engineered for cunning performance

FRV



The Flow Regulating Valve

Simple, yet revolutionary. Balancing radiators in a heating system seems like it should be simple, yet it is difficult, time-consuming and often pretty inaccurate. No more!

Correct balancing helps keep running costs down, and improves comfort by ensuring there is consistent warmth in every room of the home.

- Quickly, easily and effectively balance radiators, ensuring each room gets the correct amount of heat
- Say goodbye to some rads that get too hot, and others that never do.
- Perfect for use with heat pumps, especially with open-zone, weather compensated systems.
- Great for conventional gas, oil and biomass boilers, in both new and existing systems.
- Keep the TRVs if you want because the FRV only takes the place of the lockshield.
- 15mm compression fitting, with an extra seal between the FRV and radiator.

Two flow ranges are available:
0-2.5 l/min, greater reading resolution for smaller radiators, typically up to 800 W at ΔT5.
0-7.5 l/min, suitable for larger radiators, with heat outputs up to approx 2.6 kW at ΔT5.

Instructions

For new heating systems a room-by-room heat loss calculation should have been carried out. The radiators for each room are then sized according to their output at the design flow temperature. There should then be a list of the radiator outputs to work from. To convert the heat output of a radiator to the required flow rate is a simple task. Simply take the heat output of the radiator in kW, and then multiply by the right factor as shown below to work out the required flow rate in litres/minute. Now follow the balancing method as detailed below.

Heating appliance dT	Flow Factor
5	2.9
7	2.0
10	1.4
15	1.0
20	0.7

For a system powered by a heat pump the dT is typically 5, so the factor to use is 2.9. As a practical example, if a radiator had a required output of 1.2kW, then the flow rate that it should be set for balancing would be:

1.2 x 2.9 = 3.48 l/min

In this example, the 0–7.5 l/min FRV should be selected, as the required flow exceeds the 2.5 l/min range of the smaller valve.

Even when you have a list of flow rates from heating design software, these flow factors are a helpful way to do quick on-site sanity-checks, to make sure you are in the right ballpark.

If you have a flow meter then add up all the required flow rates to work out the overall flow rate required. Add 15% tolerance. Open all the FRVs and TRVs on the system and set the pump speed to as closely match the overall flow rate needed.

If you do not have a flow meter then set the pump to a constant speed setting which you think will satisfy the overall flow rate required. You may find this needs adjusting once you have balanced the last radiator.

High Differential Pressure - RRadiators close to the pump, particularly on larger systems, may experience excessive differential pressure, making precise adjustment difficult. Where necessary, fit an additional lockshield at the opposite end of the radiator. Use this to restrict the flow initially, then fine-tune using the FRV. Sharing the pressure drop between the valves provides better control.

Balance the Radiators - Begin balancing the system from the radiator nearest to the heat source. Refer to your previously calculated flow rates for each radiator. **Hold the black section of the flow meter and turn to adjust.** Adjust each valve to achieve the correct flow rate before moving on to the next radiator.

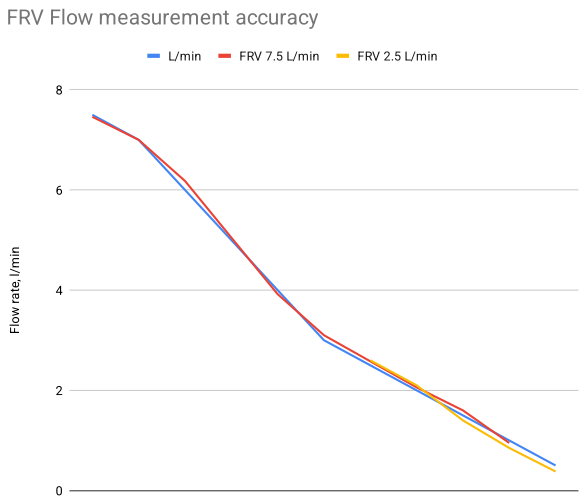
Repeat if Necessary - If the FRVs on the radiators at the end of the system receive too much flow and so need adjusting down a lot, or receive too little flow, then adjust the pump speed, and repeat the balancing process starting again from the first radiator.

Fit the cap - Once flows are correct fit the cap.

Potentially reset the Pump - for systems that rely on dynamic pump settings set the pump back to its previous setting.

For Systems with mis-sized radiators follow this QR code and use the FRV Flow Rate Calculator.

Accuracy



Accuracy of FRVs measured against a calibrated flow meter.
FRVs are rated to 10 bar working pressure, and have been stress tested to 20 bar.

Too Low Flow? - *Check for* faults and pipe sizing. If none use a bigger pump, or accept higher Delta T.

Changing Delta T affects efficiency!

You may need higher radiator outputs, or a higher flow temperature. Restart balancing if Delta T or flow temperature is changed.

Keep It Efficient - *Aim for only the required flow. Excess flow wastes energy and causes noise.*



Fit, set, forget

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