

Beautiful Line
SLIMDUCT™ RD
Design and installation materials

Beautiful Line
SLIMDUCT™ RD
Design and installation materials

SLIMDUCT™ RD Design and installation materials

2024

Cat.No.202502

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

INABA DENKI SANGYO CO.,LTD.
Inaba Denko Products Overseas Sales Department

4-11-14, ITACHIBORI, NISHI-KU, OSAKA, JAPAN 550-0012
Tel : +81 (0) 6-4391-1920 Fax : +81 (0) 6-4391-1935
E-MAIL : inabadenko-overseas@gr-inaba.com

<https://www.inaba-denko.com/en/>

INABA DENKO
2024

<https://www.inaba-denko.com>



Before using “SLIMDUCT RD” ("the Product" hereinafter), read “SLIMDUCT RD Design and Installation Materials” carefully and perform designing and installation work properly for correct and safe use of the Product.

We cannot be held responsible for any damage (including but not limited to breakage, overturning and other accidents) caused by operating or installation methods which differ from that is described in this document.

Read the following first (for correct and safe use)

The Product is a decorative cover for air conditioning piping. Do not use for any other purpose.

■The following categories are used to indicate the degree of harm or damage that may occur when operating incorrectly ignoring what is indicated.

 Warning	Incorrect handling of the Product may result in death or serious injury of the user.
 Caution	Incorrect handling of the Product may result in injury of the user.
Notice	Incorrect handling of the Product may result in property damages.

■Observe the following instructions for preventing harm to the user and others and damage to properties.

 Warning	●Do not apply a load that exceeds the allowable load. Doing so may result in damage or fall. ●Use the bolts and nuts that come with the Product when assembling the parts and tighten them carefully without crushing bolt threads and nut corners, or it may cause loosening, fall, breakage and rusting.
 Caution	[General precautions for SLIMDUCT RD] ●Surface treatment is not provided, and the cut ends are exposed. Always wear work clothes, gloves, helmet, etc. when performing installation work. ●For preventing accidents, do not use the Product as a substitute for a scaffold or ladder. Doing so may result in a fall. [About the RD duct (walkway type)] ●It is designed for the purpose of being used as a walkway for maintenance work of outdoor units. Avoid using it as a normal walkway (comply with industrial safety and health regulations and other laws and regulations and perform installation work safely). ●Always wear gloves, helmet, etc. for safety when walking on it. ●Do not walk on the area near the joint parts and duct ends. ●The mounting brackets shall be mounted on the straight duct or at the designated positions of the part and firmly secured to the floor. Do not mount the bracket at locations where the joint parts are used.
Notice	●This Product is not of the waterproof structure. If waterproof property is required, be sure to apply caulking or putty to the joints and coupling parts. If waterproof property is required for pipe shafts and other pipe exit points, use a water stop plate (RSP), water stop sleeve (RSB), bottom plate (RDB) or similar components, and apply caulking or putty.

Observe the following points

■About handling

- (1) Do not damage the surface.
- (2) Do not place the Product directly on the ground for temporary placement (use non-wood liners to create a gap).
- (3) Do not handle the Product in the stuck condition in the rain.
- (4) When using acidic or alkaline chemicals (including cleaning fluids) during or after installation work, cover the duct with a sheet or the like to prevent contact with the chemicals.
- (5) When cutting piping made of copper, etc., cover the duct with a sheet, etc. to protect the duct from being exposed to metallic powders.

■About storage

- (1) Store the duct in a well-ventilated room.
- (2) When storing the duct outside, place the duct with a gap from the ground in a well-drained area. Cover the duct completely with a sheet in rainy weather and remove the cover promptly in fine weather. Ensure that the duct is protected from seawater splashes when during marine transportation and storage on the quay.
- (3) When storing the duct in the stack, use non-wood cushioning materials to provide a sufficient gap between members, and provide a larger gap with the ground.

For designing and installation companies

Read this “SLIMDUCT RD Design and Installation Materials” carefully and perform designing and installation work properly for correct and safe use of the Product.

About the SLIMDUCT RD-ZA Series

- SLIMDUCT RD-ZA series consist of uncoated steel plates, which causes the metallic luster of the Product surface to decrease and the color to change from gray to grayish black over time.
- Due to the production process of steel plates, SLIMDUCT RD-ZA series differs in the appearance of the steel plate surface (color and pattern) from one product to another. In addition, machining marks may be found due to unavoidable reasons of the product machining process. However, the steel base will not be exposed and the corrosion resistance will not reduce at all.
- As with the hot-dip zinc-coated finishing (HDZT), white rust will occur. However, that will not significantly reduce the corrosion resistance, because the white rust will work as the protective film.
- As with the hot-dip zinc-coated finishing (HDZT), blackening phenomenon will occur. However, that will not reduce 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 installation, aluminum and magnesium will melt out from the plating layer of the plane surface. The dense zinc-based protective film which contains the melted out aluminum and magnesium covers the end face, and produces an excellent corrosion resistance. (For the mechanism of corrosion resistance production in the end face, see[5.2])
- When you perform a cutting work on site, be sure to perform the repair work by using the zinc rich paint (Zn-Al).
- Stainless steel is used for bolts, nuts and washers, used for assembly of the Product. Due to the characteristics of thermal expansion and thermal conduction, seizure may occur depending on the tightening conditions.

About appearance changes

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

- (1) Magnesium-containing zinc-aluminum protective film
- (2) Magnesium-containing zinc-based protective film

It works as the protective film on the coated 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 white rust

Highly corrosion-resistant hot-dip zinc-coated steel sheets contain zinc that has an ionization tendency higher than iron in its coated layer. By this, for cut end faces of the coated steel sheet and parts of surface where defects were developed due to flaws, sacrificial anticorrosion protection works and corrosion of the steel 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 coated layer is damaged.

Therefore, it is important to minimize damage to the protective film on the surface during the installation work for maintaining the corrosion resistance for a long period of time. Care should be taken in handling and storage.

About the SLIMDUCT RD-SUS

Stainless steel has a strong resistance against rust. However, it can rust in a salt damage region, in a strongly acidic environment, or by contacting a dissimilar metal.

About handling of the data

Read the conditions below carefully before using data contained in this document.

- The data contained in this document can be used only for the product design review when using our Product. Use of the data is prohibited for any purpose other than the above.
- Data contained in this document does not guarantee the specifications of our Product. We cannot be held responsible for any damage caused by using these data regardless of the reason.
- Values provided in the figures and tables of this document are not guaranteed to be the same as those of the actual products.
- Data is subject to change without prior notice for product improvement. Please understand.
- Alteration, reproduction or distribution of the data in this document is prohibited without permission from Inaba Denko.
- Take full responsibility for your use of this document.

Polyphyletic ducting system creating comfortable environment

Beautiful Line
SLIMDUCT™ RD

Design and installation materials

Design P1 to P67

Installation P69 to P160

Materials P161 to P167

Design of each part							Total design				Specifications				
Other parts	Bottom plate	Fittings	Mounting bracket	Connection method	Pipe shaft and wall penetration	Duct	Installation method (hanging from the ceiling)	Installation method (on the wall surface)	Installation method (on the floor)	Basic design flow	Accommodation capacity	Load capacity and strength	Product configuration, specifications, and weight		
Installation procedure															
Others		Bottom plate		Fittings		Connection		Duct (straight pipe)		Mounting bracket		Pipe shaft and wall penetration		How to proceed installation	
Materials															
SI units			Copper pipe			How to take measures against snow accumulation			About the corrosion resistance of RD-ZA type			Specifications by Ministry of Land, Infrastructure, Transport and Tourism			

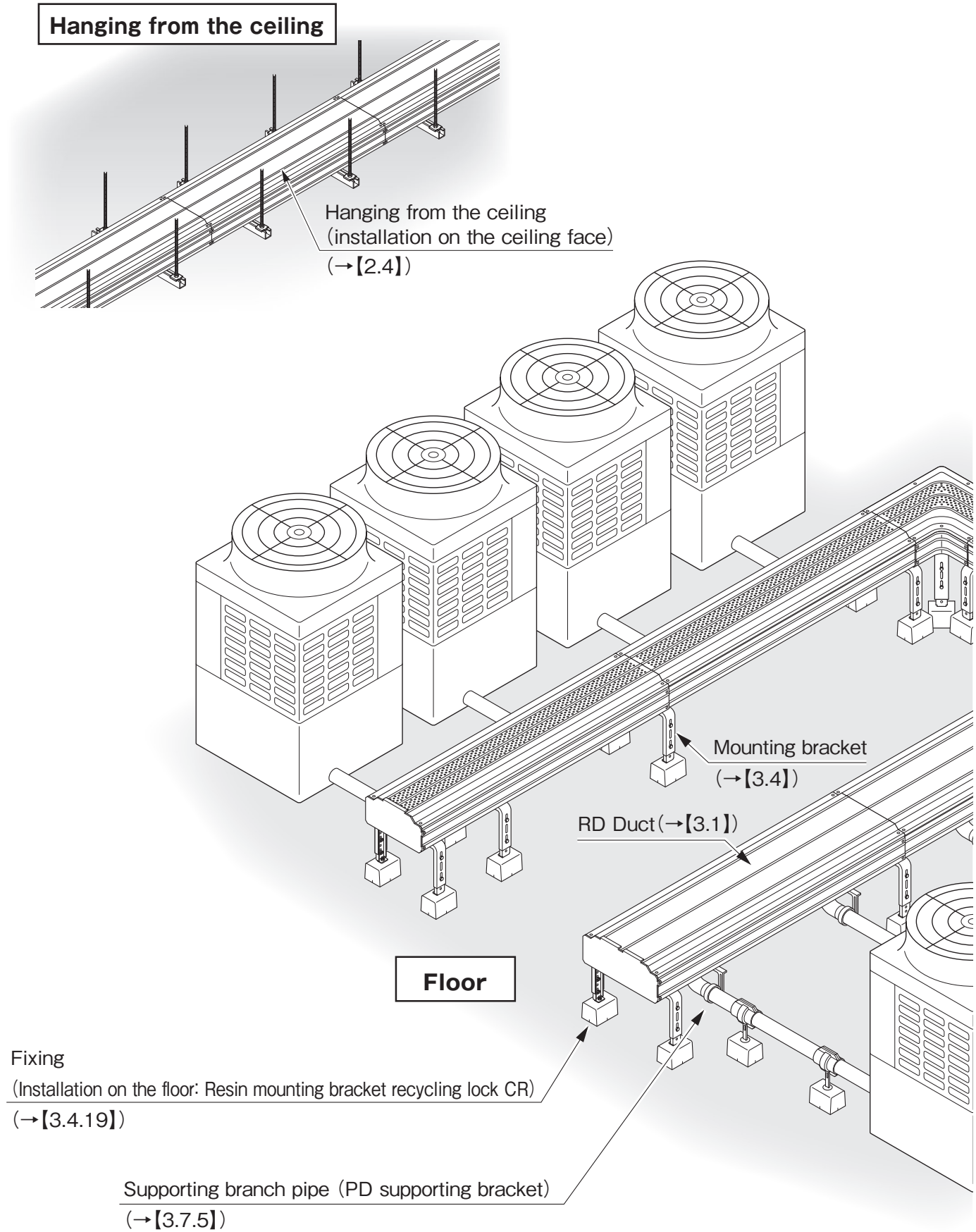
Table of contents

Design	
1 Specifications	1
1.1 Product configuration	2
1.1.1 Product list	2
1.1.2 Product variations	3
1.1.3 Part name	3
1.2 Specifications	3
1.2.1 Material	3
1.3 Product weight	4
1.3.1 Duct	4
1.3.2 Parts	5
1.3.3 Mounting bracket	5
1.4 Load capacity and strength	6
1.4.1 Allowable load of base (duct base + strut)	6
1.4.2 Strength of cover (allowable load)	6
1.4.3 Load capacity (allowable load) of mounting bracket	6
1.5 Accommodation capacity	7
1.5.1 When using BHC the BIGTIE holder (for channel)	7
1.5.2 Table of rough indication of accommodatable quantity of pipelines in a case where the piping is not fixed (thickness of insulation = Liquid pipe : 10 mm, Gas pipe : 10 mm)	8
1.5.3 Table of rough indication of accommodatable quantity of pipelines in a case where the piping is not fixed (thickness of insulation = Liquid pipe : 10 mm, Gas pipe : 20 mm)	9
1.5.4 Table of rough indication of accommodatable quantity of pipelines in a case where the piping is not fixed (for the triple piping system)	10
2 Total design	11
2.1 Basic design flow	12
2.2 Installation method (on the floor)	14
2.2.1 Installation by using mounting bracket	14
2.2.2 Installation by using H-steel/channel steel	14
2.2.3 Installation by using channel	14
2.3 Installation method (on the wall surface)	15
2.3.1 Types of installation on the wall surface (vertical)	15
2.3.2 Feasibility of installation on wall face for each product type	15
2.3.3 Conditions for installation on the wall surface (directly on the wall surface)	16
2.3.4 Conditions for installation on the wall surface (suspended from the wall surface)	17
2.4 Installation method (hanging from the ceiling)	18
2.4.1 Notes on hanging from the ceiling	18
3 Design of each part	19
3.1 Duct	20
3.1.1 Product configuration	20
3.1.2 Load capacity	20
3.1.3 Selecting duct	20
3.1.4 About installation on the wall surface and by hanging from the ceiling	20
3.1.5 Position to set the mounting bracket (for installation on the floor)	21
3.1.6 Notes on designing	21
3.1.7 Cutting duct	21
3.2 Pipe shaft and wall penetration	22
3.2.1 Installation example of Pipe shaft and wall penetration (installation outdoors on the floor)	22
3.2.2 Installation of RWP wall flange	23
3.2.3 Installation of RSP wall sleeve	24
3.2.4 Installation of RSB cut-off wall plate	24
3.2.5 Installation of RSPC water shut-off plate protection cover	25
3.2.6 Installation of CB chamber box (removal from the front)	26
3.2.7 Installation of CB chamber box (removal from the bottom)	27
3.2.8 Installation of chamber box (self-making)	28
3.2.9 Wall penetrating installation method (indoors)	28
3.3 Connection method	29
3.3.1 Table for selecting connection method	29
3.3.2 Coupler-free connection	30
3.3.3 RSJ fixing coupler	30
3.3.4 RFJ free coupler	30
3.3.5 RSS sliding coupler	32
3.3.6 RR reducer	33
3.3.7 Connection for 900/900H corner parts	33
3.3.9 Connection for 900/900H joint (1) RXR	33
3.3.8 Connection for 900/900H joint (2) RXJ	34
3.3.10 RXSS/RXSSW box joint sliding coupler	34
3.3.11 RCSS sliding coupler for RCF-900 (H)-SUS	35
3.4 Mounting bracket	36
3.4.1 Product configuration	36
3.4.2 Load capacity	36
3.4.3 Table for selecting a 150-type mounting bracket (for installation on the floor)	36
3.4.4 Table for selecting a mounting bracket other than 150-type (for installation on the floor)	37
3.4.5 Table for selecting a mounting bracket for installation on the wall surface (basic installation example)	37
3.4.6 Example of position for setting	38
3.4.7 Position for setting	39
3.4.8 Standard pitch between bases	40
3.4.9 Example of setting the mounting bracket	41
3.4.10 RZC bracket attachment plate for vertical ell	42
3.4.11 RBK-B auxiliary bracket for strut	42
3.4.12 RBK-A auxiliary bracket for duct base	42
3.4.13 RD-HB screw set for wall cover	42
3.4.14 RZY mounting bracket guide for duplex mounting	42
3.4.15 RDY pipe support base	43
3.4.16 RKT fixing bracket for fixing RD to shaped steel	43
3.4.17 RKTW RD walkway fixing bracket for shaped steel	43
3.4.18 RCT RD bracket for fixing channel	44
3.4.19 Fixing (to floor)	44
3.5 Fittings	45
3.5.1 Types of fittings	45
3.5.2 RE 90°flat ell	46
3.5.3 RF 45°flat ell	47
3.5.4 RFS flexible corner	49
3.5.5 RT tee	50
3.5.6 RXN/RX cross	51
3.5.7 RCF 45°vertical ell	53
3.5.8 RC/RCI/RCO 90° vertical ell (for 150 to 600H)	56
3.5.9 RCI/RCO 90° vertical ell (for 900/900H)	59
3.5.10 Installation of a mounting base on the elevation surface corner	61
3.6 Bottom plate	62
3.6.1 Type of bottom plate setting	62
3.6.2 Bottom plate usable position	63
3.6.3 Fittings necessary for bottom plate installation	64
3.7 Other parts	65
3.7.1 RXH cover reinforcing plate	65
3.7.2 RSK RD duct partitioning bracket for H type	65
3.7.3 RDK RD strut set	66
3.7.4 REC end cap	66
3.7.5 RPH PD supporting bracket	67
3.7.6 RDS caution sticker	67

Table of contents

Installation	
4 Installation procedure	69
4.1 How to proceed installation	70
4.1.1 How to proceed installation	70
4.1.2 Tools for installation	70
4.2 Pipe shaft and wall penetration	71
4.2.1 List of installation methods	71
4.2.2 RWP wall flange	72
4.2.3 RSP/RSPR wall sleeve	73
4.2.4 RSB cut-off wall plate	75
4.2.5 RSPC water shut-off plate protection cover	76
4.2.6 CB chamber box	77
4.3 Mounting bracket	82
4.3.1 List of parts for the mounting bracket	82
4.3.2 RZ (RZM+RZB) RD mounting bracket (for 300 to 900)	83
4.3.3 RZ-150, RZW RD mounting bracket (for 150)	85
4.3.4 RZC bracket attachment plate for vertical ell	87
4.3.5 RZY mounting bracket guide for duplex mounting	88
4.3.6 RDY pipe support	89
4.3.7 RZH RD mounting base reinforcing plate	89
4.3.8 FL-B-Z cross-lock B type (for outdoor use)	90
4.3.9 RBK-B auxiliary bracket for strut	90
4.3.10 RBK-A auxiliary bracket for duct base	91
4.3.11 RKT RD bracket for fixing to shaped steel	92
4.3.12 RKTW RD walkway fixing bracket for shaped steel	92
4.3.13 RCT RD bracket for fixing channel	94
4.3.14 CR recycling lock (multipurpose support base)	95
4.3.15 PB plastic base	96
4.4 Duct (straight pipe)	97
4.4.1 RD Duct	97
4.4.2 RDW walkway type duct	98
4.4.3 Example of RD/RDW assembly	99
4.4.4 RD/RDW coupler-free connection <simple assembly method>	100
4.5 Connection	101
4.5.1 Connection methods and part list	101
4.5.2 Coupler-free connection	102
4.5.3 RSJ fixing coupler	103
4.5.4 RFJ free coupler	105
4.5.5 RSS sliding coupler	108
4.5.6 RR reducer (coupler type)	110
4.5.7 RR reducer (plate type)	111
4.5.8 RXR 900(H) type reducer for fittings	112
4.5.9 RXJ 900(H) type coupler for fittings	113
4.5.10 RXSS/RXSSW box joint sliding coupler	114
4.5.11 RCSS sliding coupler for RCF-900 (H)-SUS	117
4.6 Fittings	119
4.6.1 Fittings list	119
4.6.2 RE 90° flat ell	120
4.6.3 REW 90° flat ell (walkway type)	122
4.6.4 RF 45° flat ell	123
4.6.5 RFW 45° flat ell (walkway type)	125
4.6.6 RFS flexible corner	127
4.6.7 RFSW flexible corner (for walkway type)	129
4.6.8 RT tee	131
4.6.9 RTW tee (walkway type)	133
4.6.10 RXN/RX cross	134
4.6.11 RXNW/RXW cross (walkway type)	136
4.6.12 RCI 90° inside vertical ell	138
4.6.13 RCO 90° outside vertical ell	140
4.6.14 RC 90° vertical ell (150)	143
4.6.15 RCF 45° vertical ell	144
4.7 Bottom plate	146
4.7.1 Bottom plate list	146
4.7.2 RDB bottom plate set for RD duct	147
4.7.3 REB bottom plate set for 90° flat ell	150
4.7.4 RFB bottom plate set for 45° flat ell	151
4.7.5 RTS bottom plate set for tee	152
4.7.6 RDBJ bottom plate for coupler	153
4.7.7 RJB retrofit bottom plate for coupler	154
4.7.8 RNB bottom net	155
4.8 Others	156
4.8.1 List of other members	156
4.8.2 REC end cap	157
4.8.3 RPH PD supporting bracket	158
4.8.4 RDK RD strut set	159
4.8.5 RSK RD duct partitioning bracket for H type	159
4.8.6 RDS caution sticker	160
5 Materials	161
5.1 Specifications by Ministry of Land, Infrastructure, Transport and Tourism	162
5.1.1 Standard specifications of machinery and equipment installation by Ministry of Land, Infrastructure, Transport and Tourism	162
5.1.2 Supervision guidelines of machinery and equipment installation by Ministry of Land, Infrastructure, Transport and Tourism	162
5.2 About the corrosion resistance of RD-ZA type	163
5.3 View of snow accumulation	164
5.3.1 The Building Standards Act	164
5.3.2 Calculation of snow load for RD (example)	164
5.3.3 Other notes	165
5.4 Copper pipe	166
5.4.1 Table of copper pipe specifications	166
5.4.2 Pipe weight (reference value)	166
5.5 SI units	167
5.5.1 Table of SI units	167
5.5.2 SI unit conversion table	167

Installation image

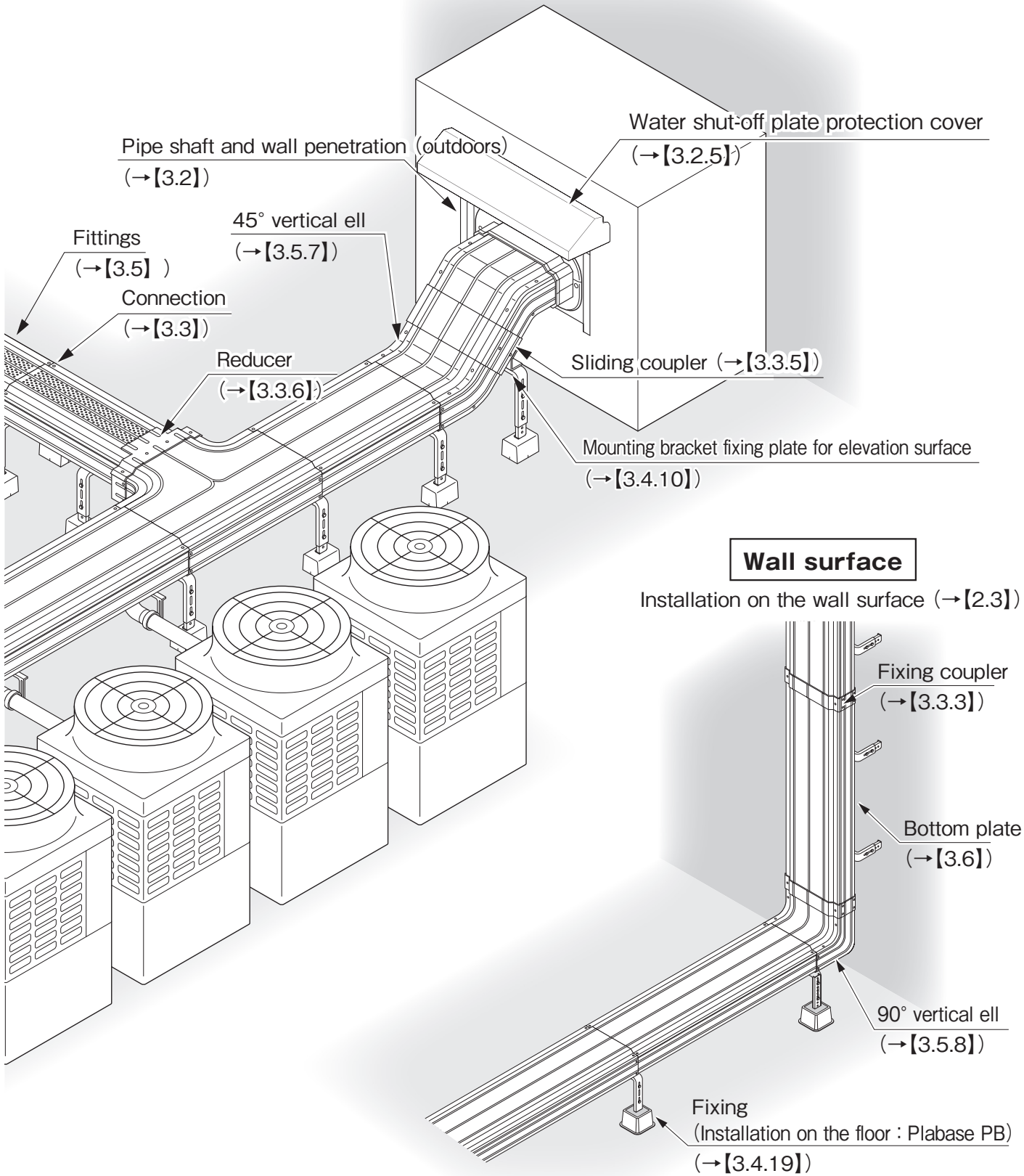


Installation image

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.



Features

Beauty Slim finish, Accommodation in order

Beautiful finish

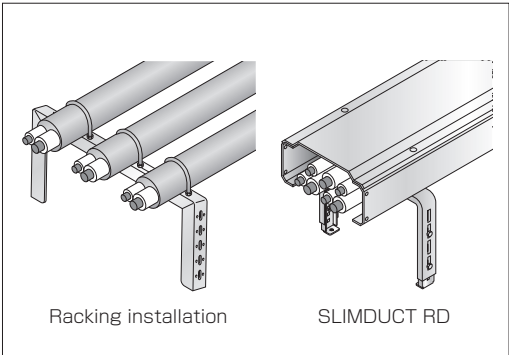
Straight and curved lines are combined for slim finish, and pipes are accommodated in order.



Functions Accommodating multiple pipes of various types

Accommodating multiple pipelines

Multiple pipes of various types can be accommodated in different sizes. With a streamlined collective piping, multiple pipelines can be accommodated in a smaller area than the conventional method.



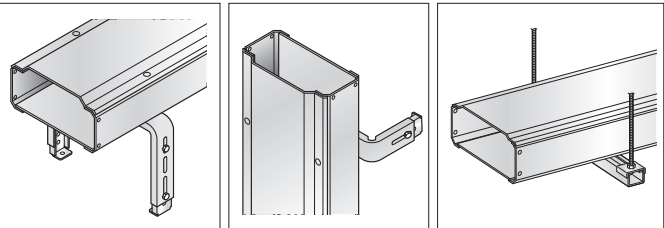
Simple installation design

No special tool is needed for connecting members and assembling ducts, enabling start of installation 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 installation conditions. *

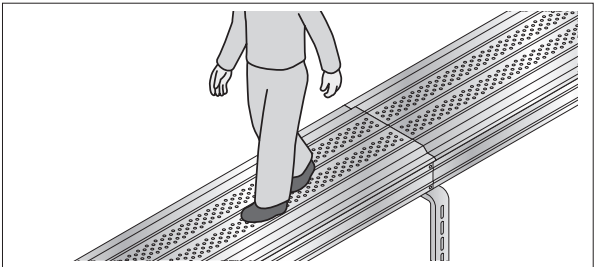
* Some sizes are excluded.



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 brackets 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 JIS G 3323 K27
- *2 JIS G 4305 SUS304

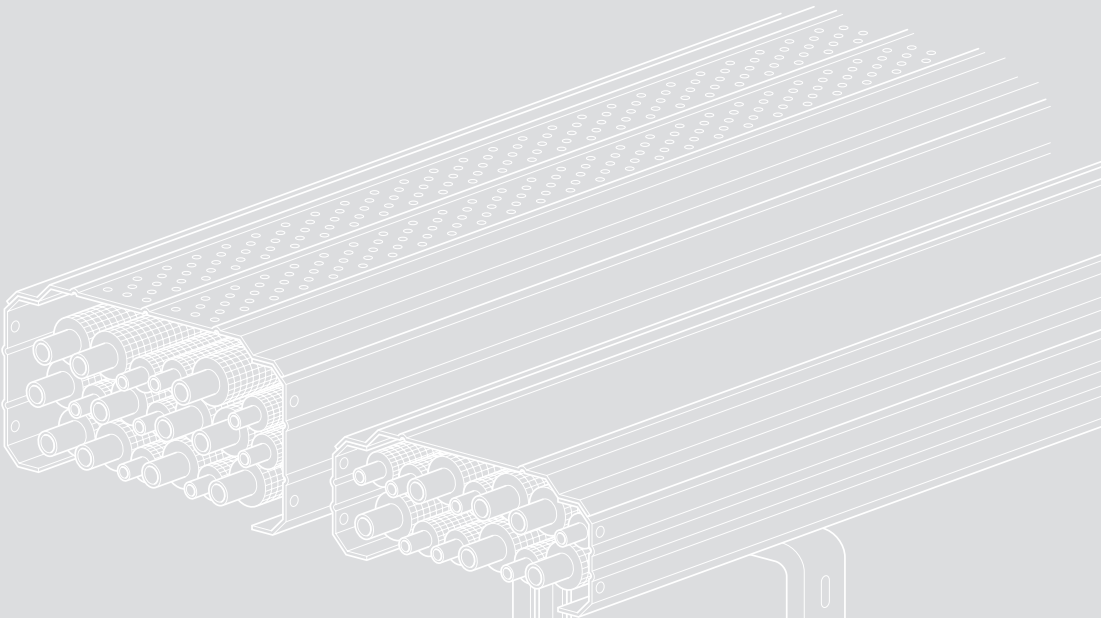
Excellent resistance to flaws

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

Product configuration	P2
Specifications	P3
Product weight	P4 to P5
Load capacity and strength	P6
Accommodation capacity	P7 to P10



Specifications	Design	
	Product configuration, specifications, and weight	
	Load capacity and strength	
Total design	Accommodation capacity	
	Basic design flow	
	Installation method (on the floor)	
Design of each part	Installation method (on the wall/surface)	
	Installation method (hanging from the ceiling)	
	Duct	
Other parts	Pipe shaft and wall penetration	
	Connection method	
	Mounting bracket	
Other parts	Fittings	
	Bottom plate	

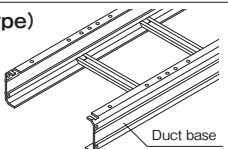
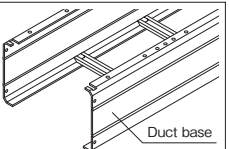
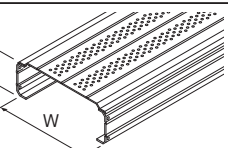
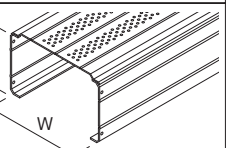
1.1 Product configuration

1.1.1 Product list

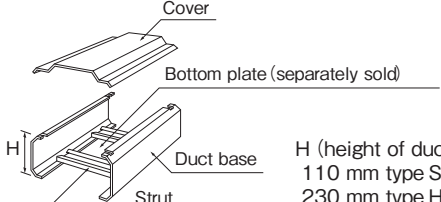
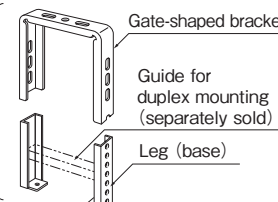
<Table 1.1.1-1>

Product type	Product name	Model number (duct size omitted)	Related item	
			Design	Installation
Straight pipe	RD duct	RD	[3.1]	[4.4]
	RD duct (walkway type)	RDW	[3.1]	[4.4]
Elbow	90° flat ell	RE	[3.5.2]	[4.6.2]
	90° flat ell (walkway type)	REW	[3.5.2]	[4.6.3]
	45° flat ell	RF	[3.5.3]	[4.6.4]
	45° flat ell (walkway type)	RFW	[3.5.3]	[4.6.5]
	Flexible corner	RFS	[3.5.4]	[4.6.6]
	Flexible corner (walkway type)	RFSW	[3.5.4]	[4.6.7]
	45° vertical ell	RCF	[3.5.7]	[4.6.15]
	90° inside vertical ell	RCI	[3.5.8]	[4.6.12]
	90° outside vertical ell	RCO	[3.5.8]	[4.6.13]
	90° vertical ell (for 150)	RC	[3.5.8]	[4.6.14]
Tee	Tee	RT	[3.5.5]	[4.6.8]
	Tee (walkway type)	RTW	[3.5.5]	[4.6.9]
Cross	Cross	RXN/RX	[3.5.6]	[4.6.10]
	Cross (walkway type)	RXNW/RXW	[3.5.6]	[4.6.11]
Reducer	Reducer (coupler type)	RR	[3.3.6]	[4.5.6]
	Reducer (plate type)	RR	[3.3.6]	[4.5.7]
Coupler	Fixing coupler	RSJ	[3.3.3]	[4.5.3]
	Free coupler	RFJ	[3.3.4]	[4.5.4]
	Sliding coupler	RSS	[3.3.5]	[4.5.5]
	Reducer for 900-type fittings	RXR	[3.3.8]	[4.5.8]
	Coupler for 900-type fittings	RXJ	[3.3.9]	[4.5.9]
	Box joint sliding coupler	RXSS/RXSSW	[3.3.10]	[4.5.10]
	Sliding coupler for RCF-900 (H)-SUS	RCSS	[3.3.11]	[4.5.11]
End cover	End cap	REC	[3.7.4]	[4.8.2]
Pipe shaft and penetrating part	RD wall flange	RWP	[3.2.2]	[4.2.2]
	Wall sleeve	RSP	[3.2.3]	[4.2.3]
	Wall sleeve(inverted)	RSPR	[3.2.3]	[4.2.3]
	Cut-off wall plate	RSB	[3.2.4]	[4.2.4]
	Water shut-off plate protection cover	RSPC	[3.2.5]	[4.2.5]
	Chamber box	CB	[3.2.6/3.2.7/3.2.8]	[4.2.6]
Partition in ducts	RD duct partitioning bracket	RSK	[3.7.2]	[4.8.5]
Supporting pipes	Pipe support base	RDY	[3.4.15]	[4.3.6]
Mounting bracket	RD mounting bracket	RZM,RZB,RZ,RZW	[3.4]	[4.3]
	Fixing bracket for fixing RD to shaped stee	RKT/RKTW	[3.4.16/3.4.17]	[4.3.11/4.3.12]
	RD bracket for fixing channel	RCT	[3.4.18]	[4.3.13]
	Auxiliary bracket for strut	RBK-B	[3.4.11]	[4.3.9]
	Auxiliary bracket for duct base	RBK-A	[3.4.12]	[4.3.10]
	Bracket attachment plate for vertical ell	RZC	[3.4.10]	[4.3.4]
Bottom plate	RZ guide for duplex mounting	RZY	[3.4.14]	[4.3.5]
	Bottom plate set for RD duct	RDB	[3.6]	[4.7.2]
	Bottom plate for coupler	RDBJ	[3.6]	[4.7.6]
	Retrofit bottom plate for coupler	RJB	[3.6]	[4.7.7]
	Bottom plate set for 90° flat ell	REB	[3.6]	[4.7.3]
	Bottom plate set for 45° flat ell	RFB	[3.6]	[4.7.4]
	Bottom plate set for tee	RTS	[3.6]	[4.7.5]
	Bottom net	RNB	[3.6]	[4.7.8]
	Resin bush for bottom plate	RDB-B	[3.6]	[4.7]
	Supporting branch pipes	PD supporting bracket	[3.7.5]	[4.8.3]
Strut	Strut set	RDK	[3.7.3]	[4.8.4]
Reinforcing cover	Cover reinforcing plate	REH/RFH	[3.5.2/3.5.3]	[4.6.2/4.6.4]
	Cover reinforcing plate (for 900 type)	RXH	[3.7.1]	[4.6.5/4.6.10/4.6.11]
Other parts	Caution sticker	RDS	[3.7.6]	[4.8.6]

1.1.2 Product variations

Cover	Duct base	
	Standard type (S type)	High type (H type)
Standard type	Steel sheet type (ZA) Stainless type (SUS) 	Steel sheet type (ZA) Stainless type (SUS) 
	W : 150·300·450·600-900 Height 111 (150 type only) 134 (300/450/600/900) 131 (300/450 SUS type only)	W :300·450·600·900 Height 251 (300H/450H) 254 (600H/900H)
Walkway type	W : 300-450·600-900 Height 134 	W : 300-450·600-900 Height 254 

1.1.3 Part name

Cover		H (height of duct base) 110 mm type Standard type (S type) 230 mm type High type (H type)
Base		

1.2 Specifications

1.2.1 Material

■ Metal products

Type	Material	Surface treatment	Salt damage resistance
Steel sheet type	Highly corrosion-resistant hot-dip galvanized steel sheet (Molten zinc: 6%, Aluminum: 3%, Magnesium) JIS G 3323 K27	Standard product	—
Stainless type	Stainless steel sheet JIS G 4305 SUS304	Made-to-order	Hairline finish 2B finish

■ Resin products

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

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 insulation such as polyethylene foam that is of extremely low water absorption.
If waterproofness (preventing rain water intrusion) is required for the pipe takeout part etc., use the bottom plate for duct (RDB), wall sleeve (RSP), and cut-off wall plate (RSB), as well as be sure to apply caulking or take other means for waterproofing.

Reference [3.2] Pipe shaft and wall penetration

1.3 Product weight

- 1.3.1 Duct [Design]

1.3 Product weight

- 1.3.2 Parts [Design]
- 1.3.3 Mounting bracket

1.3 Product weight

Table of contents

1.3.1 Duct	4
1.3.2 Parts	5
1.3.3 Mounting bracket	5

1.3.1 Duct

<Table 1.3.1-1> Weight of duct (unit : kg)

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

1.3.2 Parts

<Table 1.3.2-1> Weight of parts (fittings) (unit : kg)

Standard product				Walkway type	
Model number	Weight	Model number	Weight	Model number	Weight
RE-150-□	1.9	RCO-450-□	8.0	REW-450-□	11.1
RE-300-□	6.5	RCO-450H-□	12.2	REW-450H-□	13.3
RE-300H-□	9.0	RCO-600-□	10.2	REW-600-□	15.8
RE-450-□	9.2	RCO-600H-□	15.8	REW-600H-□	19.0
RE-450H-□	11.4	RCO-900-□	20.7	RFW-300-□	6.2
RE-600-□	12.8	RCO-900H-□	25.2	RFW-300H-□	7.7
RE-600H-□	16.0	RCF-300-□	5.6	RFW-450-□	9.5
RF-300-□	5.7	RCF-300H-□	6.7	RFW-450H-□	10.5
RF-300H-□	7.2	RCF-450-□	6.1	RFW-600-□	11.8
RF-450-□	7.7	RCF-450H-□	7.5	RFW-600H-□	14.2
RF-450H-□	9.7	RCF-600-□	9.2	RFSW-300	2.5
RF-600-□	9.9	RCF-600H-□	13.5	RFSW-300H	3.1
RF-600H-□	12.3	RCF-900-□	14.8	RFSW-450	4.0
RFS-300	2.5	RCF-900H-□	17.8	RFSW-450H	4.7
RFS-300H	3.1	RT-150-□	2.3	RFSW-600	6.6
RFS-450	4.0	RT-300-□	8.2	RFSW-600H	7.4
RFS-450H	4.7	RT-300H-□	10.0	RFSW-900	10.1
RFS-600	5.8	RT-450-□	12.0	RFSW-900H	11.2
RFS-600H	6.6	RT-450H-□	14.0	RTW-300-□	9.0
RFS-900	8.8	RT-600-□	18.7	RTW-300H-□	10.8
RFS-900H	9.9	RT-600H-□	21.6	RTW-450-□	14.4
RCI-300-□	5.3	RXN-300-□	7.1	RTW-450H-□	16.4
RCI-300H-□	7.7	RXN-300H-□	9.0	RTW-600-□	22.6
RCI-450-□	6.9	RXN-450-□	10.2	RTW-600H-□	25.5
RCI-450H-□	10.3	RXN-450H-□	12.1	RXNW-300-□	8.8
RCI-600-□	8.8	RXN-600-□	13.6	RXNW-300H-□	10.7
RCI-600H-□	13.3	RXN-600H-□	15.5	RXNW-450-□	14.5
RCI-900-□	21.4	RX-900-□	28.1	RXNW-450H-□	16.4
RCI-900H-□	26.2	RX-900H-□	31.2	RXNW-600-□	21.7
RCO-300-□	5.9	REW-300-□	7.0	RXNW-600H-□	23.5
RCO-300H-□	8.9	REW-300H-□	9.5	RXW-900-□	37.4
				RXW-900H-□	40.5

※ The product weight is almost the same for both the highly corrosion-resistant steel sheet type and the stainless type.
※ In the box □, a type such as A, B, C is indicated.

1.3.3 Mounting bracket

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

Model number	Weight	Model number	Weight	Model number	Weight
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.
※ In the box □, a type such as A, B, C is indicated.

1.4 Load capacity and strength

- 1.4.1 Allowable load of base (duct base + strut)
- 1.4.2 Strength of cover (allowable load) [Design]
- 1.4.3 Load capacity (allowable load) of mounting bracket

1.4 Load capacity and strength

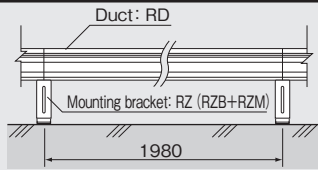
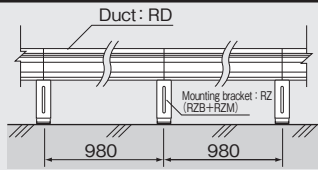
Outline

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] View of snow accumulation

1.4.1 Allowable load of base (duct base + strut)

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

Item	Allowable load for 2-m RD duct	
	2-m RD duct (pipe support by 3 strut)	1-m RD duct ×2 (pipe support by 4 strut)
		
Duct size		
RD-150	9,387N (958kgf)	12,548N (1,280kgf)
RD-300	3,929N (401kgf)	5,281N (539kgf)
RD-450	2,546N (260kgf)	3,448N (352kgf)
RD-600	1,837N (187kgf)	2,513N (256kgf)
RD-900	1,102N (112kgf)	1,552N (158kgf)
RD-300H	3,877N (396kgf)	5,228N (533kgf)
RD-450H	2,494N (255kgf)	3,396N (347kgf)
RD-600H	1,785N (182kgf)	2,461N (251kgf)
RD-900H	2,231N (228kgf)	3,076N (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 strut (in the assembled state).

1.4.2 Strength of cover (allowable load)

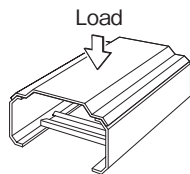
This is the strength of cover (allowable load for cover being restored to the original state) when the cover is attached to the base (duct base + strut).

Note that values for the W600 to 900H sizes and the walkway type are those in the state where the cover reinforcing plate is attached.

<Figure 1.4.2-1>

Specifications		Strength of cover	
		for 1m ²	When load is applied by the load plate (200mm × 100mm)
Standard type	Steel sheet	4,903N/m ² (500kgf/m ²) or less	98N (10kgf) or less
	Stainless type		
Walkway type	Steel sheet type	49,030N/m ² (5,000kgf/m ²) or less	980N (100kgf) or less

<Figure 1.4.2-1>



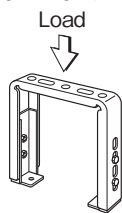
1.4.3 Load capacity (allowable load) of mounting bracket

When four fixing bolts are used and the bolt tightening torque is 19.6N·m (200 kg·cm), the load by which the mounting bracket will begin to shift is 6,374N (650 kgf).

<Figure 1.4.3-1>

Bolt tightening torque	Load by which shift will begin (4 fixing bolts)
19.6N·m (200kg·cm)	6,374N (650kgf)

<Figure 1.4.3-1>



1.5 Accommodation capacity

- 1.5.1 When using BHC the BIGTIE holder (for channel) [Design]

1.5 Accommodation capacity

Table of contents

1.5.1 When using BHC the BIGTIE holder (for channel)	7
1.5.2 Table of rough indication of accommodatable quantity of pipelines in a case where the piping is not fixed (thickness of insulation = Liquid pipe:10mm, Gas pipe:10mm)	8
1.5.3 Table of rough indication of accommodatable quantity of pipelines in a case where the piping is not fixed (thickness of insulation = Liquid pipe:10mm, Gas pipe 20mm)	9
1.5.4 Table of rough indication of accommodatable quantity of pipelines in a case where the piping is not fixed (for the triple piping system)	10

Notes

The quantity of accommodated pipelines described in the document is only for reference and does not guarantee the accommodation capacity.
The quantity may differ depending on the installation condition.

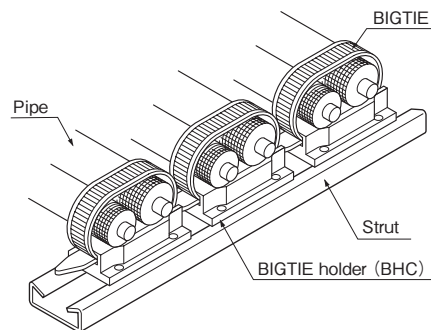
Especially, the accommodatable quantity of pipelines in a case where the piping is not fixed differs depending on the installation condition.

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 fittings. 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 surface, or hanging from the ceiling (hanging upside down).

1.5

Accommodation capacity

- 1.5.2 Table of rough indication of accommodatable quantity of pipelines in a case where the piping is not fixed
- (thickness of insulation = Liquid pipe:10mm, Gas pipe:10mm)
- [Design]

1.5

Accommodation capacity

- 1.5.3 Table of rough indication of accommodatable quantity of pipelines in a case where the piping is not fixed
- (thickness of insulation = Liquid pipe:10mm, Gas pipe:20mm)
- [Design]

Design

Product: configuration, specifications, and weight	Load capacity and strength	Accommodation capacity	Specifications	
Basic design flow	Installation method (on the floor)	Installation method (on the wall surface)	Installation method (hanging from the ceiling)	Total design
Duct	Pipe shaft and wall penetration	Connection method	Mounting bracket	Design of each part
Bottom plate	Fittings	Other parts		

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 wall sleeve (RSP) is used, or the cut-off wall plate (RSB) is used.

■ Thickness of insulation = Liquid pipe:10mm, Gas pipe:10mm (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	21	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.

Design

Product: configuration, specifications, and weight	Load capacity and strength	Accommodation capacity	Specifications	
Basic design flow	Installation method (on the floor)	Installation method (on the wall surface)	Installation method (hanging from the ceiling)	Total design
Duct	Pipe shaft and wall penetration	Connection method	Mounting bracket	Design of each part
Bottom plate	Fittings	Other parts		

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 wall sleeve (RSP) is used, or the cut-off wall plate (RSB) is used.

■ Thickness of insulation = Liquid pipe:10mm , 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	18	38
9.52 × 12.70	2	5	10	9	19	10	25	18	38
9.52 × 15.88	2	5	10	8	18	10	24	17	36
9.52 × 19.05	2	4	8	7	16	9	21	15	32
9.52 × 22.22	2	4	8	7	15	9	20	14	30
9.52 × 25.40	2	4	8	6	14	8	18	13	28
9.52 × 28.58	1	3	6	6	13	8	17	12	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	14	30
12.70 × 25.40	1	3	6	6	13	8	16	13	26
12.70 × 28.58	1	3	6	6	12	7	16	12	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	6	13	8	17	13	26
15.88 × 25.40	1	3	6	6	12	8	15	12	24
15.88 × 28.58	1	3	6	5	11	7	15	11	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	11	23
19.05 × 28.58	1	3	6	5	11	7	15	11	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 wall sleeve (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 insulation = 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 insulation = 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

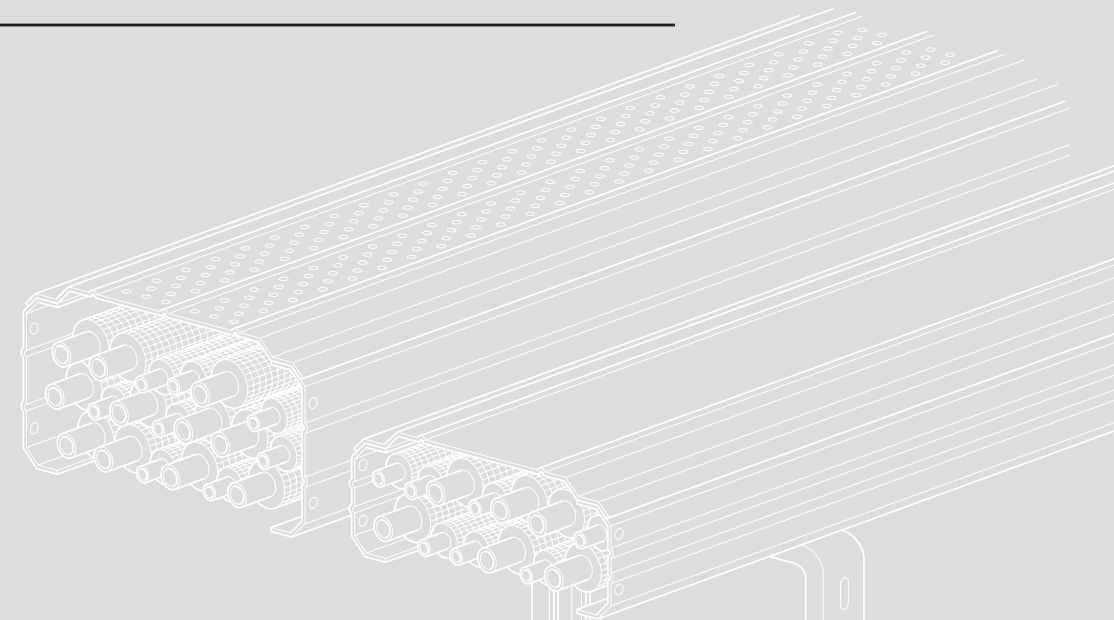
2 Total design

Basic design flow P12 to P13

Installation method
(on the floor) P14

Installation method
(on the wall surface) 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 Pipe shaft part and equipment layout part based on the size and quantity of pipes. <Figure 2.1-1>

Reference [1.5] Accommodation capacity

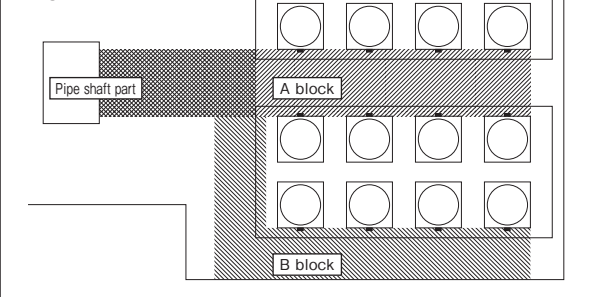
Example 15.88×25.4 (thickness of insulation : 10mm)

Pipe shaft part = 12 pipelines → RD-600 size

A block = 8 pipelines → RD-450 size

B block = 4 pipelines → RD-300 size

<Figure 2.1-1>

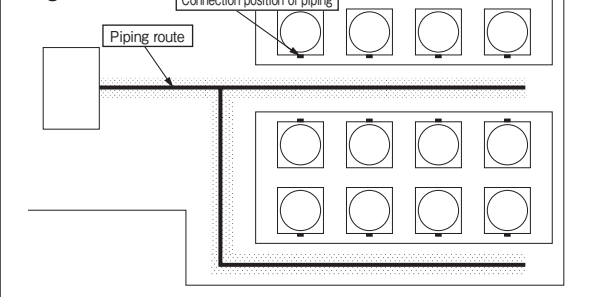


2 Designing piping route and checking pipe size

Design the Pipe shaft 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 brackets 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 brackets to be set for 1 m. (0.5 to 2)

※ The quantity of mounting brackets will differ depending on the part or position.

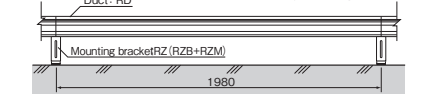
Reference [1.3] Product weight
[1.4] Load capacity and strength
[3.4] Mounting bracket

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 bracket : 650 kg/piece → Quantity of mounting brackets to be set = 0.5 pieces/m → Basic pitch for setting mounting brackets = 2m

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

Reference [5.3] View of snow accumulation

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



4 Setting Pipe shaft and height of mounting bracket

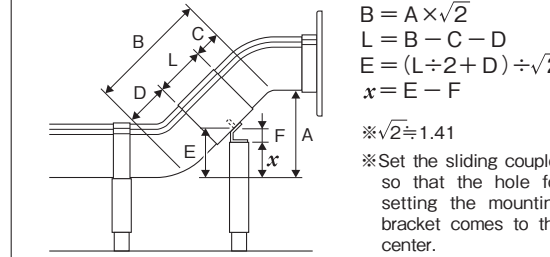
Check the method of penetrating part in the Pipe shaft part, and set the height of mounting bracket based on the height of Pipe shaft, equipment, and obstacles. <Figure 2.1-4.1/4.2>

※ Set the height within the mounting bracket settable range.

※ As to the level difference, set it within the height adjustable with vertical ell or sliding coupler.

Reference [3.2] Pipe shaft and wall penetration, [3.4] Mounting bracket

<Figure 2.1-4.1> Relation in height in the Pipe shaft part (example)

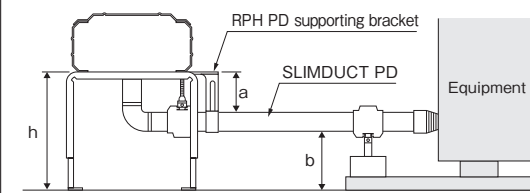


$$B = A \times \sqrt{2}$$
$$L = B - C - D$$
$$E = (L \div 2 + D) \div \sqrt{2}$$
$$x = E - F$$

$$\sqrt{2} \approx 1.41$$

※ Set the sliding coupler so that the hole for setting the mounting bracket 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 installation r is the radius of RD.

5 Locating parts

Locate the ducts, fittings, couplers, and end caps etc.

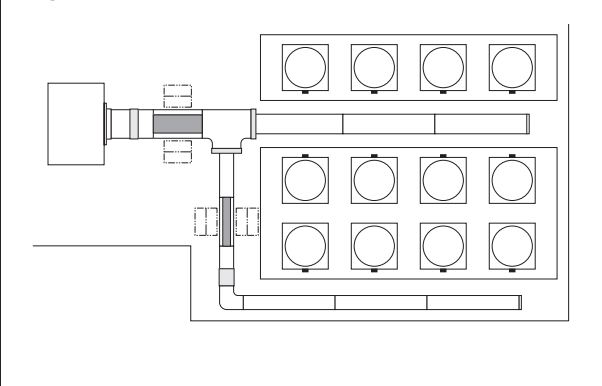
Connection parts include the sliding coupler for adjusting length and the reducer for connecting different size ducts. <Figure 2.1-5>

※ 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>



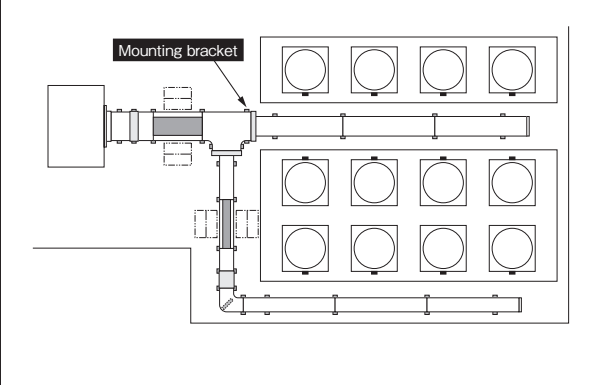
6 Locating mounting bracket

Check the types of fittings and connection methods in each part, and design the positions to set the mounting brackets. <Figure 2.1-6>

※ Required quantity of mounting brackets differs depending on the types of fittings and connection methods.

Reference [3.4] Mounting bracket
[3.5] Fittings

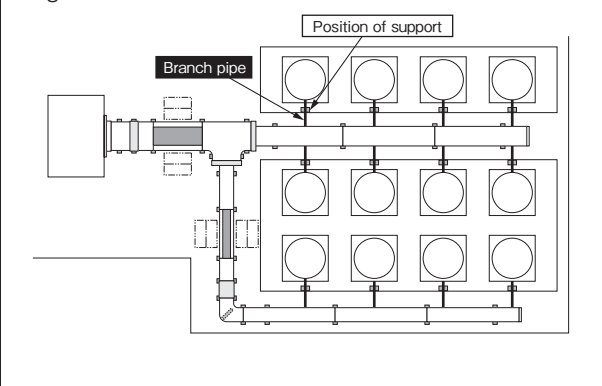
<Figure 2.1-6>



7 Connecting to equipment

Design the route end of piping (branch piping) connecting to the equipment and position of support in consideration of obstacles around the equipment. <Figure 2.1-7>

<Figure 2.1-7>



2.2 Installation method (on the floor)

- 2.2.1 Installation by using mounting bracket
- 2.2.2 Installation by using H-steel/channel steel [Design]
- 2.2.3 Installation by using channel

2.2 Installation method (on the floor)

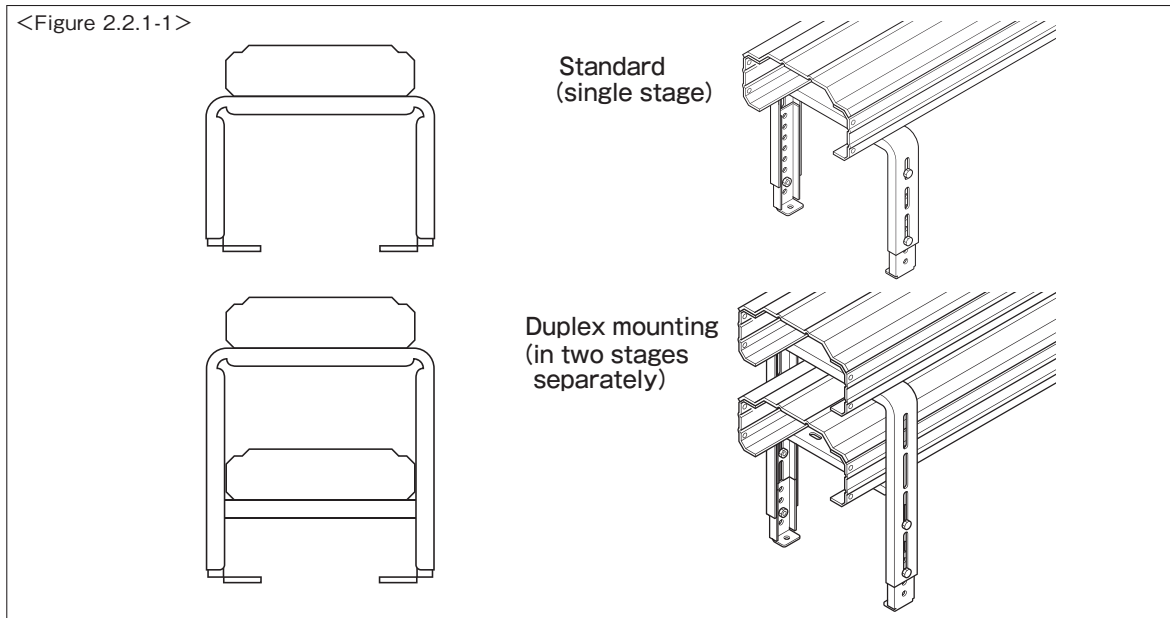
2.2.1 Installation by using mounting bracket <Figure 2.2.1-1>

There are the following installation patterns.

- Single-stage mounting
- Duplex mounting (in two stages separately) ※150 is excluded

Note that in the duplex mounting, three-dimensional arrangement or bending is of much difficulty. A box joint cannot be used for the size of 900 (H).

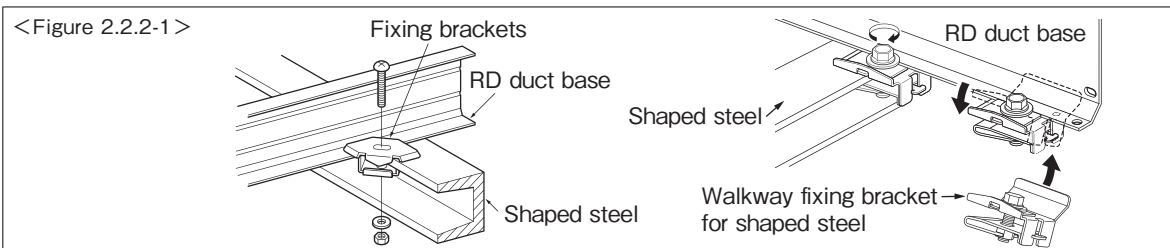
Reference For details about mounting bracket, see "[3.4] Mounting bracket".



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. To connect and secure the duct to H-steel/channel steel, use bolts or RD fixing brackets for shaped steel. Positions where bolts are fixed are to be the same as the positions where the mounting brackets are to be fixed.

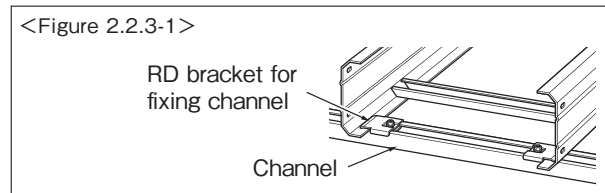
Reference For details of using the RD fixing bracket for shaped steel, see [3.4.16] RKT RD fixing bracket for shaped steel and [3.4.17] RKTW RD walkway fixing bracket for shaped steel."



2.2.3 Installation by using channel <Figure 2.2.3-1>

There is a way to install RD duct in the channel. Install the channel stop fitting and tighten it with screws.

Reference This method cannot be used for the walkway type. For details about the fixing bracket for fixing RD to shaped steel, see "[3.4.18] RCT bracket for fixing channel"



2.3 Installation method (on the wall surface)

- 2.3.1 Types of installation on the wall surface (vertical) [Design]
- 2.3.2 Propriety of wall surface

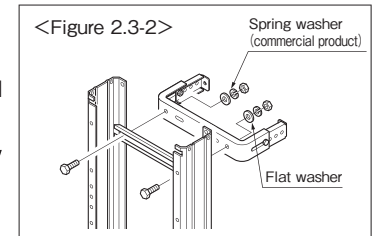
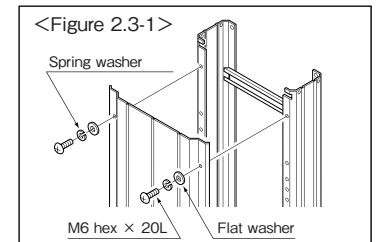
2.3 Installation method (on the wall surface)

Table of contents	Warning	15
	2.3.1 Types of installation on the wall surface (vertical)	15
	2.3.2 Propriety of wall surface	15
	2.3.3 Conditions for installation on the wall surface (directly on the wall surface)	16
	2.3.4 Conditions for installation on the wall surface (suspended from the wall surface)	17

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

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

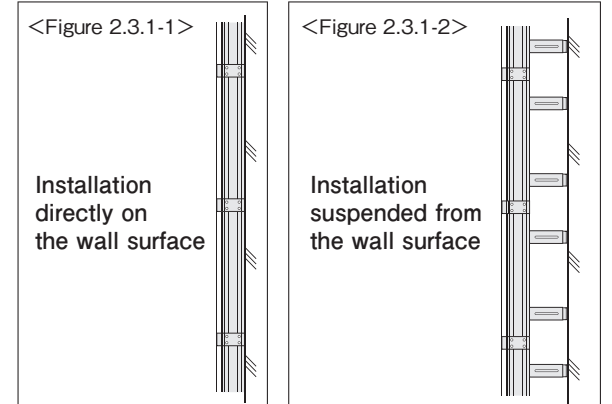
- For attaching the cover, use "Bolt and washer set for cover on wall surface RD-HB".
 - ※ Set contents
 - M6 hex × 20L SUS
 - M6 spring washer SUS
 - M6 flat washer SUS
 - ※ The cover bolt supplied with the product cannot be used.
- For installation on the wall surface (suspended from the wall surface), 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 bracket, 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.



2.3.1 Types of installation on the wall surface (vertical)

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

<Figure 2.3.1-1, 2>



2.3.2 Feasibility of installation on wall face for each product size

<Table 2.3.2-1> shows feasibility of installation on wall face for each type of SLIMDUCT RD.

Do not use the installation method marked with "×" as the product may fall off or damage with strong winds in a worst case scenario.

※When installing the corner parts when directly mounting to the wall, please refer to the installation section and fasten the stand to the wall using all the holes required for mounting the stand.

