

644

motorised ball valves



altecnic

644 motorised ball valves

Introduction

Altecnic offer a complete range of 2-port, 3-port and 4-port motorised ball valves for use in HVAC and domestic heating systems.

The valves and electric actuators conform to European Directives 2006/95/CE covering low voltages and 2004/108/CE covering electromagnetic compatibility.

Applications

Motorised zone valves automatically shut off the medium in air conditioning, heating or domestic water systems.

Their control characteristic, combined with reduced dimensions and manual override, make them especially suitable for zone heating systems.

The motorised valves have the following features:

- no seepage
- short operating times (valve opening - closing)
- operational capacity with high differential pressures
- low head losses
- compatibility with any type of 3-contact controller for complete control during the opening and closing phases.

Patent application No. MI2005A001282

Construction Details

Component	Material	Grade
Body	Brass	BS EN 12165 CW617N
Ball	Brass - chrome plated	BS EN 12164 CW614N
Ball seat	PTFE	
Seat 'O' ring	EPDM	
Stem 'O' ring	EPDM	
Union 'O' ring	EPDM	
Actuator Casing	Self extinguishing polycarbonate	
Casing colour	grey RAL 9002	

Technical Specification

Ambient Conditions

Max. operating temperature:	-5°C to 110°C
Ambient temperatures:	
Operation:	0 to 55°C BS EN 60721-3-3 Class 3K3 max. humidity 85%
Transportation:	-20 to 70°C BS EN 60721-3-2 Class 2K2 max. humidity 95%
Storage:	-5 to 50°C BS EN 60721-3-1 Class 1K2 max. humidity 95%

Performance - valve body

Medium:	water, glycol solution
Max. percentage of glycol:	50%
Max. working pressure:	10 bar
Working temperature range:	-5 to 110°C
Max. differential pressure:	10 bar
Connections:	½" to 1" M with union

Technical Specification

Actuator

Synchronous motor:	10 bar
Electricity supply:	230 V (±10%), 50 to 60 Hz 24 V (±10%), 50 to 60 Hz
Power consumption:	4 V
Protection class:	IP 44 (vertical stem) IP 40 (horizontal stem)
Operating time 90° rotation:	40 s
Ambient temperature range:	0 to 55°C
Dynamic torque:	8 Nm
Supply cable length:	1 m

Product Code	Description	Range
6442	2-port	½" to 1"
6443 3BY	3-port with bypass	½" to 1"
6444	4-port with telescopic bypass tee	½" to 1"

Construction Details

Actuator

ON/OFF mode

The valves may be used in ON/OFF mode with a single electrical signal for opening or closing provided by a three-contact thermostat/chrono-thermostat or an ordinary switch.

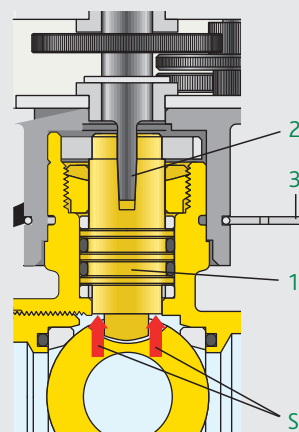
Modulating mode

The electrical construction features of the actuator allow it to be combined with any type of three-point regulator.

Drive transmission

Thanks to the tapered coupling between the valve stem (1) and the gear motor shaft (2), there is a constant connection between the two components.

This permits automatic compensation of the mechanical slack thanks to the thrust (S) on the stem applied by the pressure of the medium.

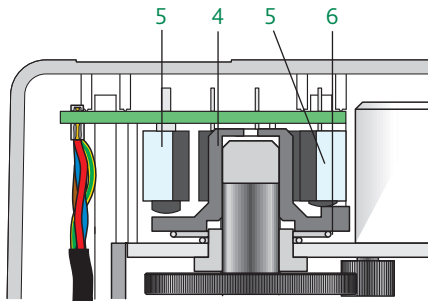


Valve actuator coupling

An elastic steel clip (3) allows the valve to be coupled to the actuator quickly and easily, simply by pushing the two parts together until they click into place and are automatically locked together.

