

# Chapter 8

Control and  
protection of  
water distribution  
systems

# E-ULTRAMIX

## The new anti-legionella system



Electronic control of water temperature  
Programming of thermal disinfection cycles  
Remote control

**WATTS®**

## Chapter 8

# Control and protection of water distribution systems

### PRESSURE REDUCING VALVES WITH COMPENSATED SEAT

#### REDUBAR

Nickel-plated brass ultra-compact pressure reducing valve. PN15. Adjustable downstream pressure: 1.5÷4 bar (factory settings 3±0.5 bar). Max. operating temperature: 70°C. Available in version with 1/2" F - 3/4" M multi-thread connections on both sides and with 3/4" M connection for 3/4" F union nut.

**Compliant with: ACS (Attestation de Conformité Sanitaire)**

Part Number	Connection	Qty/Box	Box/Carton
82500	3/4" M x rotary nut 3/4" F	1	40
82501	1/2" F / 3/4" M x 1/2" F / 3/4" M	1	40

Dimensions at the end of the section.



#### REDUBLOC

Compact brass pressure reducing valve offering 3 functions in 1:

- pressure reduction;
- controllable check valve;
- shut-off valve.

PN15. Adjustable downstream pressure: 1.5÷4 bar (factory settings 3±0.5 bar).

Max. operating temperature: 70°C. 1/2" F - 3/4" M downstream connections and 3/4" M upstream connections with union nut for direct connection to flow meters.

**Check valve to French standards (NF).**

Part Number	Connection	Qty/Box	Box/Carton
82900	1/2" F / 3/4" M x rotary nut 3/4" F	1	18

Dimensions at the end of the section.



**DRV**

Diaphragm pressure reducing valve with compensated seat complete with unions. CW617N brass body and cap. Stainless steel strainer. Plastic valve seat. Interchangeable filter-regulator unit. PN25. Adjustable downstream pressure: 1.5÷6 bar. Can be used for water, compressed air and neutral gases up to 30°C. Pressure drops less than 1.3 bar at DIN characteristic flow rate. Noise < 20 dB - Class 1 in Germany.

**Compliant with DVGW, SVGW, TIN, NF (DN 1/2" and 3/4" only).**



Part Number	DN	Qty/Box	Box/Carton
0501115	1/2" MM	1	20
0501120	3/4" MM	1	20
0501125	1" MM	1	12
0501132	1.1/4" MM	1	1
0501140	1.1/2" MM	1	1
0501150	2" MM	1	1

Dimensions at the end of the section.

**TECHNICAL NOTE - Cavitation diagram for DRV series pressure reducing valves**

**CAVITATION**

The cavitation diagram shows three operating zones of the pressure reducing valve plotted against the upstream and downstream pressures:

**Zone C:** normal duty, no cavitation

**Zone B:** medium duty, risk of cavitation

**Zone A:** heavy duty, the pressure reducing valve shows cavitation.

Continuous operation in the red cavitation zone could cause rapid deterioration of the internal parts.

**SIZING**

**Example 1 (cavitation)**

Pressure reducing valve with:

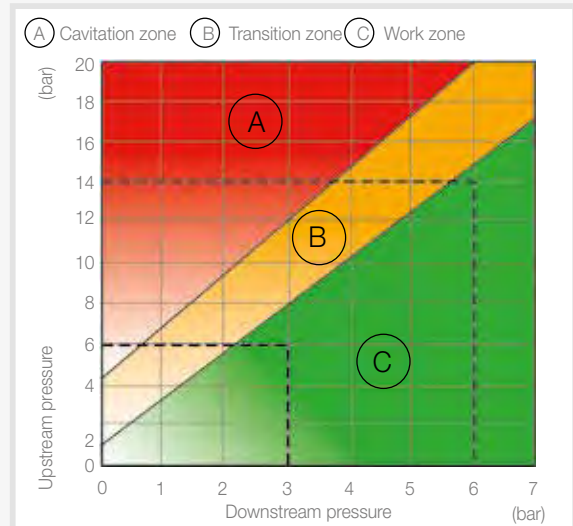
Inlet pressure P1 = 14 bar

Outlet pressure P2 = 3 bar

From the cavitation diagram it can be seen that the pressure reducing valve is constantly working in the red zone. To avoid rapid deterioration, two pressure reducing valves could be used, one connected upstream of the other.

**Upstream pressure reducing valve:** pressure drop from 14 to 6 bar (green zone).

**Downstream pressure reducing valve:** pressure drop from 6 to 3 bar (green zone).



**DRVN**

Patented diaphragm pressure reducing valve with compensated seat, outlet pressure adjuster knob and external graduated scale for easy reading of set pressure. Complete with unions. Pressed, shotblasted CW617N brass body. Stainless steel filter cartridge. Pressure gauge connection on both sides: 1/4". Materials in contact with fluids are KTW certified. PN25.

