controller according to the number of AC outputs required to control all AC irrigation valves and local devices (the FERTIKIT's internal devices - dosing channels and dosing booster, and the local devices in the pump house - filter flushing, main line pumps, main line valves, etc.).

## Select the connectivity to remote units

If there are DC latch\* irrigation valves, select the connectivity type according to the type of the remote units (SingleNet\*\* or RadioNet\*\*\*) with the license key that accommodates the number of remote units (up to 128 or up to 256).

\***DC latch** is the operating principle of a switch fed by 12 VDC, where an electrical pulse toggles between the on and off states. It is used in irrigation valves and hydraulic operation valves.

\*\***SingleNet** is a remote operation method to open/close DC latch valves via a 2-wire cable.

\*\*\***RadioNet** is a remote operation method to open/close DC latch valves via wireless transmission (radio frequency).

## Select the PC communication



### NOTE

The above SingleNet and RadioNet options include various PC communication capabilities (for further details, consult Netafim).

Wired or wireless, the NMC PC communication offers many convenient features:

- Enables remote access for service and consultation.
- Enables data logging.
- Comfortable interface.

## Additional controller accessories

- Power line protector
- Temperature and humidity measuring box
- Radiation sensor
- Communication (MUX)
- Communication card
- Cellular modem

For further details, consult Netafim.

## Quick-Selection-Tool document

In order to facilitate the process of configuring the FERTIKIT and issuing a price estimate, we make available the FERTIKIT Quick-Selection-Tool - a concise, easy-to-use document, enabling the configuration of the appropriate FERTIKIT in 5 easy steps, according to the infrastructure and the Nutrigation™ needs. (To receive the Quick-Selection-Tool and instructions for using it, call Netafim.)

The installation should be performed according to the requirements detailed in the FERTIKIT installation manual.

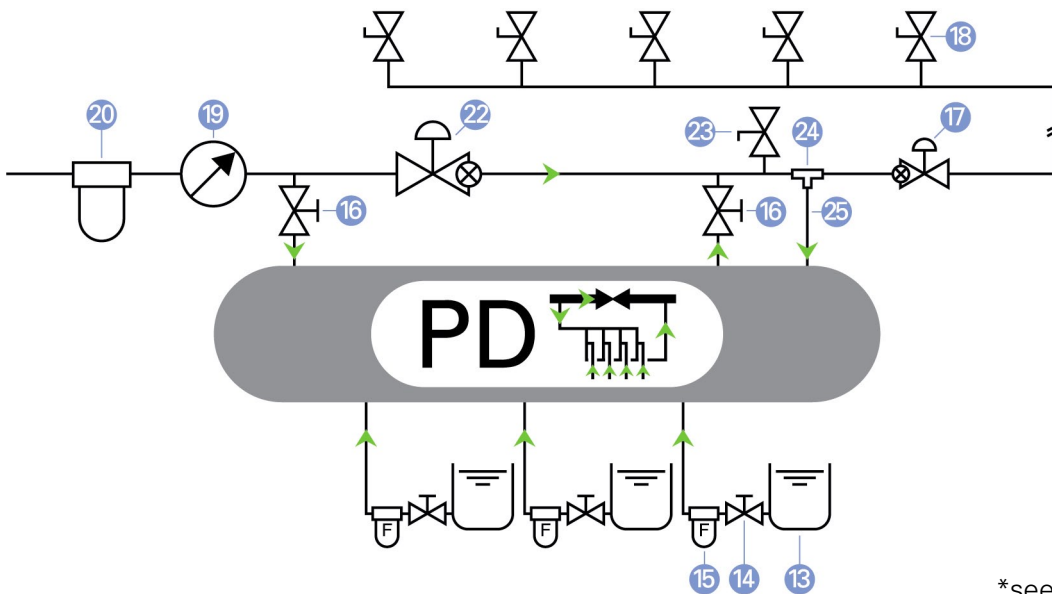
# INSTALLATION REQUIREMENTS

## Infrastructure

- The distance between the inlet and the outlet of the FERTIKIT on the main line should be from 2 to 4 meters.
- Sufficient space should be available between the fertilizer/acid tanks and the FERTIKIT to allow inspection and maintenance operations.

### Installation for PD mode

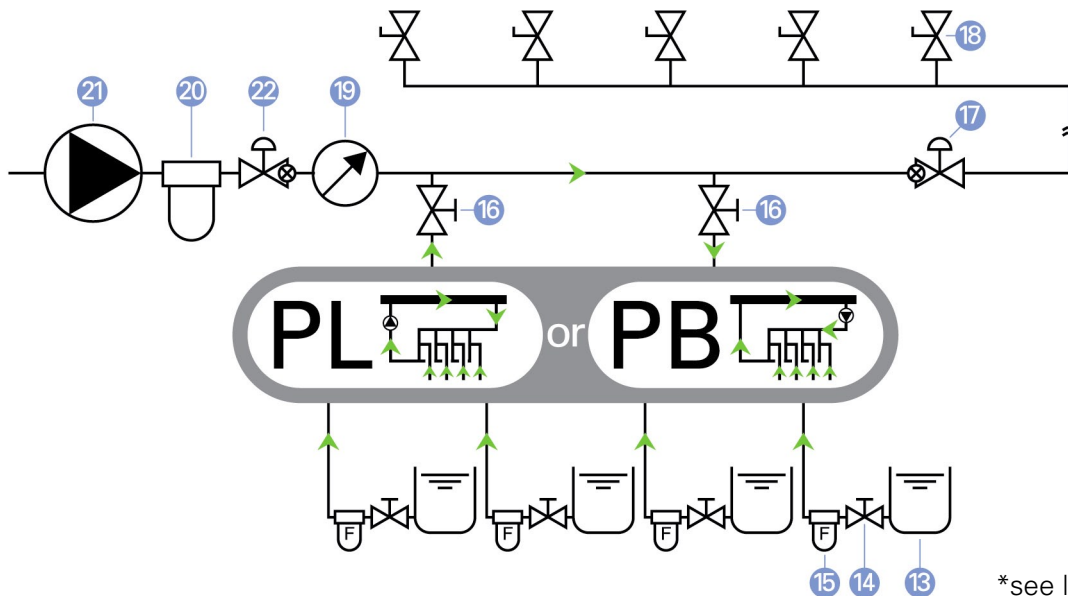
- The pressure on the main line upstream from the PRV should be at least twice the pressure downstream from the PRV.



