

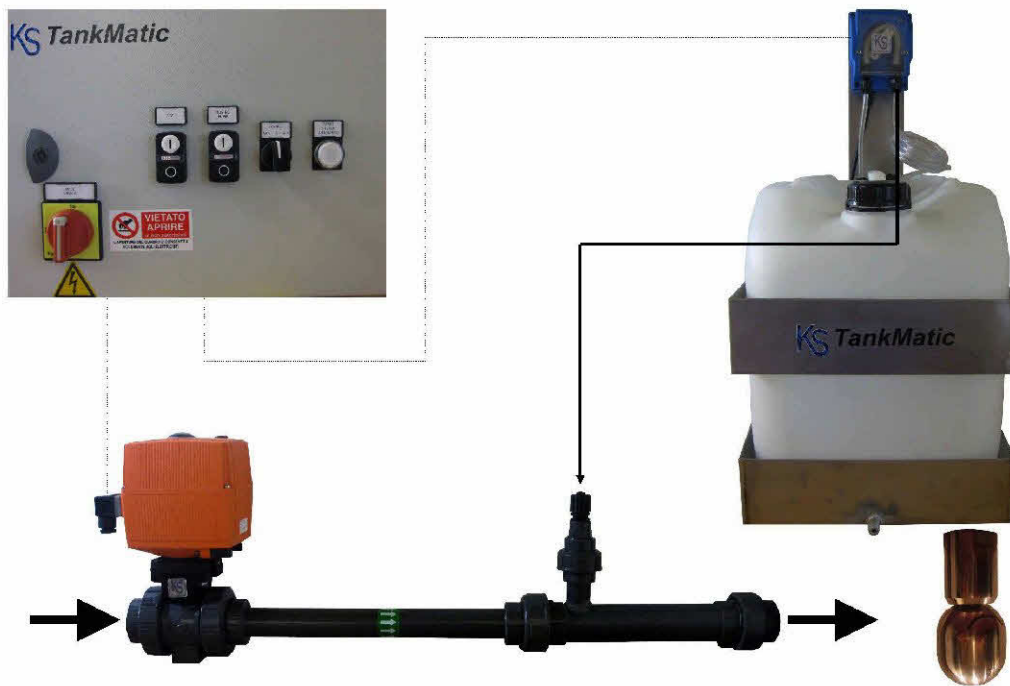


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DATA – Date: 1 – 03- 10	DOCUMENT N° - Doc. N° OI-02
Pag-Sh 1 di-of 17	Rev.
Updated in : 1 – 03- 10	0

Tank Matic Automatic Tank Cleaning System



Operating Instructions



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Study instruction manuals and observe the warnings before installation, operation, service and maintenance.

Not following the instructions can result in serious accidents with fatal injuries.

In order to make the information clear only foreseeable conditions have been considered. No warnings are given, therefore, for situations arising from unintended usage of the machine and its tools.



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1. Scope

These operating instructions are valid for the Tank Matic automatic tank cleaning system.

The Tank Matic system is designed for cleaning of sludge and sewage tank.



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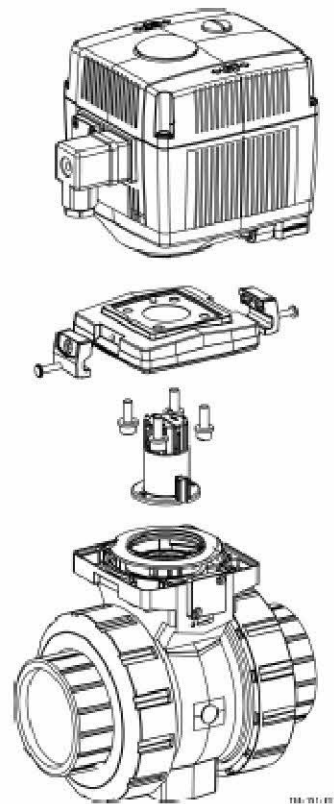
2. Operating

2.1 Check List before Start up

Before start up:

Electro actuated valve 220V

1. Ensure that the valve is assembled and connected correctly.





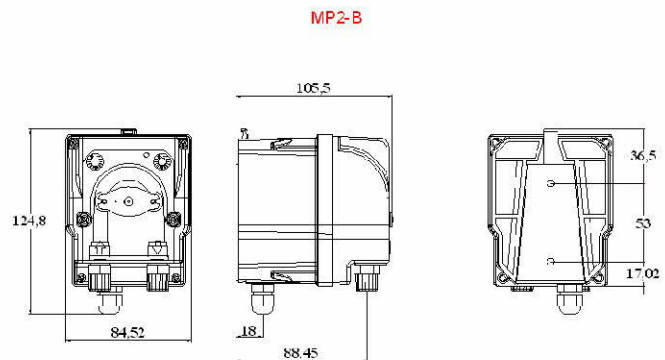
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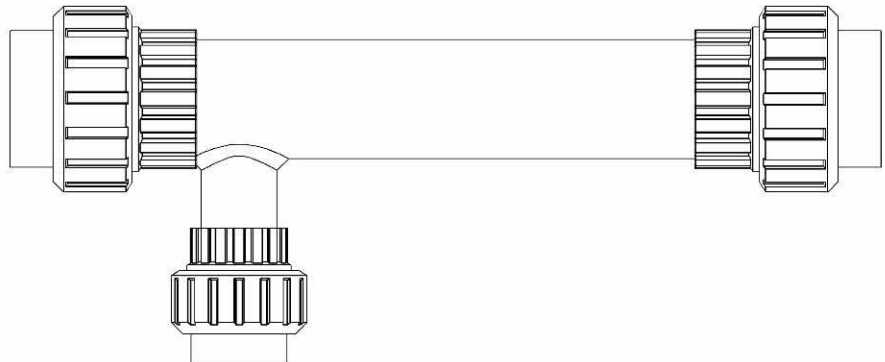
2. Operating instructions

