

**Bypass Damper** 

Read this manual and save for future reference!



UK

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## Legend

The following terms are used in this manual to draw attention to potential risks or to important information about the product:



#### **DANGER**

Indicates an imminent dangerous situation that can cause death, serious injury or significant property damage in a worst-case scenario.



## **CAUTION**

Indicates an imminent dangerous situation that can cause injury or property damage in a worst-case scenario.



## **DANGER**

Comply with the following to minimize risk of fire, electric shock, or injury:

- 1. Use this unit for its intended purpose.
- 2. Before maintenance or cleaning, the heat source must be shut off and cooled down. You must ensure that the heat source is not turned back on inadvertently.
- 3. Mechanical and electrical installation must be carried out by authorized personnel.
- 4. Follow the guidelines and safety standards of the manufacturer.
- 5. Accessories are not included in this manual. See the separate manuals for these components.

# Other symbols

The symbols below are used to signify whether a setup or an installation is approved.



## **APPROVED**

The setup / the installation complies with all precautions, and is thus approved



## **NOT APPROVED**

This solution is not approved, and we refer you to look at an approved setup/installation instead.



# 1. Product information

## 1.1 Function

## **Application**

The exodraft Bypass Damper is used in exhaust systems to control the hot flue gases/process air to the Basic Plate heat recovery devices.

A Bypass Damper is used primarily for larger boiler systems, industrial processing plants, or commercial systems.

All parts in contact with flue gas are made from stainless steel EN 1.4404. All exterior parts are made from stainless steel EN 1.4301.

An integrated electric motor opens and closes the damper.

Power supply and start/stop signal come from an external exodraft panel, and is not a part of the Bypass Damper.

The Bypass Damper has a safety spring return, causing it to close automatically in case of a power failure.

## Limitations

Max. temperature 600°C.

The Bypass Damper is not to be used as a draining point in an exhaust system.

As a rule, the Bypass Damper is only for indoor installation.

Installation outside requires extra shielding.

Flue gas / process air must be of a quality (particle free) that will not, over time, cause the damper to be filled with residue that can affect the function of the damper.

# 1.2 Shipping

Shipping

The Damper Motor is shipped strapped to a pallet including a manual.

The shipment may contain loose components.

Standard packing slip

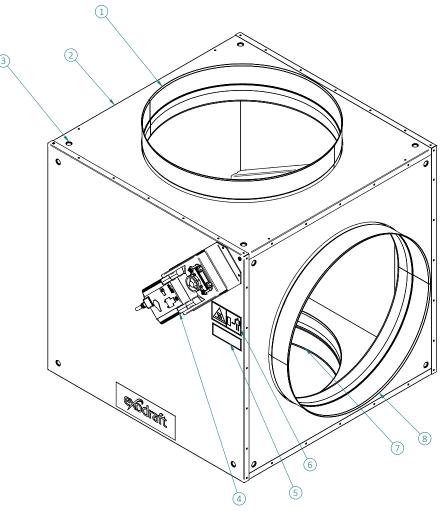
If other components are also shipped, these will appear as separate items on the packing slip.

# 1.3 Warranty

**exodraft** products must be installed by qualified personnel. Failure to comply gives **exodraft a/s** the right to declare the product warranty null and void in whole or in part.

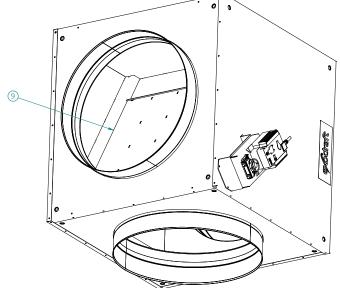
**exodraft** reserves the right to make changes to these guidelines without prior notice.

# 1.4 Components



# **Standard components**

- 1. Outlet
- 2. Housing
- 3. M12 thread for mounting, three at each corner
- 4. Damper motor (can be installed at both sides of the axle for reverse function)
- 5. Nameplate
- 6. Danger/Caution sign
- 7. Inlet
- 8. Outlet
- 9. Damper





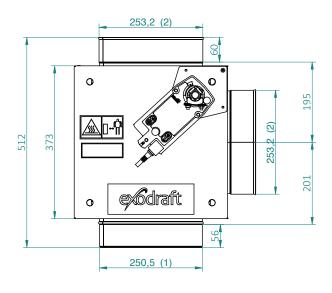
# 1.5 Basic Types

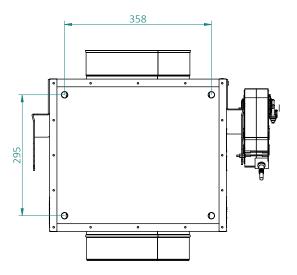
<b>exodraft</b> item number	Type (Bypass Damper)	Description	Inlet [Male] Ø exterior [mm]	Outlet [Female] Ø interior [mm]
8003300	BD250	Bypass Damper with motor Standard pipe connection dimensions Max 600°C	250,5	251,2
8003500	BD350	Bypass Damper with motor Standard pipe connection dimensions Max 600°C	350,5	351,2
8003600	BD400	Bypass Damper with motor Standard pipe connection dimensions Max 600°C	400,5	401,2
8003700	BD500	Bypass Damper with motor Standard pipe connection dimensions Max 600°C	500,5	501,2
8003800	BD700	Bypass Damper with motor Standard pipe connection dimensions Max 600°C	700,5	701,2

