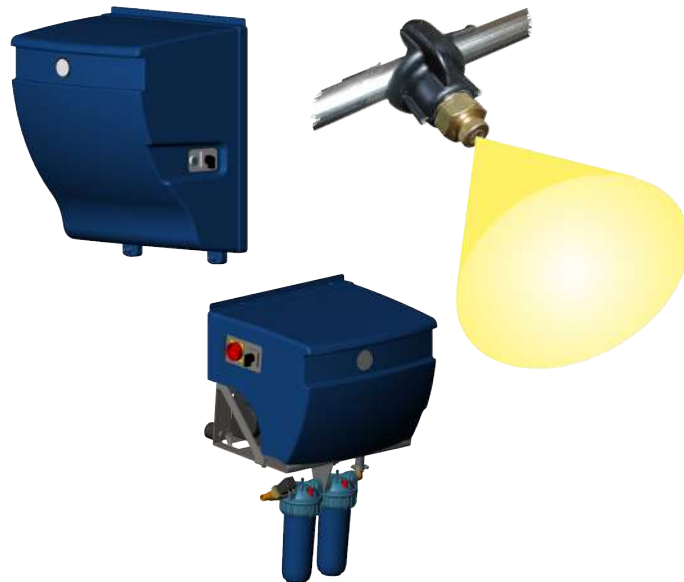


High-pressure Cooling

Pipes and Nozzles

Technical Info



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1 Product description

The principle of high-pressure cooling is to spray atomized water out into the warm air in the house. When the water evaporates, the air will be cooled. By controlling the combination of air circulation and water supply, the temperature in the house can be reduced in relation to the surroundings.

The system consists of a high-pressure pump that supplies water under high pressure 70 bar, and a piping system with FlexClamp nozzles that atomize the water into a very fine mist.

The pump is supplied as a complete unit for mounting on the wall, or alternatively, the pump is mounted on the floor, using a floor stand. Depending on the quality of the water on site, it is possible to equip the pump with various filters and other auxiliary equipment to ensure a seamless operation.

The piping system consists of a number of stainless steel pipes in which holes are punched at a suitable distance from each other for FlexClamp nozzles which are easily mounted on the pipe. The steel pipes can be mounted either on the wall with nozzles on one side, or hanging from the ceiling where FlexClamp nozzles can be mounted on both sides. There are increased requirements on the content of chloride, to avoid the start of corrosion on stainless pipes and nozzles. Chloride level should be max. 100 mg/L.

The pump is controlled by means of a temperature sensor and a humidity sensor via a climate controller. The pumps should not be used in greenhouses or for high-pressure cleaning.

1.1 DA 2000 high-pressure cooling pump

The DA 2000 high-pressure cooling pump without frequency converter is specially designed for application in poultry houses in which the requirement to the pump capacity is dependent on the size of the house and thus constant.

The DA 2000 high-pressure cooling pump with frequency converter is specially designed for cooling in pig houses in which the requirement to the pump output varies with the production. There is thus a requirement for a flexible pump.

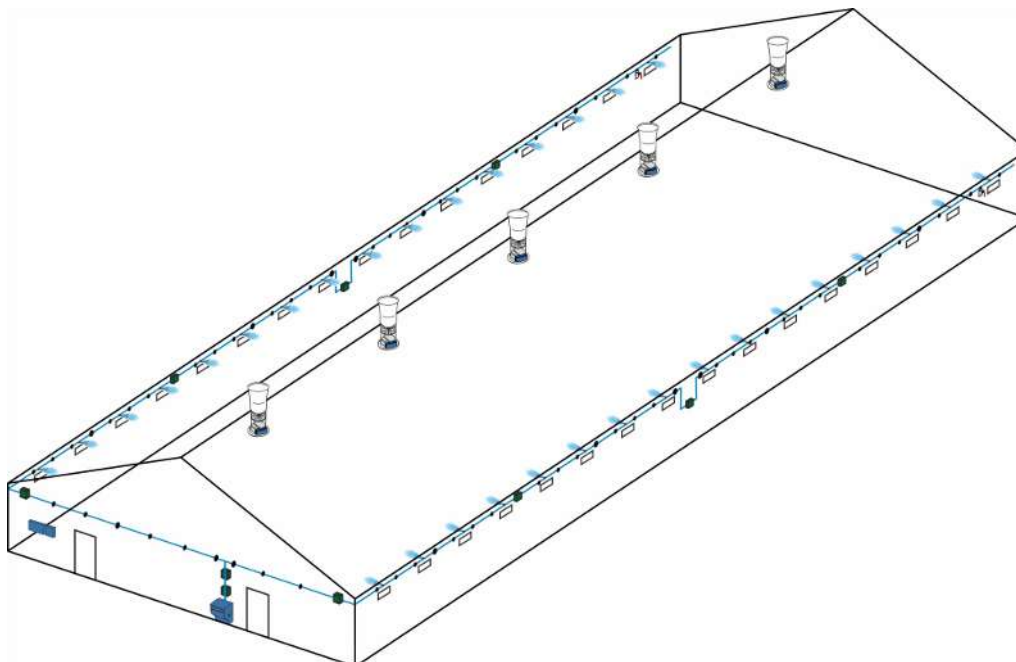


Figure 1: Overview of high-pressure cooling in a LPV system.

