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F I L T R O S

Water Filtration Systems

Series FMA – 2000

OMICRON WATER TECHNOLOGIES

models 5300, 8000, 10600,

13200, 16500, 21300 (H)

**BETTER WATERS / OMICRON
models with booster pump**

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

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IMPORTANT WARNINGS



PLEASE READ CAREFULLY AND FOLLOW THESE DEVICE MANUAL INSTRUCTIONS. THE MANUFACTURER IS NOT RESPONSIBLE FOR DAMAGES OR NEGLIGENCE OCCURRING 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 its designed usage, provided that:

Installation, management and maintenance must be carried out according to these manual instructions.

Facilities conditions and supply voltage must follow the specified instructions.

Any different usage from what is instructed will be incorrect. Unauthorized modifications are not permitted by the manufacturer. Damages resulting from incorrect usage will be the user's responsibility and will automatically void the warranty.

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

READ AND KEEP THIS INSTRUCTIONS

*We really want you to save time and money!
Reading this entire manual will assure correct installation and safe product usage.*

CAUTION!



ELECTRICAL DISCHARGE RISK. OPERATIONS INDICATED WITH THIS SYMBOL MUST BE PERFORMED ONLY BY SKILLED TECHNICAL PERSONNEL.

WARNING!



ESSENTIAL INFORMATION AND FEATURES.
KEEP THIS DEVICE DOCUMENTATION FOR REFERENCE.

	<p style="text-align: center;">SISTEMAS DE FILTRADO Y TRATAMIENTO DE FLUIDOS, S.A. <i>Polígono Armentera Parcela 86-87 22400 Monzón (Huesca) ESPAÑA/Spain</i></p> <p style="text-align: center;">Tel: +34 974 401 933 / Fax: +34 974 417 809 info@stf-filtros.com / www.stf-filtros.es</p>
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Declaración de Conformidad **CE**

(Conforme a las Directivas Europeas 2006/42/CE sobre Máquinas-Anexo IIA, Directiva 97/23/CE sobre Equipos a Presión y Directiva 2006/95/CE sobre Material Eléctrico)

EC Declaration of Conformity

(As defined by “Machinery Directive 2006/42/EC, Appendix IIA”, “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 basic health and safety requirements according to the following directives:

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

<p style="text-align: center;">DESCRIPCIÓN DE LA MÁQUINA: <i>Machine Description:</i></p>	<p style="text-align: center;"><i>FILTRO DE MALLA AUTOLIMPIANTE ELÉCTRICO AUTOMATIC SCREEN FILTER ELECTRICAL MOTOR</i></p>
<p style="text-align: center;">FUNCIÓN: <i>Function:</i></p>	<p style="text-align: center;"><i>RETENCIÓN DE SÓLIDOS EN SUSPENSIÓN RETENTION OF SUSPENDEED SOLIDS</i></p>
<p style="text-align: center;">MODELO / TIPO: <i>Model / Type:</i></p>	
<p style="text-align: center;">CLIENTE: <i>Customer:</i></p>	
<p style="text-align: center;">NÚMERO DE SERIE: <i>Serial Number:</i></p>	
<p style="text-align: center;">LA MÁQUINA SE ENCUENTRA EN ANEXO IV? <i>The machine is included in Appendix IV?</i></p>	NO

	<p align="center">SISTEMAS DE FILTRADO Y TRATAMIENTO DE FLUIDOS, S.A. <i>Polígono Armentera Parcela 86-87 22400 Monzón (Huesca) ESPAÑA/Spain</i></p> <p align="center">Tel: +34 974 401 933 / Fax: +34 974 417 809 info@stf-filtros.com / www.stf-filtros.es</p>
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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, is excluded from the scope of this Directive.

<p align="center">DESCRIPCIÓN DEL EQUIPO: <i>Equipment:</i></p>	<p align="center"><i>FILTRO DE MALLA AUTOLIMPIANTE</i> <i>AUTOMATIC SCREEN FILTER ELECTRICAL DRIVE</i></p>
<p align="center">PRESIÓN DE DISEÑO / TEMPERATURA DISEÑO <i>Design Pressure / Design Temperature</i></p>	<p align="center"><i>PN10 / 50°C</i></p>
<p align="center">FLUIDO A CONTENER/ GRUPO S. D 67/548/CEE <i>Fluid to contain / Fluid group S/D. 67/548/CEE :</i></p>	<p align="center"><i>AGUA / GRUPO 2</i> <i>WATER / GROUP 2</i></p>
<p align="center">CATEGORÍA DEL EQUIPO / MÓDULO <i>Category S/D.9-/2-EC / Module</i></p>	<p align="center">NO APLICA (APARTADO 3 ARTICULO 3) <i>NOT APPLY (SECTION 3 OF ARTICLE 3)</i></p>

03. – DECLARATION OF CONFORMITY

	<p align="center">SISTEMAS DE FILTRADO Y TRATAMIENTO DE FLUIDOS, S.A. <i>Polígono Armentera Parcela 86-87 22400 Monzón (Huesca) ESPAÑA/Spain</i></p> <p align="center">Tel: +34 974 401 933 / Fax: +34 974 417 809 info@stf-filtros.com / www.stf-filtros.es</p>
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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 for this equipment is maintained at our corporate address, stated 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, 18 de marzo de 2016 / 18th March, 2016



STF
 FILTROS
 Sistemas de Filtrado
 y Tratamiento de Fluidos S.A.
 Pol. Ind. la Armentera Parc. 87
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Andrés Bellera
 Departamento de Calidad / Quality Department

1. – INTRODUCTION

STF – FILTROS congratulates you on the acquisition of its self-backwashing automatic filter(s).


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


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

CONTACT



SISTEMA DE FILTRADO Y TRATAMIENTO DE FLUIDOS S.A

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WARRANTY CERTIFICATE

TWO YEAR LIMITED WARRANTY

STF-Filtros sells this product with the understanding that the user will perform all necessary tests to determine the suitability of this product for the user's intended application, and warrants to the original purchaser that this product will be free from defects in material and workmanship for twenty-four (24) months from the product delivery date. Subject to the limitations set forth below, STF-Filtros will repair, replace or refund the purchase price as paid by the CUSTOMER.

The repair, replacement or refund remedy shall be the sole and exclusive remedy provided under the "Two year limited warranty" and shall not extend beyond the twenty-four (24) month period set forth herein.

Exclusions and Limitations

1. The "Two-year limited warranty" is void if the product has been subjected to:

- a) Misuse, neglect or accident.
- b) Unauthorized modification, improper installation or application.
- c) Use in violation of our instructions for installation and maintenance.
- d) Repair or modifications performed by non-qualified personnel
- e) Power surges, flood, fire, accidental breakage or other events outside STF- FILTROS control.

2. The "Two year limited warranty" does not cover any transportation charge, customs clearance or any other costs for return of the products, for reshipment of any repaired or replaced products, or costs associated with installation, removal or reinstallation of the products.

2. – WARRANTY

3. Warranty claims will not be honoured if the type or serial number of the products of STF FILTROS has been altered, removed or made illegible.

4. The warranty stipulated in this certificate is only available to our direct customers.

Model	
Serial Number	_____/____

Issue date

Name

Delivery note No.

Authorized signature

FILTER SAFE USE INSTRUCTIONS

THE INCORRECT USE OR MAINTENANCE OF THE EQUIPMENT MAY CAUSE PHYSICAL INJURIES.



IT IS STRONGLY RECOMMENDED TO COMPLY WITH THE FOLLOWING INSTRUCTIONS IN ORDER TO AVOID RISKS.

USE ACCIDENT PREVENTION MEASURES TO ASSURE YOUR SAFETY AND EQUIPMENT SAFETY.

1. Do not touch parts in motion.

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

2. Do not touch the filter without protection.

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

3. Protection against electric shocks.

Prevent accidental contact between the electrical and metallic parts of the device.

4. Disconnect the filter.

Disconnect the device from the power source before performing any assistance, inspection, maintenance, cleaning, changing or part verification operations.

5. Release filter pressure.

Release pressure in the device before performing any assistance, inspection, maintenance, cleaning, changing or part verification operations.

6. Working area.

Maintain the working area clean and free of unnecessary tools. Sparks may be produced while the device is in operation; do not use the device in the presence of varnish, petrol or other flammable or explosive substances.

3. – SAFETY

7. Filter maintenance.

Follow the instructions in this manual: check the lubrication; regularly inspect the power cable and if it is damaged have it repaired by qualified personnel. Check the exterior has no visible anomalies.

8. Ensure the screws, pins and cover are securely fastened.

Regularly check they are securely fastened.

9. Ensure the device operates at correct voltage.

Pay attention to the voltage specified in this manual and on the filter information label.

10. Never use the filter if it is faulty.

If the filter runs making unusual noises, excess vibration or it looks faulty, stop its running immediately and check its functionality.

11. Use only original spare parts.

The use of non-original spare parts invalidates the warranty.

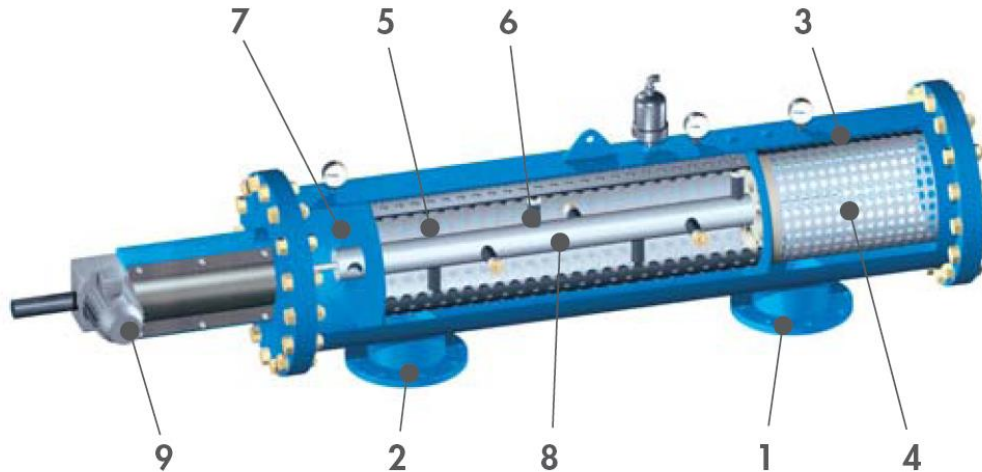
12. Do not modify the filter.

Unauthorised modification may diminish device performance and cause serious accidents to personnel who are not sufficiently technically knowledgeable.

13. Disconnect and drain the device.

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

The filter consists of an outer casing which houses three distinct chambers. The first one is a coarse screen which connects with the filter water inlet, and where the coarse screen used as a prefilter is located.



1.	Inlet	6.	Filtering chamber
2.	Outlet	7.	Flushing chamber
3.	Strainer chamber	8.	Scanner
4.	Strainer filter	9.	Motor drive
5.	Filtration screen		

Water flows from outside to inside the filter. Once inside, the water enters the second chamber (“filtration chamber”). The main filtering element (filtration screen) is located within.

The water flows outwards from inside the filtering body. Suspended solids (dirt) are retained in the filtering element, i.e. in the mesh. This chamber connects with the filtered water outlet to the required application: drinking water, process water, cooling water, etc.

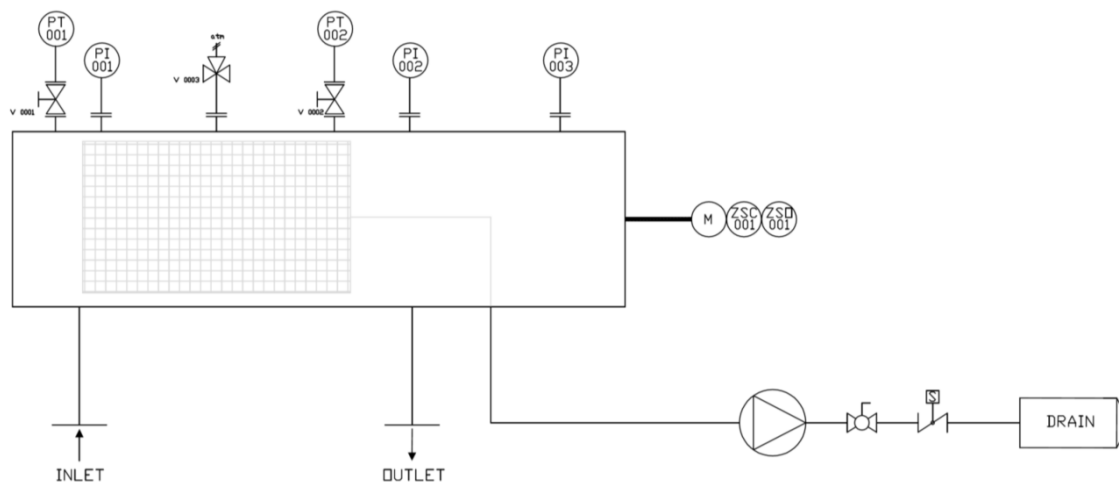
The dirt retained gradually forms a cake on the mesh, which generates a given pressure drop. Cleaning of the filter is supported by a second chamber, the cleaning chamber, which outlet is connected to the drain valve allowing evacuation of the wash water when generating the self-cleaning process. The cleaning chamber is separated from the filtration chamber by means of a special seal.

4. – DESCRIPTION FMA – 2000

The suction scanner is a vital element of this technology. This scanner occupies the exact position that the central shaft of the filtering cartridge would occupy, and is hydraulically connected to the cleaning chamber. In turn, the suction nozzles are arranged perpendicularly in the area that it occupies in the filtration chamber, with the nylon bristles reaching a few microns away from the mesh.

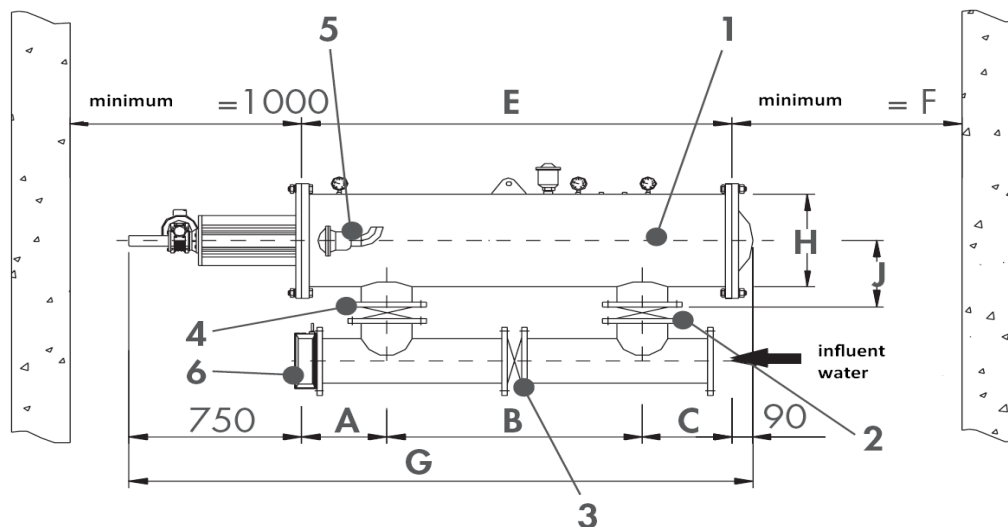
The location of these nozzles in the suction scanner has been designed to come into contact with the entire inner surface of the mesh, thanks to the spiral movement provided to the scanner by the electric motor by combining longitudinal displacement and rotation.

The minimum pressure is 3 bar for a micronage of 10 μm . When the pressure is lower than the minimum, the flush cycle will be supported by a booster pump.



5. – PERFORMANCE

1. Water enters the filter through the prefiltration chamber, where thick particles are retained, functioning as a strainer.
2. Water enters the filtering chamber, travels through from inside to outside the **filtering screen**. High quality water is obtained according to the filtration degree chosen for the filtration screen, which can vary from 10 microns to 2000 microns.
3. Particles remaining on the thin screen interior gradually produces head loss between the filter inlet and outlet. Two analogic transducers will indicate the backwashing sequence when the DP becomes 0.3 (3 m.c.a). There are other means to indicate filter backwashing: Timed backwash, time and pressure combination, continuous backwashing option.
4. When the pressure switch indicates 0.3 bar, the drain valve receives the opening signal, then generates a pressure differential between outside (atmospheric pressure) and inside of the filter (working pressure) which produces fast moving water that goes through the screen, and then goes outside through the nozzles' internal orifices. Additionally at the same time the start signal is sent to the motor.
5. The result of these actions is the suction effect of the nozzles on the screen-collected particles and the suction scanner's spiral movement in the inside of the filter.
6. During the 25-second backwashing process (32 seconds for 10 micron screens), water is still being filtered and goes on flowing to the system or application. This feature of the filter's design allows backwashing water consumption to be minimal and the working system to be continuous.



- | | |
|---------------------------------|-------------------------------|
| 1. Automatic filter series 2000 | 4. Butterfly valve outlet |
| 2. Butterfly valve inlet | 5. Cleaning valve 2" |
| 3. Bypass valve | 6. Retaining valve (optional) |

Note

Flow rates below are stated for a 125 micron filtration screen. Lower maximum flow rates apply to finer micron-rated screens.

Model Support	Connect In / Out	Dimensions (mm)									Filtration surface	Water consumption per cleaning (l)	Weight (kg)
		A	B	C	DN	E	F	G	H	J			
FMA – 2003	3"	302	360	219	80	881	400	1625	457	325	1600	35	245
FMA – 2004	4"	314	770	220	100	1305	690	2140	457	325	3200	70	280
FMA – 2006	6"	340	1000	240	150	1580	970	2415	457	325	4800	105	340
FMA – 2008	8"	367	110	388	200	1855	1240	2690	457	325	6400	140	390
FMA – 2010	10"	419	1370	341	250	2130	1520	2965	457	325	8000	175	430
FMA – 2012	12"	430	1100	325	300	1855	1240	2690	660	450	10030	140	595
FMA – 2014	14"	433	1370	327	350	2130	1520	2965	660	450	12800	175	668

6. – TECHNICAL CHARACTERISTICS FMA – 2000

Model Support ST.STEEL	Connect In / Out	Dimensions (mm)									Filtration surface	Water consumption per cleaning (l)	Weight (kg)
		A	B	C	DN	E	F	G	H	J			
FMA – 2003	3"	302	360	219	80	881	400	1625	457	325	2200	35	261
FMA – 2004	4"	314	770	220	100	1305	690	2140	457	325	4390	70	304
FMA – 2006	6"	340	1000	240	150	1580	970	2415	457	325	6900	105	382
FMA – 2008	8"	367	110	388	200	1855	1240	2690	457	325	9400	140	439
FMA – 2010	10"	419	1370	341	250	2130	1520	2965	457	325	11900	175	495
FMA – 2012	12"	430	1100	325	300	1855	1240	2690	660	450	14700	140	6755
FMA – 2014	14"	433	1370	327	350	2130	1520	2965	660	450	19150	175	668

MODEL PVC	Flows (m ³ / h)			
	Maximum flow	High quality	Medium quality	Low quality
FMA – 2003	75	45	35	25
FMA – 2004	150	80	65	50
FMA – 2006	290	150	120	90
FMA – 2008	380	250	200	150
FMA – 2010	800	400	320	240
FMA – 2012	920	500	400	300
FMA – 2014	1250	600	480	360

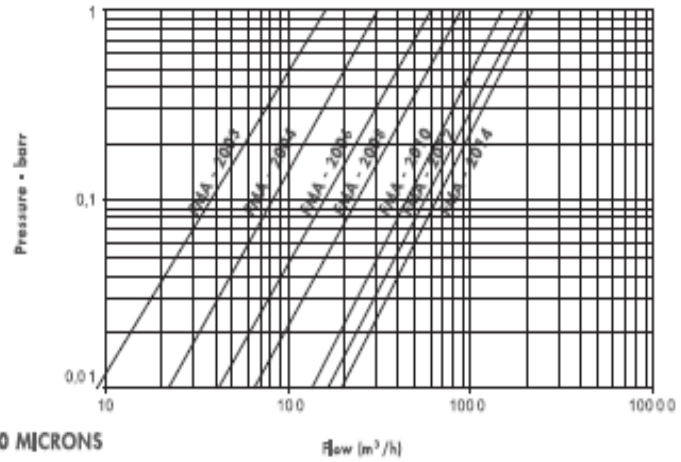
MODEL ST. STEEL	Flows (m ³ / h)			
	Maximum flow	High quality	Medium quality	Low quality
FMA – 2003	120	60	48	34
FMA – 2004	235	110	90	370
FMA – 2006	400	215	173	129
FMA – 2008	790	320	256	192
FMA – 2010	1150	580	464	348
FMA – 2012	1400	700	560	420
FMA – 2014	1800	900	720	540

