Beautiful Line

SLIMDUCT™ RD

Design and construction materials

●Remarks･･･For more details, general catalogues are available upon requests. Quality, technical information & packing details in the leaflet are subject to change without notice.

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SLIMDUCT™ RD Design and construction materials

2019

Beautiful Line

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Ver9.00

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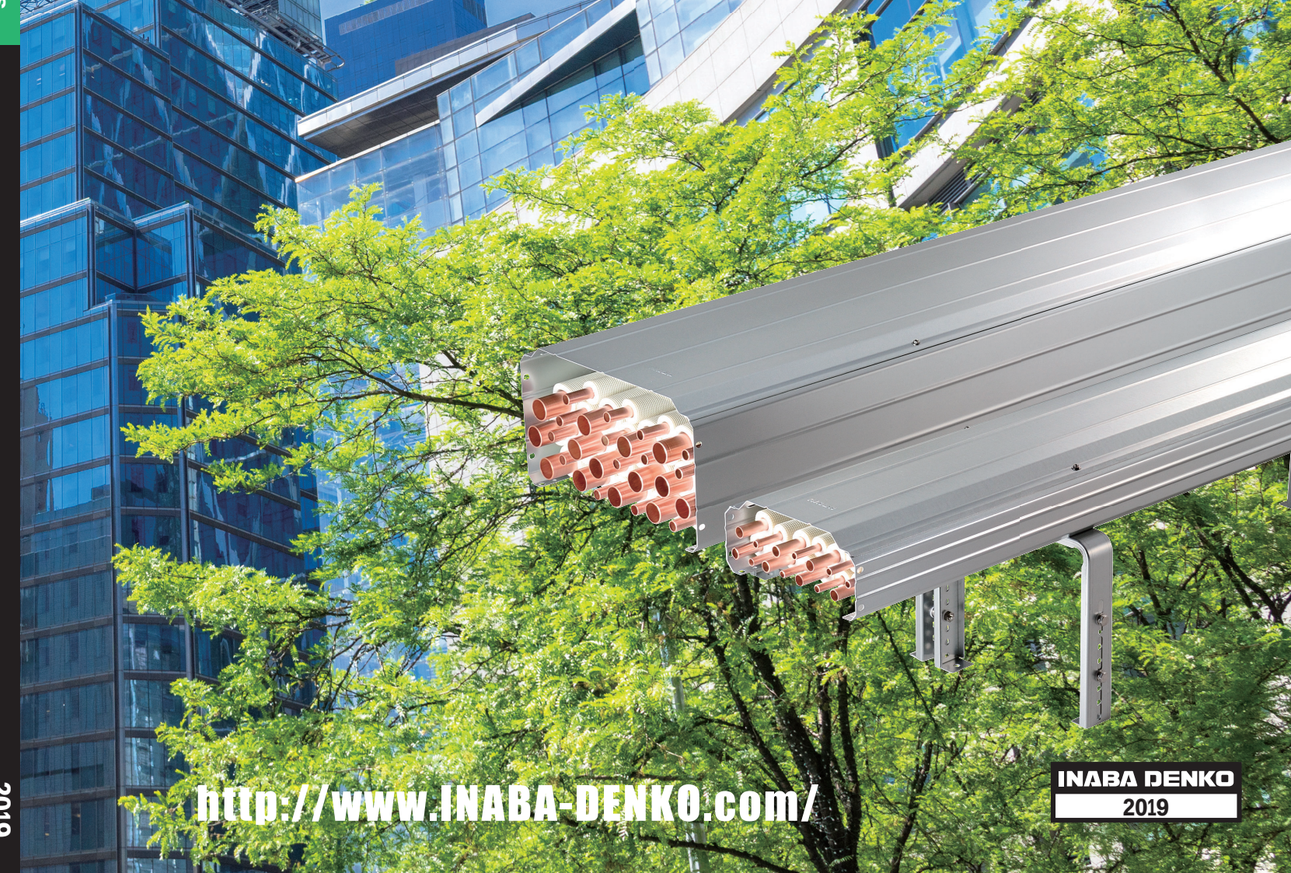

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2019

⚠ Precautions

Read this document "RD design and construction materials" carefully and perform the design and construction appropriately to use "SLIMDUCT RD" properly.

Precautions for all SLIMDUCT RD products

- Read this document "RD design and construction materials" and the instruction manual carefully to use the product properly.
  We cannot be held responsible for any problems caused by improper use or construction not observing the descriptions in this document and the manual.
- For inquiries about products, contact a sales office of our company INABA DENKO.
- This product is not of the waterproof structure. If the waterproof property is required, be sure to apply caulking or puttying at the connection and joint portions for waterproofing.
- Do not apply a load exceeding the allowable load limit. Doing so can cause a damage or drop.
- Tighten the bolts and nuts firmly but carefully not to strip them. Otherwise, loosening, drop, or rusting can be caused.

About the RD duct (walkway type)

- Since the RD duct (walkway type) is designed for the purpose of being used as the walkway in the maintenance operation of the outdoor unit, avoid it being used always.
- When walking, be sure to wear gloves and a helmet for safety.
- Set the mounting bases at the designated locations of straight duct and each part, and fix them firmly on the floor face. Note that the mounting base must not be set at portions where joint parts are used.
- Do not use portions where joint parts are used and around the duct end as the walkway.

About the SLIMDUCT RD-ZA

- As with the hot-dip galvanized finish type (HDZ), white rust will occur. However, that will not remarkably lower the corrosion resistance, because the white rust will work as the protective film.
- As with the hot-dip galvanized finish type (HDZ), blackening phenomenon will occur. However, that will not lower the corrosion resistance.
- The black soot in the weld nut part inside the duct does not promote oxidation, and there is no problem in use.
- In the end face, red rust will occur in the early stage because the steel base is exposed. However, in several months after the construction, aluminum and magnesium will melt out from the plating layer of the plane surface. The dense galvanized protective film which contains the melted out aluminum and magnesium covers the end face, and produces an excellent corrosion resistance. At the same time, the color will gradually change to gray or grayish black. (For the mechanism of corrosion resistance production in the end face, see [5.2].)
- Cut ends are exposed, since no surface treatment is performed. When performing the construction work, be sure to wear work clothes and gloves to avoid the risk of injury.
- Machining marks may remain unavoidably due to a processing reason. However, no iron base is exposed and the corrosion resistance is not lowered.
- When you perform a cutting work on site, be sure to perform the repair work by using the zinc rich paint (Zn-Al).

■ About the change in appearance of the ZA type

The surface of the highly corrosion-resistant hot-dip galvanized steel sheet forms a duplex dense oxide film composed of the following:

1. Magnesium-containing zinc-aluminum protective film
2. Magnesium-containing galvanized protective film

It works as the protective film on the plated surface.
This protective film is very thin and transmits light, and the luster of the underlying zinc is seen. As time passes and the environment changes, however, the oxide film will become thick and will not transmit the light, resulting in losing luster and change to grayish black in color. This is called blackening.

■ About the white rust of the ZA type

The hot-dip galvanized steel sheets with a high corrosion resistance contain zinc that has an ionization tendency higher than iron in its plating layer. By this, for cut end faces of the coated steel sheet and portions of surface where defects were developed due to flaws, a sacrificial protection works and corrosion of the iron base is suppressed by zinc hydroxide (white rust).
Also, the surface of the coated steel sheet reacts with carbon dioxide and water in the air, zinc hydroxide (white rust) is formed on the surface, and corrosion is suppressed by its film. This zinc hydroxide (white rust) is formed almost evenly on the surface of the coated steel sheet. However, there are some cases where it is locally formed in a short time, e.g., in two hours or so if the formation of zinc hydroxide (white rust) is promoted by condensation etc. or the plated layer is damaged.
Therefore, it is important to minimize the damage to the protective film on the surface in the construction for maintaining the corrosion resistance for a long time. Be careful in handling and storage.

■ Cautions in handling

1) Do not damage the surface.
2) When temporarily storing the product, do not place it directly on the ground. (Make a space by using a material other than wood.)
3) Avoid loading and unloading in a stacked state in the rain.
4) If you use acid or alkaline chemical liquid (including cleaning liquid) in or after the construction, cover the product with sheets for curing to prevent splash of the chemical liquid.
5) Also when cutting copper pipes in or after the construction, cover the product with sheets for curing to prevent splash of metal powders.

■ Cautions in storage

1) Store the product inside a well ventilated room.
2) When storing the product outdoors, store it in a well-drained location with a clearance from the ground surface.
3) When storing the product outdoors in the rain, cover the product completely with sheets, and when the weather turned out to be fine, immediately remove the sheets.
In the marine transportation and quay storage, avoid sea water splashing on the product.
4) For storage by stacking the parts, make a sufficient clearance between parts by using a cushioning material other than wood, and make more clearance from the ground surface.

About the SLIMDUCT RD-SUS

- Stainless steel is a material which is strong against rust. However, it can rust in a salt damage region, in a strongly acidic environment, or by contacting a dissimilar metal.

Notes on use of "RD design and construction materials"

- The contents in this document "RD design and construction materials" are based on those at the time of issuance.
  Please understand that the specifications and prices of products are subject to change without prior notice for improvement.
  Note that details of the construction may also be changed according to the specification change. Therefore, check that your "RD design and construction materials" is of the latest version before use.
  To check if your "RD design and construction materials" is of the latest version or not, see the page of technical materials in our Website (inaba-denko.com) or contact a sales office of our company INABA DENKO.
- Unless otherwise noted, dimensions indicated in this document are the nominal dimensions (reference dimensions) not including errors.

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Polyphyletic ducting system
creating comfortable environment

Beautiful Line
SLIMDUCT™ RD

Design and construction materials

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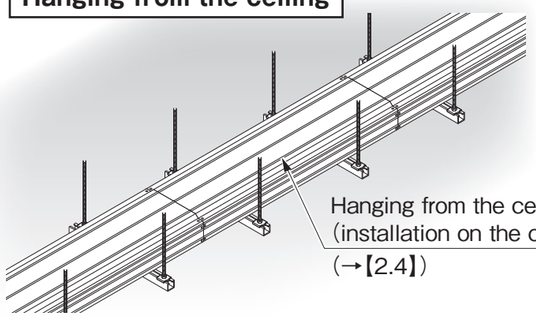
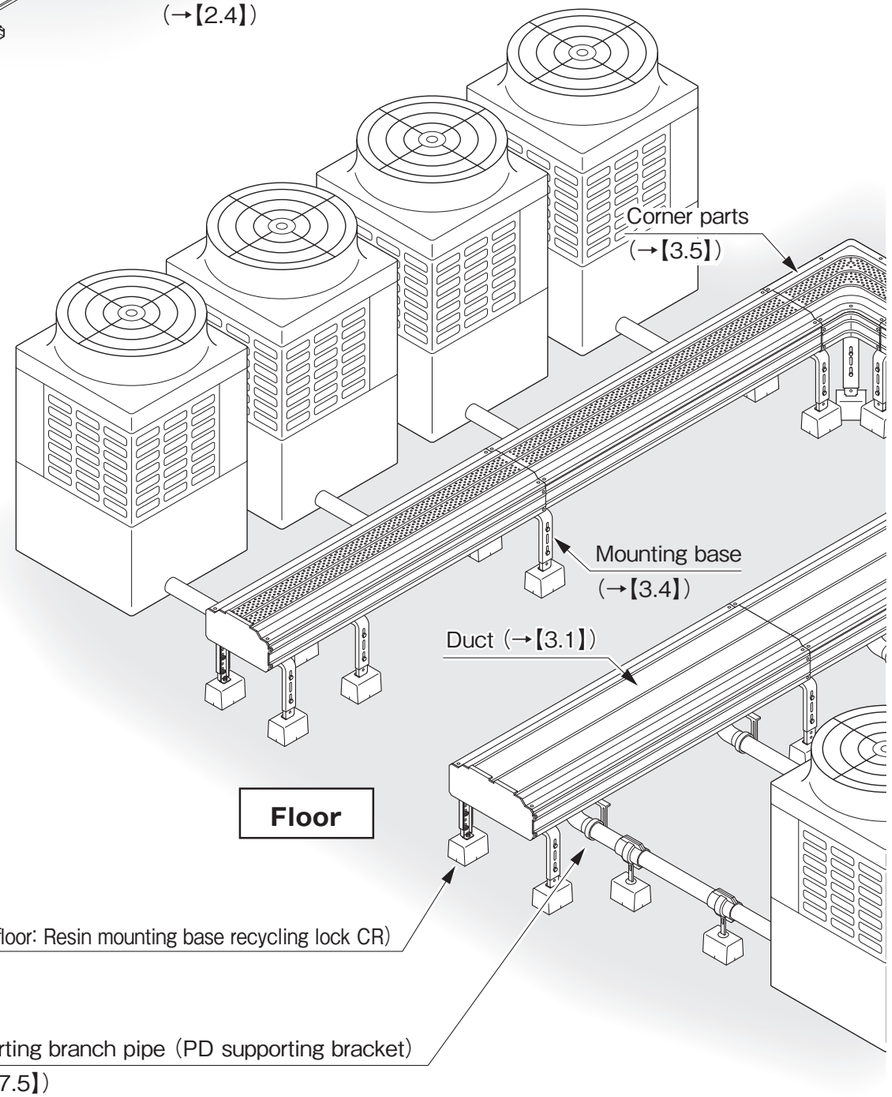
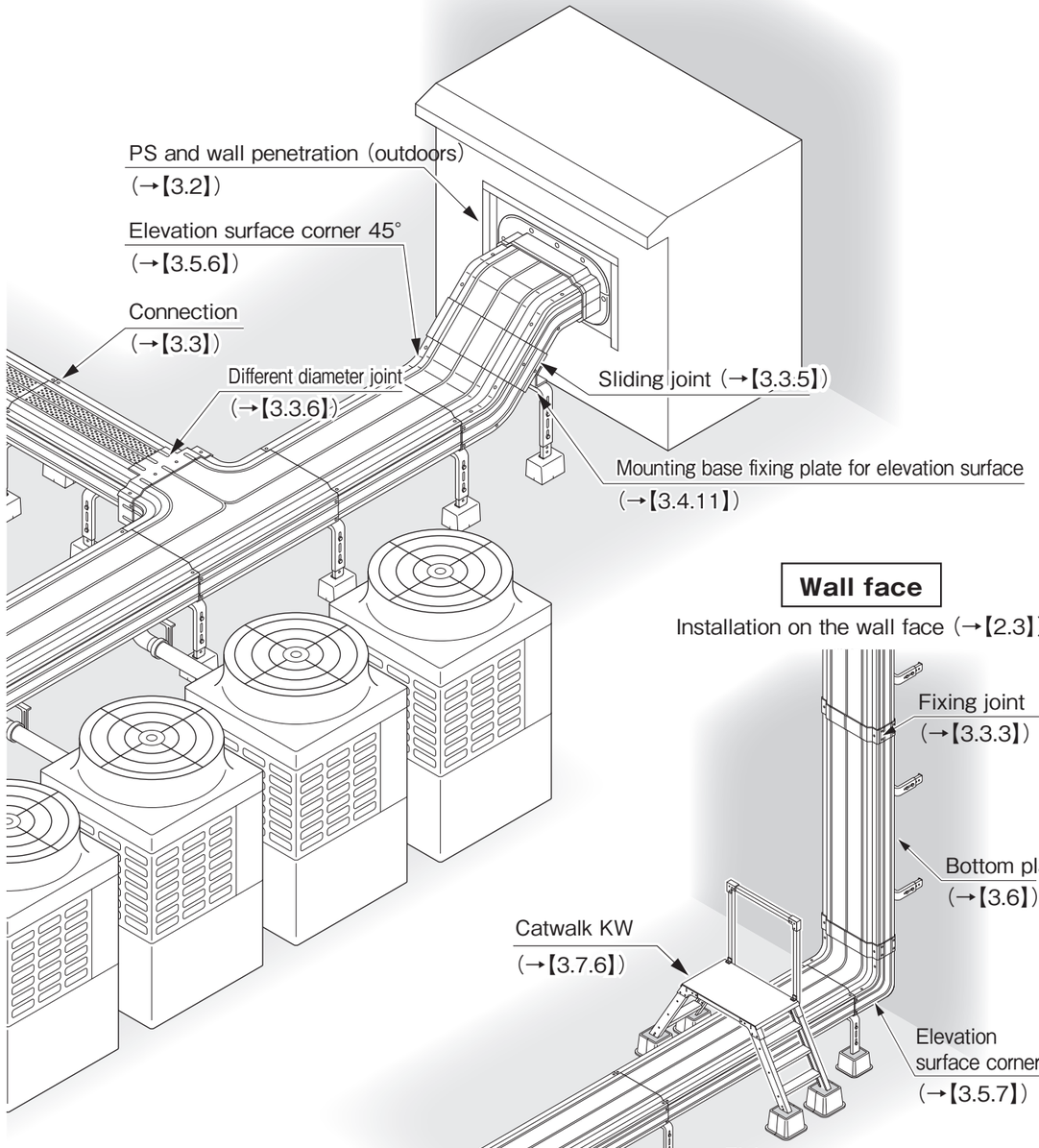
Hanging from the ceiling



Hanging from the ceiling
(installation on the ceiling face)
(→【2.4】)



SLIMDUCT RD is a piping decorative cover aiming at accommodating and protecting polyphyletic copper pipes covered with insulation material for air-conditioning.
This product is equipped with slim-shaped excellent appearance, performance with high weatherability and durability, and workability enabling installation without using special tools or connecting members.
Since we launched this series, we have developed and improved various parts, and they have been used in various sites as the standard of refrigerant pipe duct for air conditioner for building.



Wall face

Installation on the wall face (→【2.3】)

Beauty — Slim finish, Accommodation in order

Beautiful finish

Straight and curved lines are combined for slim finish, and pipes are accommodated in order.

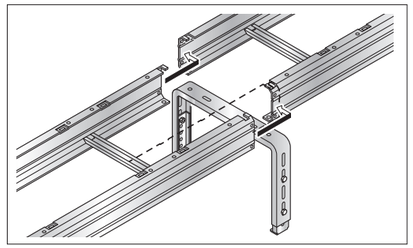
※ Photo is for illustrative purpose only.

Functions — Excellent workability

Structure connectable without using connecting members

In general duct constructions, ducts can be connected with no need of connecting members.
Construction is easy because ducts are connected each other with bolts and nuts directly. *

* Some sizes are excluded.



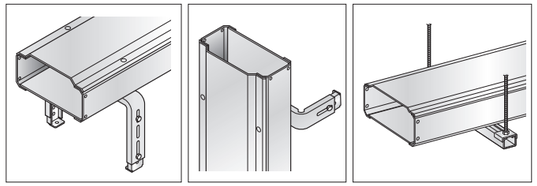
Simple construction design

No special tool is needed for connecting members and assembling ducts, enabling start of construction from the day of delivery.

Various installation methods

Various installation methods are supported including installation on the floor, wall, and ceiling, allowing free design planning depending on the construction conditions. *

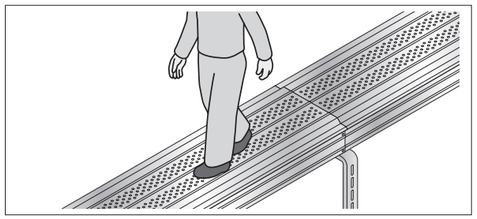
* Some sizes are excluded.



Toughness — Excellent load capacity, durability, weatherability, and resistance to flaws

Excellent load capacity

The walkway type on which you can walk on the ducts in maintenance as well as various mounting bases which have excellent load capacity are prepared.



Excellent durability and weatherability

As to the material, two types with excellent durability and weatherability are prepared: highly corrosion-resistant hot-dip galvanized steel sheet*1 and stainless steel sheet*2 (made-to-order).
Especially the highly corrosion-resistant hot-dip galvanized steel sheet has the excellent weatherability which allows being used in a heavy salt damage region where the stainless steel (SUS304) cannot be used.

*1 Product in compliance with JIS G 3323 SGMCC-SNC K27
*2 Product in compliance with JIS G 4305 SUS304

Excellent resistance to flaws

The highly corrosion-resistant hot-dip galvanized steel sheet is harder in its plated layer than the Galvalume or the hot-dip galvanized steel sheet owing to the effect of magnesium contained in the plated layer, producing an excellent resistance to flaws.
Also, even if a flaw is caused, the galvanized protective film covers the flaw in several months, presenting an excellent resistance to flaws.

Design

1 Specifications

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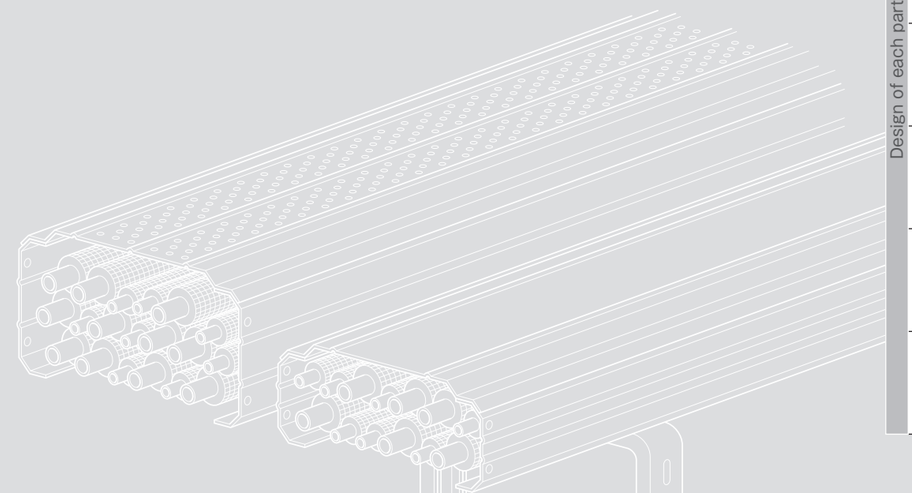
Accommodation capacity ····· P7 to P10



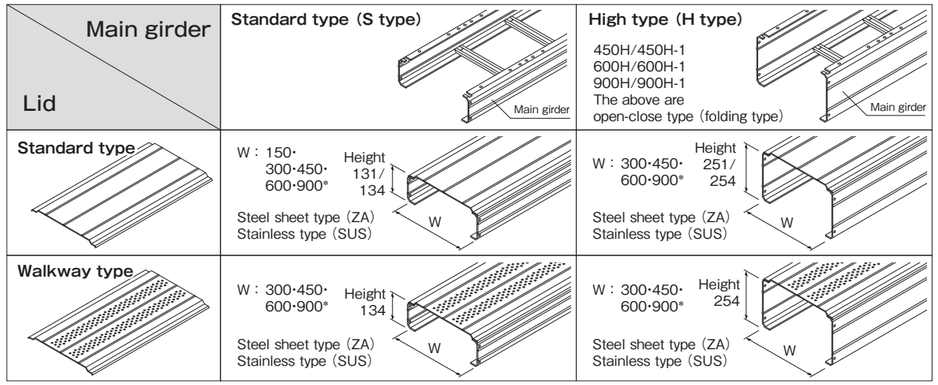
1.1 Product configuration

1.1.1 Product list

<Table 1.1.1-1>

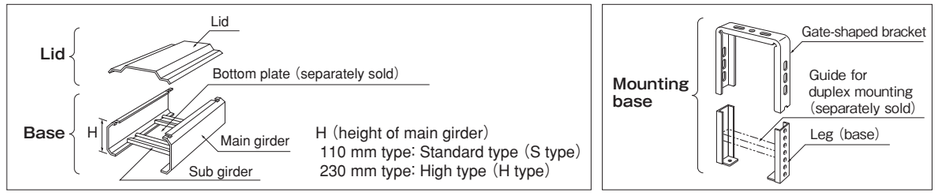
Product type	Product name	Model number (duct size omitted)	Related item	
			Design	Construction
Straight pipe	RD duct	RD	【3.1】	【4.4】
	RD duct (walkway type)	RDW	【3.1】	【4.4】
Elbow	Plane surface corner 90°	RE	【3.5.2】	【4.6.2】
	Plane surface corner 90° (walkway type)	REW	【3.5.2】	【4.6.3】
	Plane surface corner 45°	RF	【3.5.3】	【4.6.4】
	Plane surface corner 45° (walkway type)	RFW	【3.5.3】	【4.6.5】
	Elevation surface corner 45°	RCF	【3.5.6】	【4.6.13】
	Elevation surface corner 90° (rising)	RCI	【3.5.7】	【4.6.10】
	Elevation surface corner 90° (falling)	RCO	【3.5.7】	【4.6.11】
	Elevation surface corner 90° (for 150)	RC	【3.5.7】	【4.6.12】
Tee	T-shaped branch joint	RT	【3.5.4】	【4.6.6】
	T-shaped branch joint (walkway type)	RTW	【3.5.4】	【4.6.7】
Cross joint	Cross branch joint	RXN/RN	【3.5.5】	【4.6.8】
	Cross branch joint (walkway type)	RXNW/RXW	【3.5.5】	【4.6.9】
Reducer	Different-diameter joint (joint type)	RR	【3.3.6】	【4.5.5】
	Different-diameter joint (plate type)	RR	【3.3.6】	【4.5.6】
Joint	Fixing joint	RSJ	【3.3.3】	【4.5.3】
	Free joint	RFJ	【3.3.4】	【4.5.4】
	Sliding joint	RSS	【3.3.5】	【4.5.10】
	Joint for 900-type corner parts	RXJ	【3.3.8】	【4.5.9】
	Different diameter joint for 900-type corner parts	RXR	【3.3.9】	【4.5.7】
	900(H) parts connection bracket	RXC	【3.3.7】	【4.5.8】
End cover	End cap	REC	【3.7.4】	【4.8.2】
PS and penetrating portion	RD wall plate	RWP	【3.2.2】	【4.2.2】
	Water shut-off plate	RSP	【3.2.3】	【4.2.3】
	Water shut-off sleeve	RSB	【3.2.4】	【4.2.4】
	Chamber box	CB	【3.2.5/3.2.6/3.2.7】	【4.2.5】
Partition in ducts	RD duct partitioning bracket	RSK	【3.7.2】	【4.8.5】
Supporting pipes	Pipe support base	RDY	【3.4.14】	【4.3.6】
Mounting base	RD mounting base	RZM,RZB,RZ,RZW	【3.4】	【4.3】
	Fixing bracket for fixing RD to shaped steel	RKT	【3.4.15】	【4.3.9】
	Auxiliary bracket for sub girder	RBK-B	【3.4.11】	【4.3.7】
	Auxiliary bracket for main girder	RBK-A	【3.4.12】	【4.3.8】
	Mounting base fixing plate for elevation surface	RZC	【3.4.10】	【4.3.4】
	RZ guide for duplex mounting	RZY	【3.4.13】	【4.3.5】
Bottom plate	Bottom plate set for RD duct	RDB	【3.6】	【4.7.2】
	Bottom plate for joint	RDBJ	【3.6】	【4.7.6】
	Retrofit bottom plate for joint	RJB	【3.6】	【4.7.7】
	Bottom plate set for plane surface corner 90°	REB	【3.6】	【4.7.3】
	Bottom plate set for plane surface corner 45°	RFB	【3.6】	【4.7.4】
	Bottom plate set for T-shaped branch joint	RTS	【3.6】	【4.7.5】
	Net bottom plate	RNB	【3.6】	【4.7.8】
	Resin bush for bottom plate	RDB-B	【3.6】	【4.7】
Supporting branch pipes	PD supporting bracket	RPH	【3.7.5】	【4.8.3】
Sub girder	Sub girder set	RDK	【3.7.3】	【4.8.4】
Reinforcing lid	Lid reinforcing plate	REH/RFH	【3.1/3.5.2/3.5.3】	【4.4/4.6.2/4.6.4】
	Lid reinforcing plate (for 900 type)	RXH	【3.7.1】	【4.2.5】
Bridging	Catwalk	KW/KWT	【3.7.6】	【4.8.7】

1.1.2 Product variations



* ZA type only for W900 type

1.1.3 Part name



1.2 Specifications

1.2.1 Material

■ Metal products

Type	Material		Surface treatment	Salt damage resistance	Nominal plating weight	Tensile strength	Elongation
Steel sheet type	Highly corrosion-resistant hot-dip galvanized steel sheet (Molten zinc: 6%, Aluminum: 3%, Magnesium) JIS G 3323	Standard product	—	Specification with heavy salt damage resistance	190g/m² or more for one side	274.6N/mm² or more (28kgf/mm²)	28% or more
Stainless type	Stainless steel sheet JIS G 4305 SUS304	Made-to-order	Hairline finish	—	—	519.8N/mm² or more (53kgf/mm²)	40% or more

■ Resin products

Product name	Model number	Material	Color tone	Usage environment temperature range
Net bottom plate	RNB	PE (polyethylene)	Black	−20~70℃
Resin bush for bottom plate	RDB-B	PA6 (6-nylon)	Black	

Note If the product is used in a temperature lower than the minimum value of usage environment temperature, the strength of the resin itself is lowered, but the product will not be damaged as long as external stress is not applied.

Notes on the waterproof property

RD does not have the waterproof property, because RD is designed to be used with a heat insulating material such as polyethylene foam that is of extremely low water absorption.
If waterproofness (preventing rain water intrusion) is required for the pipe takeout portion etc., use the bottom plate for duct (RDB), water shut-off plate (RSP), and water shut-off sleeve (RSB), as well as be sure to apply caulking or take other means for waterproofing.

Reference 【3.2】 PS and wall penetration

1.3 Product weight

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1.3.1 Duct

<Table 1.3.1-1> **Weight of duct**

(unit : kg)

Standard product				Walkway type			
Model number	Base part	Lid part	Total	Model number	Base part	Lid part	Total
RD-150	7.0	3.0	10.0	–	–	–	–
RD-150-1	3.5	1.5	5.0	–	–	–	–
RD-150-05	2.3	0.6	2.9	–	–	–	–
RD-300-C	8.0	5.0	13.0	RDW-300-C	8.0	6.1	14.1
RD-300-1-C	4.2	2.5	6.7	RDW-300-1-C	4.2	3.2	7.4
RD-300-05-C	2.3	1.3	3.6	RDW-300-05-C	2.3	2.0	4.3
RD-300-03-C	1.5	0.7	2.2	RDW-300-03-C	1.5	1.3	2.8
RD-300H-C	13.3	5.0	18.3	RDW-300H-C	13.3	6.1	19.4
RD-300H-1-C	6.8	2.5	9.3	RDW-300H-1-C	6.8	3.2	10.0
RD-300H-05-C	2.7	1.3	4.0	RDW-300H-05-C	2.7	2.0	4.7
RD-300H-03-C	2.3	0.7	3.0	RDW-300H-03-C	2.3	1.2	3.5
RD-450-C	8.5	7.6	16.1	RDW-450-C	8.5	9.1	17.6
RD-450-1-C	4.6	3.5	8.1	RDW-450-1-C	4.6	4.8	9.4
RD-450-05-C	2.6	1.8	4.4	RDW-450-05-C	2.6	3.0	5.6
RD-450-03-C	1.8	1.0	2.8	RDW-450-03-C	1.8	1.8	3.6
RD-450H-C	13.8	7.6	21.4	RDW-450H-C	13.8	9.1	22.9
RD-450H-1-C	7.2	3.5	10.7	RDW-450H-1-C	7.2	4.8	12.0
RD-450H-05-C	3.0	1.8	4.8	RDW-450H-05-C	3.0	3.0	6.0
RD-450H-03-C	2.5	1.1	3.6	RDW-450H-03-C	2.5	1.9	4.4
RD-600-C	9.0	10.5	19.5	RDW-600-C	9.0	13.5	22.5
RD-600-1-C	4.8	5.6	10.4	RDW-600-1-C	4.8	8.2	13.0
RD-600-05-C	2.9	3.2	6.1	RDW-600-05-C	2.9	5.3	8.2
RD-600-03-C	2.0	2.2	4.2	RDW-600-03-C	2.0	3.1	5.1
RD-600H-C	14.3	10.5	24.8	RDW-600H-C	14.3	13.5	27.8
RD-600H-1-C	7.6	5.6	13.2	RDW-600H-1-C	7.6	8.2	15.8
RD-600H-05-C	4.3	3.2	7.5	RDW-600H-05-C	4.3	5.3	9.6
RD-600H-03-C	2.8	2.2	5.0	RDW-600H-03-C	2.8	3.1	5.9
RD-900-C	9.6	18.2	27.8	RDW-900-C	9.6	21.3	30.9
RD-900-1-C	5.3	9.2	14.5	RDW-900-1-C	5.3	13.5	18.8
RD-900-05-C	3.6	5.7	9.3	RDW-900-05-C	3.6	8.1	11.7
RD-900-03-C	2.6	5.3	7.9	RDW-900-03-C	2.6	5.3	7.9
RD-900H-C	14.9	18.2	33.1	RDW-900H-C	14.9	21.3	36.2
RD-900H-1-C	7.9	9.2	17.1	RDW-900H-1-C	7.9	13.5	21.4
RD-900H-05-C	4.9	5.7	10.6	RDW-900H-05-C	4.9	8.1	13.0
RD-900H-03-C	3.6	5.3	8.9	RDW-900H-03-C	3.6	5.3	8.9

※ The product weight is almost the same for both the highly corrosion-resistant steel sheet type and the stainless type.

1.3.2 Parts

<Table 1.3.2-1> **Weight of parts (corner)**

(unit : kg)

Standard product				Walkway type	
Model number	Weight	Model number	Weight	Model number	Weight
RE-150	1.9	RCO-600H-C	15.8	REW-300-C	7.0
RE-300-C	6.5	RCO-900	20.7	REW-300H-C	9.5
RE-300H-C	9.0	RCO-900H	25.2	REW-450-C	11.1
RE-450-C	9.2	RCF-300-C	5.6	REW-450H-C	13.3
RE-450H-C	11.4	RCF-300H-C	6.7	REW-600-C	15.8
RE-600-C	12.8	RCF-450-C	6.1	REW-600H-C	19.0
RE-600H-C	16.0	RCF-450H-C	7.5	RFW-300-C	6.2
RF-300-C	5.7	RCF-600-C	9.2	RFW-300H-C	7.7
RF-300H-C	7.2	RCF-600H-C	13.5	RFW-450-C	9.5
RF-450-C	7.7	RCF-900	14.8	RFW-450H-C	10.5
RF-450H-C	9.7	RCF-900H	17.8	RFW-600-C	11.8
RF-600-C	9.9	RT-150	2.3	RFW-600H-C	14.2
RF-600H-C	12.3	RT-300-C	8.2	RTW-300-C	9.0
RCI-300-C	5.3	RT-300H-C	10	RTW-300H-C	10.8
RCI-300H-C	7.7	RT-450-C	12	RTW-450-C	14.4
RCI-450-C	6.9	RT-450H-C	14	RTW-450H-C	16.4
RCI-450H-C	10.3	RT-600-C	18.7	RTW-600-C	22.6
RCI-600-C	8.8	RT-600H-C	21.6	RTW-600H-C	25.5
RCI-600H-C	13.3	RXN-300-C	7.1	RXNW-300-C	8.8
RCI-900	21.4	RXN-300H-C	9.0	RXNW-300H-C	10.7
RCI-900H	26.2	RXN-450-C	10.2	RXNW-450-C	14.5
RCO-300-C	5.9	RXN-450H-C	12.1	RXNW-450H-C	16.4
RCO-300H-C	8.9	RXN-600-C	13.6	RXNW-600-C	21.7
RCO-450-C	8.0	RXN-600H-C	15.5	RXNW-600H-C	23.5
RCO-450H-C	12.2	RX-900	28.1	RXW-900-B	37.4
RCO-600-C	10.2	RX-900H	31.2	RXW-900H-B	40.5

※ The product weight is almost the same for both the highly corrosion-resistant steel sheet type and the stainless type.

1.3.3 Mounting base

<Table 1.3.3-1> **Weight of parts (mounting base)**

(unit : kg)

Model number	Weight	Model number	Weight	Model number	Weight
RZM-300-S	0.6	RZM-300-MS	0.7	RZM-300-MM	0.8
RZM-450-S	0.8	RZM-450-MS	0.9	RZM-450-MM	1.0
RZM-600-S	0.9	RZM-600-MS	1.0	RZM-600-MM	1.1
RZM-900-S	1.9	RZM-900-MS	2.1	RZM-900-MM	2.2
RZM-300-M	1.0	RZM-300-L	1.3	RZB-S	0.4
RZM-450-M	1.1	RZM-450-L	1.4	RZB-M	0.7
RZM-600-M	1.3	RZM-600-L	1.6	RZB-ML	1.0
RZM-900-M	2.5	RZM-900-L	3.0	RZB-L	1.6

※ The product weight is almost the same for both the highly corrosion-resistant steel sheet type and the stainless type.

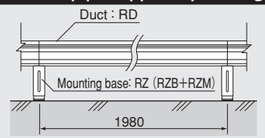
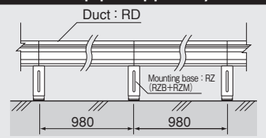
1.4 Load capacity and strength

Outline This section explains about the load capacity of products.
In the design for special environments such as with snow accumulation, take them into consideration.

Reference 【5.3】 How to take measures against snow accumulation

1.4.1 Allowable load of base (main girder + sub girder)

Allowable load (allowable pipe weight) of base part for 1m- and 2m- RD ducts

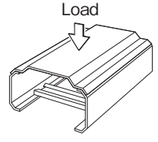
Item / Duct size	Allowable load for 2-m RD duct	
	2-m RD duct (pipe support by 3 sub girder)	1-m RD duct ×2 (pipe support by 4 sub girder)
		
RD-150	9387N(958kgf)	12548N(1280kgf)
RD-300	3929N(401kgf)	5281N(539kgf)
RD-450	2546N(260kgf)	3448N(352kgf)
RD-600	1837N(187kgf)	2513N(256kgf)
RD-900	1102N(112kgf)	1552N(158kgf)
RD-450H	2494N(255kgf)	3396N(347kgf)
RD-600H	1785N(182kgf)	2461N(251kgf)
RD-900H	2231N(228kgf)	3076N(314kgf)

※ The allowable load is the same for both the steel sheet type and the stainless type.
※ It is substantially the allowable load of the sub girder (in the assembled state).

1.4.2 Strength of lid (allowable load)

This is the strength of lid (allowable load for lid being restored to the original state) when the lid is attached to the base (main girder + sub girder).
Note that values for the W600 to 900H sizes and the walkway type are those in the state where the lid reinforcing plate is attached. <Figure 1.4.2-1>

<Figure 1.4.2-1>

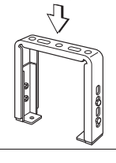


Specifications		Strength of lid	
		for 1m²	When load is applied by the load plate (200mm × 100mm)
Standard type / Walkway type	Steel sheet type / Stainless type	4,903N/m² (500kgf/m²) or less	98N(10kgf) or less
	Steel sheet type	49,030N/m² (5,000kgf/m²) or less	980N(100kgf) or less

1.4.3 Load capacity (allowable load) of mounting base

When four fixing bolts are used and the bolt tightening torque is 29.4N-m (300 kg-cm), the load by which the mounting base will begin to shift is 6,374N (650 kgf).
<Figure 1.4.3-1>

<Figure 1.4.3-1>



Bolt tightening torque	Load by which shift will begin (4 fixing bolts)
29.4N·m(300kg·cm)	6,374N(650kgf)

1.5 Accommodation capacity

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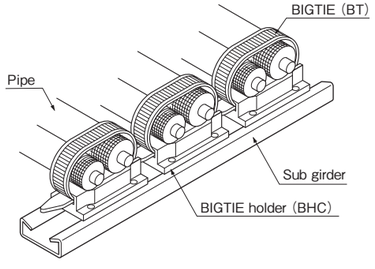
Notes

Described accommodatable quantity of pipelines is only for reference and does not guarantee the accommodation capacity.

Especially, the accommodatable quantity of pipelines in a case where the piping is not fixed differs depending on the construction condition.
Just to be safe, values in the table of rough indication of accommodatable quantity of pipelines shown below are calculated based on around 75% of the effective sectional area of duct in consideration of meandering of the annealed pipe (soft copper pipe).
Values in the table of rough indication of accommodatable number of pipelines are also set in consideration of bending of corner portions.It is recommended, however, to determine the accommodated quantity of pipelines with a margin if there is a bending in the vertical direction.

1.5.1 When using BHC the BIGTIE holder (for channel)

<Figure 1.5.1-1>



Maximum bindable quantity for each duct type									
Model number	RD-150	RD-300	RD-300H	RD-450	RD-450H	RD-600	RD-600H	RD-900	RD-900H
BHC-1	1	3	3(6)	5	5(10)	7	7(14)	10	10(20)
BHC-2	1	3	3(6)	4	4(8)	6	6(12)	8	8(16)
BHC-3	1	2	2(4)	4	4(8)	5	5(10)	8	8(16)

Note
• Values within ( ) are those in a case where the RSK (duct partitioning bracket) is used. Note that for the large diameter pipe, there is a restriction in the inner dimension of duct, and the bindable quantity of BHC may differ from the actual quantity of bindable pipelines.
It cannot be used in a condition where load is applied on the BIGTIE, i.e., in the vertical installation, horizontal installation on the wall face, or hanging from the ceiling (hanging upside down).

1.5.2 Table of rough indication of accommodatable quantity of pipelines in a case where the piping is not fixed

※ The accommodation capacity is the same for the cases where the water shut-off plate (RSP) is used, or the water shut-off sleeve (RSB) is used.

■ Thickness of heat insulating material = Liquid pipe:10mm, Gas pipe:10mm
(8 mm for pipe diameter 9.52 or less, 15 mm for pipe diameter 50.80 or more)

Pipe diameter (liquid pipe × gas pipe)	Size								
	150	300	300H	450	450H	600	600H	900	900H
6.35 × 9.52	5	10	27	17	45	25	60	38	92
6.35 × 12.70	4	8	22	14	36	23	48	33	72
6.35 × 15.88	4	8	22	13	32	21	43	26	64
9.52 × 12.70	4	8	22	13	33	21	44	31	67
9.52 × 15.88	4	8	22	12	30	19	40	25	60
9.52 × 19.05	4	8	22	11	27	17	37	24	54
9.52 × 22.22	3	7	16	10	25	15	34	20	50
9.52 × 25.40	2	6	13	10	21	14	29	20	42
9.52 × 28.58	2	5	11	10	21	13	28	20	42
12.70 × 15.88	3	7	16	11	27	16	36	24	54
12.70 × 19.05	3	7	16	10	23	14	32	23	46
12.70 × 22.22	3	6	13	10	22	14	31	19	44
12.70 × 25.40	2	5	11	9	20	13	28	19	40
12.70 × 28.58	2	5	11	9	19	13	27	18	38
12.70 × 31.75	2	4	10	7	17	11	23	15	34
12.70 × 34.92	2	4	9	6	16	10	21	13	32
12.70 × 38.10	1	3	9	5	16	10	21	11	32
15.88 × 19.05	3	6	13	9	21	13	30	22	44
15.88 × 22.22	3	5	11	8	20	13	28	18	42
15.88 × 25.40	2	5	11	8	19	12	25	18	38
15.88 × 28.58	2	5	11	7	18	12	24	16	36
15.88 × 31.75	2	4	10	7	17	10	22	14	32
15.88 × 34.92	1	3	9	5	15	9	20	12	30
15.88 × 38.10	1	3	9	5	15	9	20	11	30
15.88 × 41.28	1	3	7	5	13	7	17	10	26
19.05 × 25.40	2	5	11	7	17	11	23	17	35
19.05 × 28.58	2	5	11	7	16	11	22	15	33
19.05 × 31.75	2	4	10	6	15	10	20	14	30
19.05 × 34.92	1	3	9	5	14	9	19	11	28
19.05 × 38.10	1	3	9	5	14	8	19	10	28
19.05 × 41.28	1	3	7	5	12	7	16	9	25
19.05 × 44.45	1	3	7	4	12	7	16	9	24
19.05 × 50.80	1	2	4	3	8	4	10	6	16
19.05 × 53.98	1	2	4	3	7	4	10	6	14
22.22 × 31.75	2	3	10	5	14	9	20	13	29
22.22 × 34.92	1	3	9	5	13	8	18	10	27
22.22 × 38.10	1	3	7	5	12	8	18	10	24
22.22 × 41.28	1	3	7	5	12	6	15	8	24
22.22 × 44.45	1	3	7	4	11	6	15	8	22
22.22 × 50.80	1	2	4	3	8	4	10	6	16
22.22 × 53.98	1	2	4	3	7	4	9	6	14
25.40 × 38.10	1	3	7	5	11	7	16	9	23
25.40 × 41.28	1	2	5	4	11	5	14	8	22
25.40 × 44.45	1	2	5	4	11	5	14	7	21
25.40 × 50.80	1	2	4	3	7	4	10	6	14
25.40 × 53.98	1	2	4	3	7	4	9	6	14
28.58 × 44.45	1	2	5	3	10	5	14	7	20
28.58 × 50.80	1	2	4	3	7	4	10	6	14
28.58 × 53.98	1	2	4	3	7	4	9	6	14
31.75 × 50.80	1	2	4	3	6	3	9	6	12
31.75 × 53.98	1	2	4	3	6	3	9	6	12

※ For a size not in the table, see the item for the one size larger pipe.

1.5.3 Table of rough indication of accommodatable quantity of pipelines in a case where the piping is not fixed

※ The accommodation capacity is the same for the cases where the water shut-off plate (RSP) is used, or the water shut-off sleeve (RSB) is used.

■ Thickness of heat insulating material
= Liquid pipe:10mm (8mm for pipe diameter 9.52 or less), Gas pipe:20mm

Pipe diameter (liquid pipe × gas pipe)	Size								
	150	300	300H	450	450H	600	600H	900	900H
6.35 × 9.52	3	6	12	9	21	12	28	19	43
6.35 × 12.70	2	6	12	9	20	11	27	19	40
6.35 × 15.88	2	5	10	9	18	10	25	19	38
9.52 × 12.70	2	5	10	9	19	10	25	18	38
9.52 × 15.88	2	5	10	9	18	10	24	18	36
9.52 × 19.05	2	4	8	8	16	9	21	16	32
9.52 × 22.22	2	4	8	7	15	9	20	15	30
9.52 × 25.40	2	4	8	7	14	8	18	15	28
9.52 × 28.58	1	3	6	7	13	8	17	14	26
12.70 × 15.88	2	5	10	7	17	9	23	15	34
12.70 × 19.05	2	4	8	7	15	9	19	15	30
12.70 × 22.22	2	4	8	7	15	9	18	15	30
12.70 × 25.40	1	3	6	7	13	8	16	14	26
12.70 × 28.58	1	3	6	6	12	7	16	13	24
12.70 × 31.75	1	3	6	4	11	7	15	9	22
12.70 × 34.92	1	2	4	4	11	6	15	8	22
12.70 × 38.10	1	2	4	3	10	5	13	6	20
15.88 × 19.05	2	4	8	7	13	9	18	14	27
15.88 × 22.22	1	4	8	7	13	8	17	14	26
15.88 × 25.40	1	3	6	7	12	8	15	14	24
15.88 × 28.58	1	3	6	6	11	7	15	12	23
15.88 × 31.75	1	2	4	4	10	6	14	8	21
15.88 × 34.92	1	2	4	3	10	5	14	7	21
15.88 × 38.10	1	2	4	3	9	5	12	6	19
15.88 × 41.28	1	2	4	3	8	5	11	6	17
19.05 × 25.40	1	3	6	6	11	7	15	13	23
19.05 × 28.58	1	3	6	6	11	7	15	12	22
19.05 × 31.75	1	2	4	4	10	6	14	8	20
19.05 × 34.92	1	2	4	3	10	5	14	7	20
19.05 × 38.10	1	2	4	3	9	5	12	6	18
19.05 × 41.28	1	2	4	3	8	4	10	6	16
19.05 × 44.45	1	2	4	3	8	4	10	6	16
19.05 × 50.80	1	2	4	3	7	4	9	6	15
19.05 × 53.98	1	2	4	3	6	3	8	6	14
22.22 × 31.75	1	2	4	3	10	5	13	7	20
22.22 × 34.92	1	2	4	3	10	5	13	7	20
22.22 × 38.10	1	2	4	3	9	4	12	6	18
22.22 × 41.28	1	2	4	3	8	4	10	6	16
22.22 × 44.45	1	2	4	3	7	4	9	6	15
22.22 × 50.80	1	2	4	3	7	4	9	6	14
22.22 × 53.98	1	2	4	3	6	3	8	6	13
25.40 × 38.10	1	2	4	3	8	4	11	6	16
25.40 × 41.28	1	2	4	3	7	4	10	6	15
25.40 × 44.45	1	2	4	3	7	4	9	6	15
25.40 × 50.80	1	2	4	3	7	4	9	6	14
25.40 × 53.98	1	2	4	3	6	3	8	6	12
28.58 × 44.45	1	2	4	3	7	4	9	6	14
28.58 × 50.80	1	2	4	3	6	3	8	6	12
28.58 × 53.98	1	2	4	2	6	3	8	4	12
31.75 × 50.80	1	2	4	2	6	3	8	4	12
31.75 × 53.98	1	1	3	2	6	3	7	4	12

※ For a size not in the table, see the item for the one size larger pipe.

1.5.4 Table of rough indication of accommodatable quantity of pipelines in a case where the piping is not fixed

※ The accommodation capacity is the same for the cases where the water shut-off plate (RSP) is used, or the water shut-off sleeve (RSB) is used.

■ Table for RD duct size selection for the triple piping system

● Thickness of heat insulating material = 10mm × 10mm × 10mm

Pipe diameter	Size								
	150	300	300H	450	450H	600	600H	900	900H
9.52×15.88×19.05	2	4	10	6	17	10	23	13	34
9.52×19.05×22.22	2	4	9	6	13	9	19	13	27
12.70×19.05×22.22	1	3	8	6	12	8	17	12	25
12.70×19.05×25.40	1	3	8	5	12	7	16	11	24
12.70×22.22×25.40	1	3	7	5	11	7	16	11	23
12.70×22.22×28.58	1	2	7	4	11	6	15	10	23
12.70×25.40×28.58	1	2	6	4	11	5	15	9	22
15.88×22.22×28.58	1	2	6	4	11	5	15	9	22
15.88×25.40×28.58	1	2	6	4	10	5	14	9	21
15.88×25.40×31.75	1	2	6	3	9	5	13	8	20
15.88×28.58×31.75	1	2	6	3	9	5	13	8	20
15.88×28.58×38.10	1	1	4	3	8	4	11	6	17
19.05×22.22×28.58	1	2	6	3	10	5	14	8	21
19.05×25.40×31.75	1	2	6	3	10	5	13	8	20
19.05×28.58×31.75	1	2	5	3	9	5	13	8	19
19.05×28.58×38.10	1	1	4	3	8	4	11	6	16
19.05×31.75×38.10	1	1	4	3	7	4	10	6	15
22.22×28.58×38.10	1	1	4	2	7	3	10	5	15

※ For a size not in the table, see the item for the one size larger pipe.

● Thickness of heat insulating material = 10mm × 20mm × 20mm

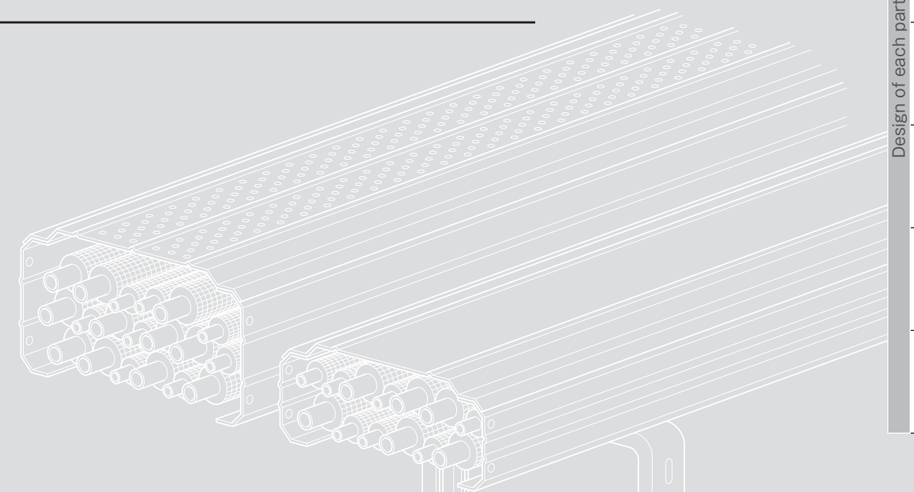
Pipe diameter	Size								
	150	300	300H	450	450H	600	600H	900	900H
9.52×15.88×19.05	1	1	5	3	7	4	11	7	15
9.52×19.05×22.22	1	1	5	3	7	3	10	6	14
12.70×19.05×22.22	1	1	4	3	7	3	10	6	14
12.70×19.05×25.40	1	1	4	2	7	3	9	5	14
12.70×22.22×25.40	1	1	4	2	7	3	9	5	14
12.70×22.22×28.58	1	1	4	2	7	3	9	5	14
12.70×25.40×28.58	—	1	4	2	6	3	8	5	13
15.88×22.22×28.58	—	1	4	2	6	3	8	5	13
15.88×25.40×28.58	—	1	3	2	6	3	8	5	12
15.88×25.40×31.75	—	1	3	2	5	3	7	5	11
15.88×28.58×31.75	—	1	3	2	5	3	7	4	11
15.88×28.58×38.10	—	1	3	2	5	3	6	4	10
19.05×22.22×28.58	—	1	3	2	5	3	7	4	12
19.05×25.40×31.75	—	1	3	2	5	3	7	4	11
19.05×28.58×31.75	—	1	3	2	5	3	7	4	11
19.05×28.58×38.10	—	1	3	2	5	3	6	4	10
19.05×31.75×38.10	—	1	3	2	5	3	6	4	10
22.22×28.58×38.10	—	1	3	1	5	2	6	4	10

※ For a size not in the table, see the item for the one size larger pipe.

Design

2 Total design

Basic design flow ····· P12 to P13
Installation method (on the floor) ····· P14
Installation method (on the wall face) ····· P15 to P17
Installation method (hanging from the ceiling) ····· P18



2.1 Basic design flow

1 Selecting duct size

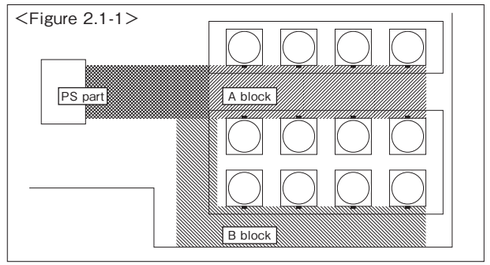
Select the duct size for the PS part and equipment layout part based on the size and quantity of pipes. <Figure 2.1-1>

Reference 【1.5】Accommodation capacity

Example 15.88×25.4 (thickness of heat insulating material : 10mm)

PS part = 12 pipelines → RD-600 type
A block = 8 pipelines → RD-450 type
B block = 4 pipelines → RD-300 type

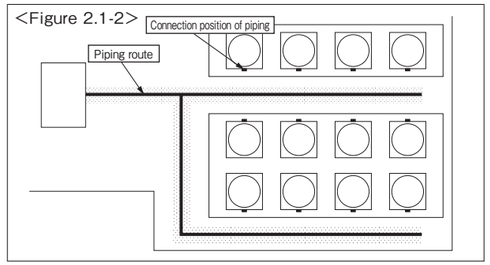
<Figure 2.1-1>



2 Designing piping route and checking pipe size

Design the PS and equipment layout, pipe size, and walkway for maintenance, and check the piping route, pipe size, and quantity of pipes.
Also at the same time, check the connection positions of piping for equipment.
<Figure 2.1-2>

<Figure 2.1-2>



3 Checking load for 1 m and setting quantity of mounting bases to be set

① Check the load for 1 meter for each piping route (block) based on the weight of pipe, product, and environment weight (e.g., snow accumulation).
② Set the quantity of mounting bases to be set for 1 m. (0.5 to 2)
※ The quantity of mounting bases will differ depending on the part or location.

Reference 【1.3】Product weight
【1.4】Load capacity and strength
【3.4】Mounting base

Example
Pipe weight : 14.04 kg (for one pipeline : 0.45 + 0.72 = 1.17 kg) × 12 pipelines
Product weight : 15.8 kg (RDW-600-C-1-ZA)
Weight of accumulated snow : 252 kg (area of duct : 0.6m2, weight of snow: 200 kg/m3, height of snow: 2 m [meter addition: 0.1])
Total : 281.84kg
Load capacity of mounting base : 650 kg/piece → Quantity of mounting bases to be set
= 0.5 pieces/m → Basic pitch for setting mounting bases = 2m

※ The weight of snow and added value (in calculation) differ depending on the region.

Reference 【5.3】How to take measures against snow accumulation

<Figure 2.1-3> Example case : 0.5 pieces/m (construction by 2 m pitch)

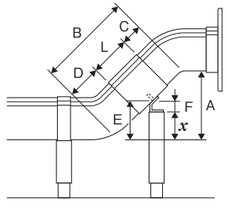
4 Setting PS and height of mounting base

Check the method of penetrating portion in the PS portion, and set the height of mounting base based on the height of PS, equipment, and obstacles. <Figure 2.1-4.1/4.2>

※ Set the height within the mounting base settable range.
※ As to the level difference, set it within the height adjustable with the elevation surface corner or sliding joint.

Reference 【3.2】PS and wall penetration, 【3.4】Mounting base

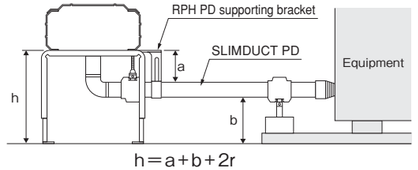
<Figure 2.1-4.1> Relation in height in the PS portion (example)



$B = A \times \sqrt{2}$
$L = B - C - D$
$E = (L \div 2 + D) \div \sqrt{2}$
$x = E - F$

※$\sqrt{2} \fallingdotseq 1.41$
※Set the sliding joint so that the hole for setting the mounting base comes to the center.

<Figure 2.1-4.2> Relation between the height of equipment and duct (example)



h = a + b + 2r

※ In a case of horizontal installationr is the radius of RD.

