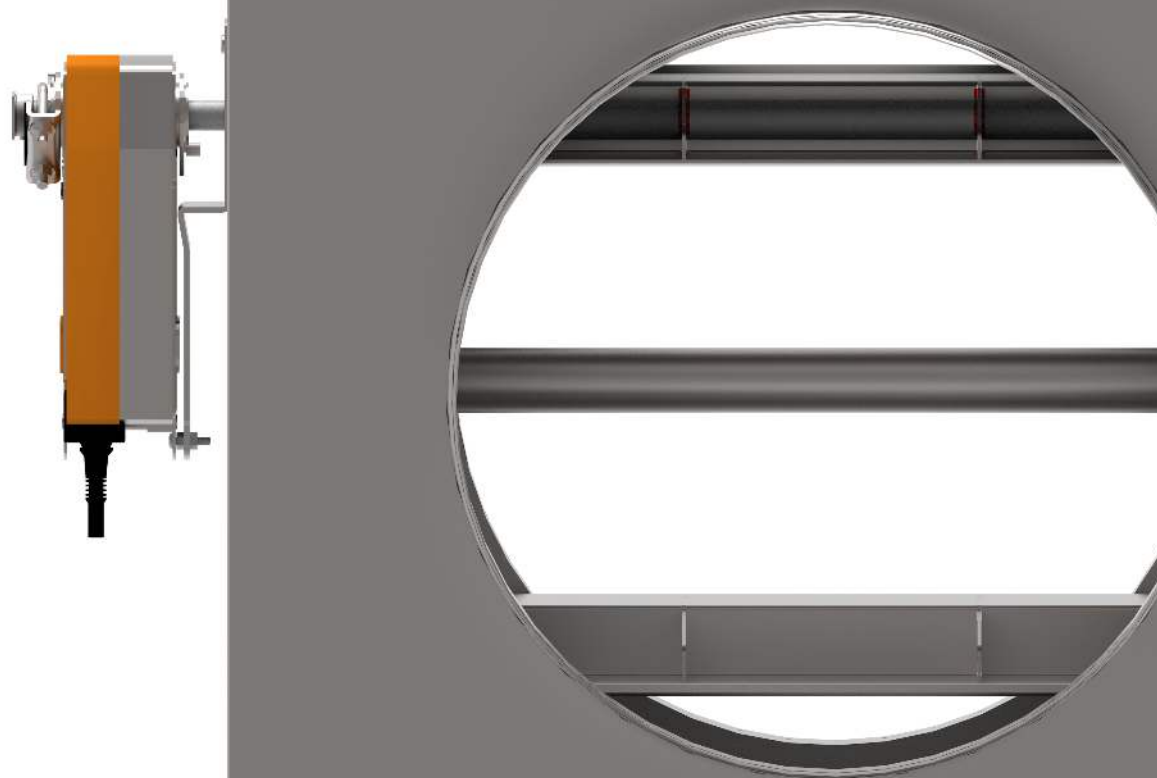


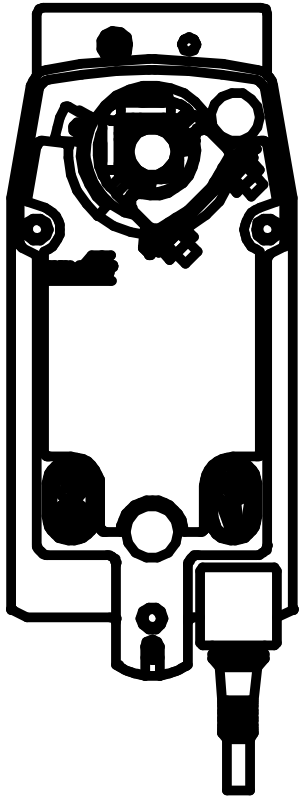
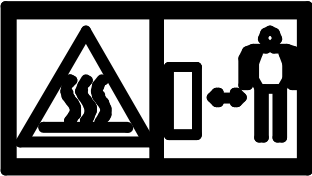
Heat Recovery

DM



UK | Read and save these instructions!

exodraft
Your energy. Optimized.



exodraft

Heat Recovery | Damper Motor

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How to use this manual

This manual has been prepared based on the specific product and contains relevant technical information and installations guides.

Accessories and spare parts are not covered by this manual. Please refer to the individual manuals of these components.

This installation manual does not contain any system design documentation.

Failure to observe instructions marked with a danger symbol may result in personal injury and/or damage to the product.

Errors and omissions excepted.



Disposal

Electrical and electronic equipment (EEE) often contain materials, components and substances that may harm the environment or be hazardous to your health. Products (WEEE) marked with the 'crossed-out wheeled bin' symbol should be disposed of separately from other waste at the end of its life. Though legislation may differ from country to country we strongly advise that electrical and electronic waste is separated from other waste and disposed of according to national legislation to protect the environment and personnel that may come into contact with waste.

Symbols

The following symbols may be used in the manual to draw attention to danger or risk of personal injury or damage to the product.



General prohibition

Failure to observe instructions marked with the prohibited symbol may result in extreme danger or serious personal injury.



General attention

Marks a dangerous situation that, in the worst-case scenario, can cause serious personal injury or significant damage to the product.



General warning

Failure to observe instructions marked with a danger symbol may result in personal injury and/or damage to the product.



Electricity hazard/High Voltage

Marks a situation in which caution is advised due to the risk of high voltage electric shock which can cause serious personal injury or significant damage to the product.



Connect an earth terminal to the ground

Failure to observe instructions marked with a danger symbol may result in personal injury and/or damage to the product.



Permitted and approved

Permitted and approved method of installation.



Prohibited and not approved

Prohibited and not approved method of installation.



Warning

To minimise the risk of fire, electric shock, personal injury and/or damage to the product please observe the following:

- Please always read the manual and only use the product in accordance with the manufacturer's instructions. If in doubt, contact one of the Exodraft specialized dealers.
- All installations must be carried out by properly qualified personnel in accordance with national legislation and regulations.
- Prior to servicing the product, the heat source must be shut off and cooled down.
- Please ensure that the heat source is not turned back on inadvertently.
- A safety thermostat (ST110) and/or safety valve must be installed and connected to the burner, ensuring disconnection in case of excessive temperatures. The switch must comply with EN 14597.

Product information

The exodraft Damper Motor is used in exodraft exhaust system solutions for the protection or control of inflow of hot flue gas to Basic Plate heat recovery devices.

A damper motor is used primarily for larger boiler systems, industrial processing plants, or commercial systems.

An integrated electric motor opens and closes the flue. Two types: on/off or modulating motor.

Power supply and start/stop signal come from an external exodraft control, and thus is not part of the Damper Motor.

The Damper Motor has a safety feature causing it to enter safety mode automatically in case of power failure.

All parts affected by flue gas are made of stainless steel EN 1.4404.

All exterior parts are made of stainless steel EN 1.4301.

The Damper Motors limitations

- Max. temperatur 600°C.
- The Damper Motor is not to be used as a draining point in an exhaust system.
- As a rule, the Damper Motor 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.

To find out more about heat recovery visit www.exodraft.com

Scope of supply

- Exodraft Damper Motor
- Installation manual and user instructions
- Pallet*
- Straps*
- Screws*
- Transportation safety brackets*

*For transportation only. Be aware to disconnect these parts before installation.

Accessories and spare parts

The table below shows the spare parts available for the Damper Motor models.

Spare parts

3201081	Damper motor NFA 10 Nm
---------	------------------------

3201078	Damper motor NF24A-SZ 10 Nm
---------	-----------------------------

*This manual does not describe the specific use of spare parts. We refer to the separate manuals for such components.

For more details contact your Exodraft dealer.

Warranty

All Exodraft products are covered by a 2-year guarantee as per European consumer rights legislation. For some countries an extended period of guarantee may apply depending on either national legislation or other clearly stipulated conditions. Customer complaints must be handled by a specialised dealer or wholesaler (preferably where the Exodraft product has been bought originally). An updated list of Exodraft specialised dealers can be found on our website for the country in question.

Exodraft products must always be installed by properly qualified personnel. Exodraft reserves the right to change these guidelines without prior notice.

The warranty and liability does not cover instances regarding personal injury or damage to property or the product that can be ascribed to one or more of the following causes:

- Failure to follow this installation and operation manual
- Incorrect installation, start-up, maintenance or servicing
- Improper repairs
- Unauthorised structural modifications made to the product
- Installation of additional components that have not been tested/approved with the product
- Any damage resulting from continued use of the product despite an evident defect
- Failure to use original spareparts and accessories
- Failure to use the product as intended
- Exceeding or failure to meet the limit values in the technical data
- Force majeure