Tank Matic Operating instructions

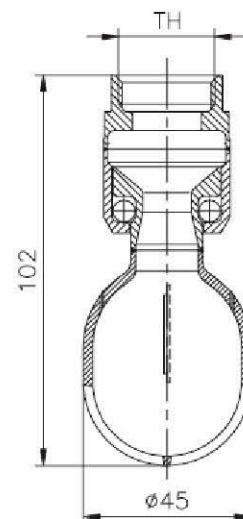
2. Make sure that the dosing pump is electrically connected to the control unit
Make sure the dosing feeding tubing are correctly connected to the soap tank and to the ejector.



3. Make sure that the ejector is connected to the dosing tubing



4. Make sure that the spray head jet is connected in the tank

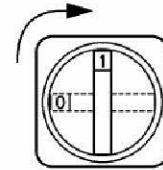




2.2 Start up

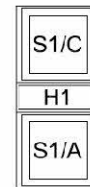
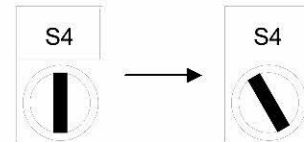
Starter

1. Turn the red main switch on the control unit to the '1' position.



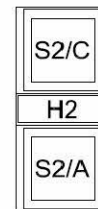
2.2.1 Local start-up (Manual mode)

1. Check that the S4 switch is on 'MAN' position.
2. Push the ELV1 valve switch from the '0' position to the 'start' S1/A position. When the switch is released, it will remain in 'S1/A' position. The Valve open and light lamp.



Now water is passing through.

3. Push the dosing pump switch from the '0' position to the 'start' S2/A position. When the switch is released, it will remain in 'S1/A' position. The dosing pump start supplying sap to the ejector and light lamp.



NOTE 1: The time that button must keep pushed depends on the tank volume and soap specification. Check it directly at the moment of start-up.

NOTE 2: After soap is given it's suggested to stop the water for some time in order to give opportunity to the soap to act on the surface of the tank.

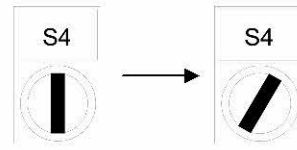


2. Operating instructions

Tank Matic Operating instructions

2.2.2 Local start-up (Automatic mode)

1. Turn the control switch clockwise from the '0' position to the 'AUTO' position.



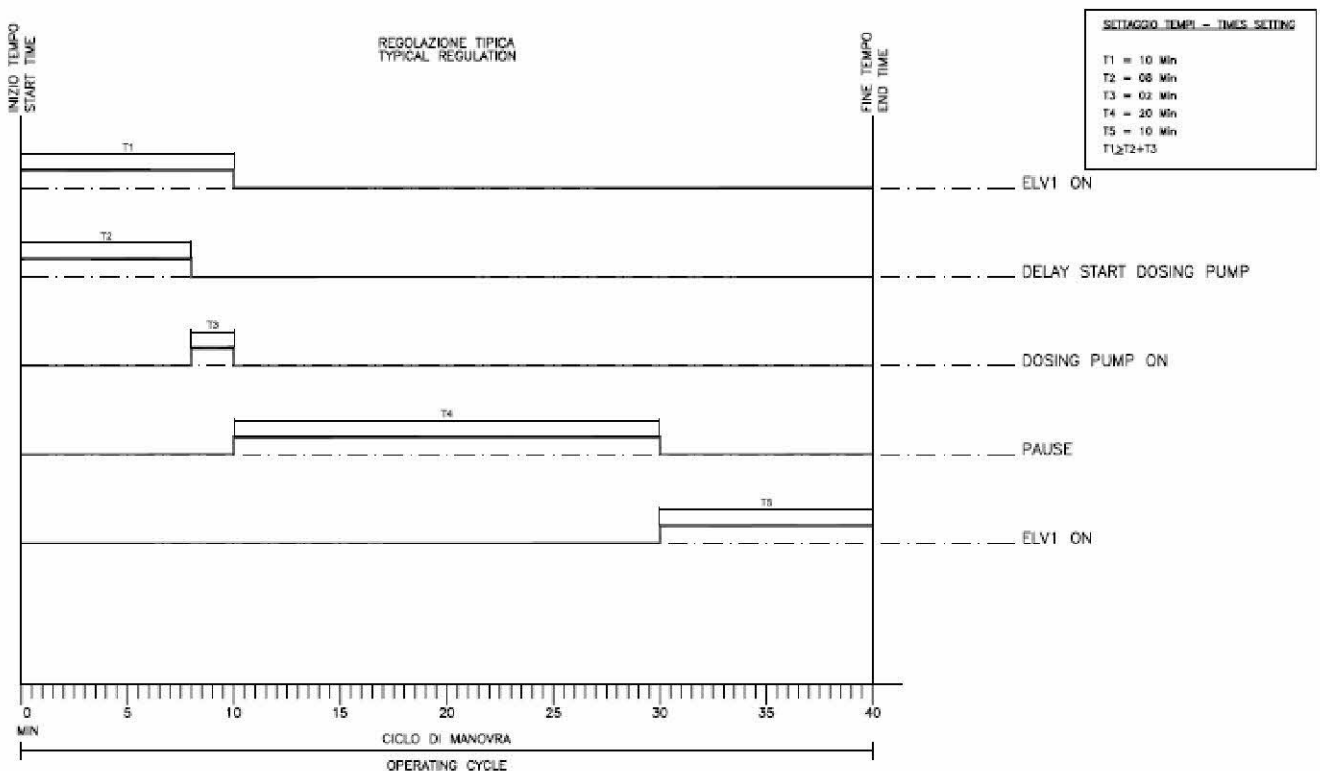
2. Push the S3 button and system will start automatically, following the cleaning procedure programmed in the PLC.



