

**GKCS**

**Description**

The panels of the GKCS V.2015 series, designed for the installation of heating and cooling radiant ceiling systems, consist in a 15 mm thick plasterboard and 30 mm thick thermal activation and sintered expanded polystyrene (EPS) insulating layer, for a total thickness of 45 mm.

Thermal activation consists of one or two hydraulic circuits executed using a 8 x 1 mm PEX-b pipe with anti-oxygen barrier, laid in a dedicated housing on the upper side of the plasterboard sheet.

A single circuit is envisaged for 0,72 m<sup>2</sup> and 1,2 m<sup>2</sup> radiant panels, whilst two hydraulic circuits are envisaged for 2,4 m<sup>2</sup> radiant panels.

The panel's different formats ensure system modularity and flexibility; non-activated panels, without hydraulic circuits, enable completing radiant surfaces with surrounding structural elements.

The panels are connected to the distribution network with 8 x 1 mm pipes.

**Versions and product codes**

Product code	Description	Dimension [mm]	Kv	Weight [kg]	Area [m <sup>2</sup> ]
KS120Y200	Active 2 circuits	1200 x 2000	0,1	30	2,4
KS60Y200	Active 1 circuit	600 x 2000	0,1	15	1,2
KS60Y120	Active 1 circuit	600 x 1200	0,12	9	0,72
KS120X300	Inactive for compensation	1200 x 2000	-	30	2,4



**NB:**  
 The 1200x1000 mm panel can be obtained by cutting panel KS120Y200 into two. The two circuits are completely separate.



**Warning.**  
 When cutting the KS120Y200 panel, pay attention to the drawing traced on the plasterboard's surface.

**Technical data**

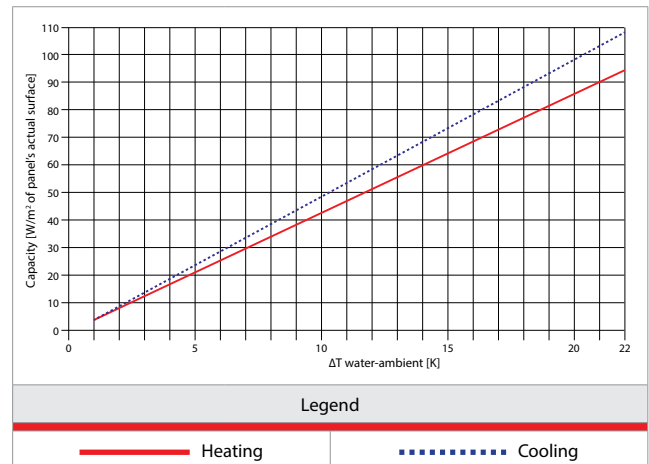
- Pipe dimensions: Ø 8 x 1 mm
- Total panel thickness: 45 mm
- Radiant panels of B-s1,d0 fire class (EN 13501-1)

**Materials**

- Panel sheet: plasterboard
- Pipes: Ø 8 x 1 mm plastic material with anti-oxygen barrier
- Insulating layer: EPS
- Pipe protection caps: plastic material