<Table 2.3.2-1>

Size	Installation directly on the wall face	Installation suspended from the wall surface
150	○	○
300	○	○
300H	○	○
450	○	○
450H	○	○
600	○	○
600H	○	×
900	△	×
900H	(not applicable to corner parts)	×

2.3 Installation method (on the wall surface)

- 2.3.3 Conditions for installation on the wall surface (directly on the wall) [Design]

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

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

1 Use the method using couplers* for fixing.

* For the upper and lower ends, the free coupler or reducer cannot be used. [3.5.8] 90° vertical ell

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

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

3 Fixing method

Fix with “Stainless W3/8 or M10 anchor” by using the parts dedicated for installation on the wall surface. Note that the installable position differs depending on the product.

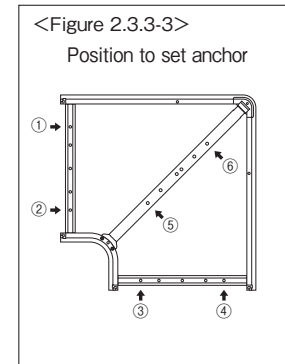
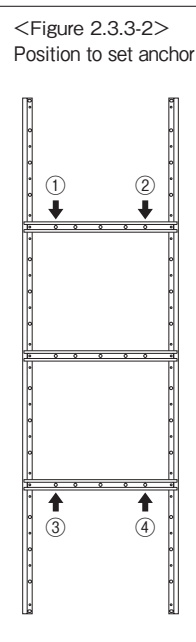
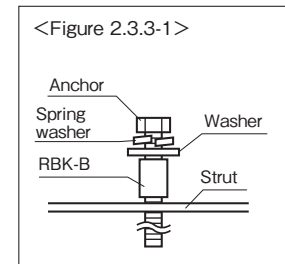
1. General type ducts and fittings

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

*For 2m-type and 1m-type ducts other than 150, installation by using the bracket for duct base is also possible in the same way as the Open type duct.

Set the anchors in 4 or more positions in consideration of balance. <Figure 2.3.3-2>

For the 90° flat ell and RE-300 to 600H, supporting in 5 or more positions including the outer R side of the auxiliary strut (6) is recommended.



2. Open type duct

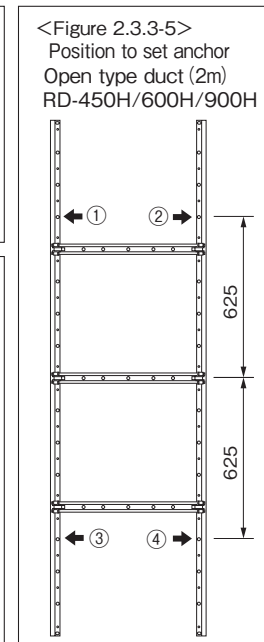
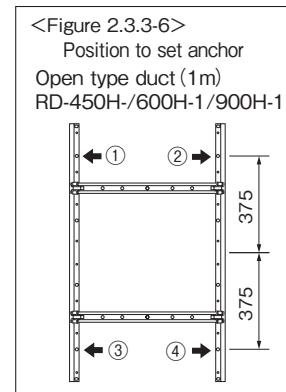
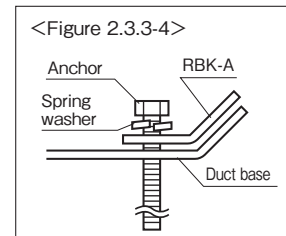
RD-450H/RD-450H-1/RD-600H/RD-600H-1/RD-900H/RD-900H-1 is included.

Set the anchor on the duct base by using RBK-A auxiliary bracket for duct base. <Figure 2.3.3-4>

Set the anchors in designated 4 positions or more.

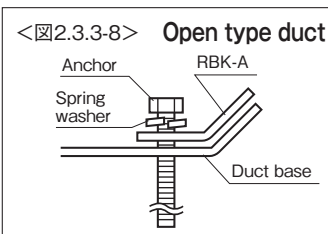
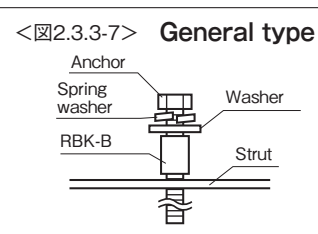
<Figure 2.3.3-5/6>

If the piping load is applied on the strut, it is recommended to add the anchor also on the strut in the same way as the general type.



Notes in design

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



2.3 Installation method (on the wall surface)

- 2.3.4 Conditions for installation on the wall surface (suspended from the wall surface) [Design]

2.3.4 Conditions for installation on the wall surface (suspended from the wall surface)

When installing SLIMDUCT RD on the wall surface (suspended from the wall surface), observe the following conditions :

1 Use the method using couplers* for fixing.

* Free coupler or fixing coupler to which the bottom plate is not attachable (some types of reducer) cannot be used. [3.5.8] 90° vertical ell

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

Remove the cover reinforcing plate standardly supplied with 600 size and some fittings.
(The cover reinforcing plate is used for preventing deflection of cover in the installation on a plane surface, and not required in the installation on the wall surface.)

3 Fixing method

Fix the RD mounting bracket on the wall surface, and attach the SLIMDUCT RD to it.

Use “RZW-150” for 150 size, and use “RZM-S + RZB-S” for other sizes.

Fix the RD mounting bracket with “Stainless W3/8 or M10 anchor”.

Note that the mounting bracket settable position differs depending on the product.

Avoid setting the mounting bracket at the connection part due to the risk of drop.

1. General type ducts and fittings

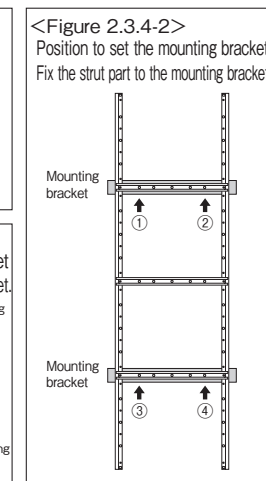
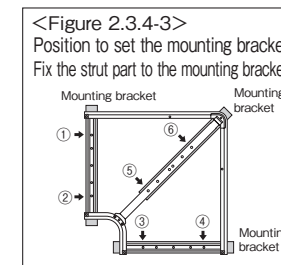
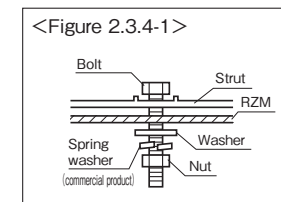
Fix the mounting bracket to the strut by using the bolt set supplied with the mounting bracket as well as the commercially available spring washer.

<Figure 2.3.4-1> * RZW-150 is excluded

*2m-type and 1m-type ducts other than 150, installation by using RBK-A auxiliary bracket for duct base is also possible in the same way as the Open type duct.

Set the anchors in 2 or more positions in consideration of balance. <Figure 2.3.4-2>

For the quantity of mounting brackets for the fittings, see pages of each fittings. <Figure 2.3.4-3>



2. Open type duct

RD-450H/RD-450H-1 is included.

Fix the mounting bracket to the duct base by using RBK-A auxiliary bracket for duct base, and at the same time, also fix the bottom plate.

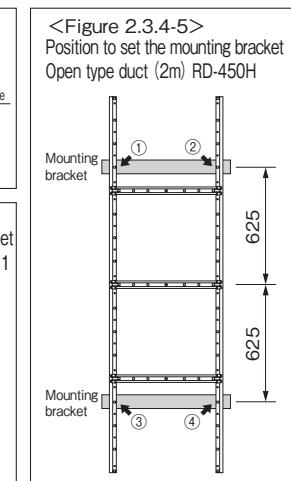
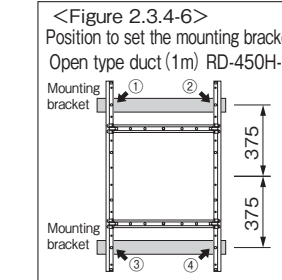
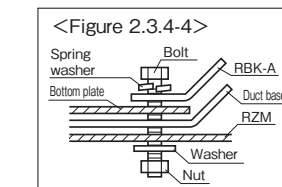
At this time, drilling is required on the bottom plate.

<Figure 2.3.4-4>

Set the anchors in designated 2 positions or more.

<Figure 2.3.4-5/6>

If the piping load is applied on the strut, it is recommended to add the mounting bracket also on the strut in the same way as the general type.



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

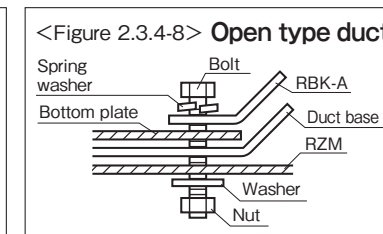
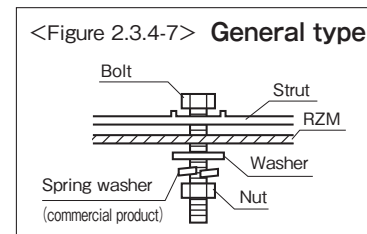
* When using RCO, it is recommended to attach the bottom plate also to the nearest plane part (50 cm or over).

[3.5.7] and [3.5.8] 90° vertical ell

Notes in design

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

* RZW-150 is excluded

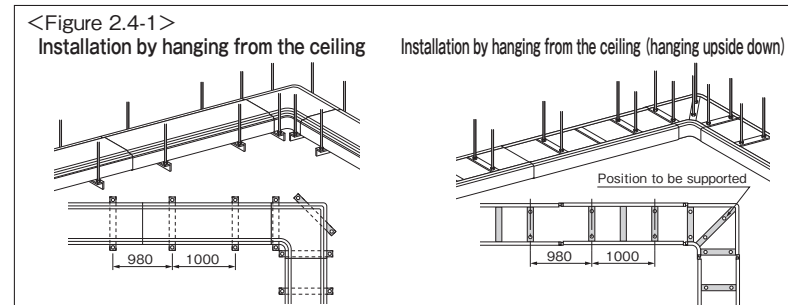


2.4 Installation method (hanging from the ceiling)

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 cover facing the ceiling and installation with the cover facing the floor.



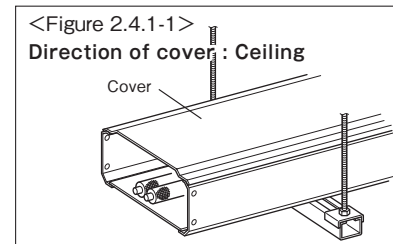
2.4.1 Notes on hanging from the ceiling

1 Generally in the installation by hanging from the ceiling

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

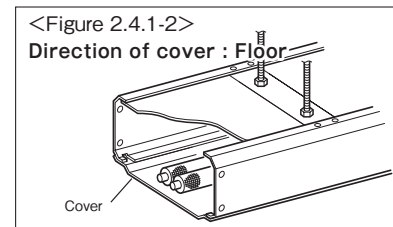
2 Direction of cover : Ceiling <Figure 2.4.1-1>

- 1. Support** ... On at least two positions of struts for one duct or one fittings respectively, attach the support part such as a channel. Although the point for determining the position to be attached is the same as that for the mounting bracket on the floor face, an enough clearance is needed between the ceiling and the duct in consideration of attaching the pipe and cover.



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

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

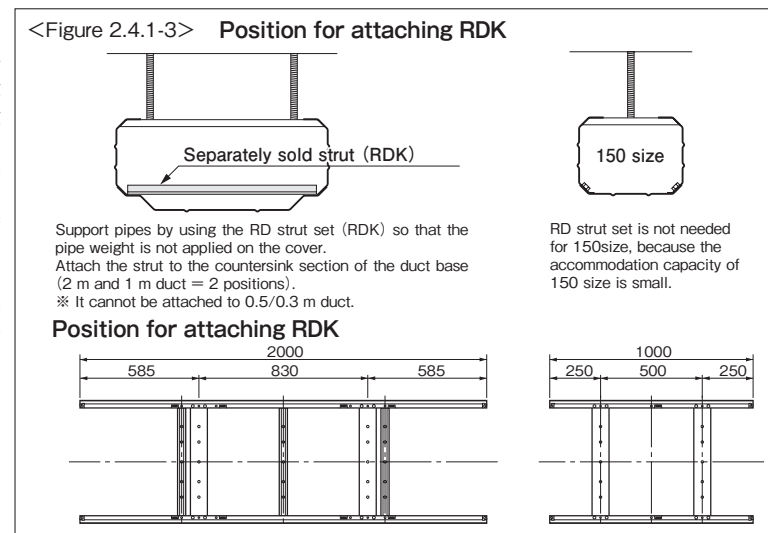


Note For the coupler-free connection method, the bottom plate for coupler (RDBJ) cannot be used.
If the coupler-free connection is used in the installation, the exclusive bottom plate is needed separately, and contact us a sales office of our company.

3. Pipe support ...

Support pipes by using the RD strut set (RDK) so that the pipe weight is not applied on the cover.
RD strut set is not needed for 150size, because the accommodation capacity of 150 size is small.
As long as it is of the general copper pipe covered with insulation material, it can be supported by the strength of cover.

<Figure 2.4.1-3>



4. **Cover reinforcing plate** ... The cover reinforcing plate cannot be used. For safety, remove the cover reinforcing plate which is standardly supplied with 600 size and some fittings.

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

Design

3 Design of each part

Duct P20 to P21

Pipe shaft and wall penetration . . . P22 to P28

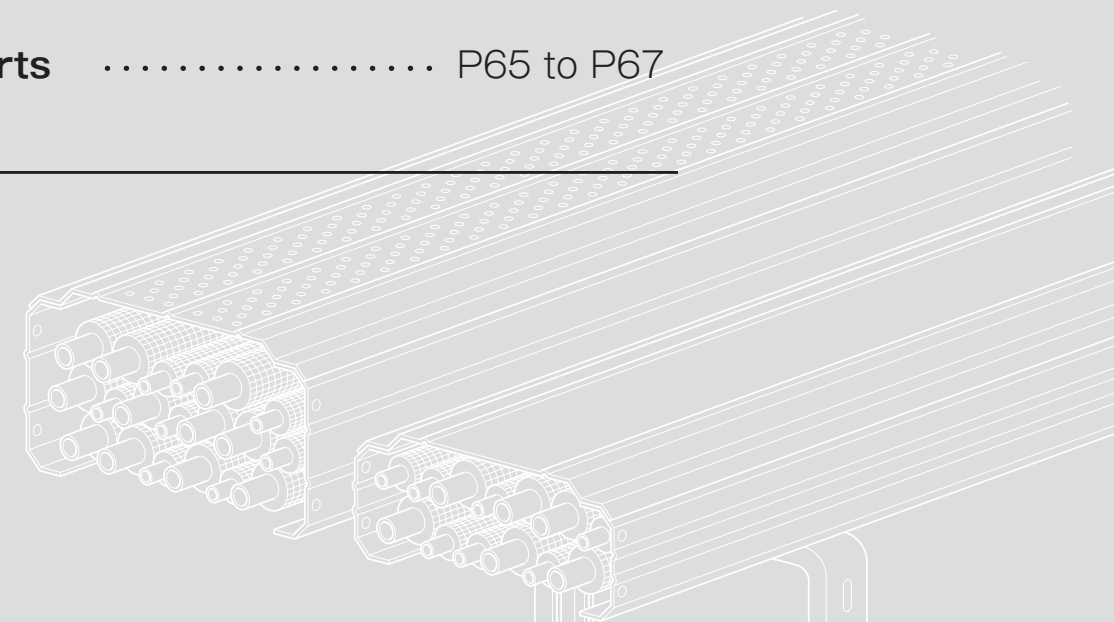
Connection method P29 to P35

Mounting bracket P36 to P44

Fittings P45 to P61

Bottom plate P62 to P64

Other parts P65 to P67



3.1 Duct

- 3.1.1 Product configuration

3.1.2 Load capacity
- 3.1.3 Selecting duct

3.1.4 About installation on the wall surface and by hanging from the ceiling
- [Design]

3.1 Duct

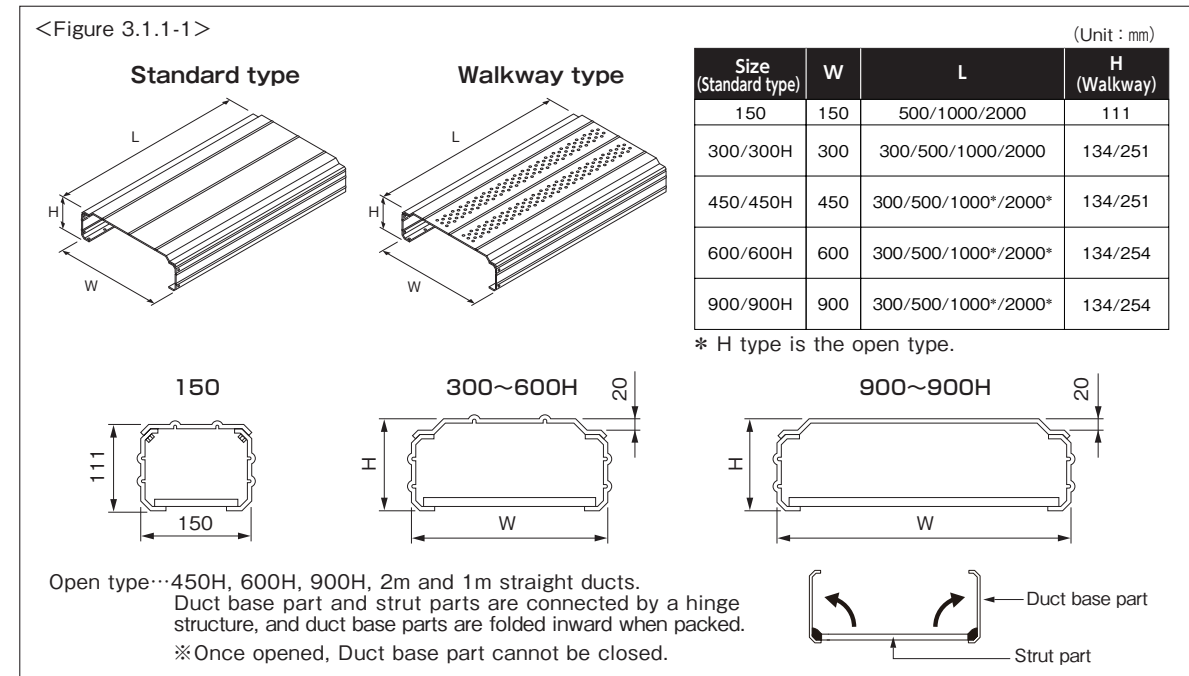
- 3.1.5 Position to set the mounting bracket (for installation on the floor)

3.1.6 Notes on design

3.1.7 Cutting duct
- [Design]

3.1 Duct

3.1.1 Product configuration



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 part (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.

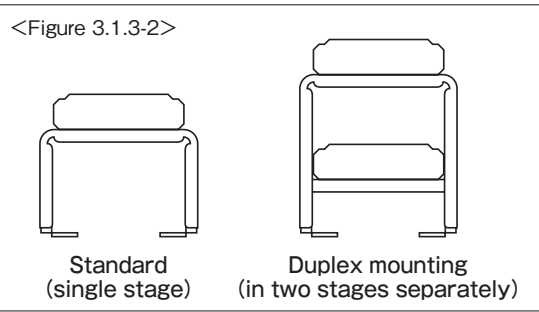
Reference [1.4] Load capacity and strength
[1.5] Accommodation capacity
[2.1] Basic design flow

Take into consideration the position 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>

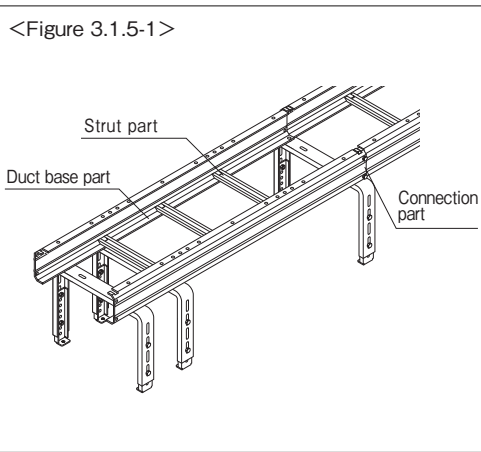
Note The duplex mounting (in two stages separately) is possible only when the mounting bracket guide for duplex mounting RZY (separately sold) is attached to RZB-M/ML/L.



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

For installation on the wall surface, see [2.3] Method of installation on the wall surface.

For installation by hanging from the ceiling, see [2.4] Method of installation by hanging from the ceiling.



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

Set the mounting brackets in 2 or more positions in consideration of load.
There are the following 3 positions to set the mounting bracket.

- 1 **Setting on strut**
This is used in the installation on the floor and installation on the wall surface.
※ For details about the installation on the wall surface, see [2.3] Method of installation on the wall surface.
- 2 **Setting on connection part**
(when the coupler-free connection installation method is used or the fixing coupler* is used)
Only for installation on the floor (a plane surface).
※ Only for RSJ, RSS, RFJ (A Size)
Reference [3.3] Connection method
- 3 **Setting on duct base**
Since the fixing strength in the mounting bracket setting on a duct base is weaker than that on a strut or connection part, there are some use restrictions depending on the installation method except for the installation on the floor.
※ For details, see [3.4.7] Position for setting.

3.1.6 Notes on designing

- 1 **Mounting bracket** **Reference** [3.4] Mounting bracket
The width of mounting bracket 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 part** **Reference** [3.3] Connection method

	Reference [3.3] Connection method
Coupler-free connection	Generally used connection method. Connect duct bases of ducts or some plane surface fittings each other without using separate members for connection. Note • It is not possible to connect with 150 type, some fittings, different size ducts, or end cut ducts. • For the installation on the wall surface, use the fixing coupler.
Fixing coupler	This is used when the vertical installation or coupler-free connection cannot be applied.
Free coupler	This is used when the coupler-free connection or fixing coupler cannot be used e.g. for the cut end of duct.
Sliding coupler	This is used for adjusting length or height. Note • There is no sliding coupler for 150 type.
Reducer	This is used for connecting different size ducts or fittings.

- 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 surface and by hanging from the ceiling.
Also, do not use the short duct end as the walkway.

- 5 **Cover reinforcing plate**
The cover reinforcing plate is standardly supplied with 600(H) and 900(H).
The cover reinforcing plate cannot be used for the installation on the wall surface and by hanging from the ceiling. Remove it.

3.1.7 Cutting duct

Whenever possible, use the sliding coupler RSS and avoid cutting the duct. If cutting is necessary, make sure you have two or more sub girders after cutting. However, ducts with sizes of 0.5 m and 0.3 m can be used with just one sub girder, on the condition that one side is connected to RWP. Do not cut the open-type ducts if the number of sub girders reduces.

Reference [3.3.5] RSS sliding coupler

If you cut, perform a repair work using a zinc rich paint (Zn-Al). (※ Do not cut the corner parts)

3.2 Pipe shaft and wall penetration

- 3.2.1 Installation example of Pipe shaft and wall penetration (installation outdoors on the floor) [Design]

3.2 Pipe shaft and wall penetration

- 3.2.2 Installation method using the RWP wall flange [Design]

3.2 Pipe shaft and wall penetration

Table of contents	3.2.1	Installation example of Pipe shaft and wall penetration (installation outdoors on the floor)	22
	3.2.2	Installation of RWP wall flange	23
	3.2.3	Installation of RSP/RSPR wall sleeve	24
	3.2.4	Installation of RSB cut-off wall plate	24
	3.2.5	Installation of RSPC water shut-off plate protection cover	25
	3.2.6	Installation of CB chamber box (removal from the front)	26
	3.2.7	Installation of CB chamber box (removal from the bottom)	27
	3.2.8	Installation of CB chamber box (self-making)	28
	3.2.9	Wall penetrating installation method (indoors)	28

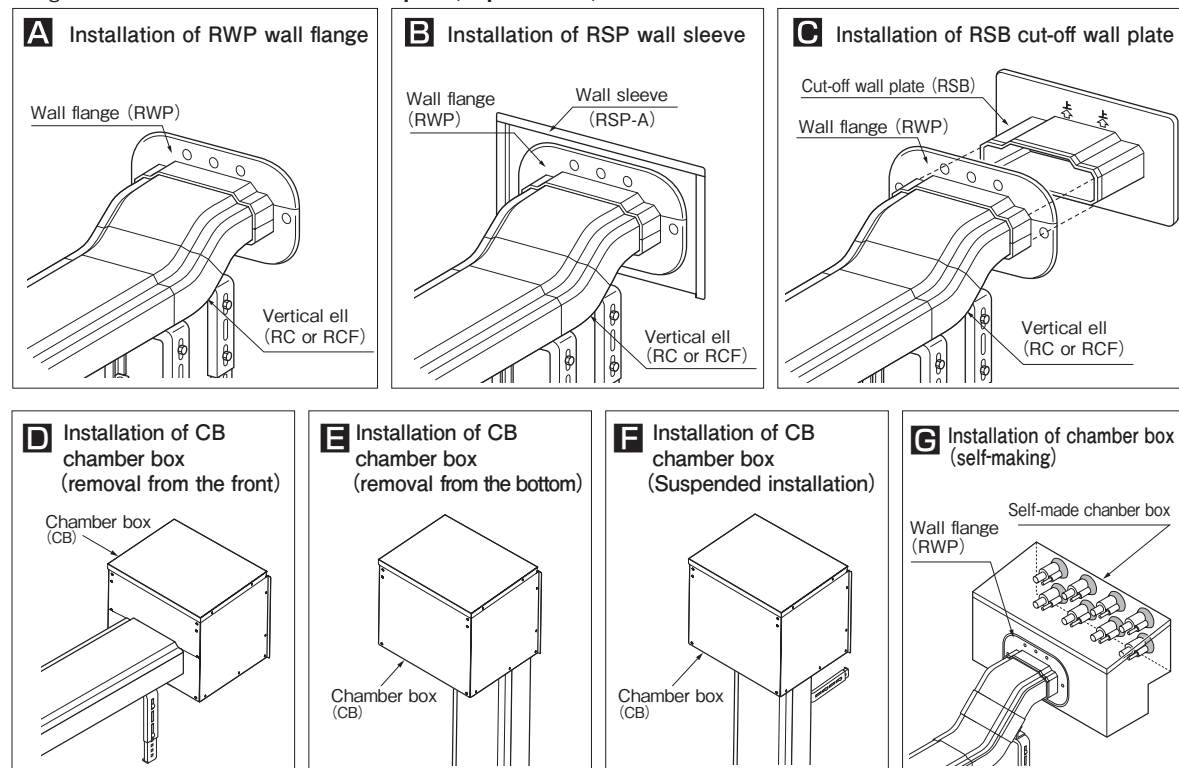
3.2.1 Installation example of Pipe shaft and wall penetration (installation outdoors on the floor)

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 installation method below is just an example. Follow the instruction by the supervisor on site for details.

<Figure 3.2.1-1> Installation example (Pipe shaft)



<Table 3.2.1-1>

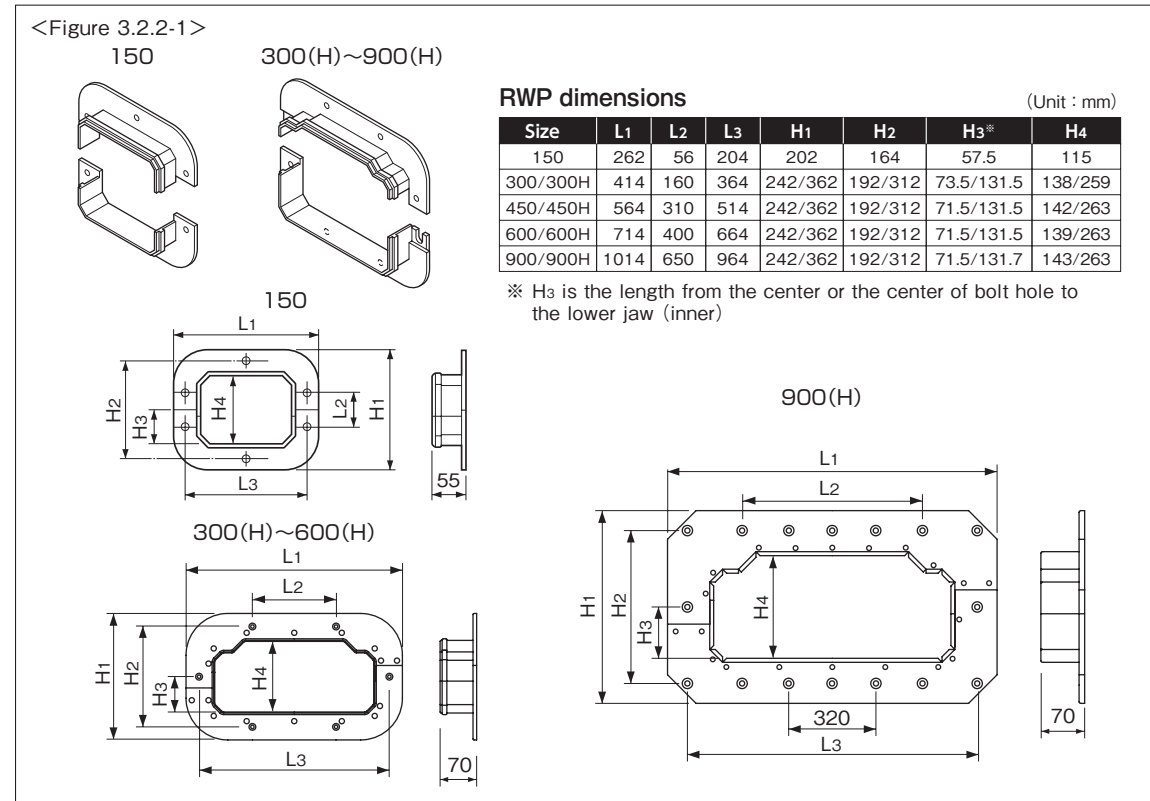
Duct size	Installation example	Explained in	Required part (just for each example)					
			Wall flange RWP	45° vertical ell RCF	90° vertical ell RC/CI	Wall sleeve RSP	cut-off wall plate RSB	Chamber box CB
150	A	P.72	○	○	—	—	—	—
300, 300H	B	P.73	○	○	—	○ ※1	—	—
450, 450H	C	P.75	○	○	—	—	○	—
600, 600H	B	P.73	○	○	—	○ ※1	—	—
900, 900H	D	P.77	—	—	—	—	—	○
300~900 300H~900H	E	P.80	—	—	—	—	—	○
	F	P.81	—	—	○	—	—	○
All sizes	G	—	○	—	—	—	—	(self-making) ※2

※1. Installation method using RSP-A (square caulking type) ※2. To be made on site

3.2.2 Installation of RWP wall flange

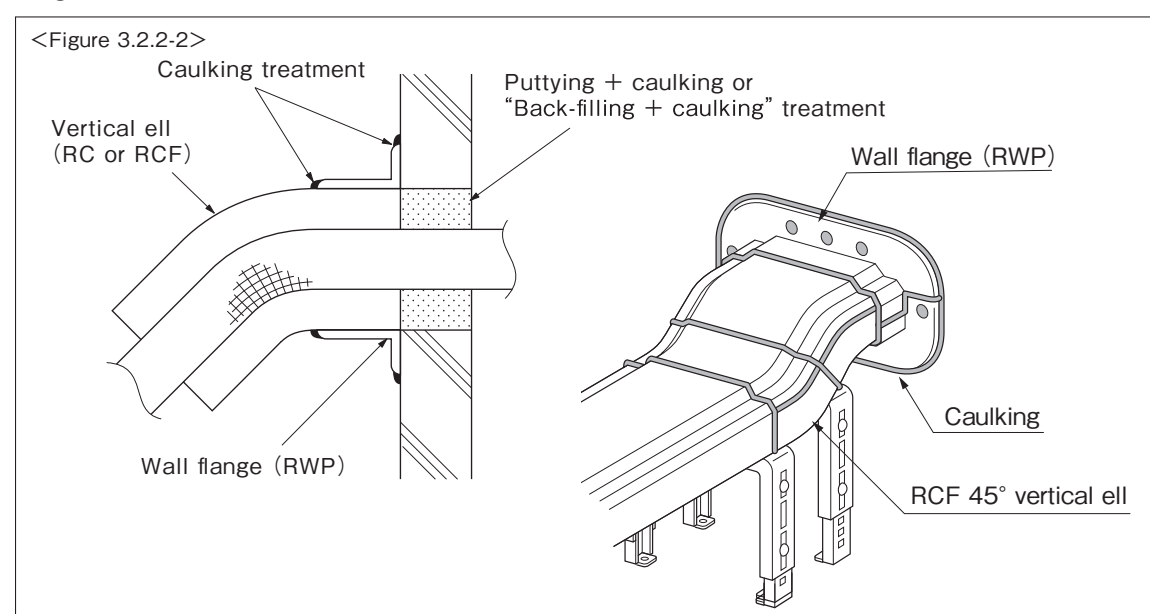
Installation example A

1 Product configuration



- 2 Perform the penetrated part treatment by using the wall flange (RWP) and the elevation surface fittings (RC, RCF). Also shut off water by “puttying + caulking” or “mortar back-filling + caulking treatment” for the penetrated part.

<Figure 3.2.2-2>



Design

3.2.2 Installation of RWP wall flange

Installation example A

1 Product configuration



- 2 Perform the penetrated part treatment by using the wall flange (RWP) and the elevation surface fittings (RC, RCF). Also shut off water by “puttying + caulking” or “mortar back-filling + caulking treatment” for the penetrated part.

<Figure 3.2.2-2>



3.2 Pipe shaft and wall penetration

- 3.2.3 Installation of RSP wall sleeve [Design]
- 3.2.4 Installation of RSB cut-off wall plate

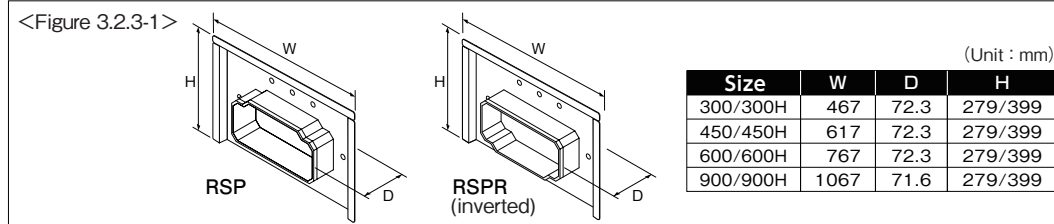
3.2 Pipe shaft and wall penetration

- 3.2.5 Installation of RSPC water shut-off plate protection cover [Design]

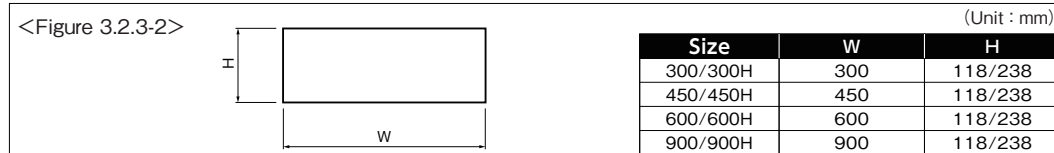
3.2.3 Installation of RSP/RSPR wall sleeve

Installation example B Perform the water shut-off treatment by using the wall sleeve (RSP-A square caulking type), the wall flange (RWP), and the 45° vertical ell (RCF) in combination.

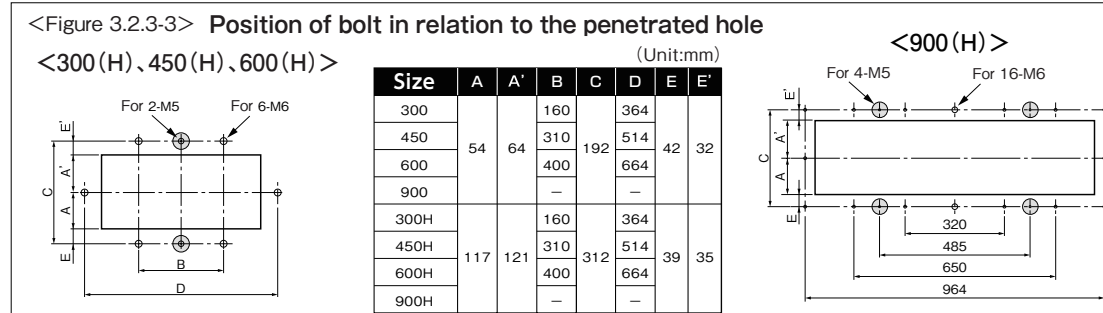
1 Product configuration



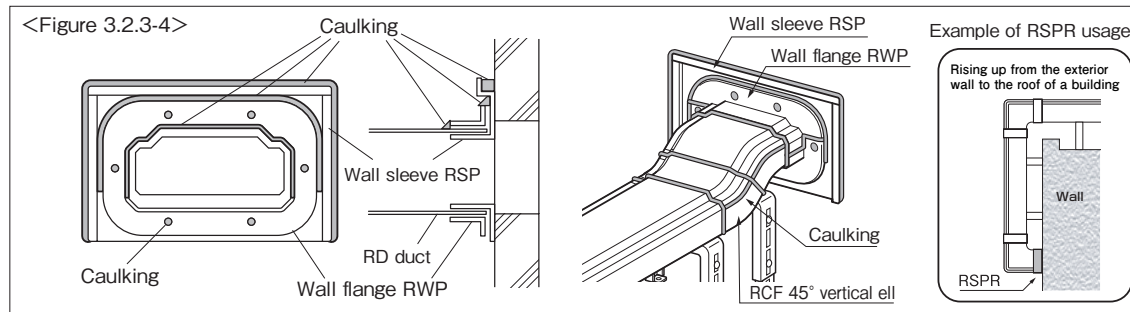
2 Dimensions of opening



3 Position of pilot hole for attaching RSP and RWP



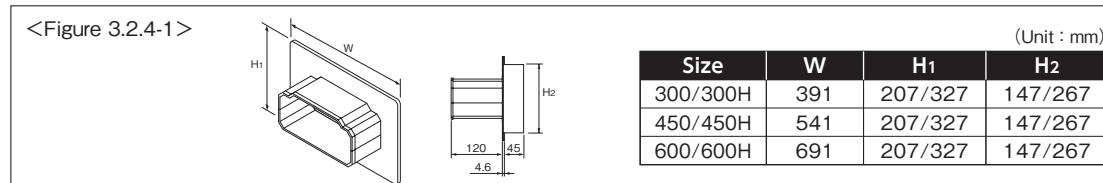
4 Caulking treatment



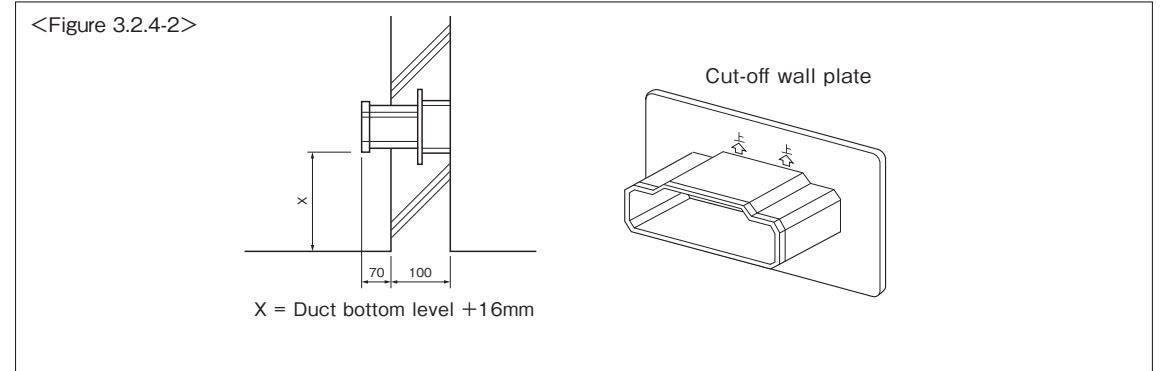
3.2.4 Installation of RSB cut-off wall plate

Installation example C Perform the water shut-off treatment by using the cut-off wall plate (RSB), the wall flange (RWP), and the 45° vertical ell (RCF) in combination.

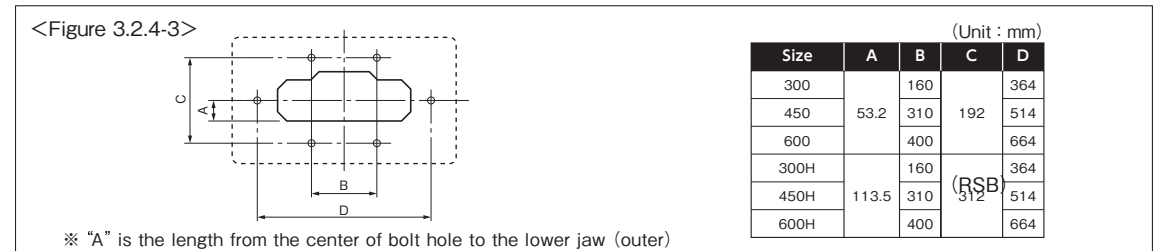
1 Product configuration



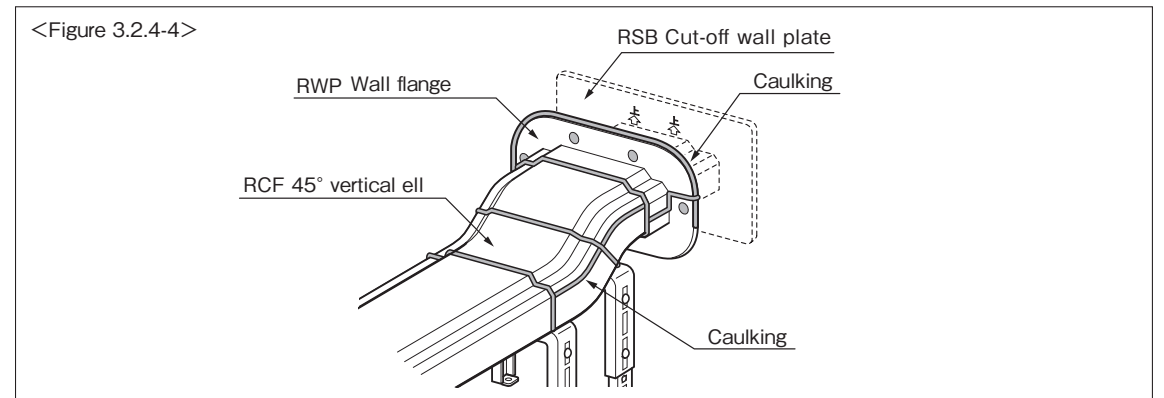
2 Dimensions for embedding the cut-off wall plate in the body



3 Position of M6×45L tapping bolt or anchor for M6 for attaching wall flange

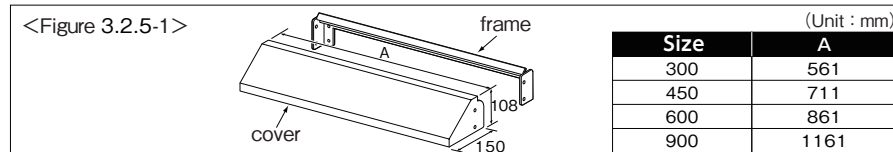


4 Caulking treatment

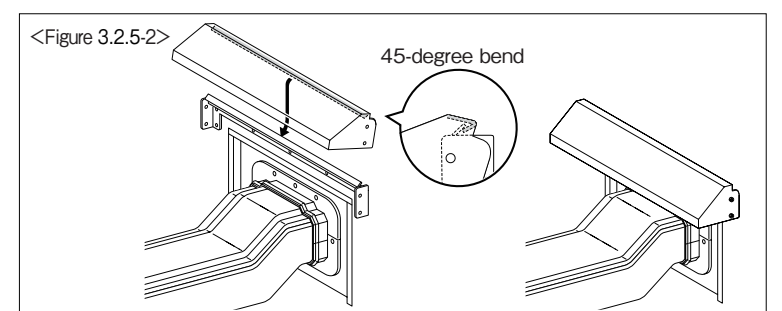


3.2.5 Installation of RSPC water shut-off plate protection cover

1 Product configuration



To protect the caulking of the water shut-off plate from ultraviolet rays, install a water shut-off plate protection cover. Fit the 45-degree bend (inside) of the cover top into the 45-degree bend of the frame top for temporary placement of the cover, and secure it with bolts.



3.2 Pipe shaft and wall penetration

•3.2.6 Installation of CB chamber box (removal from the front) [Design]

3.2.6 Installation of CB chamber box (removal from the front)

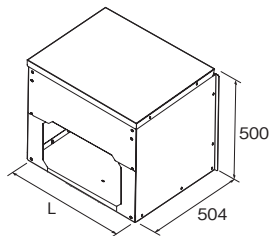
Installation example D

The cover can be removed without cutting the caulking. The duct can be extracted from the front.

※The chamber box (CB) is a product of special specifications with alteration of materials and dimensions, etc.
(a separate meeting required for the price and delivery date).

1 Product configuration

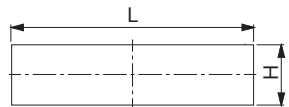
<Figure 3.2.6-1>



Unit: (mm)	
Size	L
CB-300/300H	490
CB-450/450H	640
CB-600/600H	790
CB-900/900H	1090

2 Dimensions of opening

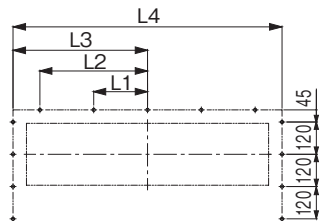
<Figure 3.2.6-2>



Unit: (mm)		
Size	L	H
CB-300 (H)	300	230
CB-450 (H)	450	230
CB-600 (H)	600	230
CB-900 (H)	900	230

3 Position for fixing W3/8 anchor bolt for CB <Figure 3.2.6-3>

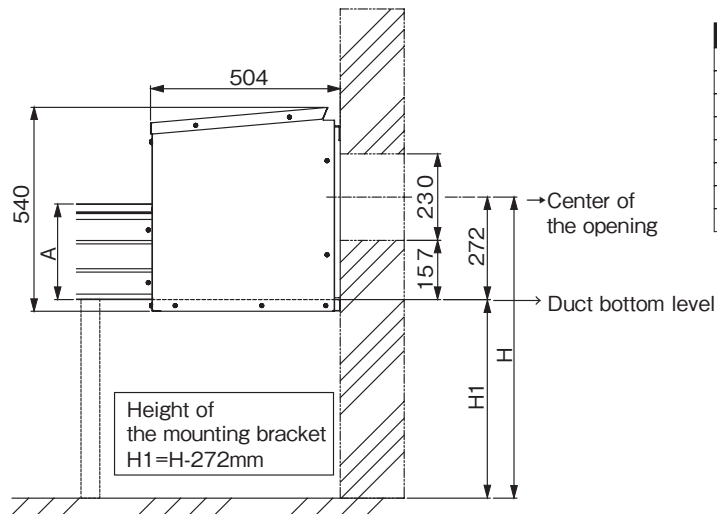
<Figure 3.2.6-3>



Unit: (mm)				
Size	L1	L2	L3	L4
CB-300 (H)	—	—	200	400
CB-450 (H)	150	—	275	550
CB-600 (H)	200	—	350	700
CB-900 (H)	200	40	350	1000

4 Dimensions of level for removing RD duct

<Figure 3.2.6-4>



Unit: (mm)	
Size	A
CB-300	134
CB-450	134
CB-600	134
CB-900	134
CB-300H	254
CB-450H	254
CB-600H	254
CB-900H	254

※The opening dimensions and positions are examples only. Design it to prevent rainwater from entering through the opening.

3.2 Pipe shaft and wall penetration

•3.2.7 Installation of CB chamber box (removal from the bottom) [Design]

3.2.7 Installation of CB chamber box (removal from the bottom)

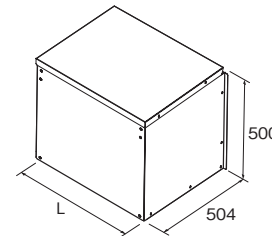
Installation example E / Installation example F

The duct can be extracted from the bottom. Wall installation and suspended installation are available. <Figure 3.2.7-2~6>

※The chamber box (CB) is a product of special specifications with alteration of materials and dimensions, etc.
(a separate meeting required for the price and delivery date).

1 Product configuration

<Figure 3.2.7-1>



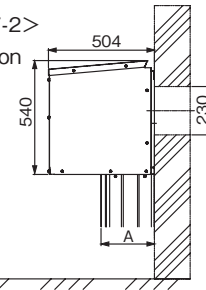
Unit: (mm)	
Size	L
CB-300/300H	490
CB-450/450H	640
CB-600/600H	790
CB-900/900H	1090

※The dimensions of the opening and the mounting position of the W3/8 anchor bolts for CB are the same as those of the installation for front extraction.

2 Dimensions of opening

<Figure 3.2.7-2>

Wall installation

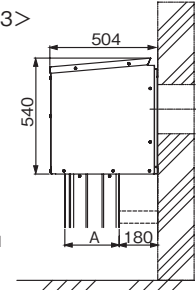


Unit: (mm)	
Size	A
CB-300	134
CB-450	134
CB-600	134
CB-900	134
CB-300H	254
CB-450H	254
CB-600H	254
CB-900H	254

<Figure 3.2.7-3>

Suspended installation

<common parts>

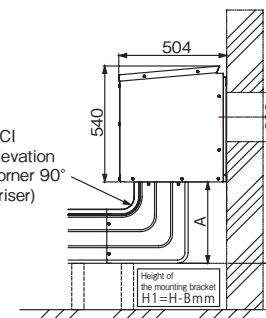


※Wall (suspended) installation is not possible for 600H and 900 (H).

Unit: (mm)	
Size	A
CB-300	134
CB-450	134
CB-600	134
CB-300H	254
CB-450H	254

<Figure 3.2.7-4>

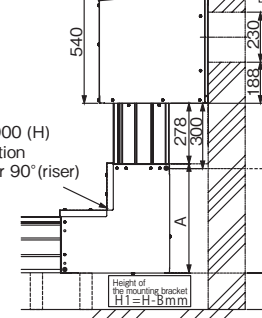
Suspended installation
(300 (H), 450 (H), 600 (H) type)



Unit: (mm)		
Size	A	B
CB-300	134	563
CB-450	260	563
CB-600	380	563
CB-300H	380	683
CB-450H	380	683
CB-600H	380	683

<Figure 3.2.7-5>

Suspended installation
(900 (H) type)

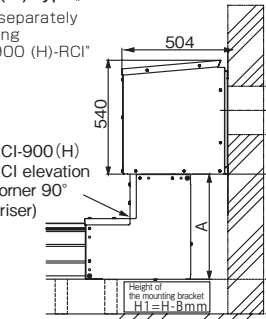


Unit: (mm)		
Size	A	B
CB-900	381	962
CB-900H	502	1083

<Figure 3.2.7-6>

Suspended installation
(900 (H) type)

※Sold separately
For using "CBB-900 (H)-RCI"



Unit: (mm)		
Size	A	B
CB-900	380	683
CB-900H	501	804

Bottom exit (suspended)

Precautions when using RCI elevation corner 90° (riser)

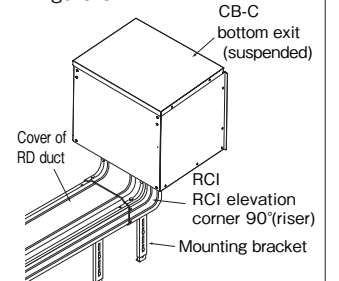
- To connect CB-C to RCI, use sems ⊕ hex bolts with flange nuts in the same way as the RD duct.

Note

For the 900 (H) type, CB-C cannot be connected directly to RCI. To directly connect to the RCI, use "CBB-900 (H)-RCI" which is sold separately.

- Install a mounting bracket at the end of both RCI and RD duct.

<Figure 3.2.7-7>



※The opening dimensions and positions are examples only. Design it to prevent rainwater from entering through the opening.

3.2 Pipe shaft and wall penetration

- 3.2.8 Installation of CB chamber box (self-making) [Design]
- 3.2.9 Wall penetrating installation method (indoors)

3.3 Connection method

- 3.3.1 Table for selecting connection method [Design]

3.2.8 Installation of CB chamber box (self-making)

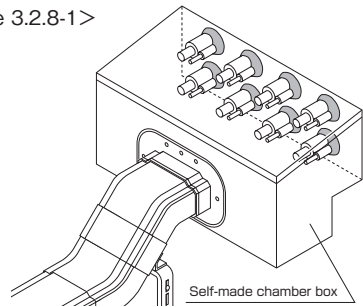
Installation example G Installation of CB chamber box (self-making)

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 installation using a self-made chamber box, follow the direction by the supervisor on site.

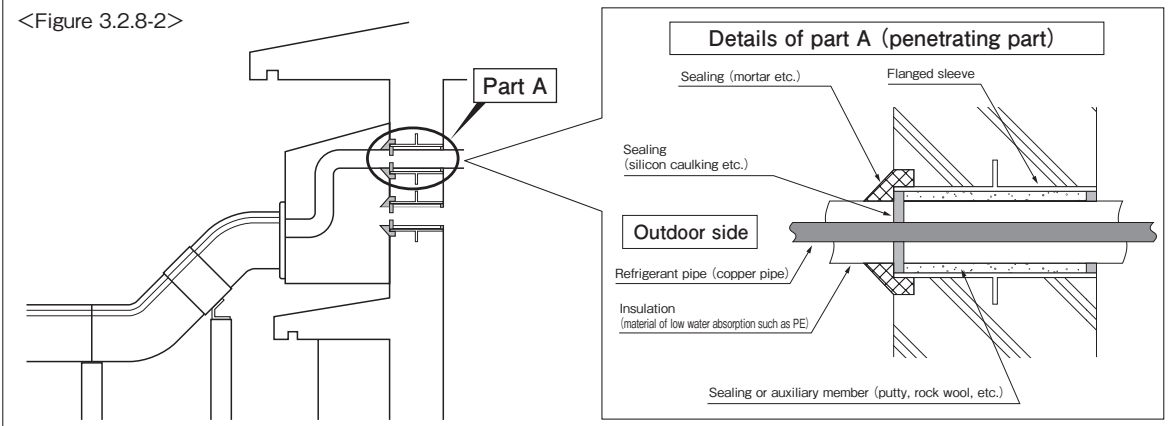
<Figure 3.2.8-1~2>

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

<Figure 3.2.8-1>



<Figure 3.2.8-2>



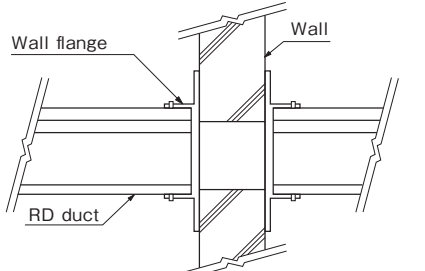
3.2.9 Wall penetrating installation method (indoors)

As the wall penetrating installation method indoors, there are “wall butt method” and “wall penetrating installation method”.
For both methods, a combination of straight duct (SLIMDUCT RD) and decorative plate (RWP wall flange) is used in installation. However, “wall butt method” is easier in maintenance.

※ For RWP, see [3.2.2] Installation of RWP wall flange.

1 Wall butt method

<Figure 3.2.9-1>



(Unit : mm)

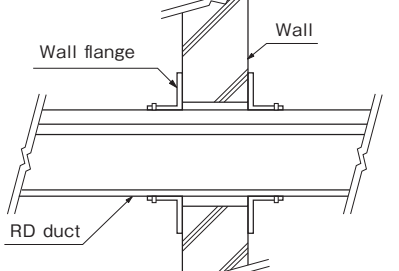
Dimensions of
wall hole

A diagram of a rectangular wall hole. The width of the hole is labeled 'A' and the height is labeled 'B'. The hole is shaded gray.

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

2 Wall penetrating installation method

<Figure 3.2.9-2>



(Unit : mm)

Dimensions of wall hole

A diagram showing a rectangular wall hole. The width of the hole is labeled 'C' and the height is labeled 'D'. The hole is shaded gray.

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

3.3 Connection method

Outline

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

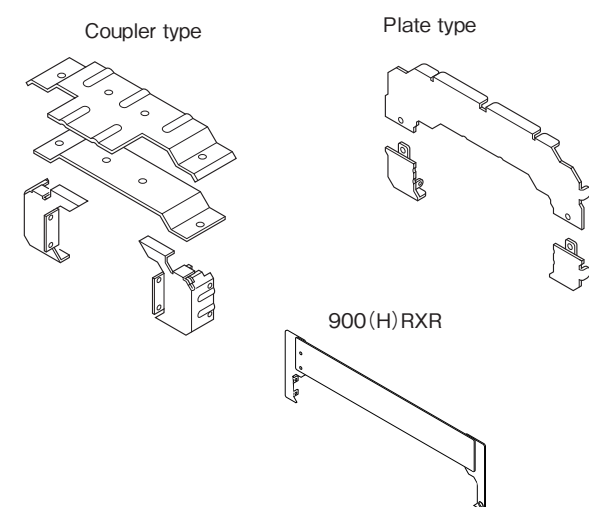
Table of contents

3.3.1 Table for selecting connection method	29
3.3.2 Coupler-free connection	30
3.3.3 RSJ fixing coupler	30
3.3.4 RFJ free coupler	30
3.3.5 RSS sliding coupler	32
3.3.6 RR reducer	33
3.3.7 Connection for 900/900H corner parts	33
3.3.8 Connection for 900/900H joint (1) RXR	33
3.3.9 Connection for 900/900H joint (2) RXJ	34
3.3.10 RXSS/RXSSW box joint sliding coupler	34
3.3.11 RCSS sliding coupler for RCF-900 (H)-SUS	35

3.3.1 Table for selecting connection method

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

<Figure 3.3.1-1>

Method	Explanation	Overlap width for connection
Coupler-free connection Reference [3.3.2]	Generally used connection method. Connect duct bases of ducts at some corners each other without using separate members for connection. Note This method cannot be used for the installation on the wall surface, or for connection with 150 size, some fittings for 900 (H) size, different size ducts, or end cut ducts.	Margin for insertion -20mm
Fixing coupler	This is used when the vertical installation or coupler-free connection cannot be applied.	Overlap width for connection 20mm
Free coupler	This is used when the coupler-free connection or fixing coupler 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 surface. This cannot be used for connection with the elevation surface fittings in the installation on the wall surface.	Overlap width for connection 20mm
Sliding coupler	Fixing coupler for adjusting length. Note There is no sliding coupler for 150 size. This cannot be used for connection with the elevation surface fittings in the installation on the wall surface.	
Coupler Reference [3.3.3] to [3.3.8]	This is used for connecting different size ducts or fittings. Note When connecting with the elevation surface fittings, this can be used only for the plane part. The coupler type cannot be used for the installation suspended from the wall surface or installation by hanging from the ceiling. 	Coupler type Overlap width for connection 63mm Plate type Margin for insertion -20mm 900 (H) RXR Margin for insertion -20mm
Reducer (including RXR)		
Connection for 900/900H parts*1 Reference [3.3.9]	for 900(H) size corner parts This is used for connecting one corner part to another fitting of 900/900H size.	RXJ: Overlap width for connection 10mm (6 mm to connect RCI to RCO)

*1 RCF-900/900H is excluded.

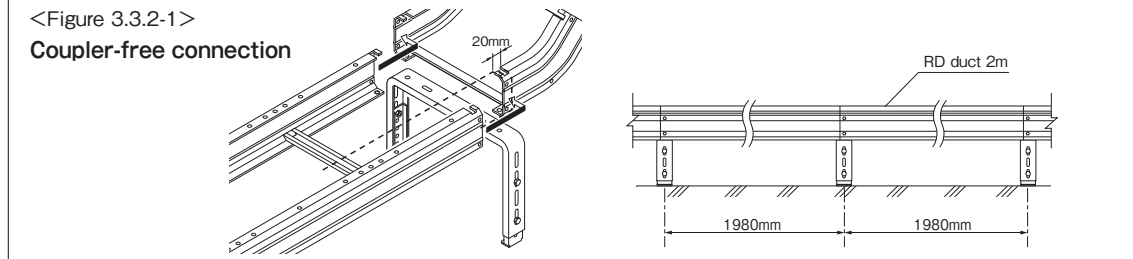
3.3.2 Coupler-free connection

This is the generally used connection method for connection of ducts or fittings. Connection is possible without using separate members for connection.

However for a installational reason, the “Coupler-free connection method” cannot be used for the installation on the wall surface, 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.

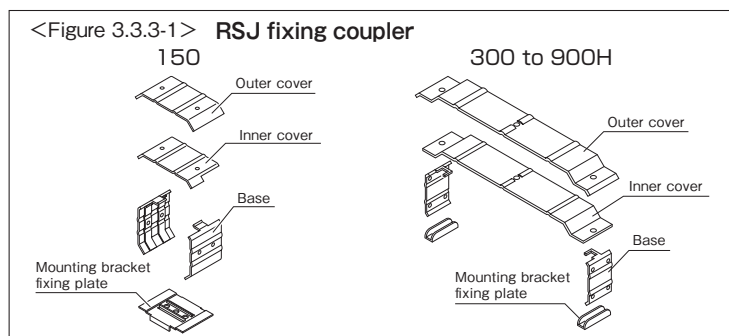
1 Overlap width for connection in the coupler-free connection <Figure 3.3.2-1>

In the coupler-free 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.



3.3.3 RSJ fixing coupler

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

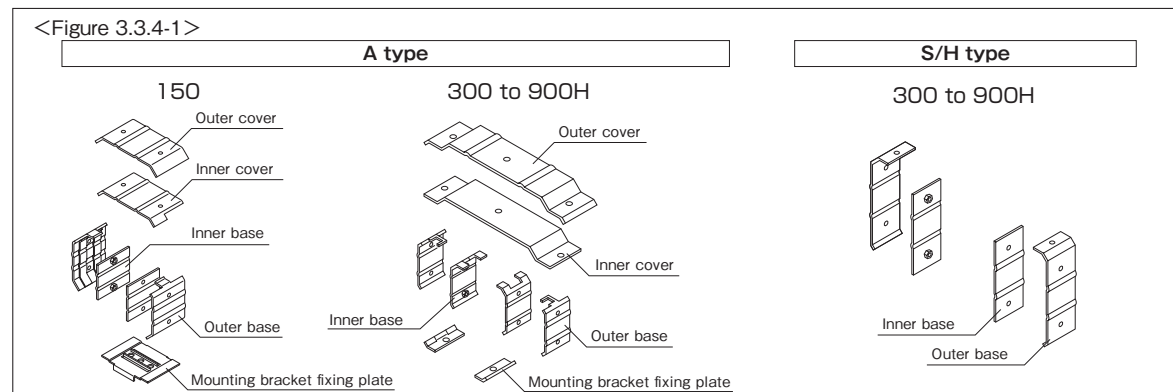


3.3.4 RFJ free coupler

There are two types of free coupler: A type in which the cover coupler 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 surface. However note that they cannot be used for connection with the vertical ell in the installation on the wall surface. When the free coupler is used, 20 mm clearance between parts is needed. For the A type, it is also possible to set the mounting bracket at the connection part by using the supplied mounting bracket fixing plate.

S/H type provides clean finishing when jointless connection is used as it does not use a lid bracket and the free joint is not clearly visible.

For details, see [3.4.7] Position for setting the mounting bracket. **Note** ※ RD duct 0.5m/0.3m, and fittings cannot be cut.



Notes on using the free coupler

1. Cutting duct base

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

2. Cutting cover

(1) S/H type

<Figure 3.3.4-2>

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

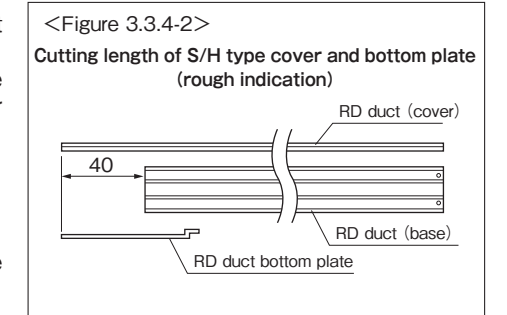
※ If there is no problem in fixing bolts or attaching the reinforcing plate, cutting may be omitted.

(2) A type

Cut it so that it becomes of the same length as the duct base.

(3) Cover bolt

If holes for cover bolts do not remain, perform drilling at the required positions.



3. Bottom plate

(1) S/H type

Cut it so that it protrudes from the duct base by 40mm.

(2) A type

Cutting is not needed when the mounting bracket is set at the connection part. When the mounting bracket 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 coupler RDBJ.

4. Repair work (Steel sheet type)

For the part 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 cover of the upper part comes in the upper position. In connection to the vertical ell, 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 bracket can be set to the vertical ell.

(2) A type

In connection to the vertical ell, connect the uncut side. For lowering the position, attach it so that the cut side comes to the upper position, and set the mounting bracket also at the connection part.