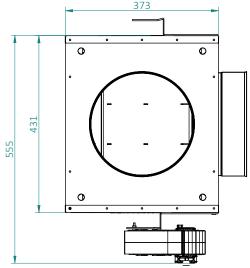


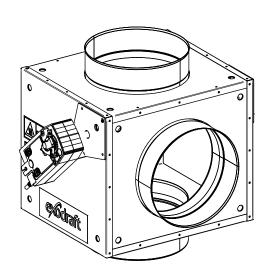
# 2. Technical Specifications

# 2.1 Type BD250







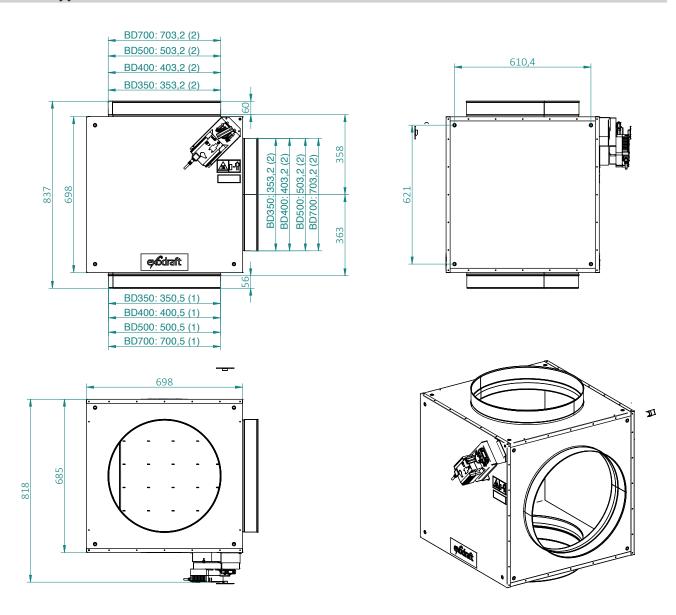


- (1) specifies outside male dimensions
- (2) specifies inside female dimensions





# 2.2 Type BD350/400/500/700



- (1) specifies outside male dimensions
- (2) specifies inside female dimensions



# 3. Mechanical Installation

## 3.1 Generelt

The Bypass Damper must be installed by qualified personnel in compliance with these instructions and all local regulations, and must comply with national regulations regarding distance from flammable materials.



#### CAUTION

If the exodraft Bypass Damper is not installed, maintained, and/or operated in compliance with the manufacturer's instructions, conditions may arise which could lead to personal injury or material damage.

## 3.2 Placement and Orientation



## **DANGER**

Always observe national regulations regarding distance from flammable materials.

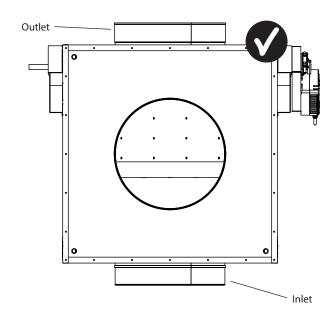
You must allow for hot surfaces on the Bypass Damper. If Bypass Damper is placed where it is easily accessible, it must Be Aware of hot to avoid inadvertent touch and any risk of inadvertent touch.

The damper motor on the Bypass Damper can be installed on the left or right side.

# Motor placed on left side

# Outlet

## Motor placed on right side



In addition to placing the motor on either (right or left) side of the Bypass Damper, you can also install the bypass damper with the damper motor pointing downwards.

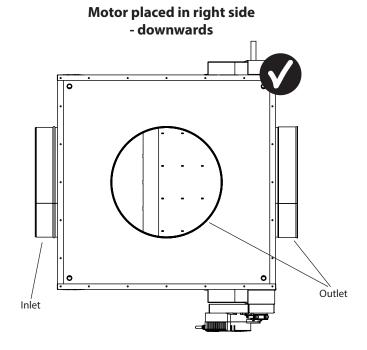
However, we do **not recommend** placing the motor at the top, due to the temperature of the flue gas. See examples on the next page.