6. – TECHNICAL CHARACTERISTICS FMA – 2000

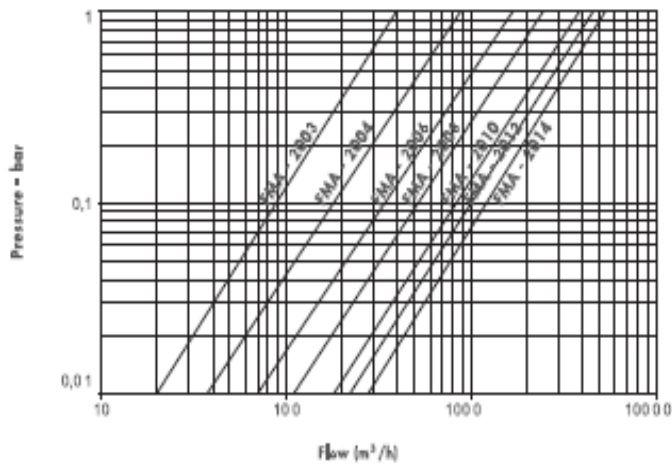
Filter model STF - FMA	2003	2004	2006	2008	2010	2012	2014
GENERAL CHARACTERISTICS							
Inlet diameter /Outlet ⁽¹⁾	DN-80 (3")	DN-100 (4")	DN-150 (6")	DN-200 (8")	DN-250 (10")	DN-300 (12")	DN-350 (14")
Maximum/ minimum working pressure	2 bar / 10 bar (for other working pressure, please ask us)						
Fluid maximum temperature	50 °C (u 95 °C on demand)						
PVC SCREEN							
Maximum flow (m ³ /h)	75	150	290	450	800	920	1.250
Gross Filtration Surface (cm ²)	2.450	4.900	7.350	9.800	12.250	16.100	20.100
Unladen weight (kg)	245	280	340	390	430	595	668
Filtration degree	1.000, 500, 300, 200, 125,100 micron						
STAINLESS STEEL SCREEN	Maximum flow in gpm = 4.4x (m ³ /h)						
Maximum flow (m ³ /h)	120	235	500	700	1150	1400	1800
Filtration Surface (cm ²)	2650	5380	7990	10.600	13,210	16,500	21,300
Unladen weight (kg)	261	304	382	439	495	675	753
Filtration degree	1000, 500, 300, 200, 125,100, 80, 50, 25, 20 and 10 micron						
BACKWASHING							
Backwashing valve	Thread G-2"						
Backwashing time	25 seconds, 32 seconds for 10 micron screens						
Backwashing flow (m ³ /h)	5	10	15	20	25	20	25
Water consumption (litros)	35	70	105	140	175	140	175
ELECTRICAL DATA							
Operating voltage	220 V AC 50 Hz Single- phase(Optional 400 V AC Three-phase and 12 V DC)						
Control voltage	24 V DC (12 V DC supply 12 V DC)						
Motor power rating	0.37 kW (0,25 kW option 12 V)						
Motor consumption	1.4 A						

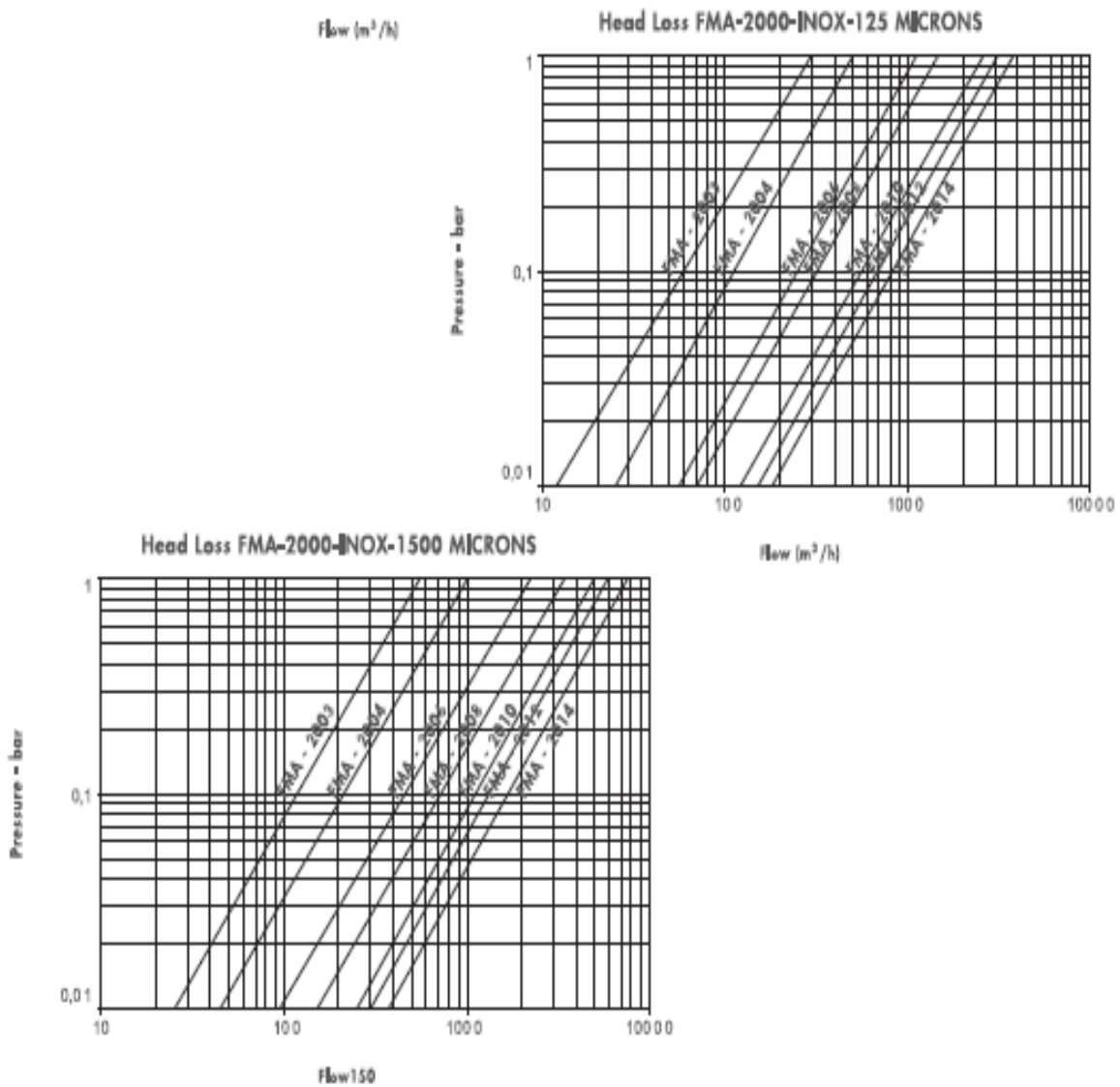
STANDARD MATERIALS	
Filter body and covers	S-235-JR Carbon steel
Finish treatment	Epoxi-polyester polymerized baked oven finish powder coating.
Suction scanner	AISI-304 stainless steel
Filtration screen	AISI-316 stainless steel
Suction nozzles	PVC with stainless steel AIS 316 ring and nylon fibers
Backwashing valves	Brass body with stainless steel spring and axis and polyamide cover.
Screw	Bichromated quality 5.6 and 5.8
Joints	NBR – EPDM - Viton
SPECIAL MATERIALS (OPTIONAL)	
Filter body and covers	A-516 carbon steel / AISI 304 stainless steel / AISI 316 / SuperDuplex
Finish treatment	Internal coating adequate for sea water and external coating for marine environment
Suction scanner	Duplex Stainless steel or Superduplex
Filtration screen	254 SMO stainless steel Avesta
Suction nozzles	In stainless steel, Duplex or Superduplex and nylon fibers.
Backwashing valves	Hydraulic, electrical or pneumatic drive. Please ask us for other materials.
Screw	A2 or A4 stainless steel
Joints	Please ask us

Head Loss FMA-2000-PVC-125 MICRONS



Head Loss FMA-2000-PVC-1500 MICRONS





All devices are identified by a nameplate affixed to the filter.

		Sistemas de Filtrado y Tratamiento de Fluidos, S.A. Pol. Armentera, parc. 86-87 22400 Monzón (Huesca) Spain Tel: 0034 974 401 548 Fax: 0034 974 401 448 Email: info@stf-filtros.com			
SELF-CLEANING SCREEN FILTER					
MODEL					
INLET / OUTLET DIAMETER					
SERIAL NUMBER					
FILTRATION DEGREE (Micron)					
MAX. WORKING PRESSURE (Kg/cm ²)					
MAX. WORKING TEMP. (°C)					
BACKWASH VALVE					
EMPTY WEIGHT (Kg)					
OPERATING WEIGHT (Kg)					

The following information is included on the nameplate:

- Model
- Inlet / outlet Diameter
- Serial number
- Filtration degree (micron)
- Max. Working pressure (kg/cm²)
- Max. Working temperature (°C)
- Backwash valve
- Empty weight (kg)
- Operating weight (kg)

8. – INSTALLATION INSTRUCTIONS

1. Take precautions to prevent the filter from knocks or blows, lifting the equipment by means of the upper anchor points.
2. Make sure that the installation point has the minimum operating pressure.
 - The backwashing line must be measured so that it receives a minimum head loss of 25 m³/h (110 gpm).
 - In installations with a working pressure greater than 6 bar (87 psi), it is advisable to install a ball valve in the backwashing line to adjust the backwashing flow.

NOTE



THE MINIMUM WORKING PRESSURE IS 2 BAR (29 PSI) BETWEEN THE FILTER OUTLET AND THE DRAIN VALVE.

IF THE DRAIN IS REDIRECTED, IT WILL BE NECESSARY TO INCREASE THE WORKING PRESSURE IN ORDER TO COMPENSATE FOR THE HEAD LOSS THAT MAY RESULT IN THE DRAIN LINE.

3. Install the filter horizontally. Check that there is enough room so that the filter can be easily accessed in safe conditions for future treatment and maintenance. See section 6.
4. Position the filter in accordance with the arrows indicating the direction of water flow.
5. Inlet and outlet shut-off valves are recommended to be installed in order to isolate it. It is recommended to install a by-pass in order to avoid power cuts during maintenance.
6. A non-return valve should be installed in the outlet to avoid any possible water hammer effect on the filter.
7. Electrical wiring may only be installed by an authorized electrician. See section 12.1.
8. During the filter installation, avoid water splashing over the electrical components or the control panel.

9. – START-UP INSTRUCTIONS

1. Check previous section instructions.
2. Check the hydraulic circuit (see section 15) that provides the backwashing valve with water, making sure that:
 - a. $\frac{3}{4}$ " filter is clean.
 - b. The ball valve is open.
 - c. The three-way valve is set to AUTO.
 - d. Start with the following shut-off valves configuration:
 - e. Inlet valve: OPEN
 - f. Outlet valve: CLOSED.
 - g. By-pass (If present): CLOSED
3. Switch on the filter, put the circuit breaker ON
4. Make sure that the programmable relay is on the selected option RUN
5. Initiate a backflush by pressing the "Manual Flush" push button.
6. The backwashing cycle process is detailed in section 12.2.
7. Open outlet valve.
8. A drop in pressure and water flow increase is produced when the system is filled. It is therefore advisable to install an outlet pressure valve to ensure that the system filling is controlled.

NOTE



SHOULD NO PRESSURE-SUSTAINING VALVE BE INSTALLED, WHILE FILLING THE SYSTEM CLOSE THE OUTLET VALVE TO ATTAIN 2 BAR (29 psi) ON THE CLEAN WATER CHAMBER PRESSURE GAUGE. ONCE THE SYSTEM IS PRESSURIZED, OPEN THE OUTLET VALVE TO OBTAIN CORRECT OPERATION.

9. Make sure that water flow and pressure installation correspond with the maximum values defined for this manual's model. See section 6.
10. Check the equipment operation and the head loss when the start up is completed.

NOTE



THE FILTER MAY AUTOMATICALLY START THE BACKWASH CYCLE WHEN THERE IS A PRESSURE DIFFERENTIAL OF 0.3 BAR (4.3 psi) BETWEEN THE INLET AND THE OUTLET.

NOTE



IN CASE SEVERAL FILTERS ARE WORKING IN PARALLEL WITH A COMMON CONTROL PANEL, PLEASE NOTE THAT THE FILTER WHICH CONTROLS THE CLEANING IS THE ONE WITH THE PRESSURE TRANSMITTERS / PRESSURE SWITCH INSTALLED INSIDE. PLEASE TAKE THIS INTO ACCOUNT DURING MAINTENANCE.

10. – MAINTENANCE INSTRUCTIONS

1. Switch off the power supply to the filter before any maintenance operation.
2. Ensure the filter has been depressurized prior to loosening the screws.
3. Avoid splashes and water leaks to minimize the personal risk of slipping or electric shock, and the damage that humidity can cause to the equipment.
4. After completing the procedure, reattach the cover.
5. Clean the screen element with a pressure washer. If necessary, acid or other chemical products may be used. This must be done following the material instructions without placing the operator or others at risk.
6. Drain the equipment when it is not used for a long time.

Note

Open and close the valves slowly and gradually.

11. – PREVENTIVE MAINTENANCE SCHEDULE

MAINTENANCE	TIME	ELEMENT	ACTION
EXTERNAL			
Working status	1000 backwashing cycles	Complete filter	Filter on + manual backwashing button. Control: Motor starting Valve opening Effective backwashing cycle ($P_1 = P_2$)
Anticorrosion treatment	12 months	FMA casing	Examine anticorrosion treatment at necessary points. Apply Epoxi - Polyester treatment
Turret	6 months	Spindle	Dismantle the spindle protection and lateral rolling press. Clean and grease spindle both sides. Use the grease supplied by STF-Filtros. Check watertightness.
Rim watertightness	6 months	Rim watertightness	Replace the inside joints: <ul style="list-style-type: none"> • Ø45x4 o-ring seal • NI joint– 150 20x28x5.5 • EQ-16 quadric joint • Scraper 20X28X4.8/7
Pressure line	1 week	Intake filter	Intake filter backwashing and microtubes for supplying water to the backwashing valve.
INTERNAL			
Anticorrosion treatment	12 months	FMA casing	Examine anticorrosion treatment in the necessary points. Apply Epoxi - Polyester treatment
Suction nozzle	12 months	Suction nozzle	Suction nozzles condition examination, nylon fibers condition, cartridge proximity.
Smoothing cartridge	12 months	Smoothing cartridge	Smoothing cartridge backwashing
Filtering cartridge	Inactivity period	Filtering cartridge	Backwash manually by using water under pressure. If necessary, acid or other chemical products may be used.
Joints	12 months	Inside joints	Examine inside joints. In case they have deteriorated, they must be replaced.

12. – CONTROL PANEL

When the control panel is installed with the filter, all the electrical connections between the control panel, the sensors and the actuators have already been installed and tested by the manufacturer. The standard input power supply is 208V AC 3Ph 60 Hz. Please consult with the manufacturer about alternatives.

WARNING!



IN THE ELECTRICAL BOX POWERED BY THREE-PHASE DURING STARTUP, CHECK THAT THE ROTATION OF THE MOTOR IS SUITABLE TO FILTER PROGRAMMING.

DESCRIPTION

In the control panel are the following monitoring and control elements, which can be classified as external and internal.

External Elements

- Main disconnecter.
- Colored lamps:

White	Energy
Yellow	Backwashing cycle
Red	Alarm / Fail
- Emergency stop button: its function is to provide an emergency stop manually.
- Buttons:

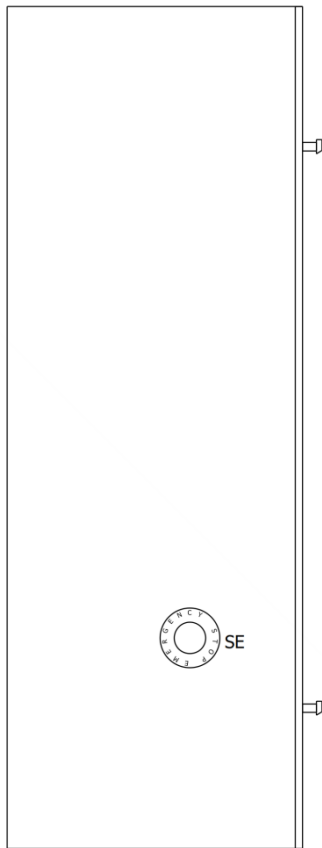
Black:	Generate a backwash cycle manually.
Blue:	Reactivate the equipment when it enters in fault status.
- Touch panel to monitor the status and performance of the filter.

Internal Elements

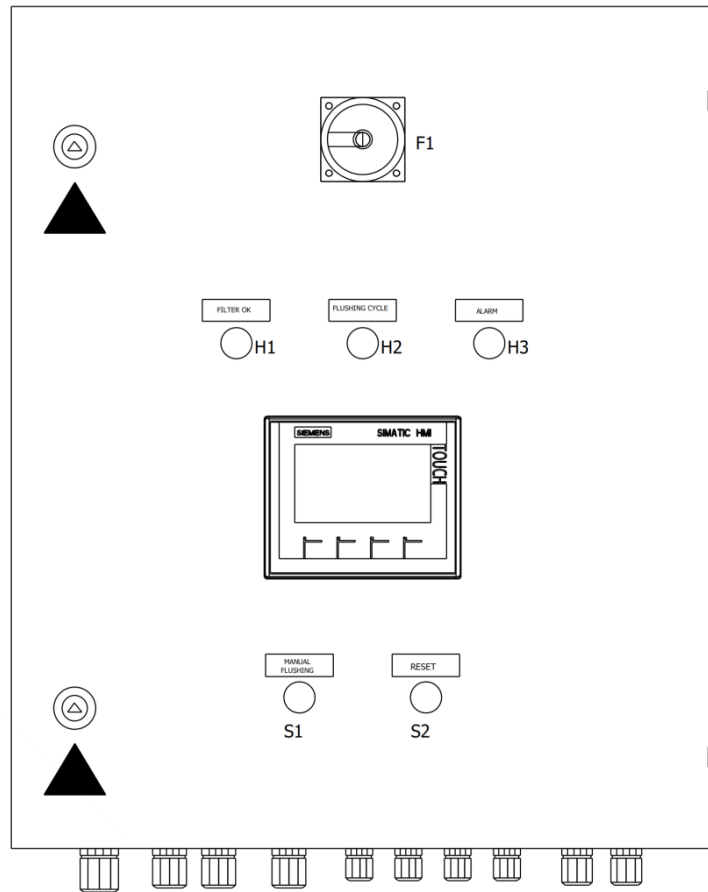
- Circuit breaker (F1 – F2)
- Power supply (T01)
- Motor circuit breaker (QM1 – QM2)
- Softstarter (U2)
- Programmer
- Connectors:
- X0 – Terminals

12. – CONTROL PANEL

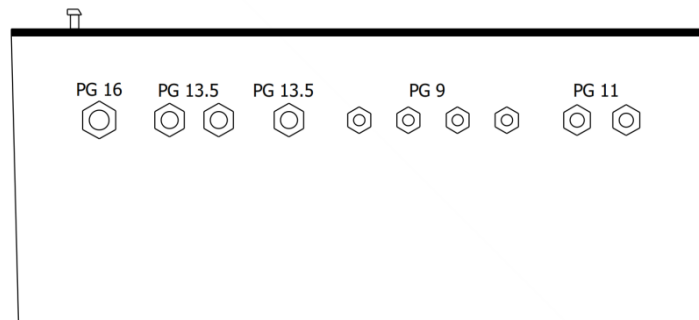
LEFT VIEW



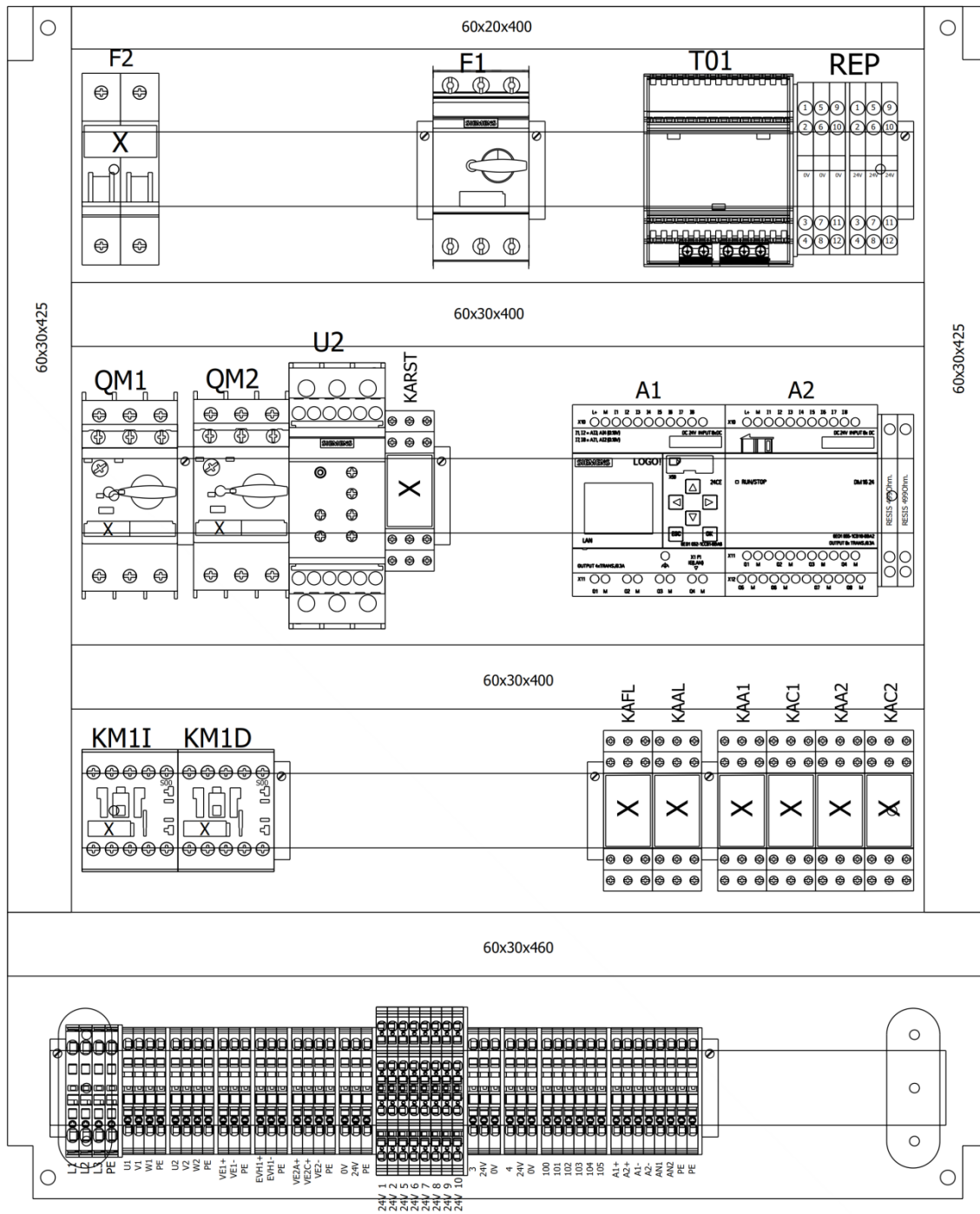
FRONT VIEW



BOTTOM VIEW



12. – CONTROL PANEL



12. – CONTROL PANEL

ELECTRICAL CONNECTIONS

¡WARNING!

