

UK

CHR-P heat-recovery unit

Read these instructions and store them for later use!

exodraft

Contents

1. Product information	3
1.1 Function	3
1.2 Shipping	3
1.3 Warranty	3
1.4 Components	4
1.5 Models	5
2. Technical specifications	6
2.1 Dimensions	6
3. Mechanical installation	9
3.1 General	9
3.2 Placement and mounting	9
3.3 Connections	10
3.4 Installation with no water connection	11
4. Electrical installation	12
4.1 General	12
4.2 Cable diagram / electrical connection	12
5. Start-up and configuration	13
5.1 General	13
5.2 System testing	13
5.3 Testing safety system	13
6. Maintenance and troubleshooting	14
6.1 Maintenance and cleaning	14
6.2 With the exchanger cassettes in place	14
6.3 With the exchanger cassettes removed	15
6.4 Troubleshooting	16
7. EU declaration of conformity	17

Key

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



Danger

Indicates an imminently dangerous situation which could lead to death, serious personal injury or extensive material damage.



Caution

Indicates an imminently dangerous situation which could lead to personal injury or material damage.



OBSERVE THE FOLLOWING PRECAUTIONS TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK OR PERSONAL INJURY:

1. Only use this device for its intended purpose.
2. Prior to maintenance or cleaning, disconnect power and shut down the heat source and allow to cool. Ensure the heat source cannot be started unintentionally.
3. Installation and pipework/cabling must be carried out by qualified personnel.
4. Follow the manufacturer's guidelines and safety standards.
5. A safety thermostat (ST110) must be installed and connected to the burner to disable it if the temperature becomes too high. The isolation switch must comply with EN 14597
6. Accessories are not covered by these instructions. See the separate instructions for these components.

1. Product information

1.1 Function

Application	<p>exodraft compact heat-recovery (CHR-P) unit with integrated bypass (optional) which can disengage residual heat recovery from thermal processes, when this is not required.</p> <p>The exchange cassette is a compact lead-in module that utilises the passing heat. Energy released from the heat source which cannot be utilised effectively is routed around the recovery unit via the bypass function.</p> <p>CHR-P units are used primarily in industrial and commercial plants with long operating hours and high exit temperatures in flue pipes and chimneys.</p> <p>CHR-P units are quick and easy to maintain and clean.</p> <p>They are typically used in bakeries, the food processing industry and industrial process systems.</p> <p>Options for using the recovered and stored energy include hot water and heating applications.</p> <p>CHR-P units may be used with oil, gas and electricity-fired heat sources.</p>
Limitations	<p>CHR-P units without by-pass must not be subjected to exhaust temperatures above 100 °C CHR-P units must not be used with solid fuel or biofuel and are exclusively for indoor installation. CHR-P units must not be put into service before they are properly insulated. Caution: Very hot surface! Range of operation: 60 - 1,000 kW (nominal burner power input).</p>

1.2 Shipping

Shipping	<p>CHR-P units are shipped wrapped on a pallet, with instructions. The package does not contain loose components.</p>
Standard packing slip	<p>If other components are also shipped these will appear as separate items on the packing slip.</p>

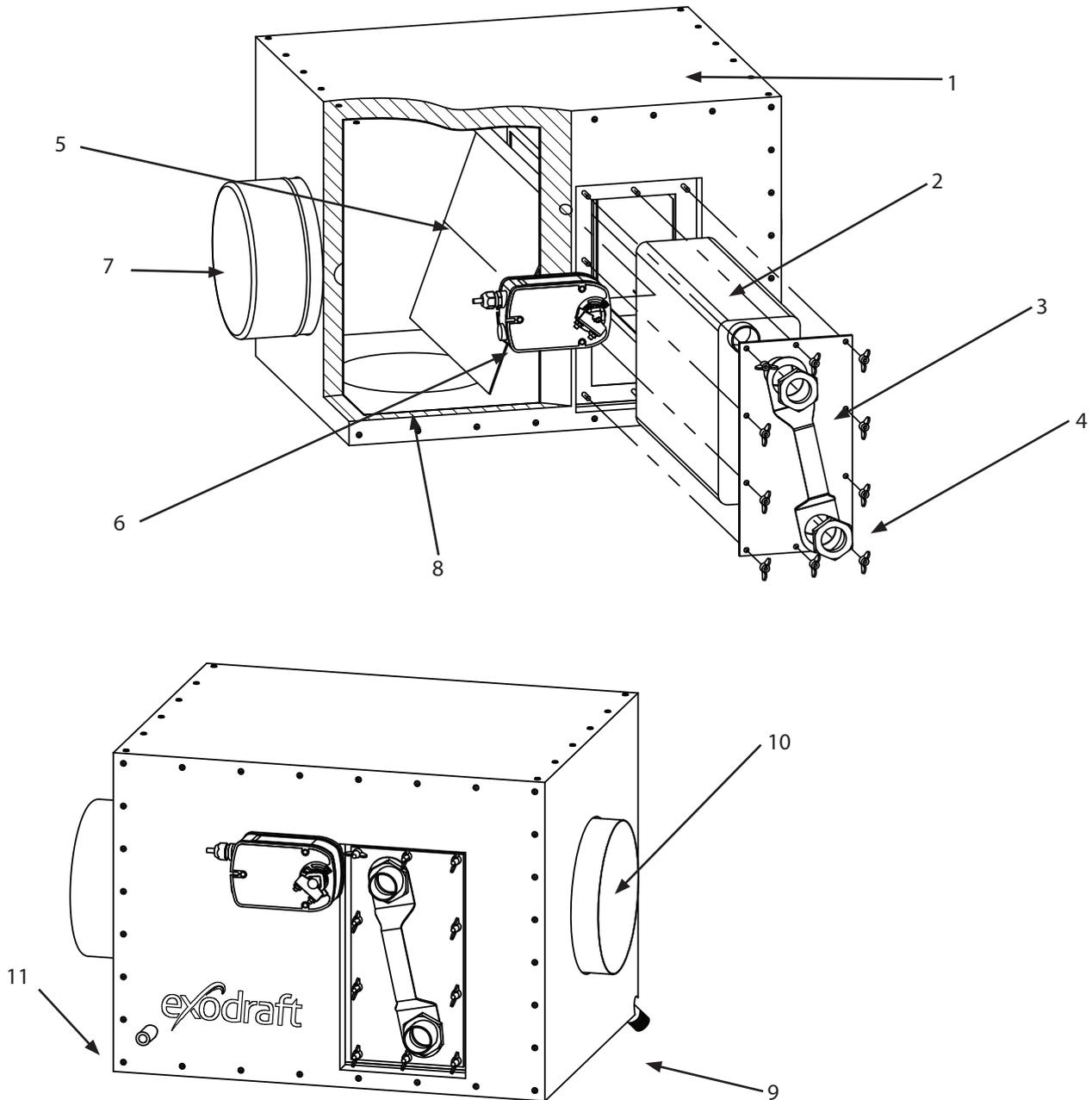
1.3 Warranty

exodraft products must be installed by qualified personnel. **exodraft a/s** may exercise its right to partially or fully nullify the product warranty if this is not observed.

