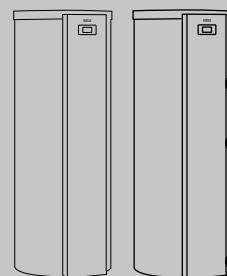




NEXPRO ACS

Domestic hot water heat pumps

A+ energy class



SUMMARY

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NexPro ACS

PRODUCT DESCRIPTION

NEXPRO ACS is the heat pump for domestic hot water designed by Riello for residential applications.

The unit consists of a heat pump and a boiler. The heat pump, housed directly in the upper part of the boiler, uses the thermal energy of the air to heat the domestic water.

The air is sucked in by a centrifugal fan that allows recirculation operation or through a duct that allows the air to be taken externally.

The recovered energy is transferred to the water by an exchanger located outside the boiler, avoiding maintenance costs.

The high efficiency of NEXPRO ACS is linked to the use of a R1234-ze refrigeration circuit, which uses a high-efficiency compressor, a thermostatic expansion valve and a hot gas by-pass valve to allow NEXPRO ACS to operate down to -5°C .

The 180 and 250 litre boilers are vitrified.

For both sizes, the 1,5 kW electric resistance is standard (accessory for the 250 lt version with additional coil) to ensure heating support, anti-freeze protection and anti-legionella function.

The entire system is controlled and regulated via a command that uses intelligent management of the individual components.

- DHW production with temperatures up to 62°C .
- High efficiency coefficient.
- 1,5 kW support electric resistance as standard (for versions without coil).
- NEXPRO 250 S DHW model can be combined with an additional heat source (solar or boiler).
- Possibility of connecting the machine to a photovoltaic system via Smart Grid connection (supplied as an accessory).
- Corrosion protection thanks to the magnesium anode and the enamelled tank.
- Working range $-5^{\circ}\text{C}/+35^{\circ}\text{C}$.
- Highest efficiency energy class: A+ (energy class range F→A+)*.
- Hermetically sealed unit.

THE RANGE

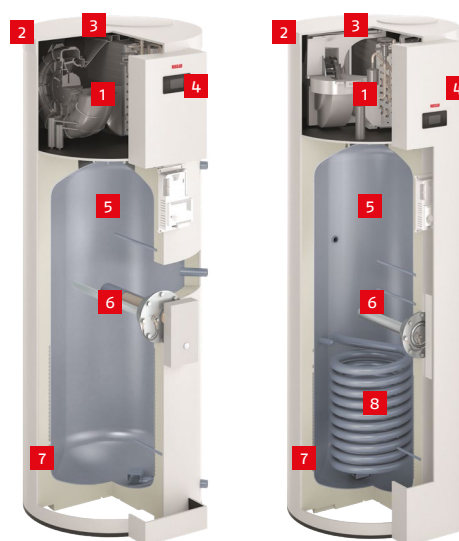
The new range of floor-standing heat pump water heaters consists of three models:

- NEXPRO 180 ACS with integrated 178-liter boiler.
- NEXPRO 250 ACS, with integrated 254-liter boiler.
- NEXPRO 250 S ACS, with integrated 251-liter boiler and coil, for connection to solar thermal collectors or boiler.



THE TECHNOLOGY

1. High efficiency refrigeration circuit.
2. Acoustically optimized fan.
3. Evaporator with high exchange surface.
4. Control panel.
5. Enamelled steel sanitary tank.
6. Additional electrical resistance (available as an accessory for the S ACS version) and magnesium anode as standard.
7. Wound condenser with high exchange surface.
8. Coil for connection to solar thermal system or boiler.



NEXPRO 250 ACS

NEXPRO 250 S ACS

* The energy efficiency class range of this product category is from F up to A+.

HEAT PUMPS

Domestic hot water heat pumps

Description	NEXPRO 180 ACS		
		M	L(*)
Withdrawal profile			
Performance data for external air operation according to EN 16147:2011 for A7/W10-53 (air inlet temperature 7°C/room temperature 20°C)			
Coefficient of performance ϵ (COP _{dhw})		2,86	2,92
Cooling-up time	h:min	07:02	06:30
Standby loss (Pes)	W	25	29
Maximum useful quantity (40°C)	l	228	253
Reference hot water temperature	°C	52,9	52,9
Energy efficiency hot water production (η_{wh})	%	113	121
Nominal heating capacity (P-rated)	kW	1,23	1,23
Annual energy consumption (AEC)	kWh	462	846
Performance data for recirculated air operation and recirculated air operation with air outlet to the outside according to EN 16147: 2011 for A20/W10-53 (air inlet temperature 20 °C/room temperature 20 °C)			
Coefficient of performance ϵ (COP _{dhw})		3,21	3,39
Cooling-up time	h:min	06:16	05:47
Standby loss (Pes)	W	24,8	29
Maximum useful quantity (40°C)	l	228	253
Reference hot water temperature	°C	52,9	52,9
Energy efficiency hot water production (η_{wh})	%	122	145
Nominal heating capacity (P-rated)	kW	1,42	1,42
Annual energy consumption (AEC)	kWh	422	707
Use limits (air inlet temperature)	°C	da -5 a +35	da -5 a +35
Electrical values			
Max. electrical power consumption	kW	2,25	2,25
Electrical power consumption of the heat pump	kW	0,425	0,425
Electrical power consumption of the EHT electric resistance	kW	1,5	1,5
Mains connection (with and without EHT electric resistance)		1/N/PE 230 V/50 Hz	1/N/PE 230 V/50 Hz
Nominal current	A	9,8	9,8
Protection fuse	A	16	16
Refrigeration circuit			
Working fluid		R1234ze	R1234ze
Refrigerant type (Hermetically sealed unit)		HFO (Hydro-Fluoro-Olefins)	HFO (Hydro-Fluoro-Olefins)
Filling volume	kg	1,15	1,15
Global warming potential (GWP)		7	7
CO ₂ equivalent	kg	8	8
Safety group		A2L	A2L
Max. operating pressure	bar	25	25
	MPa	2,5	2,5
Integrated kettle			
Material		Acciaio smaltato	Acciaio smaltato
Capacity	l	178	178
Maximum permissible domestic hot water temperature	°C	65	65
Max. operating pressure	bar	8	8
	MPa	0,8	0,8
Fan			
Volume flow			
Speed 1 (slow - recirculated air operation only)	m ³ /h	250	250
Speed 2 (fast - recirculated air and outside air operation)	m ³ /h	320	320
Minimum room volume for recirculated air operation	m ³	20	20
Max. pressure drop in the air duct system for recirculated air operation with air outlet to the outside and outside air operation	mbar	1	1
	kPa	0,1	0,1
Overall dimensions			
Width	mm	661	661
Diameter	mm	584	584
Height	mm	1559	1559
Weight	kg	95	95
Connections (male thread)			
Cold water, hot water	R	¾	¾
Domestic water recirculation	R	¾	¾
Condensate drain (Ø)	mm	20	20
Sound power level LW in recirculated air operation and recirculated air operation with air outlet to the outside (measured according to EN 12102/EN ISO 9614-2, accuracy class 2)			
Max. A-weighted sound power spectrum in the installation room	dB(A)	59	59
Noise level LW in recirculated air operation and recirculated air operation with air outlet to the outside (with directivity Q = 2 and distance 3 m)	dB(A)	41	41
Sound power level LW in external air operation (with 4 m air duct) (measured according to EN 12102/EN ISO 9614-2, accuracy class 2) Max. A-weighted sound power spectrum in the installation room			
Internal	dB(A)	53	53
External	dB(A)	64	64
Noise level LW external air operation (with directivity Q = 2 and distance 3 m)			
Internal	dB(A)	35	35
External	dB(A)	46	46
Energy class according to EU regulation n. 813/2013 Domestic hot water production (energy class range F→A+) (**)		A+	A+

