# Adlår Castra

## Site Preparations

**V202507-3**

ADLÅRCASTRA

Heat Pump Experts


## 1 Regulation 20

**Installer:** Adlar Ltd

**MCS Registration:** IAA10054

## 2 Part L: Efficiency, sizing, controls

**SAP Calculations:** BRE Database Lookup

**MCS Product Directory:** MCS Product Directory

### Energy Performance Data - Heat Loss

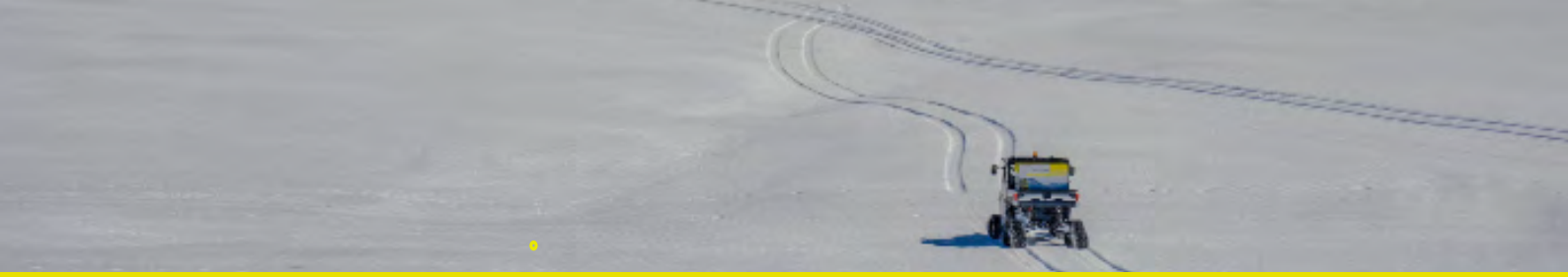
Please ask your Adlår Castra contact for your home heat loss simulation.

Data in your report includes:

The system sizing based on a whole-house heat loss calculation in accordance with CIBSE/BS EN12831 standards. The calculated heat load, and the heat pump capacity at the design temperature.

The system includes inbuilt weather-compensated controls and thermostats to ensure efficient operation in compliance with Part L.

Labelling and provision of installation manuals for safe ongoing maintenance and alteration are provided at the time of installation.



## 3 Pre-Install Checklist

- [ ] Mains water available
- [ ] Electrics ON and available, cable runs ran in advance
- [ ] Safe working environment
- [ ] All pipework as defined in this document in location
- [ ] Heat Pump Location ready and accessible
- [ ] Pipework ends / faucets capped or finished

**Terms & Conditions Carefully Reviewed**

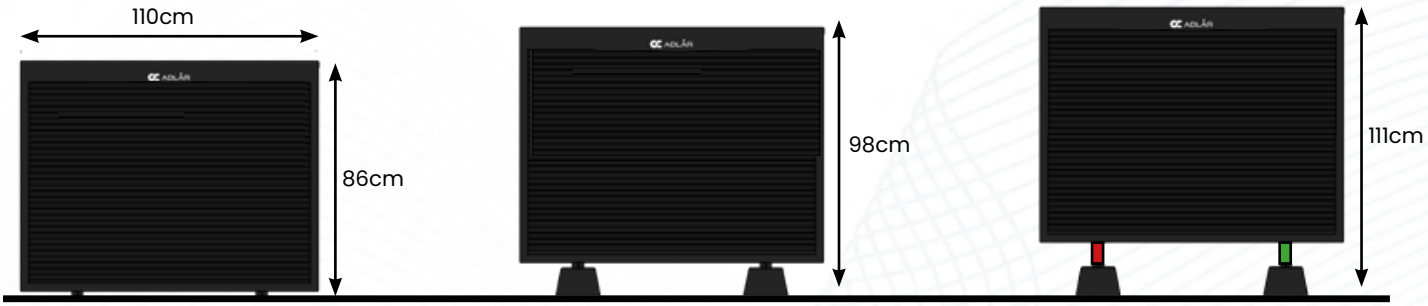
If your site isn't ready at the time of our visit or our install can't be completed in the allocated time due to ongoing works there will be additional charges as defined in our terms and conditions.

If there are construction works, you will need to make builders available to help carry heavy equipment over the site safely and make spaces available to us even if it delays their work.

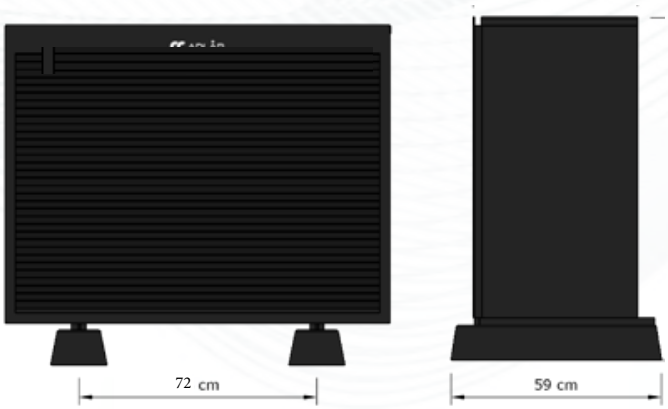
Find additional materials here.