In this way the PLC (Programmable Logic controller) will start automatically in order:

- Electro Actuated valve ELV1 open– standard set 10 min.
- Dosing Pump P1 ON– Standard set 2 min (delay on start 8 min.)
- ELV1 and P1 Stop – standard set 20 min.
- ELV1 open – standard set 10 min.

Following the internal preset program (see the “Diagram of PLC program)





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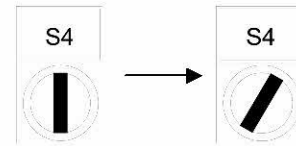
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2. Operating instructions

Tank Matic Operating instructions

2.2.3 Remote start-up (Automatic mode)

1. Turn the control switch clockwise from the '0' position to the 'AUTO' position.
Start from remote position.



In this way the PLC (Programmable Logic controller) will start automatically in order:

- Electro Actuated valve ELV1 open– standard set 10 min.
- Dosing Pump P1 ON– Standard set 2 min (delay on start 8 min.)
- ELV1 and P1 Stop – standard set 20 min.
- ELV1 open – standard set 10 min.

Following the internal program installed (see the “Diagram of PLC program)



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2. Operating instructions

Tank Matic Operating instructions

2.3 Checks During Operation

Check the system for correct operation. This is especially important the first few times the system is run, after some time the system is not running and after installation or after any dismantling and assembly has been carried out.

Check all connections for leakage.

Check the level in the soap tank at regular intervals.



2.4 Stop

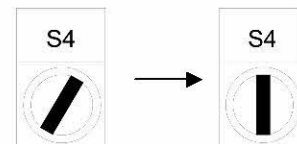
To stop the system:

- **Local operation Manual mode only**

1. Switch on S1/C to close the Electro Actuated valve ELV1
2. Switch on S2/C to stop the dosing pump P1

- **Local operation Automatic operation only**

1. Stop the automatic operation by turning the control switch to “0” position.

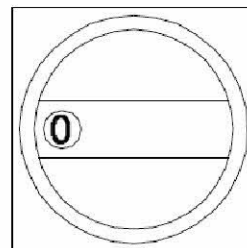


- **Remote automatic operation only**

1. Stop the automatic operation by turning the REMOTE control switch to “0” position.

Valid For all the operations

1. Turn the main switch to the '0' position.
2. Make sure that the valves on both the feed and the outlet sides of the system are closed.





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2. Operating instructions

Tank Matic Operating instructions

2.5 Emergency Stop

If an emergency situation occurs stop the System and the electro valve will close automatically and Dosing pump will stop feeding.

2.6 After Emergency Stop

The cause of the emergency must be remedied before attempting to restart the system.

