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BOOSTER SETS

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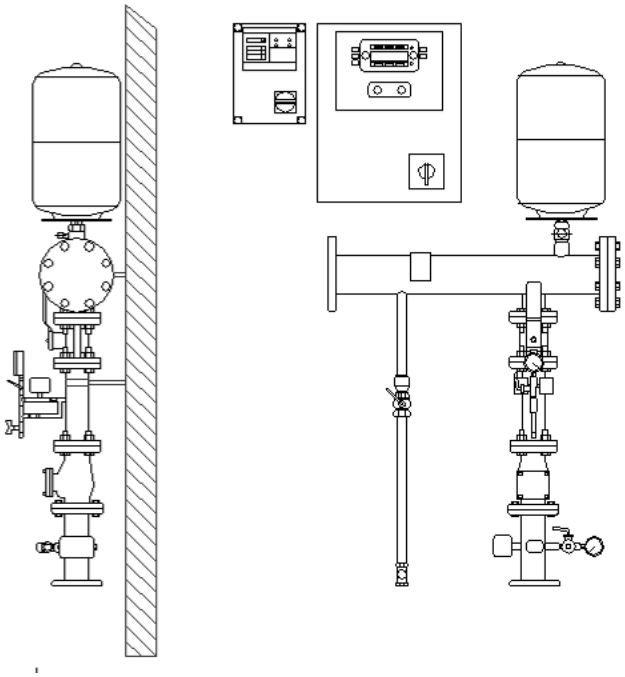
USE AND INSTALLATION MANUAL

FIRE FIGHTING SYSTEM UNI EN 12845:2020 FOR SUBMERSIBLE PUMPS



WARNING:

ORIGINAL DOCUMENTATION (NOT-REPRODUCIBLE)

fourgroup
www.fourgroup.it - info@fourgroup.it

FOURGROUP sas di Brox Srl
Via Enrico Fermi, 8
35020 Polverara (PD)
ITALY
Tel +39 049 9772407
Fax +39 049 9772408

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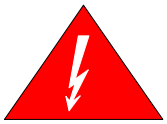
Via Enrico Fermi, 8 Polverara (PD) - ITALY
Tel. +39 (0)49 9772 407 – Fax +39 (0)49 9772 408

1. WARNINGS AND SAFETY

The symbols illustrated below, together with "DANGER" or "WARNING", indicate the potential risks due to the inobservance of the instruction to which they have been related, as indicated below:



DANGER, RISK OF ELECTRIC SHOCKS

Warns that there is a risk of electric shock if the instructions are not observed

DANGER

Warns that there is a risk of injury to persons and/or damage to belongings if the instructions are not observed

WARNING

Warns that there is a risk of damage to the pump, set or system if the instructions are not observed

- **WARNING:**
  Verify the integrity of the product upon receipt; any discrepancies must be reported in writing within seven days of receipt. Ensure that the firefighting system is in perfect working order before starting it.

- **WARNING:**
  The firefighting system UNI EN12845:2020 is designed to start automatically. Make hydraulic connections and to prime the pumps before making any electrical connections.

- **WARNING:**
  The connection of the automatic control panel must be performed by a qualified electrician in accordance with the present electrical standards.

- **WARNING:**
  The firefighting system UNI EN12845:2020 and control panels must be connected to an efficient earthing system in accordance with the electrical standards of the country in which it is installed.

- **WARNING:**
  The connection of the earth must be performed first.

- **WARNING:**
  As a general rule, any operation on electrical or mechanical parts must be performed after having previously disconnected the power supply to the firefighting system EN12845 and having disconnected the automatic control panel.
  Note: notify to the relevant staff that there is a maintenance in progress and put a sign at the entrance of the premises "Maintenance in progress".

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Via Enrico Fermi, 8 Polverara (PD) - ITALY
Tel. +39 (0)49 9772 407 – Fax +39 (0)49 9772 408

2. GENERALITY

The present manual is aimed at giving the necessary information regarding the installation, use and maintenance of our UNI EN12845:2020 firefighting system with submersible pumps.
It is important that the user read this manual prior to using the UNI EN12845:2020 firefighting system. Improper use may cause damage to the machine as well as the lapse of the guarantee. When requesting information or spare parts from our Sales Department, quote the exact identification code of the model together with the manufacturer number.
This manual, along with engine manuals and other documents which are delivered with the machine, is an integral part of the product "UNI EN12845:2020 firefighting system" in accordance with directive 2006/42/EC. This manual aims to provide information and instructions essential to adequately perform all activities related to the use of the product purchased. This manual, and documentation, are intended to be viewed by all persons involved in the life cycle of the machine and therefore must be accessible to the user.
Compliance with all safety requirements is an obligation of the customer.

The following instructions and requirements relate to the standard operations; for instructions, situations and events that are not covered in the present manual or sales documents, contact our assistance service.

The installation must be designed and carried out only by qualified technicians; Errors in the installation or use can cause serious damage to the machine, the user system and the people involved.
Do not make any action, maintenance, repairs or modifications if you do not have specific knowledge or received detailed instructions. If doubts remain, after consultation with the following paragraphs, contact Fourgroup Srl.
All operations must be carried out while respecting the safety rules.

Remember that must respect the regulations in force in the country of installation: if different rules are in force on the same topic, should always be considered the more stringent requirements.

Our products have been manufactured in accordance with the applicable safety standards in force for which it is recommended the use of all devices or notices in order that the use does not cause injury to persons or damage to belongings.
Our products were designed for the specific use intended, **THEREFORE ANY OTHER USE THAT IS DIFFERENT AND NOT IN ACCORDANCE WITH WHAT INDICATED, EXEMPTS FOURGROUP sas FROM RISKS** that may occur.
The modification of both mechanical and electrical parts of the machine is strictly prohibited. The non-compliance exempts FOURGROUP sas from any responsibility. **The responsibility of any operation that has not been authorised in writing shall fall upon the executor, inasmuch they become the manufacturer.**

FOURGROUP sas hold no responsibility whatsoever for possible damage to the machine, to persons or belongings. The individual safety standards of the country of destination should be abided by during the use of the generator (clothing, tools, etc…).

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Via Enrico Fermi, 8 Polverara (PD) - ITALY
Tel. +39 (0)49 9772 407 – Fax +39 (0)49 9772 408

3. WORKING LIMITS

WARNING

READ THE INSTRUCTION MANUALS OF EVERY PUMPS, MOTORS, CONTROL PANELS AND OTHERWISE OF ALL COMPONENTS. FOLLOW THE PROVISIONS OF THE SAFETY AND PERFORM THE PLANNED MAINTENANCE RECOMMENDED IN THE INSTRUCTION MANUALS, AS WELL AS INDICATED BY THE UNI EN 12845:2020.

- Operating ambient temperature: min. +4°C if only the electric pumps are installed, +10°C if the diesel pump is also installed; (UNI EN12845:2020 – point 10.3.3); max +40°C for internal installations (CEI EN 60439-1).
- Employable liquids: water free of vegetation, fibrous or other matter in suspension (UNI EN12845:2020 point 8.1.2), gas and corrosive/aggressive substances.
- Minimum temperature of pumped liquid: over 0°C to avoid the formation of ice during inactive periods.
- Maximum temperature of the liquid pumped: +40°C.
- Relative humidity: max 50% at 40°C in the absence condensation (CEI EN 60439-1).
- Air impurities: the air must be clean (CEI EN 60439-1). The presence of acid vapours, corrosive gases, uncommon amounts of dust are not permitted.
- Altitude: max 1000m above sea level.

N.B:
The technical rooms must be equipped with an heating system to avoid the freezing of the firefighting pipe lines and the components installed and capable of maintaining conditions temperature and humidity satisfactory in all seasons. Within the premises should have a proper system to prevent humidity greater than 80%.
Maintaining an internal temperature of at least 15 ° C is considered sufficient to limit the presence of an high relative humidity.

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Via Enrico Fermi, 8 Polverara (PD) - ITALY
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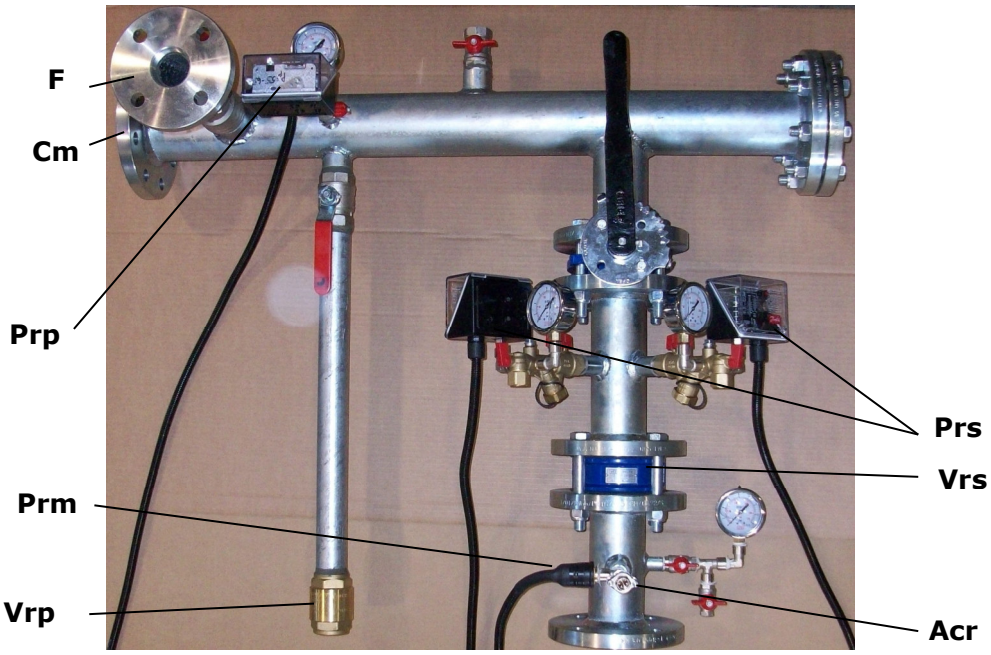
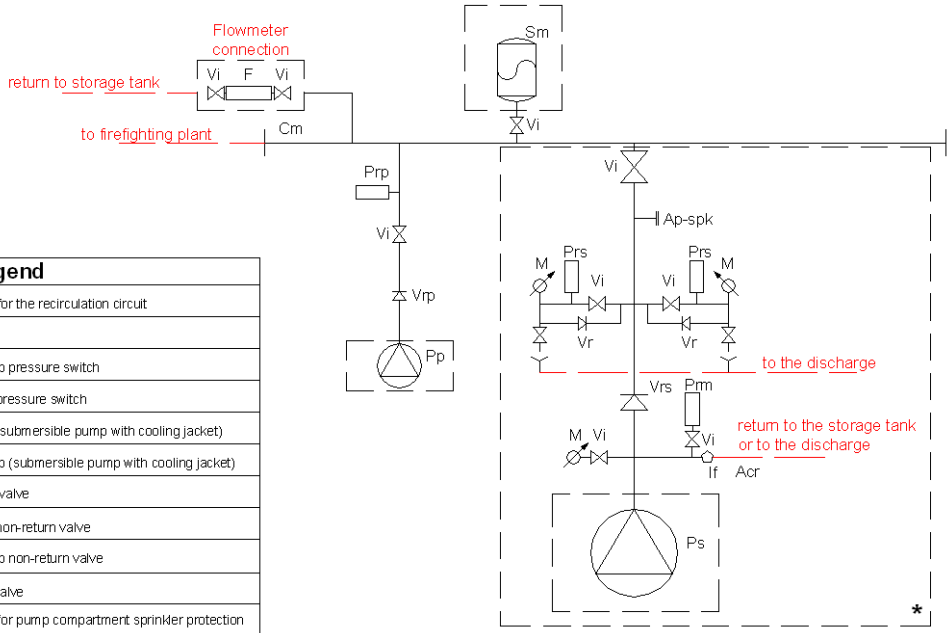
4. GENERAL CONSTRUCTION FEATURES

The UNI EN12845:2020 FIREFIGHTING SERIES it's a range of firefighting system equipped with submersible pumps. The main features of firefighting system UNI EN12845:2020 series are: the compactness that facilitates the transport and the installation; simplicity of use; wide range of reliable and powerful motors and pumps, indispensable quality in firefighting applications.





Legend	
Acr	Connection for the recirculation circuit
M	Manometer
Prp	Jockey pump pressure switch
Prs	Main pump pressure switch
Ps	Main pump (submersible pump with cooling jacket)
Pp	Jockey pump (submersible pump with cooling jacket)
Vi	Interception valve
Vrs	Main pump non-return valve
Vrp	Jockey pump non-return valve
Vr	Non-return valve
Ap-spk	Connection for pump compartment sprinkler protection
F	Flowmeter connection
Sm	Membrane pressure tank
Prm	Pump running pressure switch
Cm	Main collector
If	Visual flow indicator

* NOTE: The system could be composed with two or more service pumps. So there may be two or more circuits for the deliveries of the service pumps.