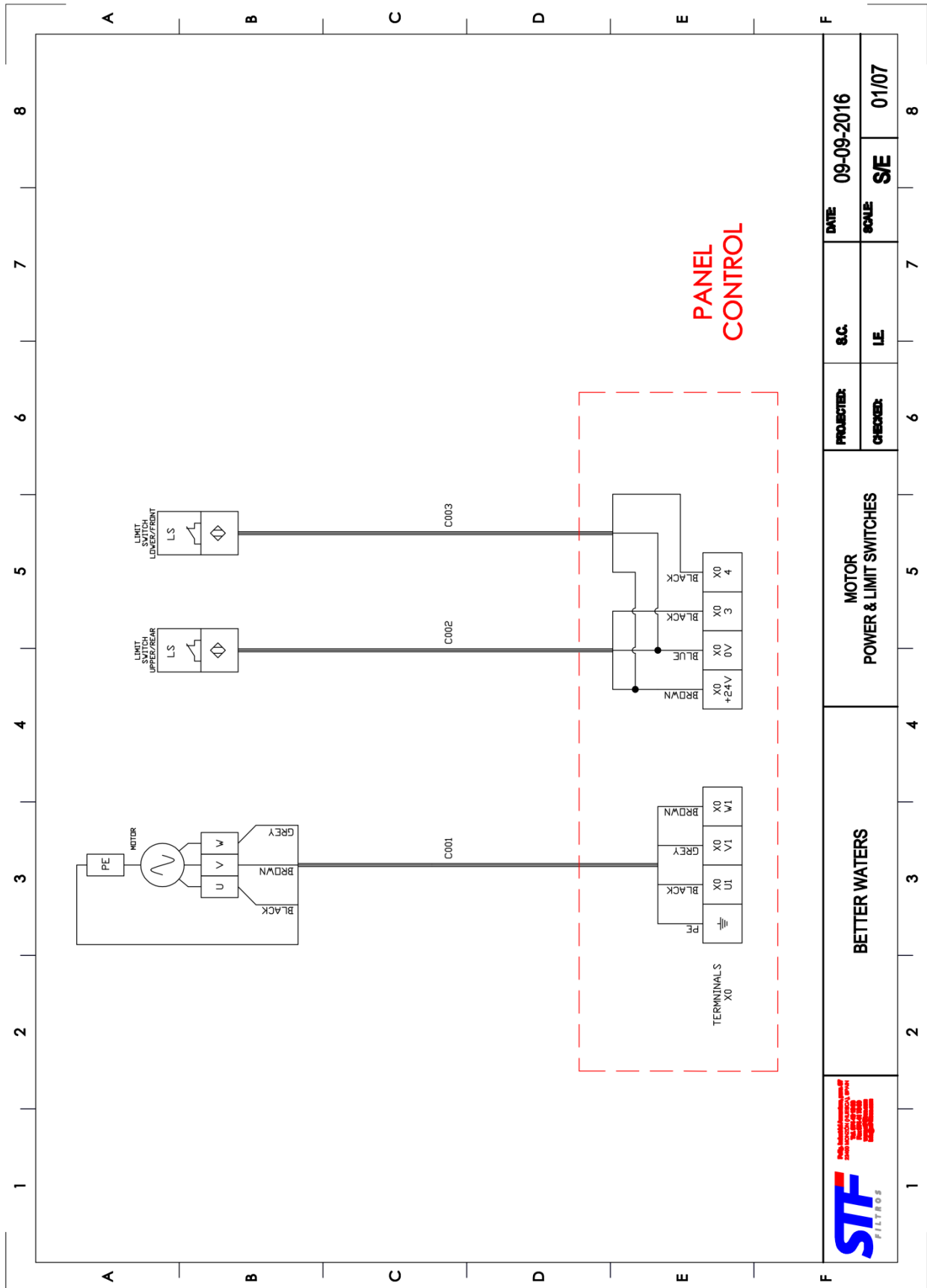


RISK OF ELECTRIC SHOCK. THE OPERATIONS MARKED WITH THIS SYMBOL MUST ONLY BE PERFORMED BY QUALIFIED PERSONNEL.

Power connection and communication connection should be at the bottom Terminal connection block, according to the following specification:
The panel control offers availability of communication with electrical connections.

Standard communication signals, differentiating between inputs and outputs:

12. – CONTROL PANEL



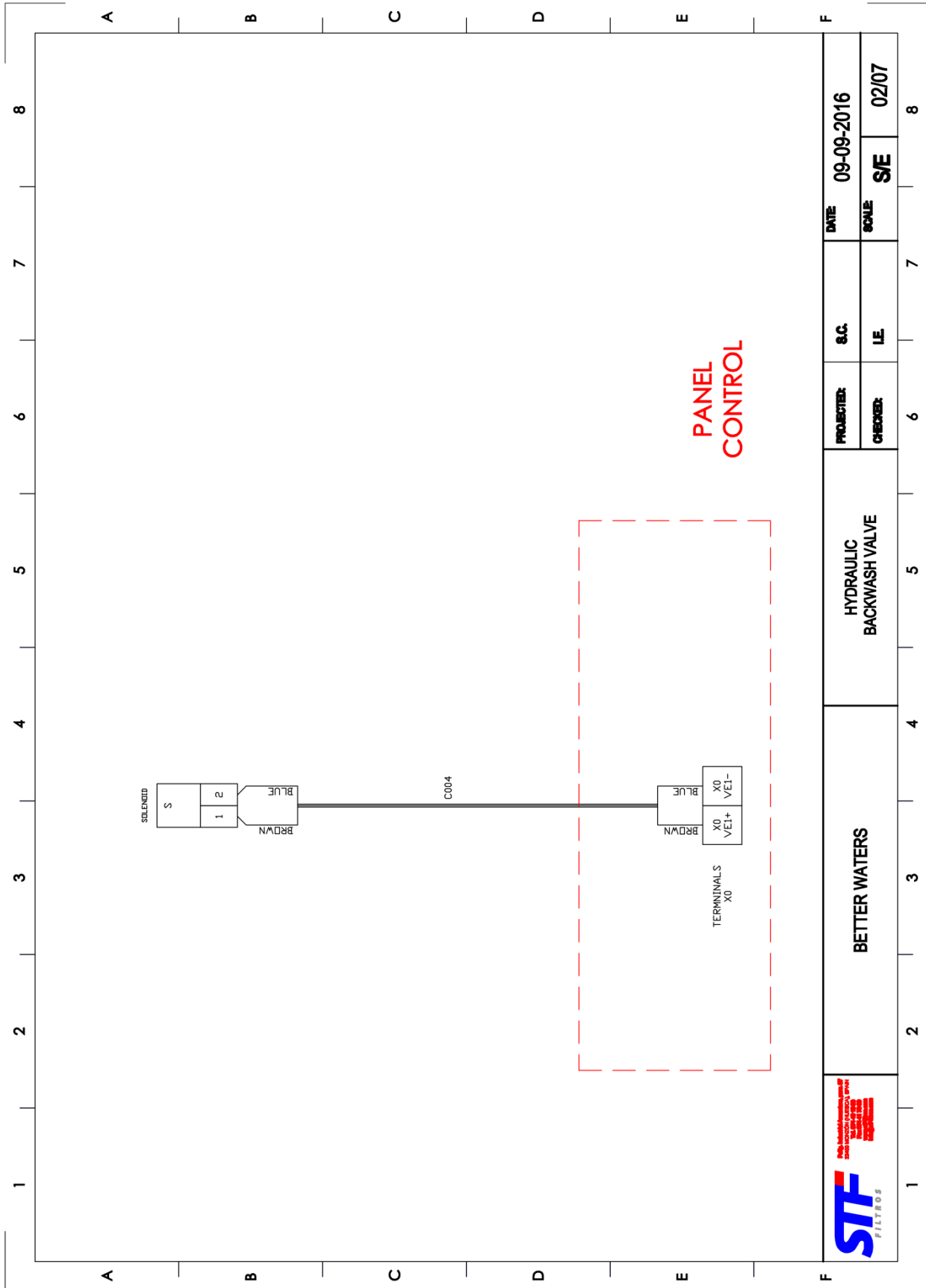
PROJECTED:	S.C.	DATE	09-09-2016
CHECKED:	LE	SCALE	S/E
			01/07

**MOTOR
POWER & LIMIT SWITCHES**

BETTER WATERS

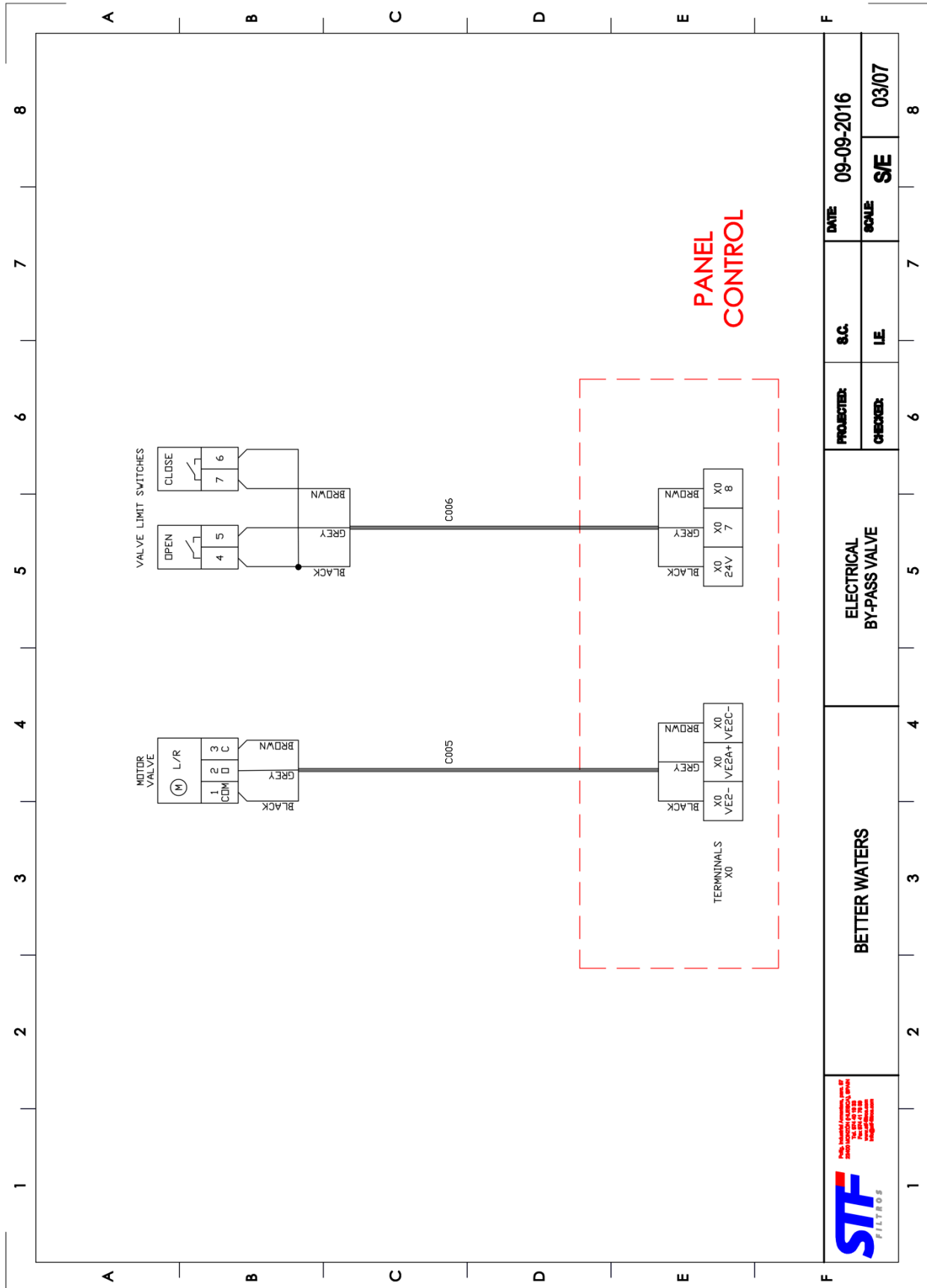


12. – CONTROL PANEL



STF FILTROS	BETTER WATERS	HYDRAULIC BACKWASH VALVE		PROJECTED:	S.C.	DATE	09-09-2016
		TERMINALS X0	VE1+	VE1-	CHECKED:	LE	SCALE

12. – CONTROL PANEL

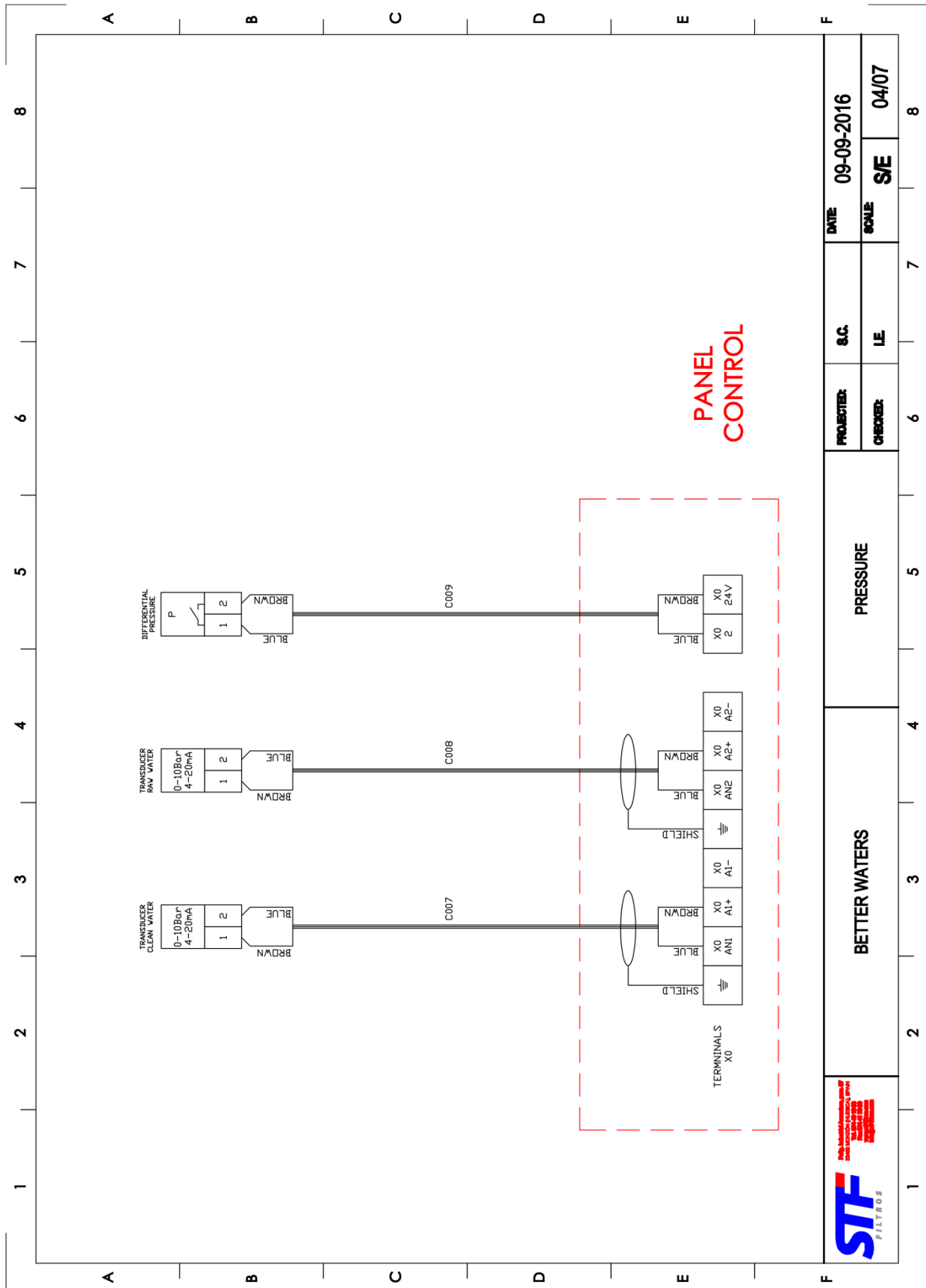


STF
FILTROS

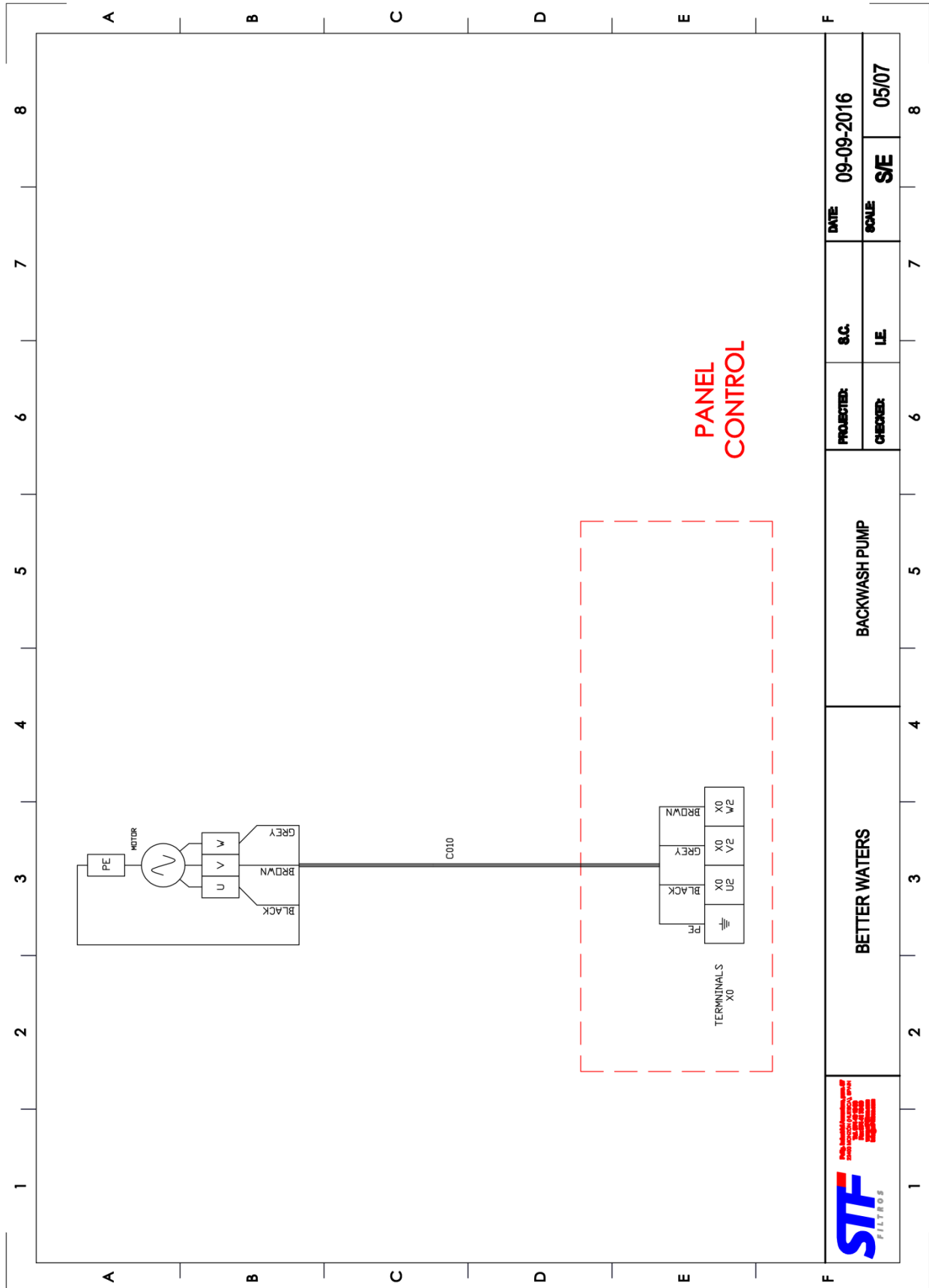
Do not connect to any other electrical system
Do not connect to any other electrical system
Do not connect to any other electrical system
Do not connect to any other electrical system