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

1.4 Components

Standard components.



1. Cabinet
2. Exchanger cassette
3. Cover
4. Wing nuts
5. Bypass damper
6. Damper motor
7. Inspection window
8. Intake
9. Drain
10. Exhaust
11. Connection for temperature sensor (must be fitted)

Optional components Controllers (EHC10 and EHC20), PT1000 temperature sensor item no. 0502302.
Mandatory accessories ST110 safety thermostat.

1.5 Models

Unit with bypass, damper motor and insulation	Unit with no bypass and insulation	Unit with bypass and damper motor, without insulation	Unit with no bypass, damper motor and insulation	Approximate connection power
exodraft item number	exodraft item number	exodraft item number	exodraft item number	
CHRP60-1-150BI	CHRP60-1-150I	CHRP60-1-150B	CHRP60-1-150	60KW
CHRP80-1-180BI	CHRP80-1-180I	CHRP80-1-180B	CHRP80-1-180	80KW
CHRP120-1-225BI	CHRP120-1-225I	CHRP120-1-225B	CHRP120-1-225	120KW
CHRP250-1-250BI	CHRP250-1-250I	CHRP250-1-250B	CHRP250-1-250	250KW
CHRP300-1-250BI	CHRP300-1-250I	CHRP300-1-250B	CHRP300-1-250	300KW
CHRP400-1-300BI	CHRP400-1-300I	CHRP400-1-300B	CHRP400-1-300	400KW
CHRP500-1-350BI	CHRP500-1-350I	CHRP500-1-350B	CHRP500-1-350	500KW
CHRP750-1-400BI	CHRP750-1-400I	CHRP750-1-400B	CHRP750-1-400	750KW
CHRP1000-1-500BI	CHRP1000-1-500I	CHRP1000-1-500B	CHRP1000-1-500	1000KW
BI = with bypass and insulation	I = with insulation	B = with bypass	- = no bypass, no insulation	

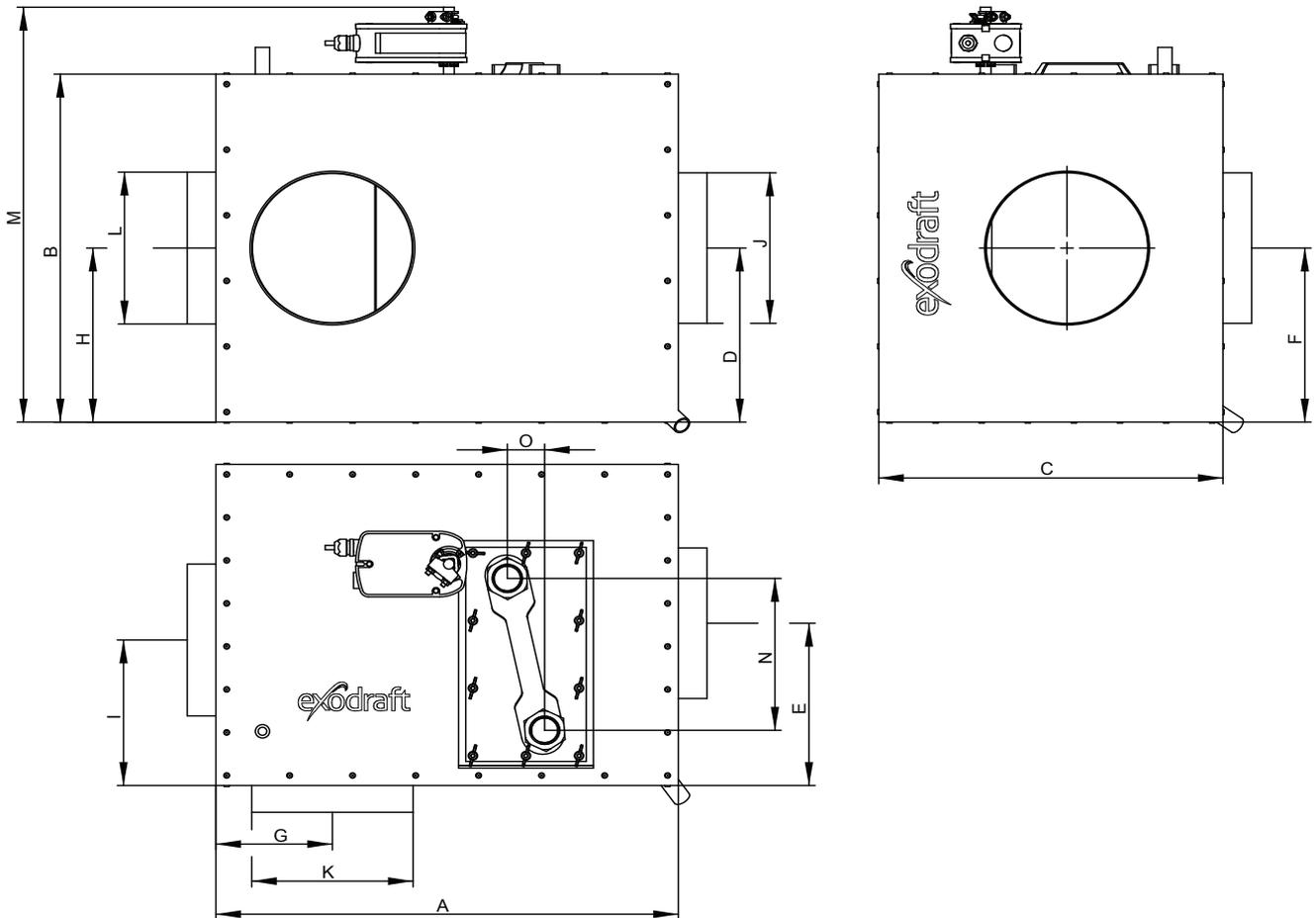


2. Technical specifications

2.1 Dimensions

Models with 1 exchanger

All illustrations in this guide show the product with insulation and bypass.



