

# ZIP Radiant Heating and Cooling Ceiling Panels

Catalog



# Zehnder – everything you need to create a comfortable, healthy and energy-efficient indoor climate

Heating, cooling, fresh and clean air: at Zehnder, you will find everything you need to create a comfortable, healthy and energy-efficient indoor climate. Zehnder's wide and clearly structured portfolio can offer the right product for any project, be it private, public or commercial, new build or refurbishment. And where service is also concerned, you'll find that Zehnder is "always around you."

## Heating

At Zehnder, **Heating** doesn't just come in the form of designer radiators. We offer solutions in all shapes and sizes, from radiant ceiling panels to heat pumps with integrated ventilation devices.

- Designer radiators
- Compact energy station with integrated heat pump
- Heating and cooling ceiling systems
- Comfortable indoor ventilation with heat recovery



## Cooling

Zehnder also offers sophisticated solutions for indoor **Cooling**. These range from cooling ceiling systems to comfortable indoor ventilation with a supply of pre-cooled fresh air.

- Heating and cooling ceiling systems
- Compact energy station with heat pump and brine pipe
- Comfortable indoor ventilation with geothermal heat exchanger for fresh air pre-cooling



## Fresh Air

**Fresh Air** – a product range with a long tradition at Zehnder. Zehnder Comfosystems provides products and solutions for comfortable indoor ventilation with heat recovery for houses and apartments, for new builds and for renovation projects.

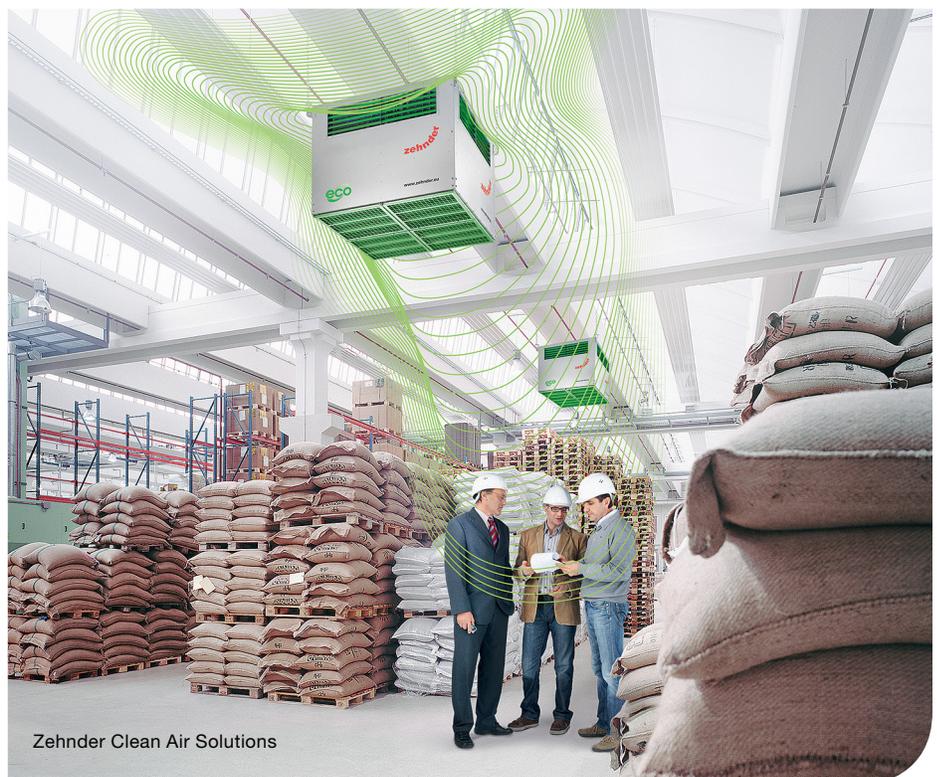
- Comfortable indoor ventilation
- Compact energy station with integrated ventilation device



## Clean Air

Zehnder Clean Air Solutions provide **Clean Air** in buildings particularly prone to dust. In residential applications, the comfortable indoor ventilation provided by Zehnder Comfosystems filters external pollutants out of the air.

- Comfortable indoor ventilation with integrated fresh-air filter
- Compact energy station with integrated fresh-air filter
- Systems for clean air





## The Sun a Masterpiece

The sun radiates warmth and light. Its thermal radiation is only effective when its rays shine on an object. The air is therefore not warmed directly. Even when the air is very cold it is possible to feel warm in the sun. The decisive factors for our personal thermal comfort are the average values of the ambient temperature and those of the surrounding surfaces.

Zehnder Rittling ZIP Radiant Ceiling Panels for heating applies this natural principle. The perceived temperature is about 37°F higher than the air temperature, resulting in comfort at a lower room temperature.

Zehnder Rittling ZIP Radiant Ceiling Panels reduce costs. Heated by hot water, maintenance is minimal and service life is unlimited, saving energy and money. Zehnder Rittling ZIP Radiant Ceiling Panels create healthy warmth. They operate without causing air movement and consequently do not swirl dust about. This in turn assists in the prevention of allergies and illnesses.

**Range of Application:** Rooms from 10' to 100' high, such as production and storage facilities, workshops, sports halls, garages, sales rooms, shipyards, maintenance shops, damp locations, etc.

<b>Overview</b>	<b>2</b>
<b>Features</b>	<b>4</b>
<b>Dimensions and data</b>	<b>6</b>
<b>Suspension Systems</b>	<b>12</b>
<b>Connections</b>	<b>14</b>
<b>Panel specifications</b>	<b>17</b>
<b>Warranty</b>	<b>19</b>

## Excellent technology

Zehnder Rittling creates an entirely new system: Zehnder Rittling ZIP Radiant Ceiling Panels.

The many advantages are:

### ■ Choice of connection methods

You choose threaded or press fit connections. **No welding required.** This simplifies installation and facilitates easy system extension when premises are enlarged.

### ■ Installation-compatible

Shorter installation time means reduced costs.

### ■ High heat emission

Tested in accordance with EN 14037. The efficient heat transfer design of the Zehnder Rittling ZIP Radiant Ceiling Panels ensure the highest possible heat output, further reducing costs.

### ■ Modular construction

Ranging from nominal 6 ft – 20 ft, the unique, modular concept of the Zehnder Rittling ZIP radiant ceiling panel system offers the right solution for any installation situation. For the very first time, modules can be arranged end to end or side by side, as required.

### ■ Lightweight

Easy to assemble and install.

### ■ Easy to store

Only one module width – 12-5/8" – uses storage space effectively.

### ■ Flexible, straightforward fastening system

Simplifies installation as well as reconfiguration or extension.

### ■ Attractive slimline appearance

15 mm (5/8") diameter tubes.

### ■ Rapid reaction time

Due to low storage mass and low water content.