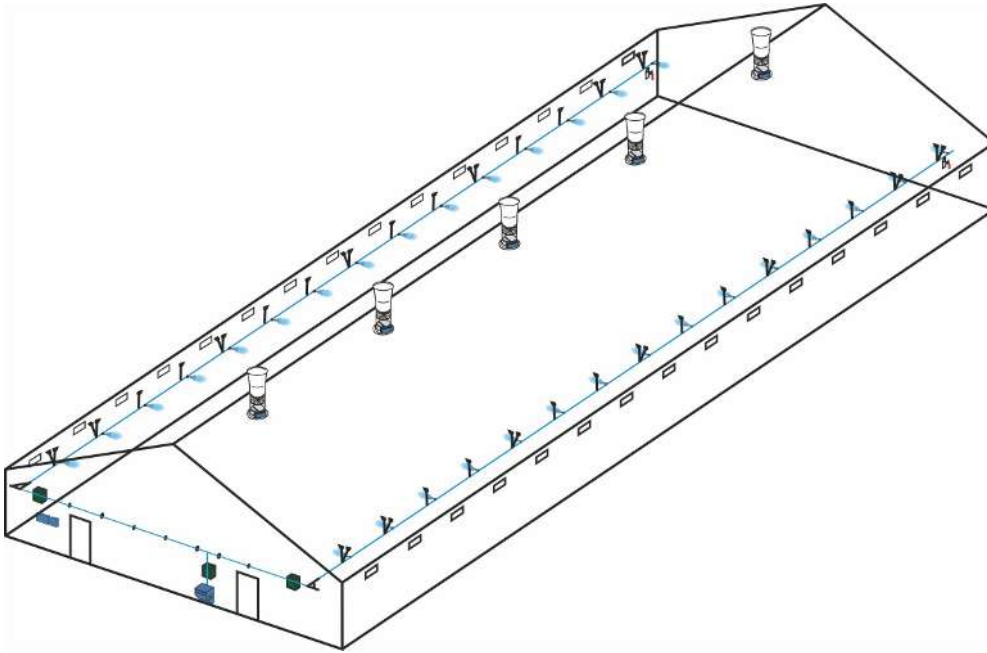


Figure 2: Overview of high-pressure cooling in a LPV system with ceiling mounting.

1.2 DA 2500 high-pressure cooling pump

The DA 2500 high-pressure pump is designed specifically for use in livestock houses in climatic zones, where severe demands are placed on the cooling system, and where the pump will run for a very long time every day. The pump is controlled by means of a temperature sensor and a humidity sensor via a climate controller.

The pump is supplied as a complete unit for mounting on the wall, or alternatively, the pump is mounted on the floor, using a floor stand. Depending on the quality of the water on site, it is possible to equip the pump with various filters and other auxiliary equipment to ensure a seamless operation.

The pump should not be used in greenhouses or for high-pressure cleaning.

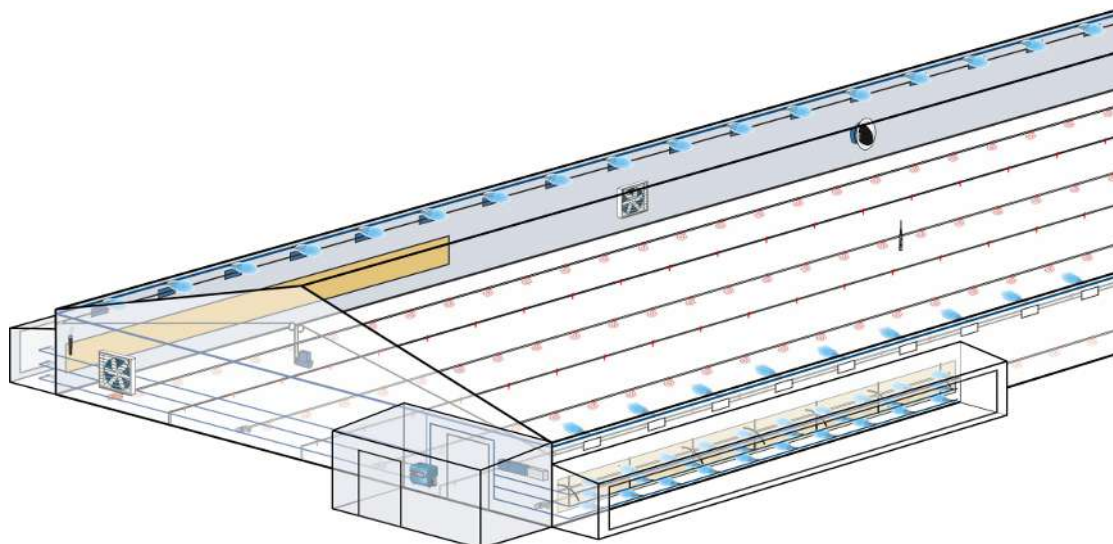


Figure 3: Overview of high-pressure cooling in a Combi-Tunnel system.

2 Product survey

2.1 Pump variants



437150 Pump V2 6 l/min 1x230V 50Hz

437151 Pump 6/7 l/min 3x400V 50/60Hz

437164 Pump V3 12 l/min 1x230V 50Hz

437165 Pump V3 12/14 l/min 3x230V 50/60Hz

437166 Pump V3 12/14 l/min 3x400V 50/60Hz

437155 Pump V2 18.5 l/min 1x220V 60Hz

437156 Pump V2 18.5 l/min 3x230V 60Hz

437158 Pump V2 18.5 l/min 3x400V 60Hz

437157 Pump V2 21 l/min 3x400V 50Hz

The pump is an ON/OFF pump and is supplied as a complete unit for mounting on the wall and includes filters, electronic thermal circuit breaker, pressure sensor, safety valve, bleed screws, manometer, solenoid valve, high-pressure hose, etc.

The pump is used where the lowest rate of flow at partial load exceeds 15 % (6/7/12/14 l pump) or 20 % (8,5/21 l pump) of the max. capacity. This means, for example, that the minimum flow is 0.9, 1.8 and 3.7/4.2 l/min. for the pumps supplying 6, 12 and 21 l/min. respectively at 50 Hz. If this cannot be met, choose a pump with frequency converter - listed below.

The pump is supplied including mounting kit.