Construction Details

Cam and limit microswitches



The cam (4), acting the limit microswitches (5), can move vertically and is supported by a tapered spring (6).

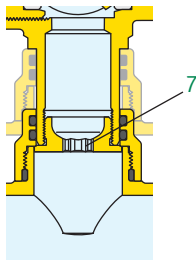
This keeps the cam in constant contact with the microswitches and compensates for wear over time.

Auxiliary microswitch

The actuator is equipped with an auxiliary microswitch to be used, for instance, to stop the pump on valve closing and vice-versa.

It gets closed for an average valve opening value of 80%.

4-port valve with telescopic tee and calibrated nozzle



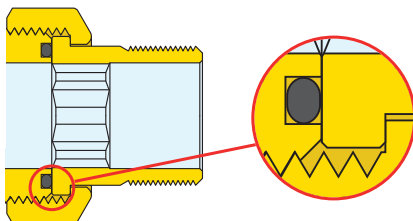
The 6444 series 4-port valve with telescopic by-pass tee allows coupling with manifolds with a main centre distance of between 49 and 63 mm.

The by-pass tee is equipped with a calibrated nozzle U6 (7) in order to create head losses equivalent to those of the user circuit.

This system makes it possible to keep the system flow rate (and therefore the pump head) constant, both when the valve is open and in by-pass mode.

Seals

The valves are equipped with unions with a flat seat with EPDM 'O'-ring.



Directions of flow and position indicator

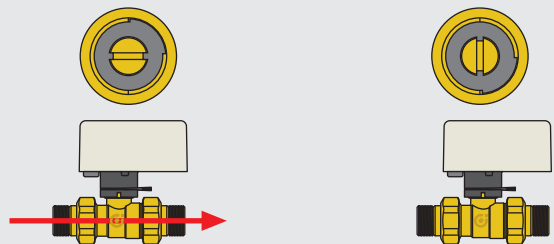
Removing the actuator reveals a slot on the top of the control stem on which the actuator pin acts:

- it allows opening/closing the valve manually with a screwdriver;
- its position shows the direction of flow according to the position of the ball, which is especially helpful when testing or checking the system.

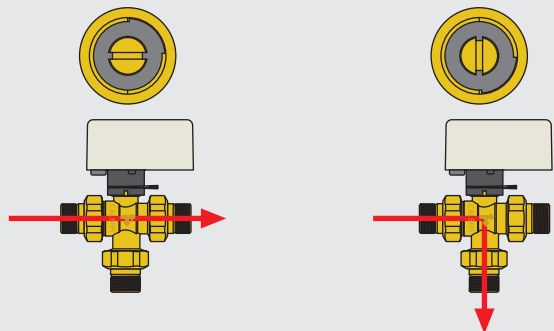
The following three diagrams illustrate the functioning of each valve type; the slot position indicates the flow direction.

All valves are supplied with the slot / indicator in the horizontal position.