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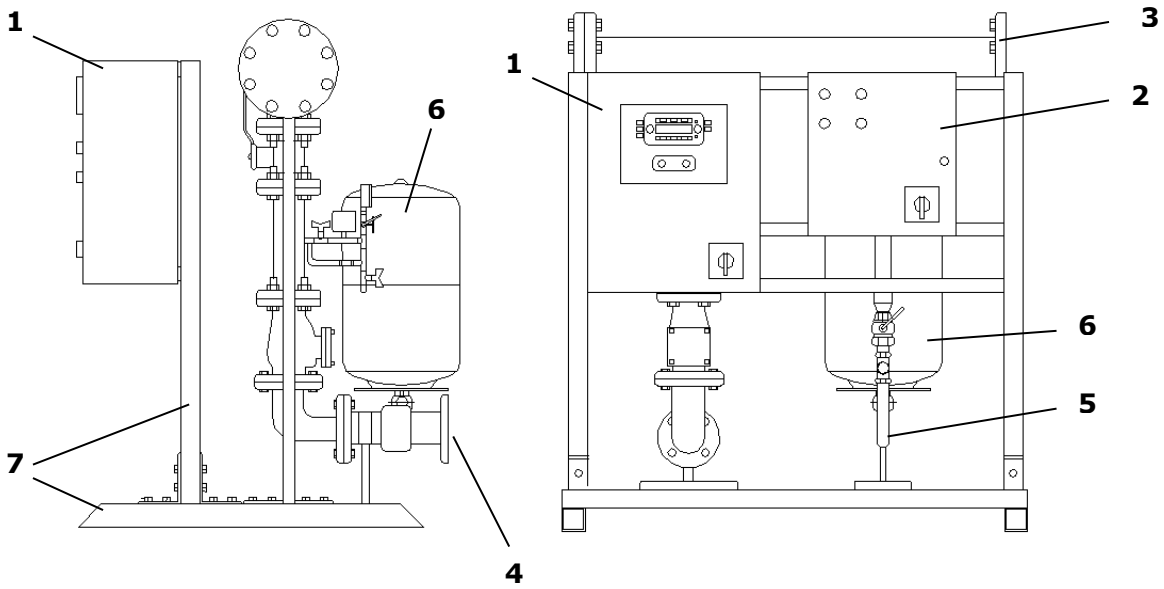
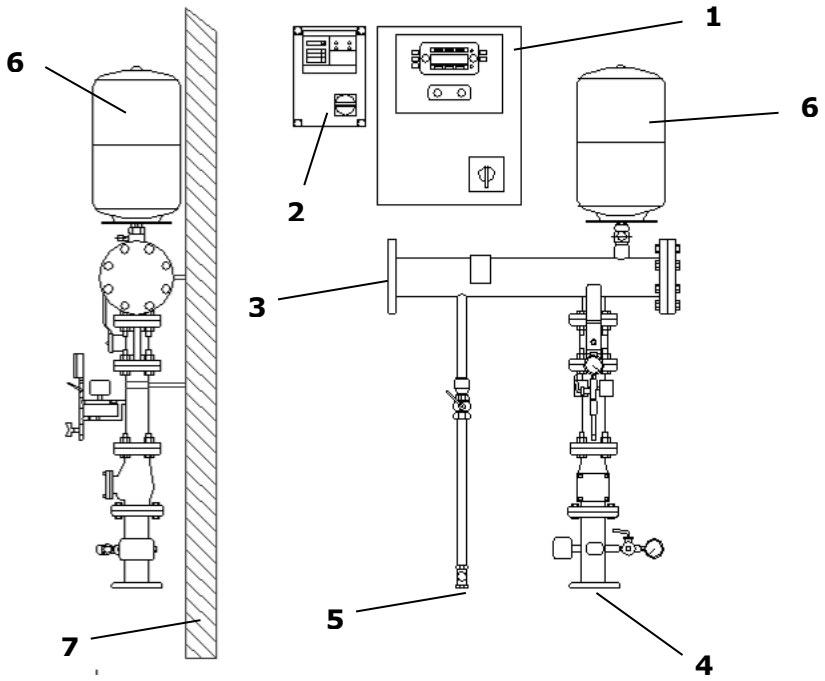
The UNI EN12845:2020 firefighting system with submersible pumps can be supplied on a SKID (a support frame with floor fixing with electrical panels already wired) or for WALL (for wall mounting, without the support frame).

Example of a SKID version of UNI EN12845:2020 firefighting system with submersible pumps:



1 – MAIN PUMP CONTROL PANEL
2 – JOCKEY PUMP CONTROL PANEL
3 – MAIN COLLECTOR
4 – MAIN PUMP SUCTION
5 – JOCKEY PUMP SUCTION
6 – MEMBRANE PRESSURE TANK
7 – SUPPORT FRAME WITH PANELS

Example of a WALL mounting version of UNI EN12845:2020 firefighting with submersible pumps:



1 – MAIN PUMP CONTROL PANEL
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3 – MAIN COLLECTOR
4 – MAIN PUMP SUCTION
5 – JOCKEY PUMP SUCTION
6 – MEMBRANE PRESSURE TANK
7 – WALL

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5. TABLES APPROXIMATE LENGTH CABLES

Tables approximate length (m) cables – Statoric impedance / D.O.L. Starters

Power rating		Voltage	Current (approximated)	Cable section (mm²) – Four poles cables				
HP	KW	V	A	1	1,5	2,5	4	6
0,5	0,37	400	1	611	908			
0,75	0,55	400	1,5	435	847	1073		
1	0,75	400	2	335	498	825		
1,5	1,1	400	3	223	332	550	883	
2	1,5	400	3,6	176	261	433	698	1045
3	2,2	400	4,7	135	201	333	534	802

Power rating		Voltage	Current (approximated)	Cable section (mm²) – Four poles cables									Cable section (mm²) – Single poles cables				
HP	KW	V	A	1	1,5	2,5	4	6	10	16	25	35	50	70	95	120	150
4	3	400	6,7	94	140	232	372	558	910								
5,5	4	400	9	66	102	169	271	407	663	1039							
7,5	5,5	400	12,3		74	123	197	296	483	757							
10	7,5	400	15,9		57	95	152	229	373	585	904	1231					
12,5	9	400	19,8			76	122	184	299	470	726	989					
15	11	400	23,3			65	104	156	254	399	616	839	1099				
17,5	13	400	27				90	135	220	345	534	727	951				
20	15	400	30				79	118	193	302	467	637	835				
25	18,5	400	38					94	154	242	374	509	668	923			
30	22	400	45						131	206	318	434	559	785	1032		
35	26	400	51						114	179	277	377	495	684	898	1077	
40	30	400	61							151	234	318	418	577	758	909	1063

Power rating		Voltage	Current (approximated)	Cable section (mm²) – Four poles cables			Cable section (mm²) – Single poles cables							Cable section (mm²) – Single poles cables (Two lines in parallel)						
HP	KW	V	A	16	25	35	50	70	95	120	150	185	240	2X50	2X70	2X95	2X120	2X150	2X185	2X240
50	37	400	74	124	192	261	343	473	622	745	872	1024		685	947					
60	45	400	89		158	215	282	381	514	618	723	851	1018	565	781	1029	1235	1447		
70	51	400	103		137	187	246	340	448	538	630	741	886	482	680	895	1075			
80	59	400	118			164	216	296	391	469	548	644	769	431	595	762	938	1097		
90	67	400	131				194	268	351	421	493	579	691	387	535	703	843	986		
100	75	400	147				174	239	314	376	439	516	613	347	479	628	752	878	1029	
125	92	400	177					198	261	313	366	429	512	287	397	522	625	731	859	1025
150	110	400	214						215	258	302	356	425	236	325	430	515	605	711	851

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6. MAIN COMPONENTS FEATURES

– CONTROL PANEL FOR STARTING ELECTRIC PUMP:
It's the whole set of electrical and electronic equipment for command, control and protection of firefighting system; such equipments are placed inside metal or plastic box into a protective structure installed on skid. The version of control panel is supplied with standard as UNI EN12845:2020.
All the features, type of working and the details are described in the specific manuals;

ELECTRIC PUMP
CONTROL PANEL
(QAD NO1; QAST NO1; QAVS NO1)

The control panel automatically manages the sequence of operations and controls for the starting of the firefighting system as a consequence of the depression created inside the firefighting water pipeline and the consequent closure of the start-up pressure switch contacts. These type of operations occur automatically without the presence of an operator (with main switches door interlock set on 1 "ON" and operations selectors set to automatic). The start-up of the firefighting system can take place in the presence of an operator by operating the manual or emergency functions.

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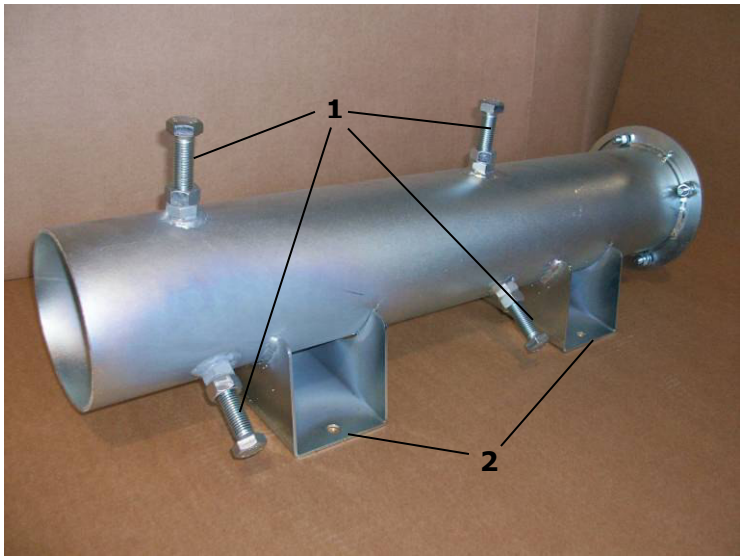
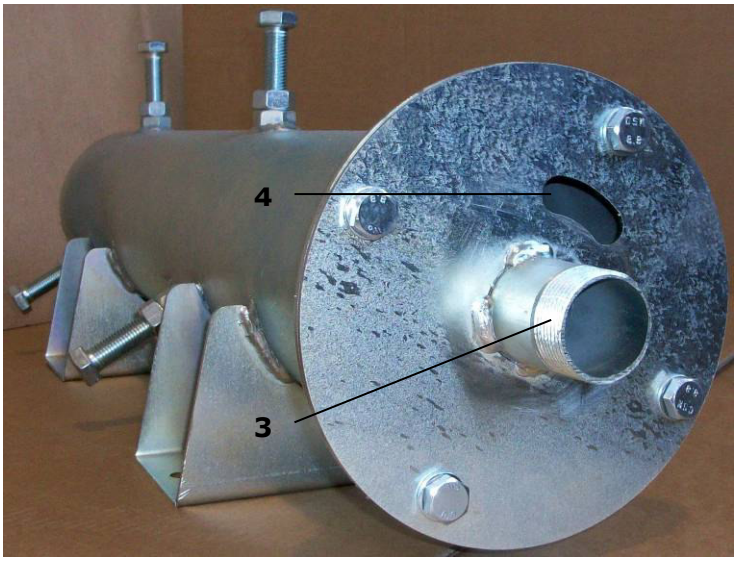
- SUBMERSIBLE PUMP:
Example of a submersible pump used on UNI EN12845:2020 firefighting system:

For the installation, the pump is placed inside the metal case (cooling jacket) and positioned with the appropriate centering bolts. Examples of metal casings (cooling jackets) for submersible pumps:





1 – CENTERING BOLTS
2 – MOUNTING BRACKETS
3 – PUMP DELIVERY WITH THREAD CONNECTION
4 – OPENING FOR CABLE

THE USE OF THE COOLING JACKET IS MANDATORY: ITS PURPOSE IS TO ALLOW THE ENGINE COOLING AND ENSURE THE HYDRAULIC PERFORMANCE (SIMULATING WELL INSTALLATION). DEPENDING ON THE MODEL PUMPS MAY WORK ONLY TO VERTICAL POSITION OR BOTH POSITION, VERTICAL AND HORIZONTAL. FOR FURTHER INFORMATION PLEASE READ THE OPERATION AND MAINTENANCE MANUAL OF THE PUMP SUPPLIED WITH THE DOCUMENTATION OF THE FIRE FIGHTING SYSTEM.

