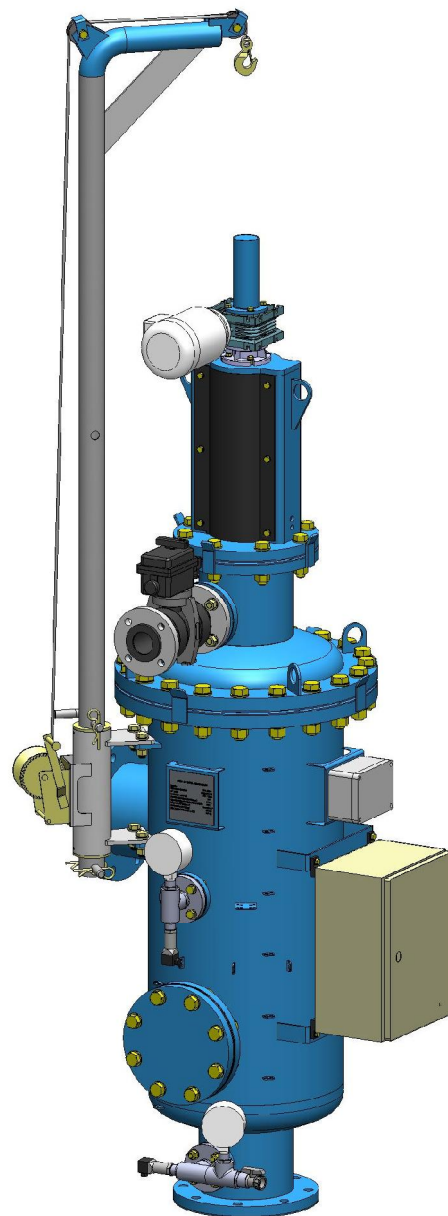


# FMA – 9000

## INSTALLATION, OPERATION AND MAINTENANCE MANUAL



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**IMPORTANT WARNINGS**

READ CAREFULLY AND FOLLOW THE DEVICE MANUAL INSTRUCTIONS. THE MANUFACTURER IS NOT RESPONSIBLE FOR THE DAMAGES OCCURED OR THE NEGLIGENCES HAPPENED AS A RESULT OF NOT READING THE MANUAL

This device has been manufactured in such a way that its performance does not bring about any risks for the designed usage, provided that:

Both the installation and the management, as well as the maintenance have to be carried out according to the manual instructions.

The facilities conditions and the supply voltage have to follow the specified instructions. Any different usage from this will be incorrect, as well as the non authorized modifications made by the manufacturer. The damages occurred because of an incorrect usage will be the user responsibility what will automatically determine the warranty cancellation.

Remember that the device will contain electric components with voltage, and therefore, all the service operations or maintenance will be performed by qualified and skilled personnel, aware of the necessary precautions. Before having access to the interior parts, the electric supply has to be dismantled.

**READ AND KEEP THESE INSTRUCTIONS**

*We really want you to save time and money!  
We assure that this entire manual reading will guarantee the correct installation and a safe product usage.*

**BEWARE!**



ELECTRICAL DISCHARGE RISK. THE OPERATIONS INDICATED WITH THIS SYMBOL WILL HAVE TO BE PERFORMED ONLY BY SKILLED TECHNICAL PERSONNEL

**BEWARE!**



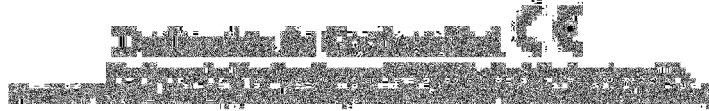
ESSENTIAL INFORMATION AND ASPECTS.  
HAVE THE DEVICE DOCUMENTATION AS A REFERENCE.

**NOTE**



REALLY IMPORTANT INFORMATION AND ASPECTS

	<p align="center"><b>SISTEMAS DE FILTRADO Y TRATAMIENTO DE FLUIDOS, S.A.</b>          Polígono La Armentera, parcela 87          22400 Monzón (Ilesca)          ESPAÑA/Spain</p>
	<p align="center">Tel: (+34) 974 40 19 33 / Fax: (+34) 974 41 78 09  <a href="mailto:info@stf-filtros.com">info@stf-filtros.com</a> / <a href="http://www.stf-filtros.com">www.stf-filtros.com</a></p>



“Pressure Equipment Directive (PED) 97/23/EC” and “Electrical Equipment Directive 2006/95/EC”)

Por el presente documento declaramos que los productos especificados a continuación cumplen los requisitos básicos de seguridad y salud conformes a las siguientes directivas que le son de aplicación:

*We hereby declare, that the products specified below meet the basic health and safety requirements of the above mentioned European Directives.*

DIRECTIVA SOBRE MÁQUINAS 2006/42/CE / (Machinery Directive 2006/42/EC, Appendix IIA)

DESCRIPCIÓN DE LA MÁQUINA: <i>Machine description:</i>	FILTRO DE MALLA AUTOLIMPIANTE ELÉCTRICO <i>ELECTRIC SELF-CLEANING SCREEN FILTER</i>
FUNCIÓN: <i>Function:</i>	RETENCIÓN DE SÓLIDOS EN SUSPENSIÓN <i>SUSPENDED SOLID RETENTION</i>
MODELO / TIPO: <i>Model / Type:</i>	
NÚMERO DE SERIE: <i>Serial Number:</i>	
LA MÁQUINA SE ENCUENTRA EN ANEXO IV? <i>Is the machine included in Appendix IV?</i>	NO

DIRECTIVA SOBRE EQUIPOS A PRESIÓN 97/23/CE / (“Pressure Equipment” Directive 97/23/CE)

Con arreglo al Apartado 3.9 del Artículo 1, de la Directiva 97/23/CE, los equipos que correspondan a lo sumo a la Categoría I, quedan excluidos de los requisitos de la presente Directiva.

*Based on Section 3.9 of Article 1, of this directive, the pressure equipment classified as no higher than category I, are excluded from the scope of this Directive.*

DESCRIPCIÓN DEL EQUIPO:	
FUNCIÓN:	
MODELO / TIPO:	
NÚMERO DE SERIE:	
LA MÁQUINA SE ENCUENTRA EN ANEXO IV?	NO

DIRECTIVA SOBRE MATERIAL ELÉCTRICO DESTINADO A UTILIZARSE CON DETERMINADOS LÍMITES DE TENSIÓN 2006/95/CE / (“Directive 2006/95/EC to electrical equipment designed for use within certain voltage limits”)

El Dossier Técnico de Fabricación de estos equipos se encuentran en nuestro domicilio social arriba indicado.

*The Technical construction file is maintained at the corporate address mentioned above.*

La maquinaria, equipo, montaje o su-montaje al que se refiere esta Declaración de conformidad no debe ponerse en funcionamiento hasta que la unidad a la que se incorpore haya sido declarada de conformidad con las disposiciones de la(s) Directiva(s) que le resulte(n) aplicable(s).

*The machinery, product, assembly or sub-assembly covered by this Declaration of Conformity must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the applicable Directive(s).*

Monzón, \_\_\_\_\_ 201 \_\_\_\_\_

**D. Víctor Clarimón Rami**  
 Dirección Industrial / General Manager

## 1. – INTRODUCTION

STF – FILTROS congratulates you on the acquisition of the FMA – 9000 self backwashing automatic filters.

All the products manufactured by STF – FILTROS are easy to install, use and maintain.

If you have any doubts about its performance after reading this manual, please contact the STF-Filtros Technical Department.

### CONTACT



SISTEMA DE FILTRADO Y TRATAMIENTO DE FLUIDOS S.A

☎ +34 974 401 933

☎ +34 974 417 809

✉ info@stf.filtros.com

www.stf-filtros.com

## 2. – WARRANTY



SISTEMAS DE FILTRADO Y TRATAMIENTO DE FLUIDOS S.A.U.

Pg. Armentera, 87 ● 22400 MONZON (Huesca) SPAIN  
 Tfno. (+34) 974 401 933 ● Fax (+34) 974 417 809  
[info@stf-filtros.com](mailto:info@stf-filtros.com) ● [www.stf-filtros.com](http://www.stf-filtros.com)



# WARRANTY CERTIFICATE

1. This certificate is issued to:

2. The product covered by this warranty is the following: (specify the model, quantity, etc.)


3. The warranty period is: (specify the duration)

### Warranty Conditions

1. This warranty is valid for products manufactured by STF FILTROS.
2. The warranty covers defects in materials and workmanship.
3. The warranty does not cover damage caused by misuse, accidents, or unauthorized modifications.
4. The warranty is void if the product is used for purposes other than those intended.
5. The warranty is void if the product is used in environments with extreme temperatures, humidity, or other conditions not specified in the technical specifications.
6. The warranty is void if the product is used in applications where it is not recommended.
7. The warranty is void if the product is used in applications where it is not recommended.

Customer Name:	_____
Address:	_____
City:	_____
Country:	_____
Product Model:	_____
Quantity:	_____
Warranty Period:	_____
Signature:	_____

### 3. – SAFETY

FILTER SAFE USE INSTRUCTIONS	
	<p>THE INCORRECT USE AND MAINTENANCE OF THE EQUIPMENT MAY CAUSE PHYSICAL INJURIES.</p> <p>IT IS STRONGLY RECOMMENDED TO RESPECT THE FOLLOWING INSTRUCTIONS IN ORDER TO AVOID RISKS.</p> <p>USE ACCIDENT PREVENTION MEASURES THAT GUARANTEE YOUR SAFETY AND THE EQUIPMENT SAFETY.</p>

- **Do not touch parts in motion.**

Never place your hands, fingers or any other body parts near the filter parts in motion.

- **Do not touch the filter without protections.**

Never use the filter without the protections are not perfectly settled in its place (e.g. Protection cover). If the maintenance operations require their removal making sure that before using the new filter the protections are well fixed in its corresponding place.

- **Get protected in case of electric shocks.**

Avoid equipment electric part accidental contacts with the metallic parts.

- **Switch off the filter.**

Switch off the filter before performing any assistance, inspection, maintenance, backwashing, replacement or control of pieces.

- **Discharge filter pressure.**

Remove the equipment pressure before performing any assistance, inspection, maintenance, backwashing, change or control of pieces.

- **Working area.**

Keep the working area clean and from time to time remove the unnecessary tools. The equipment may produce sparks while it is running, never use the equipment if there is polish, petrol or any other fuel or explosive material.

- **Filter maintenance.**

Follow this manual instructions, revise the greasing, inspect the supply wire periodically, if it is damaged get it repaired by skilled personnel. Check that the external appearance has not got visual faults.

- **Check that screws, bolts and covers are firmly fixed.**

Check that they are adjusted from time to time.



- **Make the equipment to run at a nominal tension**

Pay attention to the specified voltage in this manual and the characteristics plate in the filter.

- **Never use the filter if it is faulty.**

If the filter runs making weird noises, a lot of vibrations or it looks faulty, stop its running immediately and check its functionality.

- **Use only original spare pieces.**

The use of no original spare pieces invalidates the warranty.