“K” and “L” specify the external adapter point
 “J” specifies the internal sleeve dimensions

Table 1: Dimensions are specified **including** bypass motor and 31 mm insulation.

Dimension Type	A	B	C	D	E	F	G	H	I	Ø J	Ø K	Ø L	M	N	O	Kg
CHRP60-1-150BI	556	268	462	134	202	134	126	134	201	150	150	150	358	227	52	35
CHRP80-1-180BI	556	333	462	166	264	166	136	166	197	180	180	180	423	227	52	42
CHRP120-1-225BI	646	463	483	231	244	231	158	231	195	225	225	225	553	227	52	60
CHRP250-1-250BI	646	528	483	264	257	264	171	264	195	250	250	250	618	227	52	70

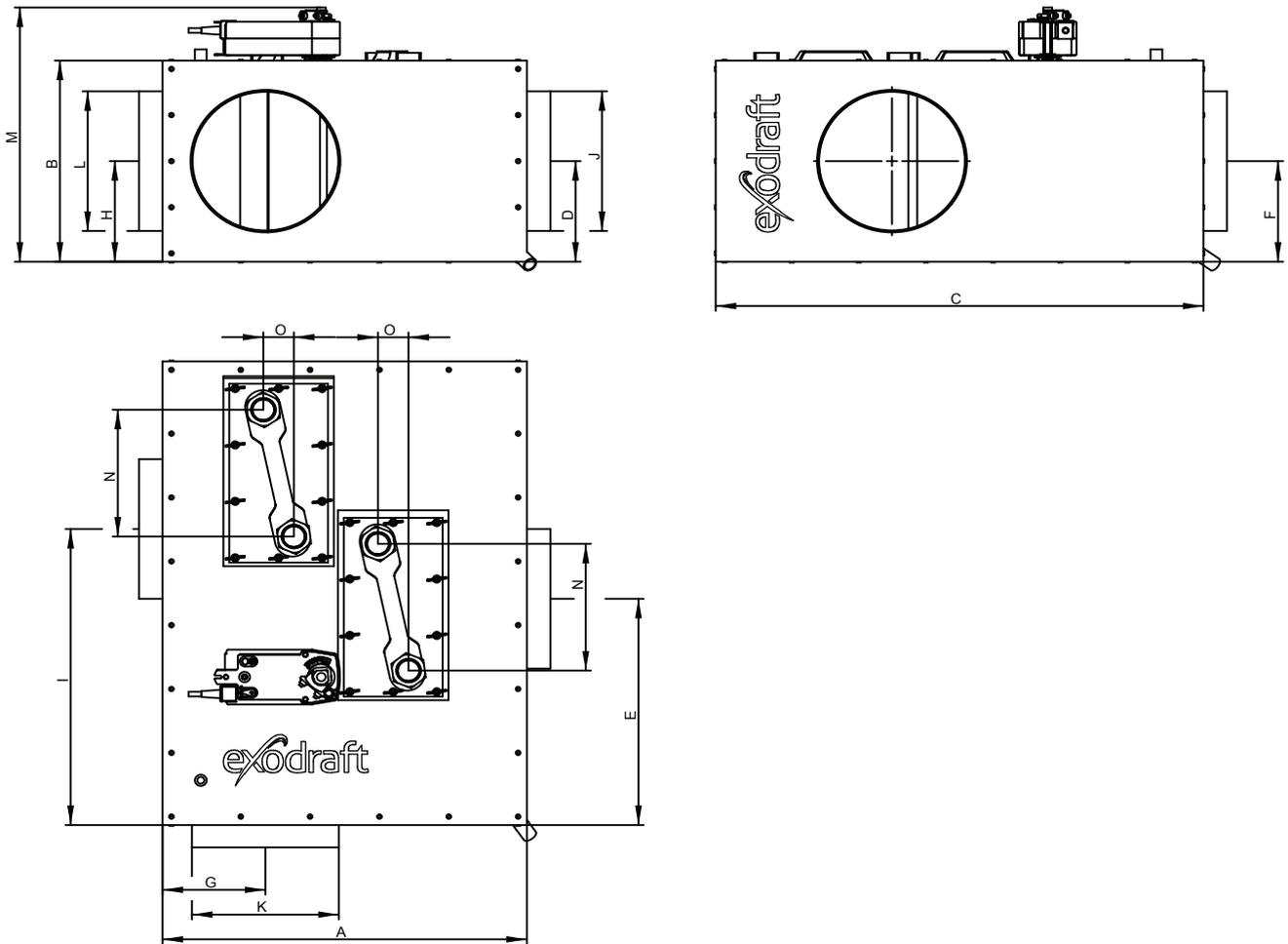
Table 2: Dimensions are specified **including** 31 mm insulation, but **without** bypass.

Dimension Type	A	B	C	D	E	F	G	H	I	Ø J	Ø K	Ø L	M	N	O	Kg
CHRP60-1-150I	479	267	400	133	201	133	126	133	201	150	150	150	-	227	52	29
CHRP80-1-180I	508	331	400	165	338	165	136	165	291	180	180	180	-	227	52	36
CHRP120-1-225I	553	461	400	230	201	230	158	230	201	225	225	225	-	227	52	48
CHRP250-1-250I	553	526	400	263	215	263	171	263	201	250	250	250	-	227	52	55



Models with 2 exchangers

All illustrations in this guide show the product with insulation and bypass.



“K” and “L” specify the external adapter point
 “J” specifies the internal sleeve dimensions

Table 3: Dimensions are specified **including** bypass motor and 31 mm insulation.