Outlet

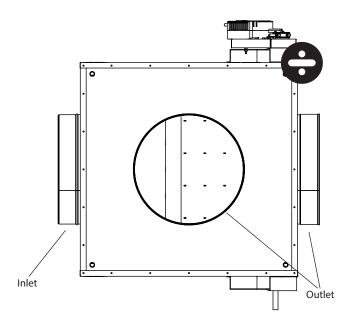


Motor placed in left side - downwards

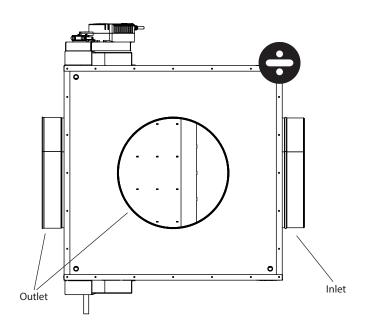


Motor placed at the left side - at the top

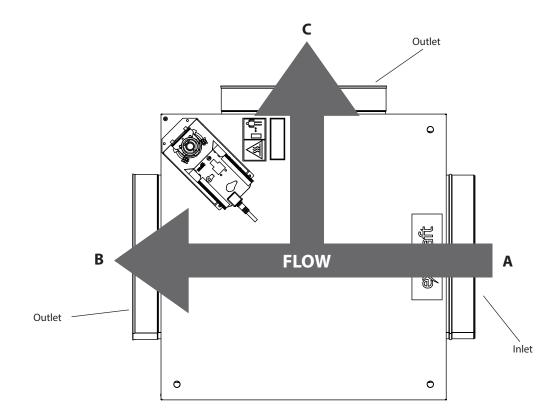
Inlet

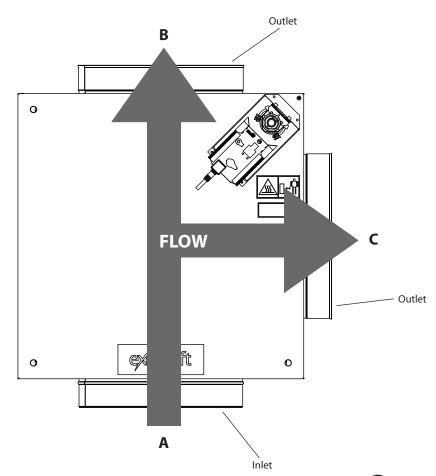


Motor placed at the right side - at the top



# 3.3 Flue Gas Direction





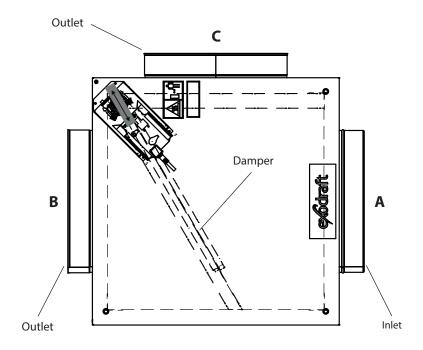


# 3.4 Damper Direction

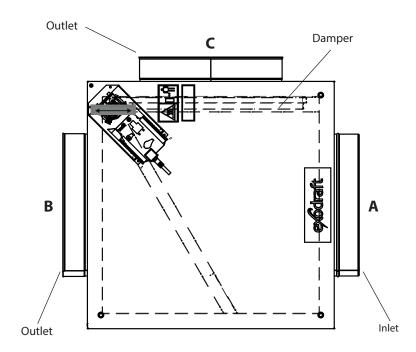
To ensure which direction the dampers are, when the unit is mounted, a damper indicator is mounted at the end of the shaft. The arrow points in the direction of the damper. See examples below and next page.



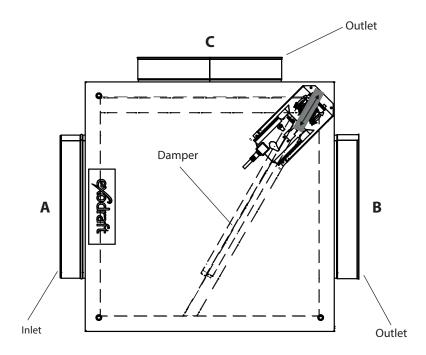
# Closed damper in sleeve B, thus flue gas flow from sleeve A to sleeve C



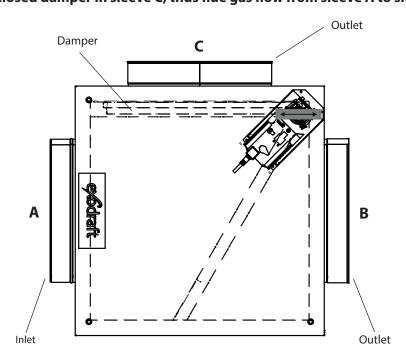
# Closed damper in sleeve C, thus flue gas flow from sleeve A to sleeve B



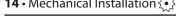
# Closed damper in sleeve B, thus flue gas flow from sleeve A to sleeve C



# ← Closed damper in sleeve C, thus flue gas flow from sleeve A to sleeve B





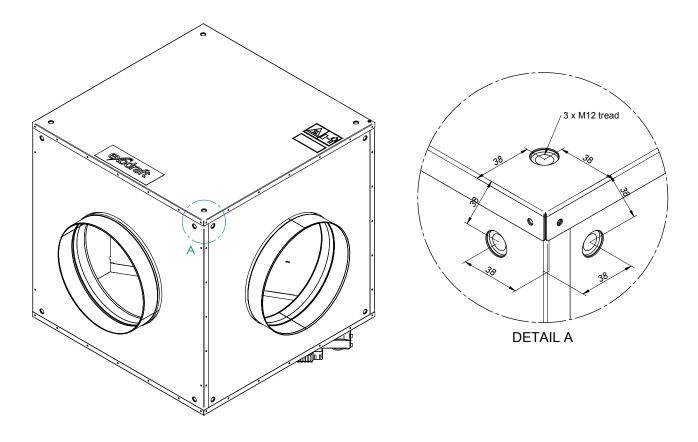


#### 3.5 Mounting

The weight must be distributed among at least 4 mounting corners (see section 3.4 - Mounting Points). Mounting points are only intended to support the weight of the product itself. As such, the Damper Motor is not built to support the weight of any chimney.