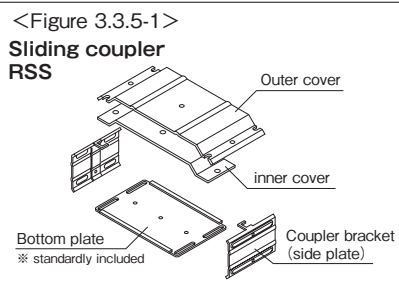
(3) Setting mounting bracket

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

3.3.5 RSS sliding coupler

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

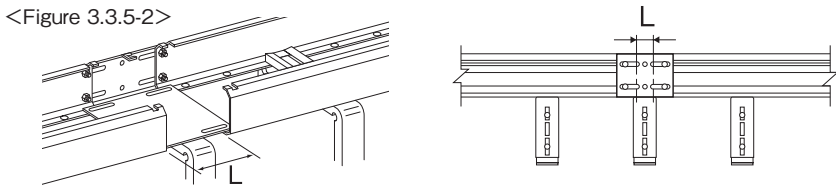
- Note**
- The bottom plate of RSS can be attached only for connection with RD duct of 1 m/2 m and the elevation surface corner.
 - Sliding adjustment on the corner part side cannot be used for connections with the corner parts of walkway type.
 - This cannot be used for the connecting part with the elevation surface corner for installation on the wall face.



<Table 3.3.5-1> Distance between parts and correspondent usage of sliding coupler (Unit : mm)

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 coupler 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	×	
400 to 500	0.3m+RSS-2	×	For 460, single use of 0.5 m duct is also possible.
500 to 600	0.3m+RSS-3	×	
500 to 600	0.5m+RSS-1	×	For 540, use of 0.3 m+0.3 m duct is also possible.
600 to 700	0.5m+RSS-2	×	
700 to 800	0.5m+RSS-3	×	For 740, use of 0.3 m+0.5 m duct is also possible.
780 to 880	0.3m+0.5m+RSS-1	×	
880 to 980	0.3m+0.5m+RSS-2	×	For 940, use of two 0.5 m ducts is also possible. For 980, single use of 1 m duct is also possible.
980 to 1080	0.3m+0.5m+RSS-3	×	
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	○	

For the dimension of level difference, see [3.5] Fittings.

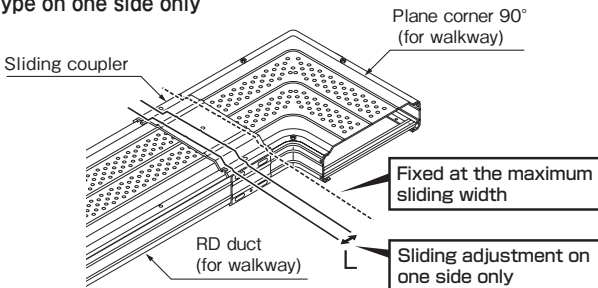


<Figure 3.3.5-3> Using the corner part of walkway type on one side only

(Unit : mm)

Model number	Slide width L when connecting walkway parts on one side
RSS-1	70~120
RSS-2	170~220
RSS-3	270~320

※When connecting to the corner parts of walkway type, the maximum sliding width is provided on the corner part side and it is a fixed width.



3.3.6 RR reducer

There are two types of reducer RR, and the installation method and dimensions differ respectively.
The mounting bracket cannot be set at the connection part of the reducer.

Set the mounting bracket at a near strut etc.

Also note that this cannot be used for connection with the vertical ell in the installation on the wall surface.

• Coupler type

This can be used for the installation on a plane surface and installation directly on the wall surface.

When this is used, 63mm clearance between parts is needed.

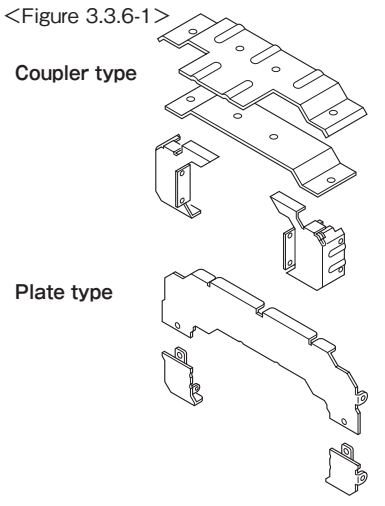
The bottom plate cannot be used.

• Plate type

This can be used for the installation on a plane surface and installation on the wall surface (downward).

When this is used, the smaller duct enters inside by 20mm.

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

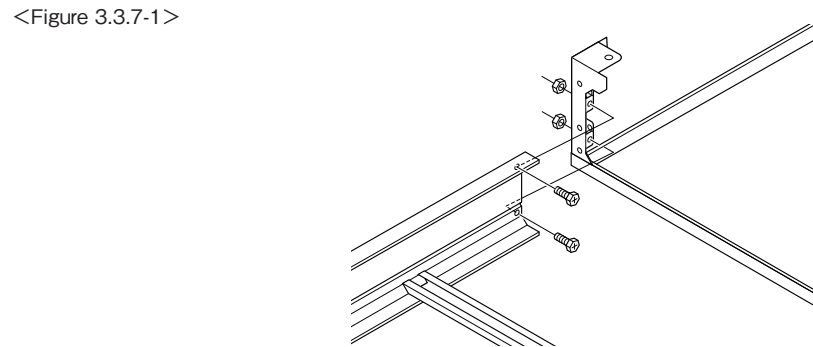


3.3.7 Connection for 900/900H corner parts

Use bolts to secure the duct, which will be connected to the corner parts, directly on the guide.

Note Support the duct and corner part separately to prevent the load from being given to other parts.

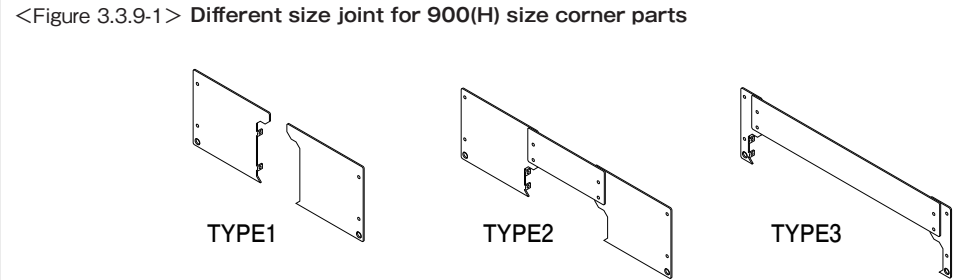
After piping work is completed, install the lid reinforcing plate (RXH-900, etc.).



3.3.8 Connection for 900/900H joint (1) RXR

When connecting 900/900H size corner part (except for RCF) to a duct of a different diameter, use RXR.

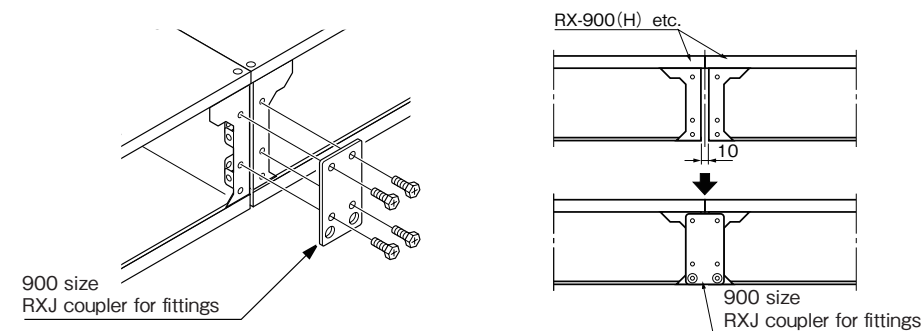
For installation, insert the duct into the part by 20 mm and secure it to RXR with bolts.



3.3.9 Connection for 900/900H joint (2) RXJ

To connect one corner part to another corner part (except for RCF) using RXJ, provide a gap of 10 mm (6 mm for RCI and RCO) between them and connect them with RXJ.
For a small gap that is created at the top, apply caulking treatment.

<Figure 3.3.9-1>



3.3.10 RXSS/RXSSW box joint sliding coupler

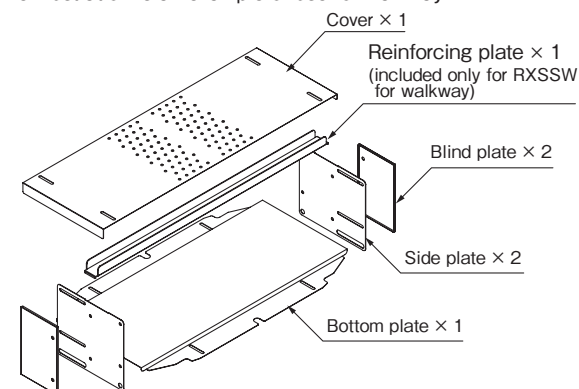
This installation is used to connect one box to another using the sliding coupler. It is used for connecting a plane corner between RX and RX or an elevation corner between RCI and RCO.

Parts to be connected

- RX-900 (H) (cross-shape branch joint)
- RXW-900 (H) (cross-shape branch joint for walkway)
- RF-900 (H) (plane corner 45°)
- RFW-900 (H) (plane corner 45° for walkway)
- RCI-900 (H) (elevation in-corner 90°)
- RCO-900 (H) (elevation out-corner 90°)

<Figure 3.3.10-1> Box joint sliding coupler RXSS/RXSSW

※The illustration is an example of use for walkway.

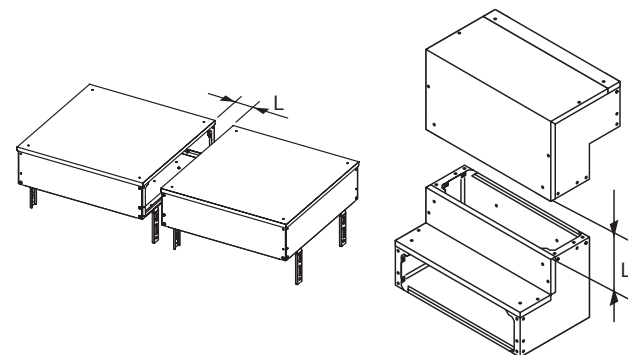


<Table 3.3.10-1>

Applicable sliding adjustment width

Unit: (mm)

Model number	Adjustment width L
RXSS(W)-900(H)-1	0~100
RXSS(W)-900(H)-2	100~200
RXSS(W)-900(H)-3	200~300



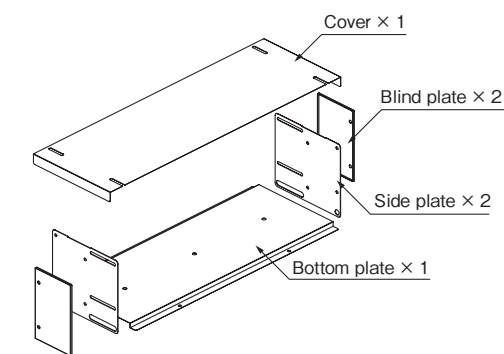
3.3.11 RCSS sliding coupler for RCF-900 (H)-SUS

Sliding coupler used to connect the elevation corner 45° (for SUS).

Parts to be connected

- RCF-900 (H)-SUS (elevation corner 45°)

<Figure 3.3.11-1> Sliding coupler RCSS for RCF-900 (H)-SUS



<Table 3.3.11-1>

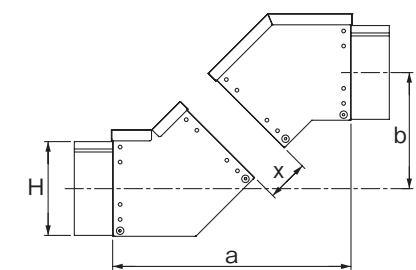
<Table 3.3.11-2>

Applicable sliding adjustment width Unit: (mm)

Model number	Adjustment width X
RCSS-900 (H)-1	0~100
RCSS-900 (H)-2	100~200
RCSS-900 (H)-3	200~300

Step dimensions

Model number	H	a	b	x
RCSS-900-1	134	487~558	207~278	13~113
RCSS-900-2		558~629	278~349	113~213
RCSS-900-3		629~700	349~420	213~313
RCSS-900H-1	254	572~643	242~313	13~113
RCSS-900H-2		643~714	313~384	113~213
RCSS-900H-3		714~785	384~455	213~313



単位: (mm)

Calculating formula

- 900 size
 $x = \sqrt{2} \times b - 280$
 $a = b + 280$
- 900H size
 $x = \sqrt{2} \times b - 330$
 $a = b + 330$ ※ $\sqrt{2} \approx 1.41$

3.4 Mounting bracket

- 3.4.1 Product configuration
- 3.4.2 Load capacity
- 3.4.3 Table for selecting a 150-size mounting bracket (for installation on the floor)

[Design]

3.4 Mounting bracket

Outline

The mounting bracket for RD 300 to 900 sizes 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 size mounting bracket: one leg mounting bracket of 280 through 940, and mounting bracket for wall surface which is appropriate for installation on the wall surface and its height is adjustable by three stages of 100, 125, and 150.

Table of contents

3.4.1 Product configuration

3.4.2 Load capacity

3.4.3 Table for selecting a 150-size mounting bracket (for installation on the floor)

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

3.4.5 Table for selecting a mounting bracket for installation on the wall surface (basic installation example)

3.4.6 Example of position for setting

3.4.7 Position for setting

3.4.8 Standard pitch between bases

3.4.9 Example of setting the mounting bracket

3.4.10 RZC bracket attachment plate for vertical ell

3.4.11 RBK-B auxiliary bracket for strut

3.4.12 RBK-A auxiliary bracket for duct base

3.4.13 RD-HB Screw set for RD-HB wall cover

3.4.14 RZY mounting bracket guide for duplex mounting

3.4.15 RDY pipe support base

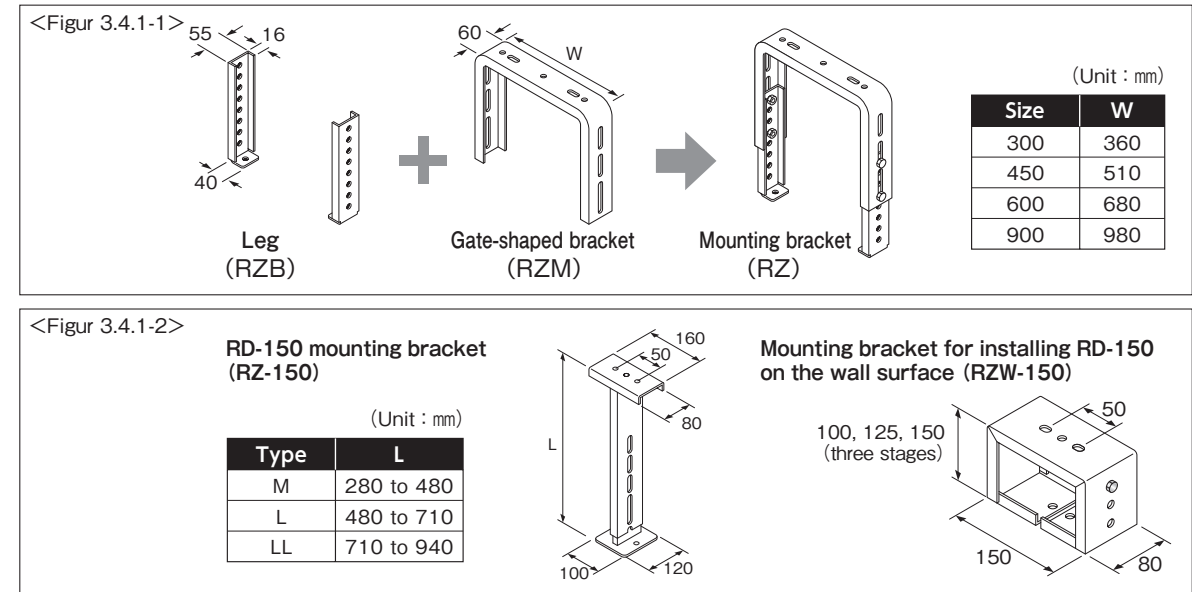
3.4.16 RKT fixing bracket for fixing RD to shaped steel

3.4.17 RKTW RD walkway fixing bracket for shaped steel

3.4.18 RCT RD bracket for fixing channel

3.4.19 Fixing (to floor)

3.4.1 Product configuration



3.4.2 Load capacity

For the load capacity, see [1.4] Load capacity and strength.

3.4.3 Table for selecting a 150-size mounting bracket (for installation on the floor)

<Table 3.4.3-1>

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

(Unit : mm)

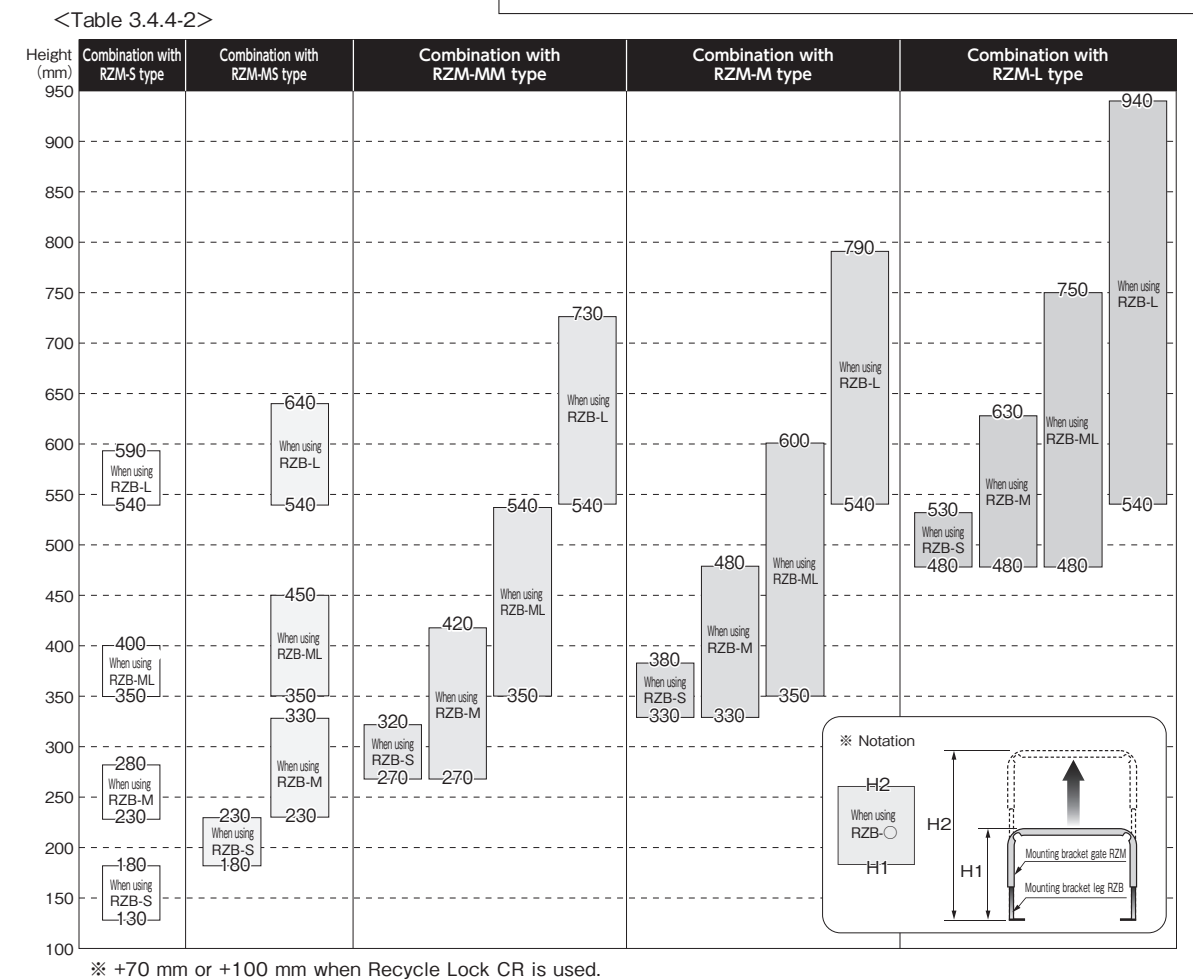
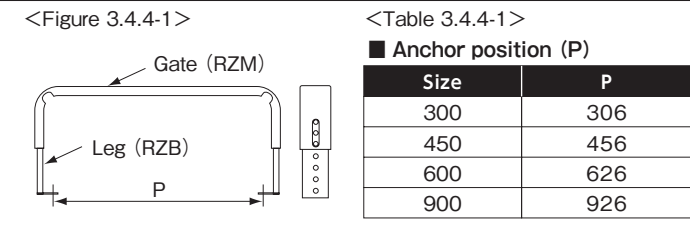
3.4 Mounting bracket

- 3.4.4 Table for selecting a mounting bracket other than 150-size (for installation on the floor)
- 3.4.5 Table for selecting a mounting bracket for installation on the wall surface (basic installation example)

[Design]

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

Based on <Table 3.4.4-2>, 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.



3.4.5 Table for selecting a mounting bracket for installation on the wall surface (basic installation example)

For installation on the wall surface, see [2.3] Method of installation on the wall surface.

<Table 3.4.5-1>

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

Notes in design

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

Example) Selecting mounting bracket when the height of mounting bracket 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.

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

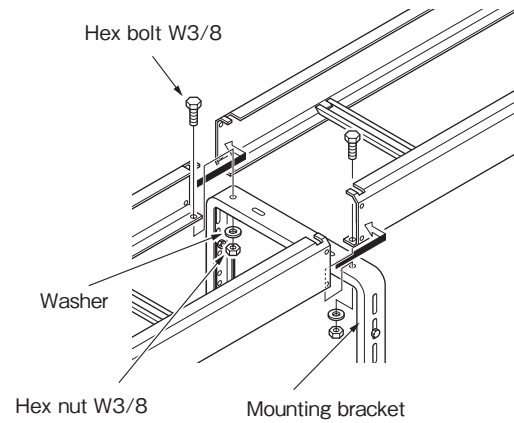
3.4.6

Example of position for setting

* For details about attaching the mounting bracket to parts, see the item of parts.

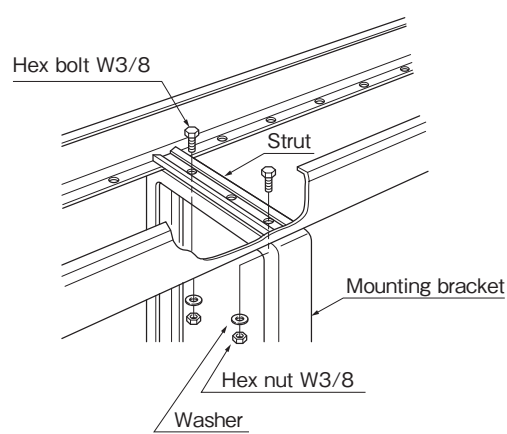
<Figure 3.4.6-1>

Fixing connection part
(coupler-free connection method)



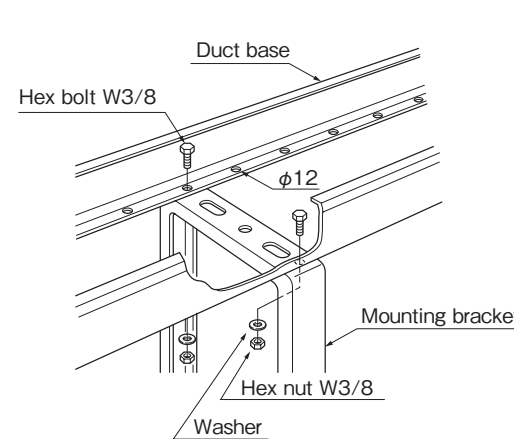
<Figure 3.4.6-2>

Fixing strut



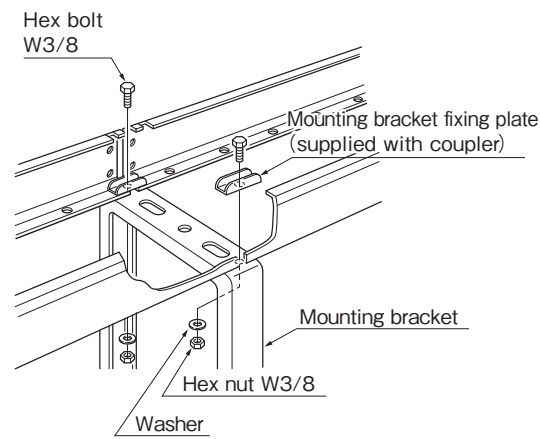
<Figure 3.4.6-3>

Fixing duct base



<Figure 3.4.6-4>

Fixing connection part
(method using fixing coupler and free coupler A type)



3.4.7

Position for setting

Warning

Positions for setting mounting brackets described here are just in a general case.
The required quantity and setting positions of mounting brackets differ depending on the fitting shape/size and installation method.
Be sure to check the pages of each fitting and its installation method to decide the positions for setting mounting brackets.

The mounting bracket can be set at the strut, duct base, connection part, auxiliary strut, and bottom plate, etc.
Note that the setting positions of mounting brackets differ depending on the duct size and installation method.

<Table 3.4.7-1> Quick reference of mounting bracket setting positions

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

Object to be set for	Size	Setting position	Connection method Duct base attachment method	Installation on the floor (2m pitch*1)			wall surface	Use condition and remarks (restrictions in △ case)	
				Standard	Walkway	Bottom plate + Standard	Bottom plate + Standard		
Duct	Other than 150	Connection part	Coupler-free connection	○	○	○	×		
			Fixing coupler	○	△	○	×	Limited to auxiliary use for walkway. *2	
			Free coupler A	△	△	△	×	Limited to auxiliary use for 2m pitch*1 and walkway. *2	
			Free coupler S/H	—	—	—	—		
			Reducer	—	—	—	—		
			Sliding coupler	△	△*4	△*5	×	Limited to auxiliary use for 2m pitch*1. *2	
		Strut part	Standard duct	○	○	○	○		
			Open type duct	○	○	○	△	Limited to auxiliary use in the installation on the wall surface. *2	
		Duct base part	Standard duct	○	△	×	△*7	Limited to auxiliary use for walkway. *2 Limited to 2m or 1m type in the installation on the wall surface.	
			Open type duct	○	△	×	○*7	Limited to auxiliary use for walkway. *2 Limited to 2m or 1m type in the installation on the wall surface.	
	150	Connection part	Coupler-free connection	—	—	—	—		
			Fixing coupler	△	—	△	×	Cannot be set in a part connecting with fittings.	
			Free coupler	△	—	△	×	Cannot be set in a part connecting with fittings.	
			reducer	—	—	—	—		
		Strut part		○	—	○	○		
		Duct base part		—	—	—	—		
Fittings	Other than 150	Connection part	Coupler-free connection	○	○	○	×		
			Fixing coupler	○	△	○	×	Limited to auxiliary use for walkway. *2	
			Free coupler A	△	△	△	×	Limited to auxiliary use for 2 pitch*1 and walkway. *2	
			Free coupler S/H	—	—	—	—		
			Reducer	—	—	—	—		
			Sliding coupler	△	—	△*6	×	Limited to auxiliary use for 2m pitch*1. *2	
		Strut part (including auxiliary strut)		○	○	○	○		
		Duct base part		—	—	—	—		
		150	Connection part	Coupler-free connection	—	—	—	—	
				Fixing coupler	—	—	—	—	
	Free coupler			—	—	—	—		
	Reducer			—	—	—	—		
	Bottom plate		○	—	○	○			
	Duct base part		—	—	—	—			

*1... See [3.4.8] Standard pitch between bases.
*2... The auxiliary use refers to the use of mounting bracket 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 bracket.
*5... In the connection with 0.5m or 0.3m duct, the bottom plate cannot be attached.
*6... In the connection with fittings other than RCF, the bottom plate cannot be attached.
*7... The exclusive bracket is required. [Reference](#) [2.3] Method of installation on the wall surface

3.4.8 Standard pitch between bases

Warning

Positions for setting mounting brackets described here are just in a general case. The required quantity and setting positions of mounting brackets differ depending on the fittings shape/size and installation method. Be sure to check the pages of each fitting and its installation method to decide the positions for setting mounting brackets.

Pitch to be set between mounting brackets 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 bracket at two positions or more for one duct/fittings. (The necessary quantity of the mounting brackets differs depending on the installation method. See the item of each part for details.)

Pitch between mounting brackets and load capacity

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

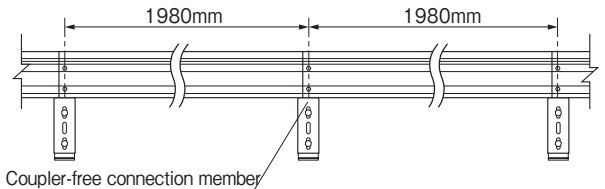
In the installation by using the coupler-free connection, set the mounting brackets at the both ends of duct. In this case, the pitch between mounting brackets is 1,980mm (approximately 2m). <Figure 3.4.8-1.1>

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

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

Reference [1.4] Load capacity and strength

<Figure 3.4.8-1.1>



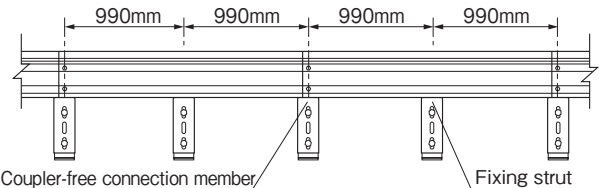
Load capacity of 2m duct when one mounting bracket is set 6,374N (650kgf)

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

When increasing the quantity of the mounting brackets to increase the load capacity, set the mounting brackets at the both ends of duct and strut at the center.

In this case, the pitch between mounting brackets is 990mm (approximately 1m). <Figure 3.4.8-1.2>

<Figure 3.4.8-1.2>

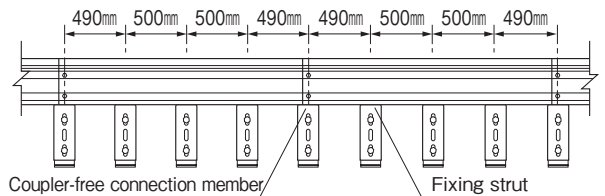


Load capacity of 2m duct when two mounting brackets are set 12,748N (1,300kgf)

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

When increasing the quantity of the mounting brackets to further increase the load capacity, set the mounting brackets at the both ends of duct and all struts. In this case, the pitch between mounting brackets 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 brackets are set 25,496N (2,600kgf)

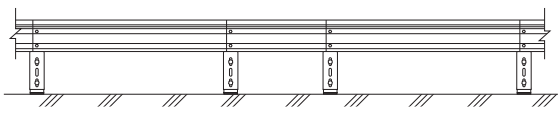
3.4.9 Example of setting the mounting bracket

1 Example of basic mounting bracket setting

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

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

<Figure 3.4.9-1>

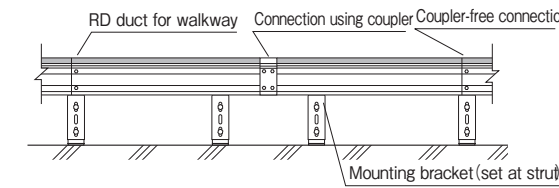


2 Example of mounting bracket setting in the connection using coupler (walkway)

When the RD duct is used as the walkway, setting the mounting bracket at the connection part using a coupler part is to be limited to auxiliary use.

Set the mounting brackets at two positions (struts) near the connection part (one on its one side and the other on its opposite side).

<Figure 3.4.9-2>

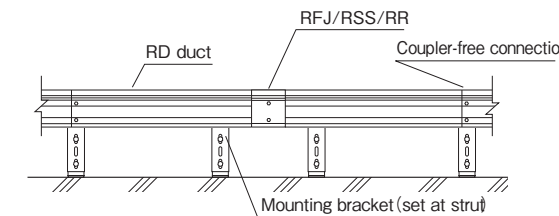


3 Example of mounting bracket setting in the connection using a special coupler (2m pitch)

In the 2m-pitch setting (setting the mounting bracket at the connection part), when free coupler RFJ, reducer RR, or Sliding coupler RSS is used, set the mounting brackets at two positions (strut or duct base) near the connection part (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>

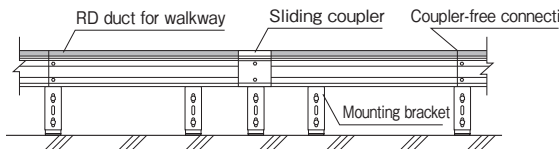


4 Example of mounting bracket setting in the connection using sliding coupler

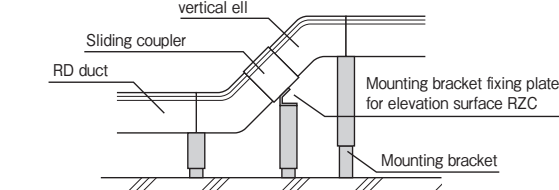
Between the parts for walkway or in use of combination with the vertical ell, set the mounting bracket also at the sliding coupler. (excluding 150 type)

※ For attaching the vertical ell, see the item of each part.

<Figure 3.4.9-4>



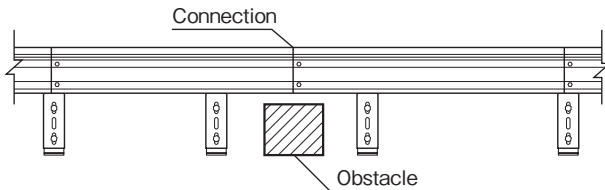
<Figure 3.4.9-5>



Notes in design

<Figure 3.4.9-6>

If the mounting bracket cannot be set at the connection part, set the mounting bracket at a near strut, etc.



3.4 Mounting bracket

3.4.10 RZC bracket attachment plate for vertical ell

3.4.11 RBK-B auxiliary bracket for strut

3.4.12 RBK-A auxiliary bracket for duct base

3.4.13 RD-HB screw set for wall cover

3.4.14 RZY mounting bracket guide for duplex mounting

[Design]

3.4 Mounting bracket

3.4.15 RDY pipe support base

3.4.16 RKT fixing bracket for fixing RD to shaped steel

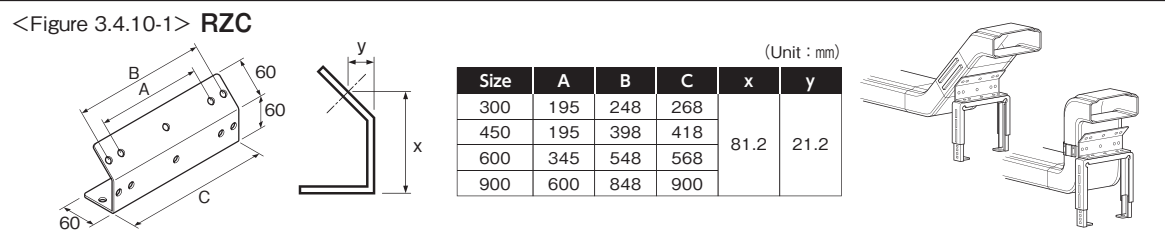
3.4.17 RKTW RD walkway fixing bracket for shaped steel

[Design]

Design	Specifications	Basic design	Total design	Duct	Pipe shaft and wall penetration	Connection method	Mounting bracket	Fittings	Bottom plate	Other parts
Product configuration, specifications, and weight	Load capacity and strength	Accommodation capacity	Installation method (on the floor)	Installation method (on the wall surface)	Installation method (hanging from the ceiling)					

3.4.10 RZC bracket attachment plate for vertical ell

This is used for supporting the 90° vertical ell or sloping part.

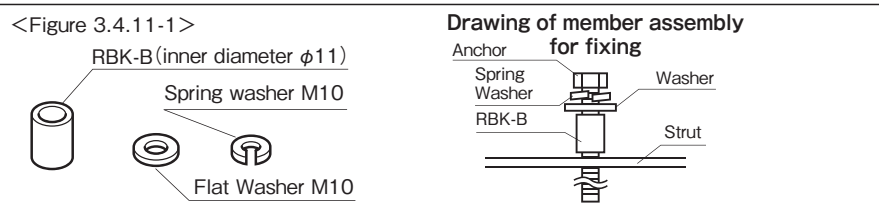


3.4.11 RBK-B auxiliary bracket for strut

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

Reference

[2.3.3] Conditions for installation on the wall surface (directly on the wall surface)

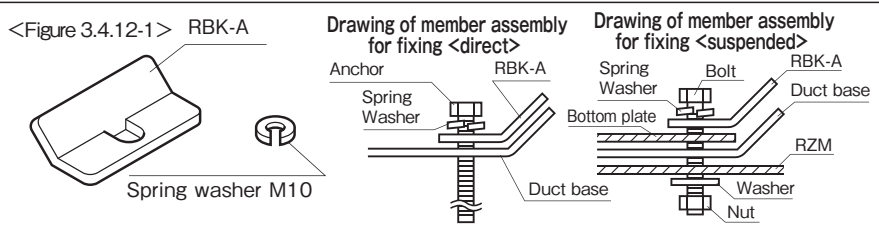


3.4.12 RBK-A auxiliary bracket for duct base

This is used for installing the open type duct on the wall surface.

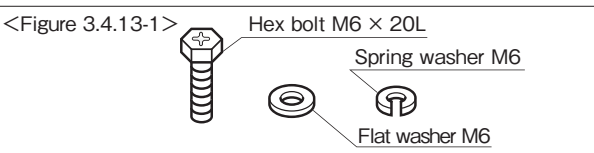
Reference

[2.3.3] [2.3.4] Conditions for installation on the wall surface



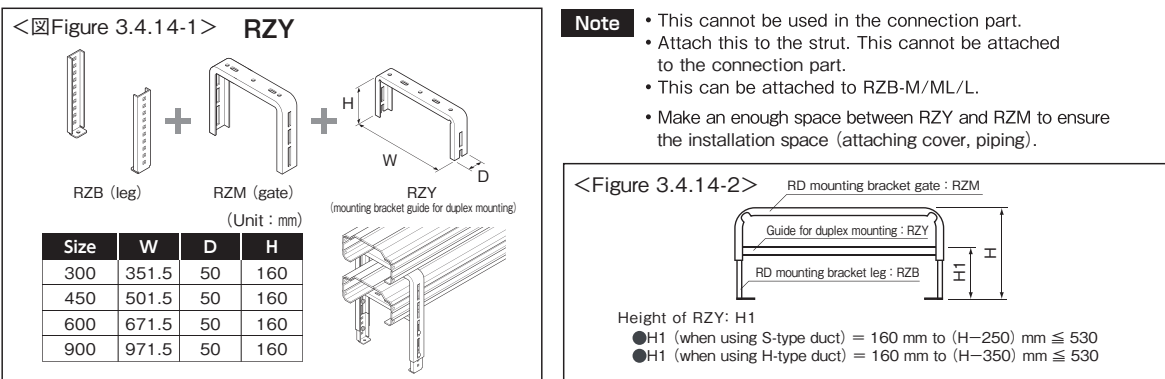
3.4.13 RD-HB screw set for wall cover

This is used for mounting the cover of duct, corner parts, and joint parts for wall installation.



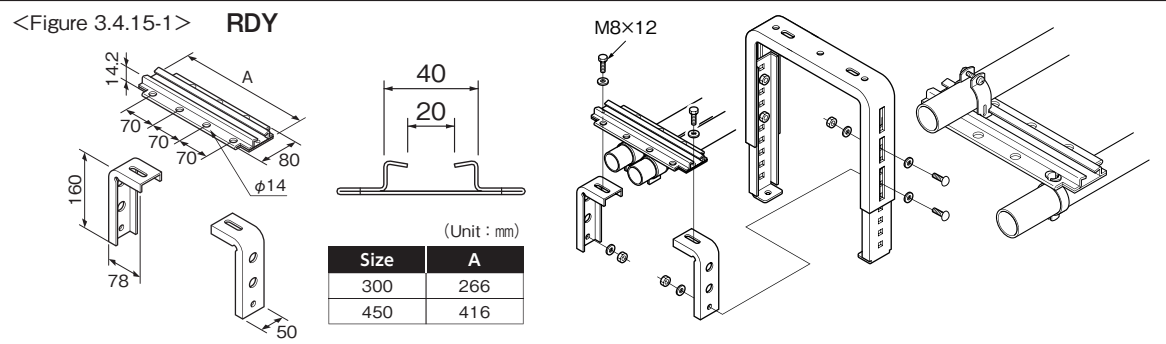
3.4.14 RZY mounting bracket guide for duplex mounting

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



3.4.15 RDY pipe support base

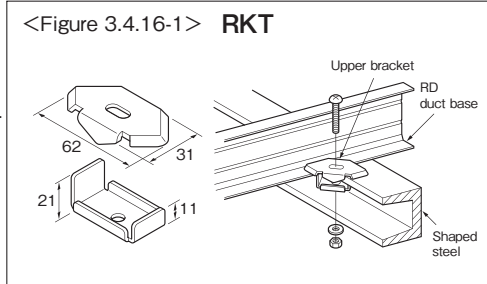
This is used when attaching the conduit etc. to the RD mounting bracket. This can be attached to RZB-M/ML/L.



3.4.16 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 fittings.

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

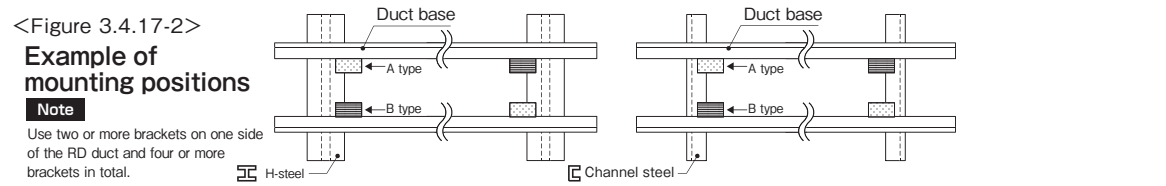
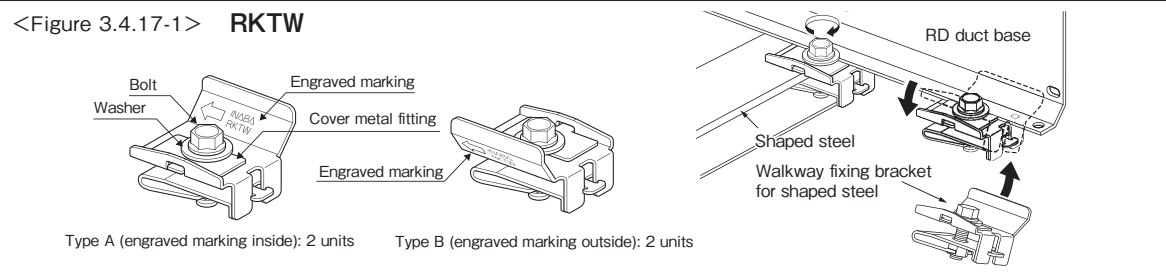


	Applicable shaped steel	Load by which shift will begin	Tightening torque
H-shaped steel	Flange thickness 7 to 13 mm	245N (25kgf)	5.9N·m (60kgf·cm)
Channel steel	75×40mm, 100×50mm, 125×65mm, 150×75mm	147N (15kgf)	

3.4.17 RKTW RD walkway fixing bracket for shaped steel

Walkway type ducts can be attached to shaped steel.

- Note**
- Do not reuse the product after it has been used.
 - This cannot be used for vertical parts on the wall, etc.
 - This cannot be attached to either end (joint) of the RD duct.
 - Insert the bracket to the shaped steel in the direction of the arrow engraved on the product.



	Applicable shaped steel	Tightening torque
H-steel	Flange thickness 7 to 13 mm	42N·m (428kgf·cm)
Channel steel	75×40mm, 100×50mm, 125×65mm, 150×75mm	

Design	Specifications	Basic design	Total design	Duct	Pipe shaft and wall penetration	Connection method	Mounting bracket	Fittings	Bottom plate	Other parts
Product configuration, specifications, and weight	Load capacity and strength	Accommodation capacity	Installation method (on the floor)	Installation method (on the wall surface)	Installation method (hanging from the ceiling)					

3.4 Mounting bracket

- 3.4.18 RCT bracket for fixing channel [Design]
- 3.4.19 Fixing (to floor)

3.5 Fittings

- 3.5.1 Types of fittings [Design]

Design

Product configuration, specifications, and weight

Specifications

Load capacity and strength

Accommodation capacity

Basic design flow

Installation method (on the floor)

Installation method (on the wall surface)

Installation method (hanging from the ceiling)

Duct

Pipe shaft and wall penetration

Connection method

Mounting bracket

Fittings

Bottom plate

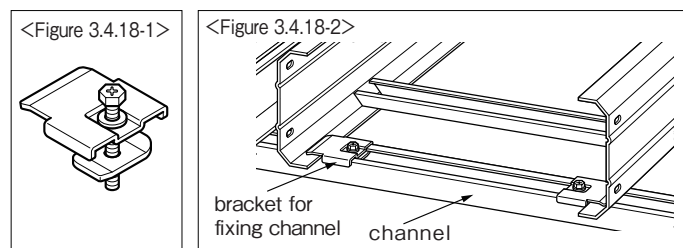
Other parts

3.4.18 RCT bracket for fixing channel

There is a method for installing RD duct directly on channel. Set the bracket for fixing channel and secure it with a bolt.

Note

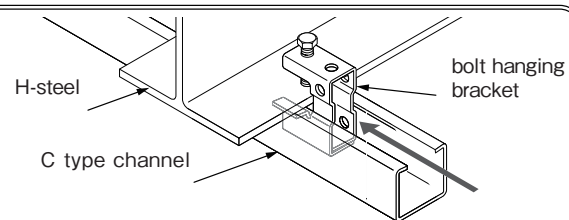
- This cannot be used in the vertical installation on the wall surface etc.
- This cannot be used for fixing the RD duct for walkway.
- Do not use this in a position where vibration or shaking occurs.
- Please install on both sides of the RD duct.



SHBN-S-Z bolt hanging bracket

For outdoor use (equivalent to HDZT49)

To support and secure the channel on the steel material, SHBN-S-Z bolt hanging bracket (for outdoor use) can also be used.

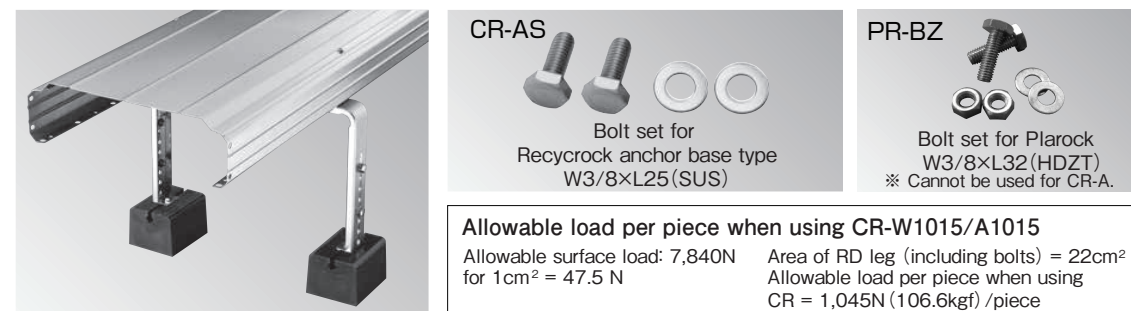
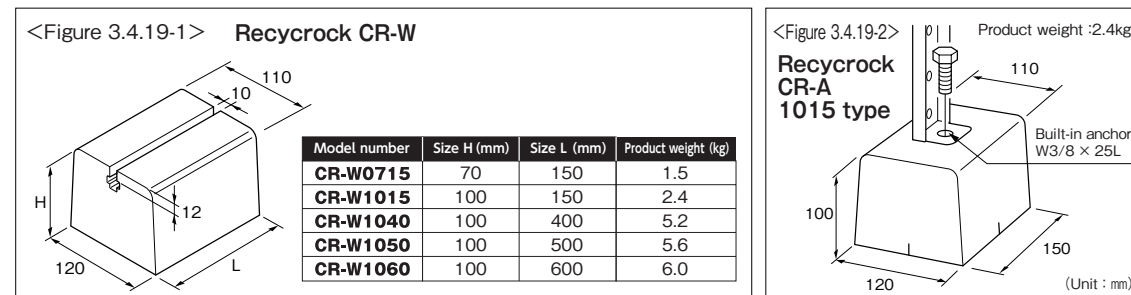


3.4.19 Fixing (to floor)

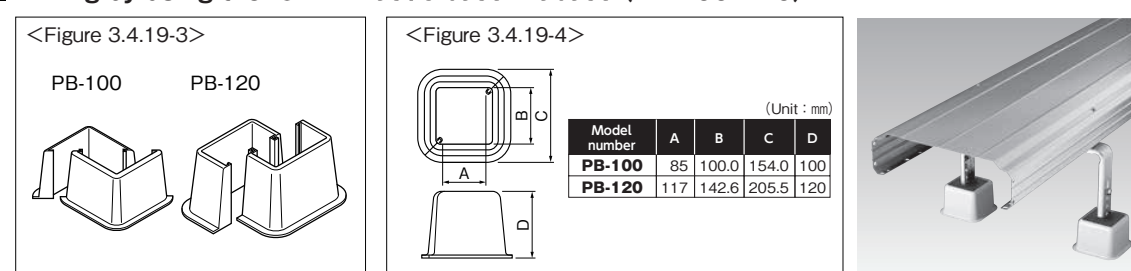
Fix the mounting bracket by anchoring or embedment with mortar. For the installation on the floor, fixing it by using the form (name of our product: Plabase) or the multipurpose support base "Recycrock" is also possible.

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

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



2 Fixing by using the form "Plastic base Plabase (PB-100/120)"



3 Fixing by using anchor

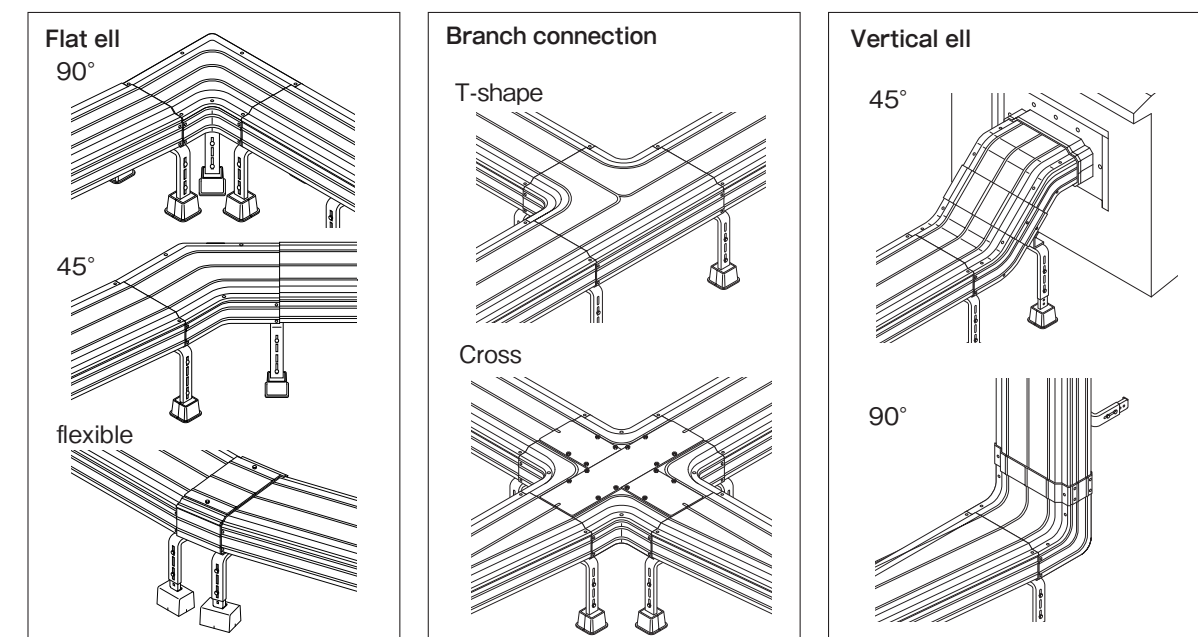
Use commercially available W3/8 or M10.

3.5 Fittings

Table of contents	3.5.1 Types of fittings	45
	3.5.2 RE 90° flat ell	46
	3.5.3 RF 45° flat ell	47
	3.5.4 RFS flexible corner	49
	3.5.5 RT tee	50
	3.5.6 RXN/RX cross	51
	3.5.7 RCF 45° vertical ell	53
	3.5.8 RC/RCI/RCO 90° vertical ell (150 to 600 H)	56
	3.5.9 RC/RCI/RCO 90° vertical ell (900/900H)	59
	3.5.10 Installation of a mounting base on the elevation surface corner	61

3.5.1 Types of fittings

There are the following types of fittings : vertical ell and flat ell 45°/90° bending, tee, and cross. Note that available sizes are limited for some fittings.



<Table 3.5.1-1>			
Classification	Product name (Abbreviated name)	Type	Remarks
Elbow	90° flat ell (RE)	Standard type	For 900 size, use RX-900/900H.
		Walkway type	There is no sliding coupler for 150 size. For 900 size, use RXW-900/900H.
	45° flat ell (RF)	Standard type	—
		Walkway type	There is no sliding coupler for 150 size.
	Flexible corner (RFS)	Standard type	There is no sliding coupler for 150 size.
		Walkway type	There is no sliding coupler for 150 size.
Tee	90° vertical ell° (RC/RCI/RCO)	Standard type	—
		Standard type	—
	45° vertical ell (RCF)	Standard type	—
Tee	Tee (RT)	Standard type	For 900 size, use RX-900/900H.
		Walkway type	There is no sliding coupler for 150 size. For 900 size, use RXW-900/900H.
Cross	Cross (RX)	Standard type	There is no sliding coupler for 150 size.
		Walkway type	There is no sliding coupler for 150 size.

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

Design

Product configuration, specifications, and weight

Specifications

Load capacity and strength

Accommodation capacity

Basic design flow

Installation method (on the floor)

Installation method (on the wall surface)

Installation method (hanging from the ceiling)

Duct

Pipe shaft and wall penetration

Connection method

Mounting bracket

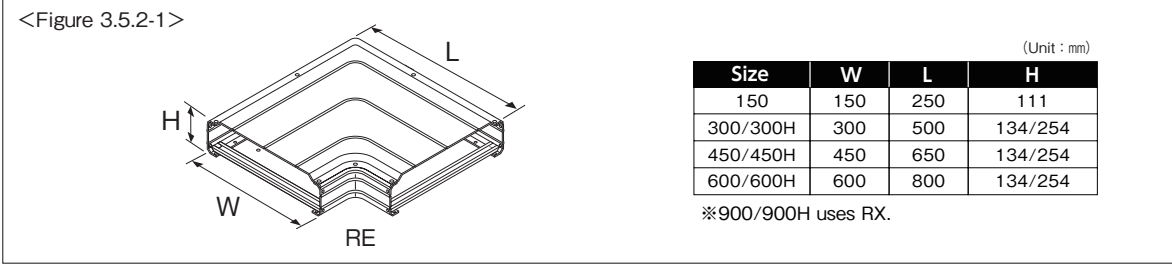
Fittings

Bottom plate

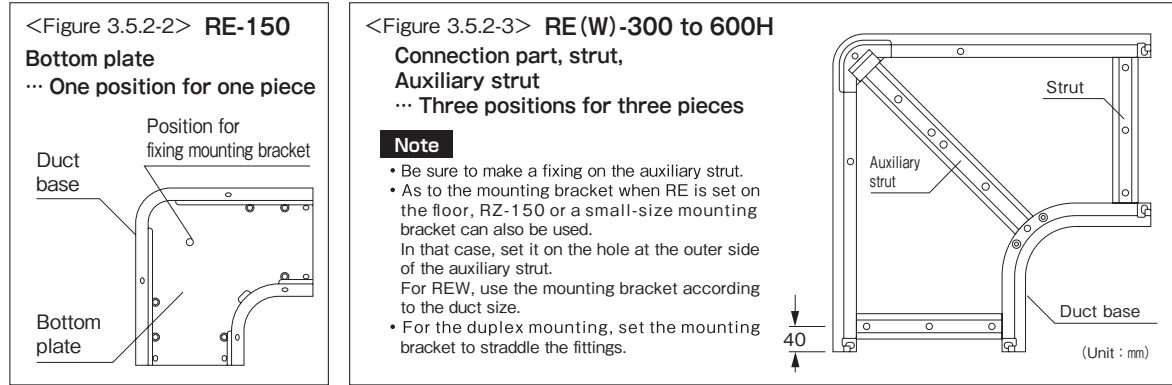
Other parts

3.5.2 RE 90° flat ell

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



1 Position for setting and required quantity of mounting brackets



2 Example of setting mounting bracket

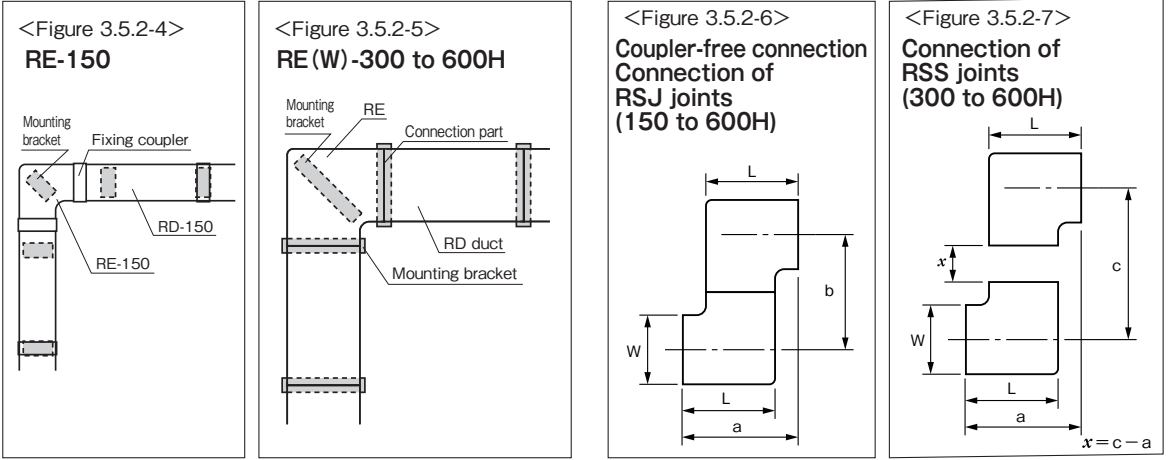


Table of RE 90° flat ell finished dimensions

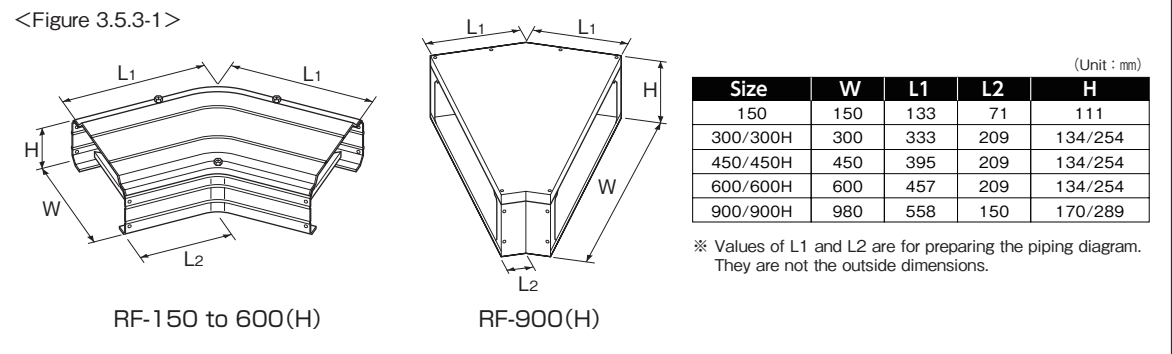
<Table 3.5.2-1> (Unit : mm)

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

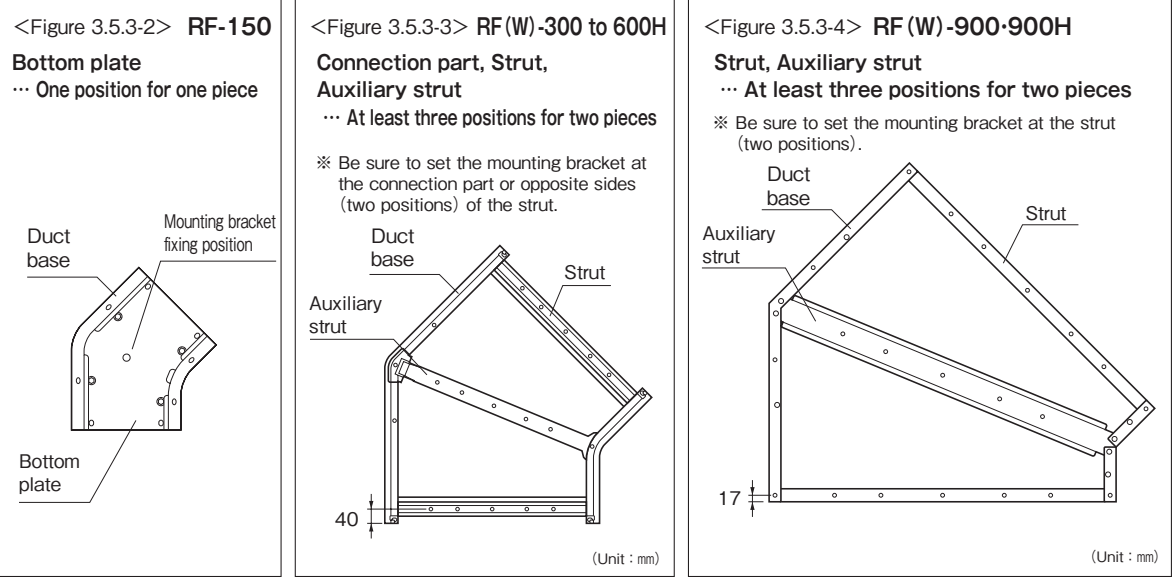
※ When the value of "x" exceeds 320, see [Table 3.3.5-1] in [3.3.5] RSS sliding coupler.

3.5.3 RF 45° flat ell

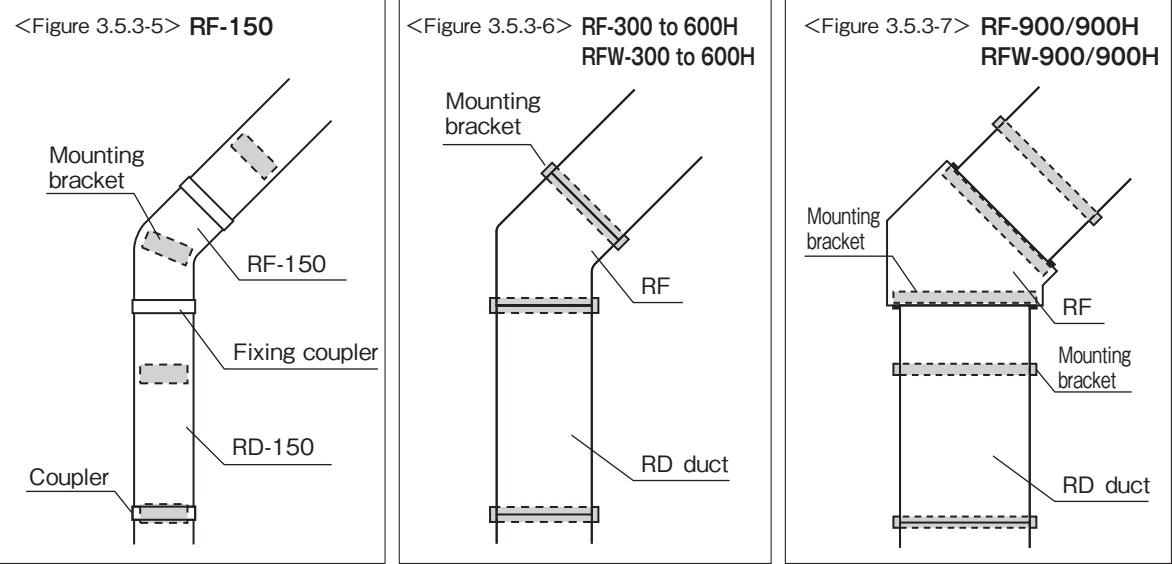
This is the plane surface 45°-bending elbow part.