\*see legend - table 7, p. 23

### Installation for PB and PL modes

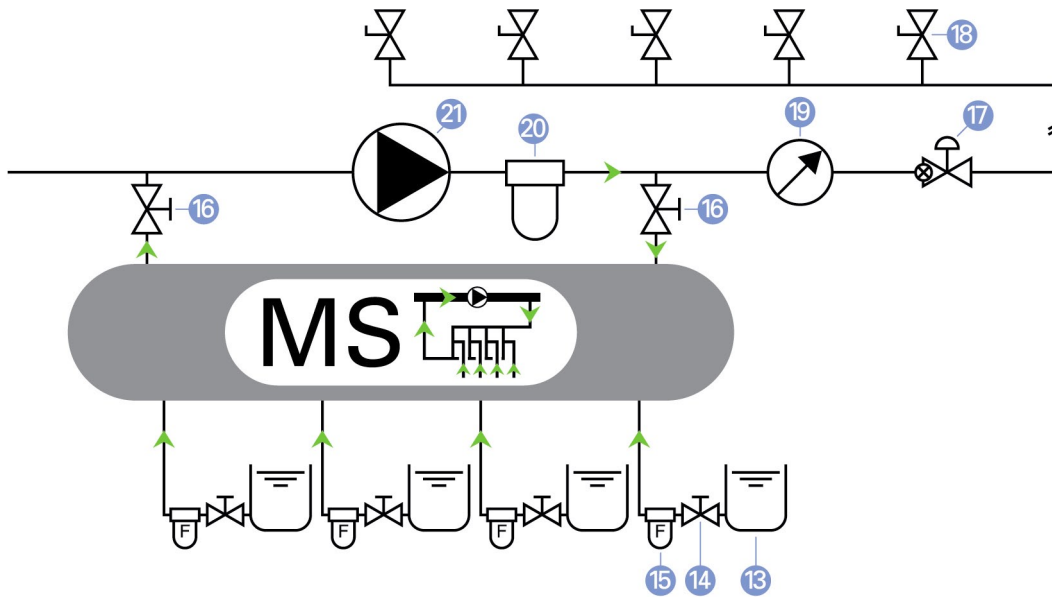
- In PL mode, the pressure on the main line should be minimum 2.5 bars



\*see legend - table 7, p. 23

# INSTALLATION REQUIREMENTS

## Installation for MS mode



## Infrastructure installation items

Table 7

Item	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	$\leq 130 \mu\text{m}$ ( $\geq 120$ mesh)
16 Manual valve (isolation)	To be installed at the inlet and at the outlet of the FERTIKIT, for use during system maintenance.
17 Pressure sustaining valve (PSV)	To be installed on the main line downstream from the FERTIKIT and able to sustain a constant pressure at the intake of the FERTIKIT, regardless of pressure changes in the field. Should be calibrated to 3-4 bars (43-58 PSI) for most projects.
18 Irrigation valve	Controllable.
19 Water meter	With electrical pulses. The pulse should be as short as possible according to the main line diameter and the controller's limitations. (See <a href="#">Recommended flow meter</a> , table 8, page 24.)
20 Main line filter	$\leq 130 \mu\text{m}$ ( $\geq 120$ mesh).
21 Main line pump	Suitable for the required pressure and flow rate according to the mode of the FERTIKIT and the field requirements (Ensure stable pressure).
22 Pressure reducing valve (PRV)	In the <b>PB</b> or <b>PL</b> mode - Should be installed on the main line, between the main line filters and the water meter and be able to reduce the main line pressure as specified for <b>PL</b> or <b>PB</b> modes (pages 13-14). In <b>PD</b> mode only - Should be installed on the main line, between the inlet and the outlet of the FERTIKIT and be able to reduce the main line pressure as specified for the <b>PD</b> mode (page 12).
23 Sampling valve	In <b>PD</b> mode only - Should be installed on the main line, downstream from the FERTIKIT's outlet (in all other modes the sampling valve is built-in).
24 Saddle fitting	In <b>PD</b> mode only - Should be installed on the main line, downstream from the FERTIKIT's outlet, equipped with an outlet suitable for the EC/pH sampling tube.

# INSTALLATION REQUIREMENTS

## Recommended flow meter

Table 8

Flow rate m <sup>3</sup> /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
60-600	100	1000-4500	100

## Electrical installation

An electrical mains installation including a circuit breaker, complying with the local safety standards and regulations should be supplied in accordance with the FERTIKIT's power consumption requirements.

### FERTIKIT's power consumption (kW)

- All FERTIKIT configurations without a dosing booster (**PD** or **MS** modes) consume under 150 W.
- In **PB** or **PL** modes, the FERTIKIT's total power consumption depends mainly on the consumption of the dosing booster (see [appendix 3 - Dosing booster list](#), page 32).