(*) Self-declared values

(**) The energy efficiency class range of this product category is from F up to A+

Description	NEXPRO 250 ACS		NEXPRO 250 S ACS		
	L	XL(*)	L	XL(*)	
Withdrawal profile					
Performance data for external air operation according to EN 16147:2011 for A7/W10-53 (air inlet temperature 7 °C/room temperature 20°C)					
Coefficient of performance ϵ (COP _{dhw})		3,23	3,37	3,22	3,37
Cooling-up time	h:min	10:00	10:00	10:00	10:00
Stand-by heat loss (Pes)	W	23	25	23	25
Maximum useful quantity (40°C)	l	329,5	351,0	329,5	351,0
Nominal heating capacity (P-rated)	kW	1,17	1,17	1,17	1,17
Performance data for recirculated air operation and recirculated air operation with air outlet to the outside according to EN 16147: 2011 for A20/W10-53 (air inlet temperature 7°C/room temperature 7°C)					
Coefficient of performance ϵ (COP _{dhw})		2,88	3,00	2,88	3,00
Cooling-up time	h:min	11:00	11:35	11:00	11:35
Standby loss (Pes)	W	33	35	33	35
Maximum useful quantity (40°C)	l	324,5	355,0	324,5	355,0
Performance data for recirculated air operation and recirculated air operation with air outlet to the outside according to EN 16147: 2011 for A20/W10-53 (air inlet temperature 15°C/room temperature 15°C)					
Coefficient of performance ϵ (COP _{dhw})		3,33	3,50	3,33	3,50
Cooling-up time	h:min	07:39	08:15	07:39	08:15
Dispersion in stand-by (Pes)	W	22	24	22	24
Max. useful flow rate (40°C)	l	335,0	362,0	335,0	362,0
Limits of use (air inlet temperature)	°C	da -5 a +35	da -5 a +35	da -5 a +35	da -5 a +35
Continuous output with domestic hot water production from 10 to 45°C in combination with an external heat generator with relative power and a heating water flow rate of 3.0 m ³ /h					
Heating water flow temperature 90°C	kW	-	-	40	40
	l/h	-	-	982	982
Heating water flow temperature 80°C	kW	-	-	32	32
	l/h	-	-	786	786
Heating water flow temperature 70°C	kW	-	-	25	25
	l/h	-	-	614	614
Heating water flow temperature 60°C	kW	-	-	17	17
	l/h	-	-	417	417
Heating water flow temperature 50°C	kW	-	-	9	9
	l/h	-	-	221	221
Electrical values					
Max. electrical power absorbed					
With EHT electric resistance (accessory for the NEXPRO 250 S ACS, included in the scope of delivery for the NEXPRO 250 ACS)	kW	2,25	2,25	2,25	2,25
Without EHT electric resistance	kW	-	-	0,75	0,75
Electrical power consumption of the heat pump	kW	0,425	0,425	0,425	0,425
Electrical power consumption of the EHT electric resistance (as an accessory for the NEXPRO 250 S ACS, included in the scope of delivery for the NEXPRO 250 ACS)					
Nominal voltage (with and without EHT electrical resistance)	1/N/PE 230 V/50 Hz				
Rated current					
With electric resistance	A	9,8	9,8	9,8	9,8
Without electric resistance EHT	A	1,84	1,84	1,84	1,84
Protection fuse	A	16	16	16	16
Refrigeration circuit					
Working fluid					
R1234-ze (E)					
Refrigerant Type (Hermetically Sealed Unit)					
HFO (Hydro-Fluoro-Olefins)					
Filling volume	kg	1,35	1,35	1,25	1,25
Global warming potential (GWP)		7	7	7	7
CO ₂ equivalent	kg	9,45	9,45	8,75	8,75
Safety group		A2L	A2L	A2L	A2L
Max. operating pressure	bar	25	25	25	25
	MPa	2,5	2,5	2,5	2,5
Fan					
Volume flow					
Speed 1 (slow - only for recirculated air operation)	m ³ /h	331	331	331	331
Speed 2 (fast - recirculated air and external air operation)	m ³ /h	375	375	375	375
Minimum room volume for recirculated air operation	m ³	20	20	20	20
Max. pressure loss in the air duct system for recirculated air operation with air outlet to the outside and external air operation	mbar	1	1	1	1
	kPa	0,1	0,1	0,1	0,1
Integrated kettle					
Material					
Enamelled steel					
Capacity	l	254	254	251	251
Lower coil capacity	l	-	-	6,5	6,5
Maximum permissible domestic hot water temperature	°C	65	65	65	65
Maximum permissible domestic hot water temperature with EHT electric resistance	°C	65	65	65	65
Maximum domestic hot water temperature achievable in combination with a photovoltaic system	°C	62	62	62	62
Max. operating pressure	bar	8	8	8	8
	MPa	0,8	0,8	0,8	0,8
Heat exchanger					
Heat exchange surface	m ²	-	-	1	1
Lower coil capacity	l	-	-	6,5	6,5
Max. operating pressure	bar	-	-	6	6
	MPa	-	-	0,6	0,6
Max. connectable opening surface of flat solar collectors	m ²	-	-	4,6	4,6
Max. connectable opening surface of tube solar collectors	m ²	-	-	3	3