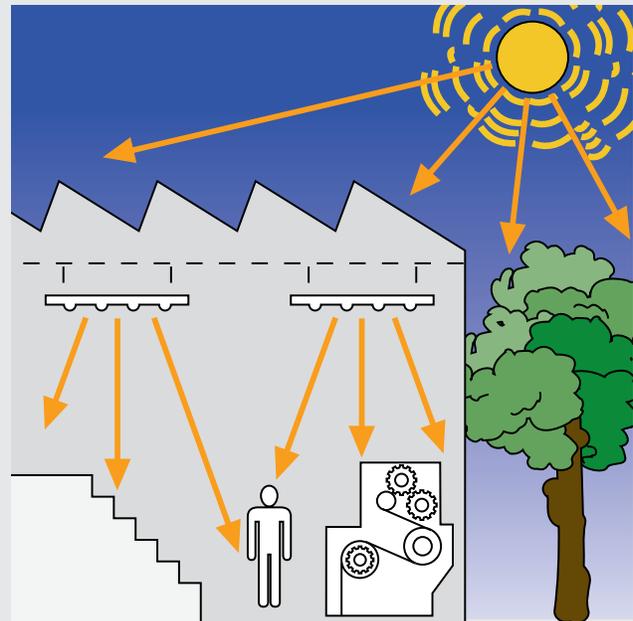
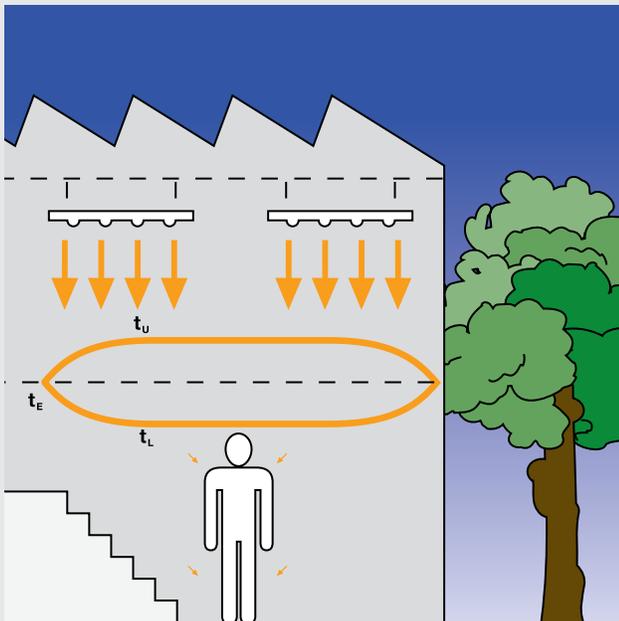
### ■ Corrosion prevention

The Zehnder Rittling ZIP Radiant Ceiling Panels are corrosion inhibited.

The relevant test was carried out in accordance with DIN 50017 "Condensation Water Test Atmospheres."

### ■ Special version for high humidity locations

Zehnder Rittling ZIP Radiant Ceiling Panels are suitable for locations that have high moisture content, such as washrooms and pool areas.



**Zehnder ZIP Radiant Ceiling Panels are ideal for integration into modern architecture.**



ALFA ROMEO  
A.C. 2000 SS  
Classical Sports Touring  
Competition Spider  
1934-1935

Alfa Romeo  
A.C. 2000 Touring Spider  
1934-1935

## Features:

Zehnder Rittling ZIP Radiant Ceiling Panel, made of 26 gauge sheet steel galvanized on both sides, with Zehnder Rittling special clip profiling to accommodate four 15 mm (5/8") O.D. precision steel tubes in line with DIN EN 10305-3. Outside surface of radiation panel coated with polyester lacquer similar to RAL 9016, opposite side with protecting lacquer. Suitable for operating temperatures up to 203°F (95°C), maximum operating pressure 73 PSIG (5 Bar).

Folded side flanges and galvanized box-section crossbars stiffen the steel sheeting and provide mounting for suspension. Two sheet-metal end elements close off the ends of the radiant panels.

A panel can be attached directly to the integral suspension bars in a fixed grid arrangement or, if several are arranged in parallel, by using a common multi-suspension bar with only two points for fixing to the ceiling.

The 1-1/4" (32 mm) diameter tubular headers are furnished with a 1" externally threaded connection boss, blank cover and an oppositely located 1/2" sleeve as vent/drain. The headers are supplied loose and are installed on site. They are connected to the panel or the panel modules by tightening the threaded couplings.

The 12-5/8" (320 mm) wide modules are supplied, ready-to-install, in nominal lengths of 6.6' (2m), 9.8' (3m), 13.1' (4m), 16.4' (5m), 19.7' (6m) according to requirements. The individual modules are joined with threaded or press fit connectors. The joints are concealed with clip fit, lacquer finished, cover plates.

The Zehnder Rittling ZIP Radiant Ceiling Panels are protected against corrosion. The relevant test was carried out in accordance with DIN 50017 "Condensation Water Test Atmosphere."

There is also a version especially for damp locations. This includes fitted insulation with a galvanized top cover added on site.

### Compression coupling:

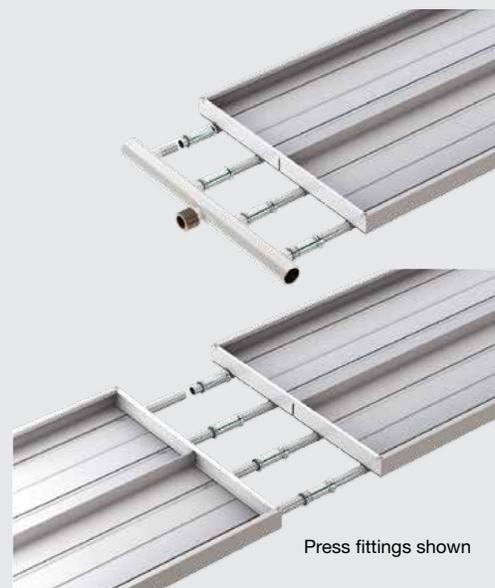
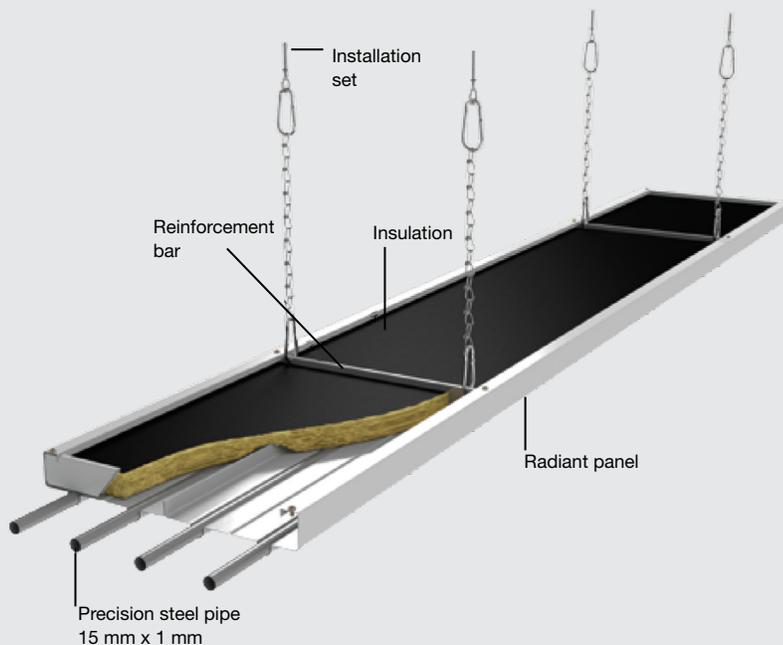
15 mm (5/8") galvanized compression fittings.