# 4 Heat Pump Dimensions

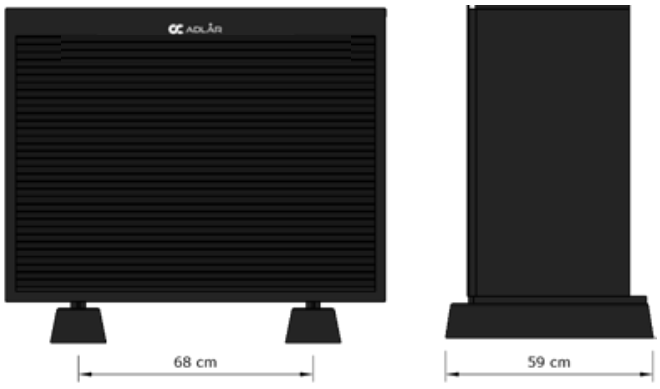
## AURORA II - Height

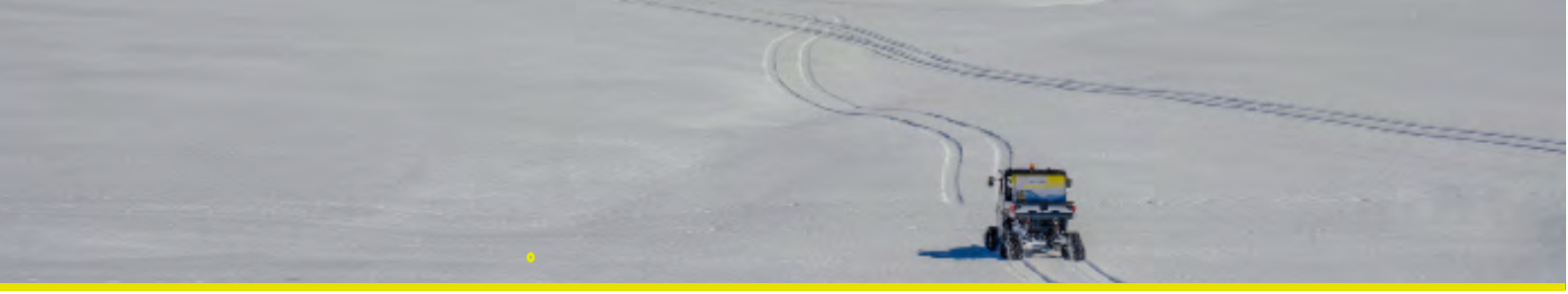



## AURORA II - 6&10kW




## AURORA II - 14kW





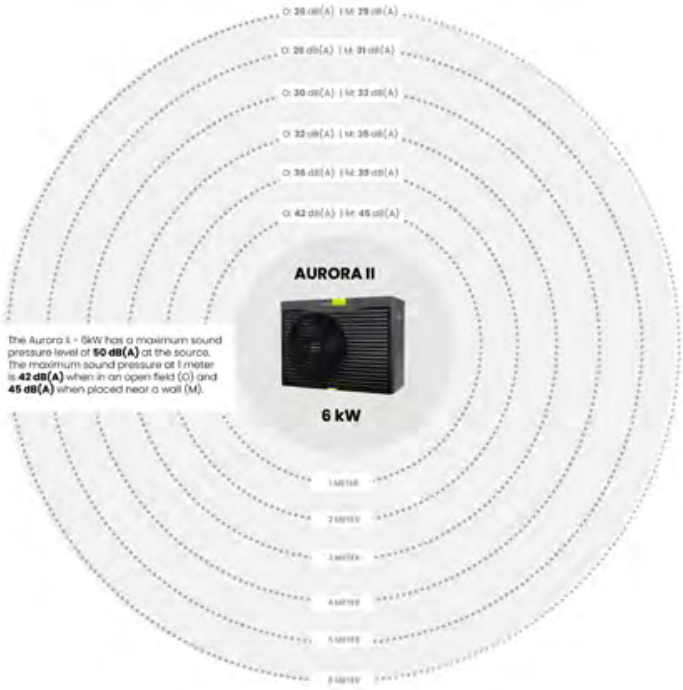
## 2 Noise & Location Considerations

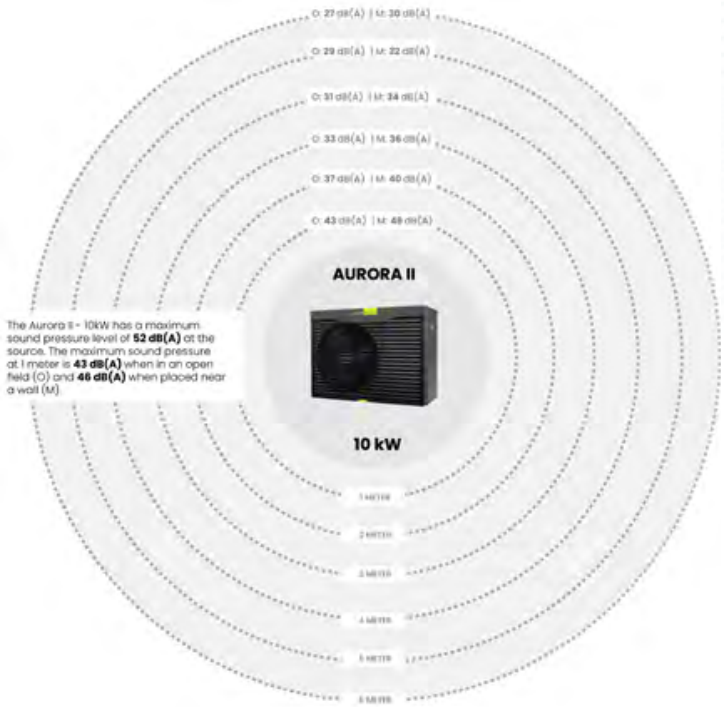
### >5m Neighbours Windows

Your external heat pump must be installed outside your property. Ideally, it should be positioned close to your existing heating system or boiler, as the new heat pump will need to connect into the same pipework and services.

To avoid the need for planning permission, the heat pump should not be located too close to your neighbour's habitable room windows. As a general guideline, if the preferred location is closer than 5 metres to your neighbour's windows, please discuss this with your sales representative.

In accordance with MCS 020 regulations, air source heat pump installations must meet permitted development requirements, including limits on noise impact at neighbouring properties. We will assess noise levels as part of our design process to ensure compliance.