1 Position for setting and required quantity of mounting brackets



2 Example of setting mounting bracket



3 Finished dimensions

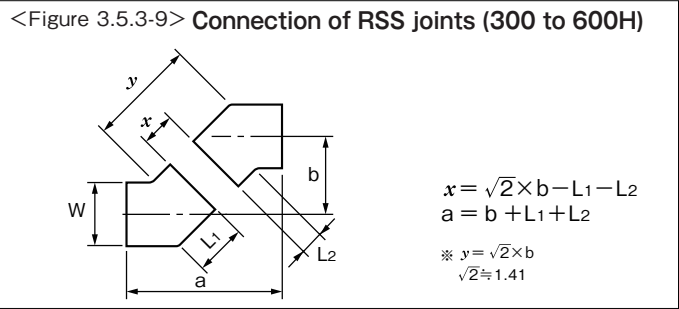
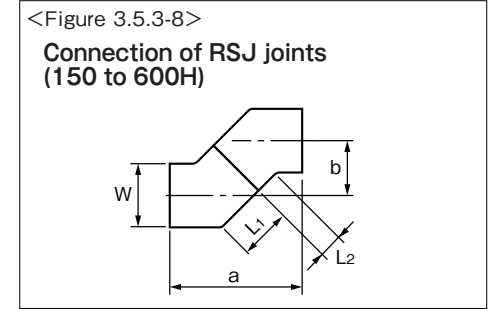


Table of RF 45° flat ell finished dimensions <Table 3.5.3-1> (Unit : mm)

Size	W	L ₁ *	L ₂ *	Coupler-free connection		Connection of RSJ joints		Connection of RSS joints			
				a	b	a	b	a	b	x※	Used coupler
150	150	133	71	—	—	362	158	—	—	—	—
300/300H	300	333	209	910	369	938	397	938~1010	397~468	20~120	RSS-1
								1010~1081	468~539	120~220	RSS-2
								1081~1152	539~610	220~320	RSS-3
450/450H	450	395	209	1016	413	1045	441	1045~1116	441~512	20~120	RSS-1
								1116~1187	512~583	120~220	RSS-2
								1187~1257	583~653	220~320	RSS-3
600/600H	600	457	209	1123	457	1151	485	1151~1222	485~556	20~120	RSS-1
								1222~1293	556~627	120~220	RSS-2
								1293~1363	627~697	220~320	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 coupler.

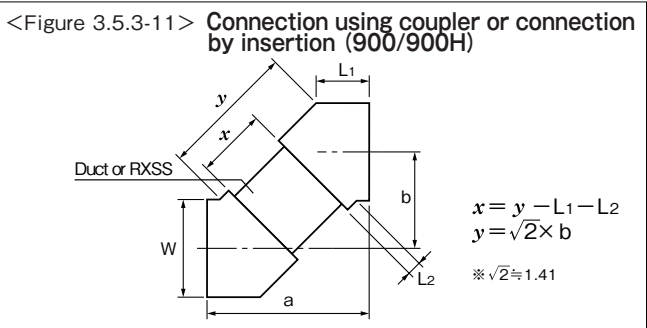
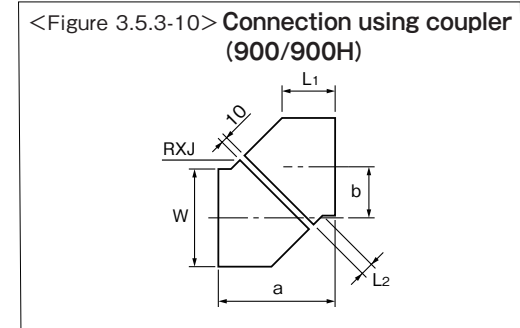
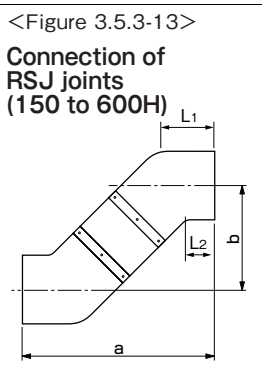
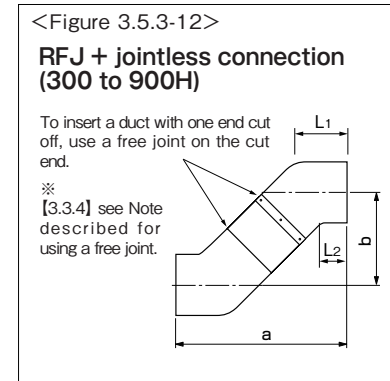


Table of RF 45° flat ell finished dimensions (connection using coupler) <Table 3.5.3-2> (Unit : mm)

Size	W	L ₁	L ₂	a	b	x	Used coupler	Size	W	L ₁	L ₂	a	b	x	Used coupler
900/900H	980	557	151	1217	508	10	RXJ	900/900H	980	557	151	1214~1284	503~573	0~100	RXSS-900-1
				1393	685	260	0.3m duct					1284~1353	573~644	100~200	RXSS-900-2
				1534	826	460	0.5m duct					1353~1426	644~715	200~300	RXSS-900-3

Insert a duct (straight pipe) between RF elevation surface corners 45° when using RFJ free joints or RSJ fixing joints (calculation of step dimensions)



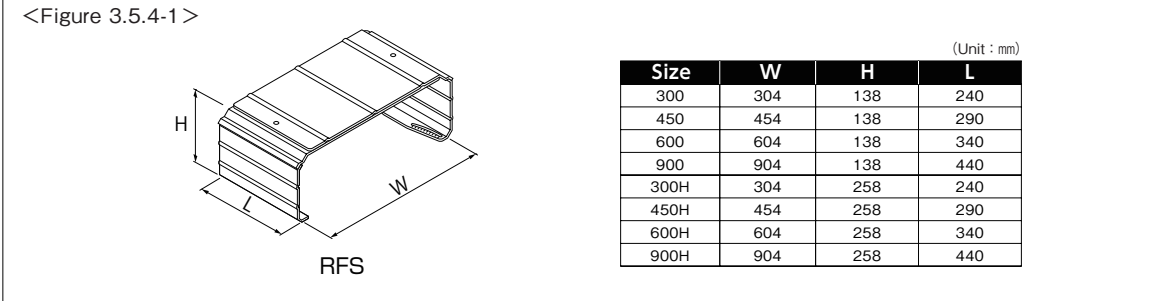
x indicates the duct length

Size	Calculation	
	RFJ + jointless connection	RSJ connection
150	—	$x = \sqrt{2} \times b - 244$ $a = b + 204$
300/300H	$x = \sqrt{2} \times b - 542$ $a = b + 542$	$x = \sqrt{2} \times b - 582$ $a = b + 542$
450/450H	$x = \sqrt{2} \times b - 604$ $a = b + 604$	$x = \sqrt{2} \times b - 644$ $a = b + 604$
600/600H	$x = \sqrt{2} \times b - 666$ $a = b + 666$	$x = \sqrt{2} \times b - 706$ $a = b + 666$
900/900H	$x = \sqrt{2} \times b - 668$ $a = b + 708$	—

* 900/900H is calculated on the assumption that the end of the duct pipe enters the corner part by 20mm.
* $a = b + L_1 + L_2$ The distance between RF: $\sqrt{2} \times b - L_1 - L_2$
※For size 900, the duct is fixed directly to the RF parts with screws without using RFJ. If you cut the duct, make a plug-in connection or drill screw holes and secure with screws.

3.5.4 RFS flexible corner

It is a corner part that can be adjusted as required in the horizontal direction.



1 Range of angles

Horizontal plane: 0° to 20°

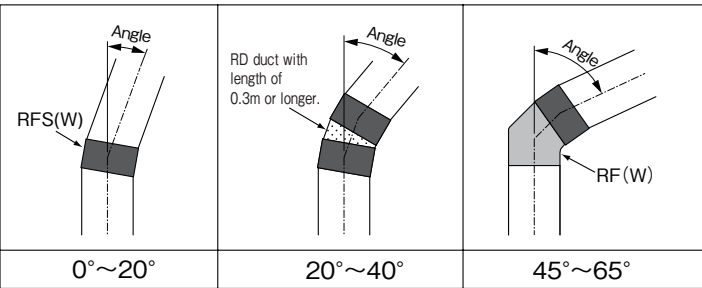
For between 20° and 40° in the horizontal plane, use 2 sets of RFS (W) flexible corner and connect an RD duct in between.

Note
• RFS (W)-900(H) can be used only for an RD duct with length of 0.5 m or longer. (Connection is not possible for 0.3 m)

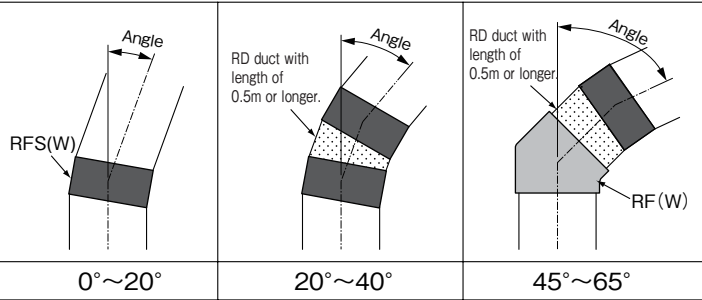
For between 45° and 65° in the horizontal plane, connect RF (W) plane surface corner 45°.

Note
• RFS (W)-900(H) cannot be directly connected to RF. Install an RD duct with length of 0.5 m or longer in between.

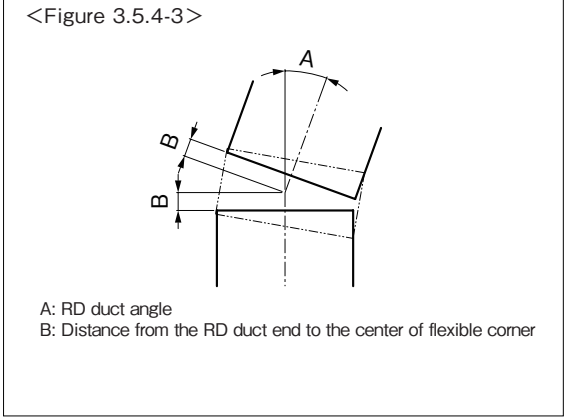
<Figure 3.5.4-2> Example of connection
RFS(W)-300(H)/450(H)/600(H)



RFS(W)-900(H)



2 Finished dimension



RFS flexible corner
Table of finished dimension (B dimension)
<Table 3.5.4-1>

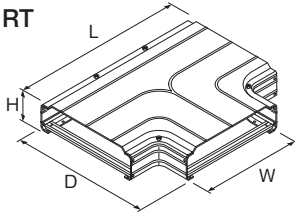
For the finished position and angle of the RD duct, see the following table. (Unit : mm)

Size	0°	4°	8°	12°	16°	20°
300/300H	90	86	82	78	74	70
450/450H	115	108	102	95	89	82
600/600H	140	131	122	112	103	94
900/900H	190	176	161	147	132	118

3.5.5 RT tee

Tees for plane surface.

<Figure 3.5.5-1> RT



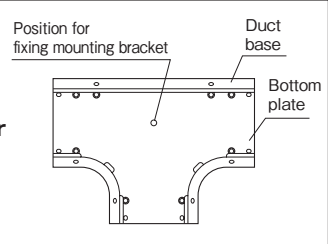
Size	W	D	L	H
150	150	250	250	111
300/300H	300	500	700	134/254
450/450H	450	650	850	134/254
600/600H	600	800	1000	134/254

(Unit : mm)

1 Position for setting and required quantity of mounting brackets

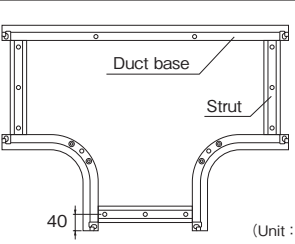
<Figure 3.5.5-2> RT-150

Bottom plate
... One position for one piece



<Figure 3.5.5-3> RT (W)-300 to 600H

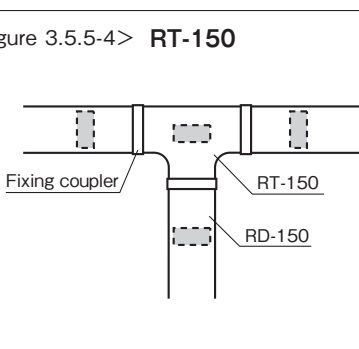
Connection part, Strut
... Three positions for three pieces



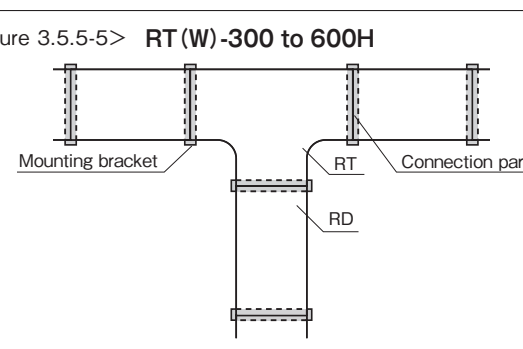
(Unit : mm)

2 Example of setting mounting bracket

<Figure 3.5.5-4> RT-150

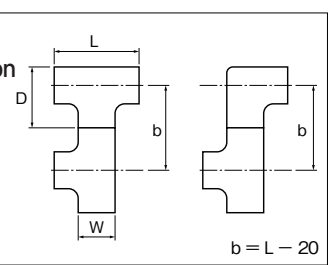


<Figure 3.5.5-5> RT (W)-300 to 600H

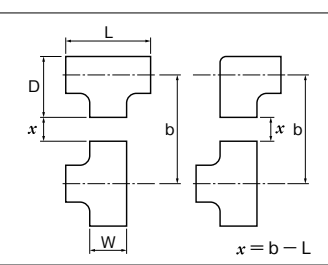


3 Finished dimensions

<Figure 3.5.5-6> Coupler-free connection
Connection of RSJ joints
(150 to 600H)



<Figure 3.5.5-7> Connection of RSS joints
(300 to 600H)



$b = L - 20$
 $x = b - L$

Table of RT tee finished dimensions

<Table 3.5.5-1>

(Unit : mm)

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

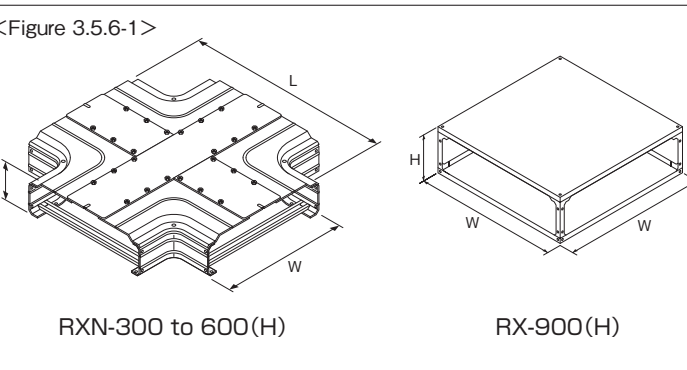
※ When the value of "x" exceeds 320, see [Table 3.3.5-1] in [3.3.5] RSS sliding coupler.

3.5.6 RXN/RX cross

This is a coupler (fittings) branching in three directions.

The size for 900/900H can also be used as an elbow or tee by stopping the opening by using the supplied plate.

<Figure 3.5.6-1>



Size	W	L	H
300/300H	300	700	134/254
450/450H	450	850	134/254
600/600H	600	1000	134/254
900/900H	980	—	200/320

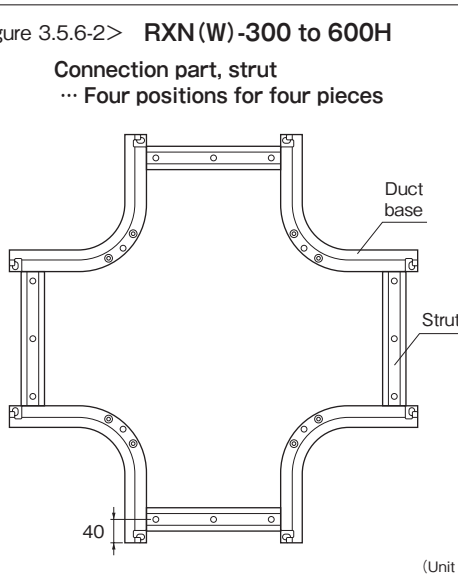
(Unit : mm)

RXN-300 to 600(H) RX-900(H)

1 Position for setting and required quantity of mounting brackets

<Figure 3.5.6-2> RXN(W)-300 to 600H

Connection part, strut
... Four positions for four pieces

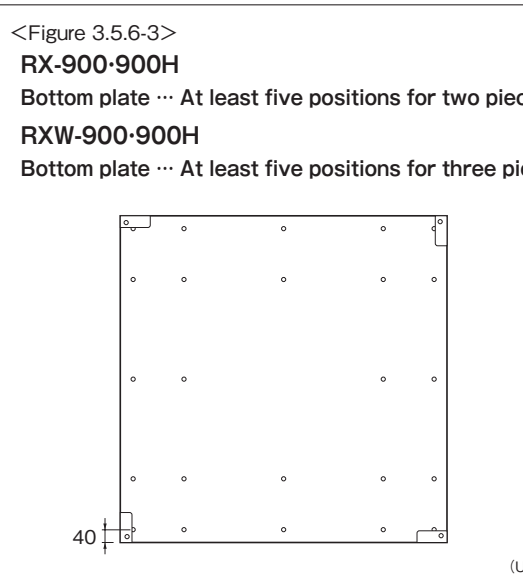


<Figure 3.5.6-3> RX-900-900H

Bottom plate ... At least five positions for two pieces

RXW-900-900H

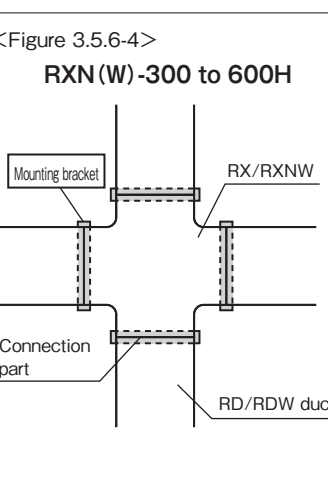
Bottom plate ... At least five positions for three pieces



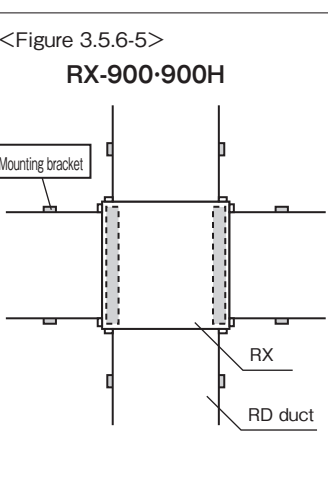
(Unit : mm)

2 Example of setting mounting bracket

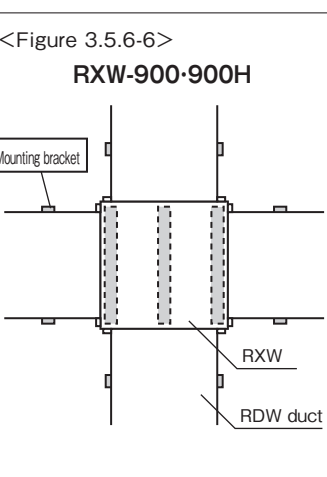
<Figure 3.5.6-4> RXN(W)-300 to 600H



<Figure 3.5.6-5> RX-900-900H

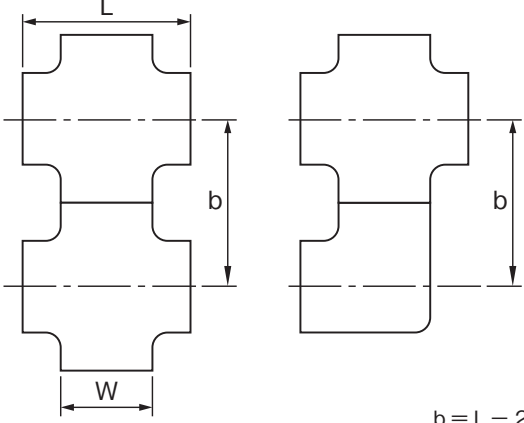


<Figure 3.5.6-6> RXW-900-900H



3 Finished dimensions

<Figure 3.5.6-7> RXN-300 to 600H Connection of RSJ joints



<Figure 3.5.6-8> RXN-300 to 600H Connection of RSS joints

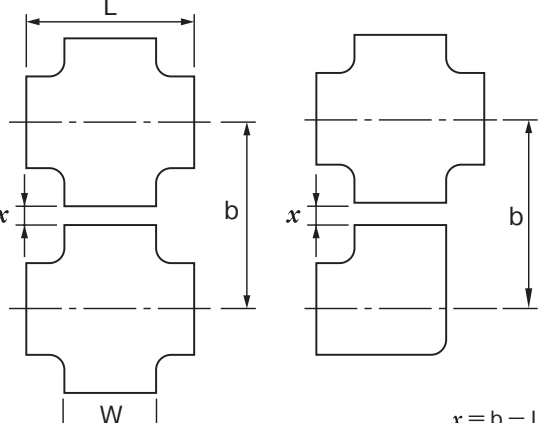


Table of cross 300 to 600H finished dimensions

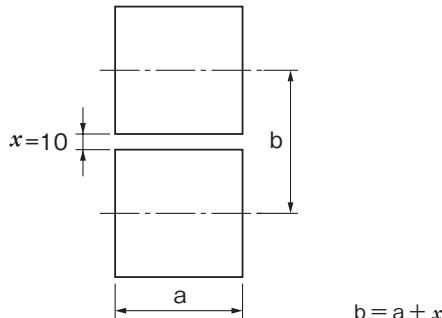
<Table 3.5.6-1>

(Unit : mm)

Size	W	L	Coupler-free connection	Connection of RSJ joints	Connection of RSS joints		
			b	b	b	x ※	Used coupler
300/300H	300	700	680	720	720~ 820	20~120	RSS-1
					820~ 920	120~220	RSS-2
					920~1020	220~320	RSS-3
450/450H	450	850	830	870	870~ 970	20~120	RSS-1
					970~1070	120~220	RSS-2
					1070~1170	220~320	RSS-3
600/600H	600	1000	980	1020	1020~1120	20~120	RSS-1
					1120~1220	120~220	RSS-2
					1220~1320	220~320	RSS-3

※ When the value of "x" exceeds 320, see [Table 3.3.5-1] in [3.3.5] RSS sliding coupler.

<Figure 3.5.6-9> 900/900H Connection using coupler (using RXJ)



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

<Figure 3.5.6-10> 900/900H Connection using coupler (using duct + RXC)

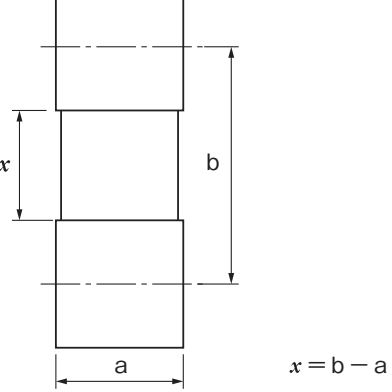


Table of cross 900/900H finished dimensions

<Table 3.5.6-2>

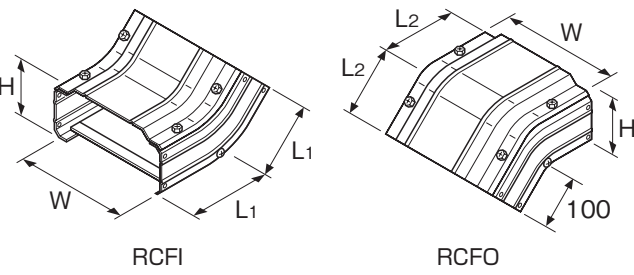
(Unit : mm)

Size	a	b	x	Used coupler
900/900H	980	990	10	RXJ
		980~1080	0~100	RXSS-900-1
		1080~1180	100~200	RXSS-900-2
		1180~1280	200~300	RXSS-900-3
		1240	260	0.3m duct
		1440	460	0.5m duct

3.5.7 RCF 45° vertical ell

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

<Figure 3.5.7-1>

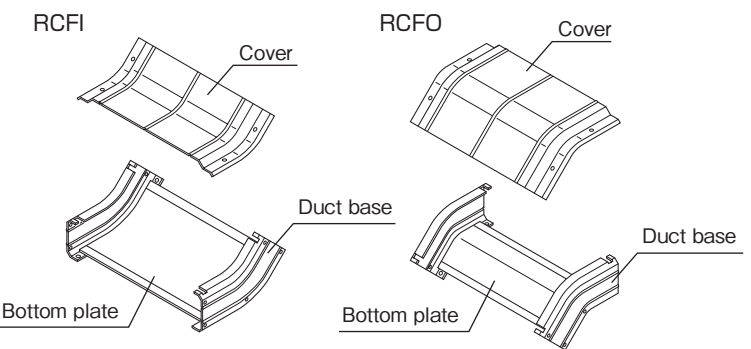


Size	W	L1	L2	H
150	150	111	111	111
300/300H	300	147/197	147/197	134/254
450/450H	450	147/197	147/197	134/254
600/600H	600	147/197	147/197	134/254
900/900H	ZA:900 SUS:980	149/198	157/207	134/254

1 Position for setting and required quantity of mounting brackets

- 150
None (not supported directly)
- 300 to 900H
Connection part
... Two positions for two pieces

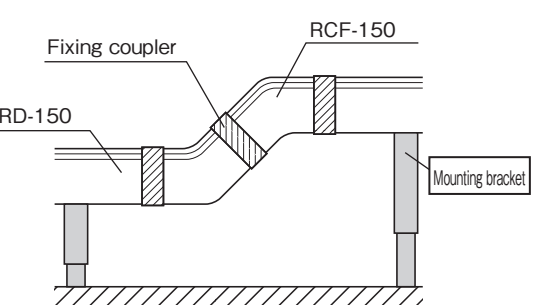
<Figure 3.5.7-2>



2 Example of setting mounting bracket

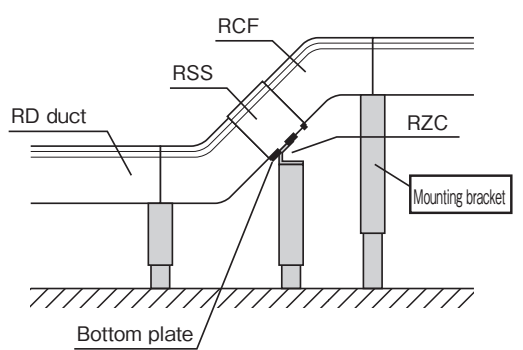
<Figure 3.5.7-3>

Setting at the connection part of RCF-150 coupler



<Figure 3.5.7-4>

Setting at the connection (sliding coupler) part of RCF-300 to 900H coupler

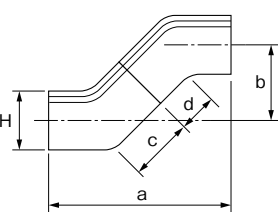


3 Dimension of level difference

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

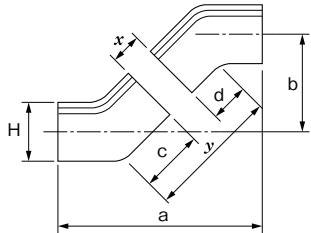
<Figure 3.5.7-5>

Coupler-free connection
Connection of RSJ joints



<Figure 3.5.7-6>

Connection of RSS joints



Standard type
 $x = \sqrt{2} \times b - 252$
 $a = b + 252$
High type
 $x = \sqrt{2} \times b - 302$
 $a = b + 302$
※ $y = \sqrt{2} \times b$
 $\sqrt{2} \approx 1.41$

※When using free coupler : x = dimension of duct short pipe (RFJ + coupler-free connection installation method)
Use a sliding coupler which is easy to adjust length as far as possible.
When using the free coupler, use the A type at which the mounting bracket can be set by checking “[3.3.4] Free coupler” in advance.

Table of RCF 45° vertical ell dimension of level difference <Table 3.5.7-1>

(Unit : mm)

Size	W	c	d	H	Coupler-free connection		Connection of RSJ joints		Connection of RSS joints			
					a	b	a	b	a	b	x	Used coupler
150	150	116	70	111	—	—	332	146	—	—	—	—
300	300	149	103	134	416	164	444	192	443~513	192~262	20~120	RSS-1
									513~584	262~333	120~220	RSS-2
									584~641	333~404	220~320	RSS-3
450	450	149	103	134	416	164	444	192	443~513	192~262	20~120	RSS-1
									513~584	262~333	120~220	RSS-2
									584~641	333~404	220~320	RSS-3
600	600	149	103	134	416	164	444	192	443~513	192~262	20~120	RSS-1
									513~584	262~333	120~220	RSS-2
									584~641	333~404	220~320	RSS-3
900	900	149	103	134	416	164	444	192	443~513	192~262	20~120	RSS-1
									513~584	262~333	120~220	RSS-2
									584~641	333~404	220~320	RSS-3
300H	300	199	103	254	502	199	530	228	530~599	228~298	20~120	RSS-1
									599~669	298~368	120~220	RSS-2
									669~726	368~439	220~320	RSS-3
450H	450	199	103	254	502	199	530	228	530~599	228~298	20~120	RSS-1
									599~669	298~368	120~220	RSS-2
									669~726	368~439	220~320	RSS-3
600H	600	199	103	254	502	199	530	228	530~599	228~298	20~120	RSS-1
									599~669	298~368	120~220	RSS-2
									669~726	368~439	220~320	RSS-3
900H	900	199	103	254	502	199	530	228	530~599	228~298	20~120	RSS-1
									599~669	298~368	120~220	RSS-2
									669~726	368~439	220~320	RSS-3

※ When the value of “x” exceeds 320, see [Table 3.3.5-1] in [3.3.5] RSS sliding coupler.
※ Values of “a” and “b” in this table were obtained from the working drawing.
※ When the value of “x” exceeds 1m, use the 90° vertical ell.

Table of RCF 45 °vertical ell (900 (H) size / SUS type) dimension of level difference <Table3.5.7-2>

(Unit : mm)

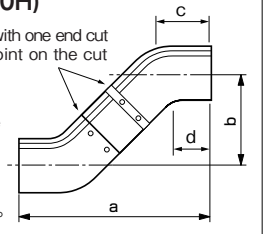
Size	H	Connection of RCSS joints			
		a	b	x	Used coupler
900	134	487~558	207~278	13~113	RCSS-900-1-SUS
		558~629	278~349	113~213	RCSS-900-2-SUS
		629~700	349~420	213~313	RCSS-900-3-SUS
900H	254	572~643	242~313	13~113	RCSS-900H-1-SUS
		643~714	313~384	113~213	RCSS-900H-2-SUS
		714~785	384~455	213~313	RCSS-900H-3-SUS

Insert a duct (straight pipe) between RCF elevation surface corners 45° when using RFJ free joints or RSJ fixing joints (calculation of step dimensions)

<Figure 3.5.7-7>

RFJ + jointless connection
(300 to 900H)

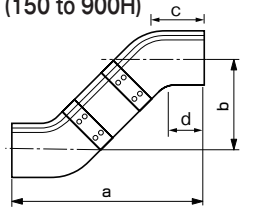
To insert a duct with one end cut off, use a free joint on the cut end.
※ [3.3.4] see Note described for using a free joint.



* $a = b + c + d$ The distance between RCF: $\sqrt{2} \times b - c - d$

<Figure 3.5.7-8>

Connection of
RSJ joints
(150 to 900H)



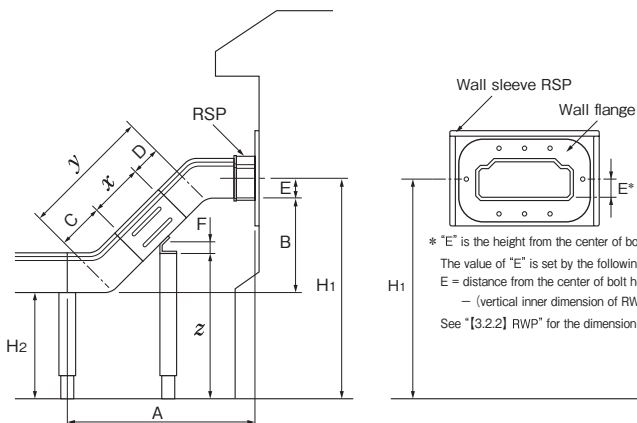
x indicates the duct length

Size	Calculation	
	RFJ + jointless connection	RSJ connection
150	—	$x = \sqrt{2} \times b - 226$ $a = b + 186$
300	$x = \sqrt{2} \times b - 252$ $a = b + 252$	$x = \sqrt{2} \times b - 292$ $a = b + 252$
450		
600		
900	$x = \sqrt{2} \times b - 302$ $a = b + 302$	$x = \sqrt{2} \times b - 342$ $a = b + 302$
300H		
450H		
600H		
900H		

※ If the duct length exceeds 1m, use an elevation surface corner 90°

4 Example of calculation of the height of mounting bracket (when using RCF coupler-free type)

<Figure 3.5.7-9> When obtaining the height of mounting bracket based on the position of Pipe shaft anchor



* “E” is the height from the center of bolt hole to the bottom of RCF.
The value of “E” is set by the following expression :
E = distance from the center of bolt hole to the RWP lower jaw (inner)
— (vertical inner dimension of RWP – height of RCF) ÷ 4.
See “[3.2.2] RWP” for the dimension of RWP.

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

【 Calculation example 】

For 600 type (standard), when
 $H_1 = 600$ $H_2 = 250$ $C = 149$ $D = 103$ $F = 81.2$
 $E = 71.5 - (139 - 131) \div 4 = 69.5$
※ $\sqrt{2} \approx 1.41$
then,
 $B = 600 - 250 - 69.5 = 280.5$
 $x = 280.5 \times \sqrt{2} - 149 - 103 = 143.5$
 $z = 250 + (149 + 143.5 \div 2) \div \sqrt{2} - 81.2 \approx 325$

(Unit : mm)

Notes in design

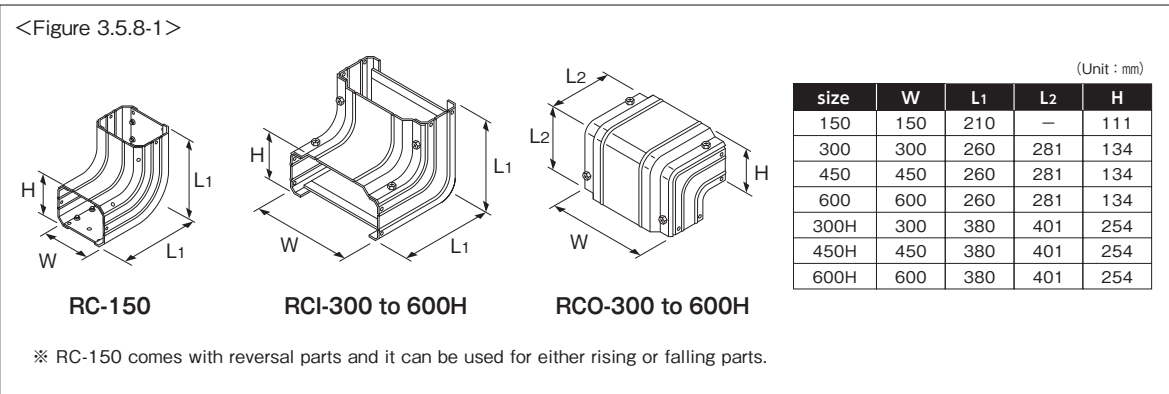
Values above are just the calculated values for selecting a mounting bracket, and in almost all of the actual installation, an error will occur by several millimeters to several centimeters depending on the parts assembly conditions and installation environment (incline of floor) etc. In selection, leaving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

Example) Selecting mounting bracket when the height of mounting bracket 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.

3.5.8 RC/RCI/RCO 90° vertical ell (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 cover and bottom plate.

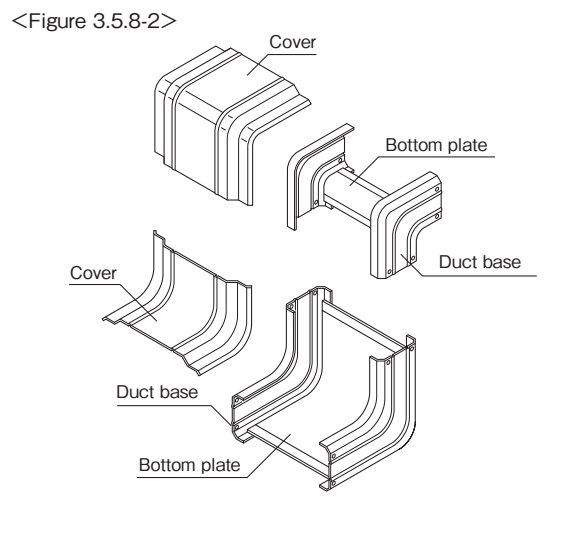


1 Position for setting and required quantity of mounting brackets

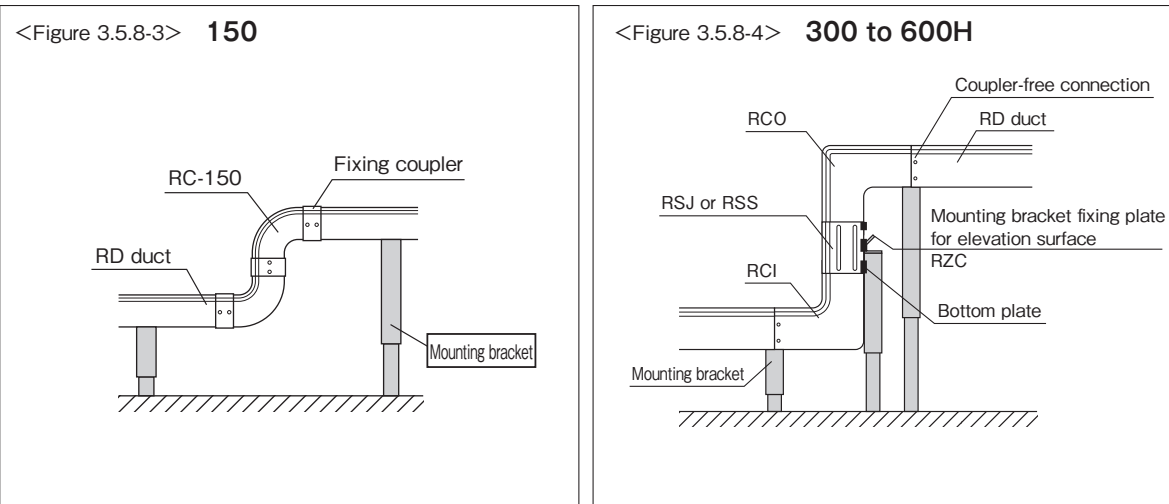
- 150
None (not supported directly)
- 300 to 600H
RCI
Connection part
... Two positions or more for one piece (see Note)
RCO
Connection part
... At least two positions for zero pieces (see Note)

Note

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

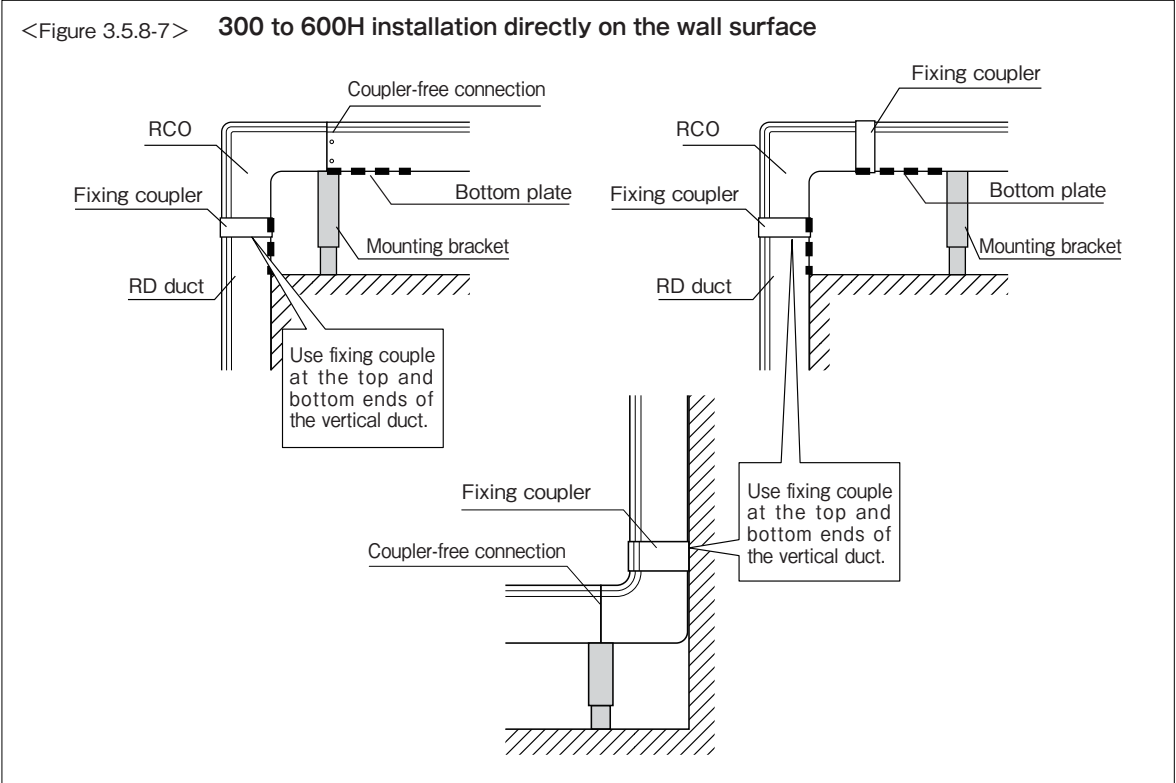
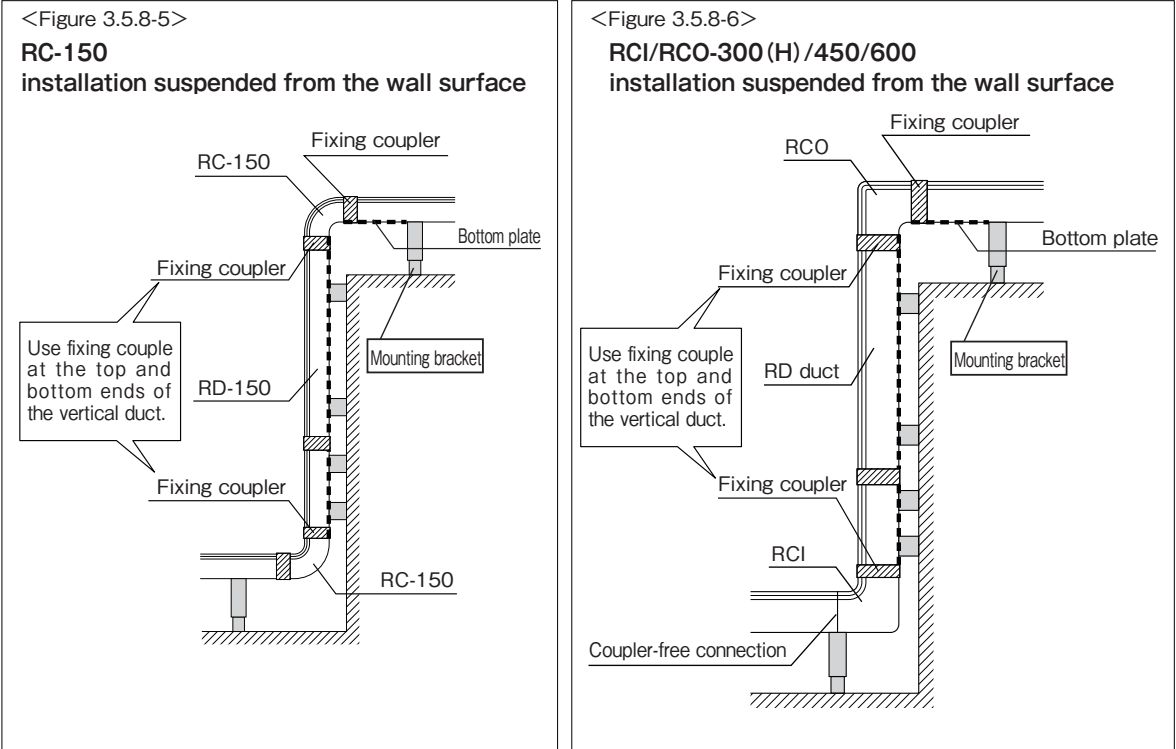


2 Example of setting mounting bracket (for level difference)



3 Example of installation on the wall surface

- Fix the load-applied side (wall side) with the fixing coupler.
- When the horizontal part is connected by the coupler-free connection, set the mounting bracket at the connection part.
- When the horizontal part is connected by the fixing coupler, set the mounting bracket at the strut of the duct.
- Bottom plate must be made of steel or stainless steel (net bottom plate is not acceptable).



4 Dimension of level difference

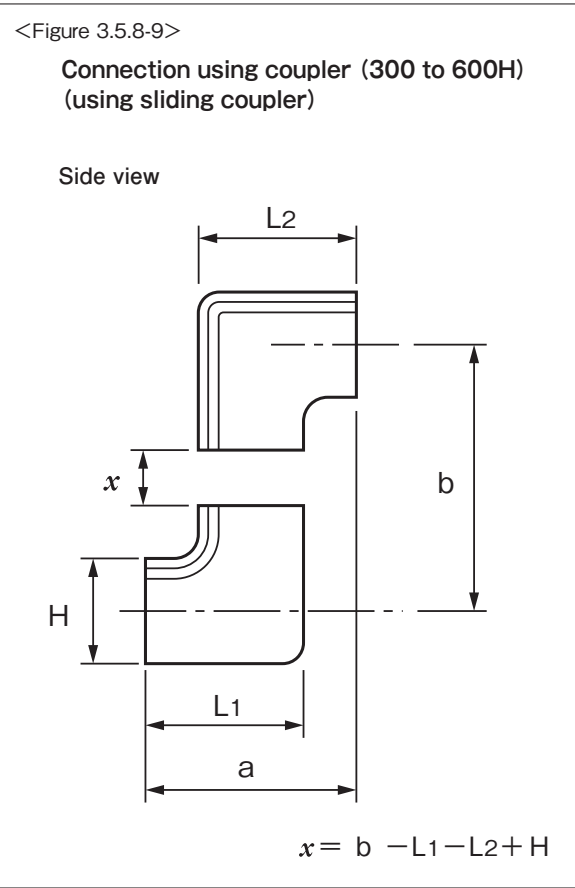
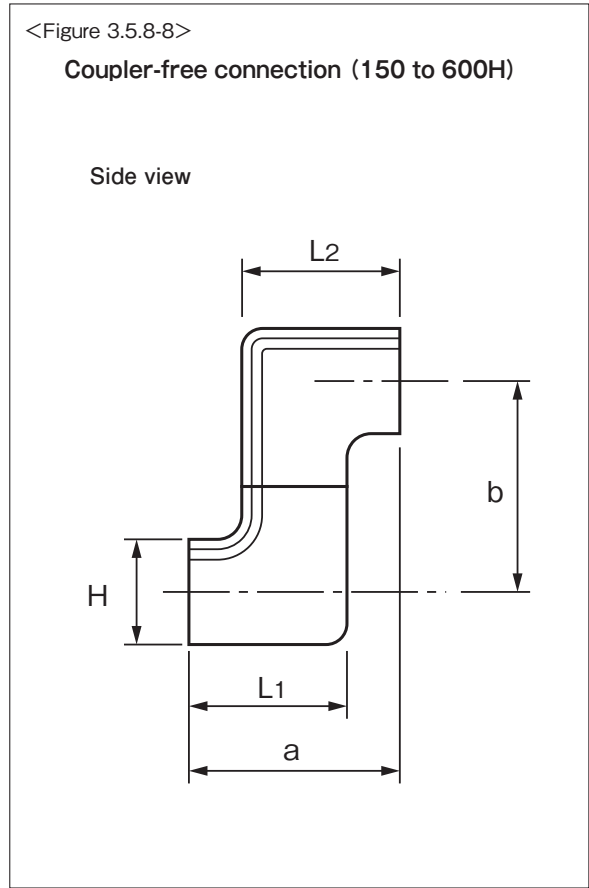
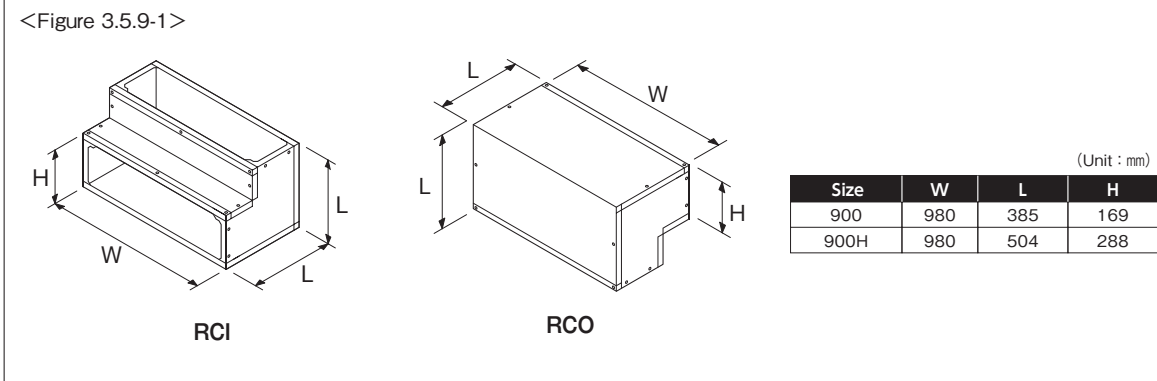


Table of RC/RCI/RCO 90° vertical ell dimension of level difference <Table 3.5.8-1> (Unit : mm)

Size	W	L1	L2	H	a	Coupler-free connection	Connection of RSJ joints	Connection of RSS joints		
						b	b	b	x※	Used coupler
150	150	210	210	111	309	—	330	—	—	—
300	300	260	281	134	410	390	430	430~530	20~120	RSS-1
								530~630	120~220	RSS-2
								630~730	220~320	RSS-3
450	450	260	281	134	410	390	430	430~530	20~120	RSS-1
								530~630	120~220	RSS-2
								630~730	220~320	RSS-3
600	600	260	281	134	410	390	430	430~530	20~120	RSS-1
								530~630	120~220	RSS-2
								630~730	220~320	RSS-3
300H	300	380	401	254	530	510	550	550~650	20~120	RSS-1
								650~750	120~220	RSS-2
								750~850	220~320	RSS-3
450H	450	380	401	254	530	510	550	550~650	20~120	RSS-1
								650~750	120~220	RSS-2
								750~850	220~320	RSS-3
600H	600	380	401	254	530	510	550	550~650	20~120	RSS-1
								650~750	120~220	RSS-2
								750~850	220~320	RSS-3

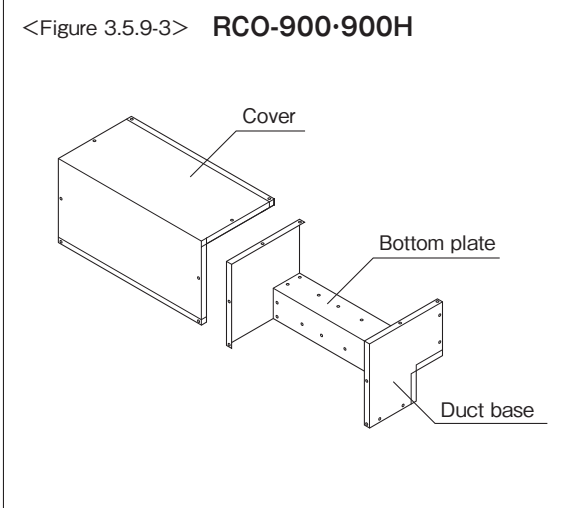
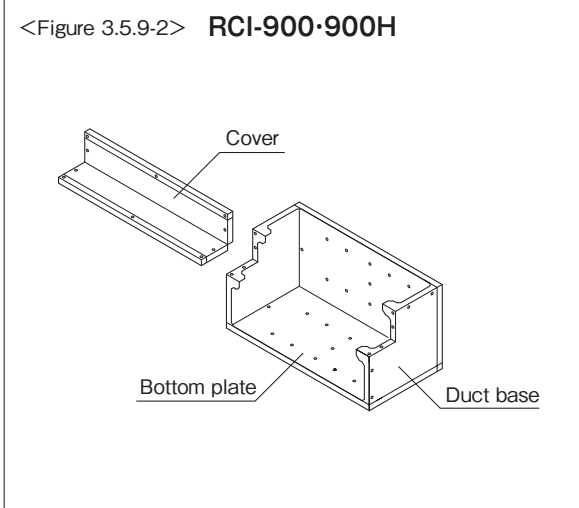
※ When the value of "x" exceeds 320, see [Table 3.3.5-1] in [3.3.5] RSS sliding coupler.

3.5.9 RCI/RCO 90° vertical ell (900/900H)

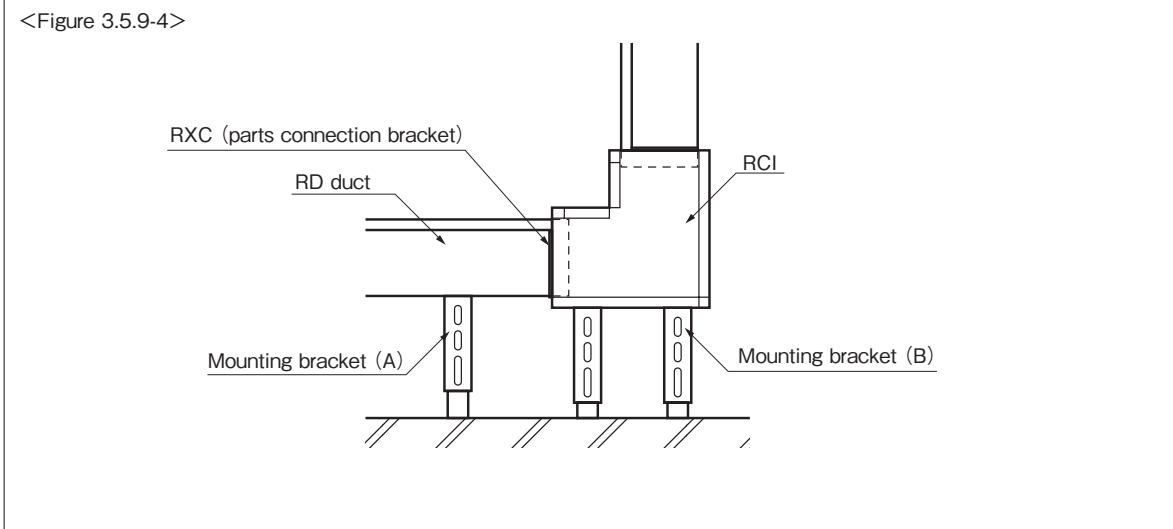


1 Position where the mounting bracket can be set

- RCI bottom plate ... Two positions or more
- RCO bottom plate, Mounting bracket fixing plate for RCO ... One or two positions



2 Example of setting mounting bracket for RCI



3.5 Fittings

- 3.5.9 RCI/RCO 90° vertical ell (900/900H) [Design]

3.5 Fittings

- 3.5.10 Installation of a mounting base on the elevation surface corner [Design]

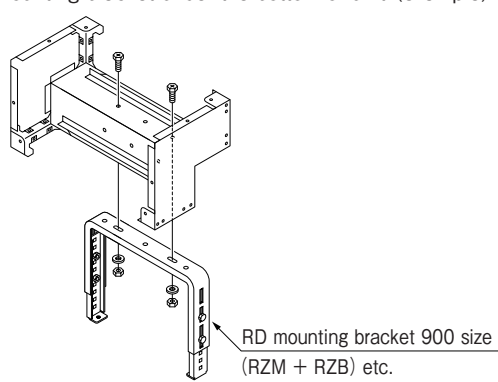
3 Installation example of RCO-900(H) mounting base

Example of installation and usage <Table 3.5.9-1>

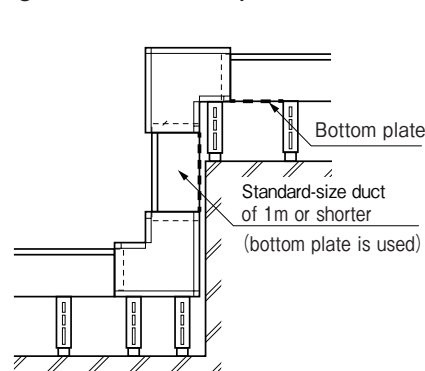
Vertical duct		Example of installation/usage	Remarks and Notes
Length	State		
1m or less	Standard-size duct	Example of installation 1 / usage 1	Support the load of piping at the upper and lower horizontal area to prevent the load from being given to the duct or corner parts.
More than 1m	Installation directly on the wall face	Example of installation 2 / usage 2	Ensure that the piping load is not given to the corner parts.

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

<Figure 3.5.9-5> (Example of setting mounting bracket 1)
Setting mounting bracket under the bottom of unit (example)

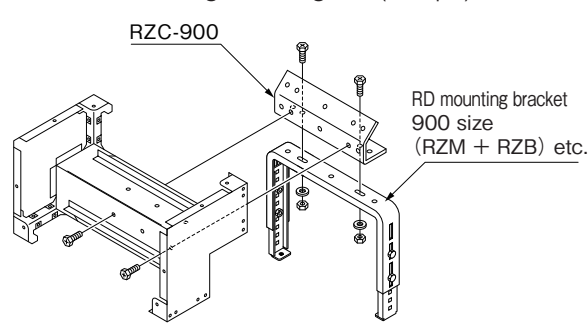


<Figure 3.5.9-6> (Example of use 1)

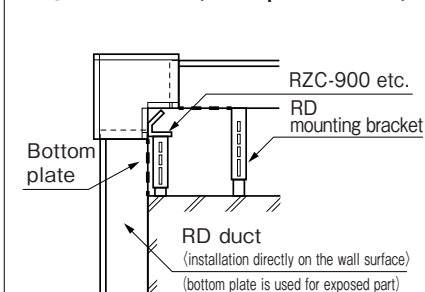


■ Example 2 of setting mounting bracket/Example 2 of use

<Figure 3.5.9-7> (Example of setting mounting bracket 2)
Installation of the mounting base using RZC (example)

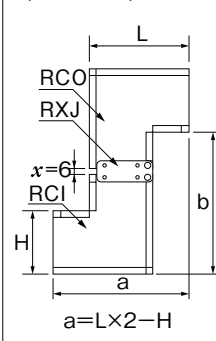


<Figure 3.5.9-8> (Example of use 2)



4 Dimension of level difference

<図3.5.9-9>
Joint connection
(RXJ use)



<図3.5.9-10>
Joint connection
(Duct use)

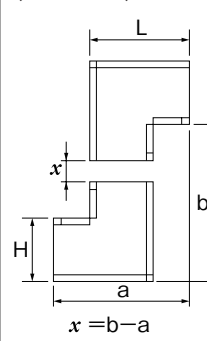


Table of RCI/RCO-900/900H vertical ell dimension of level difference

<Figure 3.5.9-2> (Unit : mm)

Size	W	L (RCI)	L (RCO)	H	a	RXJ use b	RXSS use b	Duct use b	x	Used coupler
900	980	385	385	169	600	606	—	—	6	RXJ
						—	600~700	—	0~100	RXSS-900-1
						—	700~800	—	100~200	RXSS-900-2
						—	800~900	—	200~300	RXSS-900-3
						—	—	806	260	0.3m duct
900H	980	504	504	288	719	—	—	1060	460	0.5m duct
						725	—	—	6	RXJ
						—	719~819	—	0~100	RXSS-900H-1
						—	819~919	—	100~200	RXSS-900H-2
						—	919~1019	—	200~300	RXSS-900H-3
						—	—	979	260	0.3m duct
						—	—	1179	460	0.5m duct

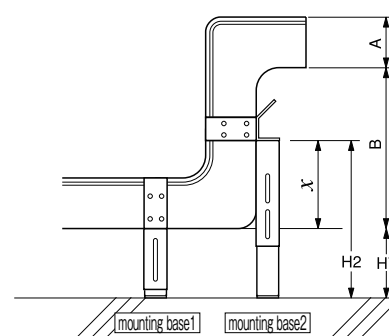
3.5.10 Installation of a mounting base on the elevation surface corner

■ Mounting base fixing plate for elevation surface and mounting base height

To install a mounting base fixing plate for elevation surface, it is necessary to select an RD mounting base. To select an RD mounting base, calculate the H2 dimension (= mounting base height) shown in the figure below using the following calculation method.

- Note**
- Note that the calculation method to obtain the H2 dimension for elevation surface corner 90° is different from that for elevation surface corner 45°.
 - If it is difficult to accurately determine the step height, a height-adjustable sliding joint can be used, in which case the dimension B becomes variable (Table 2).
 - Note that it is different from using a fixing joint (Table 1).
 - For the finished dimensions of corners, see the instructions for corner.

<Figure 3.5.10-1>
For elevation surface corner 90°



$$x = 0.5A + 0.5B - 30$$
$$H2 = x + H1$$

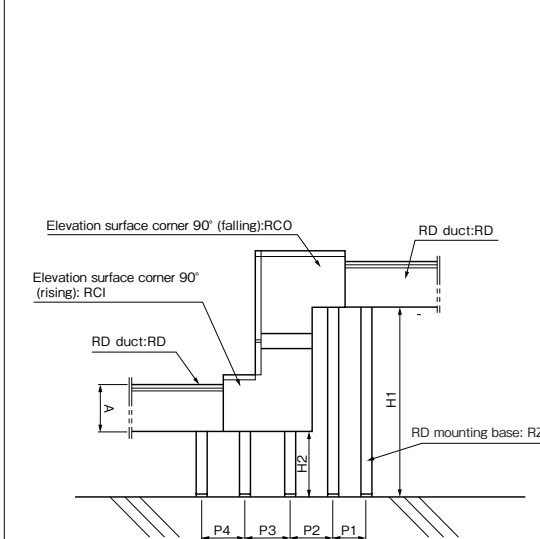
Table 1 (Unit : mm)

Size	Dimension A	Dimension B (for fixing joints)
300	134	430
300H	254	550
450	134	430
450H	254	550
600	134	430
600H	254	550

Table 2 (Unit : mm)

Size	Dimension A	Dimension B (for fixing joints)		
		RSS-1	RSS-2	RSS-3
300	134	430 to 530	530 to 630	630 to 730
300H	254	550 to 650	650 to 750	750 to 850
450	134	430 to 530	530 to 630	630 to 730
450H	254	550 to 650	650 to 750	750 to 850
600	134	430 to 530	530 to 630	630 to 730
600H	254	550 to 650	650 to 750	750 to 850

<Figure 3.5.10-2>
For 900 size elevation surface corner 90°



Size	H2	P1	P2	P3	P4
900	H1-606	240	135	(230)	
900H	H1-725	(215)	238	250	(240)

※The dimensions in parentheses are reference values.