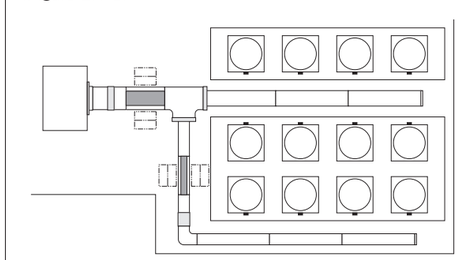
5 Locating parts

Locate the ducts, corner parts, joints, and end caps etc.
Joint parts include the sliding joint for adjusting length and the different diameter joint for connecting different size ducts.
<Figure 2.1-5>

※ We have prepared the template file for CAD in our Website. Please use it.
※ Note that the overlap width for connection will differ depending on the parts or connection method.

Reference 【3.3】Connection method

<Figure 2.1-5>



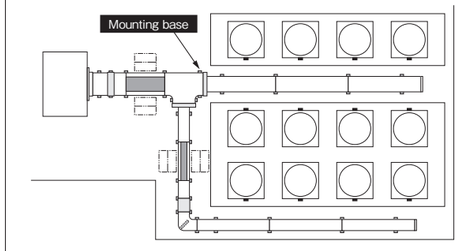
6 Locating mounting base

Check the types of corner parts and connection methods in each part, and design the locations to set the mounting bases.

※ Required quantity of mounting bases differs depending on the types of corner parts and connection methods.

Reference 【3.4】Mounting base
【3.5】Corner

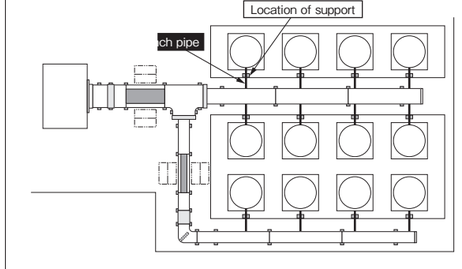
<Figure 2.1-6>



7 Connecting to equipment

Design the route end of piping (branch piping) connecting to the equipment and location of support in consideration of obstacles around the equipment.

<Figure 2.1-7>



2.2 Installation method (on the floor)

2.2.1 Installation by using mounting base <Figure 2.2.1-1>

There are the following installation patterns.

・Single-stage mounting

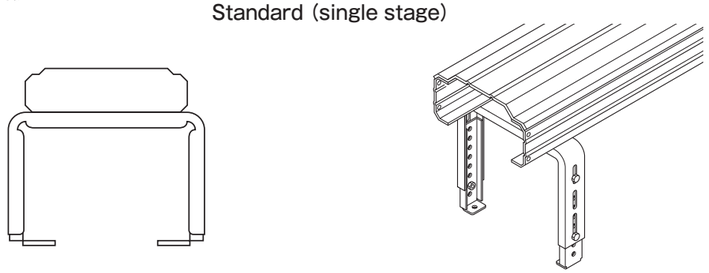
・Duplex mounting (in two stages separately) ※ for 300 to 600H only

Note that in the duplex mounting, three-dimensional arrangement or bending is of much difficulty.

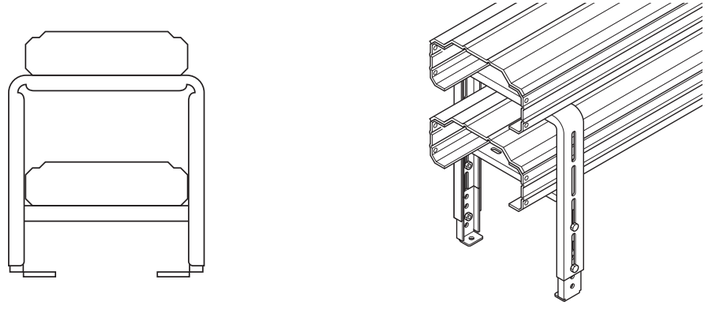
Reference For details about mounting base, see "【3.4】 Mounting base".

<Figure 2.2.1-1>

Standard (single stage)



Duplex mounting (in two stages separately)



2.2.2 Installation by using H-steel/channel steel <Figure 2.2.2-1>

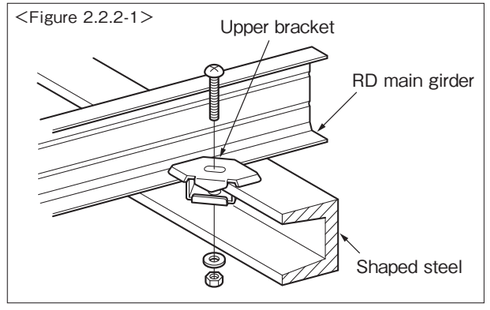
There is a method of setting H-steel or channel steel, and setting RD duct on it.

As to fixing RD duct to H-steel/channel steel, fixing with bolts or fixing by using the fixing bracket for fixing RD to shaped steel are available.

Locations where bolts are fixed are to be the same as the locations where the mounting bases are to be fixed.

Reference This method cannot be used for the walkway type. For details about the fixing bracket for fixing RD to shaped steel, see "【3.4.15】 RKT fixing bracket for fixing RD to shaped steel".

<Figure 2.2.2-1>



2.3 Installation method (on the wall face)

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2.3.2 Whether the installation on the wall face is possible or not depending on the type ····· 15
2.3.3 Conditions for installation on the wall face (directly on the wall face) ····· 16
2.3.4 Conditions for installation on the wall face (floated from the wall face) ····· 17

Warning Although SLIMDUCT RD can be installed on the wall face, there are some restrictions.

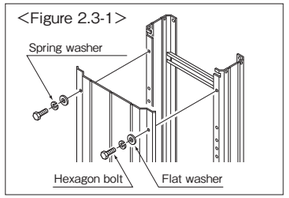
For installation on the wall face, a treatment to prevent loosening of bolts is required.

● For attaching the lid, use "Bolt and washer set for lid on wall face RD-HB".

※ Set contents
M6 hexagon × 20L SUS
M6 spring washer SUS
M6 flat washer SUS

※ The lid screw supplied with the product cannot be used.

<Figure 2.3-1>



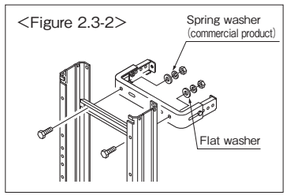
● For installation on the wall face (floated from the wall face), the following treatment is required.

• Be sure to attach the bottom plate. Otherwise, wind pressure is applied from inside the duct, causing a damage to the duct.

• For fixing the duct to the mounting base, use a commercially available "Stainless W3/8 spring washer". (RZW-150 is excluded)

※ Use it in addition to the bolt set supplied with the product for fixing.

<Figure 2.3-2>

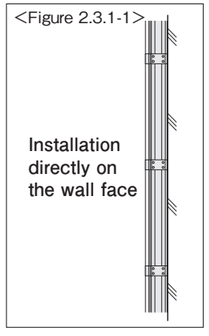


2.3.1 Types of installation on the wall face (vertical)

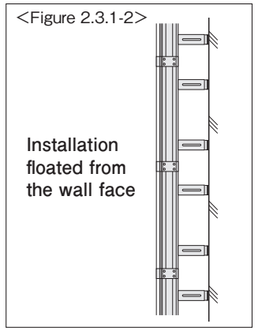
There are two methods of installing SLIMDUCT RD on the wall face: "Installation directly on the wall face" and "Installation floated from the wall face".

<Figure 2.3.1-1、2>

<Figure 2.3.1-1>



<Figure 2.3.1-2>



2.3.2 Whether the installation on the wall face is possible or not depending on the type

Whether the installation on the wall face is possible or not depending on the type of SLIMDUCT RD is shown in . <Table 2.3.2-1>

Never use the installation methods marked with "×" to avoid the worst risk of drop by a strong wind.

<Table 2.3.2-1>

Type	Installation directly on the wall face	Installation floated from the wall face
150	○	○
300	○	○
300H	○	○
450	○	○
450H	○	○
600	○	○
600H	○	×
900	△	×
900H	("×" for the corner parts)	×

2.3.3 Conditions for installation on the wall face (directly on the wall face)

When installing SLIMDUCT RD on the wall face (directly on the wall), observe the following conditions :

1 Use the method using joints※ for fixing.

※ For the upper and lower ends, the free joint or different diameter joint cannot be used.

2 The lid reinforcing plate cannot be used due to the risk of dropping off.

Remove the lid reinforcing plate standardly supplied with 600, 600H, 900, and 900H types and some corner parts.
(The lid reinforcing plate is used for preventing deflection of lid in the installation on a plane surface, and not required in the installation on the wall face.)

3 Fixing method

Fix with "Stainless W3/8 or M10 anchor" by using the parts dedicated for installation on the wall face. Note that the installable location differs depending on the product.

1. General type ducts and corner parts

Set the anchor on the sub girder by using RBK-B auxiliary bracket for sub girder. <Figure 2.3.3-1>

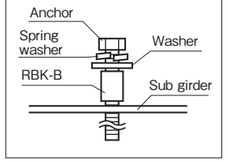
※For 2m-type and 1m-type ducts other than 150, construction by using the bracket for main girder is also possible in the same way as the open-close type duct.

Set the anchors in 4 or more locations in consideration of balance. <Figure 2.3.3-2>
For the plane surface corner 90° and RE-300 to 600H, supporting in 5 or more locations including the outer R side of the auxiliary sub girder (6) is recommended.

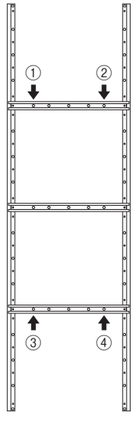
2. Open-close type duct

RD-450H/RD-450H-1/RD-600H/RD-600H-1/RD-900H/RD-900H-1 is included.
Set the anchor on the main girder by using RBK-A auxiliary bracket for main girder. <Figure 2.3.3-4>
Set the anchors in designated 4 locations or more. <Figure 2.3.3-5/6>
If the piping load is applied on the sub girder, it is recommended to add the anchor also on the sub girder in the same way as the general type.

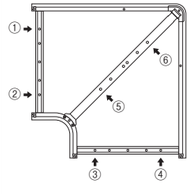
<Figure 2.3.3-1>



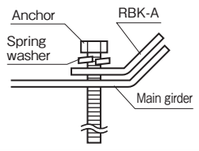
<Figure 2.3.3-2>
Location to set anchor



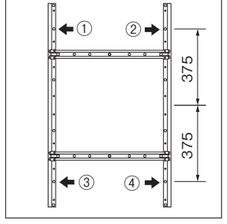
<Figure 2.3.3-3>
Location to set anchor



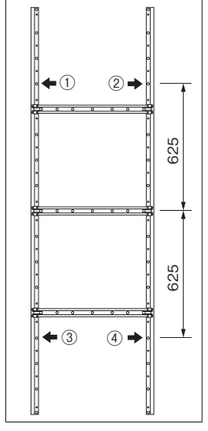
<Figure 2.3.3-4>



<Figure 2.3.3-6>
Location to set anchor
Open-close type duct (1m)
RD-450H-/600H-1/900H-1



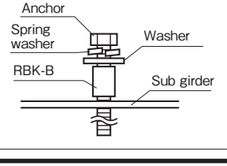
<Figure 2.3.3-5>
Location to set anchor
Open-close type duct (2m)
RD-450H/600H/900H



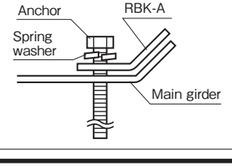
Notes in design

Use the W3/8 or M10 anchor (female), and fix it by using RBK-A auxiliary bracket for main girder or RBK-B auxiliary bracket for sub girder.

<図2.3.3-7> General type



<図2.3.3-8> Open-close type duct



2.3.4 Conditions for installation on the wall face (floated from the wall face)

When installing SLIMDUCT RD on the wall face (floated from the wall face), observe the following conditions :

1 Use the method using joints※ for fixing.

※ Free joint or joint to which the bottom plate is not attachable (some types of different diameter joint) cannot be used.
※ For the upper and lower ends, the free joint or different diameter joint cannot be used.

2 The lid reinforcing plate cannot be used due to the risk of dropping off.

Remove the lid reinforcing plate standardly supplied with 600 type and some corner parts.
(The lid reinforcing plate is used for preventing deflection of lid in the installation on a plane surface, and not required in the installation on the wall face.)

3 Fixing method

Fix the RD mounting base on the wall face, and attach the SLIMDUCT RD to it.
Use "RZW-150" for 150 type, and use "RZM-S + RZB-S" for other sizes.
Fix the RD mounting base with "Stainless W3/8 or M10 anchor".
Note that the mounting base settable location differs depending on the product.
Avoid setting the mounting base at the joint portion due to the risk of drop.

Reference 【3.4】 Mounting base

1. General type ducts and corner parts

Fix the mounting base to the sub girder by using the bolt set supplied with the mounting base as well as the commercially available spring washer. <Figure 2.3.4-1> ※ RZW-150 is excluded

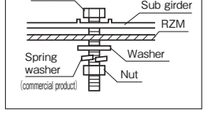
※2m-type and 1m-type ducts other than 150, construction by using RBK-A auxiliary bracket for main girder is also possible in the same way as the open-close type duct.

Set the anchors in 2 or more locations in consideration of balance. <Figure 2.3.4-2>
For the quantity of mounting bases for the corner part, see pages of each corner part. <Figure 2.3.4-3>

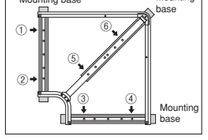
2. Open-close type duct

RD-450H/RD-450H-1 is included.
Fix the mounting base to the main girder by using RBK-A auxiliary bracket for main girder, and at the same time, also fix the bottom plate.
At this time, drilling is required on the bottom plate. <Figure 2.3.4-4>
Set the anchors in designated 2 locations or more. <Figure 2.3.4-5/6>
If the piping load is applied on the sub girder, it is recommended to add the mounting base also on the sub girder in the same way as the general type.

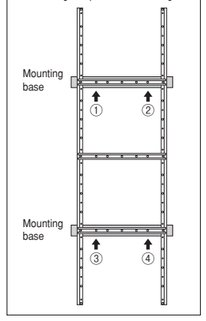
<Figure 2.3.4-1>



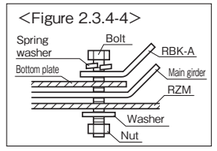
<Figure 2.3.4-3>
Location to set the mounting base
Fix the sub girder part to the mounting base.



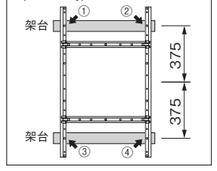
<Figure 2.3.4-2>
Location to set the mounting base
Fix the sub girder part to the mounting base.



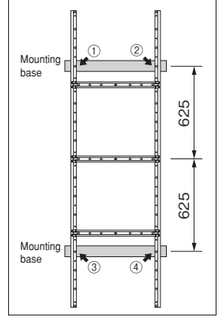
<Figure 2.3.4-4>



<Figure 2.3.4-6>
Location to set the mounting base
Open-close type duct (1m) RD-450H-1



<Figure 2.3.4-5>
Location to set the mounting base
Open-close type duct (2m) RD-450H



4 Be sure to attach the bottom plate. (in advance)

※ When using RCO, it is recommended to attach the bottom plate also to the nearest plane portion (50 cm or over).

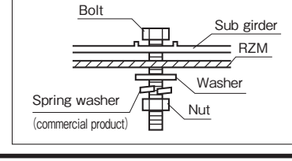
Reference 【3.5.7】 and 【3.5.8】 Elevation surface corner 90°

Notes in design

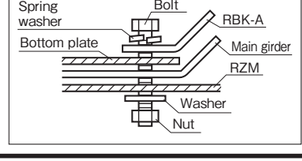
Fix the open-close type duct by using RBK-A auxiliary bracket for main girder, and fix the others by using a commercially available spring washer as shown in the figure.

※ RZW-150 is excluded

<Figure 2.3.4-7> General type



<Figure 2.3.4-8> Open-close type duct

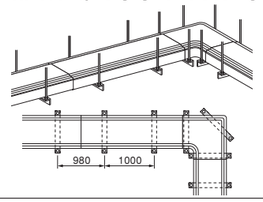


2.4 Installation method (hanging from the ceiling)

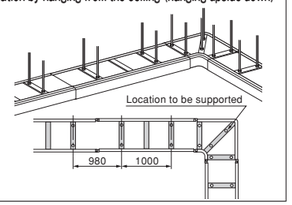
Outline

The concrete way of installation on the ceiling face is to hang the duct with channels and fully-threaded bolts.
At this time, there are two installation methods: installation with the lid facing the ceiling and installation with the lid facing the floor.

<Figure 2.4-1>
Installation by hanging from the ceiling



Installation by hanging from the ceiling (hanging upside down)



2.4.1 Notes on hanging from the ceiling

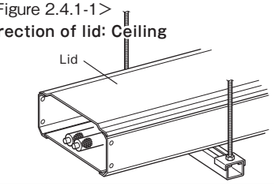
1 Generally in the installation by hanging from the ceiling

1. **Connection** … The free joint cannot be used.
2. **Support** … Support four or more locations for one duct or one corner part.
Locations to be supported are to be decided based on the locations of mounting bases being set. (Example: If the quantity of the mounting bases is 3, support 6 locations.)
For the quantity of mounting bases for the corner part, see pages of each part.

2 Direction of lid: Ceiling <Figure 2.4.1-1>

1. **Support** … On at least two locations of sub girders for one duct or one corner part respectively, attach the support part such as a channel.
Although the point for determining the position to be attached to is the same as that for the mounting base on the floor face, an enough clearance is needed between the ceiling and the duct in consideration of attaching the pipe and lid.

<Figure 2.4.1-1>
Direction of lid: Ceiling

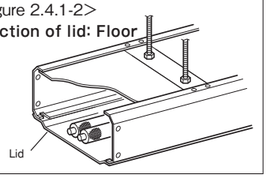


3 Direction of lid: Floor (hanging upside down) <Figure 2.4.1-2>

1. **Restriction on duct type** … 900 and 900H ducts are not usable for installation by hanging from the ceiling with “direction of lid: floor”.
3. **Bottom plate** … Use the bottom plate for preventing dust accumulation.

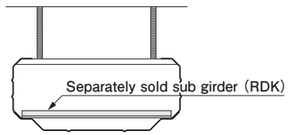
Note For the jointless connection method, the bottom plate for joint (RDBJ) cannot be used.
If the jointless connection is used in the construction, the exclusive bottom plate is needed separately, and consult with a sales office of our company.

<Figure 2.4.1-2>
Direction of lid: Floor

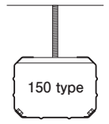


4. **Pipe support** …
Support pipes by using the RD sub girder set (RDK) so that the pipe weight is not applied on the lid.
RD sub girder set is not needed for 150type, because the accommodation capacity of 150 type is small.
As long as it is of the general copper pipe covered with insulation material, it can be supported by the strength of lid.
<Figure 2.4.1-3>

<Figure 2.4.1-3> Position for attaching RDK

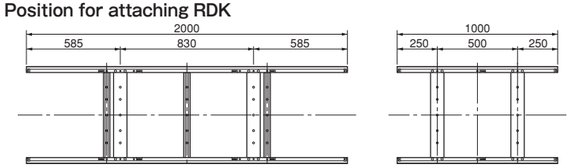


Support pipes by using the RD sub girder set (RDK) so that the pipe weight is not applied on the lid.
Attach the sub girder to the countersink section of the main girder (2 m and 1 m duct = 2 locations).
※ It cannot be attached to 0.5/0.3 m duct.



RD sub girder set is not needed for 150type, because the accommodation capacity of 150 type is small.

Position for attaching RDK



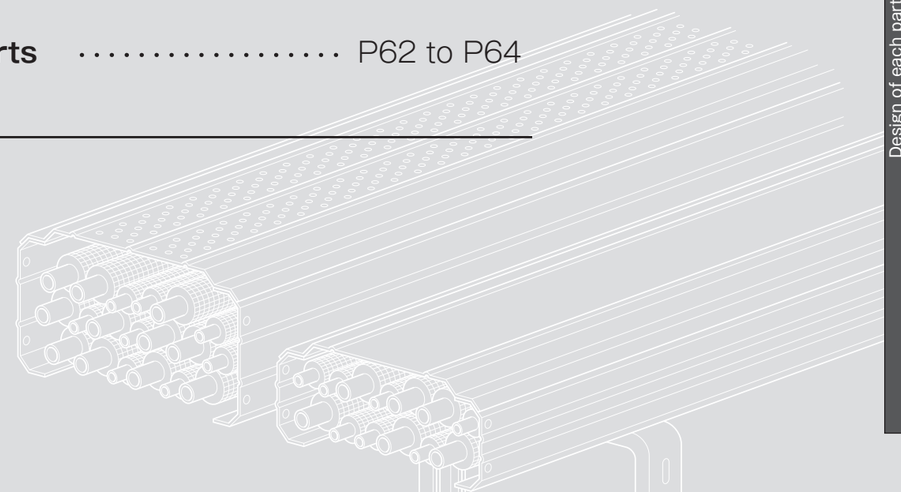
5. **Lid reinforcing plate** … The lid reinforcing plate cannot be used. For safety, remove the lid reinforcing plate which is standardly supplied with 600 type and some corner part.

Reference The lid reinforcing plate is used for preventing deflection of lid in the installation on a plane surface.

Design

3 Design of each part

Duct ····· P20 to P21
PS and wall penetration ····· P22 to P28
Connection method ····· P29 to P33
Mounting base ····· P34 to P42
Corner ····· P43 to P58
Bottom plate ····· P59 to P61
Other parts ····· P62 to P64



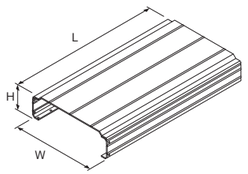
3.1 Duct

3.1.1 Product configuration

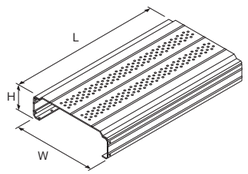
<Figure 3.1.1-1>

(Unit : mm)

Standard type



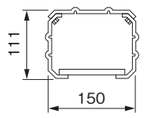
Walkway type



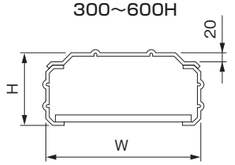
Type	W	L	H (Walkway)
150	150	500/1000/2000	111
300/300H	300	300/500/1000/2000	131/251 (134/254)
450/450H	450	300/500/1000*/2000*	131/251 (134/254)
600/600H	600	300/500/1000*/2000*	134/254 (134/254)
900/900H	900	300/500/1000*/2000*	134/254 (134/254)

* H type is the open-close type.

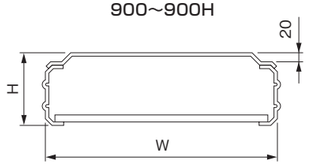
150



300~600H



900~900H



3.1.2 Load capacity

For the load capacity, see 【1.4】 Load capacity and strength.

3.1.3 Selecting duct

1 Select the duct size in consideration of the state of pipe takeout portion (pipe shaft etc.), diameter and quantity of the pipes, piping space, space for equipment maintenance, and whether the mounted stage is single or duplex, etc.

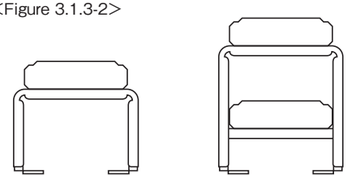
Reference 【1.4】 Load capacity and strength
【1.5】 Accommodation capacity
【2.1】 Basic design flow

Take into consideration the location for installing the duct for walkway (such as RDW), etc. for preparation of maintenance.

2 There are two duct installation patterns as shown in the figure: standard (single stage) and duplex mounting (in two stages separately).
<Figure 3.1.3-2>

Note The duplex mounting (in two stages separately) is possible only when the mounting base guide for duplex mounting RZY (separately sold) is attached to RZB-M/ML/L.
There is no mounting base guide for duplex mounting for 900 type. (See 【3.4】 Mounting base.)

<Figure 3.1.3-2>



Standard (single stage) | Duplex mounting (in two stages separately)

3.1.4 About installation on the wall face and by hanging from the ceiling

For installation on the wall face, see 【2.3】 Method of installation on the wall face.
For installation by hanging from the ceiling, see 【2.4】 Method of installation by hanging from the ceiling.

3.1.5 Location to set the mounting base (for installation on the floor) <Figure 3.1.5-1>

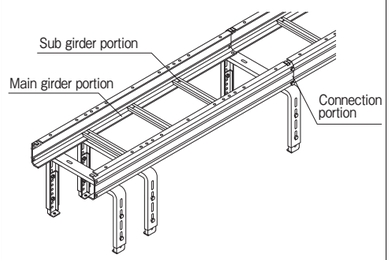
Set the mounting bases in 2 or more locations in consideration of load.
There are the following 3 locations to set the mounting base.

1 Setting on sub girder
This is used in the installation on the floor and installation on the wall face.
※ For details about the installation on the wall face, see 【2.3】 Method of installation on the wall face.

2 Setting on connection portion
(when the jointless connection construction method is used or the fixing joint* is used)
Only for installation on the floor (a plane surface).
※ Possible only with RSJ and RSS.
Reference 【3.3】 Connection method

3 Setting on main girder
Since the fixing strength in the mounting base setting on a main girder is weaker than that on a sub girder or connection portion, there are some use restrictions depending on the installation method except for the installation on the floor.
※ For details, see 【3.4.7】 Location for setting.

<Figure 3.1.5-1>



3.1.6 Notes on designing

1 Mounting base Reference 【3.4】 Mounting base
The width of mounting base is wider than that of duct.
When installing the duct, take into consideration the space for installation and maintenance works.
(Rough indication: 200 mm or more around)

2 Connection portion
Reference 【3.3】 Connection method

- In the jointless connection method, 20 mm will be shortened for one joint portion. On the other hand, in the connection method using joint, clearance of 20 mm (RSJ) to 63 mm (RR) between ducts is required as the overlap width for joint.
- For the short end, use a standard-size duct and a sliding joint in combination as far as possible.
Joint types are as shown in <Table 3.1.6-2.1>.

Reference 【3.3】 Connection method

<Table 3.1.6-2.1> Connection method

Jointless connection	Generally used connection method. Connect main girders of ducts or some plane surface corner each other without using separate members for joint. Note • It is not possible to connect with 150 type, some corner parts, different size ducts, or end cut ducts. • For the installation on the wall face, use the fixing joint.
Fixing joint	This is used when the vertical installation or jointless connection cannot be applied.
Free joint	This is used when the jointless connection or fixing joint cannot be used e.g. for the cut end of duct.
Sliding joint	This is used for adjusting length or height. Note • There is no sliding joint for 150 type.
Different diameter joint	This is used for connecting different size ducts or corner parts.

3 Clearance between RDs
If RDs are laid out in parallel, keep 200 mm or more clearance between ducts or between a duct and equipment.

4 Walkway type
The walkway type cannot be used for the installation on the wall face and by hanging from the ceiling.
Also, do not use the short duct end as the walkway.

5 Lid reinforcing plate
The lid reinforcing plate is standardly supplied with 600(H) and 900(H).
The lid reinforcing plate cannot be used for the installation on the wall face and by hanging from the ceiling.
Remove it.

3.1.7 Cutting duct

Avoid cutting and use the sliding joint RSS as far as possible.
Reference 【3.3.5】 RSS sliding joint
When you performed a cutting work, perform the repair work by using the zinc rich paint (Zn-Al).

3.2 PS and wall penetration

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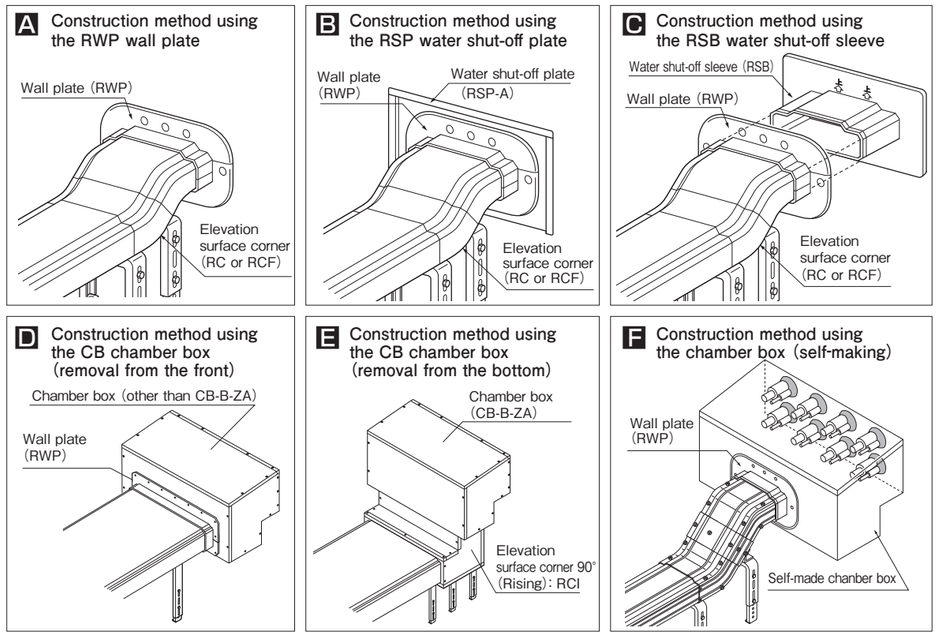
3.2.3 Construction method using the RSP water shut-off plate ····· 24
3.2.4 Construction method using the RSB water shut-off sleeve ····· 25
3.2.5 Construction method using the CB chamber box (removal from the front) ····· 26
3.2.6 Construction method using the CB chamber box (removal from the bottom) ····· 27
3.2.7 Construction method using the chamber box (self-making) ····· 28
3.2.8 Wall penetrating construction method (indoors) ····· 28

3.2.1 Construction example of PS and wall penetration (installation outdoors on the floor)

Water shut-off treatment is required for outdoor use.
There are the following penetration methods in which the water shut-off treatment is considered.

Note The explanation on the construction method below is just an example. Follow the instruction by the supervisor on site for details.

<Figure 3.2.1-1> **Construction example (PS)**



<Table 3.2.1-1>

Duct size	Construction example	Explained in	Required part (just for each example) Wall plate RWP	Elevation surface corner 45° RCF	Elevation surface corner 90° RC/RCI	Water shut-off plate RSP	Water shut-off sleeve RSB	Chamber box CB
150	A	P.23	○	○	—	—	—	—
300、300H 450、450H 600、600H	B	P.24	○	○	—	○ ※1	—	—
	C	P.25	○	○	—	—	○	—
900、900H	B	P.24	○	○	—	○ ※1	—	—
900H	D	P.26	○	—	—	—	—	○ ※2
All sizes	E	P.27	—	—	○	—	—	○ ※3
	F	P.28	○	—	—	—	—	(self-making) ※4

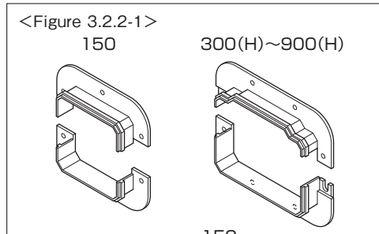
※1. Construction method using RSP-A (square caulking type)
※2. Construction method using a chamber box other than CB-B-ZA
※3. Construction method using CB-B-ZA
※4. To be made on site

3.2.2 Construction method using the RWP wall plate

Construction example A

1 Product configuration

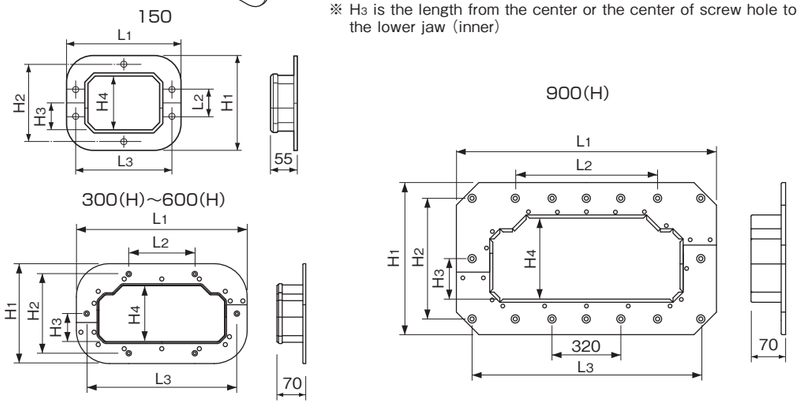
<Figure 3.2.2-1>



RWP dimensions (Unit : mm)

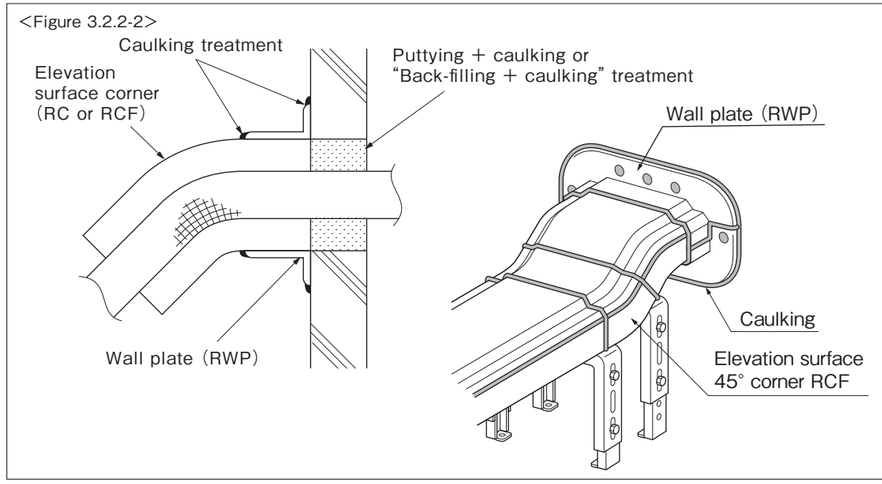
Type	L1	L2	L3	H1	H2	H3※	H4
150	262	56	204	202	164	57.5	115
300/300H	414	160	364	242/362	192/312	73.5/131.5	141/263
450/450H	564	310	514	242/362	192/312	71.5/131.5	143/263
600/600H	714	400	664	242/362	192/312	71.5/131.5	139/263
900/900H	1014	650	964	242/362	192/312	71.5/131.7	143/263

※ H3 is the length from the center or the center of screw hole to the lower jaw (inner)



2 Perform the penetrated portion treatment by using the wall plate (RWP) and the elevation surface corner (RC, RCF).
Also shut off water by "puttying + caulking" or "mortar back-filling + caulking treatment" for the penetrated portion.

<Figure 3.2.2-2>



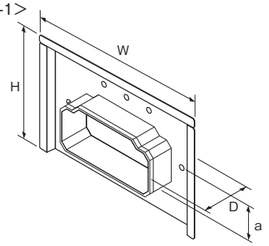
3.2.3 Construction method using the RSP water shut-off plate

Construction example B

Perform the water shut-off treatment by using the water shut-off plate (RSP-A square caulking type), the wall plate (RWP), and the elevation surface corner 45° (RCF) in combination.

1 Product configuration

<Figure 3.2.3-1>



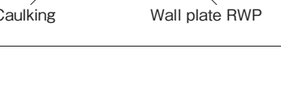
(Unit : mm)

Size	W	D	H	a
300/300H	467	72.3	279/399	50.5/113.7
450/450H	617	72.3	279/399	49.5/113.7
600/600H	767	72.3	279/399	49.5/113.7
900/900H	1067	71.6	279/399	44.6/104.6

※ "a" is the length from the center of screw hole to the lower jaw (outer)

2 Dimensions of opening

<Figure 3.2.3-2>



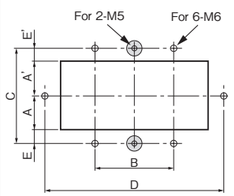
(Unit : mm)

Size	W	H
300/300H	300	118/238
450/450H	450	118/238
600/600H	600	118/238
900/900H	900	118/238

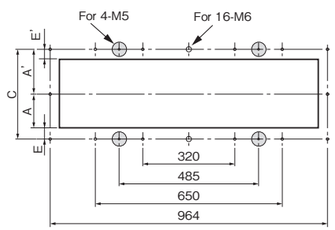
3 Position of pilot hole for attaching RSP and RWP

<Figure 3.2.3-3> Position of screw in relation to the penetrated hole

<300(H)、450(H)、600(H)>



<900(H)>

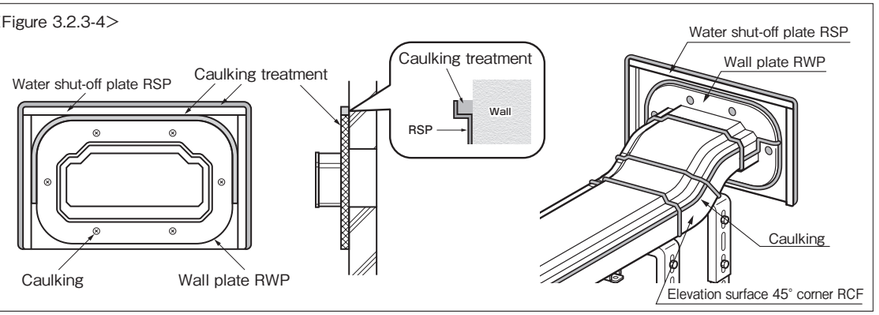


(Unit : mm)

Size	A	A'	B	C	D	E	E'
300 type	54	64	160	192	364	42	32
450 type			310		514		
600 type			400		664		
900 type			–		–		
300H type	117	121	160	312	364	39	35
450H type			310		514		
600H type			400		664		
900H type			–		–		

4 Caulking treatment

<Figure 3.2.3-4>



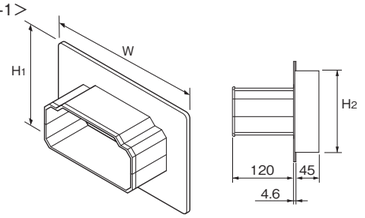
3.2.4 Construction method using the RSB water shut-off sleeve

Construction example C

Perform the water shut-off treatment by using the water shut-off sleeve (RSB), the wall plate (RWP), and the elevation surface corner 45° (RCF) in combination. The water shut-off sleeve is used by being embedded in the body.

1 Product configuration

<Figure 3.2.4-1>

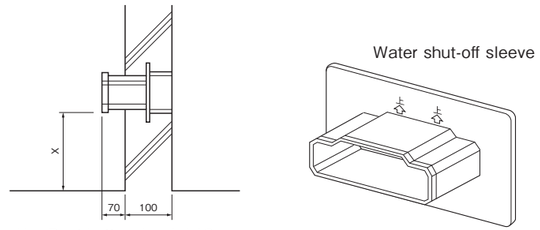


(Unit : mm)

Size	W	H1	H2
300/300H	391	207/327	147/267
450/450H	541	207/327	147/267
600/600H	691	207/327	147/267

2 Dimensions for embedding the water shut-off sleeve in the body

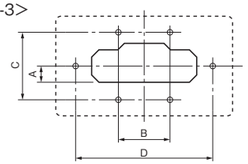
<Figure 3.2.4-2>



X = Duct bottom level +16mm

3 Position of M6×45L tapping screw or anchor for M10 for attaching wall plate

<Figure 3.2.4-3>



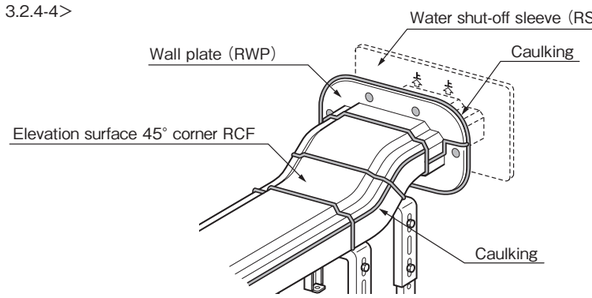
※ "a" is the length from the center of screw hole to the lower jaw (outer)

(Unit : mm)

Size	A	B	C	D
300タイプ	53.2	160	192	364
450タイプ		310		514
600タイプ		400		664
300Hタイプ	113.5	160	312	364
450Hタイプ		310		514
600Hタイプ		400		664

4 Caulking treatment

<Figure 3.2.4-4>



3.2.5 Construction method using the CB chamber box (removal from the front)

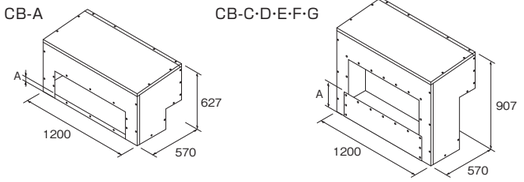
Construction example D

Perform construction by the combined use of wall plate RWP.
Also, the lid reinforcing plate RXH for reinforcing the duct end is separately needed.

※ The chamber box (CB) is a special order product with special specification in which the material and dimensions etc. are changed (since this is a special order product, we have to have a pre-meeting separately for the price and delivery date).

1 Product configuration

<Figure 3.2.5-1>

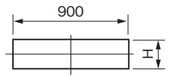


(Unit : mm)

Size	A
CB-A	(50)
CB-C	274
CB-D	218
CB-E	162
CB-F	106
CB-G	(50)

2 Dimensions of opening

<Figure 3.2.5-2>



(Unit : mm)

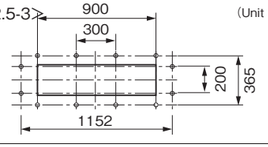
Size	H
900H	230

3 Position for fixing W3/8 anchor bolt for CB

<Figure 3.2.5-3>

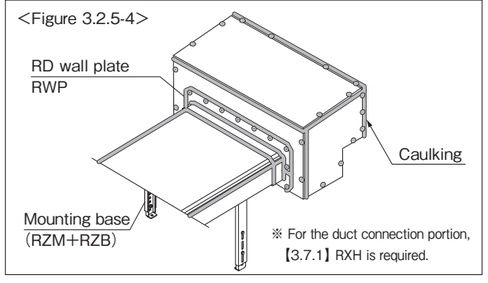
Note Since a gap will be formed at the connection portion, apply caulking or puttying for waterproofing.
<Figure 3.2.5-4>

<Figure 3.2.5-3>



(Unit : mm)

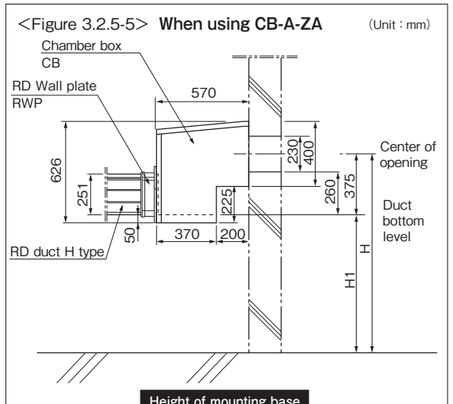
<Figure 3.2.5-4>



※ For the duct connection portion, 【3.7.1】 RXH is required.

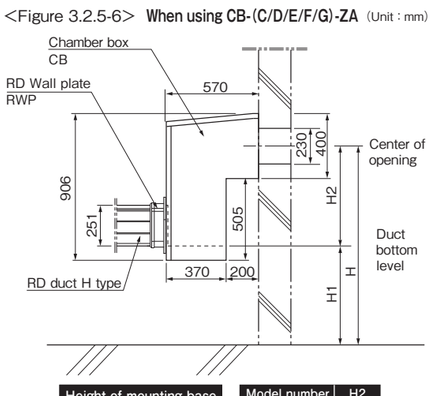
4 Dimensions of level for removing RD duct

<Figure 3.2.5-5> When using CB-A-ZA (Unit : mm)



Height of mounting base
H1=H-375mm

<Figure 3.2.5-6> When using CB-(C/D/E/F/G)-ZA (Unit : mm)



Height of mounting base
H1=H-H2mm

Model number	H2
CB-C-ZA	431
CB-D-ZA	487
CB-E-ZA	543
CB-F-ZA	599
CB-G-ZA	655

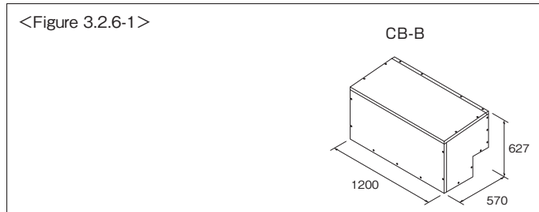
3.2.6 Construction method using the CB chamber box (removal from the bottom)

Construction example E

Construction for removal from the bottom is also possible by using RCI elevation surface corner 90° (rising). <Figure 3.2.6-2>

1 Product configuration

<Figure 3.2.6-1>

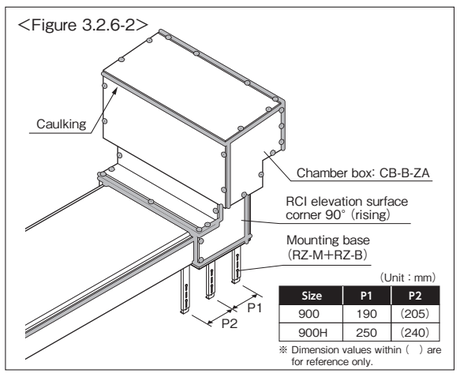


2 Fixing anchor bolt and caulking treatment

Reference For the anchor position, see 【3.2.5】 Construction method using the CB chamber box (removal from the front).

Note
- Be sure to set two RD mounting bases.
- Be sure to set RZ also for the connected RD duct end.
- The chamber box is made-to-order.
- When setting RCI-900/900H on the chamber box, remove the bottom plate B. When setting another size one on CB, perform notching to be of the appropriate size.
- RCI is just inserted into CB, but not fixed to CB. (see figure below)
- Since a gap will be formed at the connection portion, apply caulking or puttying for waterproofing.

<Figure 3.2.6-2>



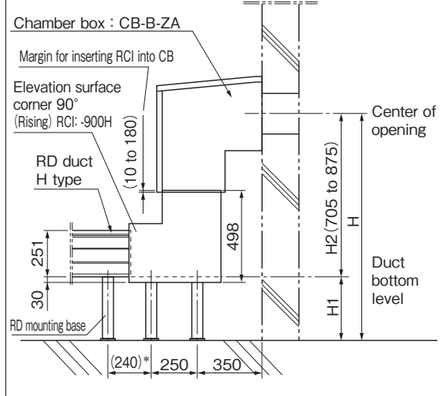
(Unit : mm)

Size	P1	P2
900	190	(205)
900H	250	(240)

※ Dimension values within ( ) are for reference only.

3 Dimensions of level for removing RD duct

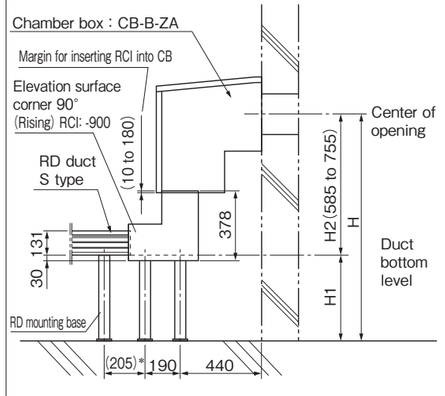
<Figure 3.2.6-3> (Unit : mm)
When using CB-B-ZA + RCI-900H elevation surface corner 90° (rising)



Height of mounting base
H1=H-H2(705~875)mm

※ H2 value differs depending on the margin for inserting RCI into CB.
705mm is for the maximum insertion 180mm.
875mm is for the minimum insertion 10mm.
* Reference value

<Figure 3.2.6-4> (Unit : mm)
When using CB-B-ZA + RCI-900 elevation surface corner 90° (rising)



Height of mounting base
H1=H-H2(585~755)mm

※ H2 value differs depending on the margin for inserting RCI into CB.
585mm is for the maximum insertion 180mm.
755mm is for the minimum insertion 10mm.
* Reference value

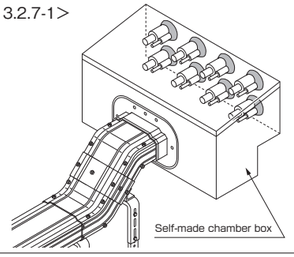
3.2.7 Construction method using the chamber box (self-making)

Construction example F Construction method using the chamber box (self-making)

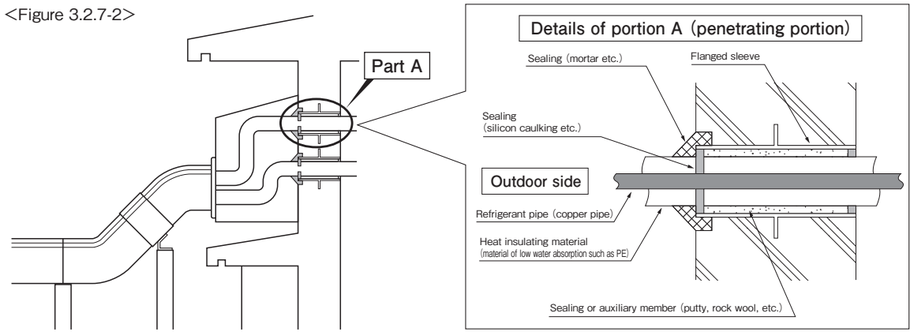
In a case where no ready-made product suits the condition on site, you may yourself.
In self-making, conditions will differ depending on the respective environment, and we will show one example only.
As for the construction using a self-made chamber box, follow the direction by the supervisor on site.
<Figure 3.2.7-1~2>

Note The chamber box and penetrating member are to be made on site.

<Figure 3.2.7-1>



<Figure 3.2.7-2>

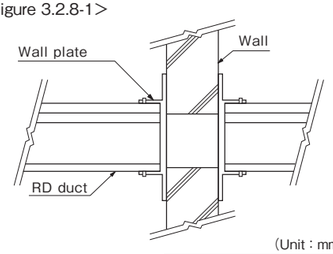


3.2.8 Wall penetrating construction method (indoors)

As the wall penetrating construction method indoors, there are "wall butt method" and "wall penetrating construction method".
For both methods, a combination of straight duct (SLIMDUCT RD) and decorative plate (wall plate RWP) is used in construction. However, "wall butt method" is easier in maintenance.
※ For RWP, see【3.2.2】Construction method using the RWP wall plate.

1 Wall butt method

<Figure 3.2.8-1>



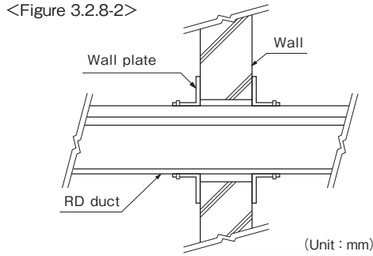
(Unit : mm)

Dimensions of wall hole

Size	A	B
150 type	110	100
300 type	260	
450 type	410	
600 type	560	
900 type	860	
300H type	260	220
450H type	410	
600H type	560	
900H type	860	

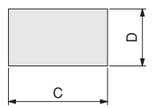
2 Wall penetrating construction method

<Figure 3.2.8-2>



(Unit : mm)

Dimensions of wall hole



Size	C	D
150 type	170	130
300 type	320	150
450 type	470	
600 type	620	
900 type	920	
300H type	320	270
450H type	470	
600H type	620	
900H type	920	

3.3 Connection method

Outline The connection method is largely classified into the following concrete methods: jointless connection which uses no member for joint, joint by using some members for joint, and joint by using the special parts for 900/900H.

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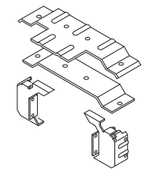
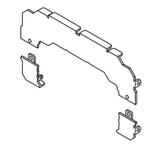
3.3.1 Table for selecting connection method

There are several connection (joint) methods as shown below. Use an appropriate method to suit the purpose.

Note For the corner parts for 900/900H excepting RCF-900/900H, general connection methods cannot be used. See "Connection for 900/900H parts" in the lowest column of the table.

<Figure 3.3.1-1>

Method		Explanation	Overlap width for connection
Jointless connection Reference【3.3.2】		Generally used connection method. Connect main girders of ducts or some corners each other without using separate members for joint. **Note** This method cannot be used for the installation on the wall face, or for connection with 150 type, some corner parts for 900(H) type, different size ducts, or end cut ducts.	Margin for insertion −20mm
Joint Reference【3.3.3】to【3.3.6】	Fixing joint	This is used when the vertical installation or jointless connection cannot be applied.	Overlap width for joint 20mm
	Free joint	This is used when the jointless connection or fixing joint cannot be used e.g. for the cut end of duct. **Note** This can be used only in the installation on a plane surface and installation directly on the wall face. This cannot be used for connection with the elevation surface corner in the installation on the wall face.	Overlap width for joint 20mm
	Sliding joint	Fixing joint for adjusting length. **Note** There is no sliding joint for 150 type. This cannot be used for connection with the elevation surface corner in the installation on the wall face.	
	Different diameter joint (including RXR)	This is used for connecting different size ducts or corner parts. **Note** When connecting with the elevation surface corner, this can be used only for the plane portion. The joint type cannot be used for the installation floated from the wall face or installation by hanging from the ceiling.	Joint type  Overlap width for joint 63mm Plate type  Margin for insertion −20mm
Connection for 900/900H parts*2 Reference【3.3.7】to【3.3.10】	900/900H Parts connection bracket	This is used for connecting 900/900H type duct and corner parts.	RXC: Margin for insertion −20mm
	900/900H type Joint for 900/900H type corner parts Joint	This is used for connecting 900/900H type corner parts each other.	RXJ: Overlap width for joint 10mm
	Insertion method for 900/900H type		Margin for insertion −10mm to −40mm

Larger diameter side	Smaller diameter side	Shape	Material
300	150	Joint type	ZAM·SUS
300H	150	Plate type	ZAM
300H	300	Joint type	ZAM
450	300	Joint type	ZAM·SUS
450H	300	Plate type	ZAM·SUS
600	300	Joint type	ZAM
600H	300	Plate type	ZAM·SUS
900	300	Plate type*1	ZAM
900H	300	Plate type*1	ZAM
450H	300H	Joint type	ZAM
600H	300H	Joint type	ZAM
900H	300H	Plate type*1	ZAM
450H	450	Joint type	ZAM·SUS
600	450	Joint type	ZAM
600H	450	Joint type	ZAM
900	450	Plate type	ZAM
900H	450	Plate type*1	ZAM·SUS
600H	450H	Joint type	ZAM·SUS
900H	450H	Plate type	ZAM
600H	600	Joint type	ZAM
900	600	Plate type, Joint type	ZAM
900H	600	Plate type*1	ZAM
900H	600H	Plate type*1, Joint type	ZAM
900H	900	Plate type*1	ZAM

*1 Can be used only when the corner part for 900(H) (other than RCF) is used.

*2 RCF-900/900H is excluded.

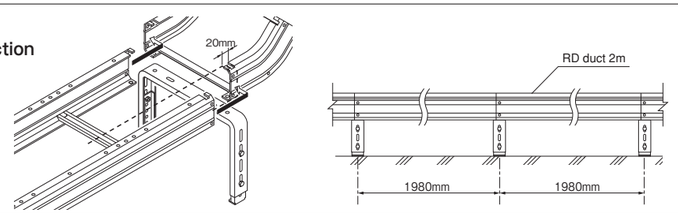
3.3.2 Jointless connection

This is the generally used connection method for connection of ducts or corner parts. Connection is possible without using separate members for joint.
However for a constructional reason, the "jointless connection method" cannot be used for the installation on the wall face, or for connection with RD-150 series, different size ducts each other, or end cut ducts. For details, see 【3.3.1】 Table for selecting connection method.

1 Overlap width for connection in the jointless connection <Figure 3.3.2-1>

In the jointless connection, the effective dimension will become shorter, because the connection is made by overlapping the end of a duct and the end of the other one by 20mm.

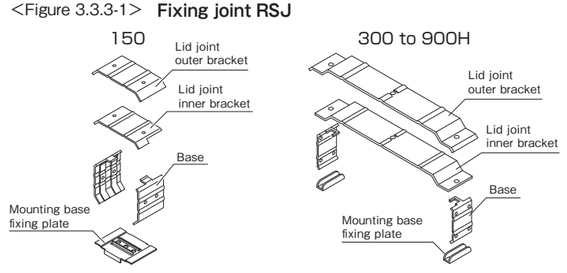
<Figure 3.3.2-1>
Jointless connection



3.3.3 RSJ fixing joint

The fixing joint can be used for the installation on a plane surface, installation on the wall face, and installation by hanging from the ceiling.
When the fixing joint is used, 20mm clearance between parts is needed.
It is also possible to set the mounting base at the connection portion by using the supplied mounting base fixing plate. (for installation on the floor only)

<Figure 3.3.3-1> **Fixing joint RSJ**

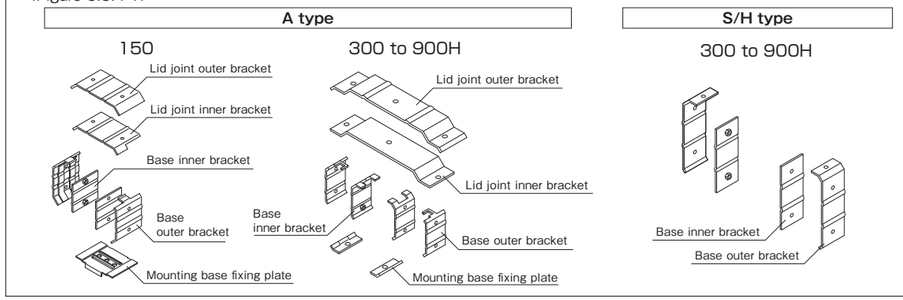


3.3.4 RFJ free joint

There are two types of free joint: A type in which the lid joint etc. are included, and S/H simplified type. They are used for connecting a cut duct. They can be used for the installation on the floor and installation directly on the wall face. However note that they cannot be used for connection with the elevation surface corner in the installation on the wall face. When the free joint is used, 20 mm clearance between parts is needed.
For the A type, it is also possible to set the mounting base at the connection portion by using the supplied mounting base fixing plate.

For details, see 【3.4.7】 Location for setting the mounting base. **Note** ※ RD duct 0.5m/0.3m, and corner parts cannot be cut.

<Figure 3.3.4-1>



Notes on using the free joint

1. Cutting main girder

Ducts can be used by cutting within the range where at least two sub girders remain.
However for the open-close type, cutting resulting in reduction of sub girders is not possible.

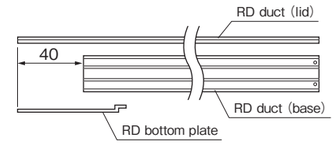
2. Cutting lid

(1) S/H type <Figure 3.3.4-2>

The lid is not to be cut when the length of cut main girder is 40mm or less.
If the length of cut main girder exceeds 40mm, the lid is to be cut so that its length becomes longer than the main girder by 40mm.

※ If there is no problem in fixing screws or attaching the reinforcing plate, cutting may be omitted.

