

CEILING MOUNTED HEATING PANELS

ARENA



2020

LYNGSON

HEAT IN VARIOUS FORMS

CEILING MOUNTED RADIANT HEATING PANELS

Ceiling heating panels heat up the surfaces of the room with radiant heat. Surfaces that in turn heat it up air and creates a draft-free and comfortable room climate. The heat source on the ceiling also makes the interior designer's work much easier and more flexible, there is no obstructing heating installation needed on the walls or floor.

Want to know more?

Download our theory handbook on ceiling panel heating.

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THEORY HANDBOOK
Ceiling heating panels



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TECHNICAL DATA



Material	The underside consists of 0.9 mm aluminum sheet and the top is covered with plastic cardboard, 35x1.5 mm galvanized steel pipes.
Insulation	Insulation installed at the factory. Mineral wool, $\lambda=0,036 \text{ W/m}^{\circ}\text{C}$
Coating	2-component polyurethane paint.
Colour	Standard colour grey NCS S3500-N, other colors are available at extra cost.
Max. pressure	10 bar
Max. temperature	80° C
Connections	See section for connections.
Quality	Tested and manufactured according to EN 14037.

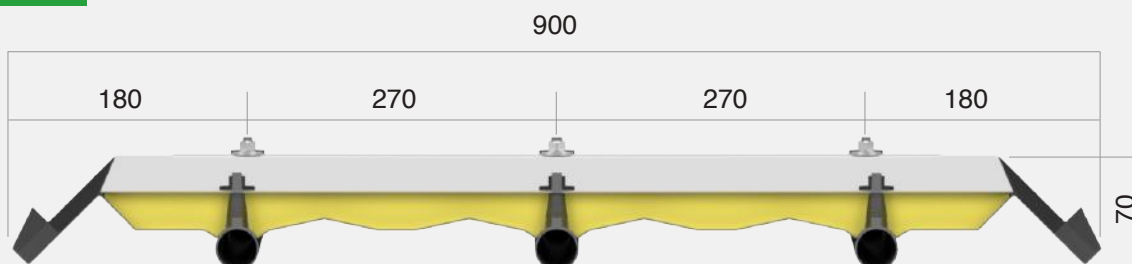
MagiCAD Arena is included in MagiCAD as a single panel up to 6 meters and as multiple panels for lanes over 6 meters. Since a longer lane is made up of start panel (SP), middle panel (MP) and end panel (EP), these have more than two connections. In MagiCAD there is a limitation and pressure drop can only be calculated on products with two connections.

CONSTRUCTION

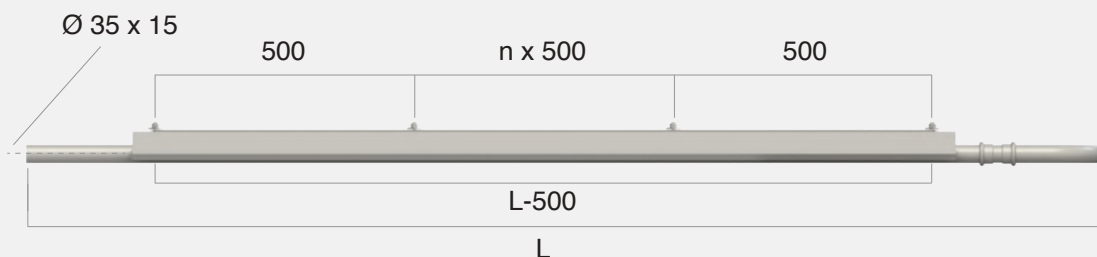
Arena 615



Arena 900

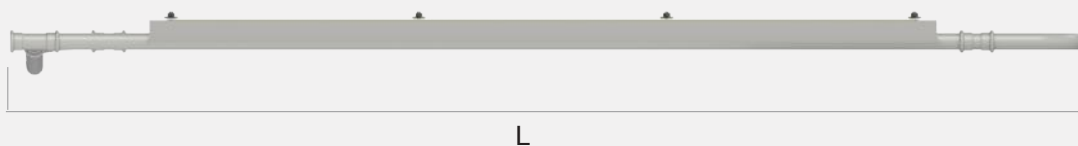


P-panel



The middle panel has smooth pipe ends without mounted press fittings.