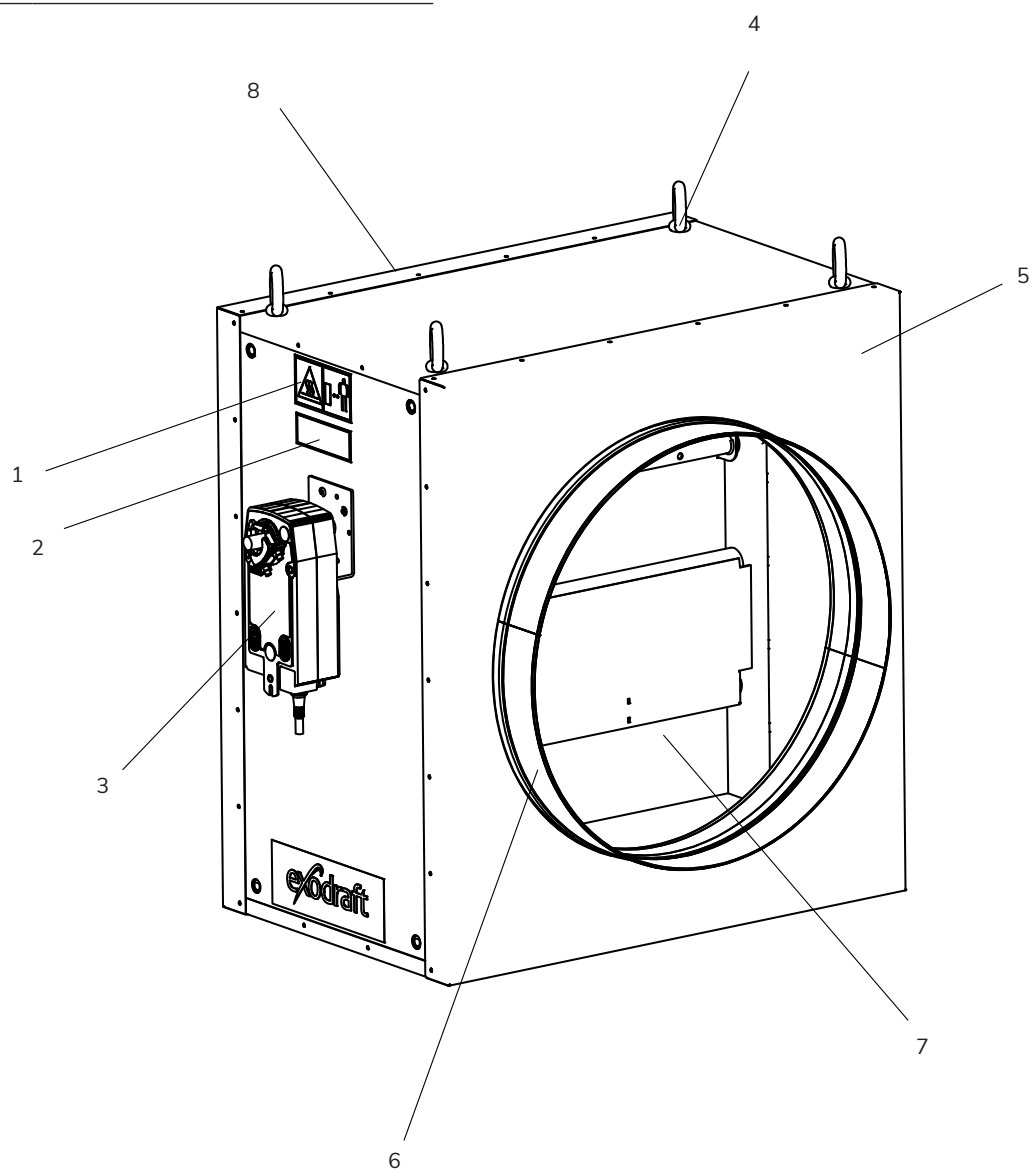
Technical specifications

Basic types

Exodraft item number	Type (Damper Motor)	Description	Motor type	Inlet Ø exterior [mm]	Outlet Ø interior [mm]
8004500	DM350	On/off damper with motor Standard pipe connection dimensions Max 600 °C	Damper motor NFA 10 Nm	350,5	351,2
8004501	DM350	Modulating damper with motor Standard pipe connection dimensions Max 600 °C	Damper motor NF24A-SZ 10 Nm	350,5	351,2
8004600	DM400	On/off damper with motor Standard pipe connection dimensions Max 600 °C	Damper motor NFA 10 Nm	400,5	401,2
8004601	DM400	Modulating damper with motor Standard pipe connection dimensions Max 600 °C	Damper motor NF24A-SZ 10 Nm	400,5	401,2
8004700	DM500	On/off damper with motor Standard pipe connection dimensions Max 600 °C	Damper motor NFA 10 Nm	500,5	501,2
8004701	DM500	Modulating damper with motor Standard pipe connection dimensions Max 600 °C	Damper motor NF24A-SZ 10 Nm	500,5	501,2

Standard components

1	Danger/ Caution sign
2	Nameplate
3	Damper motor
4	M12 thread with lifting bolts for mounting
5	Housing
6	Inlet
7	Damper flaps
8	Outlet (behind the product)

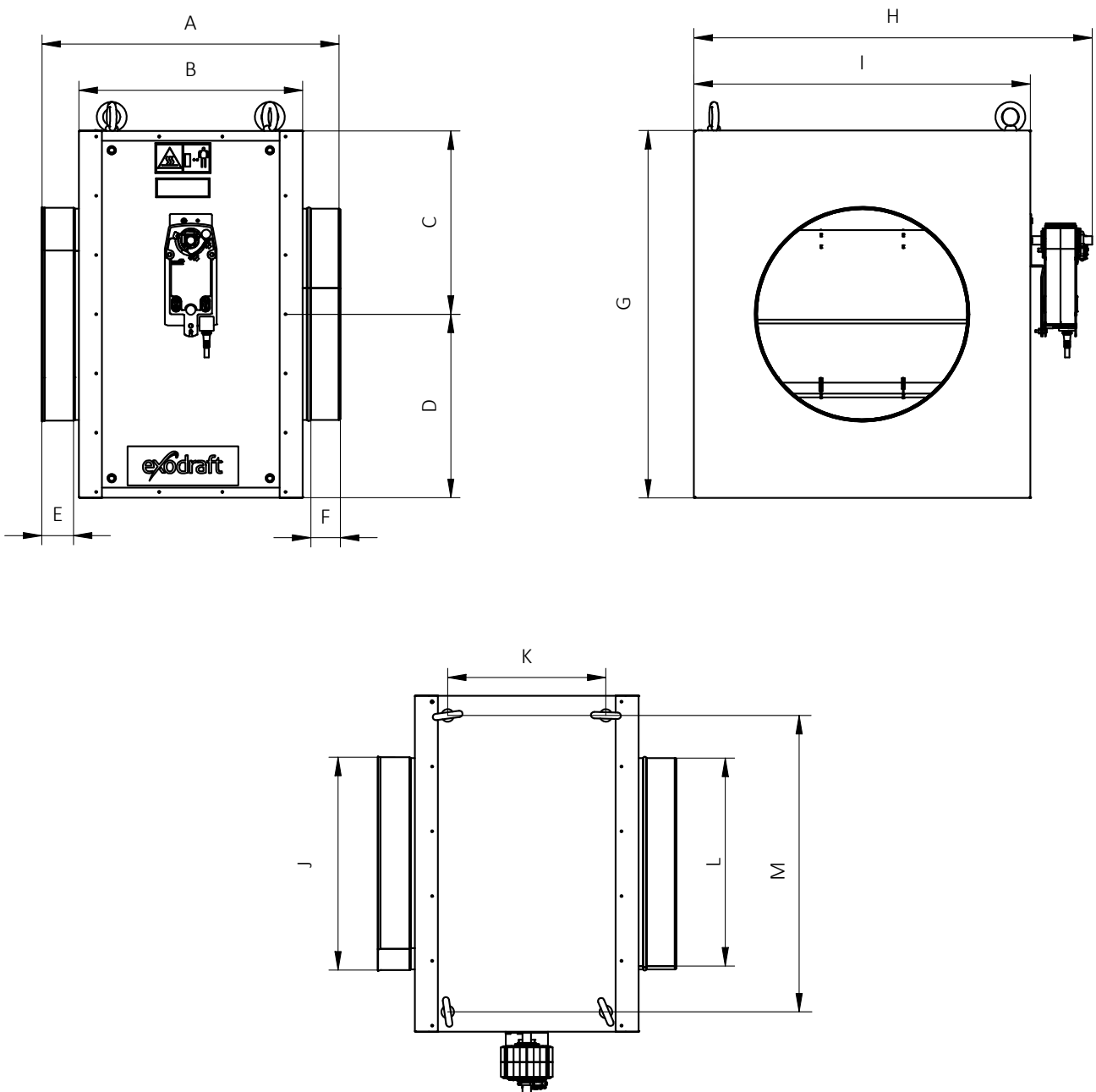


Technical data

Model	Dimensions [mm]												
	A	B	C*	D	E*	F	G	H**	I	J	K	L	M
DM350	563,4	424,4	347,5	347,5	60	56	696,4	755,1	638,2	351,5	300	350,5	562
DM400	563,4	424,4	347,5	347,5	60	56	696,4	755,1	638,2	401,5	300	400,5	562
DM500	563,4	424,4	347,5	347,5	60	56	696,4	755,1	638,2	501,5	300	500,5	562

*Specifies inside sleeve dimensions

**Specifies outside adapter dimensions



Mechanical installation

Exodraft products must always be installed by properly qualified personnel.

These instructions, applicable standards and relevant safety procedures from the manufacturer must be followed and at the same time the official provisions in force in the country, where the product is installed, must be observed.



CAUTION! If the exodraft Damper Motor 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.

Placement and orientation

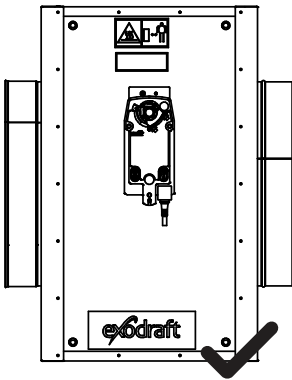
You must allow for hot surfaces on the Damper Motor. If the Damper Motor is placed where it is easily accessible, it must be shielded to avoid inadvertent touch and any risk of collision.



