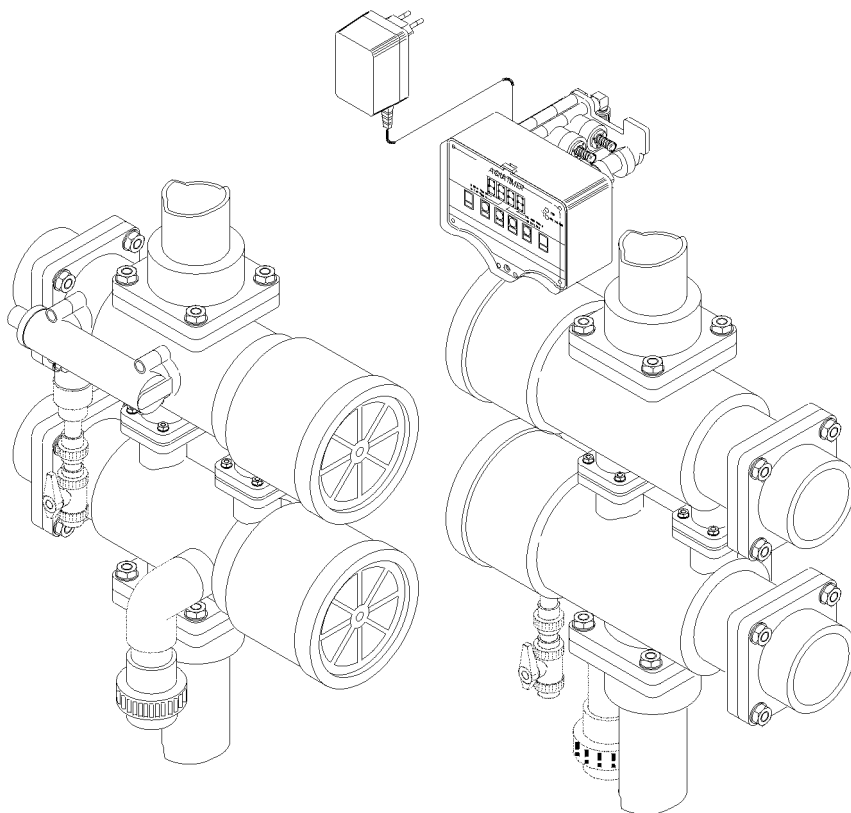




USE AND MAINTENANCE MANUAL V360



Document	Revision	Revision note	Date
MAN0031	A	Draft	

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GENERAL CHARACTERISTICS – TECHNICAL SPECIFICATIONS

The “360” valves represent an essential element for the realisation of systems of various types and for various uses.

- Softening – single, duplex, or on more columns for domestic industrial or laboratory use.
- Demineralisation and decarbonisation – single, duplex, for laboratory and industrial use and for all uses which require water with guaranteed quality characteristics.
- Filtration – single or duplex for all applications shown above.

The valves are made from materials which guarantee the maximum durability and quality.

The valves are available with a wide range of timers, for the control of all operative phases of service and regeneration, from the simplest electromechanical timer with a weekly timer, to the sophisticated electronic timers in various models which allow for volume and volume/time controls, controls of salinity in microsiemens/cm etc.

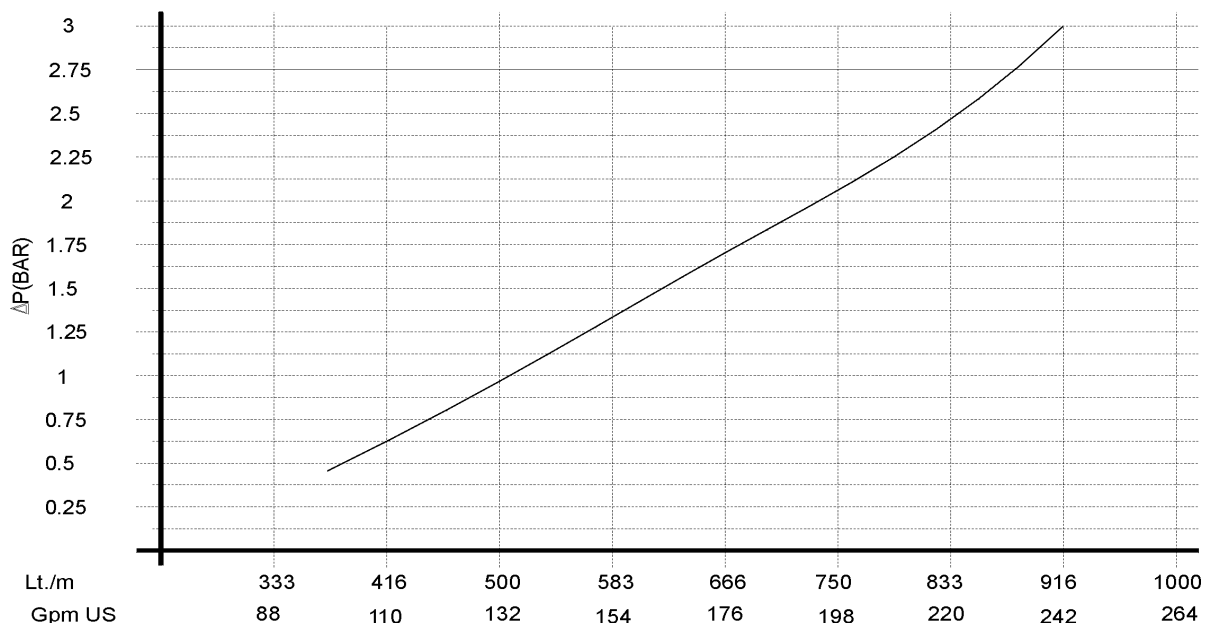
With the electronic systems, all the times of the operative phase operations are programmable, relative to the type and dimensions of the system.

For the specific characteristics of the timers, see the relevant manual.

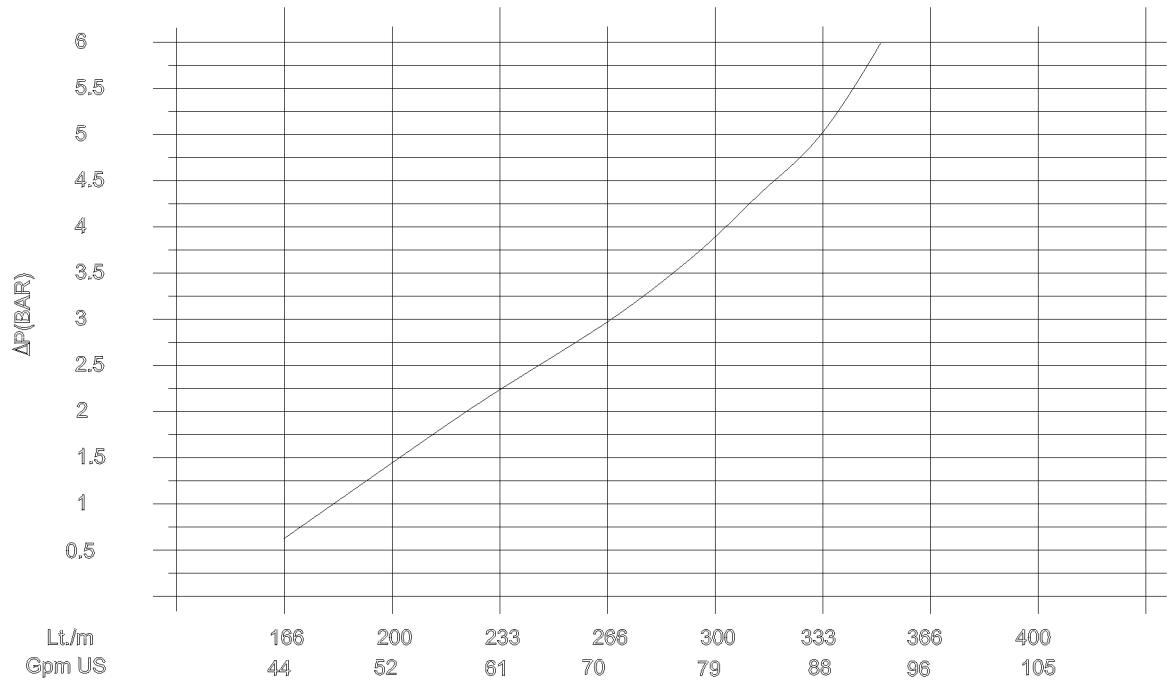
TECHNICAL SPECIFICATIONS

Running pressure	: 2 - 6 bar
Max. Running load	: 45m ³ /h
For variables of the value see graph	: -
Countercurrent rinse load	: max. 12 m ³ /h
Equicurrent fast rinse load	: 480-1300 l/h
Equicurrent fast rinse load	: max. 18 m ³ /h
Static resistance to pressure	: 22 bar
Max quantity regenerable resin	: 1200 l.
Running temperature	: 5 - 40° c
Basic materials of principal components	: abs + fv
Entry/exit attachments	: 2" female gas