P-panel



The P panel has mounted press fitting that are 75 mm above the panel's nominal dimensions.

Model	Arena 615	Arena 900
Width, mm	615	900
Construction height, mm	70	70
Weight /m incl. insulation, kg/m	4,5	6,9
Water volume /m, l	1,6	2,4
Lengths: Manufactured in steps of 0.5 meters, from 1.5 meters up to 6 meters.		

PANEL TYPES

Panel variants

Code	Name		Connection dimension
8206XX00	ARENA 615 MP		Ø 35 mm
8209XX00	ARENA 900 MP		Ø 35 mm
8209XX10	ARENA 900 P		Ø 35 mm
8209XX20	ARENA 900 SP		Ø 35 mm
8209XX25	ARENA 900 SP-SP		Ø 35 mm
8206XX30	ARENA 615 EP		Ø 35 mm
8209XX30	ARENA 900 EP		Ø 35 mm
8206XX40	ARENA 615 D		Ø 35 mm
8209XX40	ARENA 900 D		Ø 35 mm
8206XX50	ARENA 615 D-SP/EP		Ø 35 mm
8209XX50	ARENA 900 D-SP/EP		Ø 35 mm
8209XX60	ARENA 900 S		Ø 35 mm
8209XX70	ARENA 900 S-SP/EP		Ø 35 mm

Carbon steel press fittings Ø 35 mm are used to connect the panels.

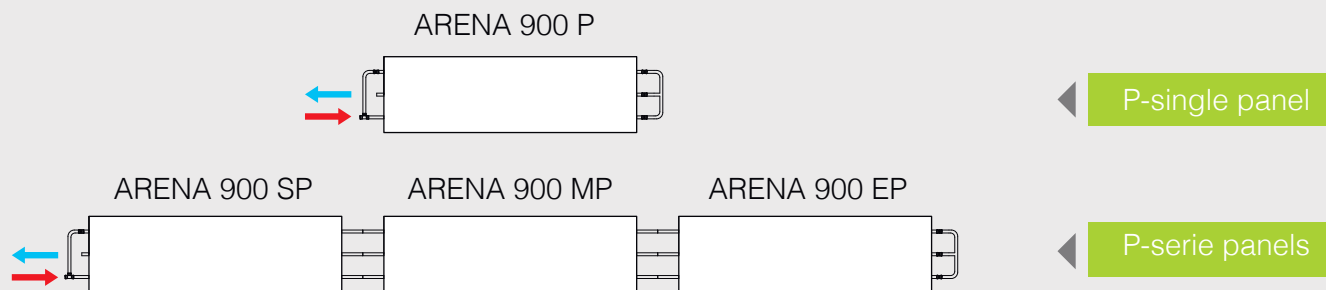
CONNECTIONS

Connection types

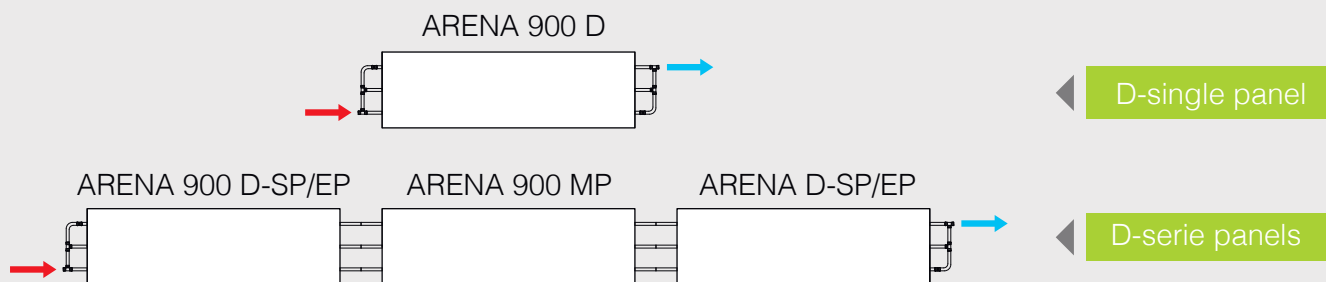
How are the different panel models used?

How long lines can be built depends on the pressure drop that must be calculated. When choosing different ways to assemble panels, it is important to consider that there is turbulent flow in the panels. If turbulent flow is not achieved, the calculated power must be adjusted by one power factor.