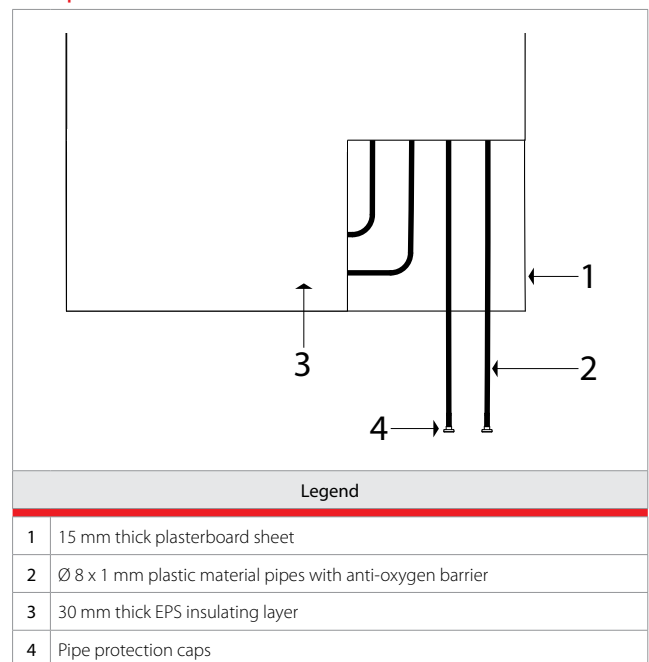
**Nominal yields**

- For cooling (in compliance with EN14240): 47,2 W/m<sup>2</sup> with water-ambient ΔT 10 K.
- For heating (in compliance with EN14037): 62,4 W/m<sup>2</sup> with water-ambient ΔT 15 K.



**NB:**  
 Outputs as per tests in a temperature-controlled enclosure. Outputs refer to the panel's actual surface.

**Components**



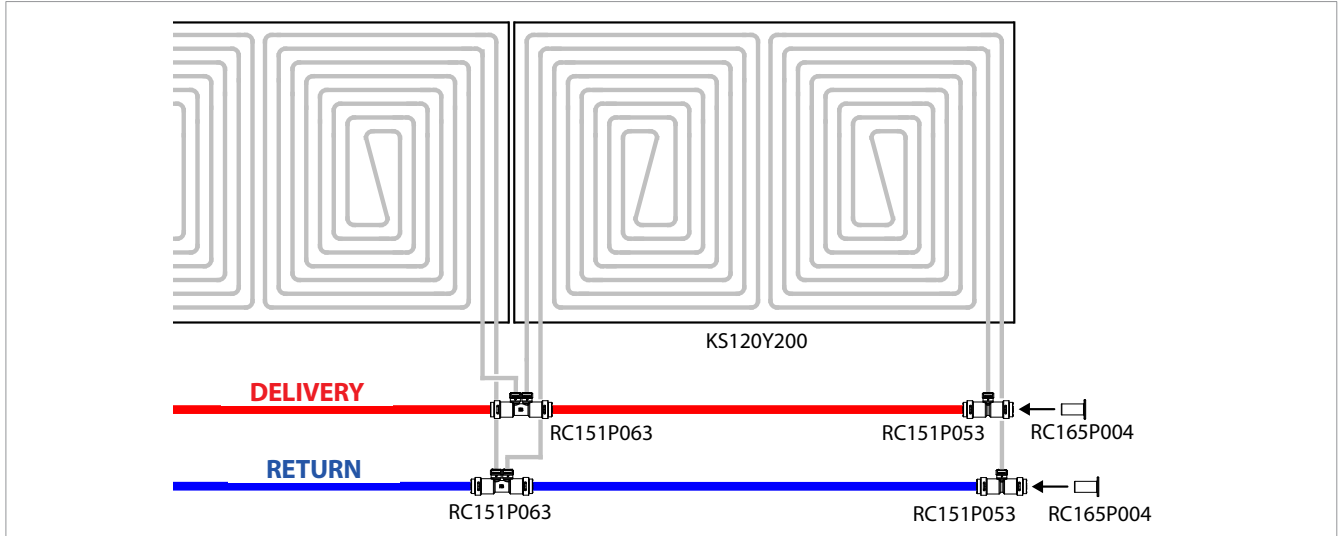
Legend	
1	15 mm thick plasterboard sheet
2	Ø 8 x 1 mm plastic material pipes with anti-oxygen barrier
3	30 mm thick EPS insulating layer
4	Pipe protection caps



**Connection and distribution system**

The designed flow rate for each internal circuit is equal to 40÷50 l/h and determines a pressure drop of approx. 2000 mm for each circuit. Such flow rate makes sure that water circulates in connection pipes at a greater speed than the critical one and, therefore, can push away any air bubbles that may be present in the pipes.

By connecting in parallel no.2 panels KS120Y200 and no.1 panel KS60Y200, for instance, it would be possible to achieve a pressure loss of approx. 150 mm on the distribution network (executed with 10 m of 20 x 2 mm multilayer pipes), i.e. negligible compared to that calculated for each panel.



