

# OPERATING AND MAINTENANCE MANUAL TO BE STORED CAREFULLY BY THE USER

## CONTENTS

CONTENTS	2
1. INTRODUCTION	2
2. IDENTIFICATION DATA	2
3. WARRANTY AND TECHNICAL SUPPORT	2
4. GENERAL SAFETY WARNINGS	3
5. TECHNICAL CONSTRUCTION CHARACTERISTICS	3
6. TECHNICAL DATA	4
7. HANDLING AND STORAGE	5
8. INSTALLATION	5
9. ELECTRICAL CONNECTION	7
10. STARTING THE SYSTEM	7
11. MAINTENANCE	8
12. DISPOSAL	10
13. ATTACHED DIAGRAMS	11
14. MODEL IDENTIFICATION CODE	20
15. DATA PLATE	21
16. PACKAGING ENVIRONMENTAL LABELLING	22
17. CE DECLARATION OF CONFORMITY	23
18. UKCA DECLARATION OF CONFORMITY	24

## 1. INTRODUCTION

This manual refers to:

- the following standard pressure booster sets:

GP	GPE	GPS/GPES	GPJ/GPEJ
1	1		
2	2	2	2
3	3	3	3
4	4	4	4

- to the following configured pressure booster sets: 2/3/4 pumps.

The sets were designed for civil, industrial and agricultural use. The manual contains all the information required to safely interact with the set over the entire product lifespan (transport, installation, use, maintenance, dismantling). The instructions are completed by the following documentation:

- manuals containing specific information concerning the electric pumps;
- manual for the control panel (EP/EP-E/SP-EFC/SP-MFC) or the control device (VASCO/E-SPD+) and the protection panel.

Carefully read all the documents before starting up the set and follow the instructions provided for the correct operation and optimal efficiency of the product. For further information, or if there are questions concerning the correct interpretation of the instructions, contact your closest authorised reseller or service centre, specifying the data identifying the set located on the DATA PLATE.

This manual is intended for:

- **personnel assigned by the manufacturer/distributor to install the set and perform extraordinary maintenance**, specialised and qualified personnel<sup>1</sup> for transport, installation, first start-up and extraordinary maintenance operations;

- **personnel assigned to operating the set**, personnel assigned to operating, cleaning and performing ordinary maintenance;
- **personnel assigned to set dismantling**.

This manual must be kept in an area where it can be stored as well as easily consulted. The company reserves the right to change the supplied technical documentation, if necessary, without updating previously issued documentation. The instructions were prepared in compliance with Machine Directive 2006/42/EC, Annex I, paragraph 1.7.4.

## THE REPRODUCTION, EVEN PARTIAL, OF THE ILLUSTRATIONS AND/OR TEXT IS PROHIBITED.

When preparing the instruction manual, the following general symbols were used to point out the consequences of failure to follow the instructions. **PAY PARTICULAR ATTENTION TO THE SAFETY INSTRUCTIONS.**

ATTENTION Risk of damaging the set or the system



Risk of personal injury or property damage



Risk of an electrical nature

## 2. IDENTIFICATION DATA

### 2.1. MANUFACTURER

**EBARA Pumps Europe S.p.A.**

**Plant management:**

Via Torri di confine, 2/1 int. C – 36053 Gambellara (VI), ITALY

Tel: 0444/706811 - Fax: 0444/405811

**Registered office:**

Via Campo Sportivo, 30 - 38023 Cles (TN), ITALY

Tel: 0463/660411 - Fax: 0444/405930

### 2.2. DATA PLATE

See the DATA PLATE chapter.

## 3. WARRANTY AND TECHNICAL SUPPORT

**FAILURE TO OBSERVE THE INSTRUCTIONS PROVIDED IN THIS INSTRUCTION MANUAL AND/OR ANY WORK ON THE PRODUCT THAT WAS NOT PERFORMED BY OUR SERVICE CENTRES INVALIDATES THE WARRANTY AND RELIEVES THE MANUFACTURER FROM ANY LIABILITY IN THE CASE OF ACCIDENTS INVOLVING PERSONNEL OR DAMAGE TO PROPERTY AND/OR THE PRODUCT ITSELF.**

Once the product is received, check that the outside of the packaging was not damaged and that there are no significant dents, otherwise immediately inform the person who made the delivery. Then, after removing the product from the packaging, check that it was not damaged during transport; if it was damaged, inform the reseller within 8 days of delivery. Then check the product plate to make sure that the characteristics stated are those you requested.

The warranty shall be voided if:

<sup>1</sup> Based on CEI EN 82079-1: "qualified person: an individual with education, training and/or technical experience that is relevant to the argument that permit them to understand the risks and avoid hazards that occur while using a product."

- disassembly or repair operations were performed by operators not authorised by EBARA Pumps Europe S.p.A.;
- faulty operation derives from the incorrect installation and/or electrical connection, tampering, improper use or use beyond the limits indicated in this manual;
- corrosive liquids, sandy water, chemically or physically aggressive liquids were pumped without prior verification and authorisation by EBARA Pumps Europe S.p.A.;
- if alleged defects were reported more than two months after discovery;
- the alleged defect depends on normal wear following use.

The following parts, which are normally subject to wear, are covered by a limited warranty: bearings, mechanical seal, seal rings, condensers, adjustable pressure switch. For the warranty covering the various components, refer also to the relative documents (electric pump, electric panel/control device/protection panel).

For technical support operations on the set, refer to the MAINTENANCE chapter.

## 4. GENERAL SAFETY WARNINGS

Before starting up the product, it is very important for the user to know how perform all the operations as described in this manual and in the other manuals listed in the INTRODUCTION chapter.

### 4.1. PREVENTIVE MEASURES BY THE USER

ATTENTION

Installation, maintenance and repairs (mechanical and electric) must be performed by specialised and qualified personnel (refer to the definition of qualified personnel in the INTRODUCTION chapter).



It is prohibited to tamper with, alter or modify the set, even partially.  
It is prohibited to use the set in conditions or for purposes other than those indicated in this manual.



The instructions located on the set that identify hazardous zones and operations must not be removed, covered or damaged.



Strictly comply with the accident prevention regulations in force in the respective countries of installation. Also carefully observe the regulations regarding the personal protective equipment necessary for the various operations on the set, referred to in this manual and in the attached documents relative to the set components.



Before handling, servicing or repairing the set or any of its parts, disconnect the electrical power supply in order to prevent its accidental start-up which could injure personnel and/or cause property damage.



Every maintenance, installation or handling operation performed on the set or any of its parts with the electrical system energised could cause serious accidents, also fatal.



Before starting the system, check that all the electric devices and components, including the cables, are correct.



Do not start up the set with bare feet or, even worse, when standing in water or with wet hands.



The device is not intended to be used by people (children included) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge unless they have been given instruction concerning the safe use of the equipment and have been made aware of the hazards connected with it by a person responsible for their safety, or if they use it under his or her supervision. Children must not play with the device.

### 4.2. PROTECTIONS AND SIGNIFICANT PRECAUTIONS



All of the set components have been designed such that the moving parts have been made harmless through the use of protective casings. The manufacturer declines all liability if damaged is caused as a result of tampering with these devices. Do not repair and/or adjust mechanical components while the machine is operating.



Each conductor or energised part is electrically isolated from the ground; there is however a supplementary safety mechanism through which the conductive parts are connected to an earth conductor to ensure that accessible parts do not become hazardous if the main insulation is damaged.

### 4.3. RESIDUAL RISKS



While maintenance is being performed, there is the risk of working on moving parts while the set is operating. Make sure to disconnect the electrical power supply before performing any work.



While maintenance is being performed, there is the risk of working on live parts while the set is operating. Make sure to disconnect the electrical power supply before performing any work.

## 5. TECHNICAL CONSTRUCTION CHARACTERISTICS

### 5.1. DESCRIPTION

Pressure booster sets are automatic systems for supplying water to 1 or more pumps in parallel, for connection to diaphragm pressure vessels, to tanks with an air cushion, or to a normal water mains. They are used whenever it is necessary to increase pressure or it is necessary to keep a water mains pressurised. Drawing water from the connected system, when the pumps are stopped, causes the pressure to decrease and the resulting start of the first pump (or pilot pump for the GPJ/GPEJ sets). If the pressure drop continues or restoring is not sufficient, the second pump will start, and so on if the set has a second, third and fourth pump (main pumps for the GPJ/GPEJ sets). The restoration of the pressure in the system causes the staggered stopping of the pumps. An electronic device activates the automatic rotation of the starting order of the electric pumps so as to ensure uniform distribution of the starting operations, and therefore of the working hours (in sets with more than one pump).

The standard pressure booster sets are divided into:

- **GP**: sets that operate with fixed speed pumps;
- **GPE**: sets that operate with variable speed pumps;
- **GPJ/GPEJ**: sets that operate with fixed (GPJ) or variable (GPEJ) speed pumps. These differ from the GP/GPE sets due to the presence of a pilot pump that starts as the first

pump to take care of small pressure losses from the system, therefore preventing the start of the main pumps (which are generally larger with a greater consumption than the pilot pump);

- **GPS/GPES**: sets that can operate with fixed (GPS) or variable (GPES) speed pumps. These sets can have dimensioned conductors to have a system pump that is inactive (in stand-by).

Similar to these are the configured pressure booster sets with 2/3/4 pumps that have the same control system and pumps as the standard ones mentioned above.