- **Do not modify the filter.**

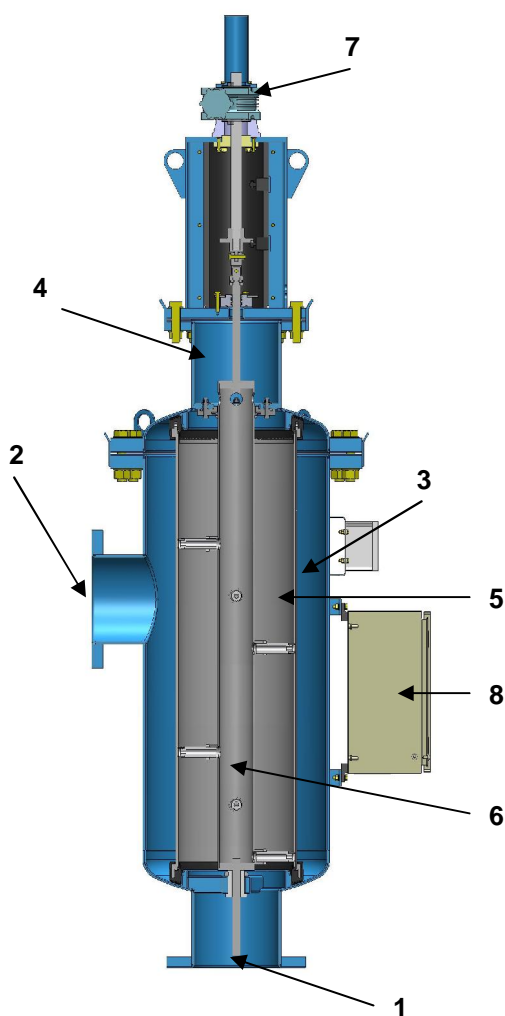
A non authorized modification can diminish the equipment performance qualities and produce harsh accidents if people have not the appropriate technical knowledge.

- **Switch off and drain off the equipment.**

When the filter is not running switch off the supply equipment and drain off the filter to get its life extended.

#### 4. -FMA-9000 FILTER DESCRIPTION

The filter consists of an external casing where there are two differentiated chambers. The former filtering chamber coincides with the influent water; and where the filtering screen is placed.



- 1 – Influent water.
- 2 – Effluent water.
- 3 – Filtering chamber.
- 4 – Backwashing chamber.
- 5 – Filtering cartridge.
- 6 – Scanner.
- 7 – Drive
- 8 – Control panel.

In this case water runs from the filter interior into the exterior. The solids remain in suspension (filth) held back in the filtering element, that is it, the screen. This chamber coincides with the filtered influent water inlet to the correct application: drinking water, process water, refrigeration water, etc.

The held back dust forms a layer on the screen, that diminishes its load. The filter backwashing bases on a third chamber, the backwashing chamber whose output is connected to the drainage valve that allows water evacuation when the backwashing process starts. The backwashing chamber is separated from the filtering by a special sealing

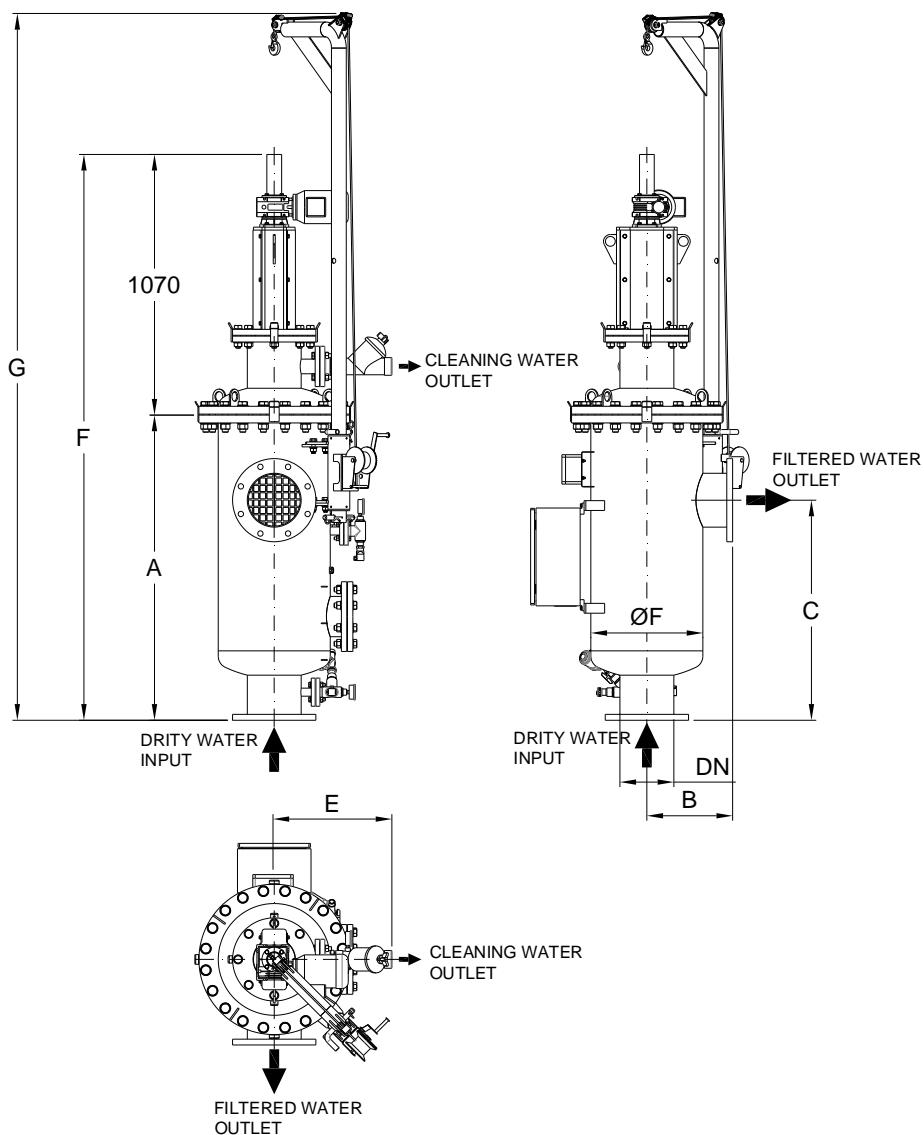
To finish with, as a very important element of this technology is the SUCTION SCANNER. This scanner is the same place as the filtering cartridge central shaft would be, and it is hydraulically

connected to the backwashing chamber. At the same time, and in the filtering chamber area where it is, the SUCTION NOZZLES are displayed perpendicularly. The nylon brushes nearly reach the screen. The situation of these nozzles in the suction scanner has been studied for getting into contact with the screen internal surface, thanks to the spiral movement that the electric engine provides to the scanner: when combining a longitudinal and rotation movement.

## 5. – FMA-9000 PERFORMANCE

- Water gets into the filtering chamber, goes through from inside to outside the FILTERING SCREEN, producing the SURFACE MECHANIC. High quality water is obtained according to the filtration degree chosen for the filtration screen which can vary from 10 microns to 2000 microns.
- Dust remains on the thin screen interior what produces head loss between the filter inlet and outlet gradually. Two analogic transducers situarán the backwashing sequence when the DP becomes 0.3 (3 m.c.a). There are other possibilities to make the filter backwashing: Time backwashings, time and pressure combination, continuous backwashing option.
- When the pressure switch indicates 0.3 bar, the drain valve receive the opening order, then it generates a pressure difference between outside (atmospheric pressure) and the inside of the filter (working pressure) that is why fast running water which is produced, goes through the screen and then goes outside through the nozzles internal orifice. Besides this, at this very moment the starting order is also sent to the engine.
- The result of these actions is: the suction effect of the nozzles on the screen dust and the suction scanner spiral movement in the inside of the filter.
- During the backwashing process that lasts 25 seconds, water is still being filtered and goes on flowing to the system or application. This fact whis is is due to the filters design allows that the backwashing water consumption is MINIMUM and the working system is CONTINUOUS

## 6. – TECHNICAL CHARACTERISTICS



MODEL	DIMENSIONS (mm)								Net filtering surface (cm <sup>2</sup> )
	A	B	C	DN	E	F	H	G	
FMA 9006		350	625	150	480	457	2039	2465	6.900
FMA 9008	1250	350	900	200	480	457	2320	2975	9.400
FMA 9010	1530	350	900	250	480	457	2600	3300	11.900
FMA 9012	1250	400	900	300	480	608	2320	2975	14.700
FMA 9014	1530	400	900	350	480	608	2600	3300	19.150

Filter model STF - FMA	9008	9010	9012	9014	
Inlet diameter /Outlet	8"	10"	12"	14"	Note A
Maximum flow (m <sup>3</sup> /h)	850	1,300	1,600	1,950	Note B
Filtration Surface (cm <sup>2</sup> )	10,600	13,210	16,500	21,300	
Net Filtration Surface (cm <sup>2</sup> )	9,400	11,900	14,700	19,150	
Minimum working pressure	2 bar	2 bar	2 bar	2 bar	
Maximum working pressure	10 bar	10 bar	10 bar	10 bar	Note C
Weight Kg	365	420	600	680	
Backwashing valve	2"	2"	2"	2"	
Backwashing time	25 seconds	25 seconds	25 seconds	25 seconds	
Backwashing flow m <sup>3</sup> /h	20	25	20	25	Note D
Backwashing water volume litres	140	170	140	170	Note D
Operating voltage	Monophase (220v 50 Hz)	Monophase (220v 50 Hz)	Monophase (220v 50 Hz)	Monophase (220v 50 Hz)	Note E
Control tension	24 V DC	24 V DC	24 V DC	24 V DC	
Electrical engine	0.5 HP	0.5 HP	0.5 HP	0.5 HP	
Electricity draw	1.4 Amp (220v/250v)	1.4 Amp (220v/250v)	1.4 Amp (220v/250v)	1.4 Amp (220v/250v)	
Filter body and covers	Carbon steel S-235-JR coated with EPOXI-POLIESTER	Carbon steel S-235-JR coated with EPOXI-POLIESTER	Carbon steel S-235-JR coated with EPOXI-POLIESTER	Carbon steel S-235-JR coated with EPOXI-POLIESTER	Note F
Suction scanner	Stainless steel AISI-316	Stainless steel AISI-316	Stainless steel AISI-316	Stainless steel AISI-316	Note F
Screens	Stainless steel AISI-316	Stainless steel AISI-316	Stainless steel AISI-316	Stainless steel AISI-316	Note F
Backwashing valves	Brass body	Brass body	Brass body	Brass body	Note F

**NOTE A:** Other diameters under request

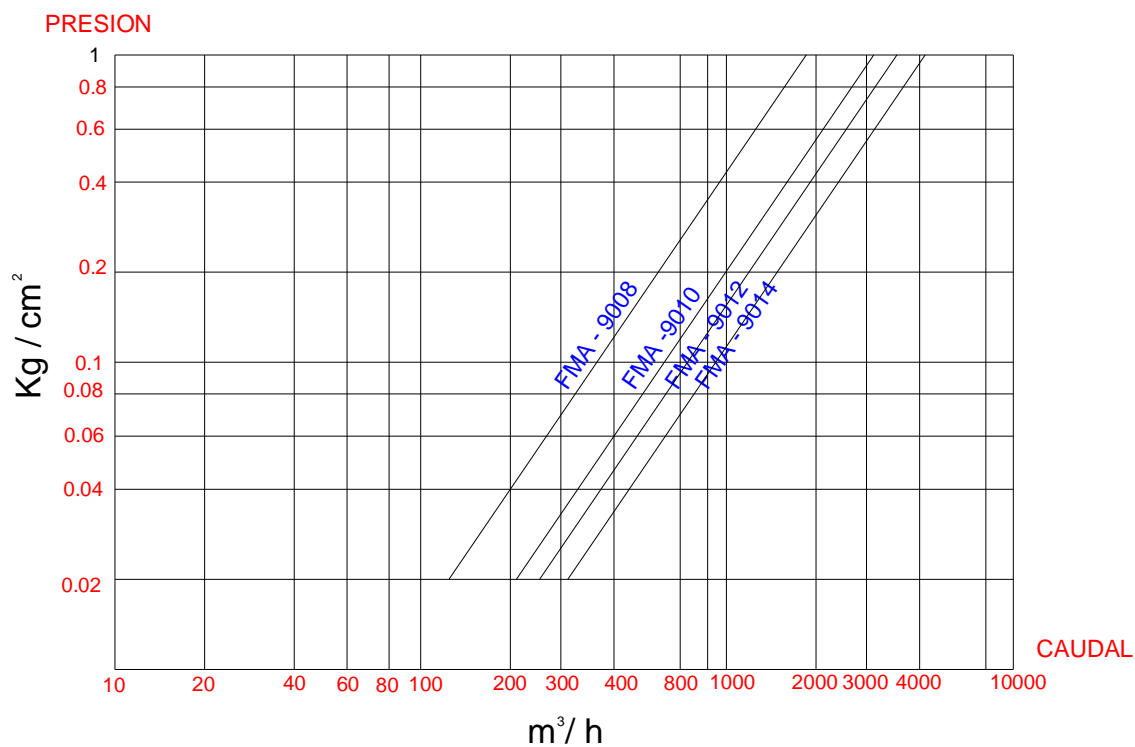
**NOTE B:** measured at 125 microns

**NOTE C:** Other pressures under request.

**NOTE D:** At 2 bar.

**NOTE E:** Any voltage under request.

**NOTE F:** Other materials under request



**NOTE:** 125 microns cartridge values. Ask the manufacturer in case of other filtration degrees.

## 7. – IDENTIFICATION PLATE

All the equipments are identified by means of an identification plate stuck to the filter.

