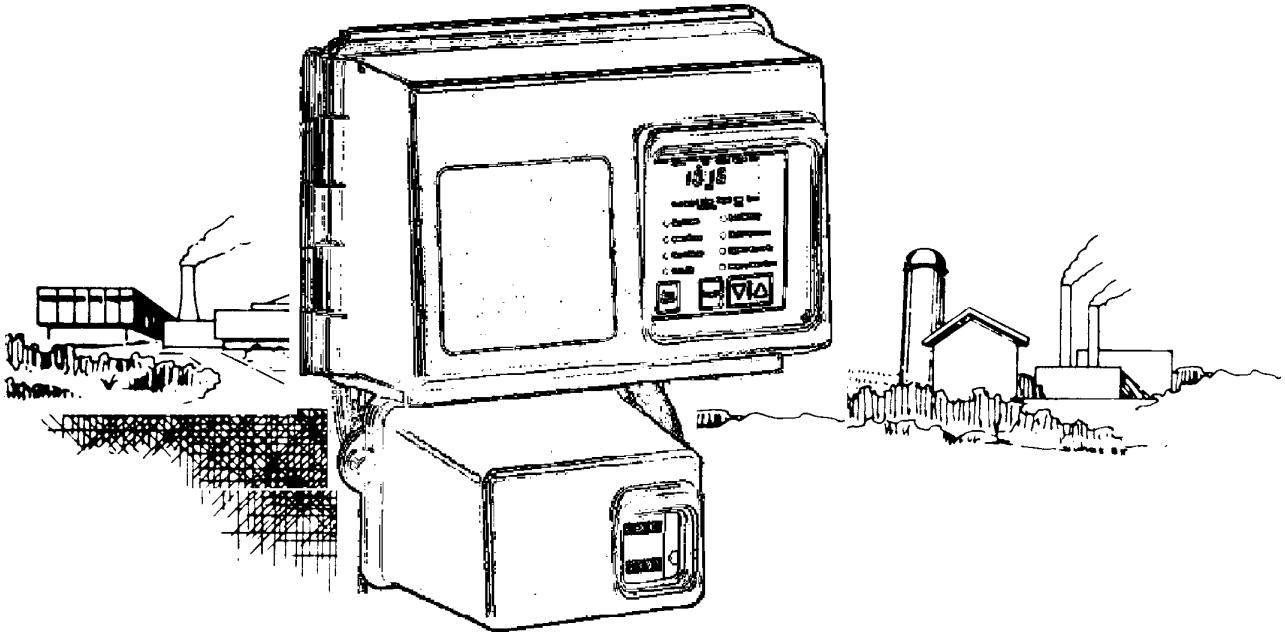
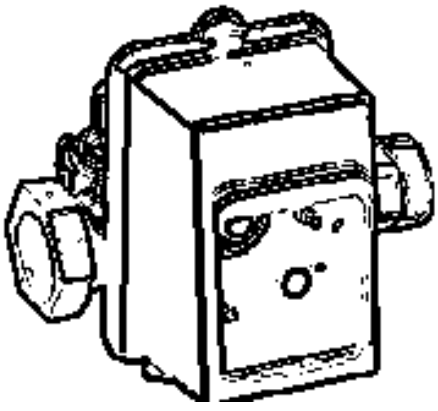
Model 2900DA duplex
Customer Manual





CM2900DA-10/2001

MODEL 2900DA duplex

installation information

JOB NO: . . . . . .

MODEL NO: . . . . . .

DESIGN HARDNESS: . . . . . mg/l as $CaCO_3$

CAPACITY PER UNIT: . . . . . kg. $CaCO_3$

RESIN VESSEL SIZE: . . . . . DIA. x . . . . . HIGH

BRINE TANK SIZE: . . . . . DIA. x . . . . . HIGH

SALT SETTING PER REGENERATION: . . . . . Kg. NaCl

RESIN VOLUME: . . . . . LITRES

2900DA CONTROL VALVE SPECIFICATIONS & SETTINGS:

1) Type of Timer: 3230

2) *Type of meter: . . . . . .

3) Meter setting . . . . . m^3

4) Regeneration programme settings:

   a) Backwash . . . . . min.

   b) Brine & Slow Rinse . . . . . min.

   c) Rapid Rinse . . . . . min.

   d) Brine tank refill: . . . . . min.

5) Drain Line Flow Control . . . . . lpm.

6) Brine refill rate: . . . . . US gpm/lpm

7) Ejector size: . . . . . .

8) Electrical: 24 volt 50 Hz 65VA

FOR SERVICE CONTACT:

MODEL 2900DA duplex

general installation check list

WATER PRESSURE: A minimum water pressure of 1,8 bar is required for the regeneration valve to operate effectively.

ELECTRICAL FACILITIES: A continuous 24 volt, 50 Hz. current supply is required. Make certain the current supply is always live and cannot be turned off with another switch.

EXISTING PLUMBING: Existing plumbing should be free from hardness scale and iron buildup. Piping that is built up heavily with hardness scale and/or iron should be replaced. If piping is clogged with iron, a separate iron filter unit should be installed ahead of the water softener.

LOCATION OF SOFTENER AND DRAIN: The softener should be located close to a drain.

BYPASS VALVES: Always provide for the installation of a bypass valve system.

CAUTION: Water pressure is not to exceed 8,0 bar. Water temperature is not to exceed 43°C. The unit must not be subjected to freezing conditions.

INSTALLATION AND START-UP INSTRUCTIONS

1). Place the softener resin vessel in position, making sure the vessel is level and on a firm base.

2). All plumbing should be in accordance with local water bylaws. The minimum pipe size for the drain line should not be less than 22mm (3/4") N.B.

3). The distributor tube should be cut **5mm BELOW** the top of the vessel. *Note: Top of vessel includes any vessel adaptor if used.*

4). Lubricate the distributor O-Ring seal and vessel O-Ring seal with silicone lubricant (Dow Corning 7® compound).

5). Fit the control valve on the resin vessel.

6). Make sure that the floor beneath the salt storage tank is both clean and level.

7). Place water in the salt tank to a depth of approximately 25mm. Salt may be placed in the tank at this time. (Use only granular or pellet/tablet type salt if a combined saturator/measuring tank system is installed).

8). Place the installation in the bypass position. Turn on the main water supply. Open a cold soft water outlet nearby and let it run for a few minutes or until such time as the pipework system is flushed free from foreign material that may have resulted from the installation.

9). Place the installation in the service position and let the water flow slowly into the resin vessel(s). Air should be expelled via the open soft water outlet and this should be closed when the water runs free of air entrapment.

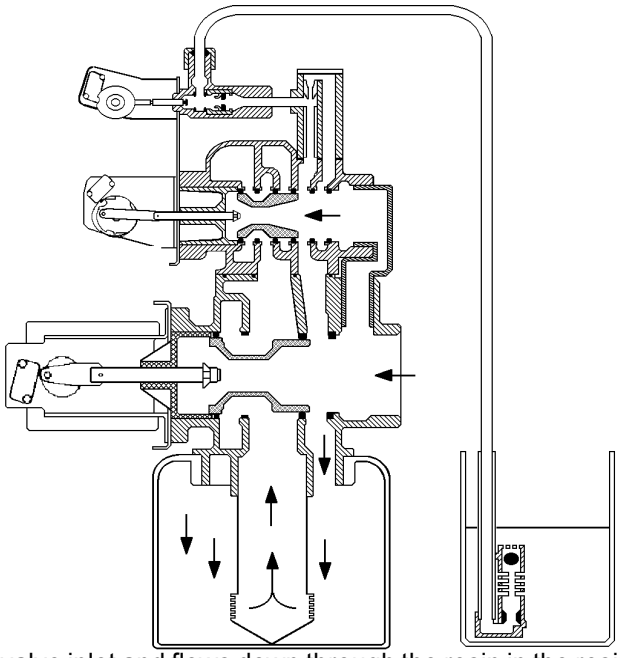
10). Electrical: All electrical connections must be made according to the appropriate codes. Connect the system to a suitable transformer if required.

SPECIAL METER INSTALLATION NOTE:
It is important that the RM style meter is installed in the horizontal plane

MODEL 2900DA duplex

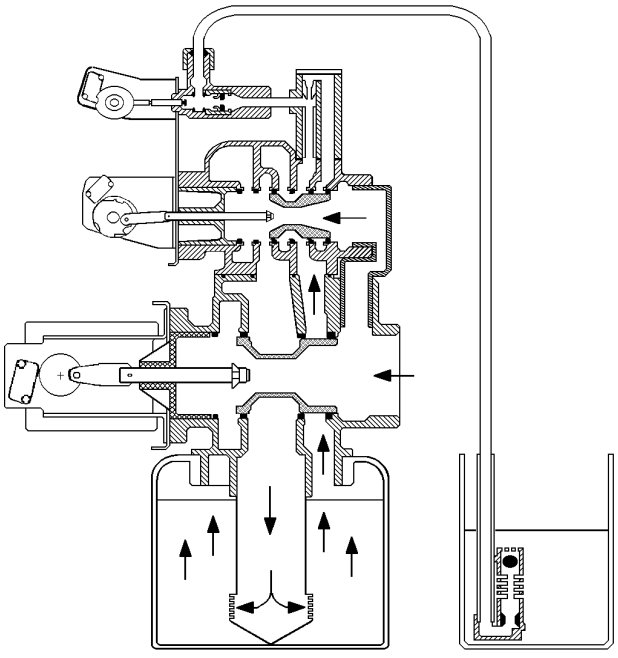
Flow diagrams

1 SERVICE POSITION



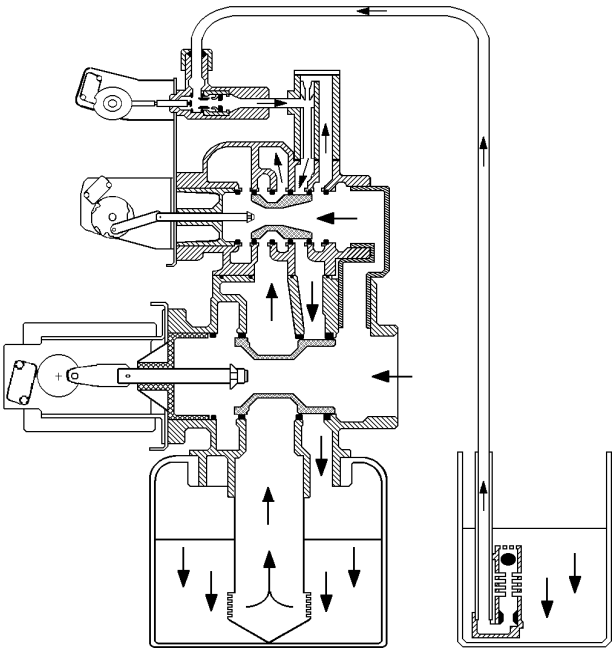
Hard water enters the unit at the valve inlet and flows down through the resin in the resin vessel. Softened water enters the centre tube through the bottom screen, then flows up through the centre tube, around the piston and exits from the valve outlet.