# **CAUTION** Maximum load for each mounting point is 100 kg.



<b>exodraft</b> Item number	Type (Bypass Damper)	Weight [kg]
8003300	BD250	30
8003500	BD350	72
8003600	BD400	70
8003700	BD500	68
8003800	BD700	140



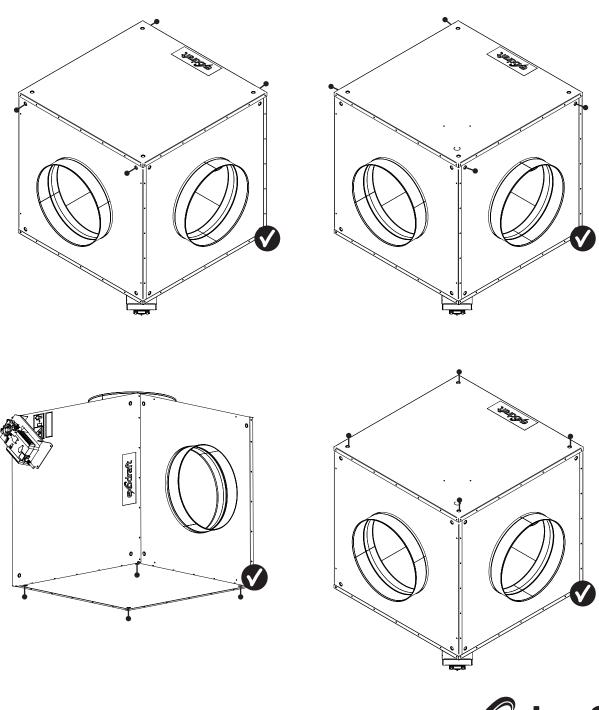
# 3.6 Mounting points

When mounting the Bypass Damper, you must use a minimum of four loadbearing mounting points.

The Bypass Damper should not be mounted using four points on the same side, unless it is the top or the bottom. Top and bottom depends on the position, i.e. the top is the side facing the ceiling.

The Bypass Damper should not be mounted using four points where two surfaces meet or where the points are offset. See examples below and on the following page of approved and disapproved mounting methods:

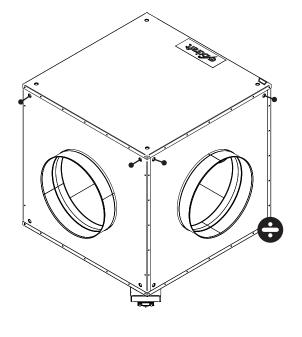


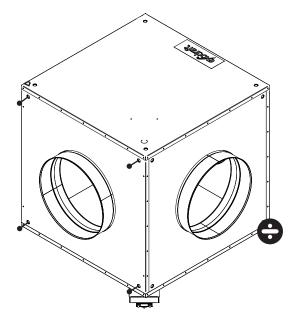


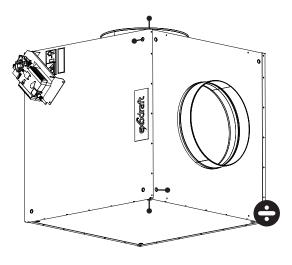


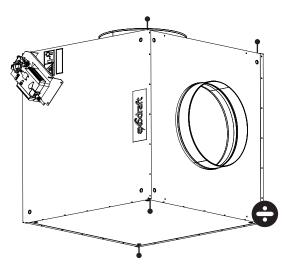


# Not approved Mounting Methods









# 4. Electrical Installation

## 4.1 General



## **DANGER**

Always turn off the power before working on the unit. Contact with live wires can cause electric shock or death.



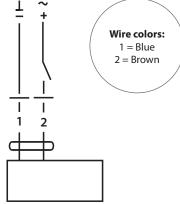
## **CAUTION**

If it becomes necessary to replace any of the original wiring that was delivered with the system, you need to use the same type of cable with the same temperature classification. If not, the isolation can melt or erode, exposing the actual wire.

All wiring must be completed in accordance with national regulations – in addition, the cable from the damper motor must not touch the Bypass Damper.

# 4.2 Wiring Diagram / Electrical Connection of Damper Motor





# BD350/BD400/BD500/BD700

AC/DC 24 V

Wire colors:

1 = Black
2 = Red
3 = White



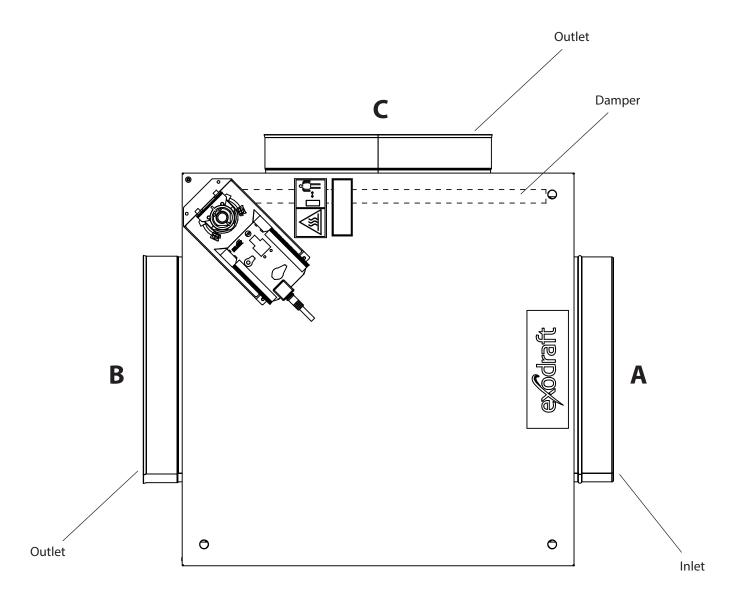
# 4.3 Installation and Placement of Belimo Motor Unit