HEAT PUMPS

Domestic hot water heat pumps

Description		NEXPRO 250 ACS		NEXPRO 250 S ACS	
		L	XL(*)	L	XL(*)
Withdrawal profile					
Overall dimensions					
Width	mm	734	734	734	734
Diameter	mm	634	634	634	634
Height	mm	1780	1780	1780	1780
Weight	kg	110	110	125	125
Connections (male thread)					
Cold water, hot water	R	¾	¾	¾	¾
Domestic water recirculation	R	¾	¾	¾	¾
External heat generator/solar collector flow/return	G	-	-	1	1
Condensate drain (Ø)	mm	20	20	20	20
Sound power level LW in recirculated air operation and recirculated air operation with air outlet to the outside (measured according to EN 12102/EN ISO 9614-2, accuracy class 2)					
Max. A-weighted sound power spectrum in the installation room		dB(A)	56	56	56
Noise level LW in recirculated air operation and recirculated air operation with air outlet to the outside (with directivity Q = 2 and distance 3 m)		dB(A)	38	38	38
Sound power level LW in external air operation (with 4 m air duct) (measured according to EN 12102/EN ISO 9614-2, accuracy class 2) Max. A-weighted sound power spectrum in the installation room					
Inside	dB(A)	50	50	50	50
Outside	dB(A)	64	64	64	64
Noise level LW operation with external air (with directivity Q = 2 and distance 3 m)					
Inside	dB(A)	32	32	32	32
Outside	dB(A)	46	46	46	46
Energy class according to EU regulation n. 813/2013 Domestic hot water production (energy class range F→A+) (**)			A+	A+	A+

(*) Self-declared values

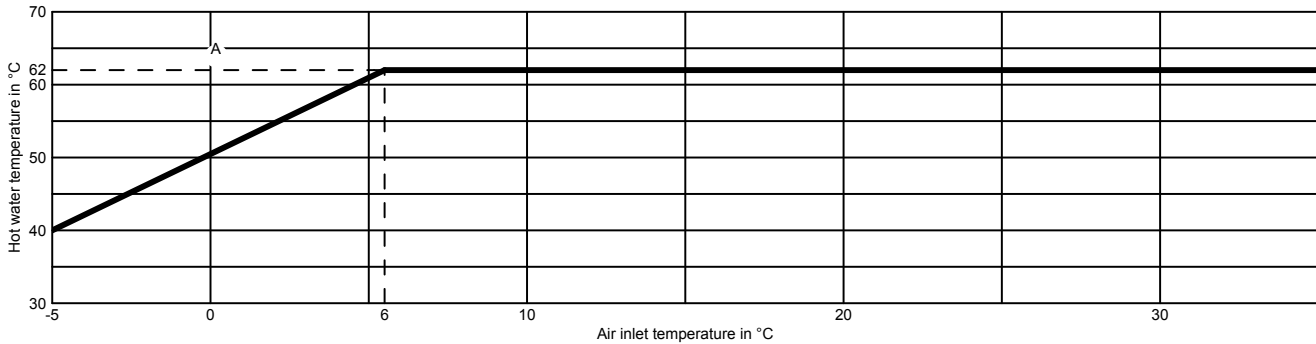
(**) The energy efficiency class range of this product category is from F up to A+

Warning about continuous output of the coil

For designing based on the indicated or measured continuous output, provide a suitable circulation pump.

EXTERNAL TEMPERATURE LIMITS

WARNING – The hot water temperature obtainable by the heat pump depends on the outside temperature. It is a maximum of 62°C.



Maximum hot water temperature achievable by the heat pump: 62°C.

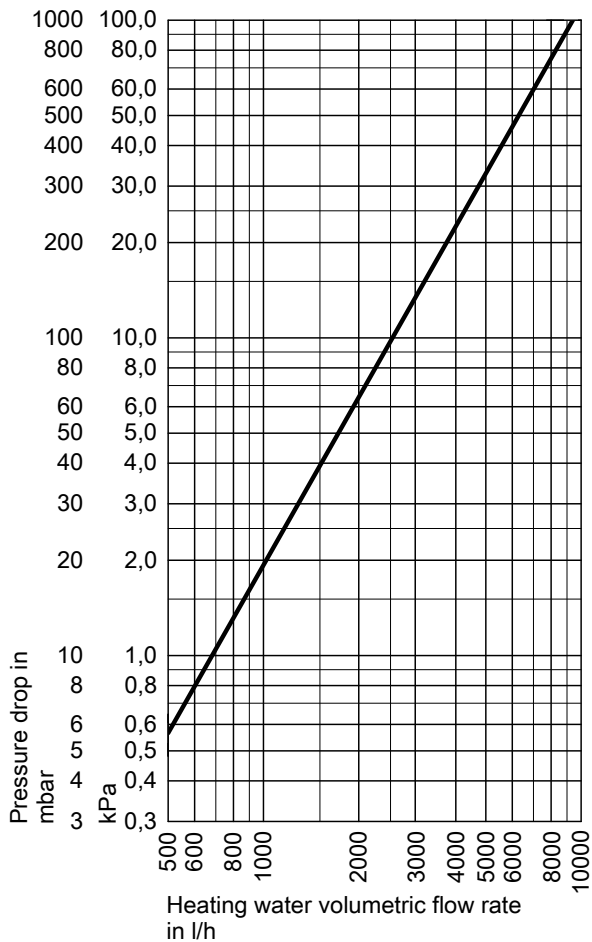
PERMISSIBLE AIR INLET TEMPERATURES

The air heat pump for domestic hot water production switches off when the permissible air inlet temperatures are outside the permissible range. It will be possible to heat the domestic hot water in combination with an electric resistance (accessory in some operating programs even when the air inlet temperatures are outside the permissible range. An external heat generator can be connected to the NEXPRO 250 S ACS. Permissible air inlet temperatures:

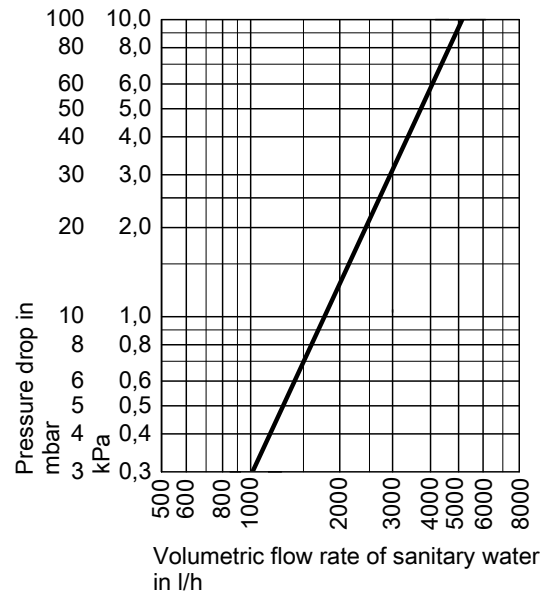
- For hot water production in recirculated air operation and in recirculated air operation with air outlet to the outside (temperature in the installation room): From 3°C to 35°C.
- For hot water production in external air operation (outside temperature): From -5°C to 35°C.