2 BACKWASH POSITION



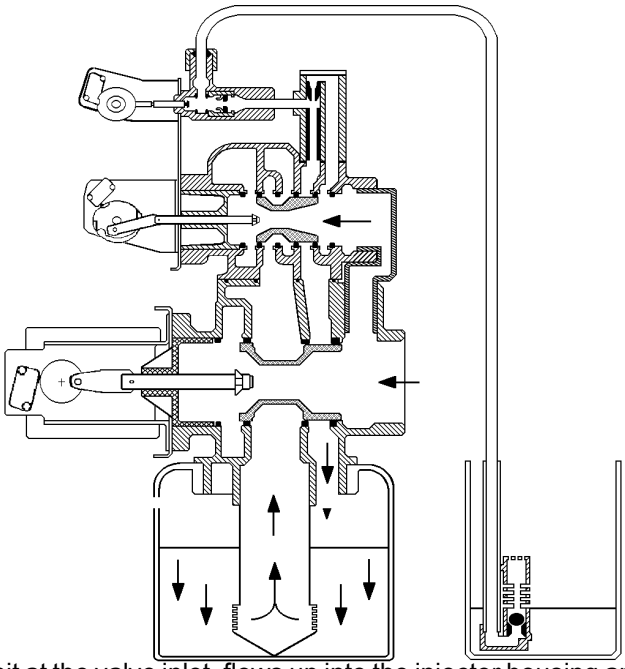
Hard water enters the unit at the valve inlet, flows through the coupling to the regeneration valve inlet. It then flows through the regen valve piston, down the centre tube, through the bottom screen and up through the resin, around the piston and exits via the valve drain port.

3 BRINE POSITION



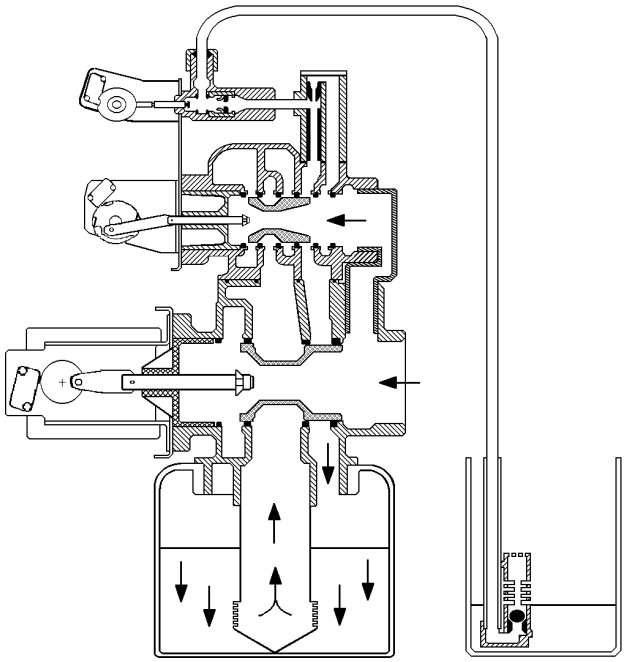
Hard water enters the unit at the valve inlet, flows up into the injector housing and down through the injector nozzle and throat, drawing brine from the brine tank. Brine flows down through the resin exits via the bottom screen, up through the centre tube and exits via the valve drain port.

4 SLOW RINSE POSITION



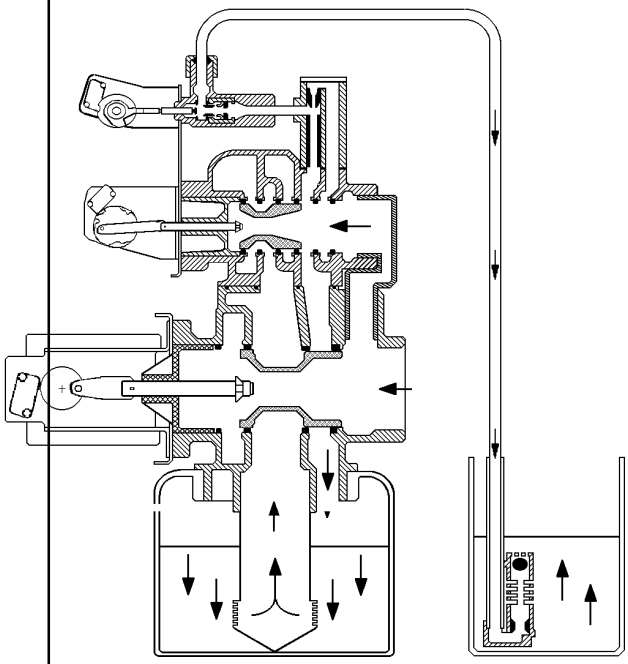
Hard water enters the unit at the valve inlet, flows up into the injector housing and down through the injector nozzle and throat, around the piston and down through the resin. It enters the bottom screen, up through the centre tube and exits via the valve drain port.

5 RAPID RINSE POSITION



Hard water enters the unit at the valve inlet, flows directly from the inlet down through the resin, into the bottom screen and up through the centre tube, around the piston and exits via the valve drain port.

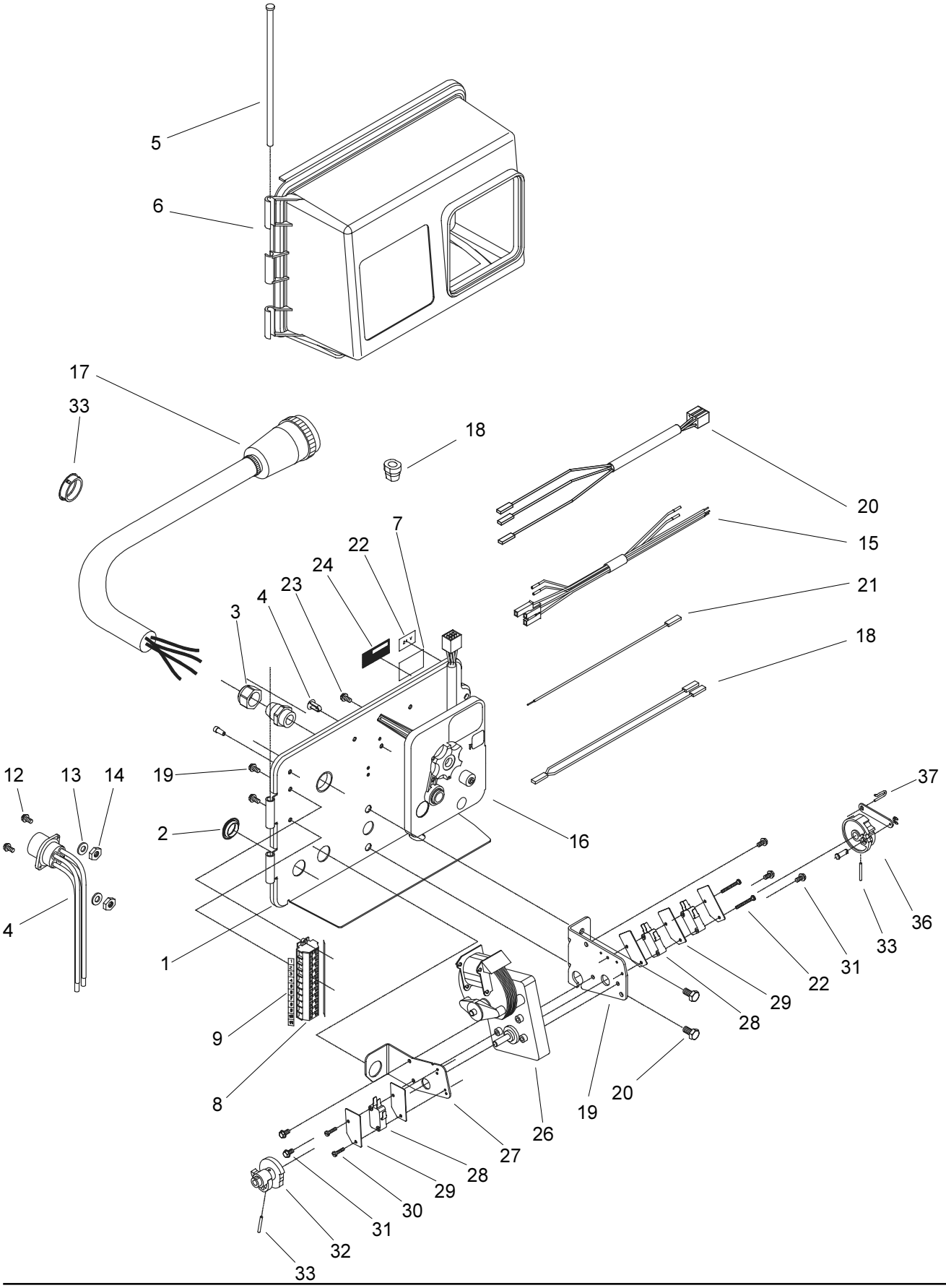
6 BRINE TANK FILL POSITION



Hard water enters the unit at the valve inlet, flows up through the injector housing, through the brine valve and into the brine tank.