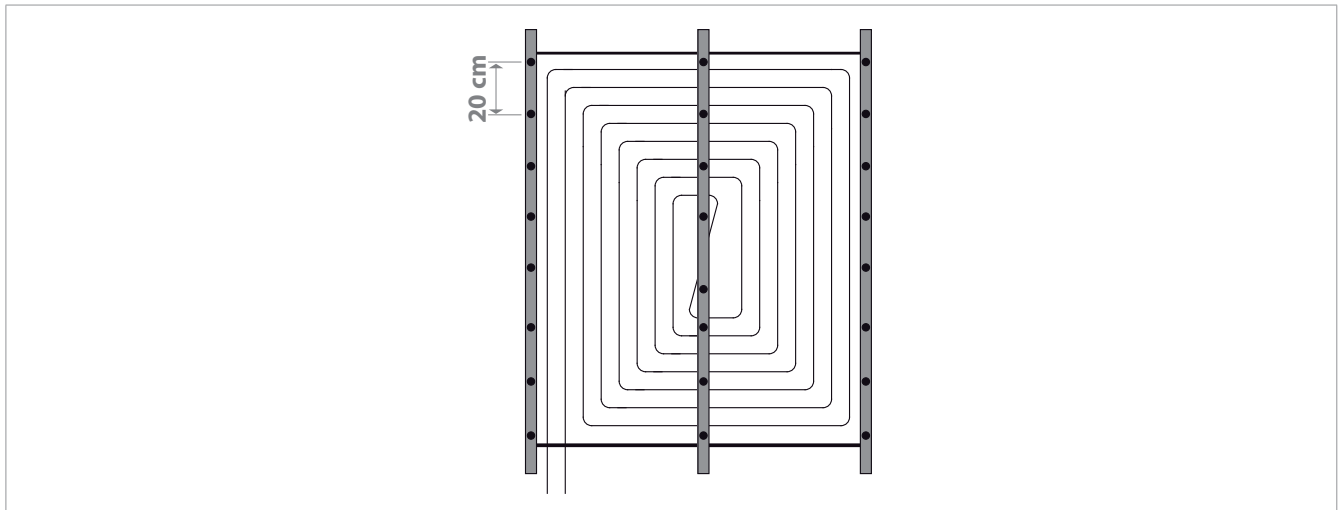
Panels should be connected using **multilayer pipes** Ø 20 x 2 mm that have not been pre-insulated (in bars) or pre-insulated (in coils) and **RC series plastic push fittings**. Adequate insulation will have to be provided for any non pre-insulated parts.



**NB:**  
 Please note that RC series plastic push fittings do not require the use of RC900 sleeves.

**Installation guidelines**

Prefabricated panels must be installed on the ceiling using carrying elements with galvanized profiles on which the modules must be fixed by means of screws with minimum length of 7 cm. The screws must be positioned in the middle of the pipe tracks traced on the panel, so as not to damage the pipes; the indicative pitch is 20 cm. Panels can be fixed to the carrying elements both longitudinally and transversally, as shown as follows.



Ceiling installation of a radiant system requires the creation of a supporting structure either in the false ceiling or against the ceiling. If the system is ceiling-mounted, the galvanized profiles are fixed directly to the ceiling with a single carrying element that acts as the center distance depending on the laying direction, be it longitudinal or transversal.



**NB:**  
 Installation in the false ceiling shown in the following images is recommended over ceiling installation, as the latter configuration can cause cracks in the plaster.



**Warning.**  
 On the jobsite, store in a dry area protected from the sun and the elements and handle the panels carefully, lifting them from the longer side without bending them too suddenly.



**Single metal carrying element**

Maximum suspension distance a [mm]	Center distance between carrier profiles b [mm]
900	longitudinal installation: 300 or 400 / transversal installation: 500

**Double metal carrying element with snap-on profile**

Maximum suspension distance a [mm]	Max. center distance primary carrying elements b [mm]	Max. center distance secondary carrying elements c [mm]
900	900	longitudinal installation: 300 or 400 / transversal installation: 500

Especially for compact installations, a clearance of approx. 25÷50 cm can be left between panel rows to insert backbone links.

Moreover, the pipes coming out of individual radiant panels should be installed over risers, to prevent crushing.