⚠	**NOTE: Before any intervention on the engine, carefully read it's manual that is always delivered with the machine. All rotating parts of the engine is shielded by appropriate fixed protections. The removal of those protections can be performed only by authorized and qualified staff. If you need to remove the protections, first is required reposition them before restart the machine. Perform maintenance operations employing all personal protective equipment required.**

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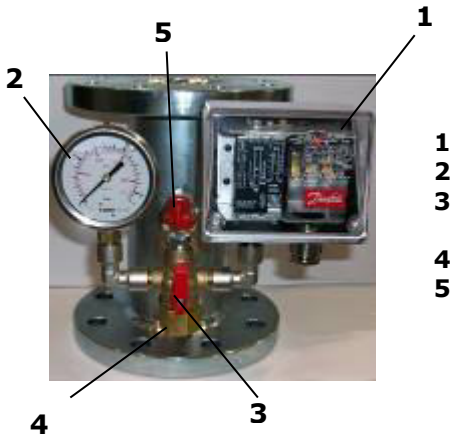
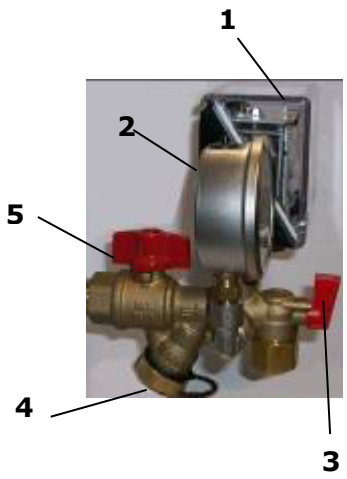
– PUMP START DEVICES

It is composed of 2 circuits to test the start-up pressure switches according to UNI EN12845:2020 (composed of pressure switch, manometer and test circuit with ball valve). Following describes the version used:



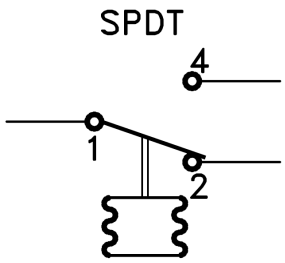
1 – PRESSURE SWITCH
2 – MANOMETER
3 – BALL VALVE - DISCHARGE TEST CIRCUIT
4 – NON-RETURN VALVE
5 – BALL VALVE - PRIMING SUPPLY STOP VALVE



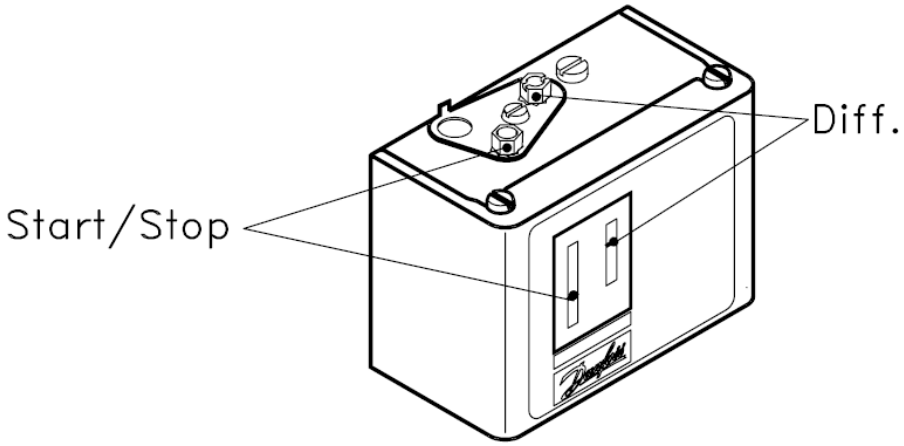
USE OF TEST CIRCUIT:

The test circuit is used for the simulation of automatic starting of the firefighting system and to verify proper operation and calibration of the calling pressure switches.
Close the ball valve 5; open the ball valve 3, discharging a small amount of water so as to create a lowering of pressure which will affect only the pressure switches and the manometer. In this way is possible to verify the calibration pressure of pressure switches through the manometer and their proper functioning; while you can verify the correct start of the firefighting system. Once you have made the test, close the ball valve 3 and open the ball valve 5 so as to bring back on pressure the test circuit. Turn off the firefighting system.

PRESSURE SWITCH DESCRIPTION (KP TYPE):



KP/KPI pressure switches with automatic reset: set the upper limit pressure on the range scale. Then set the lower limit pressure on the DIFF scale (the upper limit minus the differential).



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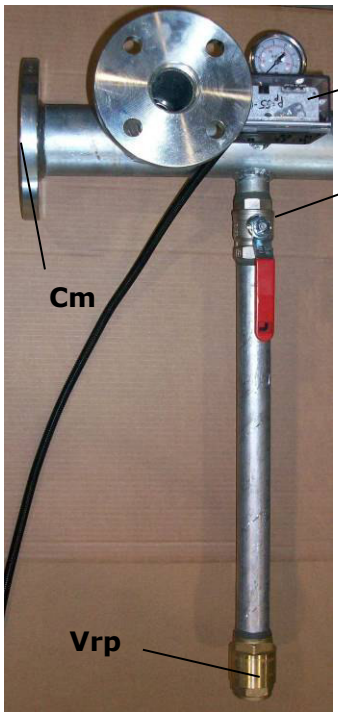
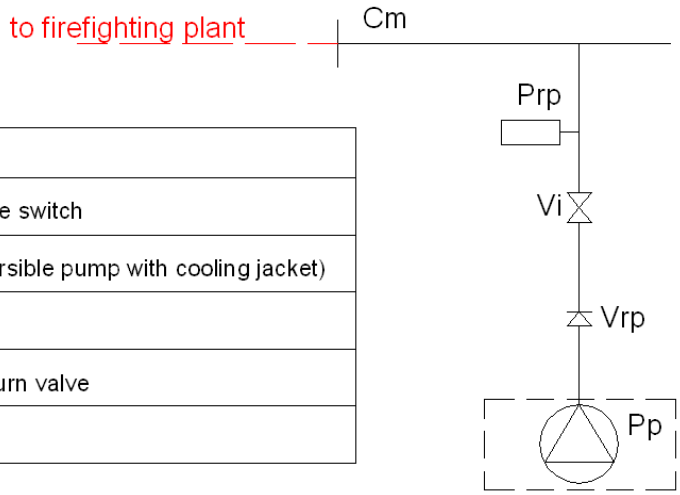
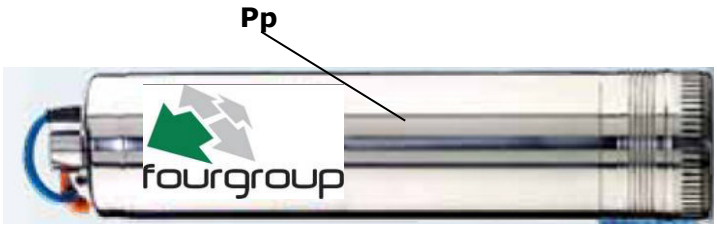
7. MAIN COMPONENTS FEATURES – JOCKEY PUMP



Legend	
Prp	Jockey pump pressure switch
Pp	Jockey pump (submersible pump with cooling jacket)
Vi	Interception valve
Vrp	Jockey pump non-return valve
Cm	Main collector





The Jockey pump is not mandatory for firefighting unit with European Standard, but its installation is strongly recommended. The jockey pump is used to avoid unnecessary starts of the main pumps (which don't stop automatically), due to smaller pressure drop of the firefighting water pipeline (caused by small leaks or drips). If the pressure drop is due to a substantial water withdrawal (eg. rupture of a sprinkler), the pump's flow is no longer sufficient to offset losses, for which the pressure inside the firefighting water pipeline continues to fall until the intervention threshold of the start-up pressure switches of the first service pump (main electric pump).

The jockey pump kit is composed as follows:
Jockey pump submersible type complete with delivery interception valve , non-return valve, pressure switch, manometer and the electrical control panel. Jockey pump kit includes a membrane pressure tank, lt.20 16 bar.

NOTE: Before the commissioning, load the expansion tank with compressed air to the pressure indicated on the tank itself.

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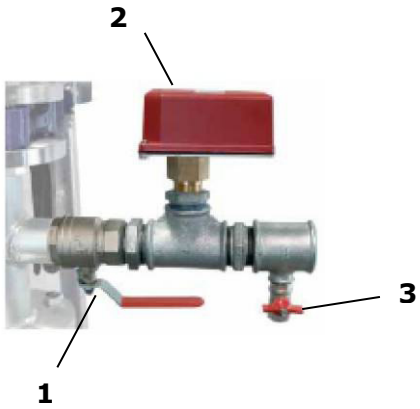
8. VISUAL FLOW INDICATOR (OPTIONAL)

Device to assure a water continue flow through the pump sufficient to prevent the overheating when it functions with closed lock. The circuits discharge must be clearly visible and where there are more pumps the circuits discharges must be separated.

9. ROOM SPRINKLER PROTECTION (OPTIONAL)

Compartments for pump sets shall be sprinkler protected. Where the pump compartment is separate, it may be impractical to provide sprinkler protection from the control valve sets in the premises. Sprinkler protection may be provided from the nearest accessible point on the downstream side of the outlet non return valve of the pump via a subsidiary stop valve secured in the open position, together with a water flow detector in accordance with EN 12259-5, to provide visible and audible indication of the operation of the sprinklers. The alarm equipment shall be installed either at the control valves or at a responsibly manned location such as a gatehouse. A 15 mm nominal diameter drain and test valve shall be fitted downstream of the flow alarm to permit a practical test of the alarm system. (UNI EN12845:2020 Chap. 10.3.2)



1 – VALVE
2 – FLOW DETECTOR
3 – DRAIN VALVE

On the each main pump lock a threaded break from 1 ½". is present that is the derivation dedicated to the technical vain sprinkler protection; the kit will be completed with an interception valve 1 ½". and alarm blood flow meter to supply at distance a visual and acoustic indication of the sprinkler functioning, test valve and system discharging from ½".

N.B.: completion by the installer (sprinklers are not included).

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10. FLOWSMETERS ASAMETERS - TYPE FBB

FOLLOW CAREFULLY THE INSTRUCTIONS OF THE MANUFACTURER

Install the gaskets with careful. Use standard gaskets.

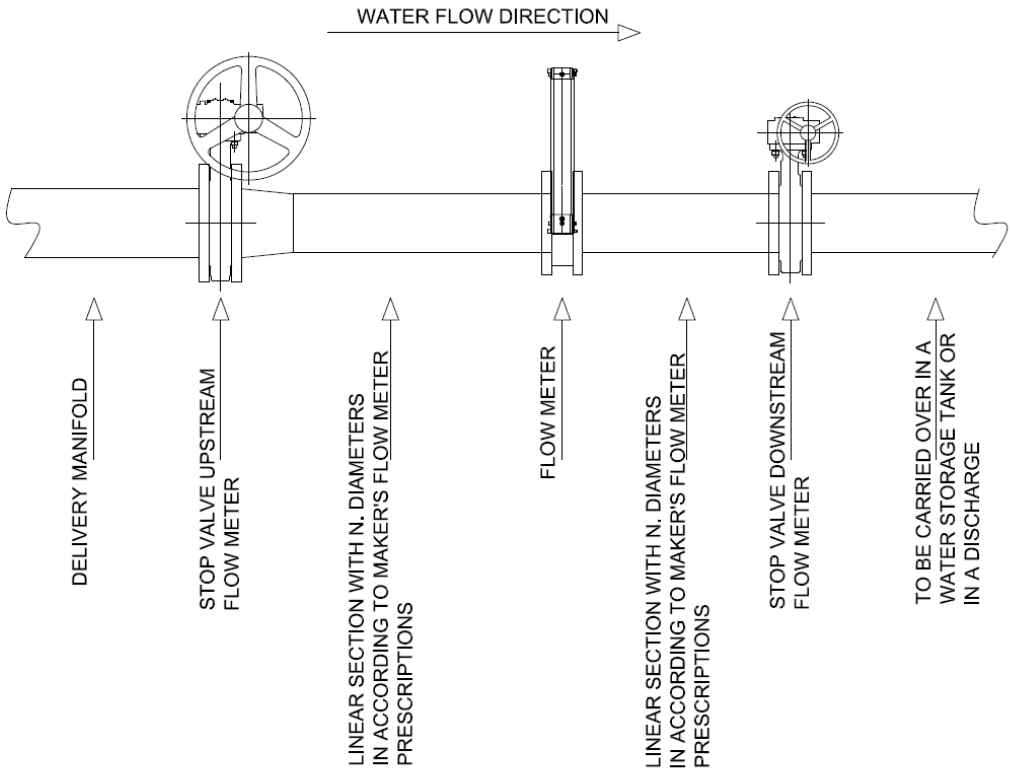
For proper operation of the test circuit to provide for upstream and downstream of the instrument the straight sections of pipe as recommended in the assembly instructions of the manufacturer of the instrument.

Put 2 valves upstream and downstream of the instrument.

CAUTION: The valves that intercept the flow meter (upstream and downstream) should always be closed (except during the short time of use of the instrument).

For proper installation of the flow meter respect the sense of the arrow on the instrument.

It is recommended to connect the pipe downstream of the instrument, after the linear length of pipe and the shut-off valve, inside the storage tank, in any position, or can be connected to the discharge sewer (with loss of m³ of water during the test runs).