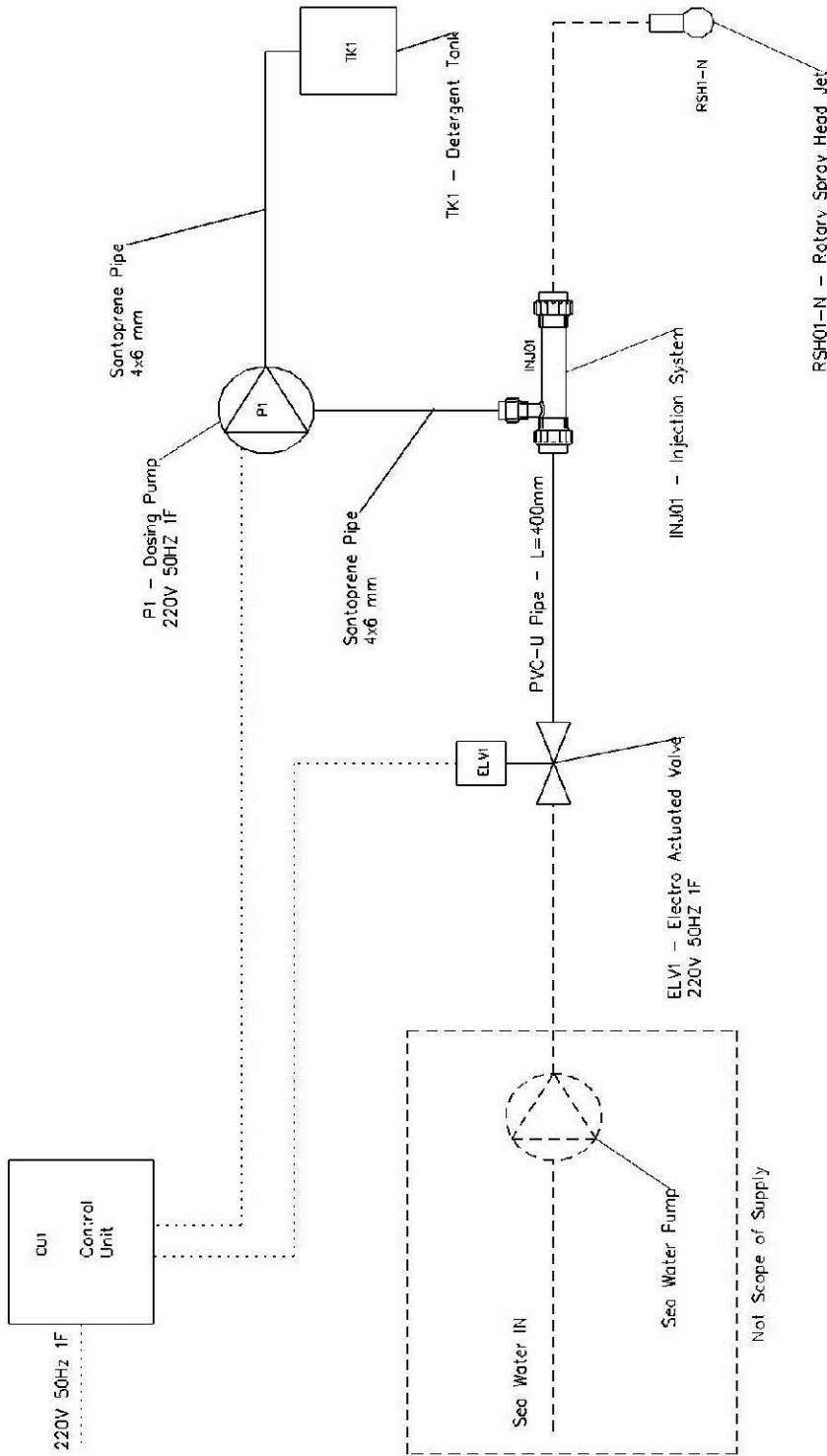
If the cause is not found a major service must be performed and all moving parts thoroughly checked.

To avoid accidental start, switch off and lock the power supply before dismantling.

Dismantling work must not be started before Check valve have closed



3. Flow diagram



ELVI	ELECTRO ACTUATED VALVE - 220V 50HZ 1F - 6A
P1	DOSING PUMP - 220V 50HZ 1F - 1A
INJ01	INJECTION SYSTEM
RSH1-N	ROTARY SPRAY HEAD JET - MAX OPERATING PRESSURE 2-3 BAR
TK1	DETERGENT TANK - 25LT
CU1	CONTROL UNIT
DATE	REV. DRAWN CHECK DATE REV. DRAWN CHECK
0	SC SC



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DATE	10/10/08
SHEET	1
DATE	10/10/08
BWG N.:	TM-A001

TANK MATIC
 FLOW DIAGRAM



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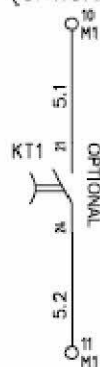
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4. Interconnection diagram

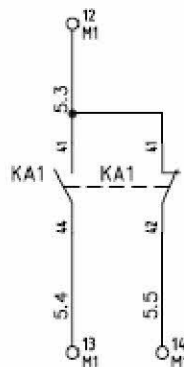
		=QG – M1 Morsettiera M1		
ELV1 ELECTRO ACTUATED VALVE 40VA – 230V 50Hz		1	⊗	3.8
		2	⊗	3.7
1 open – 2 close – 3 N		3	⊗	230VN
P1 DOSING PUMP 230V 50Hz		4	⊗	3.3
		5	⊗	3.4
EXTERNAL EMERGENCY PUSH BUTTON		6	⊗	3.5
		7	⊗	3.6
LOW LEVEL SWITCH (OPTIONAL)		8	⊗	3.6
OPEN AT ALARM		9	⊗	4.14
LOW LEVEL SWITCH ALARM (OPTIONAL)		10	⊗	5.1
OPEN AT ALARM [Potential free contact max 1A 230V]		11	⊗	5.2
ELV1 ELECTRO ACTUATED VALVE CLOSE/OPEN		12	⊗	5.3
[Potential free contact max 1A 230V]		13	⊗	5.4
		14	⊗	5.5
P1 DOSING PUMP RUNNING		15	⊗	5.6
[Potential free contact max 1A 230V]		16	⊗	5.7
REMOTE START – ONLY IN AUTOMATIC MODE		17	⊗	3.6
[Potential free contact max 1A 230V]		18	⊗	4.6
REMOTE LAMP AUTOMATIC MODE START		19	⊗	4.9
[max 0.5A 230V]		20	⊗	230VN