## Flow rate stability

Ensure that the consumption of the individual irrigation shifts is as equal as possible. Each changeover between shifts with different consumption will result in consumption fluctuation, affecting the EC and pH stability. **The smallest shift should not be less than 75% of the largest shift.**

## Source water

- Source water should be available at sufficient flow and pressure.  
If the water pressure at the inlet of the FERTIKIT is insufficient, the minimum pressure protection switch will be activated and the fertilizer solution supply will be interrupted.
- The water entering the FERTIKIT should be within a temperature range of 10°C and 35°C (50°F and 95°F).
- The source water to the FERTIKIT should be of a satisfactory chemical quality. If water pre-treatment is required, apply chemical conditioning before the water reaches the FERTIKIT.

### Source water quality

A good quality of source water, with a bicarbonate (HCO<sub>3</sub>) content of less than 5.0 meq/l (19 meq/US gal), can be used in the FERTIKIT in combination with pH control and an acid dosing channel.

Excess bicarbonate - 5.0 meq/l (19 meq/US gal) or higher - should be removed from the source water before it enters the FERTIKIT to avoid creation of low-solubility salts in the solution.

This is achieved by acidifying the incoming water to a mild acid pH value of approx. 6.0 prior to its storage in a day storage tank. This process can be performed by an additional FERTIKIT fitted with the appropriate features. The acid will neutralize the bicarbonate in the storage tank by means of a chemical reaction and the carbon dioxide (CO<sub>2</sub>) will be released from the source water. Aerating or spraying the water will improve the discharge of CO<sub>2</sub>, accelerating the neutralization process. Neutralization of the source water is necessary to create a stable pH in the FERTIKIT. Well water, mains water and river water may contain high bicarbonate concentrations - 5.0 meq/l (19 meq/US gal) or higher - necessitating the application of the above neutralization process.



#### NOTE

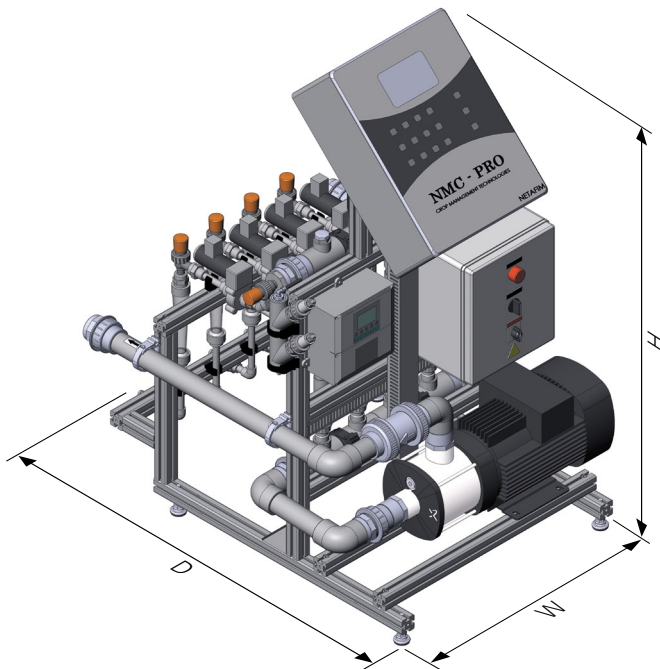
A full analysis of the water is recommended. In case of doubt, consult a Netafim expert.



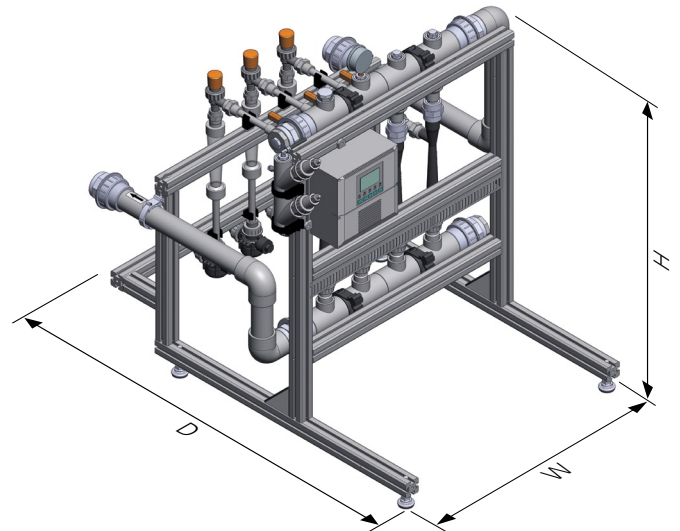
# DIMENSIONS AND WEIGHTS

## Dimensions

### With controller



### Without controller



**Table 9**

Configuration	FERTIKIT external dimensions (W/D/H*)	Package dimensions (W/D/H**)
Without controller	84/103/92 cm (33/40.5/36")	100/115/100 cm (39.5/45.5/39.5")
With controller	84/103/134.5 cm (33/40.5/53")	100/115/161 cm (39.5/45.5/63.5")

\*The height varies by  $\pm 1$  cm ( $\pm 0.5$ " according to the adjustment of the legs.

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

## Weights<sup>°</sup>

**Table 10 - With dosing booster<sup>°°</sup>**

Mode	Controller	4HM9		CM5		CM15	
		Net weight	Packed weight	Net weight	Packed weight	Net weight	Packed weight
PB or PL	Without	50 kg. (110 lbs.)	75 kg. (165 lbs.)	63 kg. (139 lbs.)	88 kg. (194 lbs.)	90 kg. (198 lbs.)	115 kg. (254 lbs.)
	With	60 kg. (132 lbs.)	88 kg. (194 lbs.)	73 kg. (161 lbs.)	101 kg. (223 lbs.)	100 kg. (220 lbs.)	128 kg. (282 lbs.)

<sup>°°</sup>Dosing boosters regularly in stock - for the weight of FERTIKITs with other dosing boosters, consult Netafim.

