



Warm Air Heating - Proportional Balancing

(Use in conjunction with **Johnson & Starley**:- Balancing procedure sheet using an airflow meter and thermometer.)

1. Set Heaters to Summer Airflow mode.
2. Calculate guide balancing velocities

BALANCING PROCEDURE SHEET				
Room 1 Column 1	Heat Required (kW) Column 2	Register/ Diffuser Size Column 3	Air Velocity Factor Column 4	Guide Balancing Velocity Column 2 x Column 4 = Metres per second

3. Transfer the guide balancing velocities to column **A** on the following table.

		A	B	C	D
Warm air outlet number	Room	Guide balancing velocities	Measured Velocities	Column B Column A	Balancing velocities Column A x Av Column C

4. Partly close the balancing dampers of the registers closest to the heater.
5. Measure the air velocity at each outlet and enter in column **B** .
6. Divide the figures in column **B** by the figure in column **A** and enter the result in column **C**.
7. Total the figures in column C and divide by the number of outlets to give an average.
8. Multiply each guide velocity (**A**) by the average (note 7) and enter the result in column **D**.
9. Balancing the system using the velocities in column D by adjusting the balancing dampers at the registers or the balancing screws/levers on the diffusers.
10. Set heater to heating mode and check temperature rise as overleaf.

Temperature rise checking across the heater

The temperature rise between the nearest available point in the return air duct and the nearest available point on the supply air duct must be between 45°C and 55°C; check as follows.

Ignite the pilot and main burners and allow 15 minutes of operation.

Set the burner bar pressure to give the required heat output as per the installation instructions.

If necessary adjust the maximum fan speed to give the temperature rise as per installation instructions:-

On **Basic Controlled Heaters** select the correct tapping at the control panel.

On **Modairflow Heaters** adjust the balancing screw at the control Panel.

On **System E-T Heaters** set the rate switch at the control Panel.

On **Economaire Heaters** the control system will automatically adjust the fan speed.

AIR VELOCITY FACTORS					
REGISTER SIZE		Air Velocity Factor	DIFFUSER SIZE		Air Velocity Factor
in x in	mm x mm		in x in	mm x mm	
6 x 4	150 x 100	1.48	2.25 x 10	57 x 250	1.58
8 X 4	200 x 100	1.14	2.25 x 12	57 x 300	1.33
8 X 6	200 x 150	0.75	2.25 x 14	57 x 350	1.14
10 X 6	250 x 150	0.6	4 x 10	100 x 250	0.9
10 X 8	250 x 200	0.44	4 x 12	100 x 300	0.75
12 X 6	300 x 150	0.51	J&S Mini		3.4
12 X 8	300 x 200	0.37			

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