<Figure 3.5.10-3>
For elevation surface corner 45°

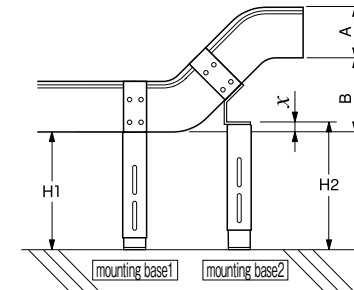


Table 1 (Unit : mm)

Size	Dimension A	Dimension B (for fixing joints)
300	134	193
300H	254	228
450	134	193
450H	254	228
600	134	193
600H	254	228
900H	254	228

Table 2 (Unit : mm)

Size	Dimension A	Dimension B (for sliding joints)		
		RSS-1	RSS-2	RSS-3
300	134	193~263	263~333	333~403
300H	254	228~298	298~368	368~438
450	134	193~263	263~333	333~403
450H	254	228~298	298~368	368~438
600	134	193~263	263~333	333~403
600H	254	228~298	298~368	368~438
900H	254	228~298	298~368	368~438

3.6 Bottom plate

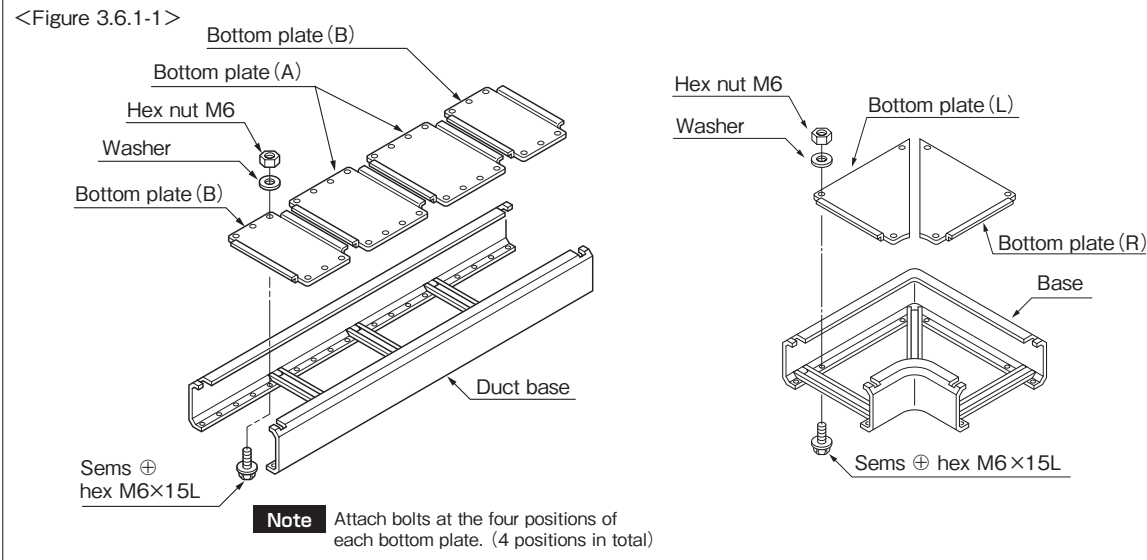
Outline Since RD is designed to be used with the copper pipe covered with insulation material in which the polyethylene foam heat insulating tube of extremely low water absorption is used, the bottom plate is basically not used. However, use the bottom plate for a position being heavily affected by wind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

Table of contents

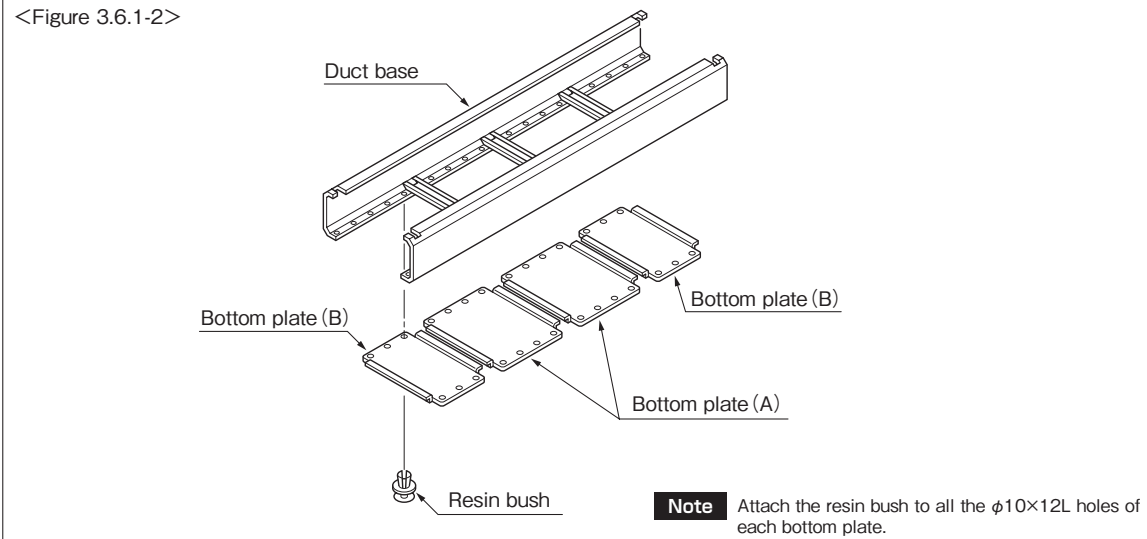
3.6.1	Type of bottom plate setting	62
3.6.2	Bottom plate usable position	63
3.6.3	Fittings necessary for bottom plate installation	64

3.6.1 Type of bottom plate setting

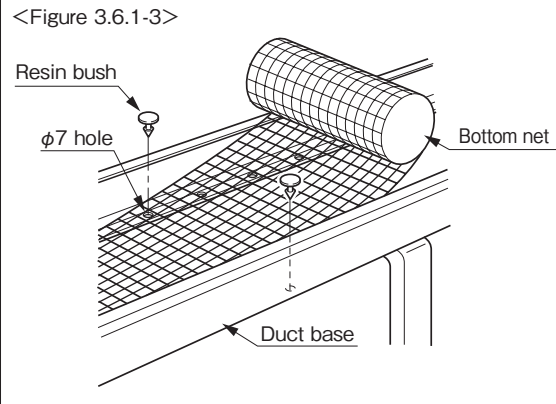
1 Attaching bottom plate (in advance)



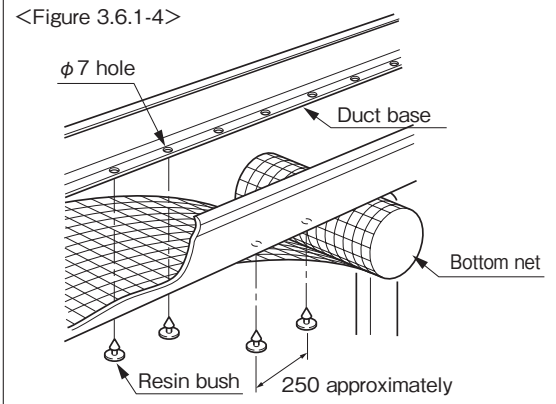
2 Attaching bottom plate (retrofit) ※ Duct only



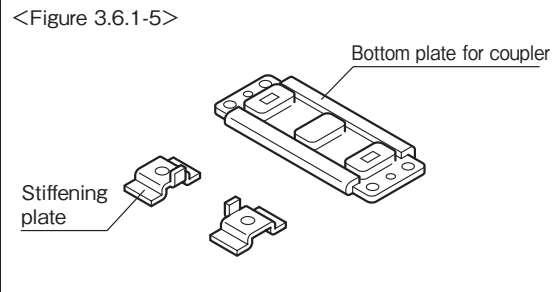
3 Attaching net (in advance) ※ Duct and RE only



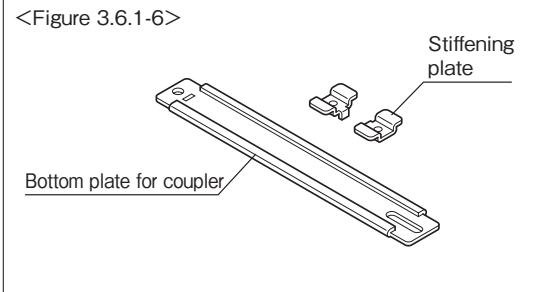
4 Attaching net (retrofit) ※ Duct and RE only



5 Bottom plate for coupler



6 Retrofit bottom plate for coupler



※ When setting the mounting bracket at the connection part, the bottom plate for coupler is not necessary.

3.6.2 Bottom plate usable position

The bottom plate usable position 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 position where there is a risk of dropping is dangerous.

Object to be attached to		Bottom plate			Bottom net (floor)	
		Attachment in advance (floor)	Attachment in advance (wall)	Retrofit attachment (floor)	In advance	Retrofit attachment
Duct		○	○	○	○	○
Flat ell		○ *5	○ *5	×	×	×
Vertical ell		○	○	×	×	×
Connection part	Coupler-free connection	△ *1	×	×	×	×
	Fixing coupler	○	○	○ *2	×	×
	Free coupler A	○ *6	×	○ *2・6	×	×
	Free coupler S/H	△ *6	×	×	×	×
	Reducer	△ *3	△ *3	△ *3	×	×
	Sliding coupler	○ *4	○ *4	×	×	×

- *1... For coupler-free connection, the bottom plate for coupler cannot be used.
Normally the mounting bracket is set at the connection part, and the bottom plate is not needed.
If the mounting bracket cannot be set at the connection part, use the coupler.
- *2... When connecting a duct of 1m or longer and a short-size duct of 0.5m or shorter/flat ell/tee by the retrofit attachment method, "retrofit bottom plate for coupler RJB" is needed instead of "bottom plate for coupler RDBJ".
For details of parts required in attachment, check [3.6.3] List of parts used for the bottom plate attachment work.
- *3... There is no bottom plate for the reducer.
Since the reducer (plate type) is built into parts, no bottom plate is needed. **Reference** [3.3.6] RR reducer
- *4... The bottom plate of RSS can be attached only in connection with RD duct 2m/1m, and the 45° vertical ell.
- *5... There is no bottom plate for RXN.
- *6... Processing the bottom plate for duct is necessary. **Reference** [3.3.4] RFJ free coupler

Design

Product configuration, specifications, and weight

Load capacity and strength

Accommodation capacity

Basic design flow

Installation method (on the floor)

Installation method (on the wall surface)

Installation method (hanging from the ceiling)

Duct

Pipe shaft and wall penetration

Connection method

Mounting bracket

Fittings

Bottom plate

Other parts

3.6.3

Fittings necessary for bottom plate installation

List of parts used in the bottom plate attachment work.
For the bottom plate usable position, check [3.6.2] Bottom plate usable position.

<Table 3.6.3-1>

Product to be attached	Attachment method	Model number	Duct size	Attachment part	Mounting bracket setting at the connection part	Required member	Installation reference page
Bottom plate	In advance	RD, RD-1	300/450/600/900	Duct(2m, 1m)	Set	Bottom plate (A) , Bottom plate (B)	P148
					Not set	Bottom plate A, Bottom plate B, Bottom plate for coupler, Stiffening plate	P148,153
				Duct(0.5m, 0.3m) Fittings	Set	Bottom plate (A) , Bottom plate (B)	P148
					Not set	Bottom plate (A) , Bottom plate (B) , Bottom plate for coupler, Stiffening plate	P148,153
			150	—	Set	Bottom plate (A) , Bottom plate (B)	P148
					Not set	Bottom plate (A) , Bottom plate (B) , Bottom plate for coupler	P148
		RD-05	300/450/600/900	Duct(2m, 1m)	Set	Bottom plate	P148
					Not set	Bottom plate, Bottom plate for coupler, Stiffening plate	P148,153
				Duct(0.5m) Fittings	Set	Bottom plate	P148
					Not set	Bottom plate, Bottom plate for coupler Stiffening plate	P148,153
		RE	300/450/600	Duct(2m, 1m)	Set	Bottom plate (R) , Bottom plate (L)	P150
					Not set	Bottom plate (R) , Bottom plate (L) , Bottom plate for coupler, Stiffening plate	P150,153
				Duct(0.5m) Fittings	Set	Bottom plate (R) , Bottom plate (L)	P150
					Not set	Bottom plate (R) , Bottom plate (L) , Bottom plate for coupler, Stiffening plate	P150,153
		RF	300/450/600	Duct(2m, 1m)	Set	Bottom plate (R) , Bottom plate (L)	P151
					Not set	Bottom plate (R) , Bottom plate (L) , Bottom plate for coupler, Stiffening plate	P151,153
				Duct(0.5m) Fittings	Set	Bottom plate (R) , Bottom plate (L)	P151
					Not set	Bottom plate (R) , Bottom plate (L) , Bottom plate for coupler, Stiffening plate	P151,153
		RT	300/450/600	Duct(2m, 1m)	Set	Bottom plate	P152
					Not set	Bottom plate, Bottom plate for coupler, Stiffening plate	P152,153
				Duct(0.5m) Fittings	Set	Bottom plate	P152
					Not set	Bottom plate, Bottom plate for coupler, Stiffening plate	P152,153
Bottom plate	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)	P149
					Not set	Bottom plate (A) , Bottom plate (B) , Bottom plate for coupler, Resin bush for bottom plate(RDB-B)	P149,154
				Duct(0.5m, 0.3m) Fittings	Set	Bottom plate (A) , Bottom plate (B) , Resin bush for bottom plate(RDB-B)	P149
					Not set	Bottom plate (A) , Bottom plate (B) , Bottom plate for coupler for retrofit attachment(RJB) , Resin bush for bottom plate(RDB-B) , Stiffening plate	P149,154
			150	—	Set	Bottom plate (A) , Bottom plate (B) , Resin bush for bottom plate(RDB-B)	P149
					Not set	Bottom plate (A) , Bottom plate (B) , Bottom plate for coupler, Resin bush for bottom plate(RDB-B)	P149
		RD-05	300/450/600/900	Duct(2m, 1m)	Set	Bottom plate, Resin bush for bottom plate(RDB-B)	P149
					Not set	Bottom plate, Retrofit bottom plate for coupler, Resin bush for bottom plate (RDB-B)	P149,154
				Duct(0.5m) Fittings	Set	Bottom plate, Resin bush for bottom plate(RDB-B)	P149
					Not set	Bottom plate, Bottom plate for coupler for retrofit attachment(RJB) , Resin bush for bottom plate(RDB-B) , Stiffening plate	P149,154
		RD, RD-1 RD-05	300/450/600/900	—	—	Bottom net (RNB) , Resin bush for bottom plate(RDB-B)	P155
			300/450/600/900	—	—	Bottom net (RNB) , Resin bush for bottom plate(RDB-B)	P155

Design

Product configuration, specifications, and weight

Load capacity and strength

Accommodation capacity

Basic design flow

Installation method (on the floor)

Installation method (on the wall surface)

Installation method (hanging from the ceiling)

Duct

Pipe shaft and wall penetration

Connection method

Mounting bracket

Fittings

Bottom plate

Other parts

3.7

Other parts

Table of contents

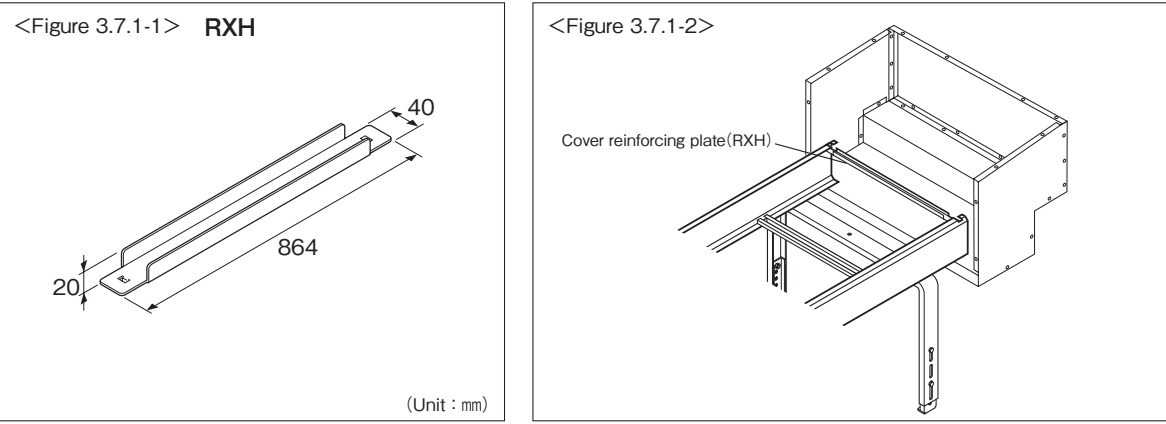
3.7.1	RXH cover reinforcing plate	65
3.7.2	RSK RD duct partitioning bracket for H type	65
3.7.3	RDK RD strut set	66
3.7.4	REC end cap	66
3.7.5	RPH PD supporting bracket	67
3.7.6	RDS caution sticker	67

3.7.1

RXH cover reinforcing plate

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

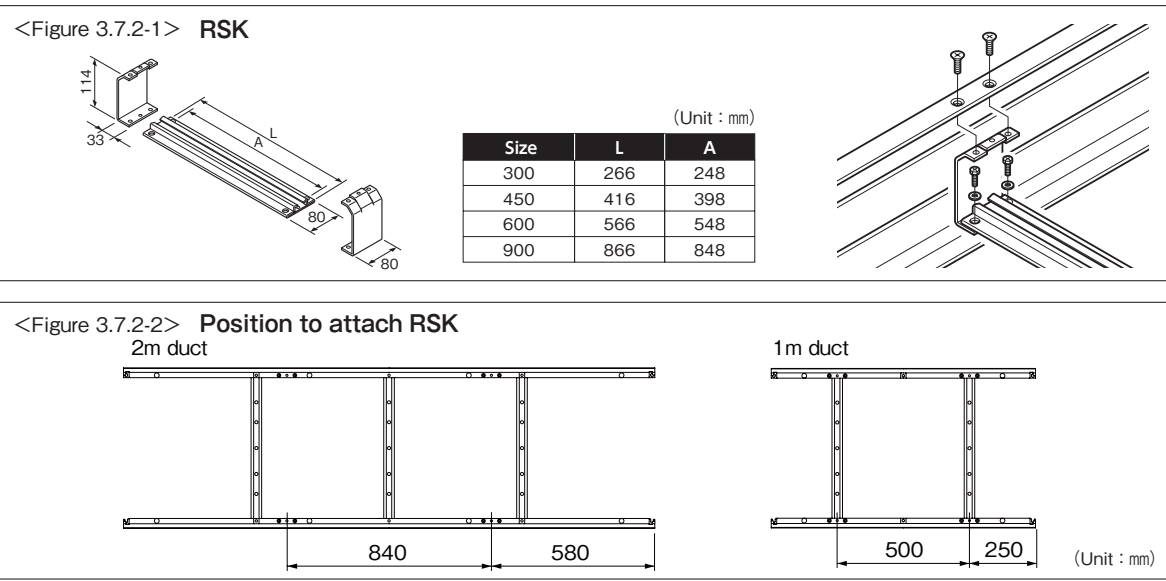
Note • This is standardly supplied with RX/RF 900/900H type.
• With RCF/RCI/RCO 900/900H type, a different-shape cover guide or cover reinforcing plate is standardly supplied.



3.7.2

RSK RD duct partitioning bracket for H type

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



3.7 Other parts

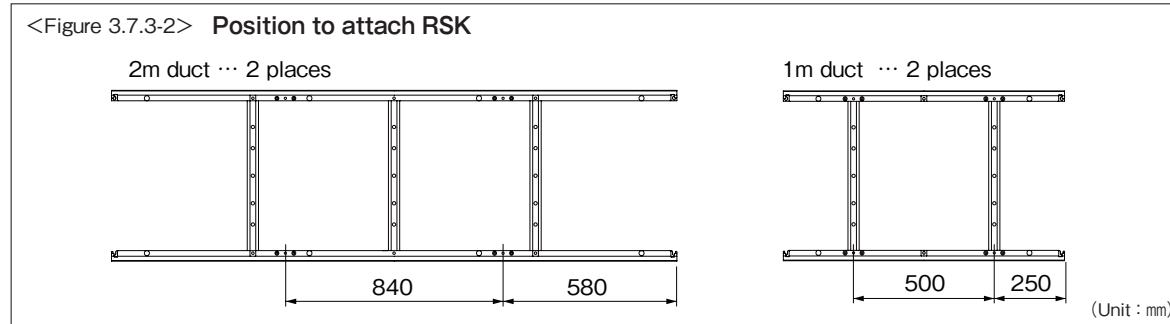
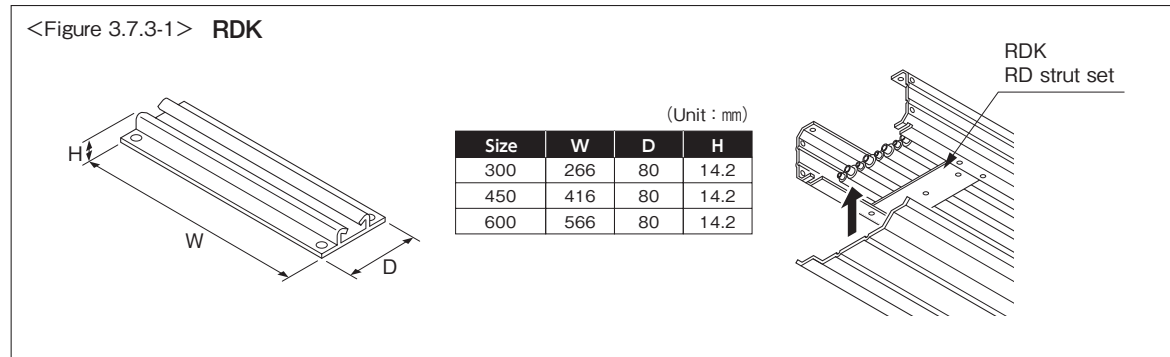
- 3.7.3 RDK RD strut set
 - 3.7.4 REC end cap
- [Design]

3.7 Other parts

- 3.7.5 RPH PD supporting bracket
 - 3.7.6 RDS caution sticker
- [Design]

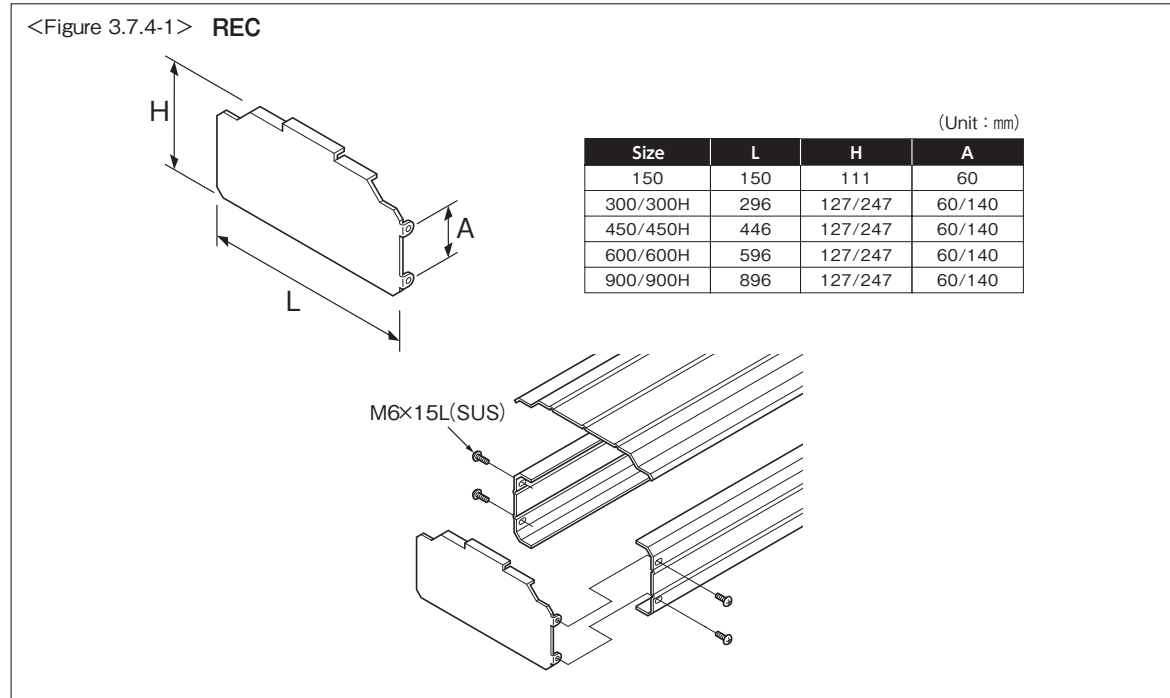
3.7.3 RDK RD strut set

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



3.7.4 REC end cap

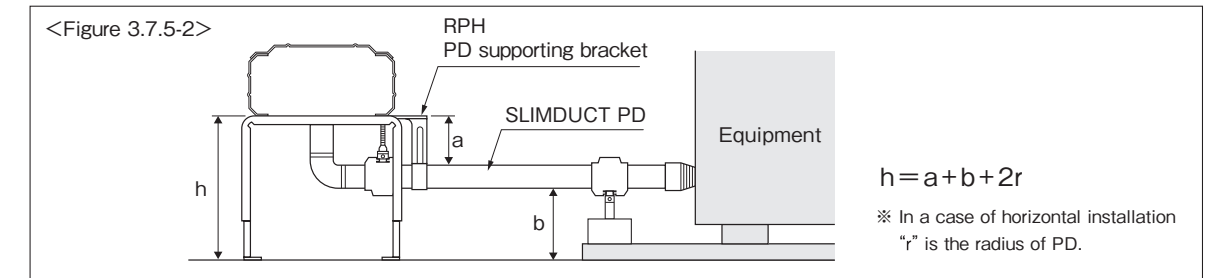
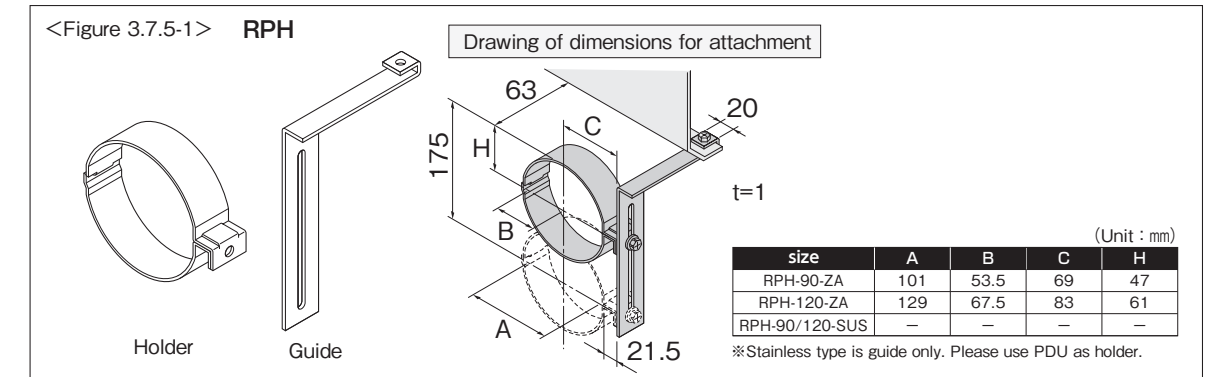
This is the plate to cover the hole at the end of duct.



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 duct base 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.



3.7.6 RDS caution sticker

It is used as a reminder not to use the duct (except walkway type) as a passageway or step.

- Note**
- Remove dusts and dirt from the surface before putting the sticker on.
 - Once a sticker is removed, its adherence deteriorates and it becomes difficult to put it on again.
 - Store it in a dry place away from direct sunlight.



Installation

4 Installation procedure

How to proceed installation	P70
Pipe shaft and wall penetration	P71 to P81
Mounting bracket	P82 to P96
RD duct (straight pipe)	P97 to P100
Connection	P101 to P118
Fittings	P119 to P145
Bottom plate	P146 to P155
Others	P156 to P160

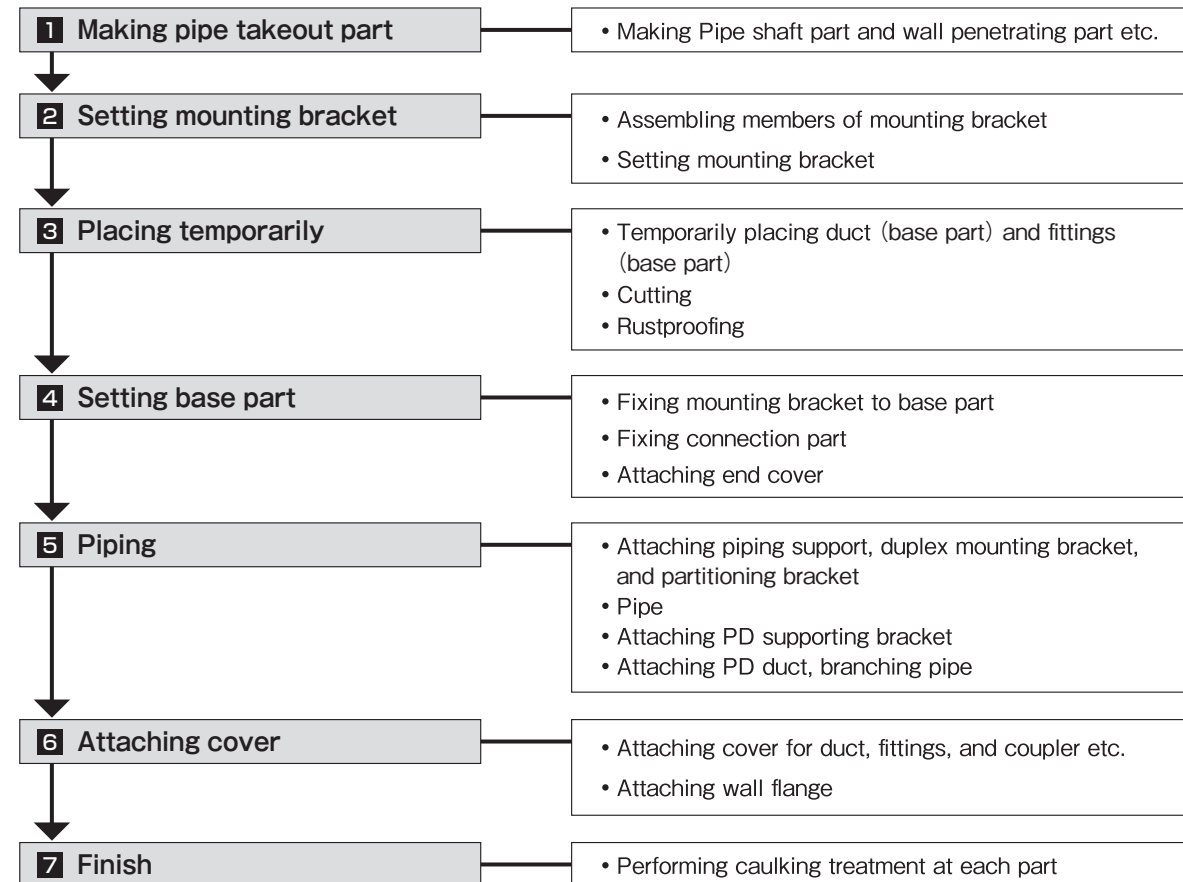
4.1 How to proceed installation

- 4.1.1 How to proceed installation [Installation]
- 4.1.2 Tools for installation

4.1 How to proceed installation

4.1.1 How to proceed installation

Proceed the installation by following the procedures as shown below.



4.1.2 Tools for installation

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

General installation	Fixing separately sold strut (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 bracket	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 bolts, be sure to use the Phillips-head screw driver No.3. (The tightening torque is to be 5N·m.)

4.2 Pipe shaft and wall penetration

- 4.2.1 List of installation methods [Installation]

4.2 Pipe shaft and wall penetration

Table of contents

4.2.1 List of installation methods	71
4.2.2 RWP wall flange	72
4.2.3 RSP/RSPR wall sleeve	73
4.2.4 RSB cut-off wall plate	75
4.2.5 RSPC water shut-off plate protection cover	76
4.2.6 CB chamber box	77

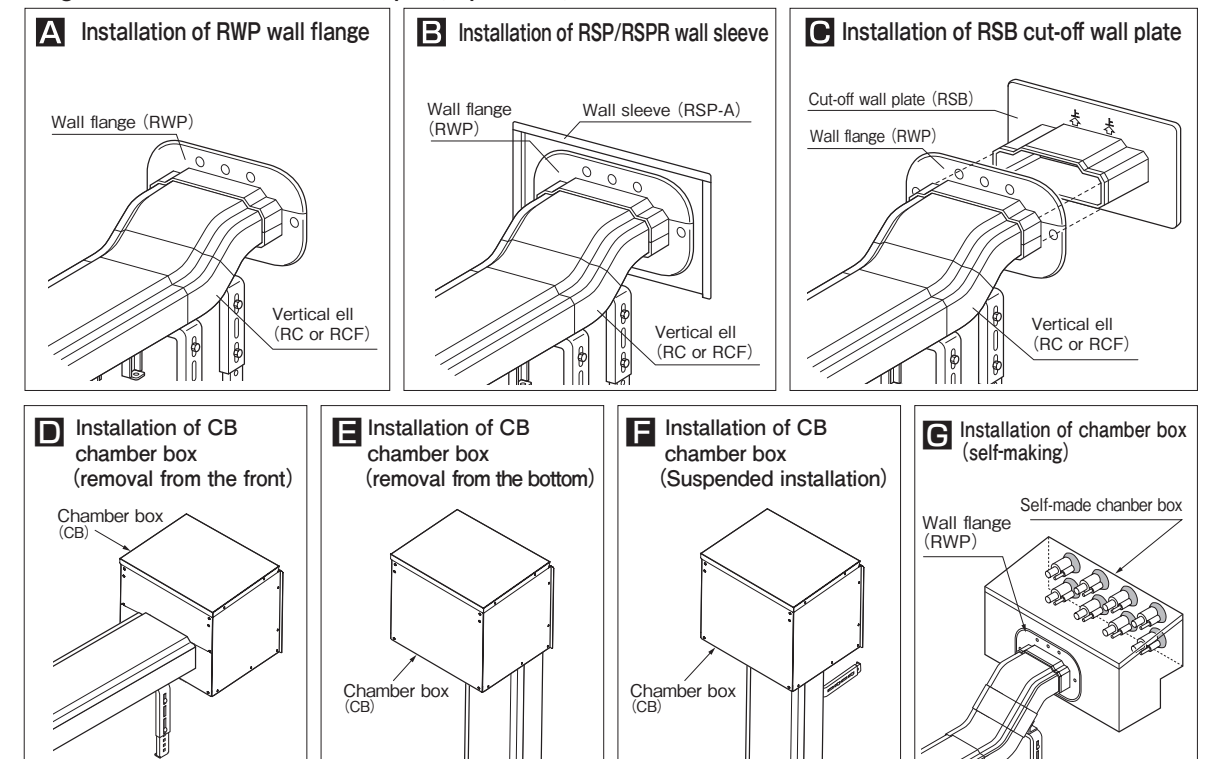
4.2.1 List of installation methods

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 installation method below is just an example. Follow the instruction by the supervisor on site for details.

<Figure 4.2.1-1> Installation example (Pipe shaft)



<Table 4.2.1-1>

Duct size	Installation example	Explained in	Required part (just for each example)					
			Wall flange RWP	45° vertical ell RCF	90° vertical ell RC/RCI	Wall sleeve RSP	cut-off wall plate RSB	Chamber box CB
150	A	P.72	○	○	—	—	—	—
300, 300H	B	P.73	○	○	—	○ ※1	—	—
450, 450H	C	P.75	○	○	—	—	○	—
600, 600H	B	P.73	○	○	—	○ ※1	—	—
900, 900H	D	P.77	—	—	—	—	—	○
300~900	E	P.80	—	—	—	—	—	○
300H~900H	F	P.81	—	—	○	—	—	○
All sizes	G	—	○	—	—	—	—	(self-making) ※2

※1. Installation method using RSP-A (square caulking type) ※2. To be made on site

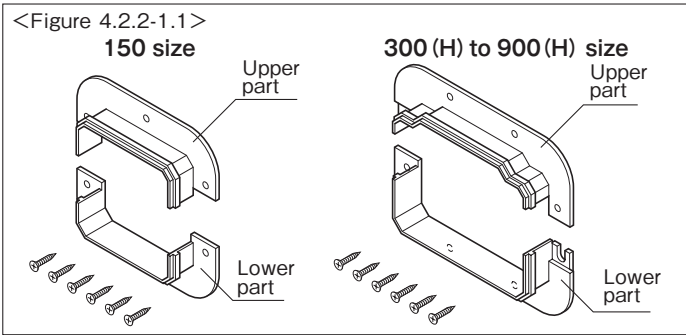
4.2.2 RWP wall flange

Duct and fittings (some 900 size products excluded) can be connected.
This can be used in combination with the cut-off wall plate RSB or wall sleeve RSP.
※ Also check the Design section before performing installation.

2D Barcode
for downloading
the specification
drawing



4.2.2-1 Product configuration



<Table 4.2.2-1.1> Set contents

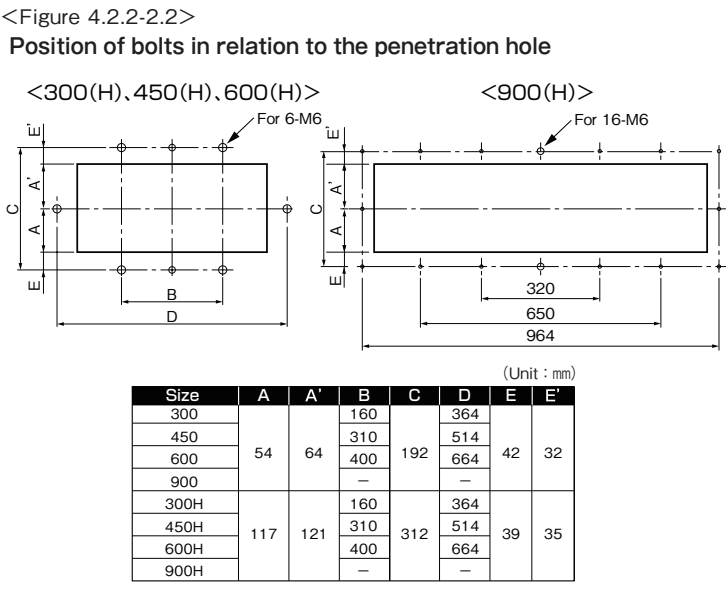
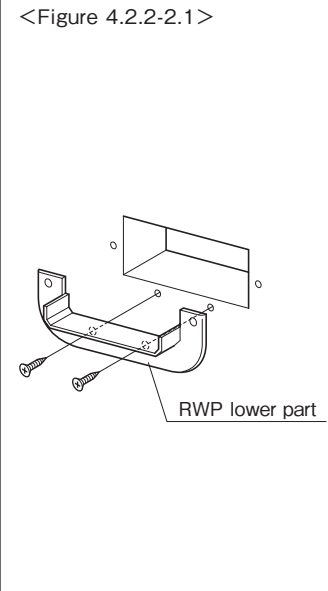
Size	Upper part	Lower part	Set bolt
150	1	1	6
300/300H	1	1	6
450/450H	1	1	6
600/600H	1	1	6
900/900H	1	1	16

<Table 4.2.2-1.2> Bolt specification

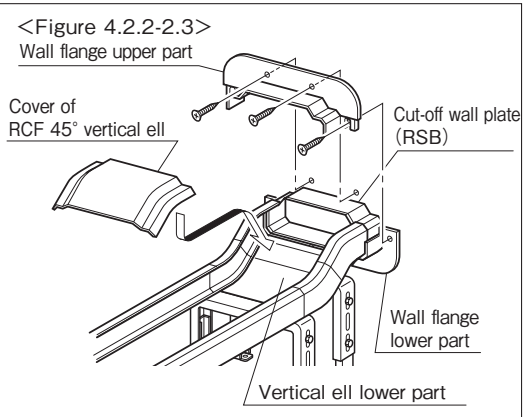
Bolt specification	Material
⊕ countersunk tapping bolt M6×45L	SUS

4.2.2-2 Installation of RWP

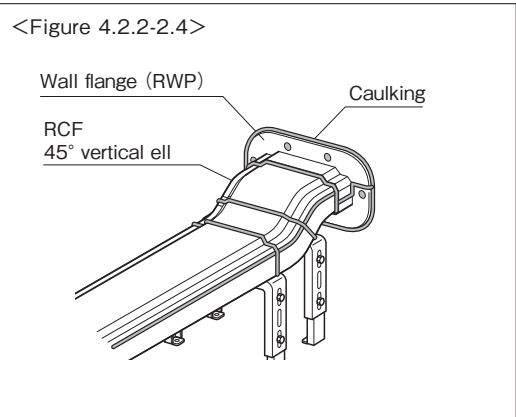
1 Check to see if the mounting holes are ready or anchors have been installed.



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



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



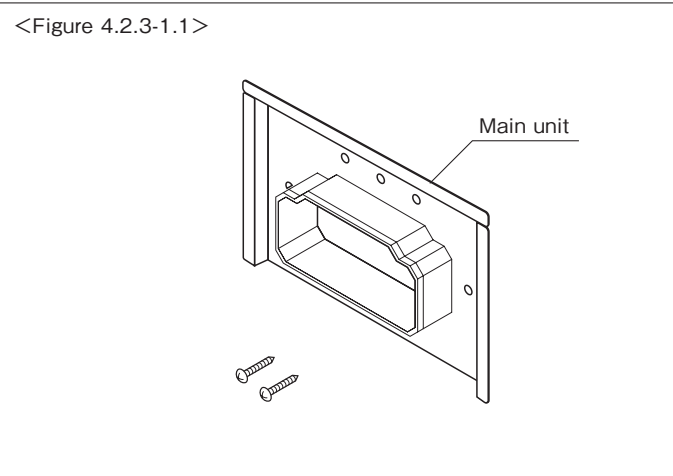
4.2.3 RSP/RSPR wall sleeve

This is the wall sleeve for the pipe takeout part.
This is used in combination with the wall flange RWP.
Duct and fittings (some 900 size products excluded) can be connected.
※ Also check the Design section before performing installation.

2D Barcode
for downloading
the specification
drawing



4.2.3-1 Product configuration



<Table 4.2.3-1.1> Set contents

Size	Main unit	Set bolt
300/300H	1	2
450/450H	1	2
600/600H	1	2
900/900H	1	4

<Table 4.2.3-1.2> Bolt specification

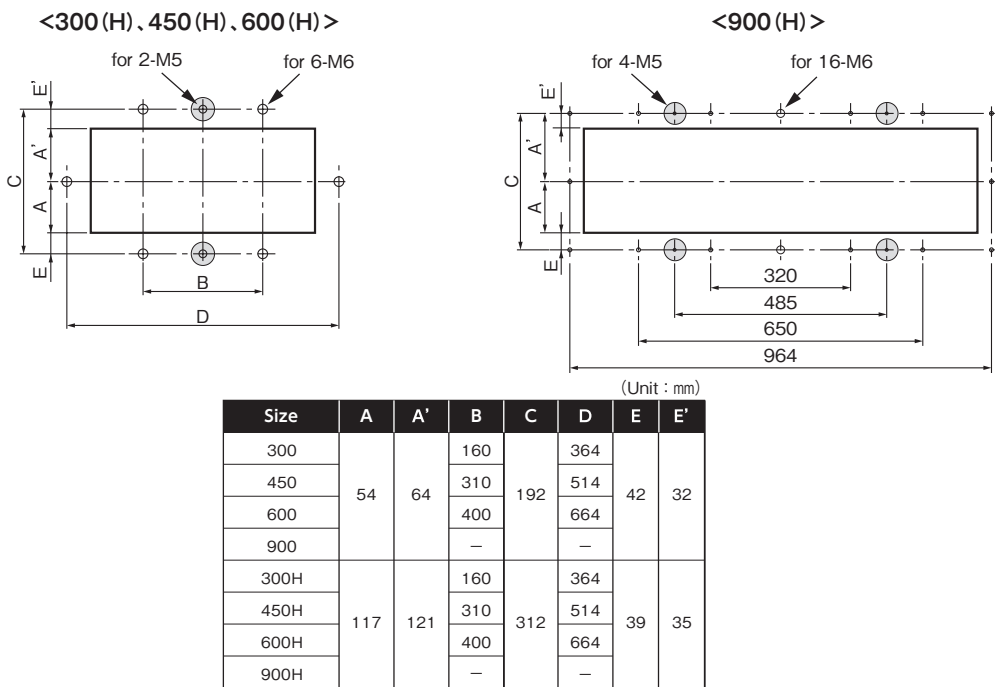
Bolt specification	Material
⊕ pan head tapping bolt M5×25L	SUS

4.2.3-2 Installation of RSP

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

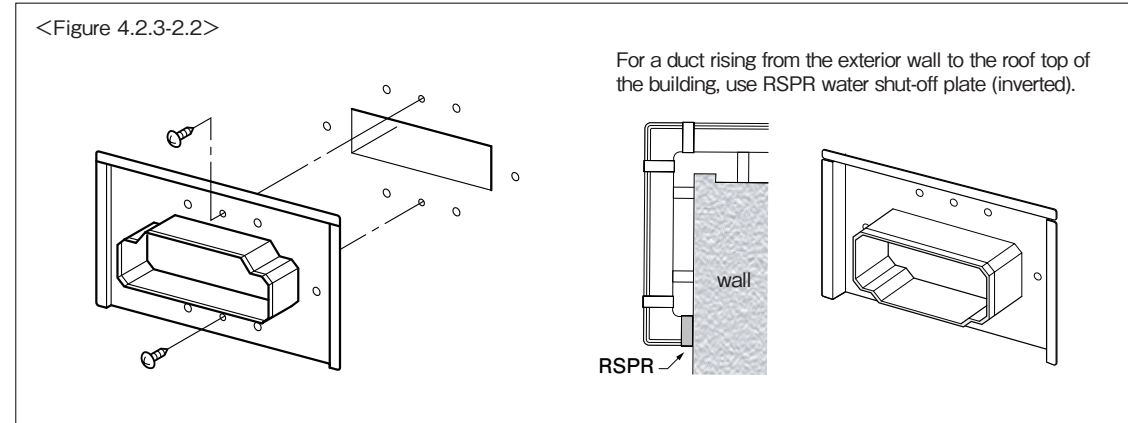
Reference [3.2.3] Installation of RSP wall sleeve

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

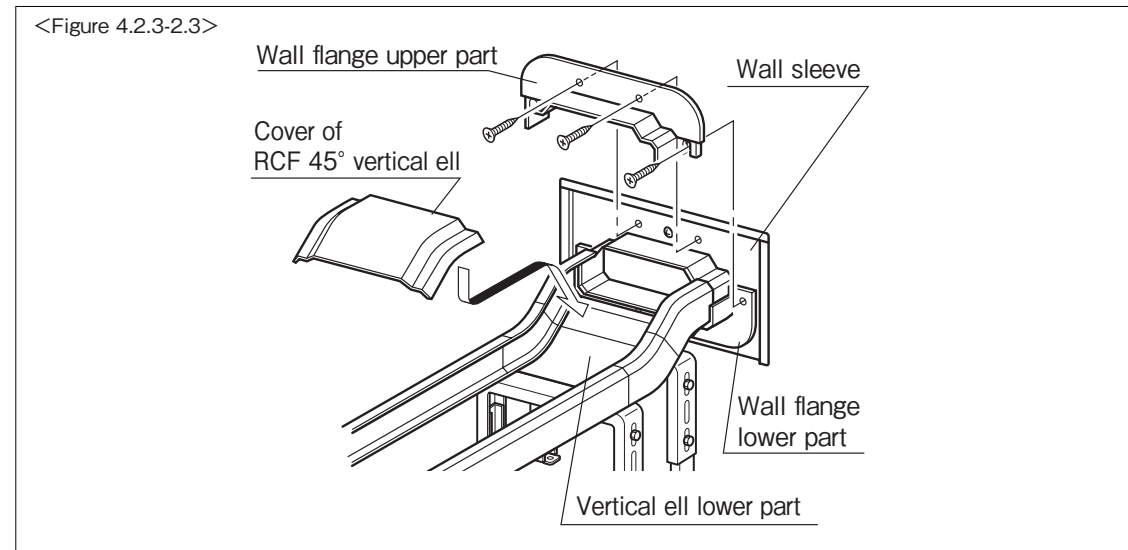


- 2 Bolt at two positions, one in the upper center of the wall sleeve, and the other in the lower center of the wall sleeve.

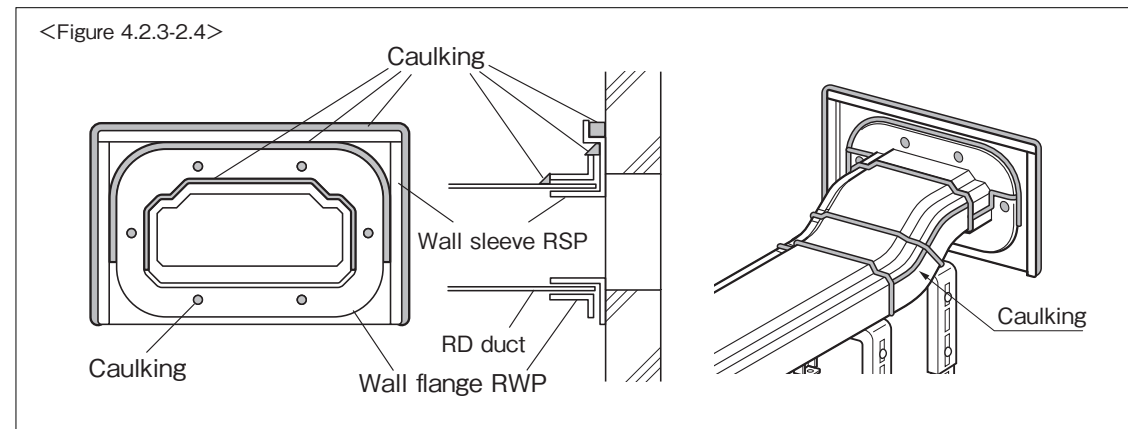
※ For 900/900H size, bolt at two positions in each of the upper and lower center of the wall sleeve (four positions in total) .



- 3 Attach the lower part of wall flange, attach the lower part of vertical ell and the lower part of duct, perform piping, and then attach each upper part of them.



- 4 Apply caulking at the top, right, and left sides of wall sleeve and wall flange respectively as shown in the figure.



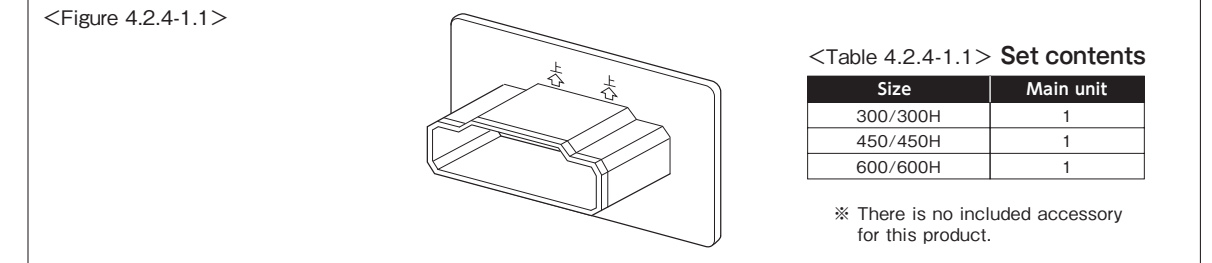
4.2.4 RSB cut-off wall plate

Perform the water shut-off treatment by using the cut-off wall plate (RSB), the wall flange (RWP), and the 45° vertical ell (RCF) in combination. The cut-off wall plate is used by being embedded in the body.

※ Also check the Design section before performing installation.

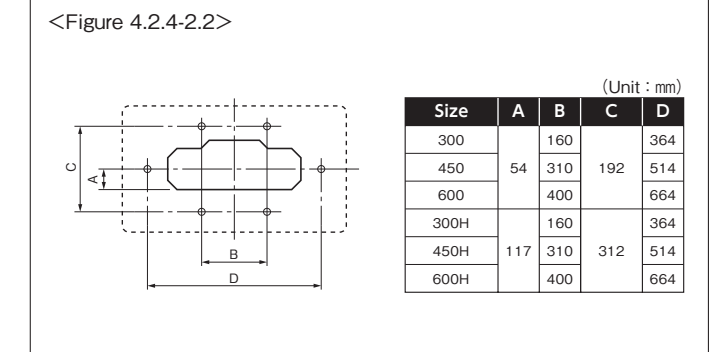
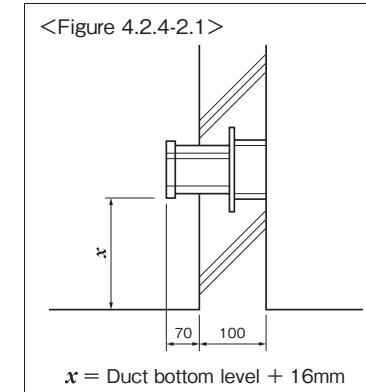


4.2.4-1 Product configuration

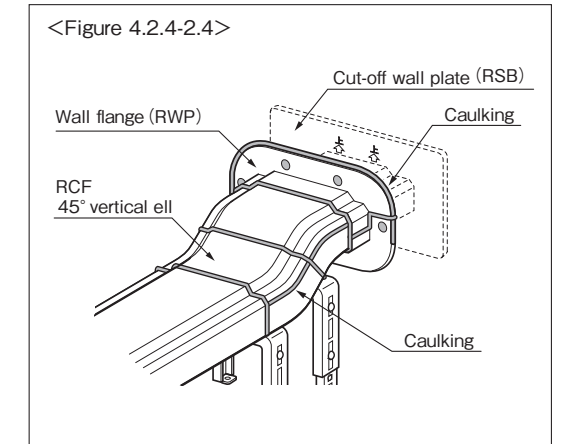
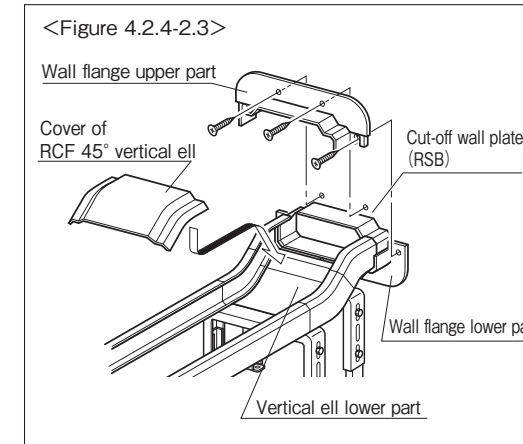


4.2.4-2 Installation of RSB

- 1 Embed the cut-off wall plate in the body of pipe takeout part.
- 2 Perform drilling for the M6×45L tapping bolt, or drive the M6 anchor for attaching the wall flange as shown in the figure.



- 3 Attach the lower part of wall flange, attach the lower part of vertical ell and the lower part of duct, perform piping, and then attach each upper part of them.
- 4 Finally, perform the caulking treatment of each part.



4.2.5 Water shut-off plate protection cover

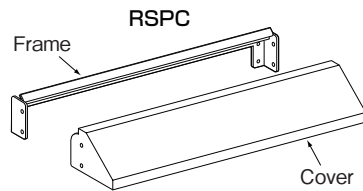
To protect the caulking of the water shut-off plate from ultraviolet rays, install a water shut-off plate protection cover.

2D Barcode for downloading the specification drawing



4.2.5-1 Product configuration

<Figure 4.2.5-1.1>



<Table 4.2.5-1.1> Set contents

Size	Frame	Cover	SEMS⊕ hex M6 × 15L	Cross recessed head tapping screws φ5 × 25L
300	1	1	4	5
450	1	1	4	7
600	1	1	4	7
900	1	1	4	7

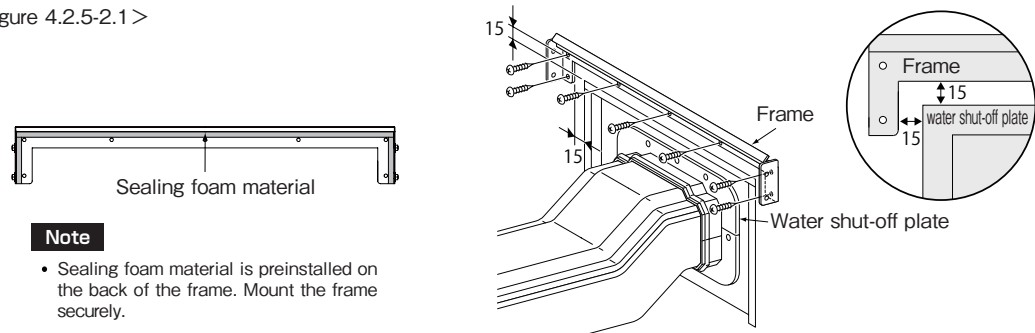
<Table 4.2.5-1.2> Bolt specifications

item	Specifications	Material
Screws for mounting frame	Cross recessed head tapping screws φ5 × 25L	SUS
Bolt for fixing Cover	SEMS⊕ hex M6 × 15L	SUS

4.2.5-2 Example of RSPC installation

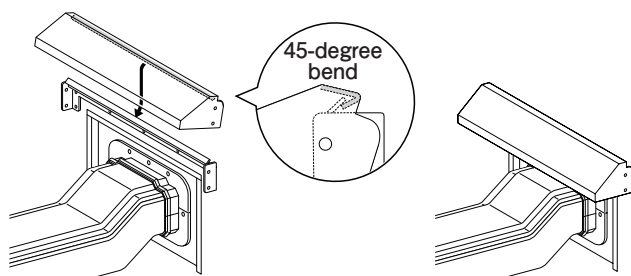
- Using the supplied tapping screws, mount the frame on the wall face (recommended hole diameter = φ4.3 mm), leaving a gap of 15 mm in the height and width from the mounting position of the water shut-off plate.

<Figure 4.2.5-2.1>



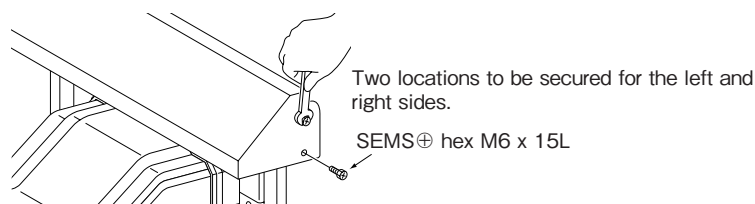
- Fit the 45-degree bend (inside) of the cover top into the 45-degree bend of the frame top for temporary placement of the cover.

<Figure 4.2.5-2.2>



- After the cover is temporarily placed, secure the cover to the frame using SEMS ⊕ hex M6 x 15L screws (4 pieces), which are included in the package.

<Figure 4.2.5-2.3>



4.2.6 CB chamber box

The cover can be removed without cutting the caulking.

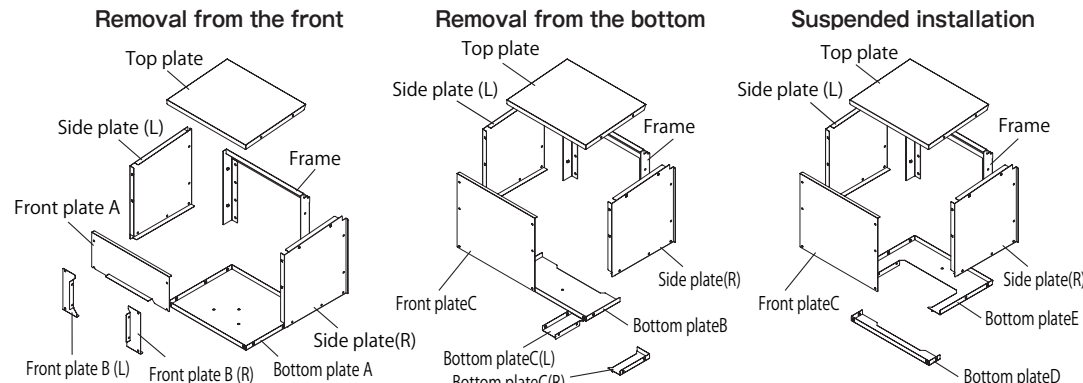
※The chamber box (CB) is a product of special specifications with alteration of materials and dimensions, etc. (a separate meeting required for the price and delivery date).
※Check instructions on the [Design] page before installation.

2D Barcode for downloading the specification drawing



4.2.6-1 Product configuration

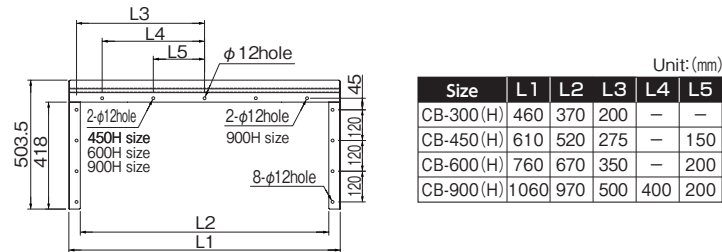
<Figure 4.2.6-1.1>



<Table 4.2.6-1.1> Bolt specifications

Size	Specifications	Material	Quantity
CB-300 (H)	Sems ⊕ hex bolt M6×15L	SUS	24
CB-450 (H)			
CB-600 (H)			
CB-900 (H)-A			
CB-900 (H)-B	Flange nut M6	SUS	4
CB-900 (H)-C			

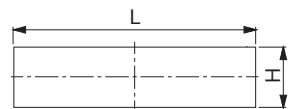
<Figure 4.2.6-1.2> Detailed view of frame dimensions (common)



4.2.6-2 Example of CB Assembly <front exit>

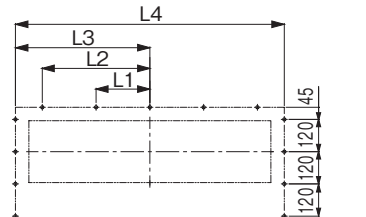
- Prepare an opening as shown in the figure below.
- Install W3/8 anchor bolts with the dimensions indicated in the figure below.

<Figure 4.2.6-2.1>



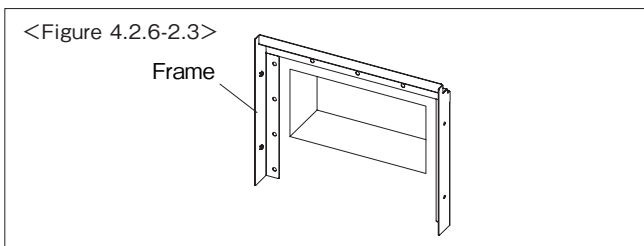
Size	L	H
CB-300 (H)	300	230
CB-450 (H)	450	230
CB-600 (H)	600	230
CB-900 (H)	900	230

<Figure 4.2.6-2.2>

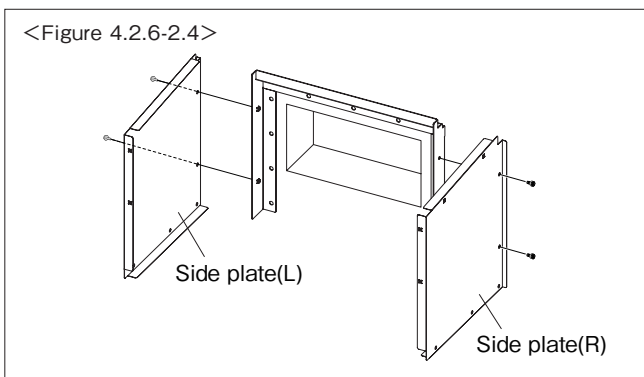


Size	L1	L2	L3	L4
CB-300 (H)	—	—	200	400
CB-450 (H)	150	—	275	550
CB-600 (H)	200	—	350	700
CB-900 (H)	200	40	350	1000

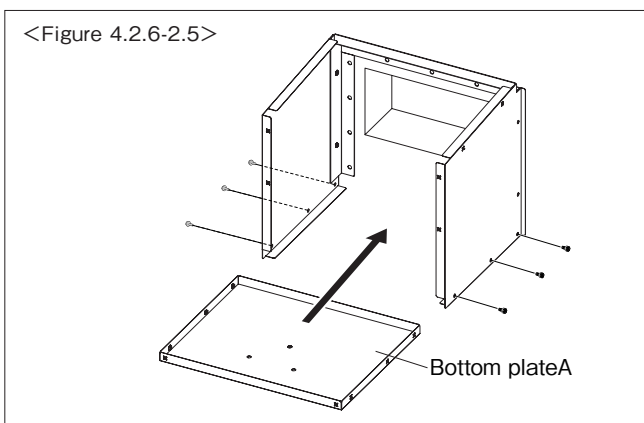
- 3** Attach the frame at the opening using W3/8 hex bolts.



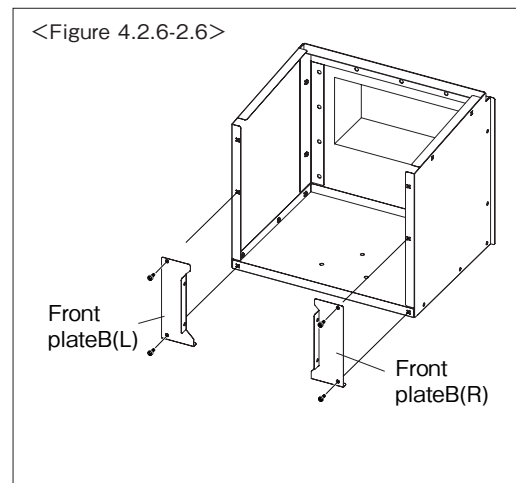
- 4** Attach the side plates to the frame using the supplied sems ⊕ hex bolts.



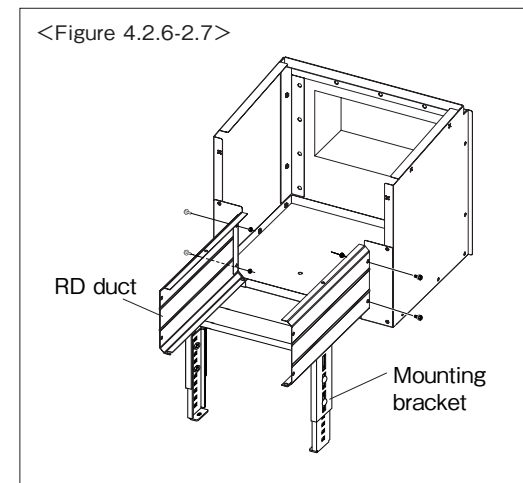
- 5** Insert the bottom plate A from the front and attach it to the side plates using the supplied sems ⊕ hex bolts.



- 6** Attach the front plate B to the side plate and the bottom plate A using the supplied sems ⊕ hex bolts.