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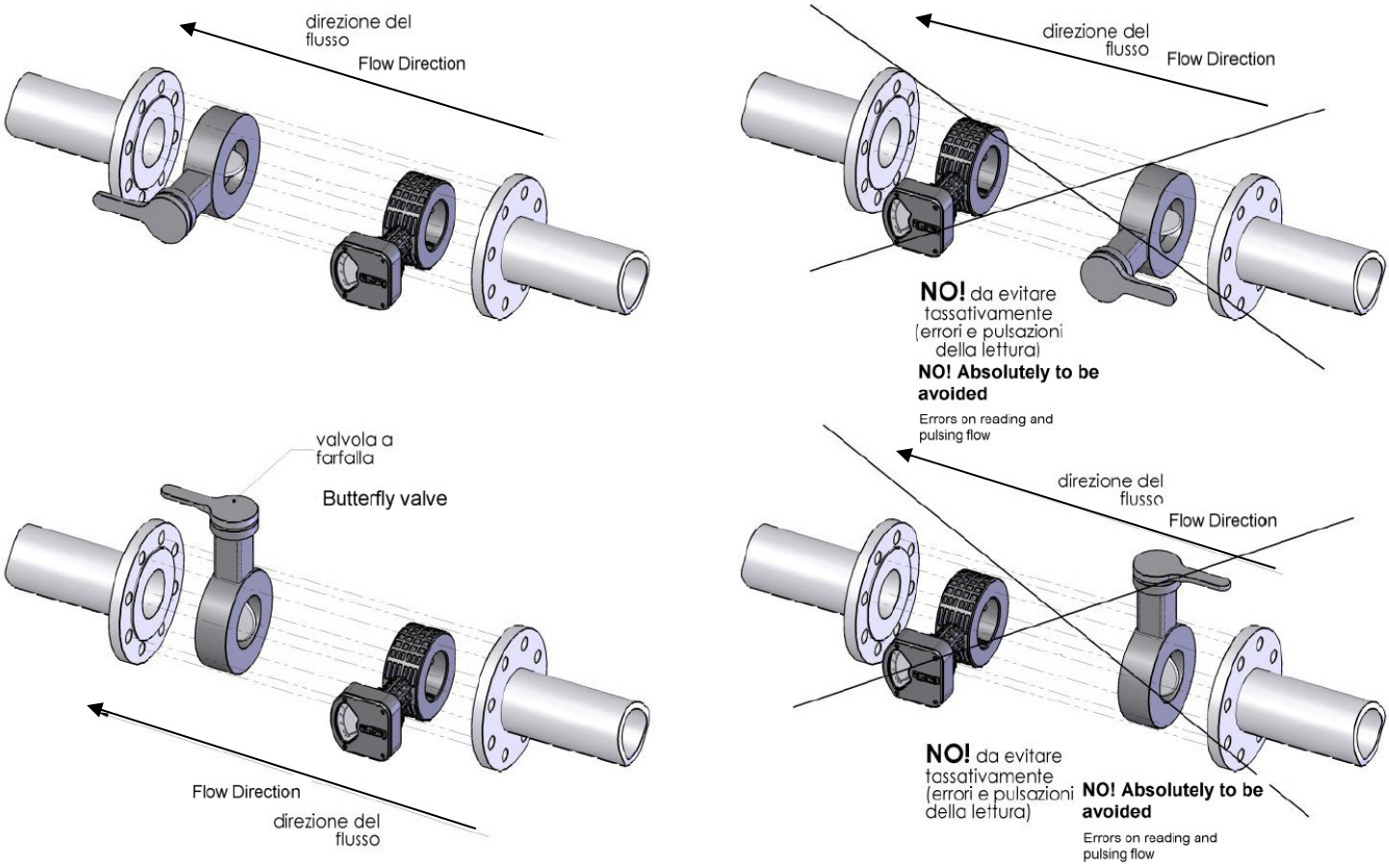
➔ FLOW METERS ASAMETERS - V6 TYPE

FOLLOW CAREFULLY THE INSTRUCTIONS OF THE MANUFACTURER

Put 2 valves upstream and downstream of the instrument.

WARNING: The valves that intercept the flow meter (upstream and downstream) should always be closed (except during the short time of use of the flow meter).
For the installation of the flow meter follow the arrow with the direction of the flow.

Montaggio in presenza di valvola a farfalla (Fig.2) / *Assembly with butterfly valve (Pct. 2)*



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ASSEMBLY OF THE INSTRUMENT

It is not necessary straight pipeline upstream or downstream of the instrument. It is suggested to respect a minimum distance of 1 or 2 DN for the installation of other measuring devices or regulation tools as valves. Please note that sharp reductions DN along the line may determine instability of measurement.

DURING MOUNTING OF THE INSTRUMENT ON PIPING, RESPECT THE DIRECTION OF THE FLOW, INDICATED BY ONE ARROW LOCATED ON THE BODY OF THE INSTRUMENT. THE INLET SIDE IT IS ALWAYS THE ONE THAT ALLOW THE OPENING OF THE FLAP AND IT IS MONODIRECTIONAL.

The position of the FLAP, respecting the sense of flow, is irrelevant for the purposes of the measure, provided pipe is always full.

HOW TO CHANGE THE POSITION OF THE INDICATION BOX (Pct. 3-4):

1. Loosen the screws of the lid 4 (A)
2. Unscrew the grain (B) of the indication group (C) and remove it
3. Expand the 4 clips on the bottom of the housing (D), without exerting too much pressure to avoid breakage, and extract the indication box from the collar of the measuring tube
4. Rotate the measuring tube according to the needs of installation; remind: the inlet side is always the one that allow the opening of the flap and it is monodirectional (2)
5. Insert back the indication box aligning the 4 clips on the bottom of the housing (D) with the centering pins (F) that are located on the collar of the measuring tube (Pct. 4)
6. Screw back the indication group (C), paying attention to align the index with the rest line present on the scale plate (E).

INSTRUMENT START UP

After installing the instrument on pipe, as reported in paragraph 1, the instrument is immediately ready to work as soon as plant start-up occurs.

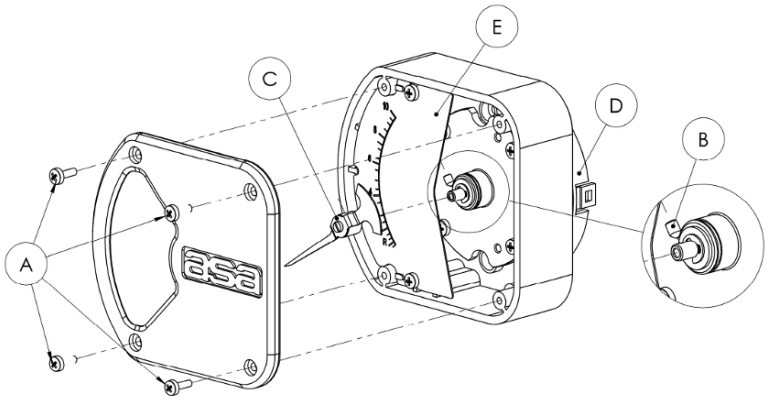


Fig./*Pct.* 3

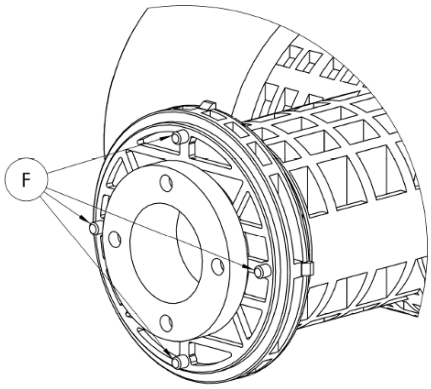
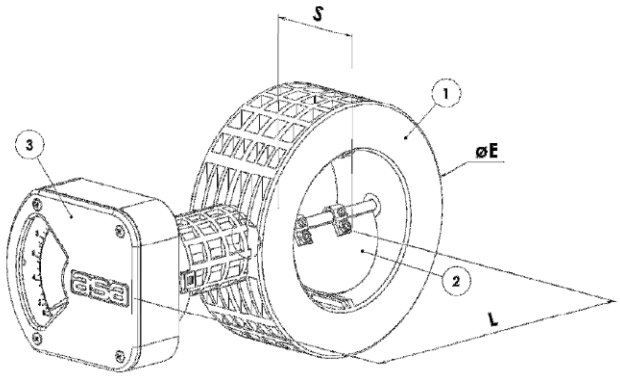
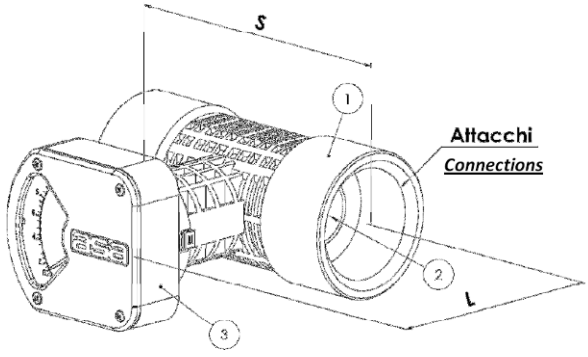


Fig./*Pct.* 4

Versione montaggio tra flange
Wafer execution



Versione TEE filettata
Screwed TEE execution



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➔ FLOW METERS ASAMETERS - Z6 TYPE

FOLLOW CAREFULLY THE INSTRUCTIONS OF THE MANUFACTURER

Put 2 valves upstream and downstream of the instrument.

WARNING: The valves that intercept the flow meter (upstream and downstream) should always be closed (except during the short time of use of the flow meter).
For the installation of the flow meter follow the arrow with the direction of the flow.

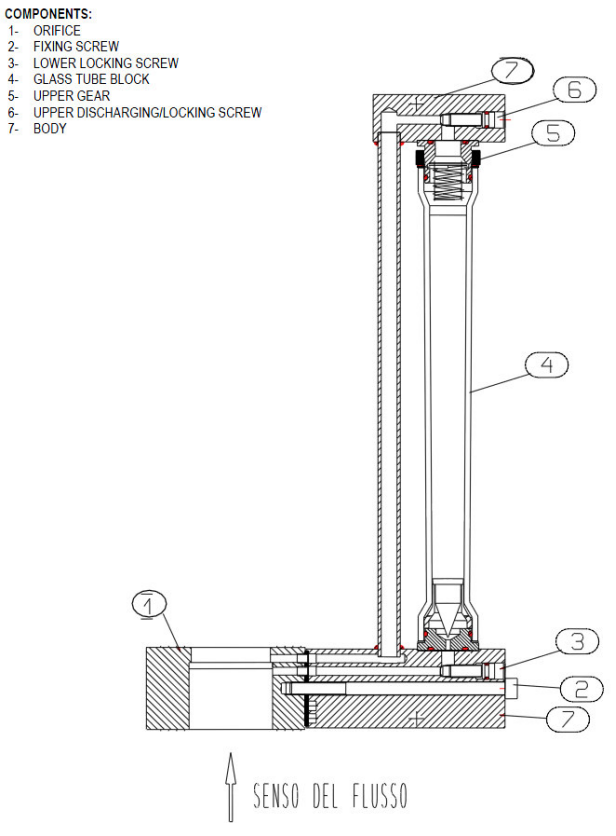
INSTALLATION
PIPING ARRANGEMENTS
For kinetic flowmeter Z6, accuracy of metering is granted by respecting the following instructions:
- Upstream and downstream the device, the pipe internal diameter shall be equal to the internal diameter of ASAMETER.
- The lenghts of the ducts upstream and dowstream the main restriction device must be in accordance with the standards issued by UNI 1567-1569 or equivalents; in many cases 20 DN upstream and 5 DN downstream of straight pipe is enough (*).
- The metering glass tube shall be always vertical.
DURING INSTALLATION OF THE ASAMETER ON THE PIPE, PAY ATTENTION TO THE DIRECTION OF FLOW AS INDICATED BY THE ARROW REPORTED ON THE ORIFICE (1). IN ANY CASE, THE FLUID ENTERS THE ORIFICE FROM THE PICKLY EDGE (RIGHT ANGLE 90°). TO CHANGE THE POSITION OF THE ORIFICE (1), UNSCREW THE FIXING SCREW (2) FROM THE BODY (7) OF THE METER, ROTATE THE ORIFICE IN THE WANTED POSITION AND TIGHTEN THE SCREW (2) AGAIN.* Straight pipe shall never be lower then 5DN downstream and 5DN upstream.

OPERATING
When the Asameter is installed on pipe and liquid flows through the instrument, provide to purge the air that might be present inside the glass measuring tube. This work can be done by loosing the upper discharging/locking screw (6) until air has been completely purged. The presence of air in the higher part of the meter can cause error of reading. Tighten the discharging/locking screw (6) until the screw head is at level with ASAMETER body (7). To grant correct working, also the lower locking screw head (3) shall be at level with the body of the meter.

MAINTENANCE OF THE DEVICE
Generally the measuring orifice (1) does not require maintenance. It is good practise, once a year or when possible, to remove the meter from the pipe for cleaning. Disassemble the orifice (1) from the body (7) by unscrewing fixing screw (2), and clean it paying particular attention to the pressure taps that shall be cleared out.

GLASS TUBE REPLACEMENT
Z6 ASAMETERS has been designed to make easy replacement of glass tube. When cleaning or replacement is necessary, follows the reported instructions:
• Tighten the locking screws (3) and (6) and remove the plexiglas protection (if present) by unscrewing the proper screws.
• Loosen the upper gear (5) anticlockwise until extraction of glass tube block (4) from the meter body (7) becomes possible. Disassemble the glass tube block (4) into its components: glass tube, upper and lower float stops, upper gear + support + O-ring, lower support + O-ring, float.
• Clean/Replace the glass tube. Remember to reassemble components to form the glass tube block (4) again.
• Install the glass tube block (4) again in the ASAMETER body (7).
• Rotate the gear (5) clockwise until the glass tube block is tighten to the meter body (7).

• Loosen the locking screws (3) and (6) until the screw head is at level with the body (7) and assemble the Plexiglas protection again.



FLOW DIRECTION

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11. DANGEROUS ZONE

To avoid exposure of personnel to potentially dangerous situations, is required that all the maintenances are made with all control panels turned off, fire fighting unit and the accessories isolated from the firefighting water pipeline, and carried out by trained personnel.

Please note that compliance with all safety requirements is an obligation of the customer.

	**Before you work on a fire fighting unit:** **- wearing the appropriate safety shoes to prevent slipping and therefore accidental contact with hot or rotating parts of the machine.** **- Wears clothes close to the body in order to avoid entanglement with the rotating parts of the machine.** **-Wearing the appropriate protective gloves to prevent contact with hot parts or hazardous liquids.** **- Wear appropriate eye protection: to avoiding eye injuries caused by unexpected ejection of fluids or parts of the machine.** **- Wear appropriate hearing protection: please note that on machines without the cover you may get a sound power that can create permanent hearing damage after long periods of exposure. Running the exact calculation of the exposure level equivalent staff (all personnel exposed) is a duty of the purchaser.**

The fire fighting unit being composed of one or more electric pumps presents risks related to the electricity.
Despite the machines are equipped with a series of active and passive safety devices (in line with the Machinery Directive) that make it safe during its normal use, remain, during the maintenance, installation and uninstallation some residual risks.