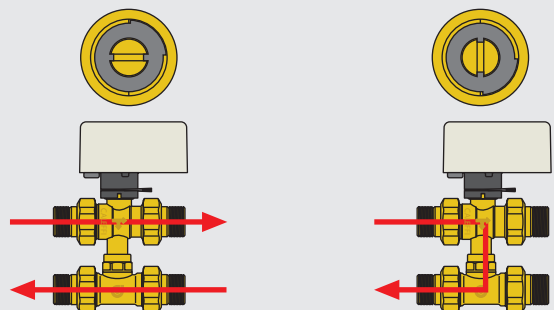
2-port valve - 6442



2-port valve - 6443. 3BY with bypass

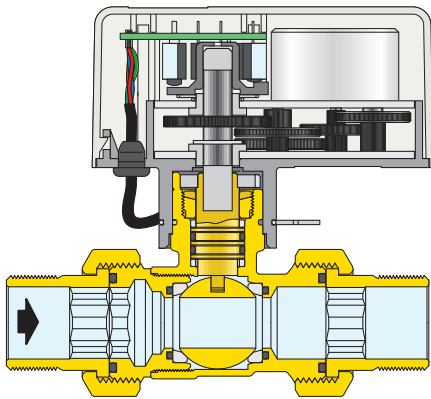


4-port valve - 6444 with bypass tee

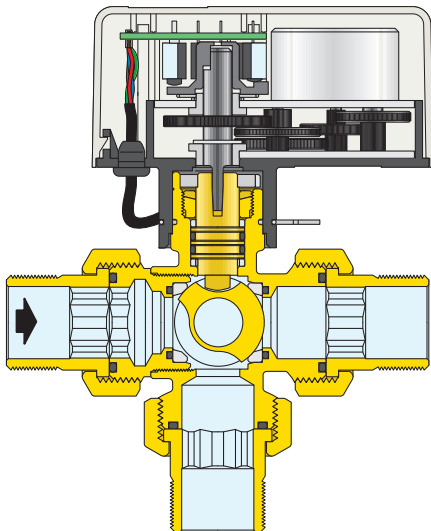


644 motorised ball valves

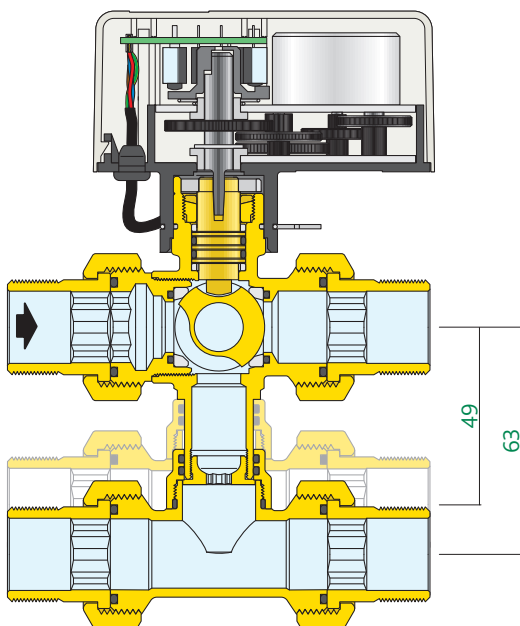
6442 2-port



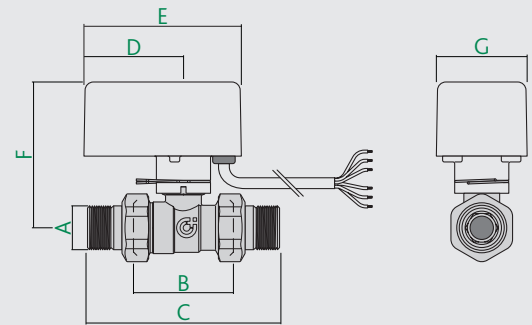
6443.3BY 3-port with bypass



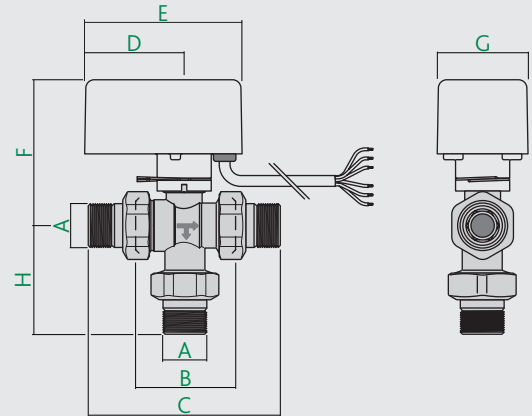
6444 4-port with telescopic bypass



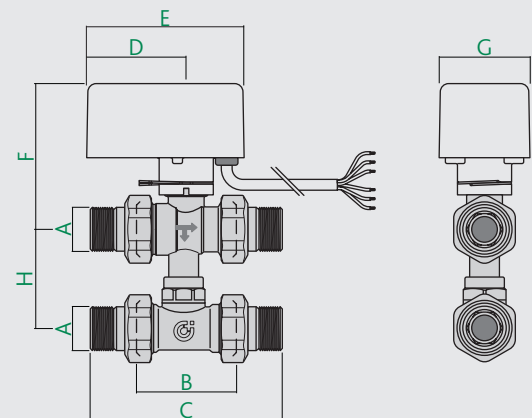
Dimensions



Code	A	B	C	D	E	F	G	kg
64424	1/2"	60	117	60	95	88	55	0.97
64425	3/4"	60	117	60	95	88	55	0.97
64426	1"	60	126	60	95	88	55	1.00