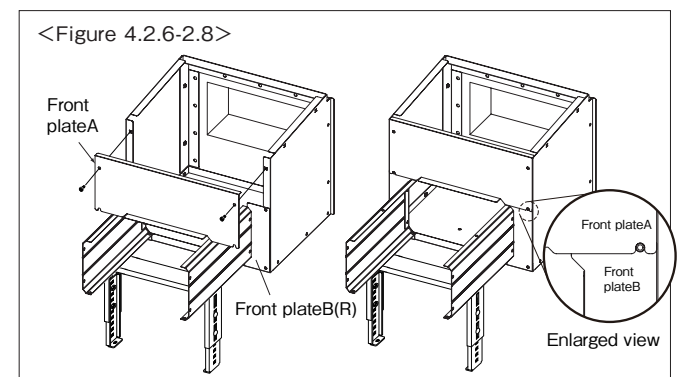


- 7** Attach the duct to the front plate B using the supplied sems ⊕ hex bolts and flange nuts, and then install the piping.

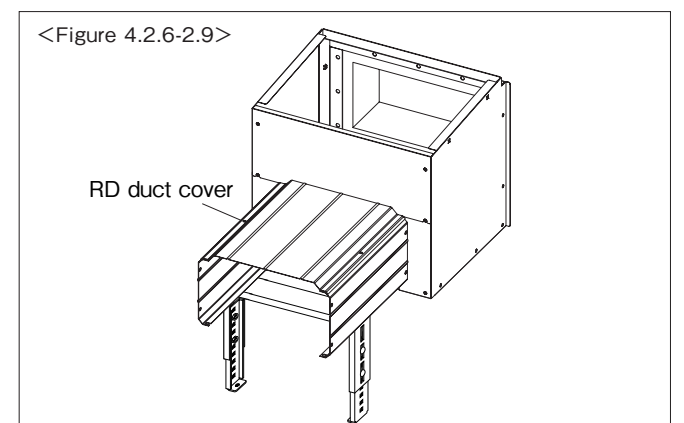


- 8** Attach the front plate A to the side plate using the supplied sems ⊕ hex bolts.

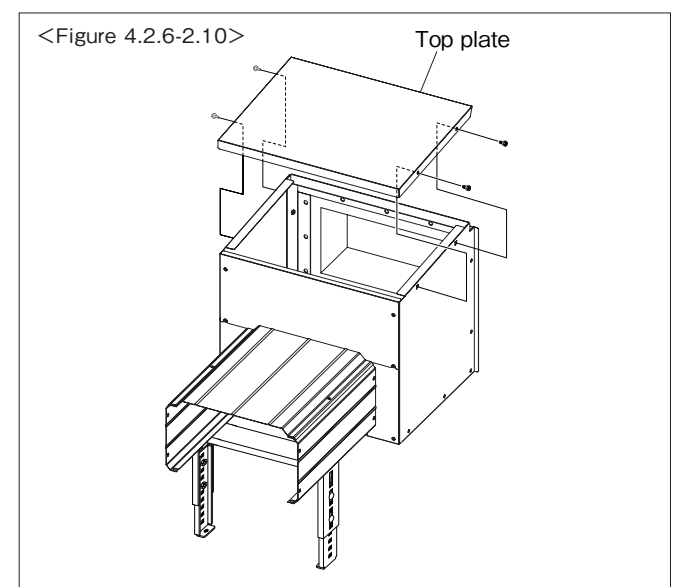
Note • Loosen the screws, make sure that the front plate A is placed on top of the front plate B as shown in the enlarged figure, and tighten the screws back together.



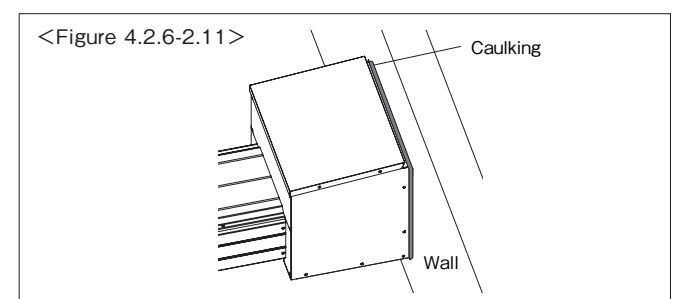
- 9** Attach the duct cover.



- 10** Attach the top plate to the side plates using the supplied sems ⊕ hex bolts.



- 11** Apply caulking or putty in the gap between the wall surface and the frame and side plate for waterproofing.

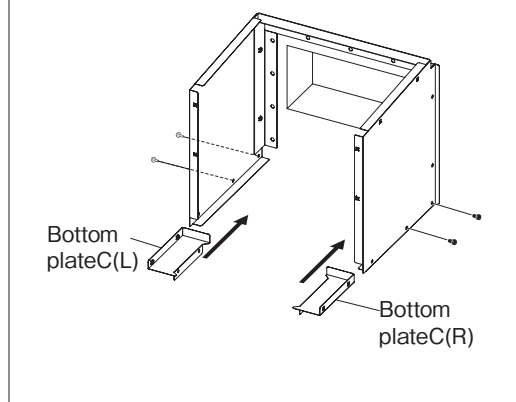


4.2.6-3 Example of CB Assembly <bottom exit (wall)>

For the installation procedure of **1** ~ **4** perform assembly in the same manner as described in 4.2.6-2 <front exit>.

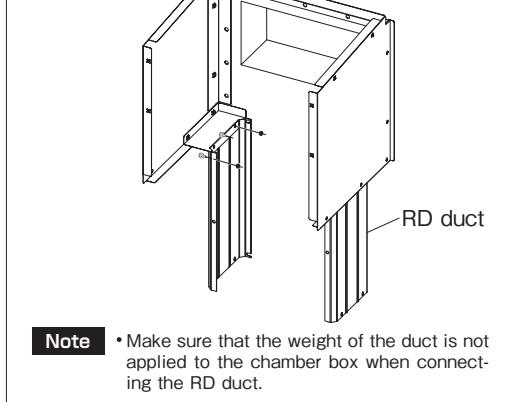
- 5** Insert the bottom plate C from the front and attach it to the side plates using the supplied sems ⊕ hex bolts.

<Figure 4.2.6-3.1>



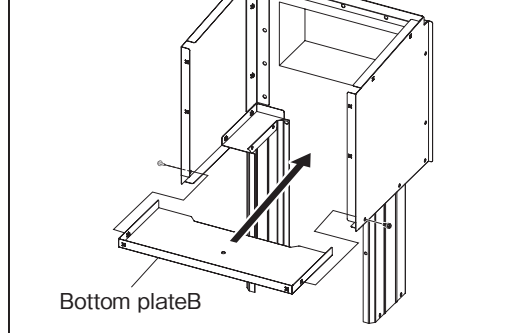
- 6** Attach the duct to the bottom plate C using the supplied sems ⊕ hex bolts and flange nuts, and then install the piping.

<Figure 4.2.6-3.2>



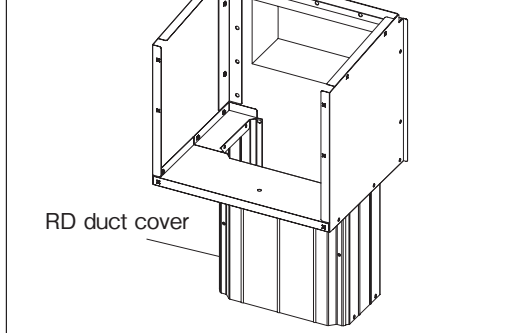
- 7** Insert the bottom plate B from the front and attach it to the side plates using the supplied sems ⊕ hex bolts.

<Figure 4.2.6-3.3>



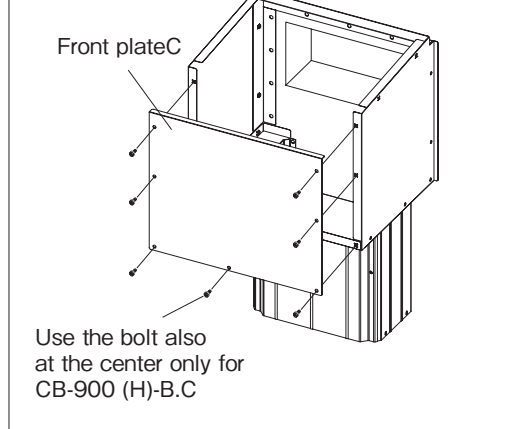
- 8** Attach the duct cover.

<Figure 4.2.6-3.4>



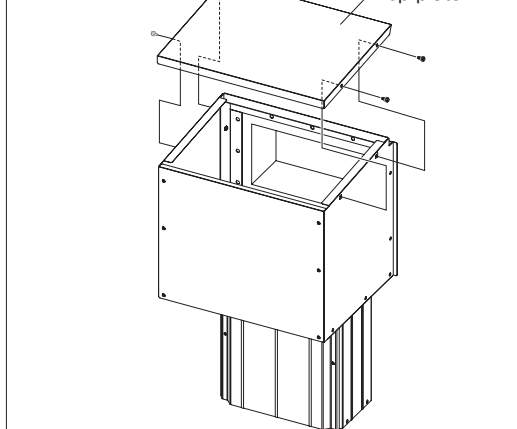
- 9** Attach the front plate C to the side plates and the bottom plate B using the supplied sems ⊕ hex bolts.

<Figure 4.2.6-3.5>



- 10** Attach the top plate to the side plates using the supplied sems ⊕ hex bolts.

<Figure 4.2.6-3.6>



4.2.6-4 Example of CB Assembly <bottom exit (suspended)>

For the installation procedure of **1** ~ **4** perform assembly in the same manner as described in 4.2.6-2 <front exit>.

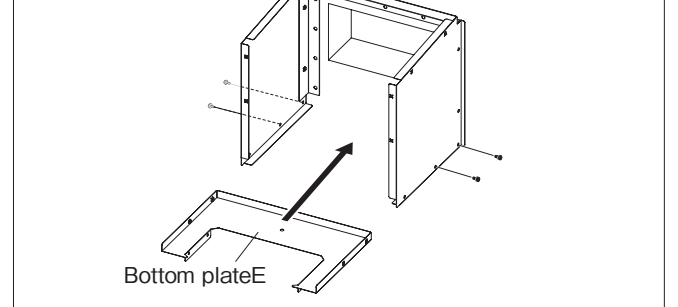
- 5** Insert the bottom plate E from the front and attach it to the side plates using the supplied sems ⊕ hex bolts. To directly connect to RCI-900 (H), use "CBB-900 (H)-RCI," which is sold separately.

Note When connecting the RCI directly, adjust the RCI mounting bracket to have the top surface of the RCI and the bottom surface of the CB side plate at the same height, and temporarily place it to make sure that RCI stays inside the CB side plate. After this, install the bottom plate, which is sold separately, to the side plate, using the supplied sems ⊕ hex bolts.

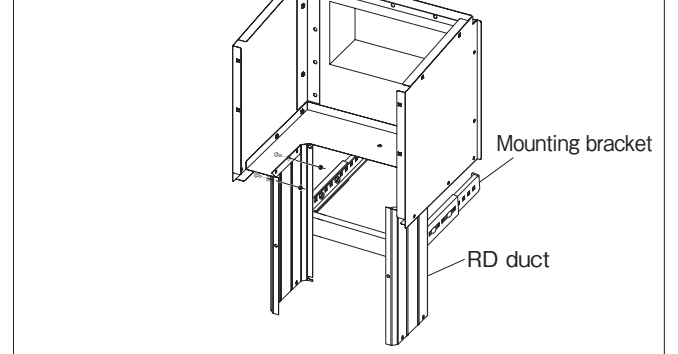
- 6** Attach the duct to the bottom plate E using the supplied sems ⊕ hex bolts and flange nuts, and then install the piping.

Note Make sure that the weight of the RD duct is not applied to the chamber box when connecting the RD duct.

<Figure 4.2.6-4.1>

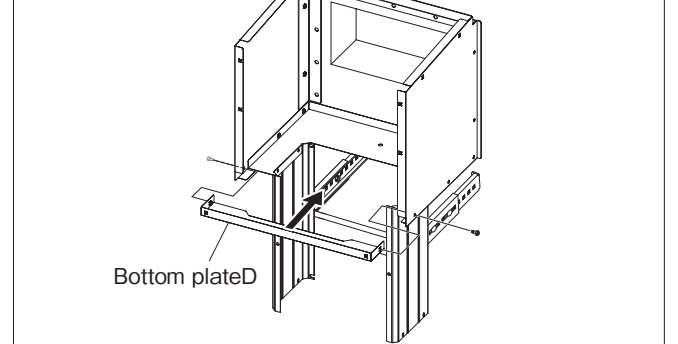


<Figure 4.2.6-4.2>



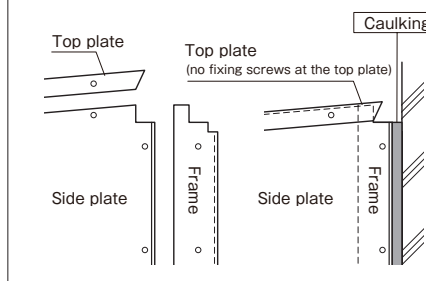
- 7** Insert the bottom plate D from the front and attach it to the side plates using the supplied sems ⊕ hex bolts.

<Figure 4.2.6-4.3>

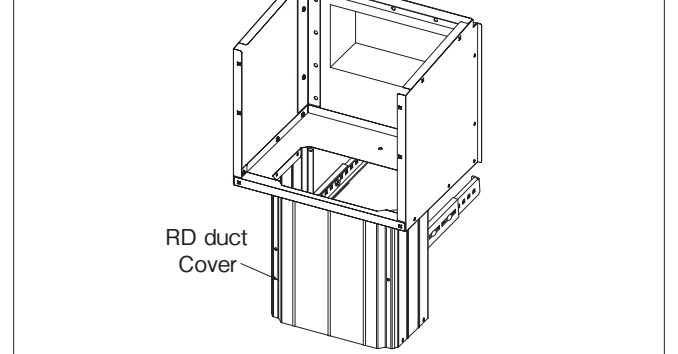


- 8** Attach the duct cover.

Figure of the square caulking part at the chamber box



<Figure 4.2.6-4.3>



For the installation procedure of **9** ~ **10** perform assembly in the same manner as described in 4.2.6-3 <bottom exit (wall)>.

4.3 Mounting bracket

Table of contents	4.3.1 List of parts for the mounting bracket	82
	4.3.2 RZ (RZM+RZB) RD mounting bracket (for 300 to 900)	83
	4.3.3 RZ-150, RZW RD mounting bracket (for 150)	85
	4.3.4 RZC bracket attachment plate for vertical ell	87
	4.3.5 RZY mounting bracket guide for duplex mounting	88
	4.3.6 RDY pipe support base	89
	4.3.7 RZH RD mounting base reinforcing plate	89
	4.3.8 FL-B-Z cross-lock B type (for outdoor use)	90
	4.3.9 RBK-B auxiliary bracket for strut	90
	4.3.10 RBK-A auxiliary bracket for duct base	91
	4.3.11 RKT bracket for fixing to shaped steel	92
	4.3.12 RKTW RD walkway fixing bracket for shaped steel	92
	4.3.13 RCT RD bracket for fixing channel	94
	4.3.14 CR recycrock (multipurpose support base)	95
	4.3.15 PB plastic base	96

4.3.1 List of parts for the mounting bracket

Mounting bracket for 300 to 900

RZ (RZM+RZB) RD mounting bracket

Mounting bracket for 150

RZ-150 (RD-150 mounting bracket)

RZW (mounting bracket for installing RD-150 on the wall surface)

RZC bracket attachment plate for vertical ell

RZY mounting bracket guide for duplex mounting

RDY pipe support base

RZH RD mounting base reinforcing plate

FL-B-Z cross-lock B type (for outdoor use)

RBK-B Bracket for installation on the wall surface (for strut)

RBK-A Bracket for installation on the wall surface (for duct base)

RKT Flxing bracket for fixing RD to shaped steel

RKTW RD walkway fixing bracket for shaped steel [installation]

RCT RD bracket for fixing channel

Multipurpose support base CR Recycrock

PB plastic base

PB Plabase

PB-100

PB-120

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

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

※ Also check the Design section before performing installation.

2D Barcode for downloading the specification drawing

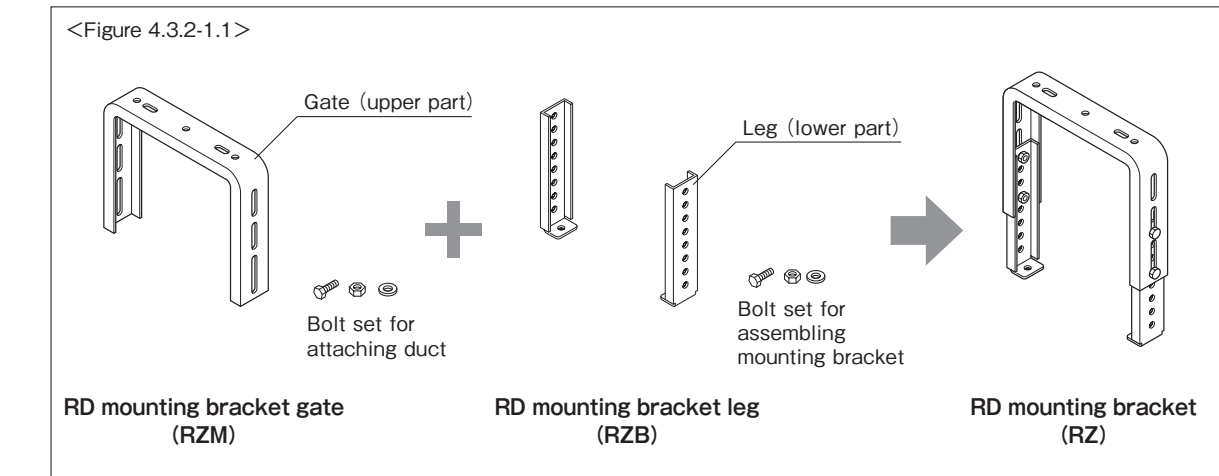
RZM

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 bracket other than 150 type (for installation on the floor)



<Table 4.3.2-1.1> Set contents

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

<Table 4.3.2-1.2> Bolt set specifications

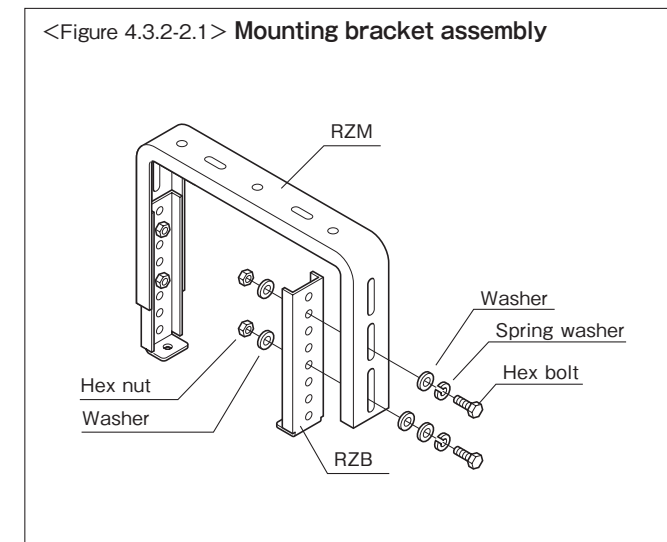
Item	Specifications	Material	Quantity
Bolt set for assembling mounting bracket	Cup head square neck bolt M8×19L	SUS	1
	Hex nut M8	SUS	1
	Flat washer M8	SUS	2
	Spring washer M8	SUS	1
Bolt set for attaching duct	Hex bolt W3/8×L25	SUS	1
	Hex nut W3/8	SUS	1
	Flat washer W3/8	SUS	1

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

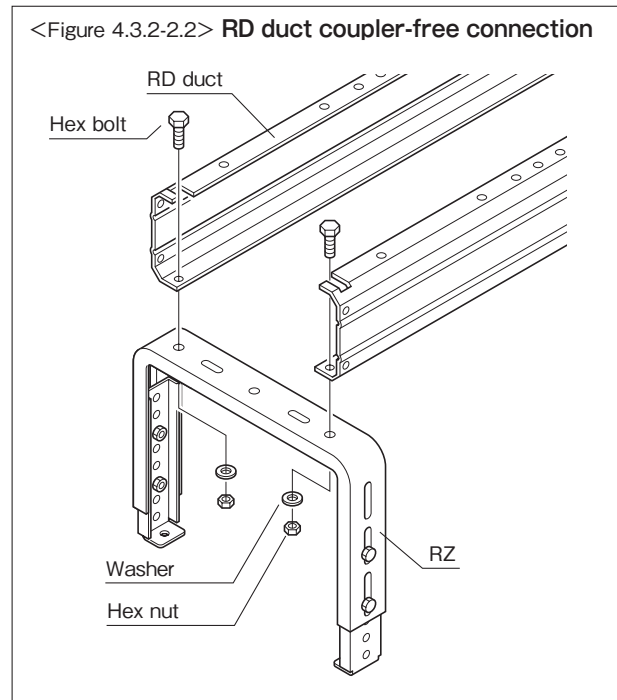
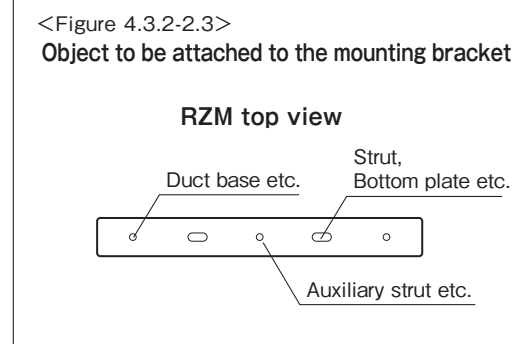
1 Attach RZB (RD mounting bracket leg) to RZM (RD mounting bracket gate).

※ Bolt tightening torque: 19.6N·m
※ If Recycrock CR etc. is to be used, set it after this procedure.

Reference [3.4.19] Fixing (to floor), Recycrock CR



2 Attach the duct etc. to the mounting bracket.



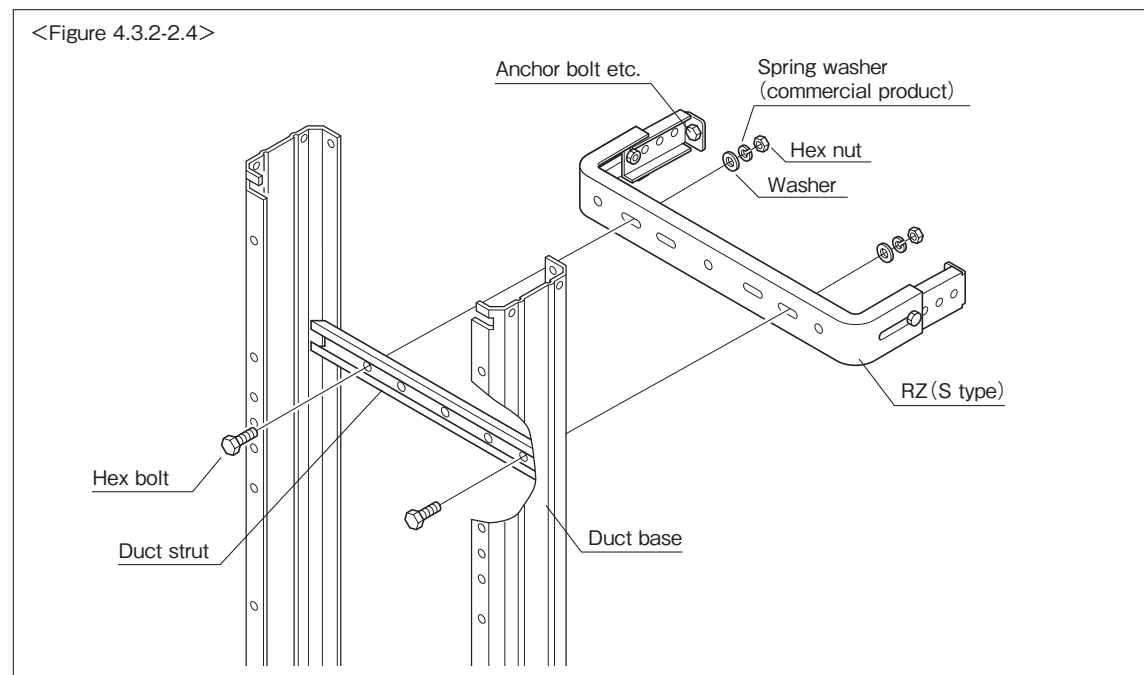
3 When attaching RZ to the wall surface (for the combination of RZM-S + RZB-S only)

1. Attach RZ to the wall surface 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.



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

This is the mounting bracket 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 surface.

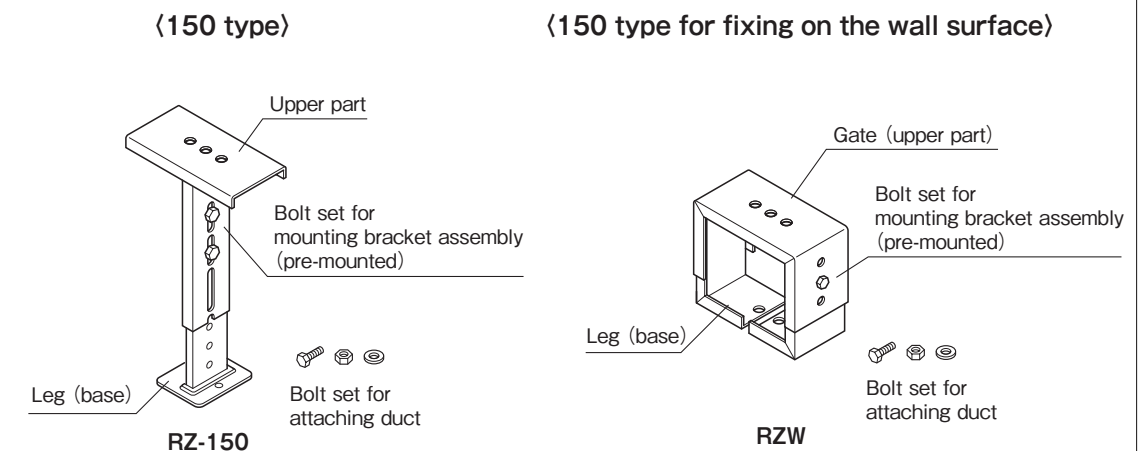
※ Also check the Design section before performing installation.

2D Barcode
for downloading
the specification
drawing



4.3.3-1 Product configuration

<Figure 4.3.3-1.1>



<Table 4.3.3-1.1> Set contents

Type	Gate-shaped bracket	Base	Bolt set for assembling mounting bracket	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

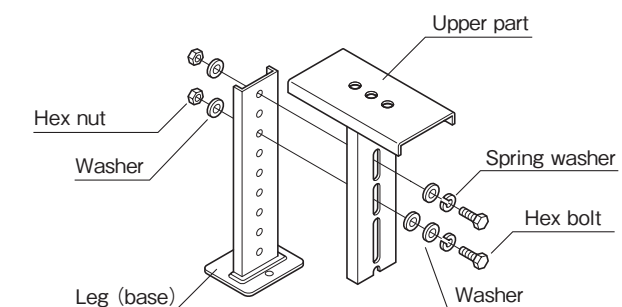
Item	Specifications	Material	Quantity
Bolt set for assembling mounting bracket	Hex bolt W3/8×L25	SUS	1
	Hex nut W3/8	SUS	1
	Flat washer W3/8	SUS	2
Bolt set for attaching duct	Spring washer W3/8	SUS	1
	Hex bolt W3/8×L25	SUS	1
	Hex nut W3/8	SUS	1
	Flat washer W3/8	SUS	1

4.3.3-2 Example of assembling and attaching RZ-150

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

※ Bolt tightening torque : 19.6N・m

<Figure 4.3.3-2.1>



4.3 Mounting bracket

• 4.3.3 RZ-150, RZW RD mounting bracket (for 150) [Installation]

4.3 Mounting bracket

• 4.3.4 RZC mounting bracket fixing plate for the elevation surface [Installation]

Installation

How to proceed
installation

Pipe shaft and
wall penetration

Mounting bracket

Duct (straight pipe)

Connection

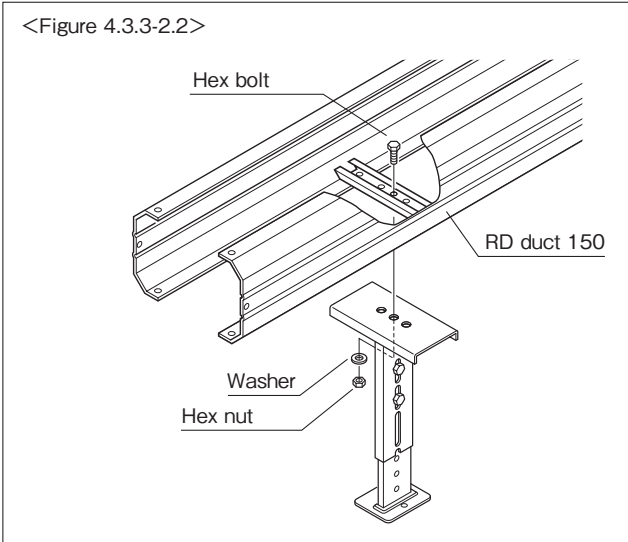
Fittings

Bottom plate

Others

Installation procedure

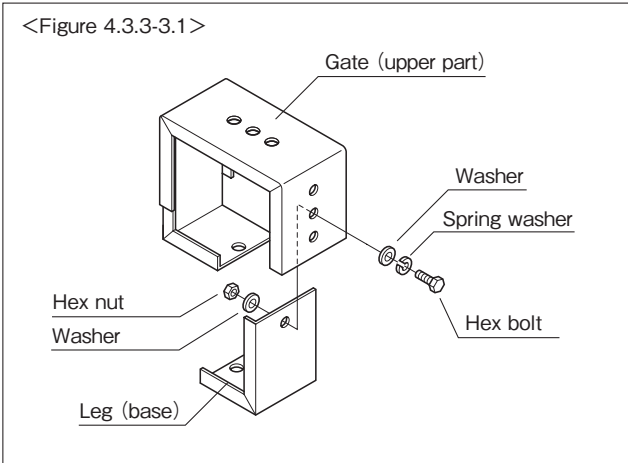
- 2 Attach the duct etc. to the mounting bracket.



4.3.3-3 Example of assembling and attaching RZW

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

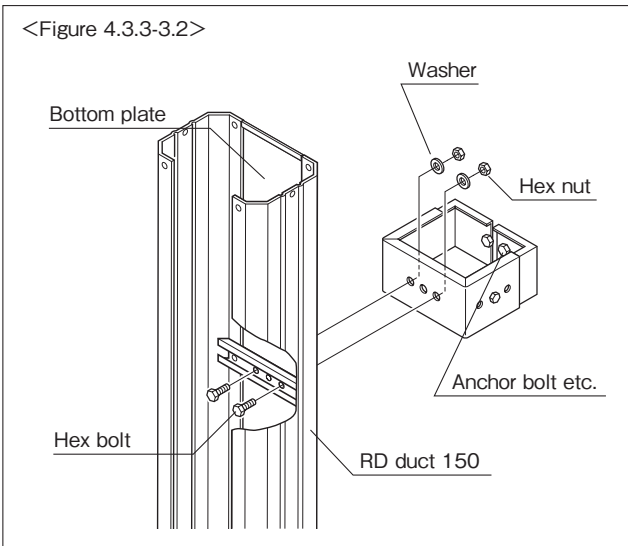
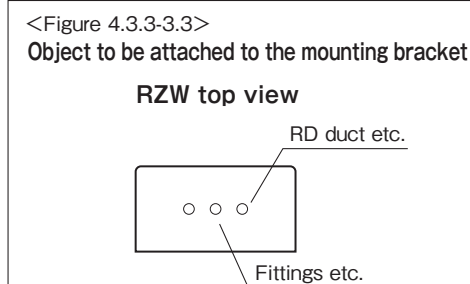
※ Bolt tightening torque: 19.6N・m



- 2 Attach RZW to the wall surface 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.



4.3.4 RZC bracket attachment plate for vertical ell

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

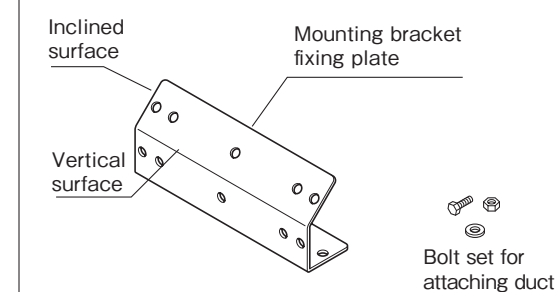
※ Also check the Design section before performing installation.

2D Barcode
for downloading
the specification
drawing

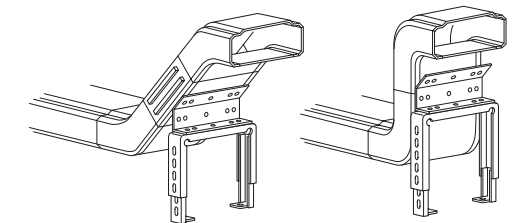


4.3.4-1 Product configuration

<Figure 4.3.4-1.1>



Example of use



<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

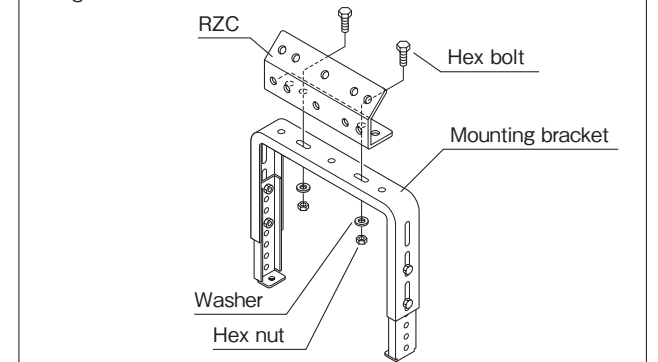
Item	Specifications	Material	Quantity
Bolt set for attaching duct	Hex bolt W3/8×L25	SUS	1
	Hex nut W3/8	SUS	1
	Flat washer W3/8	SUS	1

4.3.4-2 Installation of RZC

- 1 Attach RZC to the mounting bracket.

※ Mounting bolts are supplied with the mounting base.

<Figure 4.3.4-2.1>

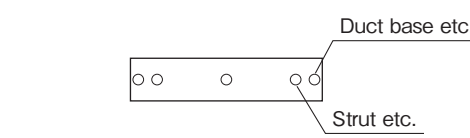


- 2 Attach the target object to RZC.

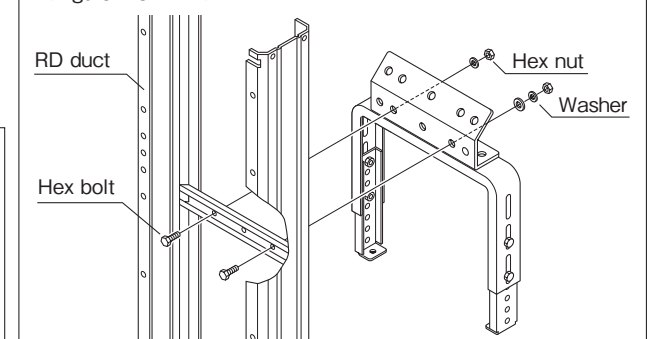
※ Use the mounting holes which fit the target object.

<Figure 4.3.4-2.3>

RZC view of front/inclined surface



<Figure 4.3.4-2.2>



Installation

How to proceed
installation

Pipe shaft and
wall penetration

Mounting bracket

Duct (straight pipe)

Connection

Fittings

Bottom plate

Others

Installation procedure

4.3.5 RZY mounting bracket guide for duplex mounting

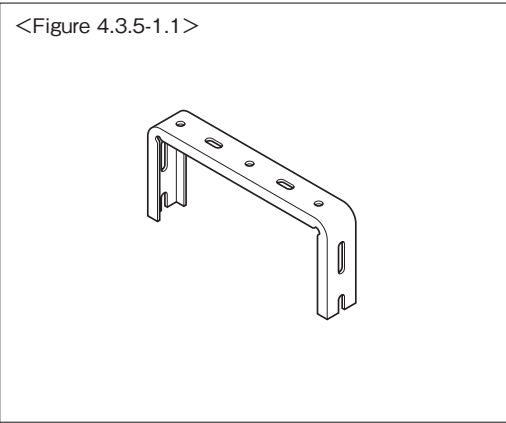
This is used for duplex mounting of the RD duct.

※ Also check the Design section before performing installation.

2D Barcode
for downloading
the specification
drawing

RZY

4.3.5-1 Product configuration



<Table 4.3.5-1.1> Set contents

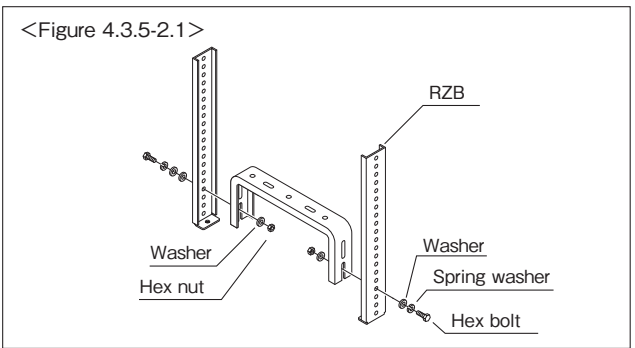
Type	Quantity
RZY main unit (gate)	1
Bolt set for assembling the mounting bracket	2
Bolt set for attaching duct	2

<Table 4.3.5-1.2> Bolt set specifications

Item	Specifications	Material	Quantity
Bolt set for assembling mounting bracket	Cup head square neck bolt M8×19L	SUS	1
	Hex nut M8	SUS	1
	Flat washer M8	SUS	2
	Spring washer M8	SUS	1
Bolt set for attaching duct	Hex bolt W3/8×L25	SUS	1
	Hex nut W3/8	SUS	1
	Flat washer W3/8	SUS	1

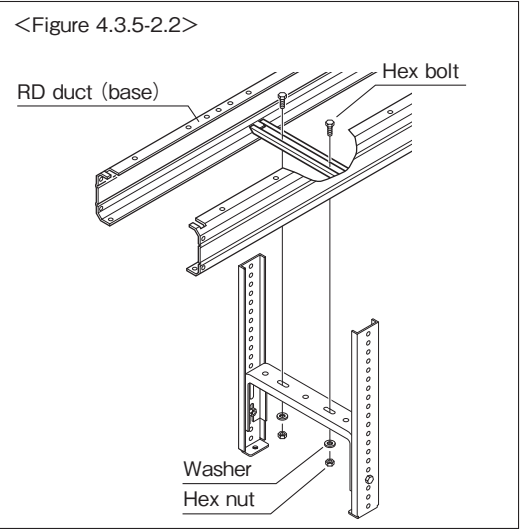
4.3.5-2 Installation of RZY

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



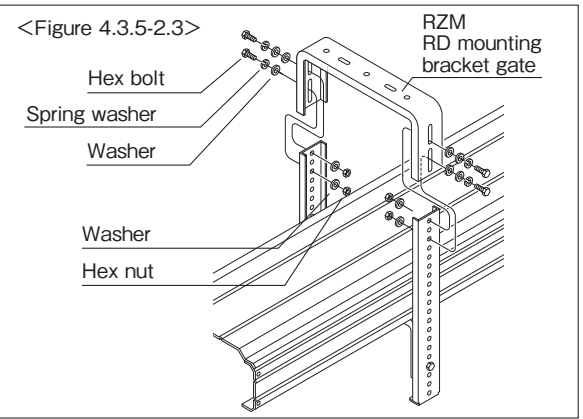
2 Attach the RD duct base.

※ Cannot be used for the connection part.



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

Reference [4.3.2] RZ (RZM+RZB) RD mounting bracket (for 300 to 900)



4.3.6 RDY pipe support base

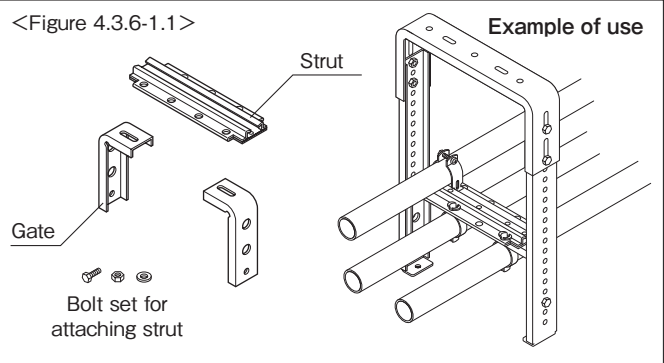
This is a part for attaching the conduit etc. to the RD mounting bracket.
The rail of 20mm in width and holes of φ14 are equipped to attach the conduit supporting bracket.

※ Also check the Design section before performing installation.

2D Barcode
for downloading
the specification
drawing

RDY

4.3.6-1 Product configuration



<Table 4.3.6-1.1> Set contents

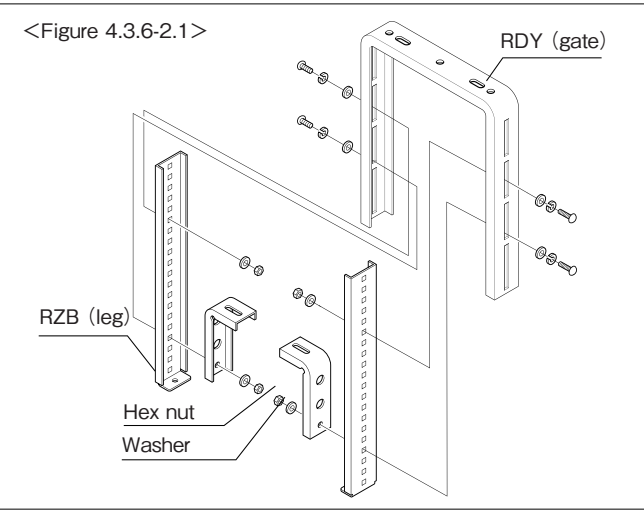
Type	Quantity
Gate (pipe support base)	2
Strut	1
Bolt set for attaching strut	2

<Table 4.3.6-1.2> Bolt set specifications

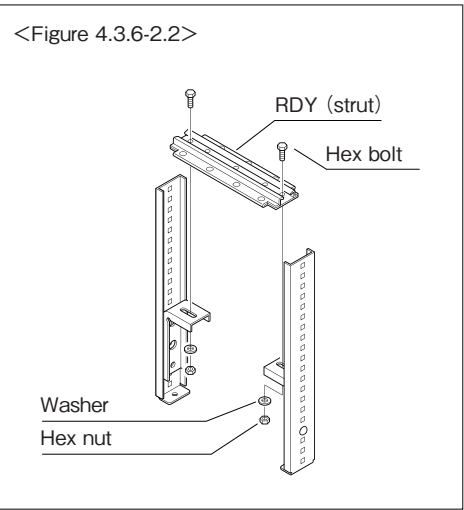
Item	Specifications	Material	Quantity
Bolt set for attaching strut	Hex bolt M8×12L	SUS	1
	Hex nut M8	SUS	1
	Flat washer M8	SUS	1

4.3.6-2 Example of assembling and attaching RDY

1 Attach the gate to the RD mounting bracket leg (RZB).
※ The mounting bolts are not supplied.
Attach it at the same time when attaching RZM.



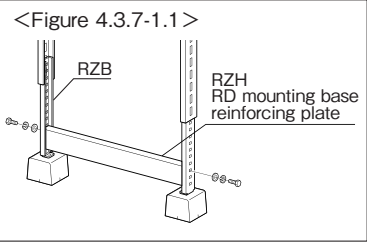
2 Attach the strut to the gate.
※For attaching a commercially available supporting brackets, check the instruction manual of its manufacturer.



4.3.7 RZH RD mounting base reinforcing plate

Attach RD mounting base reinforcing plate (RZH) to the RD mounting bracket leg.

4.3.7-1 Installation of RDH



<Table 4.3.7-1.1> Set contents

Item	Quantity
Mounting bracket reinforcing plate	1
Bolt set for mounting the reinforcing plate	2

<Table 4.3.7-1.2> Bolt set specifications

Items	Specifications	Material	Quantity
Bolt set for mounting the reinforcing plate	Cup head square neck bolt M8 x L19	SUS	1
	Hex nut M8	SUS	1
	Flat washer M8	SUS	1
	Spring washer M8	SUS	1

2D Barcode
for downloading
the specification
drawing

RZH

4.3.8

FL-B-Z cross-lock B type (for outdoor use)

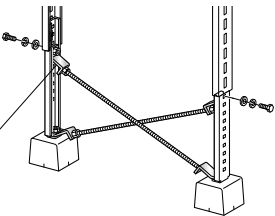
Attach the cross lock B type (outdoor specification) to the RD mounting frame.

4.3.8-1

Product configuration · Installation of FL-B-Z

<Figure 4.3.8-1.1>

FL-B-Z cross-lock B type
(for outdoor use)



2D Barcode
for downloading
the specification
drawing

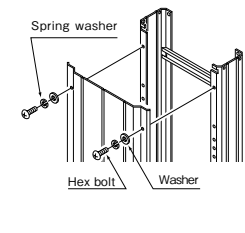


Warning Although SLIMDUCT RD can be installed on the wall surface, there are some restrictions.

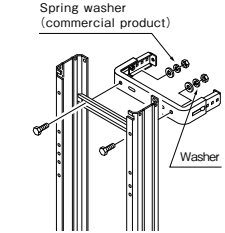
For installation on the wall surface, a treatment to prevent loosening of bolts is required.

- For attaching the cover, use "Bolt and washer set for cover on wall surface RD-HB".
 - ※ Set contents
M6 hex × 20L SUS · M6 spring washer SUS · M6 flat washer SUS
 - ※ The cover bolt supplied with the product cannot be used.
- For installation on the wall surface (suspended from the wall surface), 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 bracket, 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 4.3.8-1.2>



<Figure 4.3.8-1.3>



4.3.9

RBK-B auxiliary bracket for strut

This is the auxiliary bracket to be used in the installation directly on the wall surface.

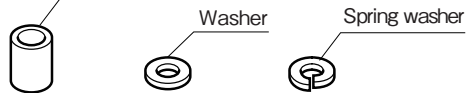
For the open type duct (RD-450H, 600H, 900H of 2m and 1m), use the auxiliary bracket for duct base RBK-A.

※ Also check the Design section before performing installation.

4.3.9-1

Product configuration

<Figure 4.3.9-1.1>



<Table 4.3.9-1.1> Set contents

Item	Material	Quantity
RBK-B (inner diameter $\phi 11 \times L22$)	SUS	1
Flat Washer M10		
Spring washer M10		

2D Barcode
for downloading
the specification
drawing



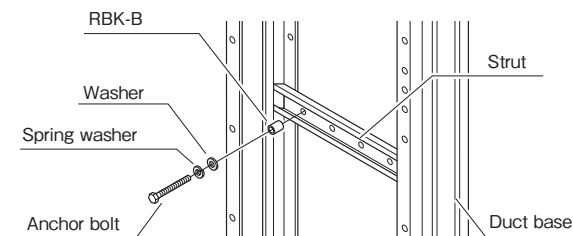
4.3.9-2

Installation of RBK-B auxiliary bracket for strut

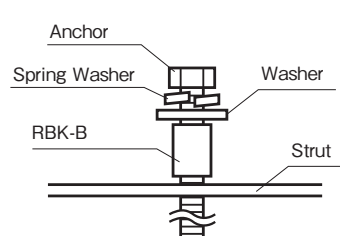
As shown in the figure, insert the commercially available anchor bolt (W3/8 or M10) into the bracket, and attach them to the same position as attaching the mounting bracket. For the position for attachment, see pages of each part.

※ 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 4.3.9-2.1>



<Figure 4.3.9-2.2>



4.3.10

RBK-A auxiliary bracket for duct base

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

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

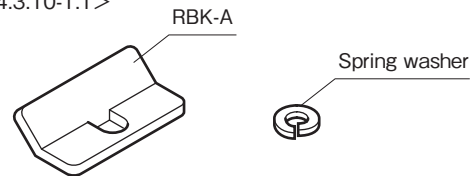
2D Barcode
for downloading
the specification
drawing



4.3.10-1

Product configuration

<Figure 4.3.10-1.1>



<Table 4.3.10-1.1> RBK-A Set contents

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

<Table 4.3.10-1.2> RBK-A-SUS Set contents

Item	Material	Quantity
RBK-A	SUS	1
Spring washer M10		

4.3.10-2

Installation of RBK-A auxiliary bracket for duct base

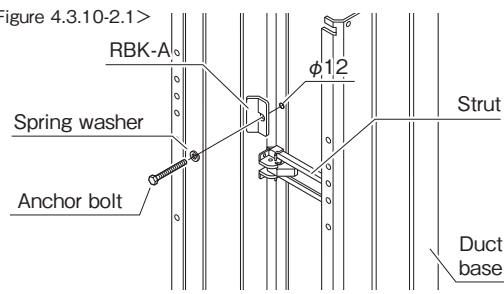
Installation directly on the wall surface

As shown in the figure, insert the commercially available anchor bolt (W3/8 or M10) into the bracket, and attach them to the $\phi 12$ hole of the duct base.

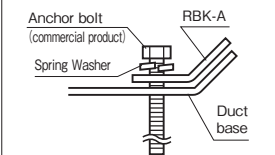
See the figure for the position for attachment.

※ 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.

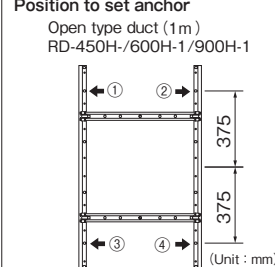
<Figure 4.3.10-2.1>



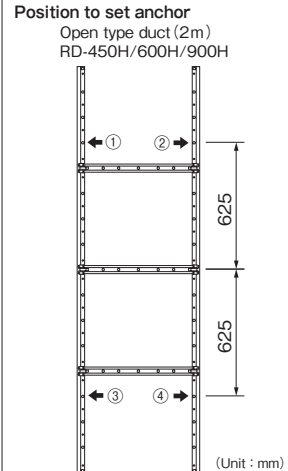
<Figure 4.3.10-2.2>



<Figure 4.3.10-2.4>



<Figure 4.3.10-2.3>

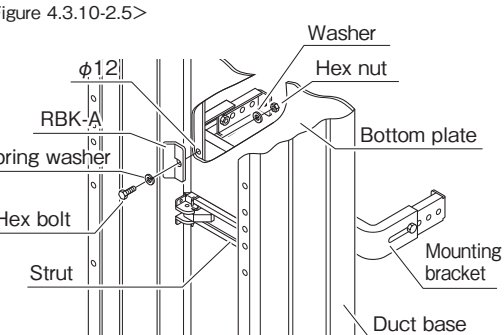


In the installation suspended from the wall surface

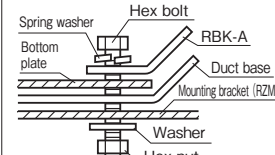
As shown in the figure, insert the hex bolt (supplied with the mounting bracket) into the bracket, and set the mounting bracket at the $\phi 12$ hole of the duct base. See the figure for the position for attachment.

※ Drilling is required on the bottom plate for the attachment of RBK-A.
※ 600H and 900(H) sizes cannot be installed on walls (suspended).

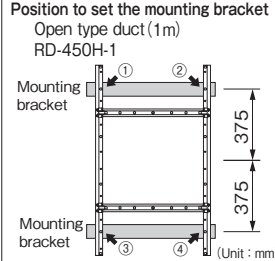
<Figure 4.3.10-2.5>



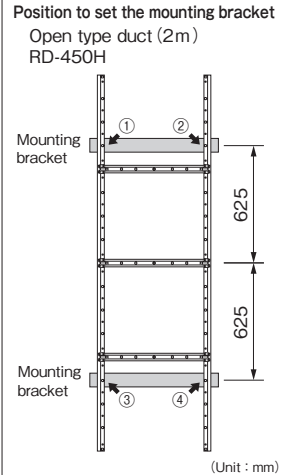
<Figure 4.3.10-2.6>



<Figure 4.3.10-2.8>



<Figure 4.3.10-2.7>



4.3 Mounting bracket

- 4.3.11 RKT bracket for fixing to shaped steel [Installation]
- 4.3.12 RKTW RD walkway fixing bracket for shaped steel

4.3 Mounting bracket

- 4.3.12 RKTW RD walkway fixing bracket for shaped steel [Installation]

4.3.11 RKT bracket for fixing to shaped steel

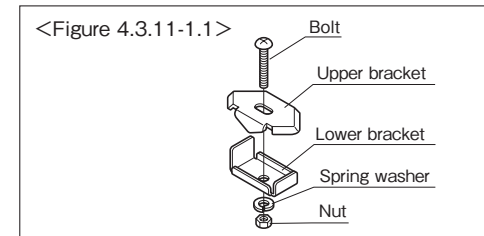
When fixing the RD duct to the shaped steel, fix the RD duct base to the shaped steel by using the bracket for fixing RD to shaped steel RKT.
※ Also check the Design section before performing installation.

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

2D Barcode
for downloading
the specification
drawing



4.3.11-1 Product configuration

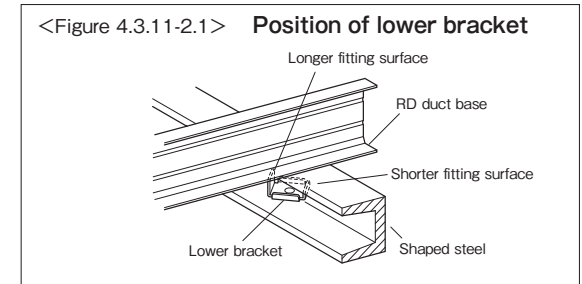


<Table 4.3.11-1.1> Set contents

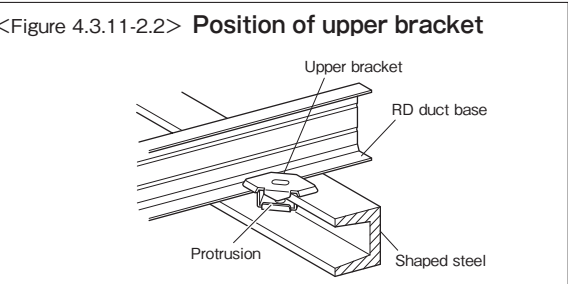
Item	Material (surface treatment)	Quantity
Upper bracket	SPHC Dacrotizing	1
Lower bracket		
Cup head square neck bolt M6×35L		
Spring washer M6		
Hex nut M6		

4.3.11-2 Installation of RKT

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

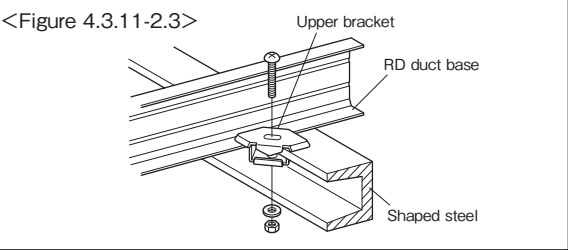


2 Set the upper bracket so that its protrusion does not ride on the RD duct base or shaped steel.



3 Tighten the nut from under the lower bracket.
※ Tightening torque 5.9N·m (60 kg·cm)

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



4.3.12 RKTW RD walkway fixing bracket for shaped steel

When fixing the duct walkway to shaped steel, fix the RD duct base to shaped steel using RKTW, the RD walkway fixing bracket for shaped steel.

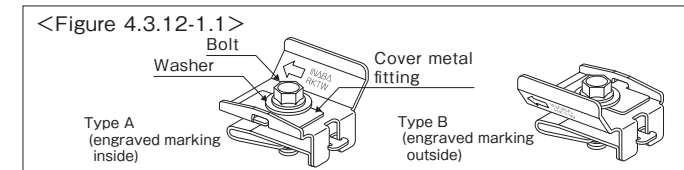
※ Check instructions on the [Design] page before installation.

Applicable shaped steel H steel section: Flange thickness 7 to 13 mm
Channel steel: 75 x 40, 100 x 50, 125 x 65, 150 x 75

2D Barcode
for downloading
the specification
drawing



4.3.12-1 Product configuration



<Table 4.3.12-1.1> Set contents

Item	Material	Quantity
Type A	Highly corrosion-resistant steel sheet	2
Type B		

4.3.12-2 Example of RKTW assembly

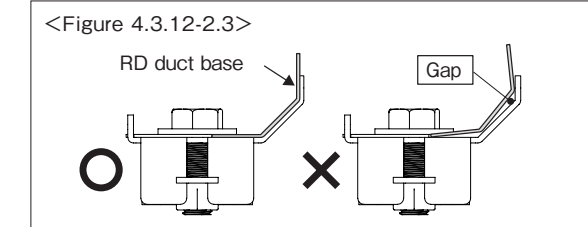
Items to be checked before installation

For attachment to shaped steel, mount the item in the direction of the arrow engraved on the bracket.

1 Place the bracket (type A) with its engraved marking surface along the bottom of the RD duct base and set it in the direction of the arrow making sure that the washer is applied to the duct base.

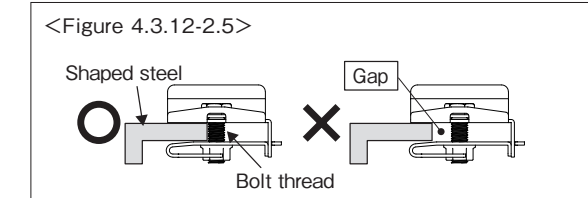
※For type B, it is the side that does not have the engraved marking

- Note**
- Make sure that the bracket is in contact with the RD duct base without any gap.



2 Lift the duct base 3 mm or more from the installation surface of the shaped steel and slide the bracket.

- Note**
- Insert the bracket until its bolt thread hits the flange of the shaped steel.

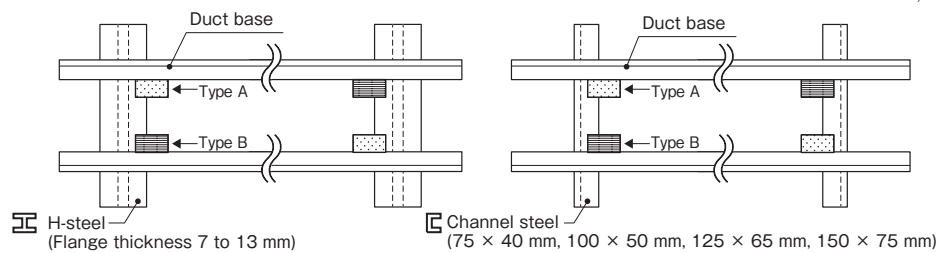


3 Tighten the bolts and it is complete.

※Tightening torque: 42 N·m (428 kgf·cm)

- Note**
- Do not reuse the product after it has been used.
 - This cannot be used for vertical parts.
 - This cannot be attached to either end (joint) of the duct.
 - Insert the bracket to the shaped steel in the direction of the arrow engraved on the product.

<Figure 4.3.12-2.7> Example of mounting positions



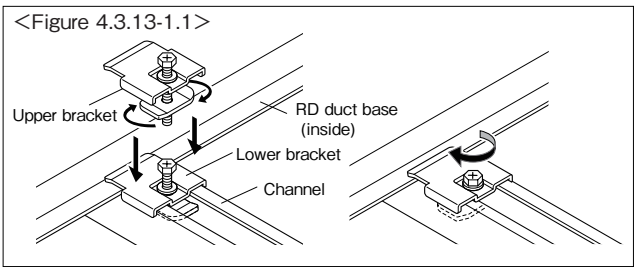
- Note**
- Use two or more brackets on one side of the duct and four or more brackets in total.

4.3.13 RCT RD bracket for fixing channel

To secure an RD duct to channel, use an RD bracket for fixing channel RCT to secure the RD duct base to the channel.

4.3.13-1 RCT products configurations and installation examples

1 Tighten the nut from under the lower



2D Barcode
for downloading
the specification
drawing



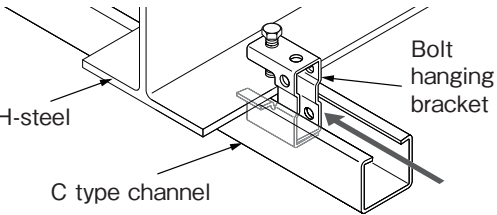
Note

- It can be used only when the RD duct and the channel are intersecting each other.
- It cannot be used for vertical installation such as on the wall face.
- It cannot be used for securing RD ducts for walkways.

SHBN-S-Z bolt hanging bracket

For outdoor use (equivalent to HDZT49)

To support and secure the channel on the steel material, SHBN-S-Z bolt hanging bracket (for outdoor use) can also be used.



4.3.14 CR Recycrock (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 bracket for RD, CR-A anchor base type, CR-D which can be used to support conduit, and CR-H hanger rail type.

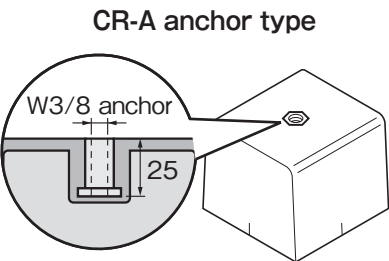
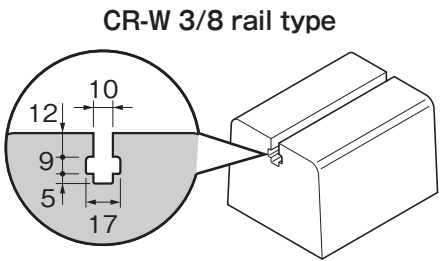
※ Also check the Design section before performing installation.

2D Barcode
for downloading
the specification
drawing



4.3.13-1 Product configuration

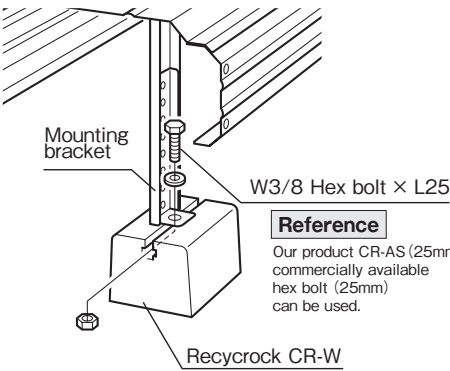
<Figure 4.3.13-1.1>



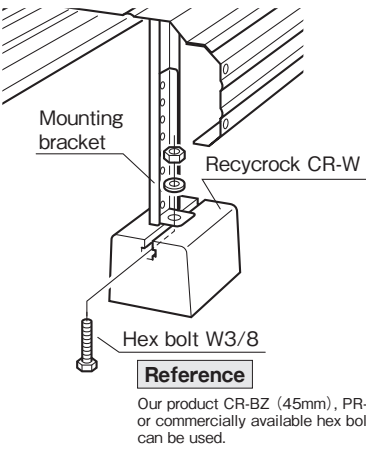
4.3.13-2 Example of assembling and attaching CR

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

<Figure 4.3.14-2.1>



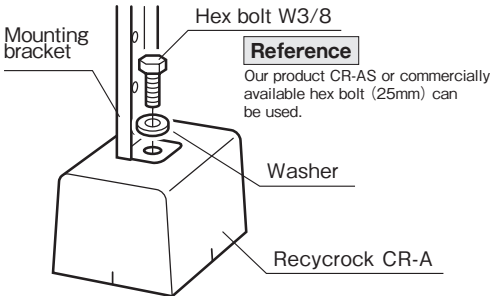
Note) The direction (position) of inserting bolt differs depending on the length of bolt.



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

※ Use a bolt of 25mm in length (SUS).

<Figure 4.3.14-2.2>



4.3.15 PB plastic base

This is the light-weight plastic base with excellent weatherability.
It is not necessary to prepare the frame or remove it after hardened, enabling large reduction of the working hours.

※ Also check the Design section before performing installation.

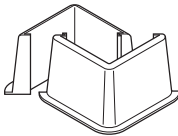
2D Barcode
for downloading
the specification
drawing



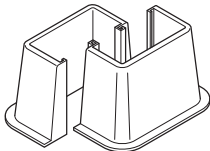
4.3.15-1 Product configuration

<Figure 4.3.15-1.1>

PB-100



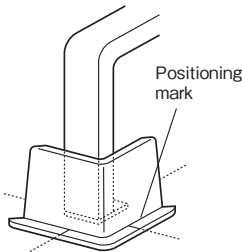
PB-120



4.3.15-2 Example of assembling and attaching PB

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

<Figure 4.3.15-2.1> Setting Plabase



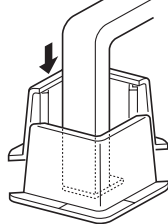
- 2** Assemble Plabase. There are two methods of assembling Plabase: coupling by sliding parts in the vertical direction, and coupling by fitting parts in the horizontal direction.