### Threaded coupling:

15 mm (5/8") galvanized clamp-ring coupling.

### Connector Technology:

If you are using two or more individual elements, they will need to be connected to one another. The individual elements are assembled into the desired configuration by means of press-fit connections and the joints are then hidden under a cover. The headers are painted as standard, so all you see is great design.



## Optional features:

### Cover plates:

Made of 26 gauge sheet steel, galvanized on both sides, polyester-lacquered on external surface, for covering the compression or threaded couplings.

### Fastening methods:

Installation Kit KN 53 for fastening to concrete ceilings.

Installation Kit KN 54 for fastening to steel section.

Installation Kit KN 56 for fastening to trapezoidally formed sheet steel.

Installation Kit KN 57 for fastening to tilted steel girders.

Installation Kit KN 58 for fastening to horizontal steel girders.

### Z-Profile clip:

For edge mounting of panel directly to ceiling.

### Double Z-Profile clip:

For edge mounting of panels directly to ceiling, located between two panels.



### Ball guard:

Curved wire mesh is installed on top of the panel to protect pipes and to inhibit balls from getting stuck on top of the panels. Tested for ball impact resistance in accordance with DIN 18032.



### Volumetric flow controller:

Zehnder Rittling combined volumetric 2-way flow controller valve for flow and return, up to 212°F (100°C), differential pressure up to 58 PSIG, PN 232 PSIG, volumetric range 0.66-4.6 GPM, consisting of: controller for return, complete with shut-off valve, filling valve, drain valve and threaded connector.

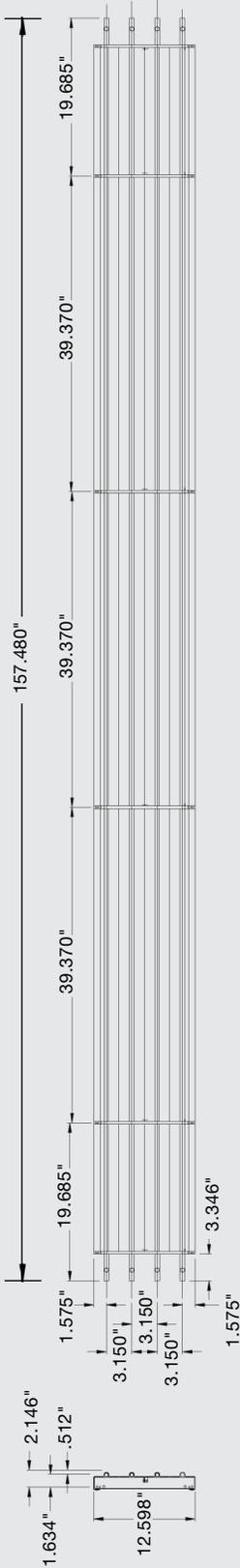
### Stainless steel flexible hoses:

Zehnder Rittling armored flexible tubing with suitability verification by the Technical Control Board, Germany for use in heating installations, consisting of temperature and aging resistant EPDM with woven stainless steel braiding PN 145 PSIG, length 19-5/8" (500 mm).