REMOTE SIGNALS

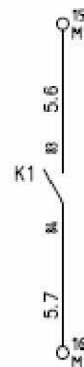
REMOTE ALARM
LOW LEVEL TANK
(OPEN AT ALARM)
(OPTIONAL)



ELV1
OPEN CLOSE
POSITION



PUMP P1
RUNNING

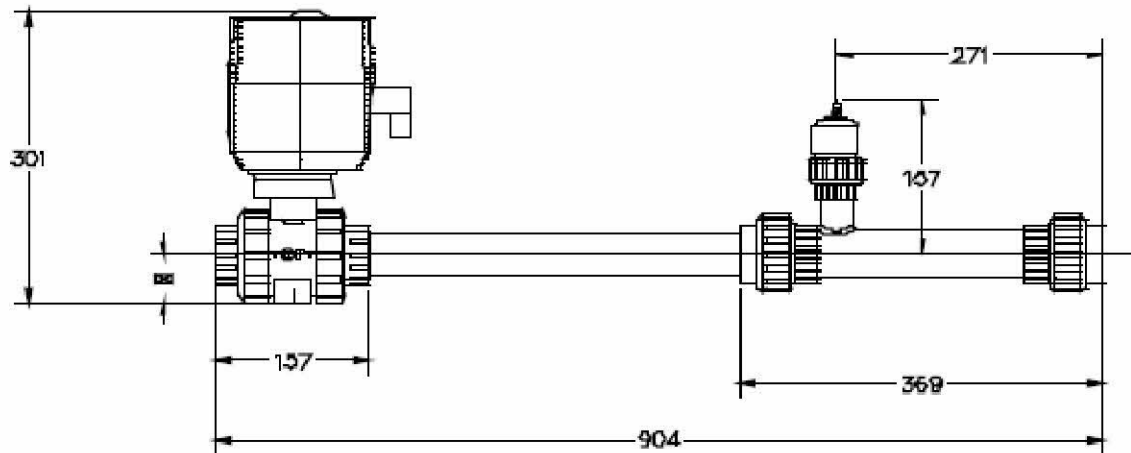




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5. Valve/Ejector Assembly drawing





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6. Soap specification – GP Clean

HYDRO CARBON FREE ENVIROMENTAL PRODUCT
WATER BASED GENERAL PURPOSE DEGREASER

PHYSICAL DATA:

Soluble in water.

Clear liquid.

Specific gravity (20° C): 0,985

Flash point (PM CC): none to boiling (100° C)

pH (1% solution): 10

DESCRIPTION

- No petroleum solvents, non-flammable.
- Biodegradable, non-toxic, waste water will split into an oil/water phase.
- Fresh smell.
- Strong degreasing properties when diluted.
- Leaves no film residues on cleaned surfaces.
- Suitable on most common metals and coatings.
- Suitable for use with oily water separators.

DIRECTIONS FOR USE

The effectiveness of the product is increased by using water at a temperature of 20 up to 60° C for dilution and rinsing.

Suitable for cleaning tank from mineral oils, edible oils and for hydrocarbon free purpose.

- When using automatic tankwash system by direct injection into the BWT Line or guncleaner the necessary solution has to be 0,5 - 1 per tonn approx.

When using by recirculation method from one tank into the next one, keep same cleaning solution for approx. 4-5 tanks

depending on the tanks capacity and on the existing contamination, in this case the concentration of product in water has to be approx. 3%-4%.

CAUTIONS

Avoid contact with eyes and prolonged contact with skin.

Use Clean GP only with sea water.

The use of chemical different from CLEAN GP could cause foam problem in the tank.



7. FAQ

1 – the system stops unexpectedly

A – verify Q2, could be in OFF position

B – verify KA1 may not work properly

C – Only if soap level switch optional is installed, soap level is low

2 – the system does not run

A – verify PLC is in the run mode

B – if installed, verify the emergency stop is not in the stop position

C – Only if soap level switch optional is installed, soap level is low

3 – tank is not clean after cleaning cycle

A – verify the spray head jet in the tank is not obstructed

B – verify the water pressure is not less than 1 bar and not more than 3 bars



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Tank Matic Automatic Tank Cleaning System

Starter/Control unit Valve Dosing Pump



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Study instruction manuals and observe the warnings before installation, operation, service and maintenance.

Not following the instructions can result in serious accidents with fatal injuries.

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A summary of the safety information is found in the Safety chapter under divider 1.