MODEL 2900DA duplex

control drive A assembly



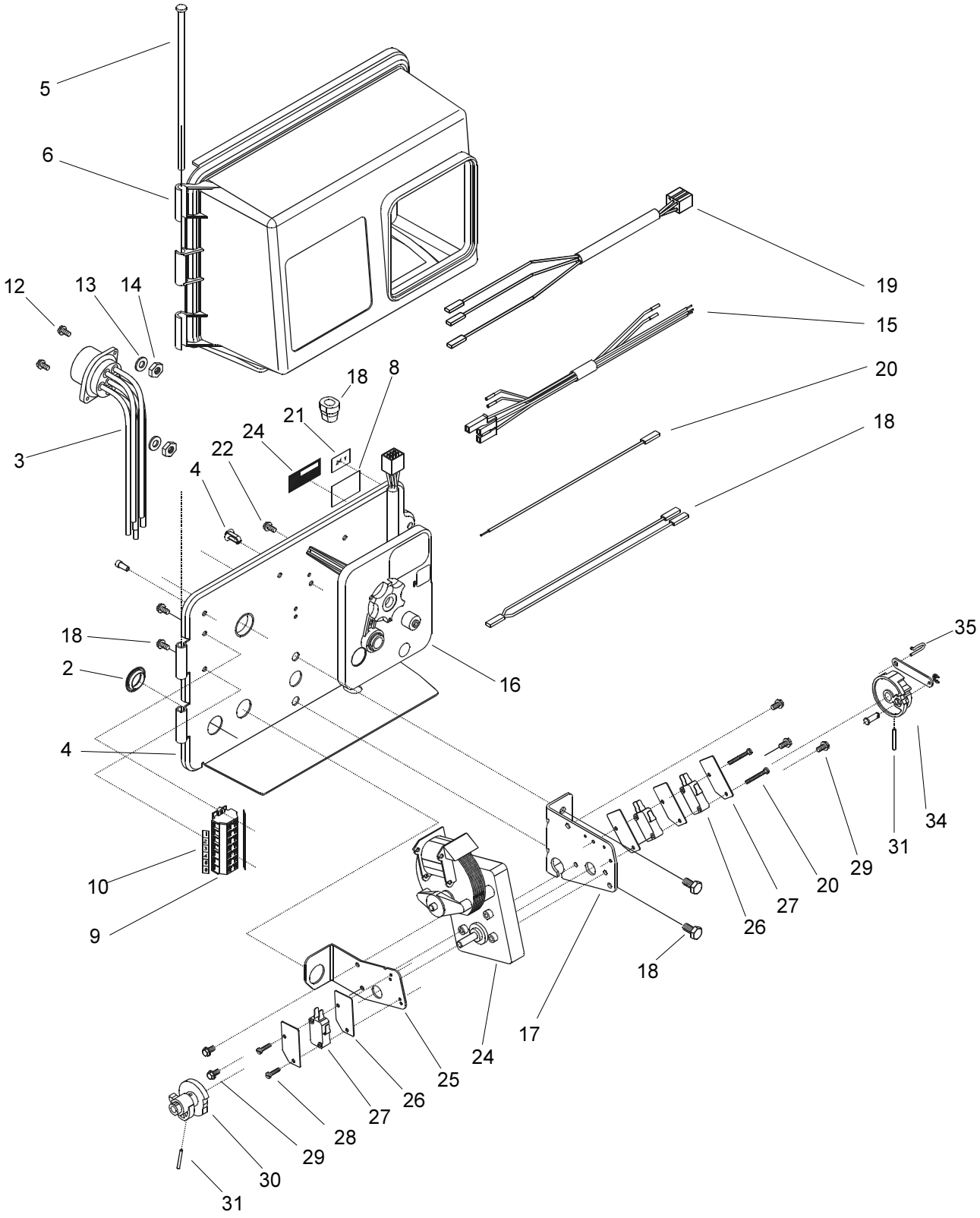
MODEL 2900DA duplex

control drive A assembly

Item	Qty	Part No.	Description
1	1	18697-14	Back Plate
2	1	18748	Plug .750 hole
3	1	17967	Fitting tight
4	6	19801	Plug .190 hole
5	1	17845-02	Pin, hinge
6	1	26829	Cover assy beige
7	1	26210-xx	CE logo
8	1	23653	10 Position Terminal Strip
9	2	24934	10 Position Terminal Strip Label
10	4	17904	Wire Sleeve (not shown)
11	1	24685	Meter Base Connector
12	2	11356	Screw
13	2	11085-01	Nut
14	2	11663	Washer
15	1	25835	Interlock Harness
16	1	24220	Timer Assy 3230 24 V
17	1	25832	Interlock Cable
18	1	13547	Strain Relief
19	2	13296	Mounting Screw
20	1	25827	Wire Harness
21	1	25414	Wire Motor
22	1	24388	Voltage label 24 V
23	2	10300	Screw Timer
24	1	21271	Serial Number Label
25	2	23726	Screw
26	1	13383	Drive motor 24vac
27	1	11826	Motor bracket - brine side
28	3	10218	Microswitch
29	5	10302	Insulator
30	2	11805	Screw
31	4	10872	Motor mount screw
32	1	12777	Brine valve cam
33	2	10338	Roll pin
34	1	23728	Motor bracket - drive side
35	2	25178	Screw
36	1	24267	Drive cam assy - STF
37	1	10909	Connecting rod clip

MODEL 2900DA duplex

control drive B assembly



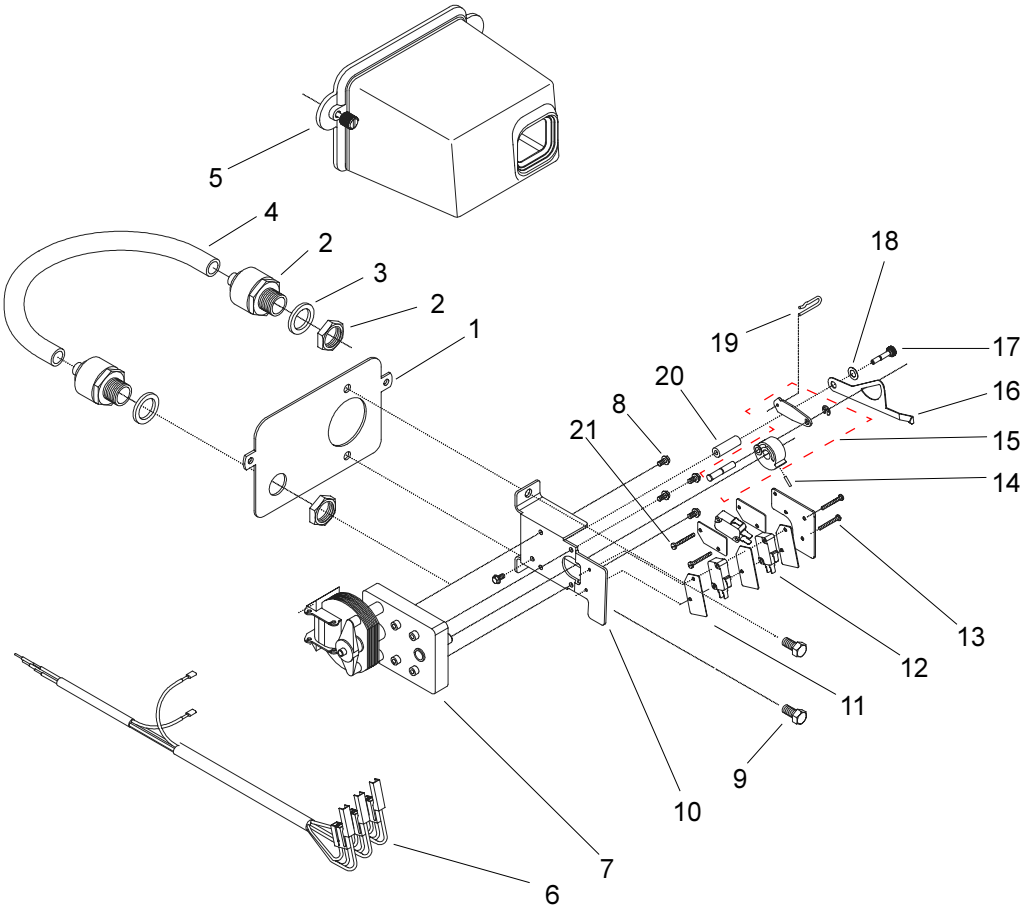
MODEL 2900DA duplex

control drive B assembly

Item	Qty	Part No.	Description
1	1	18697-14	Back Plate
2	1	18748	Plug .750 hole
3	1	24685	Meter base connector
4	6	19801	Plug .190 hole
5	1	17845-02	Hinge pin
6	1	26829	Cover assy
7	1	21271	Serial number label
8	1	26210-xx	CE logo
9	1	23653	6 Position Terminal Strip
10	2	24934	6 Position Terminal Strip Label
11	4	17904	Wire Sleeve (not shown)
12	2	11356	Screw
13	2	11085-01	Nut
14	2	11663	Washer
15	1	25835	Interlock Harness
16	1	24220	Timer Assy 3230 24 V
17	1	13547	Strain relief
18	2	13296	Mounting Screw
19	1	25827	Wire Harness
20	1	25414	Wire Motor
21	1	24388	Voltage label 24 V
22	2	10300	Screw Timer
23	2	23726	Screw
24	1	13383	Drive motor 24vac
25	1	11826	Motor bracket - brine side
26	3	10218	Microswitch
27	5	10302	Insulator
28	2	11805	Screw
29	4	10872	Motor mount screw
30	1	12777	Brine valve cam
31	2	10338	Roll pin
32	1	23728	Motor bracket - drive side
33	2	25178	Screw
34	1	24267	Drive cam assy - STF
35	1	10909	Connecting rod clip

