Commissioning Constant Pressure Systems

with 230V In-line Dampers

Users Guide

Addendum to I&M documents 671153, 671154, 671172, 671170 and 671171.

Description

An arrangement of branched ductwork connected to a Nuaire constant pressure fan. For each inlet to the system there will be a duct mounted model NRG-IL dual volume flow rate damper.

This document is intended for guidance purposes only, it does not relieve the commissioning engineer of his responsibilities to commission the system according to good custom and practice.

Figure 1. General illustration of a typical system.

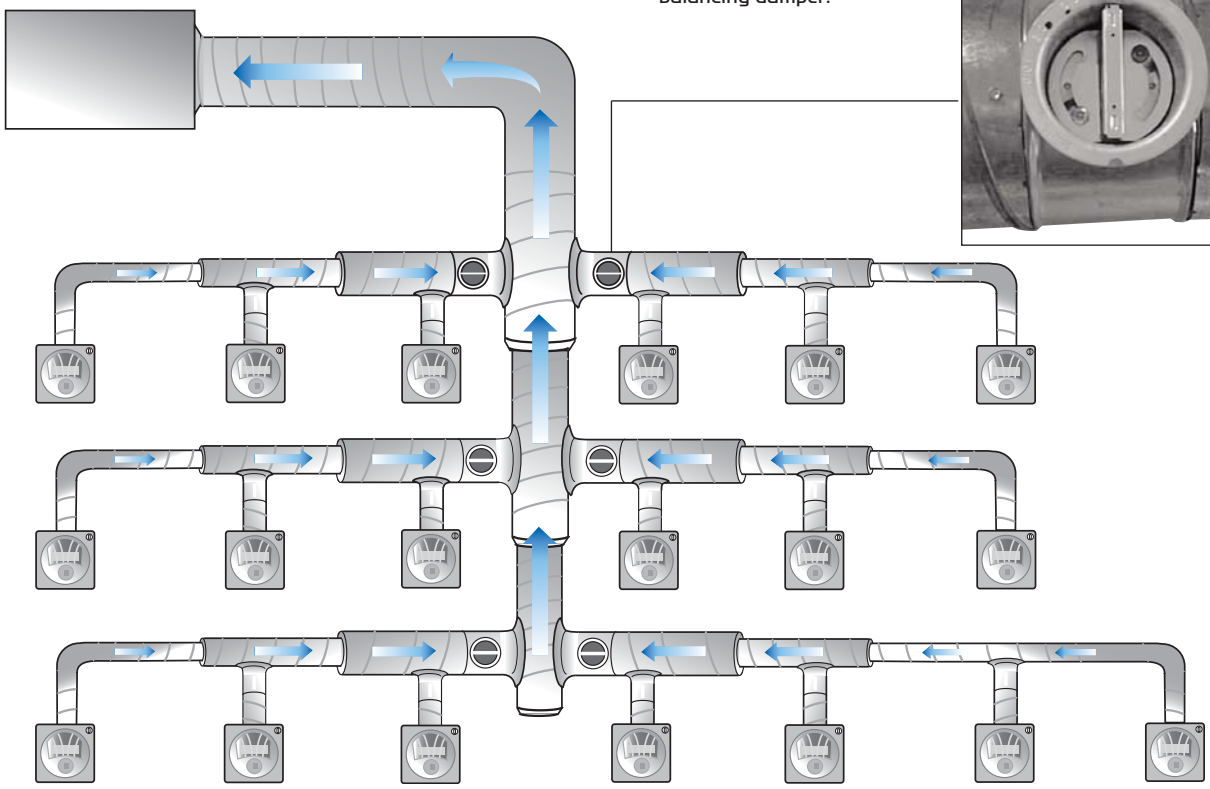

Figure 2. Volume control balancing damper.

The fan

- is specific to the system and will have been selected against quoted design criteria – Total system volume against total system resistance.
- Incorporates an integral speed control and pressure sensor.
- Will automatically adjust its own speed of operation to maintain a 'target pressure' which corresponds to the desired ventilation system performance.

Figure 3. Documentation on relevant fans.

Doc No.	Fan Type
671153	Commissioning data for direct drive indoor units
671154	Commissioning data for direct drive outdoor units
671172	Belt drive roof fans
671170	Direct drive indoor fans
671171	Direct drive outdoor fans
671206	NRG-IL dampers

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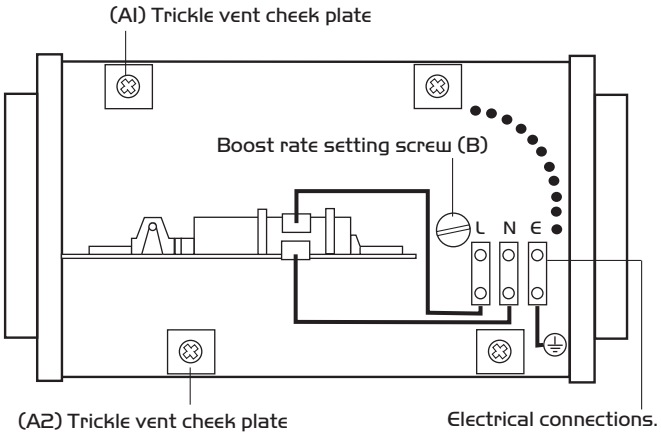
Figure 4. Unit with access panel removed, showing electrical connection and damper setting positions.



The NRG-IL

- The damper is available in four sizes, its a 230V single-phase duct-mounted device and requires access to the body to electrically connect it and to set the flow rates.
- There is no internal triggering device, the operation from closed to open must be triggered by other external switching devices e.g. Door Switch, Light switch, PIR, Humidistat etc.
- The achievable flow rates are detailed on the I&M document 671206.
- Flow rate in the boost (open) position is set by means of a rotary damper, a slotted screw adjustment accessible when the unit cover is removed.
- The flow rate in the trickle (closed) position is pre-set but can be increased by removing one or both of the restrictors accessible when the unit cover is removed.

System commissioning

To commission a system the following information is required:

- Flow rate at each inlet grille.
- Static pressure for the inlet system, this must not exceed 100Pa.
- The static pressure across the damper, this is twice the inlet pressure.
- The system target pressure.

Calculate the system target pressure by adding together the inlet system pressure and the damper static pressure.

Proceed to commission:

- Activate all dampers and set all of the integral main flow rate adjustment shutters to fully open. (screw B).
- Using normal commissioning techniques, check the duct system integrity and proportionally balance the system against the system flow rate specifications.
- For all NRG-IL devices, set the main flow rate adjustment damper to the position for the required flow rate and pressure. (screw B).
- Measuring static pressure at the ducting just before the fan casing, adjust the "Set Target Pressure" potentiometer (at the fan control box) until the specified static pressure is achieved.
  (Note that the fan speed change response/settling time may be up to 30 seconds).
- Check that the NRG-IL dampers open and close when activated.
- Perform a random sample (or 100% check if appropriate) of flow measurement at the extract grilles.
- De-activate all dampers and check that the measured static pressure is maintained at the target level.

Figure 5. Fan side commissioning box.