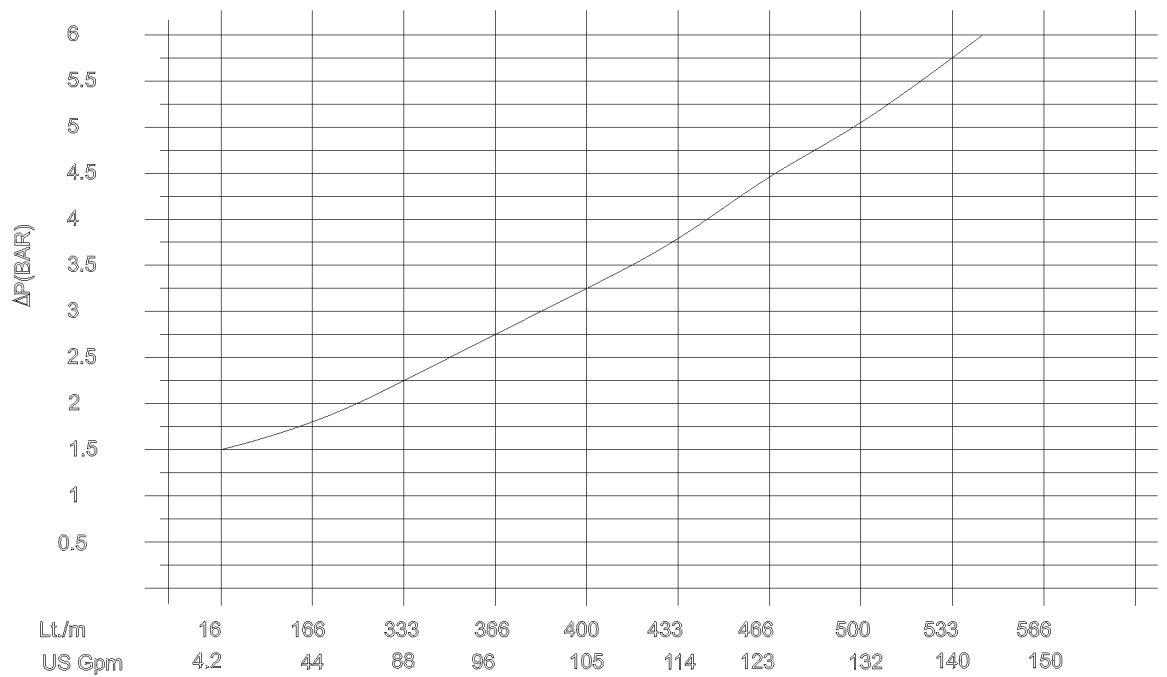
LOAD LOSS GRAPH



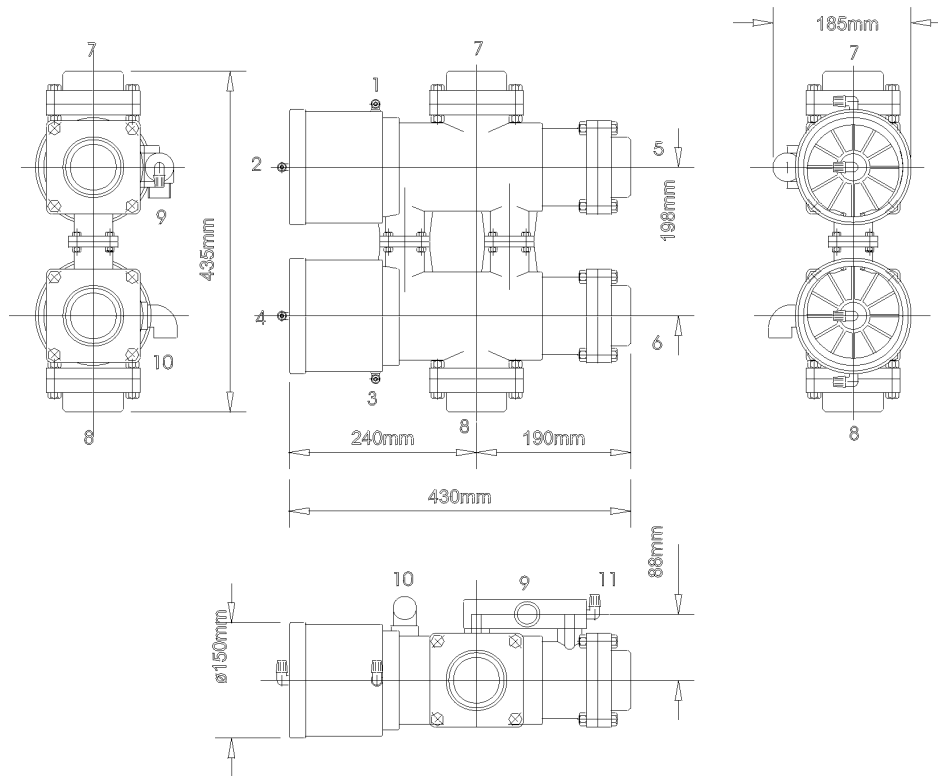
COUNTERCURRENT LOAD GRAPH



FAST RINSE LOAD GRAPH

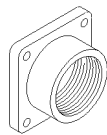


DIMENSIONS

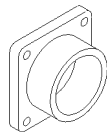


- 1** Connection for cylinder opening
Top column
- 2** Connection for cylinder closure
Top column
- 3** Connection for cylinder opening
bottom column
- 4** Connection for cylinder closure
bottom column
- 5** Entry

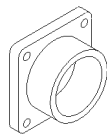
- 6** Exit
- 7** Connection top column
- 8** Connection bottom column
- 9** Connection for suction Ø 1"
- 10** Connection for male drain Ø ISO 40
- 11** Connection for pilot timer control



364-A 1" 1/2 GAS
364-B 2" GAS
364-C 2" 1/2 GAS
364-D 3" GAS



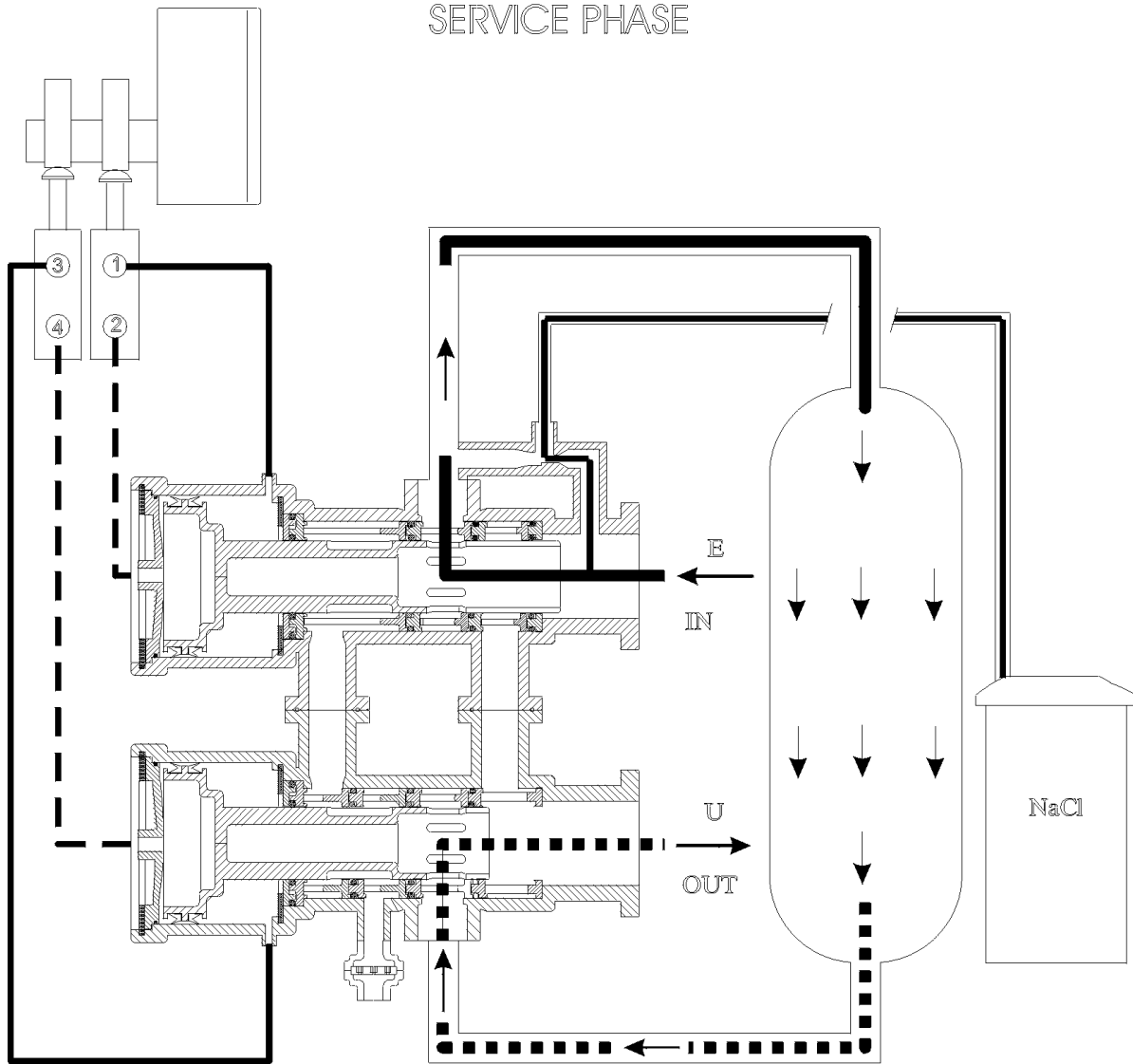
364-E01 ISO 50 GLUED
364-F01 ISO 63 GLUED
364-G01 ISO 75 GLUED