<Figure 3.3.4-2>
Cutting length of S/H type lid and bottom plate (rough indication)



(2) A type

Cut it so that it becomes of the same length as the main girder.

(3) Lid screw

If holes for lid screws do not remain, perform drilling at the required positions.

3. Bottom plate

(1) S/H type

Cut it so that it protrudes from the main girder by 40mm.

(2) A type

Cutting is not needed when the mounting base is set at the connection portion.
When the mounting base is not set, cut the bottom plate for duct so that it becomes shorter than the duct by 20 mm, and use the bottom plate for joint RDBJ.

4. Repair work (ZA type)

For the portion where you performed cutting or processing work, perform the repair work by using the zinc rich paint (Zn-Al).

5. Notes on attachment

(1) S/H type

In the vertical installation, attach it so that the lid of the upper part comes in the upper position.
In connection to the elevation surface corner, connect the uncut side.
For lowering the position (RCF), attach it so that the cut side comes to the lower position, and perform drilling so that the mounting base can be set to the elevation surface corner.

(2) A type

In connection to the elevation surface corner, connect the uncut side.
For lowering the position, attach it so that the cut side comes to the upper position, and set the mounting base also at the connection portion.

(3) Setting mounting base

For A type, the mounting base can be set at the joint portion by using the mounting base fixing plate.
Note that for 150 type, the mounting base can be set only in the connection of a duct with another duct.
For S/H type, the mounting base cannot be set at the joint portion. Set the mounting base near the joint portion (at a near sub girder etc.).

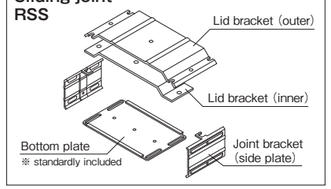
3.3.5 RSS sliding joint

This is the sliding joint with the length adjustment function.
This can be used when the distance between parts is 20 to 320mm.
Setting the mounting base at the bottom is also possible.

Note
- The bottom plate of RSS can be attached only in connection with RD duct 2m/1m, and the elevation surface corner.
  ※ The bottom plate can be attached by processing the bottom plate.

  Reference 【4.5.10-2.3】 Notes on using the bottom plate of sliding joint
- Basically, this cannot be used for connection with the corner parts of walkway type. (slide adjustment is not possible)
- This cannot be used for the portion connecting with the elevation surface corner in the installation on the wall face.

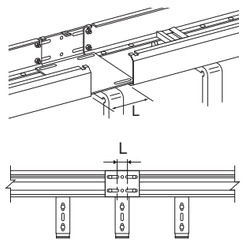
<Figure 3.3.5-1>
Sliding joint RSS



<Table 3.3.5-1> **Distance between parts and correspondent usage of sliding joint**

Distance between parts (L)	Used parts (Duct length + RSS)	RSS bottom plate attachment	Remarks
−20	None (general connection)	−	
20 to 120	RSS−1	○	For 20, fixing joint is also usable.
120 to 220	RSS−2	○	
220 to 320	RSS−3	○	For 260, single use of 0.3 m duct is also possible.
300 to 400	0.3m+RSS−1	△ *1	
400 to 500	0.3m+RSS−2	△ *1	For 460, single use of 0.5 m duct is also possible.
500 to 600	0.3m+RSS−3	△ *1	For 540, use of 0.3 m+0.3 m duct is also possible.
500 to 600	0.5m+RSS−1	△ *1	
600 to 700	0.5m+RSS−2	△ *1	
700 to 800	0.5m+RSS−3	△ *1	For 740, use of 0.3 m+0.5 m duct is also possible.
780 to 880	0.3m+0.5m+RSS−1	△ *1	
880 to 980	0.3m+0.5m+RSS−2	△ *1	For 940, use of two 0.5 m ducts is also possible. For 960, single use of 1 m duct is also possible.
980 to 1080	0.3m+0.5m+RSS−3	△ *1	
1000 to 1100	1m+RSS−1	○	
1100 to 1200	1m+RSS−2	○	
1200 to 1300	1m+RSS−3	○	For 1,240, use of 0.3 m+1 m duct is also possible.
1280 to 1380	0.3m+1m+RSS−1	○	
1380 to 1480	0.3m+1m+RSS−2	○	For 1,440, use of 0.5 m+1 m duct is also possible.
1480 to 1580	0.3m+1m+RSS−3	○	
1480 to 1580	0.5m+1m+RSS−1	○	
1580 to 1680	0.5m+1m+RSS−2	○	
1680 to 1780	0.5m+1m+RSS−3	○	For 1,720, use of 0.3 m+0.5 m+1 m duct is also possible.
1760 to 1860	0.3m+0.5m+1m+RSS−1	○	
1860 to 1960	0.3m+0.5m+1m+RSS−2	○	For 1,960, use of 2 m duct is also possible.
1960 to 2060	0.3m+0.5m+1m+RSS−3	○	
2000 to 2100	2m+RSS−1	○	
2100 to 2200	2m+RSS−2	○	
2200 to 2300	2m+RSS−3	○	

<Figure 3.3.5-2>



*1 Processing the bottom plate is necessary.
For the dimension of level difference, see 【3.5】 Corner.

Reference 【4.5.10-2.3】 Notes on using the bottom plate of sliding joint

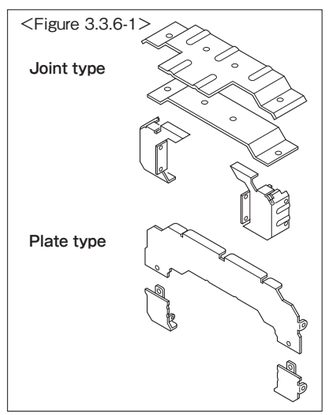
3.3.6 RR different diameter joint

There are two types of different diameter joint RR, and the construction method and dimensions differ respectively.
The mounting base cannot be set at the connection portion of the different diameter joint.
Set the mounting base at a near sub girder etc.
Also note that this cannot be used for connection with the elevation surface corner in the installation on the wall face.

- **Joint type**
  This can be used for the installation on a plane surface and installation directly on the wall face.
  When this is used, 63mm clearance between parts is needed.
  The bottom plate cannot be used.
- **Plate type**
  This can be used for the installation on a plane surface and installation on the wall face (downward).
  When this is used, the smaller duct enters inside by 20mm.

Note In the installation on the wall face (upward), rain water tends to intrude from the gap easily because of the structure of parts.

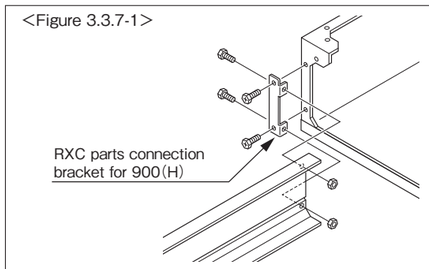
<Figure 3.3.6-1>



3.3.7 Joint for 900/900H (1) RXC

When you connect the duct and part by using RXC, insert the duct into the part by 20mm, and connect with RXC parts connection bracket for 900(H).

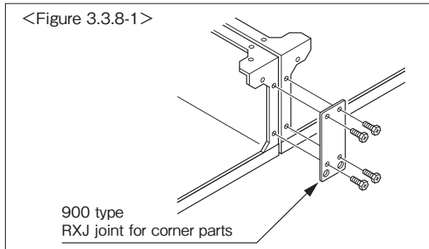
<Figure 3.3.7-1>



3.3.8 Joint for 900/900H (2) RXJ

To connect corner parts each other by using RXJ, align the corner parts (except for RCF) with 10mm clearance, and connect with RXJ.
Since some gap will be formed at the top surface etc., apply caulking etc. as necessary.

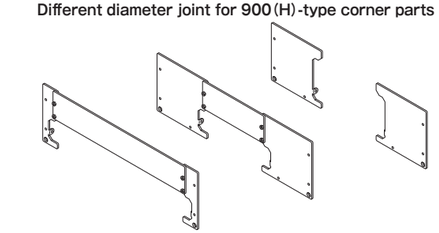
<Figure 3.3.8-1>



3.3.9 Joint for 900/900H (3) RXR

When connecting 900/900H type corner part (except for RCF) and a different diameter duct, use RXR.
When attaching, insert the duct into the part by 20mm, and fix them with screws.

<Figure 3.3.9-1>
Different diameter joint for 900(H)-type corner parts



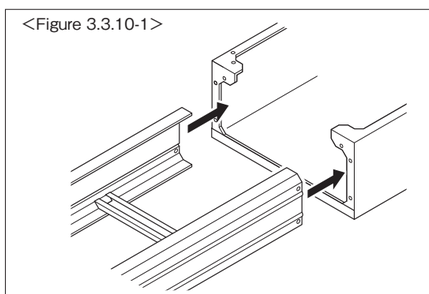
3.3.10 Joint for 900/900H (4) Insertion

Insert the duct into the corner part by 10 mm or more to connect them.
(Slide adjustment by 10mm to 40mm (plane surface) or 30mm (elevation surface) is possible.)

Note Individually support the duct and corner part respectively so that no load is applied on another part.

After the piping work is completed, attach the lid reinforcing plate (RXH-900 etc.).

<Figure 3.3.10-1>



3.4 Mounting base

Outline

The mounting base for RD 300 to 900 types can be adjusted within the range from 130 to 940 in its height by using the gate part (RZM) and leg part (RZB) in combination.
There are two types of 150 type mounting base: one leg mounting base of 280 through 940, and mounting base for wall face which is appropriate for installation on the wall face and its height is adjustable by three stages of 100, 125, and 150.

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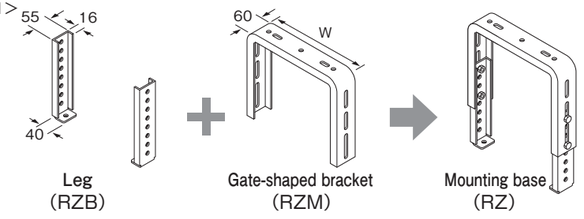
3.4.1 Product configuration

<Figur 3.4.1-1>



(Unit : mm)

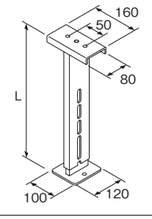
Type	W
300	360
450	510
600	680
900	980

<Figur 3.4.1-2>

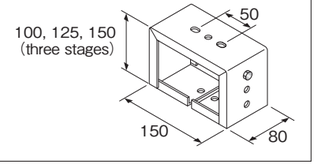
RD-150 mounting base (RZ-150)

(Unit : mm)

Type	L
M	280 to 480
L	480 to 710
LL	710 to 940



Mounting base for installing RD-150 on the wall face (RZW-150)



3.4.2 Load capacity

For the load capacity, see【1.4】Load capacity and strength.

3.4.3 Table for selecting a 150-type mounting base (for installation on the floor)

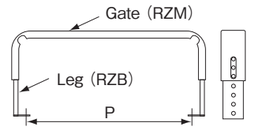
<Table 3.4.3-1>

Model number	Height
RZ-150-M	280mm to 480mm
RZ-150-L	480mm to 710mm
RZ-150-LL	710mm to 940mm

3.4.4 Table for selecting a mounting base other than 150-type (for installation on the floor)

Based on <Table 3.4.4-1>, select a combination of gate and leg to suit the required height.
Note that if there are multiple combinations to suit the required height, the leftmost one is of the lowest price.

<Figure 3.4.4-1>

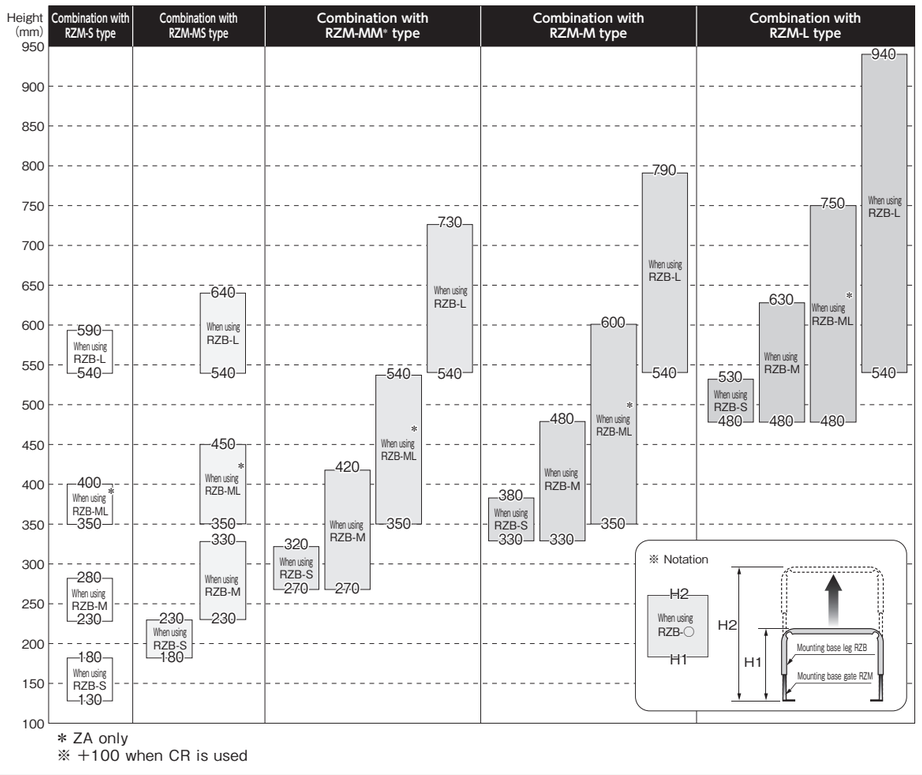


<Table 3.4.4-2>

■ Anchor position (P)

Size	P
300	306
450	456
600	626
900	926

<Table 3.4.4-1>



* ZA only
※ +100 when CR is used

3.4.5 Table for selecting a mounting base for installation on the wall face (basic construction example)

For installation on the wall face, see 、【2.3】Method of installation on the wall face.

<Table 3.4.5-1>

Model number	Height	Remarks
RZW-150	100, 125, 150 (three stages)	Dedicated for 150 type
RZM-S+RZB-S	130mm to 180mm	—

Notes in design

Values in the table for selecting a mounting base are just the calculated values, and in almost all of the actual construction, an error will occur by several millimeters to several centimeters depending on the parts assembly conditions and construction environment (incline of floor) etc.
In selection, leaving a margin is recommended.

Example) Selecting mounting base when the height of mounting base is 380mm in design

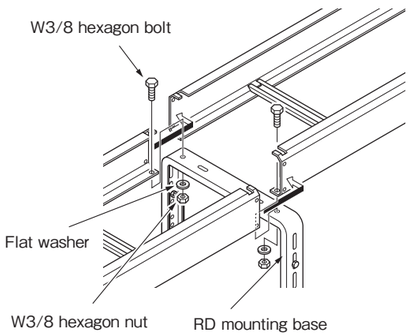
○ RZM-S + RZB-ML — Error correction is possible within the range of 350mm to 400mm.

× RZM-M + RZB-S — Since the error correction is possible within the range of 330mm to 380mm, error correction to over 380 mm is not possible.

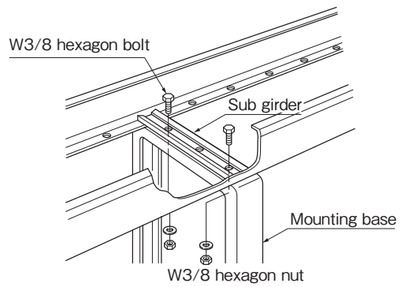
3.4.6 Example of location for setting

∗ For details about attaching the mounting base to parts, see the item of parts.

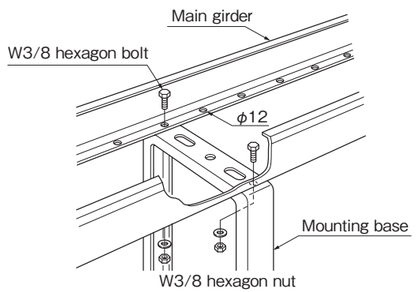
<Figure 3.4.6-1>
Fixing connection portion (jointless connection method)



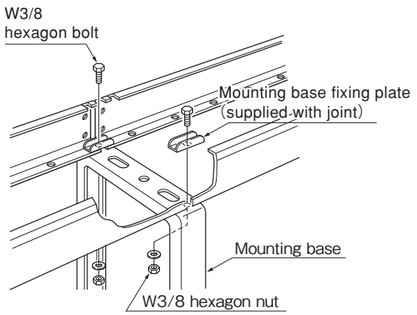
<Figure 3.4.6-2>
Fixing sub girder



<Figure 3.4.6-3>
Fixing main girder



<Figure 3.4.6-4>
Fixing connection portion (method using fixing joint and free joint A type)



Design
Specifications: Product configuration, specifications, and weight / Load capacity and strength / Accommodation capacity
Total design: Basic design flow / Installation method (on the floor) / Installation method (on the wall face) / Installation method (hanging from the ceiling)
Design of each part: Duct / PS and wall penetration / Connection method / Mounting base / Corner / Bottom plate / Other parts

3.4.7 Location for setting

Warning
Locations for setting mounting bases described here are just in a general case.
The required quantity and setting locations of mounting bases differ depending on the corner part shape/size and construction method.
Be sure to check the pages of each corner part and its construction method to decide the locations for setting mounting bases.

The mounting base can be set at the sub girder, main girder, joint portion, auxiliary sub girder, and bottom plate, etc.
Note that the setting locations of mounting bases differ depending on the duct size and construction method.

<Table 3.4.7-1> **Quick reference of mounting base setting locations**

○ : Usable △ : Usable but there are some restrictions × : Unusable — : Cannot be set for a constructional reason

Object to be set for	Size	Setting location	Connection method / Main girder attachment method	Installation on the floor (2m pitch*1) Standard	Installation on the floor (2m pitch*1) Walkway	Installation on the floor (2m pitch*1) Bottom plate + Standard	Wall face Bottom plate + Standard	Use condition and remarks (restrictions in △ case)
Duct	Other than 150	Connection portion	Jointless connection	○	○	○	×	
			Fixing joint	○	△	○	×	Limited to auxiliary use for walkway. *2
			Free joint A	△	△	△	×	Limited to auxiliary use for 2m pitch*1 and walkway. *2
			Free joint S/H	—	—	—	—	
			Different diameter joint	—	—	—	—	
			Sliding joint	△	△*4	△*5	×	Limited to auxiliary use for 2m pitch*1. *2
		Sub girder portion	Standard duct	○	○	○	○	
			Open-close type duct	○	○	○	△	Limited to auxiliary use in the installation on the wall face. *2
		Main girder portion	Standard duct	○	△	×*3	△*7	Limited to auxiliary use for walkway. *2 Limited to 2m or 1m type in the installation on the wall face.
			Open-close type duct	○	△	×*3	○*7	Limited to auxiliary use for walkway. *2 Limited to 2m or 1m type in the installation on the wall face.
	150	Connection portion	Jointless connection	—	—	—	—	
			Fixing joint	△	—	△	×	Cannot be set in a portion connecting with a corner part.
			Free joint	△	—	△	×	Cannot be set in a portion connecting with a corner part.
			Different diameter joint	—	—	—	—	
		Sub girder portion		○	—	○	○	
		Main girder portion		—	—	—	—	
Plane surface Corner Parts	Other than 150	Connection portion	Jointless connection	○	○	○	×	
			Fixing joint	○	△	○	×	Limited to auxiliary use for walkway. *2
			Free joint A	△	△	△	×	Limited to auxiliary use for 2 pitch*1 and walkway. *2
			Free joint S/H	—	—	—	—	
			Different diameter joint	—	—	—	—	
			Sliding joint	△	—	△*6	×	Limited to auxiliary use for 2m pitch*1. *2
		Sub girder (including auxiliary sub girder)		○	○	○	○	
		Main girder portion		—	—	—	—	
	150	Connection portion	Jointless connection	—	—	—	—	
			Fixing joint	—	—	—	—	
			Free joint	—	—	—	—	
			Different diameter joint	—	—	—	—	
		Bottom plate		○	—	○	○	
		Main girder portion		—	—	—	—	

∗1… See【3.4.8】Standard pitch between bases.
∗2… The auxiliary use refers to the use of mounting base which is not counted in the load calculation, and the safety is kept even without using it.
∗3… When attaching the bottom plate, processing the bottom plate is necessary.
∗4… For the walkway, be sure to set the mounting base.
∗5… In the connection with 0.5m or 0.3m duct, the bottom plate cannot be attached.
∗6… In the connection with a corner part other than RCF, the bottom plate cannot be attached.
∗7… The exclusive bracket is required. **Reference** 【2.3】Method of installation on the wall face

3.4.8 Standard pitch between bases

Warning

Locations for setting mounting bases described here are just in a general case.
The required quantity and setting locations of mounting bases differ depending on the corner part shape/size and construction method.
Be sure to check the pages of each corner part and its construction method to decide the locations for setting mounting bases.

Pitch to be set between mounting bases for duct : Basically 1,980mm for the joinless connection. However adjust it depending on the piping condition or environment weight (e.g., snow accumulation).

Note Basically set the mounting base at two locations or more for one duct/corner part.
(The necessary quantity of the mounting bases differs depending on the construction method. See the item of each part for details.)

Pitch between mounting bases and load capacity

1 Support at the both ends of duct (2m pitch)

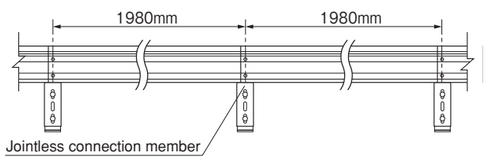
In the construction by using the jointless connection, set the mounting bases at the both ends of duct.
In this case, the pitch between mounting bases is 1,980mm (approximately 2m).
<Figure 3.4.8-1.1>

The pitch becomes 1980mm because (the ducts of 2000mm in length are connected with overlapping by 20mm).

※ The pitch between mounting bases to support duct differs depending on the load.

Reference 【1.4】 Load capacity and strength

<Figure 3.4.8-1.1>

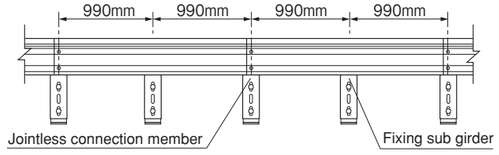


Load capacity of 2m duct when one mounting base is set
6,374N(650kgf)

2 Support at the both ends of duct and sub girder at the center (1m pitch)

When increasing the quantity of the mounting bases to increase the load capacity, set the mounting bases at the both ends of duct and sub girder at the center.
In this case, the pitch between mounting bases is 990mm (approximately 1m).
<Figure 3.4.8-1.2>

<Figure 3.4.8-1.2>

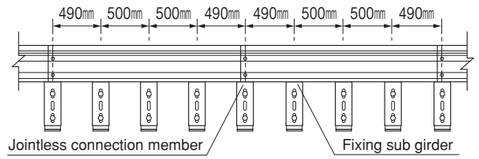


Load capacity of 2m duct when two mounting bases are set
12,748N(1,300kgf)

3 Support at the both ends of duct and all sub girders (0.5m pitch)

When increasing the quantity of the mounting bases to further increase the load capacity, set the mounting bases at the both ends of duct and all sub girders.
In this case, the pitch between mounting bases is 490 to 500mm (approximately 0.5m).
<Figure 3.4.8-1.3>

<Figure 3.4.8-1.3>



Load capacity of 2m duct when four mounting bases are set
25,496N(2,600kgf)

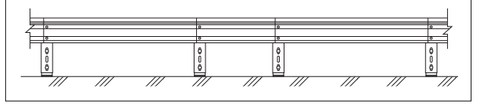
3.4.9 Example of setting the mounting base

1 Example of basic mounting base setting

For stability, set the mounting bases to support the duct at least in two positions.

※ For the required quantity of mounting bases for each part, check the page of explanation on each part.

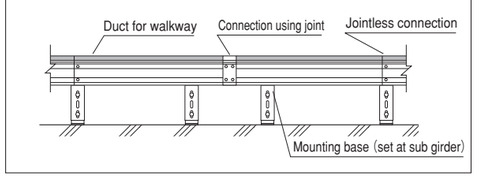
<Figure 3.4.9-1>



2 Example of mounting base setting in the connection using joint (walkway)

When the RD duct is used as the walkway, setting the mounting base at the connection portion using a joint part is to be limited to auxiliary use.
Set the mounting bases at two positions (sub girders) near the connection portion (one on its one side and the other on its opposite side).

<Figure 3.4.9-2>

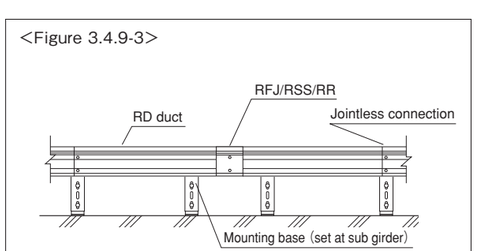


3 Example of mounting base setting in the connection using a special joint (2m pitch)

In the 2m-pitch setting (setting the mounting base at the connection portion), when free joint RFJ, different diameter joint RR, or Sliding joint RSS is used, set the mounting bases at two positions (sub girder or main girder) near the connection portion (one on its one side and the other on its opposite side).

※ Usable only for auxiliary use
(not counted in the load calculation). (excluding RR)

<Figure 3.4.9-3>

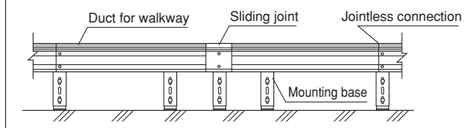


4 Example of mounting base setting in the connection using sliding joint

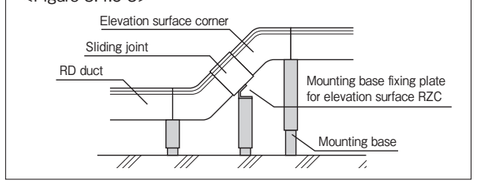
Between the parts for walkway or in use of combination with the elevation surface corner, set the mounting base also at the sliding joint. (excluding 150 type)

※ For attaching the elevation surface corner, see the item of each part.

<Figure 3.4.9-4>



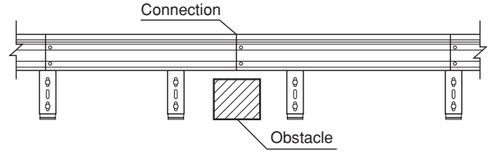
<Figure 3.4.9-5>



Notes in design

<Figure 3.4.9-6>

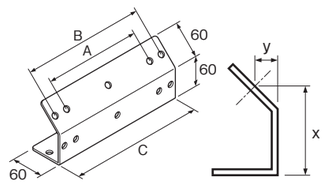
If the mounting base cannot be set at the connection portion, set the mounting base at a near sub girder, etc.



3.4.10 RZC mounting base fixing plate for the elevation surface

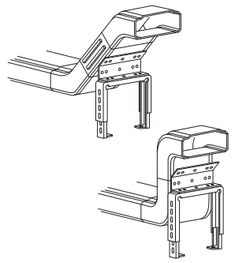
This is used for supporting the elevation surface corner 90° or sloping portion.

<Figure 3.4.10-1> **RZC**



(Unit : mm)

Type	A	B	C	x	y
300	195	248	268	81.2	21.2
450	195	398	418		
600	345	548	568		
900	600	848	900		



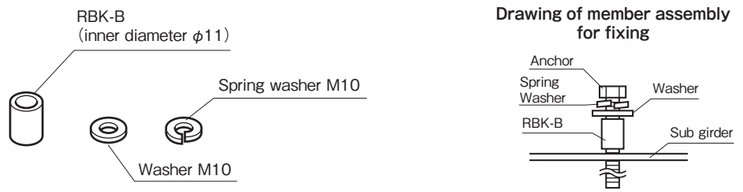
Restriction When using for the elevation surface corner 90° of the 900 type, use the 600 type.

3.4.11 RBK-B auxiliary bracket for sub girder

This is used for fixing general type ducts and corner parts directly to the wall.

Reference 【2.3.3】 Conditions for installation on the wall face (directly on the wall face)

<Figure 3.4.11-1>

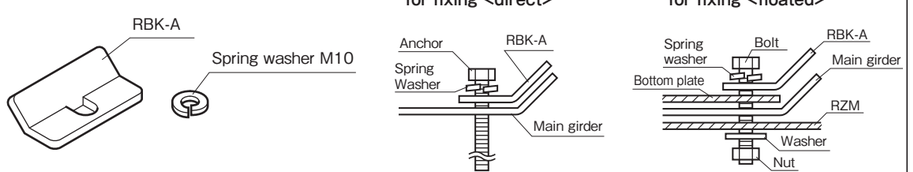


3.4.12 RBK-A auxiliary bracket for main girder

This is used for installing the open-close type duct on the wall face.

Reference 【2.3.3】【2.3.4】 Conditions for installation on the wall face

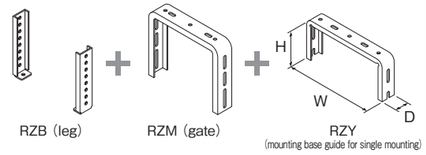
<Figure 3.4.12-1>



3.4.13 RZY mounting base guide for duplex mounting

This is used to support duplex mounting of the RD duct.
Attach RZY (guide for duplex mounting) to RZB.

<Figure 3.4.13-1> **RZY**



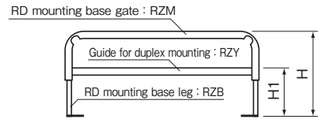
(Unit : mm)

Type	W	D	H
300	351.5	50	160
450	501.5	50	160
600	671.5	50	160

Restriction
- This cannot be used in the connection portion.
- Attach this to the sub girder. This cannot be attached to the joint portion.
- This can be attached to RZB-M/ML/L.

Note
- Make an enough space between RZY and RZM to ensure the construction space (attaching lid, piping).

<Figure 3.4.13-2>

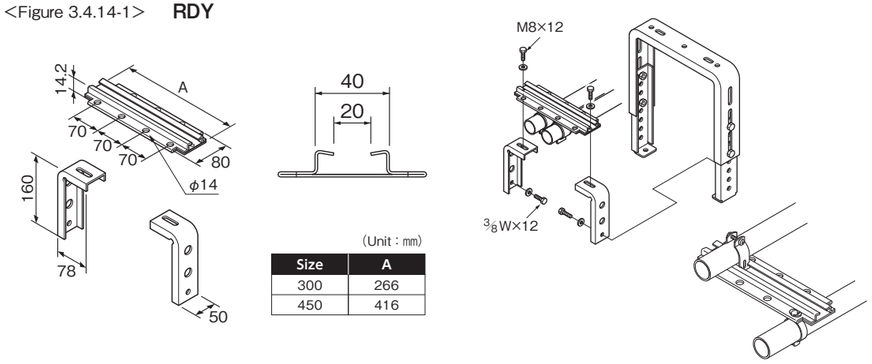


Height of RZY: H1
- H1 (when using S-type duct) = 160 mm to (H−250) mm ≦ 530
- H1 (when using H-type duct) = 160 mm to (H−350) mm ≦ 530

3.4.14 RDY pipe support base

This is used when attaching the conduit etc. to the RD mounting base.
This can be attached to RZB-M/ML/L.

<Figure 3.4.14-1> **RDY**



(Unit : mm)

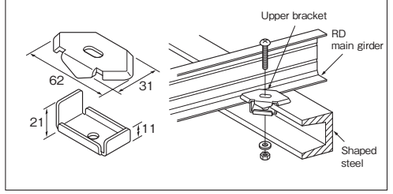
Size	A
300	266
450	416

3.4.15 RKT fixing bracket for fixing RD to shaped steel

This is of dedicated use for the standard type RD duct.
The RD duct can be attached to the shaped steel by using this.
This cannot be used for the walkway type or corner parts.

Note
- This cannot be used in the vertical installation on the wall face etc.
- This cannot be used for fixing the RD duct for walkway.
- Do not use this in a location where vibration or shaking occurs.
- Secure fixing cannot be attained for other than the scope of application of shaped steel.
- Securely tighten the screw with the designated torque.
- Set it in 4 or more locations for one duct.

<Figure 3.4.15-1> **RKT**



<Table 3.4.15-1>

Scope of application of shaped steel		Load by which shift will begin	Tightening torque
H-shaped steel	Applicable thickness of flange: 7 to 13mm	245N (25kgf)	5.9J (60kg-cm)
Channel steel	75×40、100×50、125×65、150×75	147N (15kgf)	

※ Width: 75mm or less, Thickness in the center: 7 to 12.5mm

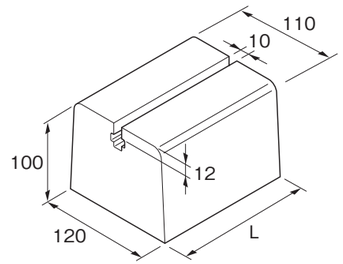
3.4.16 Fixing (to floor)

Fix the mounting base by anchoring or embedment with mortar. For the installation on the floor, fixing it by using the form (name of our product: Plabase PB) or the multipurpose support base "Recycrock" is also possible.

Firmly fix the mounting base when using it in a walkway etc.

1 Fixing it by using the support base "Recycrock CR"

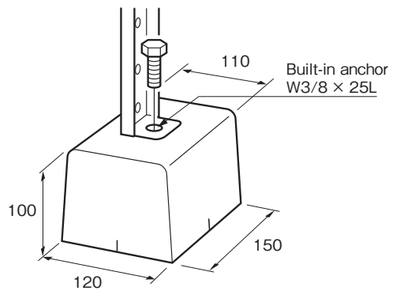
<Figure 3.4.16-1> **Recycrock CR-W**



(Unit : mm)

Model number	Size L (mm)	Product weight (kg)
CR-W1015	150	2.3
CR-W1040	400	5.0
CR-W1050	500	5.4
CR-W1060	600	5.8

<Figure 3.4.16-2> **Recycrock CR-A1015 type**



Product weight :2.3kg

CR-AS

Bolt set for
Recycrock anchor base type
W3/8×L25(SUS)

PR-BZ

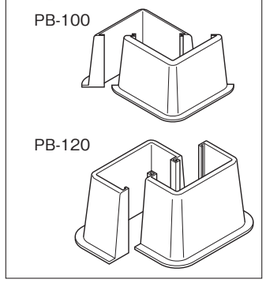
Bolt set for Plarock
W3/8×L32(HDZ)
※ Cannot be used for CR-A.

Allowable load per piece when using CR-W1015/A1015

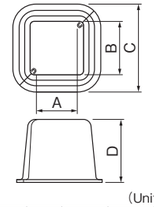
Allowable surface load: 7,840N
for 1m² = 47.5 N
Area of RD leg (including bolts) = 20cm²
Allowable load per piece when using CR = 950N (96.9kgf)/piece

2 Fixing by using the form "Resin foundation form Plabase (PB-100/120)"

<Figure 3.4.16-3>



<Figure 3.4.16-4>



(Unit : mm)

Model number	A	B	C	D
PB-100	85	100.0	154.0	100
PB-120	117	142.6	205.5	120

3 Fixing by using anchor

Use commercially available W3/8 or M10.

3.5 Corner

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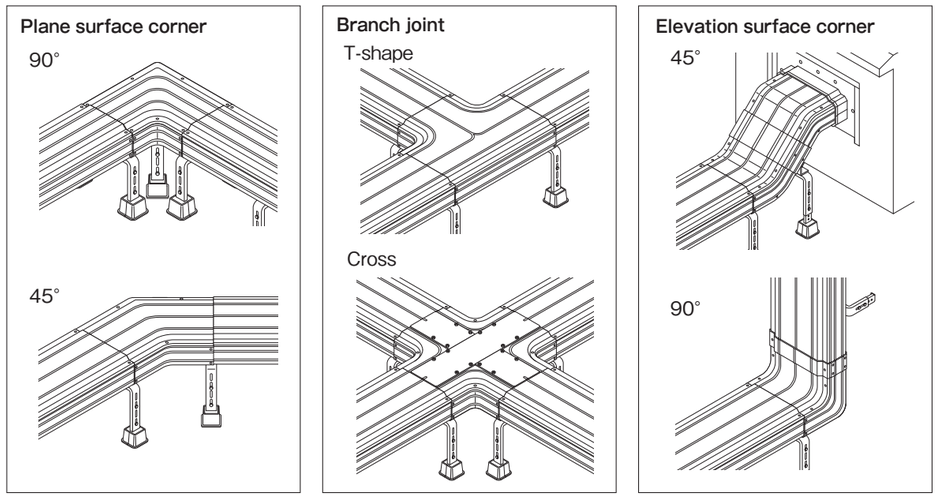
3.5.1 Types of corner parts

There are the following types of corner part: elevation surface and plane surface corner 45°/90° bending (elbow), T-shaped branch joint (tees), and cross branch joint.
Note that available sizes are limited for some parts.



<Table 3.5.1-1>

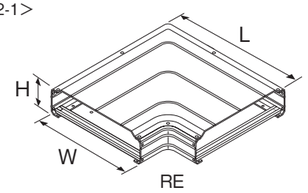
Classification	Product name (Abbreviated name)	Type	Remarks
Elbow	Plane surface corner 90° (RE)	Standard type	For 900 type, use RX-900/900H.
		Walkway type	There is no sliding joint for 150 type. For 900 type, use RXW-900/900H.
	Plane surface corner 45° (RF)	Standard type	—
		Walkway type	There is no sliding joint for 150 type.
	Elevation surface corner 90° (RC/RCI/RCO)	Standard type	—
	Elevation surface corner 45° (RCF)	Standard type	—
Tee	T-shaped branch joint (RT)	Standard type	For 900 type, use RX-900/900H.
		Walkway type	There is no sliding joint for 150 type. For 900 type, use RXW-900/900H.
Cross	Cross branch joint (RX)	Standard type	There is no sliding joint for 150 type.
		Walkway type	There is no sliding joint for 150 type.

※ The lid reinforcing plate is supplied with some products. The lid reinforcing plate cannot be used for the installation on the wall face and by hanging from the ceiling. Remove it before setting.
※ The walkway type cannot be used for the installation on the wall face and by hanging from the ceiling.
※ 900/900H type corner part is of the structure of the duct being inserted. (RCF is excluded.)

3.5.2 RE plane surface corner 90°

This is the plane surface 90°-bending elbow part.

<Figure 3.5.2-1>



(Unit : mm)

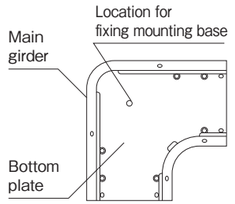
Type	W	L	H (Walkway)
150	150	250	111
300/300H	300	500	131/251 (134/254)
450/450H	450	650	131/251 (134/254)
600/600H	600	800	134/254 (134/254)

※ Use RX for 900/900H.

1 Location for setting and required quantity of mounting bases

<Figure 3.5.2-2> **RE-150**

Bottom plate
··· One location for one piece

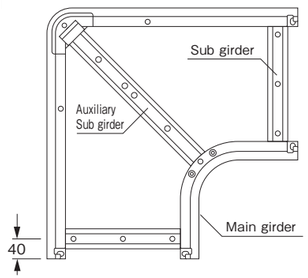


<Figure 3.5.2-3> **RE(W)-300 to 600H**

Connection portion, Sub girder, Auxiliary sub girder
··· Three locations for three pieces

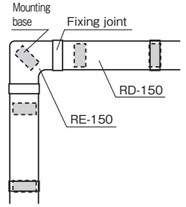
Note

- Be sure to make a fixing on the auxiliary sub girder.
- As to the mounting base when RE is set on the floor, RZ-150 or a small-size mounting base can also be used.
  In that case, set it on the hole at the outer side of the auxiliary sub girder.
  For REW, use the mounting base according to the duct size.
- For the duplex mounting, set the mounting base to straddle the corner.

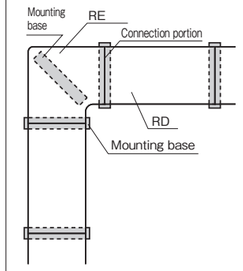


2 Example of setting mounting base

<Figure 3.5.2-4>
RE-150

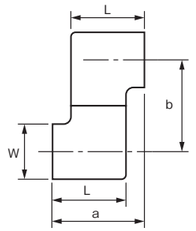


<Figure 3.5.2-5>
RE(W)-300 to 600H



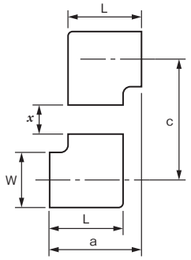
3 Finished dimensions

<Figure 3.5.2-6>
Jointless connection (300 to 600H)



a=L×2−W
b=a−20

<Figure 3.5.2-7>
Connection using joint



$x = c - a$

Table of plane surface corner 90° RE finished dimensions <Table 3.5.2-8>

(Unit : mm)

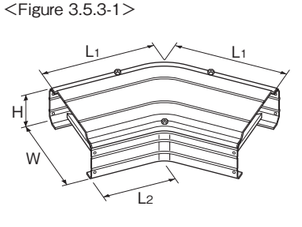
Size	W	L	a	Jointless connection b	Connection using joint c	x※	Used joint
150	150	250	350	—	370	20	RSJ
300/300H	300	500	700	680	720 to 820	20 to 120	RSS-1
					820 to 920	120 to 220	RSS-2
					920 to 1020	220 to 320	RSS-3
450/450H	450	650	850	830	870 to 970	20 to 120	RSS-1
					970 to 1070	120 to 220	RSS-2
					1070 to 1170	220 to 320	RSS-3
600/600H	600	800	1000	980	1020 to 1120	20 to 120	RSS-1
					1120 to 1220	120 to 220	RSS-2
					1220 to 1320	220 to 320	RSS-3

※ When the value of "x" exceeds 320, see【Table 3.3.5-1】in【3.3.5】RSS sliding joint.

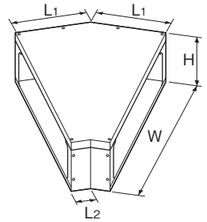
3.5.3 RF plane surface corner 45°

This is the plane surface 45°-bending elbow part.

<Figure 3.5.3-1>



RF-150 to 600(H)



RF-900(H)

(Unit : mm)

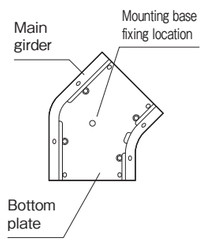
Type	W	L1	L2	H (Walkway)
150	150	133	71	111
300/300H	300	333	209	131/251 (134/254)
450/450H	450	395	209	131/251 (134/254)
600/600H	600	457	209	134/254 (134/254)
900/900H	980	558	150	200/320 (200/320)

※ Values of L1 and L2 are for preparing the piping diagram. They are not the outside dimensions.

1 Location for setting and required quantity of mounting bases

<Figure 3.5.3-2> **RF-150**

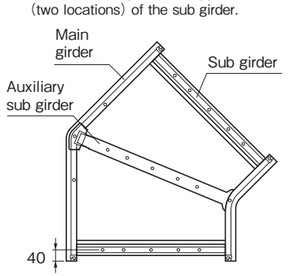
Bottom plate
··· 1One location for one piece



<Figure 3.5.3-3> **RF(W)-300 to 600H**

Connection portion, Sub girder, Auxiliary sub girder
··· At least three locations for two pieces

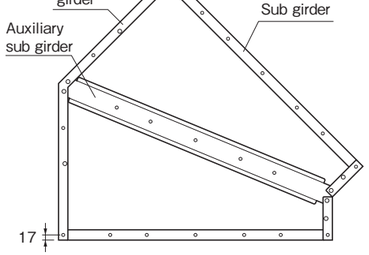
※ Be sure to set the mounting base at the connection portion or opposite sides (two locations) of the sub girder.



<Figure 3.5.3-4> **RF(W)-900·900H**

Sub girder, Auxiliary sub girder
··· At least three locations for two pieces

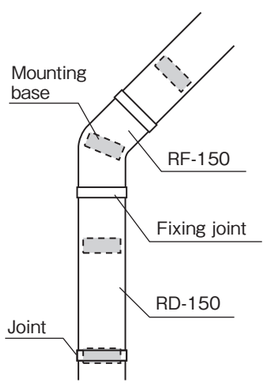
※ Be sure to set the mounting base at the sub girder (two locations).



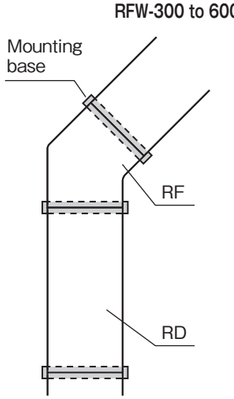
※ The height of 900/900H type is lower than the height of mounting base of duct by 30mm.

2 Example of setting mounting base

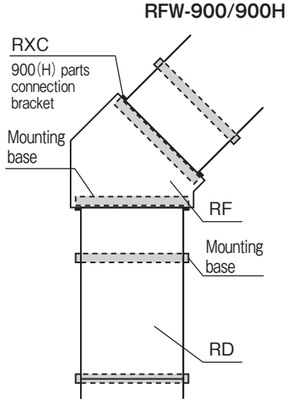
<Figure 3.5.3-5> **RF-150**



<Figure 3.5.3-6> **RF-300 to 600H**
RFW-300 to 600H



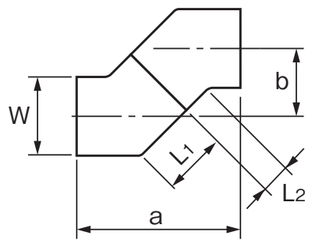
<Figure 3.5.3-7> **RF-900/900H**
RFW-900/900H



※ The height of 900/900H type is lower than the height of mounting base of duct by 30mm.

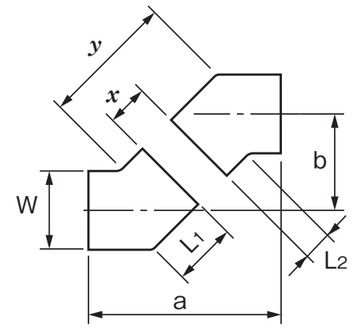
3 Finished dimensions

<Figure 3.5.3-8> **Jointless connection (300 to 600H)**



$a = b + L_1 + L_2$
$b = (L_1 + L_2 - 20) \div \sqrt{2}$
※ $\sqrt{2} = 1.41421356$

<Figure 3.5.3-9> **Connection using joint (150 to 600H)**



$x = y - L_1 - L_2$
$y = b \times \sqrt{2}$
$a = b + L_1 + L_2$
※ $\sqrt{2} = 1.41421356$

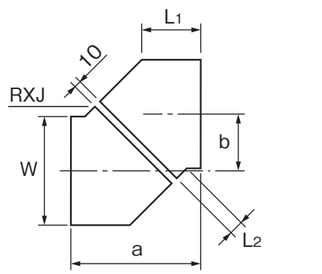
Table of plane surface corner 45° RF finished dimensions <Table 3.5.3-1> (Unit : mm)

Size	W	L_1 *	L_2 *	Jointless connection a	Jointless connection b	Connection using joint a	Connection using joint b	x ※	Used joint
150	150	133	71	–	–	362	158	20	RSJ
300/300H	300	333	209	910	369	938 to 1010	397 to 468	20 to 120	RSS-1
						1010 to 1081	468 to 539	120 to 220	RSS-2
						1081 to 1152	539 to 610	220 to 320	RSS-3
450/450H	450	395	209	1016	413	1045 to 1116	441 to 512	20 to 120	RSS-1
						1116 to 1187	512 to 583	120 to 220	RSS-2
						1187 to 1257	583 to 653	220 to 320	RSS-3
600/600H	600	457	209	1123	457	1151 to 1222	485 to 556	20 to 120	RSS-1
						1222 to 1293	556 to 627	120 to 220	RSS-2
						1293 to 1363	627 to 697	220 to 320	RSS-3

* Values of L1 and L2 are for preparing the piping diagram. They are not the outside dimensions.

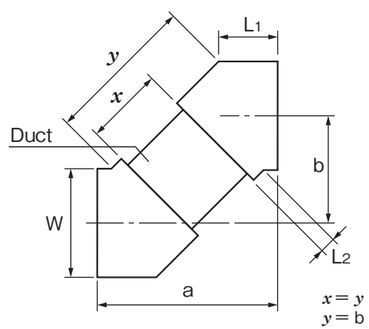
※ When the value of "x" exceeds 320, see【Table 3.3.5-1】in【3.3.5】RSS sliding joint.

<Figure 3.5.3-10> **Connection using joint (900/900H)**



$a = b + L_1 + L_2$
$b = (L_1 + L_2 - 10) \div \sqrt{2}$
※ $\sqrt{2} = 1.41421356$

<Figure 3.5.3-11> **Connection using joint or connection by insertion (900/900H)**



$x = y - L_1 - L_2$
$y = b \times \sqrt{2}$
※ $\sqrt{2} = 1.41421356$

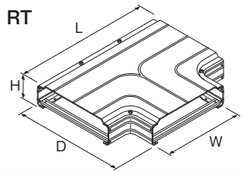
Table of plane surface corner 45° RF finished dimensions (connection using joint) <Table 3.5.3-2> (Unit : mm)

Size	W	L_1	L_2	a	b	x	Used joint
900/900H	900	558	150	1217	508	10	RXJ
				1393	685	260	RXC+0.3m
				1534	826	460	RXC+0.5m

3.5.4 RT T-shaped branch joint

Tees for plane surface.

<Figure 3.5.4-1> **RT**

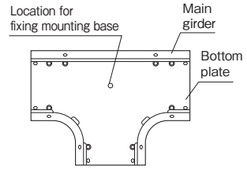


(Unit : mm)

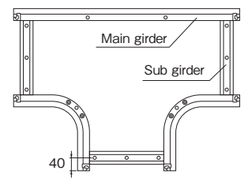
Type	W	D	L	H (Walkway)
150	150	250	250	111
300/300H	300	500	700	131/251 (134/254)
450/450H	450	650	850	131/251 (134/254)
600/600H	600	800	1000	134/254 (134/254)

1 Location for setting and required quantity of mounting bases

<Figure 3.5.4-2>
RT-150
Bottom plate
··· One location for one piece

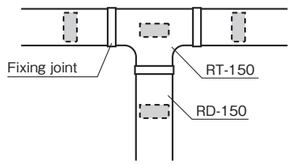


<Figure 3.5.4-3>
RT(W)-300 to 600H
Connection portion, Sub girder
··· Three locations for three pieces

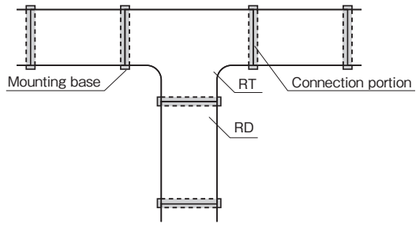


2 Example of setting mounting base

<Figure 3.5.4-4> **RT-150**

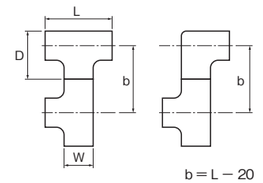


<Figure 3.5.4-5> **RT(W)-300 to 600H**



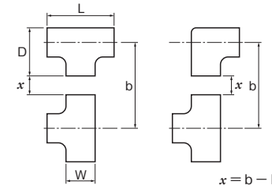
3 Finished dimensions

<Figure 3.5.4-8>
Jointless connection



b = L − 20

<Figure 3.5.4-9>
Connection using joint



$x = b - L$

Table of T-shaped branch joint RT finished dimensions <Table 3.5.4-12> (Unit : mm)

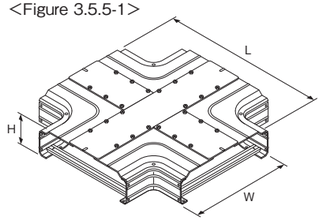
Size	W	D	L	b Jointless connection	b Connection using joint	x ※	Used joint
150	150	250	350	–	370	20	RSJ
300/300H	300	500	700	680	720 to 820	20 to 120	RSS-1
					820 to 920	120 to 220	RSS-2
					920 to 1020	220 to 320	RSS-3
450/450H	450	650	850	830	870 to 970	20 to 120	RSS-1
					970 to 1070	120 to 220	RSS-2
					1070 to 1170	220 to 320	RSS-3
600/600H	600	800	1000	980	1020 to 1120	20 to 120	RSS-1
					1120 to 1220	120 to 220	RSS-2
					1220 to 1320	220 to 320	RSS-3

※ When the value of "x" exceeds 320, see【Table 3.3.5-1】in【3.3.5】RSS sliding joint.

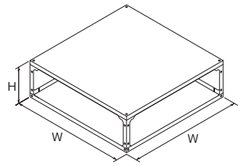
3.5.5 RXN/RX cross branch joint

This is a joint (corner part) branching in three directions.
The type for 900/900H can also be used as an elbow or tee by stopping the opening by using the supplied adapter.

<Figure 3.5.5-1>



RXN-300 to 600(H)



RX-900(H)

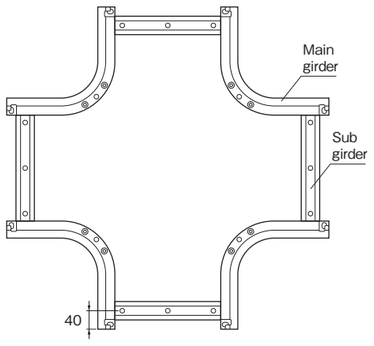
(Unit : mm)

Type	W	L	H (Walkway)
300/300H	300	700	131/251 (134/254)
450/450H	450	850	131/251 (134/254)
600/600H	600	1000	134/254 (134/254)
900/900H	980	–	200/320 (200/320)

1 Location for setting and required quantity of mounting bases

<Figure 3.5.5-2> **RXN(W)-300 to 600H**

Connection portion, Sub girder ··· Four locations for four pieces



<Figure 3.5.5-3>

RX-900·900H

Bottom plate ··· At least five locations for two pieces

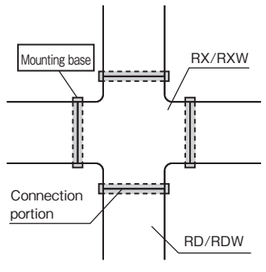
RXW-900·900H

Bottom plate ··· At least five locations for three pieces

2 Example of setting mounting base

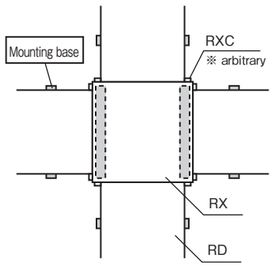
<Figure 3.5.5-4>

RXN(W)-300 to 600H



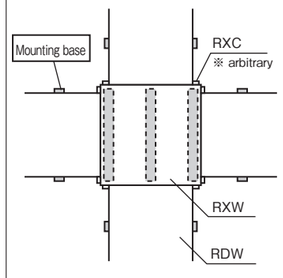
<Figure 3.5.5-5>

RX-900·900H



<Figure 3.5.5-6>

RXW-900·900H

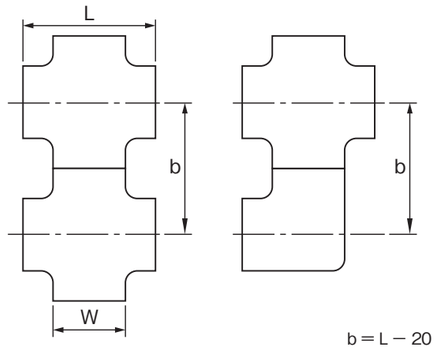


※ The height of 900/900H type is lower than the height of mounting base of duct by 30mm.

3.5 Corner
• 3.5.5 RXN/RX cross branch joint 〔 Design 〕

3 Finished dimensions

<Figure 3.5.5-7> **RXN-300 to 600H Jointless connection**



<Figure 3.5.5-8> **RXN-300 to 600H Connection using joint (using sliding joint)**

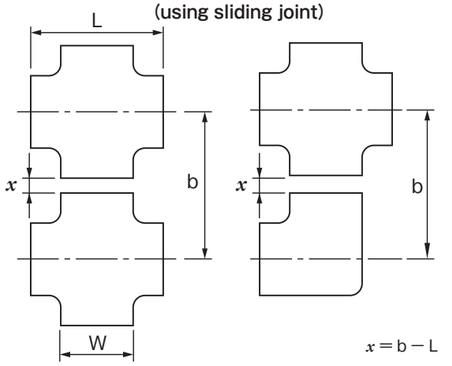
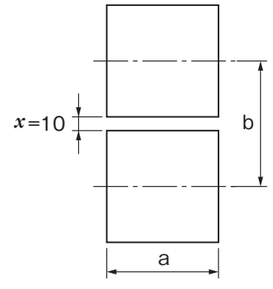


Table of cross branch joint 300 to 600H finished dimensions <Table 3.5.5-9> (Unit : mm)

Size	W	L	b		x ※	Used joint
			Jointless connection	Connection using joint		
300/300H	300	700	680	720 to 820	20 to 120	RSS-1
				820 to 920	120 to 220	RSS-2
				920 to 1020	220 to 320	RSS-3
450/450H	450	850	830	870 to 970	20 to 120	RSS-1
				970 to 1070	120 to 220	RSS-2
				1070 to 1170	220 to 320	RSS-3
600/600H	600	1000	980	1020 to 1120	20 to 120	RSS-1
				1120 to 1220	120 to 220	RSS-2
				1220 to 1320	220 to 320	RSS-3

※ When the value of "x" exceeds 320, see【Table 3.3.5-1】in【3.3.5】RSS sliding joint.

<Figure 3.5.5-10> **900·900H Connection using joint (using RXJ)**



※ Since some gap will be formed, apply caulking as necessary.

<Figure 3.5.5-11> **900·900H Connection using joint (using duct + RXC)**

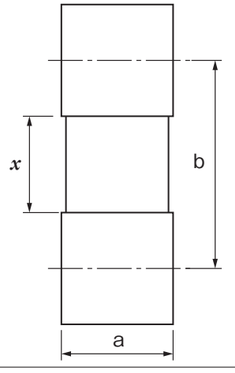


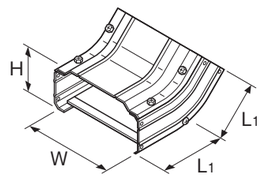
Table of cross branch joint 900/900H finished dimensions <Table 3.5.5-12> (Unit : mm)

Size	a	b	x	Used joint
900/900H	980	990	10	RXJ
		1240	260	RXC+0.3m
		1440	460	RXC+0.5m

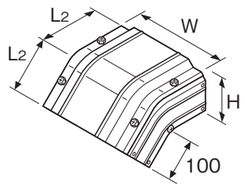
3.5.6 RCF elevation surface corner 45°

Elevation surface 45° elbow.
One set (RCF) is composed of one piece of rising type (RCFI) and one piece of falling type (RCFO).