PRESSURE DROPS

Heating side pressure drop of auxiliary heat source coil (only type NEXPRO 250 S ACS)



Pressure drop on sanitary side

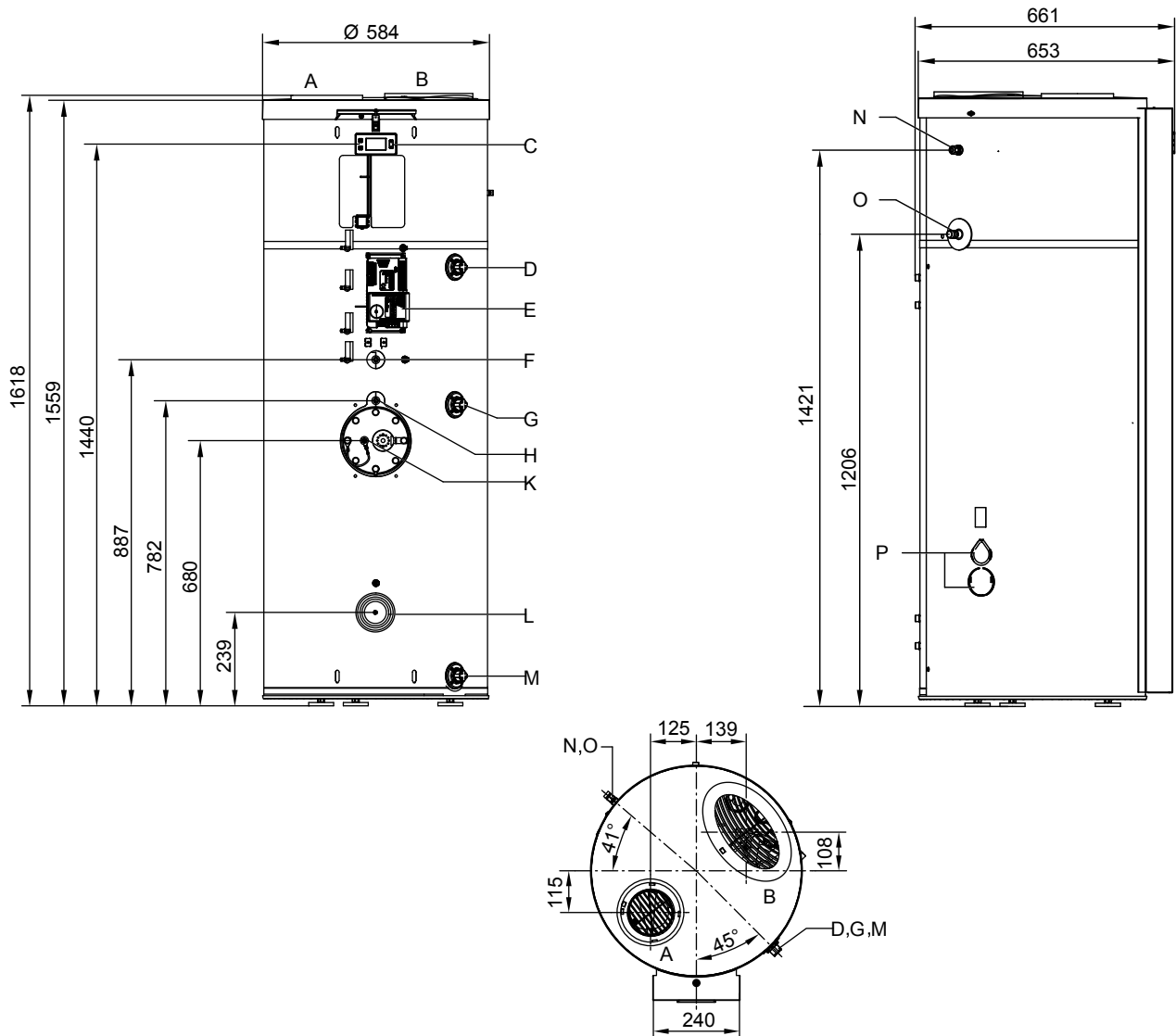


HEAT PUMPS

Domestic hot water heat pumps

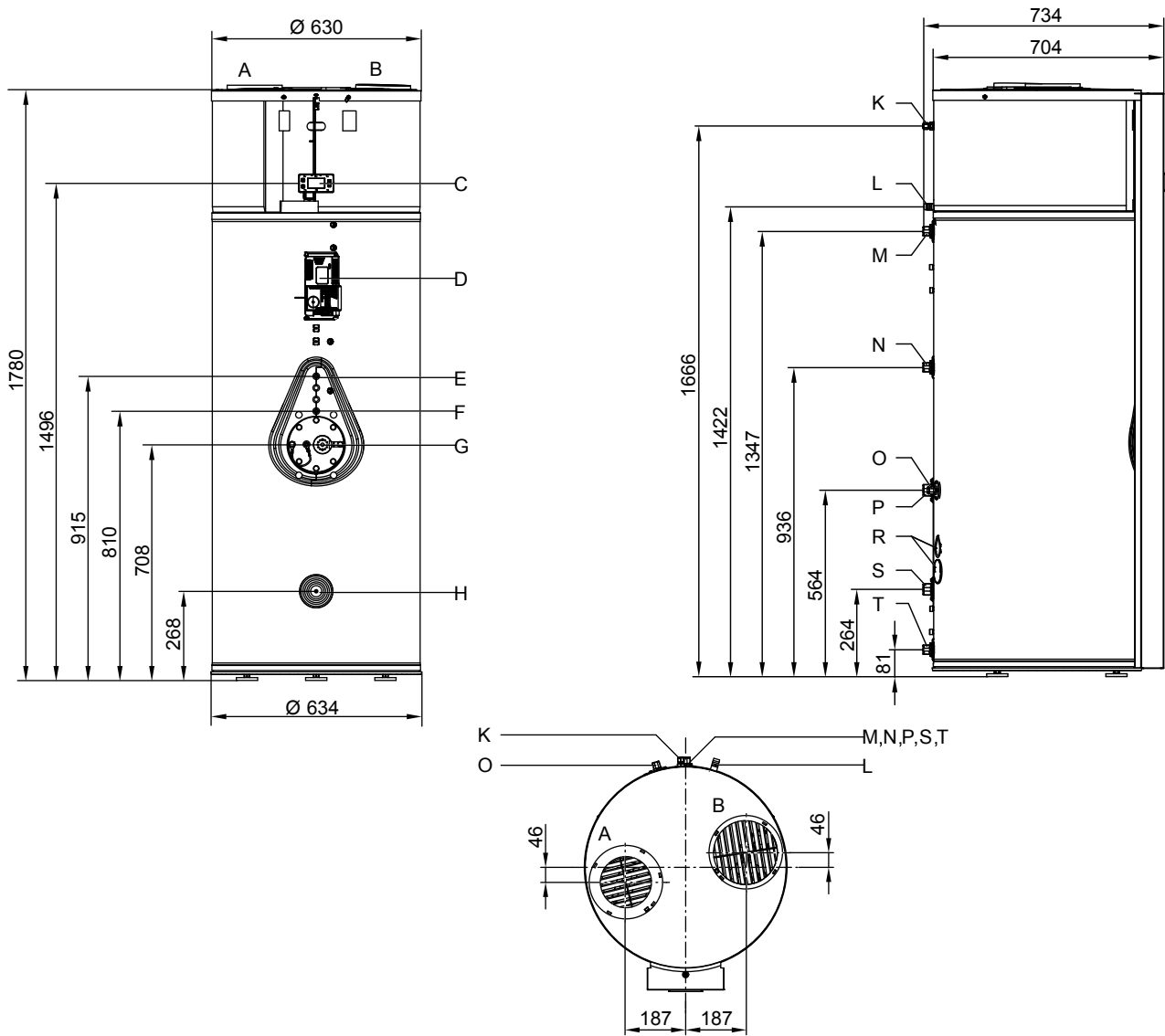
CONNECTION DIAGRAM

180 ACS MODEL



- A** Air outlet:
 - With protective grille: for recirculated air operation.
 - With external air adapter DN 160: for recirculated air operation with air outlet to the outside and external air operation.
- B** Air inlet:
 -With protective grille: for recirculated air operation.
 -With external air adapter DN 160: for recirculated air operation with air outlet to the outside and external air operation.
- C** Service unit.
- D** Hot water R 3/4.
- E** Heat pump regulation.
- F** Immersion sleeve for M-tap profile.
- G** Recirculation R 3/4.
- H** Immersion sleeve for L-tap profile.
- K** Factory-fitted temperature sensors:
 - Boiler temperature sensor and Manual reset safety thermostat of the air heat pump for domestic hot water production.
 - Inspection opening.
 - Protective magnesium anode.
 - Anode powered by external energy (accessory).
 - EHT electric resistance (supplied condition).
- L** Immersion sleeve for sampling profile recognition.
- M** Cold water/drain R 3/4.
- N** Network cable (3 m long).
- O** Condensate drain Ø20 mm.
- P** Process injection cap (do not open, do not insert anything).

250 ACS and 250 S ACS MODELS



Air outlet:

- A - With protective grille: for recirculated air operation.
- With external air adapter DN 160: for recirculated air operation with air outlet to the outside and external air operation.

Air inlet:

- B -With protective grille: for recirculated air operation.
- With external air adapter DN 160: for recirculated air operation with air outlet to the outside and external air operation.

C Service unit.

D Heat pump regulation.

Immersion sheath for L sampling profile Factory-mounted temperature sensors:

- E - Boiler temperature sensor.
- Manual reset safety thermostat of the air heat pump for domestic hot water production.

F Immersion sheath for XL sampling profile.

Factory-mounted temperature sensors:

- G - Inspection opening.
- Protective magnesium anode.