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Specification

Dimensions

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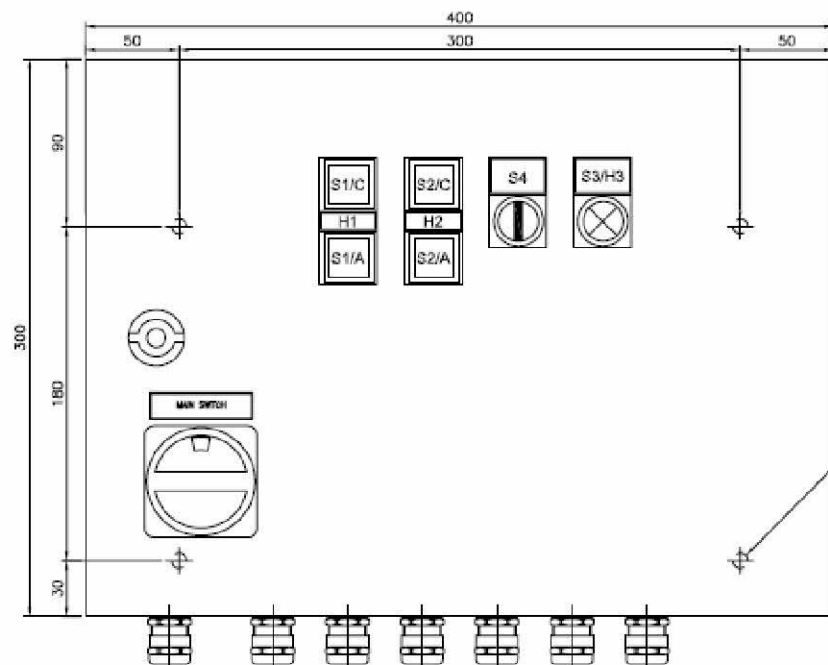
1. Control Unit Function description

1.1 Application

The starter/control unit is used to start the Electro actuated valve and the soap feed pump. The unit also gives an alarm and stops the system if a fault occurs.

1.2 Design

The controls are located at the front of the starter/control unit cabinet.



Q1	Main switch
S1	Start/stop ELV1
S2	Start/Stop dosing pump
S4	CONTROL MAN - AUT - START AUT
H1	ELV1 Operation ON
H2	Dosing PumpOperation ON
S3/H3	Start automatic operation



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2. Control Unit Technical data

2.1 Specification

- Power supply: 230V 50/60Hz
- Max fuse: 6A
- Protection class: IP65
- High voltage tested: During 2 min.
at 2 500V
- Maximum ambient temperature: 55 °C
- Cabinet material: Steel
- Weight: Approx. 12 kg



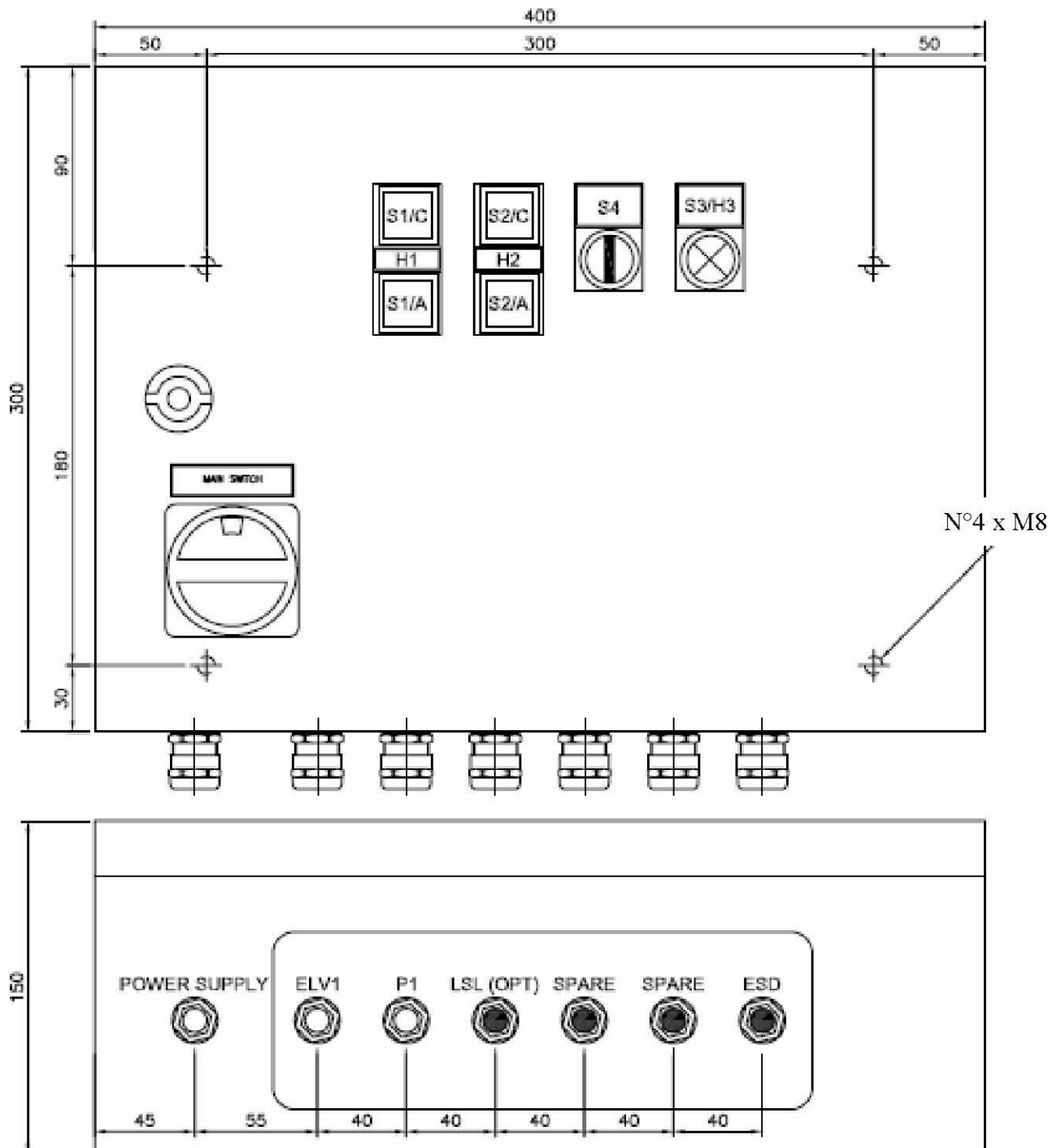
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2. Technical data