364-N01 Ø 60.4 GLUED
364-P01 3" NPT GLUED

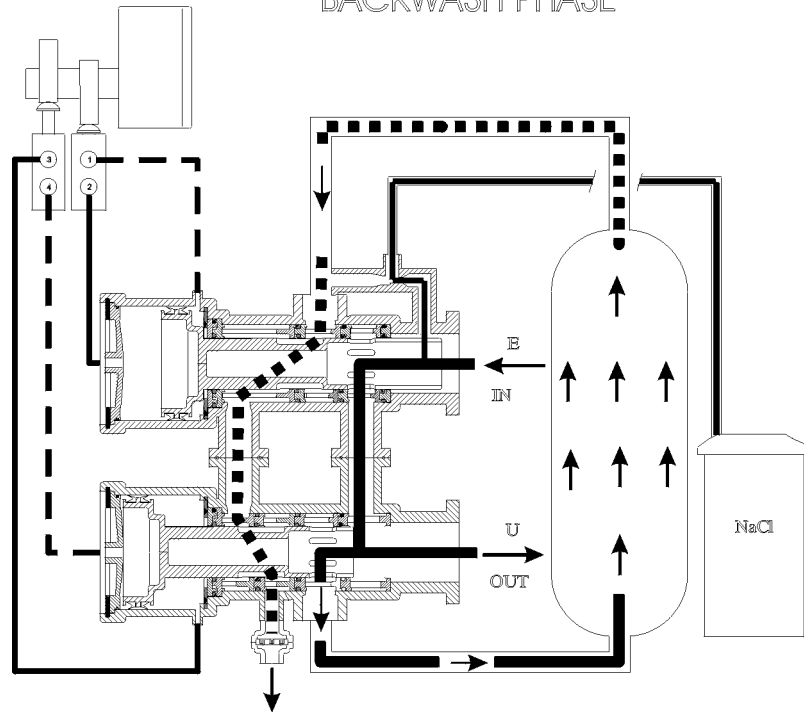
FUNCTIONAL DIAGRAMS

FASE: SERVIZIO
SERVICE PHASE

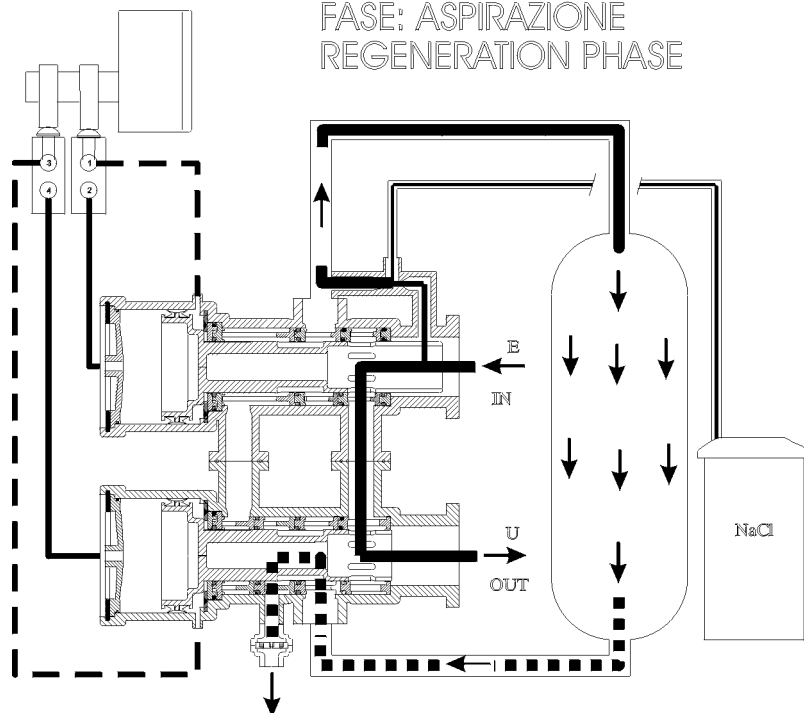


FUNCTIONAL DIAGRAMS

FASE: CONTROLAVAGGIO
BACKWASH PHASE

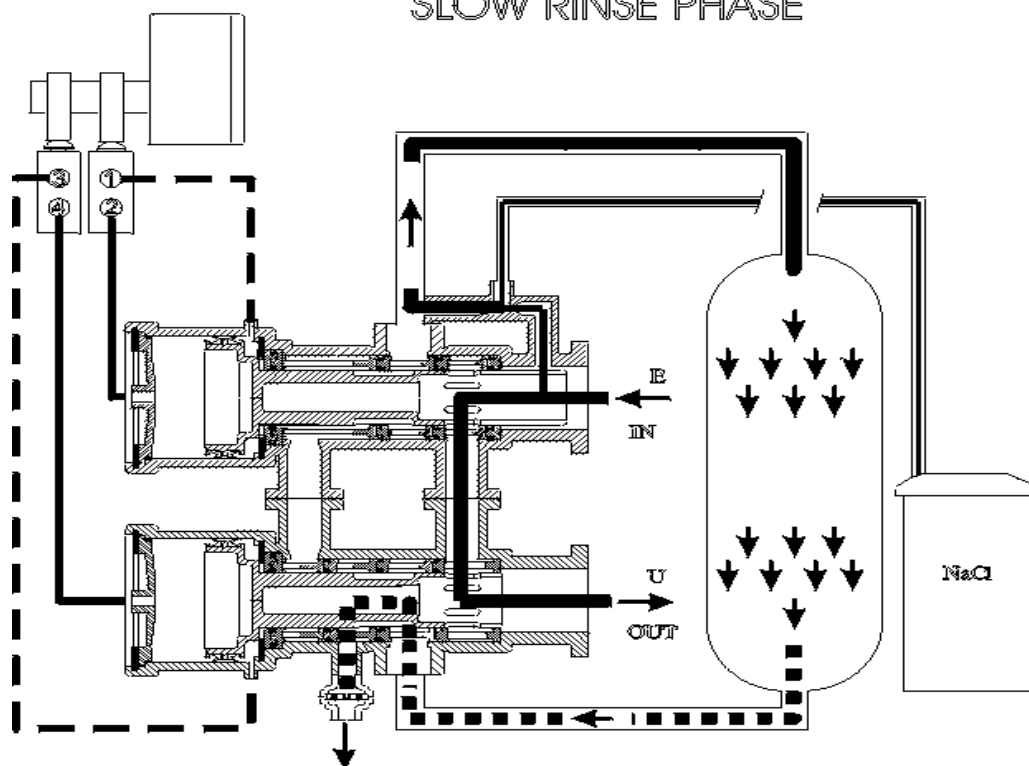


FASE: ASPIRAZIONE
REGENERATION PHASE

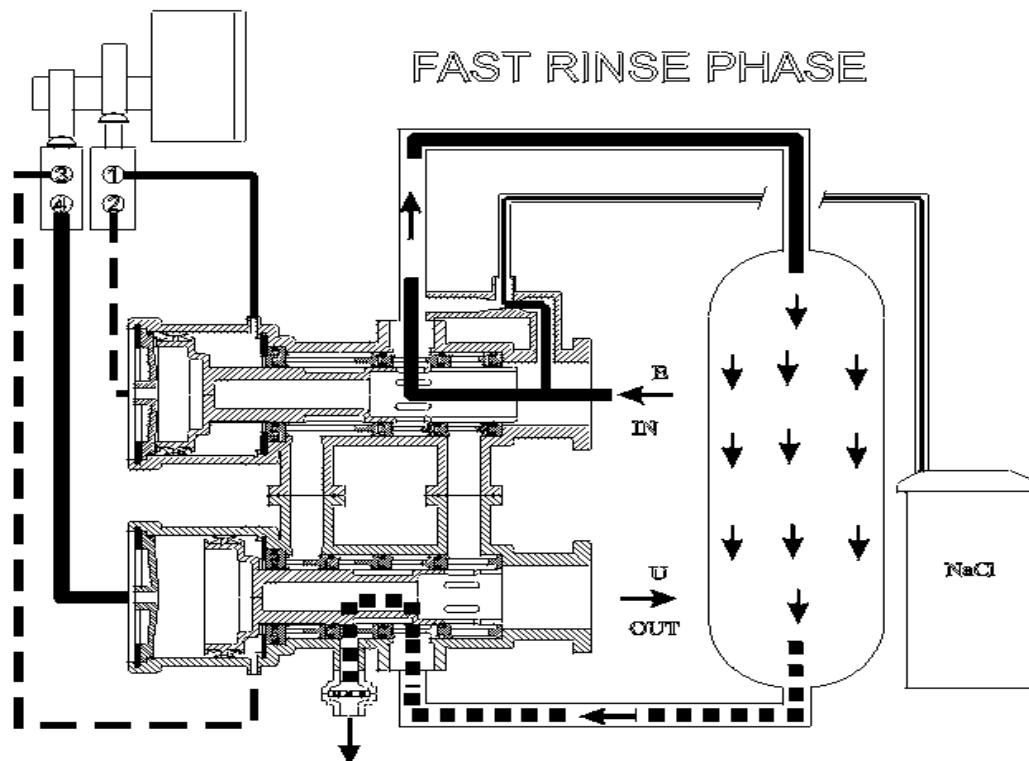


FUNCTIONAL DIAGRAMS

SLOW RINSE PHASE