The motor unit can be placed in both the right and left side of the Bypass Damper, which makes it possible to adjust the setup and the safety position according to individual requirement.

In addition, the Safety position can be set to have a 'closed port' at Sleeve B or Sleeve C. The drawing below shows where Sleeve B and Sleeve C are placed on the product.

The choice of placement/orientation of the Bypass Damper depends on the setup of the chimney installation and where you want to have the safety position in your system.

By default, Bypass Damper is always installed from exodraft's production, with closed damper in sleeve C when it is in safety position.

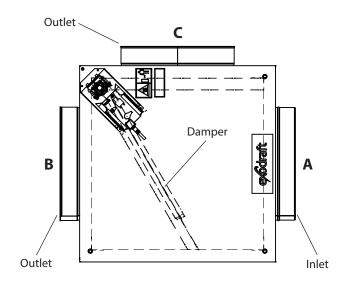


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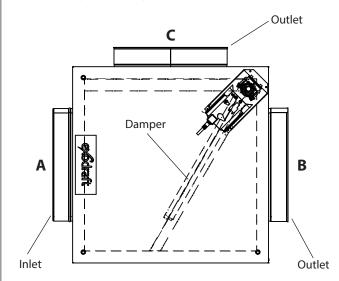
To install the motor unit correctly, you must first decide where you want to have the safety position. After this, you also need to decide on which side you want the motor to be placed. Below you see the four options.

The letters illustrates which column needs to be used and followed in the installation guide in the next pages.

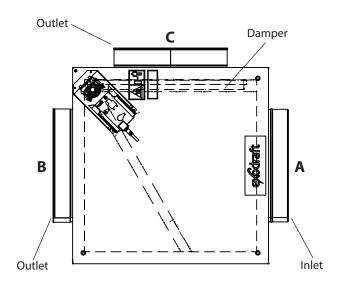
Motor unit placed in the left side - Bypass/Safety Position in the B-sleeve



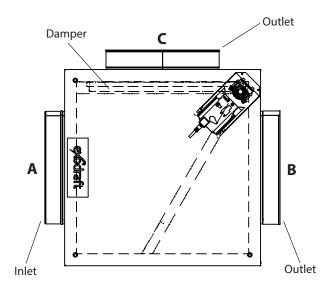
Motor unit placed in the right side - Bypass/Safety Position in the B-sleeve