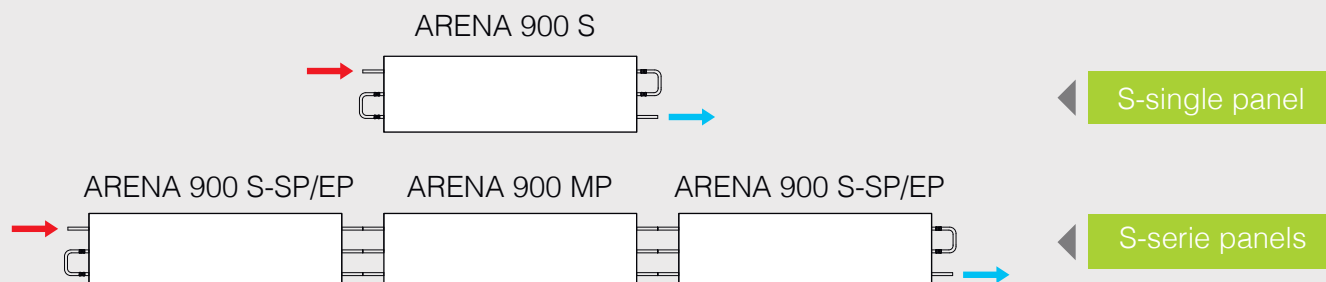
P-connection



D-connection



S-connection



Valves and actuators

The control valve is often located close to the ceiling heating panel, which means that actuators are often the most flexible solution.

With the large range of models and sizes, Arena covers a large area of power. This in turn requires a large range of valves.

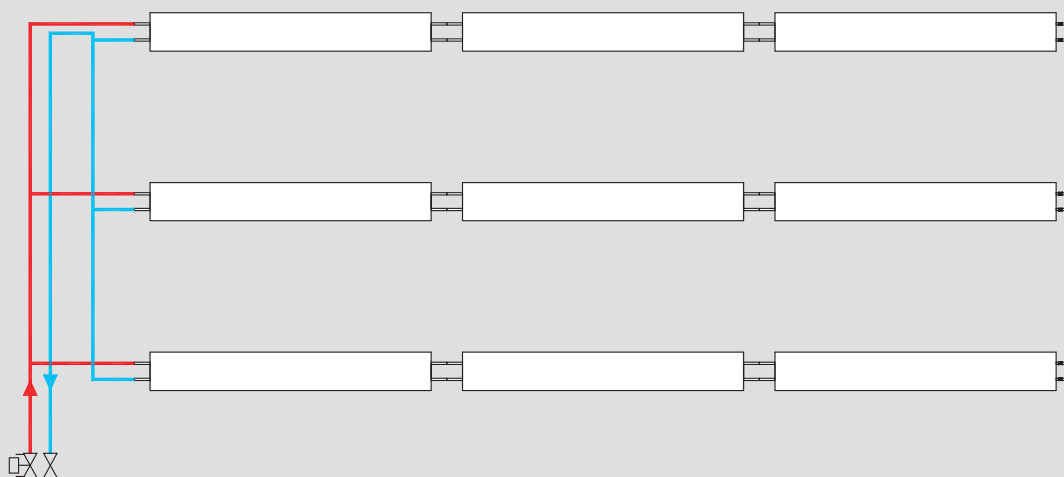
Valves for on/off control are most common, but Lyngson can also offer pressure-independent PICV valves that can be equipped with modulating or on/off actuators.



It is important that Arena is designed for turbulent flow according to the chapter Effects.

Tichelmann's principle

In cases where many lanes are connected in parallel, the number of control valves can be reduced by connecting according to Tichelmann's principle. Simply explained, all lanes must have the same length of pipeline and thus the same high pressure drop. Please contact Lyngson for more information.



Use our user-friendly power output and size calculation program. With the ceiling panel guide you can get an idea of the number of panels required.

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CONNECTION AND TEMPERATURE CONTROL

Control of one or more panel lines with thermoelectric actuators.



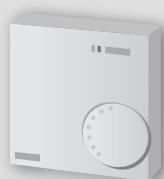
Control of one or more panel lines with thermoelectric actuators and wireless room thermostat.



Control of an entire zone with only one control valve and thermoelectric actuator. Tichelmann coupling.