<Figure 4.3.15-2.2>

Fitting parts
in the horizontal direction
(PB-100 only)



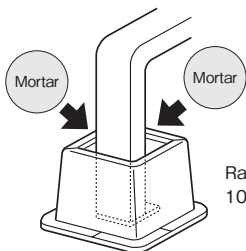
Sliding parts
in the vertical direction
(PB-100/120)



- 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 4.3.15-2.3>.

<Figure 4.3.15-2.3>



PB-100 : approximately 3.5kg
PB-120 : approximately 7.0kg

Ratio of "Cement : Sand : Water" (mass ratio)
100 : 300 : 55

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 coupler parts and coupler-free connection without using coupler parts. Be sure to check "3.5 RD duct [Design]" before installation.

Table of contents

4.4.1 RD duct	97
4.4.2 RDW walkway type duct	98
4.4.3 Example of RD/RDW	99
4.4.4 RD/RDW coupler-free connection <simple assembly method>	100

4.4.1 RD duct

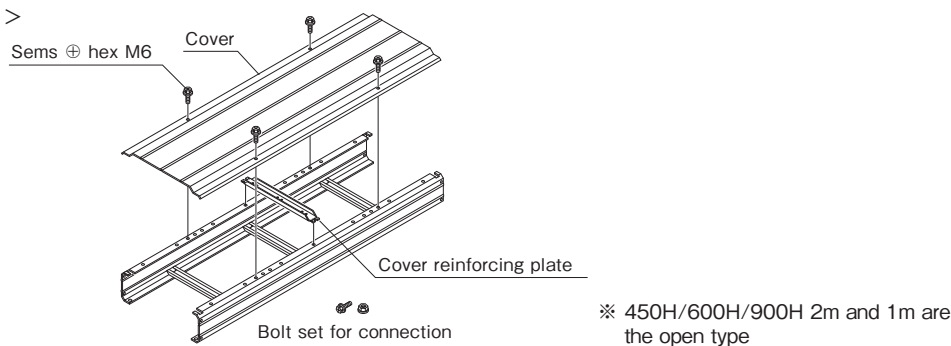
Standard-type straight pipe (straight duct).
Note that the installation details are different between for the standard type and for the walkway type.
※ Also check the Design section before performing installation.

2D Barcode
for downloading
the specification
drawing



4.4.1-1 Product configuration

<Figure 4.4.1-1.1>



<Table 4.4.1-1.1> Set details

Size	Cover	Base	Bolt set for connection	Length of duct							
				2m	1m	0.5m	0.3m	2m	1m	0.5m	0.3m
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> Bolt specification

Item	Specifications	Material
Bolt set for connection	Sems ⊕ hex M6×15L	SUS
Cover bolt	Flange nut M6	SUS
Cover bolt	Sems ⊕ hex M6×15L	SUS

4.4.1-2 Position to attach the cover reinforcing plate

<Table 4.4.1-2.1> Position to attach the cover 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 installation details are different between for the standard type and for the walkway type.

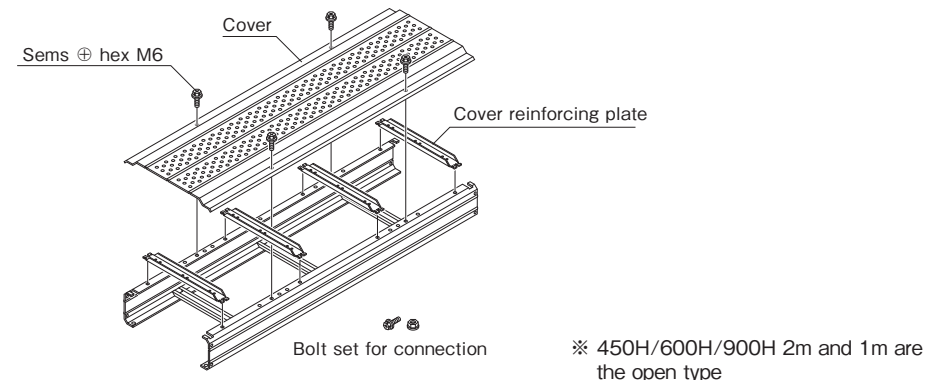
※ Also check the Design section before performing installation.

QR code for downloading the specification drawing



4.4.2-1 Product configuration

<Figure 4.4.2-1.1>



<Table 4.4.2-1.1>
Set details

Size	Cover	Base	Bolt set for connection	Length of duct							
				2m		1m		0.5m		0.3m	
				Cover bolt	Cover reinforcing plate	Cover bolt	Cover reinforcing plate	Cover bolt	Cover reinforcing plate	Cover bolt	Cover 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>
Bolt specification

Item	Specifications	Material
Bolt set for connection	Sems ⊕ hex M6×15L	SUS
Flange nut M6		SUS
Cover bolt	Sems ⊕ hex M6×15L	SUS

4.4.2-2 Position to attach the cover reinforcing plate

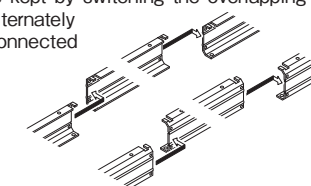
<Table 4.4.2-2.1> Position to attach the cover reinforcing plate

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

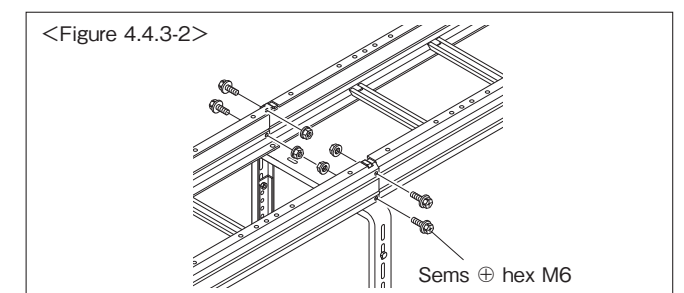
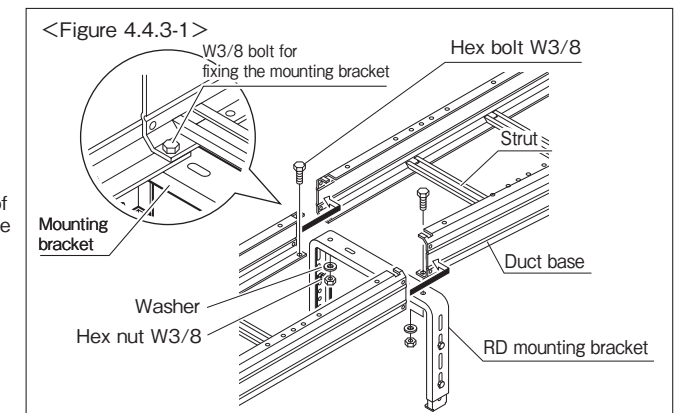
4.4.3 Example of RD/RDW assembly

- 1 Fit ducts each other so that their duct base ends overlaps by 20mm, and fix the overlapped part of the bottom of duct base to the mounting bracket by using W3/8 hex bolts.

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

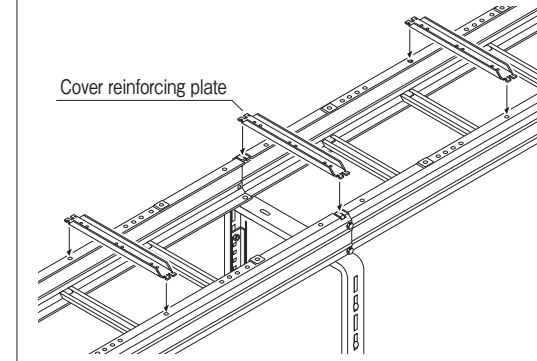


- 2 Fix the side surface of overlapped part of the duct base ends with bolts.

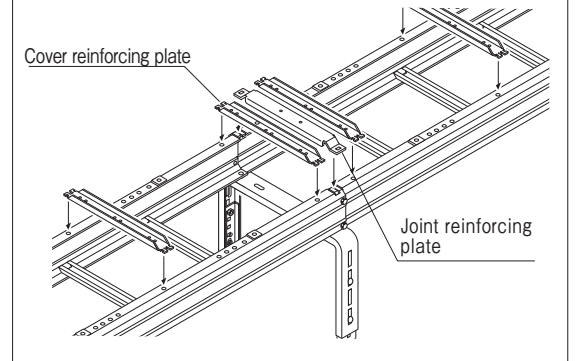


- 3 Perform piping, and then attach each reinforcing plate. For the attachment position, see "Position to attach the cover reinforcing plate". The cover reinforcing plate for the connection part is to be attached for 600 to 900H with coupler-free connection or connection using the free coupler S/H type.

<Figure 4.4.3-3> General type

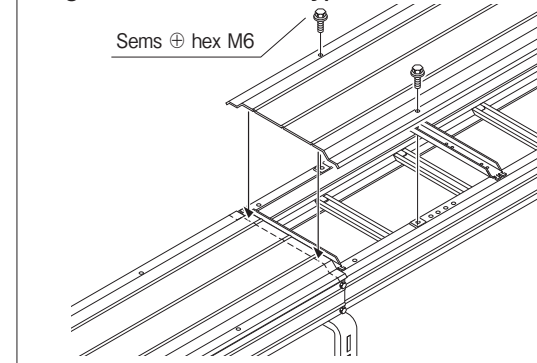


<Figure 4.4.3-4> Walkway type

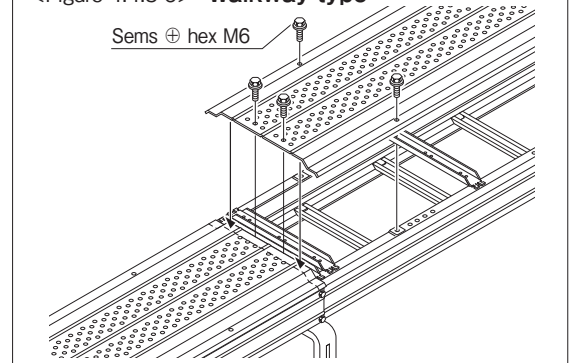


- 4 Set the cover with overlap by 20mm. (At the part connected with the flat ell, overlap the covers so that the cover of the straight duct comes over the other for beautiful finish.)

<Figure 4.4.3-5> General type

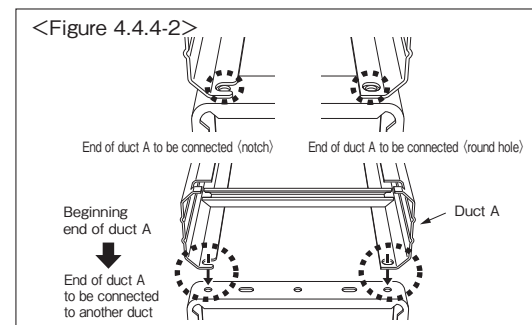
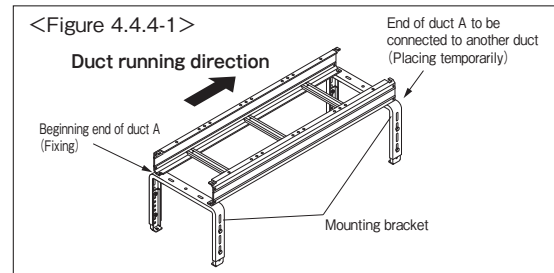


<Figure 4.4.3-6> Walkway type

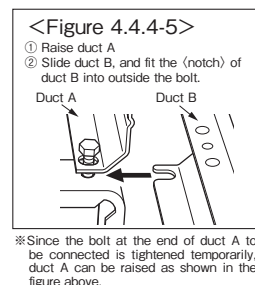
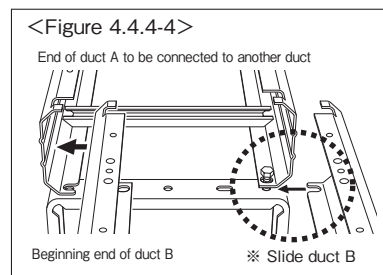
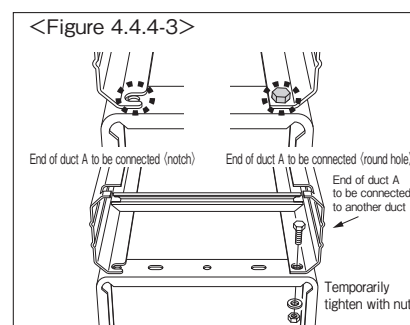


4.4.4 RD/RDW coupler-free connection <simple assembly method>

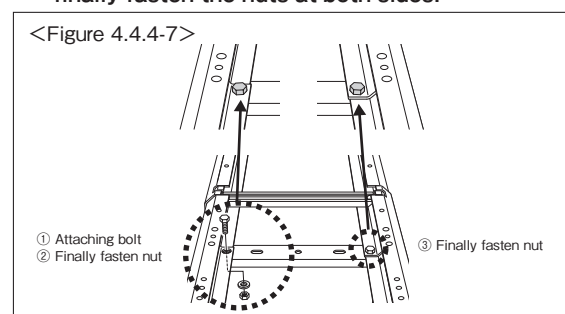
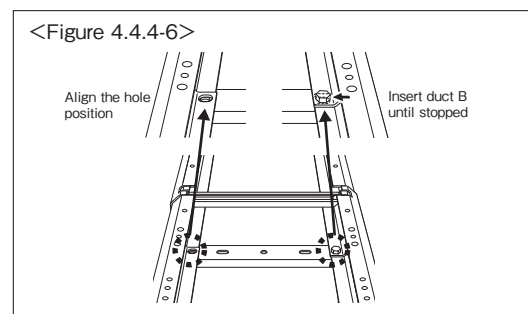
- 1 Place duct A on the mounting bracket, and fix its beginning end of duct A to the mounting bracket. For the end of duct A to be connected to another duct, do not fix to the mounting bracket but just place it temporarily.
- 2 For the end of duct A to be connected to another duct, align “notch”, “round hole”, and “hole of the mounting bracket”.



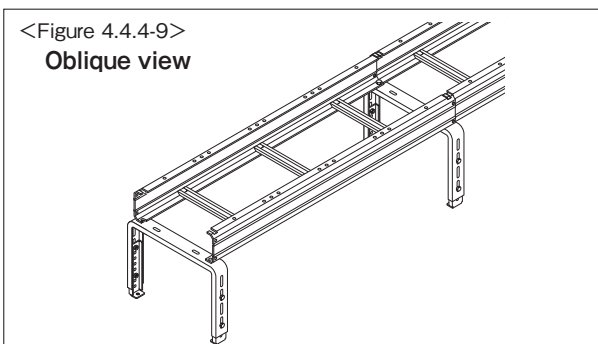
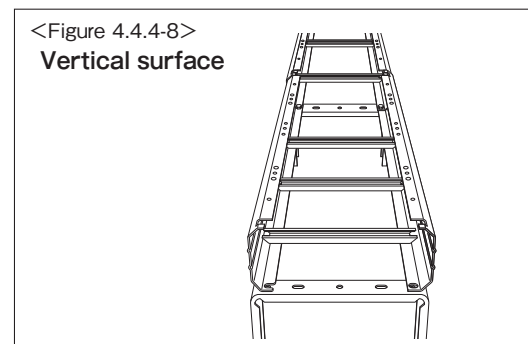
- 3 Insert the bolt into the round hole of the duct base that is placed temporarily on the mounting bracket, and temporarily tighten the bolt with the nut.
- 4 Temporarily place the beginning end of duct B on the mounting bracket of the side of end of duct A to be connected to another duct. Insert the (notch) of the beginning end of duct B into between the duct A duct base and the mounting bracket (bolt-attaching position).



- 5 Finely align “duct A”, “duct B”, and “hole of the mounting bracket” by sliding duct B.
- 6 After aligning “duct A”, “duct B”, and “hole of the mounting bracket”, attach the bolt and finally fasten the nuts at both sides.



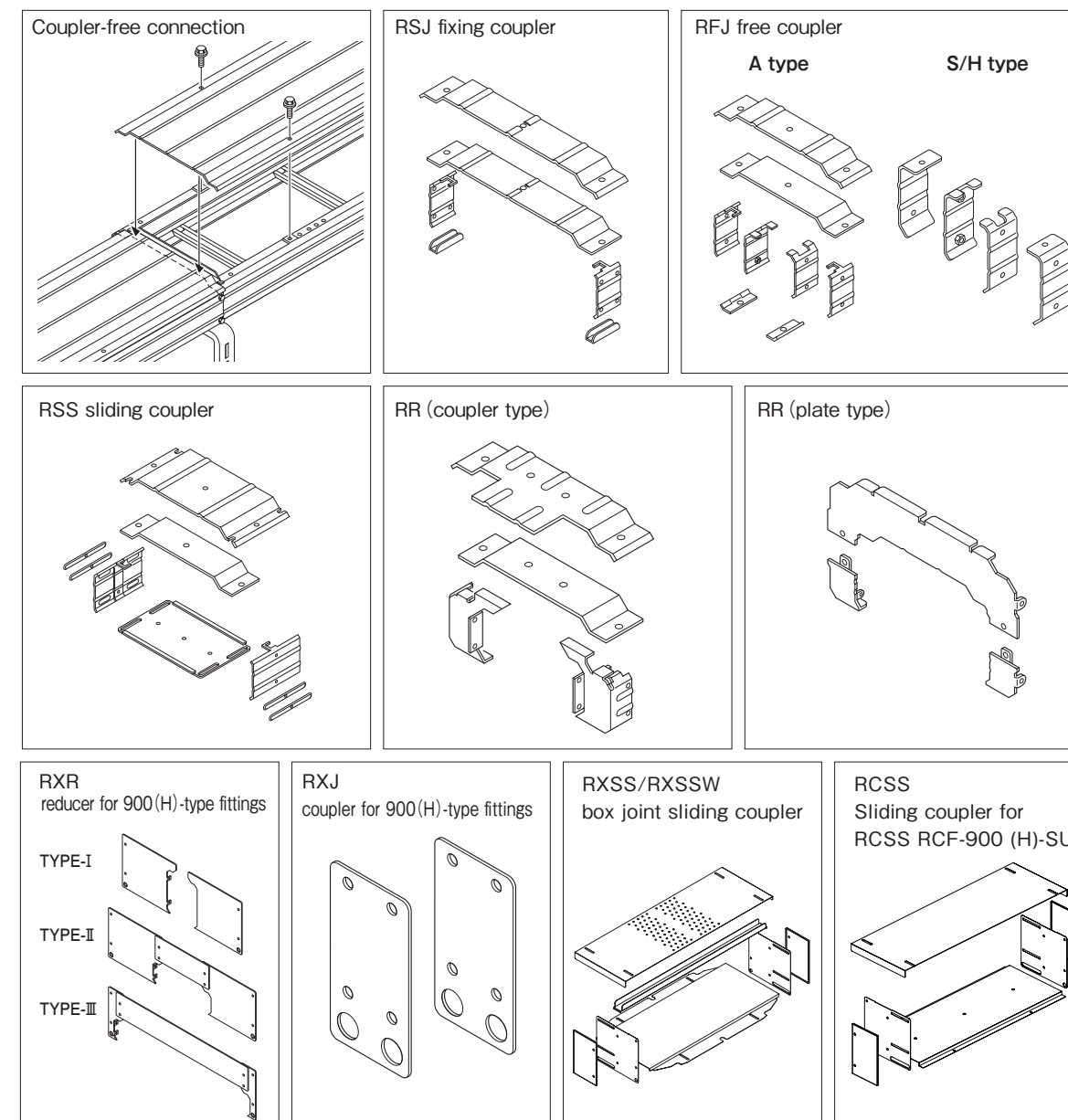
- 7 Assembly completed



4.5 Connection

Table of contents	4.5.1 Connection methods and part list	101
	4.5.2 Coupler-free connection	102
	4.5.3 RSJ fixing coupler	103
	4.5.4 RFJ free coupler	105
	4.5.5 RSS sliding coupler	108
	4.5.6 RR reducer (coupler type)	110
	4.5.7 RR reducer (plate type)	111
	4.5.8 RXR reducer for 900-type fittings	112
	4.5.9 RXJ coupler for 900(H)-type fittings	113
	4.5.10 RXSS/RXSSW box joint sliding coupler	114
	4.5.11 RCSS Sliding coupler for RCSS RCF-900 (H)-SUS	117

4.5.1 Connection methods and part list



4.5.2 Coupler-free connection

4.5.2-1 Example of assembly by coupler-free connection

This is the installation method to connect the RD ducts (excepting 150) and main fittings without using coupler parts.

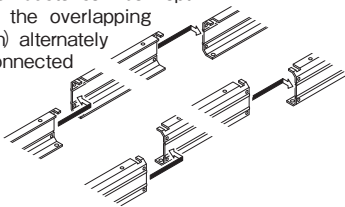
This can be used for the installation on the floor and installation by hanging from the ceiling.

※ Also check the Design section before performing installation.

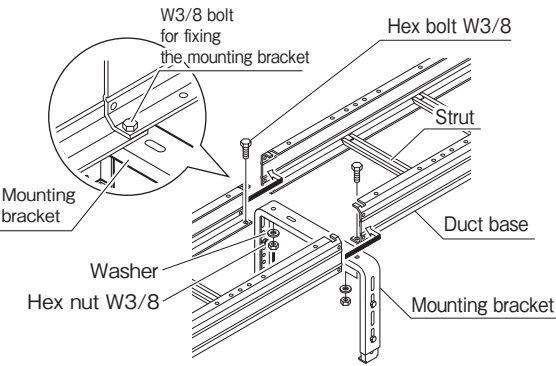
- 1 Fit ducts each other so that their duct base ends overlaps by 20mm, and fix the overlapped part of the bottom of duct base to the mounting bracket by using Hex bolts W3/8.

Note If the mounting bracket cannot be set, change the installation method to that using coupler parts.

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

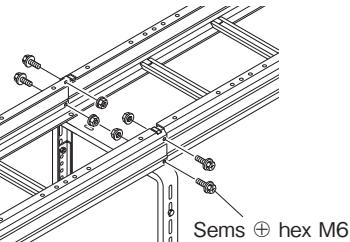


<Figure 4.5.2-1.1>



- 2 Fix the side surface of overlapped part of the duct base ends with bolts.

<Figure 4.5.2-1.2>

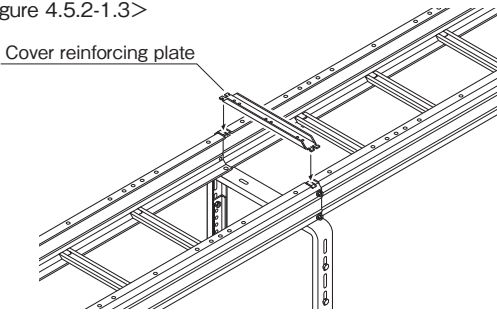


- 3 Perform piping, and then attach the cover reinforcing plate.

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

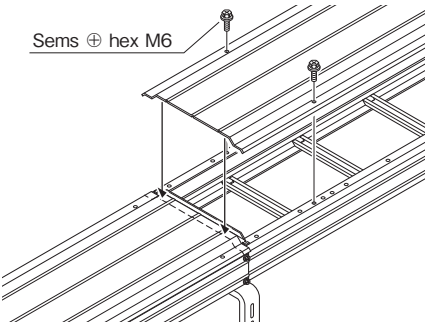
The cover reinforcing plate for the connection part is to be attached in the 600 to 900H coupler-free connection or when the free coupler S/H type is used.

<Figure 4.5.2-1.3>



- 4 Set the cover with overlap by 20mm. (At the part connected with the flat ell, overlap the covers so that the cover of RD duct comes over the other for beautiful finish.)

<Figure 4.5.2-1.4>



4.5.3 RSJ fixing coupler

This is the coupler used for connecting ducts or fittings (except for some 900 size).

For the installation on the floor, it is also possible to set the mounting bracket at the connection part.

※ Also check the Design section before performing installation.

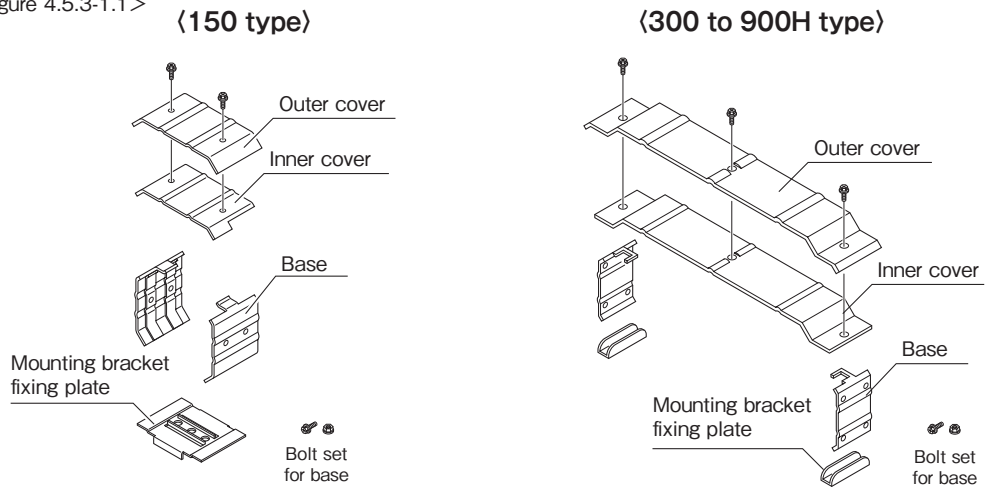
※ For the installation on the wall surface, also check [2.3.3] and [2.3.4] Conditions for installation on the wall surface.

QR code for downloading the specification drawing



4.5.3-1 Product configuration

<Figure 4.5.3-1.1>



<Table 4.5.3-1.1> Set contents

Size	Cover (outer)	Cover (inner)	Base	Bolt for cover	Bolt set for base	Mounting bracket 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> Bolt specification

Item	Specifications	Material
Bolt for cover	Sems ⊕ hex bolt M6 × 20L	SUS
Bolt set for base	Sems ⊕ hex bolt M6 × 15L	SUS
	Flange nut M6	SUS

4.5.3-2 Installation of RSJ

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

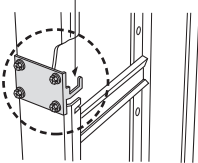
Note

<Figure 4.5.3-2.2>

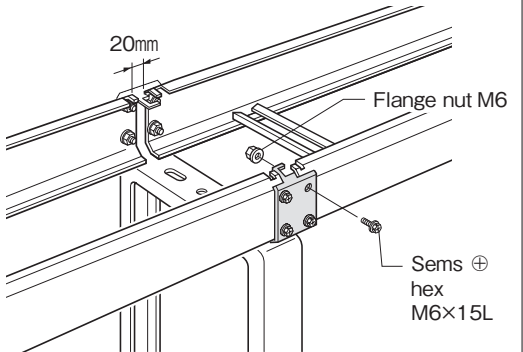
In the vertical installation, attach the fixing coupler so that its opening of the guide groove faces upward to prevent drop of the inner cover.

※ There is no sliding coupler for 150 size.

Make the opening of the guide groove of coupler face upward.

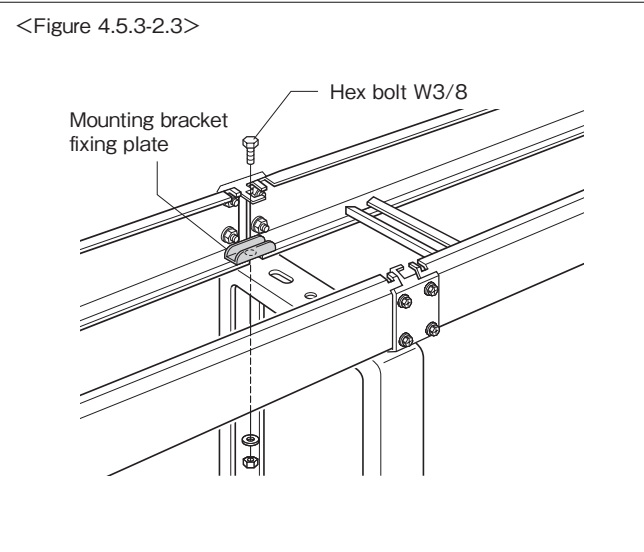


<Figure 4.5.3-2.1>

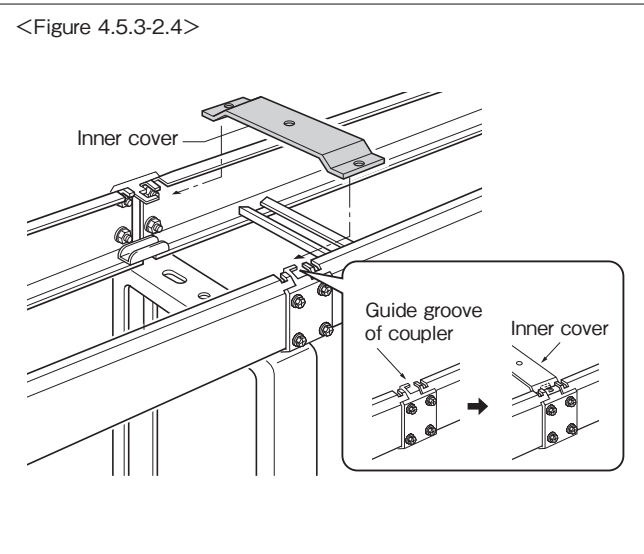


2 When attaching the mounting bracket (RZ) to the connection part, fix the duct to the mounting bracket by using the mounting bracket fixing plate (mounting bracket fixing bracket for 150 size) .

The mounting bracket fixing plate is not needed when the mounting bracket is not attached to the connection part.

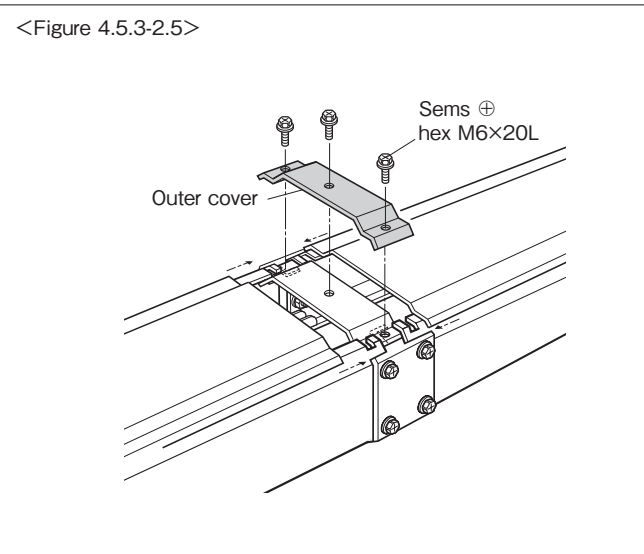


3 Perform piping, and then insert the inner cover between the inner base and the upper part of duct base. For 300 to 900H, fit the nut part of the inner cover in the guide groove of coupler.



4 Finally set the cover of duct, and attach the outer cover.

Note
For installation on the wall, it is necessary to take measures to prevent bolts from loosening. For details, see [2.3] Installation method (on the wall surface).

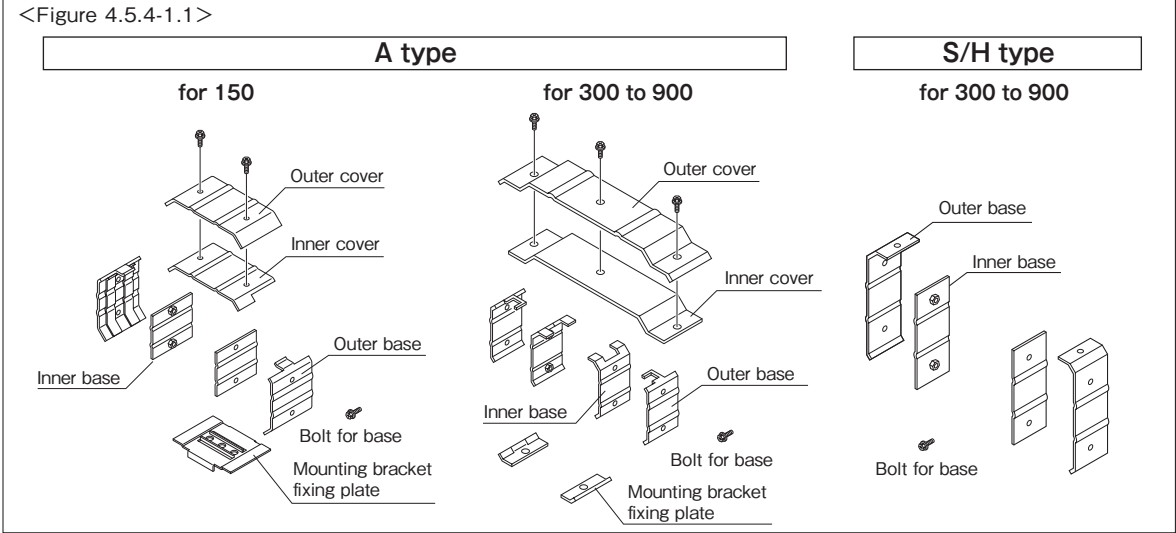


4.5.4 RFJ free coupler

This is the coupler to connect a cut duct and other parts. This can be used in the installation on the floor and installation directly on the wall surface.
※ Also check the Design section before performing installation.
※ For the installation on the wall surface, also check [2.3.3] and [2.3.4] Conditions for installation on the wall surface.



4.5.4-1 Product configuration



<Table 4.5.4-1.1> Set contents

Size	Outer Cover	Inner Cover	Outer base	Inner base	Bolt for cover	Bolt for base	Mounting bracket fixing plate
150	1	1	2	2	2	4	1
300/300H	0	0	2	2	0	4	0
450/450H							
600/600H							
900/900H							

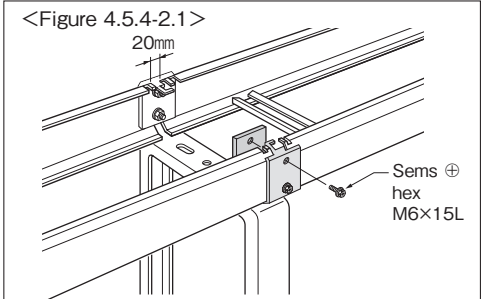
<Table 4.5.4-1.2> Bolt specification

Item	Specifications	Material
Bolt for cover	Sems ⊕ hex M6 × 20L	SUS
Bolt for base	Sems ⊕ hex M6 × 15L	SUS

4.5.4-2 Installation of RFJ (type A)

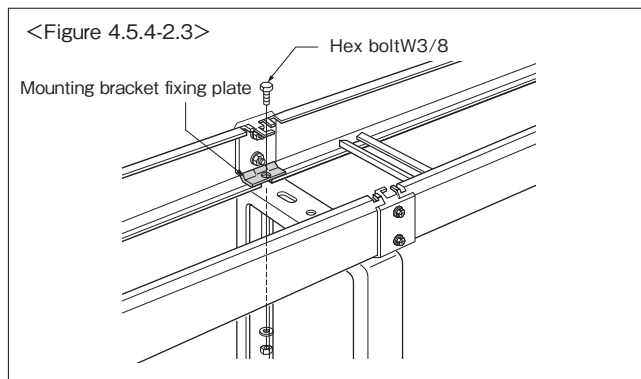
- 1 When cutting the duct base, cut so that at least two struts remain. Otherwise the cut one cannot be used. However for the open type, cutting resulting in reduction of struts is not possible. Cut the cover to be the same size as the duct. Cut the bottom plate to be shorter than the duct by 20mm.
- 2 Make a 20mm clearance at the duct connection part, and clamp and tighten the RD duct with the free coupler (base part).

Note
<Figure 4.5.4-2.2>
In the vertical installation, attach the fixing coupler so that its opening of the guide groove faces upward to prevent drop of the inner cover.
※ 150 type is excluded.
※ Usable only for the installation directly on the wall surface.

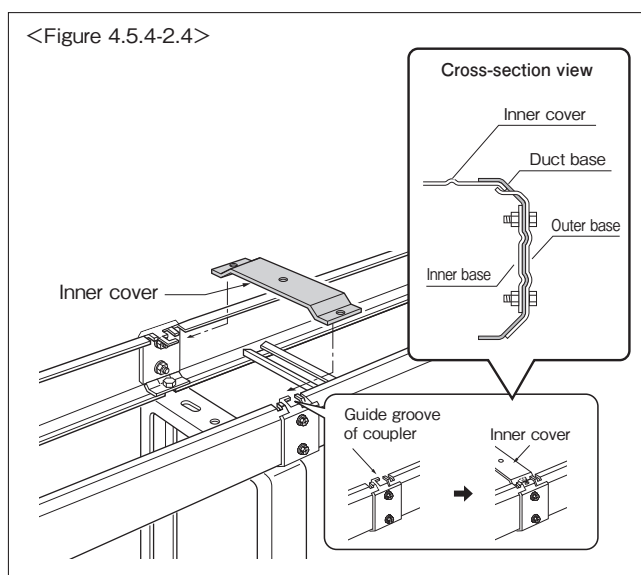


- When setting the mounting bracket (RZ) at the connection part, fix the duct to the mounting bracket by using the mounting bracket fixing bracket.

The mounting bracket fixing bracket is not needed when the mounting bracket is not set at the connection part.

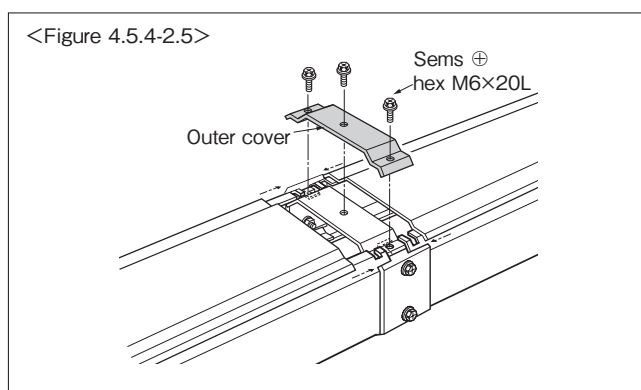


- Perform piping, and then fit the inner cover. Insert the inner cover between the inner base and the upper part of duct base. For 300 to 900H, fit the nut part of the inner cover in the guide groove of coupler.



- Finally set the cover of duct, and attach the outer cover.

Note
In the installation on the wall surface, treatment to prevent loosening of bolt is necessary. For details, check [2.3] Installation method (on the wall surface).



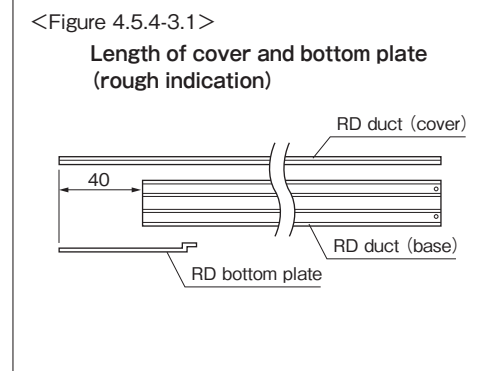
Notes on attachment

In connection to the vertical ell, connect the uncut side.
If attachment to the vertical ell 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 bracket can be set only when it is connected to the duct. When connecting to the fittings, set the mounting bracket at the strut near the fittings.

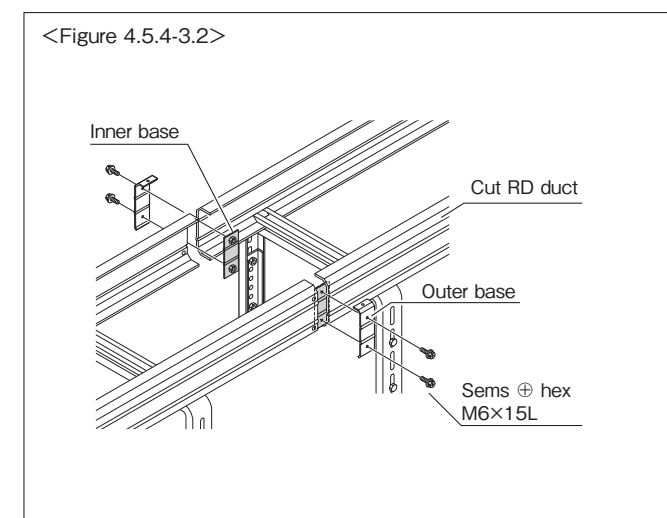
4.5.4-3 Installation of RFJ (type S/H)

- When cutting the duct, cut so that at least two struts remain. Otherwise the cut one cannot be used. However for the open type, cutting resulting in reduction of struts is not possible. Cut the cover so that its length becomes longer than the duct base by 40mm. If holes for cover bolts 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 duct base by 40mm.

※ For Steel sheet type, for the part where you performed cutting or processing work, perform the repair work by using the zinc rich paint (Zn-AL).

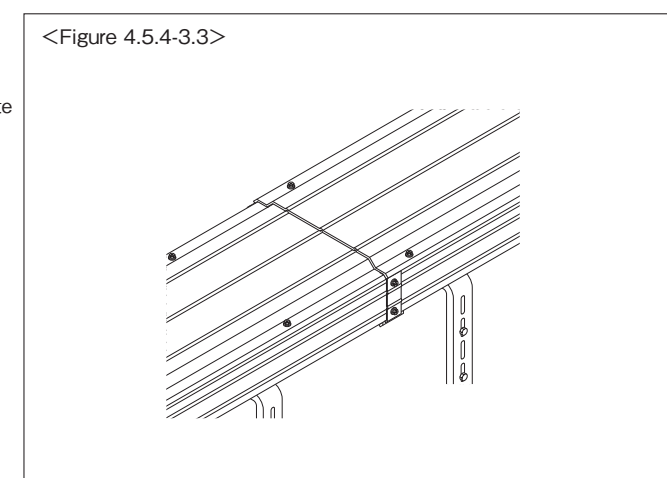


- Make a 20mm clearance at the duct connection part, and clamp and tighten the RD duct with the free coupler (base part).



- Perform piping, and then finally set the cover of duct.

※ For 600 to 900H, attach the cover reinforcing plate to the connection part.



Notes on attachment

The mounting base cannot be installed for the S/H type. Install mounting bases to the sub girders, etc. located before and after the S/H type.
For vertical installation, attach this so that the lid of the upper part comes on top.
For connection to an elevation surface corner, connect the end that is not cut.
For connection to an elevation surface corner such as when lowering the position, attach this so that the cut side comes to the bottom, and provide a hole for installing the mounting base on the elevation surface corner.

4.5.5 RSS sliding coupler

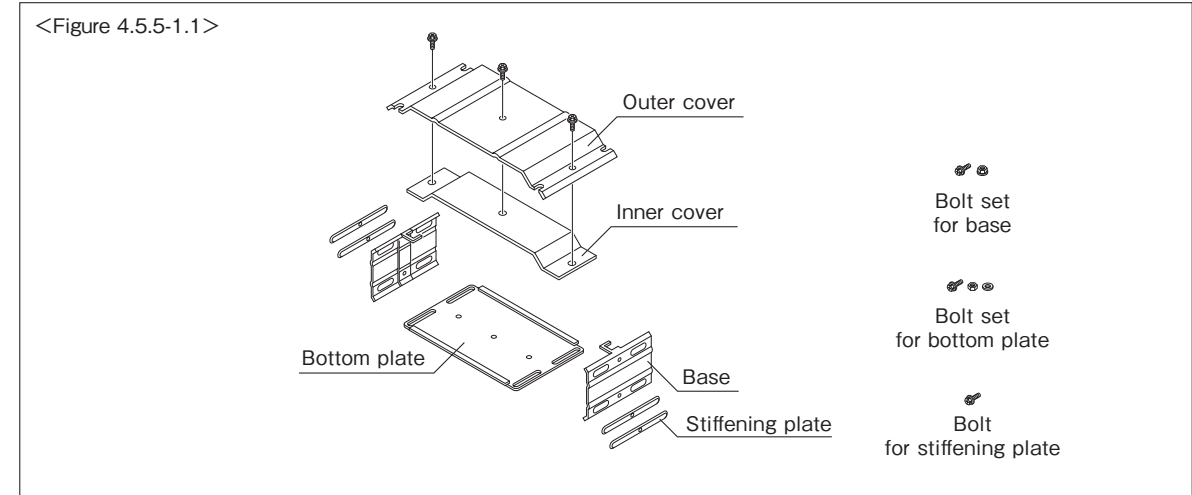
This is the connection length adjustable coupler.
This can be used when the clearance between ducts or fittings is 20mm to 320mm.

※ 900(H) size fittings is excluded.
※ Also check the Design section before performing installation.

2D Barcode
for downloading
the specification
drawing



4.5.5-1 Product configuration



<Table 4.5.5-1.1> Set contents

Size	Cover (outer)	Cover (inner)	Base	Bottom plate	Stiffening plate	Bolt for cover	Bolt set for base	Bolt set for bottom plate	Bolt 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 4.5.5-1.2> Bolt specification

Item	Specifications	Material
Bolt for cover	Sems ⊕ hex M6 × 20L	SUS
Bolt set for base	Sems ⊕ hex M6 × 15L Flange nut M6	SUS
Bolt set for bottom plate	Sems ⊕ hex M6 × 15L	SUS
	Hex nut M6	SUS
	Flat washer M6	SUS
Bolt for stiffening plate	Sems ⊕ hex M6 × 20L	SUS

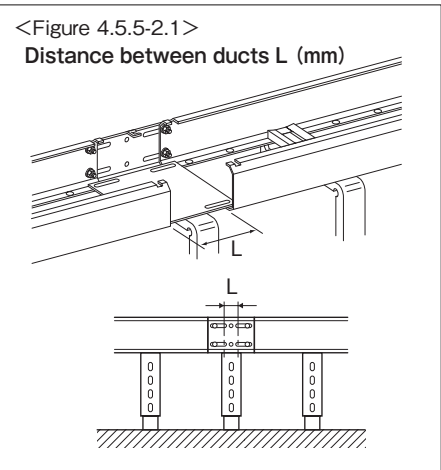
4.5.5-2 Installation of RSS

1 Attach or temporarily place the ducts or fittings, and check the dimension of level difference of the Pipe shaft takeout part (H) (level difference between the inner bottom surface of flange of the wall flange RWP and the bottom surface of duct), or check the distance between the ducts or fittings (L). Based on this value, select the appropriate sliding coupler.

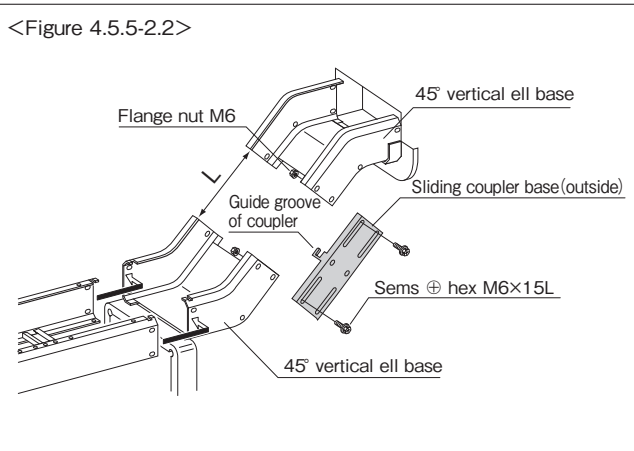
Unit: (mm)

Sliding coupler model number/item	Distance between ducts L
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] Fittings.
※ If the distance L exceeds 320mm, see [3.3.5] RSS sliding coupler.



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



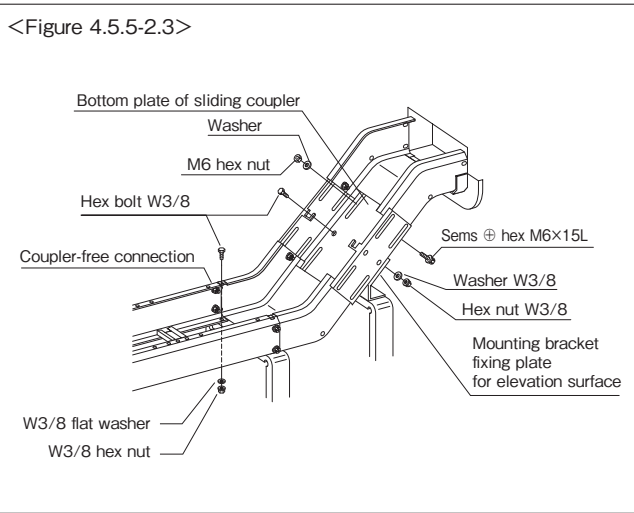
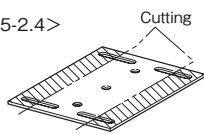
3 Attach the bottom plate of sliding coupler and the mounting bracket.

Notes on using the bottom plate of sliding coupler

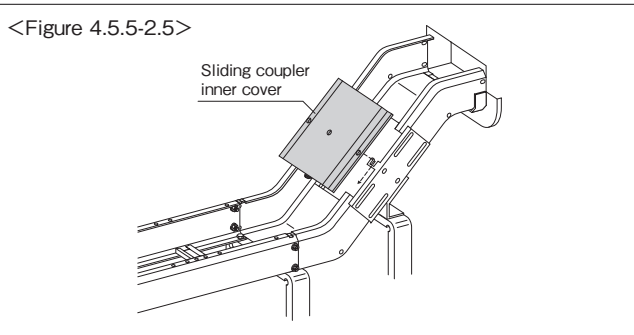
The bottom plate of sliding coupler cannot be attached to a duct other than the straight duct of 2m and 1m, or a fitting other than the 45° vertical ell. If the bottom plate of sliding coupler needs to be attached inevitably, processing the bottom plate of sliding coupler is required. Also in this case, supporting the bottom plate by the mounting bracket is necessary.

※When using as the walkway, cutting is not allowed.

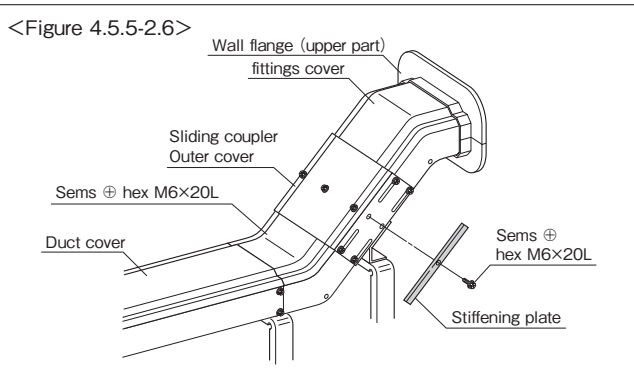
<Figure 4.5.5-2.4>



4 Perform piping, and then insert the sliding coupler cover inner bracket between the guide groove of coupler and the upper part of duct base.



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



Note

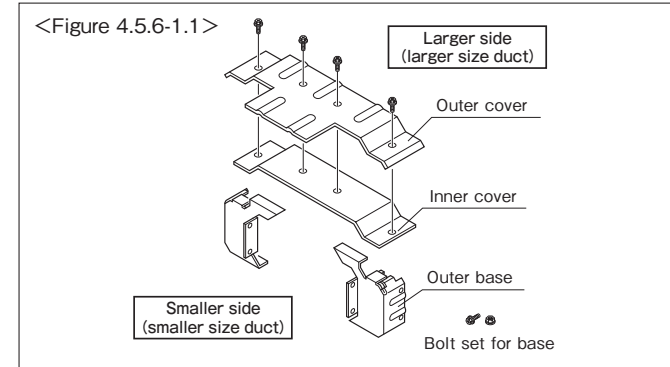
For installation on the wall, it is necessary to take measures to prevent bolts from loosening. For details, see [2.3] Installation method (on the wall surface).

4.5.6 RR reducer (coupler type)

This is the coupler for connecting different size parts.
This can be used in the installation on the floor and installation directly on the wall surface.
※ Also check the Design section before performing installation.
※ For the installation on the wall surface, also check [2.3.3] and [2.3.4] Conditions for installation on the wall surface.



4.5.6-1 Product configuration



<Table 4.5.6-1.2> Set contents

Size of larger side	Cover (outer)	Cover (inner)	Base (outer)	Bolt for cover	Bolt set for base
300	1	1	2 *	2	4
300H				3	
450/450H	1	1	2 *	4	4
600/600H				4	
900/900H				3	

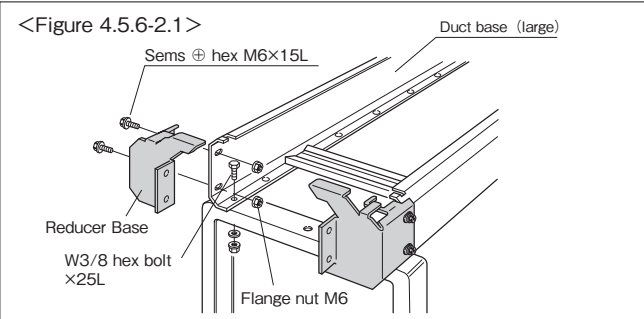
* one each for the right and left

<Table 4.5.6-1.2> Bolt specification

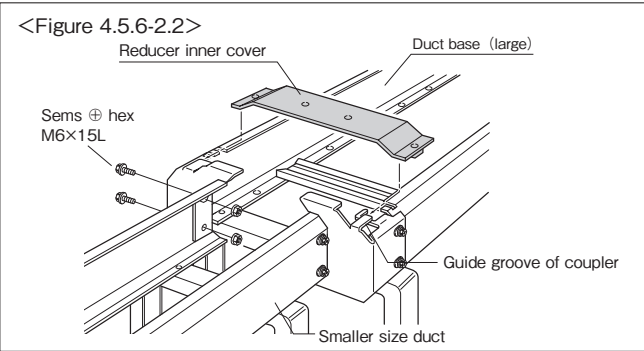
Item	Specifications	Material
Bolt for cover	Sems ⊕ hex M6 × 20L	SUS
Bolt set for base	Sems ⊕ hex M6 × 15L	SUS
	Flange nut M6	SUS

4.5.6-2 Installation of RR (coupler type)

1 Set the mounting bracket at the hole (φ 12) in the duct base of larger size duct. Then, attach the reducer base to the duct base.



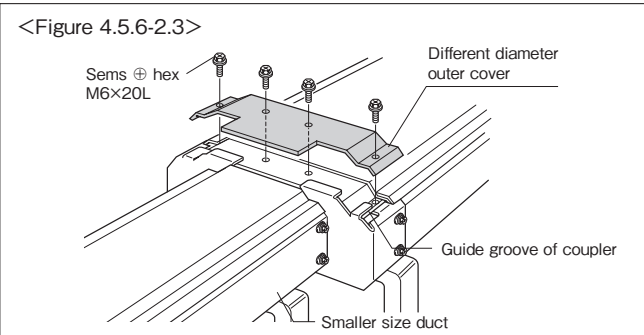
2 Attach and fix the smaller size duct to the reducer base. Perform piping, and then fit the reducer inner cover in the guide groove of coupler.



3 Finally set the cover of duct, and attach the different diameter outer cover.

Note

For installation on the wall, it is necessary to take measures to prevent bolts from loosening. For details, see [2.3] Installation method (on the wall surface).



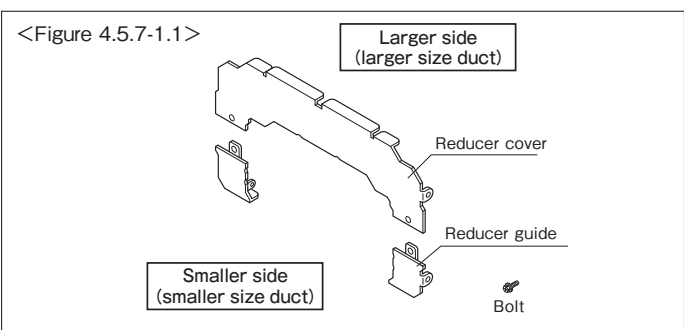
4.5.7 RR reducer (plate type)

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



※ Also check the Design section before performing installation.
※ For the installation on the wall surface, also check [2.3.3] and [2.3.4] Conditions for installation on the wall surface.

4.5.7-1 Product configuration



<Table 4.5.7-1.1> Set contents

Cover	Guide	Bolt
1	2 (one each for the right and left)	8

<Table 4.5.7-1.2> Bolt specification

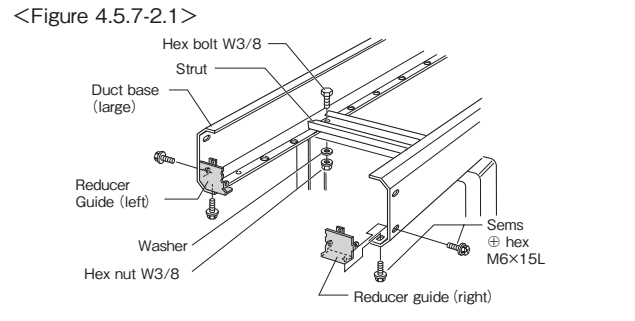
Item	Specifications	Material
Bolt	Sems ⊕ hex M6 × 15L	SUS

4.5.7-2 Installation of RR (plate type)

1 Fix the mounting bracket to the strut of duct. Then, attach the reducer guide to the duct base (large) by using the supplied bolts.

Note

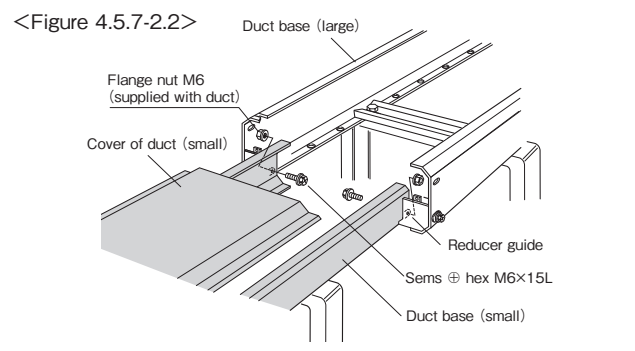
When fixing the mounting bracket to the duct base, fix it at between the strut of each duct and the connection part.



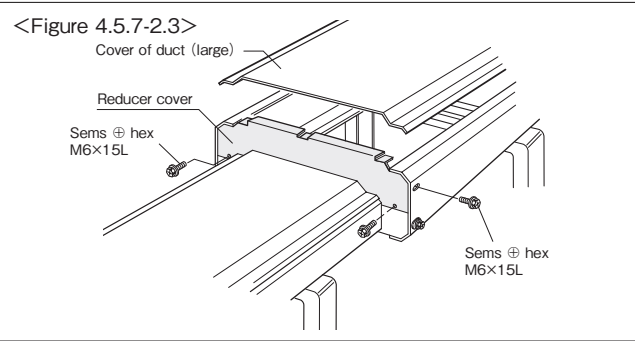
2 Fit the duct (small) into the reducer guide. Attach the duct base (small) to the reducer guide by using the bolts and nuts supplied with the duct (small).

Note

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



3 Finally, set the reducer cover to the duct base (large) and the reducer guide by using the supplied bolts.



4.5.8 RXR reducer for 900(H) size fittings

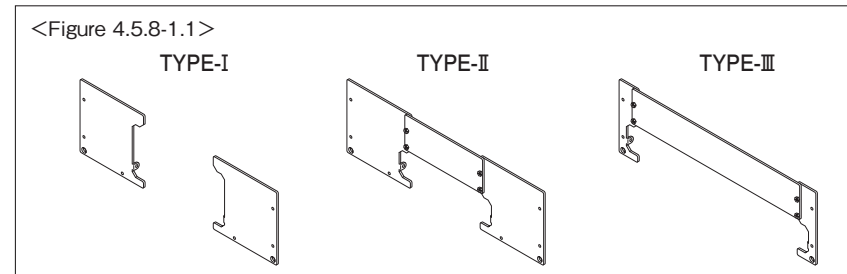
This is the reducer dedicated for use with the 900(H) size fittings.
Since this is the coupler of duct-inserting type, the effective length of duct will become shorter by 20mm.

- ※ Also check the Design section before performing installation.
- ※ For the installation on the wall surface, also check [2.3.3] and [2.3.4] Conditions for installation on the wall surface.

2D Barcode for downloading the specification drawing



4.5.8-1 Product configuration



<Table 4.5.8-1.1>
Set contents

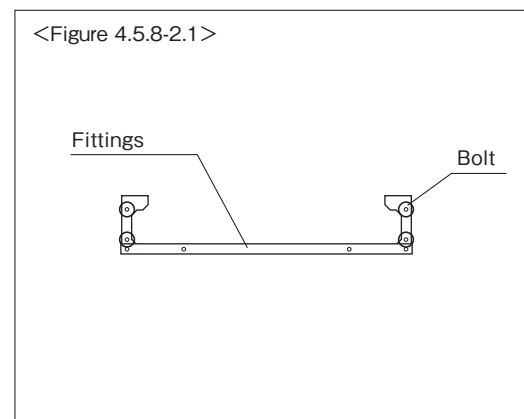
Type	Main unit
TYPE I	2 (one each for the right and left)
TYPE II	1
TYPE III	1

※ Use the bolts supplied with the fittings for attachment.

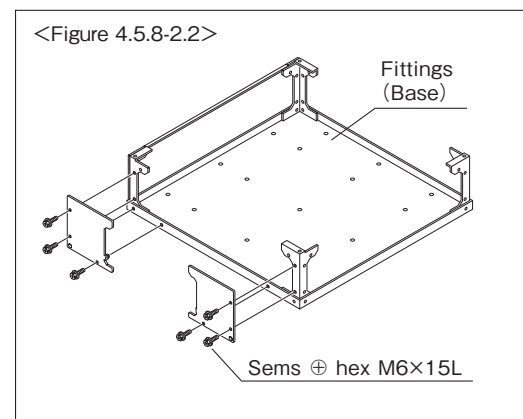
4.5.8-2 Installation of RXR

1 Remove bolt from the fittings.

※ Positions (four positions) enclosed by ○

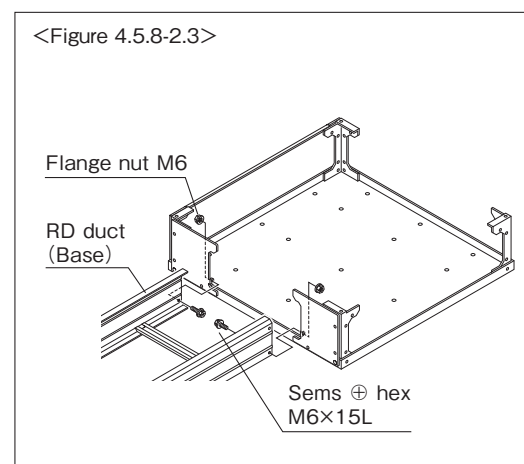


2 Fix RXR with bolts.

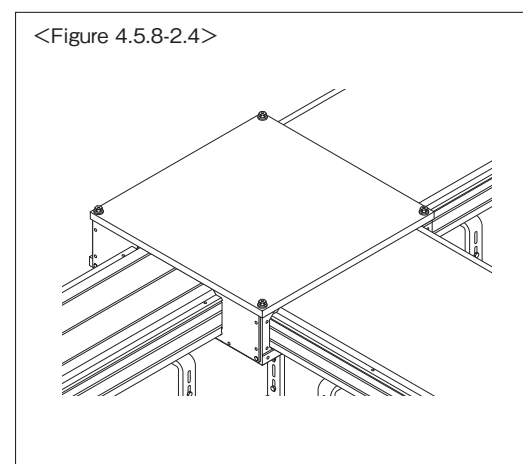


3 Fit in the duct, and fix it with bolts.

※ Bolts are supplied with the duct.



4 Perform piping, and then finally set the cover. For installation of the fittings, see pages of each fitting.



4.5.9 RXJ coupler for 900(H) size fittings

This is the coupler RXJ for connecting 900(H) size fittings each other except for RCF.

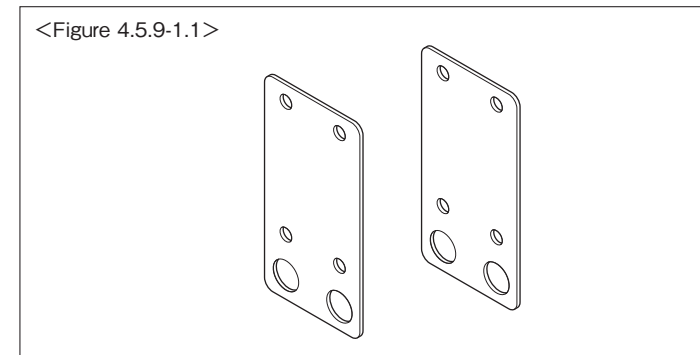
Note For the installational reason, some gap is formed.

- ※ Also check the Design section before performing installation.

