DucoBox Silent



Product version 17xxxx and above

Installation guide











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Translation of the original instructions

See www.duco.eu for information regarding warranty, maintenance, technical data, etc.
Installation, connection, maintenance and repairs are to be carried out by an accredited installer. The electronic components of this product may be live. Avoid contact with water.









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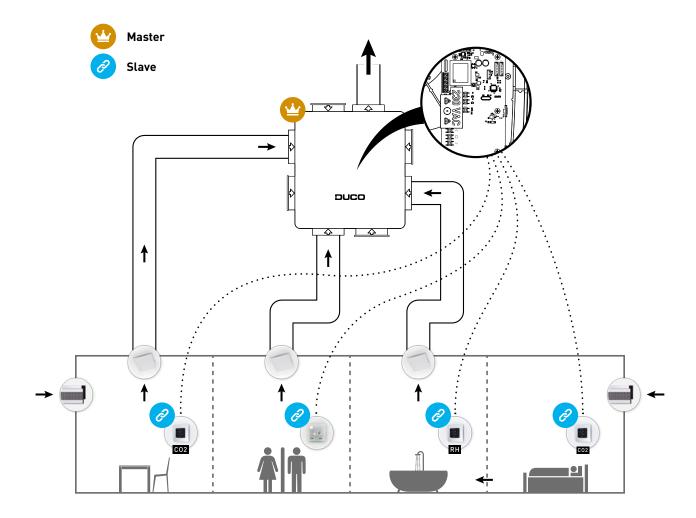
01 Introduction

Congratulations on your DucoBox Silent, the quietest box in Europe! The DucoBox Silent performs two functions in a Duco Demand-Controlled Natural Ventilation System:

On the one hand it is the **extractor fan** that exhausts stale air with excessive CO₂ content or humidity.

On the other it is the system 'master' or brain of the system. It receives and interprets signals from slave components (measurements from sensors or manual input), on the basis of which it controls the ventilation system.

It is inadvisable to connect the DucoBox (via a duct or directly) to an extractor hood, regardless of type. This usually causes excessive fouling in the DucoBox, which affects its operation or has a more direct effect on output.





02 Product sheet

PRODUCT FICHE - Ref Delegated regulation (EU) n° 1253/2014 **DucoBox Silent**

(English)



Trade mark	Duco
Model reference	DucoBox Silent
	0000-4215 / 0000-4225 / 0000-4229 / 0000-4232 / 0000-4233 / 0000-4237 / 0000-4238 / 0000-4304 / 0000-4305 /
	0000-4438 / 0000-4490 / 0000-4501 / 0000-4607

		Manual control (no DCV)	Clock control (no DCV)	Central demand control (+ 1 sensor)	Local demand control (+ min 2 sensors)
Enocific onorgy consumntion	cold	-30,5	-	-40,7	-54,1
Specific energy consumption (SEC) in (kWh/(m².an))	average	-14,1	-	-19,8	-27,0
(SEC) III (KVVII/(III .dii))	warm	-4,8	-	-7,7	-11,5
	cold	В		A	A+
SEC class	average	E		E	В
	warm	F		F	Е
	Typology	Unidirectional		Unidirectional	Unidirectional
	Type of motor	Variable speed	-	Variable speed	Variable speed
Туре	of heat recovery	None		None	None
Thermal efficiency of hea	at recovery in (%)	Not applicable	-	Not applicable	Not applicable
Maximum flo	ow rate in (m³/h)	400		400	400
Electric fanpower input at ma	aximum flow rate in (W)	72,42	-	72,42	72,42
Sound power level Lwa at re	ference flow rate in dB(A))	45		45	45
Reference flow rate in (m³/s)		0,08	-	0,08	0,08
Reference pressure difference in (Pa)		50		50	50
SPI en (W/m³/h)		0,10	-	0,10	0,10
		1		0,85	0,65
Control factor and control typology		Manual control		Central demand control	Local demand control
Declared maximum internal leakage rates in (%)		Not applicable	-	Not applicable	Not applicable
Declared maximum	external leakage rates in (%)	2,23%		2,23%	2,23%
Ŋ	Mixing rate in (%)	Not applicable	-	Not applicable	Not applicable
Position and descripti	on of visual filter warning	Not applicable		Not applicable	Not applicable
	install regulated ly/exhaust grilles	Inst	ructions according to legisla	itive regulations area of applica	tion
Pre-/dis-asser	mbly instructions	<u>www.duco.eu</u>			
Airflow sensitivity to pressure variations at + 20 Pa / -20Pa		Not applicable	-	Not applicable	Not applicable
Indoor/outdoor air tightness in (m³/h)		Not applicable		Not applicable	Not applicable
Annual electricity consumpti	on (AEC) in (kWh electricity/a)	120,2		86,8	50,8
	cold	3355	-	4290	5536
Annual heating saved (AHS)	average	1715	_	2193	2830
in (kWh primary energy/a)	warm	776	_	992	1280