Dimension Type	A	B	C	D	E	F	G	H	I	Ø J	Ø K	Ø L	M	N	O	Kg
CHRP300-1-250BI	623	396	831	198	407	198	175	198	531	250	250	250	496	227	52	85
CHRP400-1-300BI	673	461	881	230	456	230	202	230	581	300	300	300	561	227	52	107
CHRP500-1-350BI	773	521	931	261	520	261	226	261	681	350	350	350	621	227	52	127

Table 4: Dimensions are specified **including** 31 mm insulation, but **without** bypass.

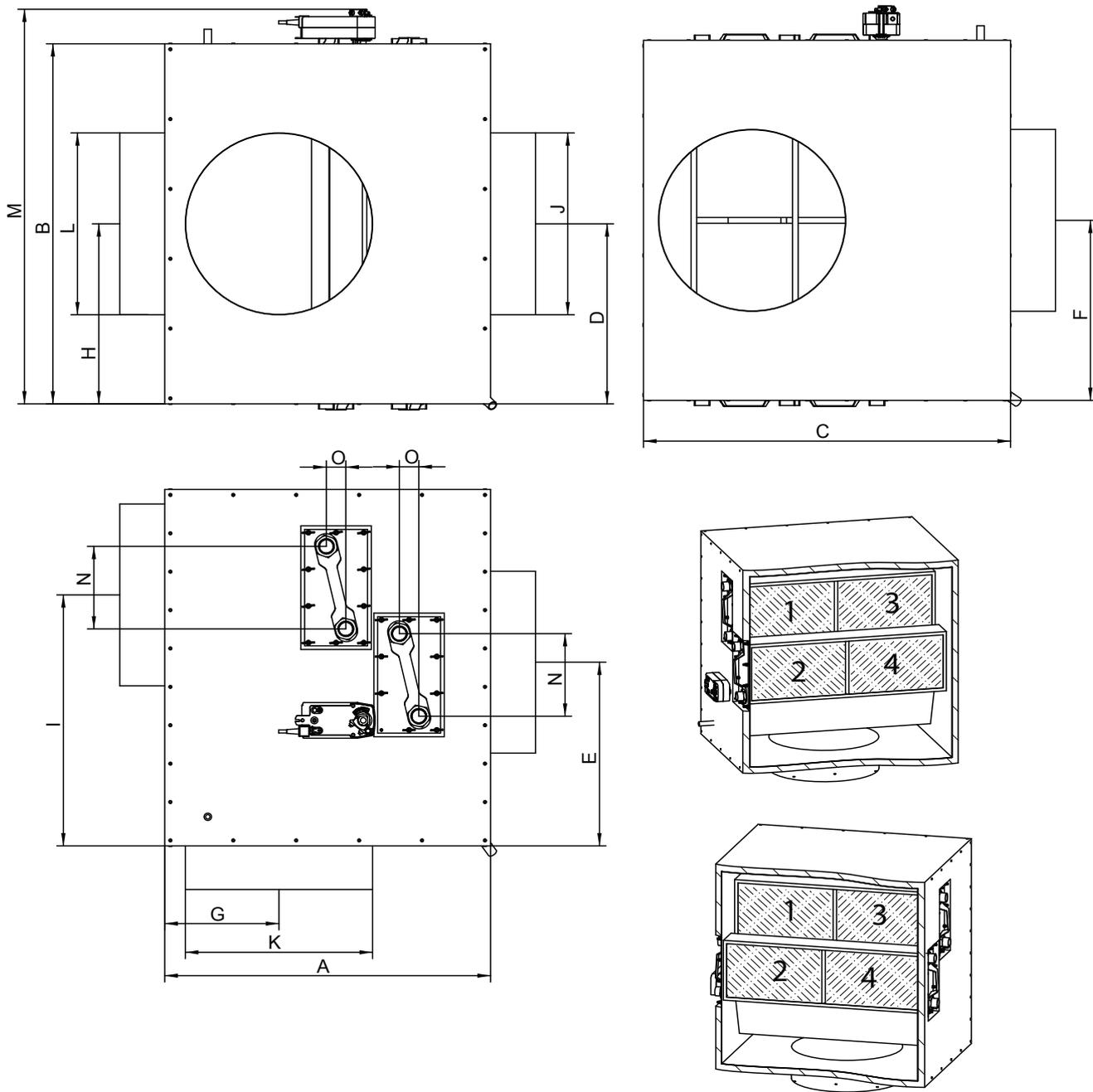
Dimension Type	A	B	C	D	E	F	G	H	I	Ø J	Ø K	Ø L	M	N	O	Kg
CHRP300-1-250I	623	396	771	198	382	198	175	198	531	250	250	250	-	227	52	78
CHRP400-1-300I	673	461	821	230	404	230	202	230	581	300	300	300	-	227	52	92
CHRP500-1-350I	773	521	871	261	432	261	226	261	681	350	350	350	-	227	52	104





Models with 4 exchangers

All illustrations in this guide show the product with insulation and bypass.



“K” and “L” specify the external adapter point
 “J” specifies the internal sleeve dimensions

Table 5: Dimensions are specified **including** bypass motor and 31 mm insulation.

Dimension Type	A	B	C	D	E	F	G	H	I	∅ J	∅ K	∅ L	M	N	O	Kg
CHRP750-1-400BI	873	861	931	430	468	430	250	430	620	400	400	400	961	227	52	225
CHRP1000-1-500BI	973	991	981	495	493	495	275	495	701	500	500	500	1091	227	52	269

Table 6: Dimensions are specified **including** 31 mm insulation, but **without** bypass.