<Figure 3.5.6-1>



RCFI



RCFO

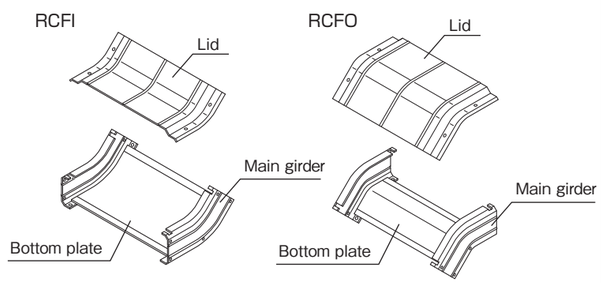
(Unit : mm)

Type	W	L1	L2	H
150	150	111	111	111
300/300H	300	147/197	147/197	131/251
450/450H	450	147/197	147/197	131/251
600/600H	600	147/197	147/197	131/251
900/900H	980	149/198	157/207	131/251

1 Location for setting and required quantity of mounting bases

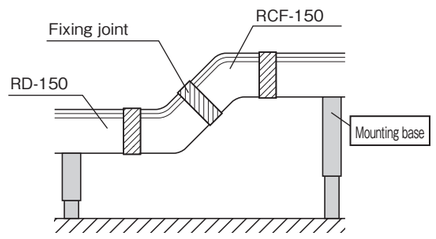
- 150
  None (not supported directly)
- 300 to 900H
  Connection portion
  ··· Two locations for two pieces

<Figure 3.5.6-2>

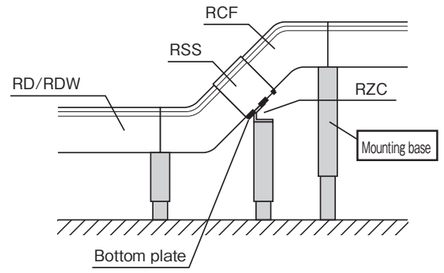


2 Example of setting mounting base

<Figure 3.5.6-3>
Setting at the connection portion of RCF-150 joint



<Figure 3.5.6-4>
Setting at the connection (sliding joint) portion of RCF-300 to 900H joint

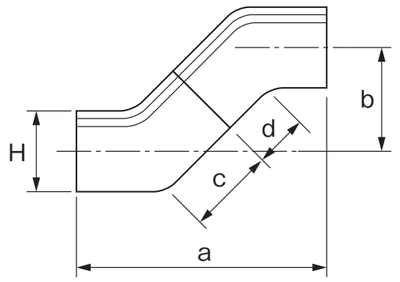


3.5 Corner • 3.5.6 RCF elevation surface corner 45° 〔 Design 〕

3 Dimension of level difference

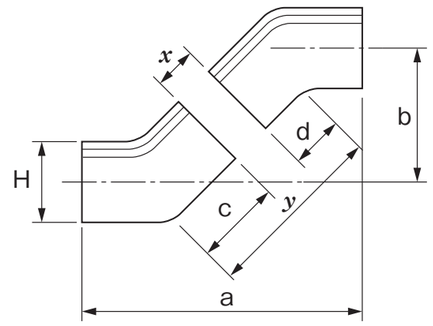
Values of "c" and "d" are the dimensions of the bottom of RCF for preparing the layout diagram.

<Figure 3.5.6-5>
Jointless connection



$a = b + c + d$
$b = (c + d - 20) \div \sqrt{2}$
※ $\sqrt{2} = 1.41421356$

<Figure 3.5.6-6>
Connection using joint (using sliding joint)



$x = y - c - d$
$y = b \times \sqrt{2}$
$b = a - c - d$
※ $\sqrt{2} = 1.41421356$

※When using free joint : x = dimension of duct short pipe (RFJ + jointless connection construction method)
Use a sliding joint which is easy to adjust length as far as possible.
When using the free joint, use the A type at which the mounting base can be set by checking "【3.3.4】Free joint" in advance.

Table of elevation surface corner 45° RCF dimension of level difference <Table 3.5.6-7>

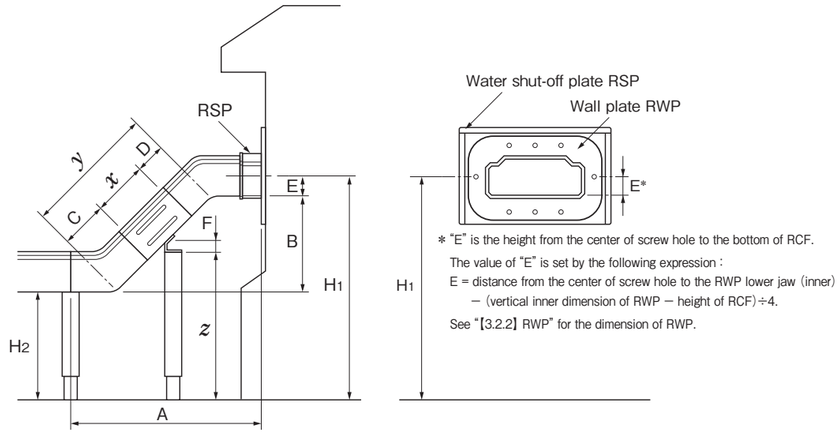
(Unit : mm)

Size	W	c	d	H	Jointless connection a	Jointless connection b	Connection using joint a	Connection using joint b	x	Used joint
150	150	111	111	111	—	—	—	—	20	RSJ
300	300	149	103	131	416	164	443 to 513	192 to 262	20 to 120	RSS-1
							513 to 584	262 to 333	120 to 220	RSS-2
							584 to 641	333 to 404	220 to 320	RSS-3
450	450	149	103	131	416	164	443 to 513	192 to 262	20 to 120	RSS-1
							513 to 584	262 to 333	120 to 220	RSS-2
							584 to 641	333 to 404	220 to 320	RSS-3
600	600	149	103	131	416	164	443 to 513	192 to 262	20 to 120	RSS-1
							513 to 584	262 to 333	120 to 220	RSS-2
							584 to 641	333 to 404	220 to 320	RSS-3
900	980	149	103	131	416	164	443 to 513	192 to 262	20 to 120	RSS-1
							513 to 584	262 to 333	120 to 220	RSS-2
							584 to 641	333 to 404	220 to 320	RSS-3
300H	300	199	103	251	502	199	528 to 599	227 to 298	20 to 120	RSS-1
							599 to 669	298 to 368	120 to 220	RSS-2
							669 to 726	368 to 439	220 to 320	RSS-3
450H	450	199	103	251	502	199	528 to 599	227 to 298	20 to 120	RSS-1
							599 to 669	298 to 368	120 to 220	RSS-2
							669 to 726	368 to 439	220 to 320	RSS-3
600H	600	199	103	251	502	199	528 to 599	227 to 298	20 to 120	RSS-1
							599 to 669	298 to 368	120 to 220	RSS-2
							669 to 726	368 to 439	220 to 320	RSS-3
900H	980	199	103	251	502	199	528 to 599	227 to 298	20 to 120	RSS-1
							599 to 669	298 to 368	120 to 220	RSS-2
							669 to 726	368 to 439	220 to 320	RSS-3

※ When the value of "x" exceeds 320, see【Table 3.3.5-1】in【3.3.5】RSS sliding joint.
※ Values of "a" and "b" in this table were obtained from the working drawing.
※ When the value of "x" exceeds 1m, use the elevation surface corner 90°.

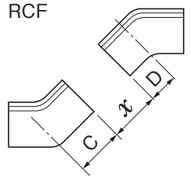
4 Example of calculation of the height of mounting base (when using RCF jointless type)

<Figure 3.5.6-11> When obtaining the height of mounting base based on the position of PS anchor

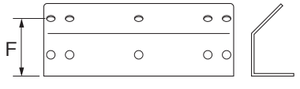


$$B = H_1 - H_2 - E = (C + D + x) \div \sqrt{2}$$
$$x = B \times \sqrt{2} - C - D$$
$$z = H_2 + (D + x \div 2) \div \sqrt{2} - F$$

RCF



RZC



【 Calculation example 】

For 600 type (standard), when

$H_1 = 600$ $H_2 = 250$ $C = 149$ $D = 103$ $F = 81.2$

$E = 71.5 - (139 - 131) \div 4 = 69.5$

※ $\sqrt{2} \fallingdotseq 1.41$

then,

$B = 600 - 250 - 69.5 = 280.5$

$x = 280.5 \times \sqrt{2} - 149 - 103 = 143.5$

$z = 250 + (149 + 143.5 \div 2) \div \sqrt{2} - 81.2 \fallingdotseq 325$

Notes in design

Values above are just the calculated values for selecting a mounting base, and in almost all of the actual construction, an error will occur by several millimeters to several centimeters depending on the parts assembly conditions and construction environment (incline of floor) etc.
In selection, leaving a margin is recommended.

Example) Selecting mounting base when the height of mounting base is 380 mm in design

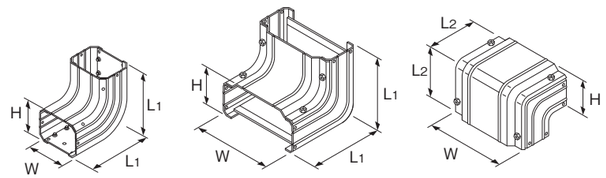
◯ RZM-S + RZB-ML — Error correction is possible within the range of 350mm to 400mm.

× RZM-M + RZB-S — Since the error correction is possible within the range of 330mm to 380mm, error correction to over 380mm is not possible.

3.5.7 RC/RCI/RCO elevation surface corner 90° (150 to 600H)

Elevation surface 90° elbow. There are the rising type (RCI) and the falling type (RCO).
RC-150 can be used for both "rising" and "falling" by exchanging the lid and bottom plate.

<Figure 3.5.7-1>



(Unit : mm)

Type	W	L1	L2	H
150	150	210	—	111
300	300	260	281	131
450	450	260	281	131
600	600	260	281	131
300H	300	380	401	251
450H	450	380	401	251
600H	600	380	401	251

※ RC-150 can be used for both "rising" and "falling" by exchanging the lid and bottom plate.

1 Location for setting and required quantity of mounting bases

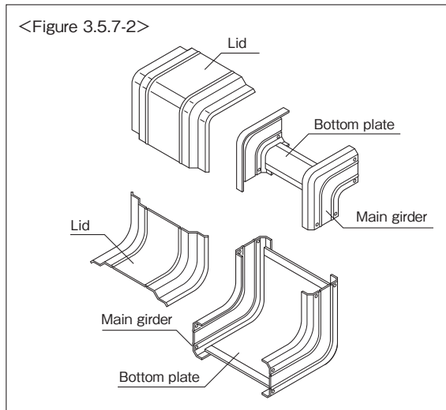
• **150**
None (not supported directly)

• **300 to 600H**
RCI
Connection portion
··· Two locations or more for one piece (see Note)
RCO
Connection portion
··· At least two locations for zero pieces (see Note)

Note

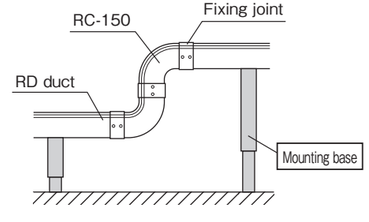
When not setting the mounting base, use the fixing joint RSJ or sliding joint RSS by checking the construction example carefully in advance.
※ Between RCI and RCO, direct or indirect support is required.
※ Indirect support
State where no mounting base is set at the target object directly, but the load is supported by combination with other parts.

<Figure 3.5.7-2>

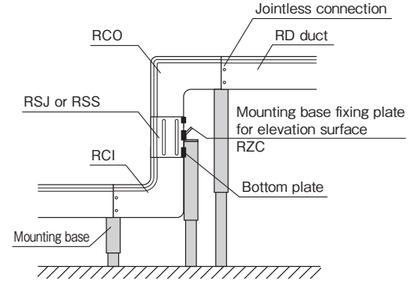


2 Example of setting mounting base (for level difference)

<Figure 3.5.7-3> **150**



<Figure 3.5.7-4> **300 to 600H**



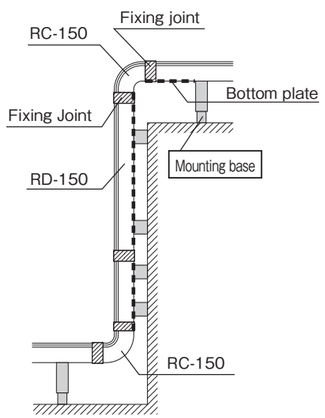
Between RCI and RCO, some support is required.

3 Example of installation on the wall face

- Fix the load-applied side (wall side) with the fixing joint.
- When the horizontal portion is connected by the jointless connection, set the mounting base at the connection portion.
- When the horizontal portion is connected by the fixing joint, set the mounting base at the sub girder of the duct.

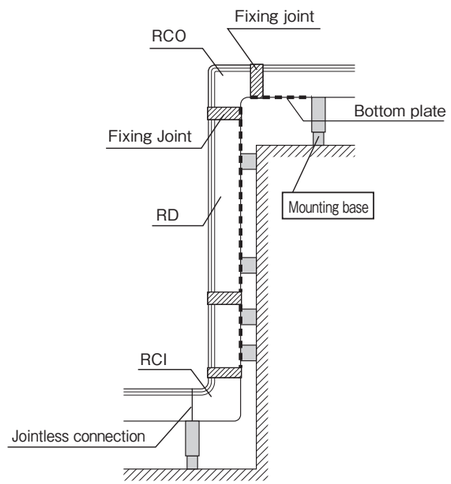
<Figure 3.5.7-5>

RC-150
installation floated from the wall face

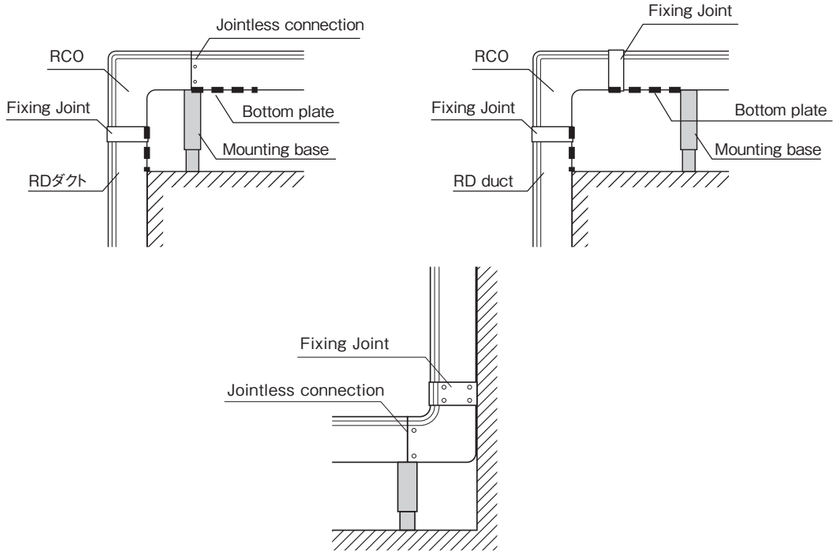


<Figure 3.5.7-6>

RCI/RCO-300(H)/450/600
installation floated from the wall face



<Figure 3.5.7-7> **300 to 600H installation directly on the wall face**

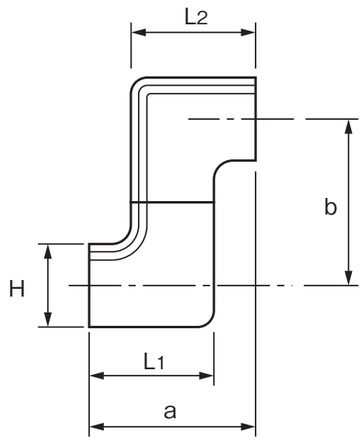


4 Dimension of level difference

<Figure 3.5.7-8>

Jointless connection (300 to 600H)

Side view

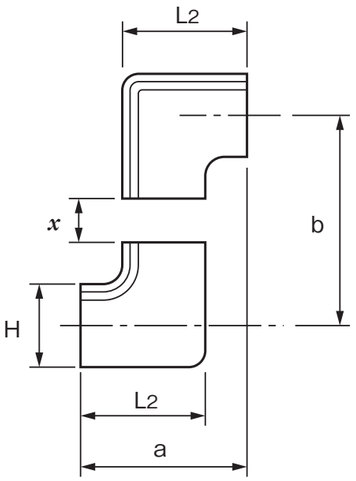


$a = L_1 + L_2 - H$
$b = a - 20$

<Figure 3.5.7-9>

Connection using joint (150 to 600H)
(using sliding joint)

Side view



$x = b - L_1 - L_2 + H$

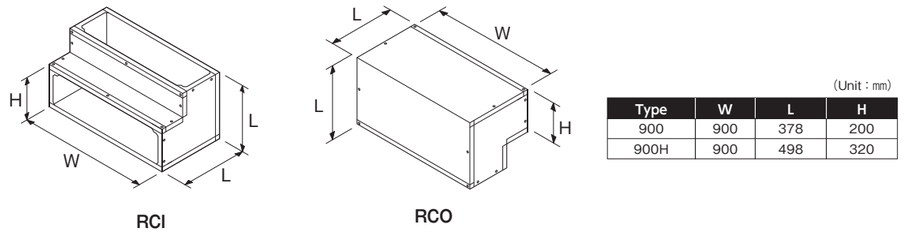
Table of elevation surface corner 90° RC/RCI/RCO dimension of level difference <Table 3.5.7-10> (Unit : mm)

Size	W	L_1	L_2	H	A	b		x ※	Used joint
						Jointless connection	Connection using joint		
150	150	210	210	111	309	–	329	20	RSJ
300	300	260	281	131	410	390	430 to 530	20 to 120	RSS-1
							530 to 630	120 to 220	RSS-2
							630 to 730	220 to 320	RSS-3
450	450	260	281	131	410	390	430 to 530	20 to 120	RSS-1
							530 to 630	120 to 220	RSS-2
							630 to 730	220 to 320	RSS-3
600	600	260	281	131	410	390	430 to 530	20 to 120	RSS-1
							530 to 630	120 to 220	RSS-2
							630 to 730	220 to 320	RSS-3
300H	300	380	401	251	530	510	550 to 650	20 to 120	RSS-1
							650 to 750	120 to 220	RSS-2
							750 to 850	220 to 320	RSS-3
450H	450	380	401	251	530	510	550 to 650	20 to 120	RSS-1
							650 to 750	120 to 220	RSS-2
							750 to 850	220 to 320	RSS-3
600H	600	380	401	251	530	510	550 to 650	20 to 120	RSS-1
							650 to 750	120 to 220	RSS-2
							750 to 850	220 to 320	RSS-3

※ When the value of "x" exceeds 320, see【Table 3.3.5-1】in【3.3.5】RSS sliding joint.

3.5.8 RCI/RCO elevation surface corner 90° (900/900H)

<Figure 3.5.8-1>



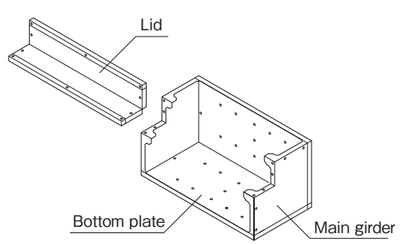
(Unit : mm)

Type	W	L	H
900	900	378	200
900H	900	498	320

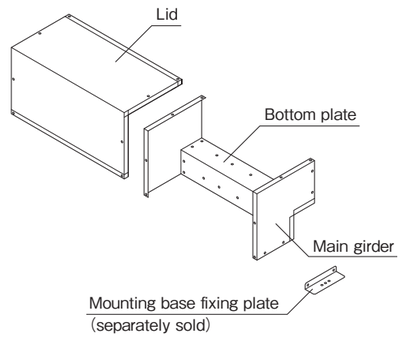
1 Location where the mounting base can be set

- RCI bottom plate ··· Two locations or more
- RCO bottom plate, Mounting base fixing plate for RCO ··· One or two locations

<Figure 3.5.8-2> RCI-900·900H

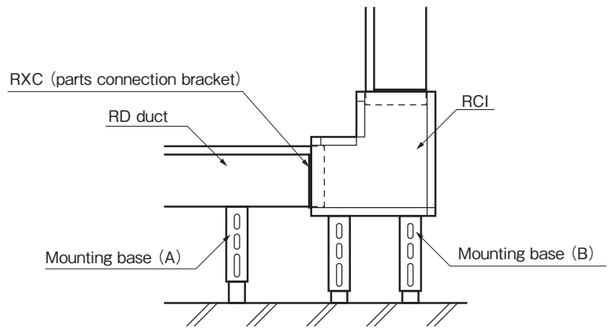


<Figure 3.5.8-3> RCO-900·900H



2 Example of setting mounting base for RCI

<Figure 3.5.8-4>



※ Height of mounting base (A) = Height of mounting base (B) + 30mm

3 Example of setting mounting base for RCO-900(H)

※ Be sure to joint in the horizontal direction by using RXC (parts connection bracket) etc.

Table for checking the necessity of support by the mounting base fixing plate (for RCO) for each example of setting mounting base <Table 3.5.8-5>

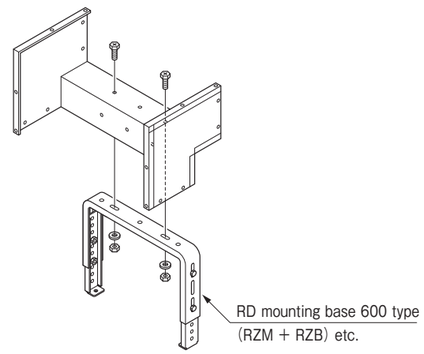
Duct in the vertical direction		Use of RXC	Support by the mounting base fixing plate (for RCO) *	Example of setting mounting base / Example of use	Remarks / Notes
Length	Condition				
1m or less	Standard-size duct	RXC is used	No support allowed (However, fix the both ends of duct with RXC and set at least one mounting base at RCO.)	Example 1 of setting mounting base / Example 1 of use	Support the piping load at the horizontal portions above and below so that the load is not applied on the duct or corner parts.
Longer than 1m	Installation directly on the wall face	RXC is used	No support allowed (However, support the falling portion with RZC etc.)	Example 2 of setting mounting base / Example 2 of use	Do not allow the piping load to be applied on the corner parts.

* Separately sold (made-to-order)

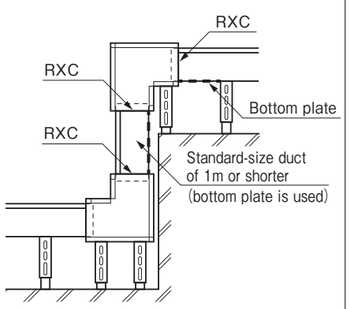
■ Example 1 of setting mounting base/Example 1 of use

<Figure 3.5.8-6> 〈Example of setting mounting base 1〉

Setting mounting base under the bottom of unit (example)



<Figure 3.5.8-7> 〈Example of use 1〉

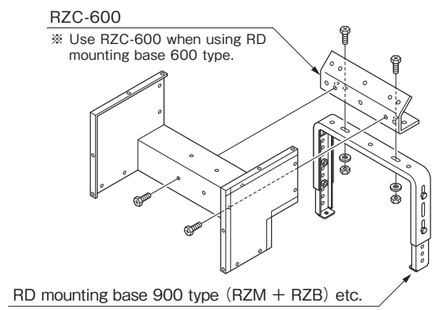


■ Example 2 of setting mounting base/Example 2 of use

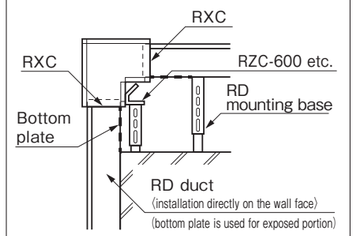
<Figure 3.5.8-8> 〈Example of setting mounting base 2〉

Setting mounting base using RZC (example)

※ 900 type mounting base cannot be set.
600 type is to be used.



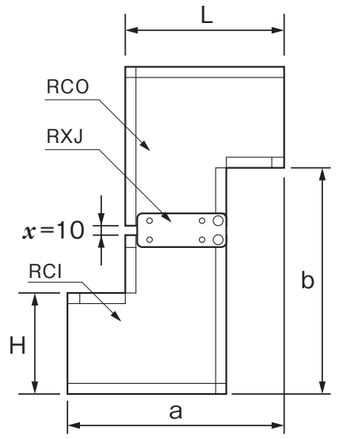
<Figure 3.5.8-9> 〈Example of use 2〉



4 Dimension of level difference

<Figure 3.5.8-10>

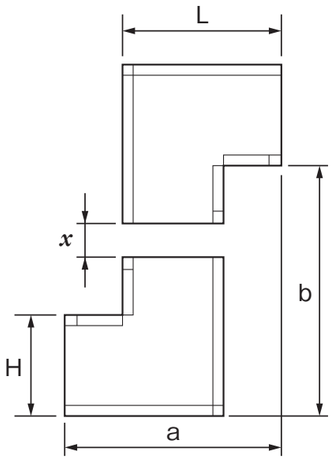
Connection using joint (using RXJ)



a = L×2 − H
b = a + 10

<Figure 3.5.8-11>

Connection using joint (using duct + RXC)



x = b − a
= b − L×2 + H

Table of elevation surface corner 90° RCI/RCO-900/900H dimension of level difference

<Table 3.5.8-12> (Unit : mm)

Size	W	L(RCI)	L(RCO)	H	a	b		x	Used joint
						Using RXJ	Using duct + RXC		
900	980	378	378	200	556	566	566	10	RXJ
							816	260	RXC+0.3m
							1016	460	RXC+0.5m
900H	980	498	498	320	676	686	686	10	RXJ
							936	260	RXC+0.3m
							1136	460	RXC+0.5m

Design
Specifications: Product configuration, specifications, and weight | Load capacity and strength | Accommodation capacity
Total design: Basic design flow | Installation method (on the floor) | Installation method (on the wall face) | Installation method (hanging from the ceiling) | Duct | PS and wall penetration | Connection method | Mounting base | Corner | Bottom plate | Other parts
Design of each part

3.6 Bottom plate

Outline

Since RD is designed to be used with the copper pipe covered with insulation material in which the polyethylene foam heat insulating tube of extremely low water absorption is used, the bottom plate is basically not used. However, use the bottom plate for a location being heavily affected by wind and rain such as the wall face, for a location such as a penetrating portion where the water shut-off performance is to be considered, or in a condition where the bird damage can be assumed.

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3.6.2 Bottom plate usable location ····· 60
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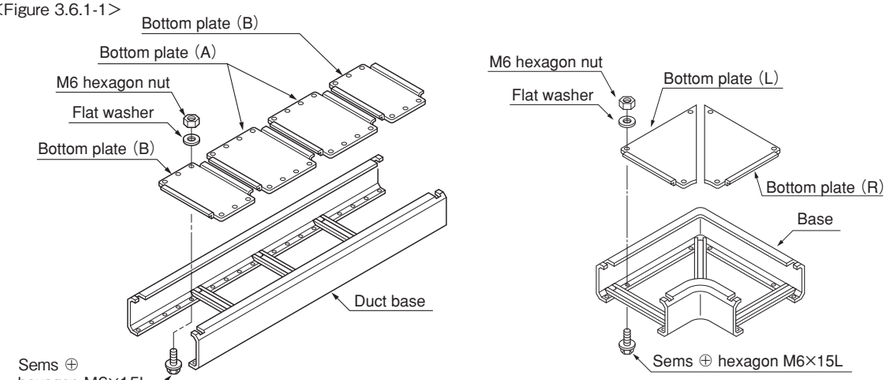
3.6.1 Type of bottom plate setting

1 Attaching bottom plate (in advance)

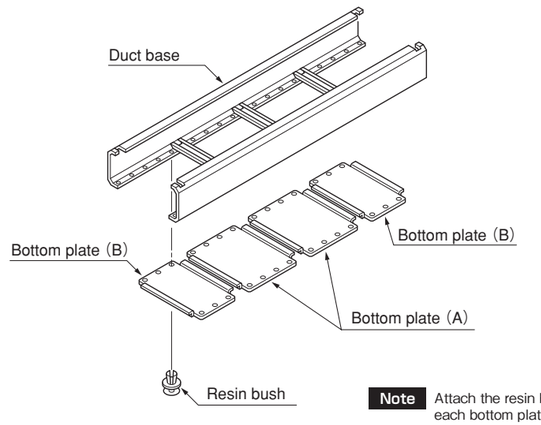
<Figure 3.6.1-1>



Note Attach screws at the four corners (four locations) of each bottom plate. (24 locations in total)

2 Attaching bottom plate (retrofit) ※ Duct only (excluding 900 type)

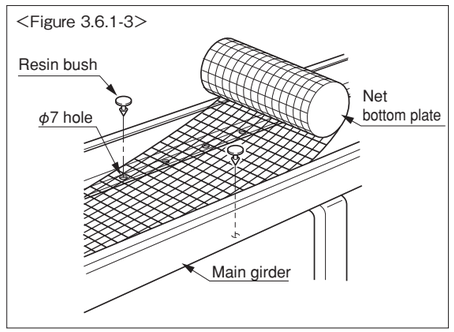
<Figure 3.6.1-2>



Note Attach the resin bush to all the ϕ10×12L holes of each bottom plate.

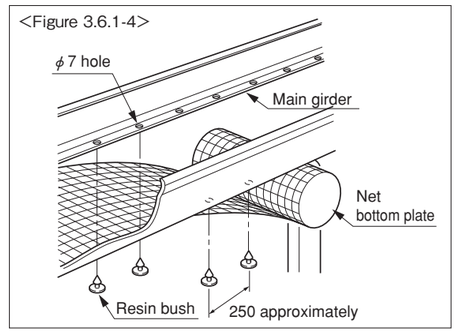
3 Attaching net (in advance) ※ Duct only

<Figure 3.6.1-3>



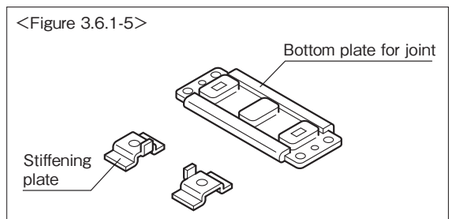
4 Attaching net (retrofit) ※ Duct only

<Figure 3.6.1-4>



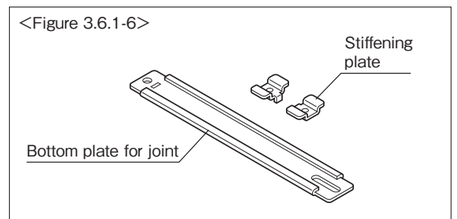
5 Bottom plate for joint

<Figure 3.6.1-5>



6 Retrofit bottom plate for joint

<Figure 3.6.1-6>



※ When setting the mounting base at the connection portion, the bottom plate for joint is not necessary.

3.6.2 Bottom plate usable location

The bottom plate usable location is shown in <Table 3.6.2-1>.
For details of parts required in attachment, check【3.6.3】List of parts used for the bottom plate attachment work.

Warning Retrofit attachment of the bottom plate in a location where there is a risk of dropping is dangerous.

<Table 3.6.2-1> **Bottom plate usable location** ○ : Usable △ : but alternative method available × : Unusable

Object to be attached to		Bottom plate			Net bottom plate (floor)	
		Attachment in advance (floor)	Attachment in advance (wall)	Retrofit attachment (floor)	In advance	Retrofit attachment
Duct		○	○	○ *1	○	○ *1
Plane surface corner		○ *6	○ *6	×	×	×
Elevation surface corner		○	○	×	×	×
Connection portion	Jointless connection	△ *2	×	×	×	×
	Fixing joint	○	○	○ *3	×	×
	Free joint A	○ *7	×	○ *3*7	×	×
	Free joint S/H	△ *7	×	×	×	×
	Different diameter joint	△ *4	△ *4	△ *4	×	×
	Sliding joint	○ *5	○ *5	×	×	×

*1… For 900/900H type, retrofit attachment is not possible.
*2… For jointless connection, the bottom plate for joint cannot be used.
Normally the mounting base is set at the connection portion, and the bottom plate is not needed.
If the mounting base cannot be set at the connection portion, use the joint.
*3… When connecting a duct of 1m or longer and a short-size duct of 0.5m or shorter/plane surface corner/branch joint by the retrofit attachment method, "retrofit bottom plate for joint RJB" is needed instead of "bottom plate for joint RDBJ".
For details of parts required in attachment, check【3.6.3】List of parts used for the bottom plate attachment work.
*4… There is no bottom plate for the different diameter joint.
Since the different diameter joint (plate type) is built into parts, no bottom plate is needed. Reference【3.3.6】RR different diameter joint
*5… The bottom plate of RSS can be attached only in connection with RD duct 2m/1m, and the elevation surface corner 45°.
*6… There is no bottom plate for RXN.
*7… Processing the bottom plate for duct is necessary. Reference【3.3.4】RFJ free joint

3.6.3 List of parts used for the bottom plate setting

List of parts used in the bottom plate attachment work.
For the bottom plate usable location, check【3.6.2】Bottom plate usable location.

<Table 3.6.3-1>

Product to be attached	Attachment method	Model number	Duct size	Attachment portion	Mounting base setting at the joint portion	Required member	Construction reference page
Bottom plate	Attachment in advance	RD、RD-1	300/450/600/900	Duct(2m、1m)	Set	Bottom plate (A), Bottom plate (B)	P131
					Not set	Bottom plate A, Bottom plate B, Bottom plate for joint, Stiffening plate	P131,136
				Duct(0.5m、0.3m) Corner	Set	Bottom plate (A), Bottom plate (B)	P131
					Not set	Bottom plate (A), Bottom plate (B), Bottom plate for joint, Stiffening plate	P131,136
			150	—	Set	Bottom plate (A), Bottom plate (B)	P131
					Not set	Bottom plate (A), Bottom plate (B), Bottom plate for joint	P131
		RD-05	300/450/600/900	Duct(2m、1m)	Set	Bottom plate	P131
					Not set	Bottom plate, Bottom plate for joint, Stiffening plate	P131,136
				Duct(0.5m) Corner	Set	Bottom plate	P131
					Not set	Bottom plate, Bottom plate for joint Stiffening plate	P131,136
		RE	300/450/600	Duct(2m、1m)	Set	Bottom plate (R), Bottom plate (L)	P133
					Not set	Bottom plate (R), Bottom plate (L), Bottom plate for joint, Stiffening plate	P133,136
				Duct(0.5m) Corner	Set	Bottom plate (R), Bottom plate (L)	P133
					Not set	Bottom plate (R), Bottom plate (L), Bottom plate for joint, Stiffening plate	P133,136
		RF	300/450/600	Duct(2m、1m)	Set	Bottom plate (R), Bottom plate (L)	P134
					Not set	Bottom plate (R), Bottom plate (L), Bottom plate for joint, Stiffening plate	P134,136
				Duct(0.5m) Corner	Set	Bottom plate (R), Bottom plate (L)	P134
					Not set	Bottom plate (R), Bottom plate (L), Bottom plate for joint, Stiffening plate	P134,136
		RT	300/450/600	Duct(2m、1m)	Set	Bottom plate	P135
					Not set	Bottom plate, Bottom plate for joint, Stiffening plate	P135,136
				Duct(0.5m) Corner	Set	Bottom plate	P135
					Not set	Bottom plate, Bottom plate for joint, Stiffening plate	P135,136
	Retrofit attachment	RD、RD-1	300/450/600	Duct(2m、1m)	Set	Bottom plate (A), Bottom plate (B), Resin bush for bottom plate (RDB-B)	P132
					Not set	Bottom plate (A), Bottom plate (B), Bottom plate for joint, Resin bush for bottom plate (RDB-B)	P132,137
				Duct(0.5m、0.3m) Corner	Set	Bottom plate (A), Bottom plate (B), Resin bush for bottom plate (RDB-B)	P132
					Not set	Bottom plate (A), Bottom plate (B), Bottom plate for joint for retrofit attachment (RJB), Resin bush for bottom plate (RDB-B), Stiffening plate	P132,137
			150	—	Set	Bottom plate (A), Bottom plate (B), Resin bush for bottom plate (RDB-B)	P132
					Not set	Bottom plate (A), Bottom plate (B), Bottom plate for joint, Resin bush for bottom plate (RDB-B)	P132
		RD-05	300/450/600/900	Duct(2m、1m)	Set	Bottom plate, Resin bush for bottom plate (RDB-B)	P132
					Not set	Bottom plate, Retrofit bottom plate for joint, Resin bush for bottom plate (RDB-B)	P132,137
				Duct(0.5m) Corner	Set	Bottom plate, Resin bush for bottom plate (RDB-B)	P132
					Not set	Bottom plate, Bottom plate for joint for retrofit attachment (RJB), Resin bush for bottom plate (RDB-B), Stiffening plate	P132,137
Net Bottom plate	Attachment in advance	RD、RD-1 RD-05	300/450/600/900	—	—	Net bottom plate (RNB), Resin bush for bottom plate (RDB-B)	P138
	Retrofit attachment		300/450/600/900	—	—	Net bottom plate (RNB), Resin bush for bottom plate (RDB-B)	P138

3.7 Other parts

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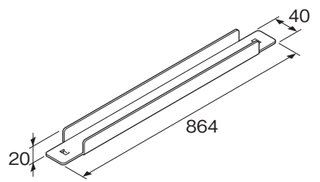
3.7.4 REC end cap ····· 63
3.7.5 RPH PD supporting bracket ····· 64
3.7.6 KW catwalk ····· 64

3.7.1 RXH lid reinforcing plate

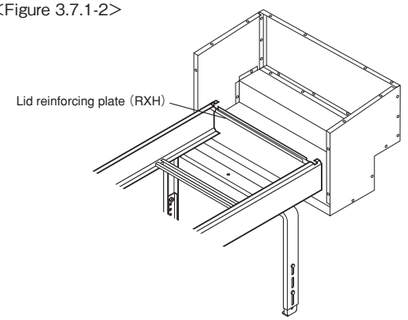
This is used for reinforcing the 900/900H type duct end.
Use this when connecting with chamber box CB etc.

Note
• This is standardly supplied with RX/RF 900/900H type.
• With RCF/RCI/RCO 900/900H type, a different-shape lid guide or lid reinforcing plate is standardly supplied.

<Figure 3.7.1-1> **RXH**



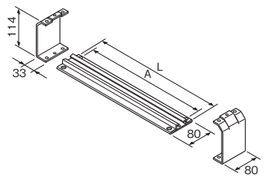
<Figure 3.7.1-2>



3.7.2 RSK RD duct partitioning bracket for H type

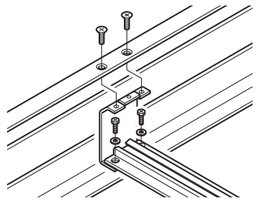
This is the heat insulating material compression preventing bracket for the polyphyletic ducting system.
This is of dedicated use for the H type duct of 2m and 1m.

<Figure 3.7.2-1> **RSK**

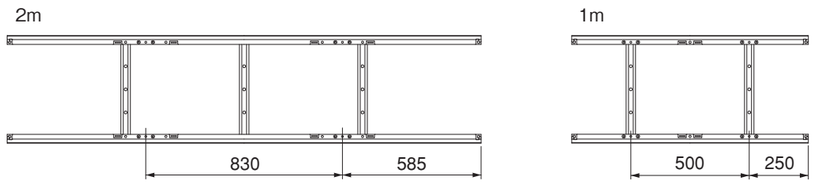


(Unit : mm)

Type	L	A
300	266	248
450	416	398
600	566	548
900	866	848



<Figure 3.7.2-2> **Location to attach RSK**

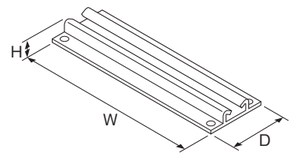


Design
Specifications
Product configuration, specifications, and weight
Load capacity and strength
Accommodation capacity
Basic design flow
Total design
Installation method (on the floor)
Installation method (on the wall face)
Installation method (hanging from the ceiling)
Design of each part
Duct
PS and wall penetration
Connection method
Mounting base
Corner
Bottom plate
Other parts

3.7.3 RDK RD sub girder set

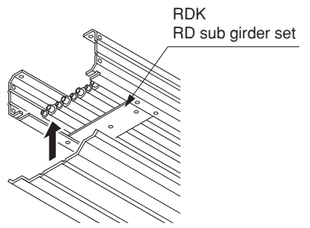
This is used as the support of piping in hanging from the ceiling (with the lid of duct facing downward).
This can be attached to the RD duct 300 to 600H of 2m or 1m.

<Figure 3.7.3-1> **RDK**

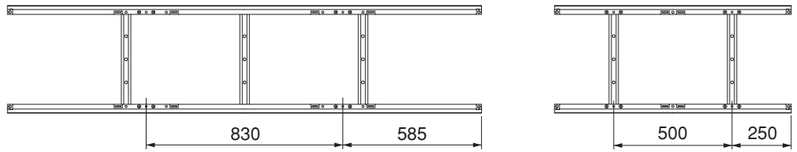


(Unit : mm)

Type	W	D	H
300	266	80	14.2
450	416	80	14.2
600	566	80	14.2



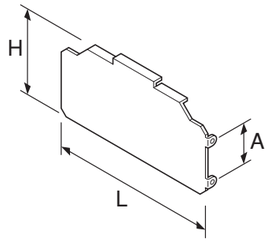
<Figure 3.7.3-2> **Location to attach RSK**



3.7.4 REC end cap

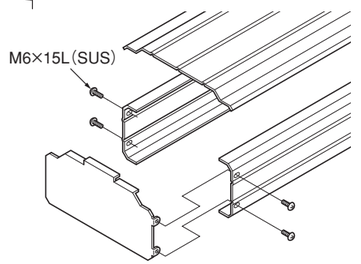
This is the plate to cover the hole at the end of duct.

<Figure 3.7.4-1> **REC**



(Unit : mm)

Type	L	H	A
150	150	111	60
300/300H	296	127/247	60/140
450/450H	446	127/247	60/140
600/600H	596	127/247	60/140
900/900H	896	127/247	60/140

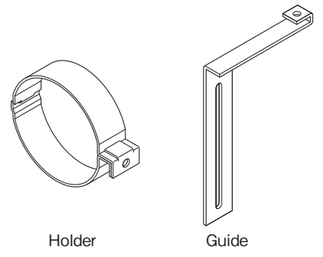


3.7.5 RPH PD supporting bracket

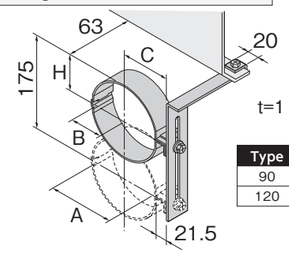
This is the bracket to support the duct branched from the RD duct (SLIMDUCT PD).

※ This does not support or fix piping.
For supporting piping, use commercially available supporting brackets etc. as necessary.
※ In the main girder of RD duct, several holes (24 holes for 2m) are prepared for attaching bolts, into which the W3/8 or M10 bolts can be inserted.

<Figure 3.7.5-1> **RPH**



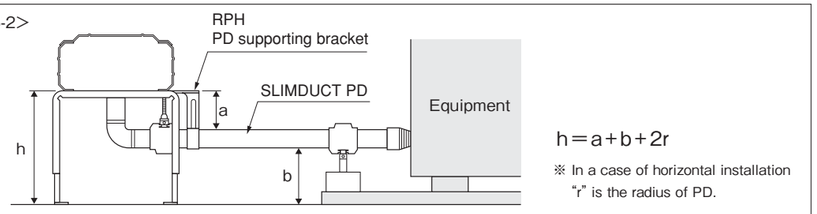
Drawing of dimensions for attachment



(Unit : mm)

Type	A	B	C	H
90	101	53.5	69	47
120	129	67.5	83	61

<Figure 3.7.5-2>



h = a + b + 2r

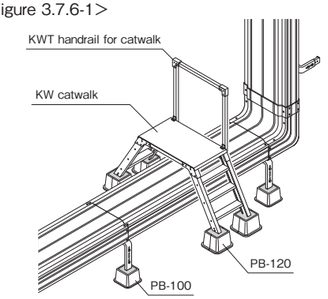
※ In a case of horizontal installation "r" is the radius of PD.

3.7.6 KW catwalk

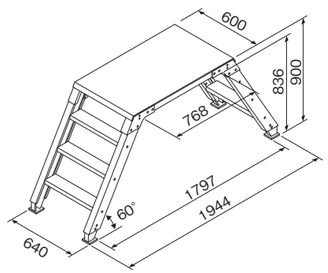
This is the bridge for straddling over an obstacle.
The separately available KWT handrail for catwalk can be attached.

※ Fixing method
Use PB-120 or self-made forms, and perform fixing by using mortar etc.
※ KWT can be attached on both sides.

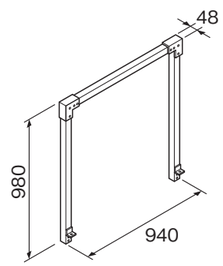
<Figure 3.7.6-1>



<Figure 3.7.6-2> **KW catwalk**



<Figure 3.7.6-3> **KWT handrail for catwalk**



Construction

4 Construction procedure

How to proceed construction ····· P66

PS and wall penetration ····· P67 to P74

Mounting base ····· P75 to P87

RD duct (straight pipe) ····· P88 to P91

Connection ····· P92 to P105

Corner parts ····· P106 to P128

Bottom plate ····· P129 to P138

Others ····· P139 to P143

4.1 How to proceed construction

4.1.1 How to proceed construction

Proceed the construction by following the procedures as shown below.

1 Making pipe takeout portion	• Making PS portion and wall penetrating portion etc.
2 Setting mounting base	• Selecting mounting base • Assembling members of mounting base • Setting mounting base
3 Placing temporarily	• Temporarily placing duct (base part) and corner parts (base part) • Cutting • Rustproofing
4 Setting base part	• Selecting jointing method • Fixing mounting base to base part • Fixing joint portion • Attaching end cover
5 Piping	• Attaching piping support, duplex mounting bracket, and partitioning bracket • Pipe • Attaching PD supporting bracket • Attaching PD duct, branching pipe
6 Attaching lid	• Attaching lid for duct, corner part, and joint etc. • Attaching wall plate
7 Finish	• Performing caulking treatment at each portion

4.1.2 Tools for construction

In the SLIMDUCT RD construction, the following tools are required for each process.

General construction	Fixing separately sold sub girder (in hanging from the ceiling etc.)	Cutting duct
• Phillips-head screw driver No.3 • Wrench No.17 (for M10, W3/8) • Wrench No.10 (for M6)	• Wrench No.10 (for M6)	●For highly corrosion-resistant hot-dip galvanized steel sheet • High-speed cutter • Sander etc. ●For stainless steel sheet • Plasma cutter etc.
Fixing mounting base	**Wall penetration**	**Branching**
• Anchor (W3/8) + Drill etc. • Form + Mortar etc.	• Drill • Anchor • Mortar • Calking compound • Sandpaper etc.	• Hacksaw • High-speed cutter

Note For tightening the mounting screws, be sure to use the Phillips-head screw driver No.3. (The tightening torque is to be 5N-m.)

4.2 PS and wall penetration

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4.2.3 RSP water shut-off plate ····· 69
4.2.4 RSB water shut-off sleeve ····· 71
4.2.5 CB chamber box ····· 72

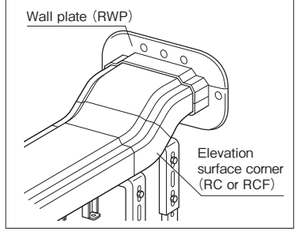
4.2.1 List of construction methods

Water shut-off treatment is required for outdoor use.
There are the following penetration methods in which the water shut-off treatment is considered.

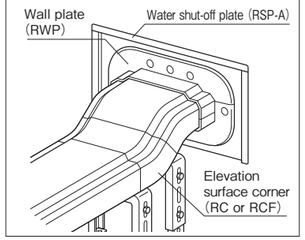
Note The explanation on the construction method below is just an example. Follow the instruction by the supervisor on site for details.

<Table 4.2.1-1> **Construction example (PS)**

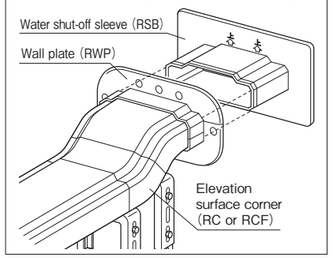
A Construction method using the RWP wall plate



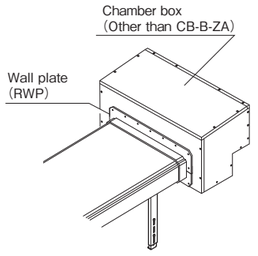
B Construction method using the RSP water shut-off plate



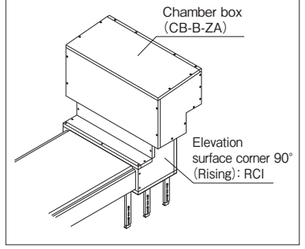
C Construction method using the RSB water shut-off sleeve



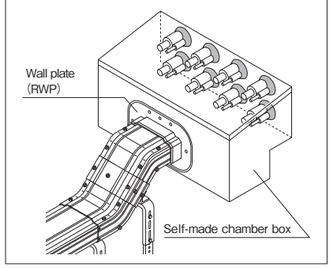
D Construction method using the CB chamber box (removal from the front)



E Construction method using the CB chamber box (removal from the bottom)



F Construction method using the chamber box (self-making)



<Table 4.2.1-2>

Duct size	Construction example	Explained in	Required part (just for each example) Wall plate RWP	Elevation surface Corner 45° RCF	Elevation surface Corner 90° RC/RCI	Water shut-off plate RSP	Water shut-off sleeve RSB	Chamber box CB
150	A	P.68	○	○	–	–	–	–
300、300H 450、450H 600、600H	B	P.69	○	○	–	○ ※1	–	–
	C	P.71	○	○	–	–	○	–
900、900H	B	P.69	○	○	–	○ ※1	–	–
900H	D	P.72	○	–	–	–	–	○ ※2
All sizes	E	P.74	–	–	○	–	–	○ ※3
	F	–	○	–	–	–	–	※4 (self-making)

※1. Construction method using RSP-A (square caulking type)
※2. Construction method using a chamber box other than CB-B-ZA
※3. Construction method using CB-B-ZA
※4. To be made on site

4.2.2 RWP wall plate

Duct and corner part (some 900 type products excluded) can be connected.
This can be used in combination with the water shut-off sleeve RSB or water shut-off plate RSP.

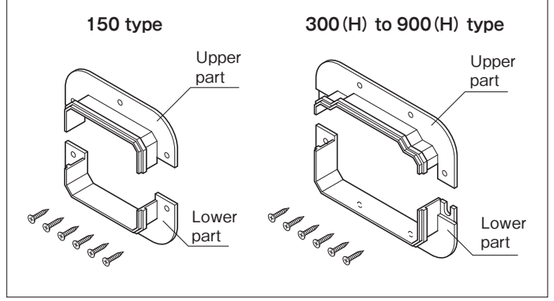
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RWP

4.2.2-1 Product configuration

<Figure 4.2.2-1.1>



<Table 4.2.2-1.1> **Set contents**

Type	Upper part	Lower part	Set screw
150	1	1	6
300/300H	1	1	6
450/450H	1	1	6
600/600H	1	1	6
900/900H	1	1	16

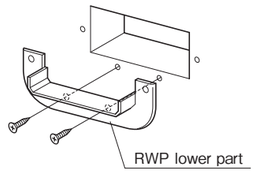
<Table 4.2.2-1.2> **Screw specification**

Screw specification	Material
⊕ countersunk tapping screw SUS M6×45L	SUS

4.2.2-2 Example of attaching RWP

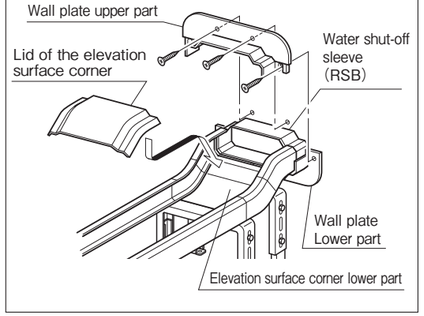
1 Attach the wall plate RWP lower part to the opening.

<Figure 4.2.2-2.1>



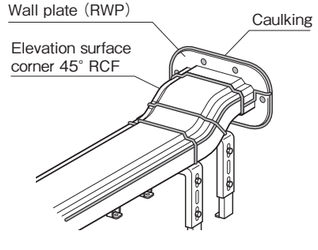
2 After piping, set the lid of RD duct, and attach the RWP upper part.

<Figure 4.2.2-2.2>



3 Finally, perform the water shut-off treatment as necessary.

<Figure 4.2.2-2.3>



4.2.3 RSP water shut-off plate

This is the water shut-off plate for the pipe takeout portion.
This is used in combination with the wall plate RWP.
Duct and corner part (some 900 type products excluded) can be connected.

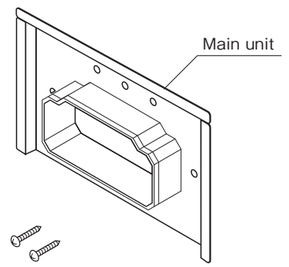
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RSP

4.2.3-1 Product configuration

<Figure 4.2.3-1.1>



<Table 4.2.3-1.1> **Set contents**

Type	Main unit	Set screw
300/300H	1	2
450/450H	1	2
600/600H	1	2
900/900H	1	4

<Table 4.2.3-1.2> **Screw specification**

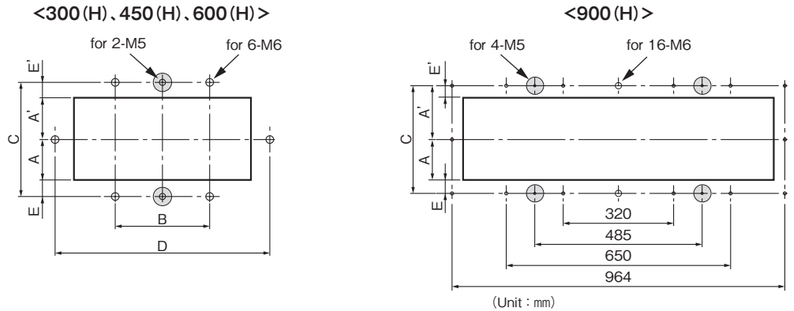
Screw specification	Material
⊕ pan head tapping screw M5×25L	SUS

4.2.3-2 Example of attaching RSP

1 Check that opening the mounting hole or driving the anchor is complete.

Reference 【3.2.3】Construction method using the RSP water shut-off plate

<Figure 4.2.3-2.1> **Position of screw in relation to the penetrated hole**



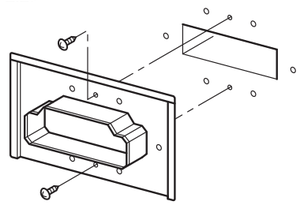
(Unit : mm)

Size	A	A'	B	C	D	E	E'
300 type	54	64	160	192	364	42	32
450 type			310		514		
600 type			400		664		
900 type			–		–		
300H type	117	121	160	312	364	39	35
450H type			310		514		
600H type			400		664		
900H type			–		–		

2 Screw at two locations, one in the upper center of the water shut-off plate, and the other in the lower center of the water shut-off plate.

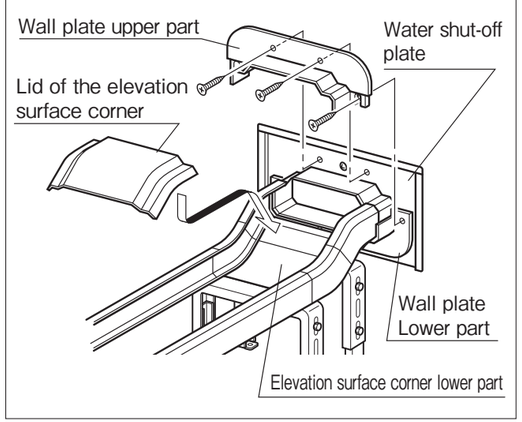
※ For 900/900H type, screw at two locations in each of the upper and lower center of the water shut-off plate (four locations in total).

<Figure 4.2.3-2.2>



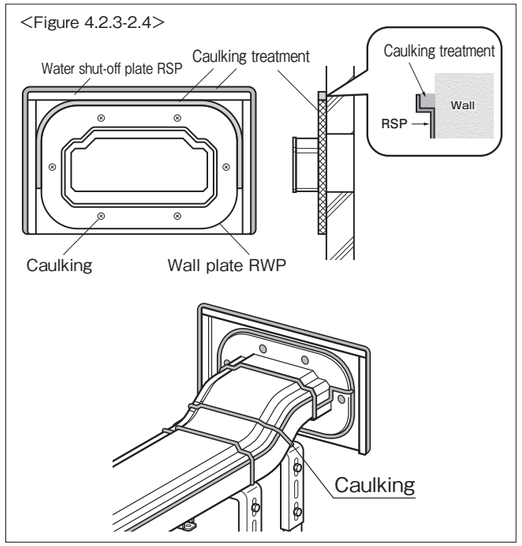
3 Attach the lower part of wall plate, attach the lower part of elevation surface corner and the lower part of duct, perform piping, and then attach each upper part of them.

<Figure 4.2.3-2.3>



4 Apply caulking at the top, right, and left sides of water shut-off plate and wall plate respectively as shown in the figure.

<Figure 4.2.3-2.4>



4.2.4 RSB water shut-off sleeve

Perform the water shut-off treatment by using the water shut-off sleeve (RSB), the wall plate (RWP), and the elevation surface corner 45° (RCF) in combination. The water shut-off sleeve is used by being embedded in the body.

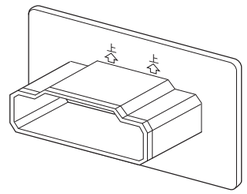
QR code for downloading the specification drawing

RSB

※ Also check the Design section before performing construction.

4.2.4-1 Product configuration

<Figure 4.2.4-1.1>



<Table 4.2.4-1.1> **Set contents**

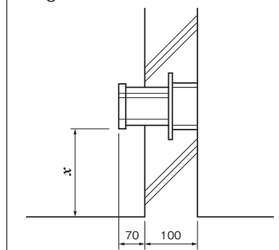
Type	Main unit
300/300H	1
450/450H	1
600/600H	1

※ There is no included accessory for this product.

4.2.4-2 Example of attaching RSB

1 Embed the water shut-off sleeve in the body of pipe takeout portion.

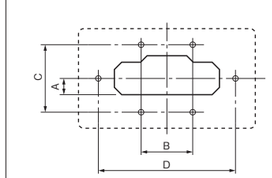
<Figure 4.2.4-2.1>



x = Duct bottom level + 16mm

2 Perform drilling for the M6×45L tapping screw, or drive the M6 anchor for attaching the wall plate as shown in the figure.