The control systems for the sets are divided based on if there is an inverter or not, i.e. a frequency variator that makes it possible to vary the pump speed, and on the type of inverter. They are:

- **EP** control panel: for the actuation of the single-phase or three-phase pumps at a fixed speed, controlled by pressure switches;
- **EP-E** control panel: for the actuation of the single-phase or three-phase pumps at a fixed speed controlled by a transducer (one transducer for the entire set);
- **SP-EFC** control panel: for the actuation of the three-phase pump with the first pump at a variable speed, and the others, cascading, at a fixed speed;
- **SP-MFC** control panel: for the actuation of the three-phase pump at a variable speed;
- **VASCO** inverter: installed on the motor for the actuation of the three-phase pump at a variable speed;
- **E-SPD+** inverter: installed on the motor for the actuation of the three-phase pump at a variable speed.

For details concerning the operation of each panel/device, see the dedicated supplementary manual.

Note: sets with an VASCO and E-SPD+ control device have a MASTER pump (the first pump to the left when viewing the set from the panel side), whose inverter controls the activation sequence of all pumps.

The sets can be equipped with the following types of pump: AGA/CDX/2CDX/2CD/CDA/CMA/CMB/COMPACT/CVM/EVM/EVML/EVVG/EVMS/EVMSL/EVMSG/GS/JE/JEX/MATRIX/MD/MMD/MULTIGO/3M/3LM/3S/3LS/3D/3DS/3P/3LP/3DP.

## 5.2. COMPONENTS

The pressure booster sets are shown in the diagrams in fig. A in the ATTACHED DIAGRAMS chapter.

The code identifying the models is described in the MODEL IDENTIFICATION CODE chapter.

## 5.3. INTENDED USE

The sets are intended for civil, industrial and agricultural applications in particular for:

- lifting or pumping water;
- cooling;
- heating;
- irrigation;
- washing systems.

The treated liquid must be:

- potable, clean water, rainwater or groundwater, or a mixture;
- free of solid or fibre bodies in suspension;
- free of aggressive chemical substances;

- at a temperature compatible with that indicated in the pump documentation and in any case within the range 0 - 50°C with the use of pressure switches (EP, SP-EFC, SP-MFC control system) or in the range 0 - 80°C with the use of transducers (EP-E, VASCO, E-SPD+ control system).

The installation environment must:

- be covered and protected against the adverse weather conditions and frost;
- have an ambient operating temperature between 0 and 40°C;
- be at a maximum altitude of 1000 m above sea level;
- have a max. relative humidity of 50% at +40°C.

NB: The sets are designed to operate with a positive head. Installation of set with a negative head, isn't recommended.

Given the set's inlet pressure and the maximum pump head, make sure not to exceed the maximum outlet pressure permitted for the relative pump.

## 5.4. UNINTENDED USE



Improper product use could cause hazardous conditions as well as personal injury and/or property damage.

ATTENTION Unintended product use can invalidate the warranty.

The sets cannot be used for:

- handling of liquids with temperatures not compatible with what is indicated in the pump documentation and in any case outside the range 0 - 50°C with the use of pressure switches (EP, SP-EFC, SP-MFC control system) or range 0 - 80°C with the use of transducers (EP-E, VASCO, E-SPD+ control system);
- pumping dirty water;
- pumping water with solid particles in suspension;
- pumping corrosive liquids or liquids with acid substances;
- pumping seawater;
- pumping inflammable/explosive liquids;
- installation outside without protection against atmospheric agents or frost;
- operating without liquid;
- operating in ATEX environments.

For special applications that are not included in the Intended use chapter, contact our technical office.

## 6. TECHNICAL DATA

ATTENTION The manufacturer reserves the right to make changes to the technical data to make improvements and updates, without prior notice.

### 6.1. SET DATA PLATE

For the data plate, see the DATA PLATE chapter.

### 6.2. COMPONENT TECHNICAL DATA

For the technical data for the single components (electric pumps, control panels or control devices and protection panel) see the relative attached documents.

### 6.3. INFORMATION ABOUT AIRBORNE NOISE

The noise levels of the pressure booster set are obtained starting from the sound levels emitted by the single main electric pump, which can be found in its operating and

maintenance manual, adding the values indicated in the following table (applicable for 50 and 60Hz):

By sound pressure level is meant the mean value of the measurements taken at a distance of 1 m from the set in a free field. For the noise value tolerance, refer to the manual of the single main electric pump, as it is the main source of noise.

Standard set	Configured set	L <sub>DA</sub> dB(A)	L <sub>WA</sub> dB(A)
1GP/1GPE/2GPS/2GPES	-	2	13
2GP/2GPE/3GPS/3GPES	2-pump sets	4	15
2GPJ/2GPEJ	-	5	16
3GP/3GPE/4GPS/4GPES	3-pump sets	6	17
3GPJ/3GPEJ	-	6,5	17,5
4GP/4GPE	4-pump sets	7	18
4GPJ/4GPEJ	-	7,5	18,5

#### 6.4. TESTING

100% of the pressure booster sets are subjected to routine hydraulic, mechanical and electrical tests before being packaged. In particular, the operation of the set and each individual pump is checked, a seal test is performed with the delivery outlet closed and the rated head is checked.

## 7. HANDLING AND STORAGE

### 7.1. HANDLING (see the attached diagrams fig. B)



Observe the current accident prevention regulations.  
Possible risk of crushing.  
Use safety footwear.

#### ATTENTION

Only use the procedures specified below and the lifting points provided for handling the package and the set after the packaging has been removed.

The pressure booster sets are sent packaged on wooden pallets and in a cardboard box for smaller sizes; in the case of larger sets, in addition to the pallet also a wooden crate is used and additionally covered with nylon film. In the case of obvious dimensional problems, the intake manifold can be supplied disassembled. Various packaging systems (by sea or other) will be used based on specific customer request.

The set must be handled with utmost caution during handling and transport. Particular attention must be paid when lifting and putting down the set:

- when the set is on a pallet, move it using a lifting carriage. Pay attention to the weight indicated directly on the pallet. Check the stability of the pallet on the lifting carriage before performing lifting or moving operations;
- after the pallet and packaging have been removed, only use the specific hooking points provided on the base for movement (note: to lift the set off the pallet, remove the fastening screws that anchor the set to the pallet itself). For larger sets, there are 4 eyebolts on the base. For smaller sets, there are 4 holes on the base for lifting using pipes (not supplied with the set). It is recommended to use pipes with a section suitable for lifting and to pay attention when fastening the lifting belts to prevent the set from falling. For their movement, take the weight indicated on the pallet into account. Do not anchor on pumps, motors, manifolds or other accessories. Make sure that the set is firmly fixed to the provided lifting points before performing the lifting and moving operations.

Blows, falls or swinging must be avoided, which could cause non apparent damage. Do not stand near the set while lifting, handling or setting it down.

## 7.2. STORAGE

To maintain the full efficiency of the set:

- store the product in a covered and dry location away from heat sources and protected against impacts, dirt and vibrations;
- do not place heavy objects on the packaging;
- store the product at an ambient temperature between +5°C and +40°C (41°F and 104°F) with a relative humidity of 60%.

## 8. INSTALLATION



Installation must be performed by specialised and qualified personnel (refer to the definition of qualified personnel in the INTRODUCTION chapter).

### 8.1. MECHANICAL FASTENING (see the attached diagrams fig. C)

- The set must be positioned on a flat surface (refer also to the TECHNICAL CONSTRUCTION CHARACTERISTICS chapter for the characteristics required for the installation environment).
- The set must be positioned in a protected area with reserved access where there is sufficient space for maintenance and removal. It is recommended to maintain at least three sides free, i.e. the side of the electric control panel or protection panel (minimum 100 cm of free space), the side opposite of the panel and the side with the connections to the delivery and intake lines (minimum 50 cm of free space).
- If the set is provided with feet, the set must be placed on the ground.



The set arrives with the feet disassembled. The feet must be assembled with the set lifted off the ground. Therefore pay utmost attention during this operation to keep the set from falling.  
Use appropriate PPE.

- If the set does not have feet, it can be fixed to the ground by means of anchors using the provided holes.

### 8.2. CONNECTION TO THE HYDRAULIC SYSTEM (see the attached diagrams fig. D)

Refer to the images to identify the referenced points ("a", "b" ...).



The pipes must be sized to support the maximum operating pressure of the set (CHECK THE PUMP PRESSURE ON THE PUMP PLATE TO DETERMINE THE MAXIMUM PRESSURE AT WHICH THE SET CAN OPERATE)

- If the set arrives with the intake manifold disassembled, make the connection using a pipe union or counter flange.
- Connect the set's intake ("a") and delivery ("b") lines to the system. The unit is supplied with threaded flanges or flanged connections and with closing caps/flanges for the manifold side not used for the connection. The dimension of the connection pipes must be equal to or greater than the set's intake and delivery manifolds; they must be as short and straight as possible, and with a path that always ascends towards the pumps (intake), using as few elbows as possible, avoiding minimum number of elbows, avoiding goosenecks that could cause siphons or air pockets. Please note that in sets with 1 pump, the manifold is not present and the connection is made

directly to the intake ("a") and delivery ("b") lines of the single pump.