The accessories in the examples are available from several different manufacturers.



Room thermostat



Wireless room thermostat



Zone-balance valve






Actuator






Wireless receiver




ACCESSORIES

Arena is often installed in long lanes and valves with large capacity may be needed. Lyngson has developed proposals for control packages with various advanced controls.

Control package 1	Pressure-independent control valve with actuator and electromechanical room thermostat	Dimension	Code
	Control-balance valve, V5005T, pressure-independent control valve with easy adjustment in l/h. Excl. Measuring socket. Pressure class PN16. Can also be equipped with modulating control	DN15 DN20 DN25	H84422 H84423 H84424
	MT4, Thermoelectric actuator, 230V. on/off function: NO - normally open, NC - normally closed.	NO NC	H84301 H84302
	T6360A, Room thermostat for on / off control, 230V. Accessories: Maximum limiter Protective cover		H84118 H84116 H84117

Control package 2	Pressure-independent control valve with actuator and wireless room thermostat	Dimension	Code
	Control-balance valve, V5005T, pressure-independent control valve with easy adjustment in l/h. Excl. Measuring socket. Pressure class PN16. Can also be equipped with modulating control	DN15 DN20 DN25	H84422 H84423 H84424
	MT4, Thermoelectric actuator, 230V. on/off function: NO - normally open, NC - normally closed.	NO NC	H84301 H84302
	Y87RF / BDR91, Wireless room thermostat for on/off control incl. relay module for up to 5 actuators. Accessories: Room thermostat Y87RF		H84111 H84110

ACCESSORIES

Control package 3	Control with zone-balance valve with actuator and electromechanical room thermostat	Dimension	Artikel nr.
	Control-balance valve TBV-C inv/inv with measuring socket. Pressure class PN16. LF - low flow NF - normal flow	DN15, LF DN15, NF DN20 DN25	549110 549111 549112 549113
	EMO T, Thermoelectric actuator, 230V. on/off function NO - normally open NC - normally closed	NO NC	549034 549035
	Room thermostat for on/off control, 230V. (Max 10 pcs actuators per regulator)		549030

POWER OUTPUT

Power output according to EN 14037. Calculated according to $Q = K \times (\Delta T_m)^n$

Power output is calculated according to $\Phi_D = K_m \times (\Delta T_m)^n$

Q	Delivered effect, W/m
K	Heat coefficient for the model
ΔT_m	The difference between the average temperature of the water and the room temperature, ° K
n	Heat exponent for the model

Model	Power output * [W/m]	K	n
Arena 615	294	2,4547	1,1927
Arena 900	451	3,8271	1,1902

(*)Power output is indicated at $\Delta T_m=55K$

Effektavgivning per meter panel (W/m) Effektiv längd		
ΔT_m (°K)	Arena 615	Arena 900
20	88	135
22	98	152
24	109	168
26	120	185
28	131	202
30	142	219
32	154	237
34	165	254
36	177	272
38	189	290
40	201	309
42	213	327
44	225	346
46	237	365
48	249	384
50	262	403
52	274	422
54	287	441
56	300	461
58	313	481
60	326	500
62	338	520
64	352	540
66	365	560
68	378	581
70	391	601



Recommended minimum flows for turbulent flow (l / h)		
Type of connection	Arena 615	Arena 900
P	129,6	259,2
S	-	129,6
D	259,2	388,8

$$\Delta T_m = ((\text{inlet } ^\circ t + \text{return } ^\circ t)/2) - \text{room } ^\circ t$$