		Sistemas de filtrado y tratamiento de fluidos, S.A. Pol. La Armentera, Parc. 87 Monzón (Huesca)			
<b>FILTRO de MALLA AUTOLIMPIANTE</b>					
<b>EQUIPO</b>		<b>FMA Serie-9000</b>			
<b>DIÁMETRO ENT/SAL</b>		**** / ****			
<b>Nº SERIE</b>		****			
<b>MICRAJE ( micras )</b>		****			
<b>PRESIÓN MÁXIMA DE TRABAJO</b>		****			
<b>TEMPERATURA MÁXIMA DE TRABAJO</b>		****			
<b>VÁLVULA DE DRENAJE</b>		****			
<b>PESO EN VACIO ( Kg )</b>		****			
<b>PESO LLENO DE AGUA ( Kg )</b>		****			

The following information is included in the identification plate:

- Equipment serial
- Inlet diameter / outlet
- Equipment serial number
- Micronage
- Maximum working pressure
- Drainage valve
- Unladen weight
- Laden weight
- CE certificate



## 8. – INSTALLATION INSTRUCTIONS

- Take precautions to prevent the filter from striking, the equipment lifting by means of the upper anchor points.
- Make sure that the installation point has the minimum operation pressure.
  - The backwashing pipe has to be measured so that it gets a minimum flow head loss of 25 m<sup>3</sup>/h.
  - In installations with a working pressure superior to 6 bar, it is advisable to install a ball valve in the backwashing pipe to adjust the backwashing flow.

### NOTE



THE MINIMUM WORKING PRESSURE IS 2 BAR BETWEEN THE FILTER OUTLET AND THE DRAIN VALVE.

IN CASE THE DRAIN IS RECONDUCTED, IT IS NECESSARY TO INCREASE THE WORKING PRESSURE IN ORDER TO COMPENSATE FOR THE HEAD LOSS THAT MAY APPEAR IN THE DRAIN PIPE

- Install the filter in a vertical way, make sure there is enough room to allow an easy access to the equipment for future treatments and for a safe maintenance.
- Position the filter in the driving obeying the arrows indicating the water running direction.
- Inlet and outlet shut-off valves are recommended to be installed in order to insulate it. It is recommended to install a by-pass in order to avoid power cuts during the maintenance.
- It is recommended to install an outlet backflow in order to avoid water hammer on the filter.
- According to section 12.1 the electrical wiring can only be installed by a skilled electrician.
- In the filter installation it has to be avoided that water splashes over the electrical components or the control panel.

## 9. – STARTING INSTRUCTIONS.

- Check previous section instructions.
- Check the hydraulic circuit (see section 15) that provides the backwashing valve with water, making sure that:
  - ¾" filter is clean.
  - The ball valve is open.
  - The 3 way valve value is in AUTO position.
  - Start with the following shut-off valves configuration:
    - Inlet valve: OPEN
    - Outlet valve: CLOSE.
    - By – pass (If it exists): CLOSE
- Switch on the filter, put the circuit breaker ON
- Make sure that the programmable relay is on the selected option RUN
- Manual backwash by pressing the limp button.
- The backwashing cycle evolution is detailed in section 12.2.
- Open outlet valve.  
A drop in pressure and water flow increase is produced when the water mains is filled in. That is why it is advisable to install an outlet pressure valve, making sure that the water mains filling is controlled.

### NOTE



IN CASE A SUPPORTING PRESSURE IS NOT INSTALLED, DURING THE WATER MAINS FILLING, CLOSE THE OUTLET VALVE UNTIL GETTING 2 BAR IN THE CLEAN WATER PRESSURE GAUGE.  
ONCE THE WATER MAINS IS PRESSURIZED, OPEN THE OUTLET VALVE TO GET A CORRECT OPERATION.

- Make sure that water flow and pressure installation correspond with the maximum values defined for this manual model. See section 6
- Check the equipment operation and the head loss when the starting up is finished.

**NOTE**

THE FILTER CAN START THE BACKWASHING CYCLE AUTOMATICALLY WHEN THE 0.3 PRESSURE DIFFERENCE BETWEEN THE INLET AND THE OUTLET RISES OVER 0.3 BAR.

## 10. – MAINTENANCE INSTRUCTIONS.

- Switch off the energy supply filter before any maintenance operation.
- Make sure that the filter is unpressurized before loosening the screws.
- Avoid splashes and water leaks by minimizing the personnel risk sliding or being electrocuted and the damage that humidity can cause to the equipment.
- After completing the treatment rearm the transmission mechanism protecting covers.
- Make the the manual backwashing of the filtering cartridge by using pressurized. If necessary acid or any other chemical products will be used. This process has to be done following the material instructions and not putting the operator or the rest of the people at risk.
- Drain the equipment when it is not used for long time.

### NOTA




OPEN AND CLOSE THE VALVES SLOWLY AND GRADUALLY.

## 11. – PREVENTIVE MAINTENANCE SCHEDULE

MAINTENANCE	TIME	ELEMENT	ACTION
<b>EXTERNAL</b>			
Working revision	1000 backwashing cycles	Complete filter	Filter on + manual backwashing button.  Control: <ul style="list-style-type: none"> <li>• Engine starting</li> <li>• Valve opening</li> <li>• Efective backwashing cycle (P<sub>1</sub> = P<sub>2</sub>)</li> </ul>
Anticorrosion treatment	12 months	FMA casing (element 9)	Review anticorrosion treatment in the necessary points.  Apply Epoxi - Polyester treatment
Turret	6 months	Spindle (element 1.23)	Desmantle the spindle protection (1.32) and lateral rolling press Clean and grease spindle both sides  Use the grease supplied by STF-Filtros.
Rim watertightness	6 months	Rim watertightness (element 1.10)	Revise the watertightness of the element 1.10.  Replace the inside joints: <ul style="list-style-type: none"> <li>• Ø45x4 o-ring seal (element 1.9)</li> <li>• NI joint– 150 20x28x5,5 (element 1.14)</li> <li>• EQ-16 quadric joint (element 1.15)</li> <li>• Scraper 20X28X4,8/7 (element 1.16)</li> </ul>
Pressure line	1 week	Intake filter (element 18)	Intake filter backwashing and microtubes for supplying water to the backwashing valve.
<b>INTERNAL</b>			
Anticorrosion treatment	12 months	FMA casing (element 9)	Review anticorrosion treatment in the necessary points  Apply Epoxi - Polyester treatment
Suction nozzle	12 months	Suction nozzle (element 24.1)	Suction nozzles condition revision, nylon fibers condition, cartridge proximity.
Smoothing cartridge	12 months	Smoothing cartridge (element 28)	Smoothing cartridge backwashing
Filtering cartridge	Inactivity period	Filtering cartridge (element 29)	Backwash manually by using water under pressure, if necessary, acid or any other chemicals products will be used
Joints	12 months	Inside joints <ul style="list-style-type: none"> <li>• Element 11</li> <li>• Element 27.6</li> <li>• Element 27.8</li> <li>• Element 30</li> </ul>	Revise inside joints. In case they are deteriorated, they will be replaced.

## 12. – CONTROL PANEL

When a FMA-2000 filter model is supplied, all the electrical connections between the control panel and the actuators have already been installed and checked by the manufacturer.  
The equipment supply is 230V CA, 50Hz in a standard way. In case of variants, this should be checked with the manufacturer

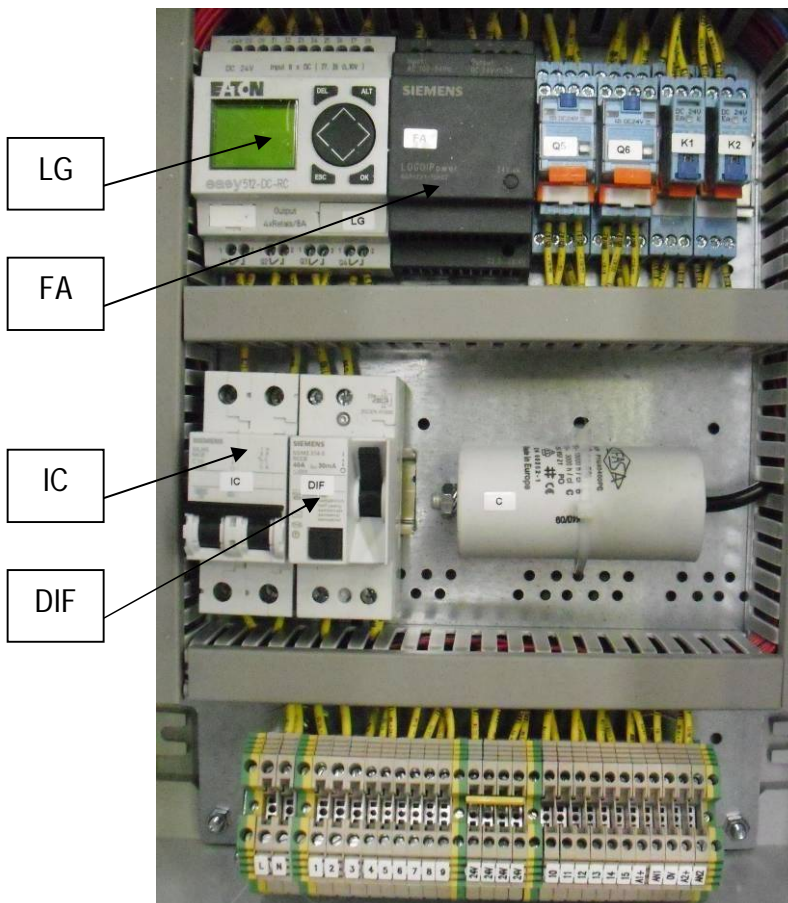
<b>BEWARE!</b>	
	<p>DURING THE STARTING, IT SHOULD BE CHECKED THAT THE ENGINE TURNING CORRESPONDS WITH THE FILTER PROGRAMMING IN PANELS WHICH ARE SUPPLIED BY TRIPHASE CURRENT.</p>

### DESCRIPTION

The different monitoring and control components can be found In the control panel :

- Pilot lights:
  - Green: It turns on when there is energy.
  - Yellow: It turns on when a backwashing cycle is produced.
  - Red: It turns on when there is an alarm.
  
- The push button has two functions:
  - To generate a manual backwashing cycle.
  - To rearm the equipment when it fails.
  
- Thermic magnet (**IC**).
  - 1 + N, 10A C
  
- Differential (**DIF**).
  - 1 + N, 40A 30 mA.
  