<Figure 4.2.4-2.2>

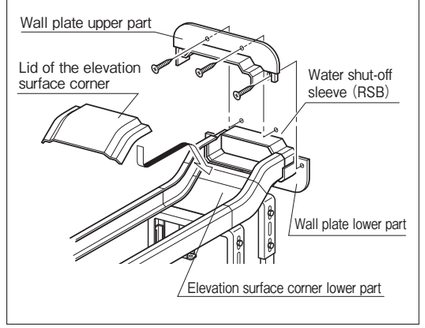


(Unit : mm)

Size	A	B	C	D
300 type	54	160	192	364
450 type		310		514
600 type		400		664
300H type	117	160	312	364
450H type		310		514
600H type		400		664

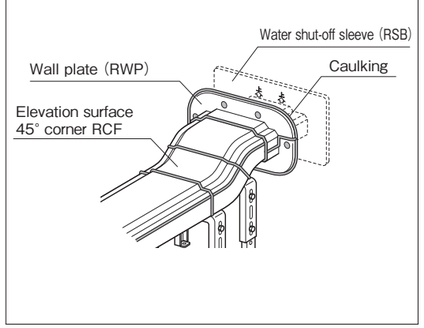
3 Attach the lower part of wall plate, attach the lower part of elevation surface corner and the lower part of duct, perform piping, and then attach each upper part of them.

<Figure 4.2.4-2.3>



4 Finally, perform the caulking treatment of each part.

<Figure 4.2.4-2.4>



4.2.5 CB chamber box

Perform construction by the combined use of wall plate RWP.

※ The chamber box (CB) is a special order product with special specification in which the material and dimensions etc. are changed (since this is a special order product, we have to have a pre-meeting separately for the price and delivery date).
※ Also check the Design section before performing construction.

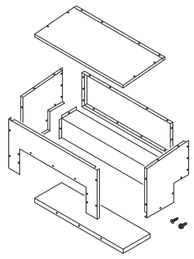
QR code for downloading the specification drawing

CB

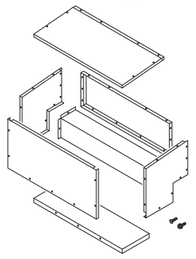
4.2.5-1 Product configuration

<Figure 4.2.5-1.1>

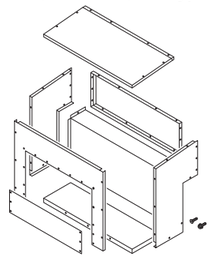
CB-A-ZA type



CB-B-ZA type



CB-(C·D·E·F·G)-ZA type



<Table 4.2.5-1.1> Set contents

Type	Front plate	Top plate	Side plate (right and left)	Frame	Bottom plate A	Bottom plate B	Stiffening plate	Countersunk screw	Hexagon bolt
CB-A	1	1	1 for each side	1	1	1	0	16	28
CB-B	1	1	1 for each side	1	1	1	0	0	32
CB-C	1	1	1 for each side	1	1	1	1	16	36
CB-D	1	1	1 for each side	1	1	1	1	16	36
CB-E	1	1	1 for each side	1	1	1	1	16	36
CB-F	1	1	1 for each side	1	1	1	1	16	34
CB-G	1	1	1 for each side	1	1	1	0	16	32

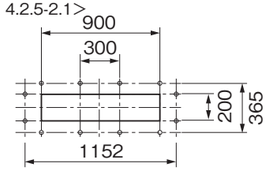
<Table 4.2.5-1.2> Screw/Bolt specification

Specifications	Material
⊕ Countersunk screw M6×20L	SUS
⊕ sems hexagon bolt M6×15L	

4.2.5-2 Example of attaching CB 〈removal from the front〉

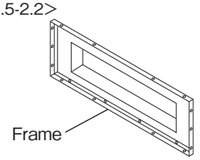
1 Drive the W3/8 anchor bolt with the dimensions as shown in the figure.

<Figure 4.2.5-2.1>



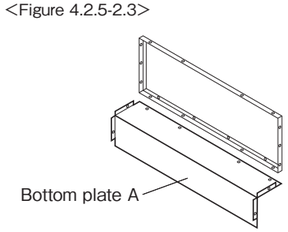
2 Attach the frame to the opening by using the commercially available W3/8 hexagon bolt.

<Figure 4.2.5-2.2>



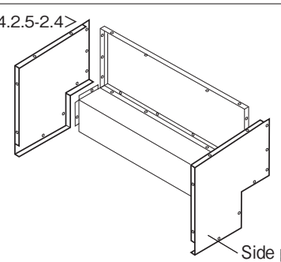
3 Attach bottom plate A to the frame by using the M6 hexagon bolt.

<Figure 4.2.5-2.3>



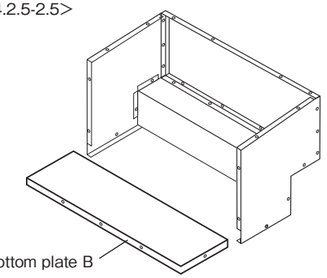
4 Attach the side plate to the frame and bottom plate A by using the M6 hexagon bolt.

<Figure 4.2.5-2.4>



5 Insert bottom plate B from the front, and attach it to the side plate by using the M6 hexagon bolt.

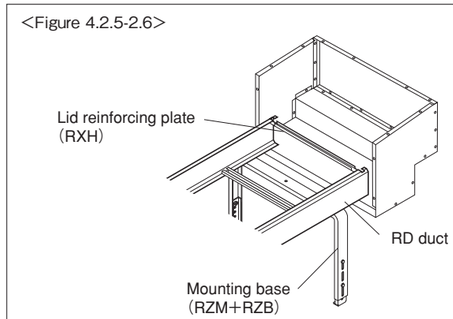
<Figure 4.2.5-2.5>



6 Temporarily place the RD duct, and then perform the piping work.
(Insert the straight duct into the chamber box by 10mm or more.)
After the piping work is completed, attach the separately sold lid reinforcing plate (RXH) to the position of about 50mm from the end of RD duct.

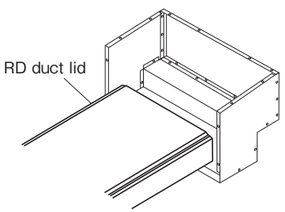
Note Set the mounting base (RZM+RZB) at the position of 250mm from the end of straight duct.

<Figure 4.2.5-2.6>



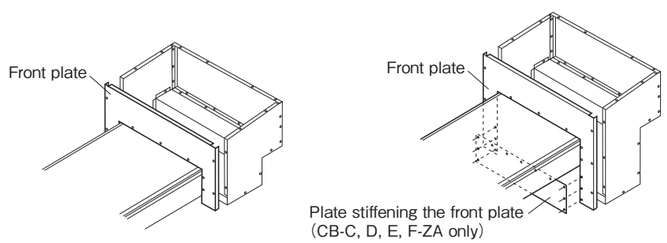
7 Set the lid of RD duct by using the M6 hexagon bolt.

<Figure 4.2.5-2.7>



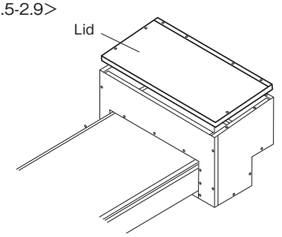
8 Attach the front plate and the plate stiffening the front plate by using the M6 hexagon bolt.

<Figure 4.2.5-2.8>



9 Set the lid by using the M6 hexagon bolt.

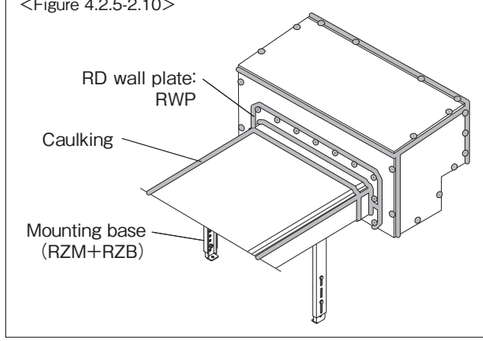
<Figure 4.2.5-2.9>



10 Attach the separately sold RWP to the RD connection portion by using the M6 countersunk screw.

Note Since a gap will be formed at the connection portion, apply caulking or puttying for waterproofing.

<Figure 4.2.5-2.10>



4.2.5-3 Example of attaching CB <removal from the bottom>, When using RCI elevation surface corner 90° (rising)

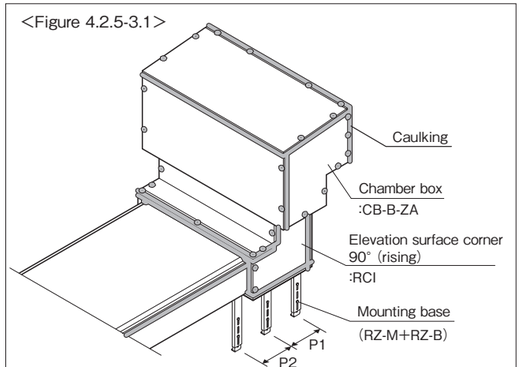
Construction by using elevation surface corner 90° (rising) RCI is also possible.

Attach the chamber box CB-B-ZA by referring to steps 1 through 4 of [4.2.5-2], attach RCI under it, perform piping, set the lid by referring to steps 6 through 10 of [4.2.5-2], and perform the caulking treatment.

Note

- Be sure to set two RD mounting bases.
- Be sure to set RZ also for the connected RD duct end.
- The chamber box is made-to-order.
- When attaching 900/900H to CB, remove bottom plate B. When setting another size one on CB, perform notching to be of the appropriate size.
- RCI is to be only inserted into CB, but not connected to CB.
- Since a gap will be formed at the connection portion, apply caulking or puttying for waterproofing.

<Figure 4.2.5-3.1>



<Table 4.2.5-3.1> (Unit : mm)

Size	P1	P2
900	190	(205)
900H	250	(240)

※ Dimension values within ( ) are for reference only.

4.3 Mounting base

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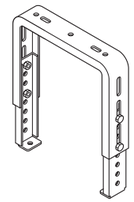
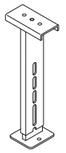
4.3.1 List of parts for the mounting base

Mounting base for 300 to 900
RZ(RZM+RZB)
RD mounting base

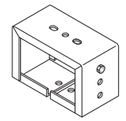


Mounting base for 150

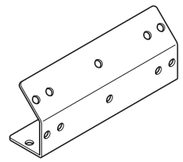
RZ-150
(RD-150 mounting base)



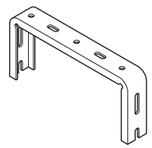
RZW
(mounting base for installing RD-150 on the wall face)



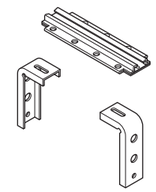
RZC
mounting base fixing plate for the elevation surface



RZY
mounting base guide for duplex mounting



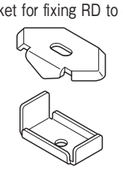
RDY pipe support base



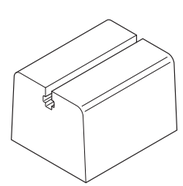
Bracket for installation on the wall face (for sub girder)

Bracket for installation on the wall face (for main girder)

For fixing to shaped steel
RKT
fixing bracket for fixing RD to shaped steel

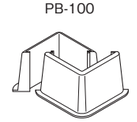


Multipurpose support base
CR Recycrock

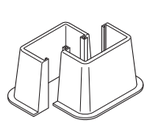


PB resin foundation form
PB Plabase

PB-100



PB-120



4.3.2 RZ (RZM+RZB) RD mounting base (for 300 to 900)

This is the mounting base for RD (300 to 900).
By combining the gate (RZM) and leg (RZB), this can be used as the mounting base of various height.

※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

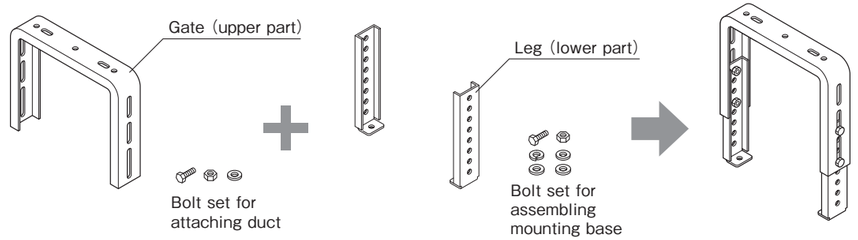
RZM RZB

4.3.2-1 Product configuration

300 to 900 type is of the combination of gate and leg.

Reference 【3.4.4】 Table for selecting a mounting base other than 150-type (for installation on the floor)

<Figure 4.3.2-1.1>



<Table 4.3.2-1.1> **Set contents**

Type	Gate-shaped bracket	Base	Bolt set for assembling mounting base	Bolt set for attaching duct
RZB	0	2	4	0
RZM	1	0	0	2

<Table 4.3.2-1.2> **Bolt set specifications**

Item	Specifications	Material	Quantity
Bolt set for assembling mounting base	Hexagon bolt W3/8×L25	SUS	1
	Hexagon nut W3/8	SUS	1
	Flat washer W3/8	SUS	1
	Spring washer W3/8	SUS	1
	Resin washer W3/8	POM	2
Bolt set for attaching duct	Hexagon bolt W3/8×L25	SUS	1
	Hexagon nut W3/8	SUS	1
	Flat washer W3/8	SUS	1

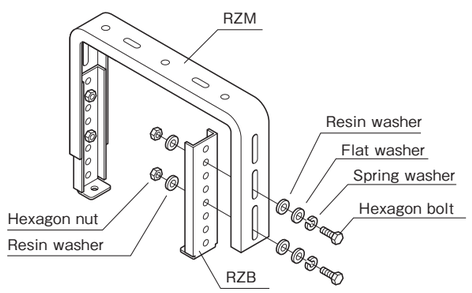
4.3.2-2 Example of assembling and attaching RZ <300 to 900>

1 Attach RZB (RD mounting base leg) to RZM (RD mounting base gate).

※ Bolt tightening torque: 29.4N-m
※ If Recycrock CR etc. is to be used, set it after this procedure.

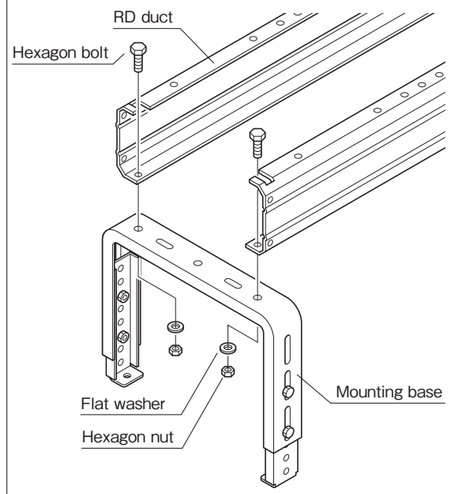
Reference 【3.4.16】 Fixing (to floor), Recycrock CR

<Figure 4.3.2-2.1> **Mounting base assembly**



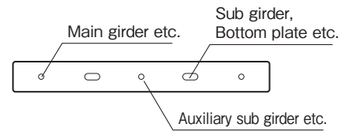
2 Attach the duct etc. to the mounting base.

<Figure 4.3.2-2.2> **RD duct jointless connection**



<Figure 4.3.2-2.3>
Object to be attached to the mounting base

RZM top view



3 When attaching RZ to the wall face (for the combination of RZM-S + RZB-S only)

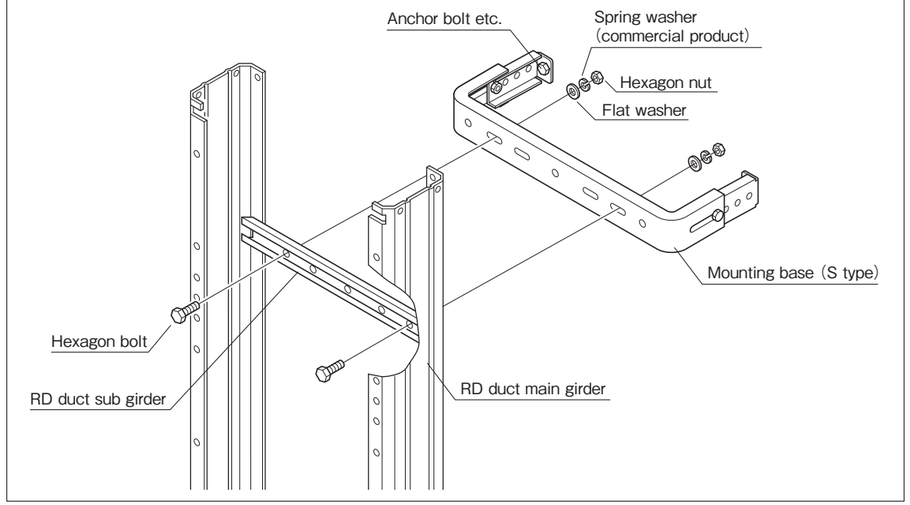
1. Attach RZ to the wall face by using anchors etc.

※ For the type and specifications of the anchor bolt etc., follow the instruction by the supervisor on site.

2. Attach the duct etc. to RZ.

- When there are multiple mounting holes, use the outermost two holes.
- When attaching the duct and parts, fix the duct by using the supplied bolt set and the commercially available spring washer (W3/8 SUS) in addition.

<Figure 4.3.2-2.4>



4.3.3 RZ-150, RZW RD mounting base (for 150)

This is the mounting base for RD (for 150).
There are the following two types: RZ-150 for to be fixed on the floor, and RZW-150 for to be fixed on the wall face.

※ Also check the Design section before performing construction.

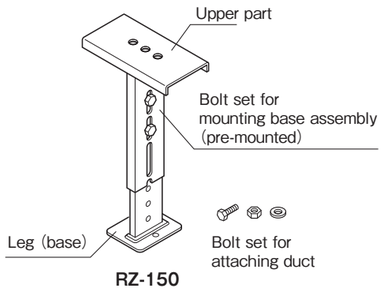
QR code for downloading the specification drawing

RZ-150 RZW-150

4.3.3-1 Product configuration

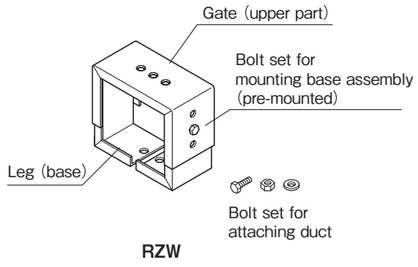
<Figure 4.3.3-1.1>

〈150 type〉



RZ-150

〈150 type for fixing on the wall face〉



RZW

<Table 4.3.3-1.1> Set contents

Type	Gate-shaped bracket	Base	Bolt set for assembling mounting base	Bolt set for attaching duct
RZ-150	1	1	2	1
RZW-150	1	2	2	2

<Table 4.3.3-1.2> Bolt set specifications

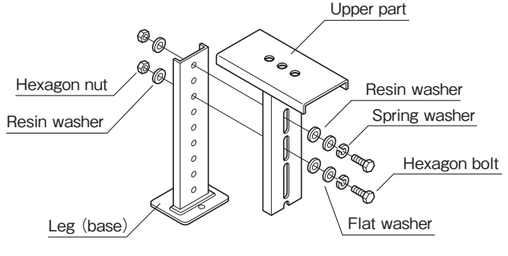
Item	Specifications	Material	Quantity
Bolt set for assembling mounting base	Hexagon bolt W3/8×L25	SUS	1
	Hexagon nut W3/8	SUS	1
	Flat washer W3/8	SUS	1
	Spring washer W3/8	SUS	1
	Resin washer W3/8	POM	2
Bolt set for attaching duct	Hexagon bolt W3/8×L25	SUS	1
	Hexagon nut W3/8	SUS	1
	Flat washer W3/8	SUS	1

4.3.3-2 Example of assembling and attaching RZ-150

1 Attach the leg (base) to the upper part.

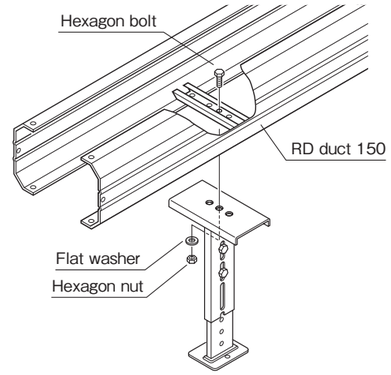
※ Bolt tightening torque : 29.4N-m

<Figure 4.3.3-2.1>



2 Attach the duct etc. to the mounting base.

<Figure 4.3.3-2.2>

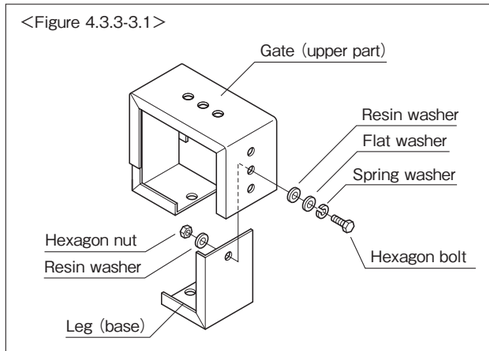


4.3.3-3 Example of assembling and attaching RZW

1 Attach the leg (base) to the gate (upper part).

※ Bolt tightening torque: 29.4N-m

<Figure 4.3.3-3.1>

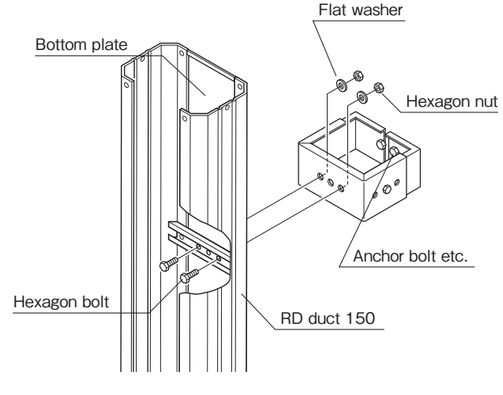


2 Attach RZW to the wall face by using anchor bolts etc.

※ For the type and specifications of the anchor bolt etc., follow the instruction by the supervisor on site.

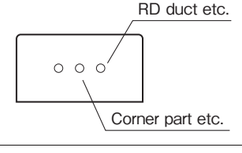
3 Attach the duct etc. to RZW.

<Figure 4.3.3-3.2>



<Figure 4.3.3-3.3>
Object to be attached to the mounting base

RZW top view



4.3.4 RZC mounting base fixing plate for the elevation surface

This is the fixing plate to attach the mounting base to the duct or corner part on an elevation surface or sloping slope (inclined at 45°).

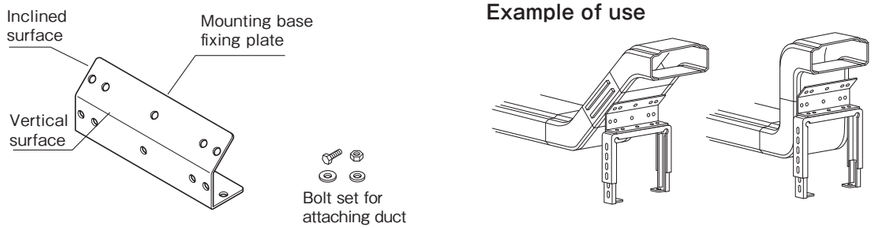
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RZC

4.3.4-1 Product configuration

<Figure 4.3.4-1.1>



<Table 4.3.4-1.1> **Set contents**

Type	Quantity
RZC main unit	1
Bolt set for attaching duct	2

<Table 4.3.4-1.2> **Bolt set specifications**

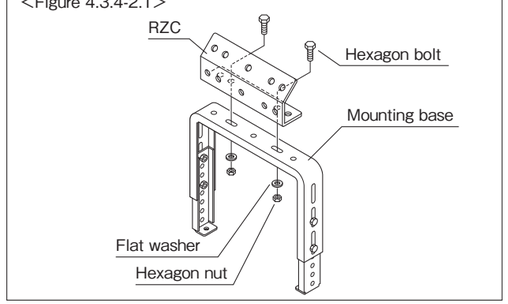
Item	Specifications	Material	Quantity
Bolt set for attaching duct	Hexagon bolt W3/8×L25	SUS	1
	Hexagon nut W3/8	SUS	1
	Flat washer W3/8	SUS	1
	Resin washer W3/8	POM	1

4.3.4-2 Example of attaching RZC

1 Attach RZC to the mounting base.

※ Mounting bolts are supplied with the mounting base.

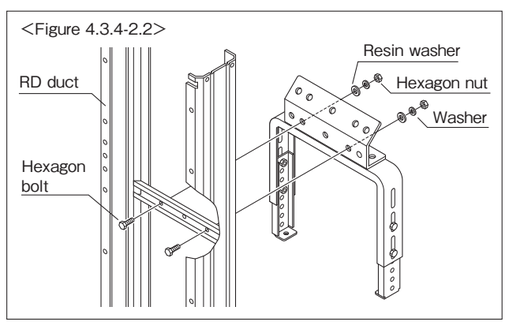
<Figure 4.3.4-2.1>



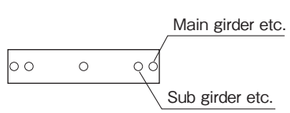
2 Attach the target object to RZC.

※ Use the mounting holes which fit the target object.

<Figure 4.3.4-2.2>



<Figure 4.3.4-2.3>
RZC view of front/inclined surface



4.3.5 RZY mounting base guide for duplex mounting

This is used for duplex mounting of the RD duct.

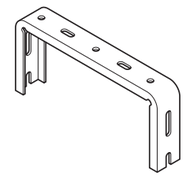
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RZY

4.3.5-1 Product configuration

<Figure 4.3.5-1.1>



<Table 4.3.5-1.1> **Set contents**

Type	Quantity
RZY main unit (gate)	1
Bolt set for assembling the mounting base	2
Bolt set for attaching duct	2

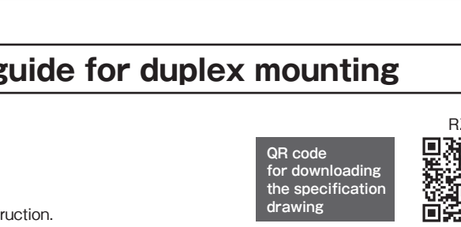
<Table 4.3.5-1.2> **Bolt set specifications**

Item	Specifications	Material	Quantity
Bolt set for assembling mounting base	Hexagon bolt W3/8×L25	SUS	1
	Hexagon nut W3/8	SUS	1
	Flat washer W3/8	SUS	1
	Spring washer W3/8	SUS	1
	Resin washer W3/8	POM	2
Bolt set for attaching duct	Hexagon bolt W3/8×L25	SUS	1
	Hexagon nut W3/8	SUS	1
	Flat washer W3/8	SUS	1

4.3.5-2 Example of attaching RZY

1 Attach RZY to the RZB RD duct mounting base leg.

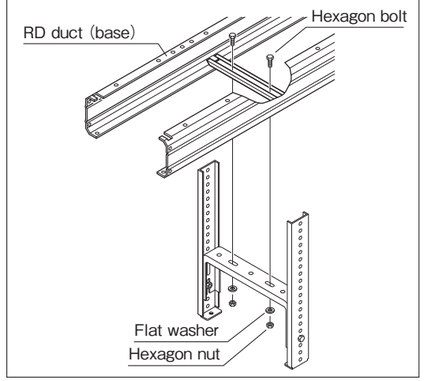
<Figure 4.3.5-2.1>



2 Attach the RD duct base.

※ Cannot be used for the connection portion.

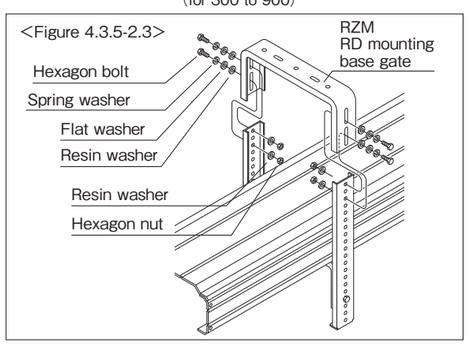
<Figure 4.3.5-2.2>



3 Perform piping of the lower stage, set the lid, and attach the RZM RD mounting base gate. Then, perform the procedures in the same way as RZ.

Reference 【4.3.2】 RZ (RZM+RZB) RD mounting base (for 300 to 900)

<Figure 4.3.5-2.3>



4.3.6 RDY pipe support base

This is a part for attaching the conduit etc. to the RD mounting base.
The rail of 20mm in width and holes of ϕ14 are equipped to attach the conduit supporting bracket.

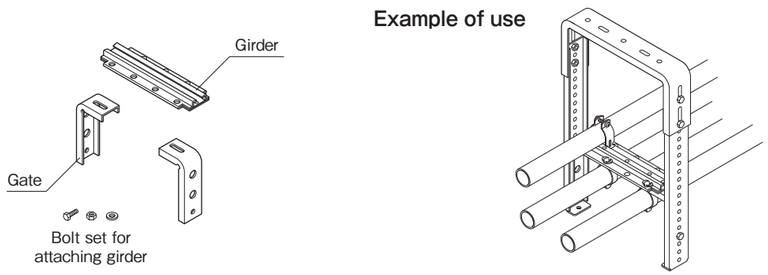
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RDY

4.3.6-1 Product configuration

<Figure 4.3.6-1.1>



<Table 4.3.6-1.1> **Set contents**

Type	Quantity
Gate (pipe support base)	2
Girder	1
Bolt set for attaching girder	2

<Table 4.3.6-1.2> **Bolt set specifications**

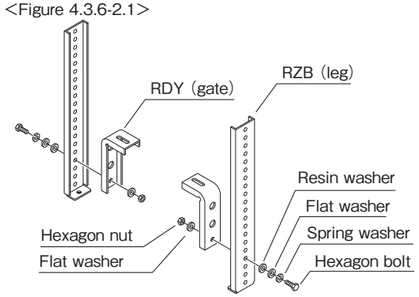
Item	Specifications	Material	Quantity
Bolt set for attaching Girder	Hexagon bolt M8×12L	SUS	1
	Hexagon nut M8	SUS	1
	Flat washer M8	SUS	1

4.3.6-2 Example of assembling and attaching RDY

1 Attach the gate to the RD mounting base leg (RZB).

※ The mounting bolts are not supplied.
Attach it at the same time when attaching RZM.
If attaching it separately, use commercially available bolts.

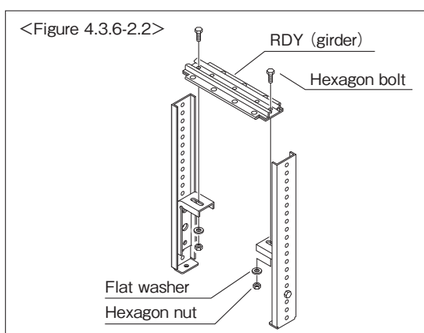
<Figure 4.3.6-2.1>



2 Attach the girder to the gate.

※ For attaching a commercially available supporting brackets, check the instruction manual of its manufacturer.

<Figure 4.3.6-2.2>



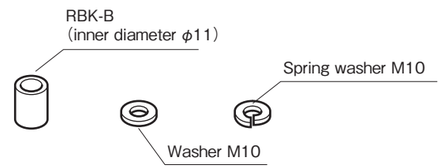
4.3.7 RBK-B auxiliary bracket for sub girder

This is the auxiliary bracket to be used in the installation directly on the wall face.
For the open-close type duct (RD-450H, 600H, 900H of 2m and 1m), use the auxiliary bracket for main girder RBK-A.

※ Also check the Design section before performing construction.

4.3.7-1 Product configuration

<Figure 4.3.7-1.1>



<Table 4.3.7-1.1> **セット内容**

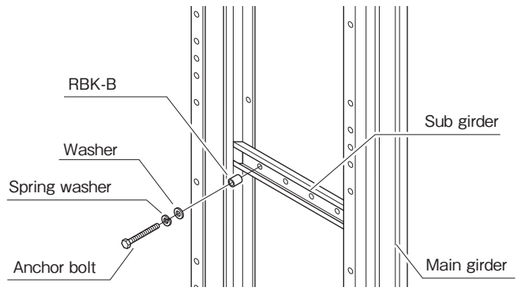
Item	Material	Quantity
RBK-B (inner diameter ϕ11×L22)	SUS	1
Washer		
Spring washer		

4.3.7-2 Example of attaching RBK-B auxiliary bracket for sub girder

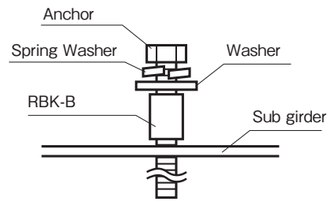
As shown in the figure, insert the commercially available anchor bolt (W3/8 or M10) into the bracket, and attach them to the same location as attaching the mounting base.
For the location for attachment, see pages of each part.

※ The anchor bolt specifications are to differ depending on the wall structure and load.
Follow the instruction by the supervisor on site to select the appropriate one.

<Figure 4.3.7-2.1>



<Figure 4.3.7-2.2>



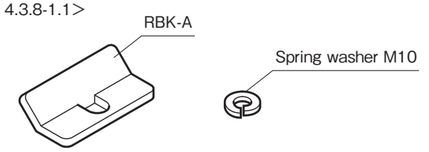
4.3.8 RBK-A auxiliary bracket for main girder

This is the auxiliary bracket to be used in the installation of the open-close type duct (RD-450H, 600H, 900H of 2m and 1m) on the wall face.

※ This can also be used for the general type 2m and 1m duct (excluding 150 type).
※ Also check the Design section before performing construction.

4.3.8-1 Product configuration

<Figure 4.3.8-1.1>



<Table 4.3.8-1.1> **Set contents**

Item	Material	Quantity
RBK-A	ZAM	1
Spring washer M10	SUS	

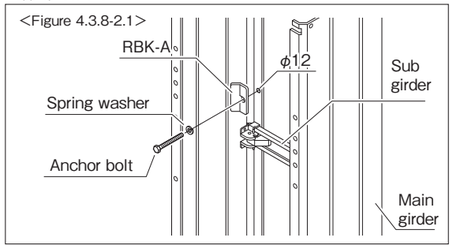
4.3.8-2 Example of attaching RBK-A auxiliary bracket for main girder

Installation directly on the wall face

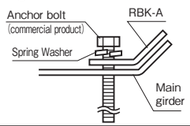
As shown in the figure, insert the commercially available anchor bolt (W3/8 or M10) into the bracket, and attach them to the ϕ12 hole of the main girder.
See the figure for the location for attachment.

※ The anchor bolt specifications are to differ depending on the wall structure and load. Follow the instruction by the supervisor on site to select the appropriate one.

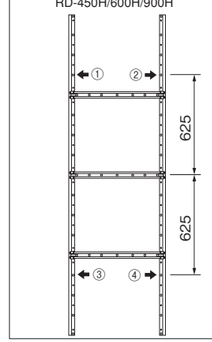
<Figure 4.3.8-2.1>



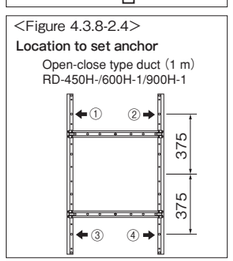
<Figure 4.3.8-2.2>



<Figure 4.3.8-2.3>
Location to set anchor
Open-close type duct (2 m)
RD-450H/600H/900H



<Figure 4.3.8-2.4>
Location to set anchor
Open-close type duct (1 m)
RD-450H-/600H-1/900H-1

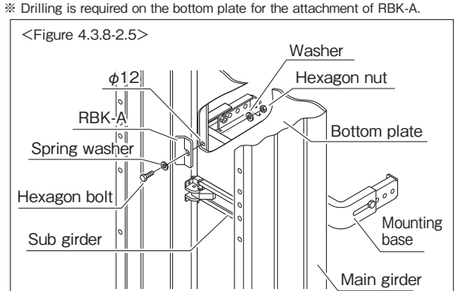


In the installation floated from the wall face

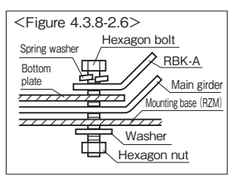
As shown in the figure, insert the hexagon bolt (supplied with the mounting base) into the bracket, and set the mounting base at the ϕ12 hole of the main girder. See the figure for the location for attachment.

※ Drilling is required on the bottom plate for the attachment of RBK-A.

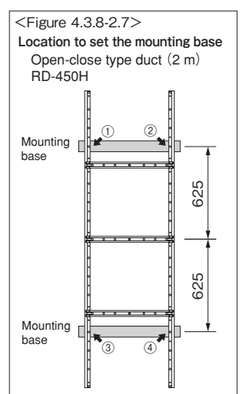
<Figure 4.3.8-2.5>



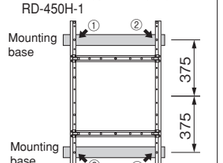
<Figure 4.3.8-2.6>



<Figure 4.3.8-2.7>
Location to set the mounting base
Open-close type duct (2 m)
RD-450H



<Figure 4.3.8-2.8>
Location to set the mounting base
Open-close type duct (1m)
RD-450H-1



4.3.9 RKT bracket for fixing to shaped steel

When fixing the RD duct to the shaped steel, fix the RD main girder to the shaped steel by using the bracket for fixing RD to shaped steel RKT.

※ Also check the Design section before performing construction.

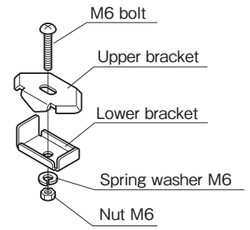
Scope of application of shaped steel	H-steelApplicable thickness of flange ··· 7 to 13mm Channel stee ··· 75×40、100×50、125×65、150×75

QR code for downloading the specification drawing

RKT

4.3.9-1 Product configuration

<Figure 4.3.9-1.1>



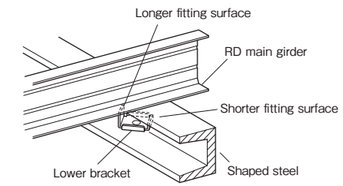
<Table 4.3.9-1.1> **Set contents**

Item	Material (surface treatment)	Quantity
Upper bracket	Dacrotizing	1
Lower bracket		
Cup head square neck bolt M6×35L		
Spring washer M6		
Nut M6		

4.3.9-2 Example of attaching RKT

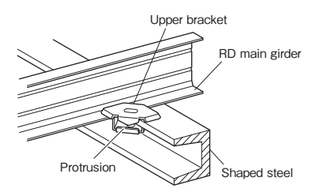
1 Set the lower bracket so that its longer fitting surface contacts the RD main girder, and its shorter fitting surface contacts the shaped steel.

<Figure 4.3.9-2.1> **Position of lower bracket**



2 Set the upper bracket so that its protrusion does not ride on the RD main girder or shaped steel.

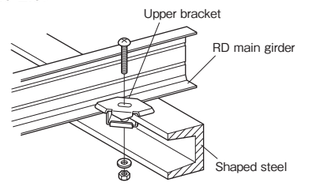
<Figure 4.3.9-2.2> **Position of upper bracket**



3 Tighten the nut from under the lower bracket.

※ Tightening torque 5.9N-m (60 kg-cm)

<Figure 4.3.9-2.3>



Note

- This cannot be used in the vertical installation on the wall face etc.
- This cannot be used for fixing the RD duct for walkway.
- Do not use this in a location where vibration or shaking occurs.
- Secure fixing cannot be attained for other than the scope of application of shaped steel.
- Securely tighten the screw with the designated torque.

4.3.10 CR recycling lock (multipurpose support base)

This is the multipurpose support base which is friendly to the global environment using recycled material.
There are the following types : CR-W 3/8 rail type which can also be used as the mounting base for RD, CR-A anchor base type, CR-D which can be used to support conduit, and CR-H hanger rail type.

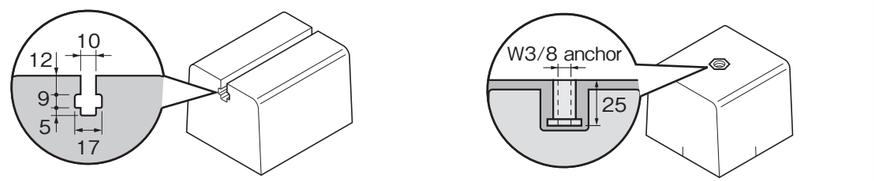
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

CR-W CR-A

4.3.10-1 Product configuration

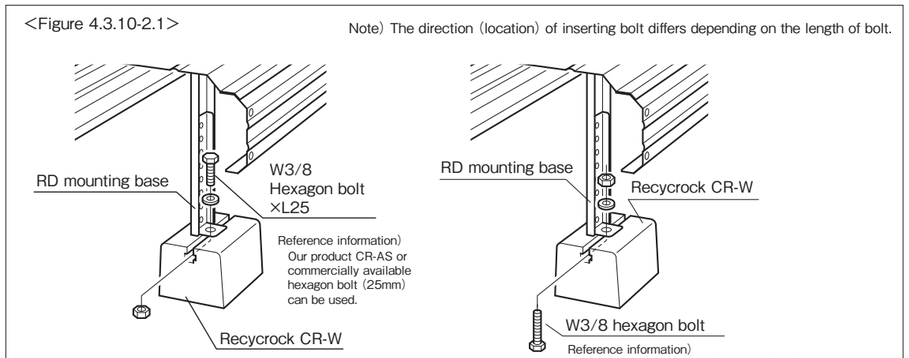
<Figure 4.3.10-1.1>



4.3.10-2 Example of assembling and attaching CR

1 CR-W··· Set the nut or bolt in the rail, and attach the mounting base etc.

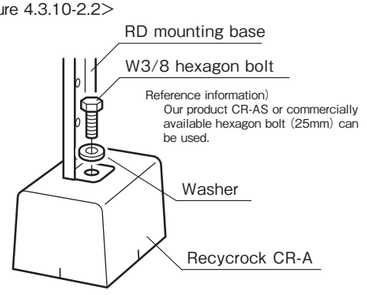
<Figure 4.3.10-2.1>



2 CR-A··· Attach the mounting base and fix it with the bolt.

※ Use a bolt of 25mm in length (SUS).

<Figure 4.3.10-2.2>



4.3.11 PB resin foundation form

This is the light-weight resin foundation form with excellent weatherability.
It is not necessary to prepare the frame or remove it after hardened, enabling large reduction of the working hours.
PB-100 is optimal for use as the base of the RD mounting base, and PB-120 is optimal for use as the base of catwalk.

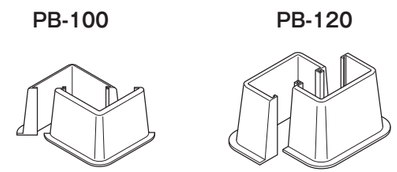
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

PB

4.3.11-1 Product configuration

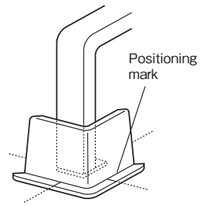
<Figure 4.3.11-1.1>



4.3.11-2 Example of assembling and attaching PB

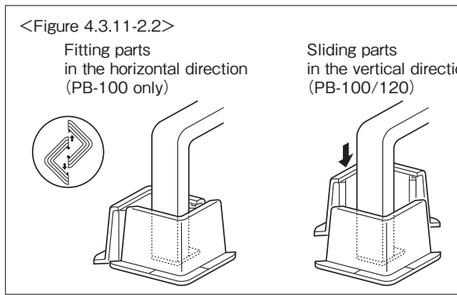
1 Set Plabase by aligning it with the mounting base.
Since Plabase has the positioning mark, align the mark and positioning line for beautiful finish.

<Figure 4.3.11-2.1> Setting Plabase



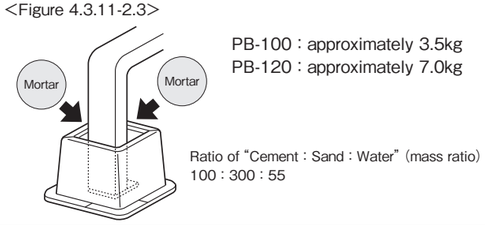
2 Assemble Plabase. There are two methods of assembling Plabase: jointing by sliding parts in the vertical direction, and jointing by fitting parts in the horizontal direction.

<Figure 4.3.11-2.2>



3 Finally fill mortar.
After pouring and filling mortar, sufficiently perform the mortar butt work. If too much water is contained, a large shrinkage may occur and the finished surface may not become flat. For the blending ratio, refer to <Figure 4.3.11-2.3>.

<Figure 4.3.11-2.3>



4.4 RD duct (straight pipe)

Outline

There are two types of RD duct : Standard type and Walkway type which can be used as the walkway in the maintenance work etc.
Also, there are two connection methods : Connection using joint parts and Jointless connection without using joint parts. Be sure to check “5.5 RD duct【Design】” before construction.

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4.4.4 RD/RDW jointless connection <simple assembly method> ····· 91

4.4.1 RD duct

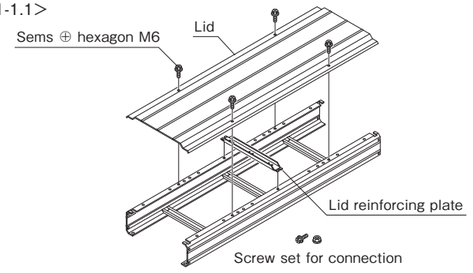
Standard-type straight pipe (straight duct).
Note that the construction details are different between for the standard type and for the walkway type.
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RD

4.4.1-1 Product configuration

<Figure 4.4.1-1.1>



※ 450H/600H/900H 2m and 1m are the open-close type (folding type).

<Table 4.4.1-1.1> **Set details**

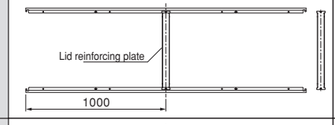
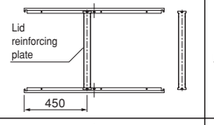
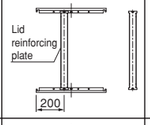
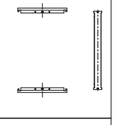
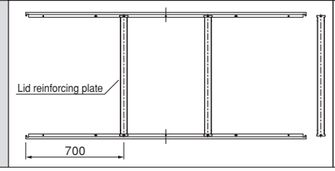
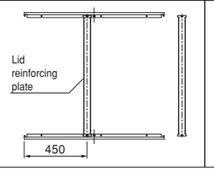
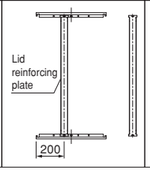
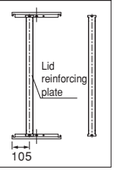
Size	Lid	Base	Screw set for connection	Length of duct							
				2m		1m		0.5m		0.3m	
				Lid screw	Lid reinforcing plate	Lid screw	Lid reinforcing plate	Lid screw	Lid reinforcing plate	Lid screw	Lid reinforcing plate
150	1	1	0	4	0	2	0	2	0	2	0
300/300H	1	1	4	4	0	2	0	2	0	2	0
450/450H	1	1	4	4	0	2	0	2	0	2	0
600/600H	1	1	4	4	2	2	2	2	2	2	1
900/900H	1	1	4	4	3	2	2	2	2	2	2

<Table 4.4.1-1.2> **Screw specification**

Item		Specifications	Material
Screw set for connection	Screw	Sems ⊕ hexagon M6×15L	SUS
	Nut	Flange nut M6	SUS
Lid screw	Screw	Sems ⊕ hexagon M6×15L	SUS

4.4.1-2 Location to attach the lid reinforcing plate

<Table 4.4.1-2.1> **Location to attach the lid reinforcing plate**

	2m-duct	1m-duct	0.5m-duct	0.3m-duct
600(H) type				
900(H) type				

4.4.2 RDW walkway type

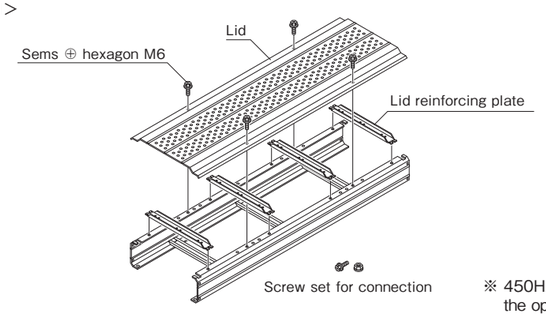
Walkway-type straight pipe (straight duct).
Note that the construction details are different between for the standard type and for the walkway type.
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RDW

4.4.2-1 Product configuration

<Figure 4.4.2-1.1>



※ 450H/600H/900H 2m and 1m are the open-close type (folding type).

<Table 4.4.2-1.1> **Set details**

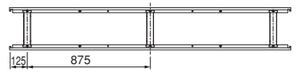
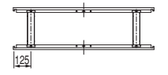
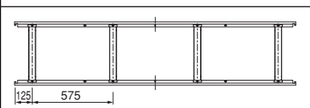
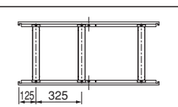
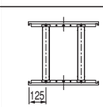
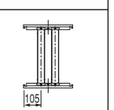
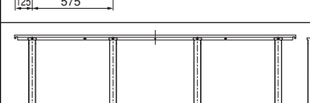
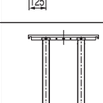
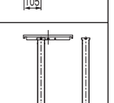
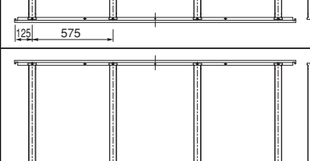
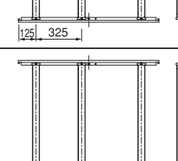
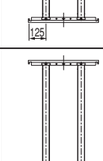
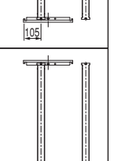
Size	Lid	Base	Screw set for connection	Length of duct							
				2m		1m		0.5m		0.3m	
				Lid screw	Lid reinforcing plate	Lid screw	Lid reinforcing plate	Lid screw	Lid reinforcing plate	Lid screw	Lid reinforcing plate
300/300H	1	1	4	4	3	2	2	2	2	2	2
450/450H	1	1	4	4	4	2	3	2	2	2	2
600/600H	1	1	4	4	5	2	4	2	3	2	2
900/900H	1	1	4	4	5	2	4	2	3	2	2

<Table 4.4.2-1.2> **Screw specification**

Item		Specifications	Material
Screw set for connection	Screw	Sems ⊕ hexagon M6×15L	SUS
	Nut	Flange nut M6	SUS
Lid screw	Screw	Sems ⊕ hexagon M6×15L	SUS

4.4.2-2 Location to attach the lid reinforcing plate

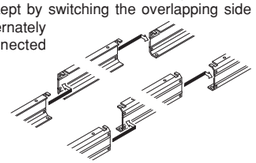
<Table 4.4.2-2.1> **Location to attach the lid reinforcing plate**

	2m-duct	1m-duct	0.5m-duct	0.3m-duct
300(H) type				
450(H) type				
600(H) type				
900(H) type				

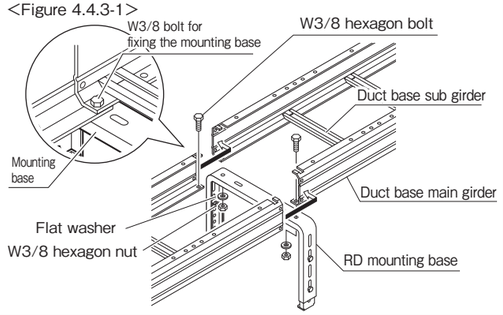
4.4.3 Example of RD/RDW assembly

1 Fit ducts each other so that their duct base main girder ends overlaps by 20mm, and fix the overlapped portion of the bottom of duct base main girder to the mounting base by using W3/8 hexagon bolts.

▶When fitting ducts each other, the straightness of ducts can be kept by switching the overlapping side (direction) alternately by each connected portion.

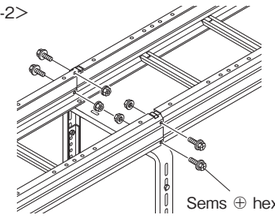


<Figure 4.4.3-1>



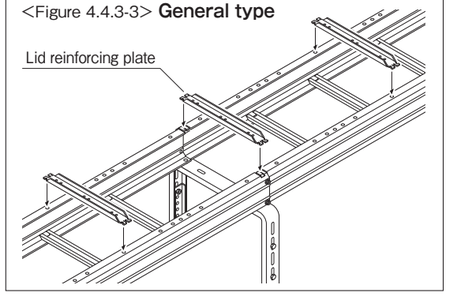
2 Fix the side surface of overlapped portion of the duct base main girder ends with screws.

<Figure 4.4.3-2>

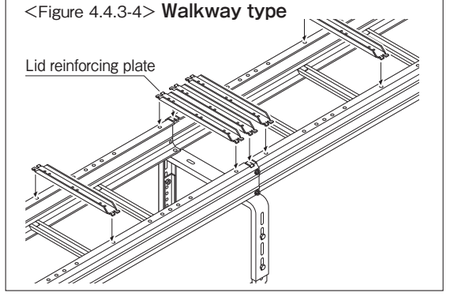


3 Perform piping, and then attach each reinforcing plate. For the attachment location, see "Location to attach the lid reinforcing plate".
The lid reinforcing plate for the connection portion is to be attached for 600 to 900H with jointless connection or connection using the free joint S/H type.

<Figure 4.4.3-3> General type

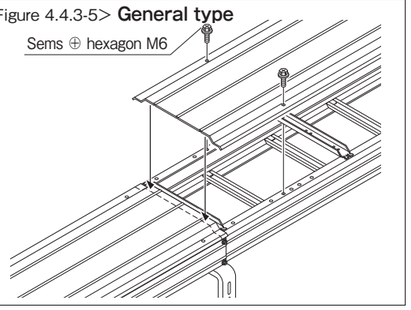


<Figure 4.4.3-4> Walkway type

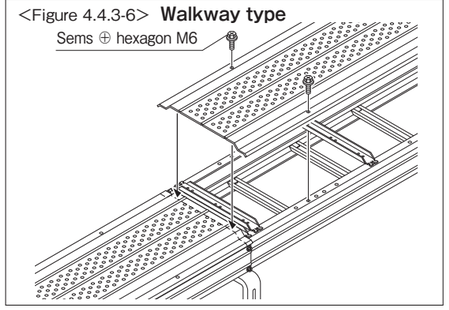


4 Set the lid with overlap by 20mm.
(At the portion connected with the plane surface corner, overlap the lids so that the lid of the straight duct comes over the other for beautiful finish.)

<Figure 4.4.3-5> General type



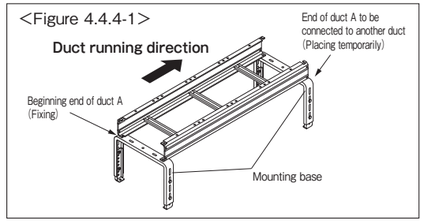
<Figure 4.4.3-6> Walkway type



4.4.4 RD/RDW jointless connection 〈simple assembly method〉

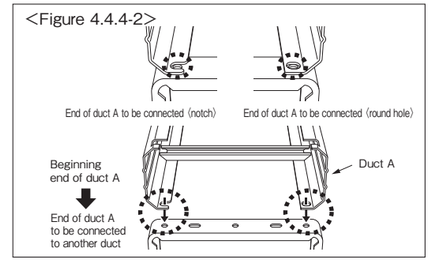
1 Place duct A on the mounting base, and fix its beginning end of duct A to the mounting base.
For the end of duct A to be connected to another duct, do not fix to the mounting base but just place it temporarily.

<Figure 4.4.4-1>



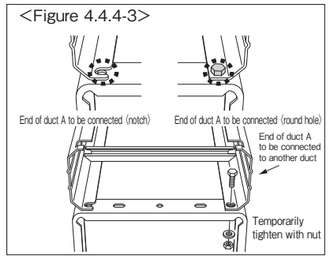
2 For the end of duct A to be connected to another duct, align "notch", "round hole", and "hole of the mounting base".

<Figure 4.4.4-2>



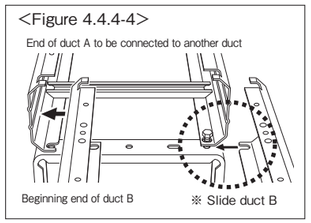
3 Insert the bolt into the round hole of the main girder that is placed temporarily on the mounting base, and temporarily tighten the bolt with the nut.

<Figure 4.4.4-3>

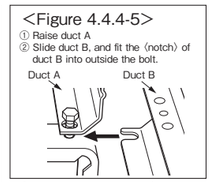


4 Temporarily place the beginning end of duct B on the mounting base of the side of end of duct A to be connected to another duct.
Insert the 〈notch〉 of the beginning end of duct B into between the duct A main girder and the mounting base (bolt-attaching position).

<Figure 4.4.4-4>



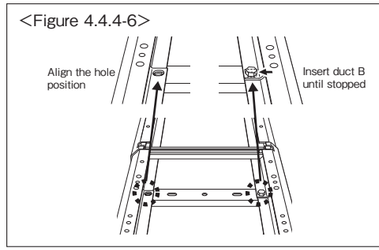
<Figure 4.4.4-5>



※Since the bolt at the end of duct A to be connected is tightened temporarily, duct A can be raised as shown in the figure above.

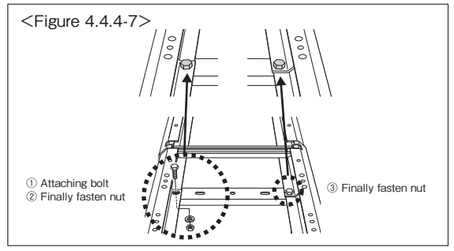
5 Finely align "duct A", "duct B", and "hole of the mounting base" by sliding duct B.

<Figure 4.4.4-6>



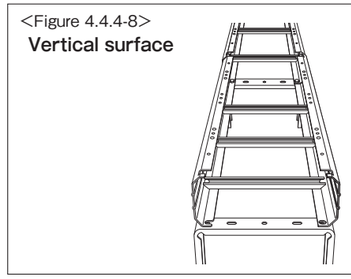
6 After aligning "duct A", "duct B", and "hole of the mounting base", attach the bolt and finally fasten the nuts at both sides.