- All the threaded or flanged connections must be well sealed to prevent air infiltration.
- Supports, anchors, unions, pipes and other system components must be independent of the set to prevent creating additional loads or stress. If there are support brackets on the manifold, use them to fasten the manifold to a structure in order to reduce the load on the pumps.
- It is recommended to install an isolating valve immediately downstream of the set.
- To avoid transmitting vibrations to the system pipes, it is recommended to install antivibration joints on the set's intake and delivery lines.
- Always install a foot valve when installing above-head.
- In order to test the set, install a union tee downstream of it with an isolating valve and the relative recirculation pipe connected to the intake tank or towards the discharge.

### 8.3. CONNECTION TO PRESSURE TANKS (see the attached drawings fig. D)

It is possible to assemble diaphragm tanks with a capacity of up to 24 litres on the delivery manifold, depending on the number of pumps. It is recommended to only install tanks type-approved according to Directive 2014/68/EU. They must only be installed on specific G 1 pipe sections ("c"). If using larger sized diaphragm pressure tanks (precharged or supplied by a compressor), the connection must be made to the end of the delivery manifold not used for the connection to the system (for sets with more than 1 pump). For air cushion type pressure tanks, the automatic supply must be connected with the G 1/2 intake located on the pump intake line ("d"), which is only present in sets with fixed speed pumps. In any case, refer to the tank's instruction manual.

#### 8.3.1. SYSTEM WITH MEMBRANE PRESSURE TANK

For correct operation of the pressurization system, we recommend the use small size pressure tank. It is necessary to stabilize any pressure fluctuations during the variation frequency of the inverter.

Pay attention to the calculation for pre-charge of the pressure tank. In case of changes in the reference pressure, the pre-charge of the tank must be adjusted according to the calculation.

The formula for calculating the pre-charge pressure is the following:

$$P_p = (P_s - D_r) - 0,5 \text{ bar}$$

where:

$P_p$ = Pre-charge pressure;

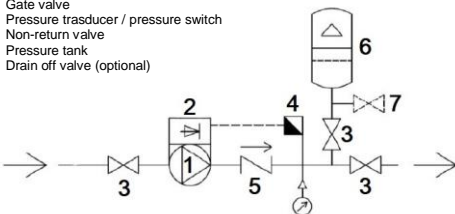
$P_s$ = Setpoint pressure;

$D_r$ = Delta restart pressure.

#### Hydraulic installation (constant pressure)

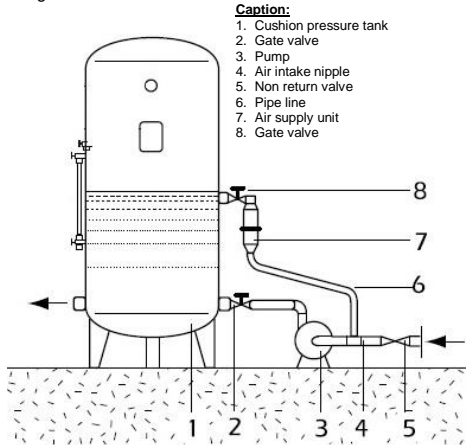
Caption:

1. Pump
2. Control panel / VFD
3. Gate valve
4. Pressure trasducer / pressure switch
5. Non-return valve
6. Pressure tank
7. Drain off valve (optional)



#### 8.3.2. SYSTEM WITH CUSHION TYPE PRESSURE TANK

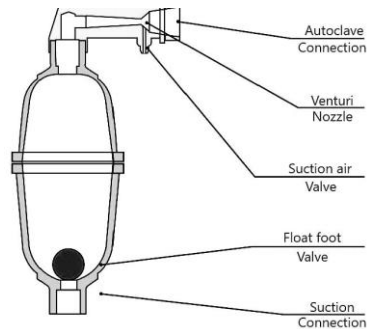
The system is schematically represented in the following image.



Any difference in installation with respect to the ATTENTION diagram above precludes the correct operation of the air supply unit.

#### Air supply unit

The device consists of a small container equipped with a float bottom valve and an air intake valve. The latter, if crossed by a flow of water, is able to suck air from the outside by the Venturi effect. This device must be mounted in correspondence with the holding level of the air cushion.



#### Principle of operation.

when the pump is running, air enters the feeder through the air intake valve; the flow stops when the whole feeder is full of air and the yellow ball is at the bottom closing the connection pipe with the pump intake. When the pump has stopped, the pressure from the fluid-mounting tank reverses the flow of water which, via nipple 4 and pipe 6, pushes the air contained in the feeder into the fluid-mounting tank (you should hear the characteristic gurgling sound).

Each air supply unit must be connected to only one pump; there must be no connection between the two air supply units in the case of a pressurization unit; there must be no non-return valves on the supply manifold of the unit and the pressurized autoclave tank, nor on the outlets of the individual pumps. Only those on the suction side.

#### ATTENTION

The automatic air feeder is suitable for systems where regular operation of the pumps is required, because it uses the start-ups to perform its function.

Its correct operation is guaranteed when there is a negative suction head of the pump; in the case of a positive head it is advisable that this does not exceed 5 m ca.

However, it cannot be used in combination with submersible pumps where it is not physically possible to connect it to the pump suction.

### 8.4. PRIMING (see the attached diagrams fig. E)

- **Set with positive head (priming tank with a level higher than the pump intake opening):** open the set's intake isolating valves ("i"), and close the delivery isolating valves ("h"), remove the filling cap located on the top of the pumps ("g") (see the manual for the specific pump for additional information) and wait until water exits. If there is no leakage (e.g. horizontal priming) from the stop valve, fill through the pump filling hole until it overflows, then reclose using the relative cap.
- **Set with negative head. (priming tank with a level lower than the pump intake opening):** open the set's intake isolating valves ("i"), remove the filling cap from the pumps ("g") and fill until it overflows. Then reclose using the relative cap.

## 9. ELECTRICAL CONNECTION

#### ATTENTION



The electrical connection must be performed by specialised and qualified personnel (refer to the definition of qualified personnel in the INTRODUCTION chapter).



The set power supply must be supplied by means of a permanent connection to the system's electrical panel. The connection must include a switch, fuses and a thermal circuit-breaker adjusted to the current absorbed by the set. Make sure that the characteristics of the electrical panel are compatible with those of the set. Use connection cables with a section suitable for set absorption (refer to the attached electrical panel manual for technical absorption data).



Check that the mains to which the set is being connected has a functional earthing system according to the electrical regulations applicable in the country. Perform the earthing connection before performing any other work on the panel.

The sets can be equipped with electrical panels and single-phase or three-phase control devices with a thermoplastic or metal enclosure, depending on the size, the cable gland output, and the different degree of protection depending on the control device. The electrical components that protect the

auxiliaries operate with very low voltage, are easy to replace and find commercially.

For connecting the set to the electrical mains, refer to the attached manuals and the instructions provided on the control panel (sets with EP/EP-E/SP-EFC/SP-MFC control system) or on the protection panel (sets with VASCO, E-SPD+ control system).

For the set's wiring diagram for connecting the electric pumps to the panel or the control device, refer to the ATTACHED DIAGRAMS chapter (fig. G).

For the characteristics and wiring diagram for the panel/control device, see the attached manual for the electrical panel or control device provided with the set.

For the electrical characteristics of the panel/control device, see the attached manual for the electric pumps.

If connecting pressure switches and transducers, see the information provided on the devices themselves.

For further information, or if there are questions concerning the correct connection, contact the closest authorised reseller or service centre, specifying the data identifying the set located on the DATA PLATE.

Note: for sets with a three-phase connection, after making the connection to the terminal board, immediately check the rotation direction of the motor cooling fan, which must be compatible with the instructions provided on the fan cover and in the pump manual. If the rotation is incorrect, completely disconnect the voltage from the panel and invert the connection of two of the three phases on the board, then check again. For sets with an inverter on the motor, use the keypad to invert the rotation direction.

## 10. STARTING THE SYSTEM

For the first start-up of the set, follow the described procedure (see the attached diagrams fig. F):

- make sure that the set is full of water;
- open the pump intake ("i") and delivery ("h") isolating valves;
- close the valve downstream of the system;
- provide voltage to the electrical panel or the protection panel ("m");

For versions with the EP/EP-E/SP-EFC/SP-MFC control panel

- start the first pump in the set manually. For the procedure to follow, see the attached manual for the electrical panel. After checking that it starts, stop the pump manually;
- manually start the other pumps in the set one at a time (if present). For the procedure to follow, see the attached manual for the electrical panel. After checking that each single pump starts, stop each manually before proceeding with the next one;
- switch the set's operating mode to "automatic". For the procedure to follow, see the attached manual for the electrical panel;
- slowly open the isolating valve downstream of the system. The unit will activate automatically. Check the activation of the pumps, when starting and stopping, manoeuvring the downstream valve; if the pressure switches need adjusting, proceed as indicated in the MAINTENANCE AND REPAIR chapter.

For versions with an VASCO/E-SPD+ control device

- slowly open the isolating valve downstream of the system. The set will activate automatically. Check the operation of

the pumps, when starting and when stopping, manoeuvring the downstream valve.

NB: avoid prolonged operation with the isolating valve downstream of the system closed, to prevent damaging the pump (internal overheating).

## 11. MAINTENANCE

ATTENTION



Extraordinary maintenance and repair operations must be performed by qualified personnel (refer to the definition of qualified personnel in the INTRODUCTION chapter). Failure to observe this rule voids the warranty and puts the health of workers and the efficiency of the set at serious risk.