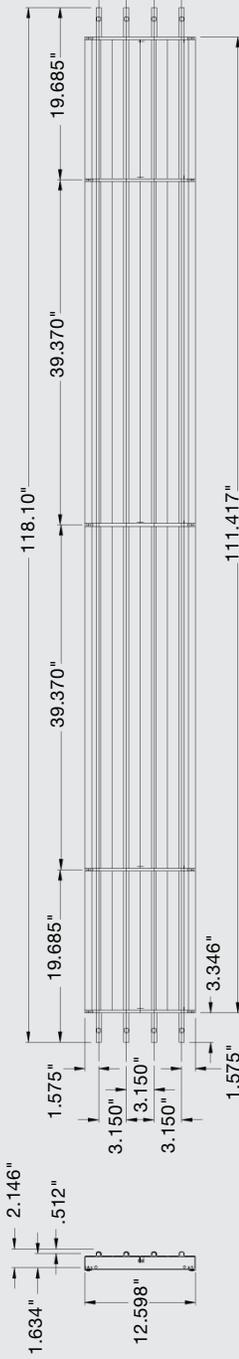


# Dimensional data, standard panels

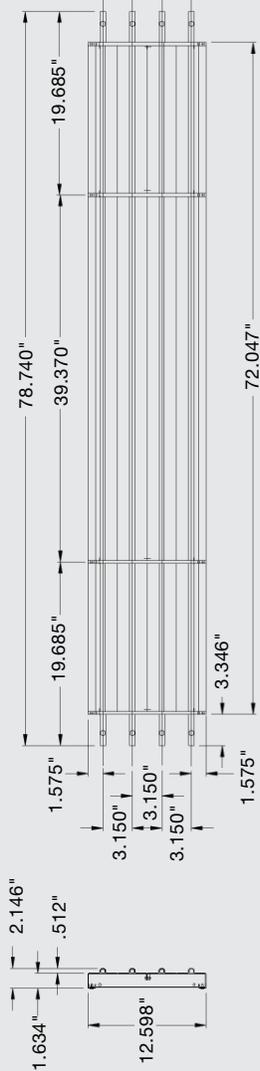
ZIP L40



ZIP L30

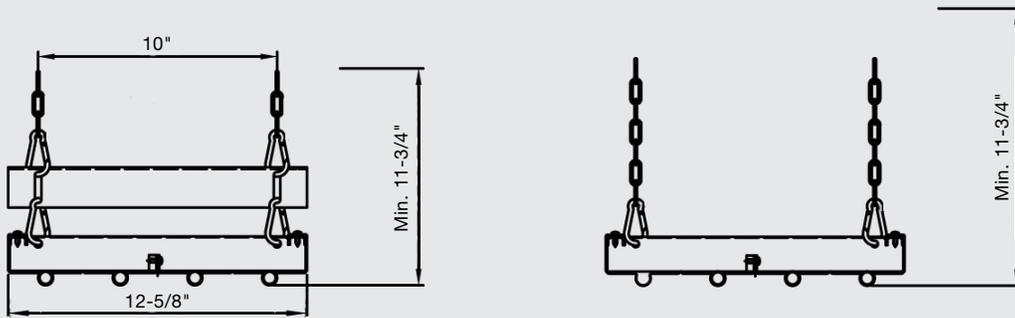


ZIP L20

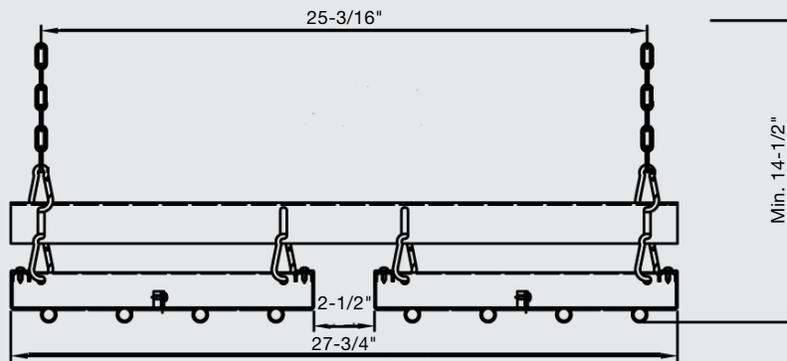


# Dimensional data, standard panels

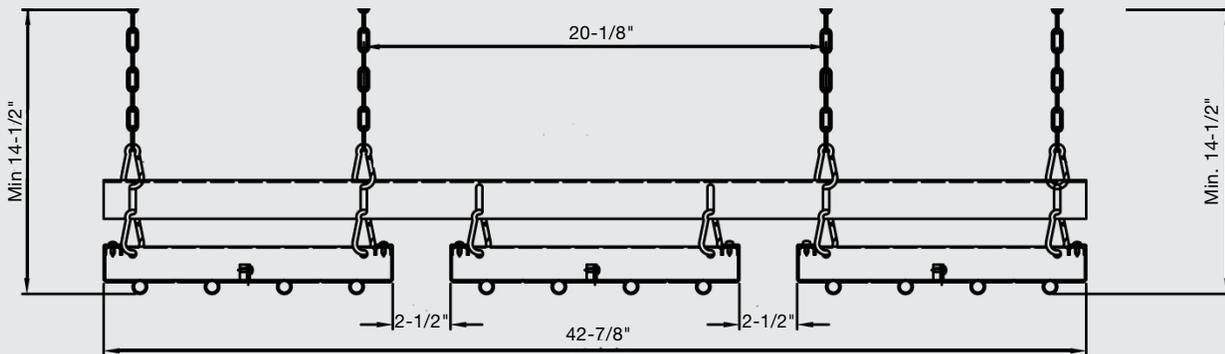
## ZIP 1



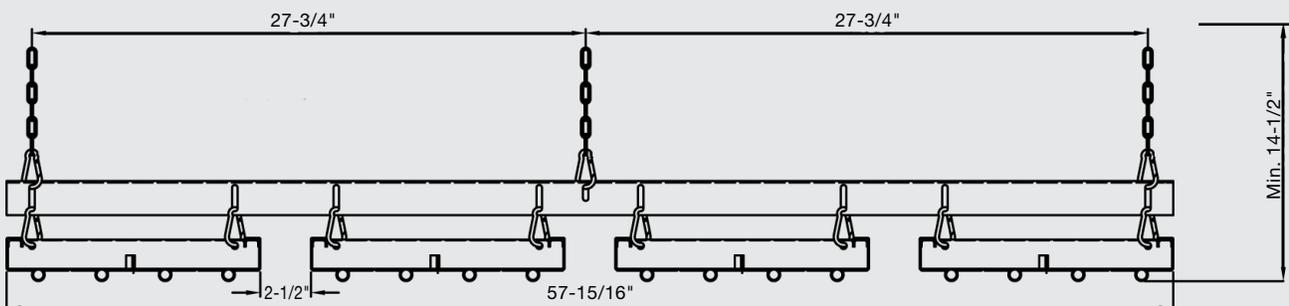
## ZIP 2



## ZIP 3



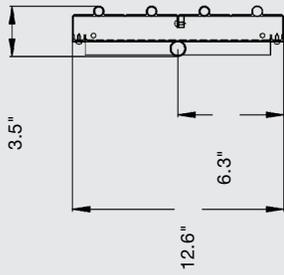
## ZIP 4



# Dimensional data, superimposed header



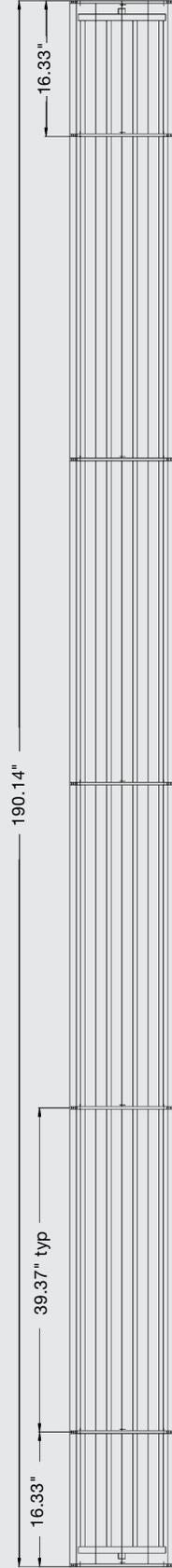
Typical for all



ZIP L60

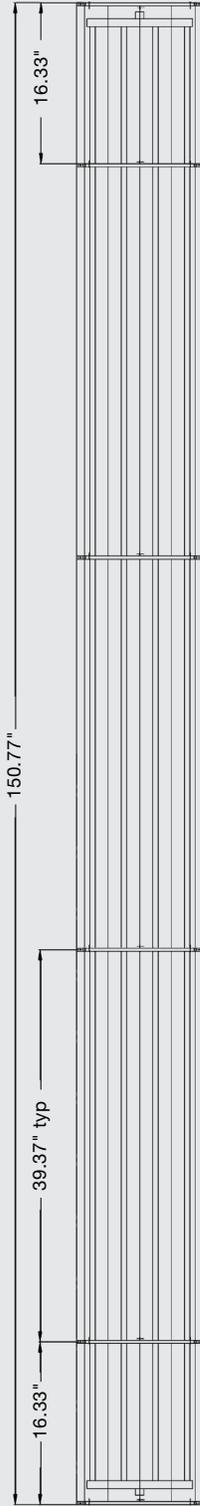


ZIP L50

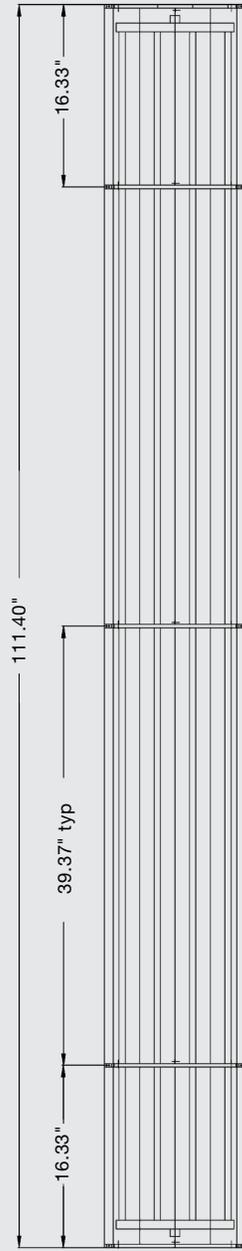


# Dimensional data, superimposed header

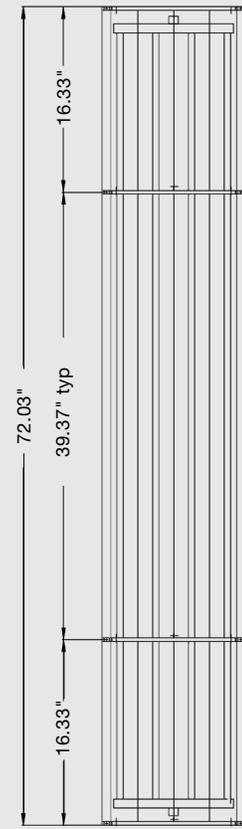
ZIP L40



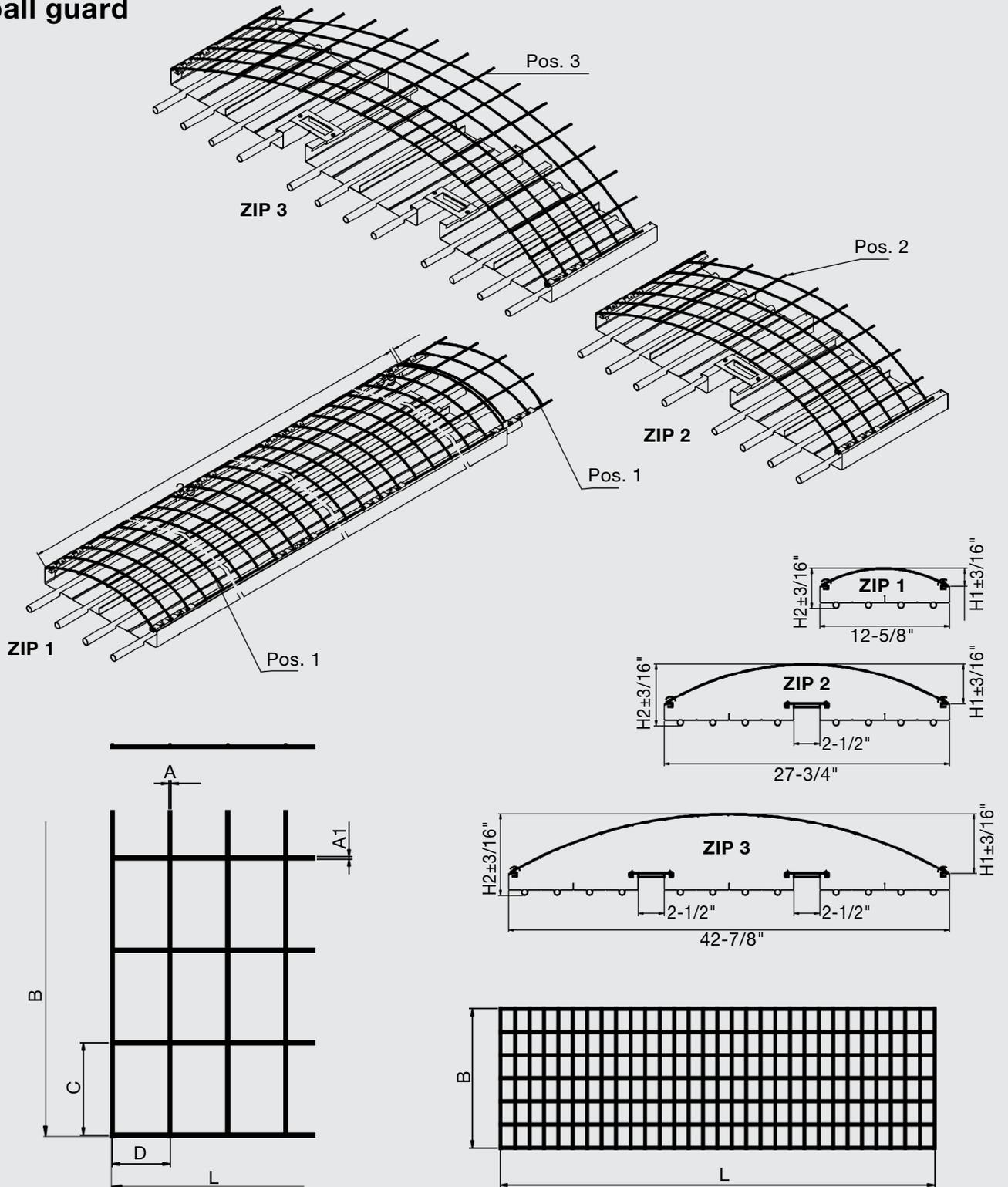