**Table 11 - Without dosing booster**

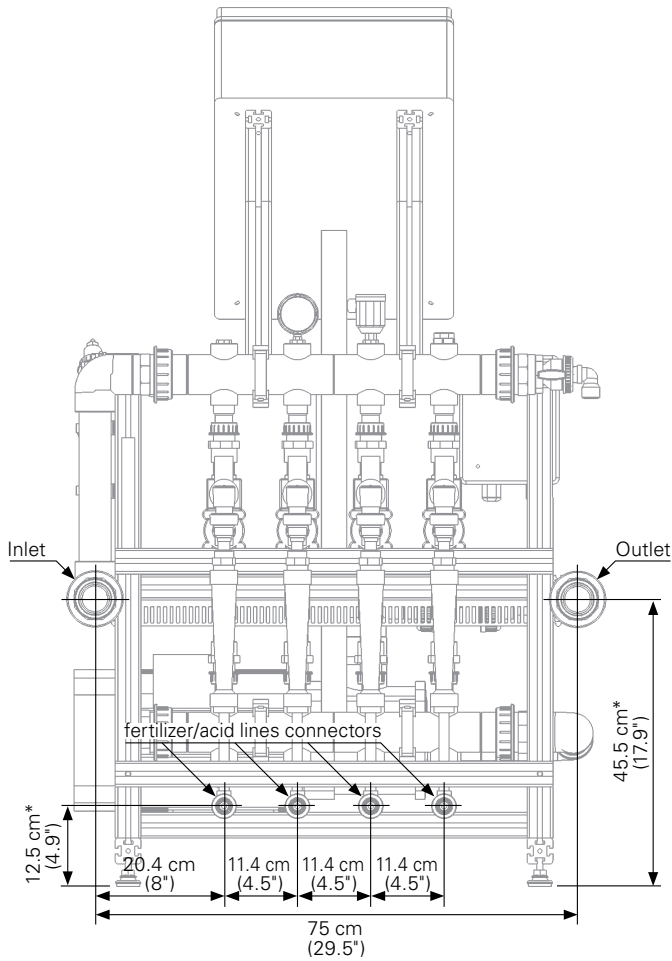
Mode	Controller	Net weight	Packed weight
PD or MS	Without	33 kg. (73 lbs.)	58 kg. (128 lbs.)
	With	43 kg. (95 lbs.)	71 kg. (157 lbs.)

<sup>°</sup>Order of magnitude only - final weights will be issued with the product order.

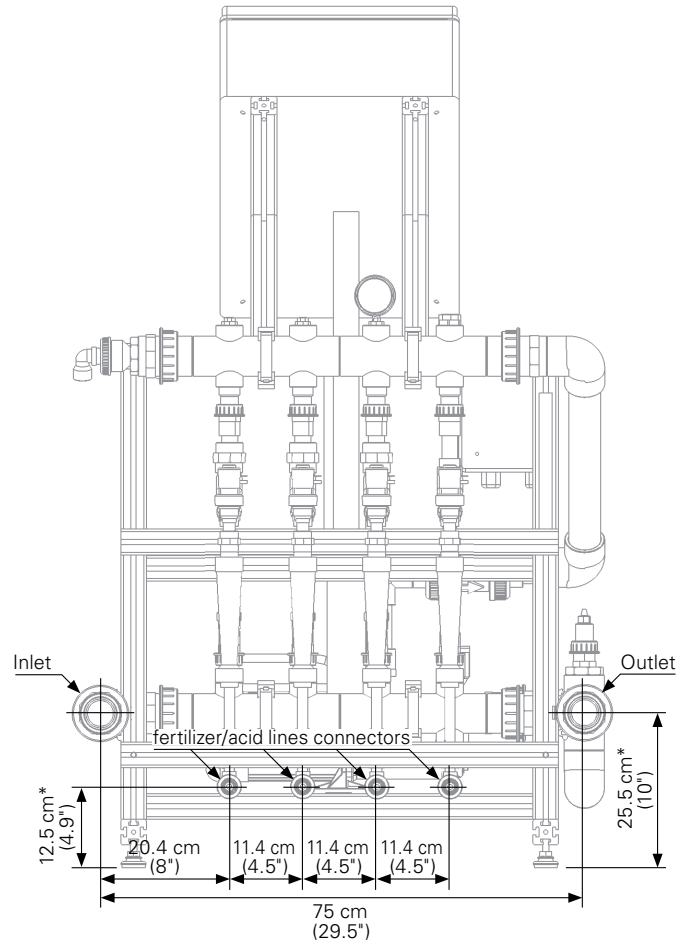
# DIMENSIONS AND WEIGHTS

## Location of inlet, outlet and fertilizer/acid line connectors

### PD, PL and MS modes



### PB mode



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

## Fertilizer and acid line connection types

**Table 12**

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"

## Inlet and outlet connection types

**Table 13**

Fittings (interchangeable)	Diameter
PVC, adaptor union - glue connector (installed)	50 mm
PVC, BSP or NPT nipple - male thread connector (supplied)	1.5"

# SAFETY AND WARRANTY

## Safety

- All safety regulations must be applied.
- Ensure that the installation is carried out in a manner that prevents leaks from the FERTIKIT, 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.
- Use protective equipment, shoes, gloves and goggles when handling fertilizers, acid and other chemicals!
- Electrical installation 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.



### **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!



### **WARNING**

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



### **NOTE**

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

# SAFETY AND WARRANTY

## Warranty

Netafim warrants all the components of the FERTIKIT 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 FERTIKIT 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.



### **NOTE**

When not installed, the pH sensor must be immersed in KCL solution at all time, protected from freezing and not be exposed to pressure greater than 7 bars (100 PSI). Damage due to these causes is not covered by warranty.