Example

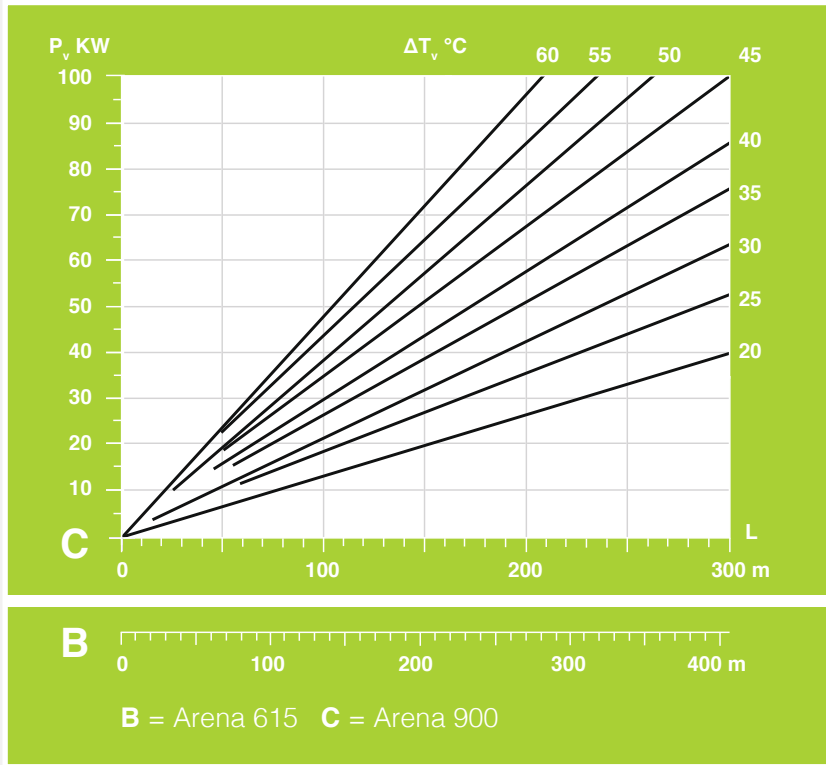
$$((t_{\text{inlet}} 60^\circ\text{C} + t_{\text{return}} 40^\circ\text{C}) : 2) - t_{\text{room}} 20^\circ\text{C} = 30^\circ\text{K}$$

Note that the "effective length", sheet metal length, at Arena is 500 mm shorter than the entire length of the panel.

Example

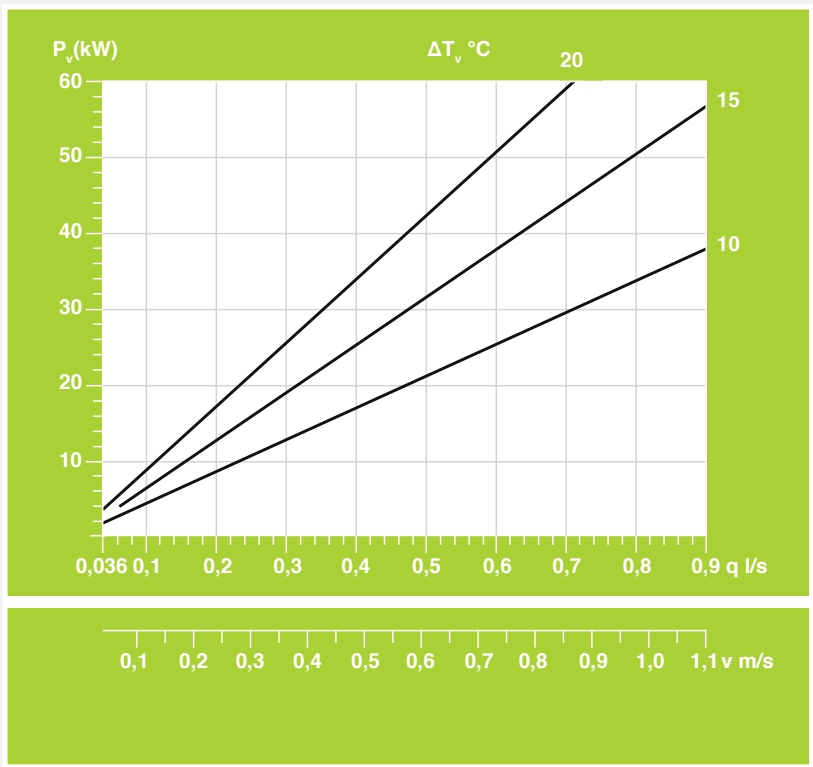
A line of 102 meters corresponds to an effective length of 93.5 meters if the strip consists of 17 panels of 6 meters each.