ZIP L30



ZIP 20



# Dimensional data, ball guard



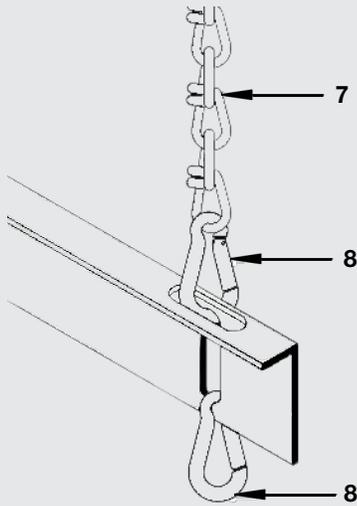
Pos.	Model	Length	Width	C	D	Wire thickness		Ball guard installed height	Overall height installed ball guard
		L	B			A	A1	H1	H2
1	ZIP 1	39"	12-5/8"	80	1-3/4"	5/64"	5/64"	1-3/4"	4"
2	ZIP 2		28-3/8"					4"	6-1/8"
3	Zip 3		44-1/16"					5-7/8"	7-7/8"

# Suspension systems

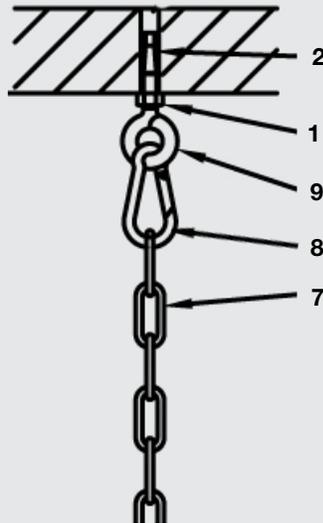
- 1 Hexagon nut, M8
- 2 Push-in anchor
- 3 Carrier clamp, M8
- 4 Security clip
- 5 Flat leaf screw, M8

- 6 Trapezoidally formed suspension element, M8
- 7 Chain link
- 8 Spring loaded gate link
- 9 Eye bolt

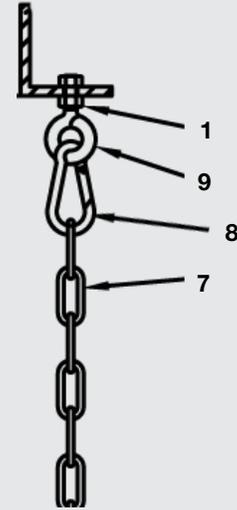
- 10 Plain washer
  - 11 Hex bolt, M8 x 40
  - 12 Hex bolt, M8 x 110
  - \* Provided by customer
- All individual components galvanized.