PRODUCT FICHE - Ref Delegated regulation (EU) n° 1253/2014

DucoBox Silent 325





Trade mark	Duco
Model reference	DucoBox Silent 325
	0000-5127

	Г				
		Manual control (no DCV)	Clock control (no DCV)	Central demand control (+1 sensor)	Local demand control (+ min 2 sensors)
Chasific anargy consumntion	cold	-31,0	-	-41,1	-54,3
pecific energy consumption (SEC) in (kWh/(m².an))	average	-14,6	-	-20,1	-27,2
(SEC) III (KVVII/(III .aii))	warm	-5,2	-	-8,1	-11,7
	cold	В		А	A+
SEC class	average	E		D	В
	warm	F		F	E
	Typology	Unidirectional		Unidirectional	Unidirectional
	Type of motor	Variable speed	-	Variable speed	Variable speed
Туре	of heat recovery	None		None	None
Thermal efficiency of hea	t recovery in (%)	Not applicable	-	Not applicable	Not applicable
Maximum flo	ow rate in (m³/h)	325		325	325
Electric fanpower input at ma	ximum flow rate in (W)	45,73	-	45,73	45,73
Sound power level Lwa at ref	erence flow rate in dB(A))	41		41	41
Reference flow rate in (m³/s)		0,06	-	0,06	0,06
Reference pressure difference in (Pa)		50		50	50
SPI en (W/m³/h)		0,08	-	0,08	0,08
		1		0,85	0,65
Control factor and control typology		Manual control		Central demand control	Local demand control
Declared maximum internal leakage rates in (%)		Not applicable	-	Not applicable	Not applicable
Declared maximum	external leakage rates in (%)	2,74%		2,74%	2,74%
N	lixing rate in (%)	Not applicable	-	Not applicable	Not applicable
Position and description	on of visual filter warning	Not applicable		Not applicable	Not applicable
	install regulated y/exhaust grilles	Instr	ructions according to legisla	tive regulations area of applica	tion
Pre-/dis-asser	nbly instructions		www	.duco.eu	
Airflow sensitivity to pressure variations at + 20 Pa / -20Pa		Not applicable	-	Not applicable	Not applicable
Indoor/outdoor air tightness in (m³/h)		Not applicable		Not applicable	Not applicable
Annual electricity consumption	on (AEC) in (kWh electricity/a)	100,9		72,9	42,6
	cold	3355	-	4290	5536
Annual heating saved (AHS)	average	1715	_	2193	2830
in (kWh primary energy/a)	warm	776		992	1280





PRODUCT FICHE - Ref Delegated regulation (EU) n° 1253/2014

(English)



DucoBox Silent 225

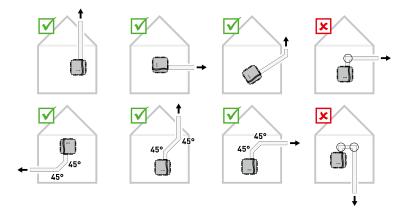
Trade mark	Duco
Model reference	DucoBox Silent 225
	0000-5126