The mounting kit consists of:

2 x drain ball valve, 12 mm pipe

1 x straight connector

1 x T-connector

1 x drain plug valve 3/4"

2 x threaded rod M10, 495 mm

3 x dowel 10 mm

3 x coach screw 10x70

2 x washer 6x14

4 x nut M10

1 x hose 3/4" with collar band

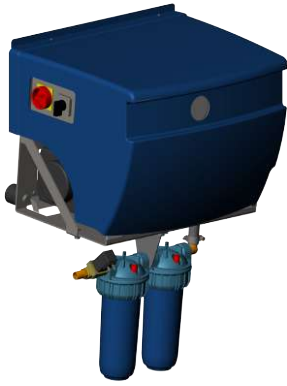
1 x hose 5/8" with collar band

4 x spacer $\varnothing 20/\varnothing 5 \times 20$ mm

4 x chipboard screw 5x70

4 x pipe holder 10 mm

4 x dowel 6 mm



437160 Pump V2 6 l/min 3x400 V 50/60 Hz, frequency

437167 Pump V3 12 l/min 3x400 V 50/60 Hz, frequency

437162 Pump V2 21 l/min 3x230 V 50/60 Hz, frequency

437163 Pump V2 21 l/min 3x400 V 50/60 Hz, frequency

The pump, which includes a frequency converter is supplied as a complete unit for mounting on the wall and includes filters, mechanical thermal cutout, pressure sensor, safety valve, bleed screws, manometer, solenoid valve, high-pressure hose, etc.

The pump is used where the lowest rate of flow at partial load exceeds 5% of the max. capacity at 70 bar. This means, for example, that the minimum flow is 0.3, 0.6 and 1.1 l/min. for the pumps supplying 6, 12 and 21 l/min. respectively at 70 bar.

The pump is supplied including mounting kit.

The mounting kit consists of:

- 2 x drain ball valve, 12 mm pipe
- 1 x straight connector
- 1 x T-connector
- 1 x drain plug valve 3/4"
- 2 x threaded rod M10, 495 mm
- 3 x dowel 10 mm
- 3 x coach screw 10x70
- 2 x washer 6x14
- 4 x nut M10
- 1 x hose 3/4" with collar band
- 1 x hose 5/8" with collar band
- 4 x spacer $\varnothing 20/\varnothing 5 \times 20$ mm
- 4 x chipboard screw 5x70
- 4 x pipe holder 10 mm
- 4 x dowel 6 mm



437626 DA 2500 V2 pump 21 l/min, 3x400 V 50 Hz

The pump is an ON/OFF pump and is supplied as a complete unit for mounting on the wall and includes thermal valve, pressure sensor, pressure controller, pressure gauge, high-pressure hose and buffer tank with control of high and low water level.

The pump is used where the lowest rate of flow at partial load exceeds 20% of the max. capacity. This means that the minimum flow is 4.2 l/min.

The pump is supplied including mounting kit.

The mounting kit includes:

- 2 x drain ball valve, 12 mm pipe
- 1 x straight connector
- 1 x T-connector
- 1 x drain plug valve 3/4"
- 2 x threaded rod M10, 495 mm
- 3 x dowel 10 mm
- 3 x coach screw 10x70
- 2 x washer 6x14
- 4 x nut M10
- 1 x hose 3/4" with collar band
- 1 x hose 5/8" with collar band
- 4 x spacer $\varnothing 20/\varnothing 5 \times 20$ mm
- 4 x chipboard screw 5x70
- 4 x pipe holder 10 mm
- 4 x dowel 6 mm

2.2 Nozzles



437475 FlexClamp nozzle complete 0.2 mm

437424 FlexClamp nozzle complete 0.3 mm

Is supplied complete with built-in filter, anti-drip function and mounting coupling.

Can be used in all high-pressure cooling systems for agriculture where water hardness is below 10-15 dH. If the water contains brass-corrosive substances, use stainless steel nozzles instead.

0.2 mm supply 4.0 l/h at 70 bar.

0.3 mm supply 6.3 l/h at 70 bar.

Seals and non-return valves are with EPDM rubber.

It is recommended ordering 10% additional spare nozzles when purchasing.



437476 FlexClamp nozzle complete anti-lime 0.2 mm

437425 FlexClamp nozzle complete anti-lime 0.3 mm

Is supplied complete with built-in filter, anti-drip function and mounting coupling.

If water hardness exceeds 15-20 dH, measures should be taken to reduce calcification; alternatively, nozzles with an anticalcium coating should be used. If the water contains brass-corrosive substances, use stainless steel nozzles instead.

The nozzle end has an anti-lime coating to reduce calcareous deposits significantly.

0.2 mm supply 3.5 l/h at 70 bar.

0.3 mm supply 6.3 l/h at 70 bar.

Seals and non-return valves are with EPDM rubber.

It is recommended ordering 10% additional spare nozzles when purchasing.



437477 FlexClamp nozzle complete, stainless 0.2 mm

437466 FlexClamp nozzle complete, stainless 0.3 mm

Is supplied complete with built-in filter, anti-drip function and mounting coupling. The water hardness may not exceed 10-15 dH.

FlexClamp stainless nozzle can be used when water quality places particularly high requirements on the material.

The nozzle included is stainless.

There are increased requirements on the content of chloride, to avoid the start of corrosion on stainless nozzles. Chloride level should be max. 100 mg/L.

0.2 mm supply 3.5 l/h at 70 bar.

0.3 mm supply 5.6 l/h at 70 bar.

Seals and non-return valves are with EPDM rubber.

It is recommended ordering 10% additional spare nozzles when purchasing.

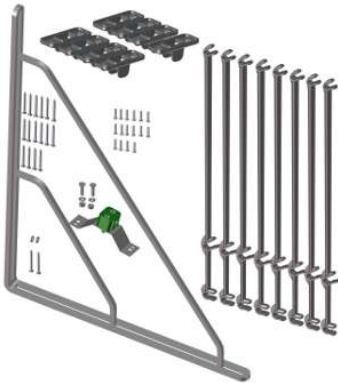
**437556 DA 2000 end nozzle 0.2 mm ss****437557 DA 2000 end nozzle 0.3 mm ss**

Place the DA 2000 nozzle at the end of the piping in the section to avoid air between the drain ball valve and the nozzle.

The nozzle included is stainless.

There are increased requirements on the content of chloride, to avoid the start of corrosion on stainless nozzles. Chloride level should be max. 100 mg/L.

2.3 Pipes and Fittings

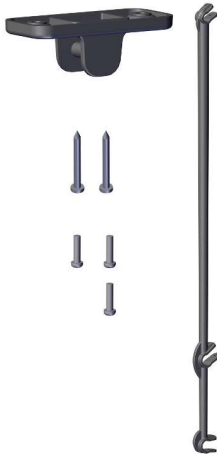
**437675 Cool pipe suspension for ceiling start**

Used when mounting cooling pipes in the ceiling.