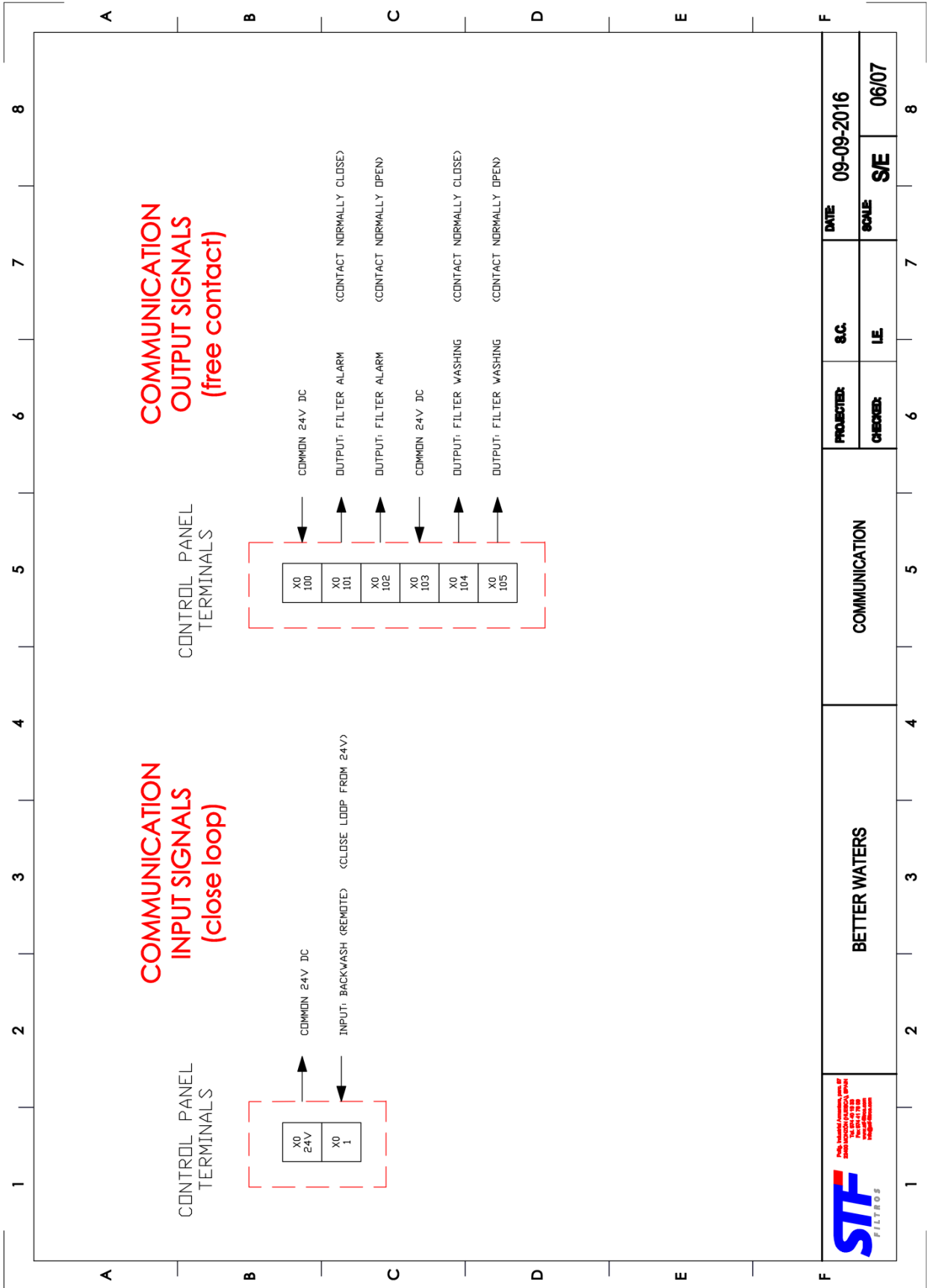
PROJECTED:	S.C.	DATE	09-09-2016
	CHECKED:	LE	SCALE
		S/E	03/07

12. – CONTROL PANEL




12. – CONTROL PANEL





12. – CONTROL PANEL

TAG	DESCRIPTION	LENGHT
C001	WIRE 4x1,5mm ²	---
C002	SPECIAL 3X0,5mm ²	---
C003	SPECIAL 3X0,5mm ²	---
C004	WIRE 2x1mm ²	---
C005	WIRE 4x1mm ²	---
C006	WIRE 4x1mm ²	---
C007	WIRE 2x1mm ² (SHIELD)	---
C008	WIRE 2x1mm ² (SHIELD)	---
C009	WIRE 2x1mm ²	---
C010	WIRE 4x2,5mm ²	---

	BETTER WATERS	TAGS	PROJECTED:	S.C.	DATE	09-09-2016
			CHECKED:	LE	SCALE	S/E

12. – CONTROL PANEL

PERFORMANCE

The human machine interface (HMI) has the following screens, where filter operations are monitored. The operator can modify and change the filter performance and control status:

SCREEN 1 – START



Start screen has a general menu, appearing on all screens of the panel:

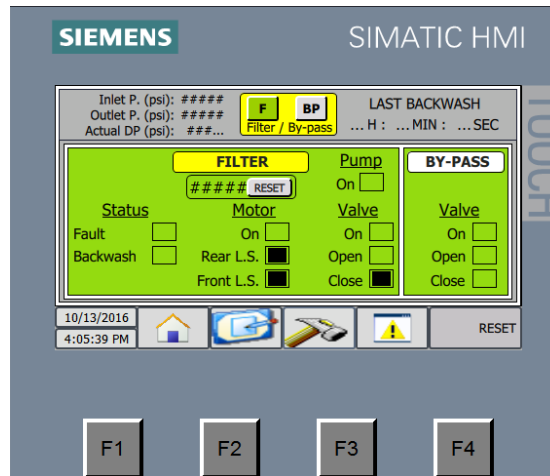
BUTTON	PROPERTY
2/2/2016 11:23:42 AM	PLC date and time
	leads directly to screen 1
	leads directly to screen 2
	leads directly to screen 3
	leads directly to screen *
RESET	Reset faults

The screen has one button, which leads directly to a window where the manufacturer information is:



12. – CONTROL PANEL

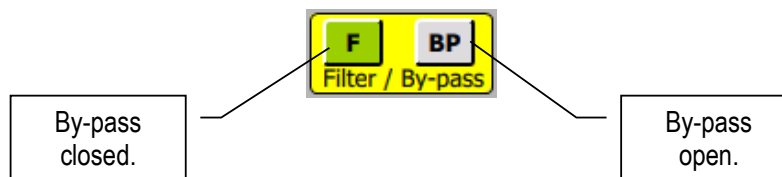
SCREEN 2 – MAIN SCREEN



This screen shows the main information for the filter; below are details:

- Upper area shows:
 - Pressures in bar: inlet, outlet and DP.
 - Time since last backwash cycle (hours : minutes : seconds)

The next push buttons enable choosing the status of the by-pass valve. The button turns to green when the mode is selected.



- Right area shows the status of the by-pass valve:
 - On: Order to open by-pass valve.
 - Open: Signal from open limit switch.
 - Close: Signal from close limit switch.
- Left area shows the status of the filter:
 - Status
 - Fault: Fault of the filter.
 - Backwash: Flushing cycle of the filter.
 - Motors
 - On: Order to turn on motor.
 - Upper LS: Signal from limit switch close to the motor.
 - Lower LS: Signal from limit switch close to the vessel.
 - Drain valve:
 - On: Order to open.
 - Open: Signal from open limit switch.
 - Close: Signal from close limit switch.
 - Backwash counter:
 - This screen shows the number of backwash cycles done by the filter. This counter can be reset by the RESET button.

12. – CONTROL PANEL

SCREEN 3 – SYSTEM PARAMETERS

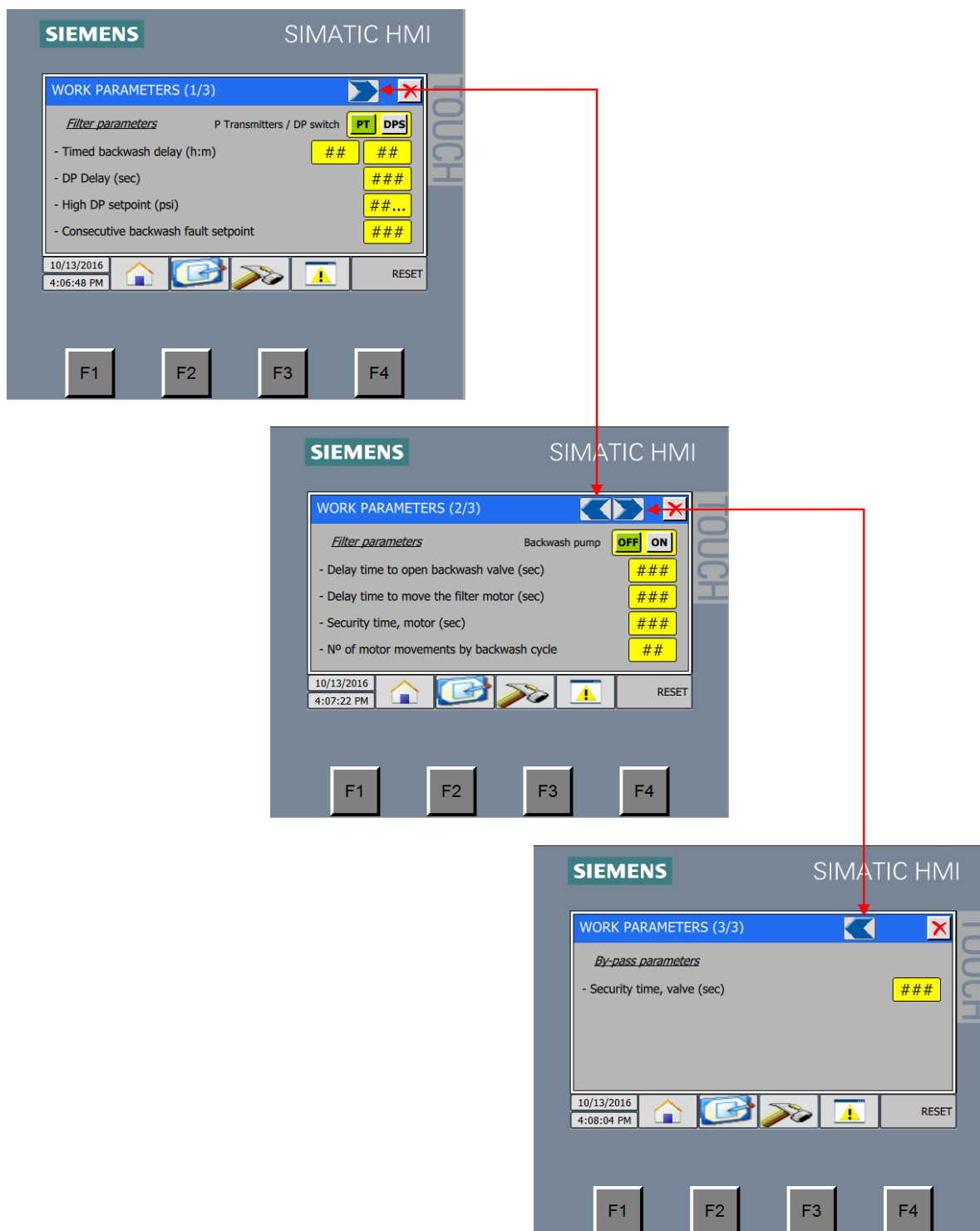


This screen is the menu for the system parameters; it has the following push buttons:

BUTTON	PROPERTY
WORK PARAMETERS	leads directly to screen 4
WORK PARAMETERS	leads directly to screen 5

12. – CONTROL PANEL

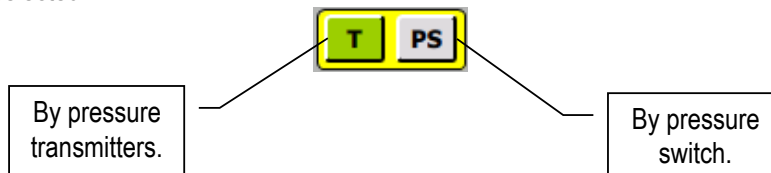
SCREEN 4 – WORK PARAMETERS



This screen has three windows where the following parameters are shown:

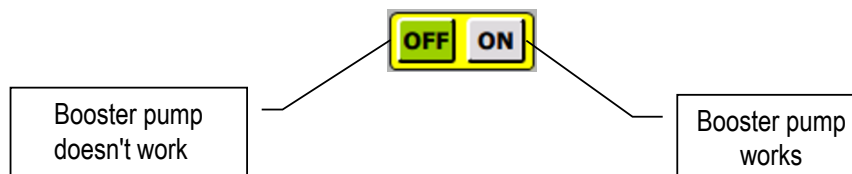
12. – CONTROL PANEL

The following push buttons allow setting of **high pressure differential** for flushing. The button turns green when the mode is selected.



- Available set points of the filter:
 - Timed backwash delay on hours and minutes.
 - Differential pressure delay, on seconds.
 - High differential pressure set point, on bar.
 - Consecutive backwash fault set point.
 - If the backwash cycle has been completed and the pressure differential still is higher than the set point, consecutive backwash counter will plus one. If the consecutive backwash counter reaches the CONSECUTIVE BACKWASH SETPOINT, the general fault will appear, and the by-pass valve will open
 - Allowable time for the filter to travel between the limit switches..
 - Number of times the cleaning system can traverse the distance between limit switches within one backwash cycle.
 - Allowable time to open the by-pass valve.

The **booster pump** will be available or not in order with the next configuration:



- Available set points of the booster pump:
 - Delay time to open backwash valve fully from the time booster pump was working.
 - Delay time to initiate the cleaning system from the time booster pump was working.

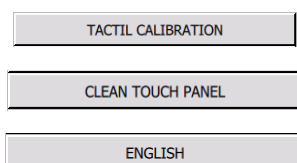
12. – CONTROL PANEL

SCREEN 5 – SCREEN PARAMETERS



This screen shows the different configuration services that are offered through the touch panel.

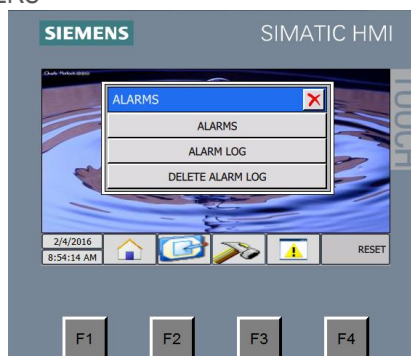
BUTTON



PROPERTY

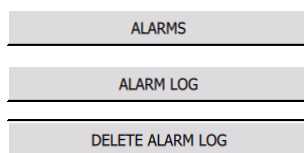
Allows panel calibration
30 sec. to clean the touch panel
Allows changing the language

SCREEN 6 – SCREEN PARAMETERS



This screen is the menu for the alarms; it has the next push buttons.

BUTTON



PROPERTY

leads directly to screen 7
leads directly to screen 8
allows delete the alarm log

12. – CONTROL PANEL

SCREEN 7 – ALARMS



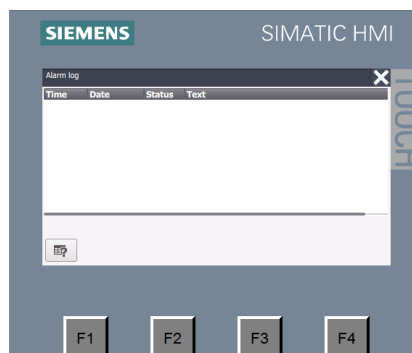
On the ALARMS screen appear all current alarms or warnings. Using the arrow keys it is possible to move the list of warnings.

To confirm one alarm or warning touch the alarm indication and press the “!” button.

There are four possible symbols next to an alarm indication:

- E: It means that the alarm has appeared.
- ES: The alarm appeared but it has already been corrected.
- ESA: The alarm has been corrected and checked by the operator with the “!” button. It passes to the ALARM LOG list.
- EA: The alarm has not been corrected but it has been checked. Once the alarm is corrected it will pass directly to the history because it has already been checked.

SCREEN 8 – ALARM LOG



The alarms that have been resolved and checked pass to the ALARM LOG screen. It is recommended to delete this list frequently in order to monitor the last alarms that have occurred at the installation.

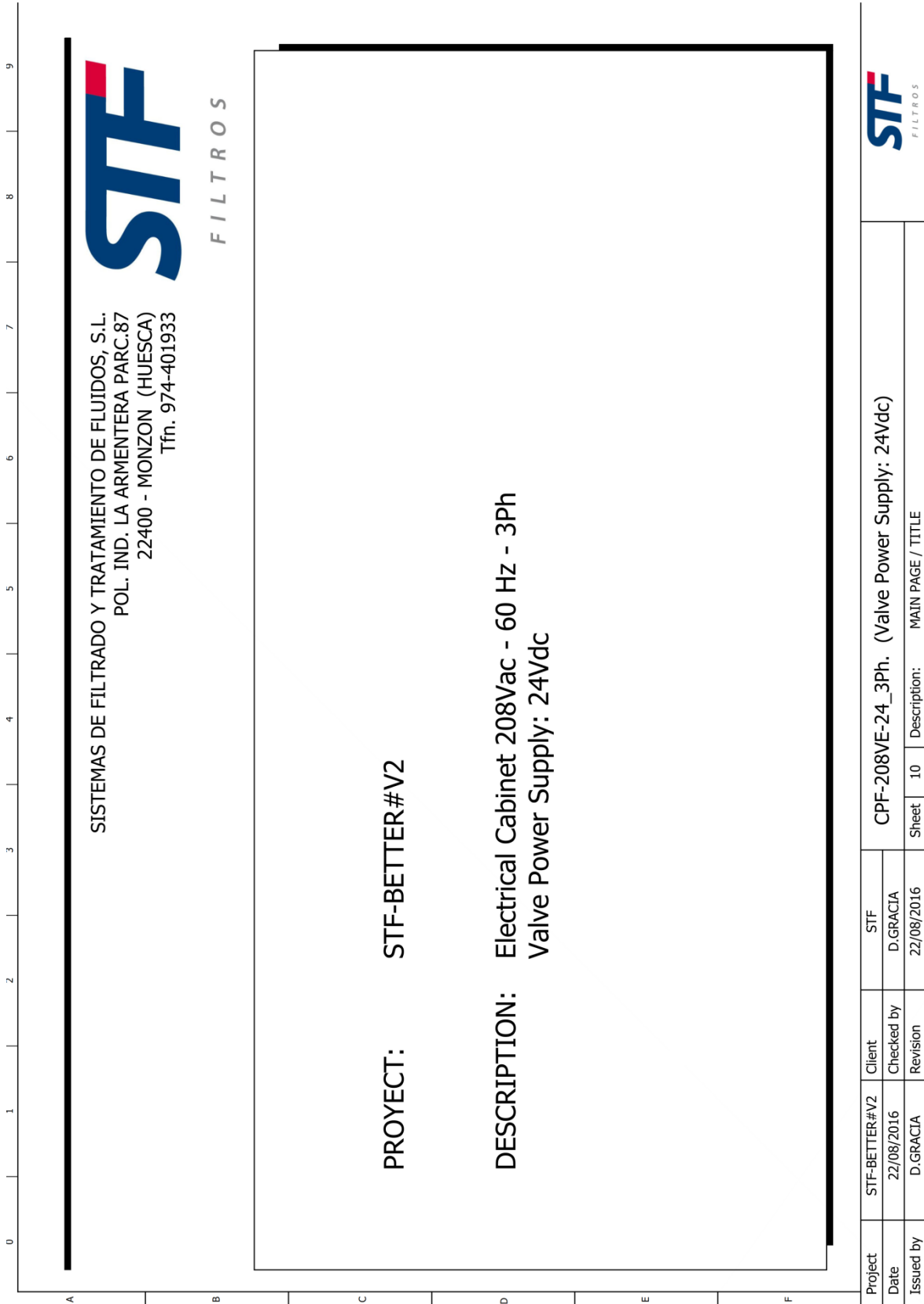
WARNINGS AND ALARMS

ALARM	CAUSE
Emergency Stop Switch	The operator pushes the emergency stop switch.
Consecutive Backwash fault	The filter station makes 10 backwash cycles consecutives (setpoint standard for our screen filters) (*) (**)
Circuit Breaker Fault	Motor circuit breaker was tripped.
Limit Switch Fault	If the motor doesn't reach the upper limit switch since the run order within the safety time, the fault will appear. If the motor doesn't reach the lower limit switch since the run order within a safety time, the fault will appear.
By-pass valve fault	If the valve doesn't reach the logical limit switch since the order within a safety time, the fault will appear.