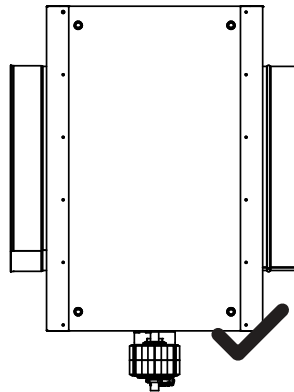
DANGER! Observe national regulations regarding distance from flammable materials.

The Damper Motor can face three different directions, all depending on the position of the Damper Motor unit. This means that the motor can be placed on the side of the housing, on top of it, or at the bottom. However, we do not recommend placing the motor at the top, due to the temperature of the flue gas. See examples below.

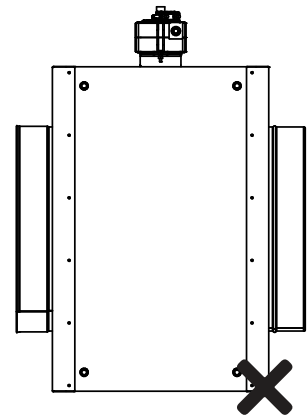
Motor placed on the side



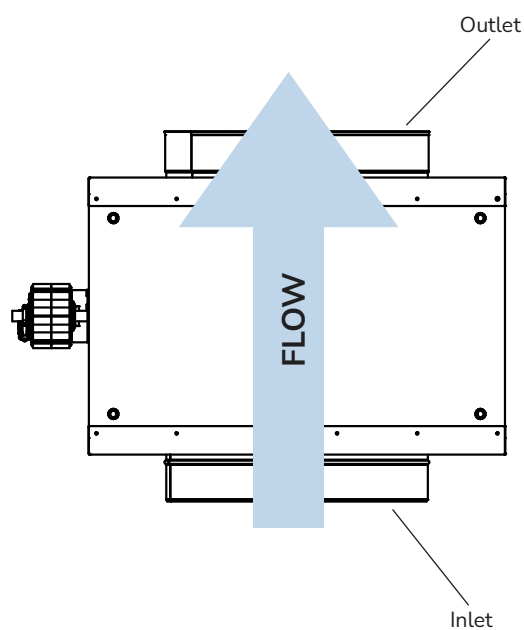
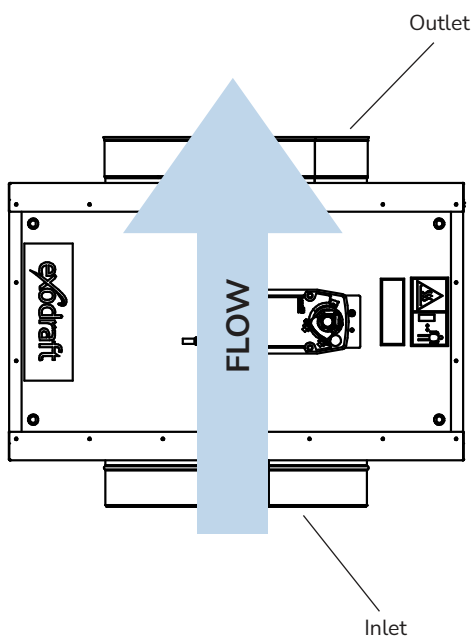
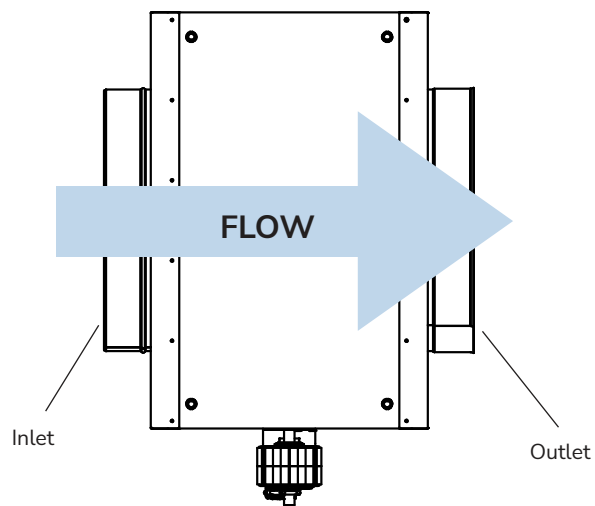
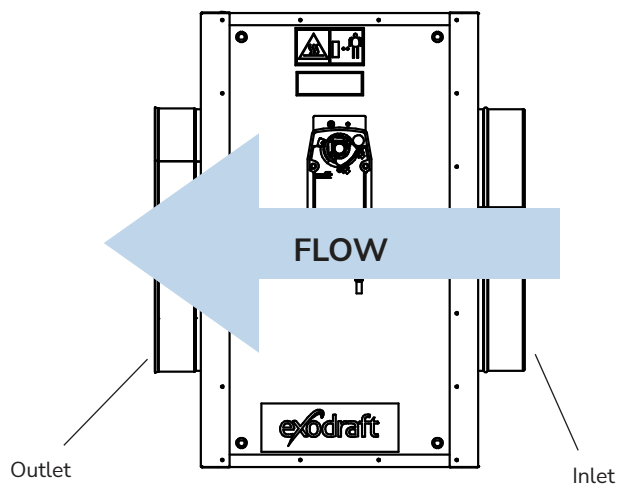
Motor placed at the downwards



Motor placed at the top



Flue gas direction

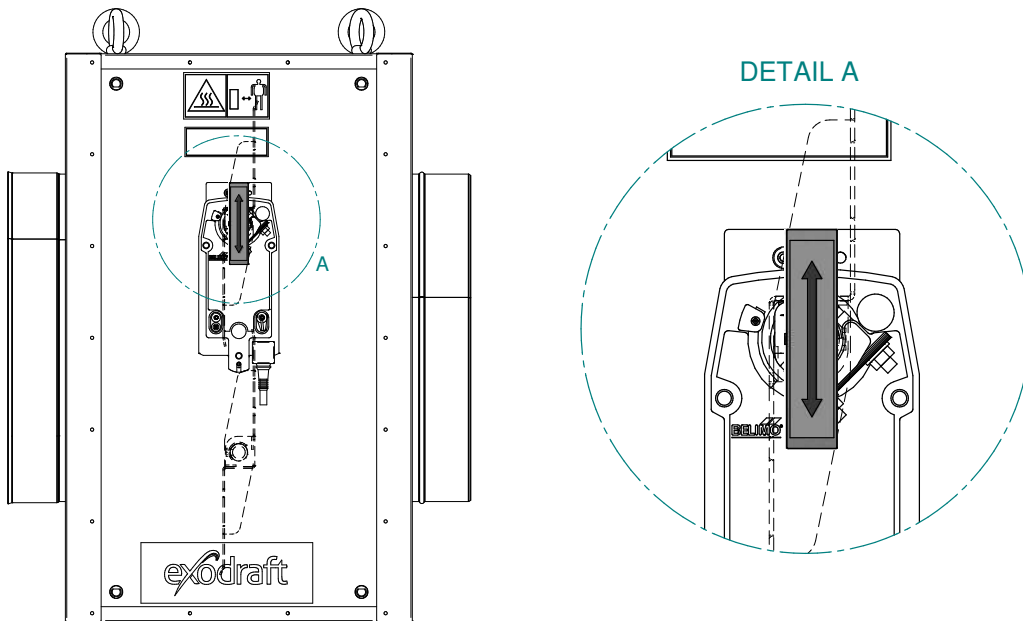


Damper direction

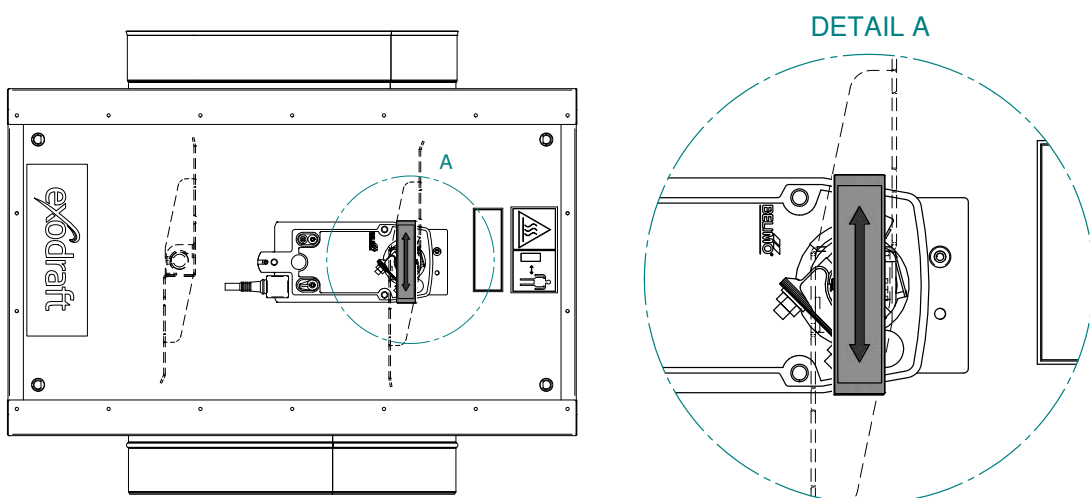
To ensure which direction the dampers are, when the unit is mounted, a damper indicator is mounted at the end of the shaft. The arrow points in the direction of the damper. See examples below and next page.