Is supplied with a mounting set.

The screws in the mounting kit are for mounting the suspension on the sandwich panel.

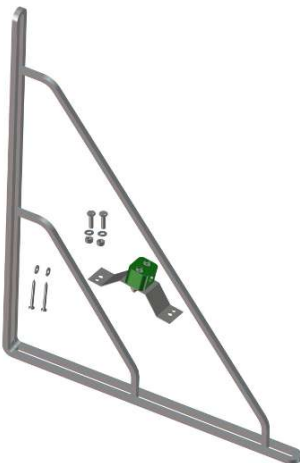
1 per string of piping.

**437676 Cool pipe suspension for ceiling next**

Used when mounting cooling pipes in the ceiling.

The screws are for mounting the suspension on the sandwich panel.

1 for every 2 meters of pipe.

**437642 Cool pipe suspension f/ceiling extra pipe start**

Use if an extra set of cooling pipes is desired in the ceiling over/under.

Comes with a mounting set.

The screws in the mounting kit are for mounting the suspension on the sandwich panel.

1 per piping set (1 piping set consists of two pipes over/under each other).



437679 Cool pipe suspension f/ceiling with wire, start

Is applied when mounting the cooling pipes in the ceiling if it is not possible to use cooling pipe suspension, item no. 437675.

Is used for mounting in brick and concrete.

1 per string of piping.



437680 Cool pipe suspension f/ceiling with wire, next

Is applied when mounting the cooling pipes in the ceiling if it is not possible to use cooling pipe suspension, item no. 437676.

Is used for mounting in brick, concrete, and sandwich panels.

Order one mounting set for every 3 meters of pipe.

Note that steel wire (413104) must be ordered for both mounting the cooling pipe from the ceiling and for mounting the wire over the cooling pipe from one end of the house to the other.



413104 Steel wire 2.0 mm 7x7 A4

Is used when mounting the cooling pipe suspension from the ceiling with wire.

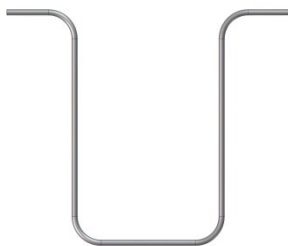
Order the number of meter steel wire corresponding the length of the cooling pipe. In addition, steel wire must be ordered for mounting the cooling pipe from the ceiling.



437472 Acid-proof pipe 12mm A4, 5.5m

Stainless, acid-proof A4 quality (AISI 316).

There are increased requirements on the content of chloride, to avoid the start of corrosion on stainless pipes. Chloride level should be max. 100 mg/L.



437558 DA 2000 U expansion

Stainless, acid-proof A4 quality (AISI 316).

Is used to control the thermal expansion of the pipes at wall mounting. To be mounted at a max. distance of 50 m.

At a temperature increase of 20°C, 50 m pipe expands approx. 18 mm (9 mm/side).

At side mode mount the U expansion using a wall bracket and two pipe holders with clips.

There are increased requirements on the content of chloride, to avoid the start of corrosion on stainless pipes. Chloride level should be max. 100 mg/L.



437561 Splicing sleeve straight press 12 mm A4

Stainless, acid-proof splicing sleeve with sealing ring in EPDM rubber that ensures a tight joint.

Requires special tool no. 437553/437559 for mounting.

It is then very easy to mount the unit. Cannot be disassembled after assembly.



437560 Splicing sleeve 90 degrees 12 mm A4

Stainless, acid-proof splicing sleeve with sealing ring in EPDM rubber that ensures a tight joint.

Requires special tool no. 437553/437559 for mounting.

It is then very easy to mount the unit. Cannot be disassembled after assembly.



437562 Splicing sleeve T-piece press 12 mm A4

Stainless, acid-proof splicing sleeve with sealing ring in EPDM rubber that ensures a tight joint.

Requires special tool no. 437553/437559 for mounting.

It is then very easy to mount the unit. Cannot be disassembled after assembly.



437646 Acidproof straight joiner 2x12 mm A4

Complete, stainless acid-proof fitting with special stainless, acid-proof sealing cone. Is supplied packed and greased with assembly grease.



437647 Acidproof angle joiner 2x12 mm A4

Complete, stainless acid-proof fitting with special stainless, acid-proof sealing cone. Is supplied packed and greased with assembly grease.



437648 Acidproof T-joiner 3x12 mm A4

Complete, stainless acid-proof fitting with special stainless, acid-proof sealing cone. Is supplied packed and greased with assembly grease.

1 T-assembler is supplied with the pump.



437426 Pipe holder set for 5.5 m pipe

4 pipe holders for 5.5 m pipe. The distance from the centre of the pipe to the wall is 36 mm.

The max. distance between pipe holders is 1.5 m.

Is typically used for mounting on the wall.

The set consists of:

4 x pipe holder $\varnothing 12$ mm x h36 mm

4 x chipboard screw 5x70 4.8x70 pan TX25 A2

4 x wall dowel 6 mm

1 x DA 2000 clips for pipe holder



437554 DA 2000 pipe holder set f/sandwich panel

Four pipe holders for 5.5m pipes. The distance from the center of the pipe to the wall is 36 mm.

The max. distance between pipe holders is 1.5 m.

Used for mounting on sandwich panel.

The set consists of:

4 x pipe holder \varnothing 12 mm x h36 mm

4 x tapping screw 5x40 pan TX25 ZnNi spec.

1 x DA 2000 clips for pipe holder

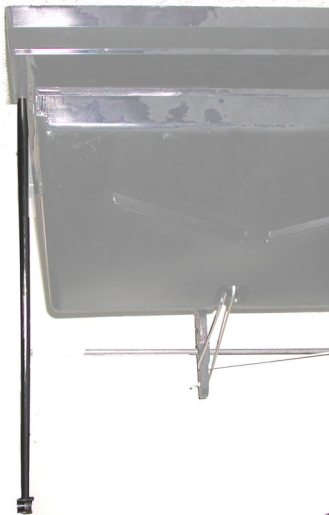


437519 DA 2000 clips for pipe holder

Used to secure cooling pipes in pipe holders on the wall.