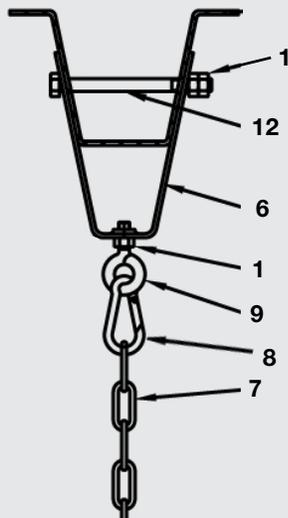
Fastening to **multi-suspension bars with spring hooks** and knotted-link chain.



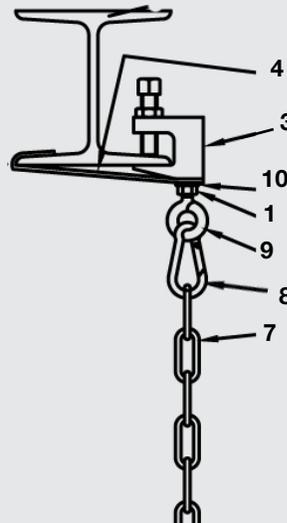
**Installation kit KN 53**  
Fastening to concrete ceiling with steel drive anchors, eye bolts and spring hooks.



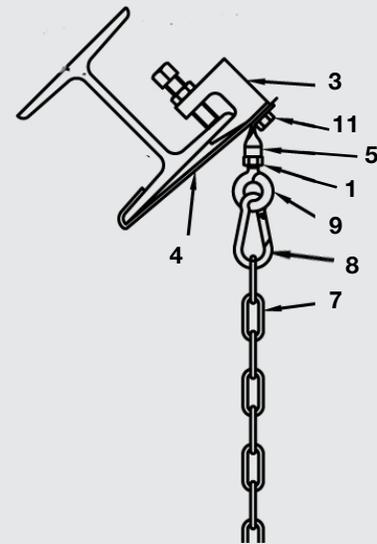
**Installation kit KN 54**  
Fastening to steel section with eye bolts and spring hooks.



**Installation kit KN 56**  
Fastening to trapezoidally formed sheet steel mounting member with trapezoidally formed suspension element, eye bolts and spring hooks.



**Installation kit KN 58**  
Fastening to horizontal steel girders with carrier clamps, eye bolts and spring hooks.

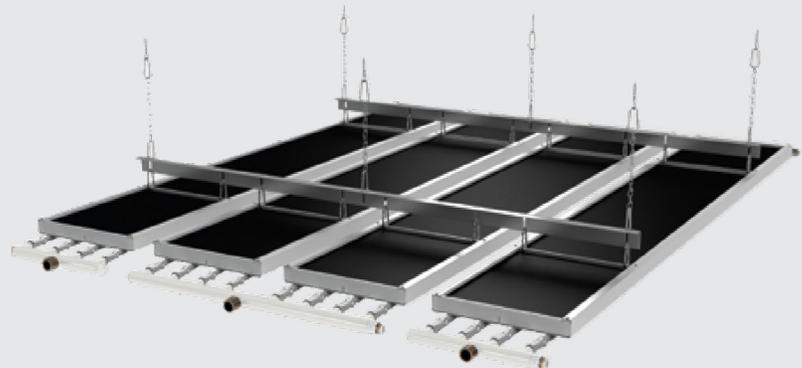


**Installation kit KN 57**  
Fastening to inclined steel girders with carrier clamps, eye bolts and spring hooks.

## Suspension systems

There are many different possible forms of suspension and fixing. Using multiple suspension bars when positioning several Zehnder Rittling ZIP modules next to one another reduces the number of installation sets required.

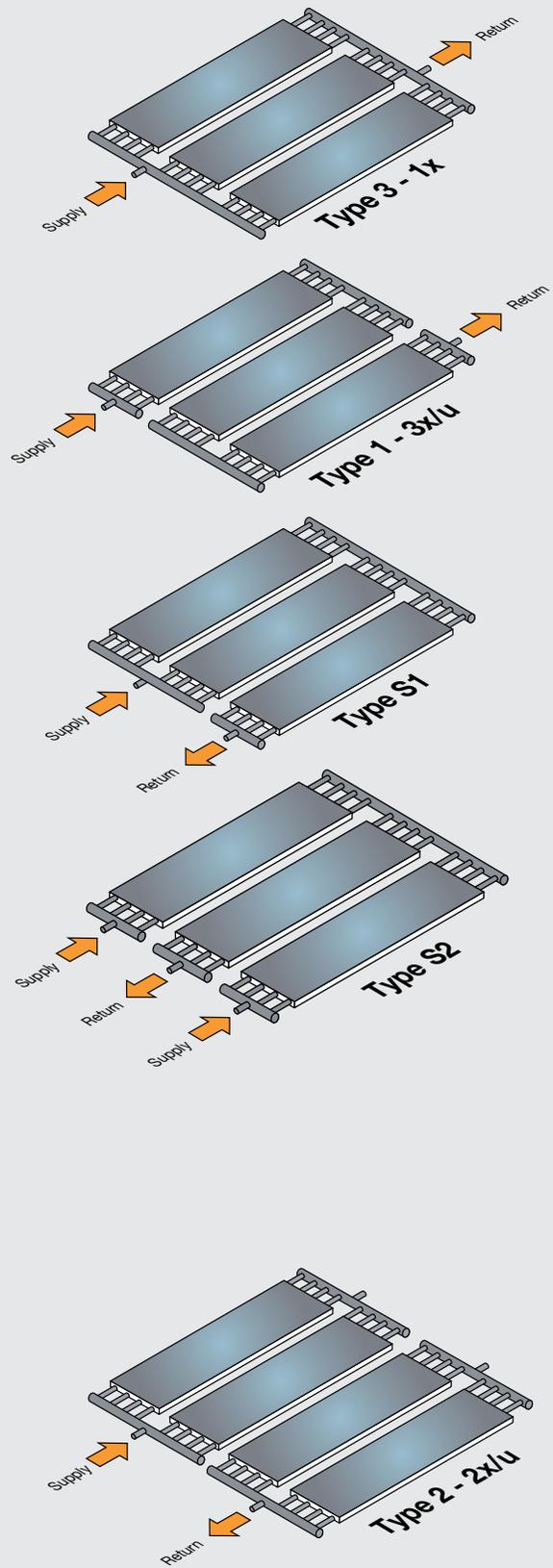
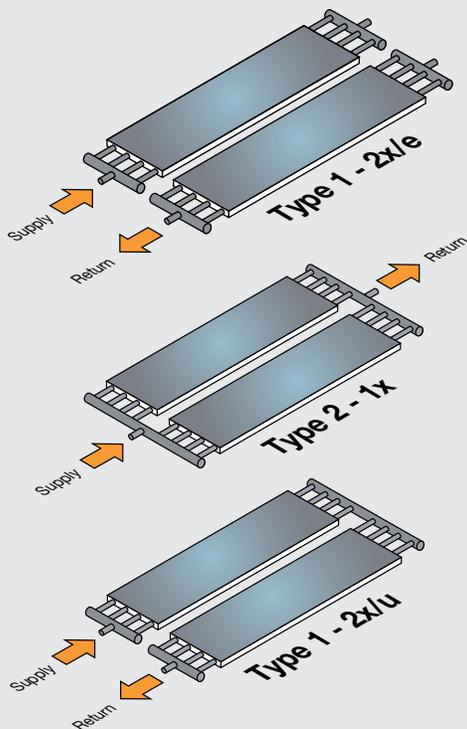
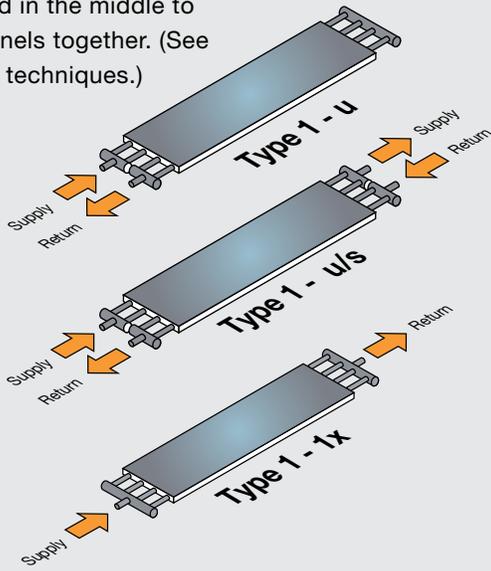
Quantity of Multiple Suspension Bars per Module	
ZIP L20	2
ZIP L30	2
ZIP L40	2
ZIP L50	3
ZIP L60	3