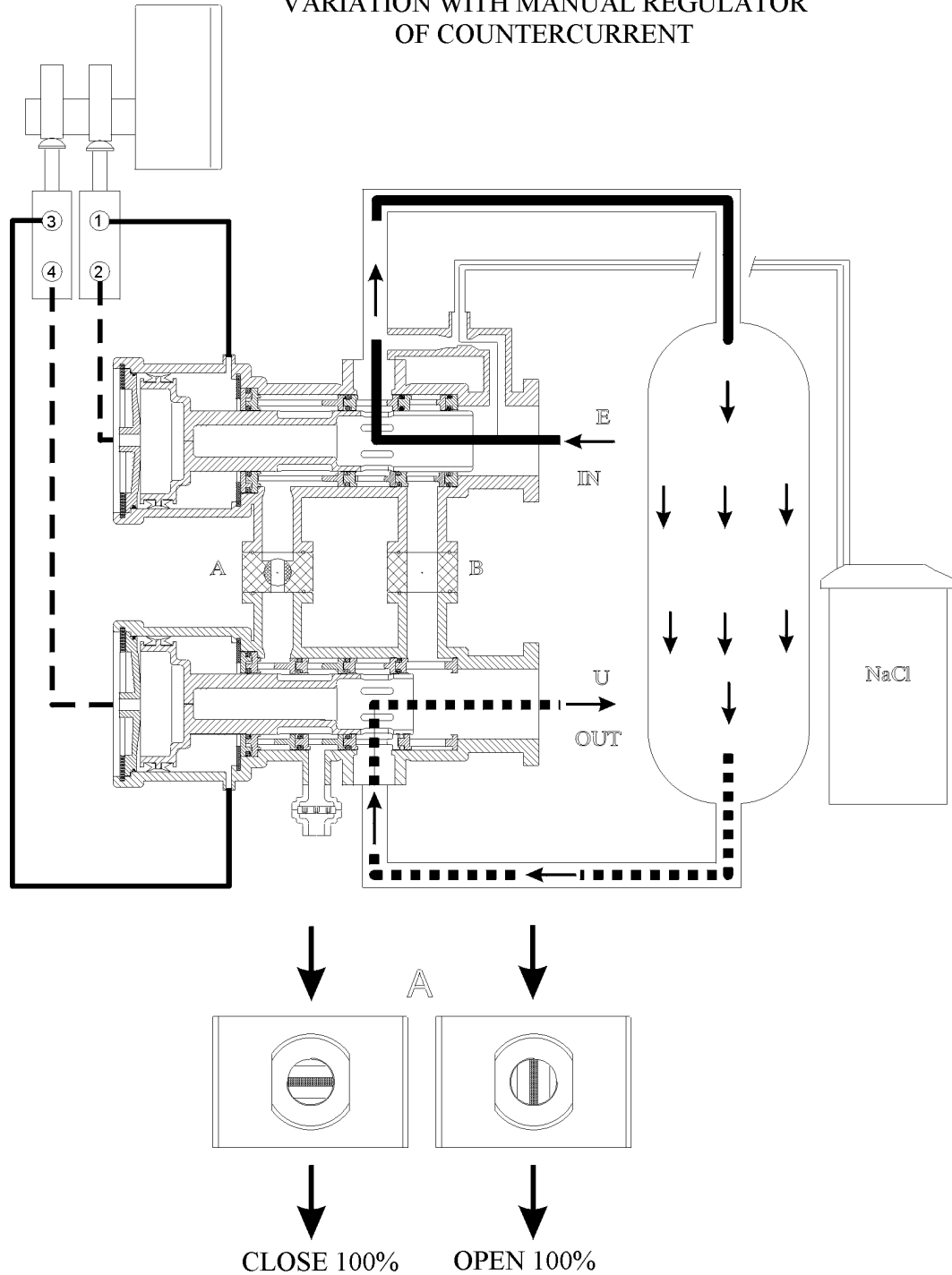


FAST RINSE PHASE

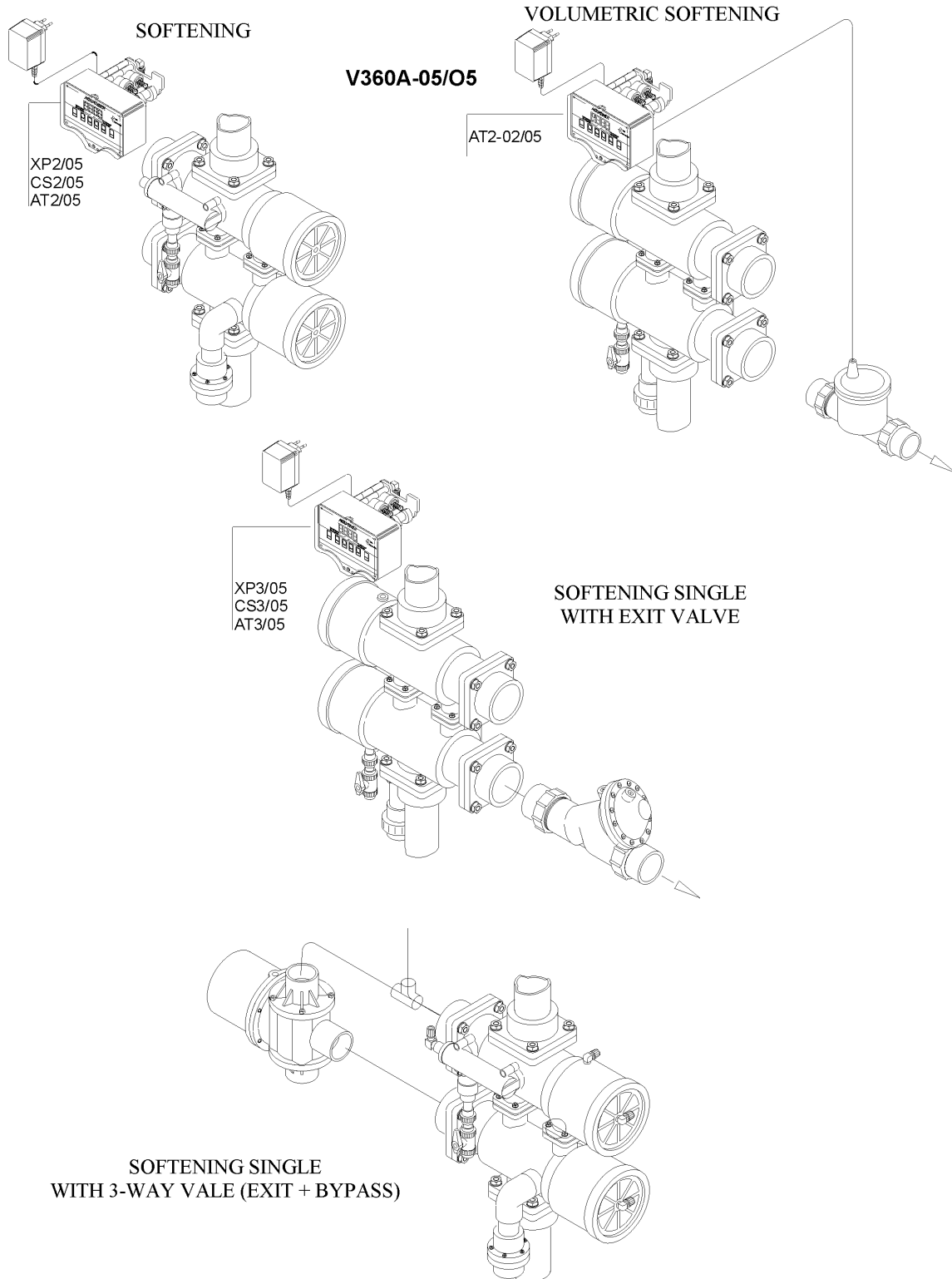


FUNCTIONAL DIAGRAMS

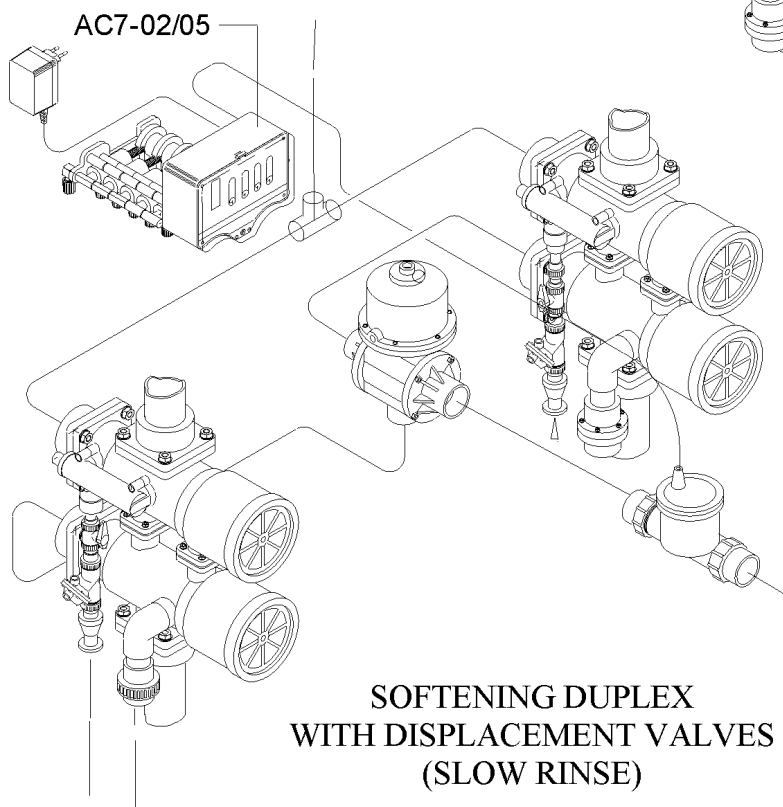
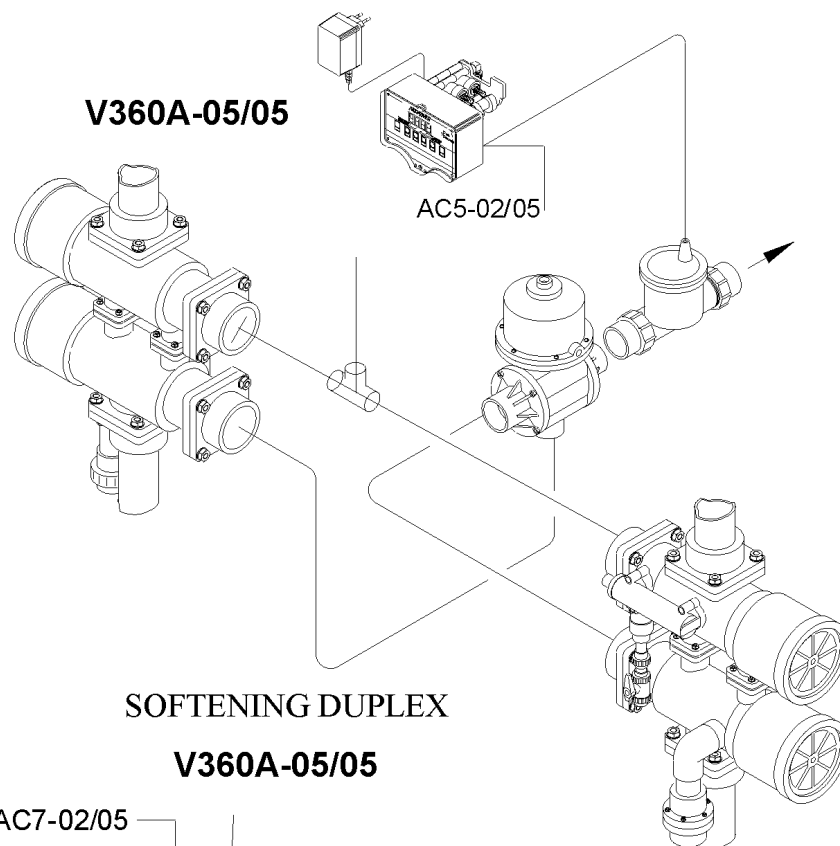
SERVICE PHASE VARIATION WITH MANUAL REGULATOR OF COUNTERCURRENT



VARIATIONS FOR SINGLE SYSTEMS USE

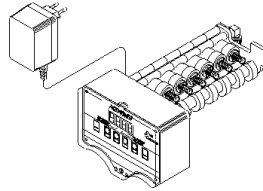
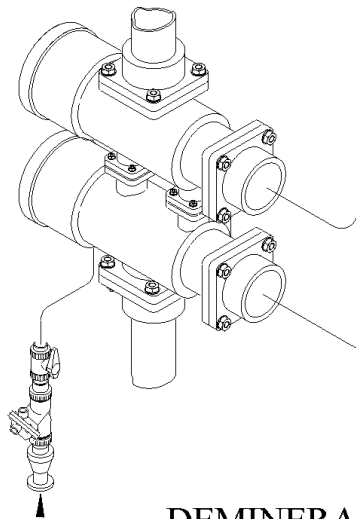