The active surface must be created leaving a distance of approx. 3÷5 mm from side walls. As for standard false ceilings, expansion joints should be provided each 15 m<sup>2</sup>. Moreover, to enable system inspection, the distance between suspended boards and the false ceiling should be of at least 10 cm.

Once the prefabricated panels have been fixed to the metal carrying elements, radiant panel installation must be carried out with compensation (i.e. inactive) panels only after the pressure test has been completed (in compliance with technical specification 0415EN).

Radiant panels can also be applied to the wall using metal carrying elements used for system installation. If a single carrying element is created, metal profiles are mounted directly onto the wall with a center distance of 50÷60 cm, fixed to the structure with dedicated screws, as described above, always leaving a service space of 25÷50 cm for connection lines between two rows of radiant panels. The areas needed for connection pipes must not be covered with panels; cladding, smoothing and plastering must be carried out after the system has been tested.

**Radiant panels installation**

After the hydraulic connection and the pressure test (in compliance with technical specification 0415EN) have been completed, the radiant surface must be finished with inactive compensation panels, and expansion joints must be provided in line with the guidelines for false ceilings.

After laying and radiant panels installation, grouting and smoothing can be completed.

Before finishing the wall with a paint layer, a layer of white primer applied to smooth out the surface and ensure the paint to be applied is evenly absorbed.



## Dimensions

Product code	L [mm]	H [mm]	Thickness [mm]
KS120Y200	1200	2000	45
KS60Y200	600	2000	
KS60Y120	600	1200	
KS120X300	1200	2000	

## Product specifications

### KS120X300

Inactive type plasterboard panel. Comprised of a 15 mm plasterboard sheet and a 30 mm layer of expanded polystyrene thermal insulation (EPS). To complete the false-ceiling made with the active panels KS60 and KS120. Dimensions 1200x2000x45 mm. Surface 2,4 m<sup>2</sup>.

### KS60Y120

Active type plasterboard panel. Comprised of a 15 mm plasterboard sheet and a 30 mm layer of expanded polystyrene thermal insulation (EPS). Activation consisting of a hydraulic circuit in PEX 8 x 1 mm pipe with anti-oxygen barrier. Dimensions 1200x600x45 mm. Surface 0,72 m<sup>2</sup>.

### KS120Y200

Active type plasterboard panel. Comprised of a 15 mm plasterboard sheet and a 30 mm layer of expanded polystyrene thermal insulation (EPS). Activation consisting of two hydraulic circuits in PEX 8 x 1 mm pipe with anti-oxygen barrier. Dimensions 1200x2000x45 mm. Surface 2,4 m<sup>2</sup>. The panel can be subdivided into two sheets with dimensions 1200x1000 mm (1,2 m<sup>2</sup>) during installation.

### KS60Y200

Active type plasterboard panel. Comprised of a 15 mm plasterboard sheet and a 30 mm layer of expanded polystyrene thermal insulation (EPS). Activation consisting of one hydraulic circuit in PEX 8 x 1 mm pipe with anti-oxygen barrier. Dimensions 600x2000x45 mm. Surface 1,2 m<sup>2</sup>.



**Description**

Push-fit connection fittings, with internal gaskets in the pipe with embedded internal sleeve for pipe support.

The fittings have the following advantages:

- ease of insertion into the pipe;
- no damage to the pipe by locking systems;
- internal gasket guarantee thanks to the action of the double O-ring and the sleeve, which ensures the pipe remains circular even in the presence of side loads;
- ease of disconnection in the event of system changes, thanks to the simple, univocal bayonet system;
- do not require RC900 sleeves.

**Technical data**

- Main connections: multilayer pipe  $\varnothing 20 \times 2$  mm
- Secondary connections: PEX-b pipe  $\varnothing 8 \times 1$  mm
- Transport and storage temperatures:  $-20$ – $80$  °C
- Working temperatures: min  $-15$  °C for water/glycol mixtures  
max  $80$  °C for continuous 2 bar pressure  
max  $120$  °C for peaks
- Working pressures: min 0 bar  
max 8 bar for room temperature
- Burst pressure:  $> 25$  bar

**Materials**

- Fittings body: nylon 6,6 with 30 % hydrolysis-resistant fiberglass
- Clip: stainless steel
- O-ring: EPDM peroxide