Dimension Type	A	B	C	D	E	F	G	H	I	∅ J	∅ K	∅ L	M	N	O	Kg
CHRP750-1-400I	793	861	931	430	438	430	250	431	620	400	400	400	-	227	52	185
CHRP1000-1-500I	893	991	981	495	463	495	275	463	701	500	500	500	-	227	52	207



3. Mechanical installation

3.1 General



Warning

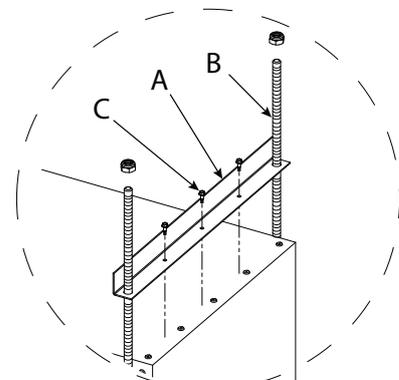
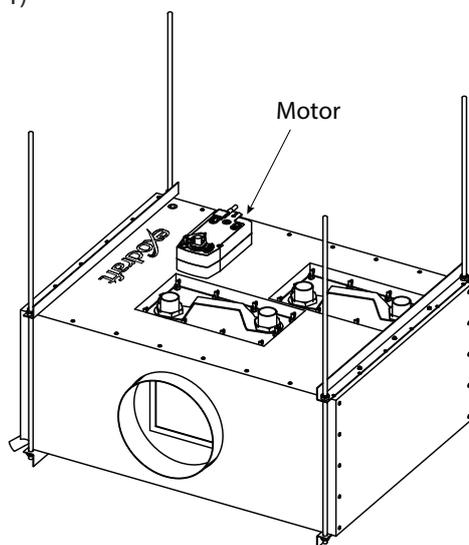
If the exodraft CHR-P heat recovery unit is not installed, maintained and operated in compliance with the manufacturer's instructions, conditions may arise which could lead to personal injury or material damage. By mounting of an uninsulated CHR-P unit "Hot surface"-warning label must be placed visibly near the inspection hatch.

CHR-P units must be installed by qualified personnel in compliance with these instructions and all local regulations. Observe national regulations regarding distance from flammable materials.

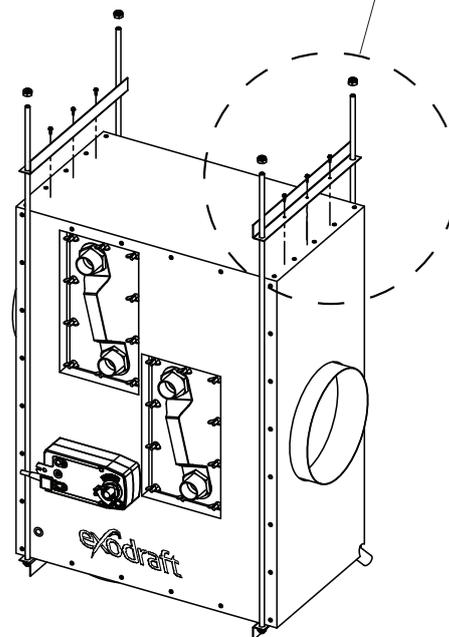
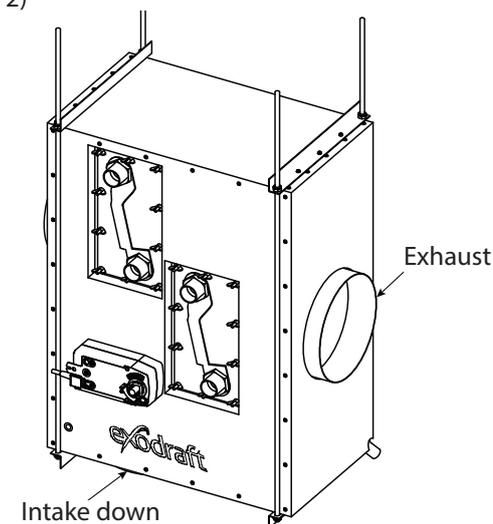
3.2 Placement and mounting

Units may be installed in one of two positions - 'motor up' or 'intake down' (see the illustration below).

1)



2)



Mount using threaded rod (B) with angle iron (A) above and below the unit. We recommend that the angle iron pieces be affixed to the cabinet using self-tapping screws (C).



CHR-P units must be installed in a way that provides easy and unimpeded access to the motor and exchanger cassette.



3.3 Connections

Connections (illustrated below) to the exchanger cassette use 1 1/4 inch thread size, except for CHR-P 60-1-150xx models, which use 1 inch thread.



Danger

**The safety thermostat must be fitted on the supply side
Pressure relief valve must be installed on the water circuit or there has to be open expansion.**

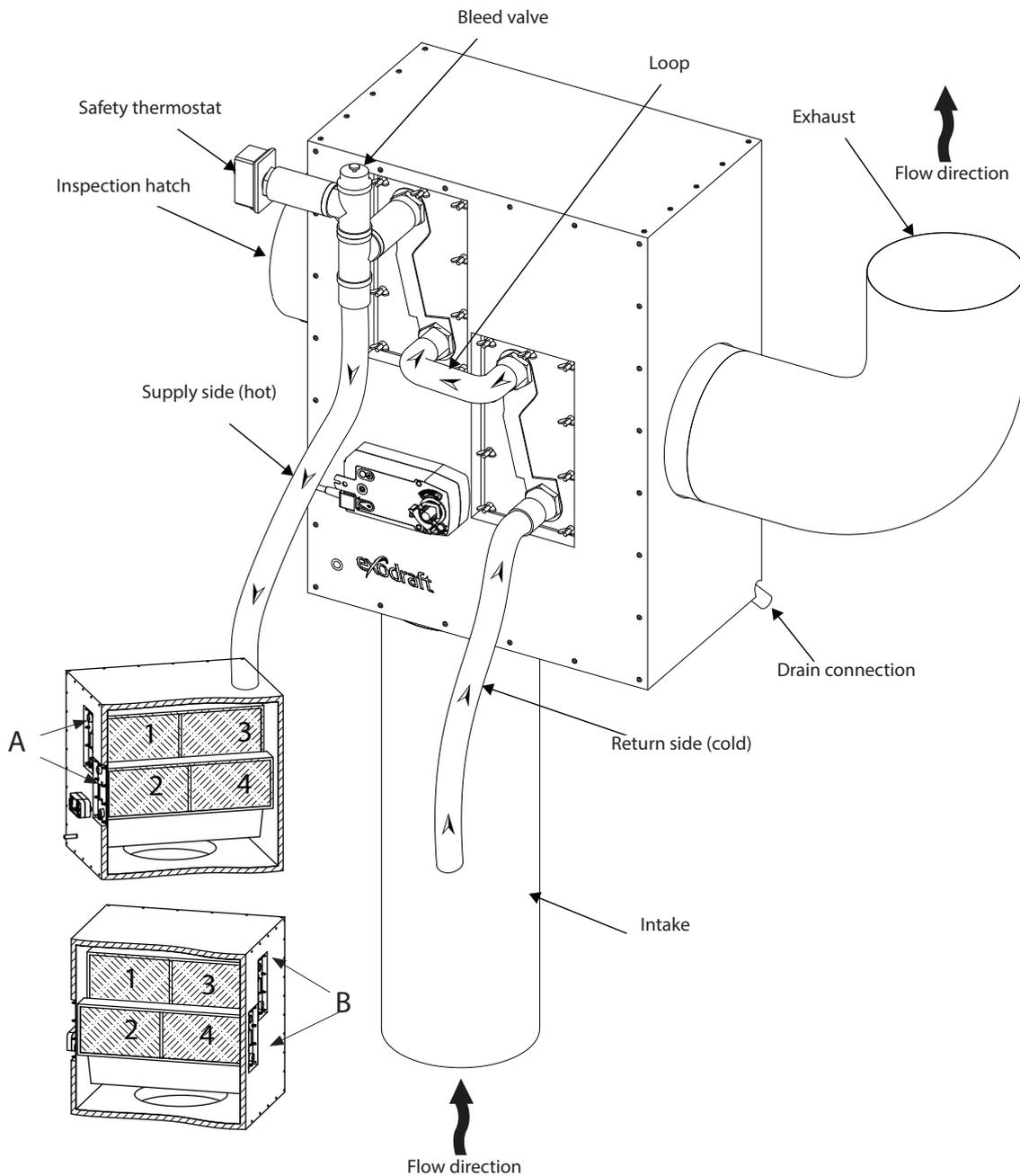
CHR-P units with 2 exchanger cassettes must be connected in series as illustrated (see page 7).