(*) ONE CONSECUTIVE BACKWASH CYCLE is when the differential pressure is higher than the set point on the previous backwash cycle.

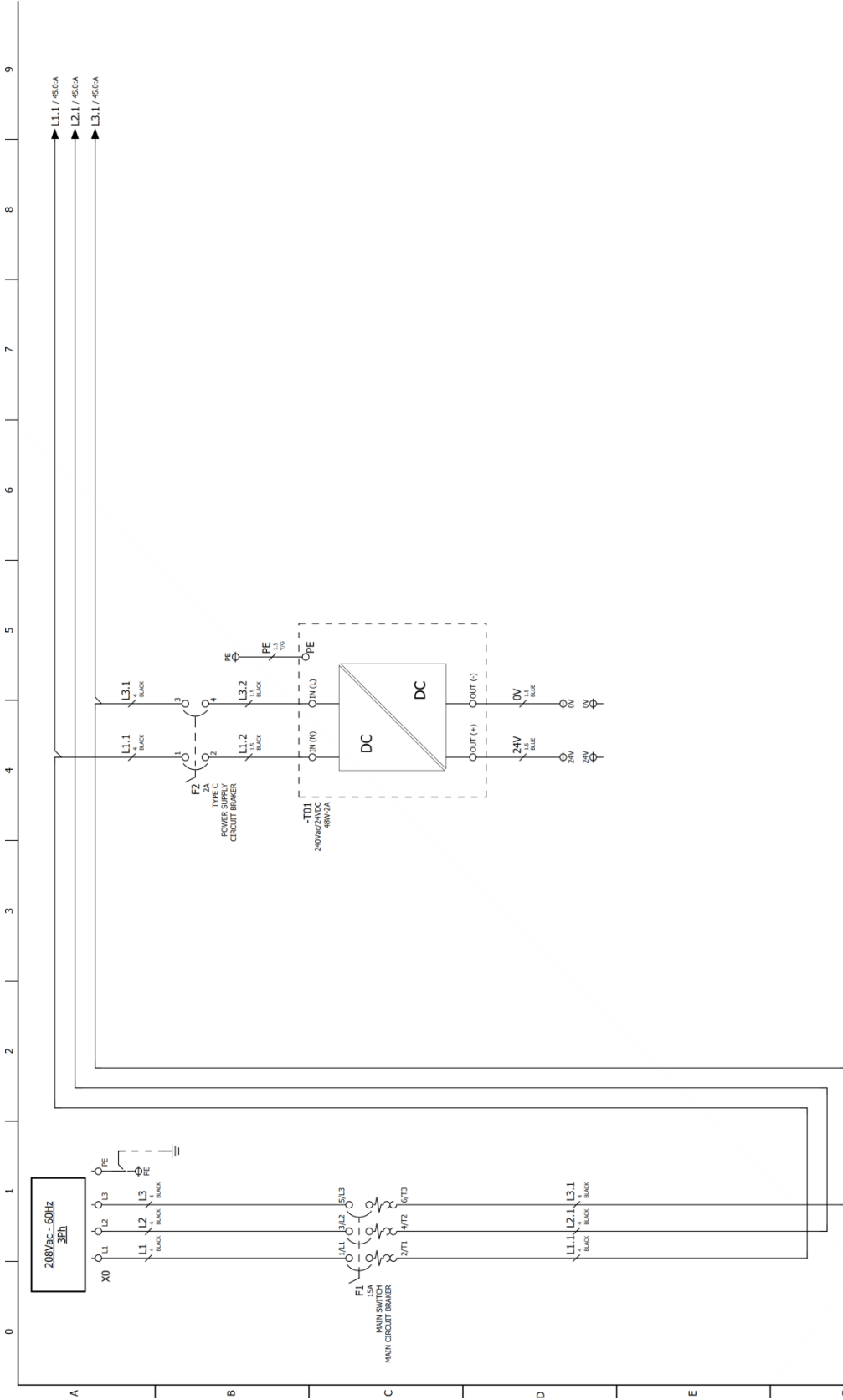
(**) If the filter has this fault, the by-pass valve will be opened automatically.

ELECTRICAL DIAGRAM



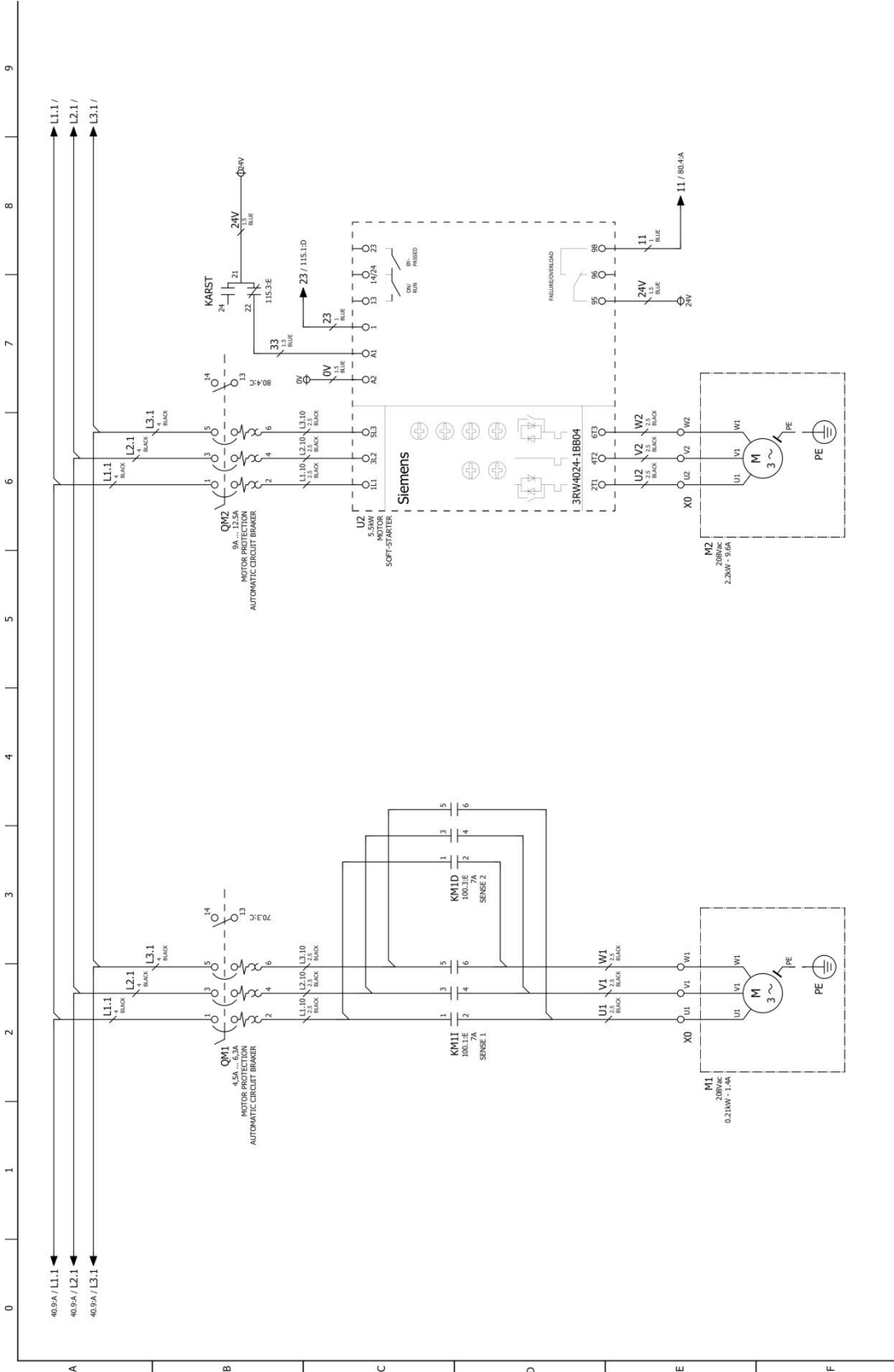
Features Sheet			
ENCLOSURE		<p>TRADE MARK - MODEL: =====</p> <p>CAHORS / ARINTER 2</p> <p>SIZE: =====</p> <p>600x500x200</p> <p>TECHNICAL FEATURES: =====</p> <ul style="list-style-type: none"> • Polyester Enclosures reinforced with fiberglass, molded hot, RAL 7035 gray color. • Degree of protection IP66 according to EN 60529 and IEC 60529. • Double insulation according to UNE-EN 60439-1 and IEC 60439-1. • High mechanical impact resistance IK10 according to EN 50102 (IK07 for enclosures with transparent door). • High resistance to corrosion and chemical and atmospheric agents. • Resistant to 70 ° C in continuous operation (peak temperatures up to 150 ° C). • Material non-hygroscopic (no water absorption). • Self-extinguishing and halogen-free. 	
ELECTRICAL INFORMATION		<p>POWER SUPPLY -- 208Vac / 60Hz</p> <p>CONTROL SUPPLY -- 24Vdc</p>	
COLORS CODE		<p>PHASE -- BLACK</p> <p>NEUTRAL -- BLUE</p> <p>24Vdc -- BLUE</p> <p>PE -- YELLOW/GREEN</p>	
MINIMUM CROSS SEC.		<p>208Vac -- 2,5mm</p> <p>24Vdc -- 1mm</p>	
Project	STF-BETTER#V2	Client	STF
Date	22/08/2016	Checked by	D.GRACIA
Issued by	D.GRACIA	Revision	22/08/2016
		Sheet	30
		Description:	TECHNICAL FEATURES
		<p>CPF-208VE-24_3Ph. (Valve Power Supply: 24Vdc)</p>	

12. – CONTROL PANEL



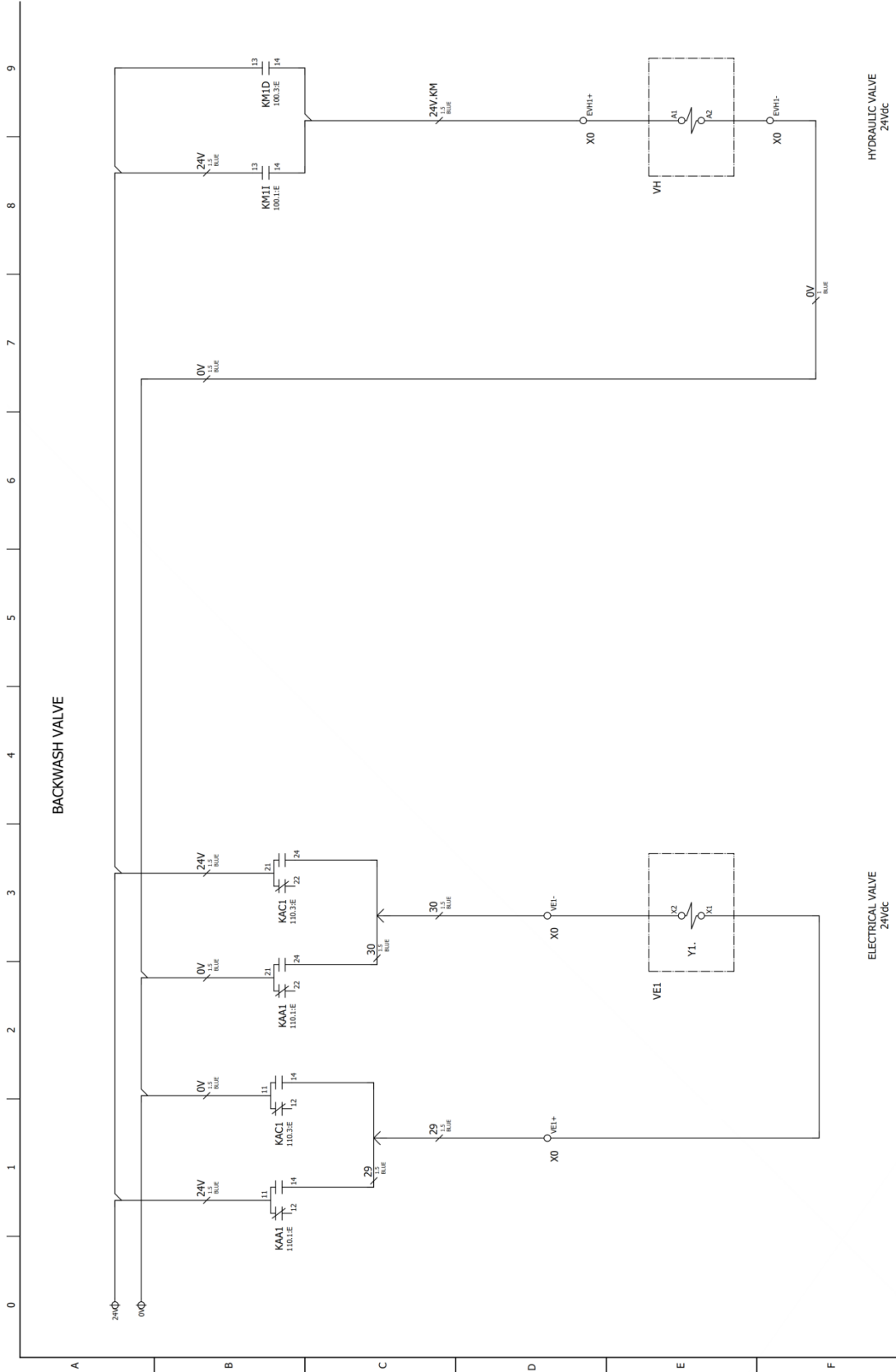
Project	STF-BETTER#V2	Client	STF	CPF-208VE-24_3Ph. (Valve Power Supply: 24Vdc)	
Date	22/08/2016	Checked by	D.GRACIA	Sheet	40
Issued by	D.GRACIA	Revision	22/08/2016	Description:	MAIN POWER SUPPLY & 24Vdc POWER SUPPLY

12. – CONTROL PANEL



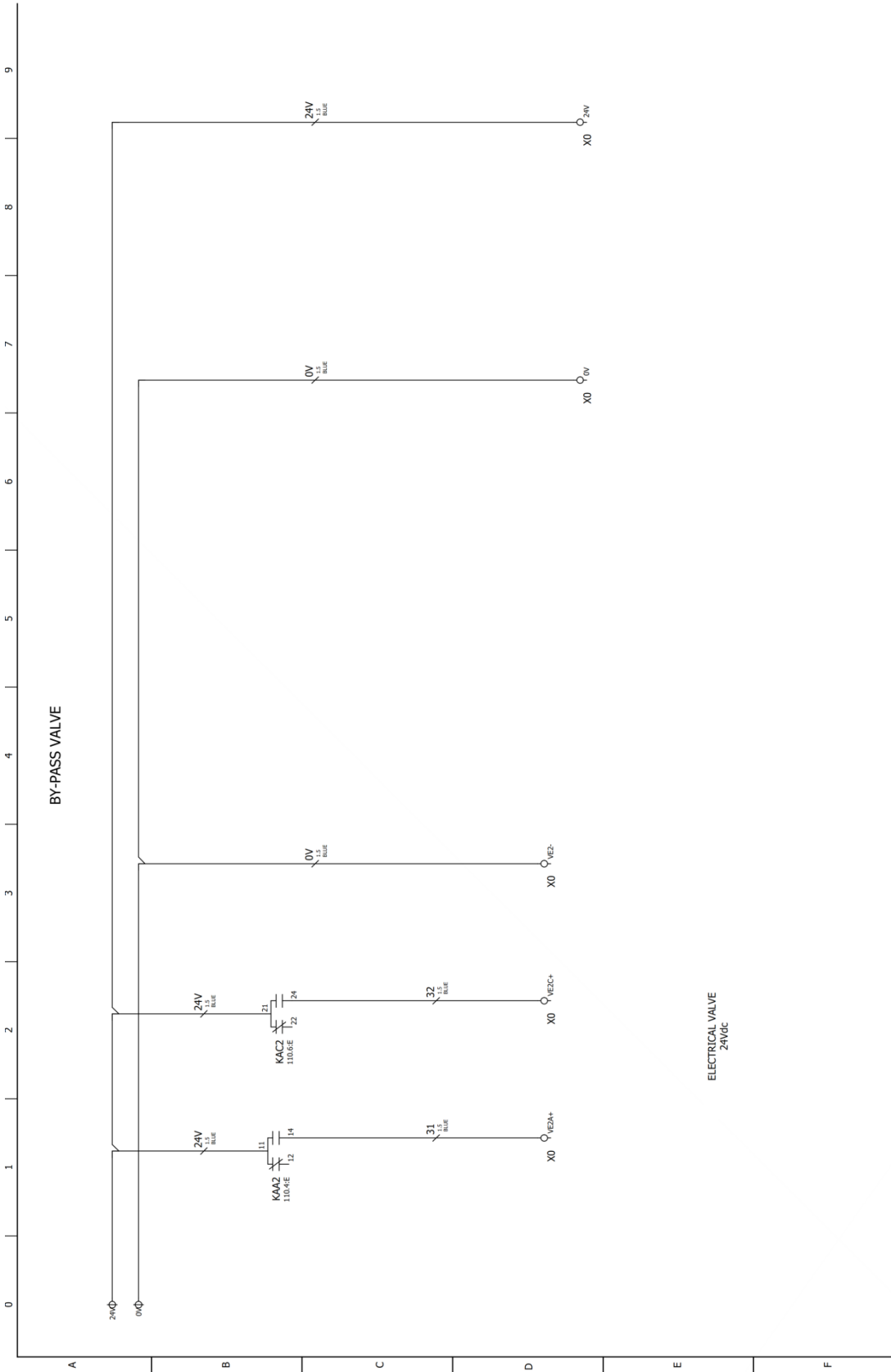
Project	STF-BETTER#V2	Client	STF
Date	22/08/2016	Checked by	D.GRACIA
Issued by	D.GRACIA	Revision	22/08/2016
Sheet		45	Description: PUMP 1 & PUMP 2 SUPPLY

12. – CONTROL PANEL



Project		STF-BETTER#V2	Client	STF
Date	22/08/2016	Checked by	D.GRACIA	
Issued by	D.GRACIA	Revision	22/08/2016	
Sheet			50.a	Description: BACKWASH VALVE SUPPLY