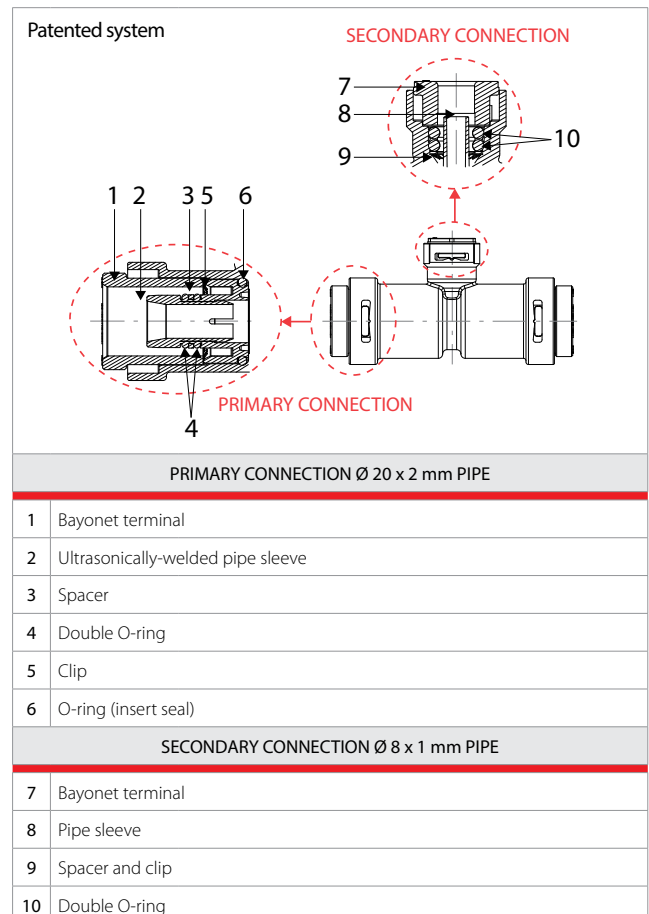
**Versions and product codes**

Product code	Size	Description
RC102P009	$\varnothing 20 \times 2$ mm	Straight fitting
RC122P009	$\varnothing 20 \times 2$ mm	90° curve fitting
RC151P053	$\varnothing 20 \times 2$ mm + 1 outlet $\varnothing 8 \times 1$ mm	T fitting with single outlet for PEX-b pipe
RC151P063	$\varnothing 20 \times 2$ mm + 2 outlets $\varnothing 8 \times 1$ mm	T fitting with double outlet for PEX-b pipe

**Completion codes**

Product code	Description
 RC165P001	Push-in connection cap $\varnothing 8 \times 1$ mm
 RC165P004	Push-in connection cap $\varnothing 20 \times 2$ mm
 RC211P001	Marker tool for $\varnothing 20, 10, 8$ mm pipe
 RC30P001	Spare part kit for push-in connection $\varnothing 20 \times 1$ mm (multilayer pipe)
 RC51P001	Spare part kit for push-in connection $\varnothing 8 \times 1$ mm (PEX-b pipe)

**Connection characteristics and components**





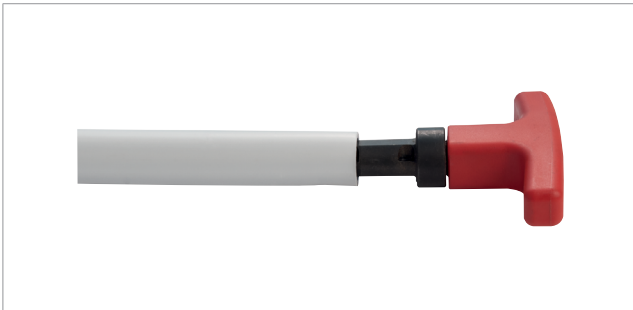
**Pipe installation on main connections**  
 (multilayer Ø 20 x 2 mm)

**Pipe connection**

1) Cut the multilayer pipe perpendicularly to its axis using a dedicated pipe cutter.