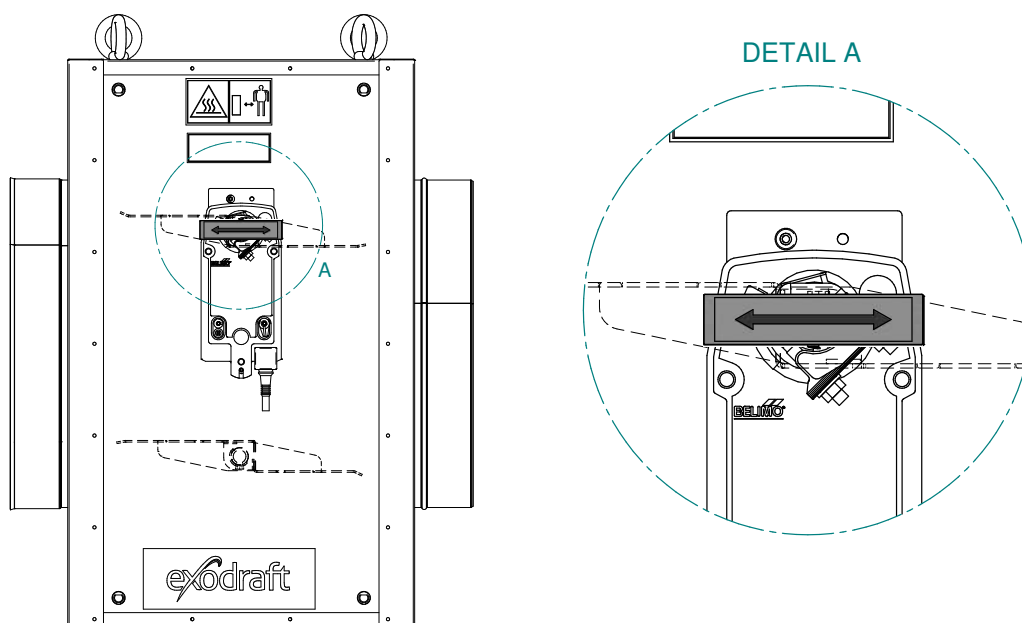
Vertical damper direction and horizontal flue gas direction – Therefore closed



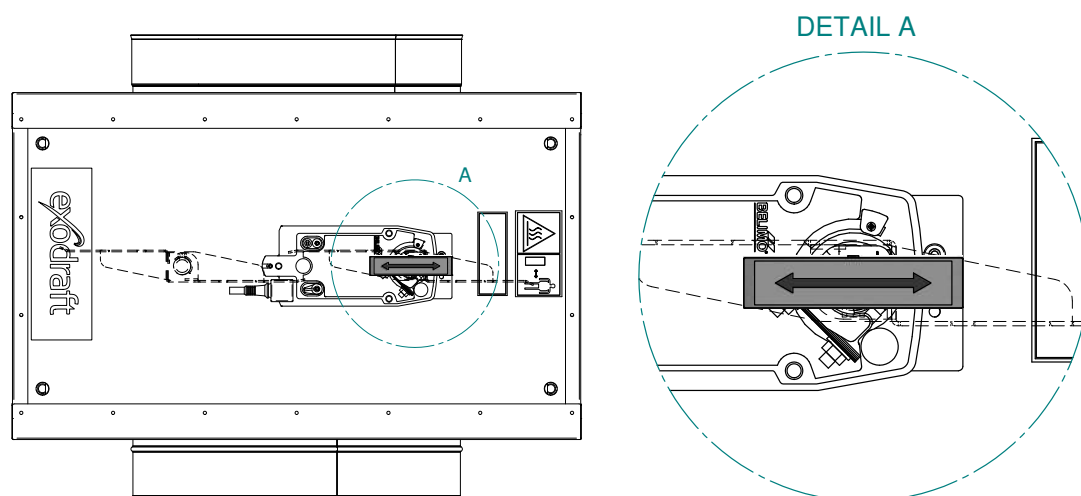
Vertical damper direction and vertical flue gas direction - Therefore open



↔ Horizontal damper direction and horizontal flue gas direction - Therefor open



↔ Horizontal damper direction and vertical flue gas direction - Therefor closed



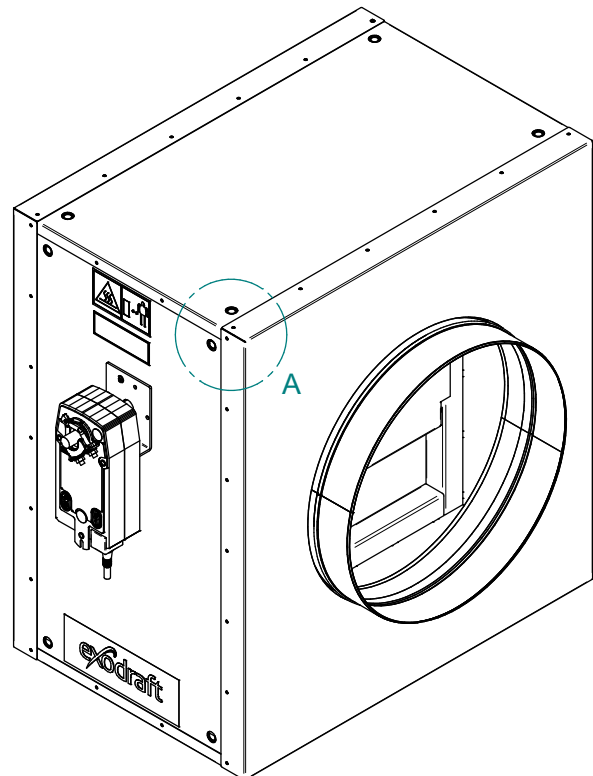
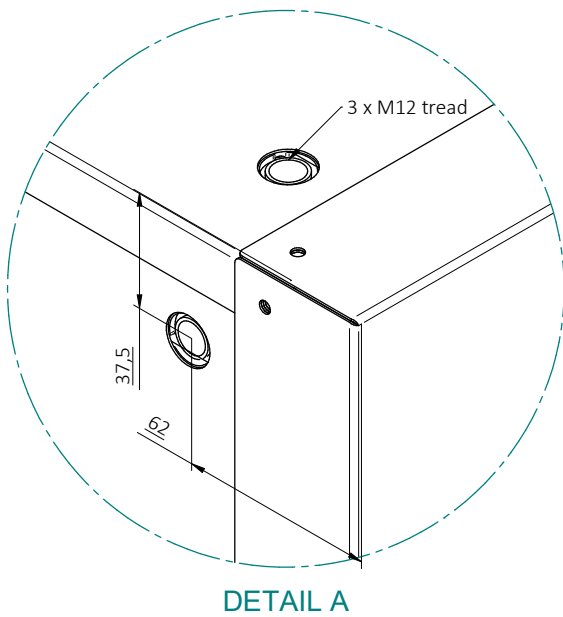
Mounting

The weight must be distributed among at least 4 mounting corners (see section 3.5 - 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.



DANGER! Max. load on mounting corner 100kg

Exodraft item number	Type (Damper Motor)	Weight
8004500	DM350	65
8004501	DM350	65
8004600	DM400	63
8004601	DM400	63
8004700	DM500	60
8004701	DM500	60