For CHR-P units with 4 exchanger cassettes, connect the cassettes on one side in parallel with the cassettes on the other side (see page 8).

A: Connect exchanger cassettes 1 + 2 in series.

B: Connect exchanger cassettes 3 + 4 in series.

Then connect sides A and B in parallel.



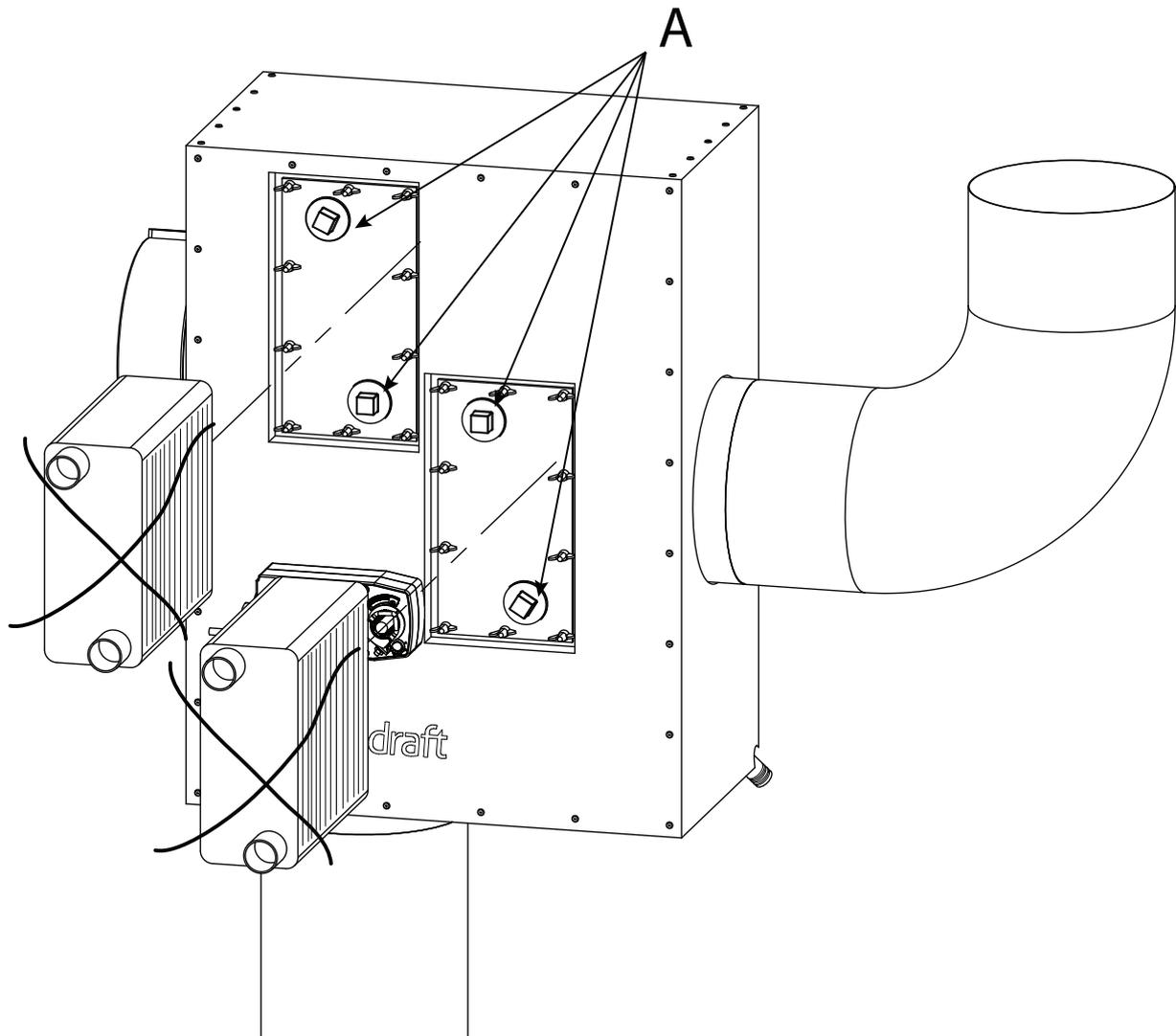


3.4 Installation with no water connection

If a CHR-P unit is installed on a chimney without the exchanger cassette, the connections on the front panel must be blanked out.

Remove the large lock nuts and the handle can be taken off. The holes in the front plate should be sealed and the front plate can be mounted again and secured by wing nuts. (on CHR-P60 no handle / grip is installed).