- Anode powered by external energy (accessory).
- EHT electrical resistance (NEXPRO 250 S ACS accessory, included in the NEXPRO 250 ACS scope of delivery).

H Immersion sleeve for sampling profile recognition.

K Network cable (3 m long).

L Condensation water \varnothing 20 mm.

M Hot water R $\frac{3}{4}$.

N Recirculation R $\frac{3}{4}$.

O Only NEXPRO 250 S ACS: External heat generator temperature sensor or manual reset safety thermostat for deactivating the solar circuit pump.

P Only NEXPRO 250 S ACS: External heat generator/solar collector flow G 1.

R Process injection cap (do not open, do not introduce anything).

Only NEXPRO 250 S ACS:

- External heat generator: return G 1.

- Solar collector: return G 1 and threaded connection (accessory) for lower boiler temperature sensor.

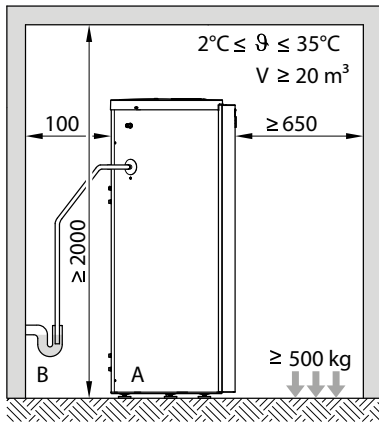
T Cold water/drain R $\frac{3}{4}$.

HEAT PUMPS

Domestic hot water heat pumps

RECIRCULATED AIR OPERATION

WARNING - If the room volume is $< 20 \text{ m}^3$, the achievement of the indicated power of the appliance is not guaranteed.



Minimum local installation height

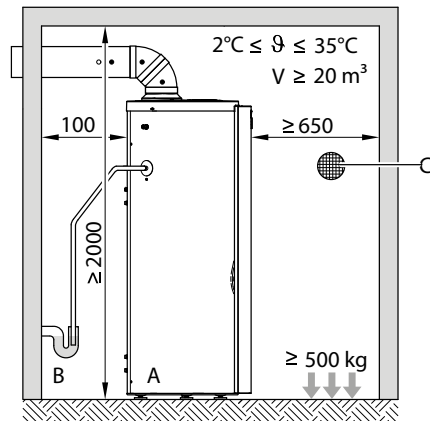
In recirculated air operation, the appliance can be installed from a ceiling height of 2000 mm.

A higher ceiling height reduces the risk of air circulation in the heat pump and ensures optimum performance.

- A Air heat pump for domestic hot water production
- B Pipe for condensate water discharge

RECIRCULATED AIR OPERATION WITH AIR OUTLET TO THE OUTSIDE

WARNING - If the room volume is $< 20 \text{ m}^3$, the achievement of the indicated power of the appliance is not guaranteed. This operating program is only permitted in unheated rooms.

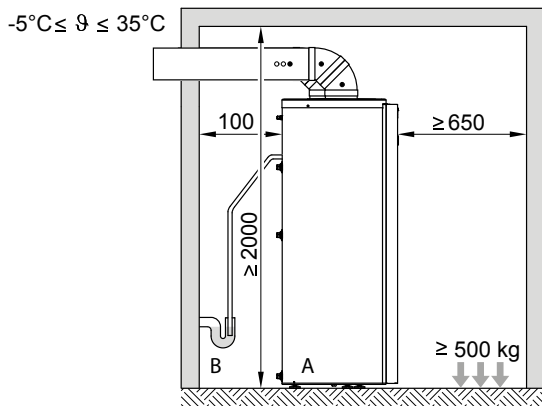


Minimum local installation height

In recirculated air operation with air outlet to the outside, the appliance can be installed from a ceiling height of 2000 mm.

- A Air heat pump for domestic hot water production
- B Pipe for condensate water discharge
- C External air opening:
With external air adapter DN 160: DN 160

EXTERNAL AIR OPERATION



Minimum installation room height

In external air operation, the appliance can be installed starting from a ceiling height of 2000 mm.