MODEL 2900DA duplex

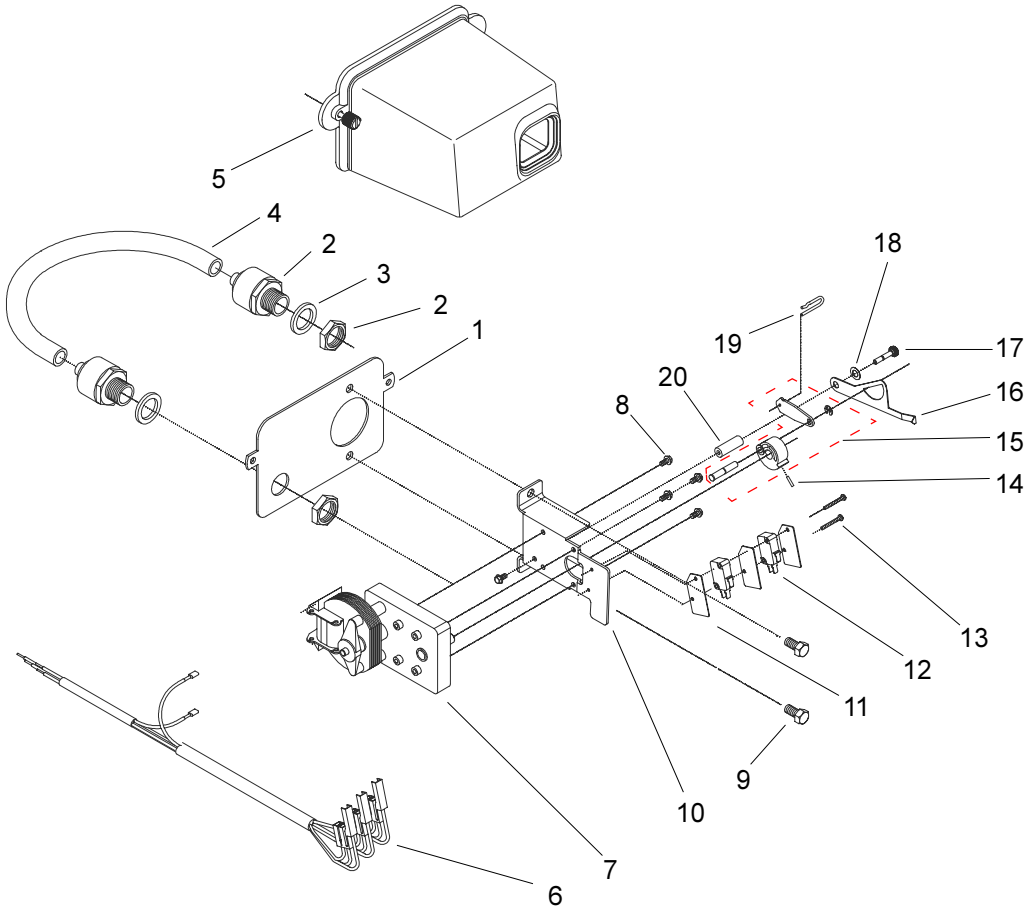
adaptor control drive assembly - A



Item	Qty	Part No.	Description
1	1	18709-50	Backplate
2	2	18692	Connector conduit
3	2	18691	Sealing washer
4	1	18693	Interdrive conduit
5	1	26218	Lower cover assembly
6	1	25833	Wire harness
7	1	15651	Adaptor drive motor - 24vac
8	4	10872	Motor mount screw
9	2	21352	Screw
10	1	14769	Motor bracket
11	5	10302	Insulator
12	3	10218	Microswitch
13	2	14923	Screw
14	1	15493	Roll pin
15	1	24214	Adaptor drive cam assy
16	1	18725	Indicator arm
17	1	15742	Indicator screw
18	1	18727	Spring washer
19	1	14813	Spring clip
20	1	18726	Indicator spacer
21	2	11805	Screw
22	1	15713	Auxiliary switch bracket

MODEL 2900DA duplex

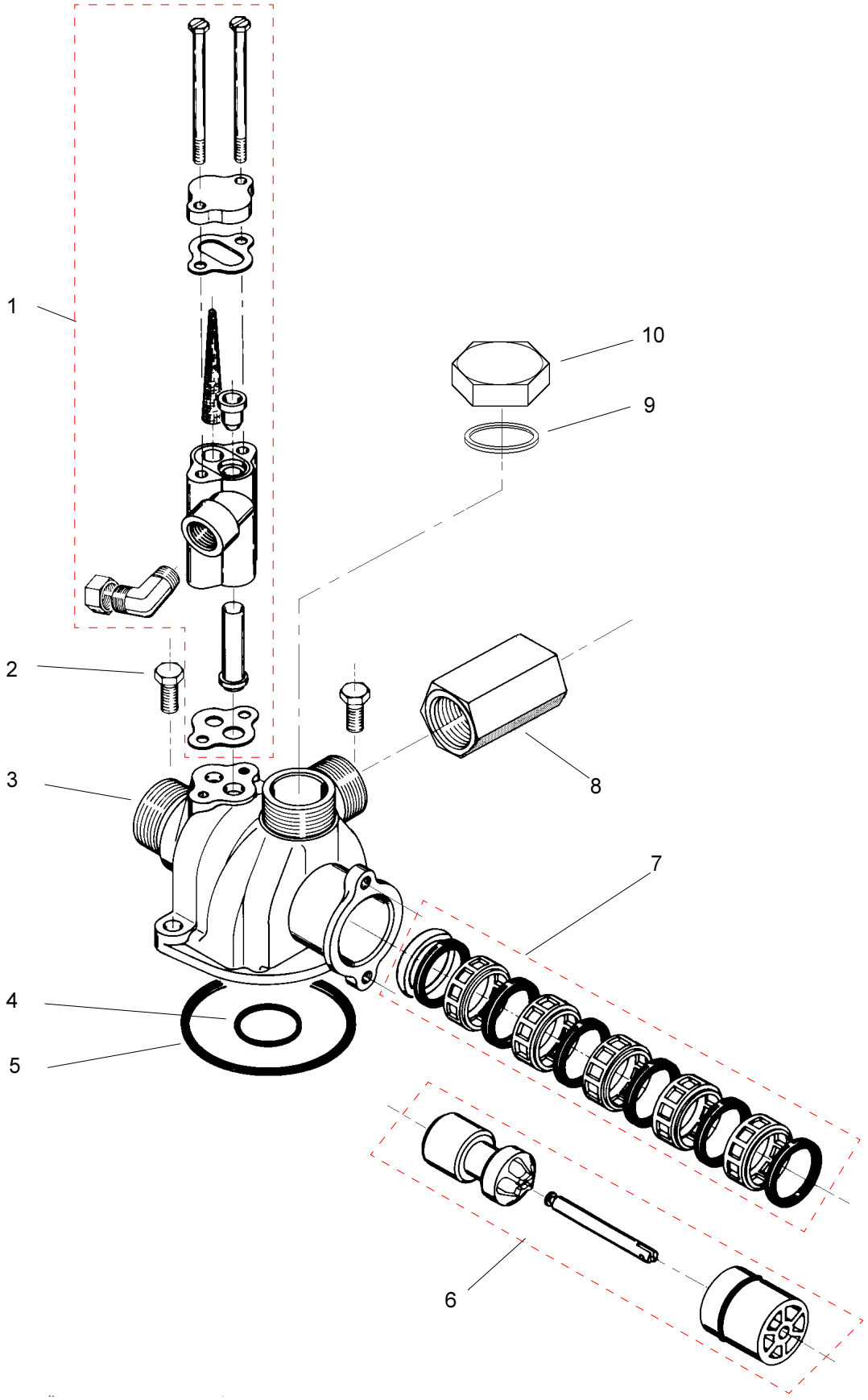
adaptor control drive assembly - B



Item	Qty	Part No.	Description
1	1	18709-50	Backplate
2	2	18692	Connector conduit
3	2	18691	Sealing washer
4	1	18693	Interdrive conduit
5	1	26218	Lower cover assembly
6	1	25833	Wire harness
7	1	15651	Adaptor drive motor - 24vac
8	4	10872	Motor mount screw
9	2	21352	Screw
10	1	14769	Motor bracket
11	3	10302	Insulator
12	2	10218	Microswitch
13	2	14923	Screw
14	1	15493	Roll pin
15	1	24214	Adaptor drive cam assy
16	1	18725	Indicator arm
17	1	15742	Indicator screw
18	1	18727	Spring washer
19	1	14813	Spring clip
20	1	18726	Indicator spacer