This warranty does not extend to repairs, adjustments or replacements of a FERTIKIT 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).

# APPENDIX 1

## Dosing ratio estimates



### WARNING

These are only estimates - for the exact fertilizer dosing ratio in a given project, consult an agronomist.

**Table 14**

### Irrigation according to the water consumption of the crop

Crop	Dosing ratio per channel (l/m <sup>3</sup> ) (US gal/1000 US gal)	
	Type 1	Type 2
<b>Open Field</b>		
Carrot	1	2.5
Corn / Maize	2	5
Cotton	2	5
Flowers	3	5
Industrial tomato	1	2.5
Onion	2	5
Plantations (Tea, coffee, citrus, avocado, almonds, pecan nuts)	1	2.5
Potato	1	2.5
Sorghum	1	2.5
Sugar cane	1.5	3
Vegetables	3	5
Watermelon	1	2.5
<b>Protected Crops</b>		
Vegetable in soil (A+B+acid)	5	
Flowers in soil (A+B+acid)	5	
Vegetable in soil (A+B+C+D+acid)	3.5	
Flowers in soil (A+B+C+D+acid)	3.5	
Vegetable in substrate	5	
Flowers in substrate	5	
Vegetable in substrate (High-Tech greenhouse - Multi-pulse**)	10	
Flowers in substrate (High-Tech greenhouse - Multi-pulse**)	10	

**Type 1:** Normal irrigation/nutrigation - Usually out of the rainy season, where a lower fertilizer dosing ratio is required.

**Type 2:** Technical Nutrigation - Usually during rainy seasons, where a small quantity of irrigation water is required for application of the fertilizer.

# APPENDIX 2

## Performance curves for selection of the dosing booster - 50 Hz

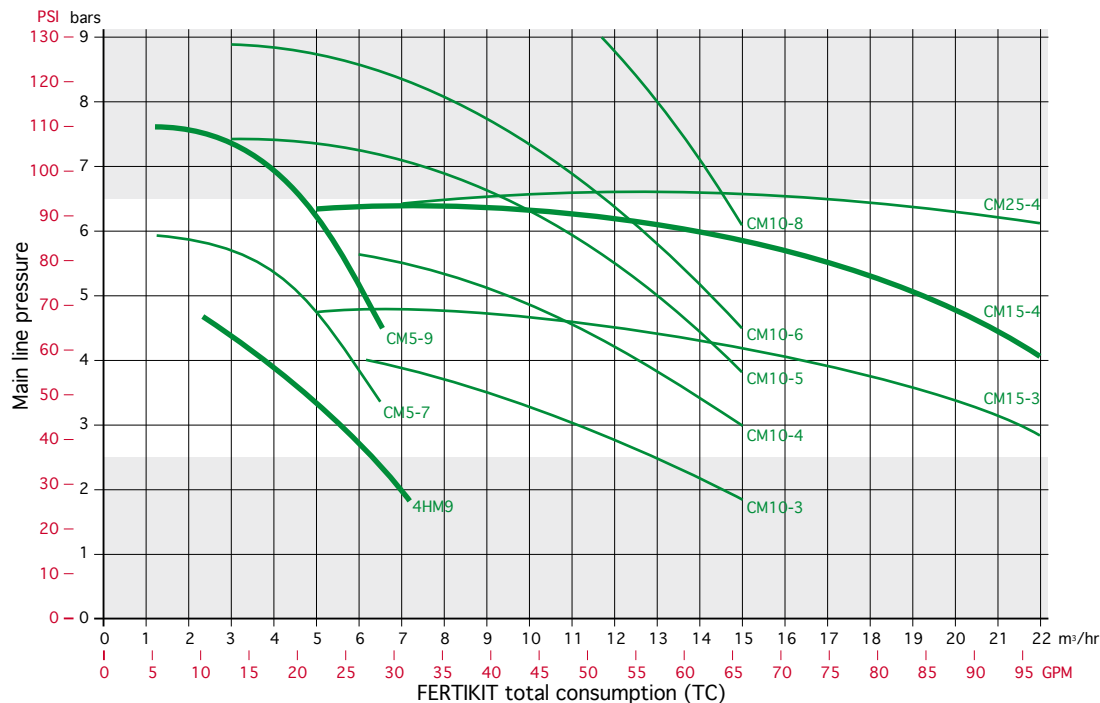
### Typical consumption of Venturis

**Table 1** - A complete line of Venturis is available to accommodate various flow rates of fertilizer or acid.

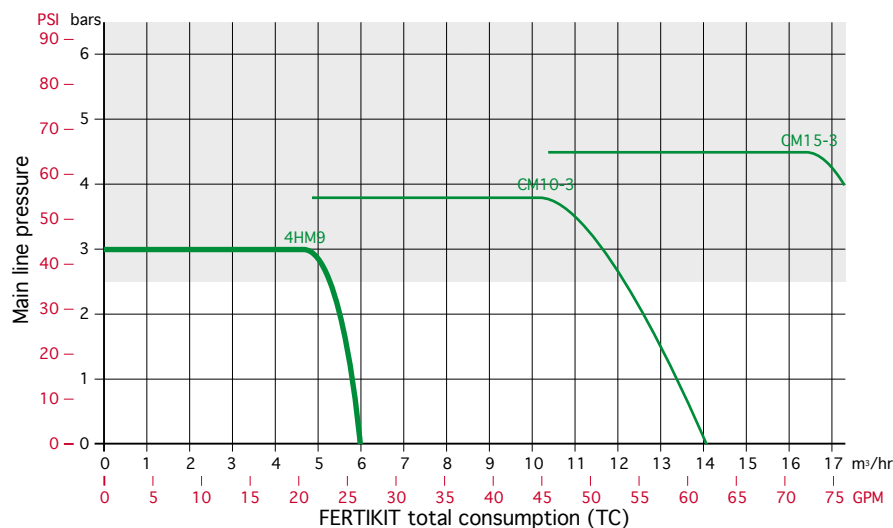
Venturi	Applicable for mode	Nominal flow l/hr (GPH)	Typical consumption* m <sup>3</sup> /hr (GPM)
PVDF - M050	Any mode	50 (13)	1 (4.4)
PP - N150	Any mode	150 (40)	1.2 (5.3)
PP - M250	PB / PD	250 (65)	4 (17.5)
PVC - N600	PL / MS	600 (158)	1.2 (5.3)
PVC - N1000	PL / MS	1000 (265)	4 (17.5)