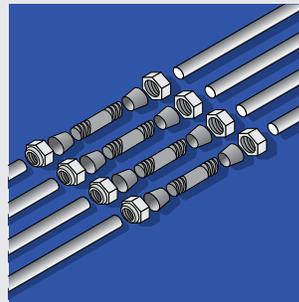
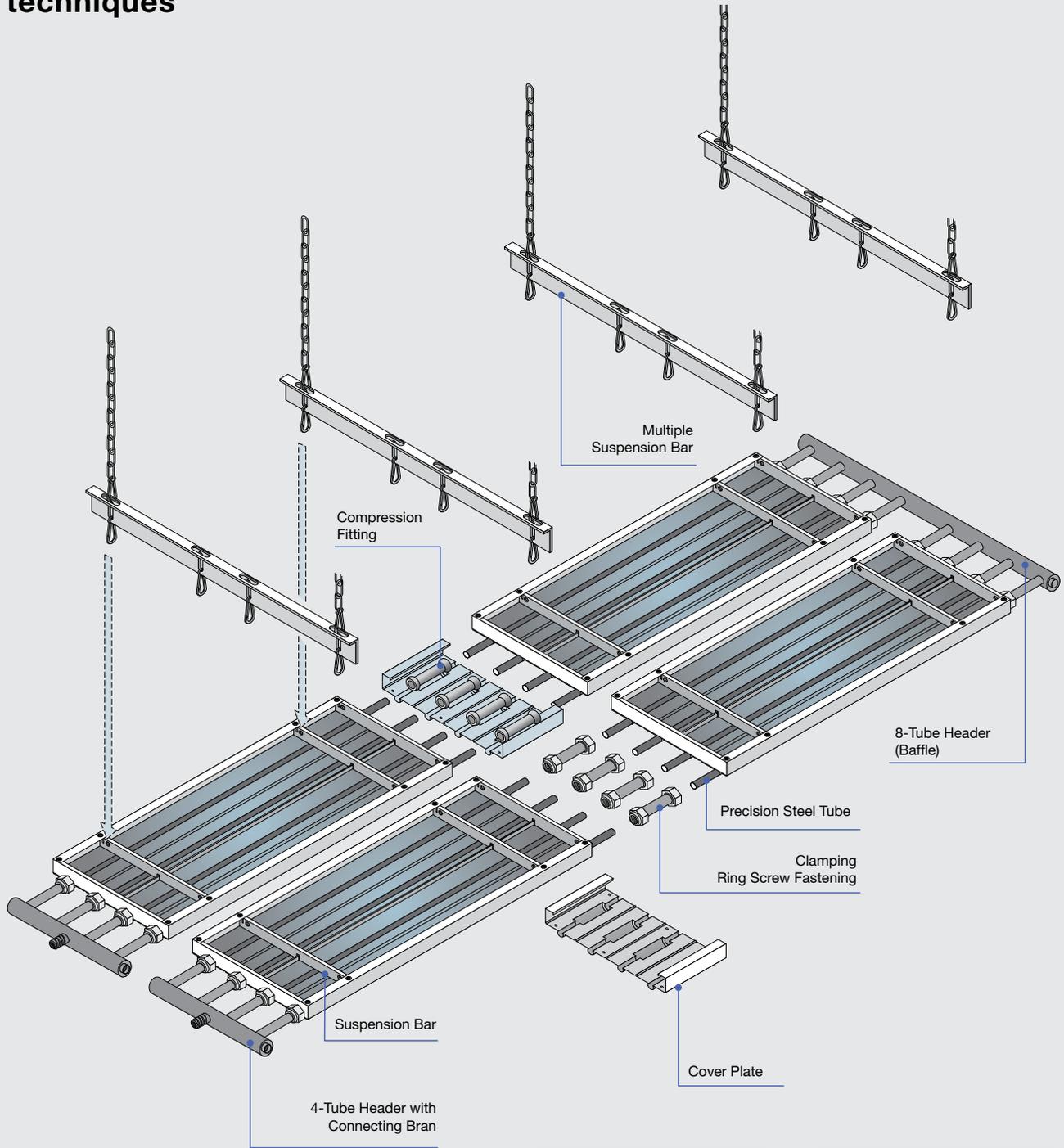
# Possible hydraulic connections

The Zehnder Rittling ZIP Radiant Ceiling Panels offer a variety of possible connections.

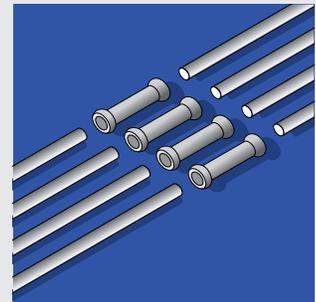
Here are the available configurations. Panels can be assembled in series with headers and collectors on each end of the run and compression or screw fittings used in the middle to connect panels together. (See connection techniques.)