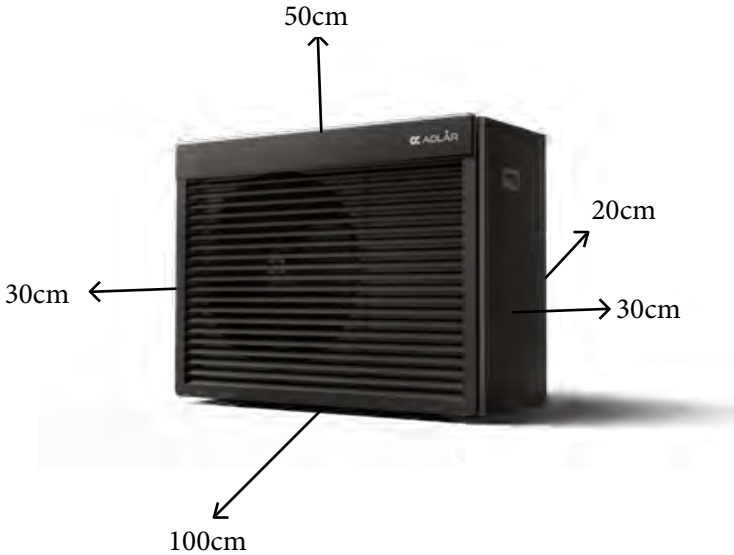




### Space Around Heat Pump

The required space around the heat pump is illustrated in the image provided.

Please be aware that solid brick walls or placement in narrow alleyways can amplify noise from the heat pump, even if those walls are located beyond the minimum clearance distances.

Best practice is to install the heat pump so that the fan faces into open space, allowing unobstructed airflow and minimising noise reflection.



# 3 Mounts and Installation Types

## A. Hard Surface - Drained

If the heat pump is installed on an existing hard surface that allows adequate water drainage — such as gravel, sloped paving stones draining into a water outlet, or another permeable ground type — then the heat pump only needs to be mounted on standard heat pump feet for support and leveling.

## B. Hard Surface - Not Drained

Heat pumps contain evaporators that generate water condensation during operation.

Careful consideration should be given to removing this water from the installation location, particularly if the area is used as a walkway or access route where standing water could freeze and create a slip hazard.

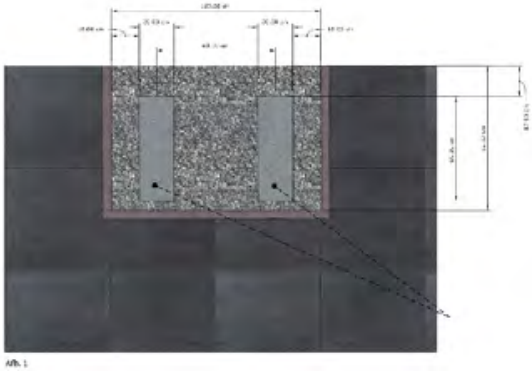
In such cases, a drainage tray should be fitted beneath the heat pump to collect the condensate, with a hose used to direct the water safely onto permeable ground away from traffic areas.

## C. Soft Surface - Concrete Slab

If the heat pump is to be installed on a soft surface, such as grass, it must be positioned on a hard surface to prevent it from sinking.

A practical solution is to install two concrete slabs, each approximately 200mm wide by 620mm long and at least 140mm deep, to provide a stable base for the heat pump.

## D. Soft Surface - Base Design



To ensure optimum water drainage, a gravel layer can be added beneath the foundation to promote effective soakaway.

The foundation slabs should meet the following requirements:

1. Sized and spaced appropriately for the specific heat pump model.
2. Stable and level, and must not sink into the ground — this should be verified, ideally during wet conditions.

The ground beneath the slabs must allow free drainage of water into the soil. A simple test is to pour a full watering can over the area and observe whether the water absorbs readily.


## E. Flat Roof Installation


Heat pumps can be installed on flat roofs. If your project is operating on a construction site, the heat pump can be delivered in advance to allow your team to position it prior to installation.

Alternatively, Adlår can arrange for a crane to lift the heat pump into place at the time of installation.

Please note: a minimum 1 metre safety zone must be maintained around the heat pump for safe and effective operation.

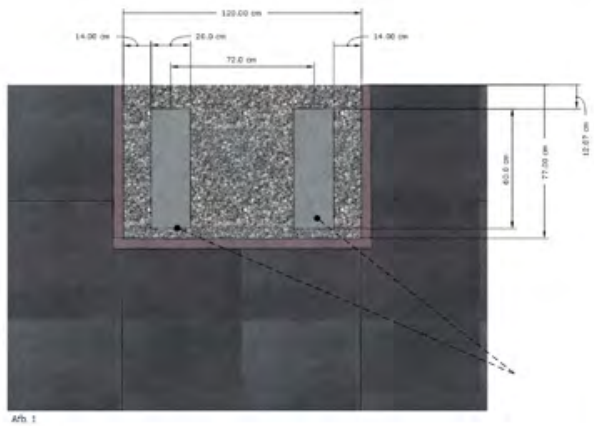
## F. Wall Bracket

Wall brackets allow the heat pump to be mounted on your wall, providing flexibility in positioning.

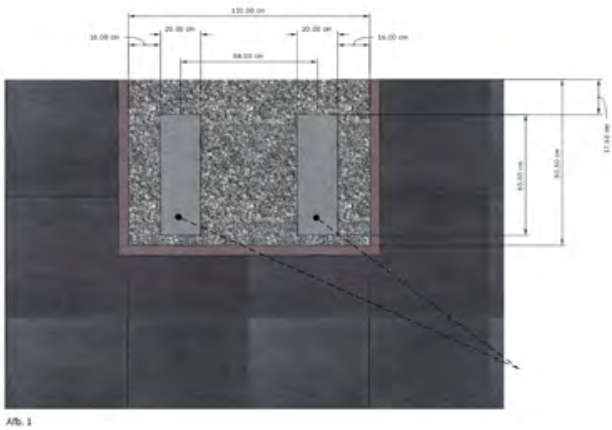
Please note that Adlår cannot take responsibility for the build quality of the wall itself. Some vibration may be transmitted through the wall with this type of installation, and this should be considered when choosing the mounting location.