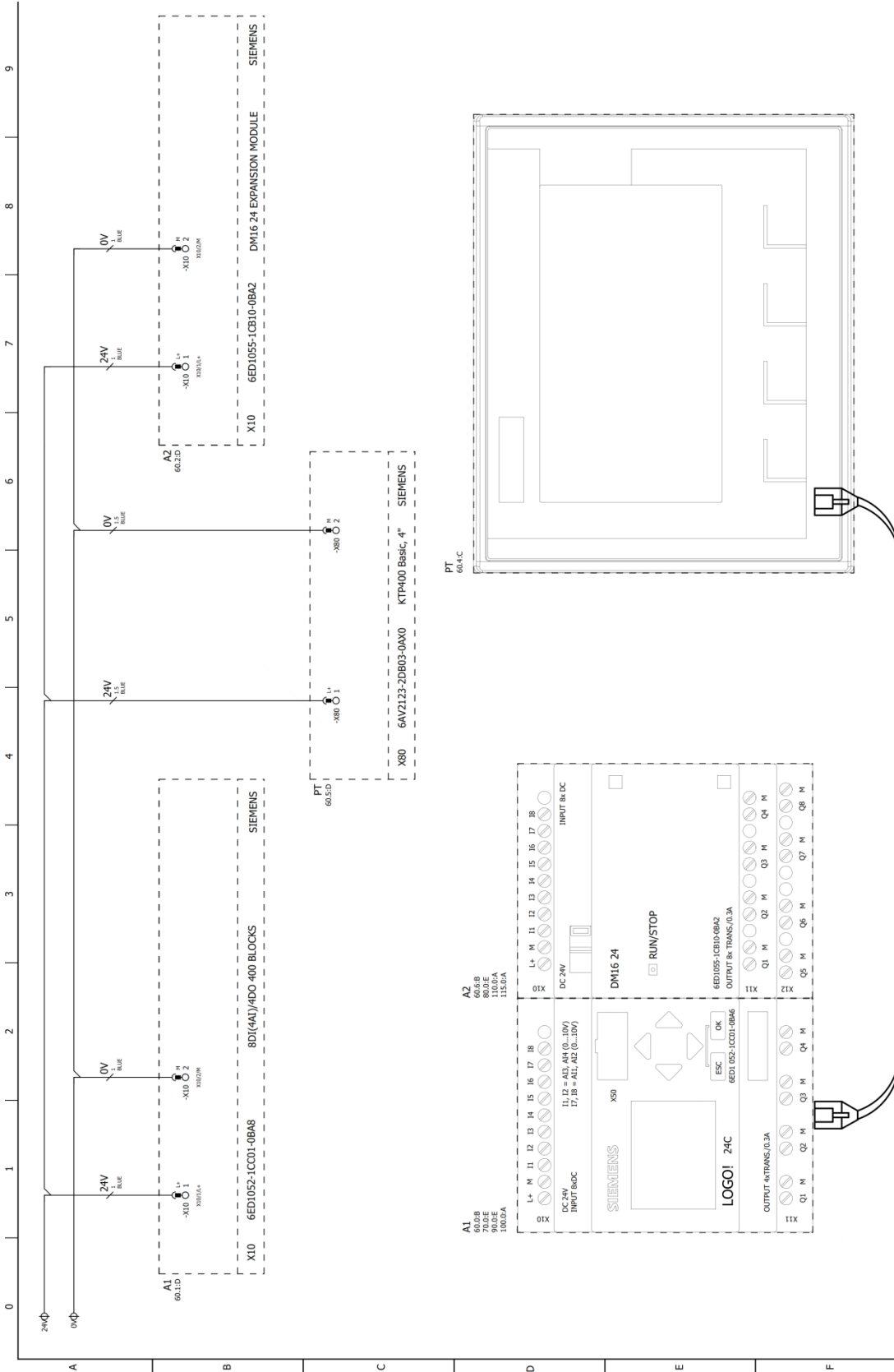
12. – CONTROL PANEL



Project	STF-BETTER#V2	Client	STF
Date	22/08/2016	Checked by	D.GRACIA
Issued by	D.GRACIA	Revision	22/08/2016
CPF-208VE-24_3Ph. (Valve Power Supply: 24Vdc)		Sheet	50.b
		Description:	BY-PASS VALVE SUPPLY

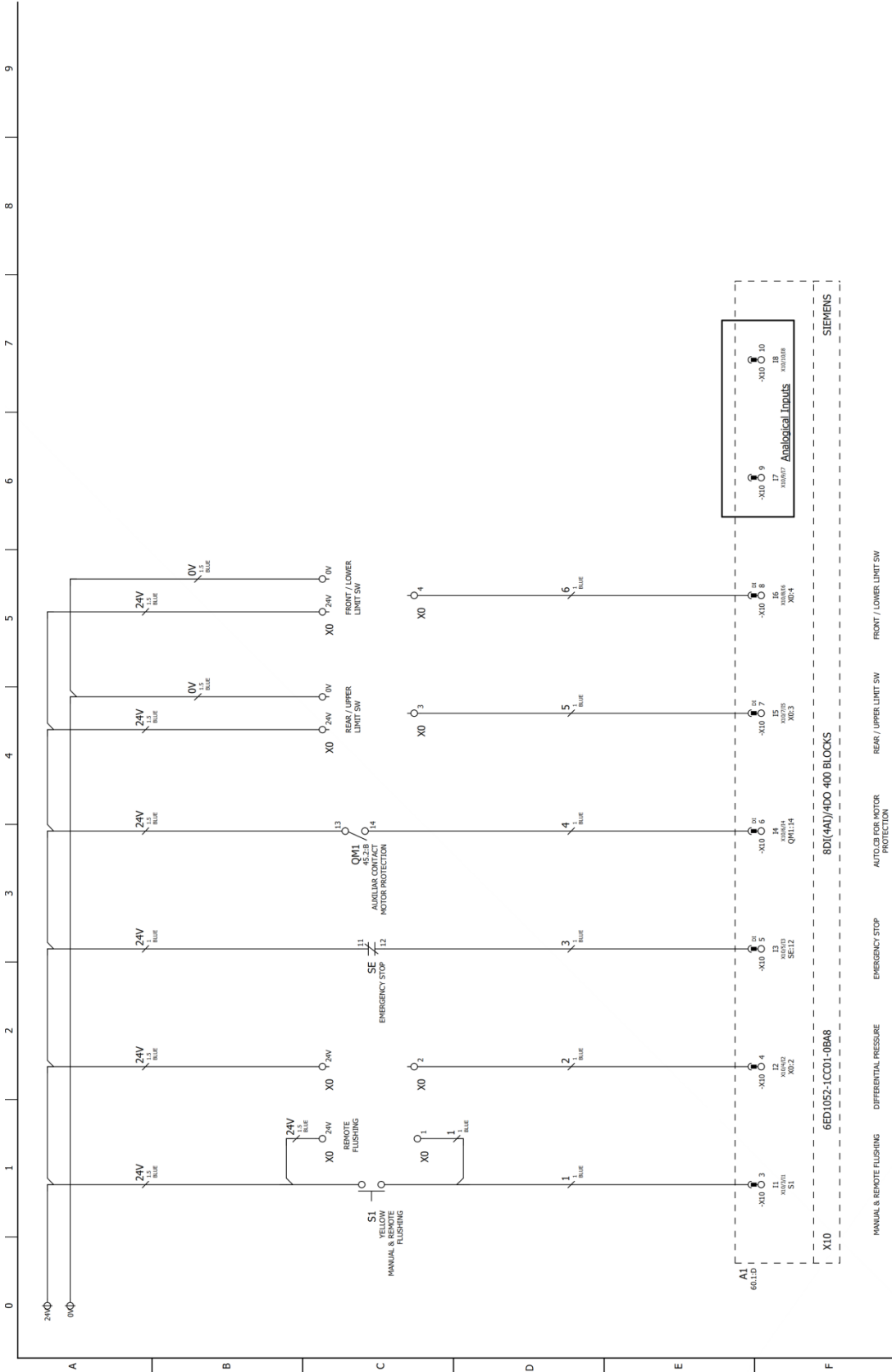


12. – CONTROL PANEL



Project	STF-BETTER#V2	Client	STF
Date	22/08/2016	Checked by	D.GRACIA
Issued by	D.GRACIA	Revision	22/08/2016
CPF-208VE-24_3Ph. (Valve Power Supply: 24Vdc)		Sheet	60
Description:		PLC SUPPLY	

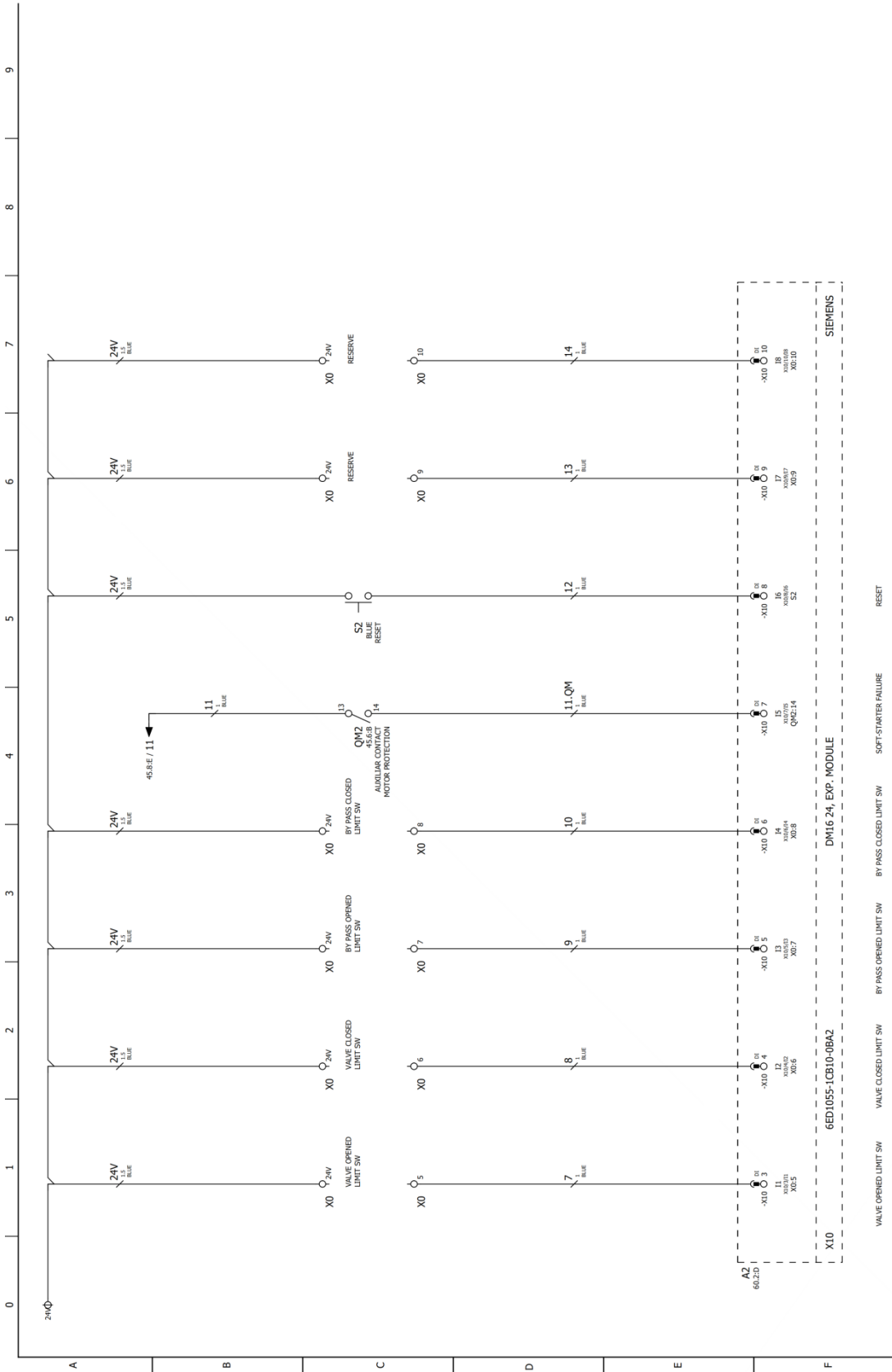
12. – CONTROL PANEL



Project	STF-BETTER#V2	Client	STF
Date	22/08/2016	Checked by	D.GRACIA
Issued by	D.GRACIA	Revision	22/08/2016
Sheet		70	Description: DIGITAL INPUTS (1/2)

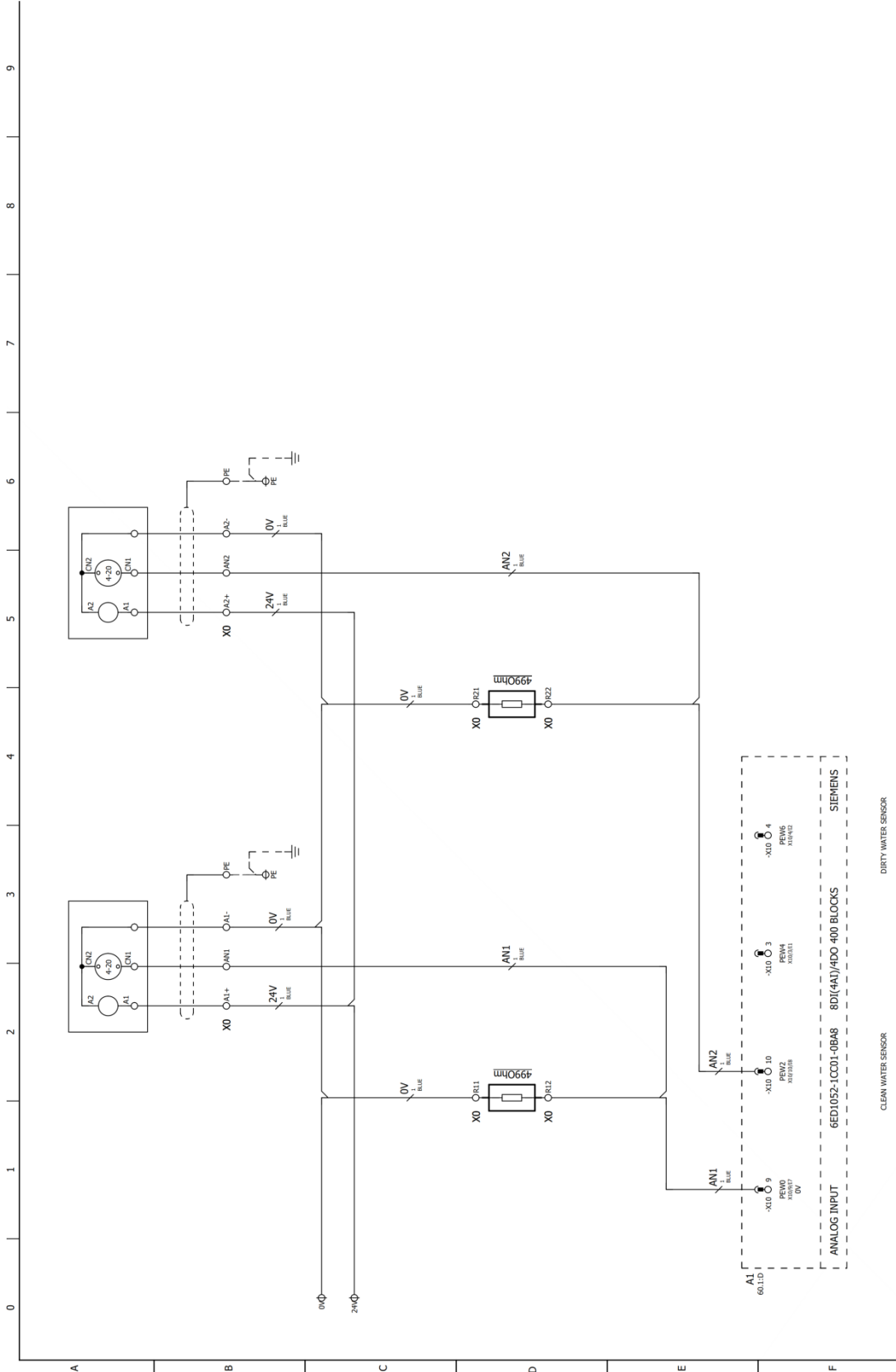


12. – CONTROL PANEL



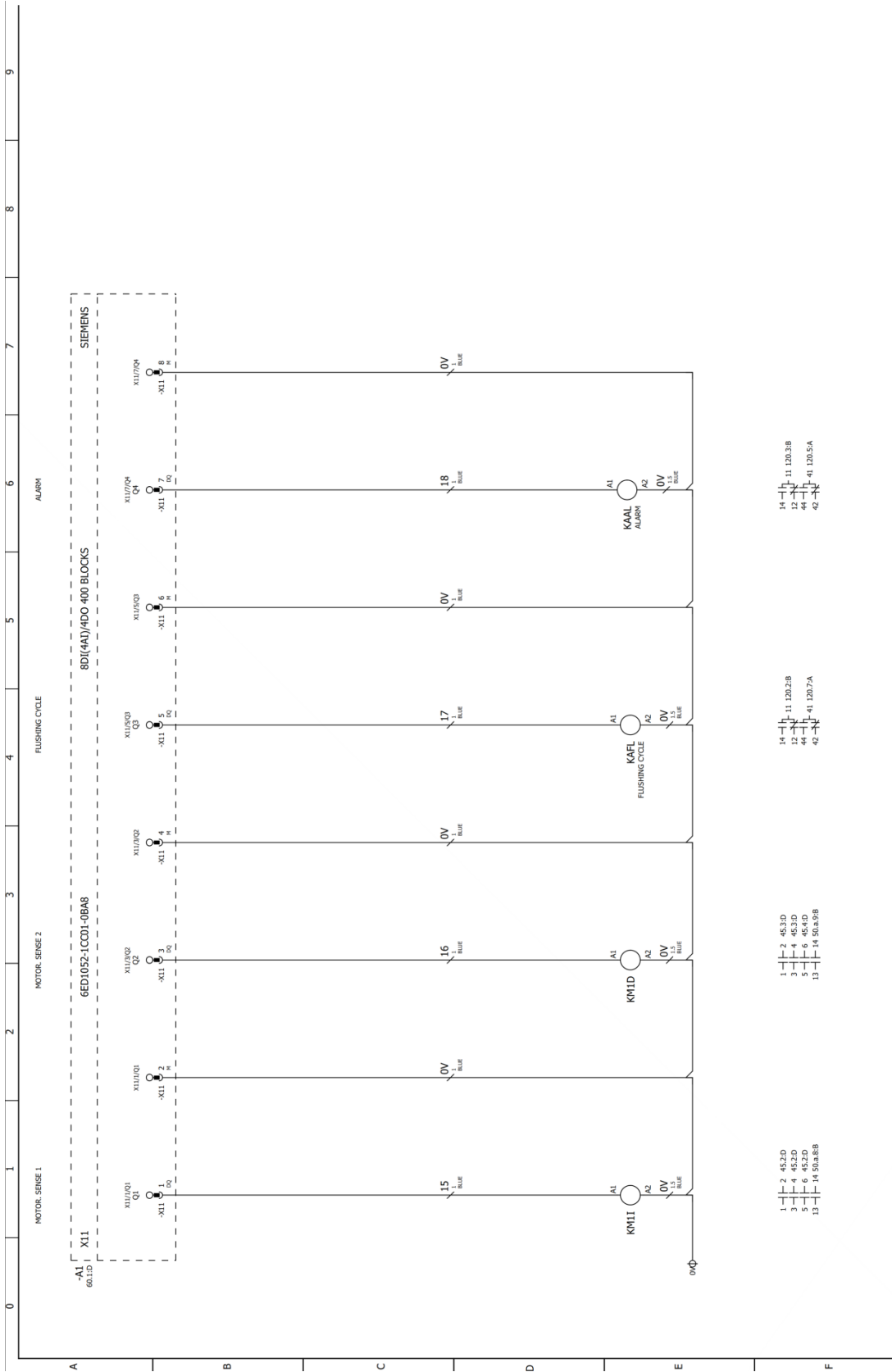
Project		STF-BETTER#V2	Client	STF
Date		22/08/2016	Checked by	D.GRACIA
Issued by		D.GRACIA	Revision	22/08/2016
Sheet			80	Description: DIGITAL INPUTS (2/2)





Project	STF-BETTER#V2	Client	STF
Date	22/08/2016	Checked by	D.GRACIA
Issued by	D.GRACIA	Revision	22/08/2016
Sheet	90	Description:	ANALOGICAL INPUTS (1/1)