Estimated calculation of the total number of meters Arena panel



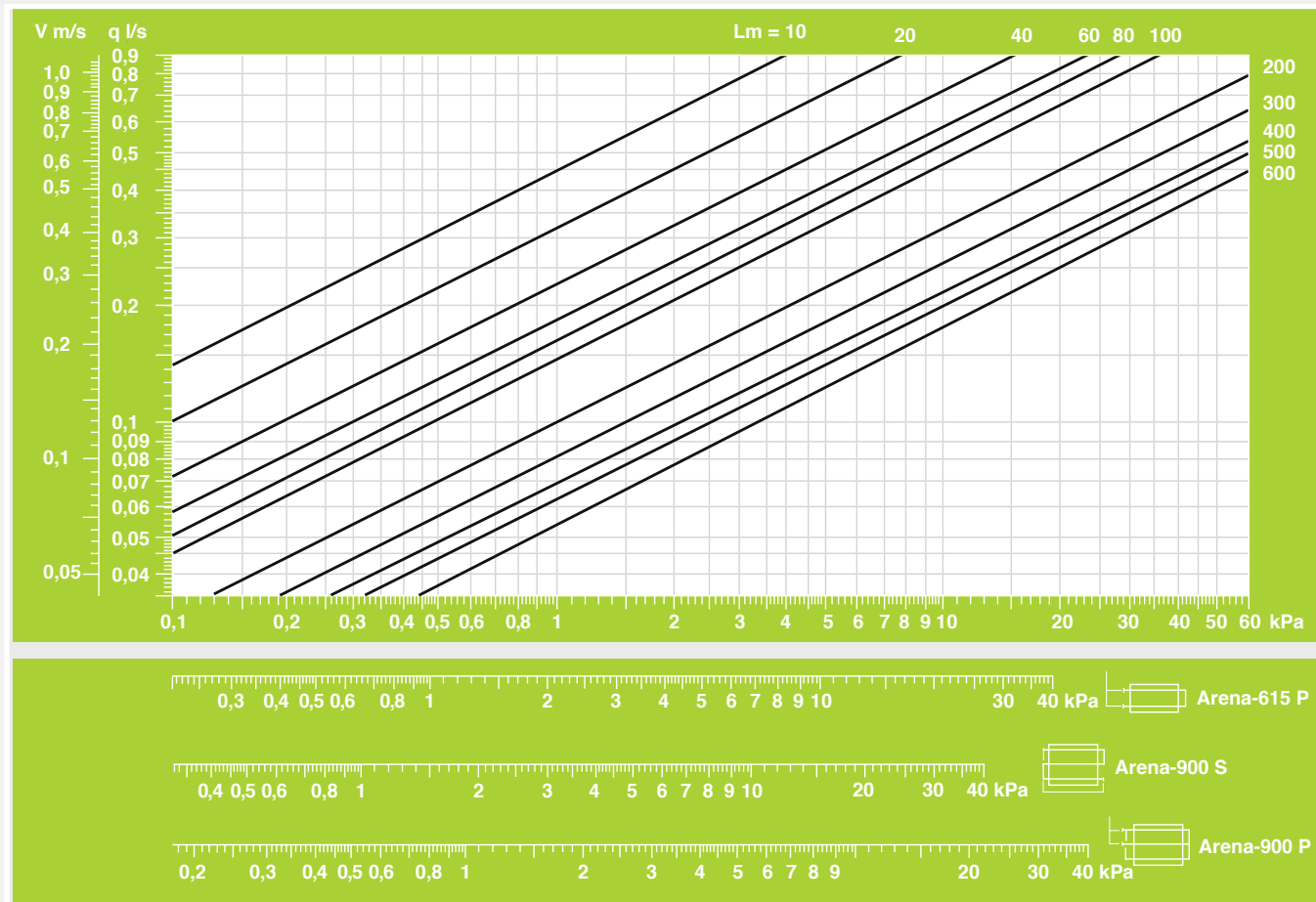
Line length refers to "effective length" according to the example on page 4.

Water flow as a function of the effect P_v at temperature difference on the water Δt_v