Every maintenance and repair operation must be performed with the set disconnected from the electrical power supply.

Pressure booster sets do not require any particular maintenance. The operations to perform are divided between ordinary and extraordinary maintenance operations depending on the skills required for the relative operation. Also refer to the instruction manual for the electric pump, the electric panel or the control device. Any problems can be solved by consulting the table below. It is recommended in case of a problem not indicated in the table, for operations indicated in the table that require the intervention of qualified personnel (refer to the definition of qualified personnel in the INTRODUCTION chapter) or for other requirements, to contact your closest service centre or distributor.

### 11.1. ORDINARY MAINTENANCE

Ordinary maintenance consists of simple control operations that can be performed by the operator who uses the set. The frequency of the checks is indicated in detail for each operation.

- Check the state of wear of the set's electrical cables and the electrical connections. If breakage or deterioration is found in the cable's protective sheaths, in the case of insecure connections or any faults, contact your closest service centre or distributor. (EVERY 6 MONTHS).
- Check that the set is operating efficiently by opening the valve downstream of the set itself to check that the pumps start, following the procedure described in the "STARTING THE SYSTEM" chapter. If problems are found when starting the pumps, contact your closest service centre or distributor. (MONTHLY).
- Check that the hydraulic connections upstream and downstream of the pressure booster system do not leak while the system is operating. Check that the system isolating and stop valves are not clogged. If necessary, restore the line to its original state. (EVERY 6 MONTHS).

### 11.2. EXTRAORDINARY MAINTENANCE

Extraordinary maintenance, just like the repair operations, may only be performed by qualified personnel (refer to the definition of qualified personnel in the INTRODUCTION chapter).

If faults are found during operation and ordinary maintenance (see what is described in the ordinary maintenance chapter) or if abnormal noises or vibrations are detected, stop the set and immediately contact your closest service centre or distributor (the complete list of resellers and service centres can be viewed at [www.ebara.it](http://www.ebara.it)) for the suitable extraordinary maintenance operations.

## 11.3. FAULT AND INTERVENTION TABLE

ATTENTION For every control below indicated, we suggest ask support by an EBARA authorized assistance center.

TROUBLE	CAUSE	SOLUTION	
<b>THE PUMP DOESN'T START</b>	Missing or interrupted main voltage	Check the main voltage presence	
	Wrong voltage		
	Pressure sensor detect wrong value		Clean or change the pressure sensor (on EP-E control panel only)
			Check the proper scale sensor setting on the control device (on EP-E control panel only)
	Pressure switches not properly setted	Check the proper pressure switches setting	
	Stucked control panel breakers	Check and change the breakers	
	Broken fuses	Change the fuses	
	Overcurrent protection operation	Check the proper overcurrent protection setting (see the motor data and control panel user manual)	
	External protection operation (e.g. minimum float switch)	Check the water availability and / or the remote control proper function	
	Blocked pump	Check and remove the blockage causes	
	Fault motor	Fix or change the motor	
	Incorrect setting of restart pressure	Check set pressure and restart pressure setting	
	Dry run protection operation		Check connection of suction pipes
			Check water availability
		Check for air leaks or infiltrations from suction pipes	
		Check correct sizing of suction pipes	
		Check correct pump priming	
<b>THE PUMP DOESN'T STOP</b>	Required working pressure too high	Set the working pressure based on the plant and pump features	
	Wrong rotation sense (low performances)	Check the rotation sense and phases connection	
	Stuck control panel breakers	Check and change the breakers	
	Pump not properly primed and doesn't achieve required	Properly prime the pump and check for air infiltration and/or leaks	

	performance	
	Malfunctioning check valve	Check or change the check valve
	Incorrect stop frequency	Check and set proper value
<b>STUCK PUMP</b>	Prolonged inactivity resulting in scaling, oxidation and limescale formation	Careful pump cleaning and maintenance
	Presence of foreign objects	Remove the foreign objects
	Blocked or broken bearings	Change bearings
	Worn bearings	Change bearings
<b>NOISY PUMP AND/OR EXCESSIVE VIBRATION</b>	Worn or broken impellers	Change impellers
	Presence of air	Check proper pump priming
	Undersized or incorrectly secured pipes	Correct sizing of suction and discharge pipes and secure pipes
	Wrong duty point setting	Set the proper duty point
	Pump undersized for system requirements	Check pump performance if it complies with system requirements
<b>PUMP OPERATES BUT DOESN'T DELIVER ENOUGH PERFORMANCE (FLOW RATE AND/OR PRESSURE)</b>	Pump not properly primed and doesn't achieve required performance	Properly prime the pump and check for air infiltration and/or leaks
	Blocked or obstructed foot valve	Remove obstruction or unblock foot valve. If necessary, replace foot valve
	Wrong rotation sense (low performances)	Check the rotation sense and phases connection
	Improperly sized pipes (excessive pressure losses)	Sizing the system piping properly
	Excessive height difference (if overhead installation)	Decrease suction height
	Excessive liquid viscosity (if different than water)	Pump model not suitable for service or incorrect pressure drop calculation / pump selection
	<b>WATER LEAKAGE</b>	Excessive wear or mechanical seal failure
Excessive wear or breakage of gaskets		Change gaskets
Pipes not properly tightened at joints		Check correct tightening of joints
<b>PUMP RUNS IN REVERSE WHEN STOPPED AND STARTS AGAIN IMMEDIATELY</b>	Unit foot valves or non-return valves not functioning properly	Check correct functioning of non-return valves and replace if necessary

<b>TOO FREQUENT PUMP RESTARTS</b>	Incorrect setting of set pressure and restart pressure parameters	Check and set proper parameters (see the control panel user manual)
	Incorrect setting and adjustment of the pressure switches	Correct adjustment of pressure switches
	No or incorrect preloading/sizing of pressure vessel	Install adequately sized pressure vessel (if absent) and/or check for proper precharge
	Faulty or defective pressure vessel membrane	Replace membrane or vessel
<b>PUMP DISPRIMED*</b>	Incorrect setting of set pressure and restart pressure parameters	Check and set proper parameters (see the control panel user manual)
	Faulty or malfunctioning air supply unit	Replace air supply unit
<b>LACK OF WATER-AIR EXCHANGE*</b>	Air supply suction valve blocked	Clean valve of possible limescale or replace air supply unit

\* Valid only for GP installation with air feeders on systems with diaphragmless tanks and/or liquid assemblies

#### 11.4. CALIBRATING THE PRESSURE SWITCHES

The pressure switches are only present in sets with an EP, SP-EFC or SP-MFC control panel.

The pressure switches are calibrated (at ambient temperature) according to the following standard table:

##### Pressure switch calibration table:

Pump sequence	Type of operation	Calibrating pressures [bar]	Sets
Pump no. 1 (or pilot pump) Pressure switch no. 1	Stop	$P1=P0-10\%$	Sets with 1 pump
	Start	$P2=P1-\Delta P_{min}$	
Pump no. 2 Pressure switch no. 2	Stop	$P3=P1-0.5$	Sets with 2 pumps
	Start	$P4=P3-\Delta P_{min}$	
Pump no. 3 Pressure switch no. 3	Stop	$P5=P3-0.5$	Sets with 3 pumps
	Start	$P6=P5-\Delta P_{min}$	
Pump no. 4 Pressure switch no. 4	Stop	$P7=P5-0.5$	Sets with 4 pumps
	Start	$P8=P7-\Delta P_{min}$	

With:

$P0$  = max pressure in bar of pump no. 1 (or pilot pump) with the opening closed

$P1 - P8$  = calibrating pressures in bar (see the following table)

$\Delta P$  = minimum differential in bar (see the following table)

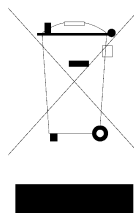
NB: depending on the characteristics of certain types of pumps (with flat curve), the pressure switch for pump no.1 (or pilot) may be calibrated at a stopping pressure  $P1 = P0 - 0.3$  bar Any diaphragm tanks must be calibrated by the user at a pressure



0.3-0.5 bar lower than the starting pressure of the pressure switch of the last pump (minimum pressure).

**Regulating range:**

PRESSURE SWITCH TYPE	PUMP P STOP PRESSURE [bar]	MINIMUM DIFFERENTI AL $\Delta P$ [bar]	MAXIMUM DIFFERENTI AL $\Delta P_2$ [bar]
PY06	1.5 - 4.5	0.8 - 1.2	-
PY12	4.5 - 10.3	1.2 - 2.1	-
XMP A06	1 - 6	0.8 - 1.2	0.8 - 4.2
XMP A12	1.3 - 12	1 - 1.7	1 - 8.4
XMx A25	3.5 - 25	3.4 - 4.5	3.4 - 20
FSG 2NE – 9NE	1.4 - 4.6	1 - 1.2	1.2 - 2.3
FYG 22NE	2.8 - 7	1.2 - 1.6	2.3 - 2.7



In particular, this symbol on the product indicates that it cannot be disposed of together with domestic waste. This provision concerns only the disposal of equipment in the territory of the European Union (2012/19 EU).

For details regarding the recycling of individual packaging components, refer to when described in chapter 18.

Note: check directly on the installed pressure switches for the identification code of the assembled model.