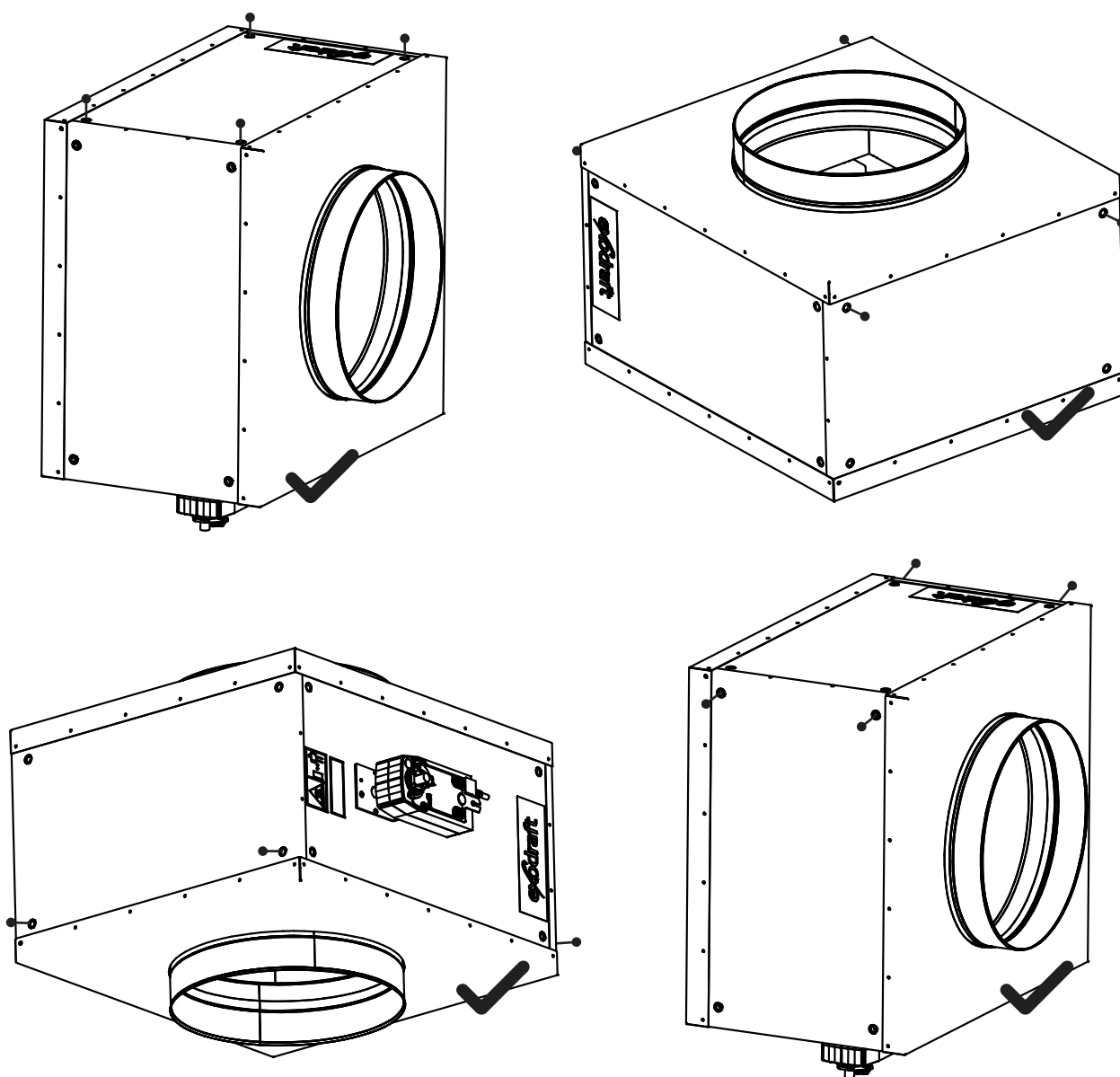
Mounting points

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

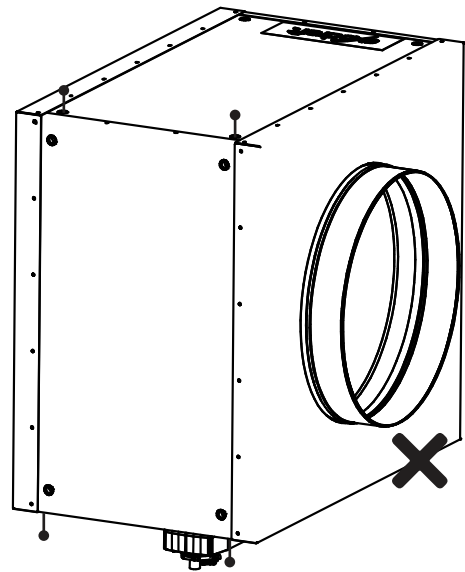
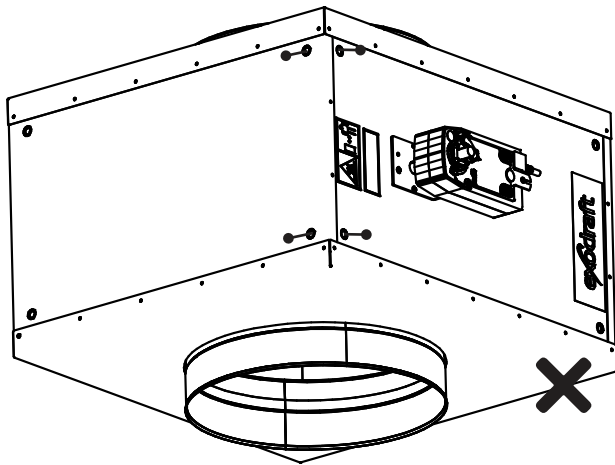
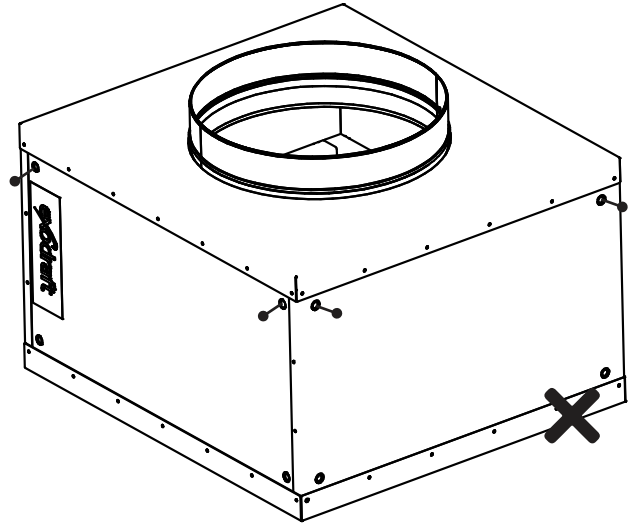
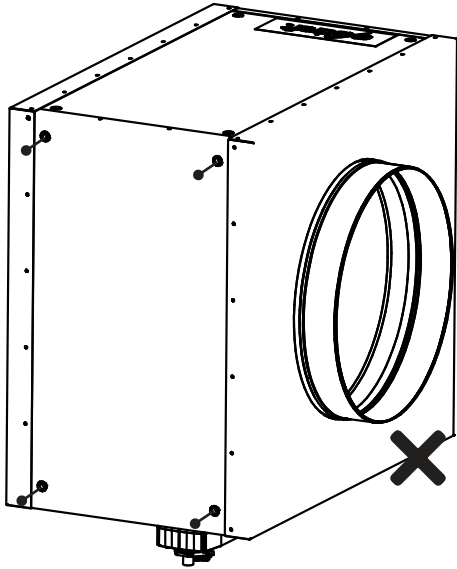
Damper Motor should not be mounted using four points on the same side, unless it is the top or the bottom. Top and bottom depends on the position, i.e. the top is the side facing the ceiling.

Damper Motor 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.

Approved mounting methods



Unapproved mounting methods



Electrical installation

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

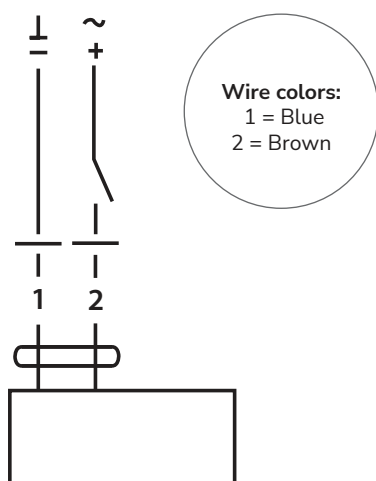


CAUTION! If it becomes necessary to replace any of the original wiring that was delivered with the system, you need to use the same type of cable with the same temperature classification. If not, the isolation can melt or erode, exposing the actual wire.

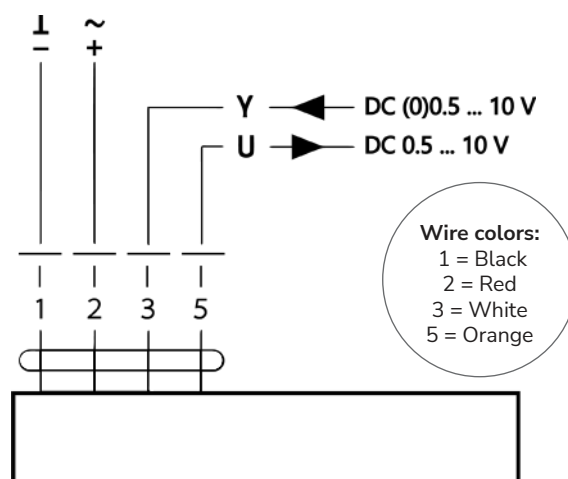
All wiring must be completed in accordance with national regulations – in addition, the cable from the damper motor must not touch the damper.