- Power supply (**FA**).
  - 230 V / 24 VCC (1<sup>a</sup>)
  
- A relay that can be programmed(**LG**).
  - EASY 24V DC 8entries / 4LCD outputs.

The messages that appear in the relay that can be programmed are specified in section 12.2 and 13.



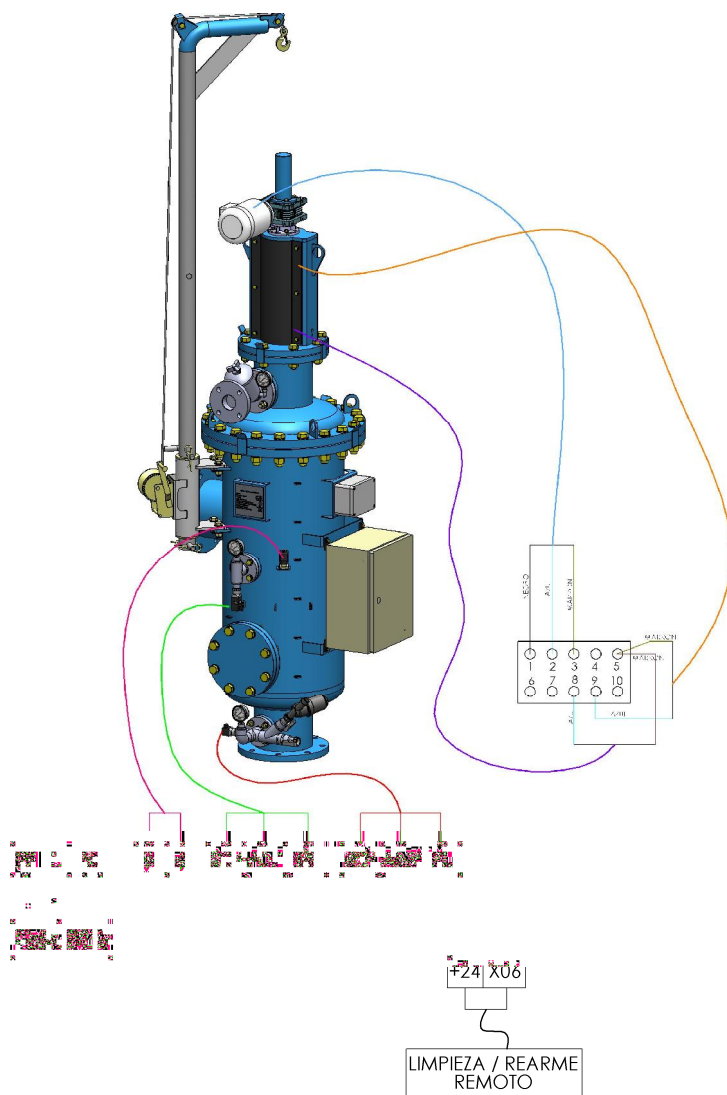
## 12.1. – CONNECTION

### BEWARE!



ELECTRICAL DISCHARGE RISK. THE OPERATIONS INDICATED WITH THIS SYMBOL SHOULD BE CARRIED OUT ONLY BY SKILLED TECHNICAL STAFF.

The supply, sensor and equipment actuators connection is carried out in the lower terminal block according to the following specifications:





- Panel supply: **PE – L – N**
- Engine supply output: **PE – 1 – 2 – 3**
- Electrically operated valve supply output: **4 – 5**
- Backwashing entry / external rearm: **+24 - 6**
- Front limit switch entry: **+24 – 8**
- Back limit switch entry: **+24 – 9**
- Clean water pressure transducer entry signal: **A1+ - AN1 – PE**
- Wastewater pressure transducer entry signal: **A2+ - AN2 – PE**
- Alarm (tension-free contact)
  - Common: **10**
  - N.C: **11**
  - N.O: **12**
- Backwashing cycle (tension-free contact)
  - Common: **13**
  - N.C: **14**
  - N.O: **15**

### COMMUNICATION STANDARD SIGNALS



**ENTRY:**

- MANUAL BACKWASHING / REARM: +24 – 6

**OUTPUT:**

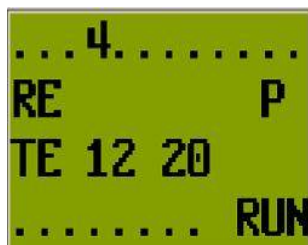
- ALARM (TENSION-FREE CONTACT): 10 – 11 – 12
- BACKWASHING CYCLE (TENSION-FREE CONTACT): 13 – 14 – 15

## 12.2. – PERFORMANCE

The start screen shows the following information, the upper parameters...3.4... indicate the entry signals into the programmer.

- Parameter 1 – Manual backwashing push-button
- Parameter 2 – Differential pressure switch. (Pressure transducers are used by default)
- Parameter 3 – Front limit switch
- Parameter 4 – Back limit switch

Besides this, the date and time appear on the display, (RUN) if the programmer is on or (STOP) if it is stopped. In the event of the equipment is stopped it will not make backwashing cycles. P indicates the push-button



Start screen image

When a backwashing cycle starts a screen that monitors the time in seconds and milliseconds appear. When the cycle finishes the start screen appears again.



Filter backwashing screen image

Pulse to check the time that has passed from the last backwashing (it appears in hours and minutes) and the total equipment backwashings number by pressing the key ◀ or ▶ while the start screen is on.

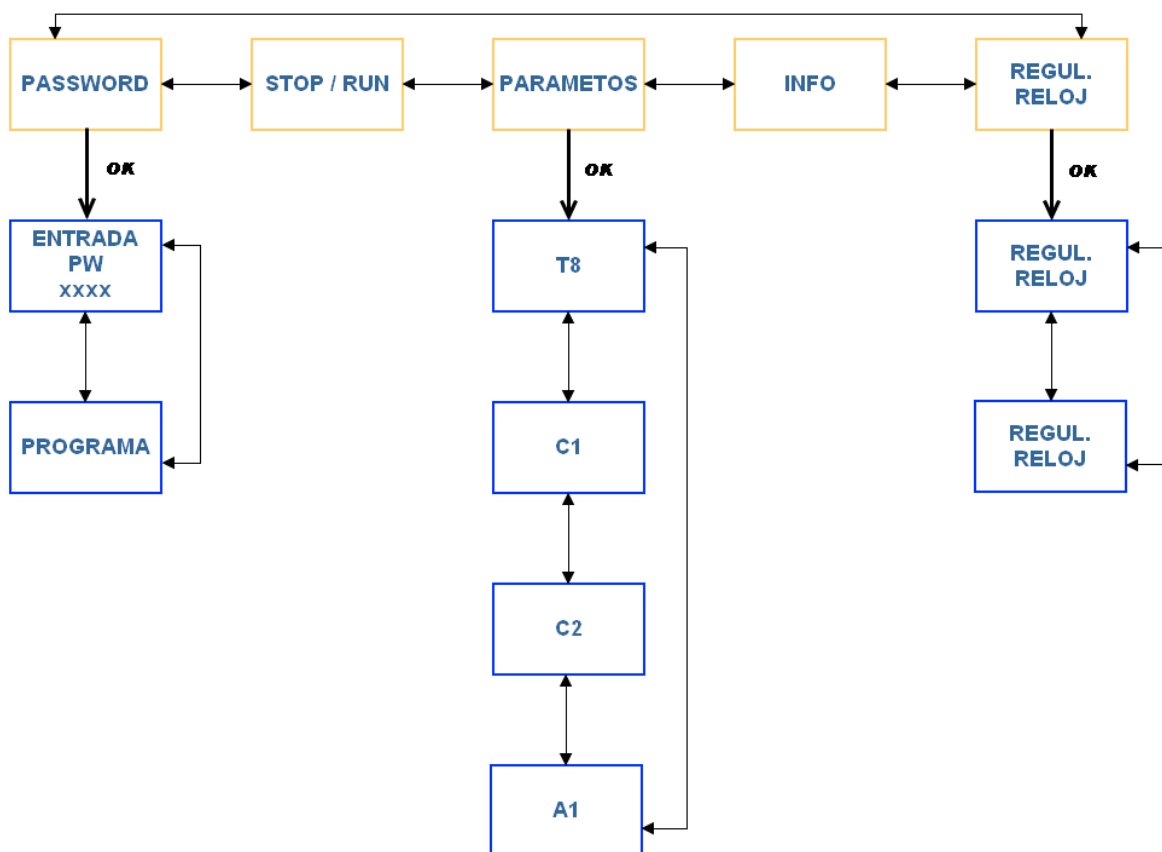


Last backwashing & total backwashings screen image

### 12.3. –MODIFYING PARAMETERS

It is useful to observe the diagram that is shown in order to have access to the different program functions. In the same diagram the main menu and several submenus appear. Pulse OK in order to have access to the main menu functions.

Press keys ▼▲ in order to change the menu selection. Press OK key in order to have access and ESC to turn back.



- **PASSWORD:** It allows you to have access to the program, it is protected to avoid non-authorized modifications by the manufacturer.
- **RUN / STOP:** It allows you to stop the running cycle when the STOP key is pressed.

The symbol ✓ appears next to the present condition on the LCD screen. Use keys ▼▲ in order to change it and select STOP RUN (a flickering appears) and press OK.

- **PARAMETERS:** It allows you to have access to the installation modifiable parameters

Press keys ▼▲ in order to select the PARAMETERS (a flickering appears) and press OK. The parameters are the following:

#### T5– Time between backwashings

It shows the backwashing time in hours and minutes. These figures turn back to zero every time a manual or automatic backwashing is carried out. This valor can be modified according to installation needs.

- I1 – Backwashing time value in hours and minutes (H:M)
- T – Time in hours and minutes (H:M) since last backwashing

Press keys ▼▲ to move over I1. Press OK to modify values by using keys ▼▲ and ◀▶ . When finished, press OK in order to accept the new value.

Press ESC to quit.

#### C1Consecutive backwashing meter

It shows the consecutive automatic backwashings number during which the pressure switch keeps sending a continuous signal. In this case the value is 20. At the moment when the consecutive automatic backwashings get this value, the filter will go into alarm. (Consult ALARM section)

- S – Setpoint value
- C – Meter real value

Press keys ▼▲ to move over S. Press OK to modify values by using keys ▼▲ and ◀▶ . When finished, press OK again to accept the new value.

Press ESC to quit

#### C8 – Language selection meter.

It allows you to select the language of the messages monitorized by the programmer. It can be done in Spanish and English.

- 1 – Spanish (standard)
- 2 – English

Press keys ▼▲ to move over I1, press OK to modify values by using keys ▼▲ and ◀▶ . When finished, press OK again to accept the new value.

Press ESC to quit


### C16– Switch pressure & pressure transducers selection.

It allows to control the filter pressure differential. It is possible to do it by means of the pressure transducers or pressure switches.

- S – Setpoint value:
  - 1 – Work with pressure switch
  - 2 – Work with pressure transducers (standard)

Press keys ▼▲ to move over I1. Press OK to modify values by using keys ▼▲ and ◀▶ . When finished, press OK again in order to accept the new value.

Press ESC to quit.

<b>BEWARE!</b>	
	IT IS NOT ADVISABLE TO MODIFY THIS VALUE. IF WATER QUALITY WORSENS IN A SPECIFIC MOMENT, THIS VALUE WILL BE MODIFIED TO A HIGHER ONE SO THAT THE FILTER CAN RECOVER AUTOMATICALLY.

### A1 – Pressure difference set value when working with pressure transducers.

It shows the pressure difference of the automatic backwashing cycle start when using pressure transducers:

- I1 – Effluent water pressure reading
- I2 – Influent water pressure reading
- OS – Set value

Press keys ▼▲ to move over OS. Press OK to modify values by using keys ▼▲ and ◀▶ . When finished, press OK again in order to accept the new value.