Tank Matic Starter/Control Unit

2.3 Control Unit Dimensions





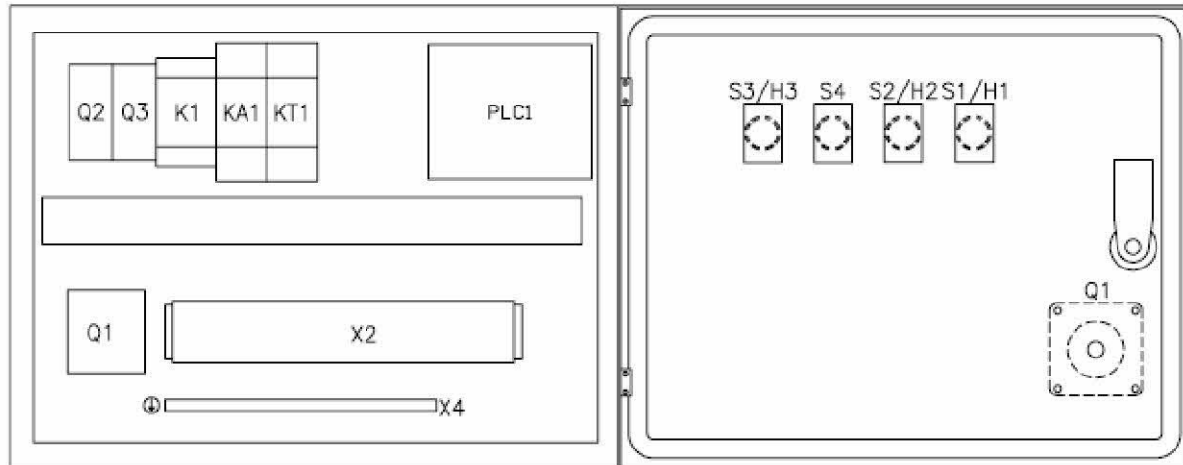
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2. Technical data

Tank Matic Starter/Control Unit

2.3 Control Unit Spare parts



TECHNICAL DATA

Main Power	: 2x230V 50Hz
Incoming Supply	: Max fuse 10A
Control Voltage	: 230Vac
Cabinet Material	: Sheet of steel
Protection Class	: IP 54
Weight	: Approx. 15 kg
Cables Incoming	: Bottom position
Painting	: RAL 7035
Spare	: 10%

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2. Technical data

Tank Matic Starter/Control Unit

Item	Qty	Article/Doc N°	Name	Remarks
DOCUMENTS				
		E005	Wiring diagram	
EQUIPMENT				
1	1	-	Circuit breaker 3x25A	Q1
2	1	-	Red handle 60x60	Q1
3	1	-	Metal-tree	Q1
4	1	-	Door interlock	Q1
5	1	-	Cover for circuit breaker	Q1
6	1	-	Enclosure box 300x400x150mm RAL 7035	
7	1	-	Programmable logic controller	PLC1
8	1	-	Contactora 3P 9A 230V AC 50/60 Hz	K1
9	1	-	Auxiliary contact block	K1
10	1	-	Auxiliary relay	KA1
11	1	-	Socket for auxiliary relay	KA1
12	1	-	Circuit breaker C60N 2P 2A "C"	Q2
13	1	-	Auxiliary contact block	Q2
14	1	-	Circuit breaker C60N 2P 2A "C"	Q3
15	1	-	Selector switch with white signal lamp	S3/H3
16	1	-	Selector switch	S1/A-C-H1
17	1	-	Selector switch	S1/A-C-H1
18	1	-	Selector switch	S4



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3. Electro Actuated Technical data