	Γ				
		Manual control (no DCV)	Clock control (no DCV)	Central demand control (+ 1 sensor)	Local demand control (+ min 2 sensors)
Specific energy consumption	cold	-31,3	-	-41,3	-54,4
(SEC) in (kWh/(m².an))	average	-14,9	-	-20,3	-27,4
(, (,(- ,,	warm	-5,5		-8,3	-11,9
	cold	В		A	A+
SEC class	average	E		D	В
	warm	F		F	E
	Typology	Unidirectional		Unidirectional	Unidirectional
	Type of motor	Variable speed	-	Variable speed	Variable speed
Туре с	of heat recovery	None		None	None
Thermal efficiency of heat	recovery in (%)	Not applicable	-	Not applicable	Not applicable
	w rate in (m³/h)	225		225	225
Electric fanpower input at max	in (W)	24,43	-	24,43	24,43
Sound power level Lwa at refe	in dB(A))	37		37	37
Reference flow rate in (m³/s)		0,04	-	0,04	0,04
Reference pressure difference in (Pa)		50		50	50
	SPI en (W/m³/h)	0,07	-	0,07	0,07
Control factor and c	control typology	1 Manual control		0,85 Central demand control	0,65 Local demand contro
Declared maximum i	nternal leakage rates in (%)	Not applicable	-	Not applicable	Not applicable
Declared maximum external leakage rates in (%)		3,96%		3,96%	3,96%
M	ixing rate in (%)	Not applicable	-	Not applicable	Not applicable
Position and descriptio	warning	Not applicable	-	Not applicable	Not applicable
Instructions to i supply	nstall regulated //exhaust grilles	Inst	ructions according to legisla	ative regulations area of applica	tion
	bly instructions		www	v.duco.eu	
Airflow sensitivity to pressure variations at + 20 Pa / -20Pa		Not applicable	-	Not applicable	Not applicable
Indoor/outdoor air tig	htness in (m³/h)	Not applicable		Not applicable	Not applicable
Annual electricity consumptio	n (AEC) in (kWh electricity/a)	89,6		64,7	37,8
	cold	3355	-	4290	5536
Annual heating saved (AHS)	average	1715	-	2193	2830
in (kWh primary energy/a)	warm	776	_	992	1280

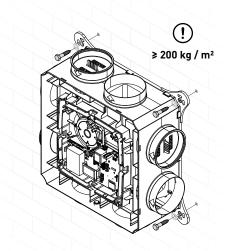


03 Fitting

03.A Position



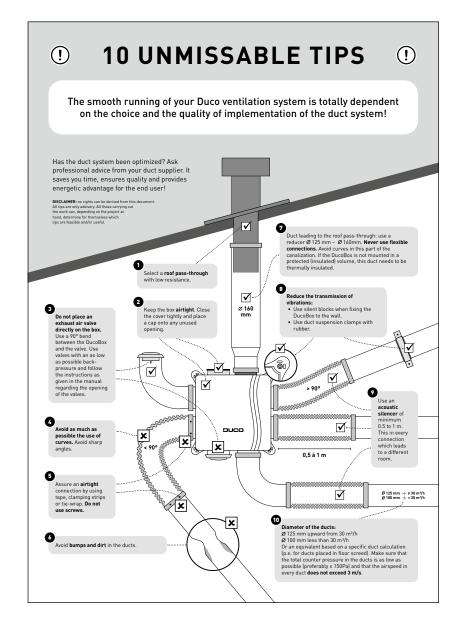
03.B Fixing



03.C Air duct connections

Keep down restriction. A non-return flap is required when discharging into a manifold.

Be sure to take note of the '10 unmissable tips' as well when fitting the DucoBox. Avoiding excessive use of bends, especially angles greater than 90° and adhering to the diameter guidelines for the ductwork will ensure that the ventilation box is able to do its job satisfactorily. Failure to take account of this recommendation may result in a highly energy and maintenance-intensive system that gives rise to frequent excessive noise levels.





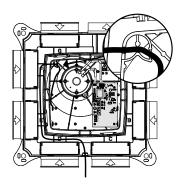
04 Wiring

04.A Connector & buttons

	CONNECTORS
1	Power 230 VAC
2	Perilex
3	Humidity Boxsensor
4	CO ₂ Boxsensor
5	Duco Network Tool
6	Fan

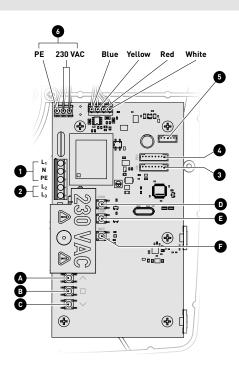
	BUTTONS
Α	UP
В	ENTER
С	DOWN
D	HIGH
E	LOW
F	INST

Illustrations and connections may vary depending on product configuration. Incorrect connection or failure to follow the instructions may result in damage to the connected devices.



Strain relief

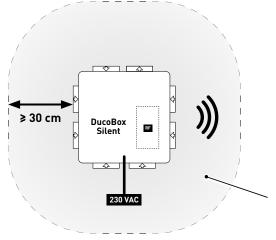
It is mandatory to place the power supply cable in the slot provided, as shown in the drawing, before powering up the DucoBox.