\* Consumption = the flow of water that needs to pass through the Venturi to enable nominal suction.

### PL mode (Graph 3)



### PB mode (Graph 4)



#### LEGEND

- The heavy-line curves represent the dosing boosters regularly in stock, enabling a shorter delivery time.
- The white areas in the graphs represent the operational pressure range of each mode.
- The gray areas in the graphs represent the pressure range at which the operation is not recommended.

# APPENDIX 2

## Performance curves for selection of the dosing booster - 60 Hz

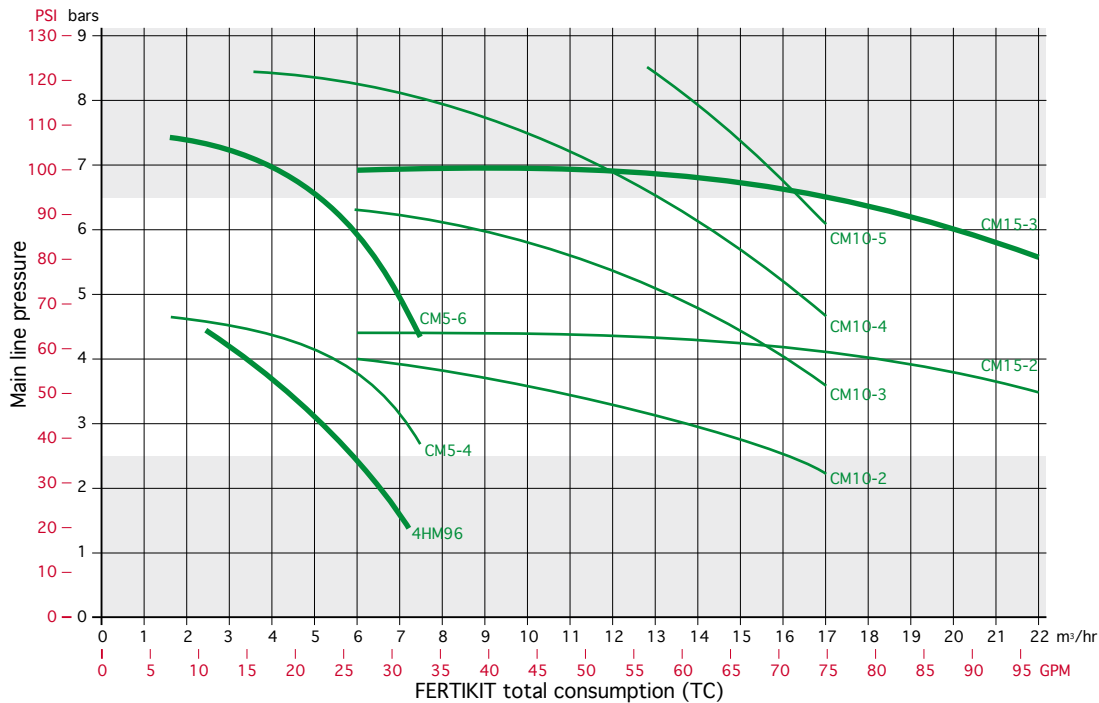
### Typical consumption of Venturis

**Table 1** - A complete line of Venturis is available to accommodate various flow rates of fertilizer or acid.

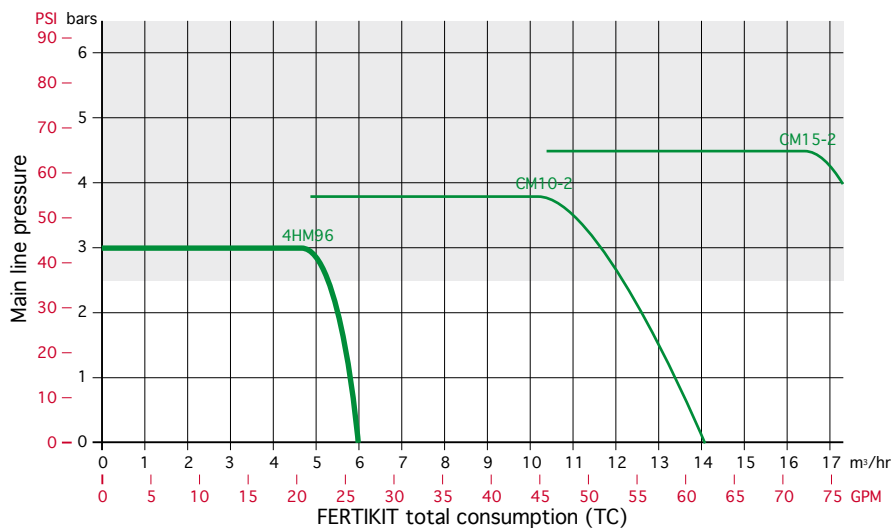
Venturi	Applicable for mode	Nominal flow l/hr (GPH)	Typical consumption* m <sup>3</sup> /hr (GPM)
PVDF - M050	Any mode	50 (13)	1 (4.4)
PP - N150	Any mode	150 (40)	1.2 (5.3)
PP - M250	PB / PD	250 (65)	4 (17.5)
PVC - N600	PL / MS	600 (158)	1.2 (5.3)
PVC - N1000	PL / MS	1000 (265)	4 (17.5)

\* Consumption = the flow of water that needs to pass through the Venturi to enable nominal suction.