Motor unit placed in the left side - Bypass/Safety Position in the C-sleeve



D. Motor unit placed in the right side - Bypass/Safety Position in the C-sleeve

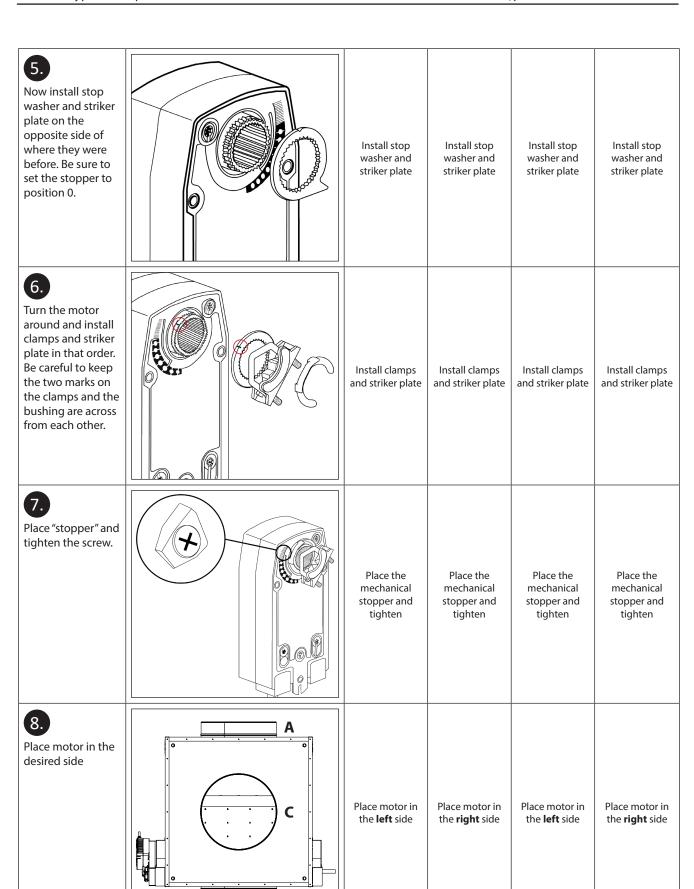






#### **Installation Guide for Bypass Damper 250** 4.4

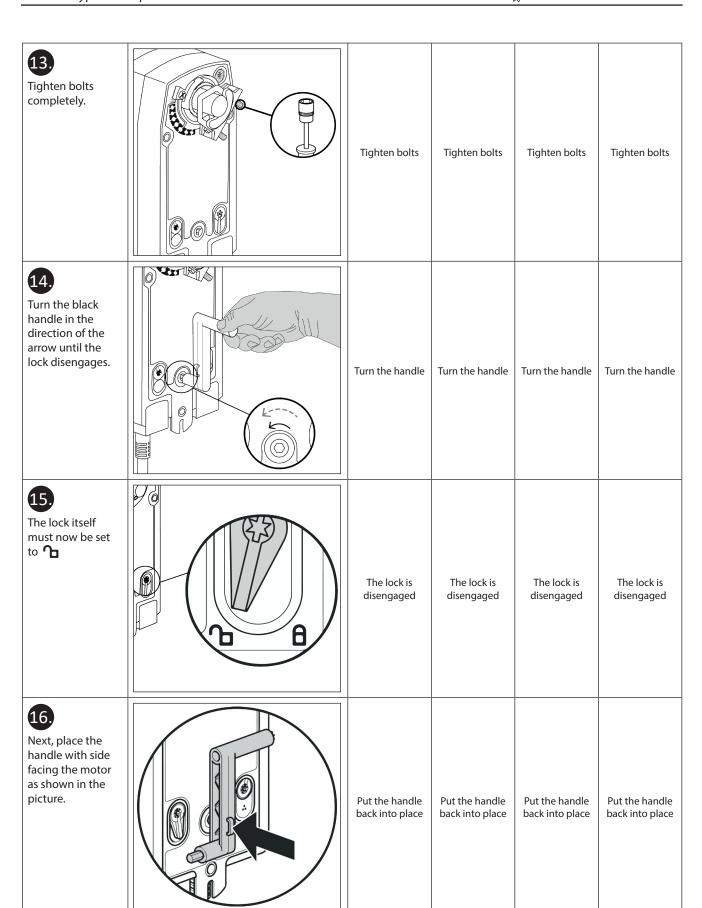
			ty position in sleeve		ty position in sleeve
	Description Step by step		B. Motor unit Placed in right side	C. Motor unit Placed in left side	D. Motor unit Placed in right side
Loosen bolts to uninstall the motor unit from the originally chosen mounting side		Loosen bolts	Loosen bolts	Loosen bolts	Loosen bolts
Loosen the stop and take it off completely. Place it somewhere safe where you won't lose it.		Loosen the mechanical stopper and uninstall	Loosen the mechanical stopper and uninstall	Loosen the mechanical stopper and uninstall	Loosen the mechanical stopper and uninstall
3. Flip the motor and uninstall striker plate and stop washer.		Uninstall striker plate and stop washer			
On the opposite side, uninstall striker plate and clamps.		Uninstall striker plate and clamps	Uninstall striker plate and clamps	Uninstall striker plate and clamps	Uninstall striker plate and clamps







9. Loosely tighten bolts.		Loosely tighten bolts	Loosely tighten bolts	Loosely tighten bolts	Loosely tighten bolts
Install the black handle and pre-tighten the actuator by turning the handle in the direction of the arrow until it catches – Turn the handle one more round after it catches.		Pre-tighten the actuator	Pre-tighten the actuator	Pre-tighten the actuator	Pre-tighten the actuator
Lock actuator into pre-tightened position, by pushing the black lock to	B	Lock the position	Lock the position	Lock the position	Lock the position
Check if the damper is closed completely		Damper must be <b>closed</b> <b>toward port B</b> .	Damper must be closed toward port B.	Damper must be <b>closed</b> <b>toward port C</b>	Damper must be <b>closed</b> <b>toward port C</b> .







		1	1	1	1
Connect power to the motor	- +	Connect power	Connect power	Connect power	Connect power
18. Let damper run in operational position		Damper must be <b>closed</b> <b>toward port C.</b>	Damper must be <b>closed</b> <b>toward port C.</b>	Damper must be <b>closed</b> <b>toward port B.</b>	Damper must be closed toward port B.
Move the stopper down too and tighten		Move down the mechanical stopper	Move down the mechanical stopper	Move down the mechanical stopper	Move down the mechanical stopper
Turn off the power and let the damper go all the way back to the bypass starting point. Check that the damper is completely closed.  The engine unit of the Bypass Damper is now completely installed.		Damper must be <b>closed</b> <b>toward port B</b> .	Damper must be closed toward port B.	Damper must be closed toward port C.	Damper must be closed toward port C.