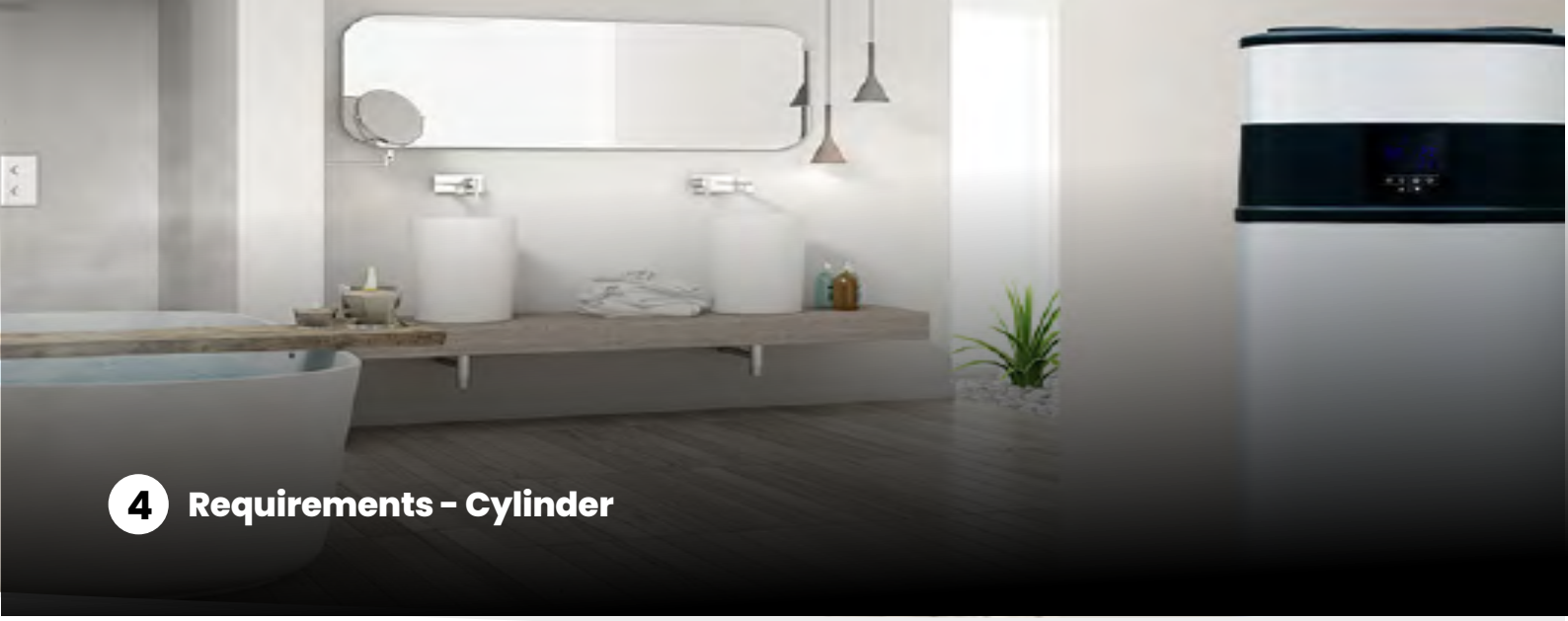
## G. Base Size

### 6 & 10 kW AURORA II

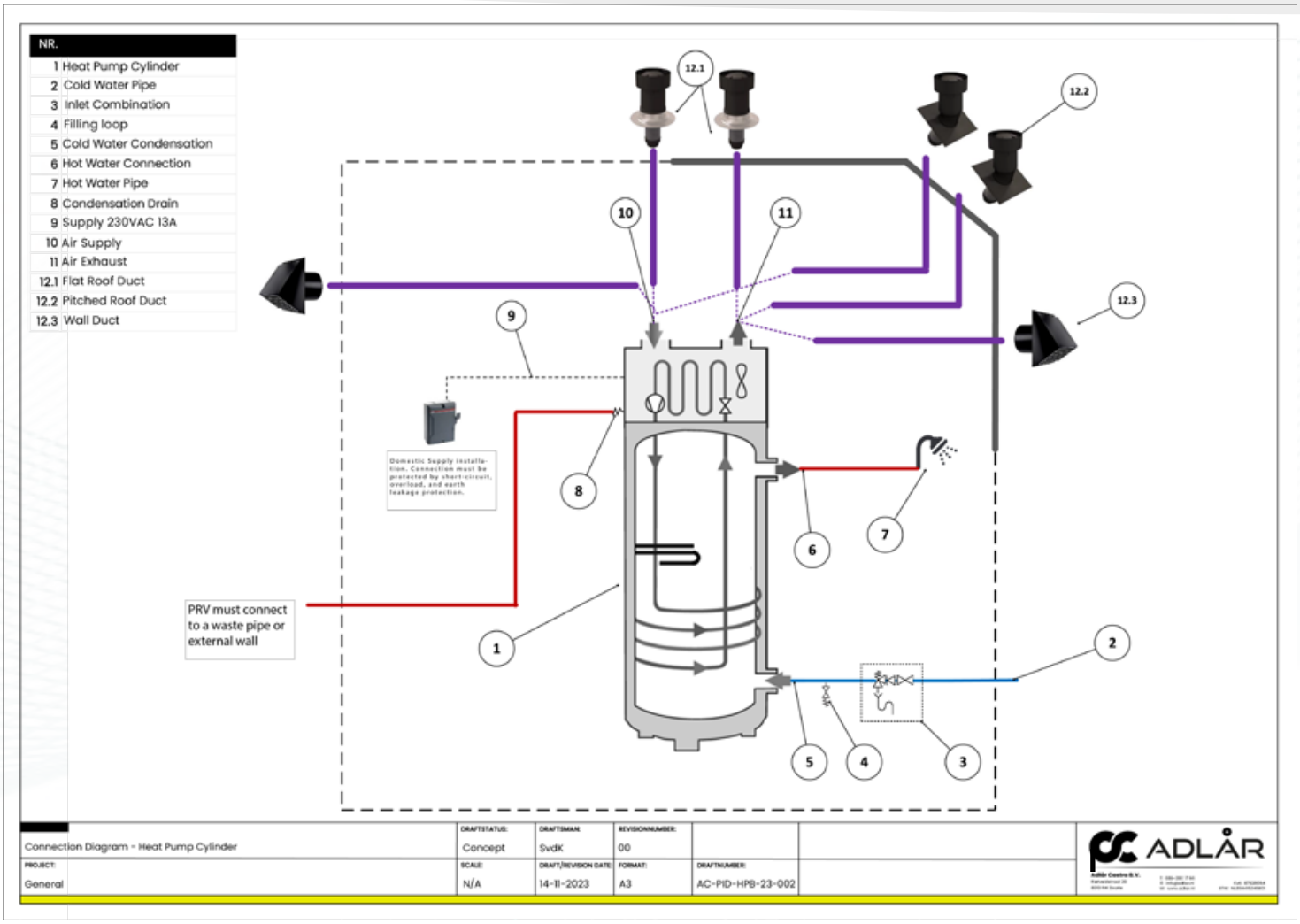


### 14kW AURORA II





# 4 Requirements - Cylinder




## A. Pipework Overview

In order to ensure the effective installation of your air source heat pump cylinder, we require the following pipework to be in place at the location of the cylinder.

1. Hot Feed: Pipework to supply your hot water faucets. Please ensure all faucets are capped or taps installed in advance.
2. Balanced cold feed - Pipework with an accessible lever valve to allow us to isolate the cold water supply (ON/OFF).
3. PRV Pipework - Pressure and temperature relief pipework must be installed and routed appropriately.