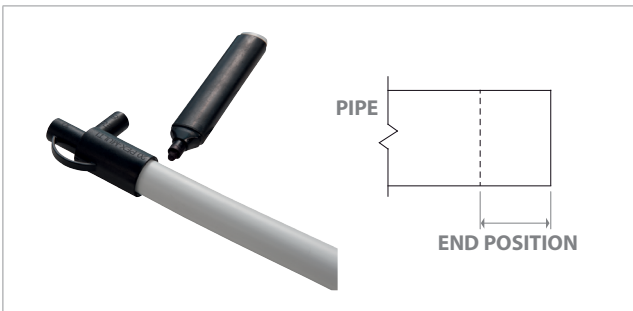


2) Process the pipe end, creating a double chamfer (inner and outer) and a non-oval internal diameter within tolerance using a calibration/flaring tool.



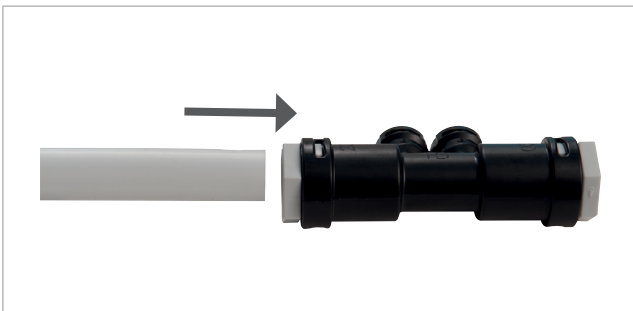
3) Mark the required insertion depth on the pipe using the relevant RC211P001 marker tool.

For Ø 20: end position = 39 mm



4) Insert the pipe into the fitting until it reaches the end position, ensuring that the mark mentioned in the previous stage is flush with the fitting's head.

For Ø 20: insertion force = 6÷16 kg

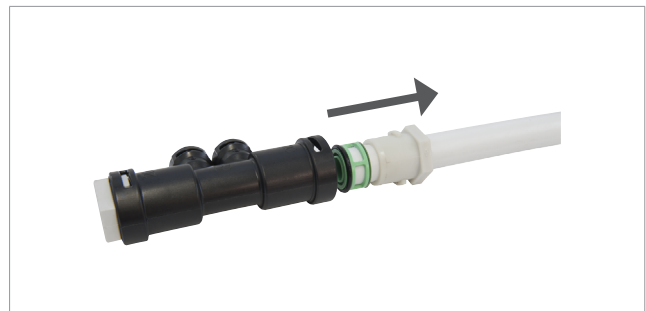


**Pipe disconnection**

1) Rotate the bayonet terminal anti-clockwise using the relevant wrench.



2) Disconnect the bayonet terminal.

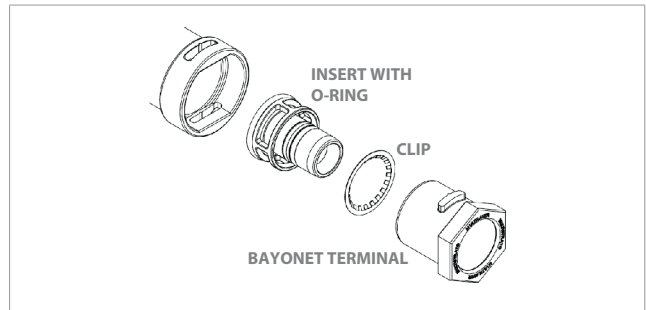


3) Remove the clip from the pipe using cutters.



4) Insert the replacement RC30P001 kit into the body, in the following order:

- insert with O-ring lubricated with silicone grease;
- stainless steel clip, with its teeth bent towards the body.



5) Reconnect the bayonet terminal, rotating it clockwise using the relevant wrench.



**Warning.**

Immediately stop installation if:

- the pipe cannot be inserted without forcing it
- insertion forces are not those included in the given ranges
- the pipe cannot be inserted to the length required

Once installation has been completed, it is recommended to test the system as described in Giacomini technical specification 0415EN.



**Warning.**

Fittings must be disassembled for disconnection purposes only by trained personnel.