VARIATIONS FOR DUPLEX SYSTEMS USE



VARIATIONS FOR DEMINERALISATION AND FILTRATION SYSTEMS USE

V360D-05/05

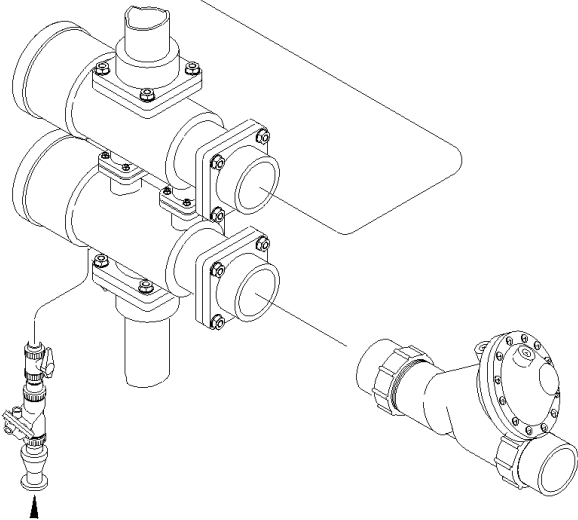


AC5-02/05

AC7-02/05

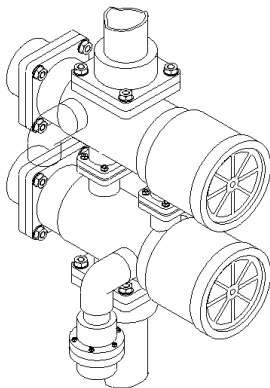
RUNS THE ASPIRATION
AT RIGENERANT

V360D-04/05

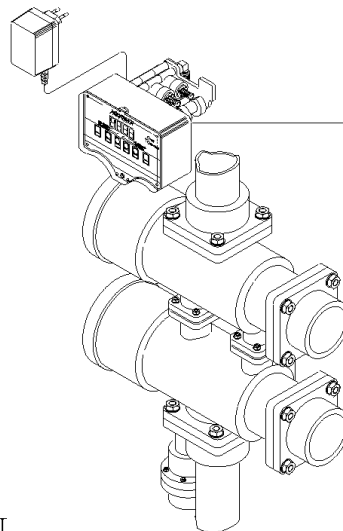


DEMINERALIZATION

V360F-05/05



FILTRATION



XP2/05

CS2/05

AT2/05

USE SPECIFICATIONS

Referring to the paragraph VERSIONS seen above, the various possibilities for the uses of this valve in the various applications may be examined.

1) Single softening: the system consists of a basic valve V360A-05/05 with or without bypass, and a timer complete with a minimum of 2 external pilots in different solutions, with which the system may be personalised as desired.

In particular, varying the number of external pilots, it is possible to obtain the following personalisations:

- I. **2 pilots** controls only the movement of the pistons of the valve
- II. **3 pilots** controls also an additional use closure valve
- III. **4 pilots** controls a use closure + a suction closure

2) duplex softening: the system is made on two columns, each of which is run by a V360A-05/05 valve. This is controlled, with water or air, by a timer with a minimum of 2 pilots per valve. The alternating duplex systems (one column is in service while the other is in regeneration or not in use), may be controlled by the AQUA CUBIC timer, which may be supplied in two standard versions:

- I. 5 pilots (**AC5-02/05**), run by volume. The system allows for use of two brine valves plus a use closure valve
- II. As a variation on this system, it is possible to substitute the two brine valves with two on-off hidro-pneumatic valves for the closing/opening of the suction duct(see valve V1 page 10), using an AQUA CUBIC 7-pilot timer. (**AC7-02/05**)

3) Demineralisation and Decarbonisation: this is the applicative sector in which the characteristics of the V360 valve may be best appreciated in the models V360D-04/05 & V360D-05/05. The timer predisposed for demineralisation is electronic with external pilots, capable of controlling an anionic and cationic column, can control the level of conductivity showing a valve in $\mu\text{siemens/cm}$ at the exit of the system, and regenerate the system automatically. The number of pilots of the timer is determined by the type of system required

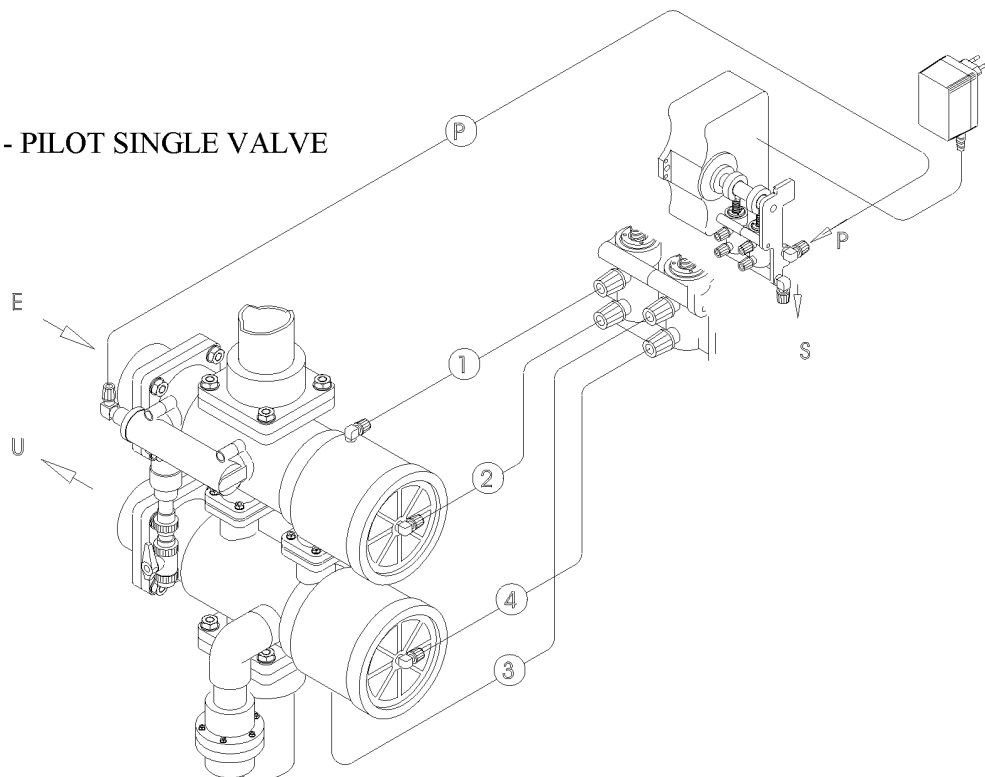
- I. **AQUA IONIC** 5 pilots (**AI5-02/05**) controls the two columns + an on-off hydro-pneumatic use closure valve
- II. **AQUA IONIC** 7 pilots (**AI7-02/05**) controls the two columns+ an on-off hydro-pneumatic use closure valve+ two on-off hydro-pneumatic valves for the closing/opening of the regenerator suction.

4) Filtration: the considerations made regarding softening are valid both for single and duplex systems, with the exception that in this case the suction of the regenerator does not need to be controlled.

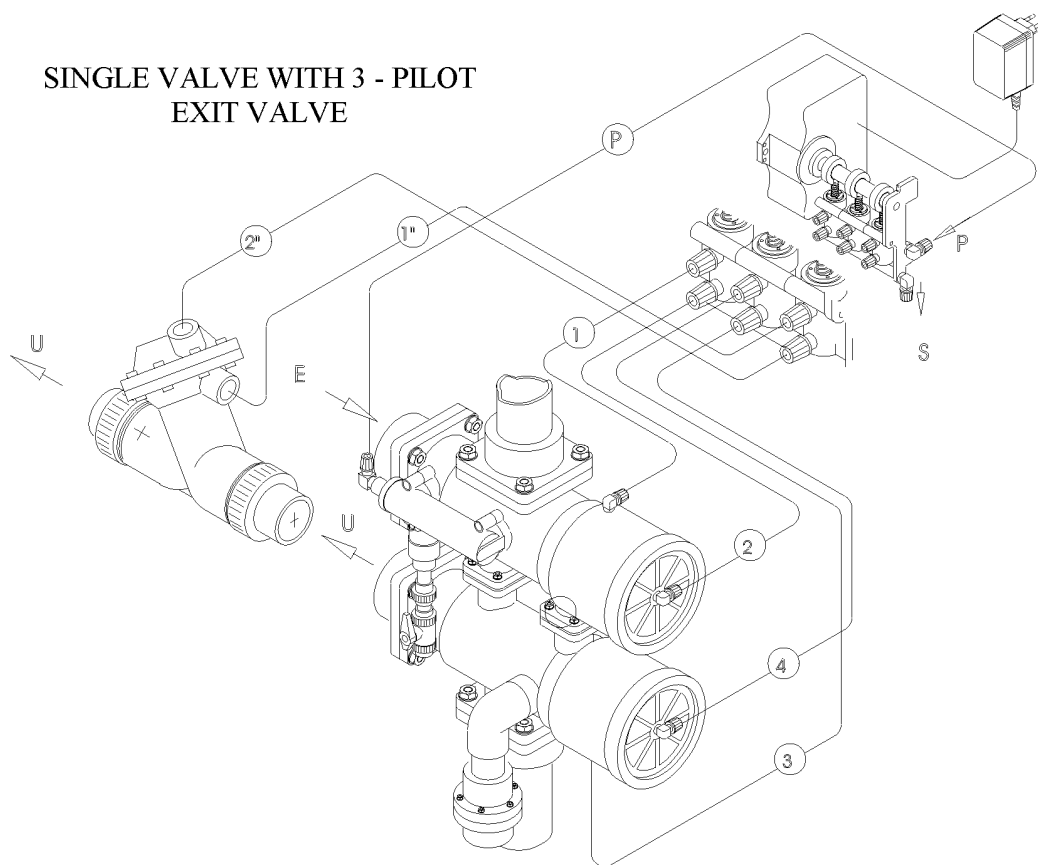
. For further details regarding the timers, see the *table of timer choice* (page 23).