Wiring Diagram/Electrical Connection of Damper Motor

804500 / 804600 / 804700
DM 350 / 400 / 500
AC 24... 240 V / DC 24... 125 V



804501 / 804601 / 804701
DM 350 / 400 / 500
AC 24 V / DC 24 V

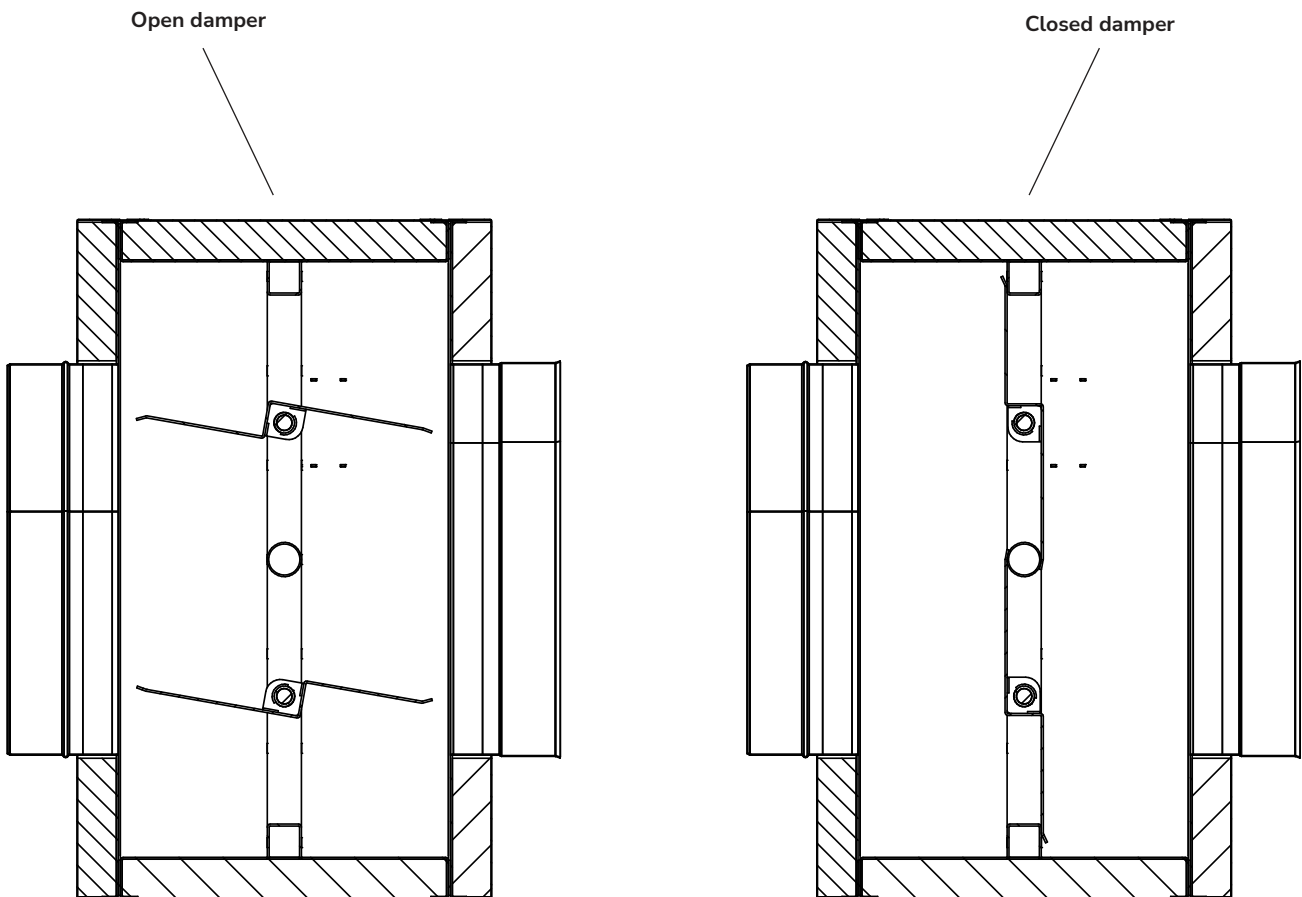


Installation and Placement of Belimo Motor Unit

The damper can be set to be closed or open as a safety position.

By default, the Damper Motor is always installed with the exodrafts factory settings with the damper closed when going into safety position.

Furthermore, the motor unit on the Damper Motor can be set for the damper to be open in the safety position, enabling individual adjustment of the setup as needed. In the illustration below, you see the Damper Motor with the damper open and closed.

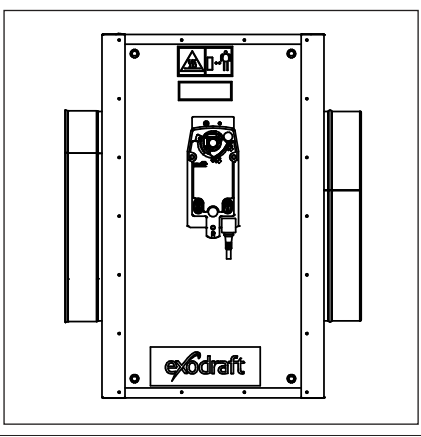
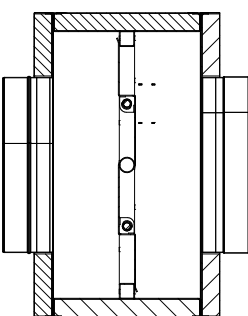
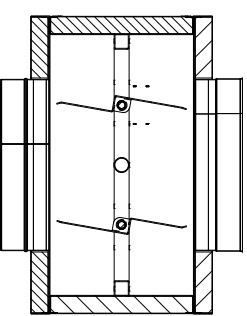
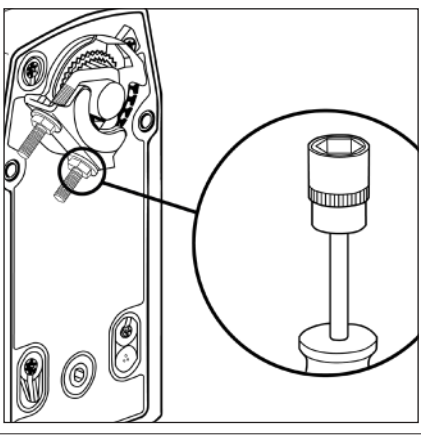
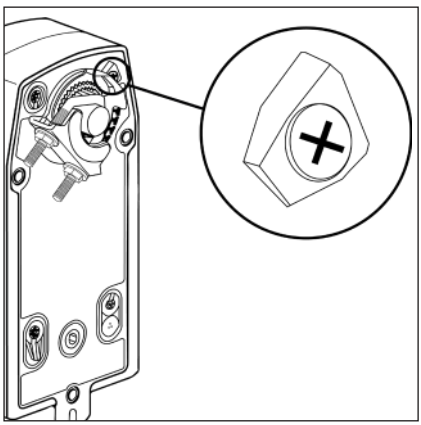


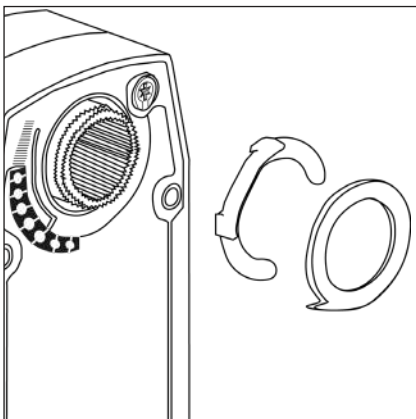
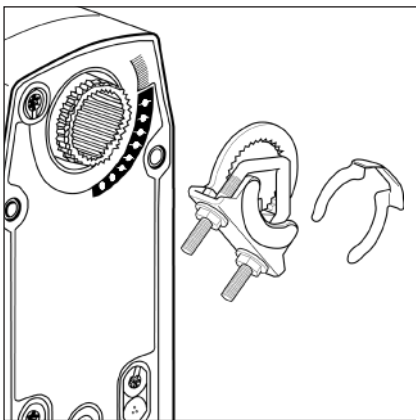
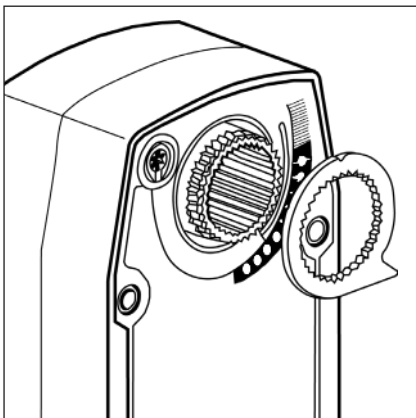
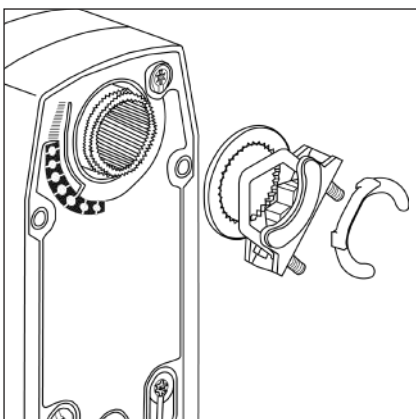
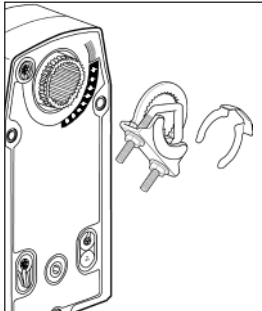
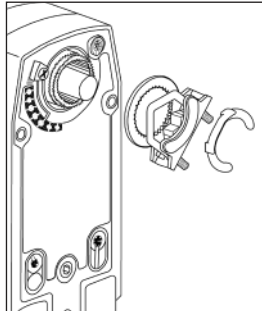
On the next page there is a installation guide for the engine if you want to swift direction.

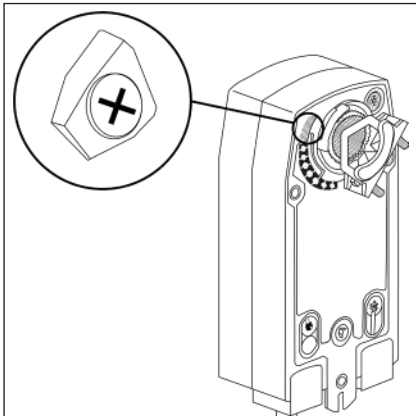
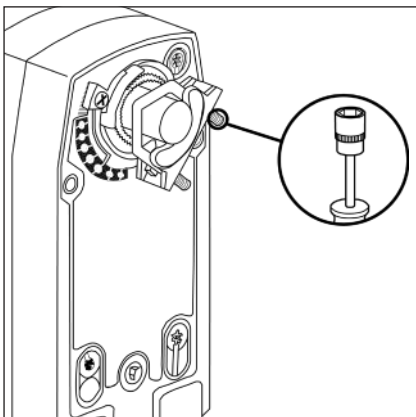
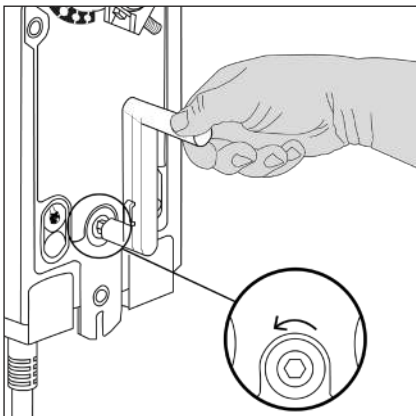

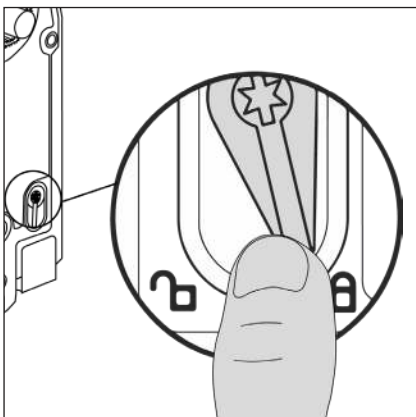


To install the motor unit correctly, you must first decide whether you want the safety position to have the damper open or closed. Next, follow the guide, step by step, by the letter associated with that column, so the safety position winds up in the desired position.

