

DOMESTIC VENTILATION CHECKLIST

Competent persons SAP Declaration



Ventilation System commissioning to ensure energy efficiency and reduced carbon emissions

Inspection checklist and air flow measurement test sheet

This inspection checklist and air flow measurement test sheet is divided into three parts:

- **Part 1 (p3)** is for recording the particulars of the system, the installation address and the installer's details.
- **Part 2a (p4)** functions as an installation checklist.
- **Part 2b (p5)** is for recording the results of a visual inspection of the installation, and also acts as a pre-test checklist.
- **Part 3 (p6-8)** is the approved manner for recording the results of mandatory air flow tests on both intermittent and continuous mechanical ventilation systems in new dwellings, and is the sheet that must be given to the building control body (BCB).

The three parts should be completed in full, and a copy should form part of the Operation and Maintenance manual.

Checking design against measured air flow rates

For Systems 1, 3 and 4, the measured air flow rates should be recorded on Part 3: Air flow measurement test details, as part of the testing and commissioning procedures given in Tables 2, 6 and 8. The measured values will need to be compared with their respective design values. Compliance with the design will be met if the measured air flow rates for each are equal to, or greater than the design value. If any measured value is less than the design value, adjustment should be made to correct the system and all air flows re-measured until they meet the design values. If it is not possible to make adjustment to increase the air flow rate then a note to this effect should be made on the sheet. This may require the person with overall responsibility for the system to carry out remedial works to rectify the cause of the under-performance. The system will need to be re-tested to confirm that the design values have been met.

Instrument calibration

Measurement of air flows should be performed using equipment that has been calibrated at a UKAS calibration centre. Calibration should be performed annually for each air flow measurement device used to record final air flow rates in Part 3.

Demonstrating compliance

All three parts of the checklist and test sheet should be completed, with the relevant Parts 2 and 3 signed by a person who is responsible for the inspection and testing of the system that has been installed.

The three part form needs to be completed for each installation address and submitted to the SAP assessor. As a minimum, a copy of Part 3 should be submitted to the BCB and the manufacturer as evidence the installation has been correctly tested and commissioned (as relevant to the system installed).

Part 1 - System details and declarations

1.1 Installation Address Details						
Dwelling name/number						
Street						
Locality						
Town						
County						
Post Code						
1.2 Installation Details						
System classification* as defined by Approved Document F 2010		Tick				
	1. Background ventilation and intermittent extract fans					
	2. Passive stack ventilation					
	3. Continuous mechanical extract: <table border="0" style="margin-left: 20px;"> <tr> <td>Centralised</td> <td></td> </tr> <tr> <td>De-centralised</td> <td></td> </tr> </table>	Centralised		De-centralised		
	Centralised					
De-centralised						
4. Continuous mechanical supply and extract ventilation with heat recovery						
Brand						
Model and Model Qualifier						
Serial number (where available)						
Location of fan units	1					
	2					
	3					
	4					
	5					

*Note. If a system has been installed that/not defined by Systems 1 to 4 in Approved Document F, further installation checks and commissioning procedures may be required. Seek particular guidance from the manufacturer for these systems.

Part 2a - Installation details

2.1 Installation Checklist - General (all systems)		
Has the system been installed in accordance with manufacturer's requirements?	Yes	No
Have relevant system installation clauses been followed as detailed in Tables 1, 3, 5, and 7 as applicable?	Yes	No
Type of ductwork installed (e.g. rigid, semi-rigid)		
If any deviation from Tables 1, 3, 5 and 7, these should be detailed here.		
Description of installed controls (e.g. timer, central control, humidistat, PIR, etc)		
Location of manual/override controls		
2.2 Installation Engineer's Details		
Name		
Company		
Address Line 1		
Address Line 2		
Telephone Number		
Post Code		
Signature		
Competent Person Scheme/ Registration Number (if applicable)		
Date of Installation (completion)		
2.3a Visual Inspections - General (all Systems)		
Total installed equivalent area of background ventilators in dwelling?		mm
Total floor area of dwelling?		m²
Does the total installed equivalent ventilator area meet the requirements given in Tables 5.2a, 5.2b, or 5.2c in ADF?	Yes	No
Have all background ventilators been left in the open position?	Yes	No
Have the correct number and location of extract fans/terminals been installed that satisfy Table 5.2a in ADF?	Yes	No
Is the installation complete with no obvious defects present?	Yes	No
Do all internal doors have sufficient undercut to allow air transfer between rooms (i.e. 10 mm over and above final floor finish)?	Yes	No