VALVE/TIMER CONNECTIONS

2 - PILOT SINGLE VALVE

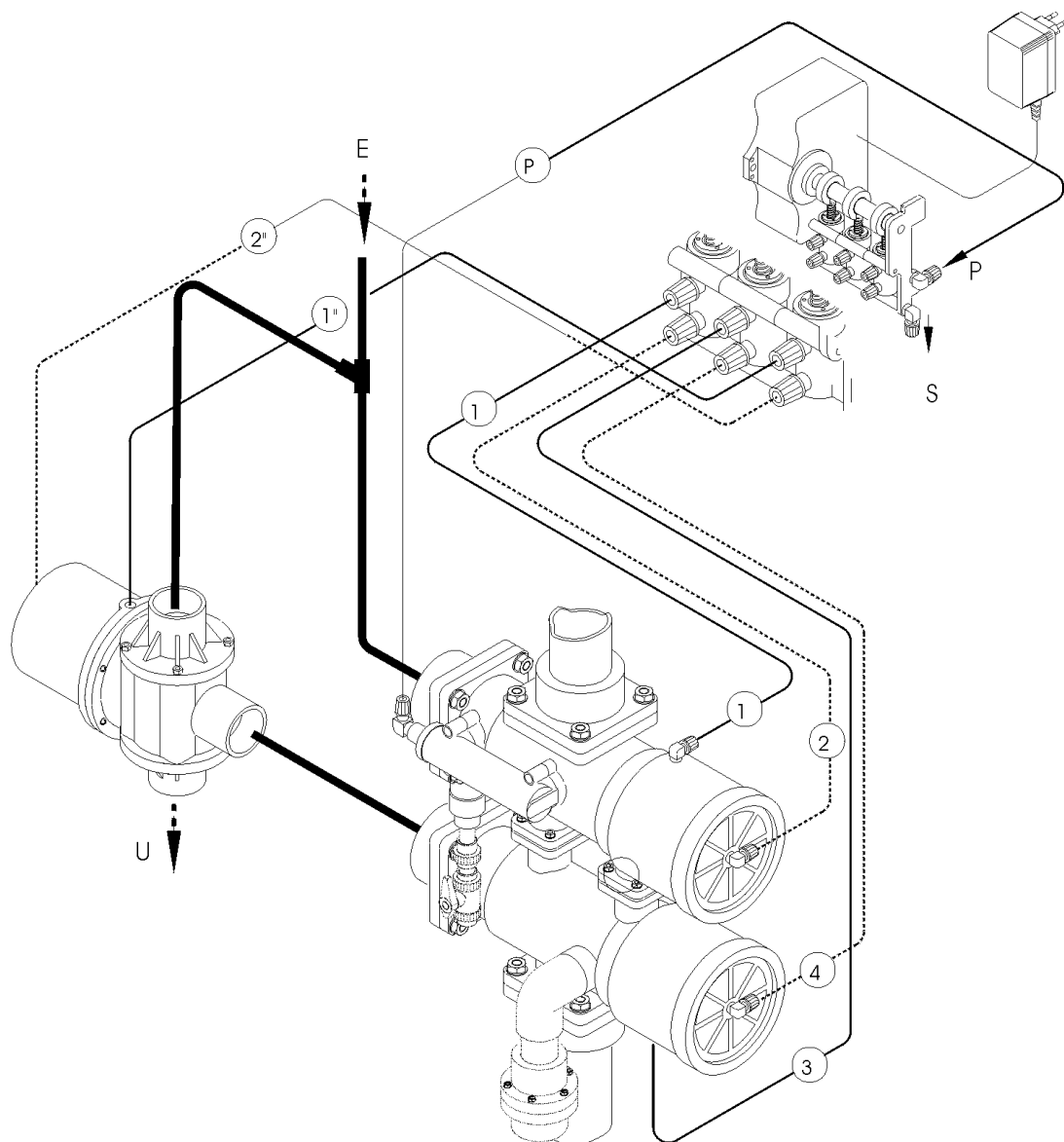


**SINGLE VALVE WITH 3 - PILOT
EXIT VALVE**



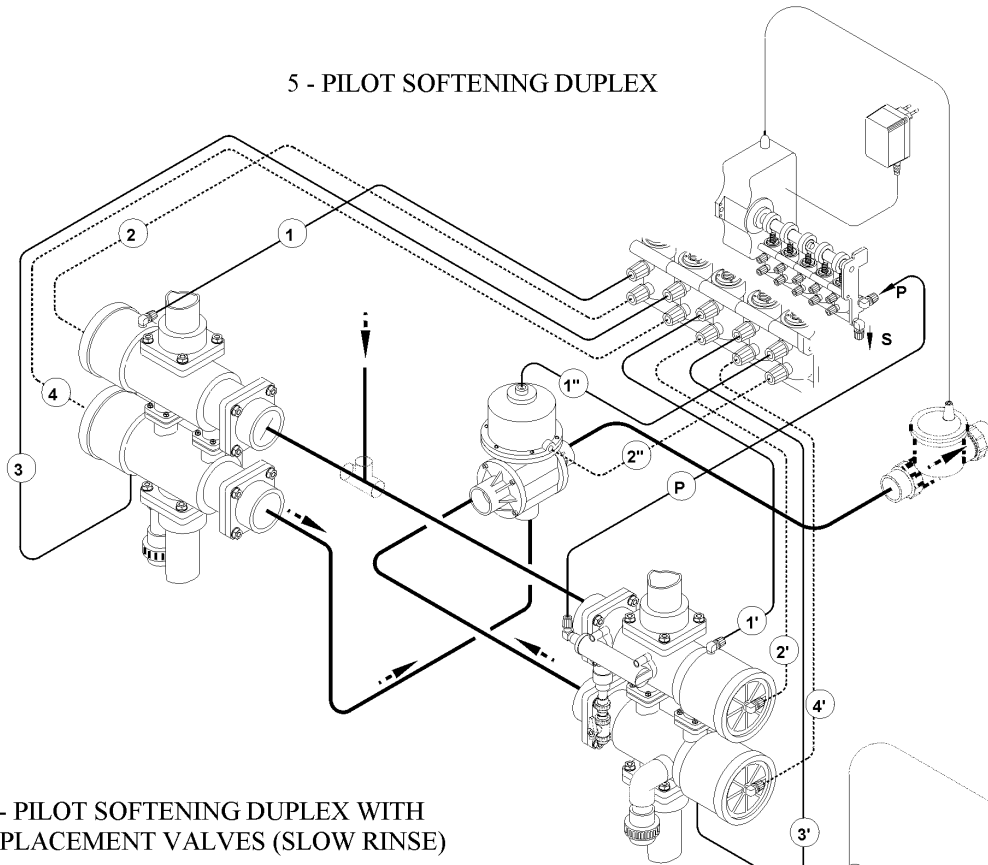
VALVE/ TIMER CONNECTIONS

SINGLE VALVE WITH 3 - PILOT BYPASS EXIT VALVE

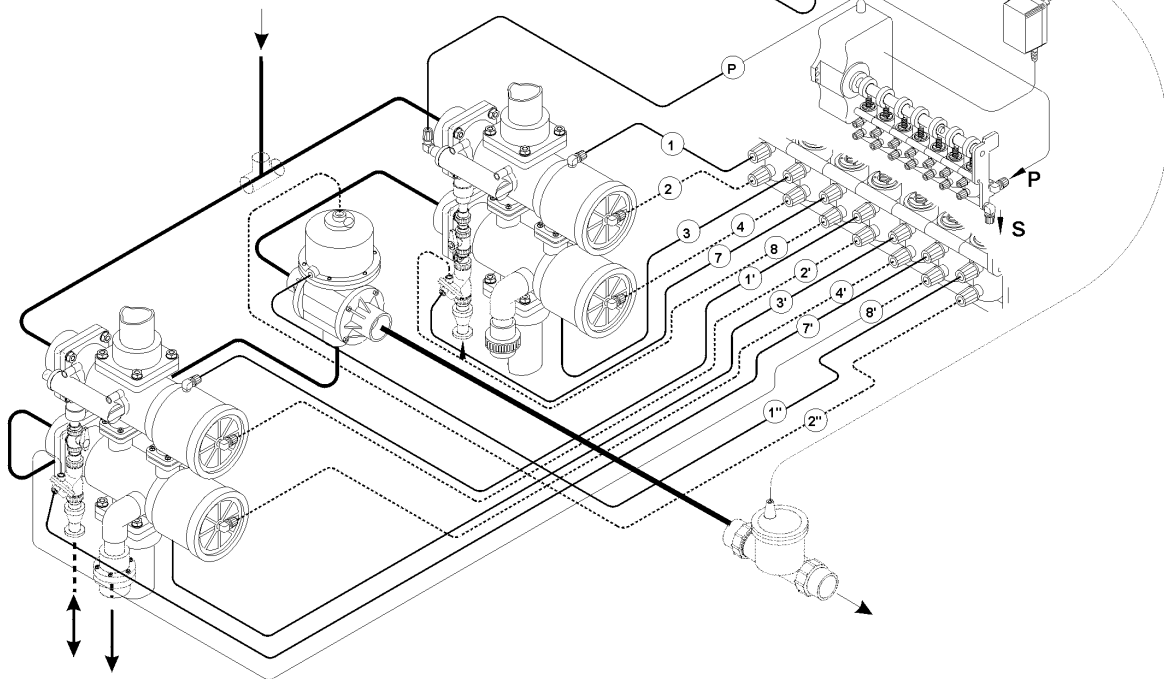


VALVE / TIMER CONNECTIONS

5 - PILOT SOFTENING DUPLEX

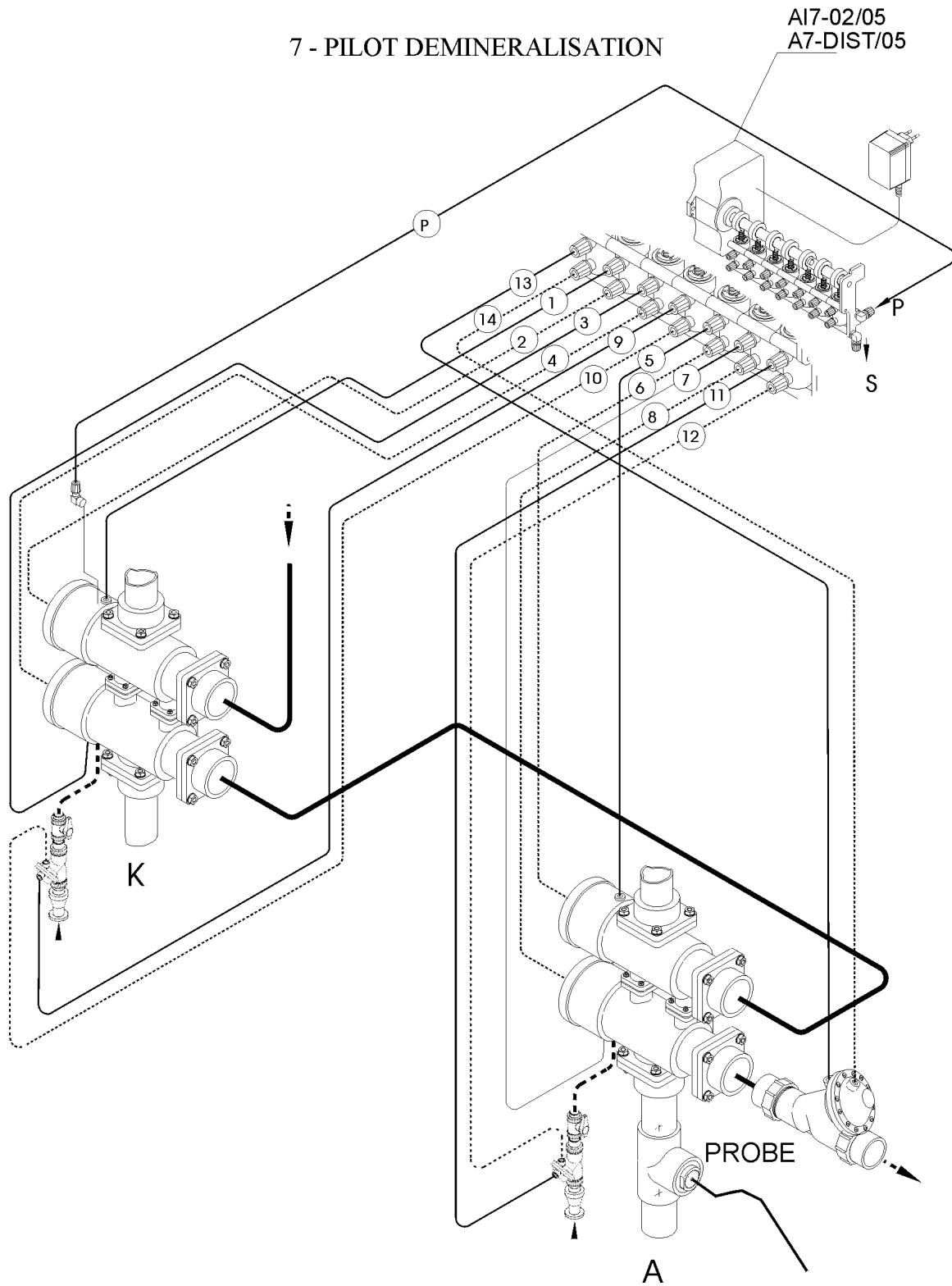


7 - PILOT SOFTENING DUPLEX WITH
DISPLACEMENT VALVES (SLOW RINSE)



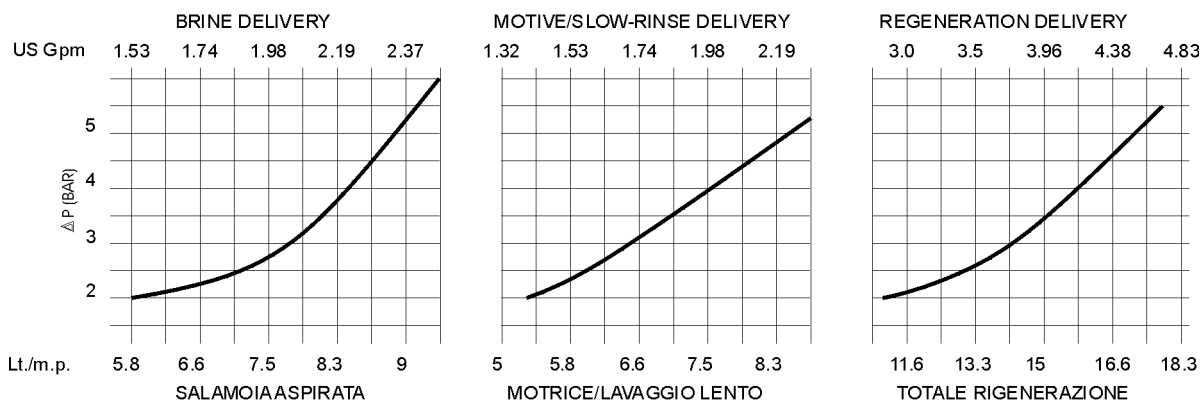
VALVE / TIMER CONNECTIONS

7 - PILOT DEMINERALISATION

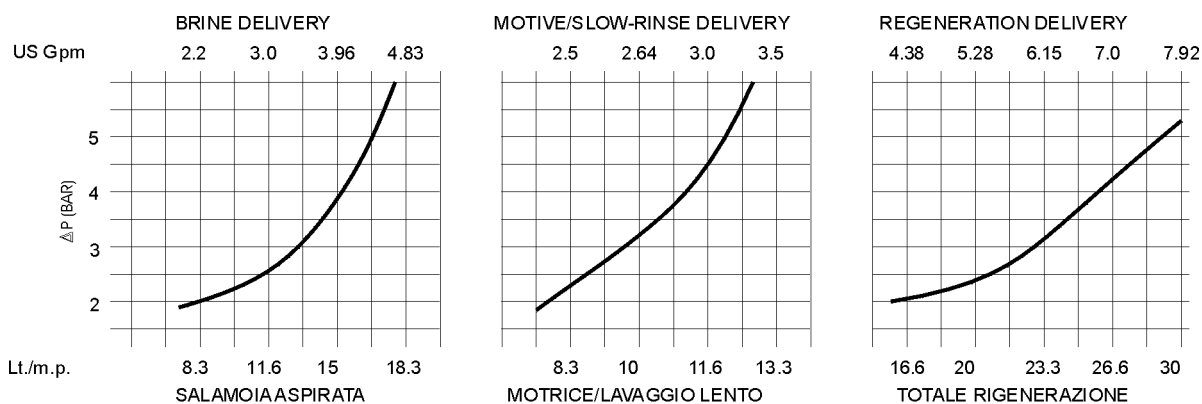


INJECTOR TABLES V360

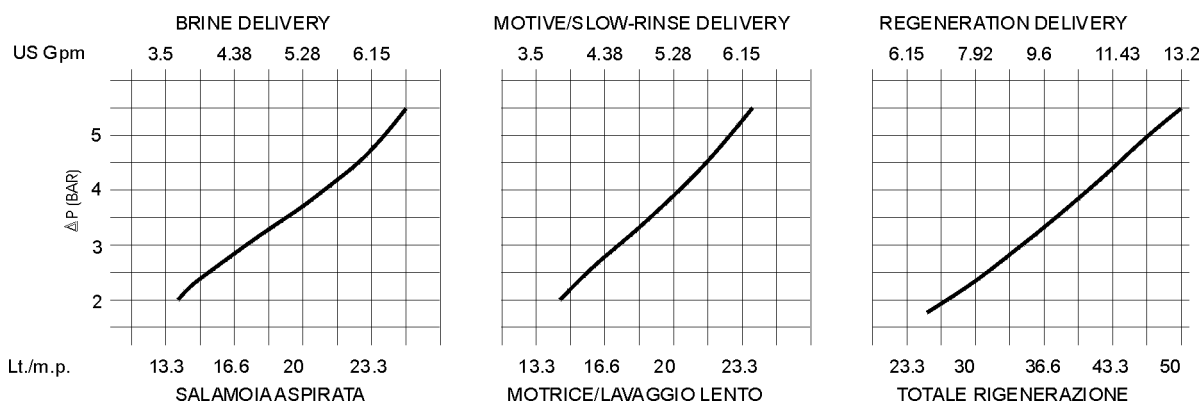
EIETTORE BIANCO - WHITE INJECTOR



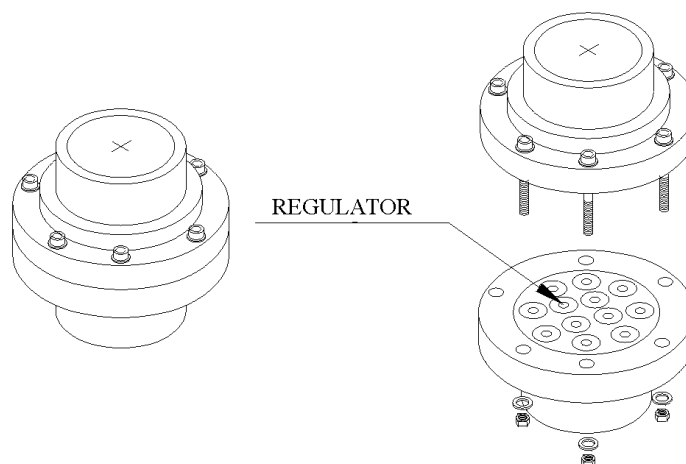