If you are in any doubt about these requirements, our surveyor or your sales representative will be happy to assist.

## B. Ducting Overview

Our cylinders require external air ductwork. Due to recent Ofgem regulations, both the intake and exhaust air must now be ducted directly to the outside environment.

Long duct runs should be installed in advance of our installation date to ensure a smooth installation.

Options for venting include:

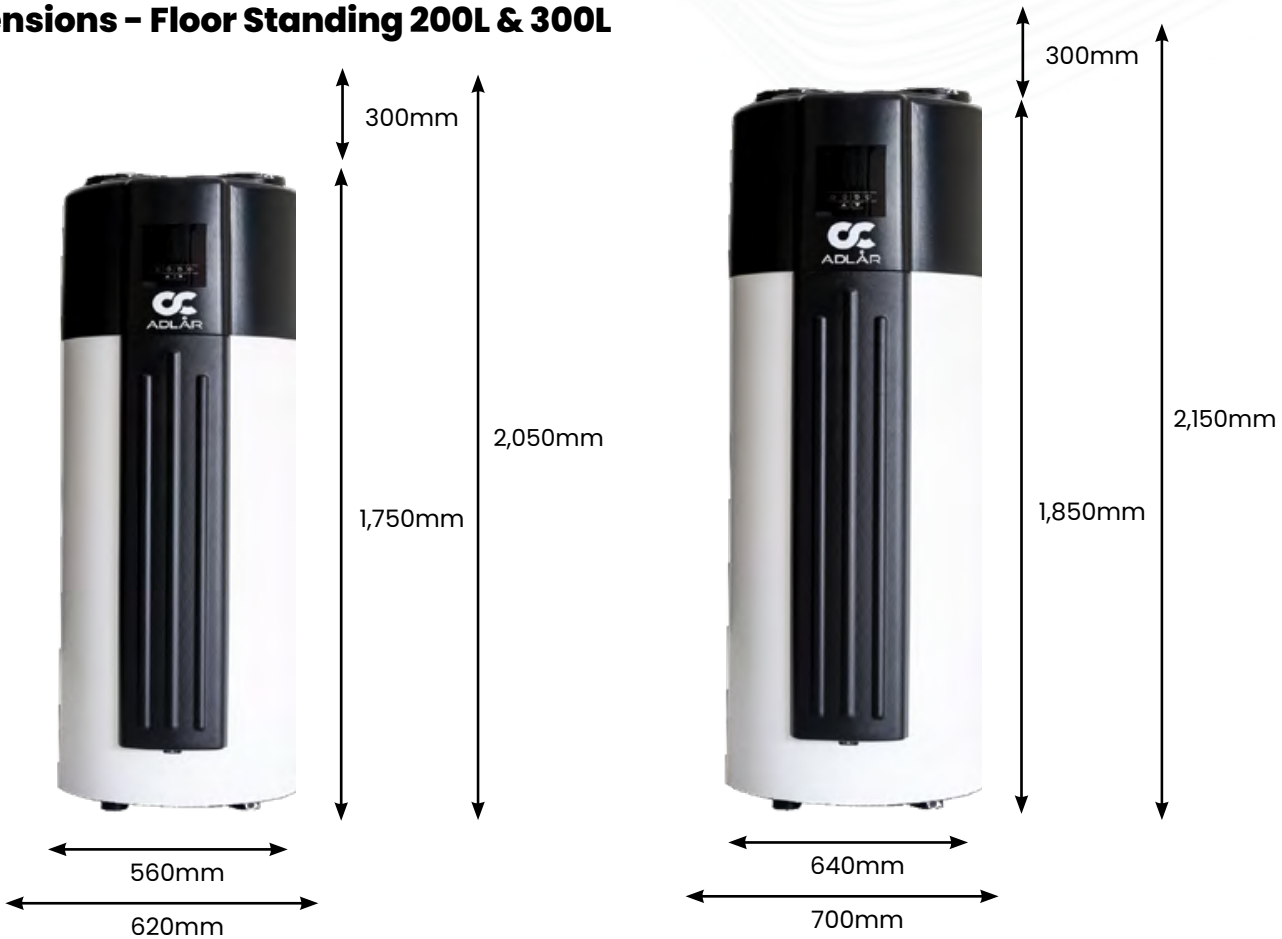
1. External wall venting
   - Rigid ductwork passing directly through an external wall, terminating with an external grille.
   - Ensure the vent location is clear of obstructions and meets clearance requirements.