Press ESC to quit.

**BEWARE!**

IT IS NOT ADVISABLE TO MODIFY THIS VALUE.  
THE DIFFERENTIAL SHOULD NEVER BE INCREASED, IT CAN ONLY BE  
MODIFIED TO LOWER VALUES IN ORDER TO BACKWASH.

## 13. – WARNINGS AND ALARMS

1. When the programmer makes the number of backwashings consecutively indicated in parameter C2 (the setpoint is 20) there is no possibility to go on filtering, the safety device that will stop the filter backwashing will activate.

The panel alarm light will turn on and the inscription **ALARM 20 CONSECUTIVE BACKWASHINGS** will appear on the programmer screen.

This alarm indicates that the pressure differential gets to the electrical panel, this can be due to a measure sensor failure, dust in the filters or dust in the water to be filtered.

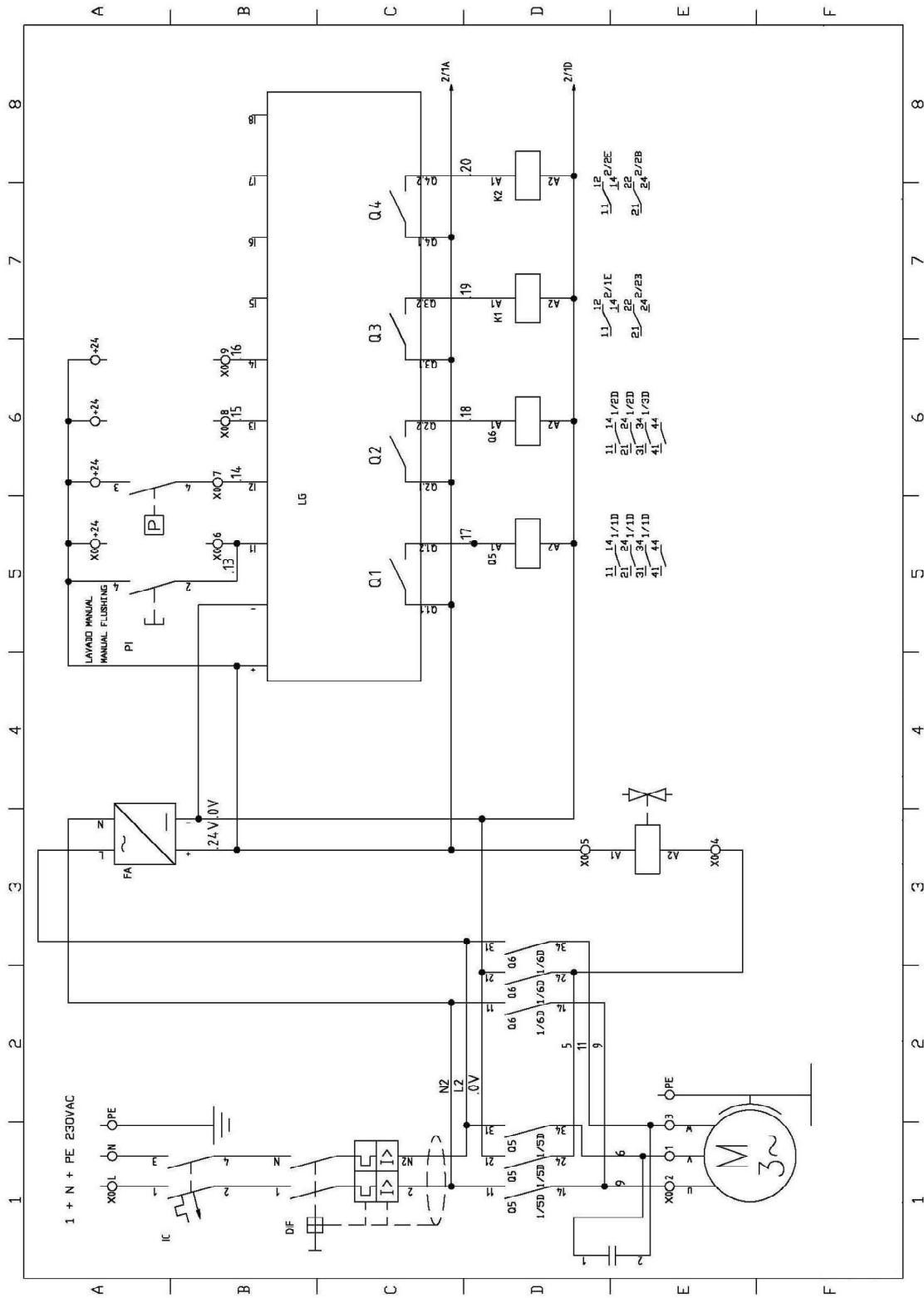
Unblock the pressure switch or press the START, REARM, ALARM button in order to delete the alarm.

2. If during the backwashing any of the engines running is stopped, the message LIMIT SWITCH ALARM will appear on the screen.  
This alarm does not need to be rearmed, it is necessary to check that the limit switch signal gets correctly to the panel, then backwash.

If this is not corrected, please contact the manufacturer.

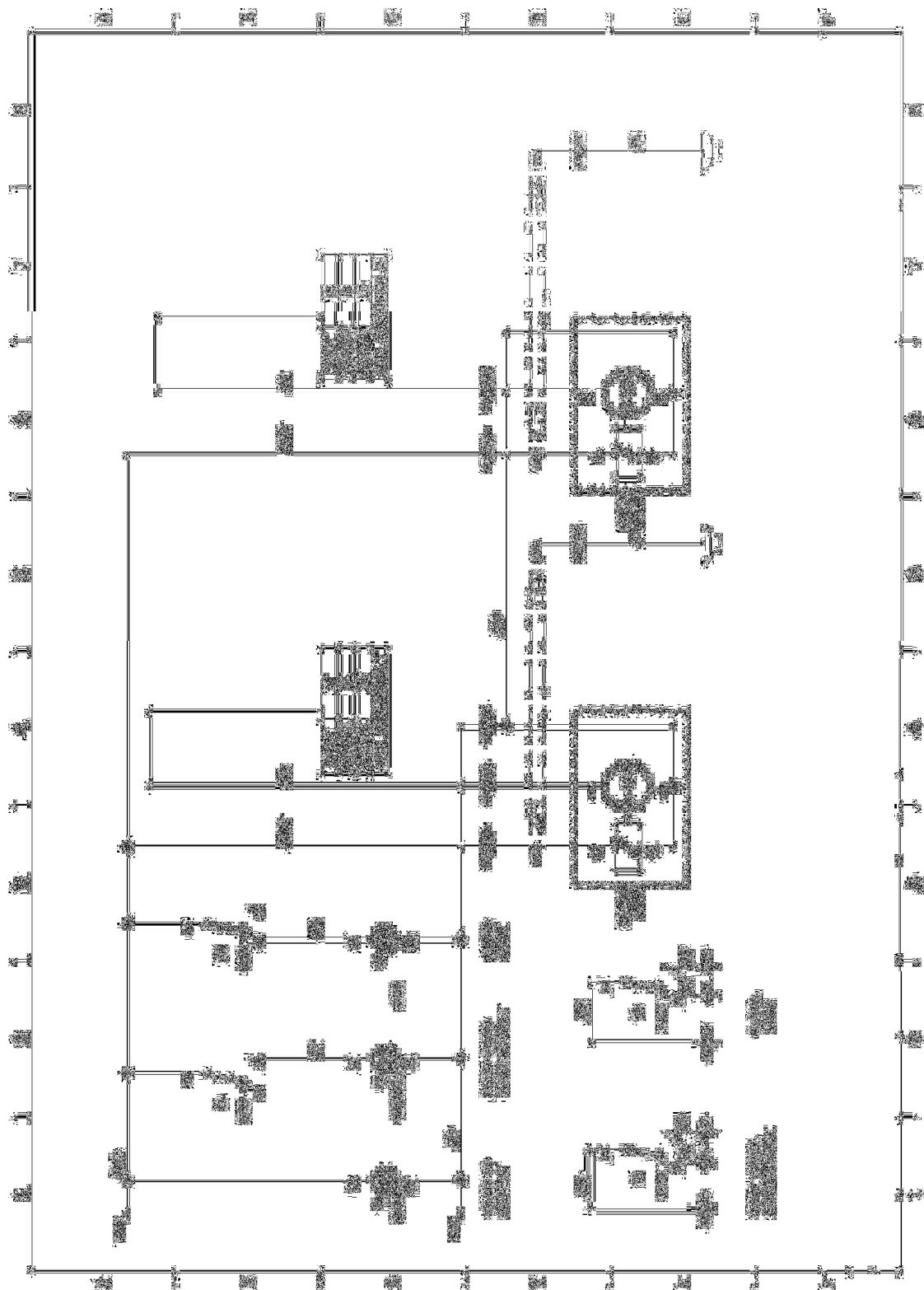
# 14. – ELECTRIC DIAGRAM

Plano 1 de 2





Plano 2 de 2



## 15. – HYDRAULIC CIRCUIT.

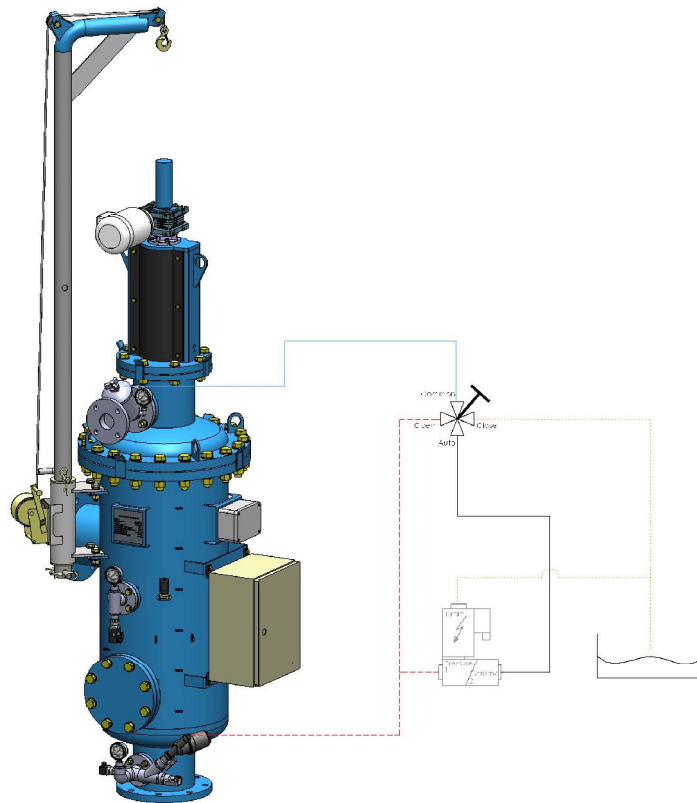
The filter has a hydraulic valve for draining the backwashing flow. The valve remains closed because of the internal spring, and it opens when introducing water in the lower chamber and it closes when the drain is in process.

The valve has a mechanic regulation that allows to adjust the backwashing flow in installations with a pressure superior to 6 bar.

The opening and closing process is automated by means of a 24V DC NC solenoid (normally closed). It is specified in the drawing below.

The 3-way valve has to remain in AUTO position, allowing the possibility to operate manually with the OPEN and CLOSE positions.

### CONEXIONES HIDRAULICAS



**BEWARE!**



FILTER THAT PROTECTS THE CIRCUIT MAINTENANCE BY MEANS OF USUAL BACKWASHINGS.

LONG DISTANCE DRAINAGE CONDUCTION CAN RESULT IN OPERATION PROBLEMS.

**NOTE**



THE PREVIOUS DIAGRAM IS VALID ONLY FOR STANDARD EQUIPMENTS WITH MAXIMUM 10 BAR PRESSURE

ASK THE MANUFACTURER IN CASE OF DIFFERENT PRESSURES.