MODEL 2900DA duplex

valve body assembly



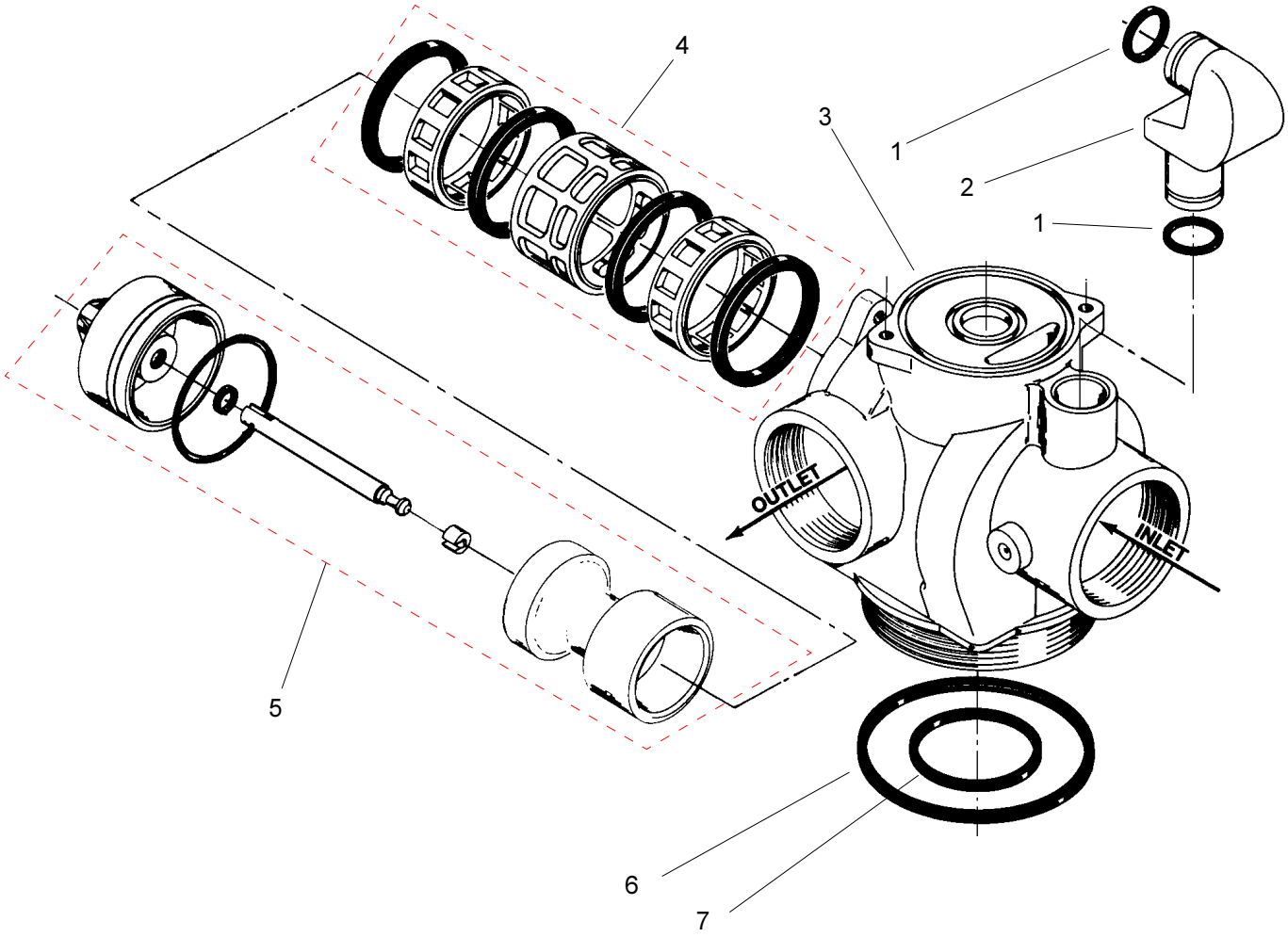
MODEL 2900DA duplex

valve body assembly

Item	Qty	Part Number	Description
1	1	24173-*	Injector assembly - * specify size
2	2	21361	Screw
3	1	23383-N	2750 body casting
4	1	11710	O-Ring
5	1	11208	O-Ring
6	1	24067	Piston assembly
7	1	24271	Seal and spacer kit
8	1	700**	DLFC - specify size
9	1	11206	Fitting gasket
10	1	23705	Pipe cap 1in BSP

MODEL 2900DA duplex

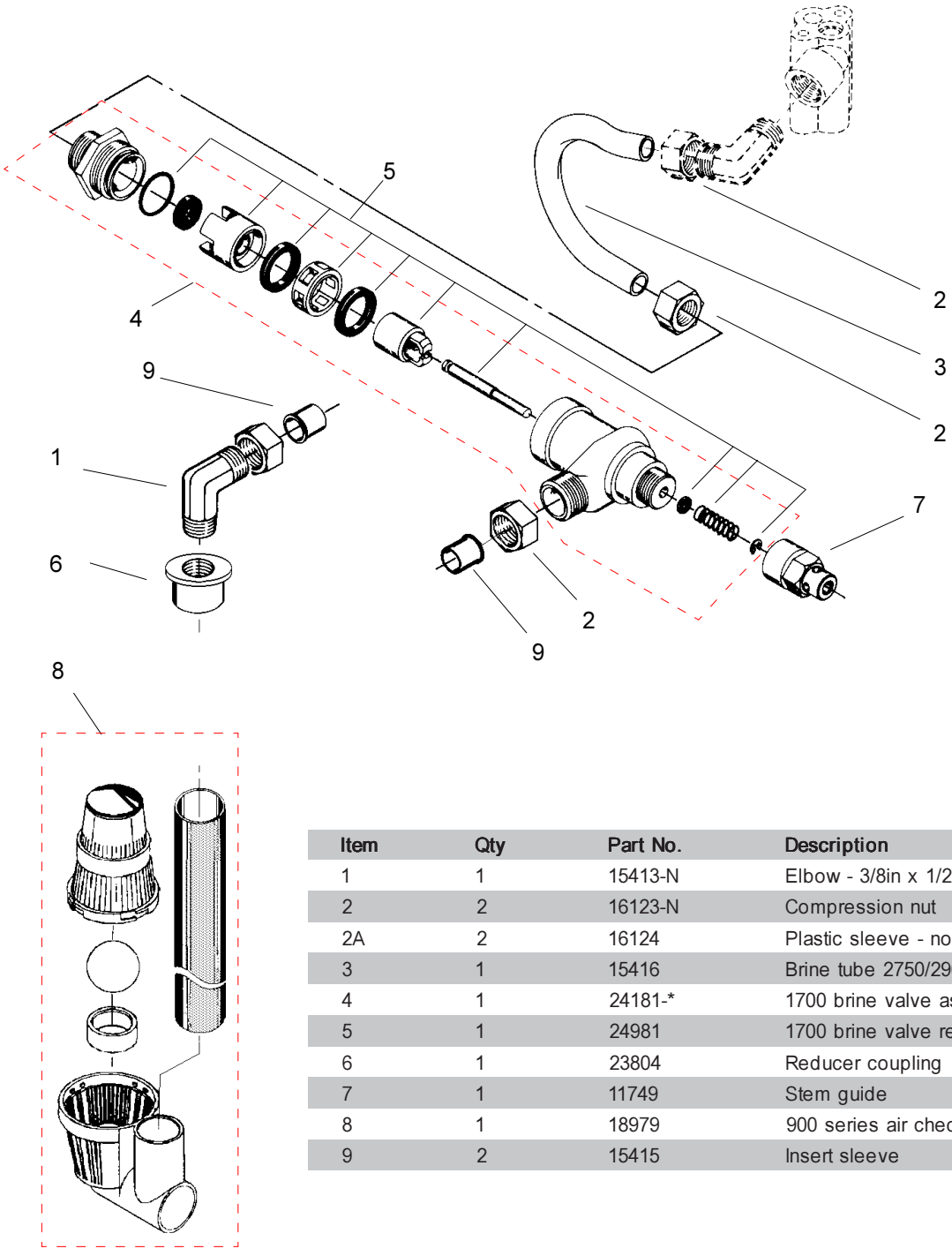
adaptor control valve assembly



Item	Qty	Part No.	Description
1	2	14812	O-Ring 560-CD
2	1	14751	Coupling
3	1	14750-12-N	2in Adaptor
4	1	24205	Seal and spacer kit
5	1	24206	Piston assy - NBP
6	1	15210	O-Ring (Park tank)
7	1	13577	O-Ring