Every four pipe holders must be equipped with clips.

Use a pipe holder with clips on both sides for U expansions.



437482 DA 1500/1800 pipe holder

For DA 1540/1800 ceiling inlet a special pipe hanger has been developed, which can be used for securing high pressure cooling pipes from SKOV A/S, if high pressure cooling is installed. The pipe holder can only be used when the ceiling pitch is 0°.

If the distance between the inlets exceeds approx. 1.5 m supplement the inlet by item no. 437480 DA 1540/1800 pipe holder with adapter.

If the length of the cooling piping exceeds 40 m, the pressure impact from the start/stop of pump may cause breakage of the rather long pipe holder.

One per inlet.



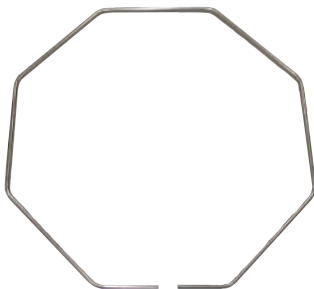
437480 DA 1540/1800 pipe holder with adapter - 0.5 m

Used where extra support of the cooling pipe is required. Height approx. 49 cm which means that it is suited for the 437482 pipe holder for DA 1540/1800. The pipe holder can only be used when the ceiling pitch is 0°.

Mount it directly on the ceiling with the two screws supplied.

In Denmark one unit per 1.2 m free-hanging cooling pipe is used - corresponding to normal lath distance.

If the length of the cooling piping exceeds 40 m, the pressure impact from the start/stop of pump may cause breakage of the rather long pipe holder.



437435 Acidproof 12 mm A4 nozzle ring for DA 40



437594 DA 2000 wall bracket complete brick/concrete

Is used to fix pipes on brick and concrete walls. This controls the temperature expansion of the pipes. To be mounted at a max. spacing of 25m and used to lock the pipes at the ends.

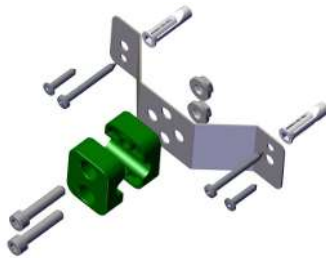
The set consists of:

2 x distance bushing $\varnothing 20/\varnothing 5 \times 25$ mm

2 x single pipe hanger $\varnothing 12$ mm

2 x wall dowel 6 mm

2 x chipboard screw 5x70 4.8x70 pan TX25 A2



437555 Wall lock for cool pipe sandwich/brick/concrete

Is used to fix pipes on sandwich panel, brick or concrete walls. This controls the temperature expansion of the pipes. To be mounted at a max. spacing of 25m and used to lock the pipes at the ends.

The set consists of:

1 x DA 2000 bracket for wall bracket

2 x single pipe hanger $\varnothing 12$ mm

2 x flange nut w/serrations M6 A2

2 x machine screw M6x30 cyl Allen Hexagon, A2

2 x tapping screw 5x16 flange TX25 ZnNi spec.

2 x chipboard screw 5x70 4.8x70 pan TX25 A2

2 x wall dowel 6 mm

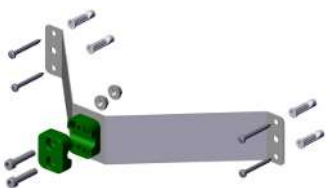


433368 DA 3800 holder for pull rod/cooling pipe

Is used when mounting cooling pipe with DA 3800 wall inlet.

The distance from the center of the pipe to the wall is 120 mm.

Max. distance between pipe holders is 2.0 m. Must be placed asymmetrical to the inlet and pull direction to allow for working space for the pull wire and spring system. Is used for mounting on sandwich panel, brick or concrete walls.



437689 Wall lock cool pipe 120 sandwich/brick/concrete

Is used when mounting cooling pipe with DA 3800 wall inlet.

Is used to fix pipes on sandwich panel, brick or concrete walls. This controls the temperature expansion of the pipes. To be mounted at a max. spacing of 25 m and used to lock the pipes at the ends.

The set consists of:

1 x bracket for wall lock 120 mm

2 x single pipe hanger $\varnothing 12$ mm

2 x flange nut w/serrations M6 A2 DIN6923

2 x machine screw M6x30 cyl Allen A2 DIN912

4 x tapping screw 5x16 flange TX25 ZnNi spec.

4 x chipboard screw 5x70 pan TX25 A2

4 x wall dowel 6 mm



437383 DA 2000/2500 pipe end press fitting

Is used at the end of the pipe.

Contains a drain plug valve and a DA 2000 end nozzle as the last part on the piping system.



437384 DA 2000/2500 pipe end cutting ring fitting

Is used at the end of the pipe.

Contains a drain plug valve and a DA 2000 end nozzle as the last part on the piping system.



437628 Drain plug valve 1/4", 12 mm pipe, end adapter

1/4" stainless steel drain plug valve fitted with a acid-proof screwed-end connection and a hose connector.

Position the drain plug valve at the end of the piping in the section.

Fits \varnothing 12 mm stainless cooling pipe and 509301 PVC hose.

Intended only for draining.



437627 Drain plug valve 1/4", 12 mm pipe pressfitting

1/4" stainless steel drain plug valve fitted with a hose connector.

Position the drain plug valve at the end of the piping in the section.

Fits \varnothing 12 mm stainless cooling pipe and 509301 PVC hose.

Intended only for draining.



509303 PVC hose uniflex 1/4" (6 mm)

509301 PVC hose uniflex 1/2" (13 mm)

509303 fits the safety valve on the high-pressure pump.

509301 fits the drain connector on the drain plug valve mounted at the end of the piping.

Can be used to guide cooling pipes through a wall.



510010 Hose connector outer RG 3/4" x 19 mm brass

One hose connector 3/4" (510010) is mounted on the pump. If additional hose connectors are required, they must be ordered separately.



510128 Clip RF type ASFA \varnothing 8 - 16 mm

To be ordered separately for fastening of hose on hose connector.

1 or 2 ends, as required.