2. Loft with soffit vents
   - Ductwork routed into the loft space and terminated via soffit vents, allowing airflow to the outside.
   - Soffit vents must be adequately sized and protected against water ingress and pests.

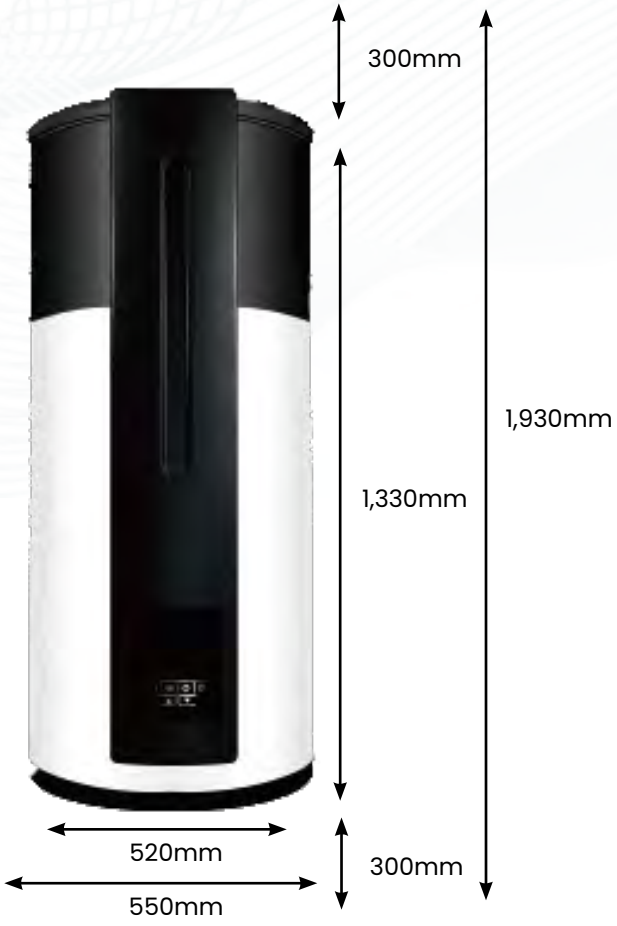
3. Flat roof venting
   - Ductwork terminated through a flat roof using a properly weather-sealed flat roof vent terminal.
   - Ensure the vent is installed in accordance with flat roof waterproofing standards.

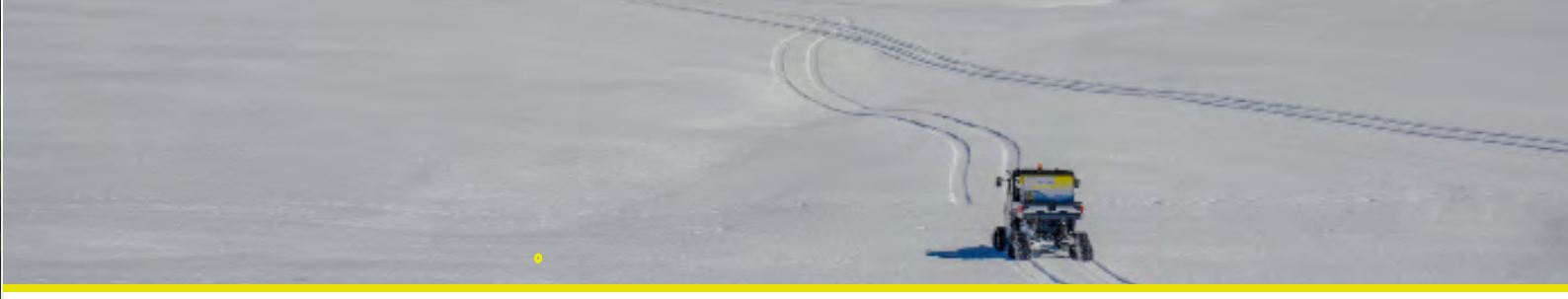
4. Loft with tile vents
   - Ductwork routed into the loft and terminated via purpose-made tile vents installed in the pitched roof.
   - Tile vents must be designed for ventilation and fitted to ensure weatherproofing.