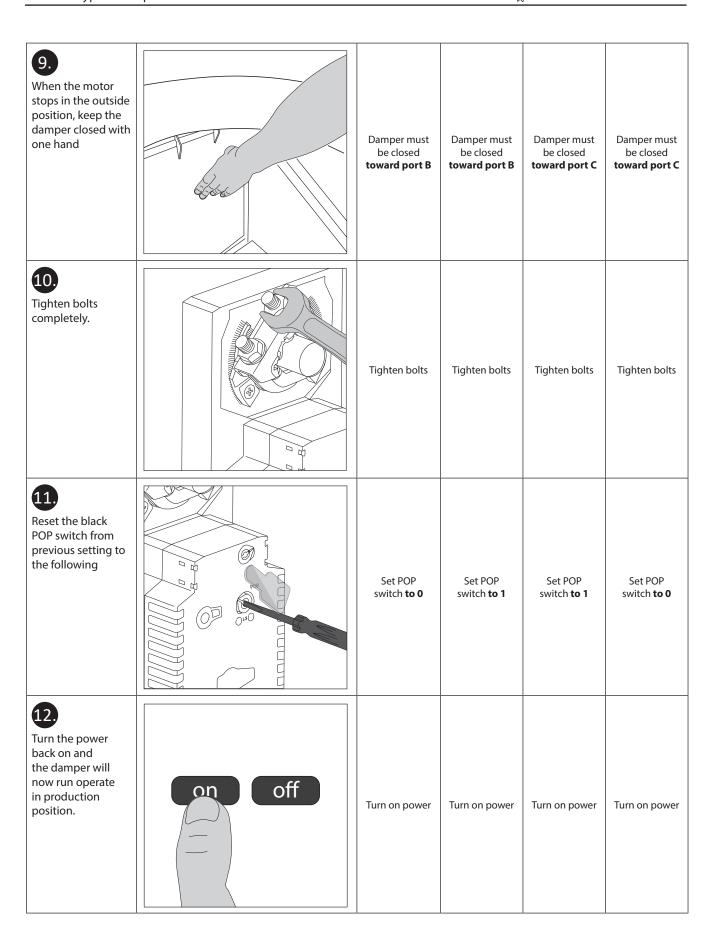


#### Installation guide for Bypass Damper 350, -400, -500 and -700 4.5

		Bypass/Safet the B-	ty position in sleeve	Bypass/Safe the C-	ty position in sleeve
	Description Step by step	A. Motor unit Placed in left side	B. Motor unit Placed in right side	C. Motor unit Placed in left side	D. Motor unit Placed in right side
Loosen bolts to uninstall the motor unit from the originally chosen mounting side.		Loosen bolts	Loosen bolts	Loosen bolts	Loosen bolts
Reset the motor by loosening the screws in both sides and push the mechanical stoppers down to position 0. Take the motor off the axle.		Move the mechanical stoppers down	Move the mechanical stoppers down	Move the mechanical stoppers down	Move the mechanical stoppers down
Place the motor in the desired side, in over the axle.		Place the motor in the <b>left</b> side	Place the motor in the <b>right</b> side	Place the motor in the <b>left</b> side	Place the motor in the <b>right</b> side
Fasten down the bolts – But they must still be loose		Fasten bolts loosely	Fasten bolts loosely	Fasten bolts loosely	Fasten bolts loosely



Set the direction of the motor on the black directional switch		Set Direction to 1	Set <b>Direction to 0</b>	Set <b>Direction to 0</b>	Set Direction to 1
Push the translucent plastic cover aside and set the black POP switch		Set POP switch to 0,1	Set POP switch to 0,9	Set POP switch to 0,9	Set POP switch to 0,1
Connect 24 V DC to motor.	- +	Connect power	Connect power	Connect power	Connect power
Turn on 24-volt power. Wait 20 seconds, and then turn off the power. Let the motor take the damper to the safety position.	on off	Turn on power and wait 20 seconds. Then turn off the power	Turn on power and wait 20 seconds. Then turn off the power	Turn on power and wait 20 seconds. Then turn off the power	Turn on power and wait 20 seconds. Then turn off the power







When the damper has gone all the way up (into production position), the motor must stop before the mechanical stop. Next, lift up the mechanical stopper all the way and tighten completely.	Lift up the mechanical stopper	Lift up the mechanical stopper	Lift up the mechanical stopper	Lift up the mechanical stopper
Turn off/disconnect the power. Let the damper go all the way back to the safety position – Check that the damper is closed completely:	Damper must be closed <b>toward port C</b>	Damper must be closed toward port C	Damper must be closed toward port B	Damper must be closed <b>toward port B</b>
Now, lift up the mechanical stopper in the opposite side and tighten  - The motor can now run within this interval and with the correct stops.	Lift up the mechanical stopper	Lift up the mechanical stopper	Lift up the mechanical stopper	Lift up the mechanical stopper
Setup and installation of the Bypass Damper motor unit is now completed.	Installation of the motor unit is now complete			

# 5. Start-up and Configuration

# 5.1 Start-up



#### **CAUTION**

Bypass Damper should not be put into operation before being properly installed. Remember: Danger may be associated with touching hot components

- 1. Check that the supply voltage complies with the voltage mentioned on the name plate
- 2. Check that the unit is set to bypass when the motor receives no voltage, and that the indside damper has not been bent during shipping or installation
- 3. Turn on the power and check that the bypass damper is working
- 4. Check that the spring return / safety function works properly
- 5. Do a slow and controlled warmup of the Bypass Damper
- 6. Check joints and sealings for any leakage
- 7. Check the damper function at high temperatures

# 5.2 Operating Conditions on Flue Gas Side

Max. flue gas temperature: 600°C

Max operating pressure: 0 Pa

Min operating pressure: -5000 Pa





## **Maintenance and Troubleshooting** 6.

#### 6.1 **Spare Parts**

The following replacement parts are available for the Bypass Damper. The table below shows available parts.