After a risk analysis is extrapolated to the following explanatory chart showing a summary of the dangerous areas of the machine.

Dangerous Zone	*danger existing*	*severity of lesion*	*frequency exposure*	*Chance of occurrence*	*possibility of avoid the damage*	*Protective measures taken*	*Notes*
Area of movement of the firefighting unit	*crush*	*serious*	*low*	*low*	*high*	*Maintain safe distances; Use appropriate tools and methodologies; Information and training of personnel handling by the user and maintenance manual and the appropriate labels*	*pic. 2*
Electrical Control panel open	*electric shock*	*high*	*low*	*low*	*high*	*Shielding with special fixed guards. Information and training of maintenance personnel by the user's manual and labels. Information on the need to perform maintenance operations with all sources of electrical energy disconnected; After maintenance, before restarting the machine, replace any guards removed.*	*pic. 1*

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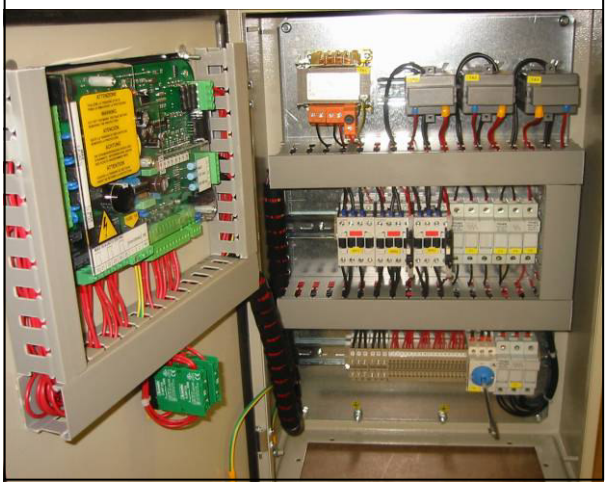
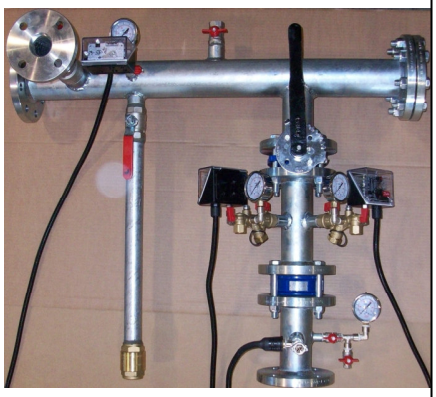
Pic. 1: Electrical control panel open

WITH CONTROL PANEL OPEN.
DANGER OF ELECTRIC SHOCK:
ELECTRIC VOLTAGE



Pic. 2: Heavy loads

AREA OF HANDLING AND
INSTALLATION:
MOVING LOADS



12. DANGERS

DANGER
RISK OF ELECTRIC SHOCK

DANGER

WARNING

GENERAL INFORMATION:

- Before performing any operation on the firefighting unit we recommend the proper working knowledge of all controls and above all **HOW to STOP THE PUMPS**.
- The firefighting unit UNI EN12845:2020 should be used only by authorized personnel.
- Before starting the firefighting unit UNI EN12845:2020, or doing anything to the machine, is required that the authorized person has **read and understood the WARNING danger** of using the same incorrect.
- If in doubt contact the manufacturer for any clarification in terms of operation and/or safety.
- The manufacturer cannot provide all the possible circumstances of risk, cannot be held liable for damages to persons or property resulting from failure of the rules of common sense, norms of security and lack of knowledge of the warnings contained in this manual.

DANGER

PARTS IN MOTION:

- Do not attempt to service with parts of the firefighting unit in motion.
- Do not remove guards by all moving parts, air intakes or to live parts.
- Wear clothes which are snug to the body (with elastic wrists, waist and ankles) in case of use / maintenance of the firefighting unit.
- Remove rings, bracelets, necklaces or anything else that may cause drag.

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DANGER

DANGER
RISK OF ELECTRIC SHOCK

- Do not expose the firefighting unit to weather.
- In case of spray water directly on the unit (activated sprinkler protection of the room) go away in a safe place immediately and remove tension.
- All electrical components must be completely closed and kept well away from water entry (check the seals).
- In case of failure by contacting the sales Fourgroup sas.

DANGER

DANGER ARISING FROM MOTOR STARTUP:

- The firefighting unit should be installed, according to existing norms, only on a flat surface;
- Don't place, even temporarily, objects on the firefighting unit.
- Identify, before starting work, the location of the emergency stop system or any other switch to turn off the machine.
- Be aware of all the operating and emergency procedures provided.
- Carefully read the instruction manual and maintenance of the motor and pump.

13. HANDLING

	**During the shifting of a firefighting unit is essential to pay the utmost attention. All handling operations must be performed by qualified personnel. For the characteristics of weight and bulk of the firefighting units an error during handling of the machine can lead to serious damage to the unit itself and to the surrounding people.**

To minimize the dangers arising from the handling of a firefighting unit is important to follow the requirements below:

- Transportation must be done with the motors off, with the machine locking, electric cables disconnected.
- Firefighting units must be protected from the elements during transport: all parts must be covered.
- Clean the area of possible obstacles to movement and all unnecessary personnel;
- Always use lifting equipment properly sized and controlled by professional organizations; is prohibited apply objects or accessories on the firefighting unit. This can overload the machine and submit to stresses not provided the lifting points.
- Do not subject the firefighting unit and lifting equipment to sudden movements or ondulations that could transmit dynamic stress to the structure;
- Do not lift the unit to heights higher than strictly necessary;
- The transport of control panels, separated from the machine must be carried out with particular attention and care to avoid damage to the equipment contained within the framework and tools on the front panel.

Firefighting units can be handled in different ways depending on the configuration of the machine and equipment available to the installer.

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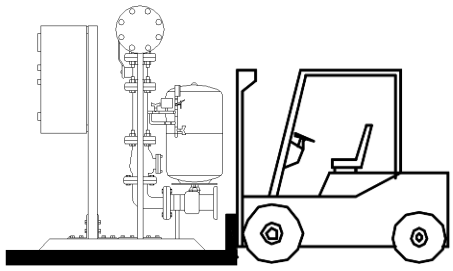
When making the lifting with the aid of a forklift is required enfork the frame laterally from the proper lifting pockets, by protruding the forks from side to side and keeping always the unit horizontally. The firefighting units UNI EN12845:2020 must be handled with care: falls and bumps can cause not visible damage.



If the unit arrives to destination, but for various reasons cannot be installed and put into operation immediately, you must provide to storage.
It must be ensured to maintain intact the packaging of all the components, whether they are assembled whether they are supplied loose; everything must be protected from the weather and from accidental drops or bumps.

14. GENERAL INSTALLATION

The installation of one or more units must be performed in conformity with the plan prepared by qualified engineers to the development of firefighting equipment.
The installation must be performed by authorized companies, with skilled personnel and adequate equipment.
Installations must be performed at workmanlike and installing company, after completion, must issue at the Customer a Declaration of Conformity of installations made to the Rule of Art, the project and the reference standards.
We recommend that you pay particular attention to safety measures related to security personnel and the plant operator.
Install the unit away from the elements and protect from frost in every case.
The room or area in which you installed the firefighting unit is intended to be operated only by persons properly trained and qualified.
Access to the pump room shall be prohibited to persons not specifically authorized and trained. The pump units are started automatically. Affix an appropriate warning sign in the room.
Before operating on the unit, carefully read the warnings in this manual and the instructions contained in booklets further supplied with the machine (pumps, control panels....etc).

Allow sufficient space for access to the unit for maintenance and for the escape of persons in case of danger.

HEATING

Firefighting units have automatic start, so the room in which they are installed must be heated during cold weather to a temperature not less than +15 ° C. The room must be equipped with heating system able to avoid freezing of pipes and be able to maintain favorable conditions of temperature and humidity in all seasons. Within the technical areas should be provided an adequate systems to prevent more than 80% humidity. Maintaining an internal temperature of at least 15 ° C is considered sufficient to limit the presence of an high relative humidity.

FOUNDATIONS AND FIXING TO THE SOIL

The foundation must be dimensioned to avoid transmission of vibration and noise to other parts of the building. When the unit is provided on a base that will always be fixed to the ground.

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	**Attention to the loss of water from the system.**

	**To preserve the proper functioning of the machine and to prevent flooding, connect the recirculation piping to the storage tank.**

15. CHECKS TO START UP

Before starting any start-up procedure is extremely important to perform a visual safety check of the workplace and of the installation of the machine. Any actual or potential hazard must be eliminated before proceeding.
- Locate the position of the buttons for starting and stopping and thus the location of electrical panels.
- Knowing the details of emergency procedures relating to the installation in question.
- Identify the location of fire extinguishers and other protective equipment and emergency and how it works.
- Identify any sources of dangers.
- Ensure that the group is clean, the surrounding area and escape routes are clean and free of obstacles. Check that there are no obstructions in inlet and outlet of vents and of ducts.
- Check to see if staff is working on other equipment in the area and whether this work precludes the operation of the plant.

	**Never start the pump when not in maximum security.**

During all the checks be sure that the motor cannot inadvertently start. Set the operation selector to "0" position.

CONTROLS ON OTHER COMPONENTS

Check the correct positioning and mounting of all components present in the plant.

MAKE SURE THAT THE RESERVE AND WATER PUMPS ARE FULL OF WATER, AND PRIMED. MAKE SURE THAT ALL THE VALVES IN SUCTION PIPE ARE OPEN TO AVOID THE OPERATION OF A DRY PUMPS WITH CONSEQUENTIAL DAMAGES TO SUCH SERIOUS.

Before starting the machine is necessary to check that:

- All staff working in the technical room is formed and educated about the dangers of using a fire fighting unit UNI EN12845:2020.
- The keys of the electrical panels are inserted in their selectors on the control panels and are positioned to "0" position for electric pumps.

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- The supply voltage to electric switchboards is available of all phases.
- The grounding is in perfect working order.
- The electric motors are not blocked (eventually unlock).
- The water storage tank is charged and available for use.

	**The firefighting unit starts even in case of absence of water within the pump bodies, if they are not strictly follow the instructions.**

16. ELECTRIC POWER SUPPLY

DANGER
RISK OF ELECTRIC SHOCK

DANGER

WARNING

ALL OPERATIONS MUST BE PERFORMED BY QUALIFIED ELECTRICIAN

All electrical connections must comply strictly with the regulations in force and be comply with the requirements of the UNI EN 12845:2020.

First power supply line (primary line):

The supply to the pump controller shall be solely for use of the sprinkler pump set and separate from all other connections. Where permitted by the electrical operator, the electrical supply to the pump controller shall be taken from the input side of the main switch on the incoming supply to the room and where this is not permitted, by a connection from the main switch. The fuses in the pump controller shall be of high rupturing capacity, capable of carrying the start current for a period of no less than 20 s.

The main switchboard shall be situated in a fire compartment used for no other purpose than electrical power supplies.

The electrical connections in the main switchboard shall be such that the supply to the pump controller is not isolated when isolating other services.

Second (or multi-) power supply line (secondary line or multi-line):

The second power supply line must be at the service of all remaining electrical loads installed in the technical compartment:

- Pressure maintenance pump (jockey pump)
- Lighting for technical compartment
- Emergency lighting
- Single phase electrical socket
- Bilge pump
- Any accessories and electrical loads of all types.

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At the discretion of the electrician, works management, designer engineer, user and firefighters, you can split the electrical loads in more supply lines.

The electric wires of the primary power must be in single stroke without junctions.

The current for calculating the correct dimension for the cable shall be determined by taking 150 % of the largest possible full load current.

	**CONSULT THE WIRING DIAGRAMS:** **- ELECTRIC PUMP** **- JOCKEY PUMP** **- OTHER ACCESSORIES** **PROVIDED WITHIN EACH CONTROL PANEL**

17. ELECTRIC CONNECTION

DANGER
RISK OF ELECTRIC SHOCK

DANGER

WARNING

<u>ALL OPERATIONS MUST BE PERFORMED BY QUALIFIED ELECTRICIAN</u>

The firefighting protection system provided must be supplied with power according to firefighting regulations in force UNI EN 12845:2020 and / or as required by the client and / or construction supervision and / or designer.

In a typical system, the electrical connections to be made are the following:

- Power connection between the main electric pump control panel and main electric pump.
- Connect the signals of the pressure switch P1 (caller pressure switch), pressure switch P2 (caller pressure switch) and pressure switch P3 (pump running pressure switch) from the delivery of the main pump to the main pump control panel. (use the NO (normally open) contact of the pressure switches: if the system is on pressure, the contact will be open; if the system is without pressure, contact will be closed).
- Connect the alarm signals between the main pump control panel and the alarm signaling control panel (AC/LU13 (SLA1/EN12845) or AC/LU412) installed in manned place manned (4 alarm signals = 8 wires).
- Power connection between the secondary electric pump control panel and secondary electric pump (if present).
- Connect the signals of the pressure switch P1 (caller pressure switch), pressure switch P2 (caller pressure switch) and pressure switch P3 (pump running pressure switch) from the delivery of the secondary pump (if present) to the secondary pump control panel. (use the NO (normally open) contact of the pressure switches: if the system is on pressure, the contact will be open; if the system is without pressure, contact will be closed).
- Connect the alarm signals between the secondary pump control panel and the alarm signaling control panel (AC/LU13 (SLA1/EN12845) or AC/LU412) installed in manned place manned (4 alarm signals = 8 wires).
- Power connection between the jockey pump control panel and jockey pump (if present).
- Connect the signal of the Ppilota pressure switch (control pressure switch) from the delivery of the jockey pump to the jockey pump control panel (if present).