Adjustable downstream pressure: 1.5 and 6 bar. Max. operating temperature: 30°C. Can be used for water, air and neutral gases. Noise < 20 dB - Class 1 in Germany.

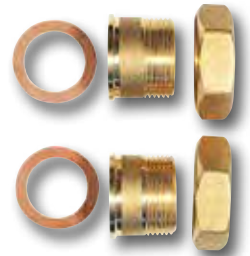


Part Number	DN	Qty/Box	Box/Carton
0502515	1/2" MM	1	20
0502520	3/4" MM	1	20
0502525	1" MM	1	15
0502532	1.1/4" MM	1	1
0502540	1.1/2" MM	1	1
0502550	2" MM	1	1

Dimensions at the end of the section.

**PARTS DRVN**

Pair of replacement unions complete with nut and gaskets for DRV series pressure reducing valves.



Part Number	DN	Qty/Box	Box/Carton
0599001	1/2" MM	1	10
0599003	1" MM	1	10
0599005	1.1/2" MM	1	10
0599006	2" MM	1	10

**DRVD16**

Flanged pressure reducing valve with single spring-compensated seat with 1/4" (DN 50-65) and 3/8" (DN 80-200) pressure gauge connections upstream and downstream. Cast iron body, cap and flanges with epoxy paint finish. PN16. Adjustable downstream pressures: standard execution: 1.5÷6 bar. Special execution: 2÷8 bar/4÷12 bar. Pressure control: turn clockwise to increase pressure, turn anticlockwise to reduce pressure. Suitable for installation on both vertical and horizontal pipes (latter preferable), observing the direction of flow. Can be used for water, air and neutral gases up to 40°C. UNI 1092-2 flanged connections.



Part Number	DN	bar	Qty/Box	Box/Carton
0504068	65	1,5 - 6	1	1
0504083	80	1,5 - 6	1	1
0504103	100	1,5 - 6	1	1

Dimensions at the end of the section.

**THERMOSTATIC MIXING VALVES**

**61C - AQUAMIX**

Thermostatic mixing valve with 4 setting positions. Anti-scald safety. Setting range: 32÷50°C. Max. differential pressure: 2 bar. Female connections. Compliant with EN 1111 and EN 1287.



Part Number	DN	Qty/Box	Box/Carton
6109C12	1/2" F	1	36
6110C34	3/4" F	1	36
6111C1	1" F	1	36

Dimensions at the end of the section.

**62C- AQUAMIX**

Thermostatic mixing valve with 4 setting positions. Anti-scald safety.  
Setting range: 42÷60°C. Max. differential pressure: 2 bar. Female connections.  
**Compliant with EN 1111 and EN 1287.**



Part Number	DN	Qty/Box	Box/Carton
6209C12	1/2" F	1	36
6210C34	3/4" F	1	36
6211C1	1" F	1	36

Dimensions at the end of the section.

**THERMOSTATIC MIXING VALVES FOR COLLECTIVE FACILITIES****e-ULTRAMIX**

Anti-legionella system with programmable thermal disinfection, consisting of:

- bimetallic strip thermostatic mixing valve with male threaded connections, brass body, anti-seize mechanism with strainers and check valves, anti-scald protection, PN 10, max. hot water inlet temperature: 85°C, dynamic operating pressure: 2-4 bar, minimum inlet/outlet temperature differential: 5°C;
- electronic control unit for programming disinfection cycles and saving data on micro SD card. CE compliant, IP30. Power supply: 230 V - 50/60 Hz. Temperature control range: 30÷70°C, disinfection temperature: 50÷70°C. With auxiliary microswitches for controlling drainage, circulation, DHW production and alarms. Remote management interface;
- mixed water flow and recirculation return probes (L=3m);
- electric actuator (5VDC, consumption 2.5W, IP30) Length of actuator/control unit cable 1.50m.



Part Number	Description	l/min	Points of use	Qty/Box	Box/ Carton
22TX94E37ELEC	e-ULTRAMIX 1 1/4"	5-175	1-21	1	1

Dimensions at the end of the section.

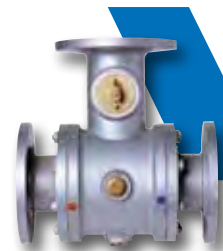
**T70**

Thermostatic mixing valve for central DHW systems with high flow rates: apartment complexes, factories, hotels, hospitals, schools, etc. Cast iron body and bronze/brass internal parts. PN16 flanged series. Adjustment range: 10÷50°C. 30÷70°C available to order. PN10. Maximum temperature: 85°C.