437433 High-pressure hose 1 m w.pipe connection A4

Hydraulic hose with stainless acid-proof adapter at both ends for mounting of 12 mm pipe.

Is used as vibration absorber among other things, if the length of the piping exceeds 40 m and pipe holders of 0.3 m or more are used; e.g. item number 437482.

2.4 Components for systems with several sections



437489 High-pr. valve two-way 3 l/min 230V 50/60

Supplied complete with 2 A4 cutting fittings.

1 per section when more sections are connected to the same cooling system.

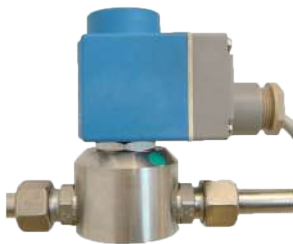


437597 High-pr.valve two-way 3 l/m 24V DC, D

Supplied complete with 2 A4 cutting fittings.

Should not be supplied by a DOL 278.

1 per section when more sections are connected to the same cooling system.



437631 High-pressure valve two-way 15 l/min 230V 50 Hz

437632 High-pressure valve two-way 15 l/min 230V 60 Hz

High-pressure valve that opens/closes for individual piping components.



280060 Contactor tripolar 400V, 230V 50/60 Hz

Is used when a pump is to supply water to several house sections. The contactor activates the high-pressure valve.

To be mounted on a DIN rail in the climate controller.

1 per house section/high-pressure valve.



340937 DIN rail L=64 mm incl. holes ø4

Is used when an additional contactor is to be mounted in the climate controller.

2.5 Auxiliary equipment and mounting parts



437502 DA 2000 kit for external tank connection

If an external tank is used before the pump, the DA 2000 kit can be used to ensure a safe water supply to the pump.

The mounting kit consists of:

- 2 x sheet cross profile
- 1 x 3 m PVC hose $\varnothing 19 \times 26$
- 1 x hose clamp $\frac{3}{4}$ "
- 2 x connector $\frac{3}{4}$ " 901-50
- 1 x float valve $\frac{3}{4}$ "
- 2 x 90 ° elbow, thread $\frac{3}{4}$ " for tube $\varnothing \frac{3}{4}$ "
- 2 x washer $\frac{3}{4}$ "
- 1 x plastic nut $\frac{3}{4}$ "
- 1 x water stop $\frac{3}{4}$ "



510122 Distance bushing $\varnothing 20/\varnothing 5 \times 25$ mm

352896 Chipboard screw 5x80 pan TX25 A2

351586 Tapp. screw 5x60 pan TX25 ZnNi spec.

The distance bushing is used when a pipe holder with a distance of 36 mm is to be increased by + 25 mm.

For mounting of distance bushing use

- screw 352896 at brick and concrete walls or
- screw 351586 at sandwich walls

A 6 mm wall dowel is supplied with the pipe holder. It may be necessary also to order the 8 mm 419335 wall dowel.



437137 Bushing for cooling pipe

Is used where holes are drilled through steel rafters, etc. for pipe lead-through.



437527 Electronic lime decomposer complete

Use of an electronic lime decomposer is recommended if water hardness exceeds 20 dH.

The lime decomposer do not remove the lime, they break the lime crystals down into smaller particles.

Most effective when the system is running continuously and not turned off.

To be mounted on the pipe after the pump and connected to 230 V. The calcium decomposer comes with clip and assembly instruction.

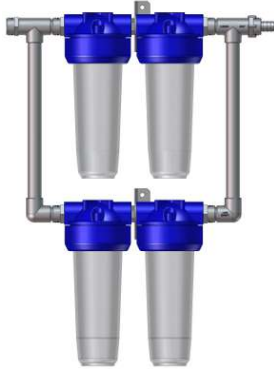
Counteracts calcareous deposits in pipes and nozzles.



437540 External filter unit 25-10 micron

Complete with installation fittings and ventilation screws.

To be mounted in front of the pump, standard filters, a phosphate filter, if any, if the water contains particularly many impurities. Is equipped with a transparent glass to visually check the degree of clogging, if any.



437637 DA 2500 external filter unit 2x5+2x1 micron

Depending on the quality of the water on site, the pump can be equipped with different filters.



437504 Coarse filter 20 micron w/glass, with bracket

437438 Coarse filter 20 micron w/glass, without bracket

This is an alternative to 437540 and has only one filter instead of two.

Complete with installation fittings and ventilation screw.

Bracket is shown in the photo.



437441 Filter cartridge 1 micron

437442 Filter cartridge 5 micron

437443 Filter cartridge 20 micron

It is recommended buying additional filters for the user so that they are available the first time filters are to be serviced.



437439 Chemical filter w/clear glass non-return valve

Filter housing with 2 x 3/4" inside pipe thread and bleed port + statutory automatic non-return valve in front of the filter housing.

It is fitted with 437444 Phosphate cartridge which slowly releases phosphate and thus reduces the limescale on the nozzles quite substantially.

Phosphate filters are intended only for continuous use.

If the cooling unit is not running, the phosphate rock will dissolve into a thick mass, which will damage the system.

The filter housing has a transparent glass to visually check the degree of clogging, if any. But in general, the system is difficult to use.



437444 Phosphate cartridge 5 micron

To be fitted in 437439 where it slowly releases phosphate and thus reduces the limescale on the nozzles quite substantially.

Phosphate filters are intended only for continuous use.

If the cooling unit is not running, the phosphate rock will dissolve into a thick mass, which will damage the system.

Dependent on the lime content, etc. the lifetime is estimated to approx 200 m³ or approx one year.



437134 Nozzle closing plug

Is used to block nozzles.

Remove the nozzle end and mount the nozzle closing plug.



437649 Acidproof end adapter 12 mm x 3/8" BSP A4

437650 Acidproof end adapter 12 mm x 1/2" BSP A4

437651 Acidproof end adapter 12 mm x 1/4" BSP A4



437636 DA 2500 floor stand for pump

Floor stand in galvanized steel.

Floor stand is used, if it is not possible to mount the pump on the wall.



437638 Mounting profile for nozzles in tunnel opening

Is used for mounting nozzles in the Rack & Pinion opening.