(illustrated below – 'A').



Warning

The CHR-P unit must not be put into operation before it has been properly installed and insulated.

Danger of contact with hot components.



4. Electrical installation

4.1 General



Danger

Switch off power before working on the device. Contact with components carrying electricity can cause shock or death.



NB:

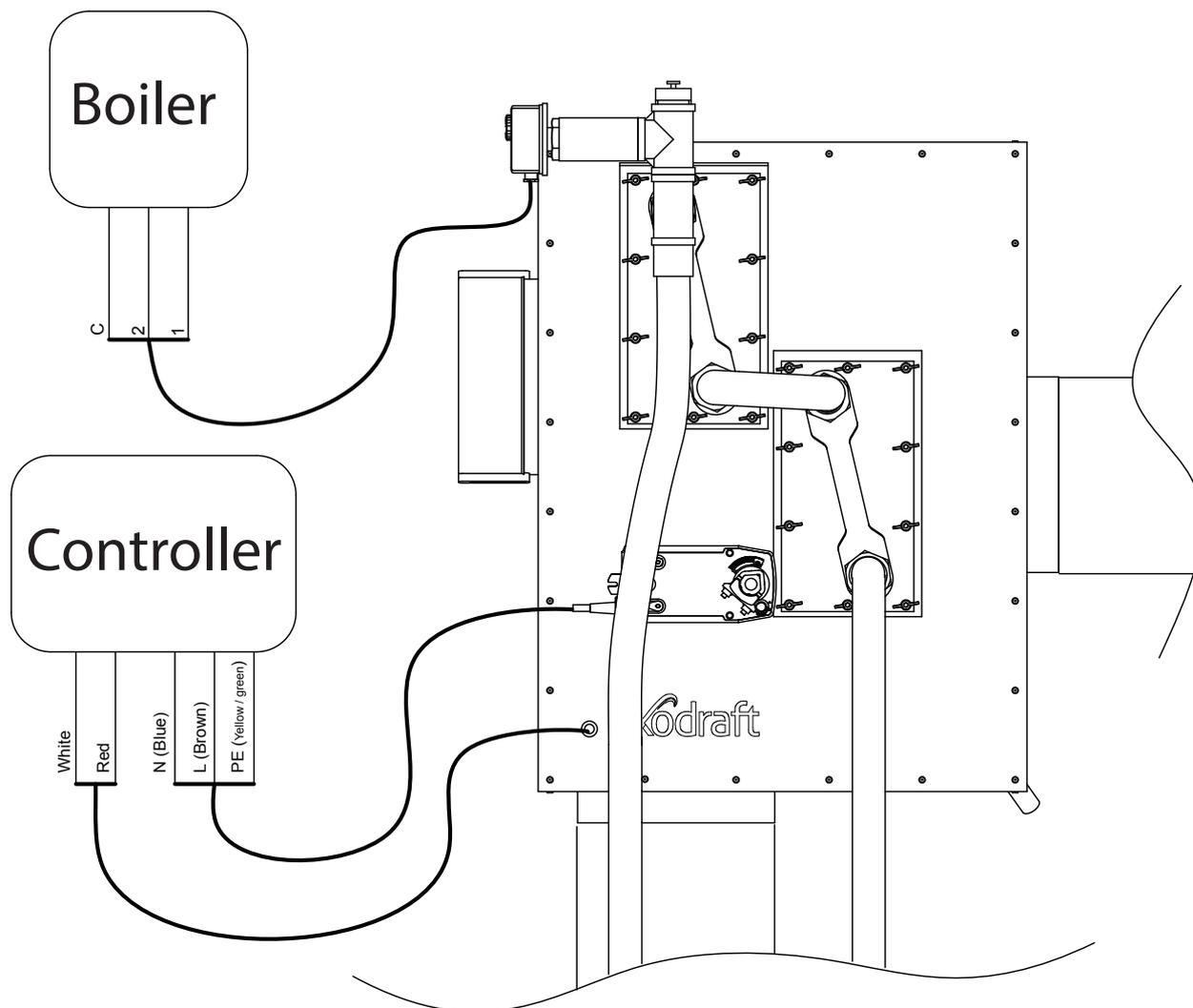
If any of the original power cables supplied with the system ever need replacing, cables with the same temperature classification must be used. Otherwise the insulation may melt or be eroded, exposing the conductor.

All cables must be run and connected in compliance with national regulations.

4.2 Cable diagram / electrical connection

Diagram for connecting bypass motor and temperature sensor and connection between the safety thermostat and burner.

For further information regarding electrical connections, see the controller instructions.





5. Start-up and configuration

5.1 General

The purpose of this **exodraft** CHR-P heat recovery unit is to recover surplus energy from flue gases and process air. The unit is environmentally friendly, economic and compact.

5.2 System testing

**Warning**

**The CHR-P unit must not be put into operation before it has been properly installed.
Danger of contact with hot components.**

- Connect the water and bleed the system
- Activate the circulation pump (not supplied by **exodraft**) and check it is operating correctly
- Check that there is water in the system
- Check the voltage compared to the motor information plate
- Check that the unit is in bypass mode when the motor has zero voltage and that the damper has not become bent during shipment or installation.
- Switch on the power and check the bypass damper operates correctly (see controller instructions)

5.3 Testing safety system

**Warning**

You must test to ensure that the safety thermostat disables the burner if the temperature rises too high.