3201081	Damper motor NFA 10 Nm
3201079	Damper motor GK24 40 Nm

#### 6.2 **Troubleshooting**

Problem	Possible cause	Rectification
The damper doesn't change position	- Defect in the damper motor	- Check voltage and the wiring connections to damper motor
	- Loose wire connection in the power supply	- Check the installation for loose connections
	- Damper is jammed	- Clean the device, check function of damper movement
	- Mounting of damper motor has become loose	- Check mounting on damper axis and adjust according to the directions described in section 4.3 – Installation and Placement of Belimo Motor Unit
Wrong damper motor position	- Wrong mounting of damper motor	- Check damper motor settings and adjust according to directions described in section 4.3 – Installation and Placement of Belimo Motor Unit

#### **Declaration of Conformity** 7.



**EU-Conformiteits verklaring** DK: EU-Overensstemmelseserklæring **GB:** Declaration of Conformity SE: **EU-Överensstämmelsedeklaration** DE: EU-Konformitätserklärung **EU-Vaatimustenmukaisuusvakuutus** FR: Déclaration de conformité de l'Union Européenne IS: **ESS-Samræmisstaðfesting** 

NO: EU-Samsvarserklæring Dichiarazione di Conformità Unione Europea PL: EU Deklaracja zgodności

# exodraft a/s Industrivej 10 **DK-5550 Langeskov**

- Erklærer på eget ansvar, at følgende produkter:

- Hereby declares that the following products:

- Erklärt hierdurch auf eigene Verantwortung, daß folgende Produkte:

- Déclare, sous sa propre responsabilité, que les produits suivants:

- Erklærer på eget ansvar at følgende produkter:

Niniejszym oświadcza, że następujące produkty:

- Veklaart dat onderstaande producten:
- Deklarerar på eget ansvar, att följande produkter:
- Vastaa siltä, että seuraava tuote:
- Staðfesti à eigin àbyrgð, að eftirfarandi vörur:
- Dichiara con la presente che i seguenti prodotti:

## BD-/250/350/400/500/700 exodraft varenr. 8003XXX

- Som er omfattet af denne erklæring, er i overensstemmelse med følgende standarder:
- Were manufactured in conformity with the provisions of the following standards:
- Die von dieser Erklärung umfaßt sind, den folgenden Normen:
- · Auxquels s'applique cette déclaration sont en conformité avec les normes
- Som er omfattet av denne erklæring, er i samsvar med følgende standarder: Zostały wyprodukowane zgodnie z warunkami określonymi w następujących normach:
- Zijn vervaardigd in overeenstemming met de voorschriften uit de hieronder genoemde normen en standaards:
- Som omfattas av denna deklaration, överensstämmer med följande standarder:
- Jota tämä selvitys koskee, on seuraavien standardien mukainen:
- Sem eru meðtalin i staðfestingu Pessari, eru i fullu samræmi við eftirtalda staðla:
- Sono stati fabbricati in conformità con le norme degli standard seguenti:

## EN60335-1, EN60335-2-80, DS/EN ISO 12100: 2012

- I.h.t bestemmelser i direktiv: En voldoen aan de volgende richtlijnen:
- In accordance with - Enligt bestämmelserna i följande direktiv:
- Entsprechen gemäß den Bestimmungen der folgenden Richtlinien: Seuraavien direktiivien määräysten mukaan:
- Suivant les dispositions prévues aux directives: - Med tilvisun til àkvarðana eftirlits:
- I.h.t bestemmelser i direktiv: In conformità con le direttive:
- Zgodnie z:

- De machinerichtlijn:
- Maskindirektivet: - The Machinery Directive: - Maskindirektivet - Richtlinie Maschinen: Konedirektiivi:
- Directive Machines: - Vèlaeftirlitið:
- Direttiva Macchinari: Maskindirektivet:
- Dyrektywą maszynową:

## 2006/42/EF/-EEC/-EWG/-CEE

- Lavspændingsdirektiv: De laagspanningsrichtlijn:
- The Low Voltage Directive: Lågspänningsdirektivet: Niederspannungsrichtlinie:
- Pieniännitedirektiivi:
- Directive Basse Tension: - Smáspennueftirlitið:
- Lavspenningsdirektivet: - Direttiva Basso Voltaggio: Dyrektywą Niskonapięciową

# 2006/95/EC

- EMC-direktivet: - And the EMC Directive:

- EMV-Richtlinie: - EMC-direktiivi:
- Directive Compatibilité Electromagnétique: - EMC-eftirlitið:
- EMC-direktivet: - Dyrektywą EMC – kompatybilności elektromagnetycznej
- En de EMC richtlijn:
- EMC-direktivet:
- Direttiva Compatibilità Elettromagnetica:

## 2004/108/EC

#### Langeskov, 08.06.2021 Algemeen directeur

- Geschäftsführender Direktor
- Président Directeur Général - Adm. direktør
- Verkställande direktör - Managing Director
- Jørgen Andersen - Toimitusjohtaja - Framkvemdastjori
  - Direttore Generale





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