- A Air heat pump for domestic hot water production
- B Pipe for condensate water discharge

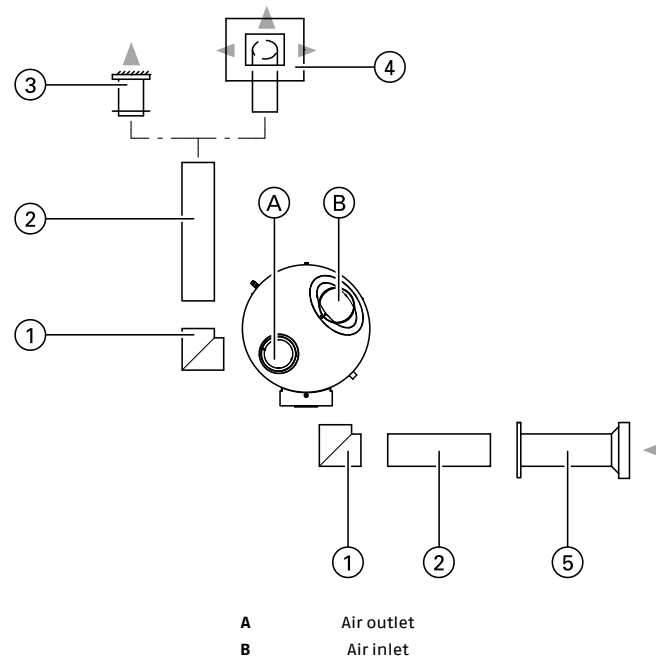
AIR CONNECTIONS

If the installation of air ducts is necessary, ensure that these:

- do not weigh down the unit.
- allow maintenance operations on the unit, access and disassembly of any accessories.
- avoid air recirculation between the machine's intake and delivery.
- are adequately protected to prevent accidental intrusion of materials into the machine.

ASSEMBLY OF THE AIR INLET/AIR OUTLET PIPING SYSTEM

System representation



Piping system		DN
1	Curve	90°
		45°
2	Circular rigid wound tube Flexible tube EPP tube (expanded polypropylene)	Length 3,0 m
3	Circular wall pass-through for air intake/expulsion with wall pass-through function for the air outlet pipe	160
4	Roof air exhaust duct	Round, with protective grille and insulating sleeve, for air outlet pipe
5	Air supply element	Wall/external connection, for air inlet pipe
Check valve (to be provided on site)		

HEAT PUMPS

Domestic hot water heat pumps

DESIGN GUIDELINES

Distribution system for air intake/air exhaust (accessory)

Air supply elements

To avoid depression in the rooms, use air supply elements for controlled ventilation of the aforementioned rooms.

Placement in the premises:

- To avoid drafts, do not place air supply elements in the immediate vicinity of seating areas and bedrooms.
- To preheat the outside air in the winter season, install the air supply elements in the air convection field of the radiators.

Sizing:

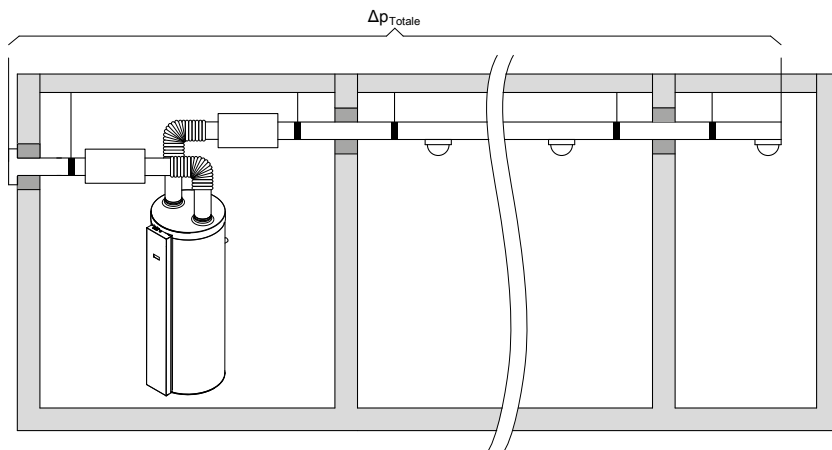
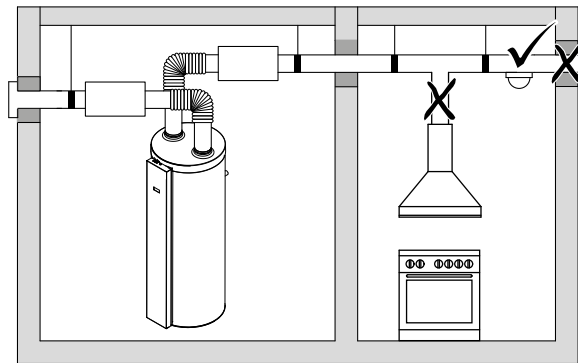
- Size the air supply elements according to the nominal air flow rate (according to DIN 1946).
- The max. air flow rate (during domestic hot water production) must be able to flow through the air supply elements.
- The pressure imbalance between the supply air flow rate and the return air flow rate must be max. 8 Pa.
- It is recommended to size the air supply elements for a pressure drop of max. 8 Pa at maximum air flow rate.

Circular air intake terminals

The exhaust air valves are adjustable for different air volume flows. The sum of the air volume flows of all exhaust air valves used must be $360 \text{ m}^3/\text{h}$.

Air intake and exhaust pipes

- To avoid complicated pipework, the air distribution system must be laid before the ductwork is installed.
- Lay the return air and exhaust air pipes in the immediate vicinity of the heat pump horizontally or with a slight slope to the air connections of the ducted air cover. This ensures that the condensation water is conveyed via the heat pump into the waste water.
- To avoid flow noise and high energy consumption due to pressure losses, reduce the pipe cross-sections only after the volumetric flow has been divided (e.g. using T-pieces).
- The connection of kitchen hoods with ventilation pipes to the return air distribution system is not permitted.
- The maximum recommended total pressure loss p_{Total} for all components, including external wall bushings, in the air distribution system is 100 Pa.



PRESSURE LOSS IN AIR PIPING SYSTEM

The maximum permissible total pressure drop Δp_{totale} in the air piping system is 100 Pa. Only then does the air heat pump for domestic hot water production reach its maximum volumetric flow rate. As an indication, the length of the piping (sum of suction + delivery) can reach 10 m using a diameter of 160 mm. For a precise check, it is recommended to calculate the circuit pressure drops according to the example below:

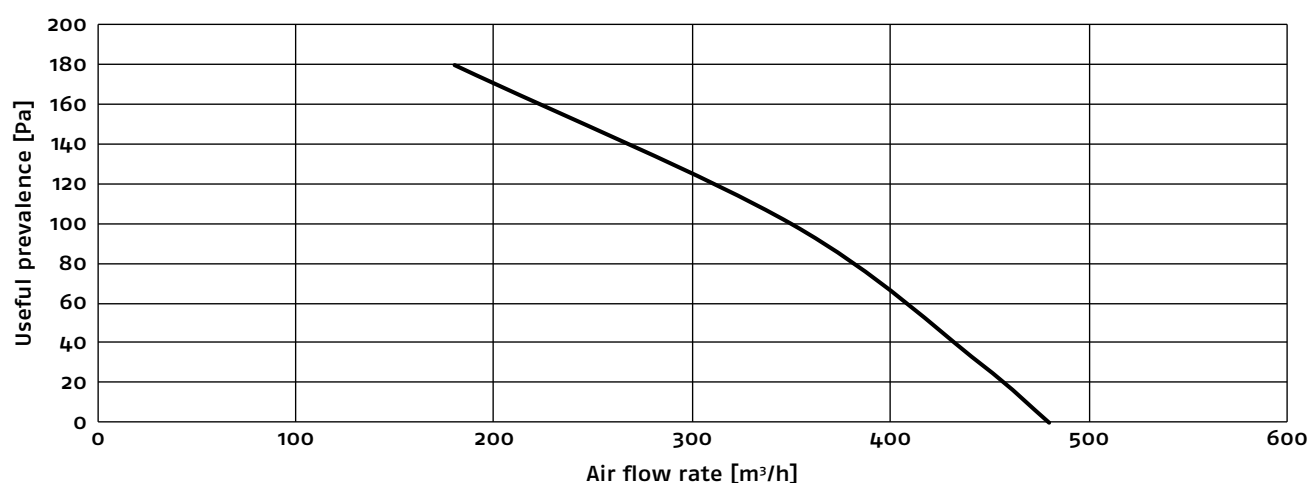
Example:

Piping system used:

- 2 external wall loops.
- 3 90° bends.
- 14.5 m of EPP piping.

Example for calculating the pressure drop in the piping system:

1. Example for NEXPRO 250 ACS with DN 160 and with an air volume flow rate of max. 375 m³/h:
 $2 \times 30 \text{ Pa} + 3 \times 2,7 \text{ Pa} + 2,2 \text{ Pa/m} \times 14,5 \text{ m} = 100 \text{ Pa}$.



THERMAL INSULATION FOR AIR DISTRIBUTION SYSTEM

- To prevent condensation, insulate the exhaust air pipes and the connections of the ducted air cover with a vapour-tight thermal coating of at least 50 mm thick.
- Insulate all return air pipes in accordance with DIN 1946-6 in a vapour-tight manner. Observe the insulation thicknesses specified in DIN 1946-6, see the following table.
- To ensure optimum heat generation in the ducted air appliance, heat losses from the air distribution system must be kept to a minimum: Insulate all pipes in unheated areas in a vapour-tight manner in accordance with DIN 1946-6, see the following table.

Isolation measures:

- Insulation must be carried out in accordance with the applicable technical standards.
- Cover the joints well with adhesive tape.
- Avoid gaps.
- Decoupling the roof and wall penetrations using insulating strips.
- As an insulating material we recommend e.g. Armaflex.

Warning - For EPP pipes or bends, no additional thermal insulation is required.

Insulation thicknesses of air distribution systems according to DIN 1946-6

Type and temperature of air in the pipeline	Laying pipes outside the thermal insulation, inside the building $\vartheta_{UL} < 18^\circ\text{C}$	Laying pipes inside the thermal insulation $\vartheta_{UL} \geq 18^\circ\text{C}$
	Insulation thickness in mm minimum	Insulation thickness in mm minimum
Return air $\vartheta_{Ar. repr.}$	≥ 25	0
Exhaust air ϑ_{FL} (vapor-tight)	50	50

ϑ_{UL} Ambient air temperature

ϑ_{FL} Air temperature in the air exhaust pipe

$\vartheta_{Ar. repr.}$ Air temperature in the air intake pipe

HEAT PUMPS

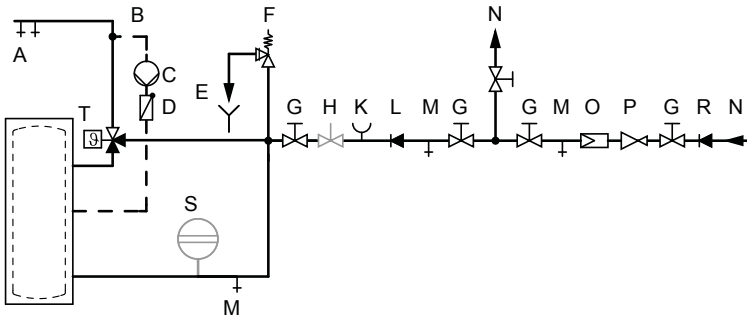
Domestic hot water heat pumps

SANITARY SIDE CONNECTIONS

The air heat pump for domestic hot water production is designed to be permanently connected to the domestic hot water network. For the domestic hot water connection, comply with DIN 1988, DIN 4753 and EN 806.

In addition, the following must be observed:

- Connect all pipes with detachable fittings.
- Equip the recirculation pipe with a recirculation pump, check valve and programmer clock. Natural circulation is only possible to a limited extent.



- A Hot water.
- B Recirculation pipe. If the recirculation is not connected, seal the connection provided.
- C Recirculation pump.
- D Spring-loaded check valve.
- E Inspectable end of the discharge pipe.
- F Safety valve.
- G Shut-off valve.
- H Flow rate control valve.
- K Pressure gauge connection.
- L Check valve.
- M Drain tap.
- N Cold water.
- O Dirt filter.
- P Pressure reducer.
- R Check valve/disconnector.
- S Expansion vessel, for domestic water (not CH).
- T Automatic thermostatic mixing device (to be provided on site, for hot water temperatures > 60°C).

The safety group according to DIN 1988 is available as an accessory. The safety group comprises the following components:

- Shut-off valve.
- Diaphragm safety valve.
- Check valve and test connections.
- Pressure gauge connections.

Warning about the dirt filter

According to DIN 1988-2, it is mandatory to equip systems with metal pipes with a dirt filter. Even if the pipes are made of plastic, DIN 1988 requires, and we recommend, the installation of a dirt filter to prevent the penetration of dirt into the system for the production of sanitary water.

Warning about the automatic thermostatic mixing device

The air heat pump for domestic hot water production is capable of heating domestic hot water to temperatures above 60°C. For this reason, as a protection against scalding, an automatic thermostatic mixing device must be installed in the hot water pipe.

Safety valve warnings

A safety group in accordance with DIN 1988 (DN 15 (R 3/4)/1 MPa) must be installed on the cold water connection. If the safety group in accordance with DIN 1988 is not installed, the system must be equipped with an approved diaphragm safety valve to protect it from overpressure.