Part 2b - Inspection of installation

Has all protection/packaging been removed (including from 1 background ventilators) such that system is fully functional?	Yes	No
For ducted systems, has the ductwork installation been installed in such manner that air resistance and leakage is kept to a minimum?	Yes	No
Are the correct number and size of background ventilators provided that satisfy ADF?	Yes	No
Has the entire system been installed such that there is sufficient access for routine maintenance and repair/replacement of components?	Yes	No

2.3b Visual Inspections- General (Systems 3 and 4 only)

Have appropriate air terminal devices been installed to allow system balance?	Yes	No
Has the heat recovery unit (System 4 only) and all ductwork been effectively insulated where installed in unheated spaces?	Yes	No
Condensate connection is complete and drains to an appropriate location (System 4 only)?	Yes	No

2.3c Other Inspections -General (Systems 1,3 and 4 only)

Upon initial start up, was any abnormal sound or vibration experienced, or unusual smells detected?	Yes	No
Does the installation follow the design?	Yes	No
Have any variations from the design been agreed?	Yes	No

2.3d Inspector's Details

Name	
Company	
Address Line 1	
Address Line 2	
Telephone Number	
Post Code	
Signature	
Competent Person Scheme/Registration Number (if applicable)	
Date of Inspection (completion)	

Part 3 - Air flow measurement test and commissioning details

3.1 Test Equipment		
Schedule of air flow measurement equipment used, (model and serial)		Date of last calibration
1		
2		
3		

3.2 Air Flow Measurements - System 1 only		
Fan Reference	Measured Extract Rate (l/s)	Design Extract Rate (l/s) Refer to Table 5.1a in ADF
Extract Fan 1		
Extract Fan 2		
Extract Fan 3		
Extract Fan 4		
Extract Fan 5		
For kitchen extract canopies, only the highest setting needs to be recorded.		

3.3 Air Flow Measurements (Extract) - Systems 3 and 4 only				
Room Reference (location of terminals)	Measured Air Flow High Rate (l/s)	Design Air Flow High Rate (l/s) Refer to Table 5.1a in ADF	Measured Air Flow Low Rate (l/s)	Design Air Flow Low Rate (l/s) Refer to Table 5.1a in ADF
Kitchen				
Bathroom				
En Suite				
Utility				
Other...				
Other...				
Other...				

Part 3 - Air flow measurement test and commissioning details

3.4 Air Flow Measurements (Supply) - System 4 only				
Room Reference (location of terminals)	Measured Air Flow High Rate (l/s)	Design Air Flow High Rate (l/s) Refer to Table 5.1b in ADF	Measured Air Flow Low Rate (l/s)	Design Air Flow Low Rate (l/s) Refer to Table 5.1b in ADF
Living Room 1				
Living Room 2				
(if present)				
Dining Room				
Bedroom 1				
Bedroom 2				
Bedroom 3				
Bedroom 4				
Bedroom 5				
Study				
Other...				

3.5 Power Test - System 3 and 4*					
Total Extract Flow Rate (High)	Total Extract Flow Rate (Low)	Total electrical power (watts on High)	Total electrical power (watts on Low)	Specific Fan Power (w/l/s - Low Speed Flow divided by Power)	Designed SAP Q SFP

* MEASUREMENT OF FAN POWER

Instrument for power measurement

Power meter capable of measuring active (true) power at 10 W and above, with a resolution of; 0.1 W, and an accuracy of; 1.5% reading, ± 2 digits. The meter must be connected in-line with the fan box, typical CT or clamp type power meters will not provide sufficiently accurate measurements at low power levels.