12. – CONTROL PANEL



1 1 432.0
2 432.0
3 432.0
4 432.0
13 14 50.8.8.8

1 1 432.0
2 432.0
3 432.0
4 432.0
13 14 50.8.8.8

14 1 1.202.3.8
14 1 1.202.3.8
14 1 1.202.3.8
42 1 1.207.7.A

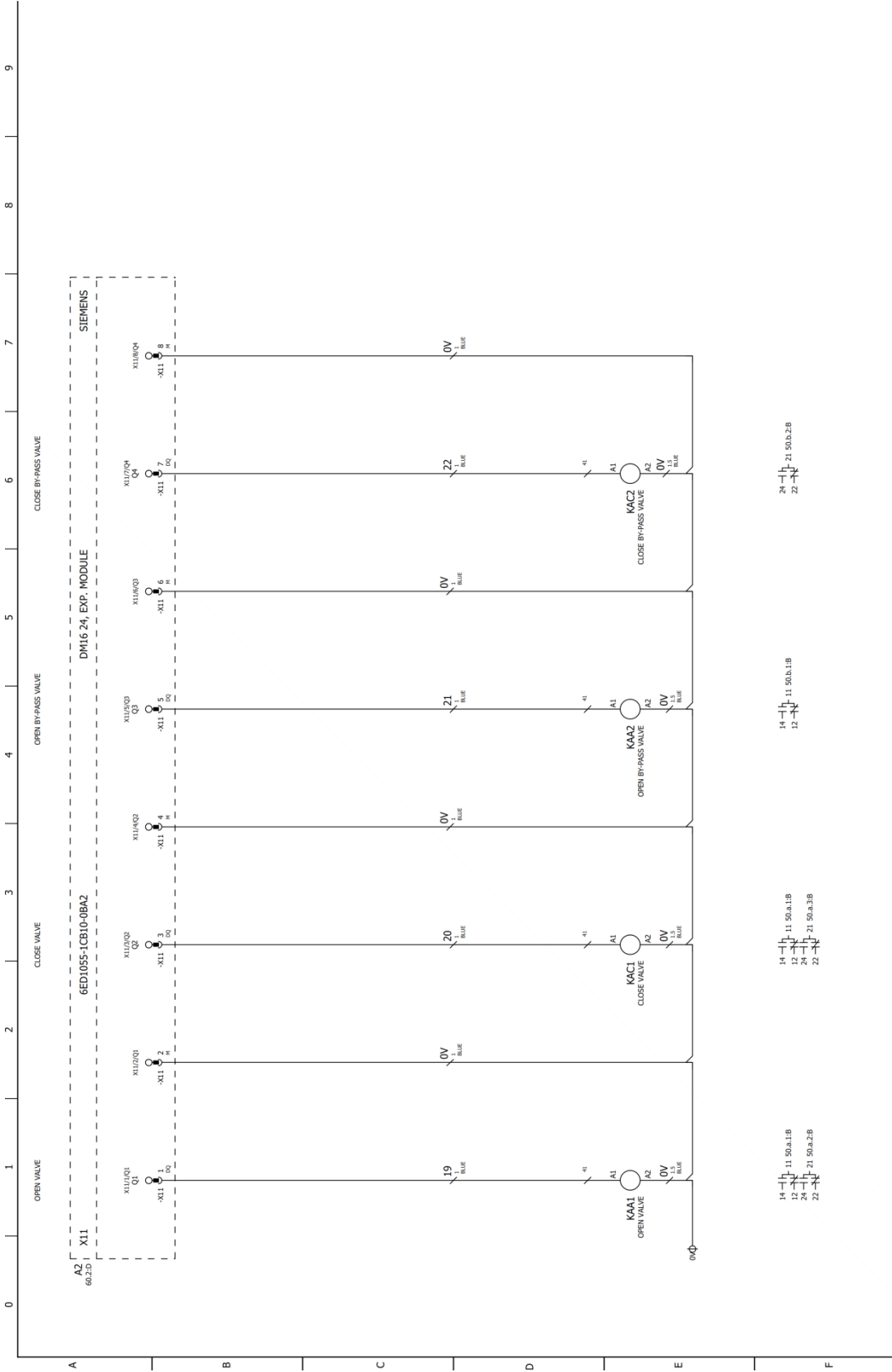
14 1 1.200.3.8
14 1 1.200.3.8
14 1 1.200.3.8
42 1 1.200.5.A

Project	STF-BETTER#V2	Client	STF
Date	22/08/2016	Checked by	D.GRACIA
Issued by	D.GRACIA	Revision	22/08/2016
Sheet		100	Description: DIGITAL OUTPUTS (1/3)



CPF-208VE-24_3Ph. (Valve Power Supply: 24Vdc)

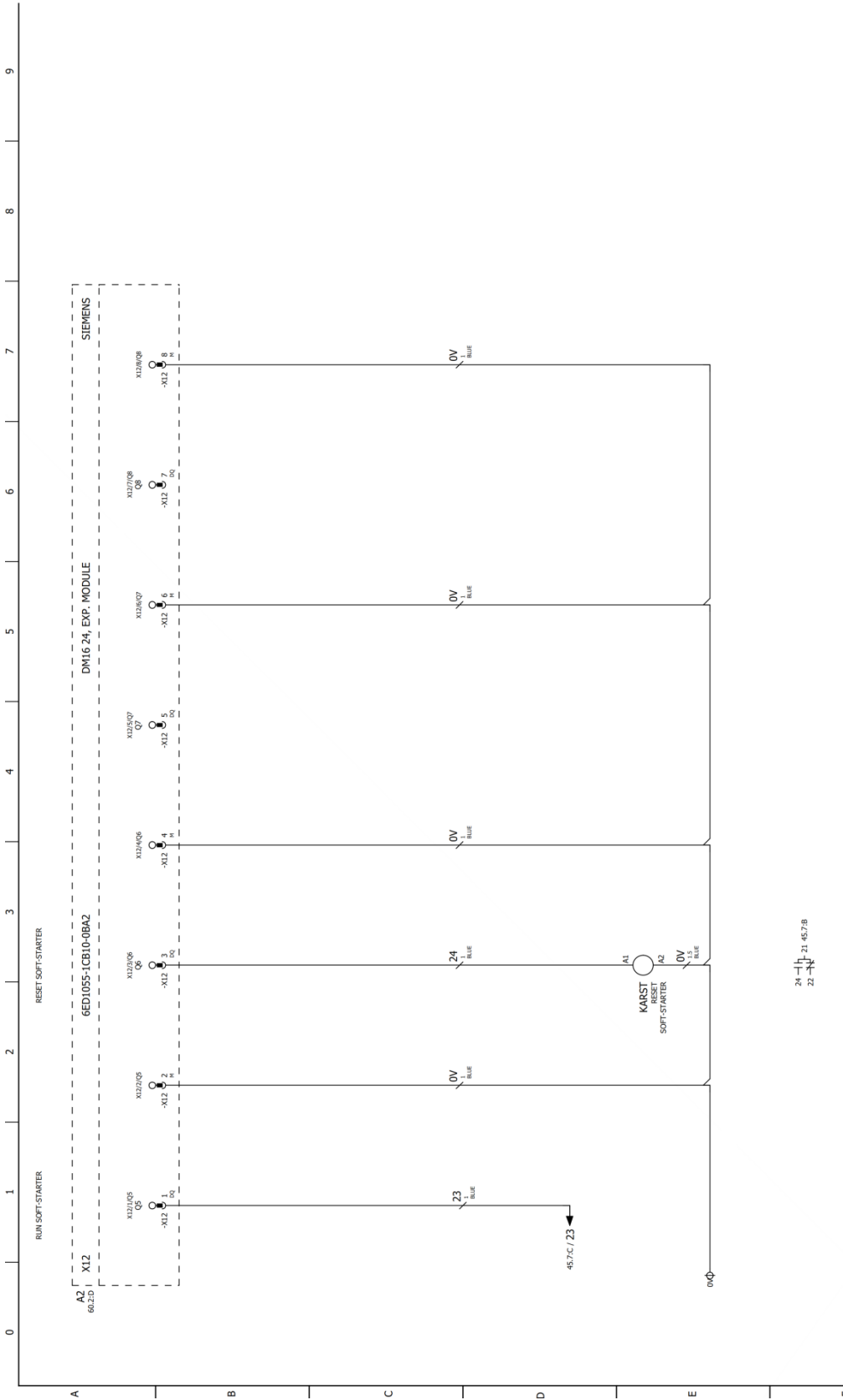
12. – CONTROL PANEL



Project	STF-BETTER#V2	Client	STF
Date	22/08/2016	Checked by	D.GRACIA
Issued by	D.GRACIA	Revision	22/08/2016
		Sheet	110
		Description:	DIGITAL OUTPUTS (2/3)
CPF-208VE-24_3Ph. (Valve Power Supply: 24Vdc)			



12. – CONTROL PANEL

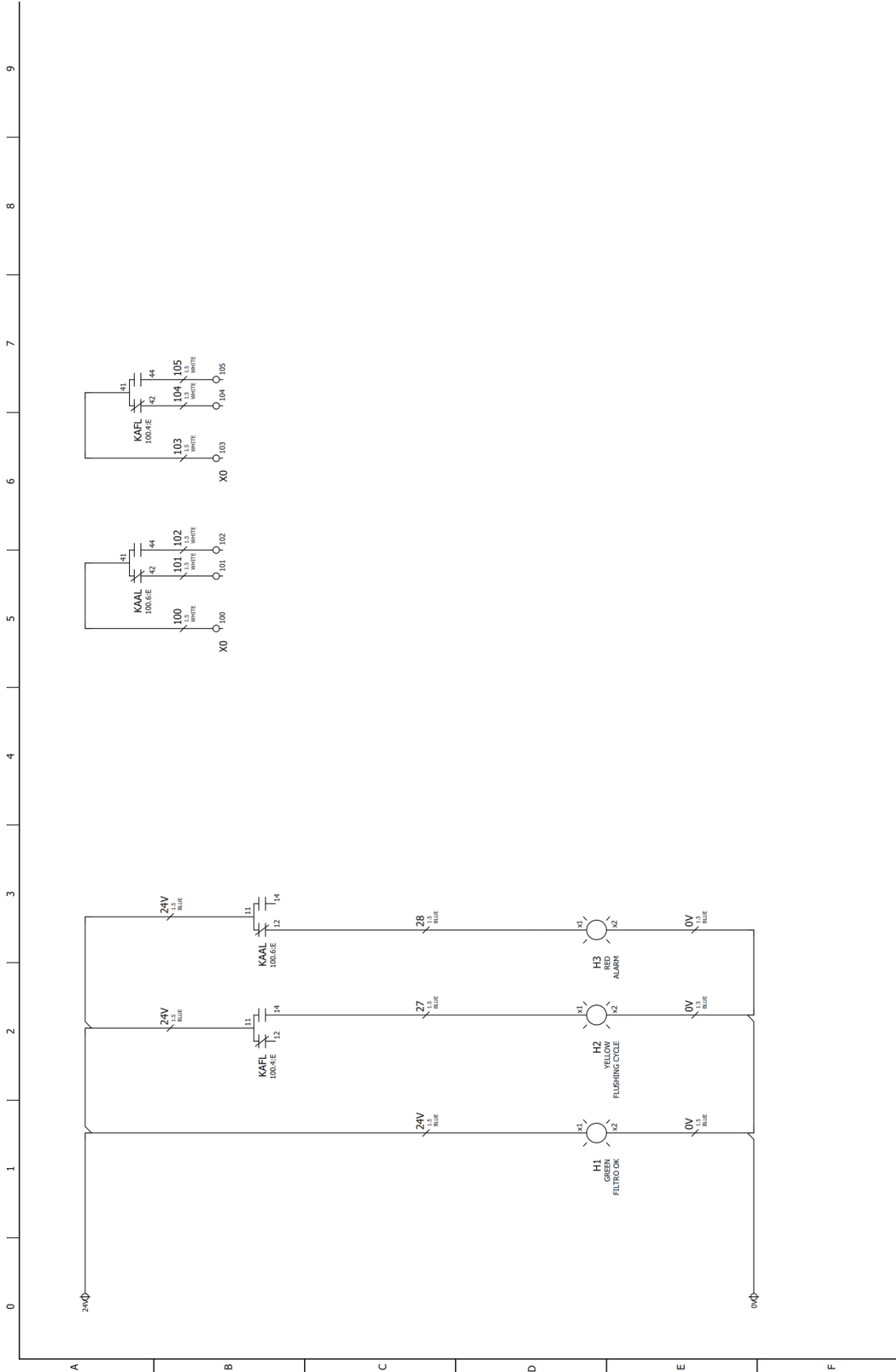


24 21 22
24 21 22

Project	STF-BETTER#V2	Client	STF	CPF-208VE-24_3Ph. (Valve Power Supply: 24Vdc)	
Date	22/08/2016	Checked by	D.GRACIA	Sheet	115
Issued by	D.GRACIA	Revision	22/08/2016	Description:	DIGITAL OUTPUTS (3/3)



12. – CONTROL PANEL



Project	STF-BETTER#V2	Client	STF
Date	22/08/2016	Checked by	D.GRACIA
Issued by	D.GRACIA	Revision	22/08/2016
CPF-208VE-24_3Ph. (Valve Power Supply: 24Vdc)		Sheet	120
		Description:	LAMPS AND FREE VOLTAGE CONTACTS



Order	Equipment model	Description	Number of units
1		TURRET	
	FMA-2003 - 2014	Electric panel CPF-01 (for 1 filter, 230v. ca panel)	1
	FMA-2003 - 2014	Electric panel CPF-04 (for 4 filters 230v. ca panel)	1
	FMA-2003 - 2014	Electric panel CPF-10 (for 10 filters 230v. ca panel)	1
1.1	FMA-2003 - 2014	Electric panel CPF-01-400 (for 1 filter 400v. ca panel)	1
	FMA-2003 - 2014	Electric panel CPF-04-400 (for 4 filters 400v. ca panel)	1
	FMA-2003 - 2014	Electric panel CPF-10-400 (for 10 filters 400v. ca panel)	1
	FMA-2003 - 2014	Electric panel CPF-01-12 (for 1 filter 12v. cc panel)	1
	FMA-2003 - 2014	Electric panel CPF-03-12 (for 3 filters 12v. cc panel)	1
1.2	FMA-2003 - 2014	M8x80 screw	4
1.3	FMA-2003 - 2014	M8 washer	15
1.4	FMA-2003 - 2014	Electric panel support plate	1
1.5	FMA-2003 - 2014	M8x20 screw	12
1.6	FMA-2003 - 2014	Protection cover	2
1.7	FMA-2003 - 2014	M5x30 screw	4
1.8	FMA-2003 - 2014	Omron limit switch	2
1.9	FMA-2003 - 2015	ø45x4 O-ring	1
1.10	FMA-2003 - 2014	Rim watertightness	1
1.11	FMA-2003 - 2014	Rim watertightness washer	1
1.12	FMA-2003 - 2014	M8 washer	3
1.13	FMA-2003 - 2014	M8x45 screw	3
1.14	FMA-2003 - 2014	NI-150 20x28x5,5 Joint	1
1.15	FMA-2003 - 2014	Quadric joint EQ-16	1
1.16	FMA-2003 - 2014	AUASOB 20x28x4,8/7 scraper	1
1.17	FMA-2003 - 2014	Male crosshead	2
1.18	FMA-2003 - 2014	M8x35 screw	2
1.19	FMA-2003 - 2014	M8 nut	2
1.20	FMA-2003 - 2014	Female crosshead	1
1.21	FMA-2003 - 2014	Limit switch	1
1.22	FMA-2003 - 2014	M6x12 screw	8
1.23	FMA-2003 - 2014	Shaft	1
1.24	FMA-2003 - 2014	M6 nut	4
1.25	FMA-2003 - 2014	M6 washer	4
1.26	FMA-2003 - 2014	M6 washer	4
1.27	FMA-2003 - 2014	Bronze nut	1
1.28	FMA-2003 - 2014	M6x35 screw	4
1.29	FMA-2003 - 2014	M8x50 screw	4
1.30	FMA-2003 - 2014	Gear engine Ca 0,37Kw 27rpm Fs-1,5 with an outlet flange	1
	FMA-2003 - 2014	Gear engineCc 12v 27rpm with an outlet flange	1
1.31	FMA-2003 - 2010	Engine cover side	1
	FMA-2012 / 2014	Engine cover side	1
1.32	FMA-2003 - 2014	Spindle protection	1
1.33	FMA-2003 - 2014	Shaft key	1
2	FMA-2003 - 2010	M18x90 screw	24
	FMA-2012 / 2014	M24x110 screw	40
Order	Equipment model	Description	Number of units
3	FMA-2003 - 2010	M18 washer	48
	FMA-2012 / 2014	M24 washer	80

13. – PARTS FMA - 2000

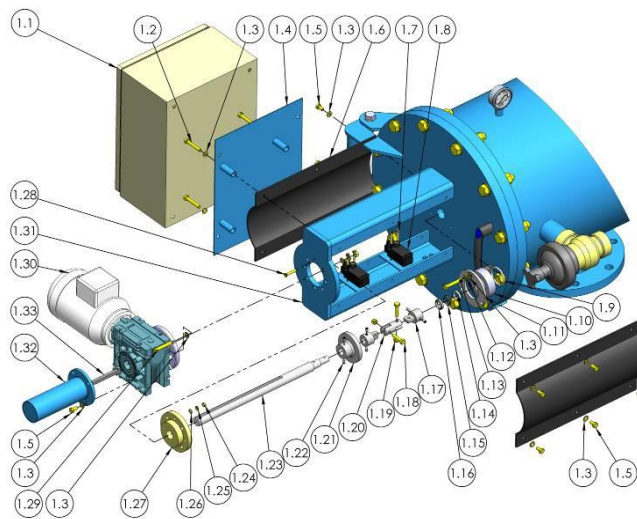
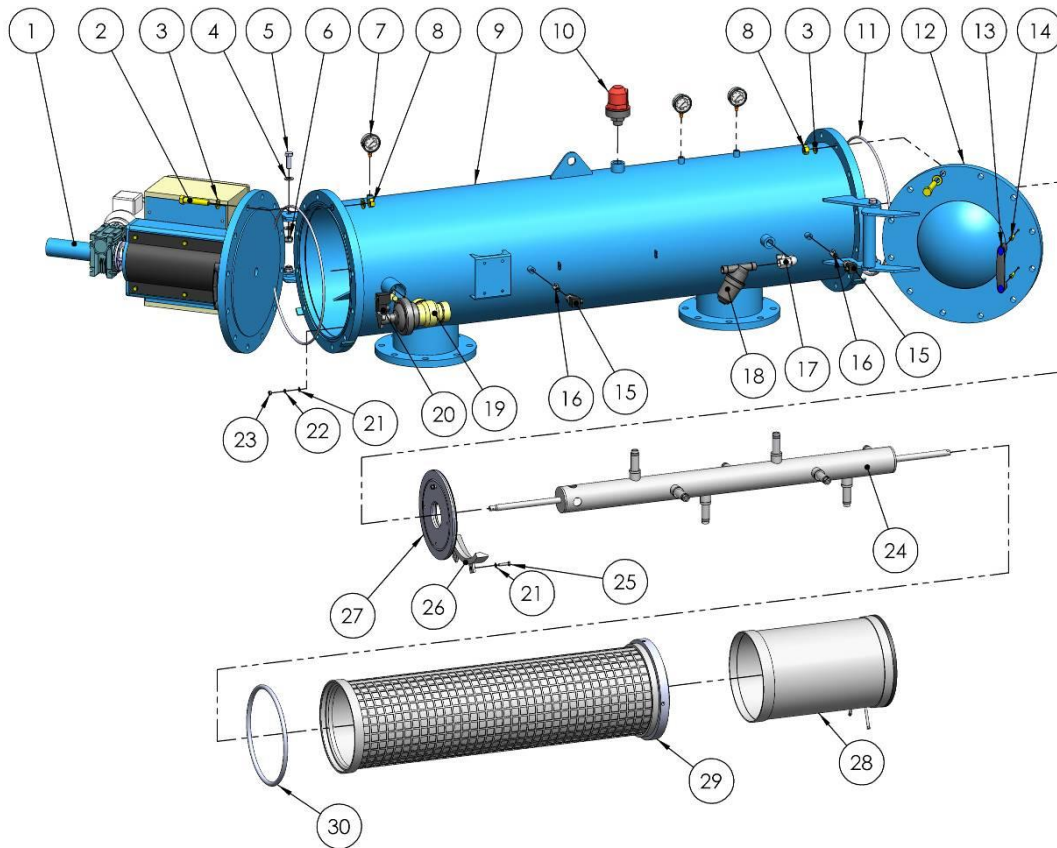
4	FMA-2003 - 2014	M16 washer	12
5	FMA-2003 - 2014	M16x50 screw	4
6	FMA-2003 - 2014	M16 nut	4
7	FMA-2003 - 2014	Glycerin pressure gauge Macho Gas-1/4"	3
8	FMA-2003 - 2010	M18 nut	24
	FMA-2012 / 2014	M24 nut	40
9	FMA-2003	Casing FMA-2003	1
	FMA-2004	Casing FMA-2004	1
	FMA-2006	Casing FMA-2006	1
	FMA-2008	Casing FMA-2008	1
	FMA-2010	Casing FMA-2010	1
	FMA-2012	Casing FMA-2012	1
	FMA-2014	Casing FMA-2014	1
10	FMA-2003 - 2014	Macho Gas-1" air release	1
	FMA-2003 - 2010	ø456x6,99 O-ring joint	2
11	FMA-2012 / 2014	ø633.48x6,99 O-ring joint	2
		ø660x8 O-ring joint	2
12	FMA-2003 - 2010	Prefiltration cover side	1
	FMA-2012 / 2014	Prefiltration cover side	1
13	FMA-2003 - 2014	Handle	2
14	FMA-2003 - 2014	M8x35 screw	4
15	FMA-2003 - 2014	Pressure transducer Macho Gas-1/4"	2
16	FMA-2003 - 2014	Ball valve M/H Gas-1/4"	2
17	FMA-2003 - 2014	Ball valve in angle M/H Gas-3/4"	1
18	FMA-2003 - 2014	Filter inlet 120mesh M/M Gas-3/4"	1
19	FMA-2003 - 2014	Valve S-300 Gas-2" Reversible angle (Bermad)	1
20	FMA-2003 - 2014	NC 24v Dc solenoid	1
21	FMA-2006 - 2014	M8 washer	4
22	FMA-2006 - 2014	M8 washer	2
23	FMA-2006 - 2014	M8 nut	2