EIETTORE ROSSO - RED INJECTOR



EIETTORE NERO - BLACK INJECTOR



FLOW CONTROL V360 PREVIEW



INTRODUCTION:

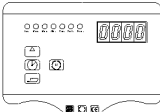
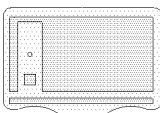
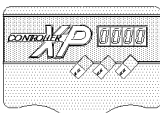
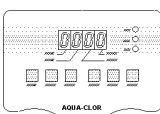
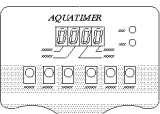
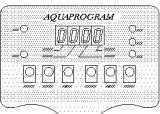
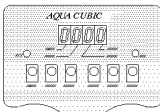
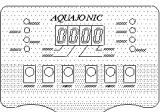
TAKING INTO ACCOUNT A LOAD IN COUNTERCURRENT, FOR CATIONIC RESINS, OF 10Mc./h/Mq., AND FOR STRONG ANIONIC RESINS OF 6Mc./h/Mq., IT IS POSSIBLE TO CHOOSE THE APPROPRIATE FLOW CONTROLS FROM THE FOLLOWING TABLE:

NOTE: THE FLOW CONTROLS SPECIFIED BELOW COVER A CYLINDER RANGE FROM 700mm A 2000 mm. FOR CATIONIC AND ANIONIC COLUMNS.