Cabling diagram

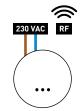
The DucoBox Silent communicates with slave components through a wireless (RF) connection. **RF components** have a maximum free-field range of 350 metres. This distance will be much less in a building because of obstacles. Therefor you will need to allow for features such as walls, concrete and metal. All slave components (except those which are battery powered) also act as repeaters. Signals from components that are unable to make a (strong) connection with the master component are forwarded automatically via no more than one other component (= hop point). Please refer to information sheet RF communication (L8000018) at www.duco.eu for further information.

DUCO RF			
Power supply 230 VAC			
Wiring	1,5 mm²		
Frequency	868 Mhz		
Maximum distance	350 m, free field (less through obstacles)		
Maximum number of components	Up to 25 wireless components in a single system		









Switch Sensor

Max. of 25 RF components

RF obstacle-free zone

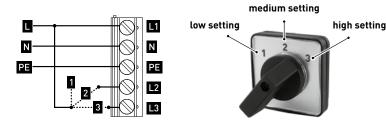
Do not place any obstacles causing RF interference or other devices with an RF connection within a radius of at least 30 cm around the RF component. We take these to include items such as washing machines, tumble dryers, ironing boards, etc.

05 Additional control options

05.A 3-position switch* via Perilex connector

The last operation on any User controller takes primacy in all cases. The ventilation position on the 3-position switch can therefore be overruled by another User controller, such that an incorrect ventilation position will be visible on the 3-position switch.

Please refer to the manual with the Duco Perilex plug for more information.

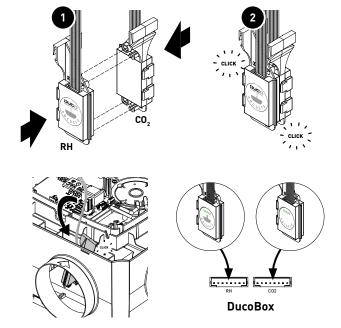


05.B Boxsensors

Boxsensors can be built into a DucoBox Silent and provide CO_2 and/or humidity measurement in an air duct. A DucoBox Silent can contain a **maximum of one \mathrm{CO}_2 and one Humidity Boxsensor**. If the living room (CO_2 measurement) and bathroom (humidity measurement) are connected to the same duct/zone, the two Boxsensors can be clipped together.

Fitting + connecting Boxsensor

- Twist the Boxsensor(s) into the desired duct in the box until the Boxsensor clicks home.
- Connect the Boxsensors to one of the two connectors provided on the DucoBox Silent PCB.



06 Electronical installation

06.A Change settings

Most of the factory settings for the network and components will be satisfactory as they are, however, depending on the situation, it may be desirable to change some parameters, such as the CO_2 setpoint. This can be done using the **Duco Network Tool***. This user-friendly software also enables problems in the system to be pinpointed. The Duco Network Tool is issued to every installer after attending a free training course at the **Duco Academy***. Please refer to our website or your Duco dealer for further information.

^{*} The 3-position switch is not a DUCO component.

^{*} Only in Belgium and the Netherlands



Installer / User mode 06.B

To add components to the network, remove or replace, the system should be put in 'Installer mode'. The LED on each component indicates the active mode of the component (see table in next section).

'Installer mode' can be activated by pressing the DucoBox Silent 'INST' button (see drawing in section "04.A Connections & buttons" on page 8.) Once the LED on the master unit starts flashing, it means that 'Installer mode' is active. Press 'INST' again to return to 'User mode' (LED fully on or off). The system reverts automatically to 'User mode' after 15 minutes of inactivity.

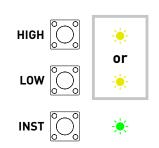
06.C LED indications

-	RED (blinking slowly) Not in network	RED (blinking rapidly) Logging in	
	GREEN (blinking slowly) In network	GREEN (blinking rapidly) In network, waiting for associated components	
->-	YELLOW (clignotement rapide) Transitional phase (please wait)	YELLOW (on) Initialising (system configuration in progress)	
-	WHITE or OFF Normal		
	BLUE Component is displayed if changes are being put through via the master.		
	ORANGE The system is not working correctly because the Duc DucoBox. Follow the guidelines in '10 essential t		

06.D Setting type of home

Setting the type of home and number of occupants correctly will provide the ventilation system with a better basis to adjust the mid-position. There are two types of home: low-rise (e.g. a house) and high-rise (e.g. a flat). Configuration of this component is obligatory in the Netherlands. The standard setting for a DucoBox is as a low-rise home for 4 (or more) occupants.