<Figure 4.4.4-7>

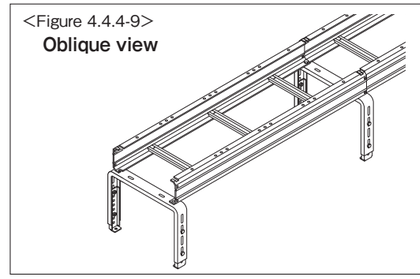


7 Assembly completed

<Figure 4.4.4-8>
Vertical surface



<Figure 4.4.4-9>
Oblique view



4.5 Connection

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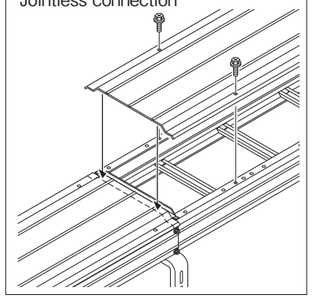
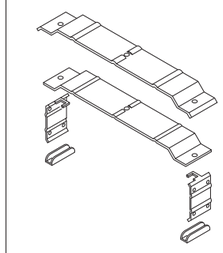
4.5.1 Connection methods and part list

Jointless connection

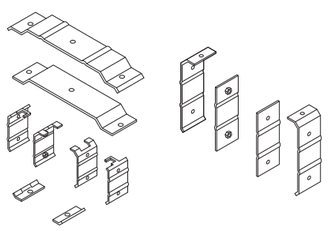


RSJ fixing joint

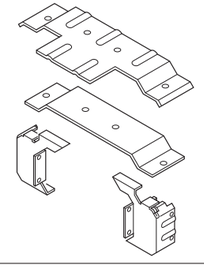


RFJ free joint

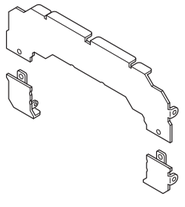
A type S/H type



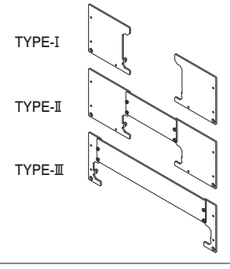
RR Different-diameter joint (joint type)



RR Different-diameter joint (plate type)

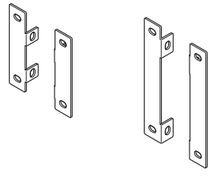


RXR different diameter joint for 900(H)-type corner parts

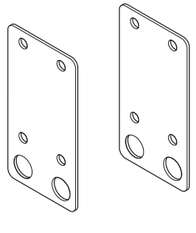


RXC 900(H) type parts connection bracket

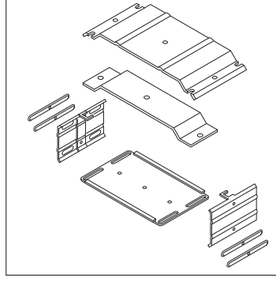
RXC-S-ZA RXC-H-ZA



RXJ joint for 900(H)-type corner parts



RSS sliding joint



4.5.2 Jointless connection

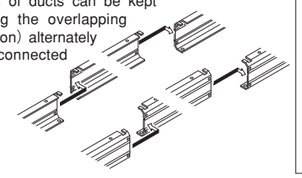
4.5.2-1 Example of assembly by jointless connection

This is the construction method to connect the RD ducts (excepting 150) and main corner parts without using joint parts.
This can be used for the installation on the floor and installation by hanging from the ceiling.
※ Also check the Design section before performing construction.

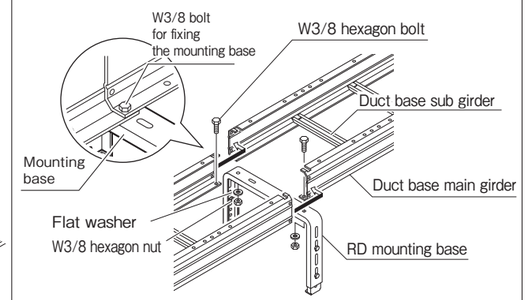
1 Fit ducts each other so that their duct base main girder ends overlaps by 20mm, and fix the overlapped portion of the bottom of duct base main girder to the mounting base by using W3/8 hexagon bolts.

Note If the mounting base cannot be set, change the construction method to that using joint parts.

▶When fitting ducts each other, the straightness of ducts can be kept by switching the overlapping side (direction) alternately by each connected portion.

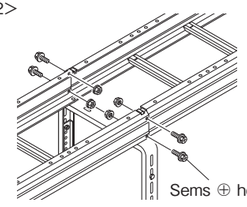


<Figure 4.5.2-1.1>



2 Fix the side surface of overlapped portion of the duct base main girder ends with screws.

<Figure 4.5.2-1.2>

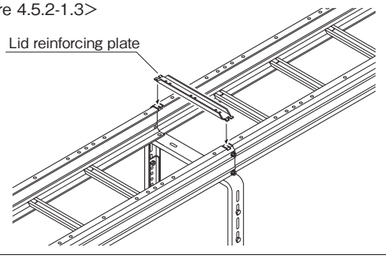


3 Perform piping, and then attach the lid reinforcing plate.

※ For attaching the lid reinforcing plate, see pages of each part.

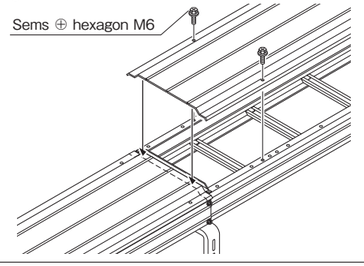
The lid reinforcing plate for the connection portion is to be attached in the 600 to 900H jointless connection or when the free joint S/H type is used.

<Figure 4.5.2-1.3>



4 Set the lid with overlap by 20mm.
(At the portion connected with the plane surface corner, overlap the lids so that the lid of RD duct comes over the other for beautiful finish.)

<Figure 4.5.2-1.4>



4.5.3 RSJ fixing joint

This is the joint used for connecting ducts or corner parts (except for some 900 type).
For the installation on the floor, it is also possible to set the mounting base at the connection portion.

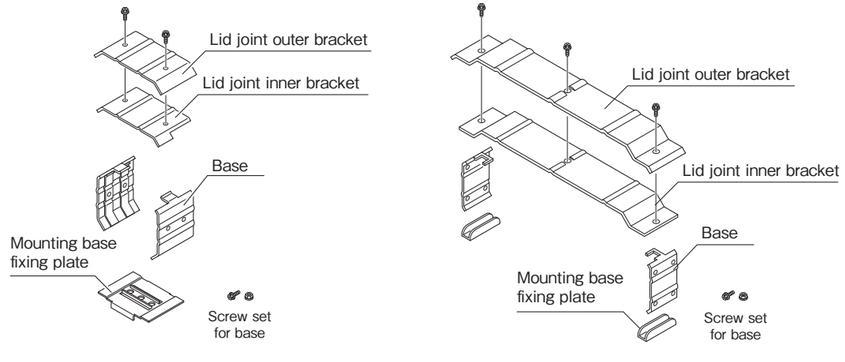
QR code for downloading the specification drawing

RSJ

※ Also check the Design section before performing construction.
※ For the installation on the wall face, also check【2.3.3】and【2.3.4】Conditions for installation on the wall face.

4.5.3-1 Product configuration

<Figure 4.5.3-1.1>



<Table 4.5.3-1.1> Set contents

Size	Lid (outer)	Lid (inner)	Base	Screw for lid	Screw set for base	Mounting base fixing plate
150	1	1	2	2	4	1
300/300H	1	1	2 (one each for the right and left)	3	8	2
450/450H						
600/600H						
900/900H						

<Table 4.5.3-1.2> Screw specification

Item	Specifications	Material
Screw for lid	Sems ⊕ hexagon bolt M6 × 20L	SUS
Screw set for base	Sems ⊕ hexagon bolt M6 × 15L	SUS
	Flange nut M6	SUS

4.5.3-2 Example of attaching RSJ

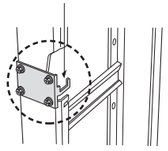
1 Make a 20mm clearance at the duct connection portion, and attach the fixing joint (base part).

Note

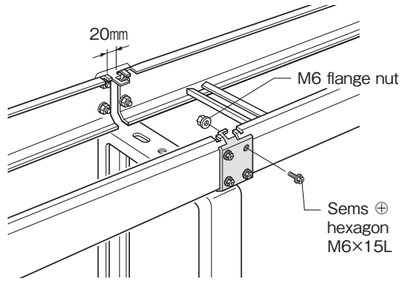
<Figure 4.5.3-2.2>

In the vertical installation, attach the fixing joint so that its opening of the guide groove faces upward to prevent drop of the lid joint inner bracket.

※ There is no sliding joint for 150 type.



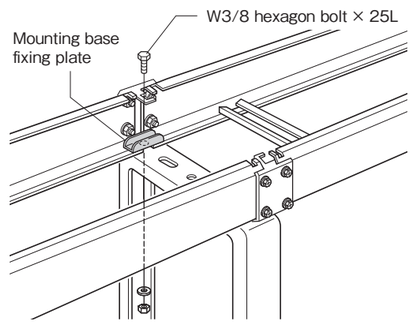
<Figure 4.5.3-2.1>



2 When attaching the mounting base (RZ) to the joint portion, fix the RD duct to the mounting base by using the mounting base fixing plate (mounting base fixing bracket for 150 type).

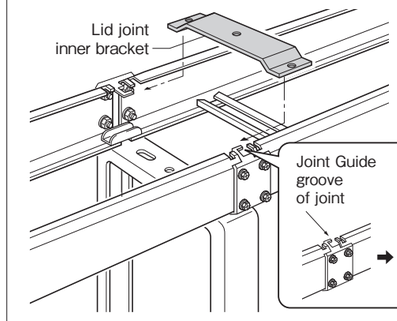
The mounting base fixing plate is not needed when the mounting base is not attached to the joint portion.

<Figure 4.5.3-2.3>



3 Perform piping, and then insert the lid joint inner bracket between the base inner bracket and the upper portion of duct main girder.
For 300 to 900H, fit the nut part of the lid joint inner bracket in the guide groove of joint.

<Figure 4.5.3-2.4>

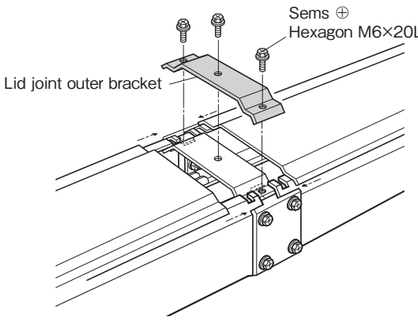


4 Finally set the lid of RD duct, and attach the lid joint outer bracket.

Note

In the installation on the wall face, treatment to prevent loosening of bolt is necessary.
For details, check【4.3】Installation on the wall face.

<Figure 4.5.3-2.5>



4.5.4 RFJ free joint

This is the joint to connect a cut duct and other parts.
This can be used in the installation on the floor and installation directly on the wall face.

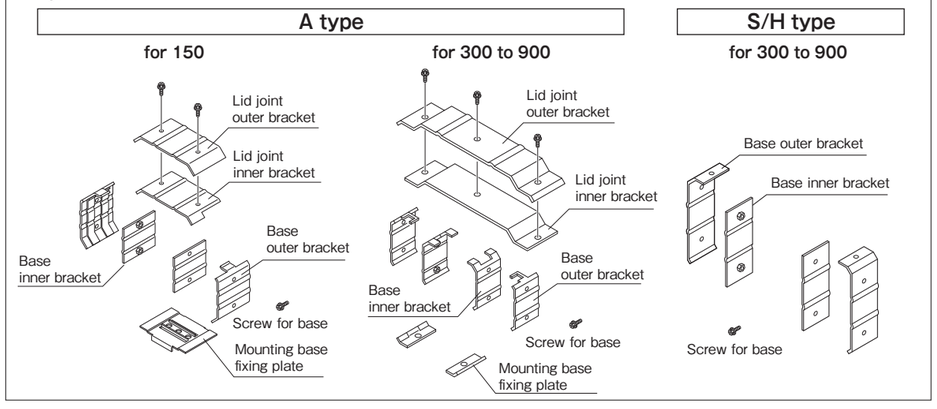
※ Also check the Design section before performing construction.
※ For the installation on the wall face, also check【2.3.3】and【2.3.4】Conditions for installation on the wall face.

QR code for downloading the specification drawing

RFJ

4.5.4-1 Product configuration

<Figure 4.5.4-1.1>



<Table 4.5.4-1.1> **Set contents**

Type	Size	Lid (outer)	Lid (inner)	Base (outer)	Base (inner bracket)	Screw for lid	Screw for base	Mounting base fixing plate
A type	150	1	1	2	2	2	4	1
	300/300H	1	1	2	2	3	4	2
	450/450H							
	600/600H							
	900/900H							
S/H type		0	0	2	2	0	4	0

<Table 4.5.4-1.2> **Screw specification**

Item	Specifications	Material
Screw for lid	Sems ⊕ hexagon bolt M6 × 20L	SUS
Screw for base	Sems ⊕ hexagon bolt M6 × 15L	SUS

4.5.4-2 Example of attaching RFJ (type A)

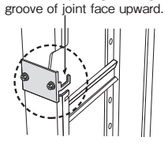
1 When cutting the main girder of duct, cut so that at least two sub girders remain. Otherwise the cut one cannot be used.
However for the open-close type, cutting resulting in reduction of sub girders is not possible.
Cut the lid to be the same size as the duct. Cut the bottom plate to be shorter than the duct by 20mm.

2 Make a 20mm clearance at the duct connection portion, and clamp and tighten the RD duct with the free joint (base part).

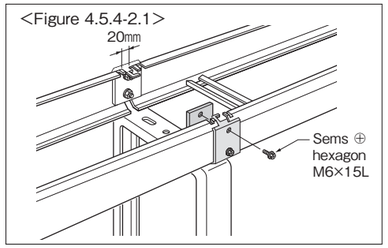
Note

<Figure 4.5.4-2.2>
In the vertical installation, attach the fixing joint so that its opening of the guide groove faces upward to prevent drop of the lid joint inner bracket.

※ 150 type is excluded.
※ Usable only for the installation directly on the wall face.



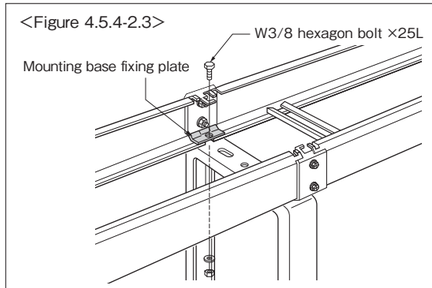
<Figure 4.5.4-2.1>



3 When setting the mounting base (RZ) at the joint portion, fix the RD duct to the mounting base by using the mounting base fixing bracket.

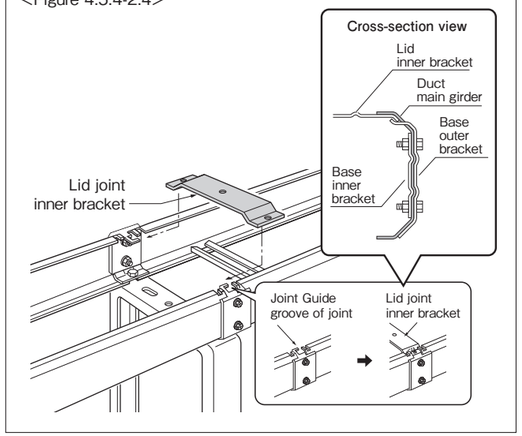
The mounting base fixing bracket is not needed when the mounting base is not set at the joint portion.

<Figure 4.5.4-2.3>



4 Perform piping, and then fit the lid joint inner bracket.
Insert the lid joint inner bracket between the base inner bracket and the upper portion of duct main girder.
For 300 to 900H, fit the nut part of the lid joint inner bracket in the guide groove of joint.

<Figure 4.5.4-2.4>

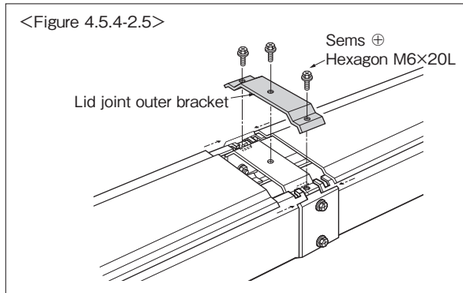


5 Finally set the lid of RD duct, and attach the lid joint outer bracket.

Note

In the installation on the wall face, treatment to prevent loosening of bolt is necessary.
For details, check【2.3】Installation method (on the wall face).

<Figure 4.5.4-2.5>



Notes on attachment

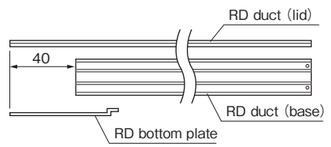
In connection to the elevation surface corner, connect the uncut side.
If attachment to the elevation surface corner is inevitable such as the case of lowering the position, attach it so that the cut side comes in the upper position.
For 150 type, the mounting base can be set only when it is connected to the duct. When connecting to the corner part, set the mounting base at the sub girder near the corner part.

4.5.4-3 Example of attaching RFJ (type S/H)

1 When cutting the duct, cut so that at least two sub girders remain. Otherwise the cut one cannot be used. However for the open-close type, cutting resulting in reduction of sub girders is not possible.
Cut the lid so that its length becomes longer than the main girder by 40mm. If holes for lid screws do not remain, perform drilling at the required positions.
Also, when using the bottom plate, cut it so that its length becomes longer than the main girder by 40mm.

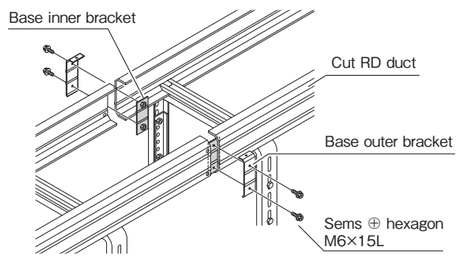
※ For ZA, for the portion where you performed cutting or processing work, perform the repair work by using the zinc rich paint (Zn-Al).

<Figure 4.5.4-3.1>
Length of lid and bottom plate (rough indication)



2 Make a 20mm clearance at the duct connection portion, and clamp and tighten the RD duct with the free joint (base part).

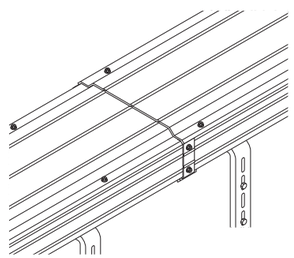
<Figure 4.5.4-3.2>



3 Perform piping, and then finally set the lid of duct.

※ For 600 to 900H, attach the lid reinforcing plate to the joint portion.

<Figure 4.5.4-3.3>



Notes on attachment

The mounting base cannot be set for the S/H type.
Set the mounting base at a near sub girder, etc.

4.5.5 RR Different-diameter joint (joint type)

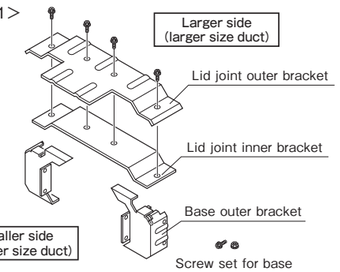
This is the joint for connecting different size parts.
This can be used in the installation on the floor and installation directly on the wall face.

※ Also check the Design section before performing construction.
※ For the installation on the wall face, also check 【2.3.3】 and 【2.3.4】 Conditions for installation on the wall face.

QR code for downloading the specification drawing
RR

4.5.5-1 Product configuration

<Figure 4.5.5-1.1>



<Table 4.5.5-1.2> Set contents

Size of larger side	Lid (outer)	Lid (inner)	Base (outer)	Screw for lid	Screw set for base
300	1	1	2 ＊	2	4
300H	1	1	2＊	3	4
450/450H				4	
600/600H				4	
900/900H				3	

＊ one each for the right and left

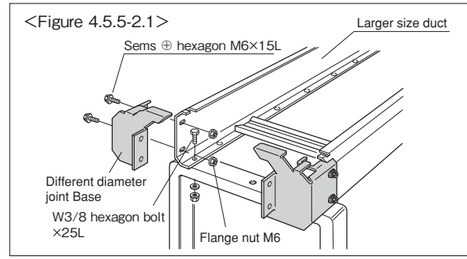
<Table 4.5.5-1.2> Screw specification

Item	Specifications	Material
Screw for lid	Sems ⊕ hexagon bolt M6 × 20L	SUS
Screw set for base	Sems ⊕ hexagon bolt M6 × 15L	SUS
	Flange nut M6	SUS

4.5.5-2 Example of attaching RR (joint type)

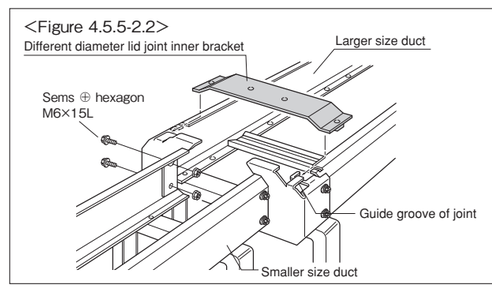
1 Set the mounting base at the hole (ϕ12) in the main girder of larger size duct. Then, attach the different diameter joint base to the main girder of duct.

<Figure 4.5.5-2.1>



2 Attach and fix the smaller size duct to the different diameter joint base.
Perform piping, and then fit the different diameter lid joint inner bracket in the guide groove of joint.

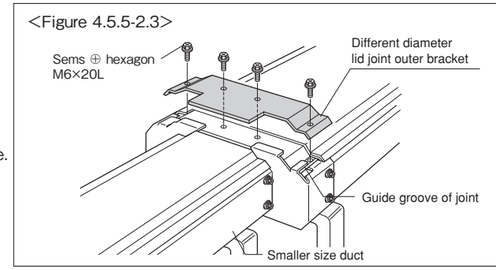
<Figure 4.5.5-2.2>



3 Finally set the lid of duct, and attach the different diameter lid joint outer bracket.

Note
In the installation on the wall face, treatment to prevent loosening of bolt is necessary.
For details, check 【4.3】 Installation on the wall face.

<Figure 4.5.5-2.3>



4.5.6 RR Different-diameter joint (plate type)

This is the joint for connecting different size parts.
Since this is the joint of duct-inserting type, the effective length of duct will become shorter by 20mm.

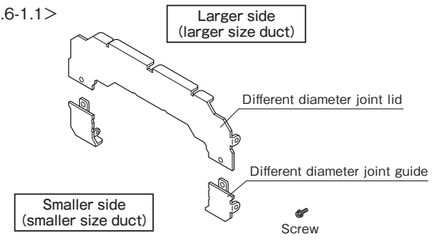
QR code for downloading the specification drawing

RR

※ Also check the Design section before performing construction.
※ For the installation on the wall face, also check【2.3.3】and【2.3.4】Conditions for installation on the wall face.

4.5.6-1 Product configuration

<Figure 4.5.6-1.1>



<Table 4.5.6-1.1> **Set contents**

Lid	Guide	Screw
1	2 (one each for the right and left)	8

<Table 4.5.6-1.2> **Screw specification**

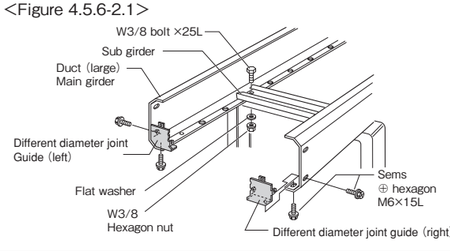
Item	Specifications	Material
Screw	Sems ⊕ hexagon bolt M6 × 15L	SUS

4.5.6-2 Example of attaching RR (plate type)

1 Fix the mounting base to the sub girder of duct.
Then, attach the different diameter joint guide to the main girder of duct (large) by using the supplied bolts.

Note
When fixing the mounting base to the main girder, fix it at between the sub girder of each duct and the joint portion.

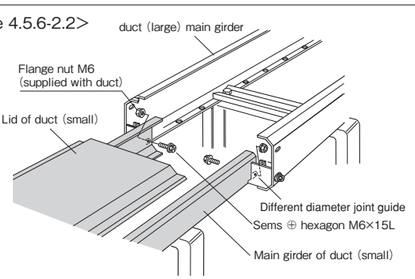
<Figure 4.5.6-2.1>



2 Fit the duct (small) into the different diameter joint guide.
Attach the main girder of duct (small) to the different diameter joint guide by using the bolts and nuts supplied with the duct (small).

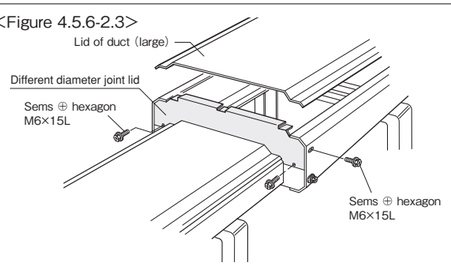
Note
For the height, the bottom line is to be aligned.
After the piping work is completed, set the lid of duct (small).

<Figure 4.5.6-2.2>



3 Finally, set the different diameter joint lid to the main girder of duct (large) and the different diameter joint guide by using the supplied bolts.

<Figure 4.5.6-2.3>



4.5.7 RXR different diameter joint for 900(H)-type corner parts

This is the different diameter joint dedicated for use with the 900(H) type corner parts.
Since this is the joint of duct-inserting type, the effective length of duct will become shorter by 20mm.

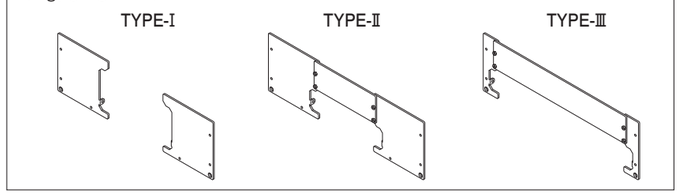
QR code for downloading the specification drawing

RXR

※ Also check the Design section before performing construction.
※ For the installation on the wall face, also check【2.3.3】and【2.3.4】Conditions for installation on the wall face.

4.5.7-1 Product configuration

<Figure 4.5.7-1.1>



<Table 4.5.7-1.1>
Set contents

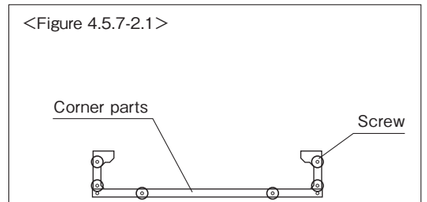
Type	Main unit
TYPE Ⅰ	2 (one each for the right and left)
TYPE Ⅱ	1
TYPE Ⅲ	

※ Use the screws supplied with the corner parts for attachment.

4.5.7-2 Example of attaching RXR

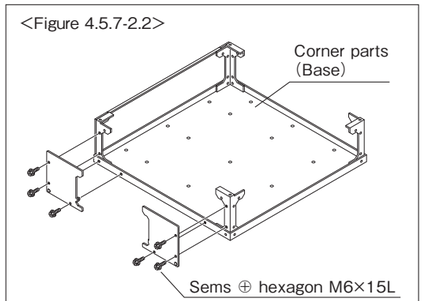
1 Remove screw from the corner part.
※ Locations (six locations) enclosed by ○

<Figure 4.5.7-2.1>



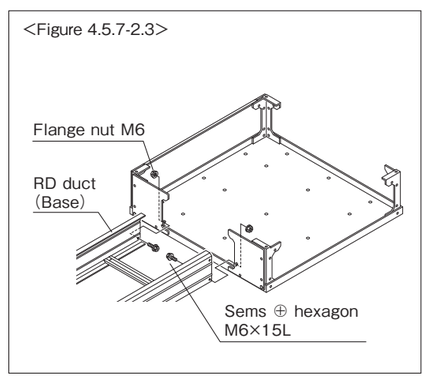
2 Fix RXR with screws.

<Figure 4.5.7-2.2>



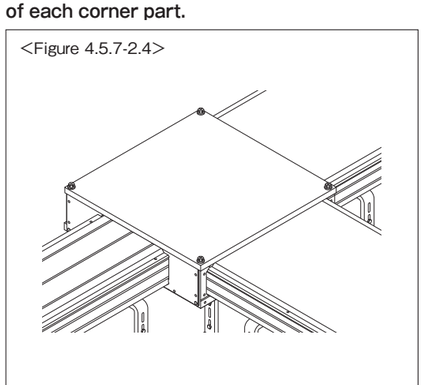
3 Fit in the duct, and fix it with screws.
※ Screws are supplied with the duct.

<Figure 4.5.7-2.3>



4 Perform piping, and then finally set the lid.
For construction of the corner part, see pages of each corner part.

<Figure 4.5.7-2.4>



4.5.8 RXC 900(H) type parts connection bracket

This is the joint for connecting the duct to the 900(H) type corner part except for RCF.
Since this is the joint of duct-inserting type, the effective length of duct will become shorter by 20mm.

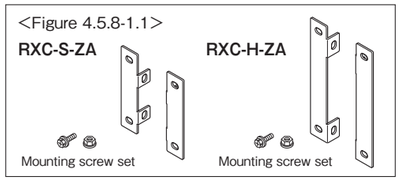
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RXC

4.5.8-1 Product configuration

<Figure 4.5.8-1.1>



<Table 4.5.8-1.1> Set contents

Size	Main unit (R)	Main unit (L)	Mounting screw set
900/900H	1	1	4

<Table 4.5.8-1.2> Screw specification

Item	Specifications	Material
Screw set for connection	Sems ⊕ hexagon bolt M6 × 15L	SUS
	Flange nut M6	SUS

4.5.8-2 Example of attaching RXC and example of connection by insertion

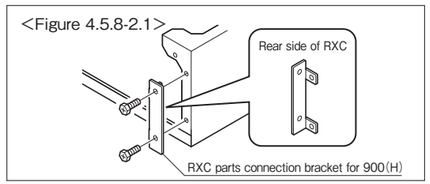
Use "900(H) parts connection bracket RXC" for connecting the duct to the corner part.
In a case where RXC etc. is not used, generally the duct is inserted into the corner part without using a joint.

※ Individually support the duct and corner part respectively so that no load is applied on another part.

Example of attaching RXC

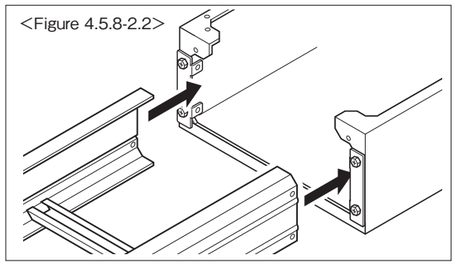
1 Attach RXC to the corner part.
For the mounting screws, use the screws pre-attached to each corner part by removing them once.

<Figure 4.5.8-2.1>



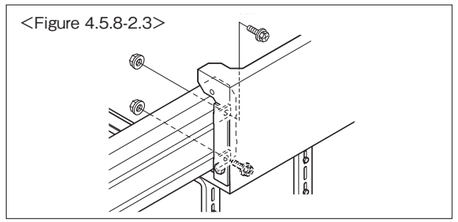
2 Insert the duct into the corner.

<Figure 4.5.8-2.2>



3 Fix RXC to the duct with screws, and perform piping.
After the piping work is completed, attach the lid reinforcing plate (RXH-900 etc.) supplied with the corner part and set the lid etc.
For construction of the corner part, see pages of each corner part.

<Figure 4.5.8-2.3>



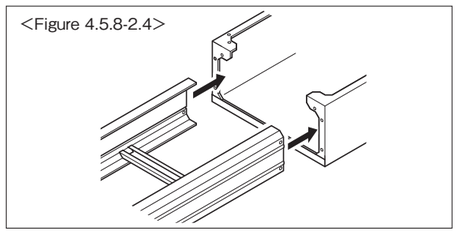
Reference : Example of connection by insertion

Insert the duct into the corner part by 10 mm or more to connect them.
(Slide adjustment by 10mm to 40mm (plane surface) or 30mm (elevation surface) is possible.)

※ Individually support the duct and corner part respectively so that no load is applied on another part.

After the piping work is completed, attach the supplied lid reinforcing plate (RXH-900 etc.).

<Figure 4.5.8-2.4>



4.5.9 RXJ joint for 900(H) type corner parts

This is the joint RXJ for connecting 900(H) type corner parts each other except for RCF.
For the constructional reason, some gap is formed.

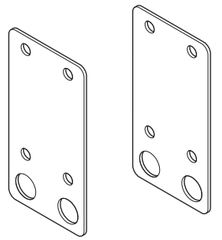
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RXJ

4.5.9-1 Product configuration

<Figure 4.5.9-1.1>



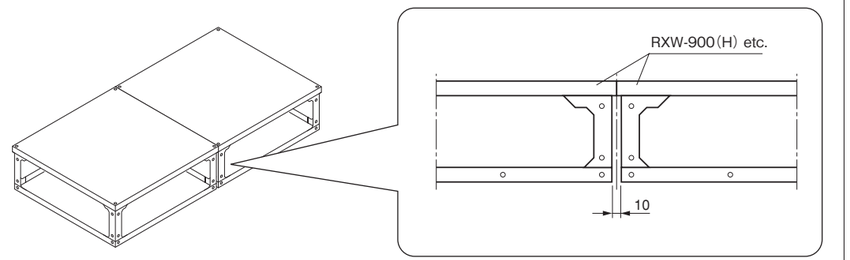
<Table 4.5.9-1.1> Set contents

Size	Main unit
900/900H	2

4.5.9-2 Example of attaching RXJ

1 Make the joint portions of RX(W)s butt each other.

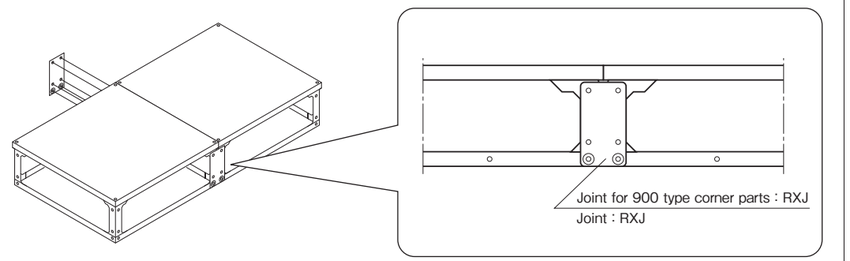
<Figure 4.5.9-2.1> Example of jointing RX(W)s each other



2 Joint the corner parts (RX(W)s in this example) by fixing RXJs to the corner parts from the both sides.

Note For the top surface of the connected box-type corner parts, apply caulking or puttying for waterproofing.

<Figure 4.5.9-2.2>



4.5.10 RSS sliding joint

This is the connection length adjustable joint.
This can be used when the clearance between ducts or corner parts is 20mm to 320mm.

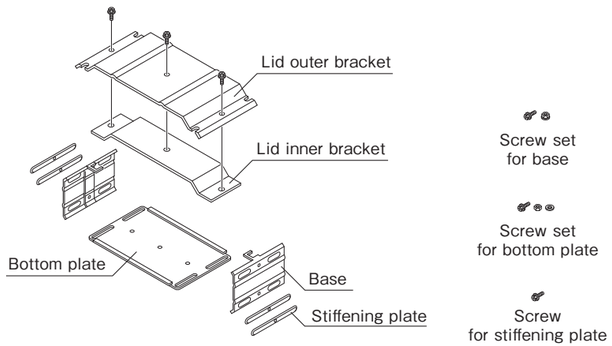
※ 900(H) type corner part is excluded.
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RSS

4.5.10-1 Product configuration

<Figure 4.5.10-1.1>



<Table 4.5.10-1.1> Set contents

Size	Lid (outer)	Lid (inner)	Base	Bottom plate	Stiffening plate	Screw for lid	Screw set for base	Screw set for bottom plate	Screw set for stiffening plate
300/300H	1	1	2 (one each for the right and left)	1	4	3	8	4	4
450/450H									
600/600H									
900/900H									

<Table 4.5.10-1.2> Screw specification

Item	Specifications	Material
Screw for lid	Sems ⊕ hexagon bolt M6 × 20L	SUS
Screw set for base	Sems ⊕ hexagon bolt M6 × 15L	SUS
	Flange nut M6	SUS
Screw set for bottom plate	Sems ⊕ hexagon bolt M6 × 15L	SUS
	Hexagon nut M6	SUS
	Flat washer M6	SUS
Screw for stiffening plate	Sems ⊕ hexagon bolt M6 × 20L	SUS

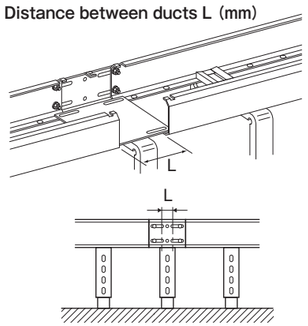
4.5.10-2 Example of attaching RSS

1 Attach or temporarily place the ducts or corner parts, and check the dimension of level difference of the PS takeout portion (H) (level difference between the inner bottom surface of flange of the wall plate RWP and the bottom surface of duct), or check the distance between the ducts or corner parts (L). Based on this value, select the appropriate sliding joint.

Sliding joint model number/item	Distance between ducts L (mm)
RSS-300-1/450-1/600-1/900-1	20 to 120
RSS-300-2/450-2/600-2/900-2	120 to 220
RSS-300-3/450-3/600-3/900-3	220 to 320
RSS-300H-1/450H-1/600H-1/900H-1	20 to 120
RSS-300H-2/450H-2/600H-2/900H-2	120 to 220
RSS-300H-3/450H-3/600H-3/900H-3	220 to 320

※ For the dimension of level difference, see【3.5】Corner.
※ If the distance L exceeds 320mm, see【3.3.5】RSS sliding joint.

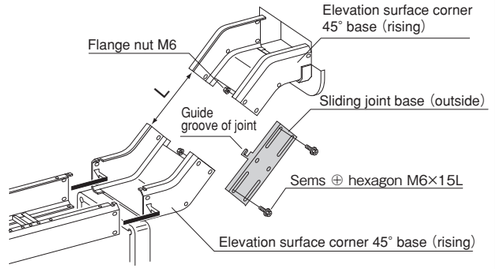
<Figure 4.5.10-2.1>
Distance between ducts L (mm)



Construction
How to proceed construction
PS and wall penetration
Mounting base
Duct (straight pipe)
Construction procedure
Connection
Corner parts
Bottom plate
Others

2 Attach and fix the sliding joint base to the base part of duct or corner part.
Be sure to attach it so that the guide groove of sliding joint base comes at the center of the clearance.

<Figure 4.5.10-2.2>

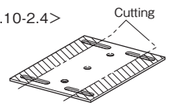


3 Attach the bottom plate of sliding joint and the mounting base.

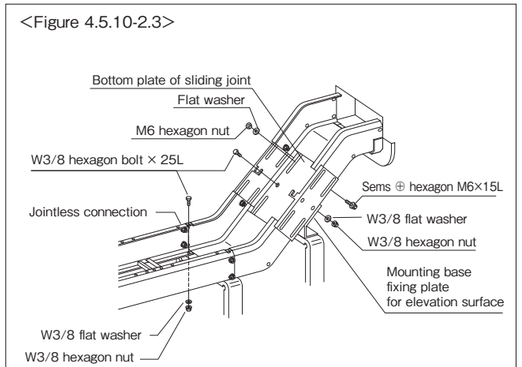
Notes on using the bottom plate of sliding joint

The bottom plate of sliding joint cannot be attached to a duct other than the straight duct of 2m and 1m, or a corner part other than the elevation surface corner 45°.
If the bottom plate of sliding joint needs to be attached inevitably, processing the bottom plate of sliding joint is required. Also in this case, supporting the bottom plate by the mounting base is necessary.
※When using as the walkway, cutting is not allowed.

<Figure 4.5.10-2.4>

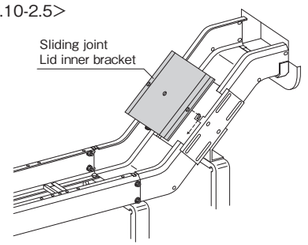


<Figure 4.5.10-2.3>



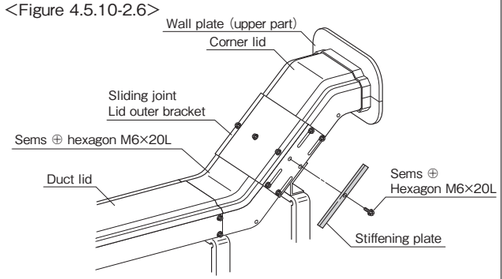
4 Perform piping, and then insert the sliding joint lid inner bracket between the guide groove of joint and the upper portion of duct main girder.

<Figure 4.5.10-2.5>



5 Set the lid of duct, and then finally attach the sliding joint lid outer bracket and the stiffening plate.

<Figure 4.5.10-2.6>



Note

In the installation on the wall face, treatment to prevent loosening of bolt is necessary.
For details, check【4.3】Installation on the wall face.

4.6 Corner parts

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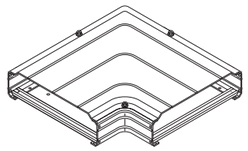
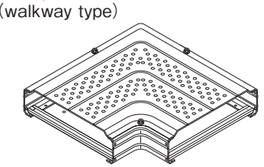
4.6.1 Corner part list

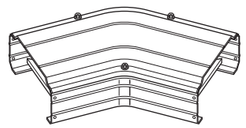
RE plane surface corner 90°



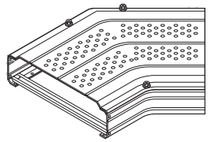
REW plane surface corner 90° (walkway type)



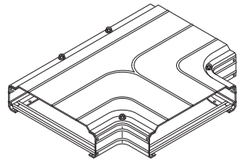
RF plane surface corner 45°



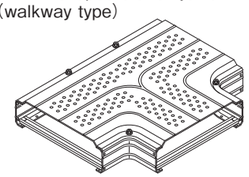
RFW plane surface corner 45° (walkway type)



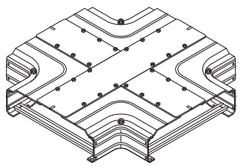
RT T-shaped branch joint



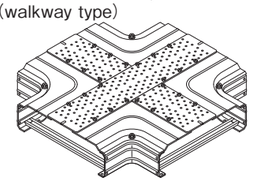
RTW T-shaped branch joint (walkway type)



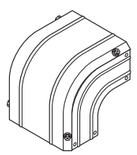
RX cross branch joint



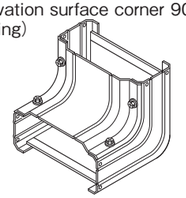
RXW cross branch joint (walkway type)



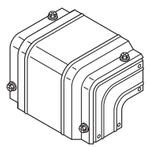
RC elevation surface corner 90° (150)



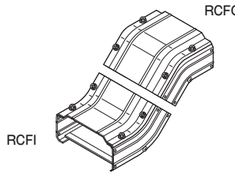
Elevation surface corner 90° (rising)



RCO elevation surface corner 90° (falling)



RCF elevation surface corner 45°



4.6.2 RE plane surface corner 90°

Plane surface type 90° elbow.
Note that the attachment method differs depending on the size.

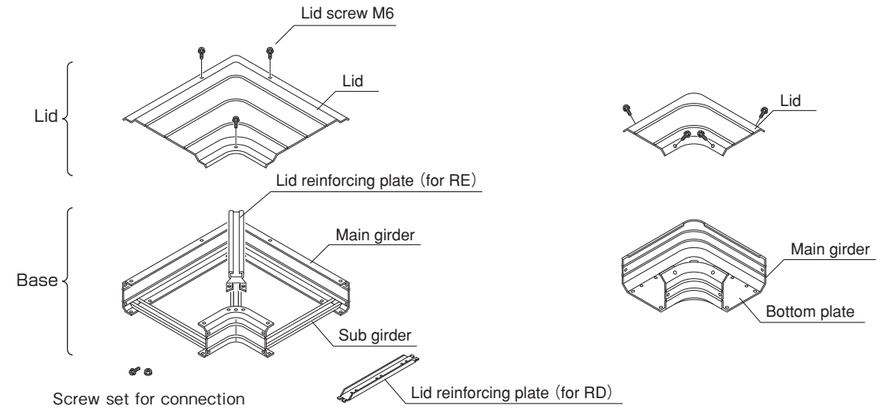
QR code for downloading the specification drawing

RE

※ Also check the Design section before performing construction.

4.6.2-1 Product configuration

<Figure 4.6.2-1.1>



<Table 4.6.2-1.1> **Set contents**

Type	Base	Lid	Bottom plate	Screw (pieces)	Screw set for connection	Lid reinforcing plate (for RE/for RD)
150	1	1	1	4	0	0/0
300/300H	1	1	0	3	4	0/0
450/450H	1	1	0	3	4	0/0
600/600H	1	1	0	3	4	1/1

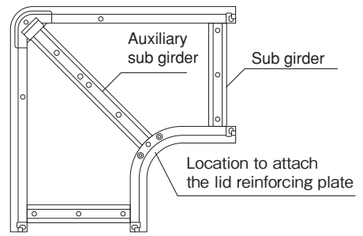
<Table 4.6.2-1.2> **Screw specification**

Name of screw	Specification	Material
Lid screw	Sems ⊕ hexagon M6×15L	SUS
Screw set for connection	Sems ⊕ hexagon M6×15L	SUS
	Flange nut M6	SUS

4.6.2-3 Base top view

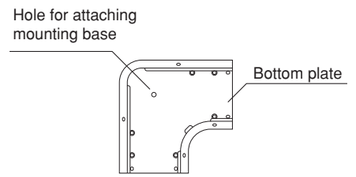
<Figure 4.6.2-3.1>

RE base (300 to 600H)



RE base (150)

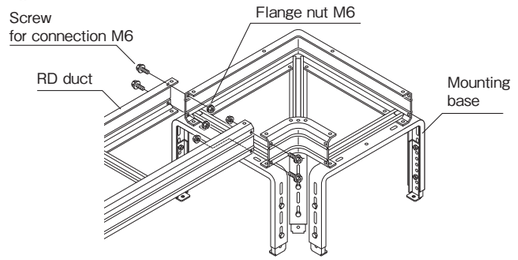
※ The bottom plate is standardly included.



4.6.2-3 Example of assembling and attaching RE (1) ⟨300 to 600H⟩

1 Temporarily place RE on the mounting base, and connect RE and the duct.

<Figure 4.6.2-3.1>



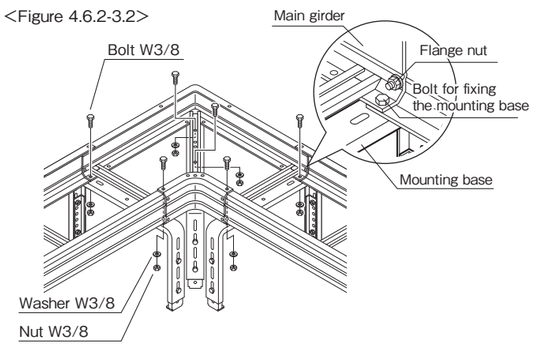
2 Fix RE to the mounting base.

※ Bolts, nuts, and washers for fixing the mounting base are supplied with the mounting base.

Perform piping, and then finally attach the lid reinforcing plate* and set the lid.

* 600/600H type only
※ For the jointless connection or when free joint S/H type is used, attach the lid reinforcing plate also to the connection portion. (600/600H type only)

<Figure 4.6.2-3.2>

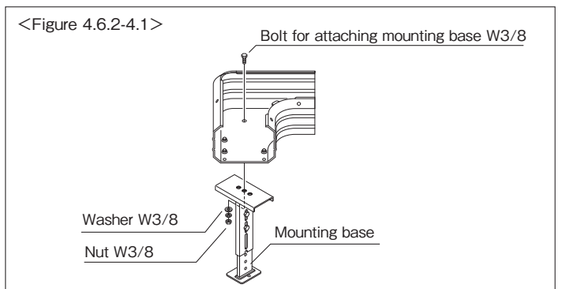


4.6.2-4 Example of assembling and attaching RE (2) 150

1 Attach RE to the mounting base.

※ Bolts, nuts, and washers for fixing the mounting base are supplied with the mounting base.

<Figure 4.6.2-4.1>

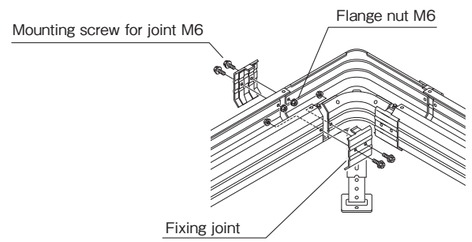


2 Connect RE and the duct by using the fixing joint.

Reference 【3.3.3】 RSJ fixing joint

Perform piping, and then finally set the lid.

<Figure 4.6.2-4.2>



4.6.3 REW plane surface corner 90° (walkway type)

Plane surface type 90° elbow (walkway type).
Note that the reinforcing plate attachment location differs depending on the size.

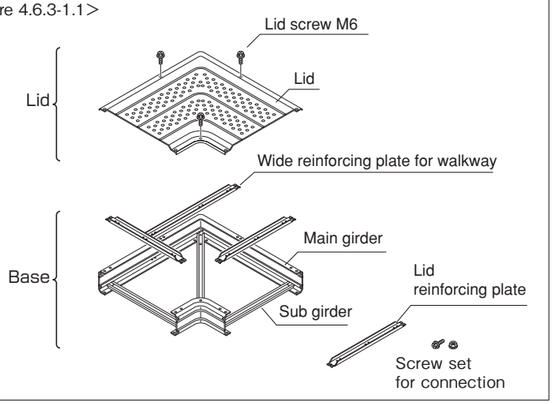
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

REW

4.6.3-1 Product configuration

<Figure 4.6.3-1.1>



<Table 4.6.3-1.1> Set contents

Type	Lid	Base	Bottom plate
300/300H	1	1	0
450/450H	1	1	0
600/600H	1	1	0

Type	Lid screw	Screw set for connection
300/300H	3	4
450/450H	3	4
600/600H	3	4

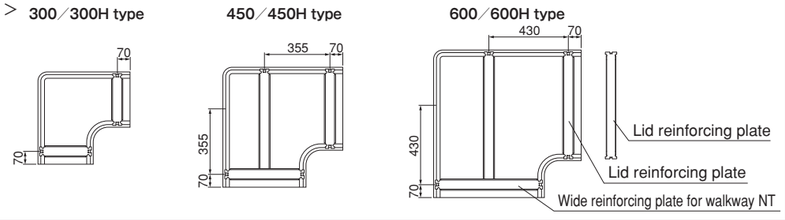
Type	Wide reinforcing plate for walkway NT	Lid reinforcing plate
300/300H	0	2
450/450H	1	1
600/600H	1	2

<Table 4.6.3-1.2> Screw specification

Name of screw	Specification	Material
Lid screw	Sems ⊕ hexagon M6×15L	SUS
Screw set for connection	Sems ⊕ hexagon M6×15L	SUS
	Flange nut M6	SUS

4.6.3-2 Location to attach the reinforcing plate

<Figure 4.6.3-2.1>

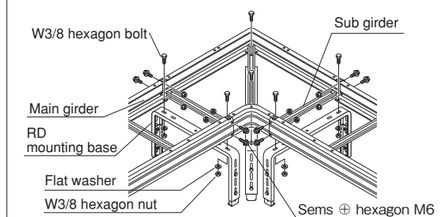


4.6.3-3 Example of attaching REW

1 Fit in the main girders each other with an overlap of 20mm, fix them to the mounting base, and then fix the overlapped portions by screwing from the sides.

Warning Be sure to set at least three mounting bases.

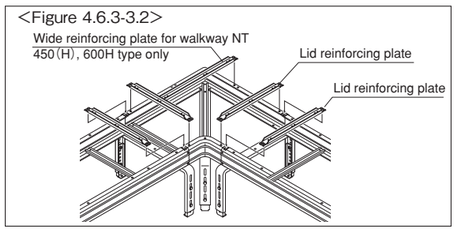
<Figure 4.6.3-3.1>



2 Perform piping, and then attach each reinforcing plate to the locations as shown in the table "Location to attach the reinforcing plate" above.
Set the lid of plane surface corner 90° walkway type.

※ For beautiful finish, set the lid of plane surface corner 90° walkway type first, and then set the lid of straight duct.
※ For the jointless connection or when free joint S/H type is used, attach the lid reinforcing plate to the connection portion. (600/600H type only)

<Figure 4.6.3-3.2>



4.6.4 RF plane surface corner 45°

Plane surface type 45° elbow.
Note that the attachment method differs depending on the size.

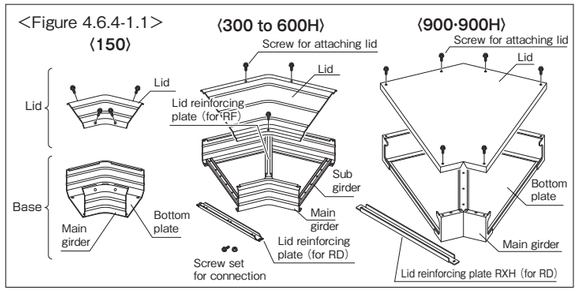
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RF

4.6.4-1 Product configuration

<Figure 4.6.4-1.1>



<Table 4.6.4-2.1> Set contents

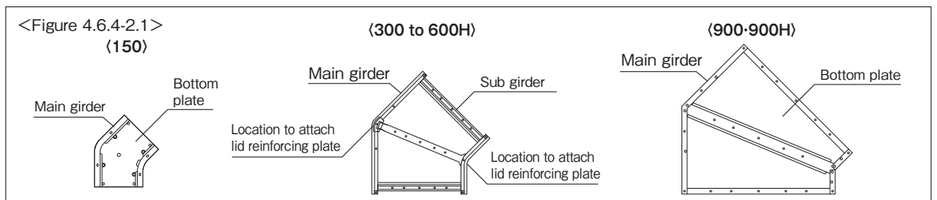
Type	Base	Lid	Bottom plate	Lid reinforcing plate (for RF/for RD)	Lid screw	Screw set for connection
150	1	1	1	0/0	4	0
300/300H	1	1	0	0/0	3	4
450/450H	1	1	0	0/0	3	4
600/600H	1	1	0	1/1	3	4
900/900H	1	1	2	0/2	6	0

<Table 4.6.4-2.2> Screw specification

Name of screw	Specification	Material
Lid screw	Sems ⊕ hexagon M6×15L	SUS
Screw set for connection	Sems ⊕ hexagon M6×15L	SUS
	Flange nut M6	SUS

4.6.4-2 Location to attach the lid reinforcing plate (base top view)

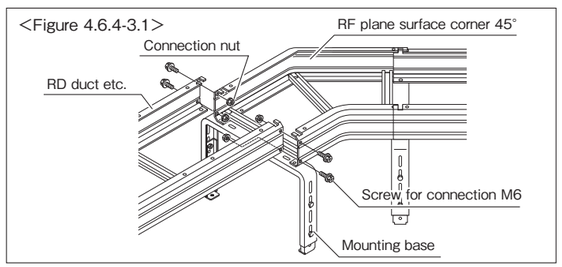
<Figure 4.6.4-2.1>



4.6.4-3 Example of assembling and attaching RF (1) <300 to 600H>

1 **Temporarily place the plane surface corner 45° RF, and then connect the RD duct.**

<Figure 4.6.4-3.1>



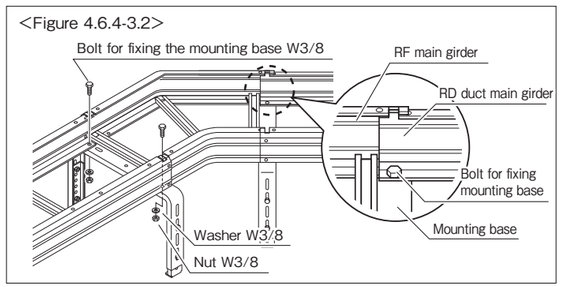
2 **Fix the connection portion to the mounting base.**

※ Bolts, nuts, and washers for fixing the mounting base are supplied with the mounting base.

Perform piping, and then finally attach the lid reinforcing plate* and the lid.

* 600/600H type only
※ For the jointless connection or when free joint S/H type is used, attach the lid reinforcing plate also to the connection portion. (600/600H type only)

<Figure 4.6.4-3.2>

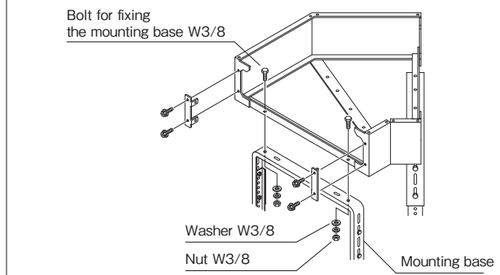


4.6.4-4 Example of assembling and attaching RF (2) <900 to 900H>

1 **Set the mounting base at the bottom plate of plane surface corner 45° RF.**

※ Bolts, nuts, and washers for fixing the mounting base are supplied with the mounting base.

<Figure 4.6.4-4.1>



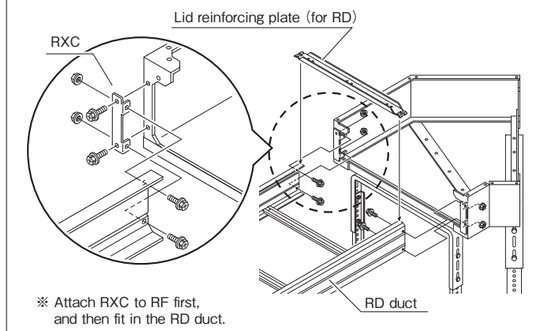
2 **Attach the RXC parts connection bracket for 900(H) to the plane surface corner 45° RF, and then fit in the RD duct and fix RXC.**

Reference 【4.5.8】 RXC 900(H) type parts connection bracket

Perform piping, and then finally attach the lid reinforcing plate* and the lid.

*…Standardly supplied with 900/900H.

<Figure 4.6.4-4.2>

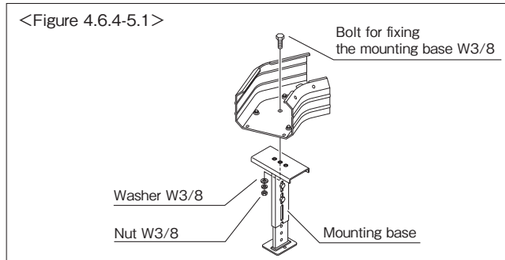


4.6.4-5 Example of assembling and attaching RF (3) <150>

1 **Set the mounting base at the bottom plate of plane surface corner 45° RF.**

※ Bolts, nuts, and washers for fixing the mounting base are supplied with the mounting base.

<Figure 4.6.4-5.1>



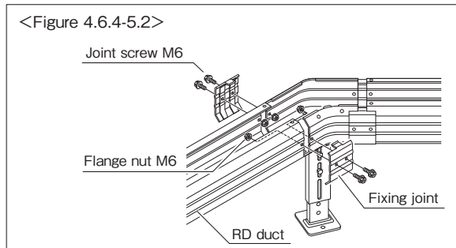
2 **Attach the duct to the plane surface corner 45° RF by using the fixing joint.**

Reference 【4.5.3】 RSJ fixing joint

Perform piping, and then finally set the lid.