Code	A	B	C	D	E	F	G	H	kg
64434.3BY	1/2"	60	117	60	95	88	55	59	1.10
64435.3BY	3/4"	60	117	60	95	88	55	59	0.45
64436.3BY	1"	60	123	60	95	88	55	59	0.46

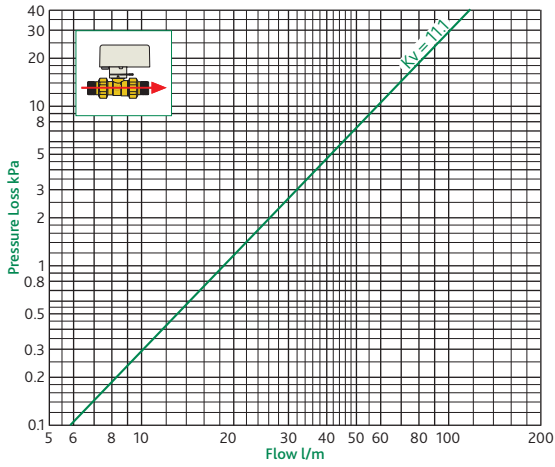


Code	A	B	C	D	E	F	G	H	kg
64444	1/2"	60	117	60	95	88	55	49 to 63	1.40
64445	3/4"	60	117	60	95	88	55	49 to 63	1.40
64446	1"	60	126	60	95	88	55	49 to 63	1.57