Max. distance between mounting profiles is 1.5 m.

2.6 Tools and mounting equipment



437446 Punch pliers for FlexClamp nozzles

Nozzle punch pliers for making holes in pipes after installation of pipes in the house.

Allows optimum positioning of nozzles at the right angle and location exactly above inlets etc.

**437690 Rems mini Akku press incl. V12 jaw**

Rems Akku-Press tool with battery.

Rems Akku press is used for joining $\varnothing 12$ mm stainless cooling pipes with press fittings.

The tool with V12 jaws closes the joint in approx. 10 seconds so that it is stable and sealed.

**437692 Press jaw V12 for Rems mini Akku-press**

V-notch press jaws which press the sleeve together in approx. 10 seconds so that the sleeve is stable and 100% tight.

The press jaw fits 437690 Rems mini Akku press incl. V12 jaw.

**437579 Rems Power-Press 230V w. V12 jaw**

Rems press tool for 230 V supply.

Rems press tool is used for joining $\varnothing 12$ mm stainless cooling pipes with press fittings.

The tool with V12 jaws closes the joint in approx. 10 seconds so that it is stable and sealed.

**437559 Sleeve press tool - V12 notch f. splicing sleeve**

V-notch press jaws which press the sleeve together in approx. 10 seconds so that the sleeve is stable and 100% tight.

The press jaw fits 437579 Rems Power-Press 230V incl. V12 jaw.

**437600 DA 2000 Manual press tool w. V12 jaws**

This manual tool is used for joining $\varnothing 12$ mm stainless cooling pipes with press fittings.

This tool with V12 jaws uses manual power to close the joint so that it is stable and sealed.

**437448 Pipe bending tool**

Designed for bending 12mm pipes.

**437449 Chamfering tool**

A practical tool for chamfering pipes after shortening.



437450 Pipe cutter

The REMS pipe cutter is used to shorten thin-walled, stainless pipes.



437451 Chop for 12 mm adapter

A practical tool for assembling sealing cone fittings.

Works as a ratchet box wrench.

Constantly engaged.



437478 Assembling tool for FlexClamp

Is used to mount FlexClamp nozzles on pipes.



530950 Silicone grease Kema SC-4 a 100 g

Silicone grease 530950 MUST be used for greasing O-rings as mineral grease decomposes the O-ring material.



437546 Hand pump for oil change

Can be used when changing oil on the pump.



777071 Oil 1.0 liter, 15W40

Can be used when changing oil on the pump.

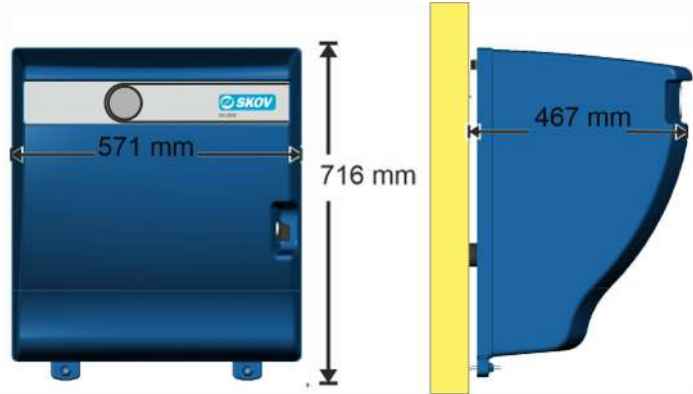
3 Technical data

3.1 DA 2000 pumps without frequency converter

		437150	437151	437164	437165	437166
Electrical						
Rated voltage	V	1x230	3x400	1x230	3x230	3x400
Operating voltage	V AC	220-240	380-415	220-240	220-240	380-415
Frequency	Hz	50	50/60	50	50/60	50/60
Current consumption	A	9.5	3.6	14	9.4	5.4
Input power P1	kW	2.2	1.9	3.2	3	3
Input power P2 shaft	kW	1.5	1.5	2.2	2.2	2.2
Mechanical						
Volume	l/min	6	6/7	12	12/14	12/14
Min. flow	%	15				
Max. pressure	bar	70				
Working pressure	bar	70				
Capacitor	µF	40	-	65	-	-
Min. pressure water supply at max. capacity	bar	2				
Standard filters	micron	1 and 5				
Coarse filter (auxilliary equipment)	micron	25 - 10				
Sound pressure level (incl. Cover) at 100 % performance	dB	79				
Oil type (mineral oil)		SAE 15W-40				
Environment						
Temperature, operation	°C	0 to +40				
Temperature, storage	°C	0 to +40				
Ambient humidity, operation	%RH	85				
Protection class	IP	54				
Shipment						
Dimension HxWxD	mm	716x571x467				
Dimensions when packed HxWxD	mm	800x600x550				
Weight	kg	41	41	51.5	44.6	44.6
Shipping weight	kg	43	43	53.5	46.6	46.6

		437155	437156	437158	437157
Electrical					
Voltage	V	1x220	3x230	3x400	3x400
Operating voltage	V AC	210-230	220-240	380-415	380-415
Frequency	Hz	60			50
Current consumption	A	17	11.1	6.4	6.4
Input power P1	kW	3.7	3.6	3.6	3.6
Input power P2 shaft	kW	3			
Mechanical					
Volume	l/min	18.5	18.5	18.5	21
Min. flow	%	20			
Max. pressure	bar	70			
Working pressure	bar	70			
Capacitor	µF	80	-	-	-
Min. pressure water supply at max. capacity	bar	2			
Standard filters	micron	1 and 5			
Coarse filter (auxilliary equipment)	micron	25 - 10			
Sound pressure level (incl. Cover) at 100 % performance	dB	79			
Oil type (mineral oil)		SAE 15W-40			
Environment					
Temperature, operation	°C	0 to +40			
Temperature, storage	°C	0 to +40			
Ambient humidity, operation	%RH	85			
Protection class	IP	54			
Shipment					
Dimension HxWxD	mm	716x571x467			
Dimensions when packed HxWxD	mm	800x600x550			
Weight	kg	49.2	49.6	49.6	49.6
Shipping weight	kg	51.2	51.6	51.6	51.6