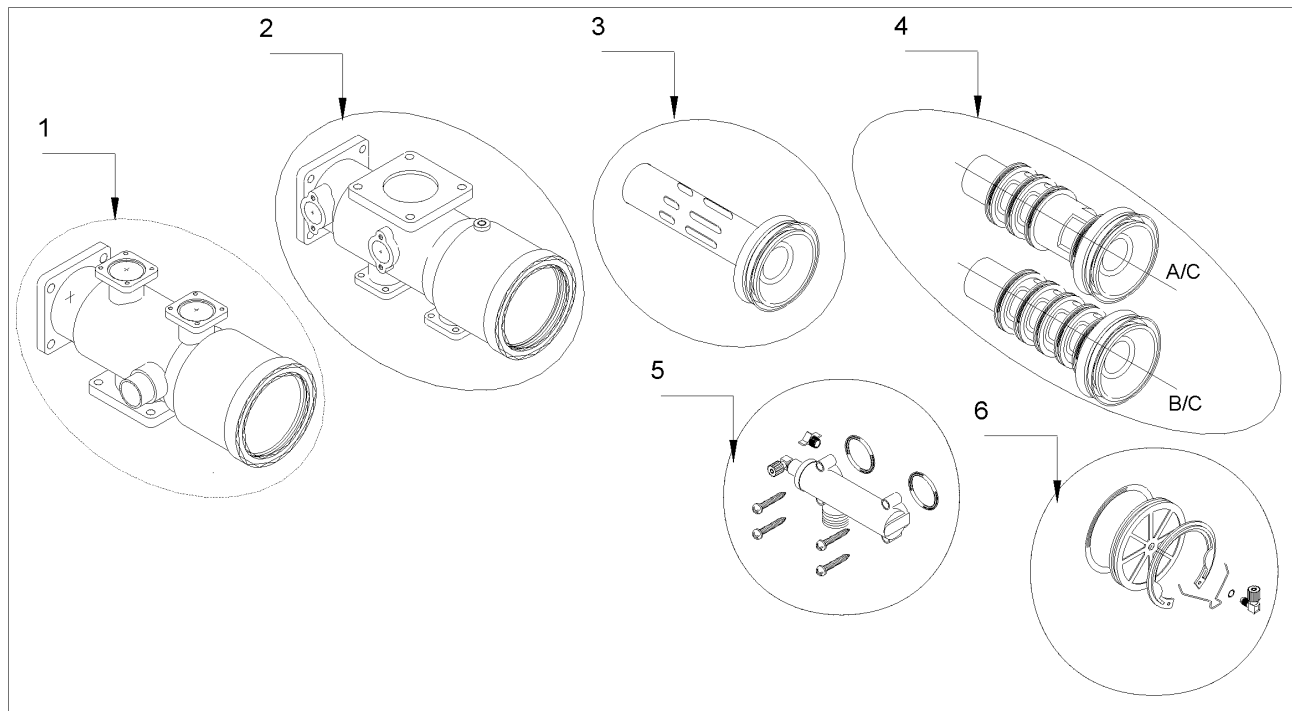
N REGULATOR	CODE REGULATOR	VOLUME CONTROLLED			
		Lt./h	Lt./m.p.	US Gpm	UK Gpm
2 X 070/4		2000	33.3	8.8	7.3
4 X 070/4		3900	65	17	14.3
5 X 070/4		4900	81.6	21.5	18
8 X 070/4		7800	130	34	28.6
9 X 070/5		10800	180	47.5	39.6
13 X 070/5		15500	258	68	56
15 X 070/5		18000	300	79	66
19 X 070/5		23000	383	101	84

TIMER

THIS TABLE SHOWS A WIDE RANGE OF CONTROL TIMERS, TO USE IN CONJUNCTION WITH THE VARIOUS MODELS OF THE V360 VALVE, FROM THE SIMPLEST TIMERS, CONSISTING OF THE ELECTROMECHANICAL VERSION TO THE RANGE WHICH ALLOWS FOR THE MOST ADVANCED APPLICATIONS OF THE TIMER/VALVE SYSTEM TO REALISE WATER TREATMENT SYSTEMS OF THE MOST RECENT AND MODERN GENERATION.

DESCRIPTION		CODICE TIMER	APPLICATION			TYPE OF VALVE			FUNCTION VARIABLES					
			SOFTENING	FILTRATION	DEMINERALIZATION	V360A	V360F	V360D	TIME CONTROL	VOLUME CONTROL	VOLUME CONTROL	DIN CONNECTION	CHLORINE PRODUCER	CONDUCTIBILITY CONTROL
 STANDARD ELECTRONIC CONTROLLER STANDARD ELECTRONIC TIMER WITH REGENERATION AT TIME SET FOR DAYS REQUIRED. REGENERATION DEPENDS ON THE CHOSEN SYSTEM SET.	CS2	•	•	•	•	•	•	•						
	 STANDARD PULSE TIMER ELECTROMECHANICAL PROGRAMMER WITH MANUAL START-UP OF REGENERATION, WITH THE POSSIBILITY OF REMOTE START-UP	SP2	•		•							1		
		SP2/08		•			•					1		
 XP CONTROLLER TIMER ELECTRONIC PROGRAMMER WITH ADJUSTABLE REGENERATIONS TIMES, REGENERATION START-UP BY TIME OR VOLUME WITH DELAYED OPERATION. MANUAL START-UP AVAILABLE	XP2	•	•	•	•	•	•	•						
	 AQUA-CLOR TIMER ELECTRONIC PROGRAMMER WITH ADJUSTABLE REGENERATIONS TIMES, REGENERATION START-UP BY VOLUME AND BY TIME WITH DEFERRED START-UP. EEPROM MEMORY. CHLORINE PRODUCER. REMOTE STARTER ON REQUEST.	ACL2	•		•			•				•		
	 AQUA-TIMER TIMER ELECTRONIC PROGRAMMER WITH ADJUSTABLE REGENERATION TIMES, REGENERATION START-UP BY TIME/VOLUME, VOLUME WITH DEFERRED START-UP. REMOTE STARTER AVAILABLE	AT2	•	•	•	•	•	•						
		AT2/02	•		•	•		•	•	•				
	 AQUAPROGRAM TIMER ELECTRONIC PROGRAMMER WITH ADJUSTABLE REGENERATION TIMES, REGENERATION START-UP BY TIME/VOLUME WITH DEFERRED START-UP. OPTIMISES AND CONTROLS THE REGENERATION CYCLE, PUMP OR OTHER ELEMENT CONTROL AVAILABLE. REMOTE STARTER, INHIBIT ENTRY, EEPROM MEMORY. CHLORINE PRODUCER ON REQUEST (PATENT S.I.A.T.A.)	AP2/02	•		•	•		•	•	•	2	•		
	 AQUA CUBIC TIMER ELECTRONIC PROGRAMMER WITH ADJUSTABLE REGENERATION TIMES. POSSIBILITY FOR DUPLEX REGENERATION USE. REGENERATION START-UP BY VOLUME. EEPROM MEMORY	AC5	•	•			•	•			1			
		AC7	•	•			•	•			1			
	 AQUA-IONIC TIMER ELECTRONIC PROGRAMMER SPECIFICALLY FOR DEMINERALISATION SYSTEM. ADJUSTABLE REGENERATION TIMES. QUALITY CONTROL OF TREATED WATER IN MICROSIEMENS/Cm. REGENERATION START-UP: VOLUME - CONDUCTIBILITY CELL - CONDUCTIBILITY/VOLUME INTERFACE FOR AUXILIARY SERVICES AVAILABLE. REGENERATION START-UP ALSO MANUAL	AI5			•		•	•			3	•		
		AI7			•		•	•			3	•		

SPARE PARTS



POS.	CODE	DESCRIPTION
1	362-L	V360 A/C MACHINED BODY
2	361-L	V360 B/C MACHINED BODY
3	1958	PISTON V360 LONG ASSEMBLED
	1958-C	PISTON V360 SHORT ASSEMBLED
4	2235	PISTONS AND LINING V360 SPARE PARTS KIT
	2235-F	PISTONS AND LINING V360 FILTER SPARE PARTS KIT
5	2236-B	V360 COMPLETE WHITE INJECTOR KIT
	2236-R	V360 COMPLETE RED INJECTOR KIT
	2236-N	V360 COMPLETE BLACK INJECTOR KIT
6	1955	STOPPER V360 ASSEMBLED

NORMAL MAINTENANCE OPERATIONS

Problem	Cause	Corrective action
1) Drain leaking while in service or on stand-by	Pilot leakage	Disconnect alternately connections 2 and 4, see page 15. If water is leaking from one of the two pressure connections, this means that the relative pilot has leaks and should be replaced. If the leakage does not come from the pilot, the cause should be sought, possibly originating from the head of the V360 piston.
	Valve leakage through the piston system	<ol style="list-style-type: none"> 1. Disconnect one by one the connections 1 and 3, see page 15, if the leaking stops, inspect and if necessary replace the OR of the plastic screw or the piston if it is ridged 2. Check that the pistons and following Or are undamaged and replace them: <ol style="list-style-type: none"> a) First OR after the plastic screw for A/C pos. 3 b) Second OR after the plastic screw for B/C pos. 5
2) Assembly and disassembly of 2 chambers	Check the internal surfaces of the chambers	<p>For all the operations regarding the inside of chambers A/C and B/C the following procedure should be respected:</p> <ol style="list-style-type: none"> A. Turn off the entry water B. Disconnect the control pipes of the piston movement C. Remove the seeger ring from the stopper, using a suitable tool D. Remove the stopper or the relative OR E. Extract the piston pressing on the internal pin; if it is difficult to extract, loosen the back flange, to allow air to enter without depressing the piston chamber F. Remove the ring-nut holding seeger ring G. Remove the plastic screw and the whole set of distancers and Ors taking care to reinsert them in the upended piston so as not to lose the correct consequence H. Check that the inside of the chamber is undamaged I. Reassemble everything, paying attention to the following: <ol style="list-style-type: none"> 1) Check that the piston is not scratched and above all that the two DE of the head are undamaged and positioned correctly (not upended) see PART. 1 2) Check that the two seeger rings are not too out of the shape and when the seeger is reinserted check that the tool used to insert the seeger is used to support the expansion of the ring into its position. The seeger stopper should be replaced every time maintenance is carried out. <p>See page 22</p>
Hardness leak at exit	Probable leak between entry and exit or on ac/bc seal	Take the piston out of the entry, checking that there is no damage to the surface. If the piston is damaged, replace it. Otherwise, replace the Ors (pos. 1 and pos. 2) of the entry chamber. To carry out this operation, proceed as indicated in point 2, paragraphs "a,b,c,d,e,f".
Suction failure	Injector	Disconnect the injector pipe between the injector and the brine. In case of air suction, the reason of a suction failure have to be searched in the measurement system of the brine valve.
		<p>In case the injector does not suck verify if:</p> <ol style="list-style-type: none"> (a) The filter inside the injector body is obstructed (b) The internal OR are defective or the two injector body are defective (in that case we suggest to contact SIATA) (c) The drain conditions do not match with the choosen injector