644 motorised ball valves

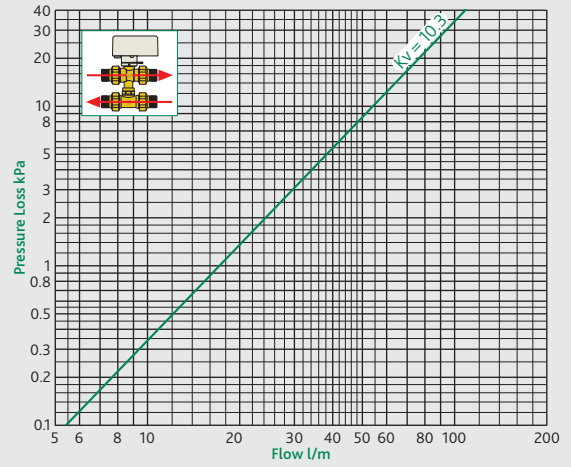
Kv Value and Flowrate

½", ¾" & 1" 6442 - 2-port

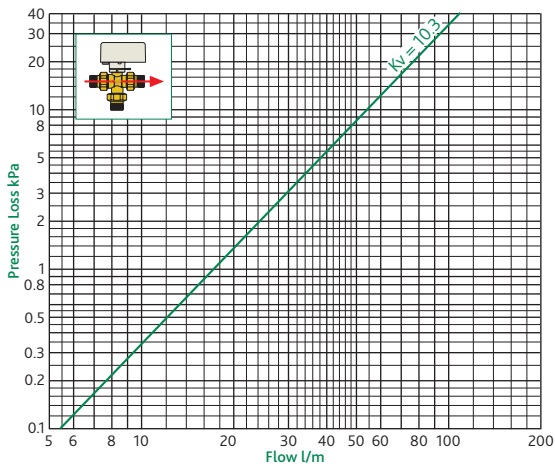


Kv Value and Flowrate

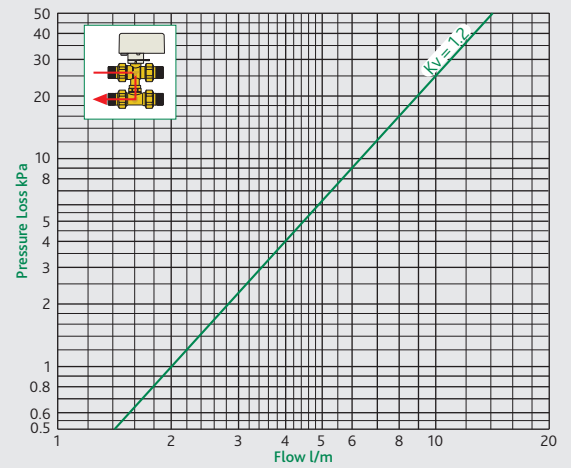
½", ¾" & 1" 6444 - 4-port with bypass in 'open' mode



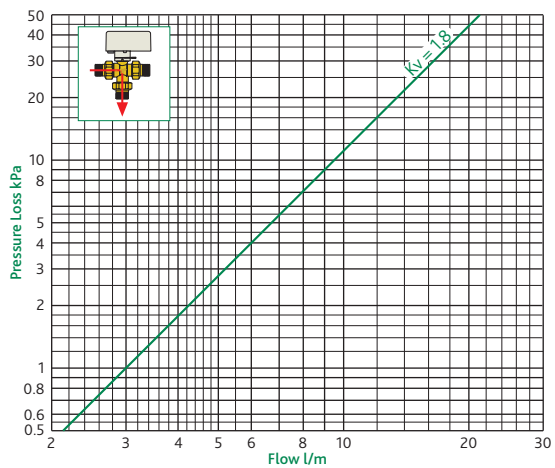
½", ¾" & 1" 6443 - 3-port with bypass in 'open' mode



½", ¾" & 1" 6444 - 4-port with in 'bypass' mode with U6 nozzle



½", ¾" & 1" 6443 - 3-port in 'bypass' mode



Application diagrams










In systems with zone control, the hydraulic circuits, serving the heating terminals, are automatically cut off in accordance with the room temperature. This circuit closing can, however, cause changes in pressure and flow rate throughout the system, so it is essential to ensure these changes are kept under control within acceptable limits.

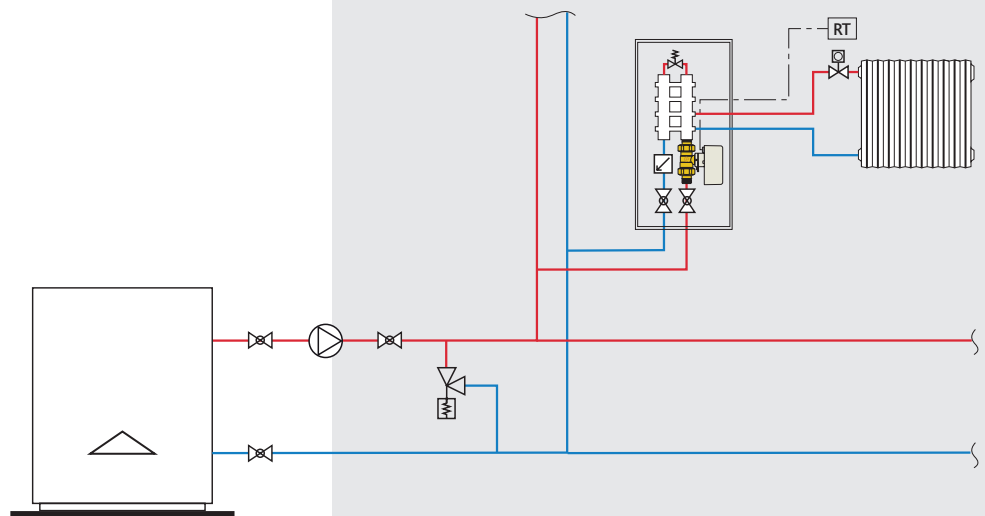
System with 2-port 6442 valves, differential by-pass valve and AUTOFLOW®

The system works with a variable flow rate and it is necessary to keep the differential pressure generated by the closure of the zone valves under control.