**Adjustment procedure (see image fig. H):**

- completely loosen the regulating nut or screw “B” of pressure switch 1 of pump no. 1 (in this  $\omega\alpha\psi$  you have the minimum differential  $\Delta P$ )
- start pump no. 1 by means of the manual control (or the pilot pump when the set is provided with one);
- slowly close the isolating valve downstream of the set until obtaining the desired stop pressure (reading on the pressure gauge), adjust pressure switch no. 1 by rotating the nut or screw “A” until the contact clicks open, this operation will stop the pump;
- slowly open the isolating valve downstream of the set, which causes a loss of system pressure until the contact clicks shut for pressure switch no. 1(which is already set with minimum  $\Delta P$ ), this operation will start the pump. Check the adjustment by increasing and decreasing the pressure downstream of the system, always using the isolating valve;
- perform the same operations for the set’s remaining pressure switches. To adjust the start and stop of the pumps, use the information provided above in the “**Pressure switch calibration table**”. Pay particular attention to set the starting values for the pumps following the first one, with decreasing pressure values to prevent the simultaneous start of the pumps;
- discharge the downstream pressure, set automatic operation on the control panel, slowly open the isolating valve downstream of the set, check the sequential intervention calibration of the pumps at least twice to further check the inversion of the starting order of the pumps.

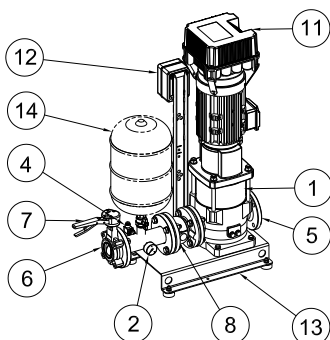
**12. DISPOSAL**

When discontinuing operation, the pressure booster set, or any of its components, must be disposed of in a separated manner according to what is set forth by the regulations in force in the country where the set is installed.

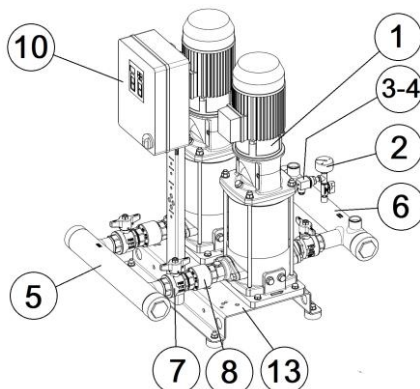
For components such as the pump inverter panels and pressure switches, see the specific component manuals

### 13. ATTACHED DIAGRAMS

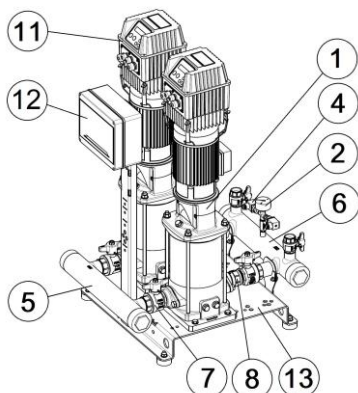
A – SHOT-PEENED SETS



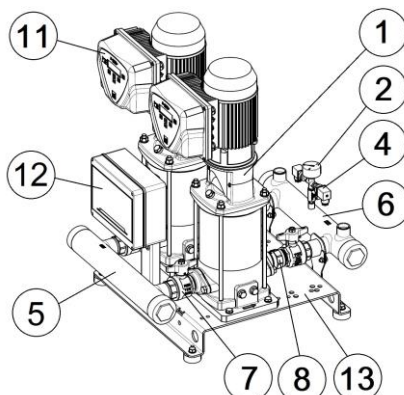
SET 1 PUMP WITH VASCO CONTROL



SET TYPE WITH  
EP/EP-E/SP-EFC/SP-MFC CONTROL



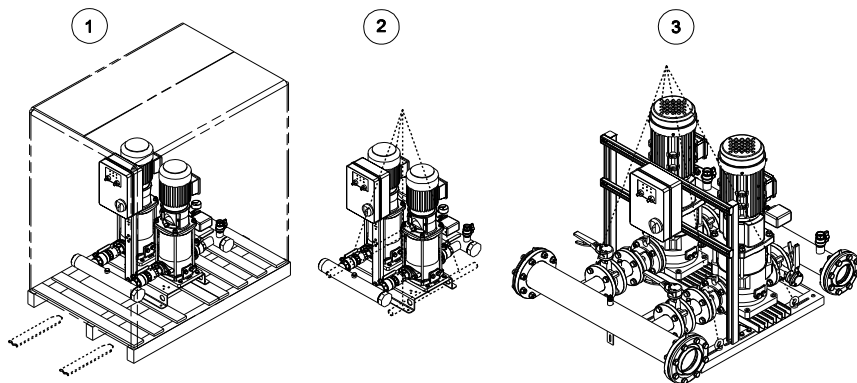
SET TYPE WITH  
VASCO CONTROL



SET TYPE WITH  
E-SPD+ CONTROL

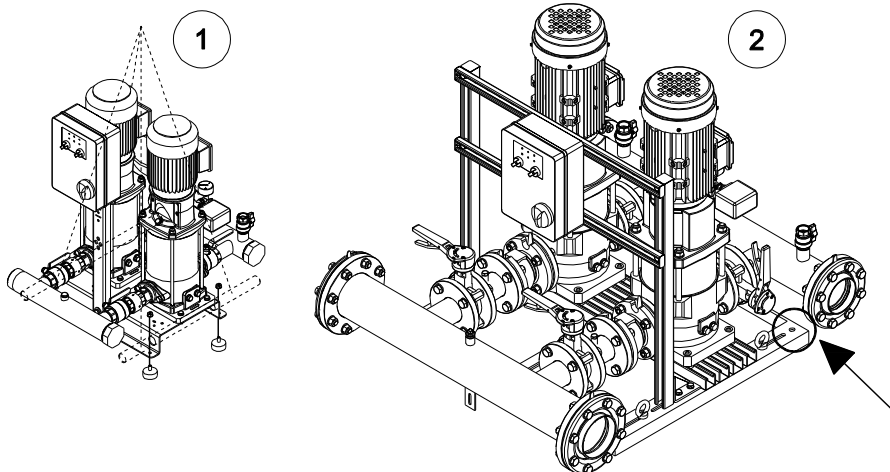
- 1- electric pumps;
- 2- pressure gauge;
- 3- pressure switches (EP/SP-EFC/SP-MFC);
- 4- pressure transducer (EP-E/SP-EFC/SP-MFC/VASCO/E-SPD+);
- 5- intake manifold (or intake connection for sets with 1 pump);
- 6- delivery manifold (or delivery connection for sets with 1 pump);
- 7- intake and delivery isolating valves;
- 8- stop valve;
- 9- intake nipples with G 1/2 UNI ISO 228/1 connection for connection to the air supply (EP/EP-E);
- 10- electric control panel (EP/EP-E/SP-EFC/SP-MFC);
- 11- control device (VASCO/E-SPD+);
- 12- protection panel (VASCO/E-SPD+);
- 13- base (with feet if made of folded metal sheet);
- 14- vertical diaphragm type vessels on the delivery line (upon request and separately).

## B - LIFTING



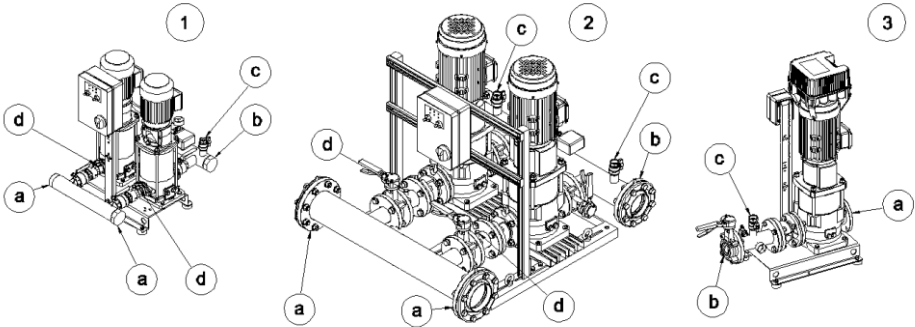
- 1-Pallet lifting with the lifting carriage
- 2-Lifting with pipes
- 3-Lifting with eyebolts

## C – MECHANICAL FASTENING



- 1-Feet fastening on the base
- 2-Fastening points for anchoring to the ground using anchors

D – HYDRAULIC CONNECTIONS

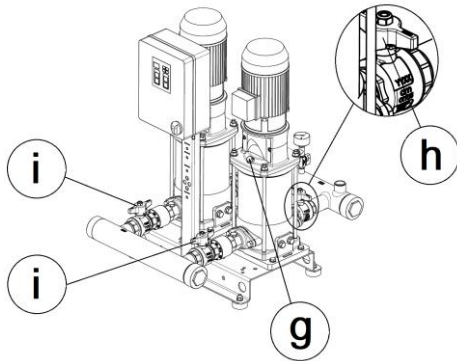


- 1-Group with threaded connections
- 2-Group with flanged connections
- 3-Group with 1 pump

- a-Intake line
- b-Delivery line
- c-G1 pipe section

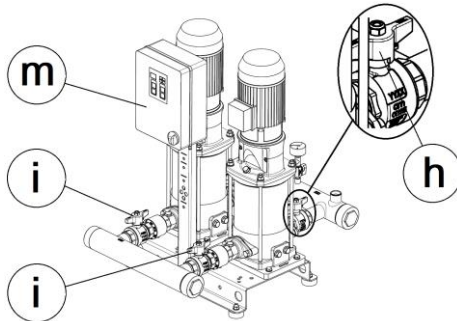
d- G 1/2 " air intake for fixed speed boosters  
(optional for flanged pump suction line)