PRESSURE DROP

Pressure drop per panel line



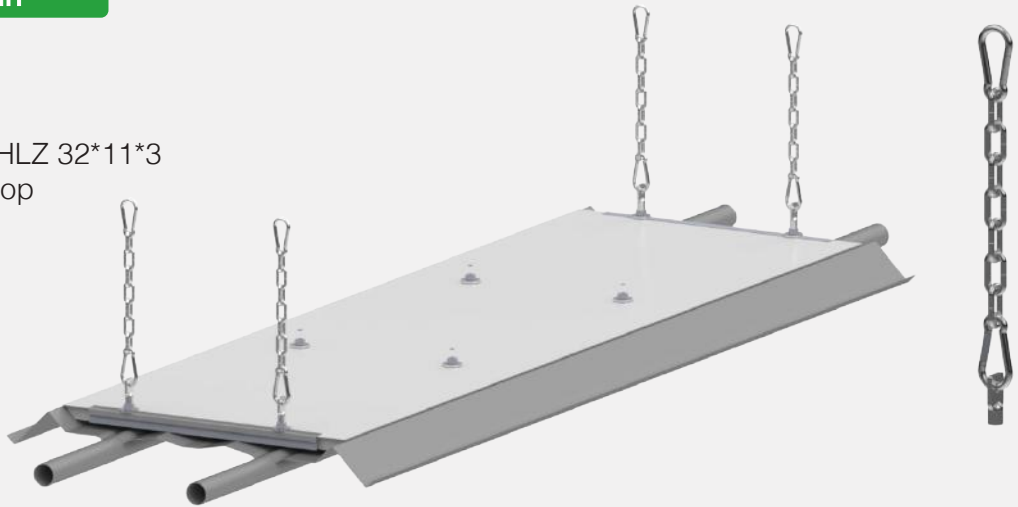
MOUNTING

For the Arena, there are two alternative suspensions of the panels, wire and chain.

Mounting kit A1 - chain

Included:

- 0,5 meter chain HLZ 32*11*3
- M6 screw with loop
- 2 pcs carabines



Chain

Chain suspension is chosen as there are high demands on the strength of the suspension. The number of suspensions needed depends on the length of the panel, at least 4 and a maximum of 6 (for panels over 3 meters). In order for the installation to be safe, it is recommended that you follow the steps in the description next to it. ►

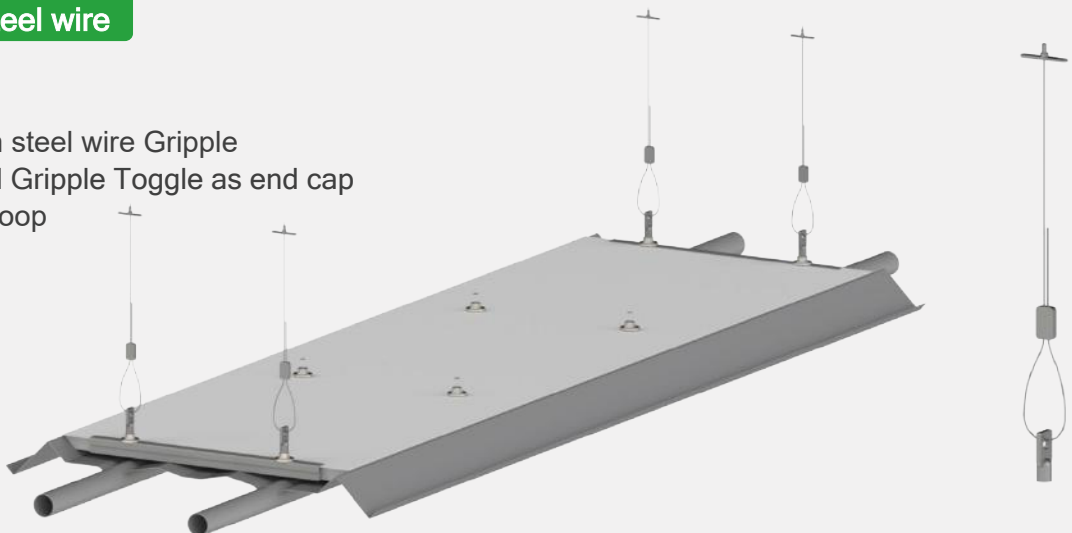
Do this:

1. Screw the screw with loop to the bolt on the panel, the suspensions should be evenly distributed over the panel.
2. Attach the cabin hook to the leaf sleeve and to the attachment to the ceiling.