※ In the installation on the wall face, treatment to prevent loosening of bolt is necessary. For details, check 【4.3】 Installation on the wall face.

<Figure 4.6.4-5.2>



4.6.5 RFW plane surface corner 45° (walkway type)

Plane surface type 45° elbow (walkway type).
Note that the reinforcing plate attachment location differs depending on the size.

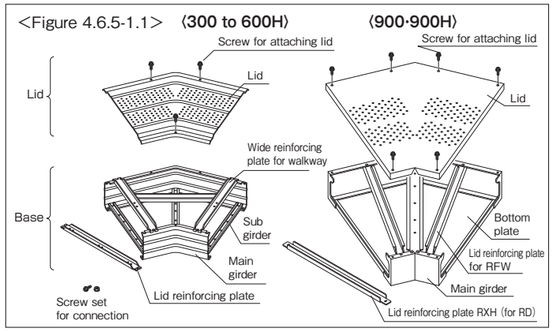
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RFW

4.6.5-1 Product configuration

<Figure 4.6.5-1.1> 〈300 to 600H〉 〈900·900H〉



<Table 4.6.5-1.1> Set contents

Type	Lid	Base	Bottom plate	Lid screw	Screw set for connection	Screw for reinforcing plate
300~450H	1	1	0	3	4	0
600/600H	1	1	0	3	4	0
900/900H	1	1	1	6	0	8

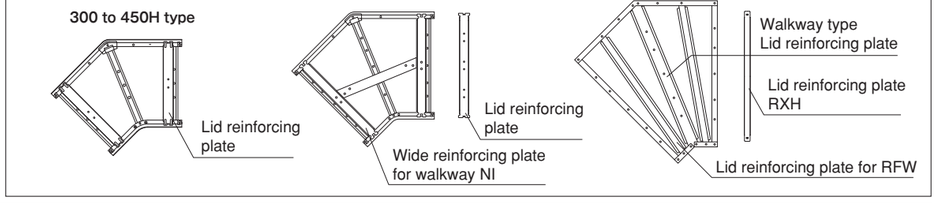
Type	Wide reinforcing plate for walkway NI	Lid reinforcing plate for walkway	Lid reinforcing plate for RFW	Lid reinforcing plate
300~450H	0	0	0	2
600/600H	1	0	0	1
900/900H	0	1	2	2

<Table 4.6.5-1.2> Screw specification

Name of screw	Specification	Material
Lid screw	Sems ⊕ hexagon M6×15L	SUS
Screw set for connection	Sems ⊕ hexagon M6×15L	SUS
	Flange nut M6	SUS
Screw for reinforcing plate	⊕ Countersunk screw M6 30L	SUS

4.6.5-2 Location to attach the reinforcing plate

<Figure 4.6.5-2.1>

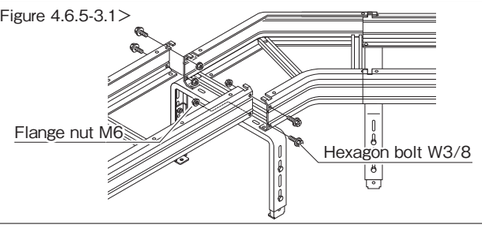


4.6.5-3 Example of attaching RFW (1) 300 to 600H type

1 Fit in the base main girders each other with an overlap of 20 mm, fix them to the mounting base, and then fix the overlapped portions by screwing from the sides.

Warning Be sure to set at least two mounting bases.

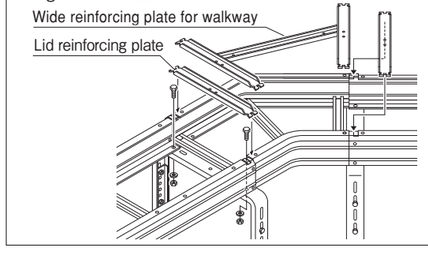
<Figure 4.6.5-3.1>



2 Perform piping, and then attach each reinforcing plate to the locations as shown in the table "Location to attach the reinforcing plate" above.
Set the lid of plane surface corner 45° walkway type.

※ For beautiful finish, set the lid of plane surface corner 45° walkway type first, and then set the lid of straight duct.
※ For the jointless connection or when free joint S/H type is used, attach the lid reinforcing plate also to the connection portion. (600/600H type only)

<Figure 4.6.5-3.2>

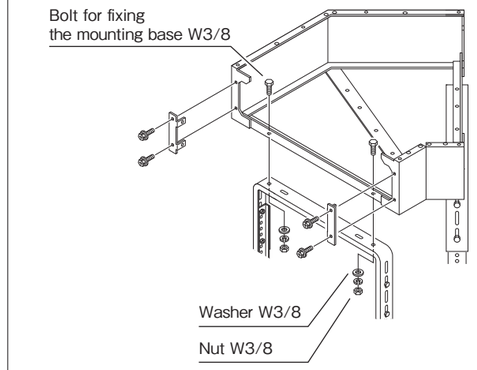


4.6.5-4 Example of attaching RFW (2) 900/900H type

1 Set the mounting base at the bottom plate of plane surface corner 45° (walkway type) RFW.

※ Bolts, nuts, and washers for fixing the mounting base are supplied with the mounting base.

<Figure 4.6.5-4.1>

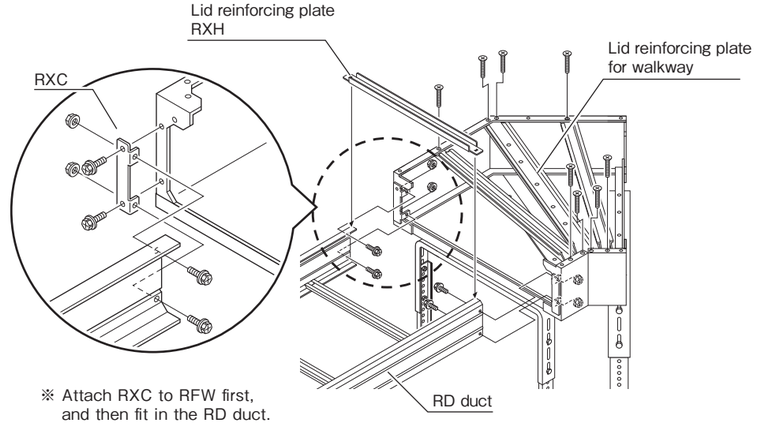


2 Attach the RXC parts connection bracket for 900(H) to RFW, and then fit in the RD duct and fix RXC.

Reference 【4.5.8】 RXC 900(H) type parts connection bracket

Perform piping, and then finally attach each reinforcing plate and the lid.

<Figure 4.6.5-4.2>



※ Attach RXC to RFW first, and then fit in the RD duct.

4.6.6 RT T-shaped branch joint

Plane surface type branching corner part.
Note that the attachment method differs depending on the size.

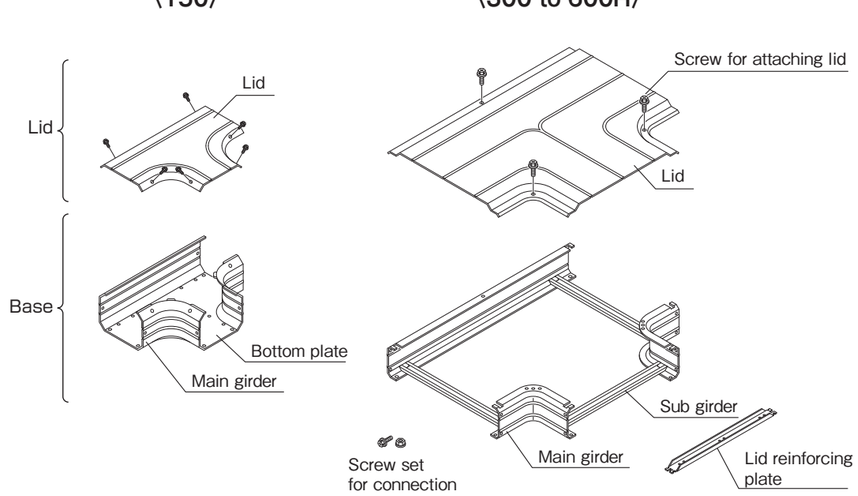
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RT

4.6.6-1 Product configuration

<Figure 4.6.6-1.1>



<Table 4.6.6-1.1> **Set contents**

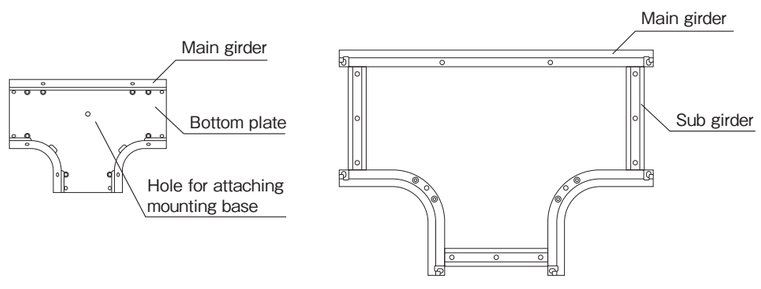
Type	Base	Lid	Bottom plate	Lid reinforcing plate	Screw for Lid	Screw set for connection
150	1	1	1	0	6	0
300/300H	1	1	0	0	4	4
450/450H	1	1	0	0	4	4
600/600H	1	1	0	2	3	4

<Table 4.6.6-1.2> **Screw specification**

Name of screw	Specifications	Material
Lid screw	Sems ⊕ hexagon M6×15L	SUS
Screw set for connection	Sems ⊕ hexagon M6×15L	SUS
	Flange nut M6	SUS

4.6.6-2 Base top view

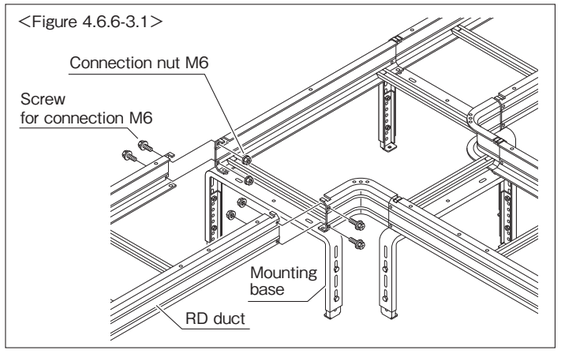
<Figure 4.6.6-2.1>



4.6.6-3 Example of assembling and attaching RT (1) <300 to 600H>

1 **Temporarily place RT, and connect the duct.**

<Figure 4.6.6-3.1>



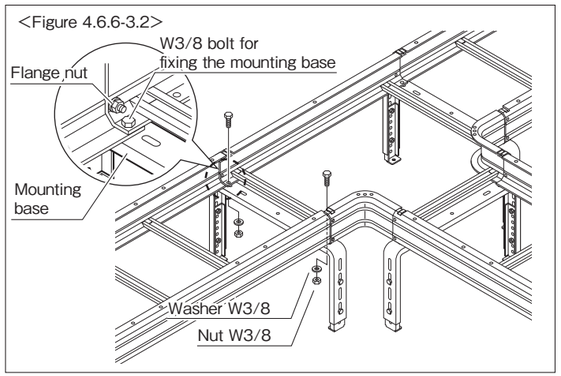
2 **Fix the connection portion to the mounting base.**

※ Bolts, nuts, and washers for fixing the mounting base are supplied with the mounting base.

Perform piping, and then finally attach the lid reinforcing plate* and set the lid.

* 600/600H type only
※ For the jointless connection or when free joint S/H type is used, attach the lid reinforcing plate also to the connection portion. (600/600H type only)

<Figure 4.6.6-3.2>

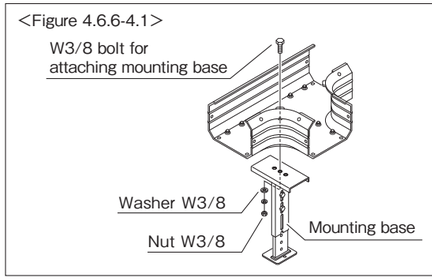


4.6.6-4 Example of assembling and attaching RT (2) <150>

1 **Set the mounting base.**

※ Bolts, nuts, and washers for fixing the mounting base are supplied with the mounting base.

<Figure 4.6.6-4.1>

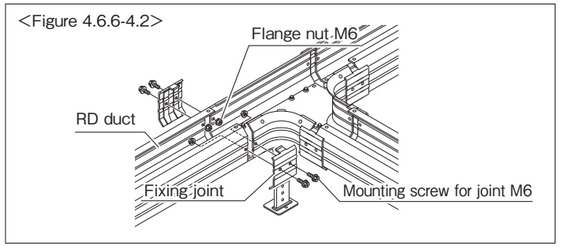


2 **Connect the RD duct to RT by using the fixing joint.**

Reference 【4.5.3】 RSJ fixing joint

Perform piping, and then finally set the lid.

<Figure 4.6.6-4.2>



4.6.7 RTW T字型分岐ジョイント(歩路用)

Plane surface type branching corner part (walkway type).
Note that the reinforcing plate attachment location differs depending on the size.

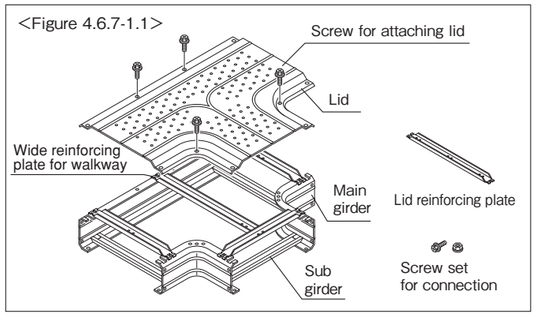
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RTW

4.6.7-1 RTW T-shaped branch joint (walkway type)

<Figure 4.6.7-1.1>



<Table 4.6.7-1.1> **Set contents**

Type	Lid	Base	Bottom plate	Lid screw
300/300H	1	1	0	4
450/450H	1	1	0	4
600/600H	1	1	0	3

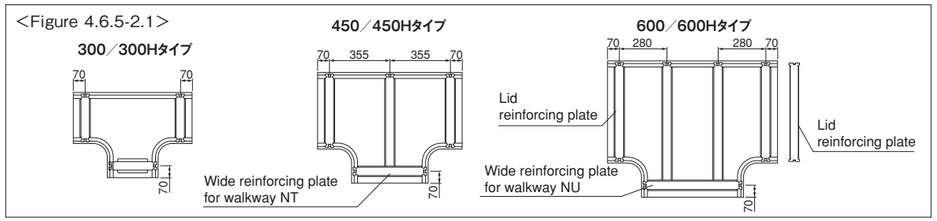
Type	Screw set for connection	Wide reinforcing plate for walkway NT	Wide reinforcing plate for walkway NU	Lid reinforcing plate
300/300H	8	0	0	3
450/450H	8	1	0	2
600/600H	8	0	2	4

<Table 4.6.7-1.2> **Screw specification**

Name of screw	Specifications	Material
Lid screw	Sems ⊕ hexagon M6×15L	SUS
Screw set for connection	Sems ⊕ hexagon M6×15L	SUS
	Flange nut M6	SUS

4.6.7-2 Location to attach the reinforcing plate

<Figure 4.6.5-2.1>

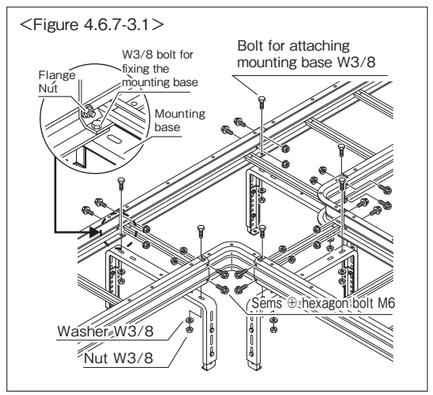


4.6.7-3 Example of attaching RTW

1 **Fit in the base main girders each other with an overlap of 20mm, fix them to the mounting base, and then fix the overlapped portions by screwing from the sides.**

Warning Be sure to set at least three mounting bases.

<Figure 4.6.7-3.1>

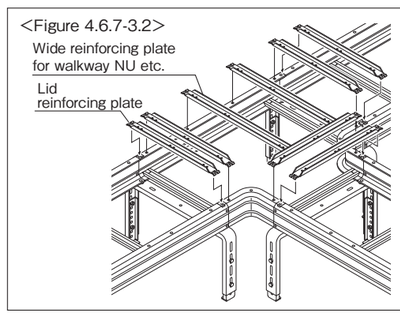


2 **Perform piping, and then attach each reinforcing plate to the locations as shown in the table "Location to attach the reinforcing plate" above. Set the lid of T-shaped branch joint (walkway type).**

※ For beautiful finish, set the lid of T-shaped branch joint (walkway type) first, and then set the lid of straight duct.

※ For the jointless connection or when free joint S/H type is used, attach the lid reinforcing plate to the connection portion. (600/600H type only)

<Figure 4.6.7-3.2>



4.6.8 4.6.8 RXN/RX Cross branch joint

Plane surface type branching corner part.
Note that the attachment method differs depending on the size.

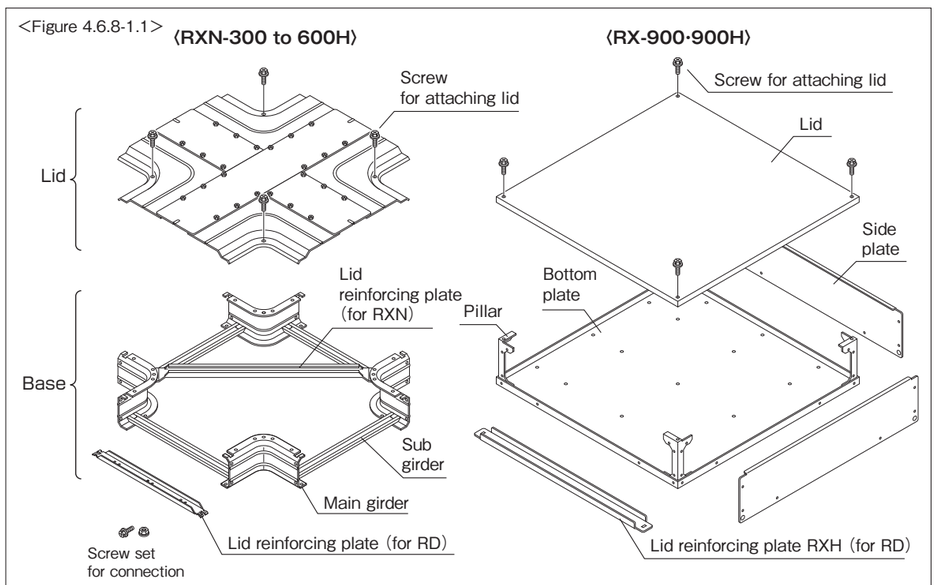
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RXN RX

4.6.8-1 Product configuration

<Figure 4.6.8-1.1>



<Table 4.6.8-1.1> **Set contents**

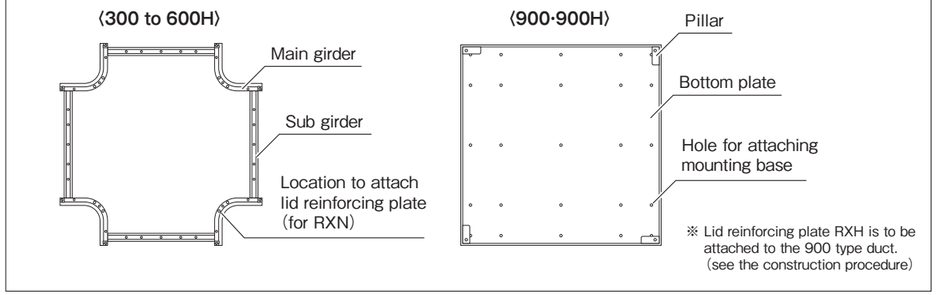
Type	Lid	Base	Bottom plate	Side plate	Lid reinforcing plate for RD/RXN	Lid screw	Side plate screw	Screw set for connection
300/300H	1	1	0	0	0/0	4	0	12
450/450H	1	1	0	0	0/1	4	0	12
600/600H	1	1	0	0	3/1	4	0	12
900/900H	1	1	1	2	4/0	4	24	0

<Table 4.6.8-1.2> **Screw specification**

Name of screw	Specifications	Material
Lid screw	Sems ⊕ hexagon M6×15L	SUS
Screw set for connection	Sems ⊕ hexagon M6×15L	SUS
	Flange nut M6	SUS

4.6.8-2 Base top view

<Figure 4.6.8-2.1>

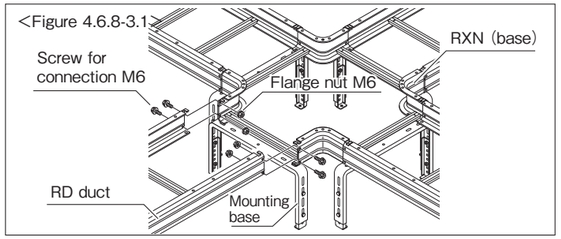


※ Lid reinforcing plate RXH is to be attached to the 900 type duct. (see the construction procedure)

4.6.8-3 Example of attaching RXN <300 to 600H>

1 Temporarily place the mounting base, and connect RXN and the duct.

<Figure 4.6.8-3.1>



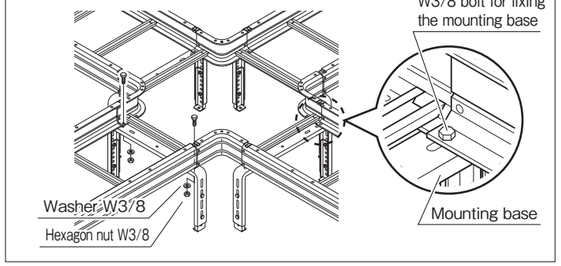
2 Fix RXN to the mounting base.

※ Bolts, nuts, and washers for fixing the mounting base are supplied with the mounting base.
※ When using the different diameter joint, set the mounting base at the sub girder.

Perform piping, and then finally attach the lid reinforcing plate* and set the lid.

* 600/600H type only
※ For the jointless connection or when free joint S/H type is used, attach the lid reinforcing plate also to the connection portion. (600/600H type only)

<Figure 4.6.8-3.2>

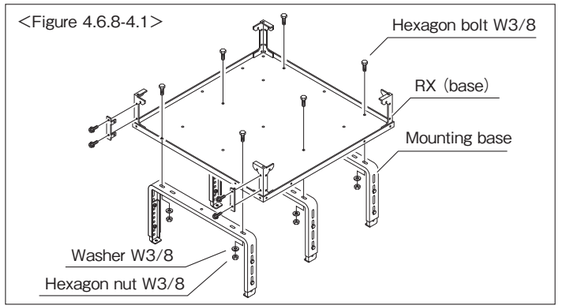


4.6.8-4 Example of assembling and attaching RZ <900/900H>

1 Set the mounting base at RX.

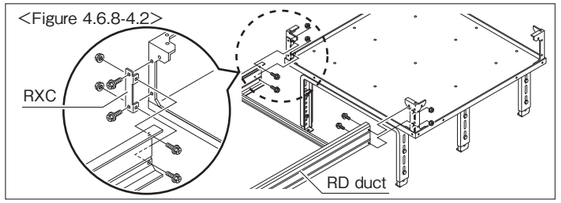
※ Bolts, nuts, and washers for fixing the mounting base are supplied with the mounting base.

<Figure 4.6.8-4.1>



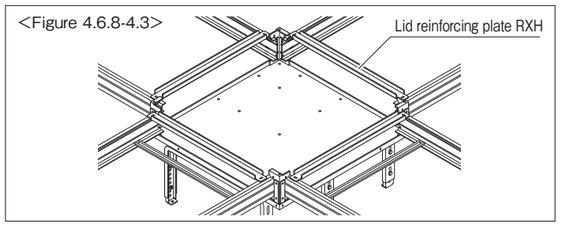
2 Attach the RD duct to the base.

<Figure 4.6.8-4.2>



3 Perform piping, and then if the branch duct is 900 or 900H, attach the supplied lid reinforcing plate RXH to the duct end, and finally set the lid.

<Figure 4.6.8-4.3>



4.6.9 RXNW/RXW cross branch joint (walkway type)

Plane surface type branching corner part.
Note that the reinforcing plate attachment location differs depending on the size.

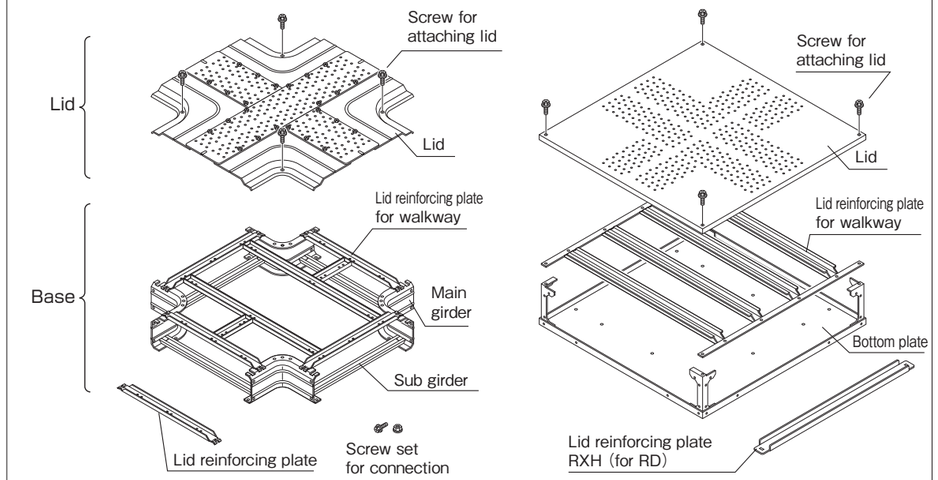
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RXNW RXW

4.6.9-1 Product configuration

<Figure 4.6.9-1.1>



<Table 4.6.9-1.1> **Set contents**

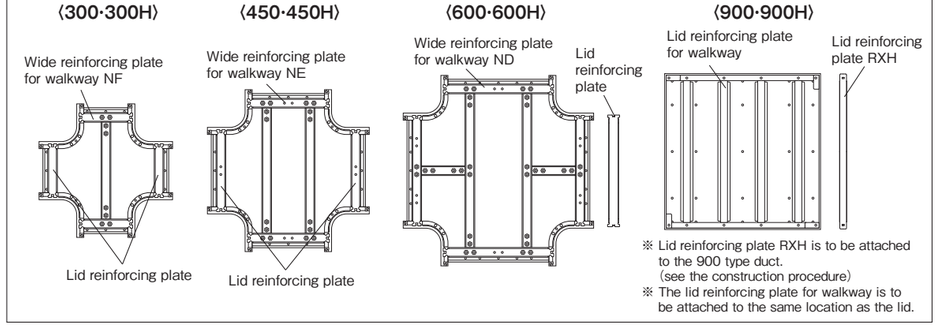
Type	Lid	Base	Bottom plate	Side plate	Lid reinforcing plate	Lid screw	Screw set for connection	Side plate screw	Wide reinforcing plate for walkway ND	Wide reinforcing plate for walkway NE	Wide reinforcing plate for walkway NF	Lid reinforcing plate for walkway
300/300H	1	1	0	0	2	4	12	0	0	0	1	0
450/450H	1	1	0	0	2	4	12	0	0	1	0	0
600/600H	1	1	0	0	3	4	12	0	1	0	0	0
900/900H	1	1	1	2	4	4	0	24	0	0	0	1

<Table 4.6.9-1.2> **Screw specification**

Name of screw	Specifications	Material
Lid screw	Sems ⊕ hexagon M6×15L	SUS
Screw set for connection	Sems ⊕ hexagon M6×15L	SUS
	Flange nut M6	SUS

4.6.9-2 Location to attach the lid reinforcing plate (base top view)

<Figure 4.6.9-2.1>

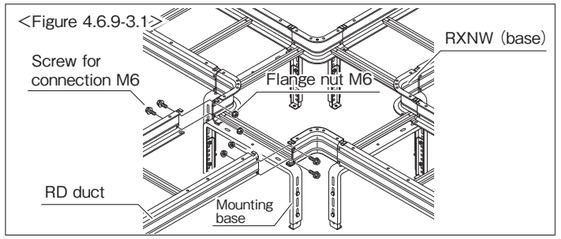


※ Lid reinforcing plate RXH is to be attached to the 900 type duct. (see the construction procedure)
※ The lid reinforcing plate for walkway is to be attached to the same location as the lid.

4.6.9-3 Example of attaching RXNW <300 to 600H>

1 Temporarily place the mounting base, and connect RXNW and the duct.

<Figure 4.6.9-3.1>



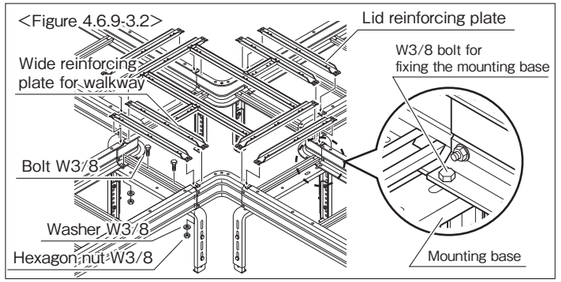
2 Fix RXNW to the mounting base.

※ Bolts, nuts, and washers for fixing the mounting base are supplied with the mounting base.
※ When using the different diameter joint, set the mounting base at the sub girder.

Perform piping, and then finally attach each reinforcing plate and set the lid.

※ For the jointless connection or when free joint S/H type is used, attach the lid reinforcing plate also to the connection portion. (600/600H type only)

<Figure 4.6.9-3.2>

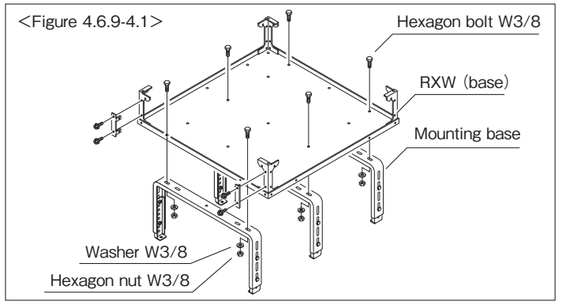


4.6.9-4 Example of attaching RXW <900/900H>

1 Set the mounting base at RXW.

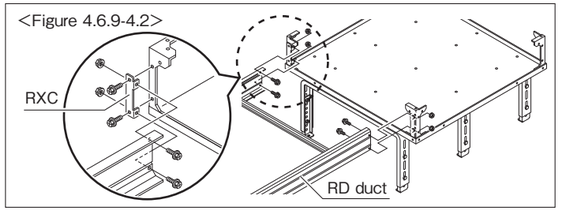
※ Bolts, nuts, and washers for fixing the mounting base are supplied with the mounting base.

<Figure 4.6.9-4.1>



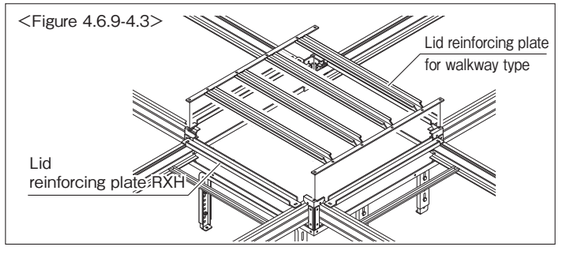
2 Attach the RD duct to the base.

<Figure 4.6.9-4.2>



3 Perform piping, and then attach each reinforcing plate.
If the branch duct is 900 or 900H, attach the supplied lid reinforcing plate RXH to the duct end, and finally set the lid.

<Figure 4.6.9-4.3>



4.6.10 Elevation surface corner 90° (rising)

Elevation surface elbow 90° (rising) for 300 to 900H.
Note that there are different construction methods for 300 to 600H and for 900/900H.

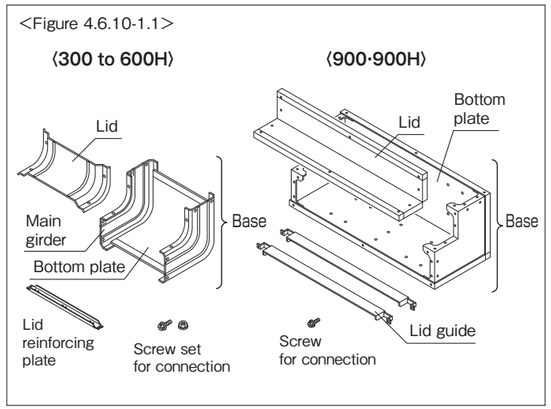
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RCI

4.6.10-1 Product configuration

<Figure 4.6.10-1.1>



<Table 4.6.10-1-2> **Set contents**

Type	Lid	Base	Bottom plate	Lid reinforcing plate /Lid guide	Lid* screw	Screw set for connection
300/300H	1	1	1	0	4	4
450/450H	1	1	1	0	4	4
600/600H	1	1	1	1	4	4
900/900H	1	1	1	2	10	12*

* Built in the main unit before shipment

<Table 4.6.10-1-3> **Screw specification**

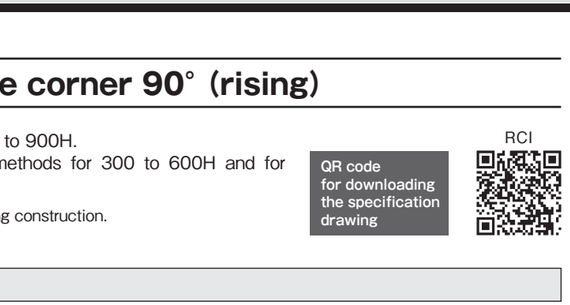
Name of screw		Specifications	Material
Lid screw		Sems ⊕ hexagon M6×15L	SUS
Screw set for connection	300 to 600H	Sems ⊕ hexagon M6×15L	SUS
		Flange nut M6	SUS
	900/900H	Sems ⊕ hexagon M6×15L	SUS

4.6.10-2 Example of assembling and attaching (1) <300 to 600H>

1 Attach the base to the duct.

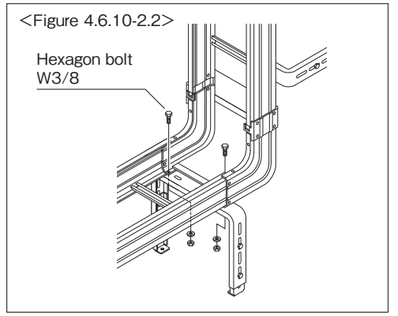
※ During the work, temporarily place the base and duct on the mounting base etc. to prevent dangling.

<Figure 4.6.10-2.1>



2 Fix them to the mounting base.

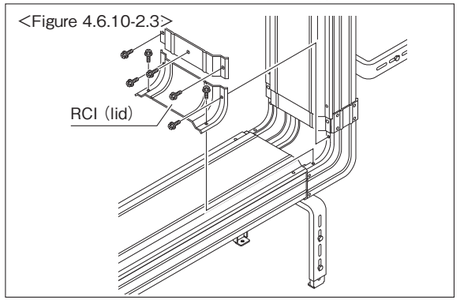
<Figure 4.6.10-2.2>



3 Perform piping, and then finally set the lid.

※ For the jointless connection or when free joint S/H type is used, attach the lid reinforcing plate to the horizontal connected portion. (600/600H type only)

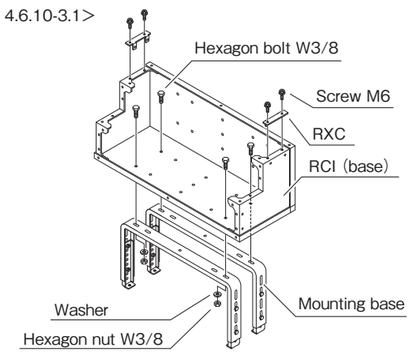
<Figure 4.6.10-2.3>



4.6.10-3 Example of assembling and attaching (2) <900/900H>

1 **Attach the base to the mounting base.**

<Figure 4.6.10-3.1>

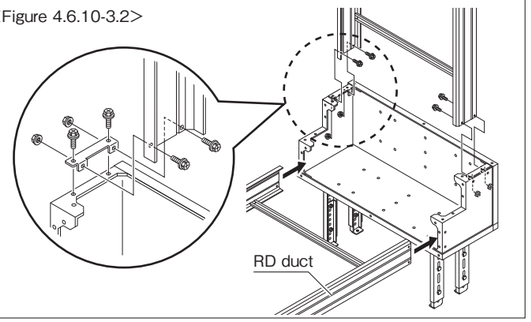


2 **Attach the RXC parts connection bracket for 900(H) to RCI.**

※ Required for the vertical side, arbitrary for the floor side.
See【4.5.8】for attaching RXC.

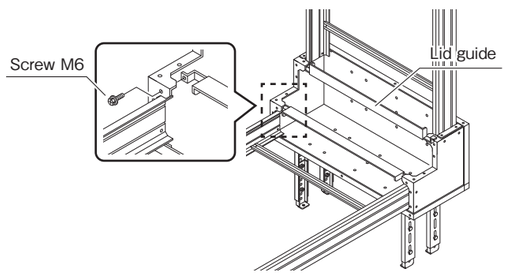
3 **Attach the duct to RCI.**

<Figure 4.6.10-3.2>



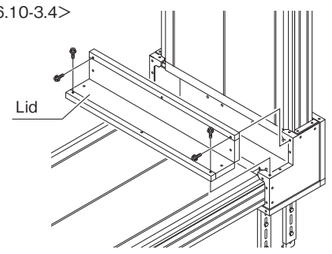
4 **Perform piping, and then attach the lid guide to RCI.**

<Figure 4.6.10-3.3>



5 **Finally set the lid.**

<Figure 4.6.10-3.4>



4.6.11 RCO elevation surface corner 90° (falling)

Elevation surface elbow 90° (falling) for 300 to 900H.
Note that there are different construction methods for 300 to 600H and for 900/900H.

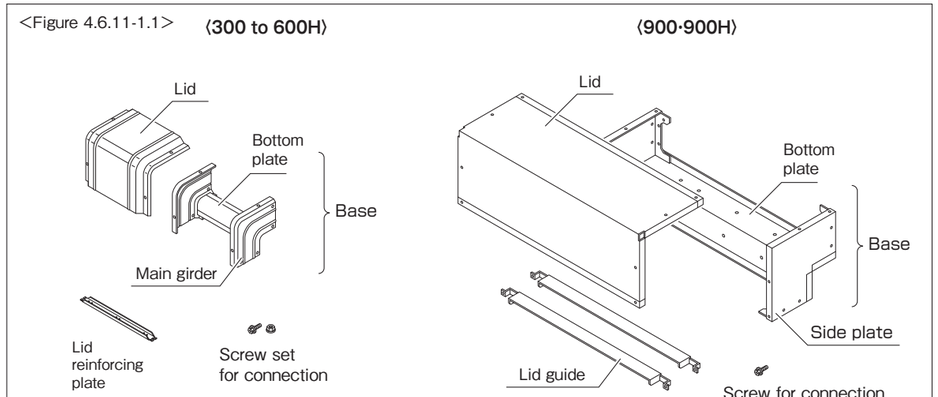
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RCO

4.6.11-1 Product configuration

<Figure 4.6.11-1.1>



<Table 4.6.11-1.1> **Set contents**

Type	Lid	Base	Bottom plate	Lid reinforcing plate /Lid guide	Lid* screw	Screw set for connection
300/300H	1	1	1	0	4	4
450/450H	1	1	1	0	4	4
600/600H	1	1	1	1	4	4
900/900H	1	1	1	2	10	12*

* Built in the main unit before shipment

<Table 4.6.11-1.2> **Screw specification**

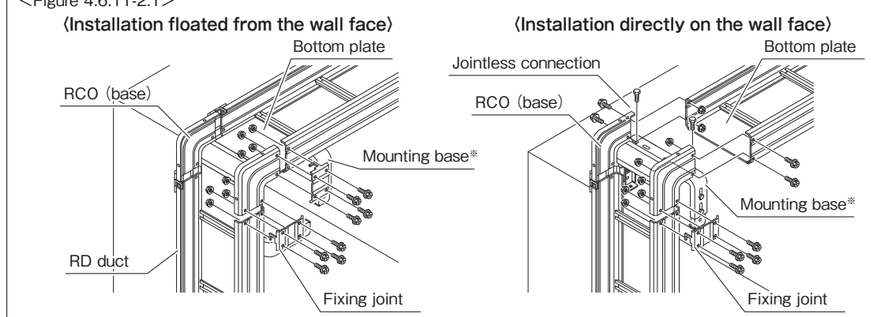
Name of screw		Specifications	Material
Lid screw		Sems ⊕ hexagon M6×15L	SUS
Screw for connection	300 to 600H	Sems ⊕ hexagon M6×15L	SUS
		Flange nut M6	SUS
	900/900H	Sems ⊕ hexagon M6×15L	SUS

4.6.11-2 Example of attaching RCO (1) <300 to 600H>

1 **Connect the base of RCO to the duct.**

※ For the installation on the wall face, attach the bottom plate to the portion connected to RCO.

<Figure 4.6.11-2.1>



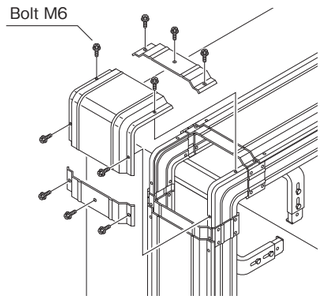
※ When the horizontal portion is connected by the fixing joint, perform the work without setting the mounting base at the connection portion (to be set at the near sub girder). When the plane portion is connected by the jointless connection, perform the work with setting the mounting base at the connection portion.

2 **Perform piping, and then finally attach the lid reinforcing plate* and set the lid.**

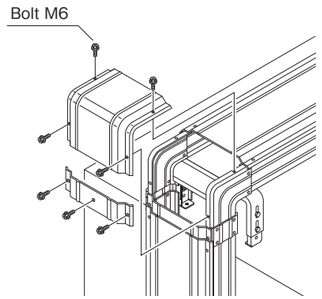
※ For the installation on the wall face, fix the lid by using the separately sold lid screw set for the installation on the wall face.
* When the horizontal portion is connected by the jointless connection + mounting base, attach the lid reinforcing plate. (600/600H type only)

<Figure 4.6.11-2.2>

〈Installation floated from the wall face〉



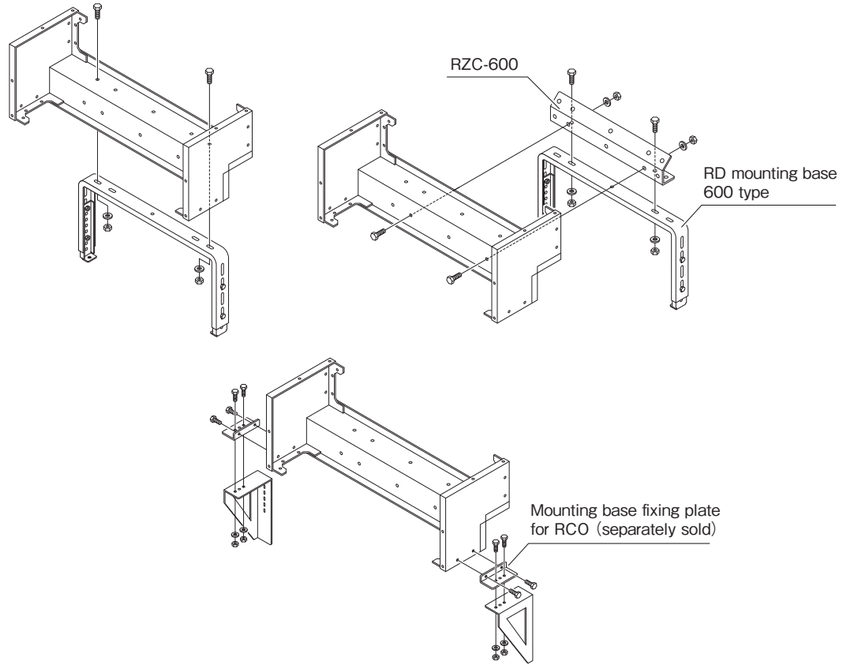
〈Installation directly on the wall face〉



4.6.11-3 Example of attaching RCO (2) <900/900H>

1 **Attach the RCO base part to the mounting base etc.**

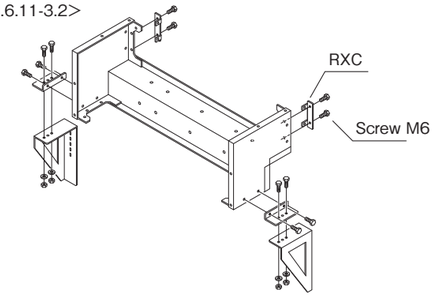
<Figure 4.6.11-3.1>



2 **Attach the RXC parts connection bracket for 900(H) to RCO.**

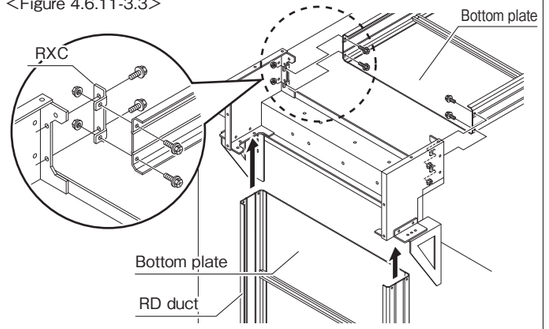
※ Required for the horizontal side.
Arbitrary for the vertical side (depends on the construction site).
For attaching RXC, see【4.5.8】.
For "usable or not", see【3.5.8】.

<Figure 4.6.11-3.2>



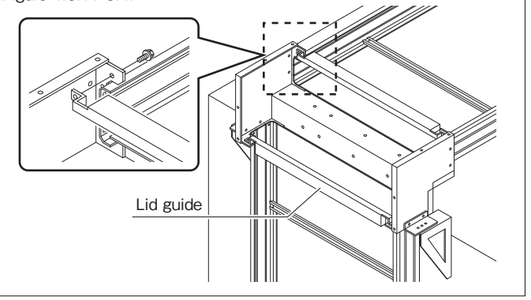
3 **Attach the duct to RCO.**

<Figure 4.6.11-3.3>



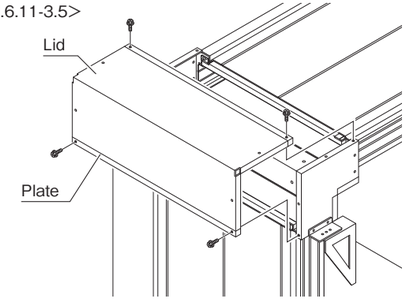
4 **Perform piping, and then attach the lid guide to RCO.**

<Figure 4.6.11-3.4>



5 **Set the lid of duct, and then finally set the lid of RCO.**

<Figure 4.6.11-3.5>



4.6.12 RC elevation surface corner 90° (150)

Elevation surface elbow 90° for 150 type. RC-150
By exchanging the supplied parts (lid and bottom plate), this can be used for both "rising" and "falling".

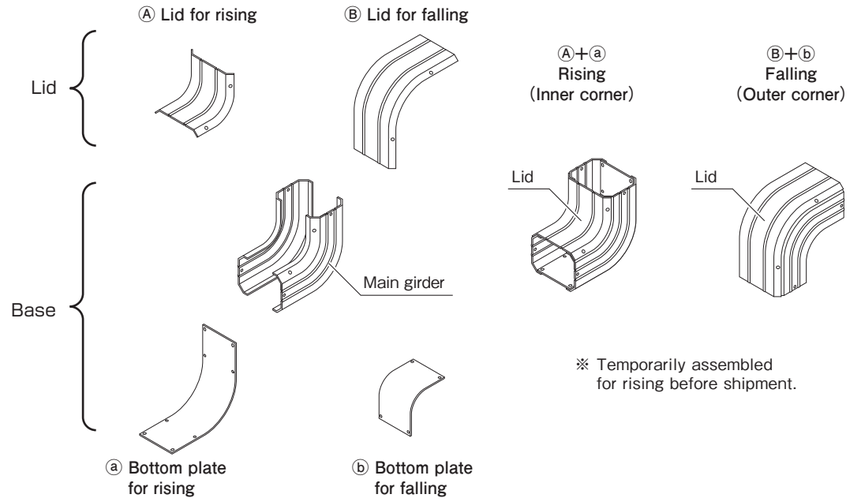
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RC-150

4.6.12-1 Product configuration

<Figure 4.6.12-1.1>



<Table 4.6.12-1.1> **Set contents**

Type	Lid	Bottom plate	Main girder	Screw for lid/bottom plate
150	2	2	2	8

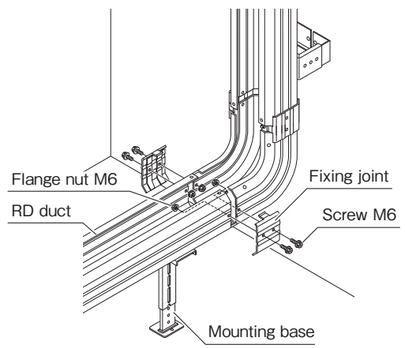
<Table 4.6.12-1.2> **Screw specification**

Specifications	Material
2 Sems ⊕ hexagon M6×15L	SUS

4.6.12-2 Example of assembling and attaching RC

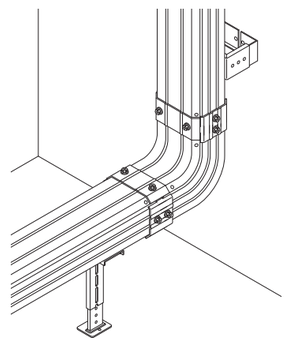
1 Assemble the base and attach it to the duct by using the fixing joint.

<Figure 4.6.12-2.1>



2 Perform piping, and then finally set the lid.

<Figure 4.6.12-2.2>



4.6.13 RCF elevation surface corner 45°

Elevation surface 45° elbow.
This is the set of the rising type (RCFI) and the falling type (RCFO).

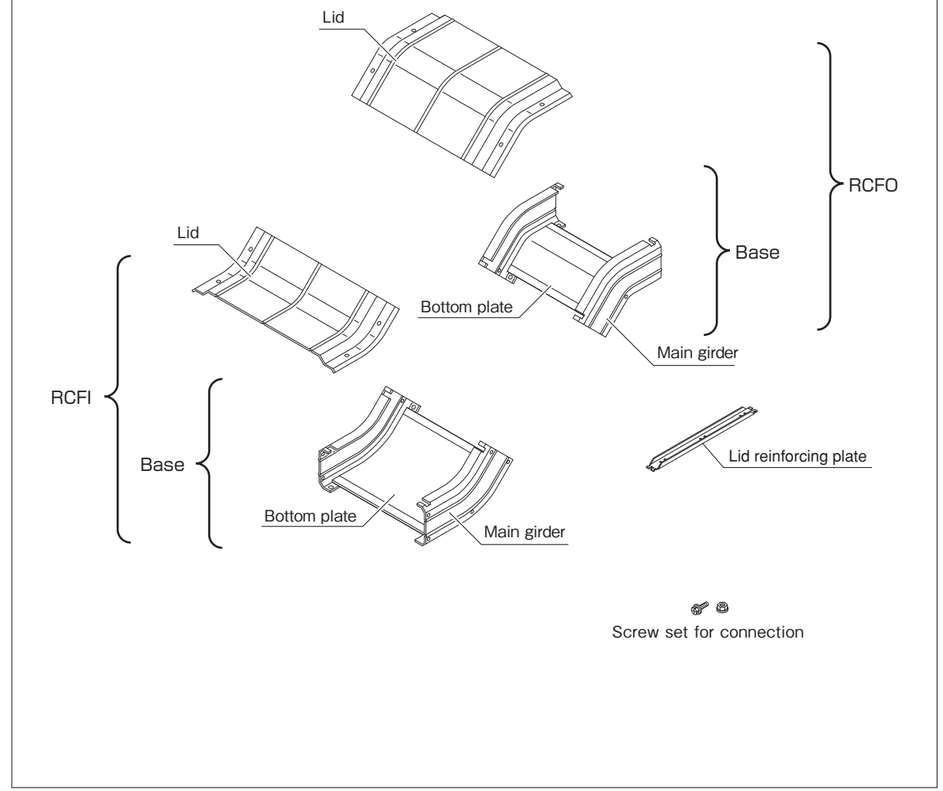
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RCF

4.6.13-1 Product configuration

<Figure 4.6.13-1.1>



<Table 4.6.13-1.1> **Set contents**

Type	Lid	Base	Bottom plate	Lid screw*	Screw set for connection	Lid reinforcing plate
150	2	2	2	8	8	0
300/300H	2	2	2	8	8	0
450/450H	2	2	2	8	8	0
600/600H	2	2	2	8	8	2
900/900H	2	2	2	8	8	2

* Built in the main unit before shipment

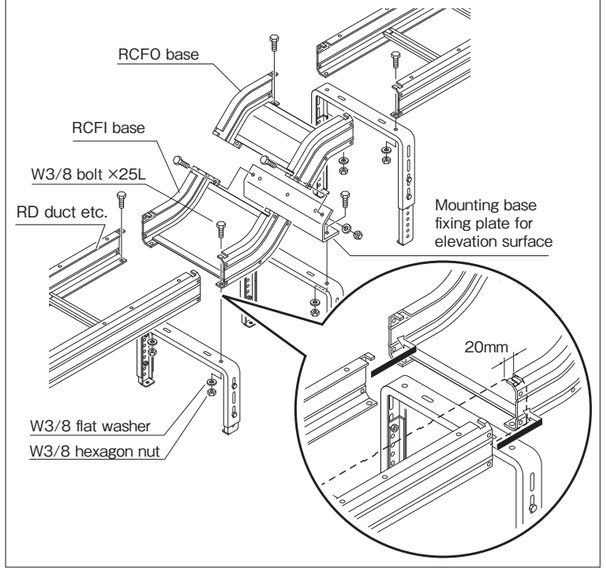
<Table 4.6.13-1.2> **Screw specification**

Name of screw	Specifications	Material
Lid screw	Sems ⊕ hexagon M6×15L	SUS
Screw set for connection	Sems ⊕ hexagon M6×15L	SUS
	Flange nut M6	SUS

4.6.13-2 Example of attaching RCF (jointless connection)

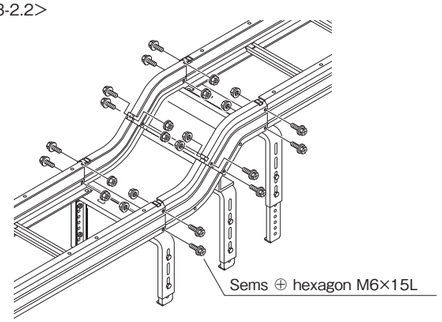
1 Fit the end of the main girder of duct and that of the main girder of corner part with an overlap of 20mm, and fix the bottom of overlapped portion of main girders to the mounting base or the mounting base fixing plate for elevation surface by using the W3/8 hexagon bolt.

<Figure 4.6.13-2.1>



2 Fix the side surface of overlapped portion of the main girder ends with screws.

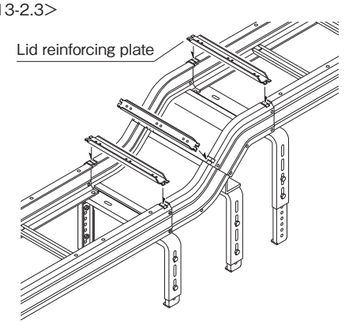
<Figure 4.6.13-2.2>



3 After the piping work is completed, attach the supplied lid reinforcing plate* to the portion connected to the duct, and then set the lid in the order from the lower portion. Set the lid with an overlap of 20mm.

* 600(H)/900H only and for jointless connection or connection using the free joint S/H type only.

<Figure 4.6.13-2.3>



4.7 Bottom plate

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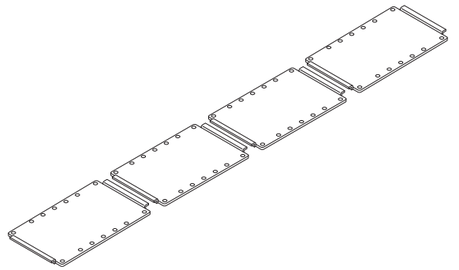
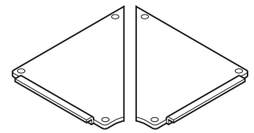
4.7.1 Bottom plate list

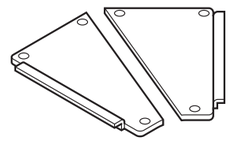
RDB bottom plate set for RD duct



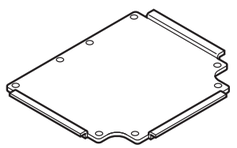
REB bottom plate set for plane surface corner 90°



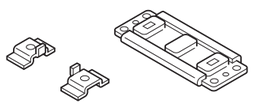
RFB bottom plate set for plane surface corner 45°



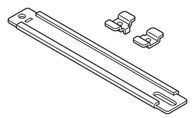
RTS bottom plate set for T-shaped branch joint



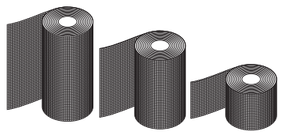
RDBJ bottom plate for joint



RJB retrofit bottom plate for joint



RNB net bottom plate



4.7.2 RDB bottom plate set for RD duct

Bottom plate for RD duct (straight pipe).
For 150 type, the bottom plate for connection portion (bottom plate for joint) is also included.
Retrofit attachment is also possible by using the separately sold resin bush for bottom plate.
※ Also check the Design section before performing construction.

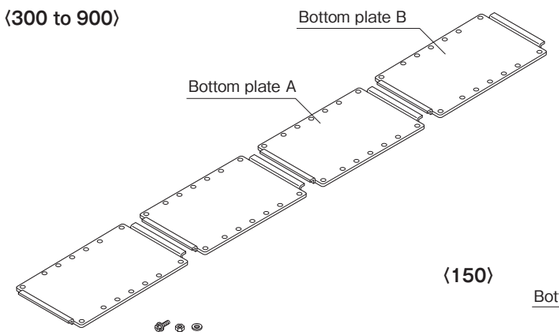
QR code for downloading the specification drawing

RDB

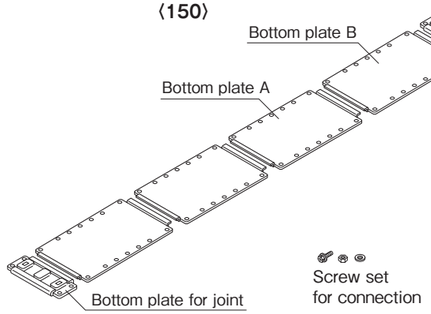
4.7.2-1 Product configuration

<Figure 4.7.2-1.1>

〈300 to 900〉



〈150〉



<Table 4.7.2-1.1> **Set contents (300~900)**

Size	Bottom plate A	Bottom plate B	Screw set for connection
2m	2	2	16
1m	1	2	12
0.5m	1	0	4
0.3m	1	0	4

※ Even for a part with the same name, its dimensions differ depending on the size.