E – PRIMING



- g-Filling cap
- h-Delivery isolating valves
- i- Intake isolating valves

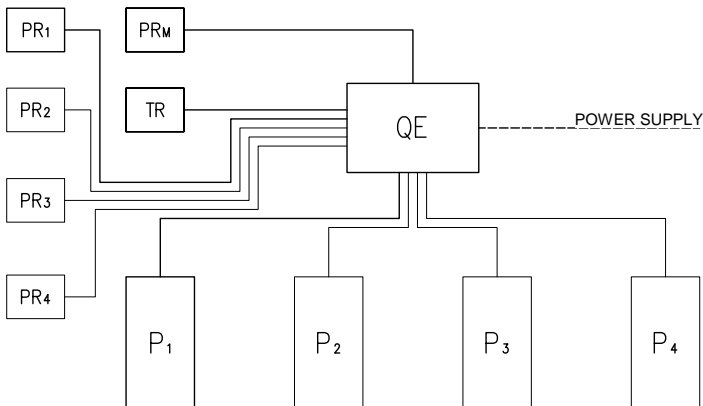
F – STARTING THE SYSTEM



- h-Delivery isolating valves
- i-Intake isolating valves
- m-Electrical panel or protection panel

**MAIN DIAGRAM**

VERSION WITH CONTROL PANEL (EP/EP-E/SP-EFC/SP-MFC)



QE = Control panel

P<sub>1(2,3,4)</sub> = Electric pump 1(2,3,4)

PR<sub>1(2,3,4)</sub> = Pressure switch 1(2,3,4) (NO connection) (EP-E excluded)

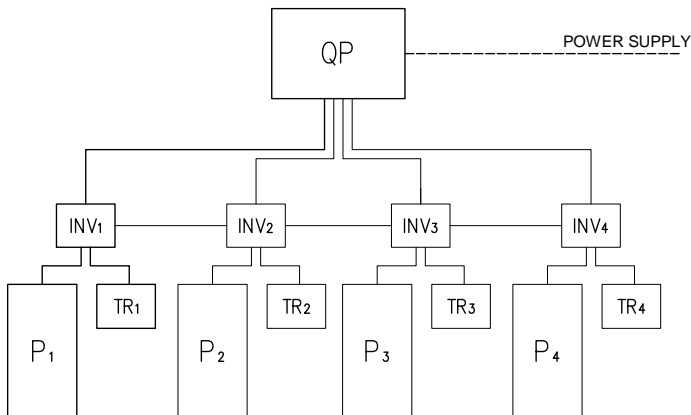
PR<sub>M</sub> = Minimum pressure switch - optional

TR = Transducer (EP excluded)

Notes:

- for connecting the panel to the power supply line, see the attached control panel manual
- The connections with dash lines are the responsibility of the installer

VERSION WITH ON-BOARD PUMP INVERTER (VASCO)



QP = Protection panel

P<sub>1(2,3,4)</sub> = Electric pump 1(2,3,4)

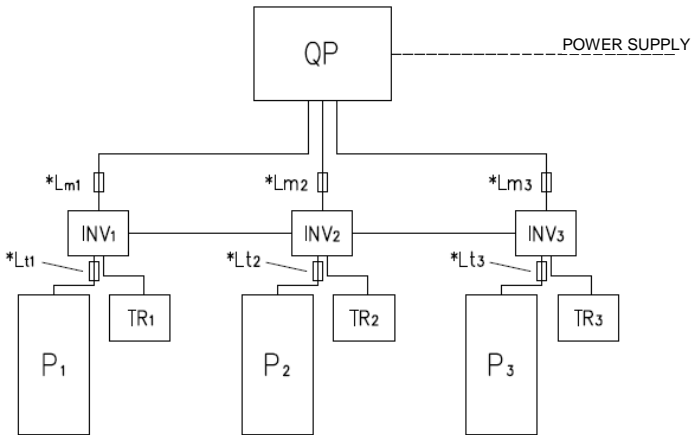
TR<sub>1(2,3,4)</sub> = Transducer 1(2,3,4)

INV<sub>1(2,3,4)</sub> = Inverter 1(2,3,4)

Notes:

- for connecting the protection panel to the power supply line, see the attached panel manual
- The connections with dash lines are the responsibility of the installer

VERSION WITH ON-BOARD PUMP INVERTER (E-SPD+ MT2200 – TT4000)



QP = Protection panel

P<sub>1(2,3)</sub> = Electric pump 1(2,3)

TR = Transducer

INV<sub>1(2,3)</sub> = Inverter 1(2,3)

\*Lm<sub>1(2,3)</sub> = Magnetic core, only for MV models

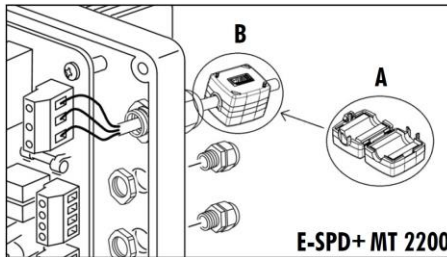
\*Lt<sub>1(2,3)</sub> = Magnetic core, only for TT models

*Notes:*

- for connecting the protection panel to the power supply line, see the attached panel manual
- The connections with dash lines are the responsibility of the installer

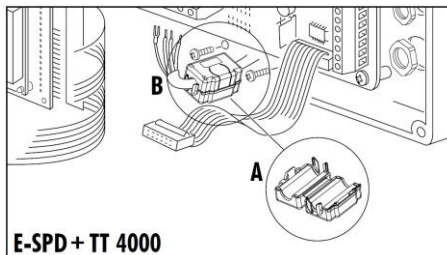
**Note: “Lm” magnetic core application (E-SPD+ MV model MT2200)**

For single-phase models (E-SPD+ MV 2200), the magnetic core is positioned close to the inverter, encasing the power cable, as shown in the inverter’s specific instruction manual.

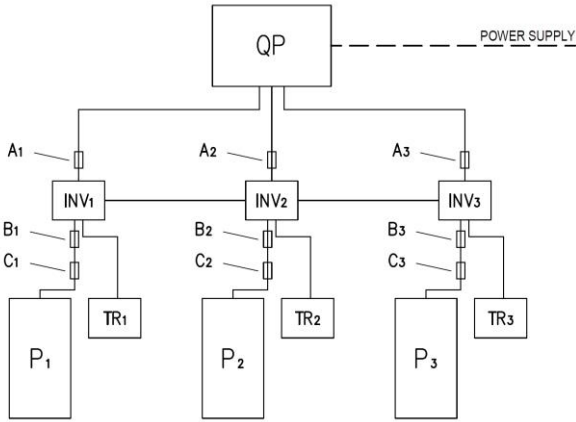


**Note: “Lt” magnetic core application (E-SPD+ model TT4000)**

For three-phase models (E-SPD+ TT 4000), the magnetic core is positioned encasing the 4 motor power connecting cables, therefore close to the “MOTOR OUTPUT” terminal block of the inverter internal board.



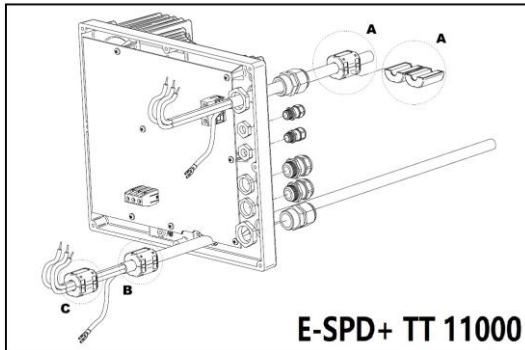
VERSION WITH ON-BOARD PUMP INVERTER (E-SPD+ TT11000)



QP = Protection panel  
P<sub>1(2,3)</sub> = Electric pump 1(2,3)  
TR = Transducer  
INV<sub>1(2,3)</sub> = Inverter 1(2,3)  
A<sub>1(2,3)</sub> = Magnetic core  
B<sub>1(2,3)</sub> = Magnetic core  
C<sub>1(2,3)</sub> = Magnetic core

**Notes:**

- for connecting the protection panel to the power supply line, see the attached panel manual
- The connections with dash lines are the responsibility of the installer

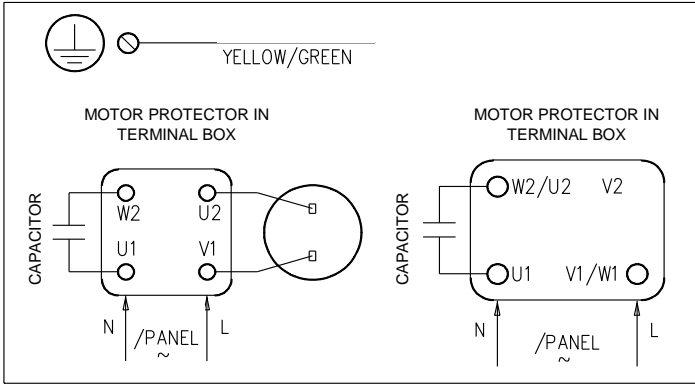


**Note: Magnetic core application “A”, “B”, “C” (E-SPD+ model TT11000)**

For E-SPD+ model TT11000, is necessary to install three magnetic cores: one in the power cable of the frequency converter, one will be installed on the outside, as close as possible to the cable gland (A). In the cable between the frequency converter and the motor, one must be installed that groups all the cables (B) and another that only groups the 3 phases without the ground (C).