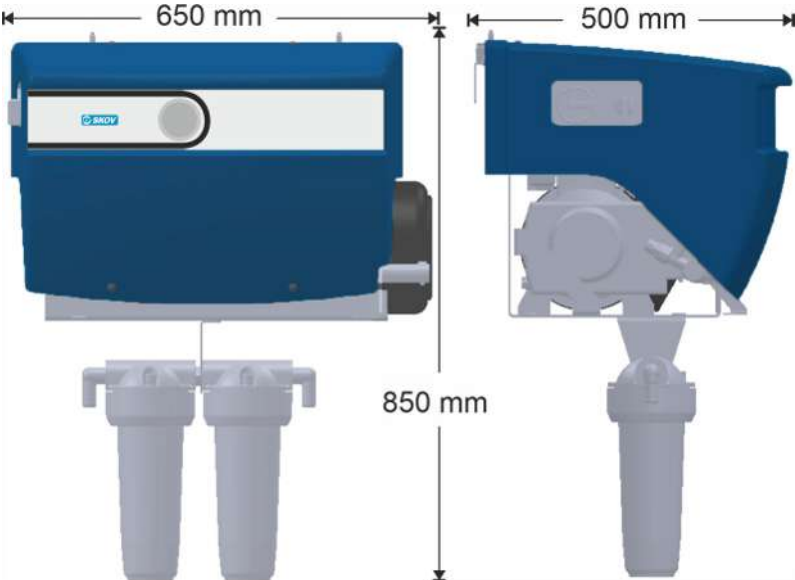
3.1.1 Dimensioned sketch



3.2 DA 2000 pumps with frequency converter

		437160	437167	437162	437163
Electrical					
Rated voltage	V	3x400	3x400	3x230	3x400
Operating voltage	V AC	380-415	380-415	220-240	380-415
RCD		To be installed in accordance with applicable laws and standards. RCD 300 mA (type B) may be used in front of the supply voltage for frequency regulated pumps.			
Frequency	Hz	50/60			
Current consumption	A	5.2	5.2	15.1	8.9
Input power P1	kW	3.7	3.7	6.2	6.2
Input power P2 shaft	kW	2.2	2.2	4	4
Mechanical					
Volume	l/min	6	12	21	21
Min. flow	%	5			
Max. pressure	bar	70			
Working pressure	bar	70			
Min. pressure water supply at max. capacity	bar	2			
Standard filters	micron	1 and 5			
Coarse filter (auxilliary equipment)	micron	25 - 10			
Sound pressure level (with cover) at 100 % performance at 50 % performance at 20 % performance at 5 % performance	dB(A)	74.5 59 58 55			
Oil type (mineral oil)		SAE 15W-40			
Environment					
Temperature, operation	°C	0 to +40			
Temperature, storage	°C	0 to +40			
Ambient humidity, operation	% RH	85			
Protection class	IP	54			
Shipment					
Dimension HxWxD	mm	850x650x500			
Dimensions when packed HxWxD	mm	1200x800x600			
Weight	kg	46.2	48.8	64	61.2
Shipping weight	kg	61.2	63.8	79	76.2

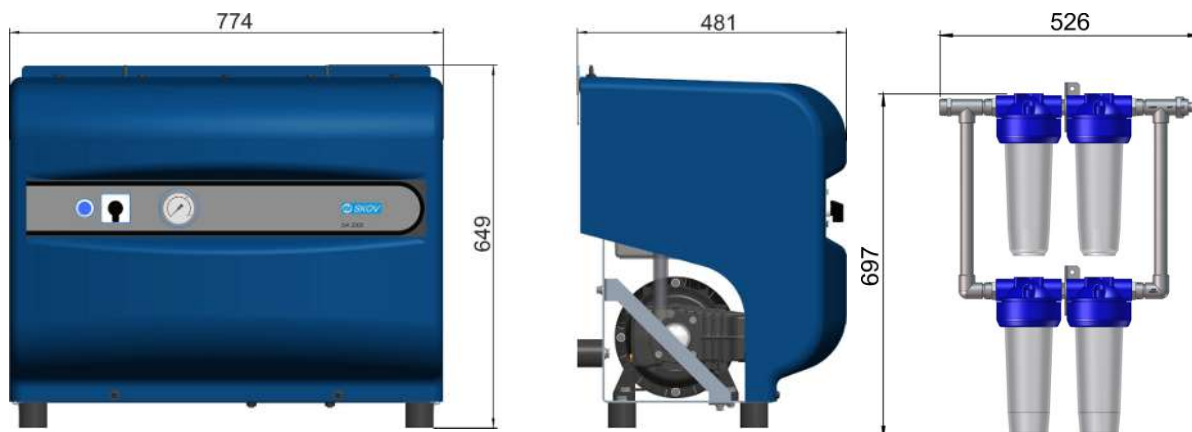
3.2.1 Dimensioned sketch



3.3 DA 2500 pump 21 I

DA 2500 V2 pump 21l/min (motor IE3) - 437626			
Electrical		DA 2500 pump 21l/min	Connection box
Rated voltage	V	3x400	230
Operating voltage	V AC	-	-
Frequency	Hz	50	
Power consumption	A	7	0.0016
Power consumption	kW	3	0.37
Mechanical			
Volume	l/min	21/25	-
Max. pressure	bar	70	-
Working pressure	bar	70	-
Min. pressure water supply at max. capacity	bar	2	-
Standard filters	micron	2 × 1 and 2 × 5	-
Coarse filter (auxilliary equipment)	micron	25 - 10	-
Sound pressure level (incl. cover) at 100% performance	dB(A)	79	-
Oil type (mineral oil)		SAE 15W-40	-
Environment			
Temperature, operation	°C	0 to +50	-
Storage temperature	°C	0 to +50	-
Ambient humidity, operation	% RH	85	-
Protection class	IP	65	-
Shipment			
Dimensions (H x W x D)	mm	649 × 774 × 481	-
Dimensions crated H x W x D	mm	800 × 1200 × 750	-
Weight	kg	78.4	-
Shipping weight	kg	93.4	-

3.3.1 Dimensioned sketch



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