6. Maintenance and troubleshooting

6.1 Maintenance and cleaning

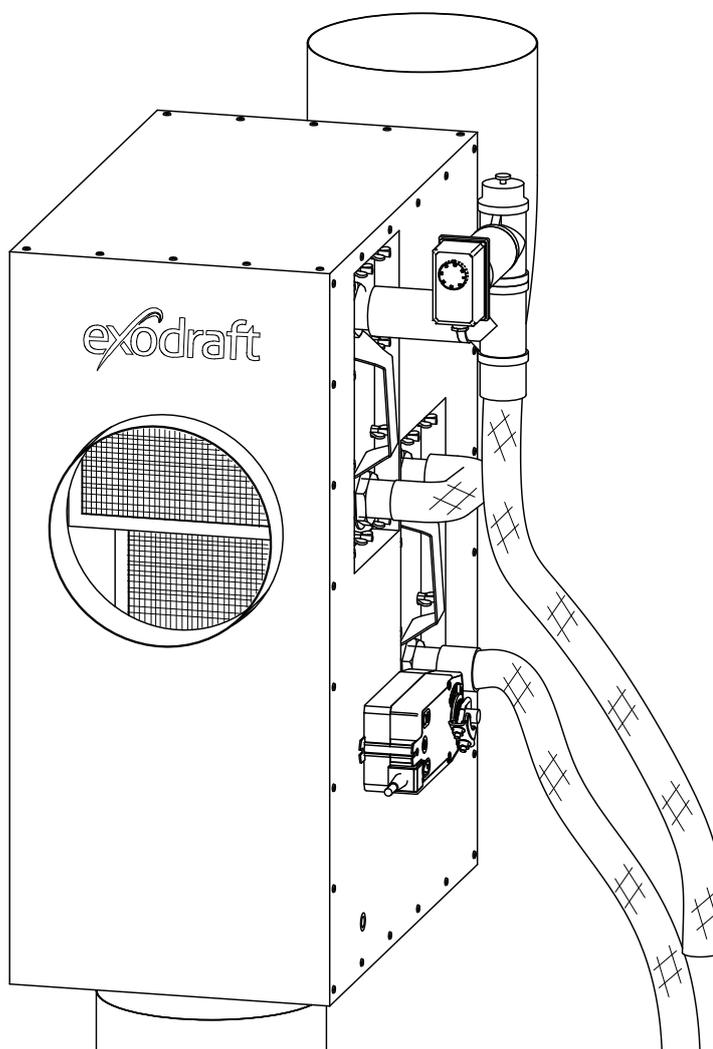


Clean the CHR-P unit at appropriate intervals, depending on the level of soiling in the passing air. You should check the unit for leaks or wear at least once a year.

To ensure maximum flow through the exchanger cassettes it is important to clean them. The cleaning interval will depend on how much debris the unit is exposed to.

6.2 With the exchanger cassettes in place

- Remove the inspection window cover
- Set the bypass damper via the **exodraft** EHC controller (see the controller instructions) so there is access to the surface of the exchanger cassettes
- Blow through the exchanger cassettes using compressed air
- If the chimney system and CHR-P unit are drained, a high-pressure cleaner may be used





6.3 With the exchanger cassettes removed

- Drain the water from the exchanger cassettes
- Remove connection hoses and pipes
- Remove the wing nuts and cover
- Pull out the exchanger cassettes
- Clean using compressed air or a high-pressure cleaner



NB:
The cassettes are heavy. See the weight table below.

The weight of the CHR-P exchanger cassettes, without water, is shown in the table below.

exodraft item number	Exchanger cassette product number	Number of exchanger cassettes	Weight per cassette
CHRP60-1-150xx	3200683	1	8.2 kg
CHRP80-1-180xx	3200684	1	10.5 kg
CHRP120-1-225xx	3200686	1	14.9 kg
CHRP250-1-250xx	3200687	1	17.1 kg
CHRP300-1-250xx	3200685	2	12.7 kg
CHRP400-1-300xx	3200686	2	14.9 kg
CHRP500-1-350xx	3200687	2	17.1 kg
CHRP750-1-400xx	3200686	4	14.9 kg
CHRP1000-1-500xx	3200687	4	17.1 kg



Warning
Ensure the power to the CHR-P heat recovery unit has been disconnected from the power supply before opening the cabinet.



6.4 Troubleshooting

Problem	Possible cause	Rectification
The supply temperature is low and the temperature difference between the flue gas intake and exhaust is too small.	<ul style="list-style-type: none"> - There is air in the water system - The circulation pump is not operating correctly - The water flow is too fast - The mixing valve is not operating correctly - The unit is in bypass mode - The water connections have been crossed - The exchanger cassette is blocked by debris 	<ul style="list-style-type: none"> - The system needs to be bled - Check the operation of the circulation pump - Check the operation of the circulation pump and mixing loop - Check the operation of the controller - Check the motor voltage and connection - Correctly connect the supply and return sides. (see section 3.3) - Clean the unit and check the drain is working
The burner is disabled at low water temperature	<ul style="list-style-type: none"> - The safety thermostat is disengaging 	<ul style="list-style-type: none"> - Check the operation of the safety thermostat - Check the safety thermostat setting - The system needs to be bled - Check the operation of the circulation pump
The burner is disabled at high water temperature	<ul style="list-style-type: none"> - There is air in the water system - The circulation pump is not operating correctly - The mixing valve is not operating correctly - The unit does not change to bypass mode - The burner is operating at high power 	<ul style="list-style-type: none"> - The system needs to be bled - Check the operation of the circulation pump - Check the operation of the controller - Check the motor voltage and connection - Check that the damper can rotate freely - A larger CHR-P unit is required or the burner power must be reduced.
Poor chimney draft	<ul style="list-style-type: none"> - The exchanger cassette is blocked/filthy 	<ul style="list-style-type: none"> - Clean the exchanger cassette and ensure that the drain is functioning properly

7. EU declaration of conformity

DK: EU-Overensstemmelseserklæring GB: Declaration of Conformity DE: EU-Konformitätserklärung FR: Déclaration de conformité de l'Union Européenne NO: EU-Samsvarserklæring PL: EU Deklaracja zgodności	NL: EU-Conformiteits verklaring SE: EU-Överensstämmelsedeklaration FI: EU-Vaatimustenmukaisuusvakuutus IS: ESS-Samræmisstaðfesting IT: Dichiarazione di Conformità Unione Europea
exodraft a/s C.F. Tietgens Boulevard 41 DK-5220 Odense SØ	
-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 ábyrgð, að eftirfarandi vörur: -dichiara con la presente che i seguenti prodotti:
CHRP- / 60-1-150xx / 80-1-180xx / 120-1-225xx / 170-1-250xx / 250-1-250xx / 300-1-250xx / 400-1-300xx / 500-1-350xx / 750-1-400xx / 1000-1-500xx	
-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 m ota täma 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:
EN60335-1, EN60335-2-80, DS/EN ISO 12100: 2012	
-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:
2006/95/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:
2004/108/EC	
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