## MOTOR CONNECTION DIAGRAMS

### SINGLE-PHASE MOTOR CONNECTION

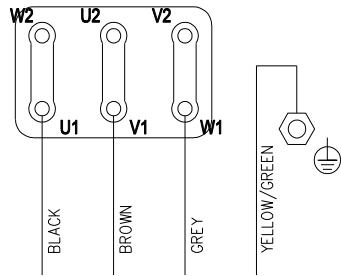


### THREE-PHASE MOTOR CONNECTION WITH CONTROL PANEL (EP/EP-E/SP-EFC/SP-MFC)

#### **TRIANGLE CONNECTION**

With three-phase power supply

- EP-E ( $\geq 5.5 \text{ kW}^*$ )
- EFC-T ( $\geq 5.5 \text{ kW}^*$ )
- MFC ( $\geq 5.5 \text{ kW}^*$ )

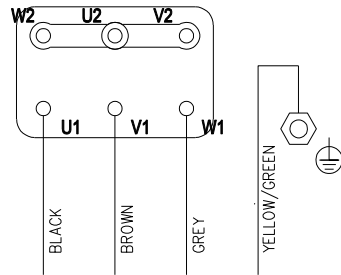


PANEL CONNECTION

#### **STAR CONNECTION**

With three-phase power supply

- EP-E ( $\leq 4 \text{ kW}^*$ )
- EFC-T ( $\leq 4 \text{ kW}^*$ )
- MFC ( $\leq 4 \text{ kW}^*$ )



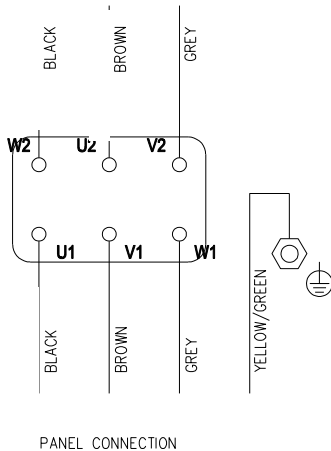
PANEL CONNECTION



**SD CONNECTION**

With three-phase power supply

- EP-SD
- EFC-SD



\*Motor power indicated, check the type of panel (EP-T, MFC, etc.) on the plate and in the panel manual.

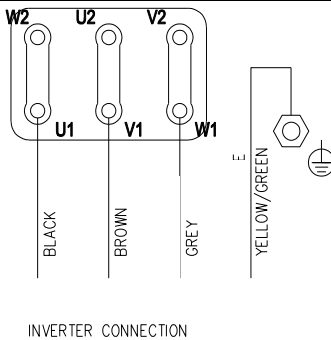
**THREE-PHASE MOTOR CONNECTION WITH ON-BOARD PUMP INVERTER (VASCO/E-SPD+)****TRIANGLE CONNECTION**

With single-phase power supply

- VASCO (from 1.5 to 3 kW\*)
- E-SPD+ ( $\leq 2.2$  kW\*)

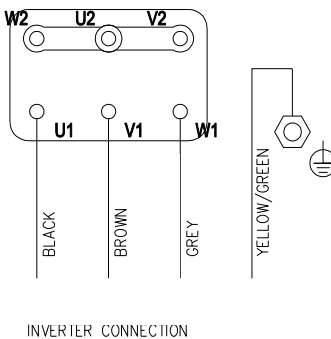
With three-phase power supply

- VASCO (from 5.5 to 45 kW\*)

**STAR CONNECTION**

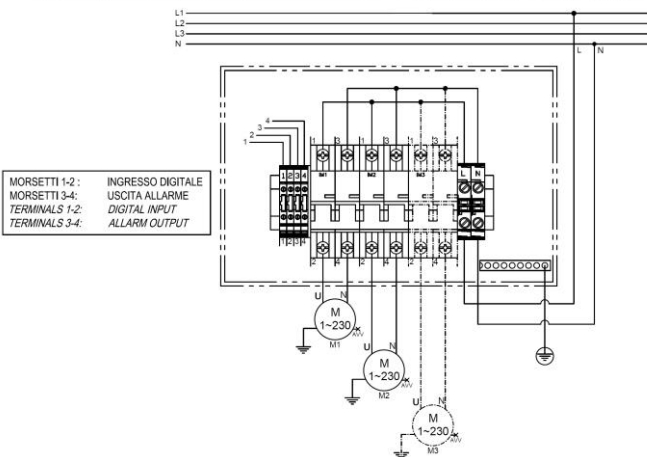
With three-phase power supply

- VASCO ( $\leq 4$  kW\*)
- E-SPD+ ( $\leq 4$  kW\*)

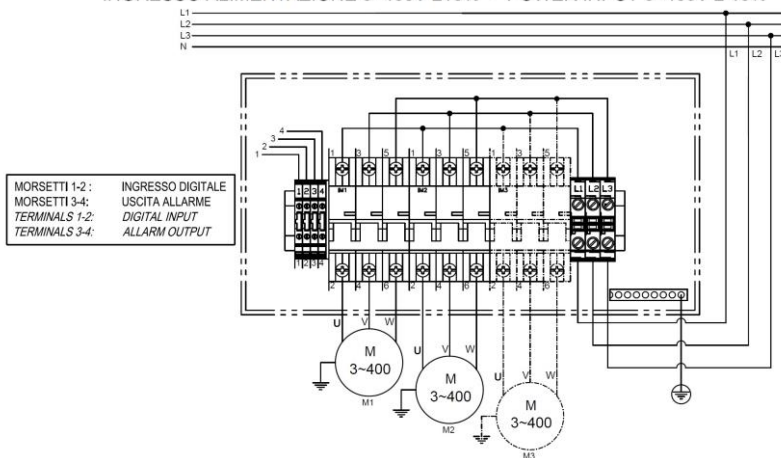


\*Motor power indicated, check the type of control device (VASCO, E-SPD+, etc.) in the device manual.

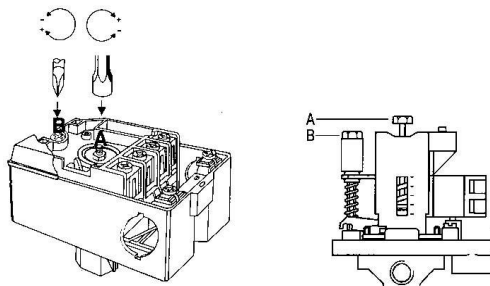
INGRESSO ALIMENTAZIONE 1~230V ±10% - POWER INPUT 1~230V ± 10%