**Pipe installation on secondary connections**  
 (PEX-b Ø 8 x 1 mm)

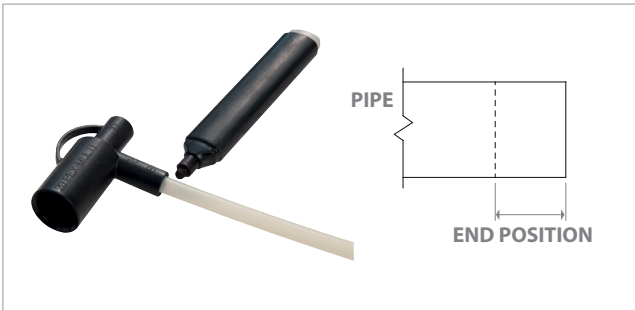
**Pipe connection**

1) Cut the PEX-b pipe perpendicularly to its axis using a dedicated pipe cutter.




2) Mark the required insertion depth on the pipe using the relevant RC211P001 marker tool.

For Ø 8: end position = 22 mm



3) Insert the pipe into the fitting until it reaches the end position, ensuring that the mark mentioned in the previous stage is flush with the fitting's head.



 **Warning.**  
 Immediately stop installation if:

- the pipe cannot be inserted without forcing it
- insertion forces are not those included in the given ranges
- the pipe cannot be inserted to the length required

**Pipe disconnection**

1) Rotate the bayonet terminal anti-clockwise using the relevant wrench.



2) Disconnect the bayonet terminal.

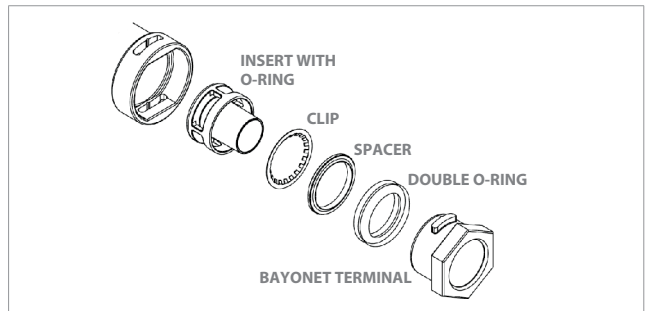


3) Remove the clip from the pipe using cutters.




4) Insert the replacement RC51P001 kit into the body, in the following order:

- insert;
- stainless steel clip, with its teeth bent towards the body;
- spacer;
- double O-ring lubricated with silicone grease.



5) Reconnect the bayonet terminal, rotating it clockwise using the relevant wrench.

 **Warning.**  
 Fittings must be disassembled for disconnection purposes only by trained personnel.



## Dimensions

Product code	A [mm]	B [mm]	C [mm]	Ø [mm]
RC102P009	20	88	ch. 30	35

Product code	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	Ø [mm]
RC122P009	20	74	56,5	74	56,5	35

Product code	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	Ø [mm]
RC151P053	20	8	98	49	49	51	33,5	35

Product code	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	I [mm]	Ø [mm]
RC151P063	20	8	121	49	49	51	33,5	23	35

Product code	A [mm]	B [mm]	C [mm]
RC165P001	8	19	35
RC165P004	20	35,5	45

## Product specifications

### RC plastic fittings

Plastic push fittings (straight, bent, 90°, T), with internal gaskets in the tube with embedded internal sleeve for pipe support. 6,6 nylon body with 30% hydrolysis-resistant fiberglass. Stainless steel clip. O-ring in peroxide EPDM. Main connections: multilayer pipe Ø 20 x 2 mm. Secondary connections (if any): PEX-b pipe Ø 8 x 1 mm. Working temperatures: min -15 °C for water/glycol mixtures; max 80 °C for continuous 2 bar pressure; max 120 °C for peaks. Working pressures: min. 0 bar; max. 8 bar for room temperature. Burst pressure > 25 bar.

## Additional information

For additional information please check the website: [www.giacomini.com](http://www.giacomini.com) or contact the technical service: ☎ +39 0322 923372 📠 +39 0322 923255 ✉ [consulenza.prodotti@giacomini.com](mailto:consulenza.prodotti@giacomini.com)  
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 Giacomini S.p.A. Via per Alzo, 39 - 28017 San Maurizio d'Opaglio (NO) Italy