MODEL 2900DA duplex

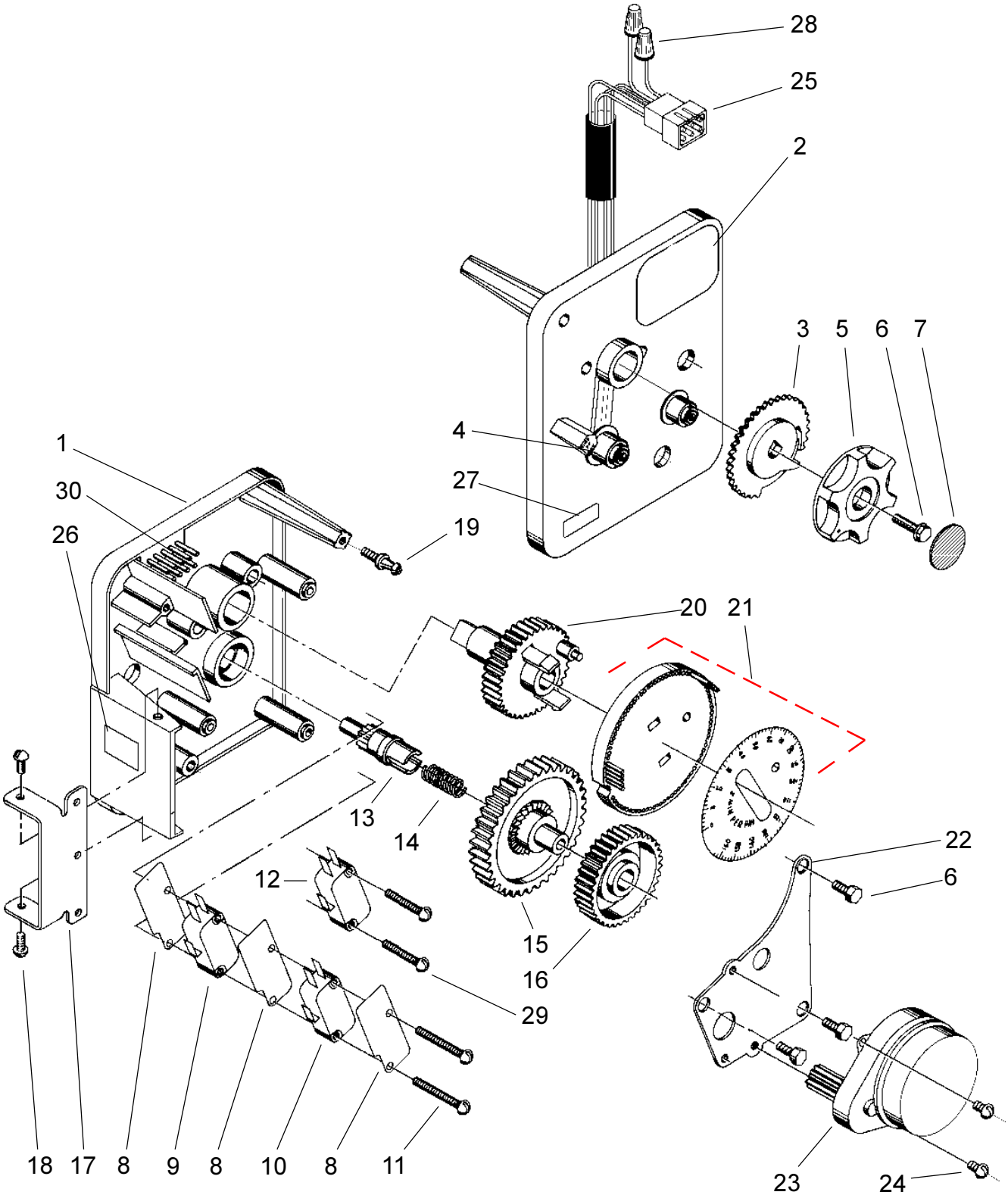
1700 brine valve assembly



Item	Qty	Part No.	Description
1	1	15413-N	Elbow - 3/8in x 1/2in tube
2	2	16123-N	Compression nut
2A	2	16124	Plastic sleeve - not shown
3	1	15416	Brine tube 2750/2900
4	1	24181-*	1700 brine valve assy - *specifiy size
5	1	24981	1700 brine valve repair kit
6	1	23804	Reducer coupling
7	1	11749	Stem guide
8	1	18979	900 series air check assy
9	2	15415	Insert sleeve

MODEL 2900DA duplex

timer assembly 3230



MODEL 2900DA duplex

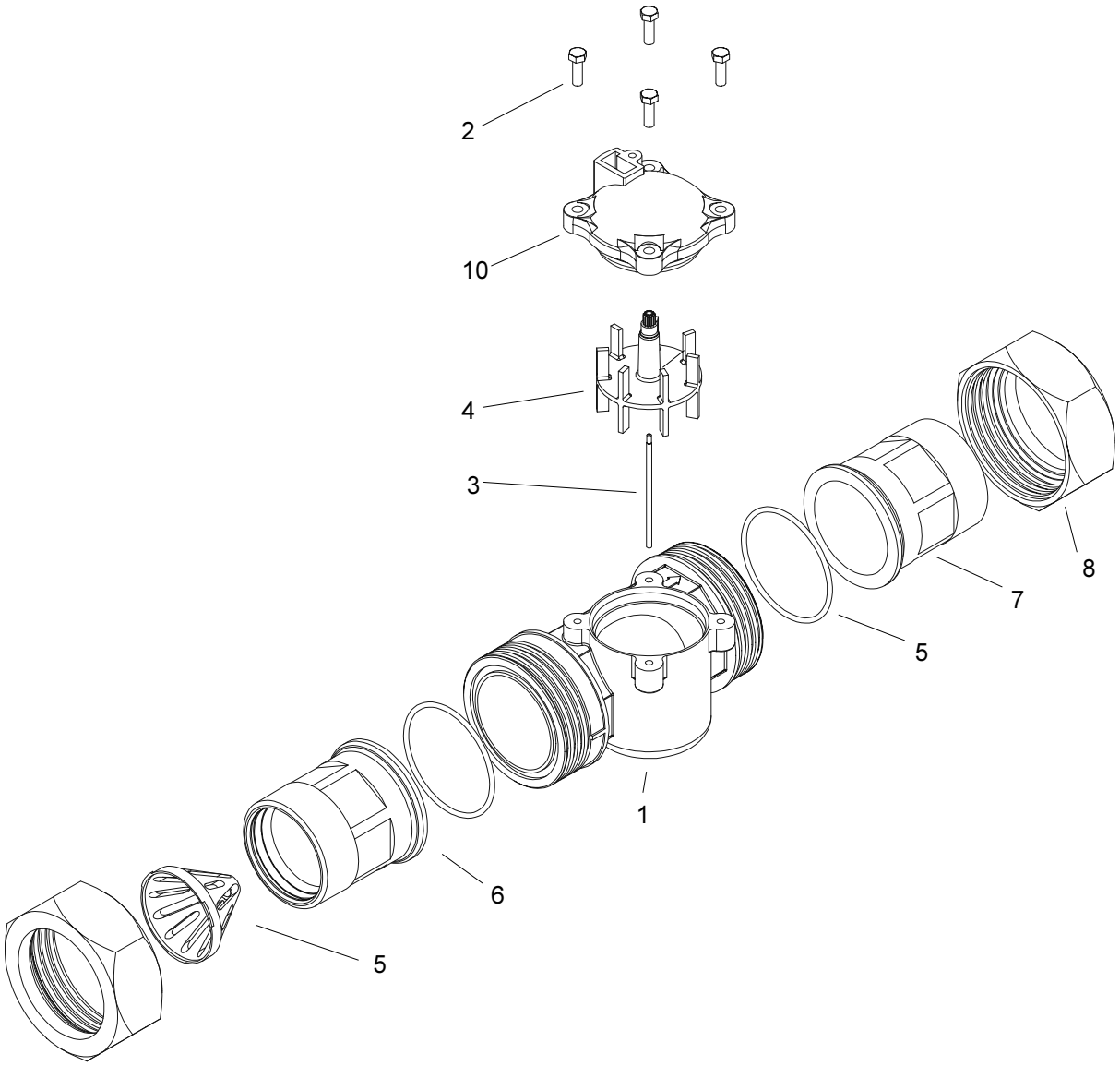
timer assembly 3230

Item	Qty	Part No.	Description
1	1	13870	Timer housing assy
2	1	26846	Pictogram
3	1	13802	Cycle actuator gear
4	1	26870	Pictogram
5	1	13886	Knob
6	4	13296	Screw
7	1	11999	Button decal
8	3	14087	Insulator
9	1	15314	Switch
10	1	11399	Switch
11	2	11413	Switch mount screw
12	1	11399	Switch****
13	1	13018	Idler shaft
14	1	13312	Idler spring
15	1	13017	Idler gear
16	1	25803	Drive gear
17	1	13881	Hinge bracket
18	2	11384	Screw
19	1	14265	Spring clip
20	1	15055	Main drive gear
21	1	24528	Programme wheel assy
22	1	13887	Motor mount plate
23	1	18826	Motor 24vac 50 Hz
24	2	13278	Screw
25	1	25826	Wire harness
26	1	24388	Voltage label
27	1	24333	Timer ID label
28	2	12681	Wire connector
29	2	21099	Screw*****
30	13	15493	Pin

NOTE: The complete sub asembly p/n 22240-24 does not include items 12 and 29 which must be ordered seperately.

MODEL 2900DA duplex

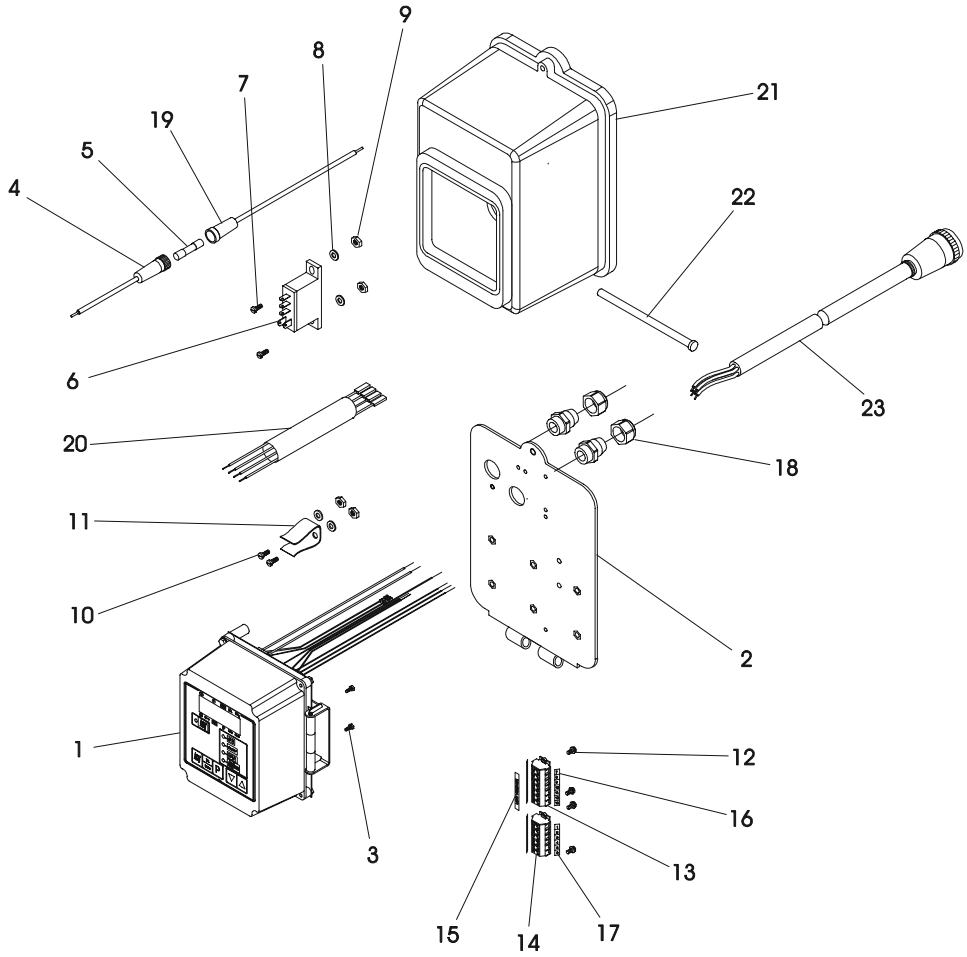
2" meter assembly option



Item	Qty	Part No.	Description
1	1	17689	Meter body
2	4	21716	Screw - M5x16
3	1	15432	Impeller shaft
4	1	15374-01	Impeller
5	2	19485	O-Ring
6	1	17987-101	2in nipple - Machined
7	1	17987-100	2in nipple
8	2	17988	2in meter nut
9	1	14680	Flow straightener
10	1	18330	Meter cover assy
or	1	28061	Complete sub assy