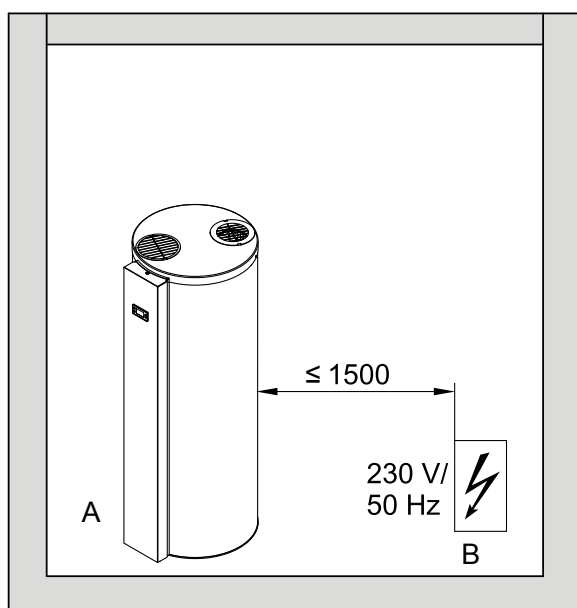
Installation warnings:

- The safety valve must be located on the cold water supply. There must be no shut-off devices between the safety valve and the boiler.
- No kinks in the pipework between the safety valve and the boiler are permitted.
- The safety valve discharge pipe must not be closed. The outgoing water must be led safely and visibly into a drain funnel. Attach a sign near the safety valve discharge pipe, or possibly on the valve itself, stating the following: "For safety reasons, water may escape from the discharge pipe during heating! Do not block."
- Install the safety valve above the upper edge of the air-source heat pump for domestic hot water production.
- The safety valve must be installed in a frost-free location and must be connected to a discharge pipe with a constant downward slope.

Technical requirements:

- Permissible temperature: 3 to 65°C.
- Max. operating pressure: 1 to 10 bar (0,1 to 1 MPa).

ELECTRICAL CONNECTION



- A Air heat pump for domestic hot water production
- B Network connection

The air heat pump for the production of domestic hot water is designed for connection with a 3-wire network cable:

- H05VV-F 3G 1,5.
- Color white.
- Conductors: L1: brown, N: blue, PE: green/yellow

For the mains connection, a Schuko socket with earthing and separate protection is required:

- 230 V / 50 Hz.
- Max. protection fuse 16 A.

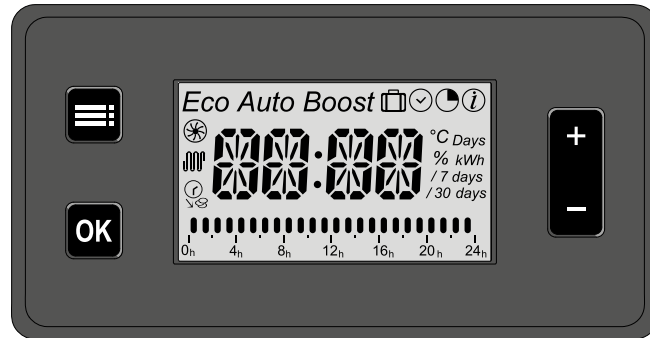
Damaged connection cables

If the connection cables of the appliance or accessories are damaged, replace them with special cables. Use only RIELLO cables for replacement.

HEAT PUMPS

Domestic hot water heat pumps

CONTROL PANEL



- +/-** To browse the menu or set values
- OK** To confirm the selection or save the setting made
- ☰** To select the operating program
- ☰** To call up the time slot programming
- ☰** To display information
- ☰** To return to the previous menu step
- ☰** aborts a setting in progress

Indication	Meaning
Eco	The ECO operating program is set
Eco + Auto	The SMART operating program is set
Auto	The AUTO operating program is set
Boost	The BOOST operating program is set
	The OUT operating program is set
	View and set times
	The PROGRAM operating program is set
	The NIGHT operating program is set
	View information
	The heat pump is active
flashing	The heat pump starts after the minimum switch-off time has elapsed
	The electric heating element is active
	The high/low tariff is enabled
flashing	The low tariff is active
The asterisk rotates	Enhanced domestic water hygiene is active.
	Display of the set time slots

In the operating programs "ECO" / "AUTO" / "PROGRAM" / "NIGHT" and "BOOST" you can set the normal hot water temperature. In the operating program "SMART" you can set the comfort level.

CONSTRUCTION DESCRIPTION FOR SPECIFICATIONS

NEXPRO 180-250 ACS

Riello NEXPRO ACS heat pumps use the thermal energy of the air to produce domestic hot water.

The ease of installation, the silent and reliable operation and the very low maintenance requirement complete the advantages of this highly ecological and economical system. The module produces domestic hot water using heat pump technology.

Highest efficiency energy class: A+ (energy class range F→A+)*.

The unit is suitable for indoor installation and uses a 1,5 kW single-phase electrical resistance as a replacement energy source as standard. The boiler is of the vertical type in steel with Ceraprotect enamel, magnesium anode, external coating in painted sheet metal.

The operating principle of the heat pump is as follows:

- the refrigerant changes state in the evaporator, taking heat from the low-temperature source (the outside air).
- the compressor, which is the beating heart of the system, raises the energy level of the heat taken: the refrigerant, in fact, by increasing pressure, reaches temperatures close to 90°C.
- in the condenser it becomes possible to transfer thermal energy to the sanitary water, heating it up to 62°C.
- the accumulation allows the heat to be stored and conserved for a long time, thanks to the polyurethane insulating jacket, finally passing through the thermostatic valve, the fluid returns to low pressure, cools down and is once again available to "load" other "ecological" heat from the outside air.
- the solenoid valve allows the pressures to be equalized during the start-up phase and, if necessary, allows the evaporator to be defrosted.

CONSTRUCTION FEATURES

The main construction features of the NEXPRO ACS heat pumps are:

- vertical steel boiler with Ceraprotect enamelling.
- aluminium condenser wrapped externally to the accumulation, free from scale and gas/water contamination.
- available in three versions: without auxiliary coils (NEXPRO 180 ACS and 250 ACS) and a lower auxiliary coil for use in combination with a boiler or solar (NEXPRO 250 S ACS).
- integrated NTC probe for water temperature control with the possibility of being inserted in two separate wells (L profile or XL profile).
- external air NTC probe for automatic insertion of the resistance with temperatures not favourable to the heat pump.
- evaporating coil inlet/outlet NTC probes.
- thermostatic valve type lamination organ.
- solenoid valve for hot gas injection and pressure equalisation.
- anti-corrosion magnesium anode.
- hydraulic connections.
- condensate drain integrated into the insulation.
- high thickness expanded polyurethane thermal insulation (45mm for 180 model) (50 mm for 250 model).
- external cladding in sheet metal painted white RAL 9010.
- use of refrigerant gas R1234ze (GWP 7).
- 1,5 kW electric resistance (accessory for the NEXPRO 250 S ACS version).
- high pressure safety devices.
- high efficiency Hitachi rotary compressor.
- radial fan with flow regulation.

The management, completely electronic, is equipped with:

- user display for setting the operating mode and the various parameters with different levels of accessibility, via password.
- self-diagnostics with high pressure alarm display, water overtemperature, disconnected probes.
- recording of operating hours and clock function.
- water setpoint adjustment for Automatic and/or Manual operation.
- external air temperature detection.
- Smart Grid function with photovoltaic that allows thermal energy to be stored if there is a minimum production of electricity.
- heat request function for an external generator.

* The energy efficiency class range of this product category is from F up to A+.



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