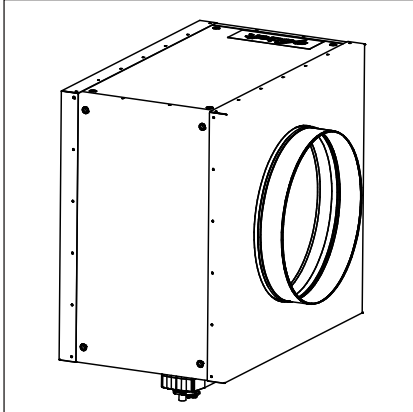
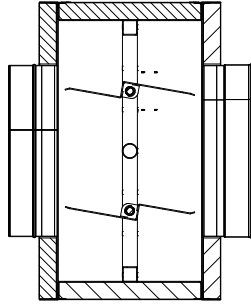
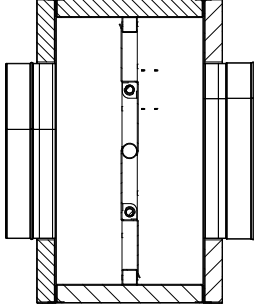
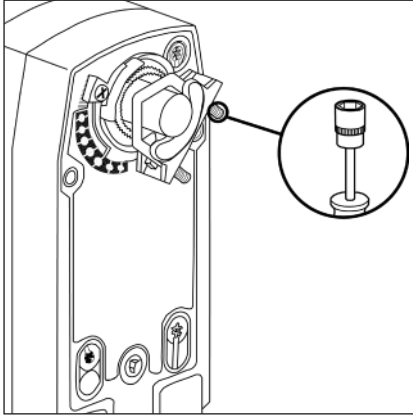
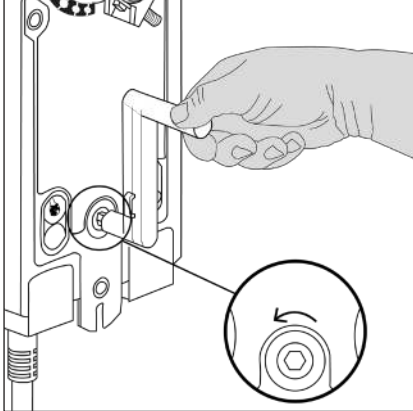

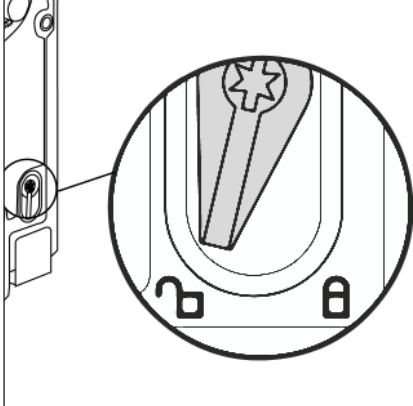


Please note that if you want to move from open damper to closed damper as safety position, there are some steps that are different in points 17-20 which you have to pay extra attention during the installation.

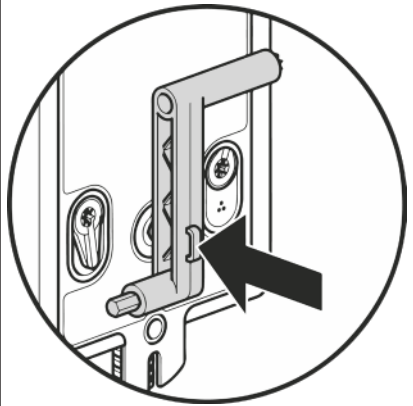
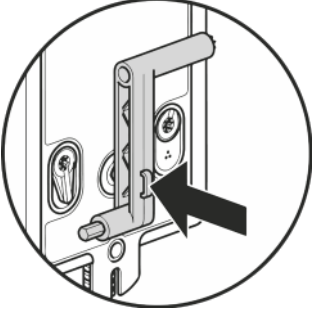
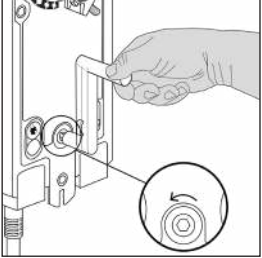
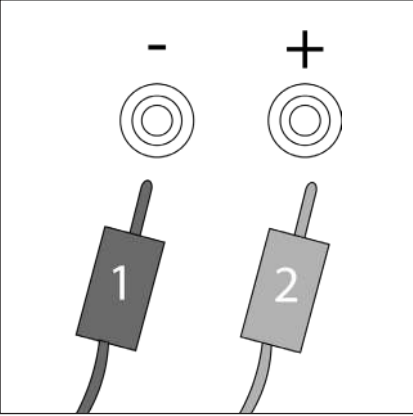
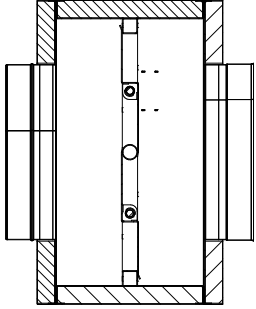
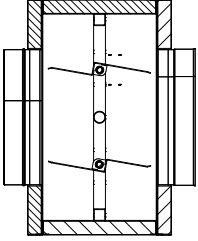
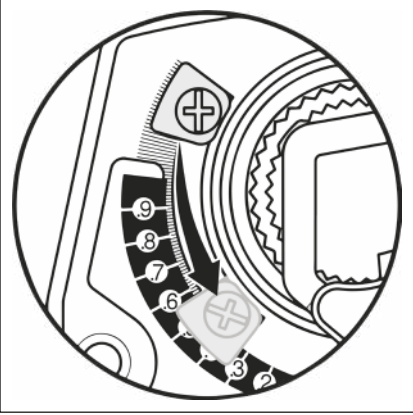

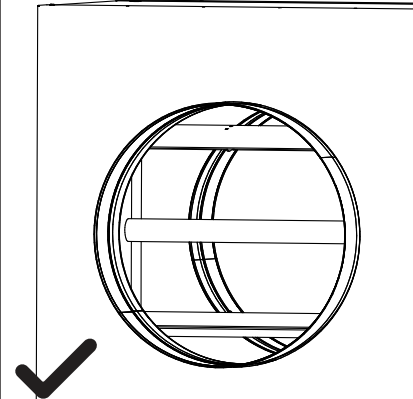
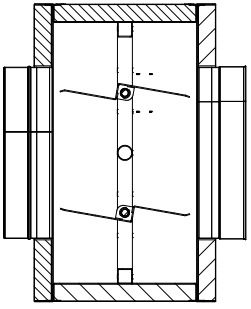
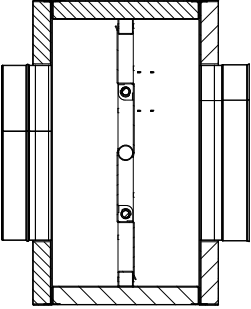
Installation/adjustment with Belimo motor type NFA 10 Nm

	Step by step	For safety position with <u>Open damper</u>	For safety position with <u>Closed damper</u>
<p>1. Damper Motor seen from the side. The damper is in one of the following positions, and will need to be changed to the opposite</p>		<p>The damper is closed as default</p> 	<p>The damper is open as default</p> 
<p>2. Loosen the nuts to uninstall the motor unit from the original placement side</p>		<p>Note that the clamp must turn counterclockwise! If it already does so, the motor is already installed according to the desired position.</p>	<p>Note that the clamp must turn clockwise! If it already does so, the motor is already installed according to the desired position.</p>
<p>3. Loosen the mechanical stop and take it off completely. Place it somewhere safe where you won't lose it.</p>		<p>Loosen the mechanical stop and uninstall</p>	<p>Loosen the mechanical stop and uninstall</p>

<p>4. Flip the motor and uninstall striker plate and stop washer.</p>		<p>Uninstall striker plate and stop washer</p>	<p>Uninstall striker plate and stop washer</p>
<p>5. On the opposite side, uninstall striker plate and clamps.</p>		<p>Uninstall striker plate and clamps</p>	<p>Uninstall striker plate and clamps</p>
<p>6. Now install stop washer and striker plate on the opposite side of where they were before. Be sure to set the stopper to position 0.</p>		<p>Install stop washer and striker plate</p>	<p>Install stop washer and striker plate</p>
<p>7. Turn the motor around and install clamps and striker plate in that order. Be careful to keep the two marks on the clamps and the bushing are across from each other.</p>		<p>Install clamps and striker plate. Note that the clamp must move counterclockwise!</p> 	<p>Install clamps and striker plate. Note that the clamp must move clockwise!</p> 

<p>8. Place the mechanical stopper at position 0, and tighten the screw.</p>		<p>Place the mechanical stop and tighten</p>	<p>Place the mechanical stop and tighten</p>
<p>9. Place motor on the axle and loosely tighten bolts.</p>		<p>Loosely tighten bolts</p>	<p>Loosely tighten bolts</p>
<p>10. 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.</p>		<p>Pre-tighten actuator</p>	<p>Pre-tighten actuator</p>
<p>11. Lock actuator into pre-tightened position, by pushing the black lock to </p>		<p>Lock into position</p> 	<p>Lock into position</p> 