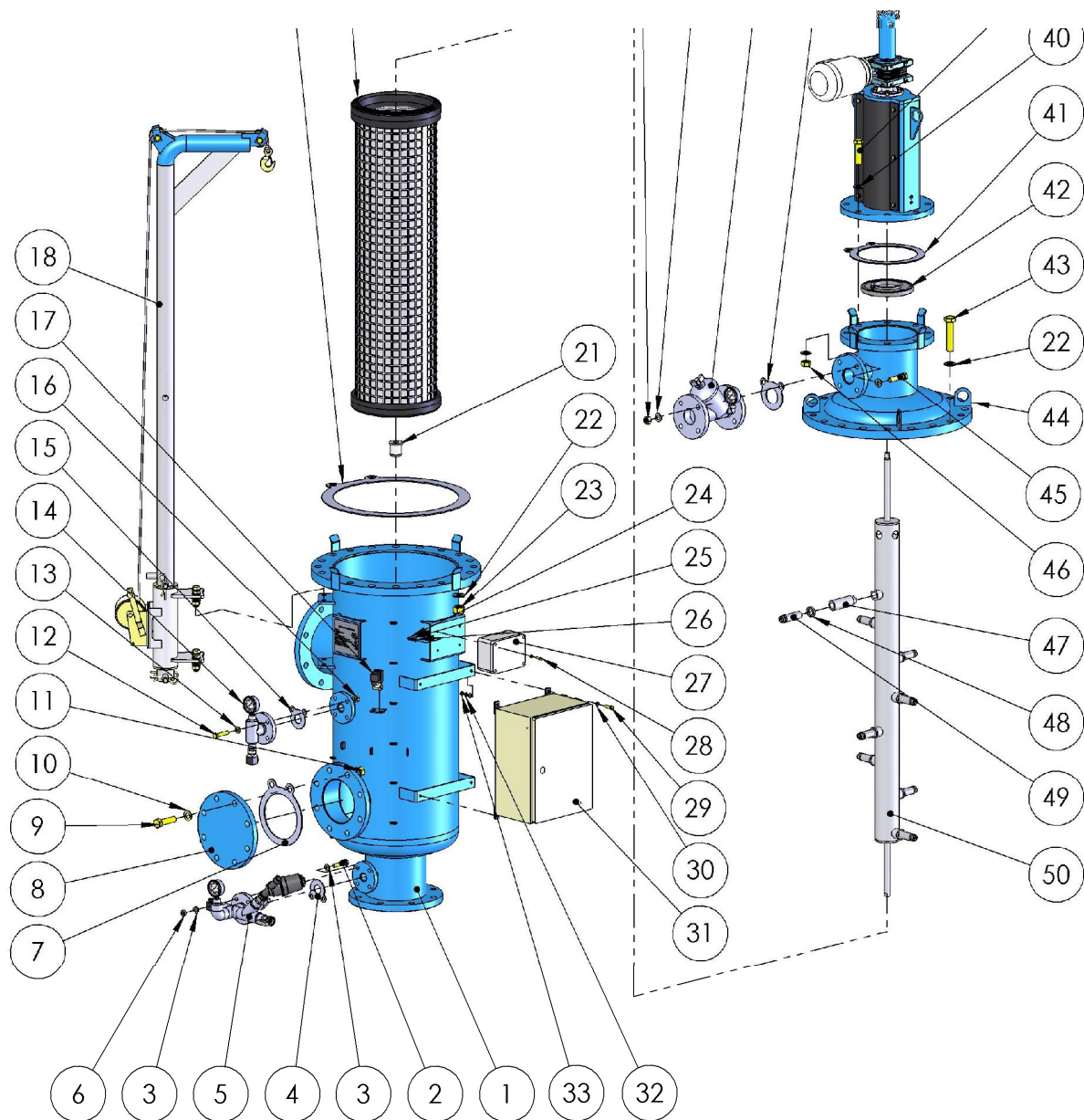
## 16. – EXPLOSION DRAWING

Order	Equipment model	Description	Number of units
1	FMA-9008	FMA-9008 casing	1
	FMA-9010	FMA-9010 casing	1
	FMA-9012	FMA-9012 casing	1
	FMA-9014	FMA-9014 casing	1
2	FMA-9008 - 9014	M12 x 60 screw	4
3	FMA-9008 - 9014	M12 washer	8
4	FMA-9008 - 9014	Dn-25 flat joint	1
5	FMA-9008 - 9014	LOWER CONNECTIONS	
5.1	FMA-9008 - 9014	Valve 3/4" Cod. 02579 Ref. 0590625 CEPEX	2
5.2	FMA-9008 - 9014	Adapter nipple 32-25x3/4" Cod. 02252 Ref. 0531434 CEPEX	2
5.3	FMA-9008 - 9014	TE 45° Cod. 22585 Ref. 0536032 CEPEX	1
5.4	FMA-9008 - 9014	Tube PVC32 pn10 L=34	3
5.5	FMA-9008 - 9014	Cross 32 Cod. 20145 Ref. 0528032 CEPEX	1
5.6	FMA-9008 - 9014	Elbow 90° Cod. 01714 Ref. 0501032 CEPEX	1
5.7	FMA-9008 - 9014	Reduction guide bush 32x20 Cod. 01917 Ref. 0506033 CEPEX	2
5.8	FMA-9008 - 9014	Adapter nipple 20-16x1/4" Cod. 02246 Ref. 0531423 CEPEX	2
5.9	FMA-9008 - 9014	Glycerin pressure gauge Male Gas-1/4"	1
5.10	FMA-9008 - 9014	Pressure transducer Male Gas-1/4"	1
5.11	FMA-9008 - 9014	Sleeve flange 32 Cod.22577 Ref. 0525032 CEPEX	1
5.12	FMA-9008 - 9014	Inlet filter 120mesh M/M Gas-3/4"	1
6	FMA-9008 - 9014	M12 Nut	4
7	FMA-9008 - 9014	Dn-150 Flat joint	1
8	FMA-9008 - 9014	Dn-150-pn10 Blide flange	1
9	FMA-9008 - 9014	M20 x 80 Screw	8
10	FMA-9008 - 9014	M20 Washer	16
11	FMA-9008 - 9014	M20 Nut	8
12	FMA-9008 - 9014	M12 x 60 Screw	4
13	FMA-9008 - 9014	M12 Washer	8
14	FMA-9008 - 9014	UPPER CONNECTIONS	
14.1	FMA-9008 - 9014	Sleeve flange 32 Cod.22577 Ref. 0525032 CEPEX	1
14.2	FMA-9008 - 9014	Tube PVC32 pn10 L=34	1
14.3	FMA-9008 - 9014	Pressure transducer Male Gas-1/4"	1
14.4	FMA-9008 - 9014	Adapter nipple 20-16x1/4" Cod. 02246 Ref. 0531423 CEPEX	2
14.5	FMA-9008 - 9014	Reduction guide bush 32x20 Cod. 01917 Ref. 0506033 CEPEX	2
14.6	FMA-9008 - 9014	TE 90° 32 Cod. 01782 Ref. 0503032 NF CEPEX	1
14.7	FMA-9008 - 9014	Glycerin pressure gauge Gas-1/4"	1
15	FMA-9008 - 9014	Dn-25 Flat joint	1
16	FMA-9008 - 9014	M12 Nut	4
17	FMA-9008 - 9014	NC 24v Dc Solenoid	1
18	FMA-9008 - 9014	Davit	
18.1	FMA-9008 - 9014	M6x12 Screw	8
18.2	FMA-9008 - 9014	FMA-9000 Slidding Davit guide bush	2
18.3	FMA-9008 - 9014	M16 x 50 Screw	4
18.4	FMA-9008 - 9014	M16 Washer	8

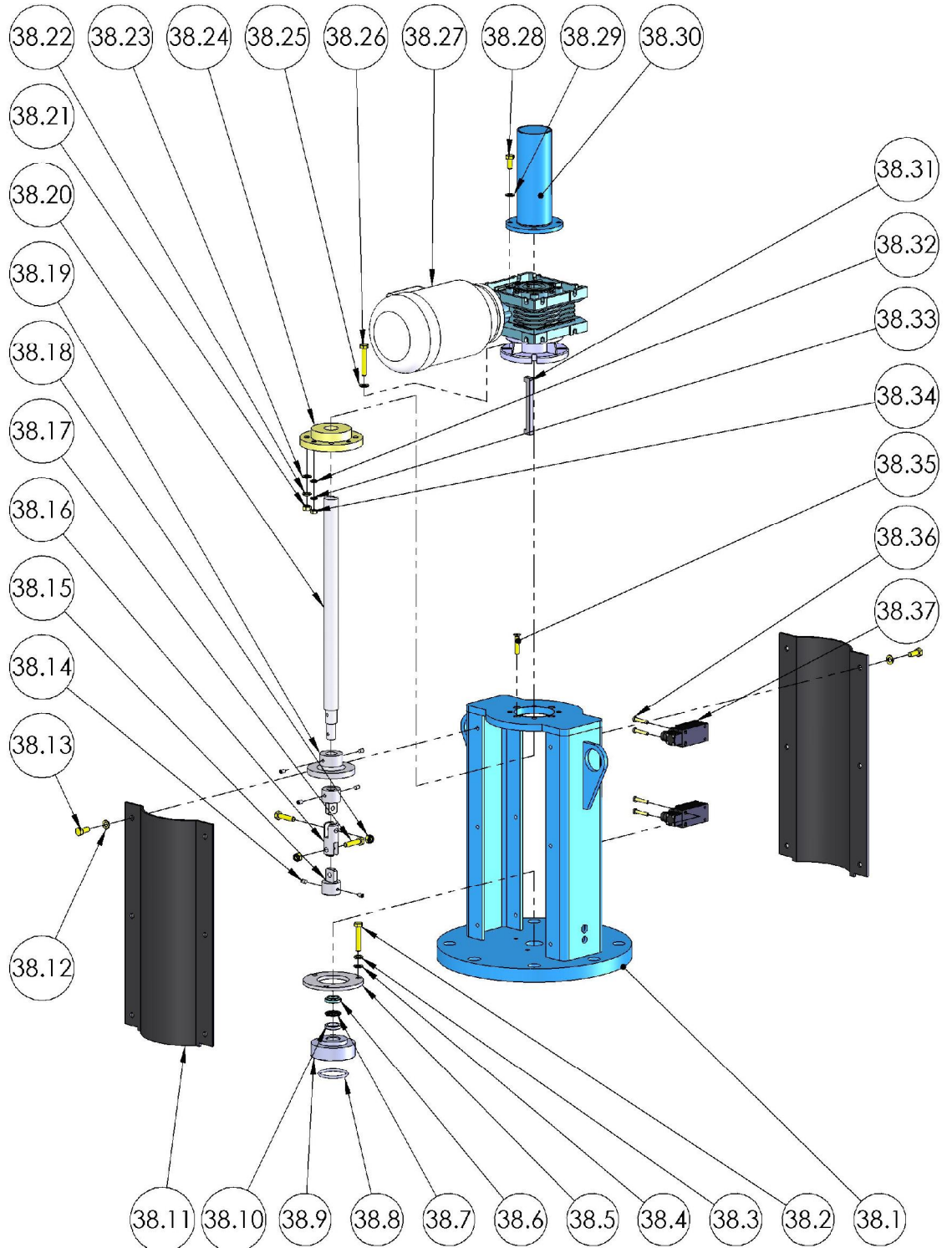
Order	Equipment model	Description	Number of units
18.5	FMA-9008 - 9014	FMA-9000 Davit support	1
18.6	FMA-9008 - 9014	M16 Washer	4
18.7	FMA-9008 - 9014	M16 Nut	4
18.8	FMA-9008 - 9014	Winch	1
18.9	FMA-9008 / 9012	FMA-9008 Davit	1
	FMA-9010 / 9014	FMA-9014 Davit	1
18.10	FMA-9008 - 9014	ø5 DIN-11024 dowel pin	3
18.11	FMA-9008 - 9014	FMA-9000 Lower davit dowel pin	1
18.12	FMA-9008 - 9014	FMA-9000 Upper davit dowel pin	1
18.13	FMA-9008 - 9014	Safety hook	1
18.14	FMA-9008 - 9014	M12 x 60 Screw	2
18.15	FMA-9008 - 9014	Towbar support	2
18.16	FMA-9008 - 9014	Davit wheel guide bush	2
18.17	FMA-9008 - 9014	Davit wheel	2
18.18	FMA-9008 - 9014	M12 Washer	4
18.19	FMA-9008 - 9014	M12 Nut	2
18.20	FMA-9008 - 9014	Towbar	1
19	FMA-9008 - 9014	Dn-450 Flat joint	1
	FMA-9008 - 9014	Dn-600 Flat joint	1
20	FMA-9008	FMA-9008 Filtering cartridge	
	FMA-9010	FMA-9010 Filtering cartridge	
	FMA-9012	FMA-9012 Filtering cartridge	
	FMA-9014	FMA-9014 Filtering cartridge	
20.1	FMA-9008 / 9010	FMA-9008 Upper joint	1
	FMA-9012 / 9014	FMA-9014 Upper joint	1
20.2	FMA-9008	INOX cartridge screen...Microns	1
	FMA-9010	INOX cartridge screen...Microns	1
	FMA-9012	INOX cartridge screen...Microns	1
	FMA-9014	INOX cartridge screen...Microns	1
20.3	FMA-9008 / 9010	FMA-9008 Lower joint	1
	FMA-9012 / 9014	FMA-9014 Lower joint	1
21	FMA-9008 - 9014	FMA-9000 Guide bush	1
22	FMA-9008 / 9010	M24 Washer	40
	FMA-9012 / 9014	M27 Washer	40
23	FMA-9008 / 9010	M24 Nut	20
	FMA-9012 / 9014	M27 Nut	20
24	FMA-9008 - 9014	M6 Nut	4
25	FMA-9008 - 9014	M6 Washer	4
26	FMA-9008 - 9014	Washer M6	8
27	FMA-9008 - 9014	Opaque cover box 165x120x80	1
28	FMA-9008 - 9014	Screw M6 x 20	4
29	FMA-9008 - 9014	Screw M8 x 30	4
30	FMA-9008 - 9014	Washer M8	8
31	FMA-9008 - 9014	Electric panel CPF-01 ( for 1 filter panel 230v. ca )	1
	FMA-9008 - 9014	Electric panel CPF-04 ( for 4 filters panel 230v. ca )	1
	FMA-9008 - 9014	Electric panel CPF-10 ( for 10 filters panel 230v. ca )	1
	FMA-9008 - 9014	Electric panel CPF-01-400 ( for 1 filter panel 400v. ca )	1
	FMA-9008 - 9014	Electric panel CPF-04-400 ( for 4 filters panel. ca )	1