MODEL 2900DA duplex

RMC-ET control assembly option

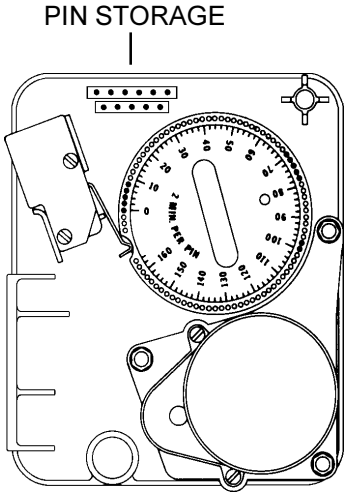


Item	Qty	Part No.	Description
1	1	27727	Timer assy - Series ET
2	1	19073	Backplate
3	2	10300	Screw
4	1	19675	Fuse holder
5	1	19676	Fuse
6	1	17749-00	Relay, SPDT 24v
7	2	11086	Screw M3
8	4	11663	Washer
9	4	11085	Nut
10	2	11358	Screw M3
11	1	17831	Battery clip
12	4	13296	Screw
13	1	15226-6	Terminal strip - 6 way
14	1	18707	Terminal strip - 7 way
15	1	18694	Low voltage label
16	2	15250	Terminal strip label
17	2	16187	Terminal strip label
18	2	17967	Gland assembly
19	1	28012	Fuse wire
20	1	28013	Relay harness
21	1	26583	Cover assembly
22	1	17845-01	Hinge pin
23	1	24651	Meter cable
24	1	19121-04	Meter harness - 7.7m - Not shown

MODEL 2900DA duplex

regeneration cycle programme setting

How To Set The Regeneration Cycle Programme:
The regeneration cycle programme on the water softener has been set up. However, portions of the cycle or programme can be lengthened or shortened in time to suit local conditions.



To expose the cycle programme wheel, grasp the timer in the upper left hand corner and pull, releasing the snap retainer and swinging the timer to the right.

To change the regeneration cycle programme, the programme wheel must be removed. Grasp the programme wheel and squeeze the protruding lugs towards the centre, lift the programme wheel off the timer. (Switch arms may require movement to facilitate removal).

After making any changes, return the timer to the closed position, engaging the snap retainer in the back plate. Make certain all electrical wires locate above the snap retainer post.

How to Change The Length Of The Backwash Time:
The programme wheel as shown in the drawing is in the service position. As you look at the numbered side of the programme wheel, the group of pins starting at zero determines the length of time the unit will backwash.

FOR EXAMPLE: If there are six pins in this section, the time of backwash will be 12 min. (2 min. per pin). To change the length of backwash time, add or remove pins as required. The number of pins x 2 equals the backwash time in minutes.

How To Change The Length Of Brine And Rinse Time:
The group of holes between the last pin in the backwash section and the second group of pins determines the length of time that the unit will brine and rinse.
To change the length of brine and rinse time, move the rapid rinse group of pins to increase or decrease holes in the brine and rinse section. The number of holes x 2 equals the brine and rinse time in minutes.

How To Change The Length Of Rapid Rinse:
The second group of pins on the programme wheel determines the length of time that the water softener will rapid rinse.
To change the length of the rapid rinse time, add or remove pins at the higher numbered end of this section as required. The number of pins x 2 equals the rapid rinse time in minutes.

How To Change The Length Of Brine Tank Refill Time:
The second group of holes on the programme wheel determines the length of time that the water softener will refill the brine tank.
To change the length of refill time, move the two pins at the end of the second group of holes as required. The number of holes x 2 equals the brine tank refill time in minutes.

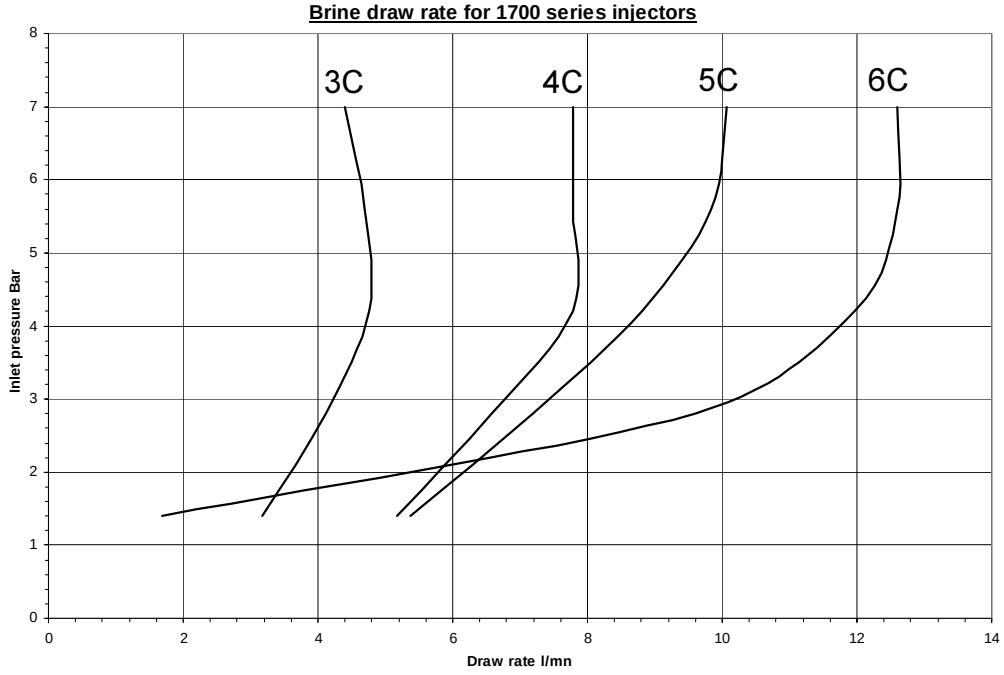
The regeneration cycle is completed and the valve returns to the SERVICE position when the outer microswitch is tripped by the two pins set at the end of the brine tank refill section. The programme wheel will continue to rotate until the inner microswitch drops into the notch on the programme wheel.

MODEL 2900DA duplex

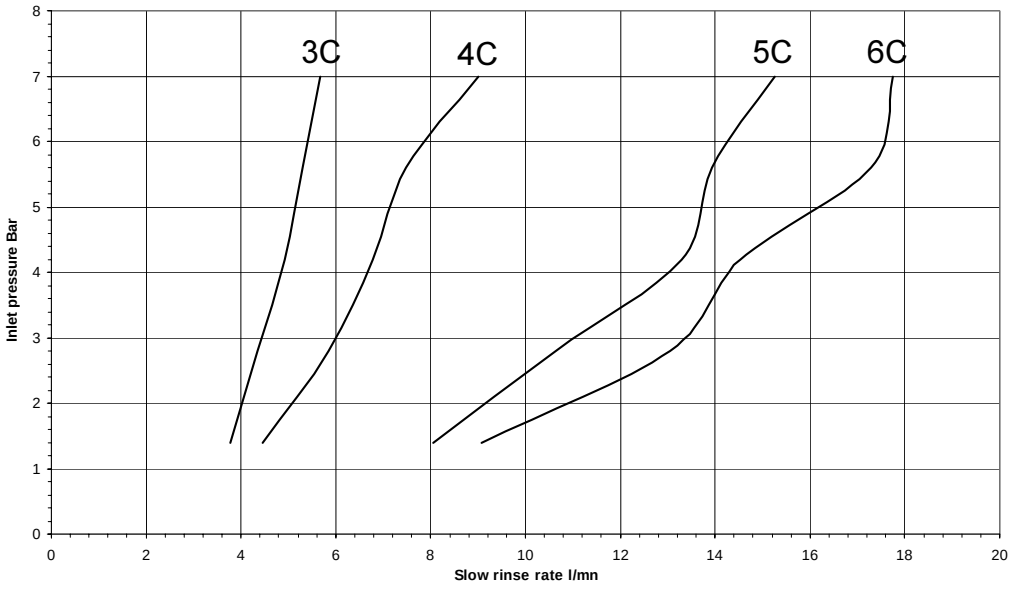
ejector performance data

Please carefully note: *The indicated ejector data is for guidance only on the relative performance between sizes. Many factors influence actual performance, particulartly the Ejector Draw Rate. As a result, the Brine Draw & Slow Rinse phase of the regeneration cycle should be established as part of the on site commissioning procedure.*