Setti	Setting type of home			
0	Ensure that 'Installer Mode' has been activated (via the 'INST' button).			
2	Press 'LOW ' for a low-rise or 'HIGH ' for a high-rise home.			
3	The yellow LED (see illustration) will flash in a pattern that indicates the number of occupants : Once, twice (applies for 3 occupants as well) or 4 times (applies for 4 occupants or more). Press 'LOW' or 'HIGH' respectively again until the LED pattern matches the correct number of occupants.			
4	Press the 'INST' button to exit 'Installer mode'.			



06.E Pairing components



Never pair more than one system with RF components at the same time. If you do so, a component in the wrong network could be paired, e.g. in the neighbours' DucoBox.

Pairing components on the DucoBox Silent

Activate 'Installer mode' by tapping 'INST' on the DucoBox. The LED will flash green rapidly.

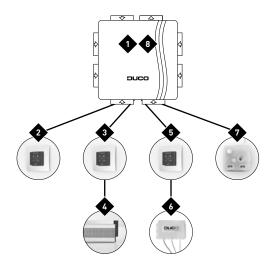
Add control components by tapping once on the component to be paired. The LED will flash red briefly and then start to flash green rapidly. Repeat this step until all remaining components in the current zone have been paired.

With RF components: start with the component closest to the master. If the first pairing is unsuccessful, another component may be tried first, which can then act as a hop point for components which are unable to make an RF connection with the DucoBox.

Once all components have been paired, 'Installer mode' can be deactivated by tapping 'INST' on the DucoBox Silent. LEDs on all (3) components will stop flashing.

Please refer to the manual with the components for more detailed information.

Example of a pairing sequence



indicates the order in which a button of the component must be pressed controls component

06.F Removing / replacing components

Removing paired components from the network or replacing is only possible within 30 minutes after the component is paired in or is restarted. Restarting can be done by disconnecting the power for a moment. After a time-span of 30 minutes, remove and replace operations are ignored. This is valid for all components from date of manufacture 170323.

Removing a component

Activate 'Installer mode' by long-pressing 2 diagonal buttons on a paired control. The LED will flash green rapidly.



Press once and hold a button on the component to be removed in order to remove it from the network.



Deactivate 'Installer mode' by pressing the 4 buttons on a paired control simultaneously (or using the palm of your hand on a control featuring touch buttons). The LED will turn white.



Replacing a component

Activate 'Installer mode' by long-pressing 2 diagonal buttons on a paired control. The LED will flash green rapidly.



Press briefly twice on the button of the component to be replaced.



Tap once on the button for the new component. The latter will take on all settings / connections in the network.



Deactivate 'Installer mode' by pressing the 4 buttons on a paired control simultaneously (or using the palm of your hand on a control featuring touch buttons). The LED will turn white.





06.H **Tips**

- Removing all components from the network (e.g. in the event of problems): Activate 'Installer mode' and long-press 'INST' until the LED starts flashing red. The DucoBox will reboot (around 15 seconds) and the LED will stop flashing.
- Restore factory settings for the DucoBox and all paired components (AS FROM DucoBox version 18xxxx): Long-press 'INST' and 'ENTER' if not in 'Installer mode'. The network remains in place.
- Use the **Duco Network Tool** to read out information from components.

07 Air calibration

The system needs to be configured for it to work correctly. This will ensure its operation is as quiet as possible and energy-efficient. See under the Tools heading at www.duco.eu for information about determining ventilation flow rates.

07.A Air calibration procedure for DucoBox Silent



a

2

The air calibration procedure must be carried out on a calm day (no more than wind force 2: leaves rustling, feeling the wind in one's face).

Air calibrating the DucoBox Silent

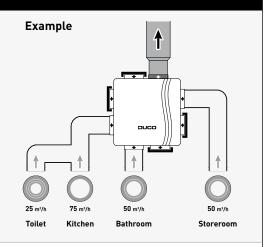
Set all exhaust vents so they match the desired flow rate in accordance with the table below. Proper pre-setting makes for rapid and correct configuration.

Flow rate	DucoVent Design	DucoVent Basic and other vents
75m³/h	0	100% open
50m³/h		50% open
25m³/h		25% open

When using DucoVent Design exhaust vents always leave the outer ring in place for acoustic effect.