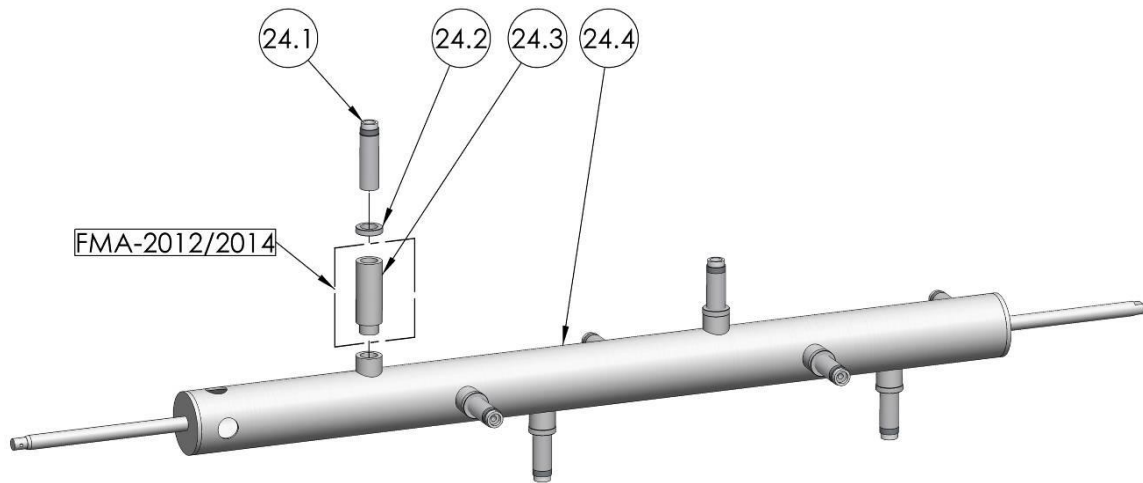
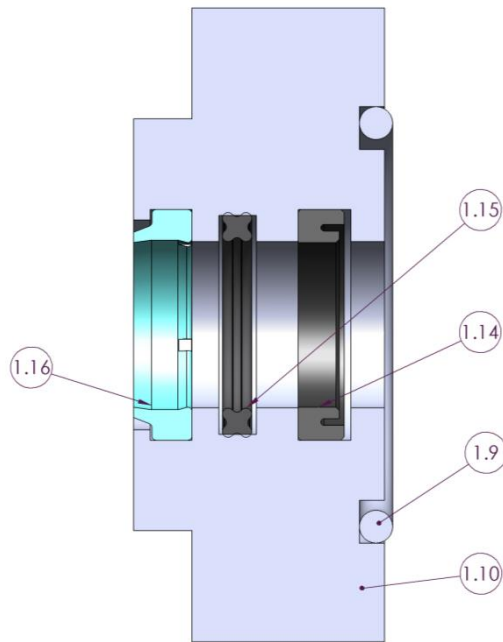
13. – PARTS FMA - 2000

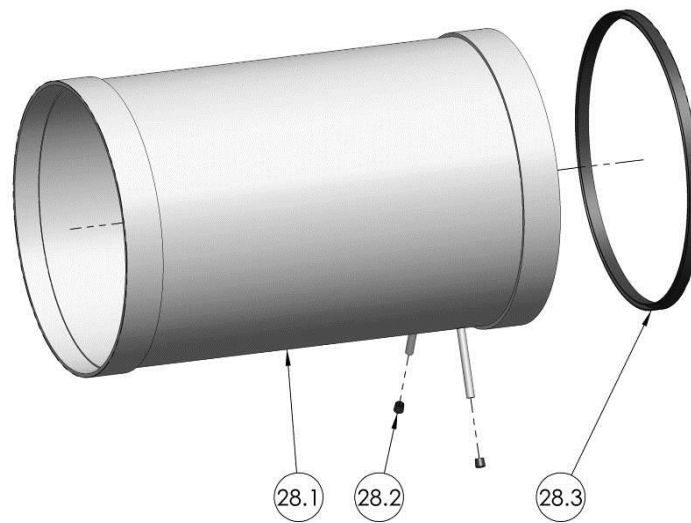
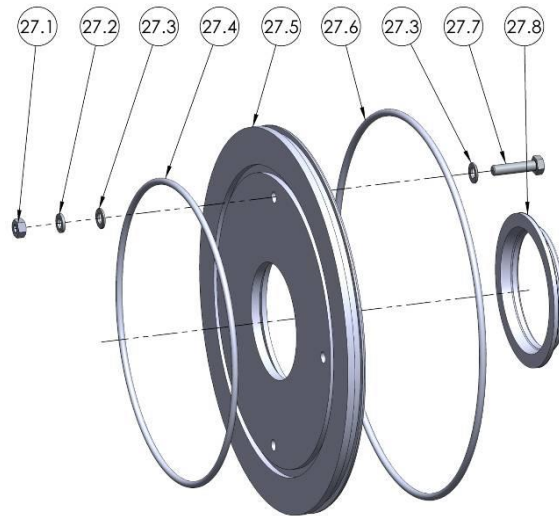
Order	Equipment model	Description	Number of units
24		SCANNER	
24.1	FMA-2003	Nylon brushes nozzle	2
	FMA-2004	Nylon brushes nozzle	4
	FMA-2006	Nylon brushes nozzle	6
	FMA-2008 / 2012	Nylon brushes nozzle	8
	FMA-2010 / 2014	Nylon brushes nozzle	10
24.2	FMA-2003	3/4" nozzle nut	2
	FMA-2004	3/4" nozzle nut	4
	FMA-2006	3/4" nozzle nut	6
	FMA-2008 / 2012	3/4" nozzle nut	8
	FMA-2010 / 2014	3/4" nozzle nut	10
24.3	FMA-2012	Nozzle extension	8
	FMA-2014	Nozzle extension	10
24.4	FMA-2003	Scanner for cartridge INOX and PVC	1
	FMA-2004	Scanner for Cartridge INOX	1
		Scanner for Cartridge PVC	1
	FMA-2006	Scanner for Cartridge INOX	1
		Scanner for Cartridge PVC	1
	FMA-2008	Scanner for Cartridge INOX	1
		Scanner for Cartridge PVC	1
	FMA-2010	Scanner for Cartridge INOX	1
		Scanner for Cartridge PVC	1
	FMA-2012	Scanner for Cartridge INOX	1
		Scanner for Cartridge PVC	1
	FMA-2014	Scanner for Cartridge INOX	1
		Scanner for Cartridge PVC	1
25	FMA-2006 - 2014	M8x40 screw	2
26	FMA-2006 - 2010	Cartridge stainless centering ring	1
	FMA-2012 / 2014	Cartridge stainless centering ring	1
27		RIM WATERTIGHTNESS	
27.1	FMA-2003 - 2014	M8 nut	4
27.2	FMA-2003 - 2014	M8 washer	4
27.3	FMA-2003 - 2014	M8 washer	8
27.4	FMA-2003 - 2014	ø230x5 O-ring	1
27.5	FMA-2003 - 2010	Rim watertightness	1
	FMA-2012 / 2014	Rim watertightness	1
27.6	FMA-2003 - 2010	ø291,47x5,33 O-ring	1
	FMA-2012 / 2014	ø468.76x6,99 O-ring	1
27.7	FMA-2003 - 2014	M8x40 screw	4
27.8	FMA-2003 - 2014	H joint	1
28		WATERTIGHTNESS DISK	
28.1	FMA-2003	Prefiltration cartridge	1
	FMA-2004 - 2010	Prefiltration cartridge	1
	FMA-2012 / 2014	Prefiltration cartridge	1
28.2	FMA-2003 - 2014	Cap GPN-280-ER8	2
28.3	FMA-2003 - 2010	62VA82 joint	
	FMA-2012 / 2014	62VA82 joint	
Order	Equipment model	Description	Number of units
29		FILTRATION CARTRIDGE	

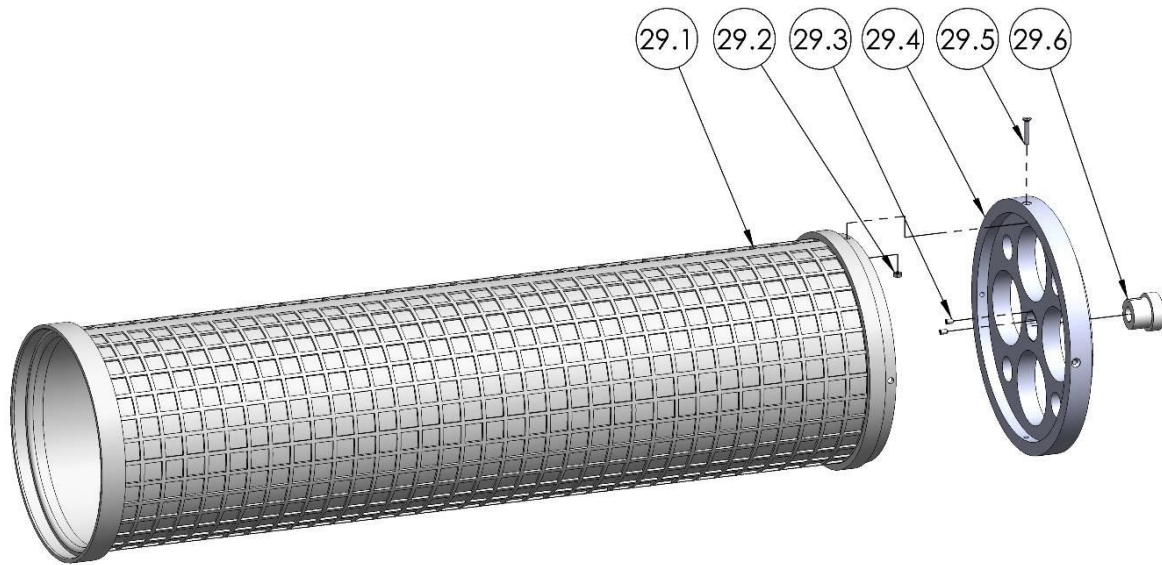
13. – PARTS FMA - 2000

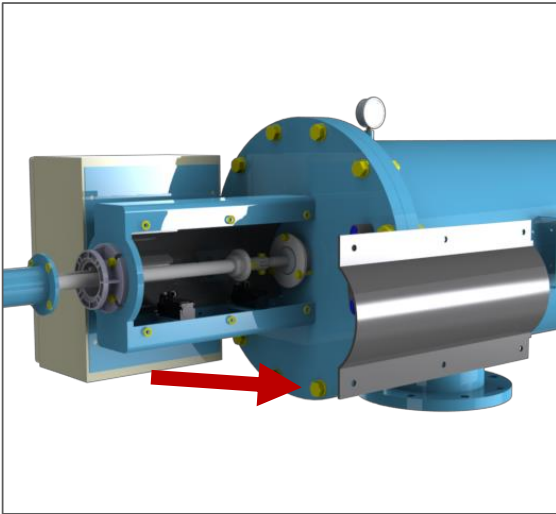
29.1	FMA-2003	PVC screen cartridge Micron	1
		INOX screen cartridge Micron	1
	FMA-2004	PVC screen cartridge Micron	1
		INOX screen cartridge Micron	1
	FMA-2006	PVC screen cartridge Micron	1
		INOX screen cartridge Micron	1
	FMA-2008	PVC screen cartridge Micron	1
		INOX screen cartridge Micron	1
	FMA-2010	PVC screen cartridge Micron	1
		INOX screen cartridge Micron	1
	FMA-2012	PVC screen cartridge Micron	1
		INOX screen cartridge Micron	1
	FMA-2014	PVC screen cartridge Micron	1
		INOX screen cartridge Micron	1
29.2	FMA-2003 - 2014	M6 nut	4
29.3	FMA-2003 - 2014	M6x12 screw	2
29.4	FMA-2003 - 2010	Disc	1
	FMA-2012 / 2014	Disc	1
29.5	FMA-2003 - 2014	M 6x35 screw	4
29.6	FMA-2003 - 2014	Housing guide	1
30	FMA-2003 - 2010	ø314x14 O-ring joint	1
	FMA-2012 / 2014	ø498x14 O-ring joint	1



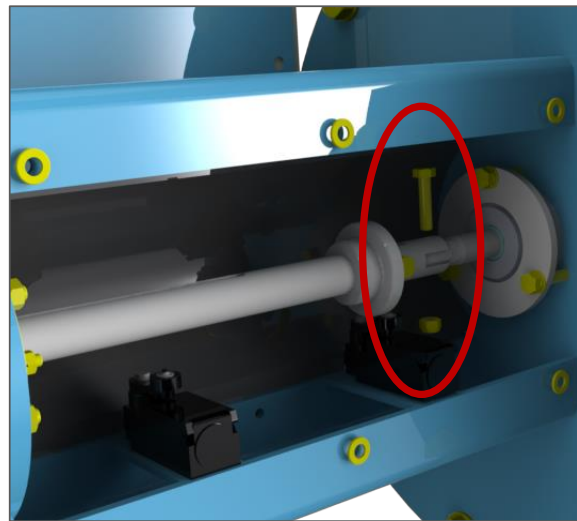




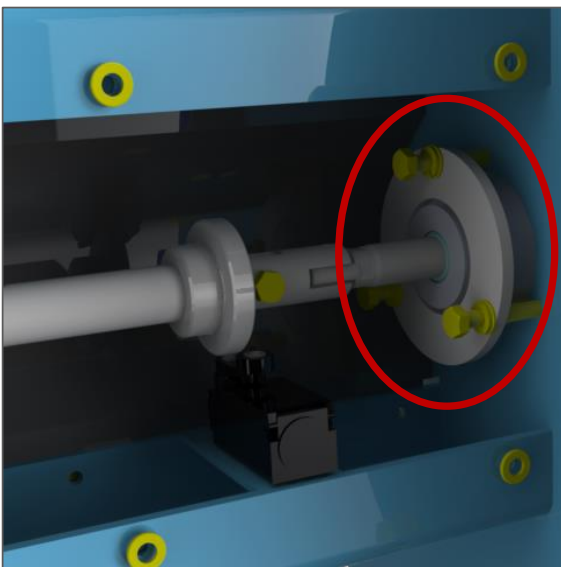




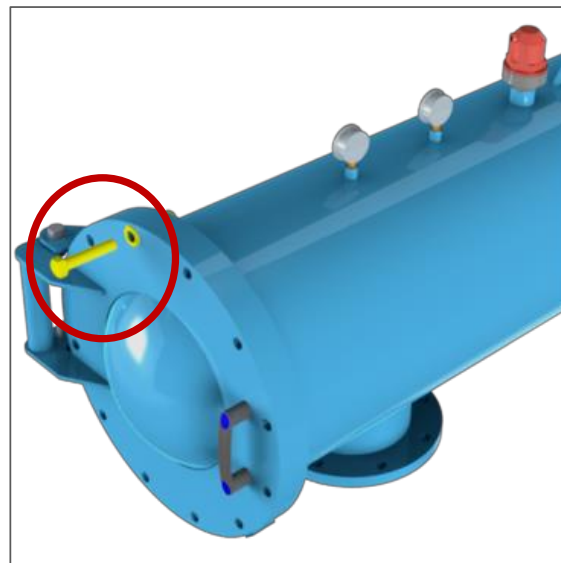
1 Remove the protection
1.6 cardan.



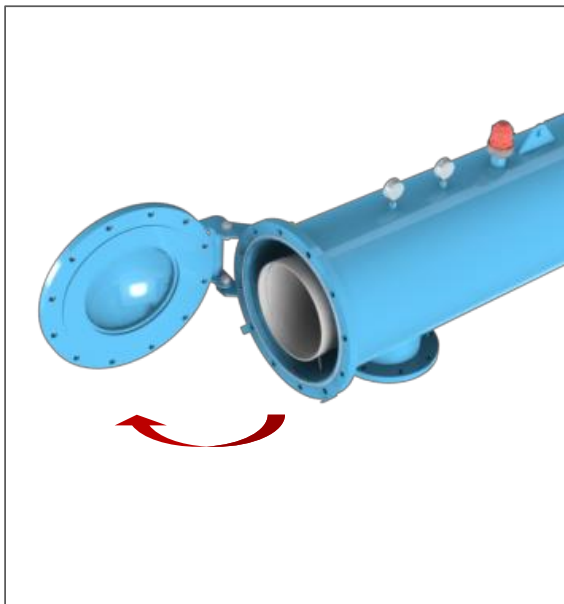
2 Remove the screw 1.18



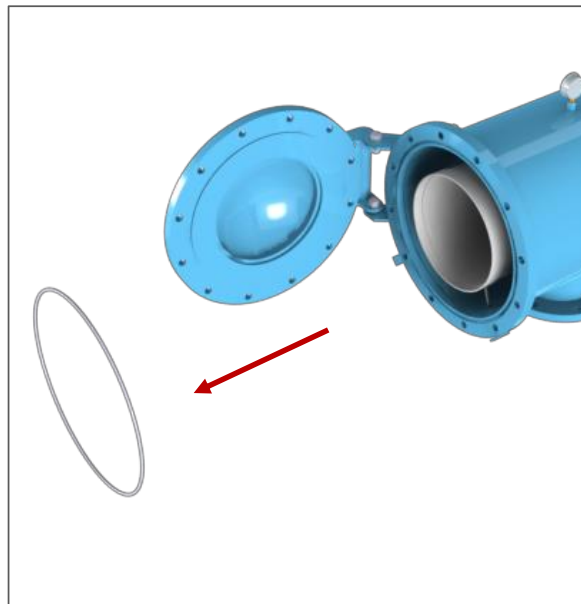
3 Loosen screws 1.13 rim
* Do not remove them.



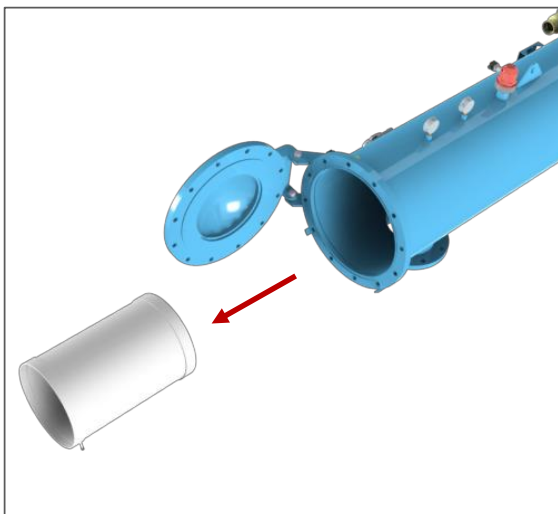
4 Remove screws 2 from
the cover.



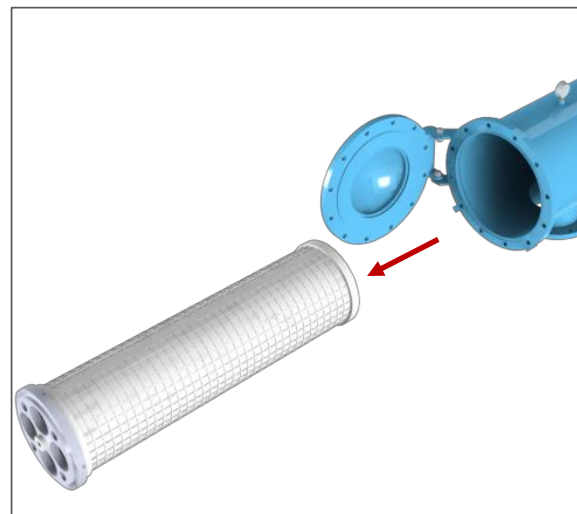
5 Open the back cover 12.



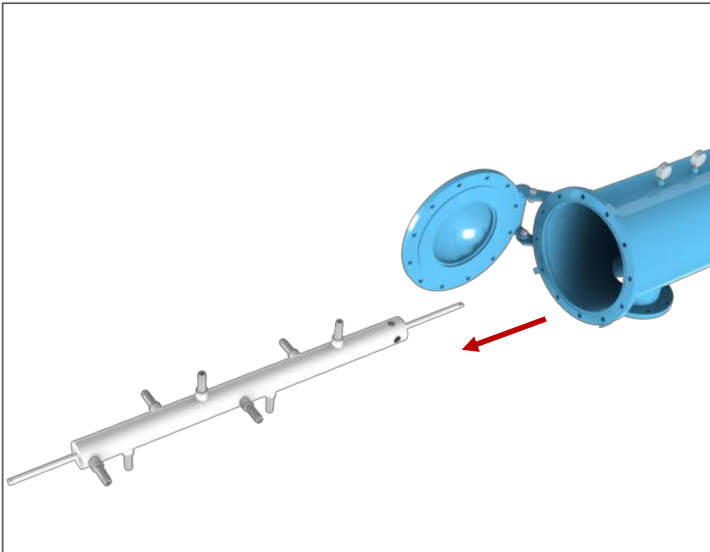
6 Remove the O-ring 11.



7 Remove the coarse screen 28.



8 Remove the filtering cartridge 29.



9 Remove the scanner 24.

Note

During the assembly don't tighten the screws that compress the Rim watertightness. Do it as a last step while the scanner is driven by the motor.

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