Brine draw rate for 1700 series injectors



Slow rinse rate for 1700 series injectors



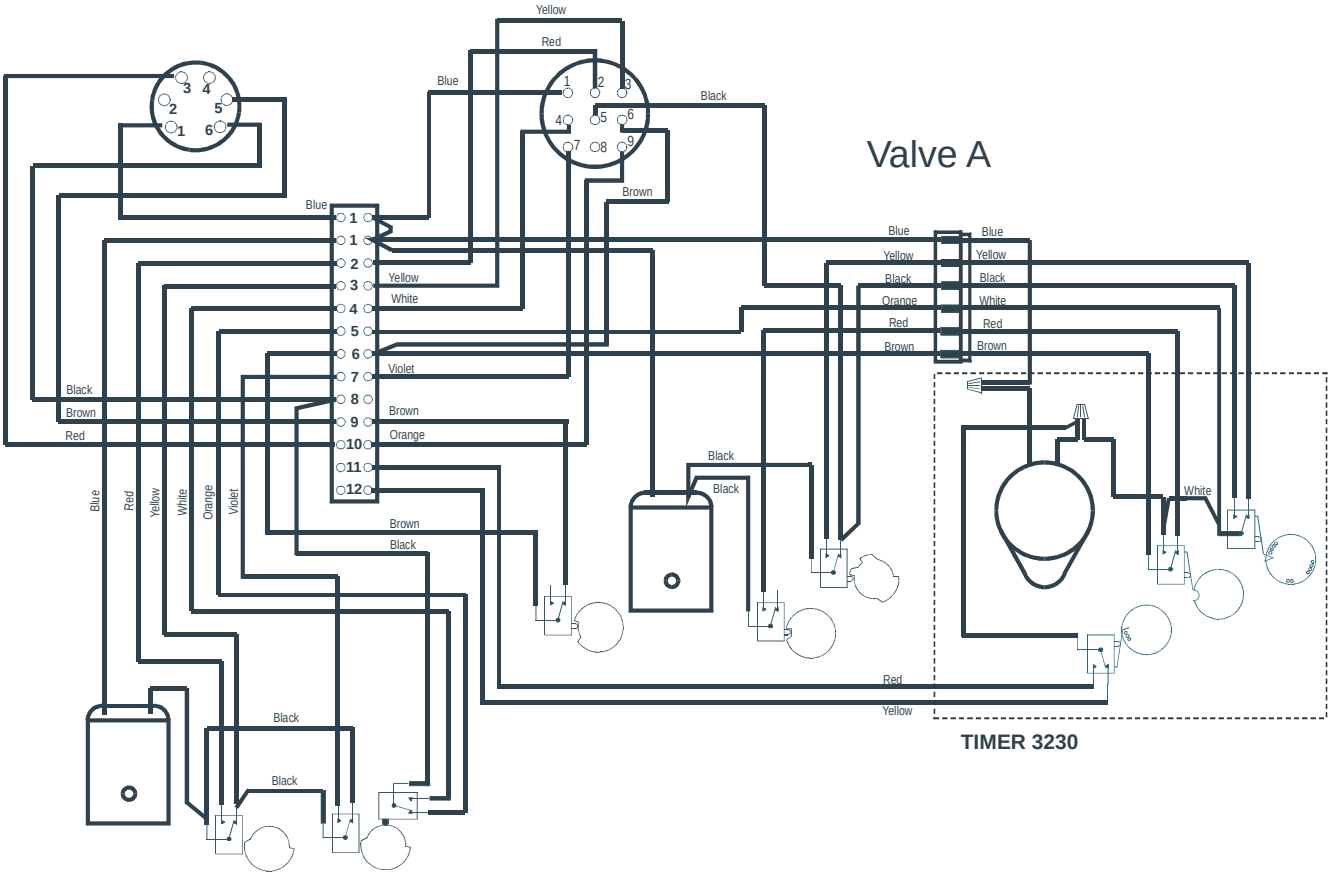
MODEL 2900DA duplex

wiring diagram for valve drives & timer

valve A

24 VAC Signal Outputs
Negative to terminal 10
Positive "Unit A in Service" signal to terminal 11
Positive "Unit A Regen" signal to terminal 12

IMPORTANT:
No installation wiring to this valve



The SOCKET indicated provides the Duplex controller connection. The corresponding cable & plug assembly is packed with the valve. When installing to a Fleck RMC-ET control, then the wire tags corresponding to the terminals in the RMC-ET head are as follows:

Tag 1 to terminal 1
Tag 3 to terminal 6
Tag 5 to terminal 2
Tag 6 to terminal 5

For other meter systems, the wires provide 24v 50 Hz. LIVE (tag 3), NEUTRAL (tag 1) & LIVE (tag 6) signal return for initiation. This signal must be of SIX minutes minimum duration and less than 60 minutes. *Note: Tagged wire 5 is redundant.*

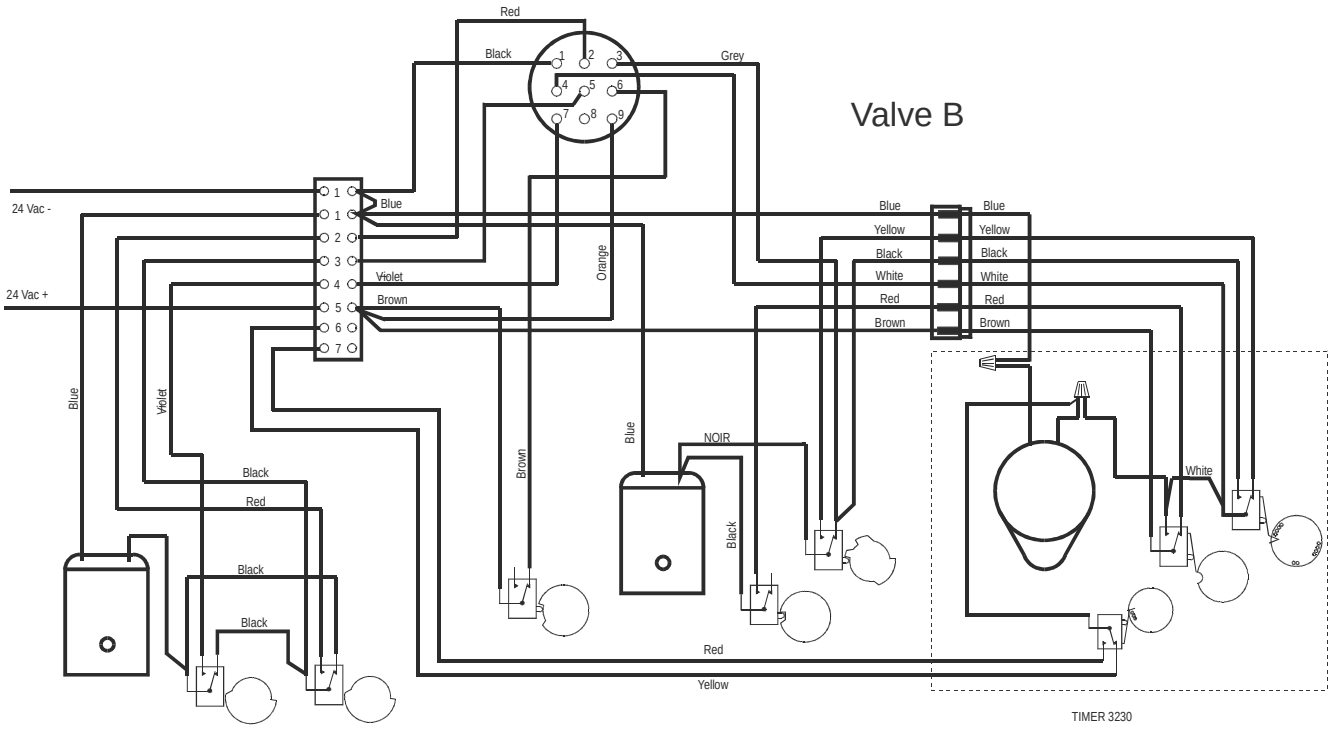
MODEL 2900DA duplex

wiring diagram for valve drives & timer

valve B

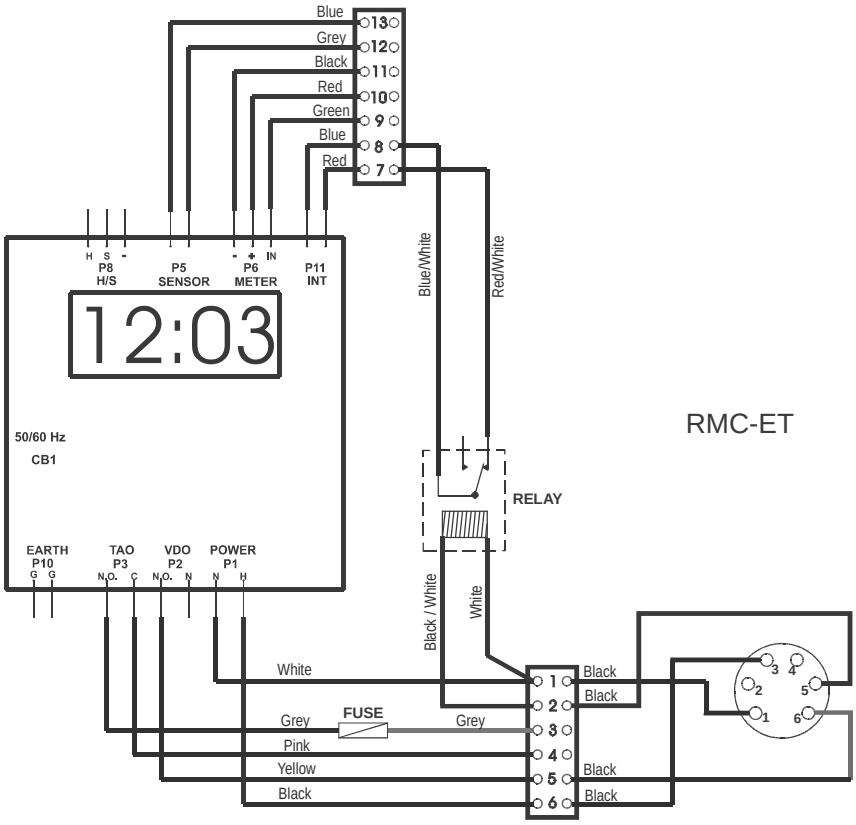
24 VAC Signal Outputs
Negative to terminal 5
Positive "Unit B in Service" signal to terminal 6
Positive "Unit B Regen" signal to terminal 7

Electrical supply connections:
24vac 50 Hz. 60 Va
Negative to TERMINAL 1
Positive to TERMINAL 5



MODEL 2900DA duplex

wiring diagram for RMC-ET assembly



The electrical supply and return signal for this assembly is provided by the meter harness p/n 24651 supplied with the main conrrol valve assembly. This cable assembly plugs into the socket on the backpanel of valve A - see diagram on page22. The cable should be attached to the terminal strip according to the table below:

Tag 1 to terminal 1
Tag 3 to terminal 6
Tag 5 to terminal 2
Tag 6 to terminal 5