Instrument calibration

UKAS and yearly.

Measurement

The total electrical power, supplied from the fused spur to the fan box, i.e. including all controls, must be measured when the system has been commissioning and the fans are running at the low air flow rate. This figure must be used for the calculation of Specific Fan Power, 3.5.

The total electrical power, supplied from the fused spur to the fan box, i.e. including all controls, must be measured when the system has been commissioning and the fans are running at the high air flow rate. This figure must NOT be used for the calculation of Specific Fan Power, 3.5.

Part 3 - Air flow measurement test and commissioning details

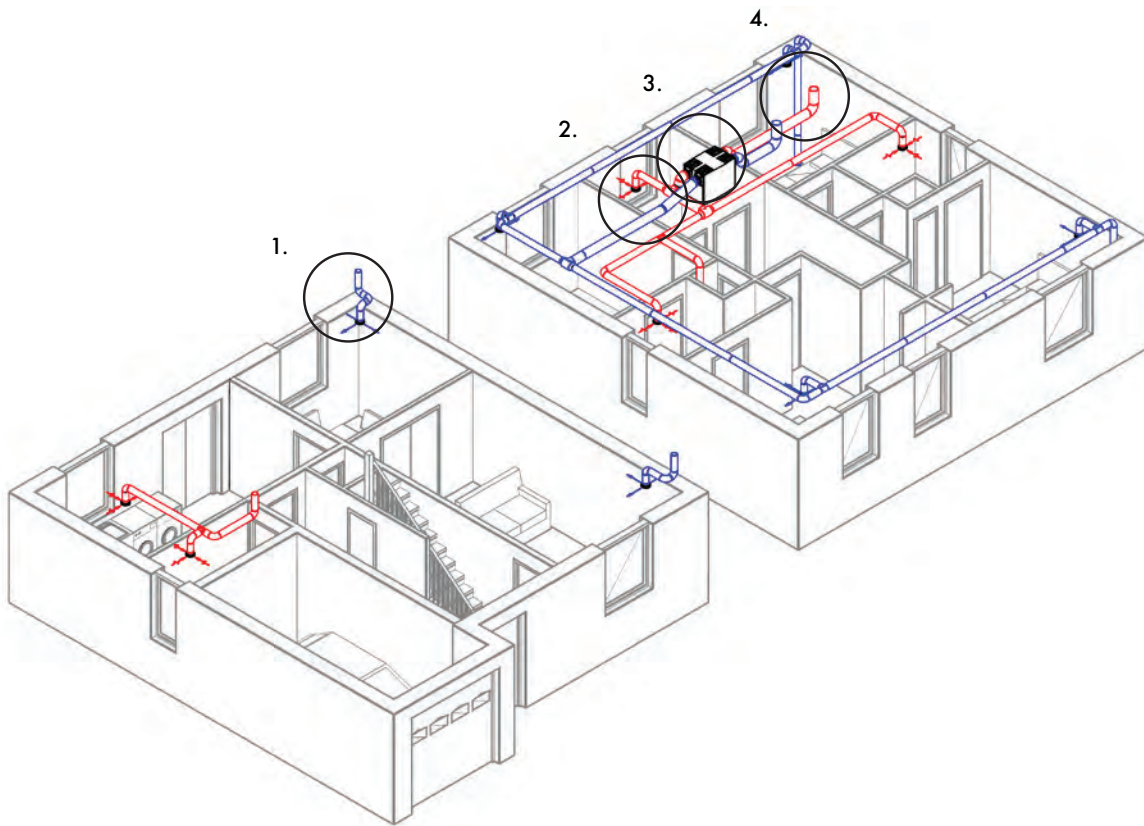
3.6 Commissioning - Systems 3 and 4 only		
Have controls been set-up in accordance with the manufacturer's recommendations?	Yes	No
Have all distribution grilles been locked to prevent unauthorised adjustment?	Yes	No

3.7 Test Engineer's Details	
Name	
Company	
Address Line 1	
Address Line 2	
Telephone Number	
Post Code	
Signature	
Competent Person Scheme/Registration Number (if applicable)	
Date of Test	

Design Guidance Scheme

To be used in conjunction with the Design Deviation Sheet detailing duct change rules.