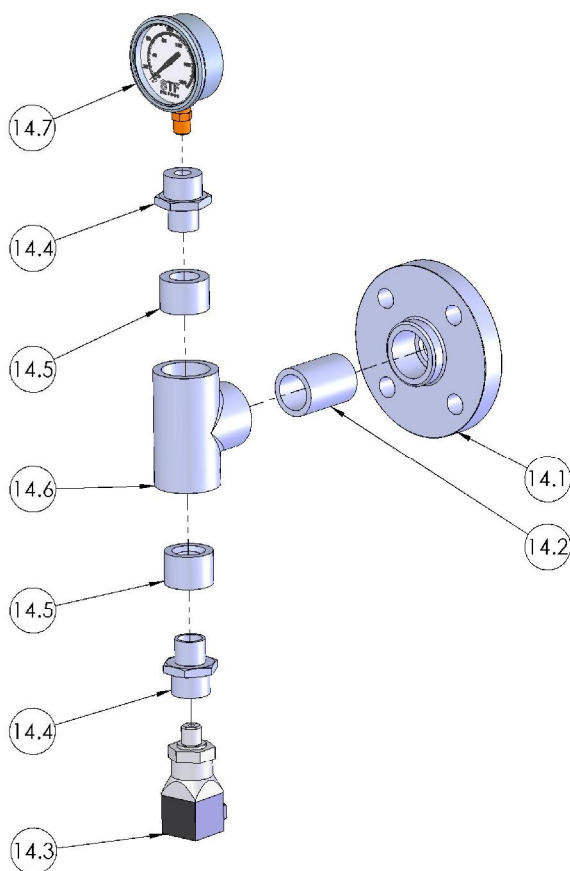
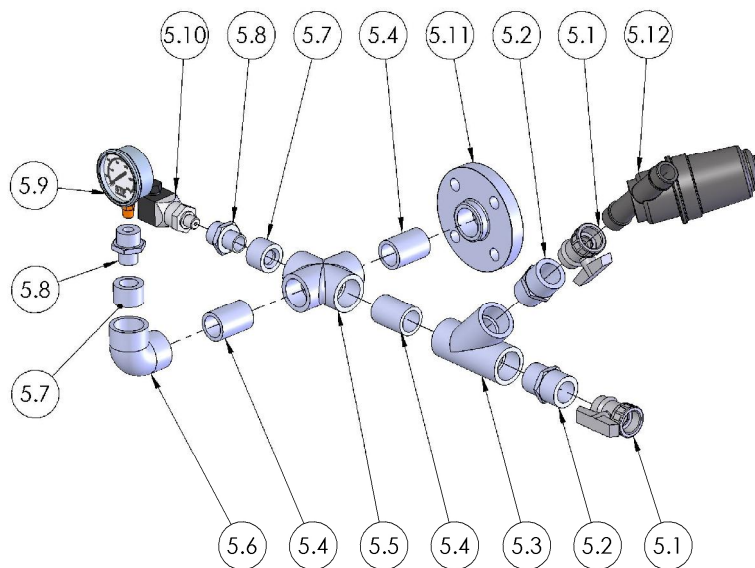
Order	Equipment model	Description	Number of units
	FMA-9008 - 9014	Electric panel CPF-10-400 ( for 10 filters panel 400v. ca )	1
	FMA-9008 - 9014	Electric panel CPF-01-12 ( for 1 filter panel 12v. cc )	1
	FMA-9008 - 9014	Electric panel CPF-03-12 ( for 3 filters panel 12v. cc )	1
32	FMA-9008 - 9014	M8 Washer	4
33	FMA-9008 - 9014	M8 Nut	4
34	FMA-9008 - 9014	M16 Nut	4
35	FMA-9008 - 9014	M16 Washer	8
36	FMA-9008 - 9014	VALVE BACKWASHING	1
36.1	FMA-9008 - 9014	S-400 2" Valve flange	1
36.2	FMA-9008 - 9014	Male female elbow 1-4 Cod. 09130013 Legris	1
36.3	FMA-9008 - 9014	Glycerine pressure gauge Male Gas-1/4"	1
37	FMA-9008 - 9014	Dn-50 Flat joint	1
38	FMA-9008 - 9014	TURRET	1
38.1	FMA-9008 - 9014	Turret	1
38.2	FMA-9008 - 9014	M8x45 Screw	3
38.3	FMA-9008 - 9014	M8 Washer	3
38.4	FMA-9008 - 9014	M8 Washer	3
38.5	FMA-9008 - 9014	Rim watertightness washer	1
38.6	FMA-9008 - 9014	AUASOB 20x28x4,8/7 Scraper	1
38.7	FMA-9008 - 9014	EQ-16 Joint	1
38.8	FMA-9008 - 9014	ø45x4 O-ring joint	1
38.9	FMA-9008 - 9014	Rim watertightness	1
38.10	FMA-9008 - 9014	NI-150 20x28x5,5 Joint	1
38.11	FMA-9008 - 9014	Protection cover	2
38.12	FMA-9008 - 9014	M8 Washer	12
38.13	FMA-9008 - 9014	M8x20 Screw	12
38.14	FMA-9008 - 9014	M6x12 Screw	6
38.15	FMA-9008 - 9014	Male crosspiece	2
38.16	FMA-9008 - 9014	Female crosspiece	1
38.17	FMA-9008 - 9014	M8x35 Screw	2
38.18	FMA-9008 - 9014	M8 Nut	2
38.19	FMA-9008 - 9014	Drive bushing	1
38.20	FMA-9008 - 9014	Spindle	1
38.21	FMA-9008 - 9014	M8 Nut	4
38.22	FMA-9008 - 9014	M8 Washer	4
38.23	FMA-9008 - 9014	M8 Washer	4
38.24	FMA-9008 - 9014	Bronze nut	1
38.25	FMA-9008 - 9014	M8 Washer	4
38.26	FMA-9008 - 9014	M8x50 Screw	4
38.27	FMA-9008 - 9014	Gear engine Ca 0,37Kw 27rpm Fs-1,5 with an outlet flange	1
	FMA-9008 - 9014	Gear engine Cc 12v 27rpm with an outlet flange	1
38.28	FMA-9008 - 9014	M8x20 Screw	4
38.29	FMA-9008 - 9014	M8 Washer	4
38.30	FMA-9008 - 9014	Spindle protection	1
38.31	FMA-9008 - 9014	Machine key	1
38.32	FMA-9008 - 9014	M6 Washer	4
38.33	FMA-9008 - 9014	M6 Washer	4
38.34	FMA-9008 - 9014	M6 Nut	4