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- Connect, (not mandatory), the alarm signal between jockey pump control panel (if present) and the alarm signaling control panel (AC/LU13 (SLA1/EN12845) or AC/LU412) installed in manned place (1 alarm signal = 2-wire).
- Connect the power supply to the main pump control panel.
- Connect the power supply to the secondary pump control panel(if present).
- Connect the power supply to the jockey pump control panel (if present).

The connections shown are for a typical system. For connections verify the schematics of the control panels (each control panel comes with the documentation inside).

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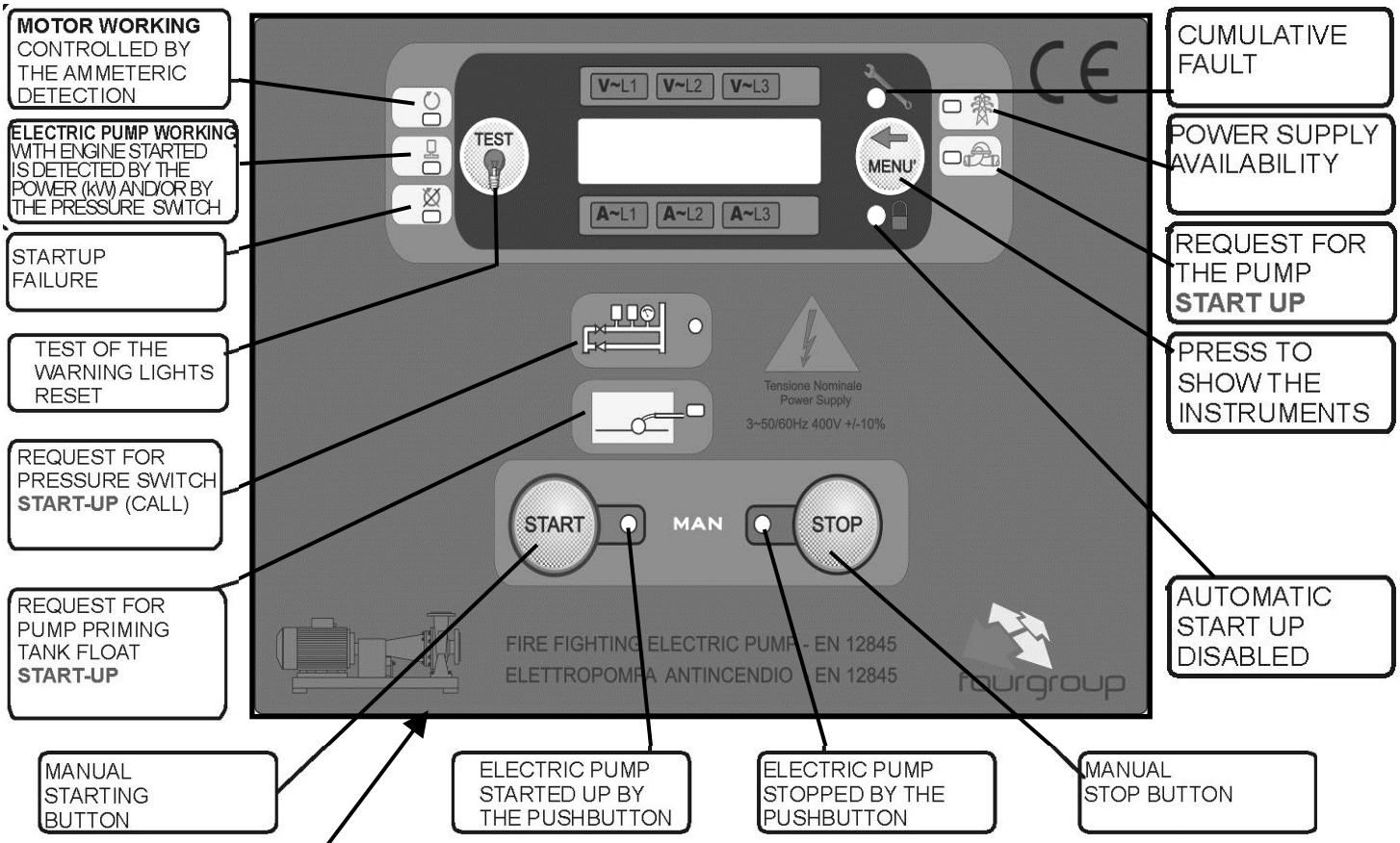
18. GENERAL OPERATION

(CONTROL PANEL TYPE QAD NO1/Hp; QAST NO1/Hp; QAVS NO1/Hp)



"AUTOMATIC"
"0"
"EMERGENCY"
SELECTOR

MAIN SWITCH
WITH DOOR
INTERLOCK
0 (OFF) – 1 (ON)

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DANGER

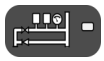
- ELECTRIC PUMP -

- AUTOMATIC MODE :

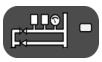
Put the general switch in " 1 " position (ON).
Enabled with the key set to AUTOMATIC (the key is removable in this position),otherwise automatic

mode is disabled, indicated by illumination of the yellow indicator light  .

The electric pump will start up if the pressure inside the firefighting plant will drop below the set value of the pressure switches (because the activation of the firefighting protections: for example hydrant, sprinkler ....).
When the control unit detects closure of one of the startup contacts (caller pressure switches), the electric pump is started up. The control unit checks (without shutting down the pump) for any motor malfunctions during operation. The start up (in automatic mode) occurs when the caller pressure

switch contacts close, indicated by the red indicator light permanently on 

After re-opening of the pressure switches (when firefighting protections are not active), the red

led  starts to flash. The pump can be stopped by push of the STOP button.

The stop of the pump is possible only if pressure of the firefighting plant is restored above the set value of the caller pressure switches by pushing the STOP button.
Is possible to start the pump by pushing the "START" button and stop the pump by pressing the "STOP" button (if the pressure inside the system is above the setting value of the pressure switches

- EMERGENCY MODE :

Put the general switch in " 1 " position (ON).
Set the key selector to "EME" position (Emergency mode).
So the pump will start immediately regardless of whether there is a call from the pressure switches or push buttons (for example, for an electronic board failure). In emergency mode pump starts up with D.O.L. starter.
To turn off the pump set the key switch in position "0".

- "0" POSITION :

Set the key selector to "0" position, excluding the automatic starting of the pump.

	WARNING: In this mode, the buttons "START" and "STOP" remain active. In the case of maintenance, disconnect the power to the panel by placing the general door lock in position "0".

- EMERGENCY STOP :

The pump can be stopped at any time by setting the main switch to "0" (OFF).

	By positioning the door locking switch to 0 (OFF) is totally inhibited the functioning of the firefighting system !

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19. START-UP OPERATION – JOCKEY PUMP

DANGER WARNING

MAIN /S ELECTRIC PUMP - FIREFIGHTING SERVICE

NOTE: The authorized operator must be aware of the contents of the electric pump user's manual before performing the following operations.

NOTE: Before starting up into use, you must preload the expansion tank to the pressure indicated on its label.

ELECTRONIC CONTROL PANEL FOR JOKEY PUMP (if present) :

CONTROL PANEL SIMPLEX-UP

NOTE: Before starting up into use, you must preload the expansion tank to the pressure indicated on the label.

1) Check that the Jokey pump is fully primed.
2) Verify that the suction stop valve is open.
3) Verify that the expansion tank (where fitted) has been installed.
4) Check that the stop valve of the expansion tank (if present) is open.
5) Ensure that any low level signal is properly connected (if present).
6) Check that the line voltage is correct.
7) Close (insert) the main switch of the Jokey pump (position ON).
8) Immediately turn off the automatic mode by pressing "0".
9) Turn on the pump manually by pressing the "MAN" button and let it run for a few seconds to check that the direction of rotation is correct (clockwise of the motor cooling fan).
10) If the rotation is wrong, turn the main switch in "0" position, remove tension from the main switchboard distribution and reverse the input phases to the control panel.

	WARNING: This operation must be executed by qualified personnel who takes the measures of caution and prevention of the danger of the case.

11) Repeat steps 7-8-9 if the direction of rotation is wrong, otherwise proceed to step 12.
12) Enable the automatic mode by pressing the "AUTO" button, keeping half-open its shutoff valve located on the outlet. Check that the system pressure rises-up and then fully open the valve.
13) The pump stops automatically when the pre-set pressure value is reached.
14) If the pump does not stop automatically, verify that there are no releases of water in firefighting ring (such as leaks in the pipe and / or open fire hydrants).
15) When the pump is automatically stopped, continue with step 16.
16) Release the pressure in the system to start the main pump/s.
17) Maintain the Jokey pump turned off by pressing the "0" to continue with the starting of the main pump/s.

	WARNING: This operation must be executed by qualified personnel who takes the measures of caution and prevention of the danger of the case

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20. MAINTENANCE

DANGER
RISK OF ELETTRIC SHOCKS

DANGER

WARNING

All maintenance operations must be performed by experienced and qualified staff or service centers authorized by us, in compliance with safety regulations and UNI EN12845: 2020.

Use only original spare parts.

All operations of periodic inspection according to UNI EN12845:2020 shall be borne by the owner of the system and maintainer of system.

For the proper functioning of the system, follow the user's manual of the endothermic engine and pump to perform the periodic maintenance, AS WELL SPECIFIED IN UNI EN12845:2020.

PROGRAMMING THE MAINTENANCE

The user shall carry out a program of inspection and checks, arrange a test, service and maintenance schedule and keep records including a logbook which shall be held on the premises.
The user shall arrange for the test, service and maintenance schedule to be carried out under contract by the system installer or a similarly qualified company. (UNI EN12845:2020 Chap. 20.1.1).

In addition to the schedule given in this clause any procedures recommended by component suppliers shall be carried out. (UNI EN12845:2020 Chap. 20.3.1.1).

Perform, as required by UNI EN12845:2020 Chapter 20:

- Weekly routine (UNI EN12845:2020 Chap. 20.2.2)

- Monthly routine (UNI EN12845:2020 Chap. 20.2.3)

- Quarterly routine (UNI EN12845:2020 Chap. 20.3.2)

- Half-yearly routine (UNI EN12845:2020 Chap. 20.3.3)

- Yearly routine (UNI EN12845:2020 Chap. 20.3.4)

- 3 Yearly routine (UNI EN12845:2020 Chap. 20.3.5)

- 10 yearly routine (UNI EN12845:2020 Cap. 20.3.6)

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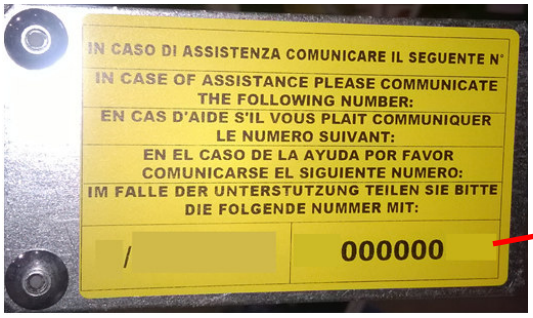
21. TECHNICAL SERVICE

For the requests for technical information at our sales service and technical service always specify the exact fire fighting-system's machine number.

LABEL WITH THE NUMBER OF MACHINE OF FIREFIGHTING SYSTEM (ON THE SIDE TO THE ELECTRIC CONTROL PANEL



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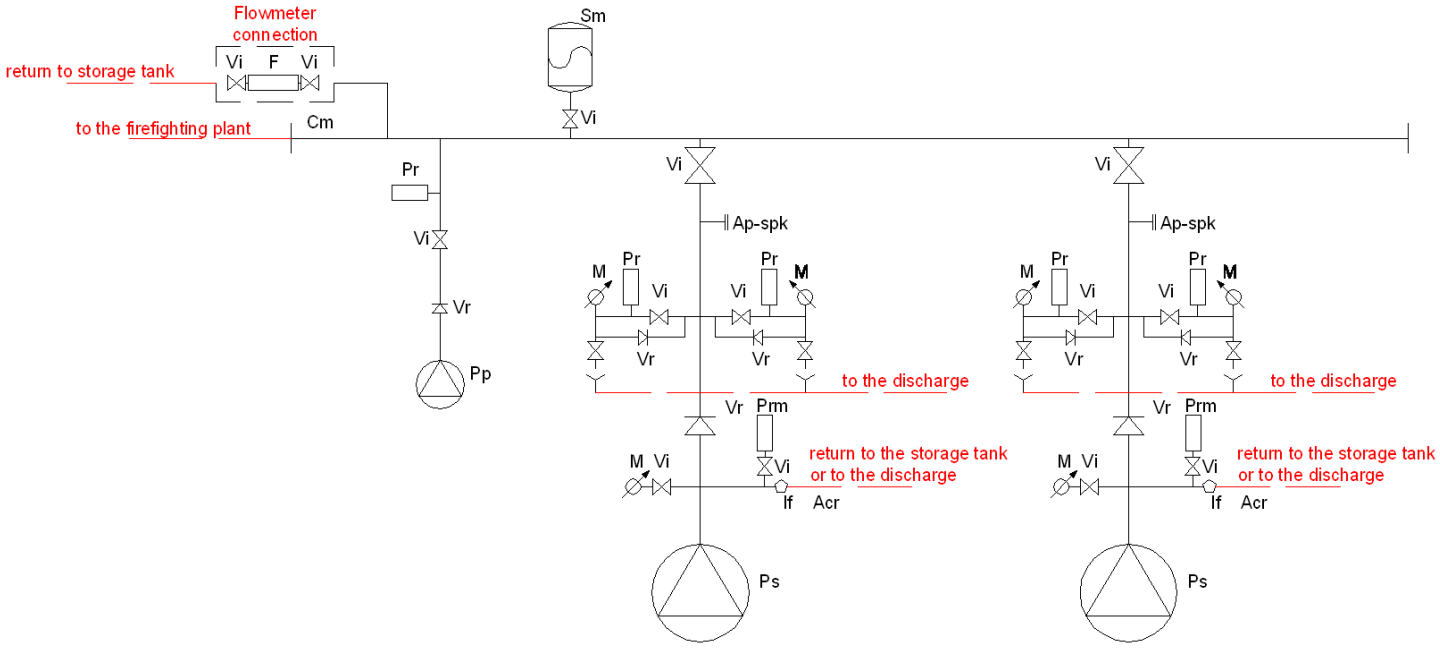
22. HYDRAULIC DIAGRAM