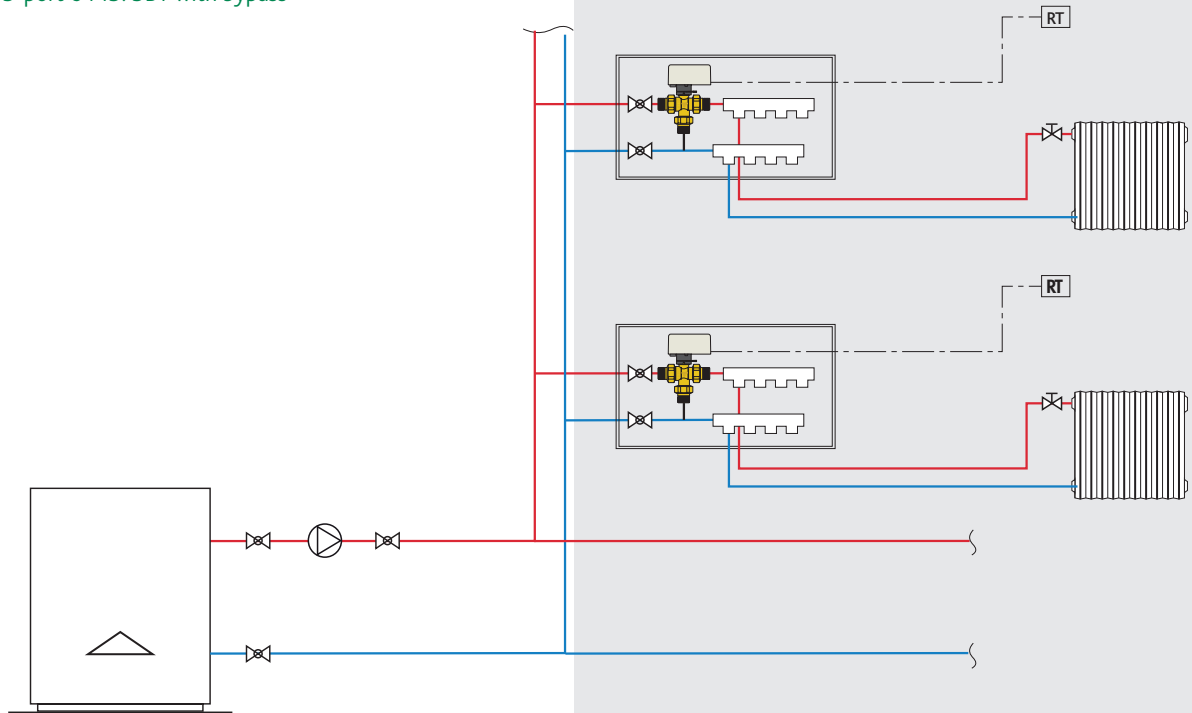
This increase, which can reach levels that prevent the system from working properly, can generate an increase in the flow rate to the circuits which are still open, resulting in pump and boiler problems. It is therefore necessary to keep the differential pressure under control by using differential by-pass valves or variable speed pumps.

Fitting the AUTOFLOW®, however, always keeps the flow rate to the open circuits at the nominal value.

-  Shut-off valve
-  Thermostatic valve
-  Manual valve
-  Pump
-  AUTOFLOW
-  Room thermostat
-  Differential by-pass
-  Air vent
-  Differential by-pass valve