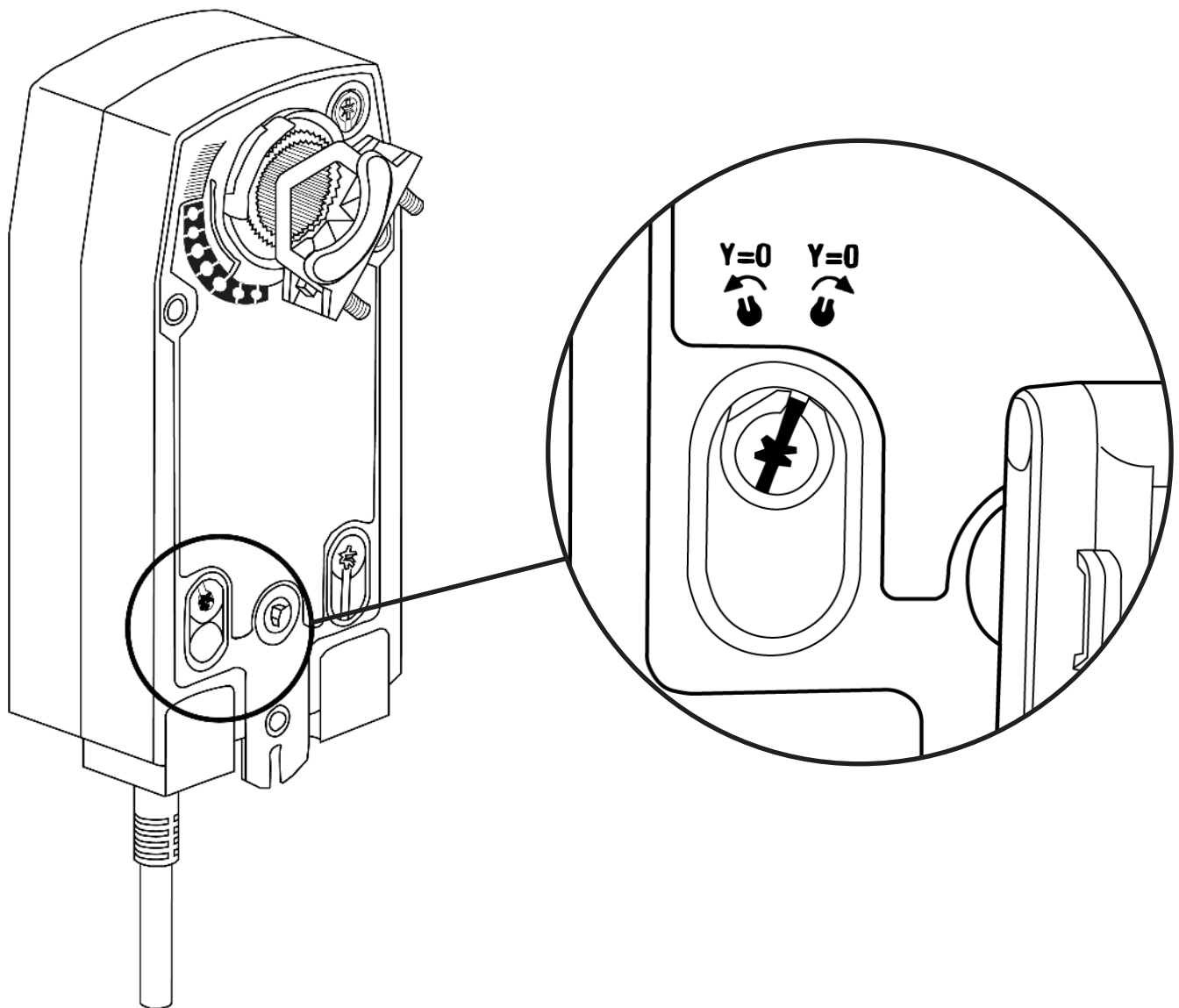
<p>12. Check if the damper is in the following position - if not, push the damper into the correct position by hand</p>		<p>The damper should now be completely open</p> 	<p>The damper should now be completely closed</p> 
<p>13. Tighten bolts completely</p>		<p>Tighten bolts completely</p>	<p>Tighten bolts completely</p>
<p>14. Turn the black handle in the direction of the arrow until the lock disengages</p>		<p>Turn handle</p>	<p>Turn handle</p>
<p>15. The lock itself must now be set to </p>		<p>The lock is disengaged</p> 	<p>The lock is disengaged</p> 

<p>16. Next, place the handle with side facing the motor as shown in the picture.</p> <p><i>Note that the guide differs for the two safety positions in these steps!</i></p>		<p>Place the handle as indicated in the picture.</p> 	<p>Turn the handle manually until the damper is in the full open position, and hold the position with the lock splitter.</p> <p>Then skip to step 19!</p> 
<p>17. Power up the motor and let the damper turn all the way back into the following position</p> <p><i>Note that the guide differs for the two safety positions in these steps!</i></p>		<p>The damper should now be completely closed</p> 	<p>The damper should now be completely open – Ensure that the stopper is placed correctly, creating a horizontal line through the damper.</p>  <p>Skip to step 20!</p>
<p>18. Move the mechanical stopper down too and tighten</p> <p><i>Note that the guide differs for the two safety positions in these steps!</i></p>		<p>Move the mechanical stopper down</p>	<p>Move the stopper down where it will cause the damper to stop here when operating in the open position.</p> <p>Next, turn the handle one round, so the lock disengages and lets the damper close completely.</p>  <p>Now, skip up to step 18!</p>
<p>19. Turn off the power and let the damper go all the way back to the desired position.</p> <p>The engine unit of the Damper Motor is now completely installed.</p>		<p>Damper should now be completely open</p> 	<p>Damper should now be completely closed</p> 

Installation/adjustment with Belimo motor type NF24A-SZ

Damper Motor products with the NF24A-SZ damper engine are modulating.

They can be set to operate with an effect from 0-10 V or from 10-0 V, depending what you want. You can invert the control signal from 0-10 V or from 10-0 V by turning the button as shown in the illustration.



Startup and configuration

System startup



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

1. Check the voltage comparing it to the name plate of the damper motor
2. Turn on the power and ensure that the damper is working correctly
3. Ensure that the spring return works correctly
4. Do a slow and controlled warmup of the Damper Motor
5. Check joints and seams for any leaking
6. Check damper function at high temperatures

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

Troubleshooting

Problem	Possible cause	Rectification
<i>The damper doesn't change position</i>	Defect in damper motor	Check voltage and connection to damper motor
	Supply to damper motor has become loose	Clean the device, check function of damper movement
	Damper is jammed	Check mounting on damper axis and adjust according to the directions described in section "Installation and Placement of Belimo Motor Unit!"
	Mounting of damper motor has become loose	
<i>Wrong damper motor position</i>	Wrong mounting of damper motor	Check mounting on damper axis and adjust according to the directions described in section "Installation and Placement of Belimo Motor Unit!"



UK Conformity Assessed



**Exodraft a/s
Industrivej 10
DK-5550 Langeskov**

Hereby declares that the following products:

DM350, DM400, DM500

Were manufactured in conformity with the provisions of the following regulations:

The Supply of Machinery (Safety) Regulations 2008

Electrical Equipment (Safety) Regulations 2016

Electromagnetic Compatibility Regulations 2016

Langeskov, 01-11-2022
Managing Director
Anders Haugaard



Declaration of Conformity

DK: EU-Overensstemmelseserklæring	NL: EU-Conformiteits verklaring
GB: Declaration of Conformity	SE: EU-Överensstämmedeklaration
DE: EU-Konformitätserklärung	FI: EU-Vaatimustenmukaisuusvakuutus
FR: Déclaration de conformité de l'Union Européenne	IS: ESS-Samræmisstaðfesting
NO: EU-Samsvarserklæring	IT: 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 oświadczam, 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:
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DM350, DM400, DM500

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 ci-contre: 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 í staðfestingu Pessari, eru í fullu samræmi við eftirtalda staðla: Sono stati fabbricati in conformità con le norme degli standard seguenti:
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EN 60335-1, EN 60335-2-80, DS/EN ISO 12100: 2011

I.h.t bestemmelser i direktiv: In accordance with Entsprechen gemäß den Bestimmungen der folgenden Richtlinien: Suivant les dispositions prévues aux directives: I.h.t bestemmelser i direktiv: Zgodnie z:	En voldoen aan de volgende richtlijnen: Enligt bestämmelserna i följande direktiv: Seuraavien direktiivien määräysten mukaan: Med tilvisun til ákvarðana eftirlits: In conformità con le direttive:
Maskindirektivet: The Machinery Directive: Richtlinie Maschinen: Directive Machines: Maskindirektivet: Dyrektywę maszynową:	De machinerichtlijn: Maskindirektivet Konedirektiivi: Vælaeftirlitið: Direttiva Macchinari:

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

Lavspændingsdirektiv: The Low Voltage Directive: Niederspannungsrichtlinie: Directive Basse Tension: Lavspenningsdirektivet: Dyrektywę Niskonapięciową	De laagspanningsrichtlijn: Lågspänningsdirektivet: Pienjännitedirektiivi: Smáspennueftirlitið: Direttiva Basso Voltaggio:
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2014/35/EC

EMC-direktivet: And the EMC Directive: EMV-Richtlinie: Directive Compatibilité Electromagnétique: EMC-direktivet: Dyrektywę EMC – kompatybilności elektromagnetycznej	En de EMC richtlijn: EMC-direktivet: EMC-direktiivi: EMC-efirlitið: Direttiva Compatibilità Elettromagnetica:
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2014/30/EC

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Your energy. Optimized.

The logo for Exodraft, featuring the word "exodraft" in a bold, lowercase sans-serif font. The letter "x" is stylized with a curved line that loops around the top and bottom of the letter, suggesting motion or energy.