Flow rates guaranteed with upstream dynamic pressures: 3 bar. Max. dynamic pressure: 6 bar.

Hot water inlet on left and cold water inlet on right, mixed water outlet at the top. A strainer and check valve should be installed at the hot/cold water inlets. Adoption of this unit discharges obligation under Italian act governing domestic hot water production.

**Compliant with EN 1111/00 and UNI EN 1287/00.**



Part Number	DN	Reg. temp.	l/min	Qty/Box	Box/ Carton
T70065	65	10-50°C	10-360*	1	1
T70080	80	10-50°C	12-700*	1	1

\* As an indication, consider the coefficient of simultaneity

Dimensions at the end of the section.

**TX90 - ULTRAMIX**

Visible thermostatic mixing valves for collective facilities such as swimming pools, sports centres, schools, military bases, factories, camp sites, hospitals, spas, etc., for setting the mixed water to a constant temperature and keeping it at that temperature even in the event of pressure fluctuations (max. 1.5 bar). Brass body.

Grey epoxy cover with blue graduated knob (Code E).

Chrome-plated cover with white graduated knob (Code C).

Anti-seize mechanism with strainers and check valves.

Steel bimetallic strip coated with rilsan to protect against scale formation.

Temperature control range: 10÷50°C and 30÷70°C (only for models with epoxy cover) with locking function. Anti-scald protection: water shut off in less than two seconds in the absence of cold water.

PN10. Max. hot water temperature: 85°C.

Flow rates guaranteed with upstream dynamic pressure: 3 bar.

Hot water inlet on left, mixed water outlet at the top.

Minimum inlet/outlet temperature differential: 5°C.

Calculation software is available on [www.wattsindustries.it](http://www.wattsindustries.it) to help with sizing and selecting the right model of UltramixTX90 thermostatic mixing valve.

**Compliant with EN 1111/00 and UNI EN 1287/02.**



Part Number	DN	Reg. temp.	Points of use	l/min	Qty/ Box	Box/ Carton
TX91E	3/4"M	10-50°C	1-7	3-56 *	1	1
TX92E	3/4"M	10-50°C	1-10	3-80 *	1	1
TX93E	1"M	10-50°C	1-15	3-120 *	1	1
TX94E	1.1/4"M	10-50°C	1-21	5-175 *	1	1
TX95E	1.1/2"M	10-50°C	1-32	5-260 *	1	1
TX96E	2"M	10-50°C	1-50	6-400 *	1	1
TX91C	3/4"M	10-50°C	1-7	3-56 *	1	1
TX92C	3/4"M	10-50°C	1-10	3-80 *	1	1
TX93C	1"M	10-50°C	1-15	3-120 *	1	1
TX94C	1.1/4"M	10-50°C	1-21	5-175 *	1	1
TX95C	1.1/2"M	10-50°C	1-32	5-260 *	1	1
TX96C	2"M	10-50°C	1-50	6-400 *	1	1
TX91E37	3/4"M	30-70°C	1-7	3-56 *	1	1
TX92E37	3/4"M	30-70°C	1-10	3-80 *	1	1
TX93E37	1"M	30-70°C	1-15	3-120 *	1	1
TX94E37	1.1/4"M	30-70°C	1-21	5-175 *	1	1
TX95E37	1.1/2"M	30-70°C	1-32	5-260 *	1	1
TX96E37	2"M	30-70°C	1-50	6-400 *	1	1

\* As an indication, consider the coefficient of simultaneity

Dimensions at the end of the section.

**PARTS CAR-TX90**

Replacement cartridge for TX90 ULTRAMIX series thermostatic mixing valves.

Part Number	Versions	l/min	Qty/ Box	Box/ Carton
TX1	TX91E, TX91C	3-56	1	1
TX2	TX92E, TX92C	3-80	1	1
TX3	TX93E, TX93C	3-120	1	1
TX4	TX94E, TX94C	5-175	1	1
TX5	TX95E, TX95C	5-260	1	1



**OVERALL DIMENSIONS**

**REDUBAR**

part number 82500

part number 82501

**REDUBLOC**

**DRV/DRVM**

DN	L	L1	H	H1
1/2"	97	152	135	48
3/4"	110	171	155	58
1"	120	191	182	66
1.1/4"	140	211	227	75
1.1/2"	160	246	255	82
2"	175	261	262	88

**DRVN/DRVMN**

DN	L	L1	H	H1
1/2"	84	135	113	16.5
3/4"	94	151	133	20.5
1"	104	161	140	26
1.1/4"	109	175	192	29.5
1.1/2"	134	214	200	36
2"	144	224	205	42