INGRESSO ALIMENTAZIONE 3~400V ±10% - POWER INPUT 3~400V ± 10%

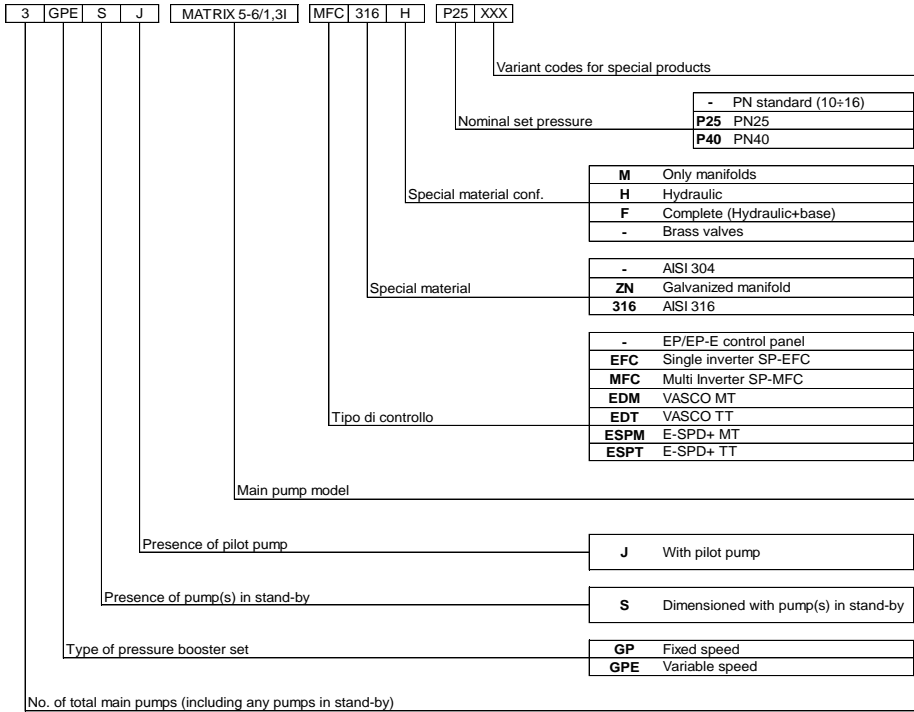


H – PUMP STARTING PRESSURE SWITCH

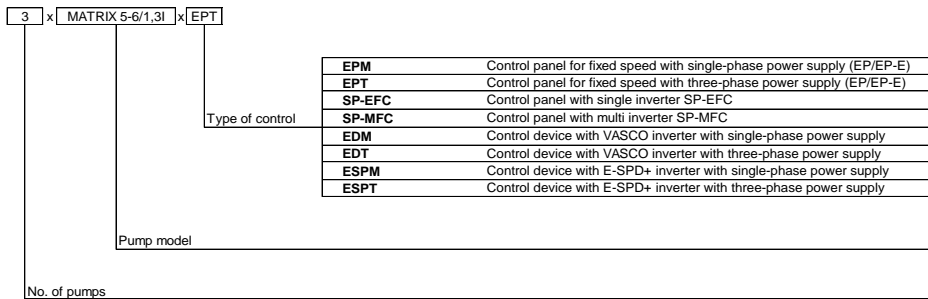


## 14. MODEL IDENTIFICATION CODE

### STANDARD PRESSURE BOOSTER SET TYPE KEY








### CONFIGURED PRESSURE BOOSTER SET TYPE KEY






## 15. DATA PLATE

### STANDARD PRESSURE BOOSTER SETS GP/GPE/GPS/GPES/GPJ/GPEJ

 <b>EBARA Pumps Europe S.p.A. - UK Branch</b> Unit A, Park 34, Collet Way, Southmead, Didcot Oxfordshire OX11 7WB Phone +44 01895 439027 VAT.: 731 5424 56		   
<b>MADE IN U.K.</b>		
<b>BOOSTER UNIT</b>		
<b>TYPE</b>	①	
<b>P/N</b>	②	
<b>S/N</b>	③	

- 1-"TYPE": Type key  
 2-"P/N": Part number  
 3-"S/N": Serial number









### CONFIGURED PRESSURE BOOSTER SETS

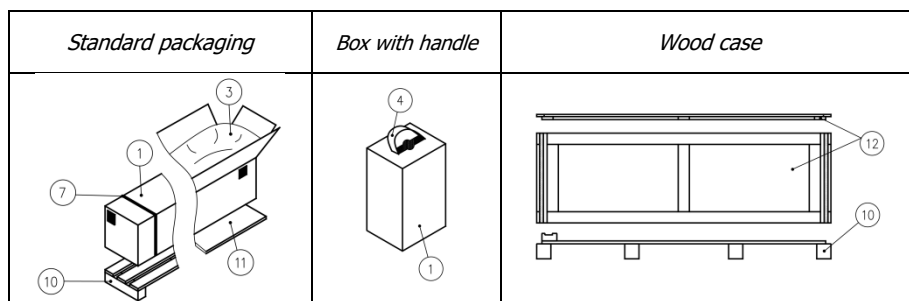
 <b>EBARA Pumps Europe S.p.A.</b> Via Campo Sportivo, 30 38023 Cles (TN), ITALY Phone +39 0444 706811 V.A.T.: 0123466021		 
<b>MADE IN ITALY</b>		
<b>BOOSTER SET</b>		
<b>TYPE</b>	①	
<b>I/C</b>	②	
<b>P/N</b>	③	
<b>S/N</b>	④	

- 1-"TYPE": Type key  
 2-"I/C": Identification code  
 3-"P/N": Part number  
 4-"S/N": Serial number

## 16. PACKAGING ENVIROMENTAL LABELLING

According to the European decision 97/129/CE and the Italian act 116/2020.

#	Description	Symbol	Waste collection
1	Box	 	Paper
2	Paper filler		
3	Plastic sheet or bag		Plastic
4	Handle		
5	Stretch film		
6	Bubble wrap		
7	Strap		Undifferentiated (or check the instructions of your municipality)
8	Polystyrene insert		
9	Foam filler		
10	Pallet		Wood
11	Chipboard panel		
12	Wood case		



- Not all the mentioned components are present

## 17. CE DECLARATION OF CONFORMITY



**EBARA**

DECLARATION OF CONFORMITY



PRODUCT SERIES:

Pressure booster sets:

1GP, 1GPE, 2GP, 2GPE, 2GPS, 2GPJ, 3GP, 3GPE, 3GPS, 3GPJ, 4GP, 4GPE, 4GPS, 4GPJ
5GP, 5GPE, 5GPS, 5GPJ, 6GP, 6GPE, 6GPS, 6GPJ
2X (pump name) EP, 3X (pump name) EP, 4X (pump name) EP,
2X (pump name) SP, 3X (pump name) SP, 4X (pump name) SP,
2X (pump name) EDM, 3X (pump name) EDM, 4X (pump name) EDM
2X (pump name) EDT, 3X (pump name) EDT, 4X (pump name) EDT
2X (pump name) ESPM, 3X (pump name) ESPM, 4X (pump name) ESPM
2X (pump name) ESPT, 3X (pump name) ESPT, 4X (pump name) ESPT

equipped with standard electric pumps:

AGA, CDX, 2CDX, 2CD, CDA, CMA, CMB, COMPACT, CVM, JE, JEX, MATRIX, MD, MMD, MULTIGO EVM, EVML, EVMG, EVMS, EVMSL, EVMSG, 3M, 3LM, 3S, 3LS, 3D, 3DS, 3P, 3LP, 3DP, GS, GSD
--

CE DECLARATION OF CONFORMITY (Translation from the original)

We, EBARA PUMPS EUROPE S.p.A headquartered in Via Campo Sportivo, 30 38023 Cles (TN) ITALY, declare under our own responsibility that our "Pressure booster sets" comply with the provisions of the following European directives:

Machine Directive 2006/42/EC  
Low Voltage Directive 2014/35/EU  
Electromagnetic Compatibility Directive 2014/30/EU  
RoHS II Directive 2011/65/EU  
EcoDesign Directive 2009/125/EC  
WEEE Directive 2012/19/EU

and with the following harmonized technical standards:

EN 809  
EN ISO 12100  
EN 60204-1  
CEI EN 61439-1  
EN 60335-1  
EN 60335-2-41  
EN 61000-6-2  
EN 61000-6-3  
EN 61800-5-1  
EN 61800-3 Categoria C2  
IEC 61800-9-2  
EN 809:1998+A1:2009  
EN ISO 12100:2010  
EN 60204-1  
EN 61000-6-4  
EN 61000-6-2  
IEC EN 61439-1(IEC 17/113)

Gambellara, 13<sup>th</sup> March 2023

Mr. Minoru Matsushita  
Managing Director

EBARA PUMPS EUROPE S.p.A.  
Via Campo Sportivo, 30  
38023 Cles (TN) ITALY

Individual authorised to compile the technical file  
and sign the CE declaration of conformity.

## 18. UKCA DECLARATION OF CONFORMITY



### UKCA DECLARATION OF CONFORMITY



**Manufacturer** EBARA PUMPS EUROPE S.p.a.  
Via Campo Sportivo, 30 38023 CLES (TN) ITALY

**Products** PRESSURE BOOSTER UNITS

1GP, 1GPE, 2GP, 2GPE, 2GPS, 2GPJ, 3GP, 3GPE, 3GPS, 3GPJ, 4GP, 4GPE, 4GPS, 4GPJ  
5GP, 5GPE, 5GPS, 5GPJ, 6GP, 6GPE, 6GPS, 6GPJ  
2X (pump name) EP, 3X (pump name) EP, 4X (pump name) EP,  
2X (pump name) SP, 3X (pump name) SP, 4X (pump name) SP,  
2X (pump name) EDM, 3X (pump name) EDM, 4X (pump name) EDM  
2X (pump name) EDT, 3X (pump name) EDT, 4X (pump name) EDT  
2X (pump name) ESPM, 3X (pump name) ESPM, 4X (pump name) ESPM  
2X (pump name) ESPT, 3X (pump name) ESPT, 4X (pump name) ESPT  
equipped of electrical pumps series:  
AGA, CDX, 2CDX, 2CD, CDA, CMA, CMB, COMPACT, CVM, JE, JEX, MATRIX, MD, MMD, MULTIGO  
EVM, EVML, EVMG, EVMS, EVMSL, EVMSG, 3M, 3LM, 3S, 3LS, 3D, 3DS, 3P, 3LP, 3DP, GS, GSD

**Directives** APPLICABLE DIRECTIVES AND REGULATIONS

- Supply of Machinery (Safety) Regulation 2008
- Electrical Equipment (Safety) Regulations 2016
- Electromagnetic Compatibility Regulations 2016
- Ecodesign for Energy-Related Products Regulations 2010
- UK RoHS Regulation

**Standards** APPLICABLE STANDARDS

- BS 809:1998+A1:2009
- BS ISO 12100:2010
- BS EN 60204-1:2018
- BS EN IEC 61439-1:2021
- BS EN 60335-1:2012+A15:2021
- BS EN 60335-2 41:2021+A11:2021
- BS EN IEC 61000-6-2:2019
- BS EN IEC 61000-6-3:2021
- BS EN 61800-5-1:2007+A11:2021
- BS EN 61800-3:2018 (Category C2)
- BS EN 61800-9-2:2017

**Declaration** DECLARATION

We, **EBARA PUMPS EUROPE S.p.a.**

Via Campo Sportivo, 30 38023 CLES (TN) ITALY

*declare under our sole responsibility that all the above mentioned products  
complies with all the Directives indicated in this declaration.*

*Person authorised to compile technical file and empowered to sign the  
EC declaration of conformity.*

SIGNATURE: Mr. Minoru Matsushita  
TITLE Managing Director

DATE: 13<sup>th</sup> March 2023