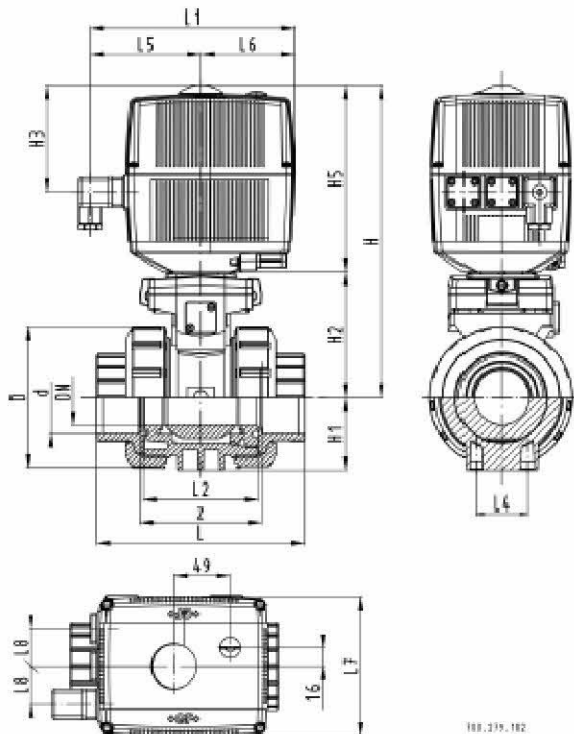
3.1 Specification

- Power supply: 230V 50/60Hz
- Max fuse: 6A
- Protection class: IP65
- DN40 – d50
- Actuator type EA21

Spares:

Art. 161486404 EPDM O-Ring Kit

Dimensions for type 130-135 solvent cement socket (DN10 - DN50)



d	DN	D	H	H1	H2	H3	H5
16	10	60	230.5	26.5	63.5	93.5	167
20	15	60	230.5	26.5	63.5	93.5	167
25	20	68	239.5	30	72.5	93.5	167
32	25	68	239.5	35.5	72.5	93.5	167
40	32	84	250.6	44	83.5	93.5	167
50	40	97	250.6	60.5	83.5	93.5	167
63	50	124	273	64	106.5	93.5	167

L*	L1	L2	L4	L5	L6	L7	L8	z
92	179.6	66	25	97.1	82.5	122	33	64
95	179.6	66	25	97.1	82.5	122	33	64
110	179.6	66	25	97.1	82.5	122	33	72
123	179.6	71	25	97.1	82.5	122	33	79
146	179.6	86	45	97.1	82.5	122	33	94
157	179.6	89	45	97.1	82.5	122	33	95
183	179.6	101	45	97.1	82.5	122	33	107



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Technical data of MFM

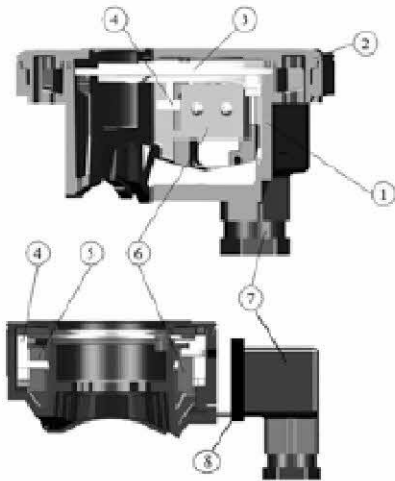
This module is for electric signalling of the valve positions of the GF ball valves type 546. The multifunctional module can be screwed directly onto the ball valve.

CE marking

According to the EC Directive 98/37/EC (formerly 89/392/EEC) pertaining to machines, these actuators/valves are not considered machines, but can be built into installations which are considered as such.

We expressly point out that operation is prohibited until conformity of the machine (system) into which this product has been installed with the EC Directive 98/37/EC concerning machines has been established.

Design of the multifunctional module including feedback unit



1. Housing
2. Cover
3. Indexing disk
4. Switch holder
5. Microswitch «OPEN»
6. Microswitch «CLOSE»
7. Connector plug 3P + E per DIN EN 175301-803 (formerly DIN 43650)
8. Seal

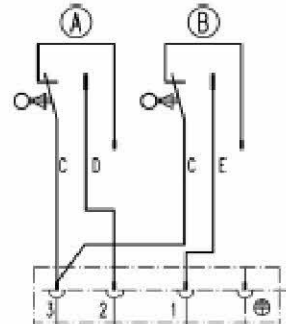
General technical data of the multifunctional module

Protection rating with DIN plug: IP65

Protection rating with cable gland: IP67

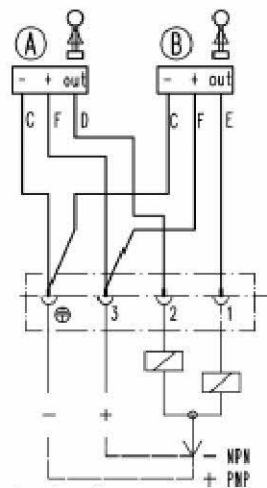
Ambient temperature: -10 °C to +50 °C

Circuit diagram



- A closed
- B open
- C black
- D blue (short cable)
- E blue (long cable)

Circuit diagram



- A closed
- B open
- C blue
- D black
- E black
- F brown



Kto Supply Sas

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4. Dosing Pump Technical data

4.1 Specification

- Power supply: 230V 50/60Hz
- Max fuse: 1A
- Protection class: IP55
- Capacity: 0-6 l/h
- Dimensions: 85x125x105 mm

MP2-B