Note, these images are for indication only.



1. SUPPLY (AND EXTRACT) GRILLES

- Never reduce diameter of supply grilles (or extract)

2. DUCTING

- Never deviate from main duct design
- Decreasing branch duct diameter has consequences if adding additional bends
- Never add flexible duct to design and do not exceed 300mm length

3. SUPPLY AND EXTRACT SPACING

- To prevent cross contamination of air, never change site specification of supply and extract to less than 300mm horizontal spacing

4. MAIN UNIT LOCATION/FIXING

- Re-location may exceed flexi duct rules and cause performance risk
- Location must ensure accessibility for filter clean/change
- Ensure fixing to a stable structure to prevent vibration/acoustic issues

5. RADIAL DUCTING/SEMI RIGID

- Radial ducting systems run individual semi-rigid ducts out from a central plenum
- Design deviations on radial systems need advice from the designer

Centralised Mechanical Ventilation Design Deviation Sheet

When deviating from the design of a central mechanical ventilation system, there are areas that can have an impact on the overall product performance. The table below gives some insight into what the impact of changes may be in order to promote the minimal changes from the approved design.

The most critical element of system design is duct layout, branches and bends, diameter and duct material used. No additional flexible ducting should be used to that specified in the design and should be no longer than 300mm, pulled tight to at least 90% of the overall length.

Branch ducting - branch ducts should be either of equal diameter to the main duct or may be reduced to a slightly smaller diameter. A reduction in diameter means anything more than 2 additional bends to that within the design can be classed as a major change. Alternatively going up a diameter size can enable 1 additional bend for every 1 metre of larger duct used.

The main central duct connects directly to the unit. As this section carries air from the whole installation, no changes should be made to its size. For the secondary ducts an increase in duct size as per the table below can allow for 1 additional bend for every 2 metres of larger duct used. in this way it is possible to extend duct lengths if required on site.

Sizing downwards			Sizing upwards
Rectangular	220 x 90mm	204 x 60mm	110 x 54mm
Round Ø	150mm	125mm	100mm

Radial ducting systems using semi-rigid ducting offer more flexible solutions, however design deviations need to be authorised by the designer.

Duct Dimensions

Topic	Design Deviation Type	Potential Risk Impact	Assessment of Actual Risk
Ducting	Branch ducts - Increasing number of bends and/or total length in system by 10% or less	Minor risk with potential for increased resistance and reduced extract rates	
	Main ducts - Increasing number of bends and/or total length in system by 10% or less	Minor risk with potential for increased resistance and reduced extract rates	
	Branch duct - sizing downwards on duct sizes or increasing number of bends and/or total length in total system by more than 10%	Major risk with potential for increased resistance and reduced extract rates	
	Main duct -sizing downwards on duct sizes or increasing number of bends and/or total length in total system by more than 10%	Major risk with potential for increased resistance and reduced extract rates	
	Amending length of flexi duct to beyond 300mm	Major risk with potential for increased resistance and reduced extract rates	
	Changing fixing bracket intervals for flexible ducting to more than 600mm	Major risk with greater chance of troughing resulting in increased resistance and reduced extract rates. Also may result in acoustic problems.	
Main unit	Re-location of unit	Minor risk becoming major if the re-location results in increased flexible duct use or additional bends	
	Fixing of unit	Major risk potential if not fixed to a stable structure which may result in acoustic/vibration problems	
Supply and extract terminals	Changing specification of size downwards	Major risk potential as resistance can increase in the system	
	Changing location of terminals	"Minor risk - to coordinate with lighting. Major risk - if relocating against good practice"	

To download further copies of this Domestic Ventilation Checklist visit: airflow.com/checklist