HYDRAULIC DIAGRAM FIRE FIGHTING SYSTEM UNI EN12845:2020 WITH 2 SERVICE PUMPS AND 1 SUBMERSIBLE JOCKEY PUMP:



Legend	
Acr	Connection for the recirculation circuit
M	Manometer
Pr	Pressure switch
Ps	Main pump (submersible pump with cooling jacket)
Pp	Jockey pump (submersible pump with cooling jacket)
Vi	Interception valve
Vr	Non-return valve
Ap-spk	Connection for pump compartment sprinkler protection
F	Flowmeter connection
Sm	Membrane pressure tank
Prm	Pump running pressure switch
Cm	Main collector
If	Visual flow indicator

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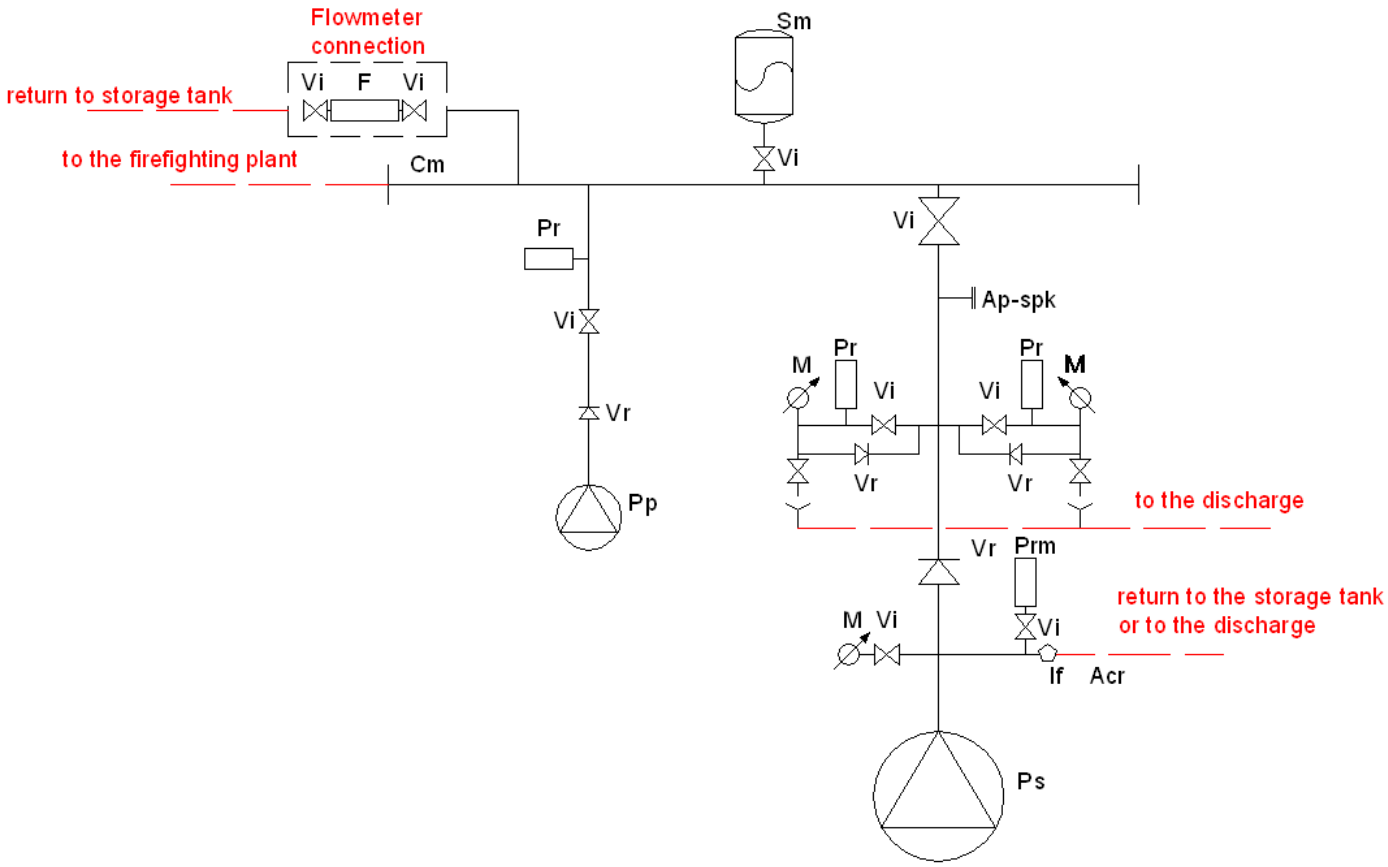
HYDRAULIC DIAGRAM FIRE FIGHTING SYSTEM UNI EN12845:2020 WITH 1 SERVICE PUMP AND 1 SUBMERSIBLE JOCKEY PUMP:



Legend	
Acr	Connection for the recirculation circuit
M	Manometer
Pr	Pressure switch
Ps	Main pump (submersible pump with cooling jacket)
Pp	Jockey pump (submersible pump with cooling jacket)
Vi	Interception valve
Vr	Non-return valve
Ap-spk	Connection for pump compartment sprinkler protection
F	Flowmeter connection
Sm	Membrane pressure tank
Prm	Pump running pressure switch
Cm	Main collector
If	Visual flow indicator

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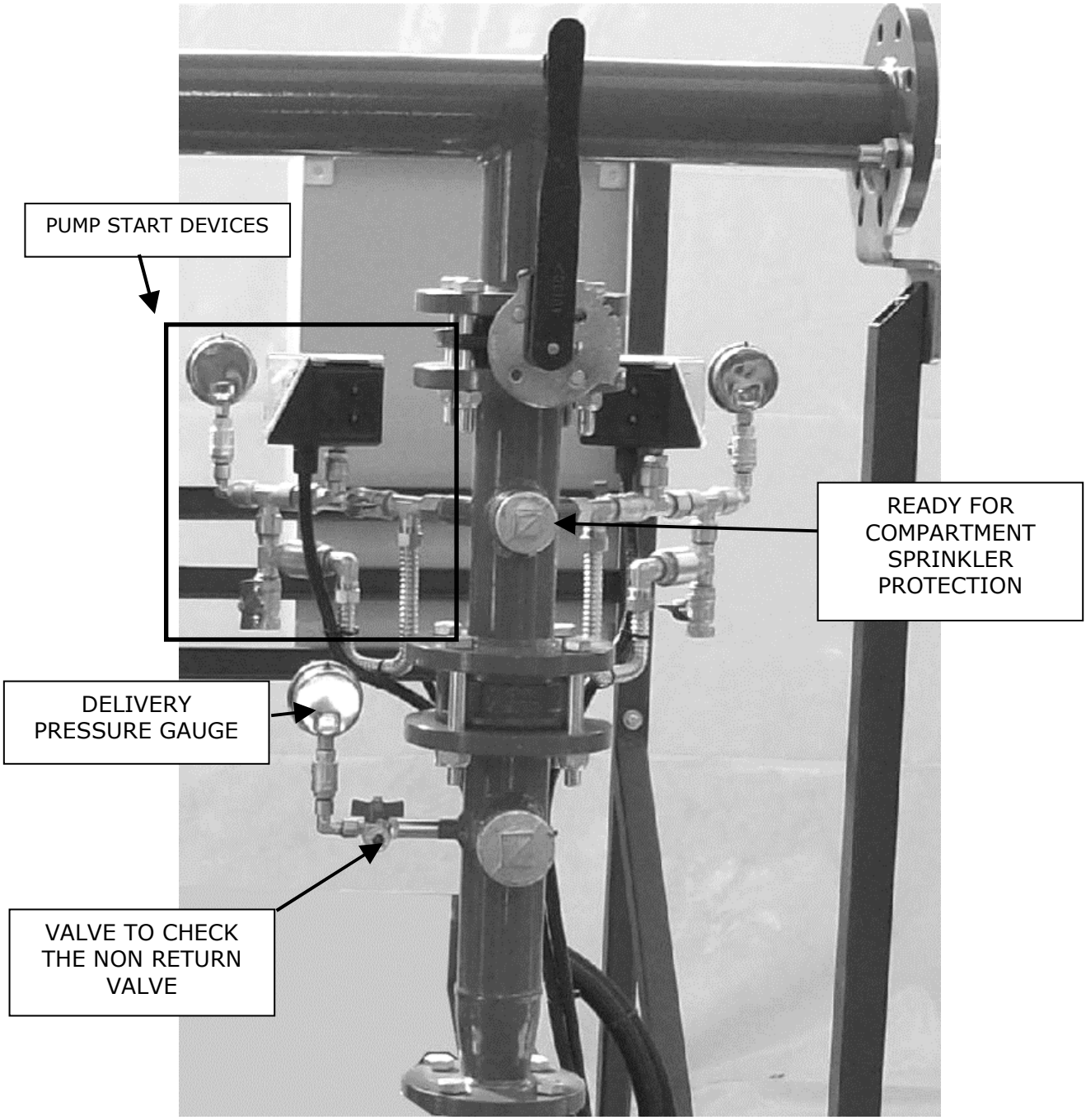
23. INSTALLATION DESCRIPTION

DESCRIPTION OF THE COMPONENTS OF A EXAMPLE SYSTEM:



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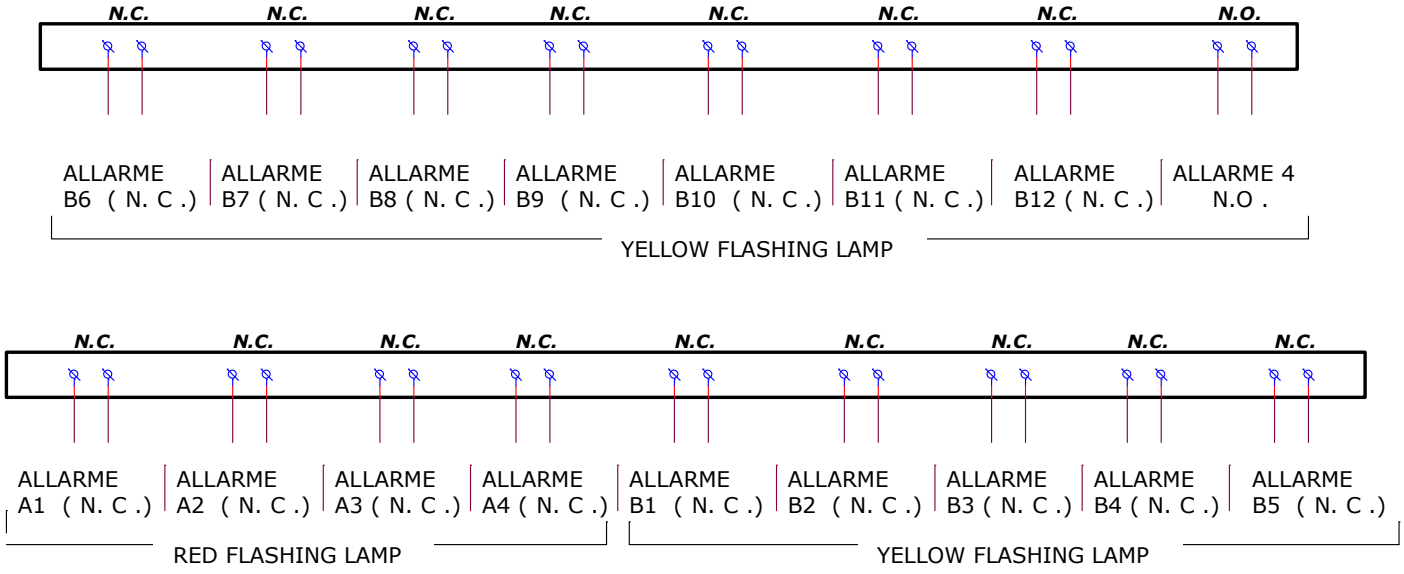
24. ALARM CONTROL PANEL MOD. AC/LU412

This equipment allows signaling for remote alarm of more pumps at the same time, according to UNI EN 12845:2020.