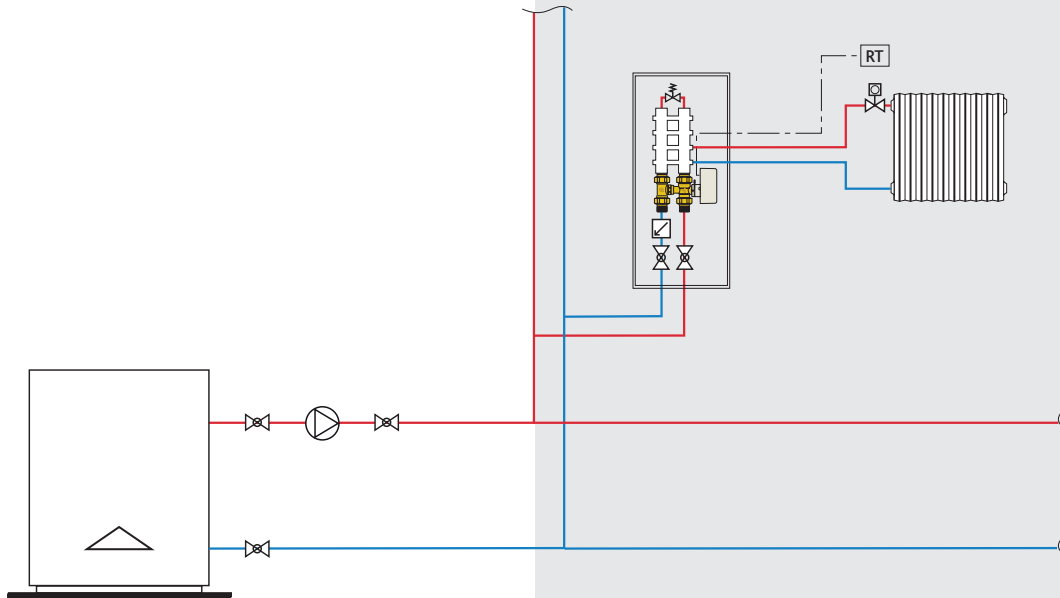


System with 3-port 6443. 3BY with bypass

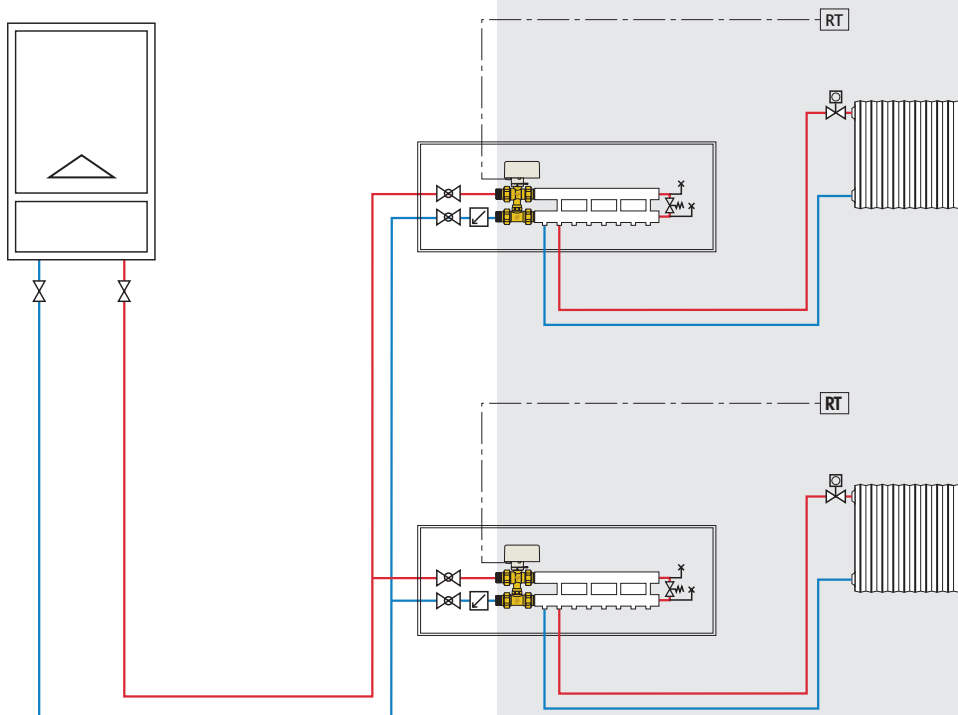


644 motorised ball valves

Applications Diagrams
System with 4-port 6444 with bypass tee and AUTOFLOW®



Independent system with 4-port 6444 with bypass tee and AUTOFLOW®



E & O.E

Altecnic Ltd Mustang Drive, Stafford, Staffordshire ST16 1GW

T: +44 (0)1785 218200 E: sales@altecnic.co.uk

Registered in England No: 2095101

altecnic.co.uk

AL 074 25-01-12