## C. Dimensions - Floor Standing 200L & 300L




## D. Dimensions - Wall Hung 80L & 120L



# 5 Additional Components

## 2x 18ltr expansion vessels

| O/D | Height |
|---|---|
| 270mm | 410mm |

## 1x STAINLESS STEEL PIPE (PRE-INSULATED)

**Supply & Return**

**~60mm O/D x2 (allow for 130mm width, 60mm height)**


## 1x Display

**5 core signal cable from heat pump location to desired location**

## Buffer Tanks


**Depending on the system requirements, an inline buffer tank may be recommended.**

**Please contact your sales representative for the size requirements for your property.**

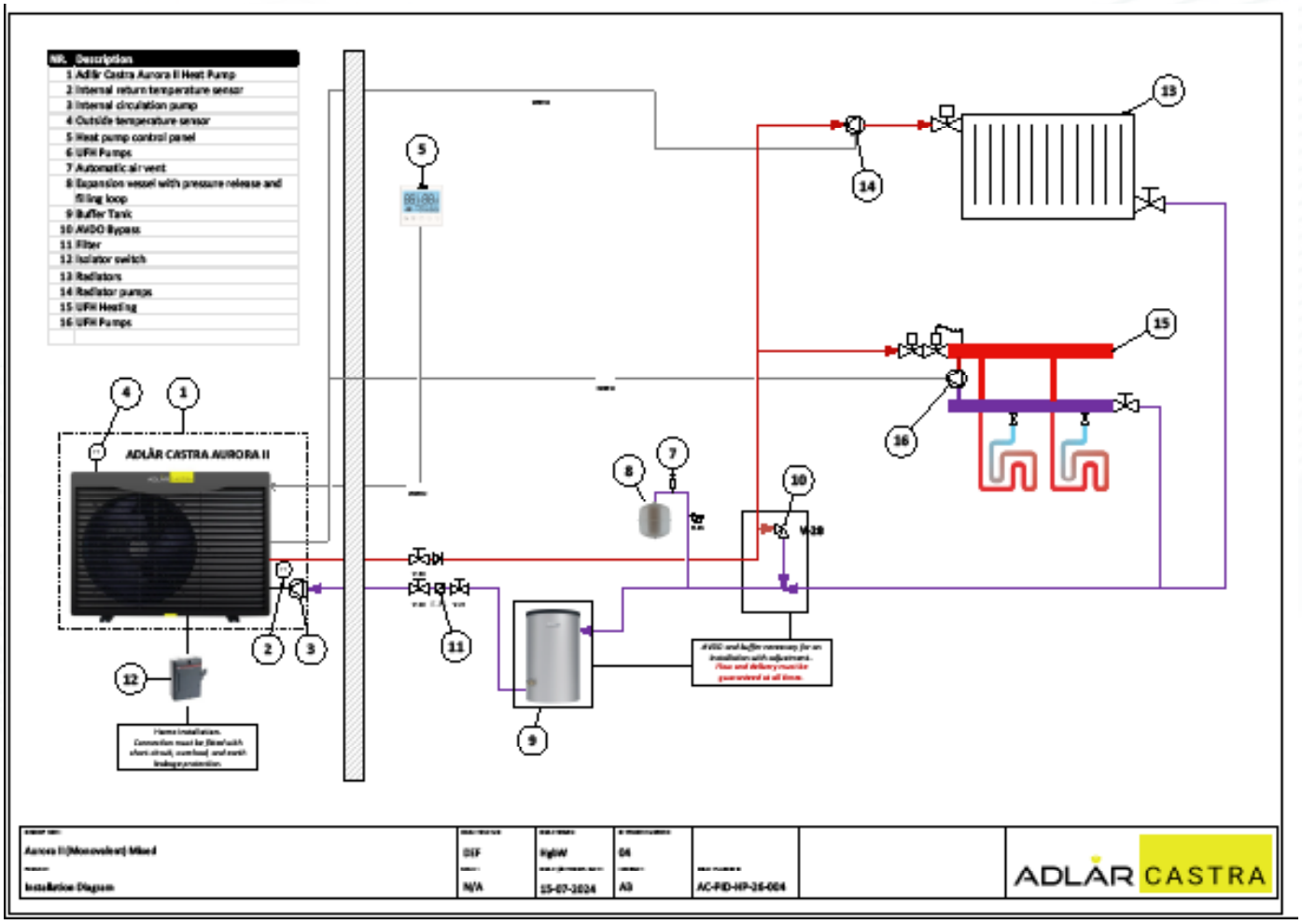
A buffer tank in a heat pump system is typically used to prevent short cycling and maintain system stability when heating zones open and close frequently. But in our setup, this isn't neccissarily needed based on personal preference:

**A. Consistent Flow = Stable Operation:**
By keeping major heating zones open at all times during operation. This ensures a consistent flow of water through the system, which is exactly what the heat pump needs to run efficiently and reliably.

**B. Buffer Tanks Solve a Problem We've Avoided:**
Buffer tanks are mainly required when zones open and close frequently, causing inconsistent flow and potential short cycling. Since we've designed the system to avoid that issue altogether, the buffer tank becomes redundant.

**C. Low Flow Temperature = Maximum Efficiency:**
Heat pumps are most efficient when operating at the lowest possible flow temperature. If zones are constantly opening and closing, it usually means the system is running too hot and overheating rooms. That leads to inefficiency and overcompensation. By keeping the temperature optimized and steady, and the main zones open, we allow the heat pump to run in its optimal range.


# 6 Pipework - Heating




## A. Pipework Overview

In order to ensure effective installation of your air source heat pump, we need the following pipework within 5 meters of the heat pump location on the inside of the property. Please ensure all pipework is clearly marked.

1. Flow and return pipework feeding all heating circuits

In a typical boiler system, the primary flow and returns are taken before the common flow and return. For a heat pump system, Adlår recommends bringing the primary flow and return lines from the heat pump into the property using insulated solar hose. These lines should be isolated with a pair of 22mm lever valves, supplied by Adlår.

## B. Internal Pipework

**Internal Distribution**
From the lever valves from the main flow and return pipes coming into the house, the flow and return should be distributed internally. Ideally, each floor of the property should have its own dedicated flow and return taken from a vertical riser. This approach allows for zoning by floor, improves system control, and enables flow rate optimisation via local pumps and two-port valves.

**Zoning and Buffer Tank**
Where zoning is implemented, a buffer tank must be included in the system. The buffer is connected to the primary return and serves several purposes:

- Maintains a minimum water volume within the system.
- Provides immediately available hot water when a zone calls for heat.
- Reduces heat pump cycling by smoothing demand caused by zone valve operation.