Electronic control panel for alarm signaling;
- Input voltage 1 ~ 50/60Hz 230V ±10%;
- Transformer 230 V/24 V for auxiliary circuit;
- No.4 very low voltage input from free NC contact for alarm fire "level A" (at the opening of the NC contact the red flashing light and the beacon activate);
- No.12 very low voltage input from free NC contact for alarm breakdown "level B" (when opening the NC contact the yellow flashing light and the beacon activate);
- N.1 very low voltage input from free NO contact For alarm breakdown "Level B" (when closing the NO contact the yellow flashing light and the beacon activate);

CONNECTIONS:



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25. GENERAL CONDITIONS OF SALE (M.COM.1.1 rev.1 del 26/07/2012)

GENERAL CONDITIONS OF SALE

All sales entered into by FOURGROUP sas (the Vendor) are to be governed exclusively by the following General Conditions of Sale.
Any clause or condition drawn up by the Buyer shall become null and void if found to be in conflict with the following conditions.

1. Quotes, orders and order confirmation
1.1. Estimates issued by FOURGROUP sas, including the description, technical features and prices of the goods shall not in any case be considered as a binding sales agreement, but rather a quote. The conditions set forth in said quote shall lose all validity and effect thirty days from the time they are transmitted to the Customer, unless FOURGROUP sas receives an Order from the Customer in the meantime.
1.2. The Buyer's Order must include indication of the quantity and name of the products required. Unwritten orders (required by phone or verbally) have to be confirmed with a written reply by the buyer; otherwise Fourgroup doesn't take charge of any kind of mistakes about orders proceeding.
1.3. The mere sending of the Order by the Buyer shall imply that the Buyer has read and is familiar with all these General Conditions of Sale, which shall consequently be fully accepted unconditionally and without restriction by the Parties.
1.4. Buyer's Orders only become binding for the FOURGROUP sas after the latter has sent an Order Confirmation to the Buyer. The Buyer will totally accept these General Condition of Sales, products quantity and prices, once two days have elapsed from the receiving of order confirmation even if the buyer doesn't send the same order confirmation stamped and countersigned to FOURGROUP sas
1.5. Information provided in catalogues, schedules and price-lists is not binding for FOURGROUP sas, which reserves the right to make any modification whatever to its products and to prices thereof in view of which, the FOURGROUP sas is to be considered bound only by such details as appear in the relative Order Confirmation.
1.6. FOURGROUP sas's catalogues have been drawn up with the utmost attention in order to ensure the accuracy of information, however, FOURGROUP sas declines responsibility for any errors or omissions contained in the same, as the Parties are only bound by the contents of Orders, Order Confirmation and these General Conditions
of Sale.

2. Conclusion of the contract
2.1. The contract of sale shall only be considered as concluded with FOURGROUP sas's explicit acceptance thereof by means of the Order Confirmation issued by FOURGROUP sas.

3. Prices
3.1. The contract prices are those set forth in the Order Confirmation, and are to be considered as being for merchandise made ready by FOURGROUP sas "ex-works" (EXW), according to Incoterms (International Commerce Terms).
3.2. Any amendment to the contract requested by the Buyer after its conclusion shall be null and void unless accepted in writing by FOURGROUP sas, specifying new terms of delivery, prices and terms of payment where applicable.

4. Delivery dates
4.1. The terms of delivery stated on the Order Confirmation are indicative, without prejudice to FOURGROUP sas's undertaking to observe the same as far as possible.
4.2. In any event, given the indicative nature of the terms of delivery, FOURGROUP sas shall in no circumstances be held responsible for any direct or indirect damage to the Buyer on account of late delivery, unless shipment date has been guaranteed in a written way by Fourgroup sas accepting an agreement with dayly penalty clauses in case of delay.
4.3. FOURGROUP sas is entitled to postpone the delivery deadline or suspend the delivery of the contractual material, at its unchallengeable discretion:
a) should the Buyer fail to observe the conditions of payment established or be late in fulfiling its contractual obligations (such as, by way of a non-limiting example, the sending of advances, granting of guarantees, issue and presentation of credit instruments and other financial fulfilments) including those relating to previous relations with FOURGROUP sas;
b) force majeure and like instances, such as, by way of a non-limiting example strikes, lock-outs or abstention from labour, epidemic, war, requisition, fire, flood, processing incidents and stoppages and/or delays in transportation, blackout or inadequacy of power supplies and any other event that cannot be attributed to FOURGROUP sas or its suppliers;
c) failure on the part of the Buyer to provide FOURGROUP sas, in good time, with any
information it has undertaken to provide and necessary for the supply and/or materials
to be delivered.
d) when amendments are made to the Order, even with FOURGROUP sas's acceptance;
e) in the event of difficulties in procurement of raw materials.
In cases in which suspension of supplies or extension in delivery deadlines are due to causes that can be referred in any way to the Buyer (such as, by way of a non limiting example, those cases set forth in the previous paragraph under points a, c and d), FOURGROUP sas shall be entitled to claim compensation from the Buyer for the damage suffered.
4.4 Delayed delivery shall not in any case entitle the Buyer to claim for compensation for damage.

5. Suspended or cancelled orders
5.1. In the event of the Buyer's suspending or cancelling an order, FOURGROUP sas reserves the right to invoice the Buyer in respect of:

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a) the cost, calculated pro-rata, of materials utilized and of work accomplished in filling the order thus far. The merchandise in this instance remaining at the Buyer's disposal;

b) increased expenditure ensuing to FOURGROUP sas from the Buyer's failure to settle, in addition to 20% of the difference between the order sum-total and the amount previously arrived at by the application of point a).

6. Deliveries
6.1. Delivery is usually understood as ex-works (EXW) at FOURGROUP sas's premise.
6.2. Specifically, delivery may be said to have taken place, to all intents and purposes, with the sending of notice (which may simply take the form of an invoice) either to the effect that merchandise is available for collection by the Buyer, or to the effect that it has been handed over to the freight company.
6.3. Once notice has been received that the goods are ready, the Buyer must swiftly indicate the name of the freight company, when appointed by the same, which will collect the goods. The Buyer must also arrange insurance cover for transportation.
6.4. In case of the late collection of merchandise made ready by FOURGROUP sas for any reason whatsoever not attributable to lack of goodwill on the part of FOURGROUP sas, the goods shall be considered delivered starting from the communication that the goods were ready for collection, with the following consequences:
a) FOURGROUP sas shall be entitled to issue the relative invoice and claim fulfilment of the terms of payment established;
b) FOURGROUP sas may package, transport or store the material at the Buyer's expense, without prejudice to its right to claim for any damage suffered, including the costs for warehousing, keeping and storage of the goods.

7. Payment
7.1. Payments must be remitted to FOURGROUP sas's place of business, and made in accordance with such conditions as are agreed; any remittance made at location or in manner differing therefrom, may not be deemed valid and shall consequently not have a redeeming effect for the Buyer
7.2 In the event of late payment at the agreed deadlines, FOURGROUP sas shall be entitled to charge penalty interest pursuant to Legislative Decree no. 231 of 9th October 2002.
7.3. Any claims or disputes give no right to the Buyer to suspend or delay the payment of invoices.
7.4. The issue of bills of exchange, IOUs, drafts, cheques or any other form of payment or guarantee shall not cause any amendment to the contract or any of the contract clauses (specifically, it shall not change the place of jurisdiction in the case of a dispute) and shall be exclusively considered as aimed at facilitating the definition of the relationship, without having any novation effect.
7.5. Advance payment to FOURGROUP sas shall always be non-interest bearing.

8. Freight forwarding
8.1. All transactions regarding transport, insurance, customs and excise, handling, and delivery are at the care, expense and risk of the Buyer, whose responsibility it is both to check the merchandise upon arrival and to make any claim against the freight company by direct approach, even where merchandise has been dispatched
carriage-paid.
8.2. In those cases where Fourgroup's transport facilities are utilized for shipping merchandise, the latter is to be dispatched, ex-works at best, with the Buyer duly assuming total responsibility thereof.

9. Claims
9.1. Any claim or contestation on the part of the Buyer with regard to merchandise supplied, must be forwarded in writing to FOURGROUP sas within 8 working days of the date of delivery of the goods and sent to FOURGROUP sas
9.2. In the event of claims for tampering with or shortage of goods, the Buyer shall promptly notify the freight company in writing at the time the goods are received.

10. Warranty
10.1. FOURGROUP sas guarantees the good operation of the standard FOURGROUP sas products for 12 months from the date of their dispatch. This warranty period could be extended and become 18 months if the goods have stand in our retailer's warehouses.
10.2. The warranty is limited to repair or replacement of parts at FOURGROUP sas's unchallengeable discretion, forwarded carriage-paid to an address specified FOURGROUP sas, which show recognizable defects due to defective materials or manufacturing. The parts replaced remain property of FOURGROUP sas.
10.3. The warranty does not cover parts that are subject to natural wear or deterioration (such as, by way of a non-limiting example, seal rings, fuse, filters, warning light).
10.4. No other compensation of any kind is envisaged by the warranty, neither can there be any question of claims for damages of any kind, direct or indirect, (including by third parties), even in respect of temporarily suspended use of the merchandise purchased. Examination of such defects and the causes thereof is to be carried out at one of FOURGROUP sas's factories, by FOURGROUP sas.
10.5 Expenses relating to operations (such as, for example, labour, dismantling, reassembly, transport, board and lodgings) by FOURGROUP sas's personnel to outside locations for the purpose, are chargeable to the Buyer, even in case the right to repairs under warranty has been acknowledged. FOURGROUP sas will be chargeable only for the costs of replaced parts and the time needed to replace them.
10.6. The warranty ceases to be effective for products stored, installed utilized or maintained in a negligent or improper manner, i.e. not in accordance to FOURGROUP sas's instructions, or modified and/or repaired in any way whatsoever, or entirely or partially disassembled
10.7. The warranty also excludes damages and/or defects and/or abnormalities deriving from external components (such as, by way of a non-limiting example lightnings, atmospheric discharge etc.).
10.8. The warranty mentioned in article 10 replaces and excludes any other form of warranty, even legal.

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10.9. The Buyer's entitlement to the warranty mentioned in this article shall be null and void in the case of non-performance of even just one of the contractual obligations assumed, specifically as regards the conditions of payment.
10.10. Any repairs under warranty and/or not under warranty are to be required in writing by the Buyer to Fourgroup sas, writing the serial number of the product, defect claimed, mentioning purchasing document.
10.11. For replaced or repaired parts and for these alone, the warranty period recommences and void the same day of the expiry date of the warranty of the product or of electrical equipment.

11. Liability
11.1. Should FOURGROUP sas be liable for faulty products, the compensation shall not in any case exceed the purchase price of the same faulty products.
11.2. FOURGROUP sas shall not in any case be liable for indirect damage such as, for example, loss of clientele, turnover, production, profit, image or any damage to the Buyer for any action taken against it by third parties.
11.3. FOURGROUP sas shall not in any case be liable when product defects are due, by way of a non-limiting example, to:
a) improper, incorrect or excessive use;
b) improper, incorrect or inadequate maintenance
c) product use that is unusual or contrary to FOURGROUP sas's warnings or, in any case, different to its intended use;
d) use of product with non-original components;
e) improper conservation

12. Applicable law, jurisdiction and place of jurisdiction
12.1. Any dispute concerning the stipulation, validity, interpretation, execution and termination of this agreement shall be governed by Italian Law and the court of Padova shall have sole jurisdiction, with the exclusive jurisdiction of the Italian judge, with the explicit exclusion of any other court.

13. Proprietorship of goods. Indemnity
13.1. The property of the goods forming the subject of this sale is of FOURGROUP sas and shall be transferred to the Buyer only upon full payment of the agreed price by the Buyer pursuant to articles 1523 f. of the Italian Civil Code.
13.2. Non-payment within the established terms of even just one instalment amounting to over one eighth of the sale price or non-payment of two instalments regardless of the sum of the same, according to the agreed terms, shall automatically invalidate the Buyers' acceleration clause, with FOURGROUP sas consequently being entitled to full and immediate payment, in a single settlement of the full residual credit.
13.3. Furthermore, when preferred by FOURGROUP sas, it shall be entitled to terminate the agreement and consequently obtain immediate return of the material delivered, withhold as indemnity, all the installments paid and demand payment of the instalments expired and 3/5 (three fifths) of those yet to expire, without prejudice to
compensation for further damage.

14. Form of the agreement
14.1. This agreement represents the only negotiation instrument governing relations between the Parties.
14.2. Any agreements to derogate, amend and/or supplement these General Conditions of Sale shall be stipulated and proven in writing.
14.3. The Buyer hereby agrees to have received and carefully examined the technical documentation provided by FOURGROUP sas, drawn up in Italian and English, regarding the material acquired.

15. Invalid clauses
15.1. The Parties hereby explicitly agree that the invalidity of one or more provisions of this agreement shall not affect the validity of the agreement as a whole.

The Buyer

Pursuant to article 1341, subsection 2 of the Italian Civil Code, the Parties hereby declare to have negotiated, carefully read and consequently to unconditionally approve the following clauses of these General Conditions of Sale:

1. exclusion of FOURGROUP sas's responsibility in the preparation of catalogues;
2. conclusion of the agreement;
3. exoneration from responsibility for late delivery; FOURGROUP sas's right to suspend delivery; Buyer's renunciation of termination of contract and damage compensation for delay in performance by FOURGROUP sas;
4. solution for suspension or cancellation of orders;
5. renunciation to suspend or delay payment; penalty clause;
6. term for complaints and expiry;
7. warranty: discipline and limitations;
8. applicable law, jurisdiction, and place of jurisdiction;
9. proprietorship and indemnity;

The Buyer

Please note that the above mentioned General Conditions of Sale can be consulted on and downloaded from our website www.fourgroup.it

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