Mounting kit A2 - steel wire

Included:

- 4 meter, 1,5mm steel wire Gripple
- double lock and Gripple Toggle as end cap
- M6 screw with loop



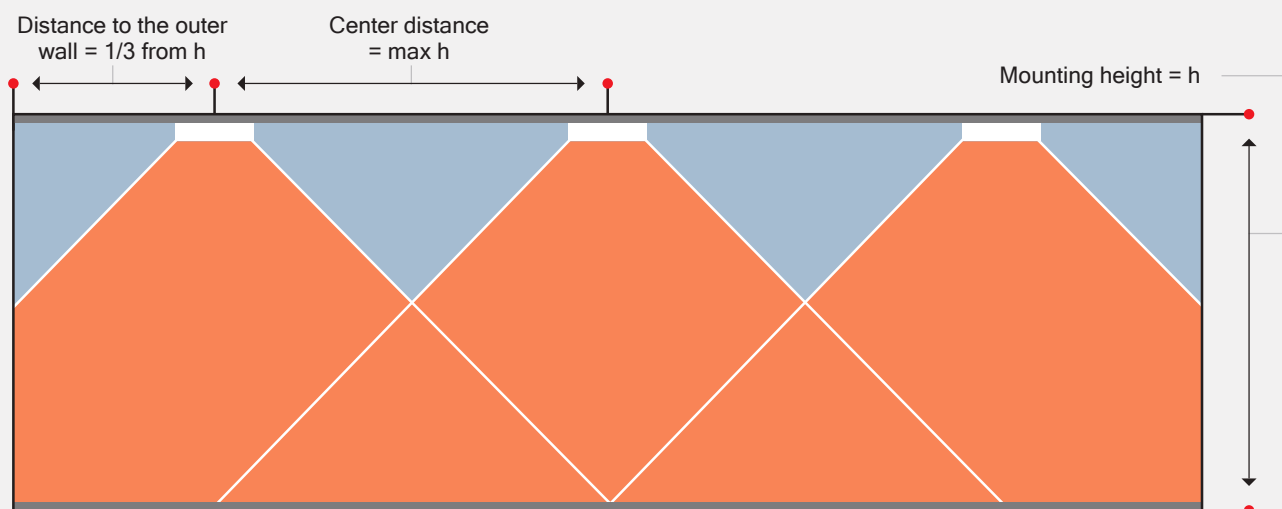
Steel wire

Wires are a very flexible solution for hanging the panels. Each wire can handle a load of 15 kg with five times safety. The number of suspensions needed depends on the length of the panel, at least 4 and a maximum of 6 (for panels over 3 meters). In order for the installation to be safe, it is recommended that you follow the steps in the description next to it. ►

Do this:

1. Screw the screw with loop to the bolt on the panel, the suspensions should be evenly distributed over the panel.
2. The wire is inserted through the double lock, then passed through the hole on the blade sleeve and back through the double lock.

SYSTEM PLANNING



Arena can be mounted as single panels or connected in series. It is often external conditions such as trusses, ventilation and lighting that can affect how the panels are mounted. The important thing is not to "obscure" the panel's radiation towards the living zone with, for example, sound absorbers or ventilation drums. Apart from this, Arena is insensitive to high assemblies. Read more about it in the Ceiling Heating Guide.



CONNECTIONS

Selection of connection

Which connection is selected as the input is irrelevant to the function. Check that the pipe ends / couplings are not damaged or have scratches, as this can lead to leakage.

Connection of valve or coupling takes place according to the usual procedure for connecting steel pipes and follow the installation instructions for the type of valve or coupling selected.

Arena is always built on 35 mm steel pipes and all factory-fitted press couplings have an M-profile.

To assemble panels connected in series, a press connection is recommended

As the panels do not have vent valves, you must always ensure that there is a high point on the pipe system to the panels where you can vent the installation.

COMMISSIONING AND MAINTENANCE

Workplace management

The panels come packed on special pallets with spacers. The sides are protected by shrink plastic for optimal protection during transport and storage.

Check that the packaging does not have any damage when receiving the goods. Any damage must be reported to the freight forwarder immediately.

Handle the panel carefully when lifting so that no bumps, scratches or other damage occur. Wear clean gloves when handling and assembling.



HEAT IN VARIOUS FORMS

At Lyngson's wide range you will find a variety of heating elements, such as ceiling heating panels, convectors, fan air heaters, air curtains and radiators.

We work on the principle of always being better. We are constantly developing and improving our products, logistics and work processes to always provide the highest quality to the customer.

We offer everything from standard radiators to a wide range of convectors. We have the largest range of panel radiators on the market so far. We produce them in our most modern factory in Latvia.

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