### PL mode (Graph 5)



### PB mode (Graph 6)



#### LEGEND

- The heavy-line curves represent the dosing boosters regularly in stock, enabling a shorter delivery time.
- The white areas in the graphs represent the operational pressure range of each mode.
- The gray areas in the graphs represent the pressure range at which the operation is not recommended.

# APPENDIX 3

## Dosing booster list

- The dosing boosters in **bold characters** are regularly in stock, enabling a shorter delivery time.

### For 50 Hz installations

Table 15

Phases	Volts	Dosing booster	FERTIKIT's total power consumption (kW)
1	220-240	<b>4HM9</b>	1.63
		CM5-7	1.45
		CM5-9	2.05
		CM10-3	2.05
3	220-240/ 380-415	<b>4HM9T</b>	1.63
		CM5-7	1.73
		<b>CM5-9</b>	2.35
		CM10-3	2.35
		CM10-4	3.35
		CM10-5	3.35
		CM10-6	4.15
		CM10-8	5.95
		CM15-3	4.15
		<b>CM15-4</b>	5.95
		CM25-4	7.55

### For 60 Hz installations

Table 16

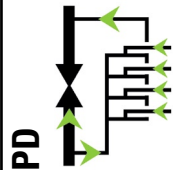
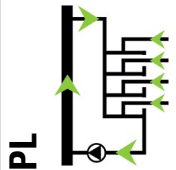
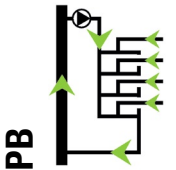
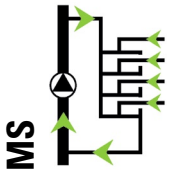
Phases	Volts	Dosing booster	FERTIKIT's total power consumption (kW)
1	110-120	<b>4HM96</b>	1.25
		4HM96/110	1.25
	220-240	CM5-4	1.29
3	208-230/ 440-480	4HM96T	1.25
		CM5-4	1.85
		<b>CM5-6</b>	2.65
		CM10-2	4.15
		CM10-3	4.15
		CM10-4	6.35
		CM10-5	6.35
		CM15-2	4.15
		<b>CM15-3</b>	6.35



# APPENDIX 4

## FERTIKIT summary of combinations

Table 17

Mode	Operating principle	Main line pressure - bar (PSI) and flow conditions	Venturis Nominal flow l/hr (GPH)	Dosing channel - capacities l/hr (GPH)
<b>PD</b> 	<p>Utilizes the main line pressure. Applicable also where there is no electricity on the site (consult Netafim). Saves the need for a dosing booster.</p>	<p>There is sufficient pressure differentiation between the source pressure and the required pressure downstream from the FERTIKIT. The pressure upstream from the PRV is at least twice the pressure downstream from the PRV.</p>	<p>PVDF - M050 50 (13) Concentrated acid</p> <p>PP - N150 150 (40)</p> <p>PP - M250 250 (65)</p>	<p>50 (13) Concentrated acid</p> <p>50 (13), 150 (40)</p> <p>400 (106)</p>
<b>PL</b> 	<p>The pressure differentiation required to generate fertilizer suction via the Venturis is produced by a suction pump integrated in the Fertikit. This mode of operation, where the lower manifold is under low pressure (around 0 bar), permits the use of high-efficiency Venturis with high suction capacity and low consumption.</p>	<p>2.5 - 6.5 bars (36-94 PSI) and sufficient for irrigation with no excess.</p>	<p>PVDF - M050 50 (13)</p> <p>PP - N150 150 (40)</p> <p>PVC - N600 600 (158)</p> <p>PVC - N1000 1000 (265)</p>	<p>50 (13) Concentrated acid</p> <p>50 (13), 150 (40)</p> <p>150 (40), 400 (106), 600 (158)</p> <p>1000 (265)</p>
<b>PB</b> 	<p>The pressure differentiation required to generate fertilizer suction via the Venturis is produced by a boost pump integrated in the Fertikit. This mode of operation, where the system pump is installed upstream from the Venturis, permits the use of a smaller pump, reducing the investment required and saving energy. This mode is suitable for relatively low flow-rates.</p>	<p>1 - 2.5 bars (14.5-36 PSI) and sufficient for irrigation with no excess.</p>	<p>PVDF - M050 50 (13)</p> <p>PP - N150 150 (40)</p> <p>PP - M250 250 (65)</p>	<p>50 (13) Concentrated acid</p> <p>50 (13), 150 (40)</p> <p>400 (106)</p>
<b>MS</b> 	<p>Utilizes the main line pump pressure. Saves the need for a dosing booster.</p>	<p>Pressure downstream the main line pump: 2 - 8 bars (29-116 PSI) and possibility of connection to the main line upstream from the pump. The main line pump capacity <math>\geq Q</math> of the largest shift + TC at the required pressure for irrigation.</p>	<p>PP - M250 250 (65)</p> <p>PP - N150 150 (40)</p> <p>PVC - N600 600 (158)</p> <p>PVC - N1000 1000 (265)</p>	<p>400 (106)</p> <p>50 (13), 150 (40)</p> <p>150 (40), 400 (106), 600 (158)</p> <p>1000 (265)</p>