# Connection techniques



Detail of the clamping ring screw fastening.



Detail of the compression fittings.



# Panel specifications

## 1. General

### 1.1 Related documents

- A. Drawings and general provisions of the contract, including general and supplementary conditions and division 1 specification sections, apply to this section.

### 1.2 Summary

- A. This section includes the following:
  - 1. Hydronic radiant heating and cooling ceiling panels.

### 1.3 Definitions

- A. Low voltage: as defined in NFPA 70 for circuits and equipment operating at less than 50V or for remote control, signaling and power limited circuits.

### 1.4 Submittals

- A. Product data: includes rated capacities, specialties and accessories for each product indicated.
- B. Shop drawings: Include plans, elevations, sections, details and attachments to other work. Indicate dimensions, weights, loads, required clearances, method of field assembly, components and location and size of each field connection.
  - 1. Include schedule showing model designation, size, room location and accessories furnished.
- C. Coordination drawings: reflected ceiling plan(s) and other details, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
  - 1. Suspended ceiling components
  - 2. Method of attaching hanging systems to building structure.
  - 3. Size and location of initial access modules for acoustical tile.
  - 4. Items penetrating finished ceiling, including the following:
    - a. Lighting fixtures
    - b. Air outlets and inlets
    - c. Speakers
    - d. Sprinklers
    - e. Access panels
  - 5. Perimeter moldings

### 1.5 Quality assurance

- A. Product options: Drawings indicating size, profiles, and dimensional requirements of radiant ceiling panels.

- B. Radiant ceiling manufacturer to supply 5 year warranty from date of shipment.
- C. Panels to be manufactured in a certified facility.
- D. Radiant ceiling panels and accessories shall be rated and tested for pressures as shown on drawings and manufacturers technical documentation

### 1.6 Coordination

- A. Coordinate layout and installation of radiant panels and suspension components with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire suppression system and partition assemblies.

## 2. Products

### 2.1 Manufacturers

- A. Manufacturers: subject to compliance with requirements, provide products by one of the following:
  - 1. Zehnder Rittling
  - 2. Alternates: approved equals or alternates are acceptable if and only if a mock-up and witness test is performed to demonstrate that the substitution meets the design criteria.

### 2.2 Hydronic Radiant heating and cooling ceiling panels

- A. Material:
  - a. Radiant ceiling panels to be constructed of galvanized sheet steel with clip profiling.
  - b. Folded side flanges and galvanized box-section crossbars shall provide rigidity for panel and mounting for suspension.
  - c. Tubing shall consist of four 15mm (5/8") O.D. precision steel tubes.
  - d. Factory installed insulation shall consist of 1/2" fiberglass insulation with foil backing <fiber backing or wrapped in LDPE foil>.
  - e. Headers shall consist of round tubing with diameter of 1-1/4" and shall include a vent/drain. Header shall be shipped loose for field installation.
  - f. Header and collector shall be pass through design allowing easy installation of panels in series. <Header and collector shall be of superimposed header design>.
  - g. Headers shall be secured to the panel tubing using 15mm (5/8") galvanized clamp-ring coupling.

- h. Radiant panels in series shall be connected using threaded couplings <crimp fittings> and provided with lower cover plate to hide any exposed connecting piping.
- i. Radiant ceiling panel surface to be coated with highly emissive powder coat paint for optimal radiative properties.
- j. Panels are protected against corrosion in accordance with DIN 50017 “Condensation Water Test Atmosphere“.
- k. Panels shall be supplied with ball guards tested in accordance with DIN 18032 for ball impact resistance.
- l. High moisture radiant ceiling panels shall be supplied with upper back plate and mold resistant insulation. Panel enclosure shall be completely sealed.
- m. Panels shall be suitable for operating temperatures up to 203°F and maximum operating pressure of 73 psig.
- n. Stainless steel flexible hoses to be supplied with panels for connections to surrounding panels and distribution system. Hose connections to consist of 1“ threaded connectors. Panel connections by means by brazing or press is not acceptable.
- o. Factory supplied mounting and hanging hardware for ceiling panels.
- p. Factory supplied surface mounting brackets to include rubber grommets.
- q. Radiant ceiling panels shall be crated, shipping via boxes is not accepted.
- r. Radiant panel performance and output as measured in BTU/hr
  - 1. Nominal panel size as scheduled
  - 2. Heating Performance:
    - 1. Radiant panel capacity shall be tested and certified by manufacturer in accordance with DIN 14037 or ASHRAE 138.
  - 3. Cooling Performance:
    - 1. Radiant panel capacity shall be tested and certified by manufacturer in accordance with DIN 14240 or ASHRAE 138.

### 3. Execution

#### 3.1 Pre-design services

- A. Bid shall include the costs to complete final selections and coordination with the Engineer at the Engineers office. Allow for a minimum of three (3) days.

#### 3.2 Installation - General

- A. Install radiant panel level and plumb. Maintain sufficient clearance for normal services, maintenance, or in accordance with construction drawings.
- B. Complete installation and startup checks according to manufacturer’s written instructions and perform the following:
  - 1. Removal of protective film coating before system startup.
  - 2. Verify that controls respond to inputs as specified.
  - 3. Verify that controls and control enclosure are accessible.
  - 4. Verify that control connections are complete to control valves as needed.
  - 5. Verify that any identification tags are visible.

#### 3.3 Connections

- A. Piping installation requirements are specified in other Division 23 Sections. Drawings indicated general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to radiant panels to allow for service and maintenance.
- C. In addition to Division 23 Section “Hydronic Piping”, connect copper tubing to supply with shut-off valve, strainer, control valve, and union or flange, and to return with balancing valve and union or flange.

#### 3.4 Field quality control

- A. Perform the following field tests and inspections and prepare test reports:
  - 1. Leak test: After installation, fill water tubes and test for leaks. Repair leaks and retest until no leaks exist.
  - 2. Operational test: After electrical circuitry has been energized, start units to conform to proper unit operation.
  - 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- B. Remove and replace malfunctioning units and retest as specified above.

#### 3.5 Cleaning and protection

- A. Remove protective film coating before startup of the system.
- B. Clean all visible surfaces of equipment; touch up as required.
- C. Protect all units before, during and after installation. Damaged materials due to improper protection shall be cause for rejection.

## Warranty

Zehnder Rittling guarantees its products to be free from defects in material and workmanship for a period of five years from date of shipment from our factory.

Should there be any defects in the good(s), the purchaser should promptly notify Zehnder Rittling. Upon receipt of written consent from Zehnder Rittling, the purchaser shall return the defective good(s) to the factory for inspection with freight prepaid. If inspection shows the goods to be defective, Zehnder Rittling will at its discretion repair or replace the said item(s).

Defects arising from damage due to shipment, improper installation, negligence or misuse by others are not covered by this warranty.

This warranty is extended only to the original purchaser from Zehnder Rittling.