Before activating air calibration mode:

- Close all windows and doors.
- Ensure that all duct openings in the DucoBox are fully closed and that the DucoBox cover is closed!
- Avoid air leaks in the ventilation ducts.
- Set all window ventilators to the open position







open

Press 'HIGH' or 'LOW' to activate the configuration mode for 30 minutes. Then close the cover firmly.

Which configuration mode should I choose?

(3)

6

9

Button	Air calibration using 'HIGH' This method is standard and has the lowest consumption. Recommended in the majority of homes.	Air calibration using 'LOW' This method offers a boost mode but may give rise to more noise and higher consumption.
$\overline{}$	Low mode (10%)	Low mode (14-33%)*
€	Medium mode (50%)	High mode (100%)
¥	High mode (100%)	Boost mode (143-333%)*

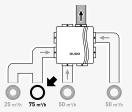


The percentages in the table indicate what percentage of the flow rate configured will be extracted. The configuration mode chosen does not affect the operation of the AUTO mode.

In the 'LOW' configuration, the percentage in low mode and boost mode is dependent on the type of home (see section "06.D Setting type of home" on page 10) and limited to the maximum achievable ventilation system flow rate.



Close the DucoBox cover. Ensure it forms an airtight seal with the DucoBox.

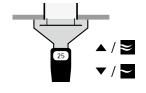


Select the duct with the highest flow rate and restriction.

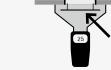
Measure at the vent and adjust the DucoBox rpm until the desired flow rate is obtained. This can be done in two ways:

- Using the \sim (lower) and \sim (higher) buttons on a paired User controller or $CO_3/$ Humidity Sensor*.
- Using the 'DOWN' and 'UP' buttons on the DucoBox. This requires the cover to be removed temporarily. Always close the cover after every measurement.

Pressing the buttons once is equal to 1% (= approximately 2 to 3 m³/h per press of the button depending on the restriction in the ducts).



Now measure the other vents. The flow rate from these other vents must only be adjusted at the vents themselves.



8 Repeat steps 6 and 7 until the desired flow rate has been obtained at each vent.



Exit configuration mode. This can be done in two ways:

- Long-press 'AUTO' on a paired User controller or CO₂/Humidity sensor* until the 4 LEDs light up white briefly and then turn yellow again.
- Press 'ENTER' in the DucoBox and then immediately close the cover on the **DucoBox**. If the cover was not closed, you can pull the plug out of the power socket for a few seconds after closing the cover in order to reboot the DucoBox. The DucoBox will now perform a calibration by speeding up high. This may take up to 1.5 min. Calibration will be complete once the DucoBox slows down the 'AUTO' button LEDs on the User controllers / CO₂/Humidity sensors* will turn white, as



ENTER

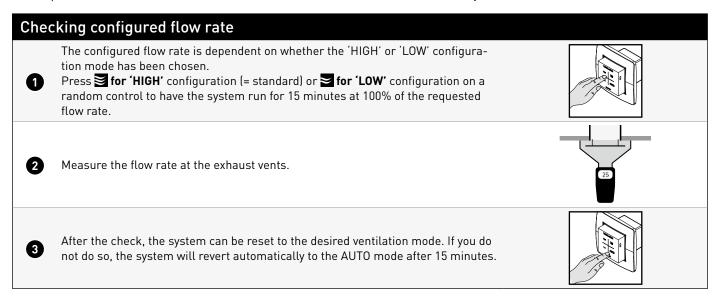
will the LED on the DucoBox.

^{*} Depending on the software version of the User controller / CO₂/Humidity sensor.



07.B Checking

The steps set out below can be used to check whether flow rates have been set correctly.



08 Maintenance & service

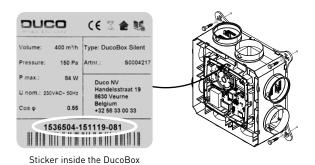
Please refer to the maintenance instructions at www.duco.eu and view the videos on duco.tv for more information.

For service problems as a user:

Please contact your installer. Keep the serial number of your product to hand.

For service problems as an installer:

Please contact your Duco products seller. Keep the serial number of your product to hand.



09 Warranty

All warranty conditions concerning the DucoBox and Duco's ventilation systems can be found on the Duco website. All complaints are to be reported to Duco by the Duco distributor with a clear description and the order/invoice number under which the products were delivered. In order to register the complaint, please use the complaint registration form found on the Duco website and the product's serial number in your message to service@duco.eu.