# APPENDIX 5

## List of configurator items Table 18

**F3 PL -3 U 40 +1 SA05 -50H 400 CM59 EH -24 P2 485 FM**  
**A B C D E F G H I J K L M N O**

### A FERTIKIT 3G

### B Mode

Code	Description
PL	PL
PB	PB
MS	MS
PD	PD
IL	IL
SP	Split

### C No of fertilizer channels (Fertilizer only, excluding acid)

Code	Description
-0	No channel for fertilizer
-1	1 channel for fertilizers
-2	2 channels for fertilizers
-3	3 channels for fertilizers
-4	4 channels for fertilizers
-5	5 channels for fertilizers
-6	6 channels for fertilizers

### D Dosing channel operator

Code	Description
Blank	No channel for fertilizer
E	Electric (standard)
U	Electric (S12)
H	Hydraulic (24 V DC solenoid)
M	Manual
CF	Electric - concentrated fertilizer

### E Fertilizer channel flowrate

Code	Description
100	1000 l/h (264 GPH)
60	600 l/h (158 GPH)
40	400 l/h (105 GPH)
25	250 l/h (66 GPH)
15	150 l/h (40 GPH)
05	50 l/h (13 GPH)
Blank	No channel for fertilizer

### F No of acid channels

Code	Description
Blank	No channel for acid
+1	1 channel for acid
+2	2 channels for acid
+3	3 channels for acid
+4	4 channels for acid
+5	5 channels for acid
+6	6 channels for acid

### G Acid channel

Code	Description
D60	Diluted acid 600 l/h (158 GPH)
D40	Diluted acid 400 l/h (105 GPH)
D25	Diluted acid 250 l/h (66 GPH)
D15	Diluted acid 150 l/h (40 GPH)
D05	Diluted acid 50 l/h (13 GPH)
SA05	Concentrated acid 50 l/h (13 GPH) S12
SA15	Concentrated acid 150 l/h (40 GPH) S12
CA05	Concentrated acid 50 l/h (13 GPH)
CA15	Concentrated acid 150 l/h (40 GPH)
Blank	No channel for acid

### H Frequency

Code	Description
-50H	50Hz
-60H	60Hz
Blank	No frequency (DC or manual)

### I Voltage

Code	Description
12VDC	12 VDC
12VAC	12 VAC
400	3 x 380 - 415 V
440	3 x 400 - 440 V
220	3 x 220 V
200	3 x 200 V
1X220	1 x 220 V
1X110	1 x 110 V
Blank	Manual

### J Pump type

Code	Description
-4HM9	Lowara 4HM9
CM54	Grundfos -CM5-4
CM56	Grundfos -CM5-6
CM57	Grundfos -CM5-7
CM59	Grundfos -CM5-9
CM102	Grundfos -CM10-2
CM103	Grundfos -CM10-3
CM104	Grundfos -CM10-4
CM105	Grundfos -CM10-5
CM106	Grundfos -CM10-6
CM108	Grundfos -CM10-8
CM152	Grundfos -CM15-2
CM153	Grundfos -CM15-3
CM154	Grundfos -CM15-4
CM254	Grundfos -CM25-4
Blank	No pump

### L Number of outputs

Code	Description
-8	8 outputs 24V AC (For FertMaster)
-15	15 outputs 24V AC (Junior)
-16	16 outputs 24V AC
-24	24 outputs 24V AC
-32	32 outputs 24V AC
-40	40 outputs 24V AC
-48	48 outputs 24V AC
-56	56 outputs 24V AC
-64	64 outputs 24V AC
Blank	Without controller

### M Controller

Code	Description
JC2	NMC-Junior 230V Chinese
JK2	NMC-Junior 230V Korean
J1	NMC-Junior 115V
J2	NMC-Junior 230V
J3	NMC-Junior 115V - Double Door
J4	NMC-Junior 230V - Double Door
P1	NMC-Pro 115V
P2	NMC-Pro 230V
K2	NMC-Pro 230V - Koren & Chinese
K4	NMC-Pro 230V - Koren & Chinese - Double Door
P3	NMC-Pro 115V - Double Door
P4	NMC-Pro 230V - Double Door
DC	NMC DC
-F1	FertMaster 115 V
-F2	FertMaster 230 V
-SSR	Solid state relays for the dosing channel (no controller)
Blank	Without controller

### N Communication port

Code	Description
-485	RS-485 (parallel) communication card
-EXP	Dual RS485 for expansion box
-232	RS-232 (serial) communication card
-SN1	SingleNet with license key 128 (Including host* & SLSM**)
-SN2	SingleNet with license key 256 (including host* & SLSM**)
-128	RadioNet with license key 128 (excluding host*)
-256	RadioNet with license key 256 (excluding host*)
-GSM	GSM modem onboard
Blank	None

\*Host: Interface card between the NMC Pro and SingleNet

\*\*SLSM: SingleNet Lightning Suppression Module

### K EC/pH measurement

Code	Description
EH	EC/pH
EC	EC
PH	pH
Blank	None

### O Special configuration

Code	Description
-FM	Fertilizer meters - Litres
-FG	Fertilizer meters - Gallons
Blank	None

# APPENDIX 6

## On-line configurator

To receive a quote or find the catalogue Number for a selected FERTIKIT configuration - after selecting the FERTIKIT, go to [www.netafim.com](http://www.netafim.com)

In the on-line configurator:

- Follow the instructions
- Send the resulting string to Netafim.

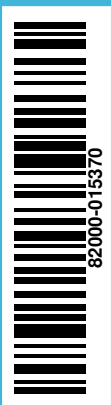


### **ATTENTION**

Not every configuration of the FERTIKIT is practicable.

Do not use the List of configurator items on the previous page to build a FERTIKIT configuration.

To avoid unpracticable configurations, always use the on-line configurator.



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