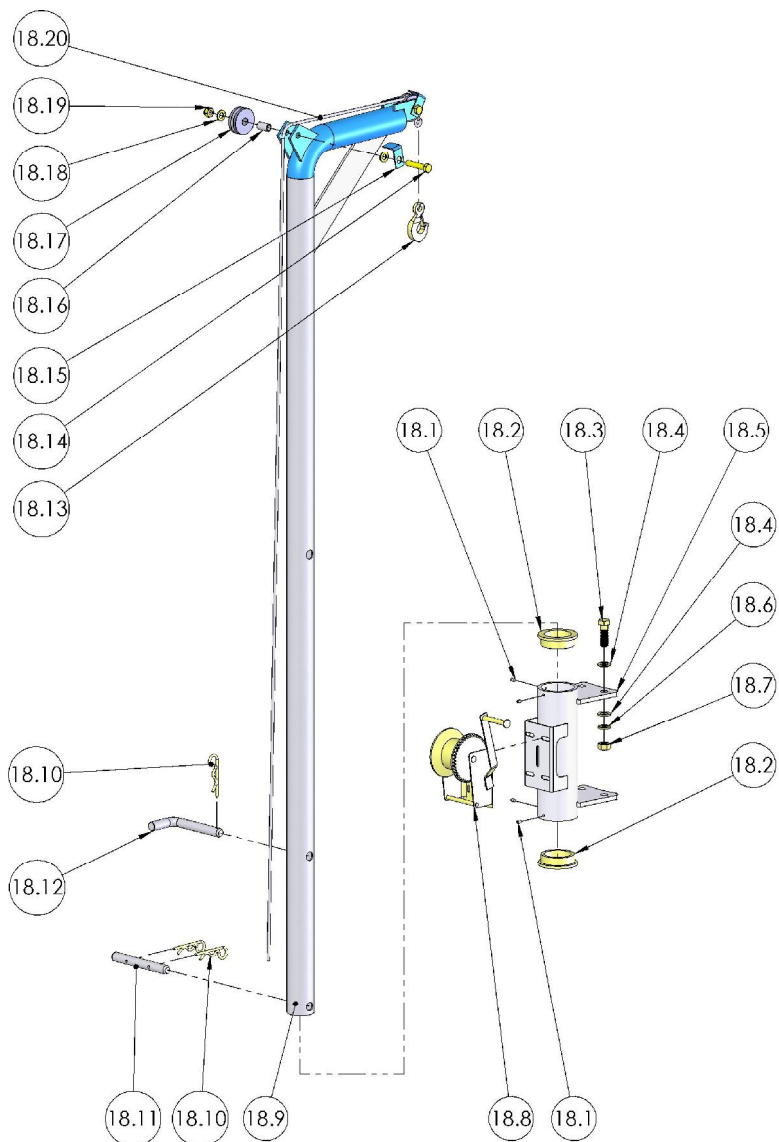
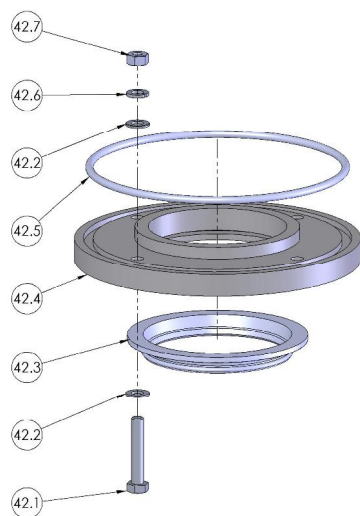
Order	Equipment model	Description	Number of units
38.35	FMA-9008 - 9014	M6x35 Screw	4
38.36	FMA-9008 - 9014	M5x30 Screw	4
38.37	FMA-9008 - 9014	Omron limit switch	2
39	FMA-9008 - 9014	M20 x 80 Screw	8
40	FMA-9008 - 9014	M20 Washer	16
41	FMA-9008 - 9014	Dn-200 Flat joint	1
42	FMA-9008 - 9014	WATERTIGHTNESS DISK	1
42.1	FMA-9008 - 9014	M8x45 Screw	4
42.2	FMA-9008 - 9014	M8 Washer	8
42.3	FMA-9008 - 9014	H joint	1
42.4	FMA-9008 - 9014	FMA-9000 Watertightness disk	1
42.5	FMA-9008 - 9014	ø165x5 O-ring seal	1
42.6	FMA-9008 - 9014	M8 Washer	4
42.7	FMA-9008 - 9014	M8 Nut	4
43	FMA-9008 / 9010	M24 x 110 Screw	20
	FMA-9012 / 9014	M27 x 120 Screw	20
44	FMA-9008 / 9010	FMA-9008 / 9010 Cover	1
	FMA-9012 / 9014	FMA-9012 / 9014 Cover	1
45	FMA-9008 - 9014	M16 x 70 Screw	4
46	FMA-9008 - 9014	M20 Nut	8
47	FMA-9012	Nozzle extension	8
	FMA-9014	Nozzle extension	10
48	FMA-9008 / 9012	3/4" Nozzle nut	8
	FMA-9010 / 9014	3/4" Nozzle nut	10
49	FMA-9008 / 9012	Nylon brushes nozzle	8
	FMA-9010 / 9014	Nylon brushes nozzle	10
50	FMA-9008 / 9012	FMA-9008 / 9012 Scanner	1
	FMA-9010 / 9014	FMA-9010 / 9014 Scanner	1

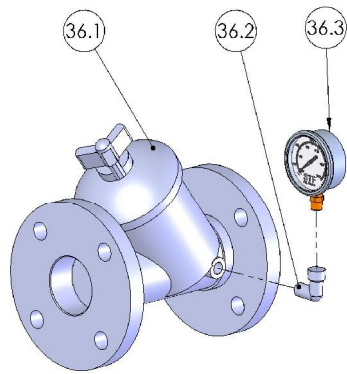
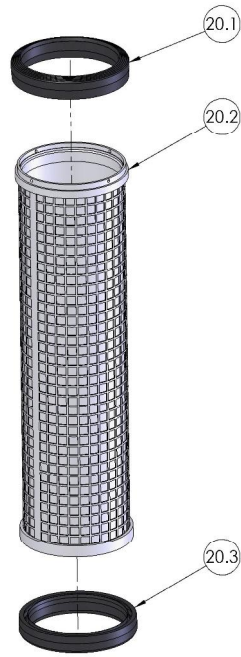




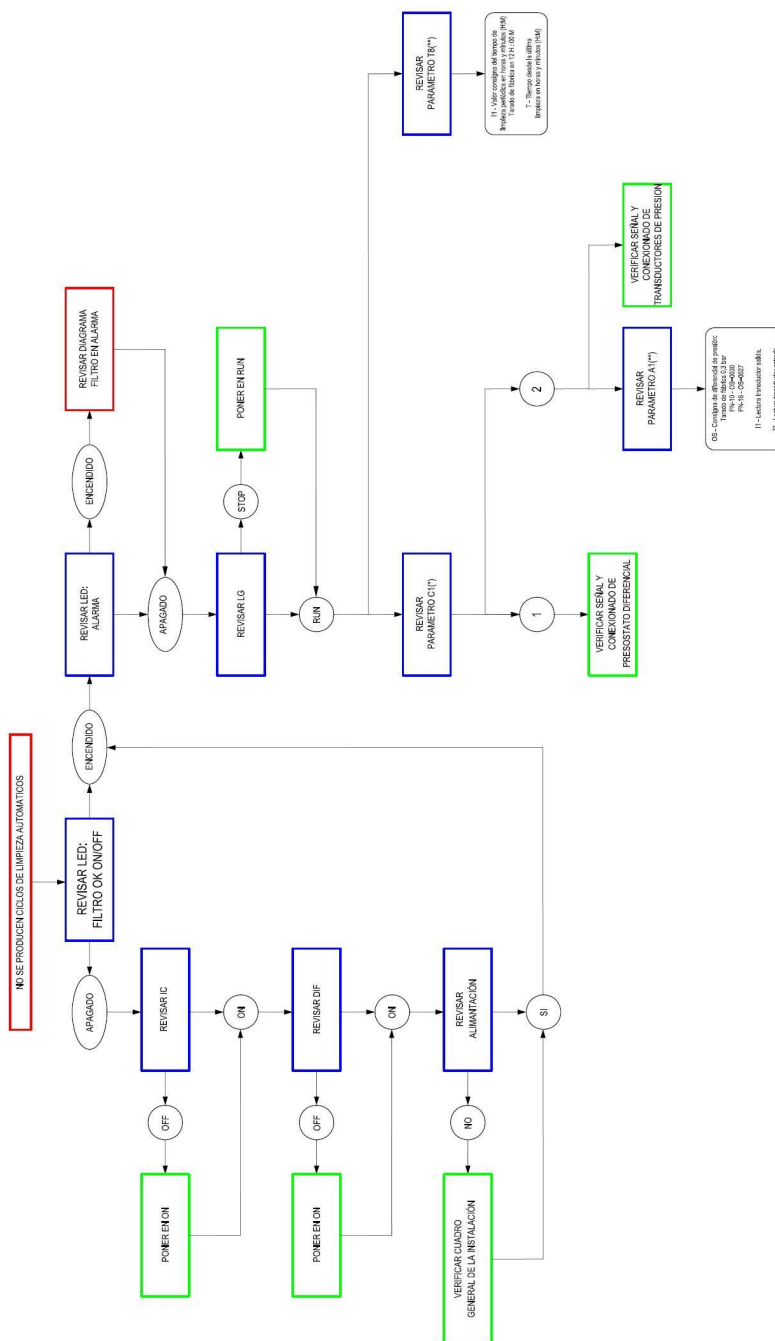






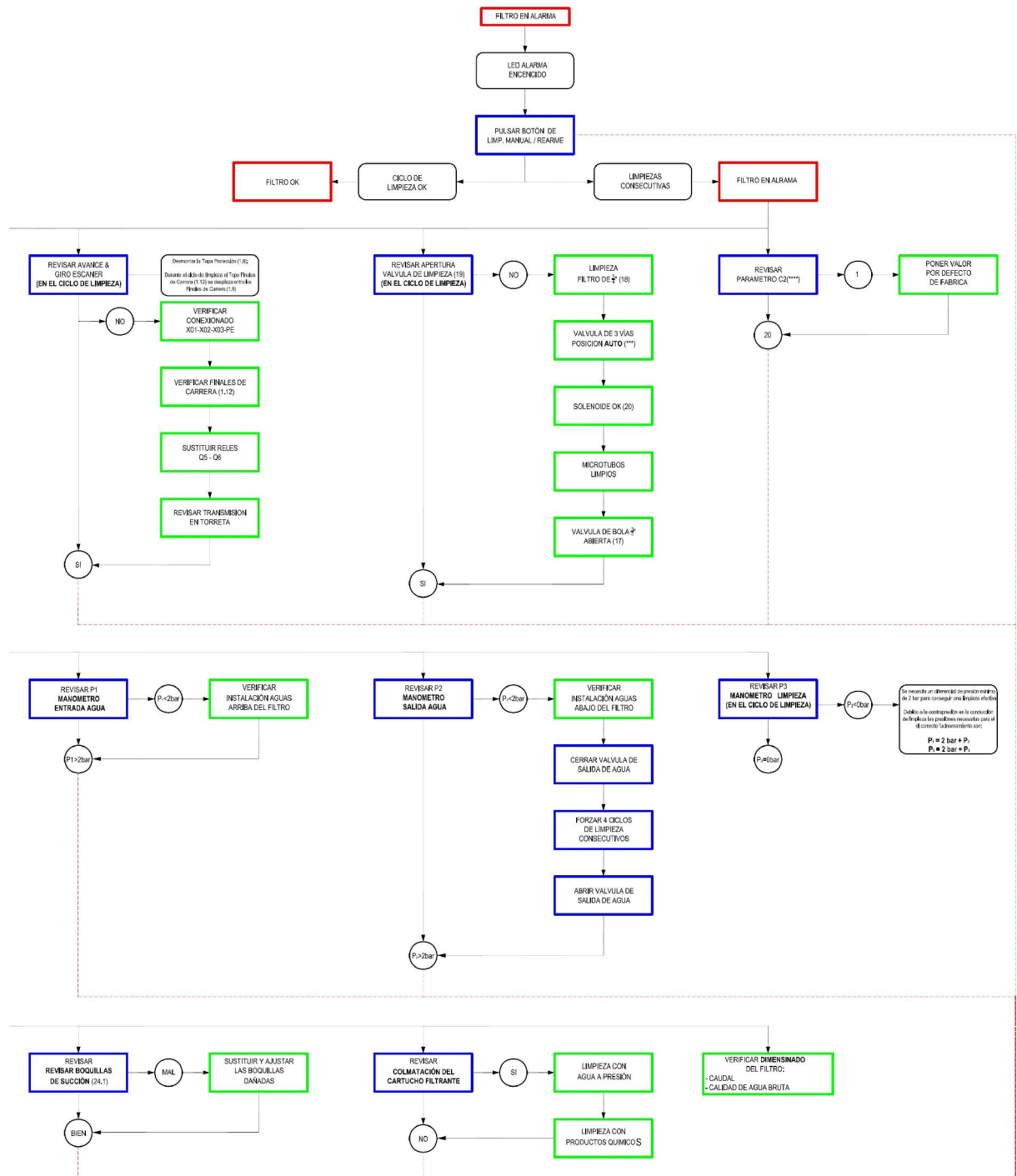


## 17. – ERROR DETECTION



(\*) C1 – Pressure switch selection differential & pressure transducers.  
Se programmer panel / Modify parameters.

(\*\*) T8 – Time between backwashings.  
See programmer panel / Modify parameters.



(\*\*\*) – See hydraulic circuit section.

(\*\*\*\*) C2 – Consecutive pieces counter.  
See programmer panel section / Modify parameters

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