<Table 4.7.2-1.2> **Set contents (150)**

Size	Bottom plate A	Bottom plate B	Bottom plate for joint	Screw set for connection
2m	2	2	2	20
1m	1	2	2	16

※ For RD-150-05, the bottom plate is standardly included (built-in).
※ Even for a part with the same name, its dimensions differ depending on the size.

<Table 4.7.2-1.3> **Screw specification**

Name of screw	Specifications	Material
Screw set for connection	Sems ⊕ hexagon bolt M6 × 15L	SUS
	Hexagon nut M6	SUS
	Washer M6	SUS

4.7.2-3 Example of attaching RDB

1 Attaching bottom plate in advance (bottom plate for duct 2m/1m/0.5m/0.3m)

After the duct jointing is completed, attach bottom plate (A), bottom plate (B), and (bottom plate for joint*) in order by using the supplied screws from inside the duct base as shown in the figure.

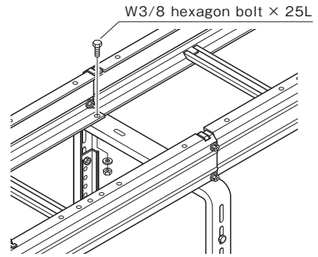
* The bottom plate for joint is standardly supplied with 150 type, but separately sold for other than 150 type.
* As for the bottom plate for joint, use the fixing joint type or free joint A type, and it is to be used only when the mounting base is not set at the connection portion.
  Also note that the attachment method differs when the part connected next to it is the duct 0.3m/0.5m, plane surface corner, or T-shaped branch. (see【4.7.6】RDBJ)

Note
- There is a directionality in bottom plate (B).
- The bottom plate for joint is not needed when the mounting base is set at the connection portion.

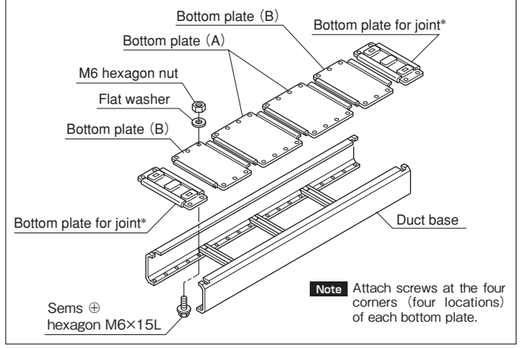
Construction for attaching the mounting base to the connection portion

<Figure 4.7.2-3.1.4>

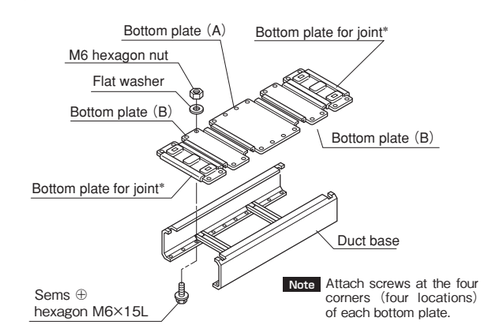
The bottom plate for joint is not needed because the mounting base is used as the bottom plate.



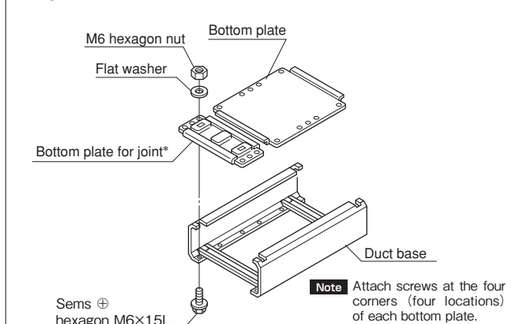
<Figure 4.7.2-3.1.1> **Construction for 2m**



<Figure 4.7.2-3.1.2> **Construction for 1m**



<Figure 4.7.2-3.1.3> **Construction for 0.3m/0.5m**



2 Retrofit attachment of the bottom plate (bottom plate for duct 2m/1m/0.5m/0.3m)

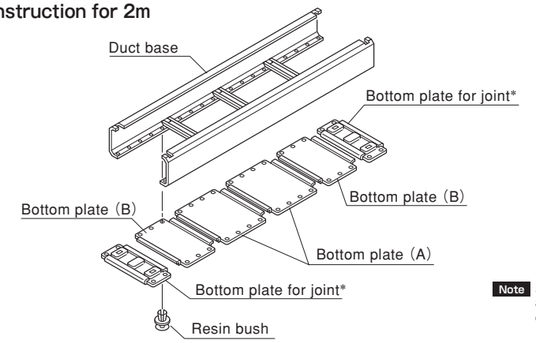
Make a 20mm clearance at the duct connection portion, and joint ducts by using the joint base such as RSJ or RFJ, and then attach bottom plate A, bottom plate B, and (bottom plate for joint*) in order by

* The bottom plate for joint is standardly supplied with 150 type, but separately sold for other than 150 type.
* As for the bottom plate for joint, use the fixing joint type or free joint A type, and it is to be used only when the mounting base is not set at the connection portion.
Also note that the attachment method differs when the part connected next to it is the duct 0.3m/0.5m, plane surface corner, or T-shaped branch. (see【4.7.6】RDBJ)

Note
- There is a directionality in bottom plate (B).
- The bottom plate for joint is not needed when the mounting base is set at the connection portion.
- **Retrofit construction is not possible for 900 type or jointless connection.**

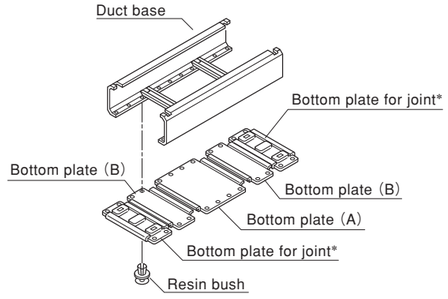
Reference【3.6.2】Bottom plate usable location

<Figure 4.7.2-3.2.1> **Construction for 2m**



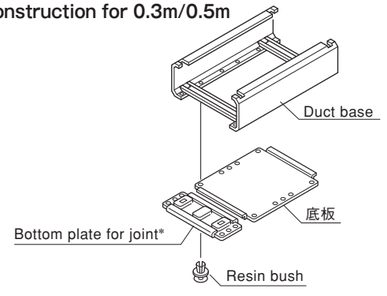
Note Attach the resin bush to all the ϕ10×12L holes of each bottom plate.

<Figure 4.7.2-3.2.2> **Construction for 1m**



Note Attach the resin bush to all the ϕ10×12L holes of each bottom plate.

<Figure 4.7.2-3.2.3> **Construction for 0.3m/0.5m**



Note Attach the resin bush to all the ϕ10×12L holes of each bottom plate.

注 樹脂ブッシュの取り付けは、各底板のϕ10×12Lの穴全てに行ってください。

4.7.3 REB bottom plate set for plane surface corner 90°

This is the 300 to 600H type bottom plate set for plane surface corner 90°.

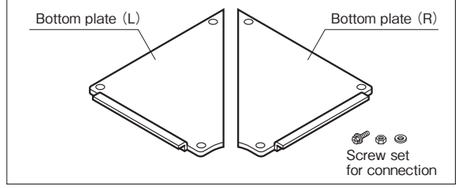
REB

QR code for downloading the specification drawing

※ The bottom plate is standardly supplied with 150 type.
※ Also check the Design section before performing construction.

4.7.3-1 Product configuration

<Figure 4.7.3-1.1>



<Table 4.7.3-1.1> **Set contents**

Bottom plate L	Bottom plate R	Screw set for connection
1	1	6

<Table 4.7.3-1.2> **Screw specification**

Name of screw	Specifications	Material
Screw set for connection	Sems ⊕ hexagon bolt M6 × 15L	SUS
	Hexagon nut M6	SUS
	Washer M6	SUS

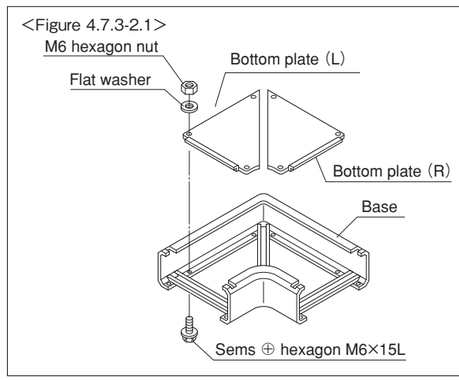
4.7.3-2 Example of attaching REB

Attaching bottom plate for plane surface corner 90° in advance

Note Retrofit attachment of the bottom plate is not possible.

Attach the bottom plate (R) and (L) by using the supplied screws from the base opening side.

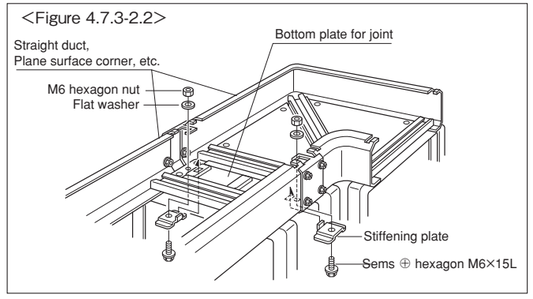
<Figure 4.7.3-2.1>



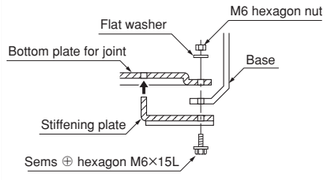
Supplement **For the connection method using joint and not setting the mounting base at the joint portion**

Drop the bottom plate for joint from the base opening side, and attach it to the bottom of base along with the stiffening plate by using the supplied screw.

<Figure 4.7.3-2.2>



<Figure 4.7.3-2.3>
Cross-section view of attaching bottom plate for joint



4.7.4 RFB bottom plate set for plane surface corner 45°

This is the 300 to 600H type bottom plate set for plane surface corner 45°.

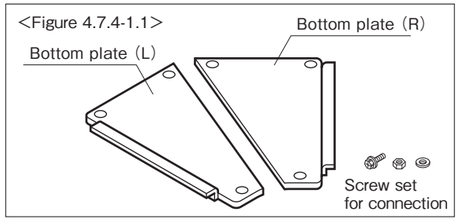
QR code for downloading the specification drawing

RFB

※ The bottom plate is standardly supplied with 150 type.
※ Also check the Design section before performing construction.

4.7.4-1 Product configuration

<Figure 4.7.4-1.1>



<Table 4.7.4-1.1> **Set contents**

Bottom plate L	Bottom plate R	Screw set for connection
1	1	6

<Table 4.7.4-1.2> **Screw specification**

Name of screw	Specifications	Material
Screw set for connection	Sems ⊕ hexagon bolt M6 × 15L	SUS
	Hexagon nut M6	SUS
	Washer M6	SUS

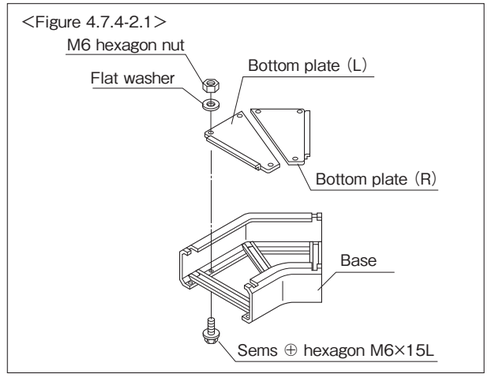
4.7.4-2 Example of attaching RFB

Attaching bottom plate for plane surface corner 45° in advance

Note Retrofit attachment of the bottom plate is not possible.

Attach the bottom plate (R) and (L) by using the supplied screws from the base opening side.

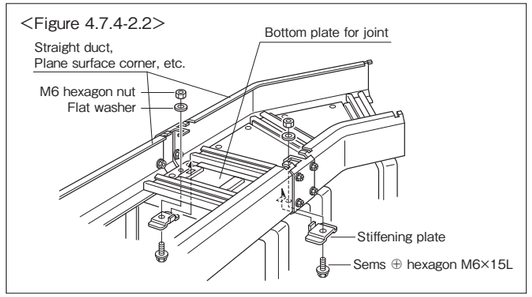
<Figure 4.7.4-2.1>



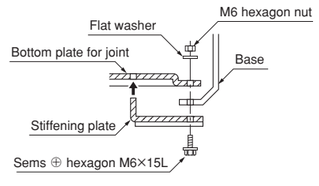
Supplement For the connection method using joint and not setting the mounting base at the joint portion

Drop the bottom plate for joint from the base opening side, and attach it to the bottom of base along with the stiffening plate by using the supplied screw.

<Figure 4.7.4-2.2>



<Figure 4.7.4-2.3>
Cross-section view of attaching bottom plate for joint



4.7.5 RTS bottom plate set for T-shaped branch joint

This is the 300 to 600H type bottom plate set for plane surface corner 45°.

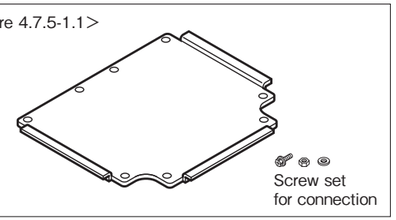
QR code for downloading the specification drawing

RTS

※ The bottom plate is standardly supplied with 150 type.
※ Also check the Design section before performing construction.

4.7.5-1 Product configuration

<Figure 4.7.5-1.1>



<Table 4.7.5-1.1> **Set contents**

Bottom plate	Screw set for connection
1	8

<Table 4.7.5-1.2> **Screw specification**

Name of screw	Specifications	Material
Screw set for connection	Sems ⊕ hexagon bolt M6 × 15L	SUS
	Hexagon nut M6	SUS
	Washer M6	SUS

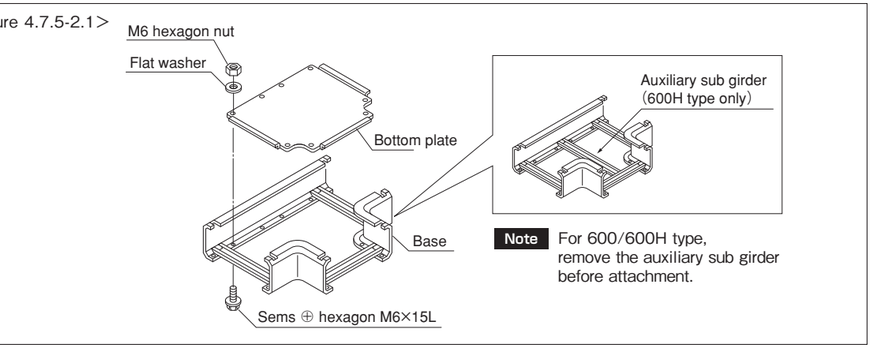
4.7.5-2 Example of attaching RTS

Attaching bottom plate for T-shaped branch joint in advance

Note Retrofit attachment of the bottom plate is not possible.

Attach the bottom plate by using the supplied screws from the base opening side.

<Figure 4.7.5-2.1>

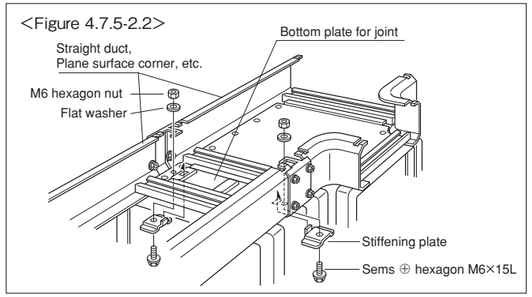


Note For 600/600H type, remove the auxiliary sub girder before attachment.

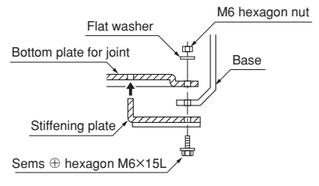
Supplement For the connection method using joint and not setting the mounting base at the joint portion

Drop the bottom plate for joint from the base opening side, and attach it to the bottom of base along with the stiffening plate by using the supplied screw.

<Figure 4.7.5-2.2>



<Figure 4.7.5-2.3>
Cross-section view of attaching bottom plate for joint



4.7.6 RDBJ bottom plate for joint

This is used for the construction using the bottom plate and in which the fixing joint or free joint is used and the mounting base is not set at the joint portion.

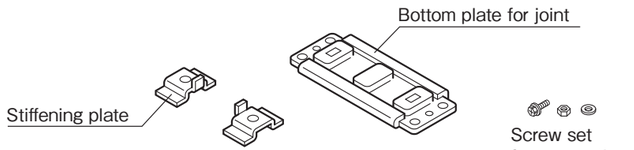
※ For 150 type, two bottom plates for duct are standardly included.
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RDBJ

4.7.6-1 Product configuration

<Figure 4.7.6-1.1>



<Table 4.7.6-1.1> **Set contents**

Bottom plate	Stiffening plate	Screw set for connection
1	2	4

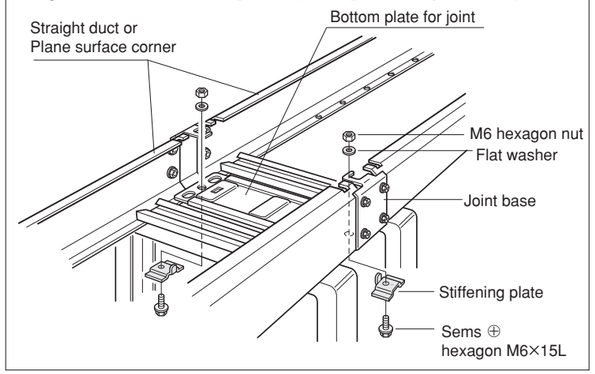
<Table 4.7.6-1.2> **Screw specification**

Name of screw	Specifications	Material
Screw set for connection	Sems ⊕ hexagon bolt M6 × 15L	SUS
	Hexagon nut M6	SUS
	Washer M6	SUS

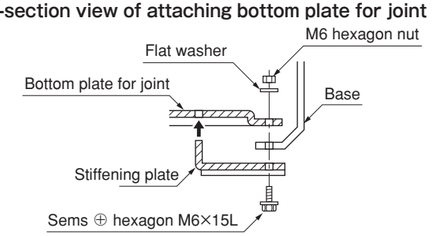
4.7.6-2 Example of attaching RDBJ

Make a 20mm clearance at the duct connection portion, and joint ducts by using the RSJ joint base, and then attach bottom plate A first, and bottom plate B next, from inside the duct by referring to the figure of [4.7.2-3.1].
Temporarily place the bottom plate for joint from the duct opening side, and attach it from the bottom along with the stiffening plate by using the supplied screws.

<Figure 4.7.6-2.1> **Drawing of attaching bottom plate for joint**



<Figure 4.7.6-2.2>
Cross-section view of attaching bottom plate for joint



4.7.7 RJB retrofit bottom plate for joint

This is the bottom plate for joint part (RSJ) used in a special case.
This is used when the bottom plate is attached to the portion connecting a straight duct and a corner part or 0.3m/0.5m duct.

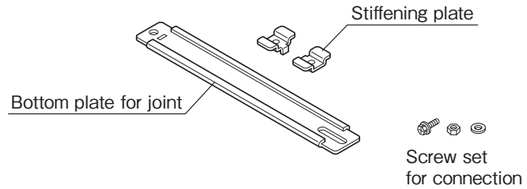
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RJB

4.7.7-1 Product configuration

<Figure 4.7.7-1.1>



<Table 4.7.7-1.1> **Set contents**

Bottom plate	Stiffening plate	Screw set for connection
1	2	2

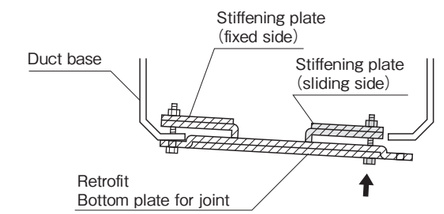
<Table 4.7.7-1.2> **Screw specification**

Name of screw	Specifications	Material
Screw set for connection	Sems ⊕ hexagon bolt M6 × 15L	SUS
	Hexagon nut M6	SUS
	Washer M6	SUS

4.7.7-2 Example of attaching RJB

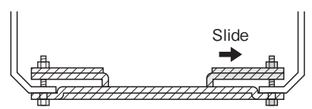
1 Fit in the retrofit bottom plate for joint from the duct base bottom as shown in the figure.

<Figure 4.7.7-2.1>
Attaching retrofit bottom plate for joint 1



2 Fit in the bottom plate while letting the edge of duct base come in the clearance of fixed-side bottom plate end, push in the sliding side of bottom plate, slide the stiffening plate, and then finally fix the screw.

<Figure 4.7.7-2.2>
Attaching retrofit bottom plate for joint 2



4.7.8 RNB net bottom plate

This is the simple bottom plate (net) for the straight duct.
This is attached by using the resin bush for bottom plate.

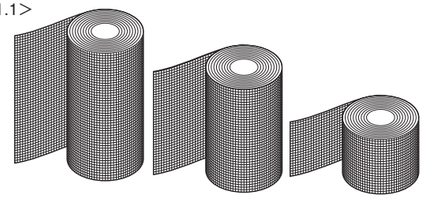
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RNB

4.7.8-1 Product configuration

<図4.7.8-1.1>



<Table 4.7.8-1.1> Set contents

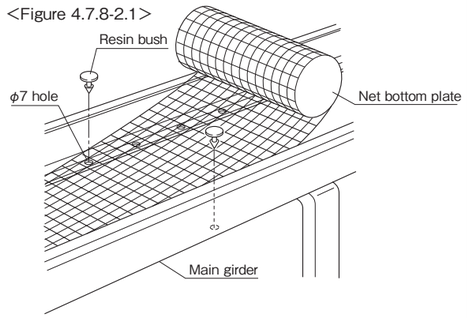
Bottom plate (resin net)
1

4.7.8-2 Example of attaching RNB (1): Attachment in advance

Note The net bottom plate cannot be attached to corner parts.

Roll out the net bottom plate on the duct base, and attach it by inserting the resin bush for bottom plate into the ϕ7 hole of the main girder.

<Figure 4.7.8-2.1>

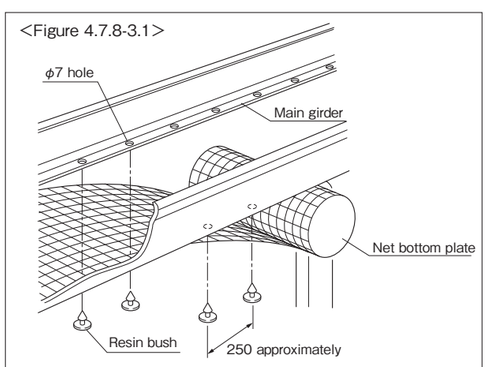


4.7.8-3 Example of attaching RNB (2): Retrofit attachment

Note
- Retrofit attachment of net bottom plate is not possible for 900 type.
- The net bottom plate cannot be attached to corner parts.

After piping, attach the net bottom plate by inserting the resin bush for bottom plate into the ϕ7 hole of the main girder as shown in the figure.
At this time, use the resin bush for bottom plate at an interval of approximately 250mm to prevent dangling of the net bottom plate.

<Figure 4.7.8-3.1>



4.8 Others

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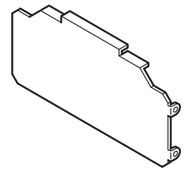
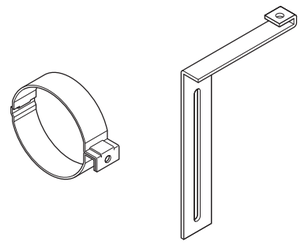
4.8.1 List of other members

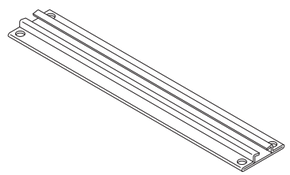
REC end cap



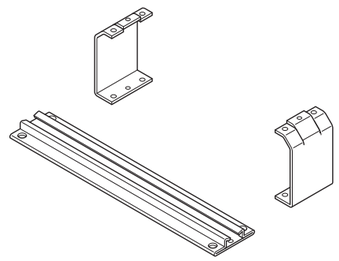
RPH PD supporting bracket



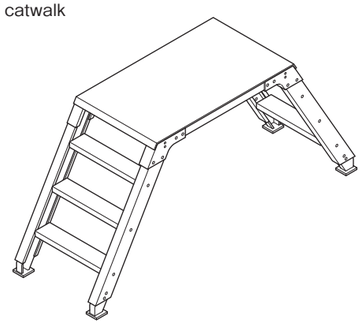
RDK RD sub girder set R



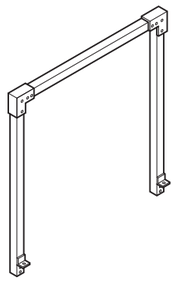
RSK RD duct partitioning bracket for H type



KW catwalk



KWT handrail for catwalk



4.8.2 REC end cap

This is the part to cover the opening of straight duct or corner part (except some parts), etc.

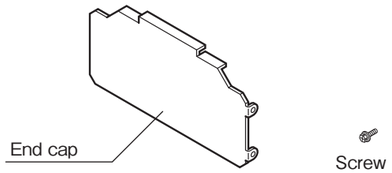
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

REC

4.8.2-1 Product configuration

<Figure 4.8.2-1.1>



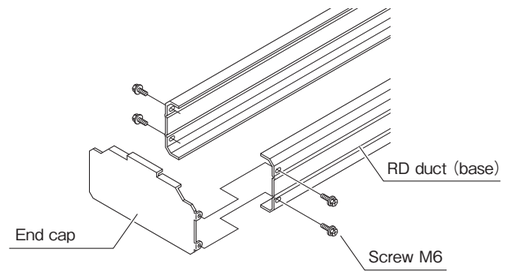
<Table 4.8.2-1.1> **Set contents**

Product name	Quantity
End cap	1
Screw (Sems ⊕ hexagon M6×15L - SUS)	4

4.8.2-3 Example of attaching REC

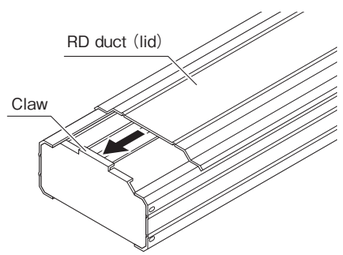
1 **Attach the end cap to the RD duct base (main girder).**

<Figure 4.8.2-3.1>



2 **After piping, attach the lid of RD duct by sliding it in the claw of cap.**

<Figure 4.8.2-3.2>



4.8.3 RPH PD supporting bracket

This is the bracket to support PD duct.

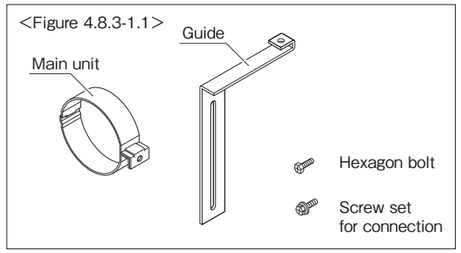
※ This bracket does not support or fix piping.
For supporting piping, use commercially available supporting brackets and PDB etc. as necessary.
※ In the main girder of RD duct, several holes (24 holes for 2m) are prepared for attaching bolts, into which the W3/8 or M10 bolts can be inserted.
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RPH

4.8.3-1 Product configuration

<Figure 4.8.3-1.1>



<Table 4.8.3-1.1> **Set contents**

Item	Quantity
Main unit	1
Guide	1
Hexagon bolt	1
Screw set for connection	1

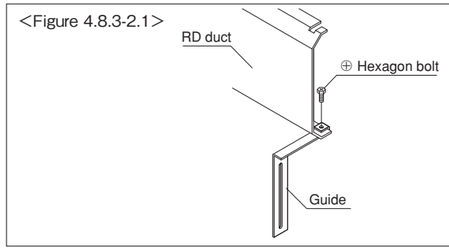
<Table 4.8.3-1.2> **Screw specification**

Name of screw	Specifications	Material
Hexagon bolt	⊕ Hexagon bolt M6×14L	SUS
Specifications	Sems ⊕ hexagon bolt M6×20L	SUS

4.8.3-2 Example of attaching RPH

1 **Attach the guide by matching the position of guide to the branching position.**

<Figure 4.8.3-2.1>



2 **Perform piping, protect the piping with the PD duct, adjust the height, and then fix with the piping support bracket RPH.**

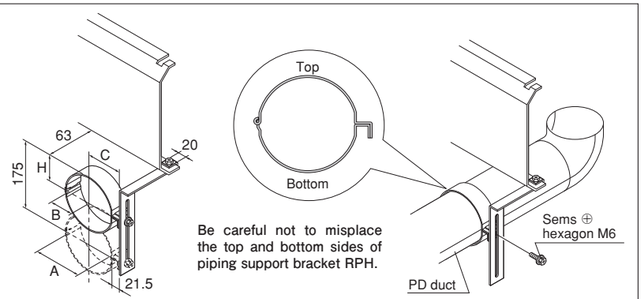
※ Bolts, nuts, and washers for fixing the mounting base are supplied with the mounting base.

Note Be careful not to misplace the top and bottom sides of piping support bracket RPH. (see <Figure 4.8.3-2.2>)

<Figure 4.8.3-2.2>

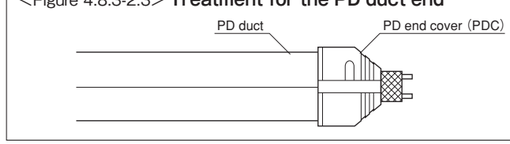
(Unit : mm)

Model number	A	B	C	H
RPH-90-ZA	101	53.5	69	47
RPH-120-ZA	129	67.5	83	61



3 **Perform the treatment for the piping end.**
Use the PD end cover for the piping end.

<Figure 4.8.3-2.3> **Treatment for the PD duct end**



4.8.4 RDK RD sub girder set

This is used as the support of piping in hanging the RD duct from the ceiling (with the lid of duct facing downward).

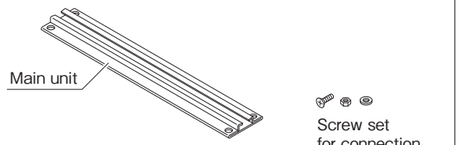
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RDK

4.8.4-1 Product configuration

<Figure 4.8.4-1.1>



<Table 4.8.4-1.1> Set contents

Item	Quantity
Main unit	1
Screw set for connection	4

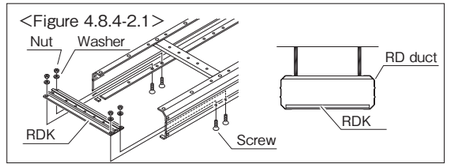
<Table 4.8.4-1.2> Screw specification

Item	Specifications	Material
Screw	⊕ Countersunk screw M6×12L	SUS
Washer	ϕ6.5 × ϕ18	SUS
Nut	Hexagon nut M6	SUS

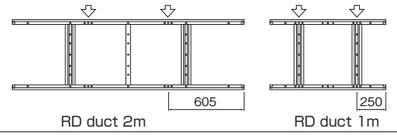
4.8.4-2 Example of attaching RDK

1 Attach RDK to RD by using the supplied screws.

<Figure 4.8.4-2.1>



<Figure 4.8.4-2.2> Location to attach RDK



4.8.5 RSK RD duct partitioning bracket for H type

This is the heat insulating material compression preventing bracket for the polyphyletic ducting system.
This can be attached to the H type duct of 2m and 1m.

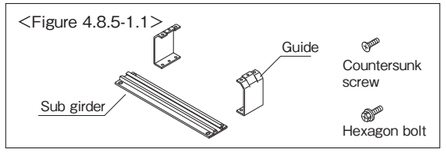
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

RSK

4.8.5-1 Product configuration

<Figure 4.8.5-1.1>



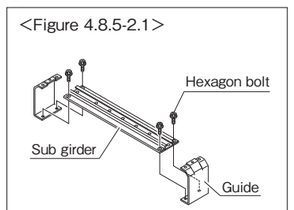
<Table 4.8.5-1.1> Set contents

Item / Specifications	Quantity
Sub girder	1
Guide	2
Countersunk screw (⊕ Countersunk M6×L12 SUS)	4
Hexagon bolt (sems ⊕ hexagon bolt M6×L15 SUS)	4

4.8.5-2 Example of attaching RSK

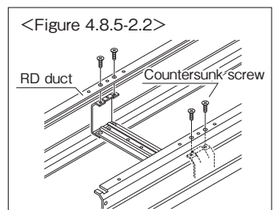
1 Attach the sub girder to the guide.

<Figure 4.8.5-2.1>

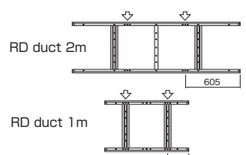


2 Partially perform piping, and then attach RSK to the main girder of RD duct.

<Figure 4.8.5-2.2>



<Figure 4.8.5-2.3>
Location to attach RSK



4.8.6 KW catwalk

This is the bridge for straddling over an obstacle.
Set this to straddle the RD duct.

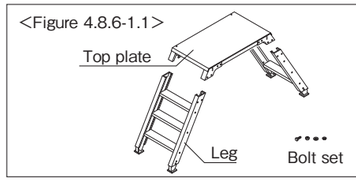
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

KW

4.8.6-1 Product configuration

<Figure 4.8.6-1.1>



<Table 4.8.6-1.1> Set contents

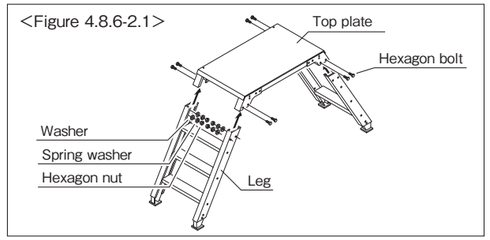
Item		Quantity	Material/surface treatment
Top plate		1	HDZ35
Leg		2	
Bolt set	Hexagon bolt M8 × L20	8	SUS
	Hexagon nut M8	8	
	Washer M8	8	
	Spring washer M8	8	

4.8.6-2 Example of assembling and attaching KW

1 Fit the leg in the top plate, and fix them with bolts.

※ When fixing the catwalk, use PB-120 or self-made forms, and perform fixing by using mortar etc.

<Figure 4.8.6-2.1>



4.8.7 KWT handrail for catwalk

This is the retrofit handrail for catwalk KW. This ensures safety in using catwalk.
This can be attached to either the right or left side of the top panel of KW.

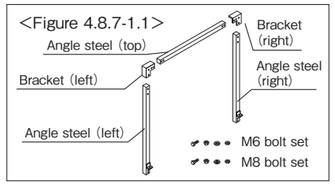
※ Also check the Design section before performing construction.

QR code for downloading the specification drawing

KWT

4.8.7-1 Product configuration

<Figure 4.8.7-1.1>



<Table 4.8.7-1.1> Set contents

Item	Quantity	Material /surface treatment
Angle steel (top)	1	HDZ35
Angle steel (left)	1	
Angle steel (right)	1	
M6 bolt set	8	SUS
M8 bolt set	6	

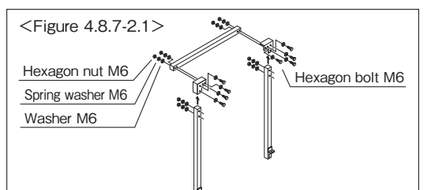
<Table 4.8.7-1.2> Bolt set specifications

Item	Set details
M6 bolt set	Hexagon bolt M6 × 20L Spring washer M6 Washer M6 Hexagon nut M6
M8 bolt set	Hexagon bolt M8 × 20L Spring washer M8 Washer M8 Hexagon nut M8

4.8.7-2 Example of attaching KWT

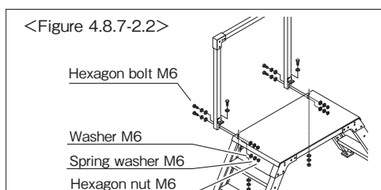
1 Assemble the angle steels and the brackets.

<Figure 4.8.7-2.1>



2 Attach the handrail to the catwalk.

<Figure 4.8.7-2.2>



MEMO

Materials

5 Materials

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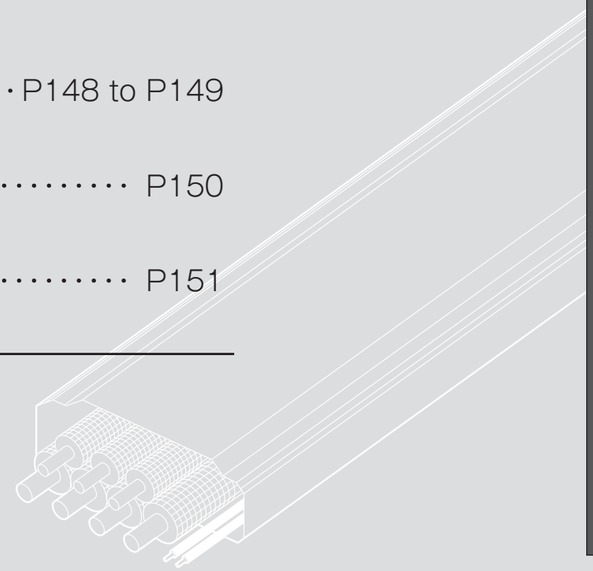
How to take measures against snow accumulation ···· P148 to P149

Copper pipe ····· P150

SI units ····· P151



5 Materials

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5.1 Specifications by Ministry of Land, Infrastructure, Transport and Tourism

5.1.1 Standard specifications of machinery and equipment construction by Ministry of Land, Infrastructure, Transport and Tourism

The heat insulating decorative case must be made of resin with weatherability, aluminum alloy, molten aluminum-galvanized sheet iron, hot-dip galvanized steel sheet or steel material, powder paint finish hot-dip galvanized steel sheet, or stainless steel sheet. The resin case must be resistant to the temperature of −20°C to 60°C.

(Page 85, Standard specifications 2013 Edition)

5.1.2 Supervision guidelines of machinery and equipment construction by Ministry of Land, Infrastructure, Transport and Tourism

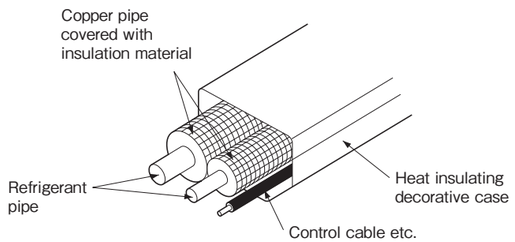
(9) Heat insulating decorative case

Standard specifications prescribes that the heat insulating decorative case must be made of resin with weatherability, aluminum alloy, molten aluminum-galvanized sheet iron, hot-dip galvanized steel sheet or steel material, or stainless steel sheet. It must be of molded pipe or elbow etc., and it must be excellent in water resistance, weatherability, and workability. The resin case with weatherability must be resistant to the temperature of −20°C to 60°C.

(Page 300, Supervision guidelines of construction 2013 Edition)

<Table 5.1.2-1>

Classification / Refrigerant pipe		Insulation thickness (mm)			
Classification of heat insulation	Material and Construction procedure			Cooling only	Heat pump
1. Exposure indoors (general living room, corridor, machine room, book room, warehouse, etc.) Exposure outdoors (including balcony and open corridor)	Simple piping 1. Copper pipe covered with insulation material 2. Heat insulating decorative case (Required portion to be fixed with screw) 3. Sealing (portion outdoors)	Compressor Outdoors	Gas pipe	20 or more	20 or more
			Liquid pipe	10 or more	10 or more
		Compressor Indoors	Gas pipe	10 or more	20 or more
			Liquid pipe	10 or more	10 or more



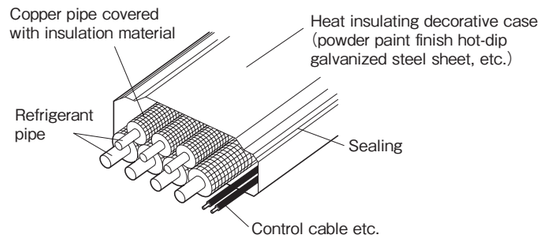
Product meeting the conditions

- Coated copper pipe (Insulation thickness 10mm) NEOCOIL NEOPIPE
- Coated copper pipe (Insulation thickness 20mm) NEOCOIL KHE NEOPIPE KHE
- Heat insulating decorative case SLIMDUCT SD SLIMDUCT LD SLIMDUCT UD SLIMDUCT PD SLIMDUCT ASD

Note For liquid pipes of 9.52 or less in nominal diameter, the insulation thickness may be 8mm.

<Table 5.1.2-2>

Classification / Refrigerant pipe		Insulation thickness (mm)			
Classification of heat insulation	Material and Construction procedure			Cooling only	Heat pump
3. Exposure indoors (general living room, corridor, machine room, book room, warehouse, etc.) Exposure outdoors (including balcony and open corridor)	Collective piping 1. Copper pipe covered with insulation material 2. Heat insulating decorative case (Required portion to be fixed with screw) 3. Sealing (portion outdoors)	Compressor Outdoors	Gas pipe	20 or more	20 or more
			Liquid pipe	10 or more	10 or more
		Compressor Indoors	Gas pipe	10 or more	20 or more
			Liquid pipe	10 or more	10 or more



Product meeting the conditions

- Coated copper pipe (Insulation thickness 10 mm) NEOCOIL NEOPIPE
- Coated copper pipe (Insulation thickness 20 mm) NEOCOIL KHE NEOPIPE KHE
- Heat insulating decorative case SLIMDUCT RD

Note 1. Indicated values of the insulation thickness are those when the class-A polyethylene foam heat insulating tube JIS A 9511 is used.
2. For liquid pipes of 9.52 or less in nominal diameter, the insulation thickness may be 8mm.

(Page 314, Supervision guidelines of construction 2013 Edition)

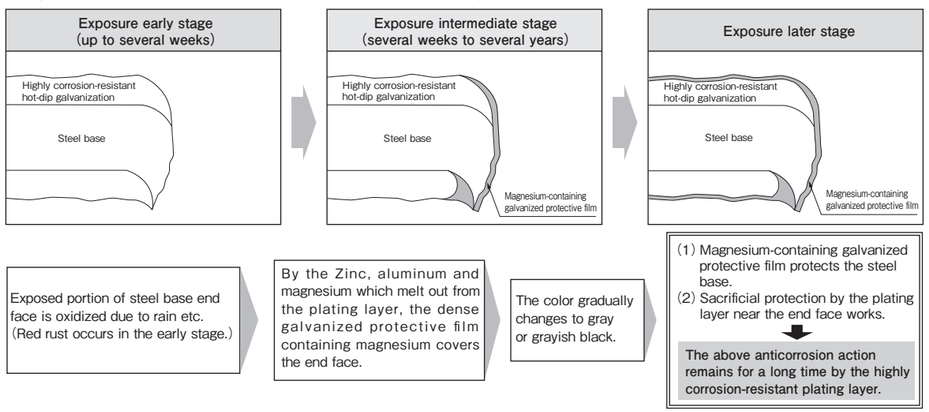
5.2 About the corrosion resistance of RD-ZA type

The RD-ZA series employs a new material “highly corrosion-resistant hot-dip galvanized steel sheet (in compliance with JIS G3323)※”, which has the corrosion resistance equal to or greater than the hot-dip galvanized finish type (HDZ55) or Galvalume (AZ150). Owing to this, the RD-ZA series can be used not only in a general outdoor environment but also in a (heavy) salt damage region where the stainless steel (SUS304) cannot be used.

In the end face, red rust will occur in the early stage because the steel base is exposed. However, in several months after the construction, aluminum and magnesium will melt out from the plating layer of the plane surface. The dense galvanized protective film which contains the melted out aluminum and magnesium covers the end face, and produces an excellent corrosion resistance. At the same time, the color will gradually change to gray or grayish black.

※ Highly corrosion-resistant hot-dip galvanized steel sheet : Zinc-aluminum (6%) -magnesium (3%) alloy plated steel sheet

<Figure 5.2-1> **Mechanism of corrosion resistance production in the end face**



5.3 How to take measures against snow accumulation

5.3.1 the Building Standards Act

The Building Standards Act prescribes conditions related to the snow load.

Article 86, Enforcement Ordinance of the Construction Standards Act (excerpts)

The snow load must be calculated by multiplying the unit load of snow accumulation by the horizontal projected area of the roof and the vertical snow accumulation in the relevant region.

2 The unit load of snow accumulation prescribed in the preceding paragraph must be 20 newtons or more per square meter for 1cm snow accumulation. However, the specific administrative agency can specify a heavy snow area in the regulation based on the criteria stipulated by the Minister of Land, Infrastructure and Transport, and can separately determine a different standard for the area.

3 The vertical amount of snowfall prescribed in paragraph 1 must be the value specified in the regulation determined by the specific administrative agency based on the criteria stipulated by the Minister of Land, Infrastructure and Transport.

From the above, in a heavy snow area, it is necessary to check in advance if there is a specified "unit load of snow accumulation", "vertical snow accumulation", etc. for the area determined by the specific administrative agency.

Example

Example of a case where the unit load of snow accumulation is separately determined

- 30N per square meter for 1cm snow accumulation
- If the snow accumulation exceeds 1m, increase the unit load by 10% for every 10cm which exceeds 1m only until the percentage reaches to 250% the upper limit.

Example of a case where the area segmentation manner for the vertical amount of snowfall differs depending on the locale

- Segmentation by city, town, and village (administrative district)
- Segmentation by height above sea level

Another example of presence of a separate regulation related to construction of facility (regulation of ensuring snow-piling space)

- For a facility with a roof (rooftop portion) of 3m in horizontal length and 2m of deepest snow beam, ensure the space of at least 2m from the wall face for piling snow.

5.3.2 Calculation of snow load for RD (example)

When the assumed snow load is 3,000N per cubic meter, and the assumed vertical amount of snowfall is 2m, the snow load is 6,000N per square meter.

1 Example of selecting lid

Select an appropriate RD duct type by checking the strength of lid.

Reference 【1.4.2】 Load capacity and strength/Strength of lid (allowable load)

Example

Standard type = 4,903 N/m² < 6,000 N/m²
Walkway type = 49,030 N/m² > 6,000 N/m²
➡ **Select the walkway type**

2 Example of calculating snow load

Find the area based on the size of used RD duct.

Example

Area (S) when RDW-900 is used
S = L 2m × W 0.9m
S = 1.8m²
➡ **Area of duct is 1.8m²**

Find the load for one piece of RD duct by multiplying the snow load by the area of RD duct.

Example

Snow load applied on RDW-900 (P)
P = 6,000N×1.8m²
= 10,800N
➡ **Snow load applied on RDW-900 = 10,800N**

3 Example of calculating total load

Find the total load (W) by further adding the pipe weight and the product weight.

Reference 【1.3】 Product weight

Example

Total load applied on RDW-900
- Product weight of RDW-900 = 30.9kg
- Pipe weight (15.88×25.4×18 pipelines)
  = (0.45+0.72)×18=21.06kg
- 1kgf = 9.80665N

W ≒ 10,800N+(30.9+21.06)×9.8
≒ 11,310N
➡ **Total load applied on RDW-900 11,310N**

4 Example of calculating the quantity of mounting bases

Find the required quantity of mounting bases (x) by dividing the total load by the load capacity of mounting base.

Reference 【1.4.3】 Load capacity and strength/Load capacity (allowable load) of mounting base
【3.4.8】 Standard pitch between bases (mounting bases)

Example

Required quantity of mounting bases (x)
- Load capacity of mounting base = 6,374N

x = 11,310N÷6,374N
≒ 1.77
➡ **Two pieces of mounting base are required for one piece of RDW-900 (construction by 1m pitch)**

5 Example of calculating surface load

Find the load for 1cm² by dividing the total load by the quantity of legs of mounting base and the area of leg.

※ on the premise that the load is applied evenly

Example

Load for 1cm² (y)
- Quantity of legs set for RDW-900 = 4
- Area of leg of the RD mounting base
  = 20cm² (bolt portion included)

y = 11,304N ÷ 4 ÷ 20
≒ 141.3
➡ **Load for 1cm² = 141.3N**
(Reference : 47.5N for CR-A/CR-W1015 1cm²)

5.3.3 Other notes

1 Amount of snowfall and load

As to the snow accumulation and load, observing these specified values does not mean completely safe. For example, even in a case of 3,000N per cubic meter in general (specified value), if the appropriate treatment (snow removal etc.) is not performed and such condition is left as is, the density of snow will increase and the unit load of snow accumulation may exceed 5,000N depending on the case. The appropriate treatment is necessary before such situation occurs.

2 Snow dropping

If a snow dropping from the upper portion of construction can be assumed, a snow roof, treatment to prevent snow dropping, or snow-piling space may be required to prevent dropped snow hitting the RD duct.

3 Remaining snow

Depending on the sunshine conditions, the snow will remain unmelted and new snow will fall on it, resulting in increase of amount of snowfall and unit load exceeding assumption.

4 Snowdrift

Depending on the wind direction or environmental condition, the amount of snowfall may increase compared to that in the usual condition.

5.4 Copper pipe

5.4.1 Table of copper pipe specifications

<Table 5.4.1-1> **Table of copper pipe specifications**

Type	Copper pipe for air-conditioning			Copper pipe for construction (hot-water supply, water supply)		
Outer diameter of copper pipe (mm)	Nominal diameter	Pipe thickness (mm)		Nominal diameter	Pipe thickness (mm)	
		General use	Supervision guidelines		L	M
6.35	1/4 inch (6.35mm)	0.8	0.80			
9.52	3/8 inch (9.53mm)	0.8	0.80	1/4 inch (6.35mm)	0.76	
12.70	1/2 inch (12.70mm)	0.8	0.80	3/8 inch (9.53mm)	0.89	0.64
15.88	5/8 inch (15.88mm)	1.0	1.00	1/2 inch (12.70mm)	1.02	0.71
19.05	3/4 inch (19.08mm)	1.0	1.05	5/8 inch (15.88mm)	1.07	
22.22	7/8 inch (22.23mm)	1.0	1.20	3/4 inch (19.08mm)	1.14	0.81
25.40	1 inch (25.4mm)	1.0	1.35			
28.58	1-1/8 inch (28.58mm)	1.0	1.55	1 inch	1.27	0.89
31.75	1-1/4 inch (31.78mm)	1.1	1.70			
34.92	1-3/8 inch (34.93mm)	1.1	1.85	1-1/4 inch (31.78mm)	1.40	1.07
38.10	1-1/2 inch (38.10mm)	1.15	2.00			
41.28	1-5/8 inch (41.28mm)	1.2	2.15	1-1/2 inch (38.10mm)	1.52	1.24

5.4.2 Pipe weight (reference value)

<Table 5.4.2-1> **Product weight of coated copper pipe**

Copper pipe specification		Product weight (kg/m)		
Outer diameter of copper pipe	Copper pipe thickness	Thickness of heat insulating material 10mm	Thickness of heat insulating material 20mm	Thickness of heat insulating material 15mm
6.35	0.8	0.14※1	0.18	—
9.52	0.8	0.21※1	0.26	0.24
12.70	0.8	0.29	0.34	0.32
15.88	1.0	0.45	0.49	0.47
19.05	1.0	0.54	—	—
	1.05	0.56	0.61	
	1.2	0.63	—	
22.22	1.0	0.63	0.68	
	1.2	0.74	0.80	
25.40	1.0	0.72	0.78	
	1.35	—	1.01	
28.58	1.0	0.81	0.88	
	1.55	—	1.28	
31.75	1.1	0.99	1.05	
	1.7	—	1.54	
34.92	1.1	1.09	1.16	
	1.85	—	1.83	
38.10	1.35	1.46	—	
	2.0	—	2.15	
41.28	1.45	1.68	1.75	
	2.15	—	2.49	
44.45	1.55	1.92	2.00	
	2.3	—	2.86	
50.80	1.4	2.04※2	2.07	
	2.65	—	3.73	
53.98	1.5	2.32※2	—	
	2.8	—	4.18	

(Note 1) Values in the table are the theoretically calculated values, and not the measured values.
※1…Thickness of the heat insulating material is 8mm.
※2…Thickness of the heat insulating material is 15mm.

5.5 SI units

5.5.1 Table of SI units

SI base unit

Length	Meter	m
Mass	Kilogram	kg
Time	Second	S
Current	Ampere	A
Thermodynamical temperature	Kelvin	K
Amount of substance	Mol	mol
Luminous intensity	Candela	cd

SI supplementary unit

Plane angle	Radian	rad
Solid angle	Steradian	sr

SI prefix

Multiple by which the unit is multiplied	Symbol	Name	Multiple by which the unit is multiplied	Symbol	Name
10^{18}	E	exa	10^{-1}	d	deci
10^{15}	P	peta	10^{-2}	c	centi
10^{12}	T	tera	10^{-3}	m	milli
10^{9}	G	giga	10^{-6}	μ	micro
10^{6}	M	mega	10^{-9}	n	nano
10^{3}	k	kilo	10^{-12}	p	pico
10^{2}	h	hecto	10^{-15}	f	femto
10^{1}	da	deca	10^{-18}	a	atto

5.5.2 SI unit conversion table

(Unit enclosed by the bold line is the SI unit.)

Force

N	dyn	kgf
1	1×10^{5}	$1.019\ 72\times10^{-1}$
1×10^{-5}	1	$1.019\ 72\times10^{-6}$
9.806 65	$9.806\ 65\times10^{5}$	1

Viscosity

Pa·s	cP	P
1	1×10^{3}	1×10
1×10^{-3}	1	1×10^{-2}
1×10^{-1}	1×10^{2}	1

Note 1P=1dyn・s/cm²=1g/cm・s、1Pa·s=1N・s/m²、1cP=1mPa·s

Stress

Pa or N/m²	MPa or N/mm²	kgf/mm²	kgf/cm²
1	1×10^{-6}	$1.019\ 72\times10^{-7}$	$1.019\ 72\times10^{-5}$
1×10^{6}	1	$1.019\ 72\times10^{-1}$	$1.019\ 72\times10$
$9.806\ 65\times10^{6}$	9.806 65	1	1×10^{2}
$9.806\ 65\times10^{4}$	$9.806\ 65\times10^{-2}$	1×10^{-2}	1

Note 1Pa=1N/m²、1MPa=1N/mm²

Kinematic viscosity

m²/s	cSt	St
1	1×10^{6}	1×10^{4}
1×10^{-6}	1	1×10^{-2}
1×10^{-4}	1×10^{2}	1

Note 1St=1cm²/s、1cSt=1mm²/s

Pressure

Pa	kPa	MPa	bar	kgf/cm²	atm	mmH₂O	mmHg or Torr
1	1×10^{-3}	1×10^{-6}	1×10^{-5}	$1.019\ 72\times10^{-5}$	$9.869\ 23\times10^{-6}$	$1.019\ 72\times10^{-1}$	$7.500\ 62\times10^{-3}$
1×10^{3}	1	1×10^{-3}	1×10^{-2}	$1.019\ 72\times10^{-2}$	$9.869\ 23\times10^{-3}$	$1.019\ 72\times10^{2}$	7.500 62
1×10^{6}	1×10^{3}	1	1×10	$1.019\ 72\times10$	9.869 23	$1.019\ 72\times10^{5}$	$7.500\ 62\times10^{3}$
1×10^{5}	1×10^{2}	1×10^{-1}	1	$1.019\ 72$	$9.869\ 23\times10^{-1}$	$1.019\ 72\times10^{4}$	$7.500\ 62\times10^{2}$
$9.806\ 65\times10^{4}$	$9.806\ 65\times10$	$9.806\ 65\times10^{-2}$	$9.806\ 65\times10^{-1}$	1	$9.678\ 41\times10^{-1}$	1×10^{4}	$7.355\ 59\times10^{2}$
$1.013\ 25\times10^{5}$	$1.013\ 25\times10^{2}$	$1.013\ 25\times10^{-1}$	1.013 25	1.033 23	1	$1.033\ 23\times10^{4}$	$7.600\ 00\times10^{2}$
9.806 65	$9.806\ 65\times10^{-3}$	$9.806\ 65\times10^{-6}$	$9.806\ 65\times10^{-5}$	1×10^{-4}	$9.678\ 41\times10^{-5}$	1	$7.355\ 59\times10^{-2}$
$1.333\ 22\times10^{2}$	$1.333\ 22\times10^{-1}$	$1.333\ 22\times10^{-4}$	$1.333\ 22\times10^{-3}$	$1.359\ 51\times10^{-3}$	$1.315\ 79\times10^{-3}$	$1.359\ 51\times10$	1

Note 1Pa=1N/m²

Work, Energy, Heat

J	kW·h	kgf·m	kcal
1	$2.777\ 78\times10^{-7}$	$1.019\ 72\times10^{-1}$	$2.388\ 89\times10^{-4}$
3.600×10^{6}	1	$3.670\ 98\times10^{5}$	$8.600\ 0\times10^{2}$
9.806 65	$2.724\ 07\times10^{-6}$	1	$2.342\ 70\times10^{-3}$
$4.186\ 05\times10^{3}$	$1.162\ 79\times10^{-3}$	$4.268\ 58\times10^{2}$	1

Note 1J=1W·s, 1J=1N·m,
1cal=4.18605J (depends on the calculation method)

Power, Work rate, Motive power, Heat flow

W	kgf·m/s	PS	kcal/h
1	$1.019\ 72\times10^{-1}$	$1.359\ 62\times10^{-3}$	$8.600\ 0\times10^{-1}$
9.806 65	1	$1.333\ 33\times10^{-2}$	8.433 71
7.355×10^{2}	7.5×10	1	$6.325\ 29\times10^{2}$
1.162 79	$1.185\ 72\times10^{-1}$	$1.580\ 95\times10^{-3}$	1

Note 1W=1J/s, PS: French horse-power.
1PS=0.735kW (by Measurement Law Enforcement Act).
1cal=4.18605J (depends on the calculation method)

Thermal conductivity

W/(m·K)	kcal/(h·m·℃)
1	$8.600\ 0\times10^{-1}$
1.162 79	1

Note 1cal=418605J
(depends on the calculation method)

Thermal conductivity coefficient

W/(m²·K)	kcal/(h·m²·℃)
1	$8.600\ 0\times10^{-1}$
1.162 79	1

Note 1 cal=4.18605J
(depends on the calculation method)

Specific heat

J/(kg·K)	kcal/(kg·℃) cal/(g·℃)
1	$2.388\ 89\times10^{-4}$
$4.186\ 05\times10^{3}$	1

Note 1 cal=4.18605J
(depends on the calculation method)

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