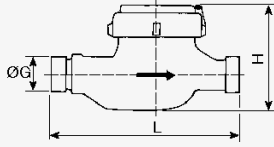
**DRVD16 - DRVD25**

DN	L	H	H1	B (PN16)	B (PN25)
50	230	383	83	165	165
65	290	440	90	185	185
80	310	490	100	200	200
100	350	561	121	220	235
125	400	712	152	250	270
150	450	839	169	285	300
200	550	1684	234	340	360



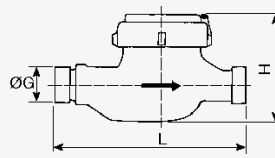
OVERALL DIMENSIONS

3499 DF-3499 RF/RC



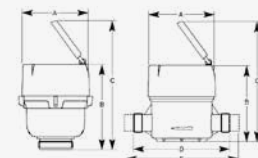
Ø G "	Ø G mm	L mm	H mm
3/4	20/27	80	69
3/4	20/27	110	69
1	26/34	130	69

499 DFB-499 DFC



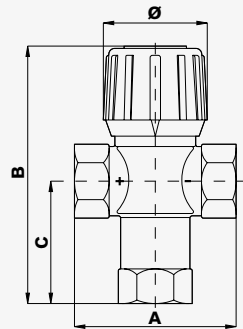
Ø mm	A mm	B mm	L mm	H mm
15	3/4	20/27	170	120
20	1	26/34	190	120
25	1 1/4	33/42	260	130
32	1 1/2	40/49	260	130
40	2	50/60	300	145
50	2 1/2	66/76	300	145

1499 DF



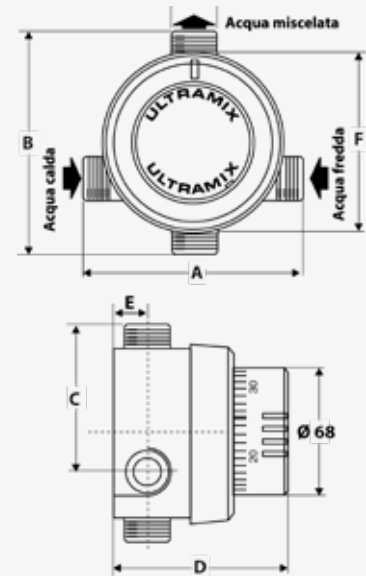
DN "	DN mm	A mm	B mm	C mm	D mm	E mm
3/4	20/27	100	125	185	105	190
3/4	20/27	100	125	185	165	267

61C/62C



DN	A	B	C	Ø
1/2"	70	107	52	45
3/4"	70	107	52	45
1"	80	110	52	45

TX90

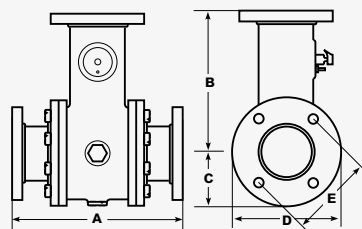


DN	A	B	C
3/4"M	117	120	81
1"M	144	142	95
1.1/4"M	182	166	107
1.1/2"M	218	199	129
2"M	242	224	144

DN	D	E	F
3/4"M	93	18	98
1"M	101	23	116
1.1/4"M	116	24	145
1.1/2"M	127	32	175
2"M	141	36	198

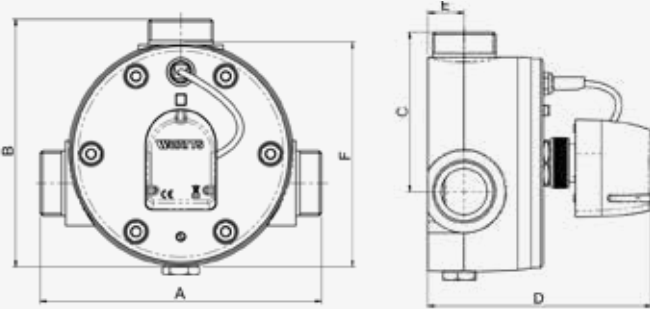
T70



DN	A	B	C	D	E
2.1/2"	294	215	90	185	145
3"	336	270	105	200	160
4"	404	270	125	220	180

**OVERALL DIMENSIONS**

**E-ULTRAMIX THERMOSTATIC MIXING VALVE WITH ACTUATOR**



	<b>A</b> mm	<b>B</b> mm	<b>C</b> mm	<b>D</b> mm	<b>E</b> mm	<b>F</b> mm	<b>ø fitting</b> mm
3/4"	117	120	81	126	19	98	G 3/4"
1"	144	142	96	133	23	116	G 1"
1 1/4"	182	160	108	149	24	145	G 1 1/4"
1 1/2"	218	200	129	164	36	175	G 1 1/2"
2"	242	217	144	173	36	198	G 2"

**E-ULTRAMIX ELECTRONIC CONTROL UNIT**