**Underfloor Heating (UFH) Systems**
- For properties with full UFH systems, remove the blending valve (only needed in mixed systems with radiators).
- Install a bypass valve to maintain water circulation when zone valves close, preventing pressure build-up and allowing the heat pump to continue operating.
- Each manifold requires its own pump and two-port valve, controlled via the UFH thermostat system. When heat is called for, the thermostat opens the actuator, starts the pump, and opens the two-port valve. When no thermostats call for heat, these components close and the bypass circuit allows continued circulation.

**Multi-Floor UFH Systems**
For UFH on multiple floors, ensure each floor is supplied by its own set of flow and return lines from the primary riser. This setup allows individual control and the ability to optimise flow rates to meet the specific heating demands of each level.

## C. External Pipework - Underground

If the heat pump is to be placed a distance away from the property or pipework is required under a walkway, you must preinstall underground ductwork piping.

The requirments of this product are:

- At least 25mm water pipes (x2)
- Electrical conduit pipe (x1)
- Fittings, dust caps, and terminal connections


# 7 Electrical Requirements

## A. Outdoor Unit

**Power Availability:**
There must be power availability from your fuse board to power the heat pump. A power cable must be run to the heat pump from a separate earthed circuit breaker on the fuse board. No other connections can share this circuit.

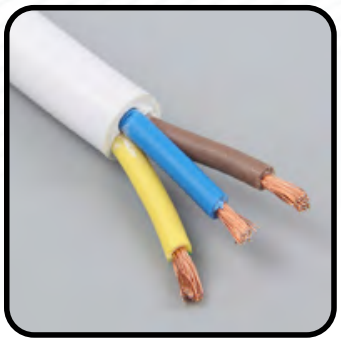

**Fuse Board**

The minimum required circuit requirements are as follows:

- Aurora II 6kW — 16A type B
- Aurora II 10kw — 20A type B
- Aurora II 14kW — 32A type B
- Aurora II 14kW (3~) — 16A type B 3P+N

**Fuse Box**
The fuse box must also be fully functional and installed in accordance with the BS 7671 + P standard. If this is not the case, Adlår will cease its work and only resume after the customer has provided a meter cupboard in accordance with the BS 7671 + P standard, with sufficient capacity for the heat pump.

Adlår will take care of the above if the customer requests.


**Armoured 3-core cable**

**Supply Cable:**
The specifications for the supply cable from the meter cupboard to the heat pump are as follows:

- 6kW: Armoured 3-core cable (3x2,5mm2)*
- 10kW & 14 kW: Armoured 3-core cable (3x4mm2)*
- 14 kW-3 phase: Armoured 5-core cable (5x2,5mm2)*

*if the cable is run >20m or is at risk of being coiled during the run, please discuss with us or a qualified electrian to determine the cable size and routing, if in doubt you should upgrade the size.

**Power Requirements**
The power requirements of an AURORA II heat pump are as follows:

| | 6kW | 10kW | 14kW-1 |
|---|---|---|---|
| Supply Power | 220~240V / 1 / 50Hz | | |
| Max Current | 15A | 17A | 27.5A |
| Fuse Characteristics | | Type B | |
| Nominal Current | 16A | 20A | 30A |
| Pole | | 1P + N | |
| Nominal Fault Current | | 30mA | |


**Rotary Isolator Switch**

**Rotary Switch**
The supply cable needs to connect into a isolated rotary switch on the outside wall where the heat pump will be located.


# B. Indoor Equipment

**Power Availability:**
We need power availability from your fuse board to power our indoor equipment. A power cable must be able to be run to the equipment from a separate earthed circuit breaker on the fuse board.


**Fuse Board**

The minimum required circuit requirements are as follows:

Connection 1:

| | |
|---|---|
| ASHP Cylinder | 230V 50Hz - 13A |
| Thermostat | 230V 50Hz - 3A |
| Total (Thermostat & Cylinder) | Shared 16A type B fuse box (RCBO) connection |

Connection 2:

| | |
|---|---|
| Buffer Tank Immersion | 16A type B fuse box (RCBO) connection |

**Fuse Box**
The Fuse Box must also be fully functional and installed in accordance with the BS 7671 + P standard. If this is not the case, Adlår will cease its work and only resume after the customer has provided a meter cupboard in accordance with the BS 7671 + P standard, with sufficient capacity for the heat pump.

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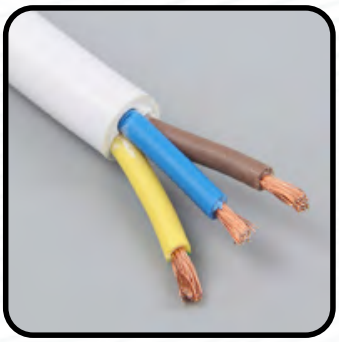
**Armoured 3-core cable**

**Supply Cable:**
The specifications for the supply cable from the meter cupboard to the heat pump are as follows:

- 16A RCBO Supply: Armoured: 3-core cable (3x2,5mm2)*

*if the cable is run >10m, or is at risk of being coiled during the run, please discuss with us or a qualified electrian to determine the cable size and routing, if in doubt you should upgrade the size.


**20A double-pole contactor**

**Connections:**
The connections of the indoor equipment is as follows:

| | |
|---|---|
| Connection 1 (Cylinder & Thermostat) | 20A double-pole contactor in series with supply |
| Connection 2 (Immersion) | 20A double-pole contactor in series with supply |

Connection 1:

| | |
|---|---|
| ASHP Cylinder | Separate Fuse Spur |
| Thermostat | Separate Fuse Spur<br>ON/OFF command back to heat pump |

Connection 2:

| | |
|---|---|
| Buffer Tank Immersion | Relay switch with wiring back to the heat pump for ON/OFF control |

**Power Requirements:**
The maximum power requirements of the indoor equipment is as follows:

| | |
|---|---|
| ASHP Cylinder | 9.41A |
| Buffer Tank Immersion | 13.7A |
| Thermostat | 3A |
| Total | 26.11A |


**Fuse Spur Switch**

ADLÅRCASTRA

Heat Pump Experts