2D Barcode for downloading the specification drawing



4.5.9-1 Product configuration

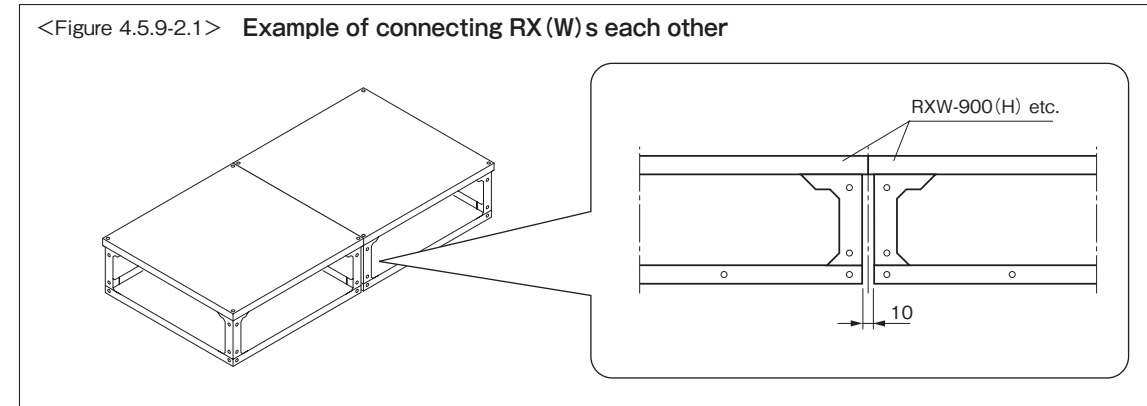


<Table 4.5.9-1.1> Set contents

Size	Main unit
900/900H	2

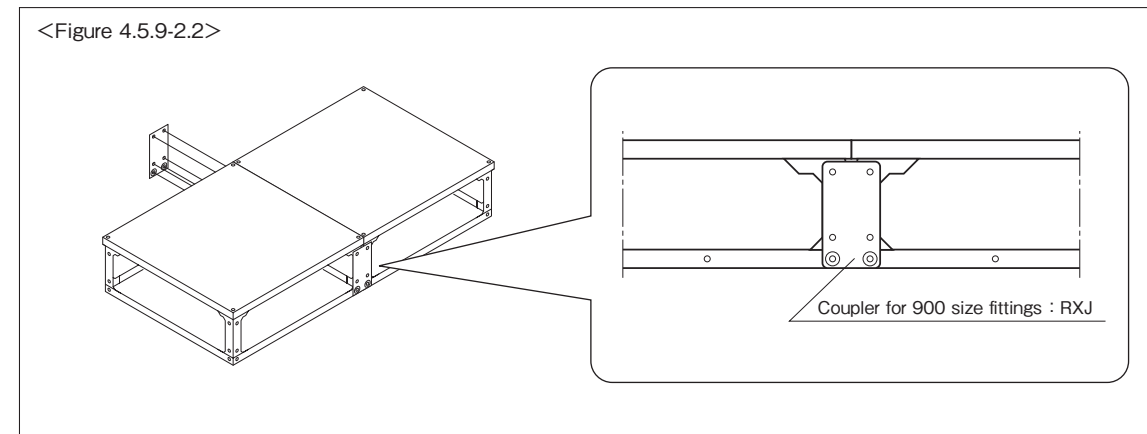
4.5.9-2 Installation of RXJ

1 Make the coupler parts of RX(W)s butt each other.



2 Connect the fittings (RX(W)s in this example) by fixing RXJs to the fittings from the both sides.

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



4.5.10 RXSS/RXSSW box joint sliding coupler

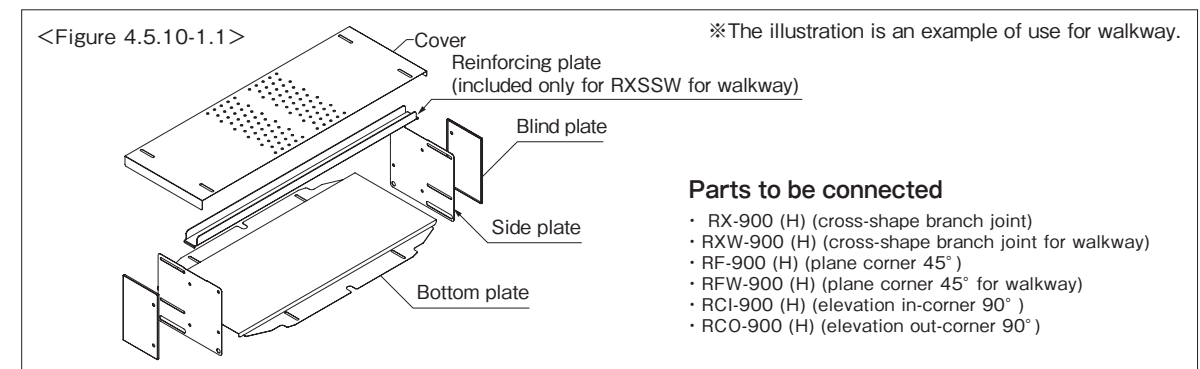
This installation is used to connect one box to another using the sliding coupler. It is used for connecting a plane corner between RX and RX or an elevation corner between RCI and RCO.

※Check instructions on the [Design] page before installation.

2D Barcode for downloading the specification drawing



4.5.10-1 Product configuration



<table 4.5.10-1.1> Set contents

Model number	Cover	Reinforcing plate	Bottom plate	Blind plate	Side plate	Screw set for the cover	Screw set for the blind plate
RXSS(W)-900(H)-1	1	1	1	2	2	4	4
RXSS(W)-900(H)-2	1	1	1	2	2	4	4
RXSS(W)-900(H)-3	1	1	1	2	2	4	4

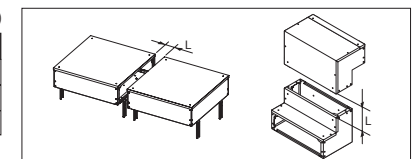
<table 4.5.10-1.2> Bolt specifications

Items	Specifications	Material
Screw set for the cover	Sems ⊕ hex bolt M6 × 15	SUS
	Flange nut M6	SUS
Screw set for the blind plate	Sems ⊕ hex bolt M6 × 15L	SUS
	Flange nut M6L	SUS

<Applicable sliding adjustment width>

Model number	Adjustment width L
RXSS(W)-900(H)-1	0~100
RXSS(W)-900(H)-2	100~200
RXSS(W)-900(H)-3	200~300

Unit: (mm)



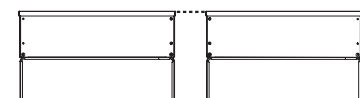
4.5.10-2 Example of RXSS assembly (1) <plane corner (example) RX-RX connection>

- 1 Attach the bottom plate using the sems ⊕ hex bolts and flange nuts supplied (4 locations in total).

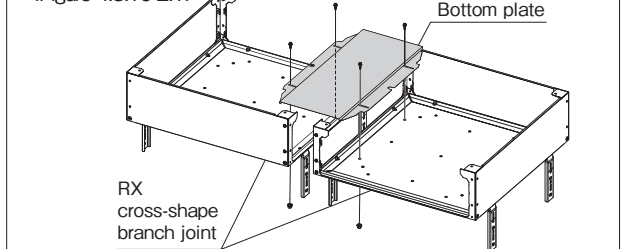
Note

Make adjustment to have the top at the same height.

<Figure 4.5.10-2.2>



<Figure 4.5.10-2.1>



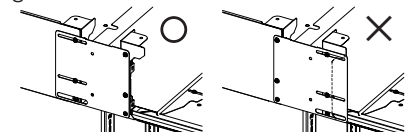
- 2 Remove the sems ⊕ hex bolts, which are supplied with RX, and attach and tighten the RX side plates and sliding coupler side plates together (8 locations in total).

When the sliding adjustment width is 0 to 15 mm
Fill the holes (2 places) at the center of the sliding coupler side plates using the supplied sems ⊕ hex bolts and flange nuts in advance.

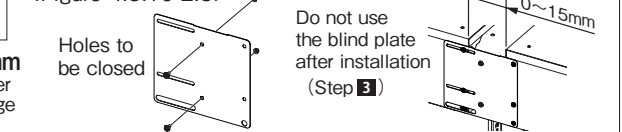
Note

The sliding coupler side plate can be mounted on either the front or rear side. However, mount it so that the sliding part does not protrude into the piping route. If the side plate protrudes, the duct cannot be installed.

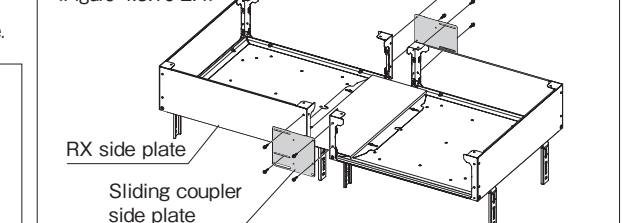
<Figure 4.5.10-2.5>



<Figure 4.5.10-2.3>



<Figure 4.5.10-2.4>

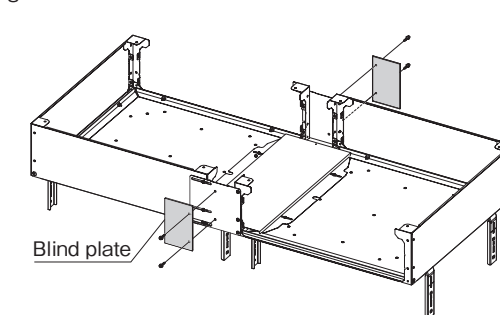


- 3 Attach the blind plate using the sems ⊕ hex bolts and flange nuts supplied (4 locations in total).

Note

Do not use the blind plate when the sliding adjustment width is 0 to 15 mm.

<Figure 4.5.10-2.5>

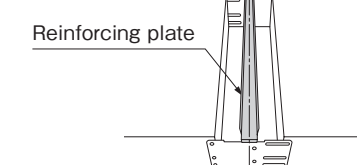


- 4 Attach the RX (W) reinforcing plate, the cover and the sliding coupler cover to RX (W) in that order and tighten them together with the supplied screws (4 locations in total).

Note

For walkways, install the reinforcing plate at the center between the parts.

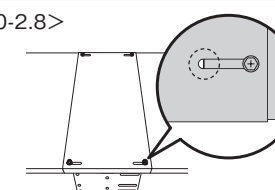
<Figure 4.5.10-2.7>



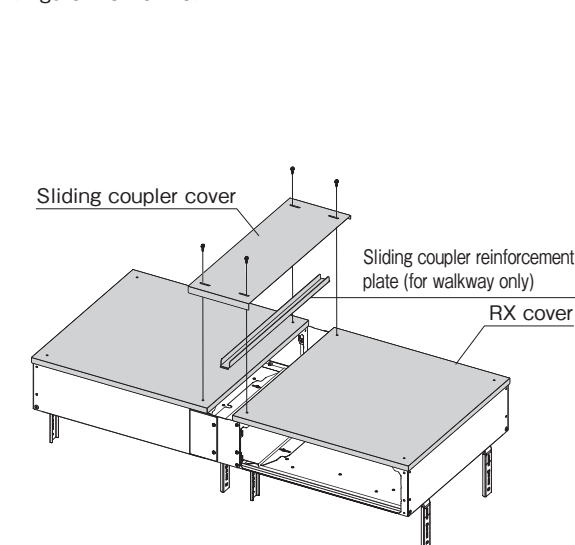
Note

Do not exceed the applicable sliding adjustment width for use. Exceeding the applicable sliding adjustment width for use may generate a gap in the long hole of the sliding coupler cover.

<Figure 4.5.10-2.8>



<Figure 4.5.10-2.6>



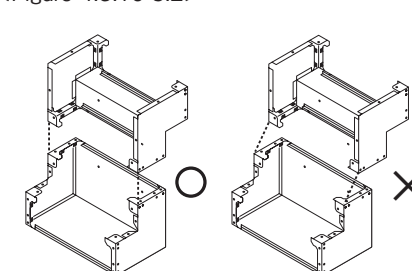
4.5.10-3 Example of RXSS assembly (2) <elevation corner (example) RCI-RCO connection>

- 1 Attach the bottom plate using the sems ⊕ hex bolts and flange nuts supplied (4 locations in total).

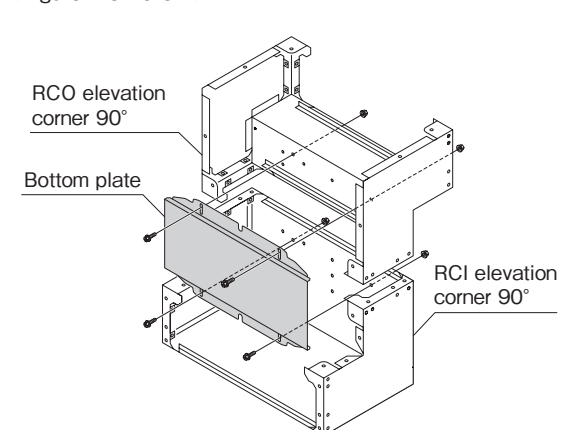
Note

Make adjustment to have the cover mounting surface at the same height.

<Figure 4.5.10-3.2>

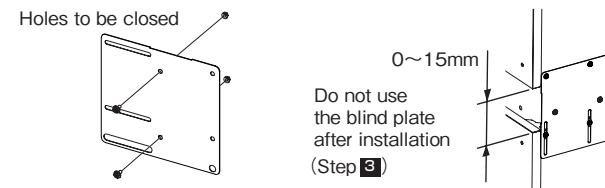


<Figure 4.5.10-3.1>



When the sliding adjustment width is 0 to 15 mm

Fill the holes (2 places) at the center of the sliding coupler side plates using the supplied sems ⊕ hex bolts and flange nuts in advance.

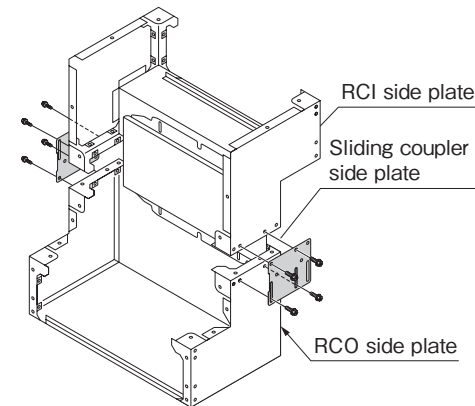


- 2 Remove the sems ⊕ hex bolts, which are supplied with RCI and RCO, and tighten the RCI and RCO side plates and sliding coupler side plates together (8 locations in total).

Note

The sliding coupler side plate can be mounted on either the front or rear side.

<Figure 4.5.10-3.3>

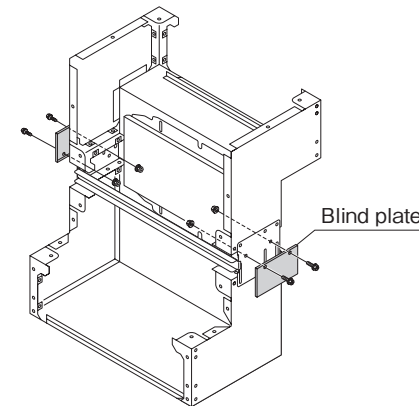


- 3 Attach the blind plate using the sems ⊕ hex bolts and flange nuts supplied (4 locations in total).

Note

Do not use the blind plate when the sliding adjustment width is 0 to 15 mm.

<Figure 4.5.10-3.4>

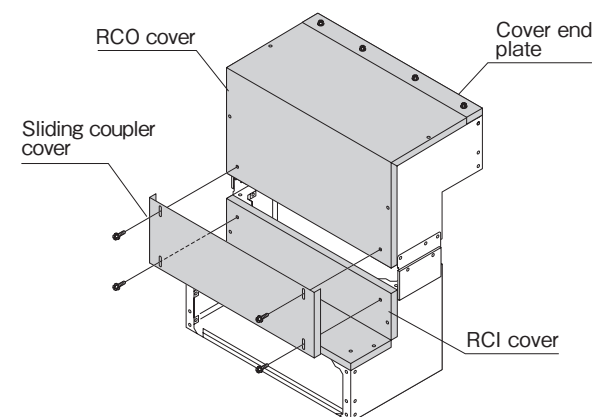


- 4 Attach the RCI and RCO cover and the sliding coupler cover in that order and tighten them together with the screws supplied with RCI and RCO (4 locations in total).

Note

Attach the RCO cover end plate to the side where the sliding coupler is not installed.

<Figure 4.5.10-3.5>



4.5.11 RCSS sliding coupler for RCSS RCF-900 (H)-SUS

It is a coupler that can adjust the connection length for the 900 size elevation corner 45° (for SUS). This coupler accommodates a gap ranging from 13 mm to 313 mm between the corner parts.

※Check instructions on the [Design] page before installation.

Parts to be connected

• RCF-900 (H)-SUS (elevation corner 45°)

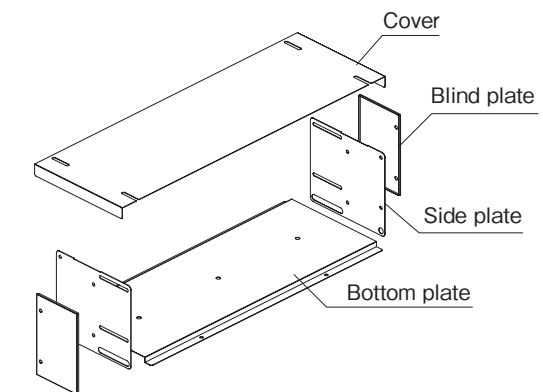
2D Barcode
for downloading
the specification
drawing

RCSS



4.5.11-1 Product configuration

<Figure 4.5.11-1.1>



<table 4.5.11-1.1> Set contents

Model number	Cover	Bottom plate	Blind plate	Side plate	Screw set for the bottom plate	Screw set for the blind plate	Washer for the cover
RCSS-900(H)-1	1	1	2	2	4	4	4
RCSS-900(H)-2	1	1	2	2	4	4	4
RCSS-900(H)-3	1	1	2	2	4	4	4

<table 4.5.11-1.2> Bolt specifications

Items	Specifications	Material
Screw set for the cover	Sems ⊕ hex bolt M6 x 15L	SUS
	Flange nut M6	SUS
Screw set for the blind plate	Sems ⊕ hex bolt M6 x 15L	SUS
	Flange nut M6	SUS
Washer for the cover	Flat washer W3/8	SUS

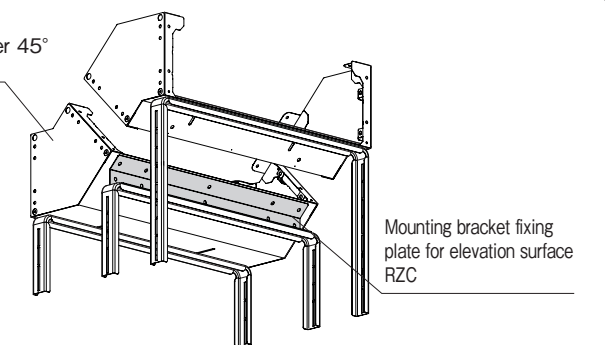
4.5.11-2 Example of RCSS assembly

When the sliding adjustment width is as indicated in the table below

Model number	Adjustment width L Unit: (mm)
RCSS-900(H)-1	83 or less
RCSS-900(H)-2	133 or less
RCSS-900(H)-3	—

Attach RZC (mounting bracket fixing plate for elevation surface) to RCF (l elevation corner 45°) before attaching the bottom plate. (Steps 1 and 2 are reversed)

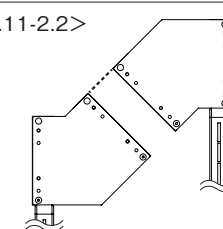
Elevation corner 45°
RCFI



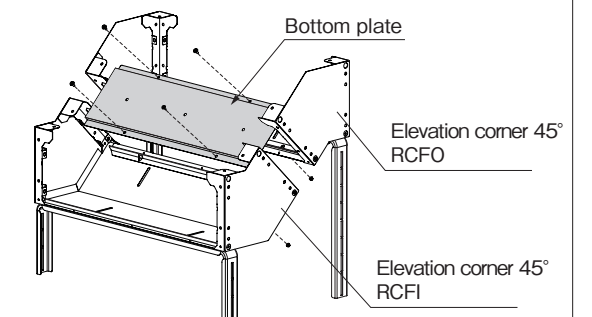
- 1 Attach the bottom plate using the sems ⊕ hex bolts and flange nuts supplied (4 locations in total).

Note Make adjustment to have the cover mounting surface of RCFI and RCFO at the same height.

<Figure 4.5.11-2.2>

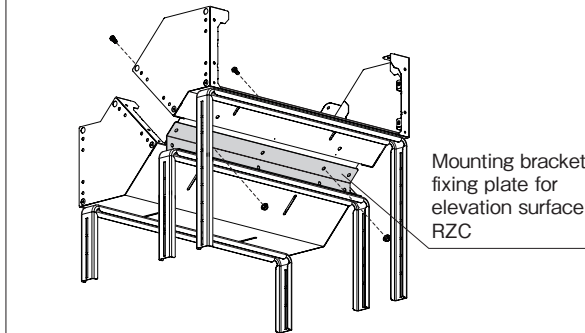


<Figure 4.5.11-2.1>



- 2** Attach RZC to the bottom plate using the bolt set supplied with RZC (2 locations in total).

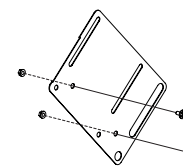
<Figure 4.5.11-2.3>



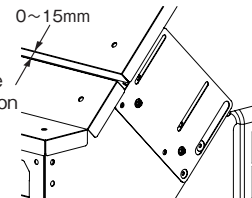
When the sliding adjustment width is 0 to 15 mm

Fill the holes (2 places) at the center of the sliding coupler side plates using the supplied sems ⊕ hex bolts and flange nuts in advance.

Holes to be closed



Do not use the blind plate after installation (Step 4)

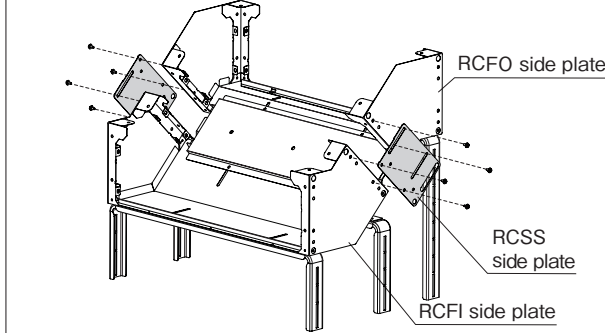


- 3** Remove the sems ⊕ hex bolts, which are supplied with RCFI and RCFO, and attach and tighten the RCFI and RCFO side plates and the RCSS side plates together in this order (8 locations in total).

Note

The RCSS side plate can be mounted on either the front or rear side.

<Figure 4.5.11-2.4>

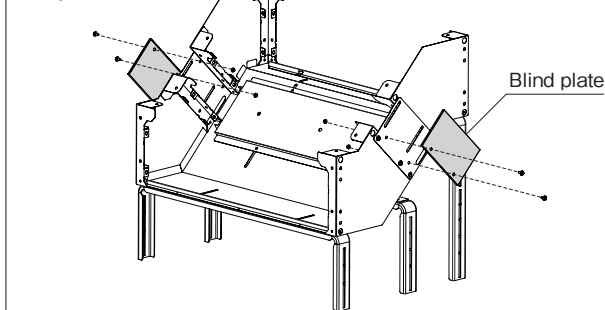


- 4** Attach the blind plate using the sems ⊕ hex bolts and flange nuts, which are supplied (4 locations in total).

Note

Do not use the blind plate when the sliding adjustment width is 0 to 15 mm.

<Figure 4.5.11-2.5>

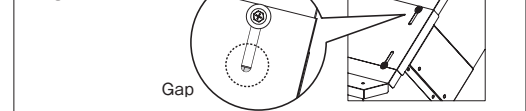


- 5** Adding the supplied flat washer to the sems ⊕ hex bolt supplied with RCFI and RCFO, attach the RCFI and RCFO covers and the RCSS cover together in this order in a way in which the cutout side of the cover is positioned on the side of RCFI (4 locations in total).

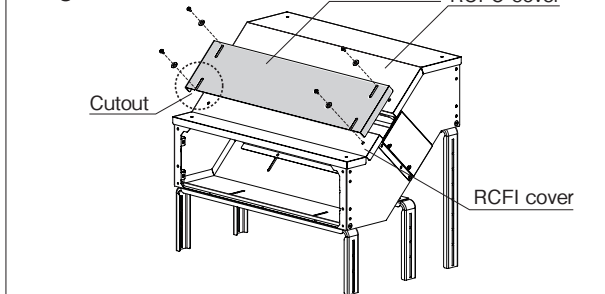
Note

- Installation may fail, if the cutout side is positioned on the side of RCFO.
- Installation may not be secured sufficiently, if a flat washer is not added. Do not exceed the applicable sliding adjustment width for use.
- A gap may be generated in the long hole of the RCSS cover, if exceeding the applicable sliding adjustment width for use.

<Figure 4.5.11-2.7>



<Figure 4.5.11-2.6>

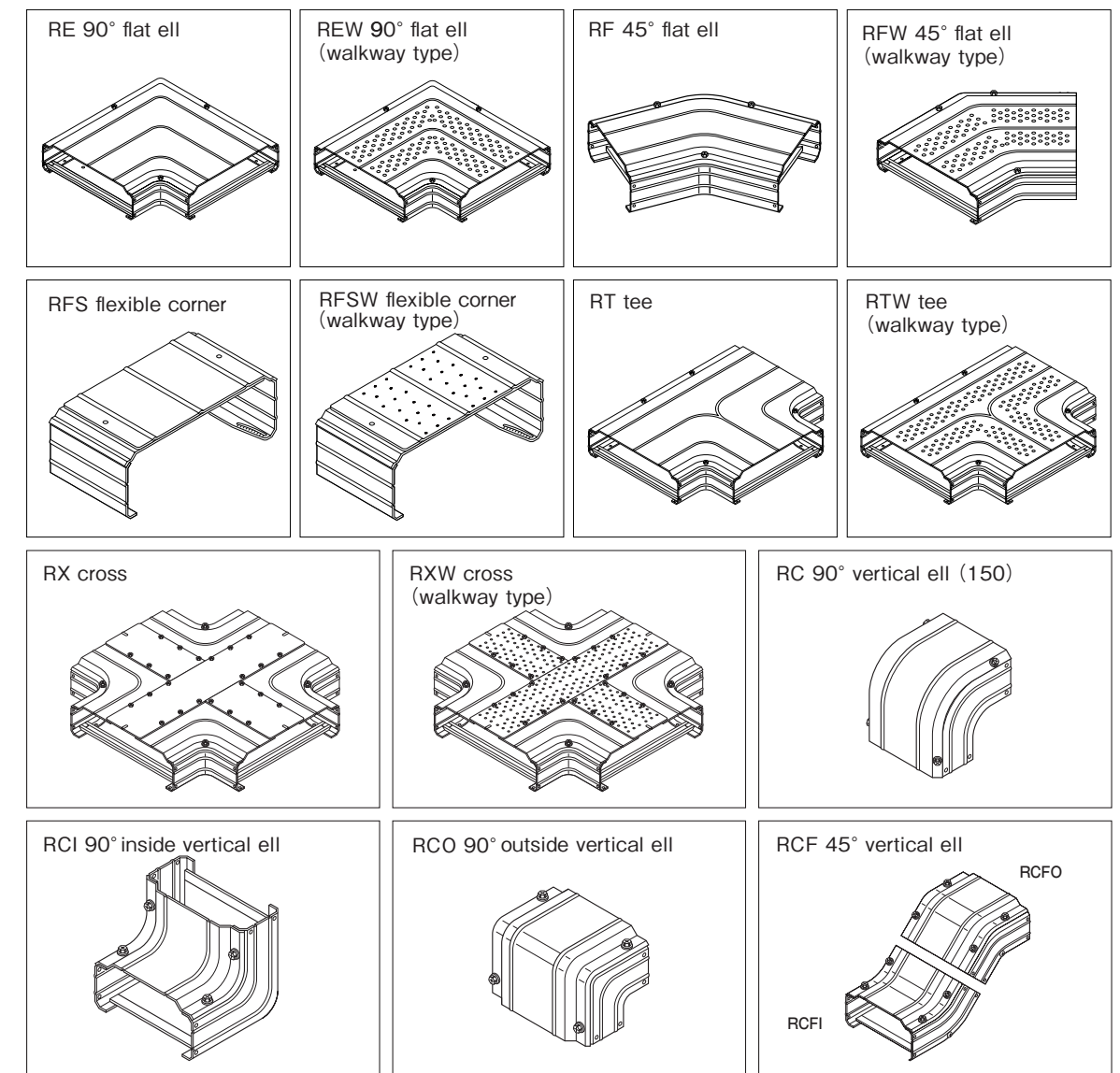


4.6 Fittings

Table of contents

4.6.1	Fittings list	119
4.6.2	RE 90° flat ell	120
4.6.3	REW 90° flat ell (walkway type)	122
4.6.4	RF 45° flat ell	123
4.6.5	RFW 45° flat ell (walkway type)	125
4.6.6	RFS flexible corner	127
4.6.7	RFSW flexible corner (walkway type)	129
4.6.8	RT tee	131
4.6.9	RTW tee (walkway type)	133
4.6.10	RXN/RX cross	134
4.6.11	RXNW/RXW cross (walkway type)	136
4.6.12	RCI 90° inside vertical ell	138
4.6.13	RCO 90° outside vertical ell	140
4.6.14	RC 90° vertical ell (150)	143
4.6.15	RCF 45° vertical ell	144

4.6.1 Fittings list



4.6.2 RE 90° flat ell

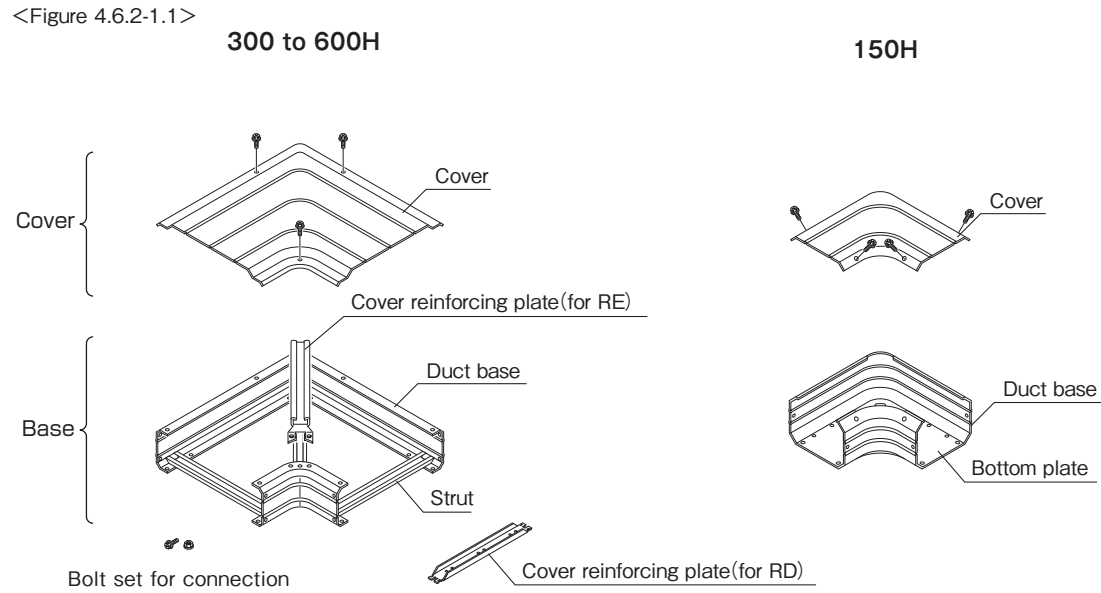
Plane surface type 90° elbow.
Note that the attachment method differs depending on the size.

※ Also check the Design section before performing installation.

2D Barcode
for downloading
the specification
drawing



4.6.2-1 Product configuration



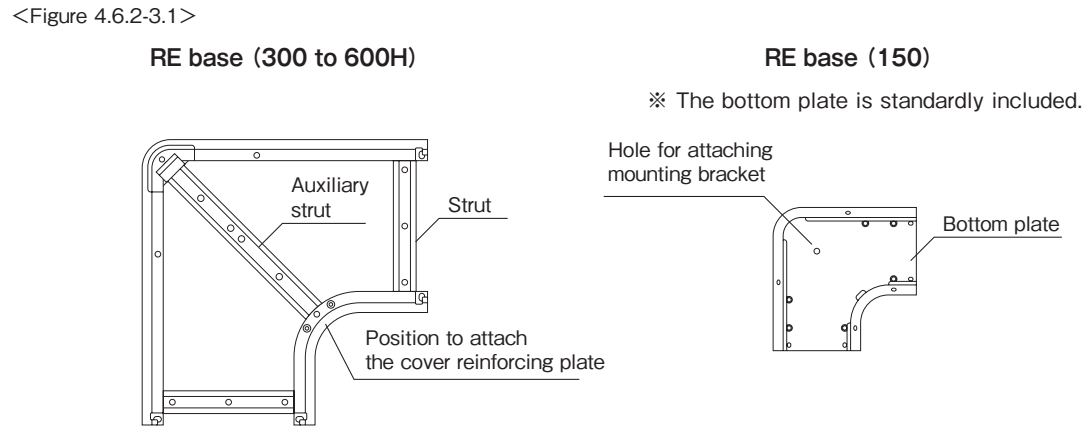
<Table 4.6.2-1.1> Set contents

Size	Base	Cover	Bottom plate	Cover bolt (pieces)	Bolt set for connection	Cover 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> Bolt specification

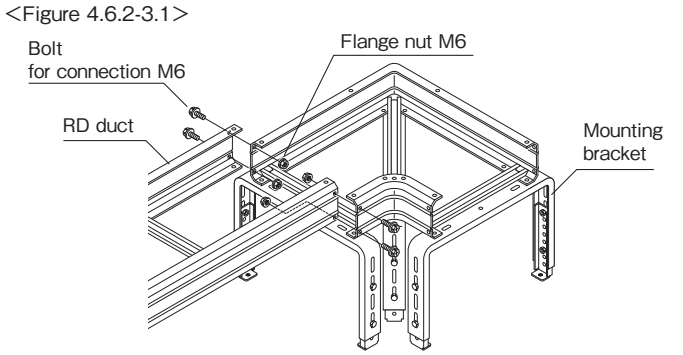
Item	Specification	Material
Cover bolt	Sems ⊕ hex M6×15L	SUS
Bolt set for connection	Sems ⊕ hex M6×15L	SUS
	Flange nut M6	SUS

4.6.2-3 Base top view



4.6.2-3 Example of assembling and attaching RE (1) (300 to 600H)

1 Place RE temporarily on the mounting bracket and connect it to the duct.

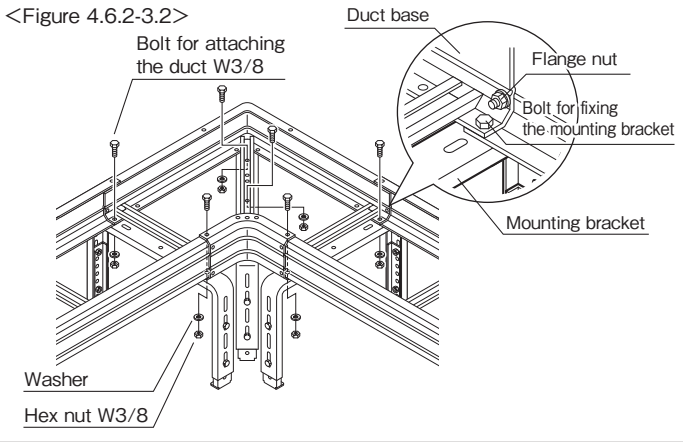


2 Secure the connection part to the mounting bracket.

※Bolts, nuts and washers for attaching the duct are supplied with the mounting bracket.

Perform piping, and then finally attach the cover reinforcing plate*and the cover.

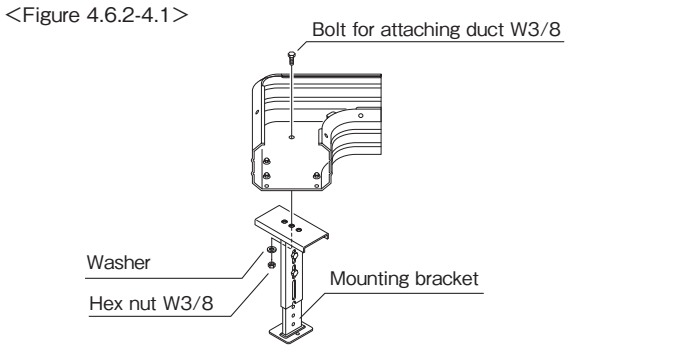
* 600/600H size only
※ For the coupler-free connection or when free coupler S/H type is used, attach the cover reinforcing plate also to the connection part. (600/600H size only)



4.6.2-4 Example of assembling and attaching RE (2) 150

1 Attach the mounting bracket to the bottom plate of RE.

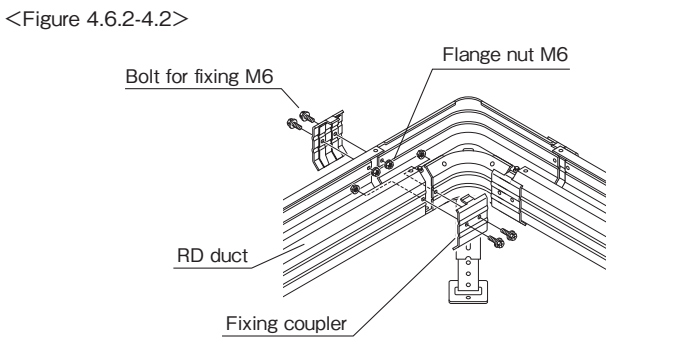
※Bolts, nuts and washers for attaching the duct are supplied with the mounting bracket.



2 Connect RE and the duct by using the fixing coupler.

Reference [4.5.3] RSJ fixing coupler

Perform piping, and then finally set the cover.



4.6.3 REW 90° flat ell (walkway type)

Plane surface type 90° elbow (walkway type).
Note that the reinforcing plate attachment position differs depending on the size.

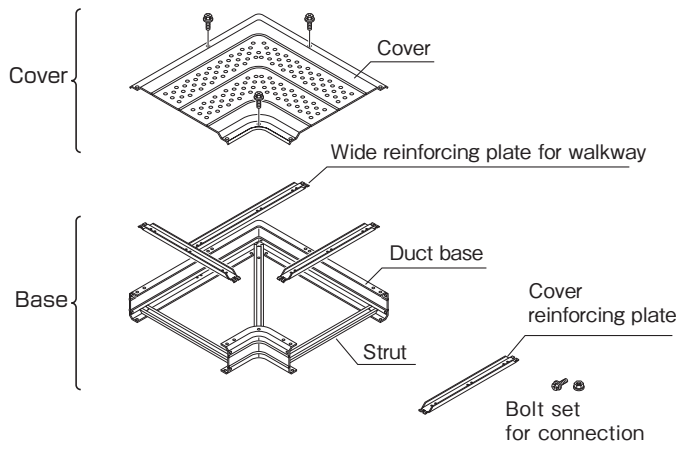
※ Also check the Design section before performing installation.

2D Barcode
for downloading
the specification
drawing



4.6.3-1 Product configuration

<Figure 4.6.3-1.1>



<Table 4.6.3-1.1> Set contents

Size	Cover	Base	Bottom plate
300/300H	1	1	0
450/450H	1	1	0
600/600H	1	1	0

Size	Cover bolt	Bolt set for connection
300/300H	3	4
450/450H	3	4
600/600H	3	4

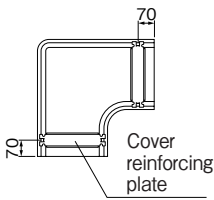
Size	Wide reinforcing plate for walkway NT	Cover reinforcing plate
300/300H	0	2
450/450H	1	1
600/600H	1	1

<Table 4.6.3-1.2> Bolt specification

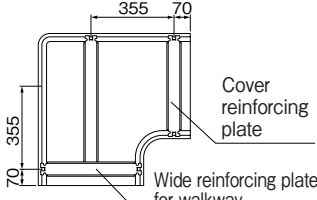
Items	Specification	Material
Cover bolt	Sems ⊕ hex M6×15L	SUS
Bolt set for connection	Sems ⊕ hex M6×15L Flange nut M6	SUS

4.6.3-2 Position to attach the reinforcing plate

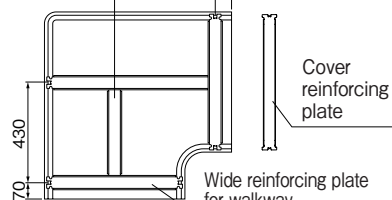
<Figure 4.6.3-2.1> 300/300H type



450/450H type



600/600H type



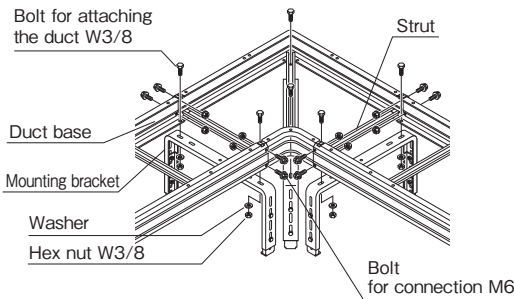
4.6.3-3 Installation of REW

1 Fit in the duct bases each other with an overlap of 20mm, fix them to the mounting bracket, and then fix the overlapped parts by bolting from the sides.

※Bolts, nuts and washers for attaching the duct are supplied with the mounting bracket.

Warning Be sure to set at least three mounting brackets.

<Figure 4.6.3-3.1>

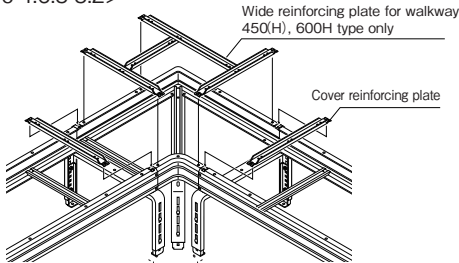


2 Perform piping, and then attach each reinforcing plate to the positions as shown in the table "Position to attach the reinforcing Plate" above.
Set the cover of walkway type.

※ For beautiful finish, set the cover of 90° flat ell walkway type first, and then set the cover of straight duct.

※ For the coupler-free connection or when free coupler S/H type is used, attach the cover reinforcing plate to the connection part. (600/600H type only)

<Figure 4.6.3-3.2>



4.6.4 RF 45° flat ell

Plane surface type 45° elbow.
Note that the attachment method differs depending on the size.

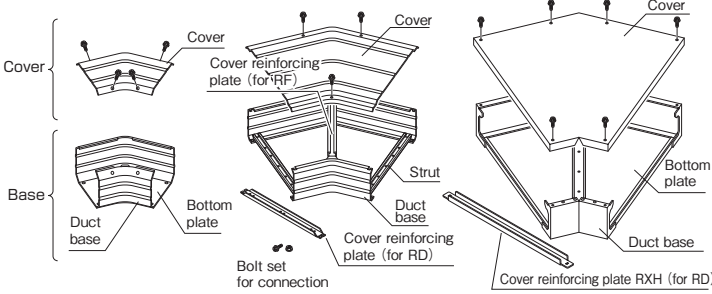
※ Also check the Design section before performing installation.

2D Barcode
for downloading
the specification
drawing



4.6.4-1 Product configuration

<Figure 4.6.4-1.1> (150)



<Table 4.6.4-2.1> Set contents

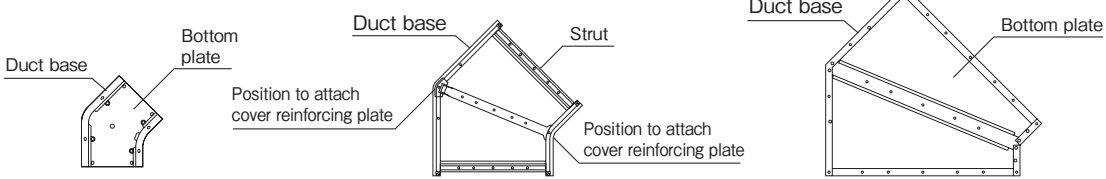
Size	Base	Cover	Bottom plate	Cover reinforcing plate (for RF/for RD)	Cover bolt	Bolt set for connection
150	1	1	1	0/0	4	0
300/300H	1	1	0	0/0	3	4
450/450H	1	1	0	0/0	3	4
600/600H	1	1	0	1/1	3	4
900/900H	1	1	2	0/2	6	8

<Table 4.6.4-2.2> Bolt specification

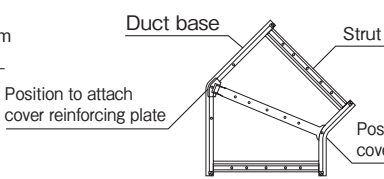
Items	Specification	Material
Cover bolt	Sems ⊕ hex M6×15L	SUS
Bolt set for connection	Sems ⊕ hex M6×15L Flange nut M6	SUS

4.6.4-2 Position to attach the cover reinforcing plate (base top view)

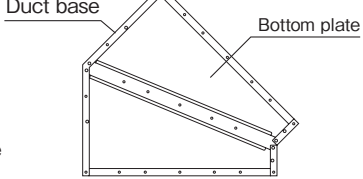
<Figure 4.6.4-2.1> (150)



(300 to 600H)



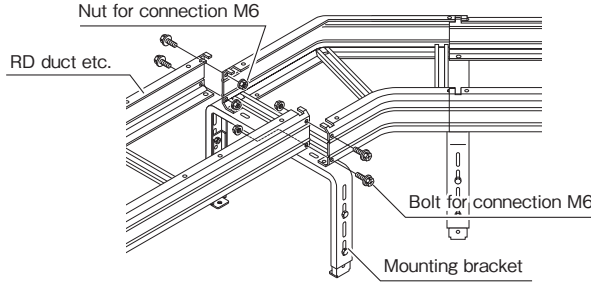
(900-900H)



4.6.4-3 Example of assembling and attaching RF (1) <300 to 600H>

1 Place RF temporarily on the mounting bracket and connect it to the duct.

<Figure 4.6.4-3.1>



2 Fix the connection part to the mounting bracket.

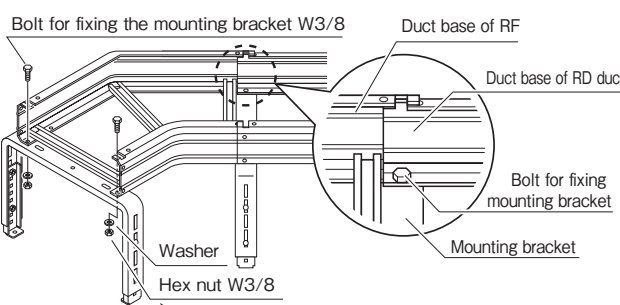
※Bolts, nuts and washers for attaching the duct are supplied with the mounting bracket.

Perform piping, and then finally attach the cover reinforcing plate*and the cover.

* 600/600H size only

※ For the coupler-free connection or when free coupler S/H type is used, attach the cover reinforcing plate also to the connection part. (600/600H size only)

<Figure 4.6.4-3.2>

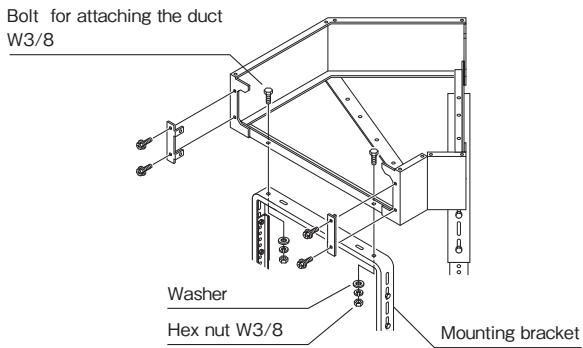


4.6.4-4 Example of assembling and attaching RF (2) <900 to 900H>

1 Set the mounting bracket at the bottom plate of RF.

※Bolts, nuts and washers for attaching the duct are supplied with the mounting bracket.

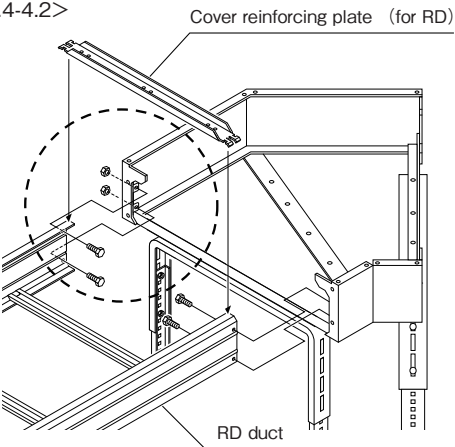
<Figure 4.6.4-4.1>



2 Insert the RD duct and fix it. Perform piping, and then finally attach the cover reinforcing plate* and the cover.

*...Standardly supplied with 900/900H.

<Figure 4.6.4-4.2>

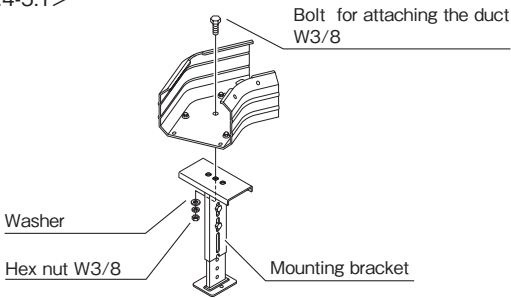


4.6.4-5 Example of assembling and attaching RF (3) <150>

1 Set the mounting bracket at the bottom plate of RF.

※Bolts, nuts and washers for attaching the duct are supplied with the mounting bracket.

<Figure 4.6.4-5.1>

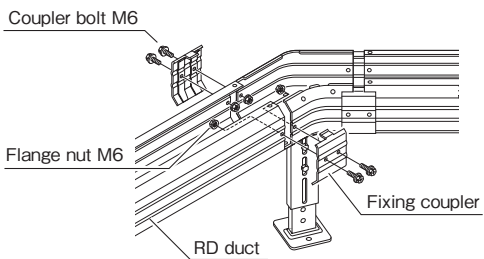


2 Attach the duct to the RF by using the fixing coupler.

Reference [4.5.3] RSJ fixing coupler

Perform piping, and then finally set the cover.

<Figure 4.6.4-5.2>



4.6.5 RFW 45° flat ell (walkway type)

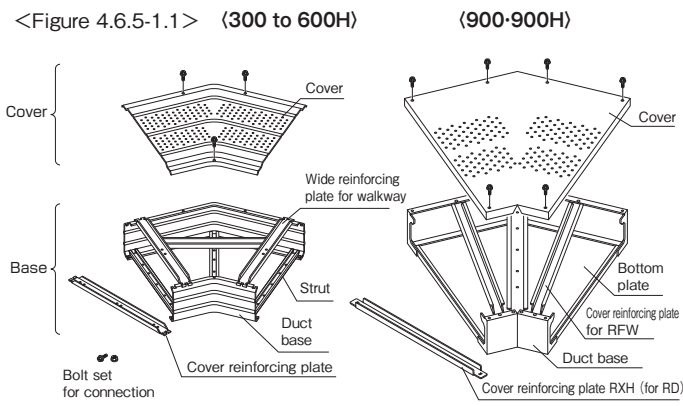
Plane surface type 45° elbow (walkway type).
Note that the reinforcing plate attachment position differs depending on the size.

※ Also check the Design section before performing installation.

2D Barcode for downloading the specification drawing



4.6.5-1 Product configuration



<Table 4.6.5-1.1> Set contents

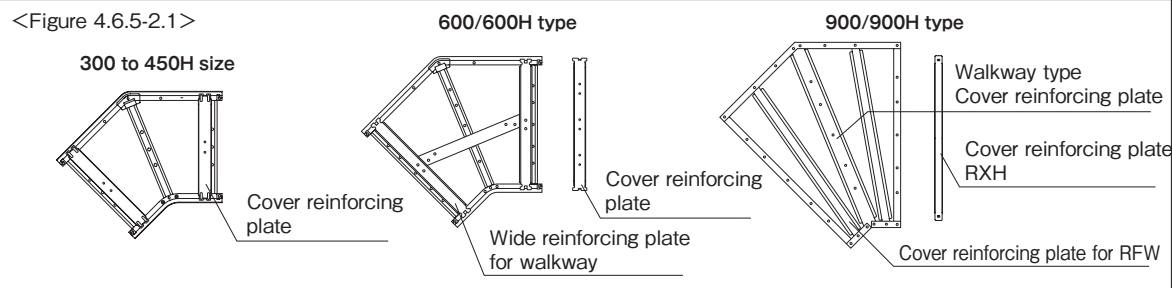
Size	Cover	Base	Bottom plate	Cover bolt	Bolt set for connection
300~450H	1	1	0	3	4
600/600H	1	1	0	3	4
900/900H	1	1	1	6	8

Size	Wide reinforcing plate for walkway NI	Cover reinforcing plate for walkway	Cover reinforcing plate for RFW	Cover 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> Bolt specification

Item	Specification	Material
Cover bolt	Sems ⊕ hex M6×15L	SUS
Bolt set for connection	Sems ⊕ hex M6×15L	SUS
	Flange nut M6	SUS

4.6.5-2 Position to attach the reinforcing plate



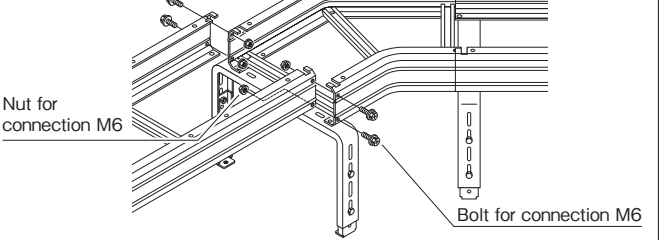
4.6.5-3 Installation of RFW (1) 300 to 600H size

1 Fit in the duct bases with an overlap of 20 mm, secure them to the mounting bracket, and secure the overlapped sides of the base duct bases using bolts.

※Bolts, nuts and washers for attaching the duct are supplied with the mounting bracket.

Warning Be sure to set at least two mounting brackets.

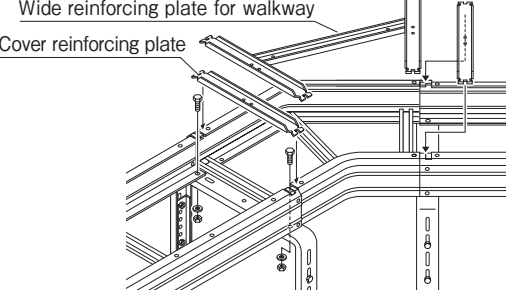
<Figure 4.6.5-3.1>



2 Perform piping, and then attach each reinforcing plate to the positions as shown in the table "Position to attach the reinforcing Plate" above. Set the cover of walkway type.

※ For beautiful finish, set the cover of 45° flat ell walkway type first, and then set the cover of straight duct.

<Figure 4.6.5-3.2>

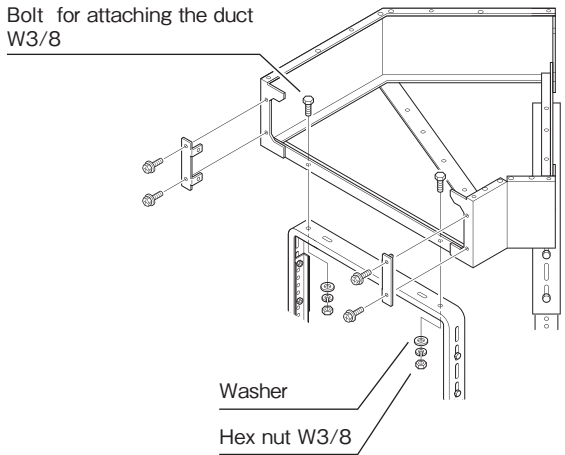


4.6.5-4 Installation of RFW (2) 900/900H type

1 Set the mounting bracket at the bottom plate of RFW (walkway type) .

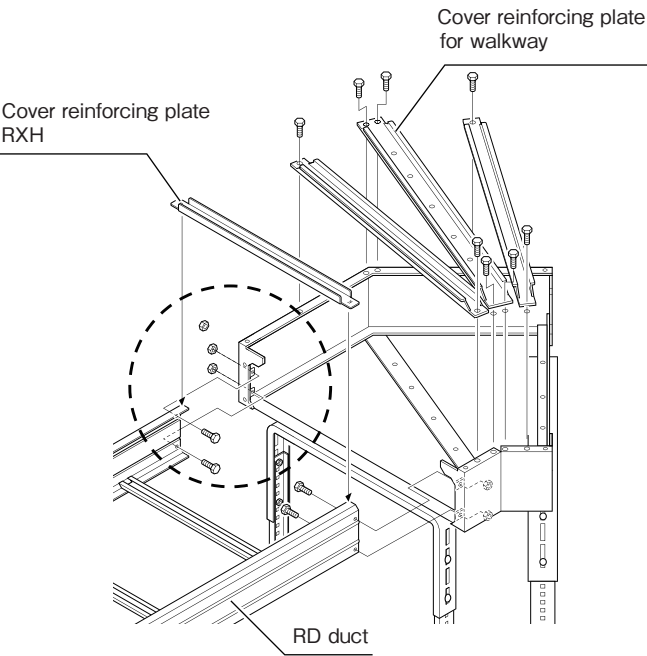
※Bolts, nuts and washers for attaching the duct are supplied with the mounting bracket.

<Figure 4.6.5-4.1>



2 Attach the RXC parts connection bracket for 900(H) to RFW, and then fit in the duct and fix RXC.

<Figure 4.6.5-4.2>



4.6.6 RFS flexible corner

This corner part is angle adjustable in the horizontal plane.

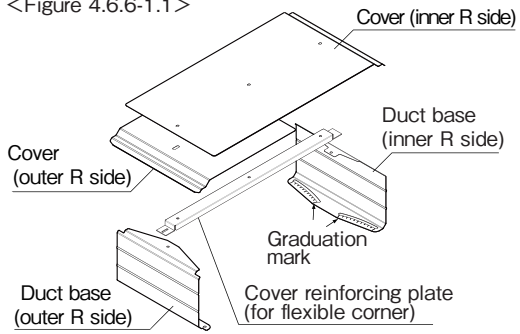
※ Check [Design] Part before starting installation work.

2D Barcode for downloading the specification drawing



4.6.6-1 Product configuration

<Figure 4.6.6-1.1>



<Table 4.6.6-1.1> Set contents

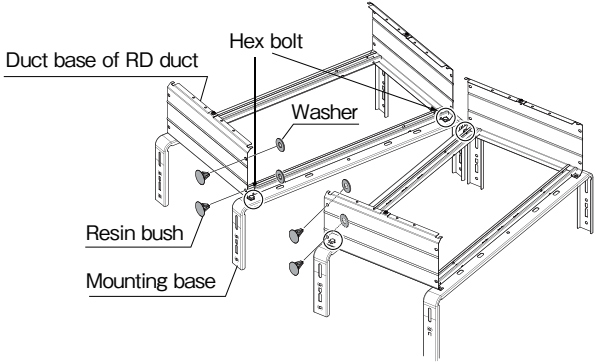
Size	Cover (inner R side)	Cover (outer R side)	Duct base (inner R side)	Duct base (outer R side)	Cover reinforcing plate
300/300H	1	1	1	1	1
450/450H	1	1	1	1	1
600/600H	1	1	1	1	1
900/900H	1	1	1	1	1

Size	Resin bush	Flat washer M8	SEMS⊕ hex M6 x 15L
300/300H	4	4	4
450/450H	4	4	4
600/600H	4	4	4
900/900H	4	4	5

4.6.6-2 Installation of RFW

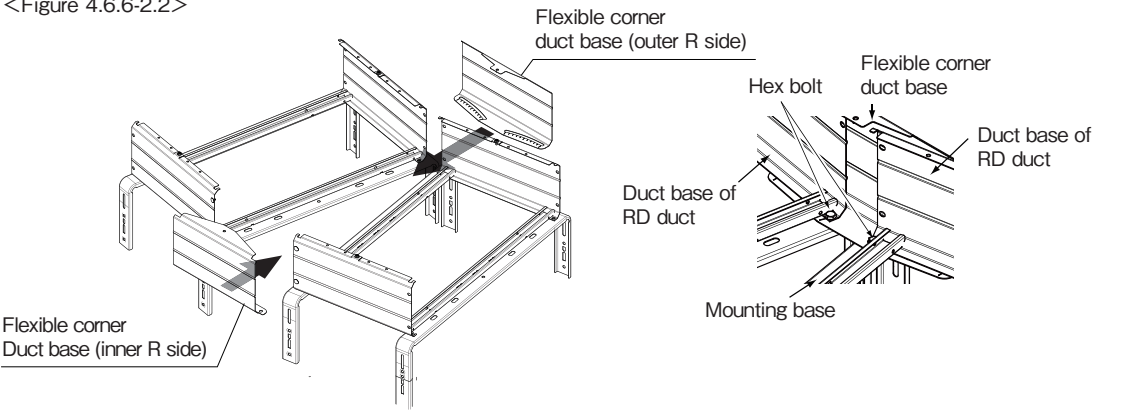
1 Temporarily fix the duct base of the duct to the mounting bracket, using hex bolts and nuts (supplied with the mounting bracket). Insert the resin bush into the hole of the duct base (outer R side) from the outside, and fit the flat washer M8 to the tab on the bush from the inside and secure it.

<Figure 4.6.6-2.1>



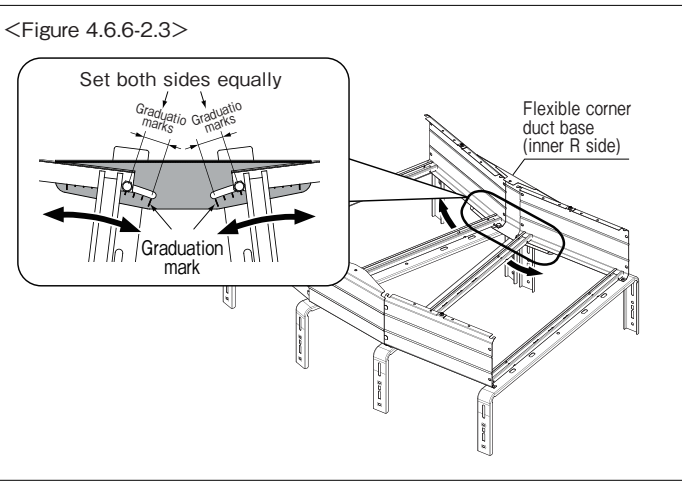
2 Remove the hex bolt that is temporarily fixed, insert the duct base (inner R side and outer R side) between the duct base and mounting bracket, and temporarily fix it again.

<Figure 4.6.6-2.2>

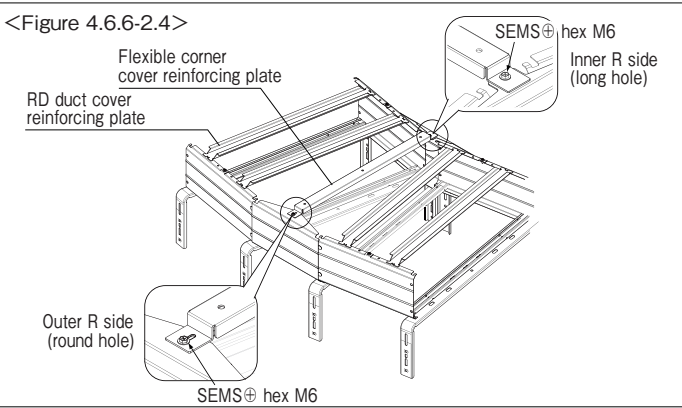


3 With reference to the graduation mark provided on the flexible corner duct base (inner R side), adjust the angle of the RD duct. When the angle has been adjusted, tighten and secure the hex bolts (inner R side and outer R side) that are temporarily fixed.

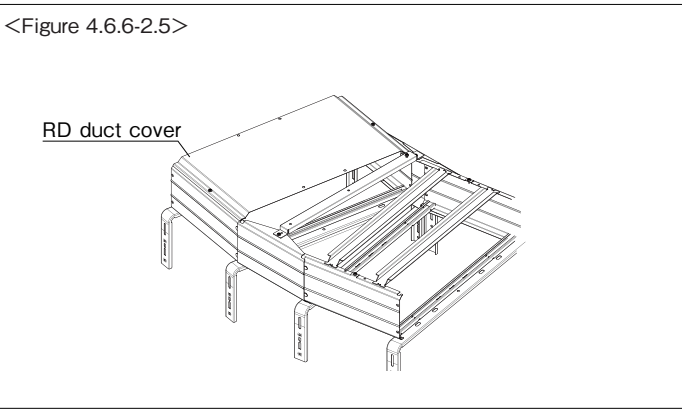
※ The angle can be adjusted in the range between 0° and 20°.
To align the RD duct angle on both sides, use the same graduation mark on both sides.



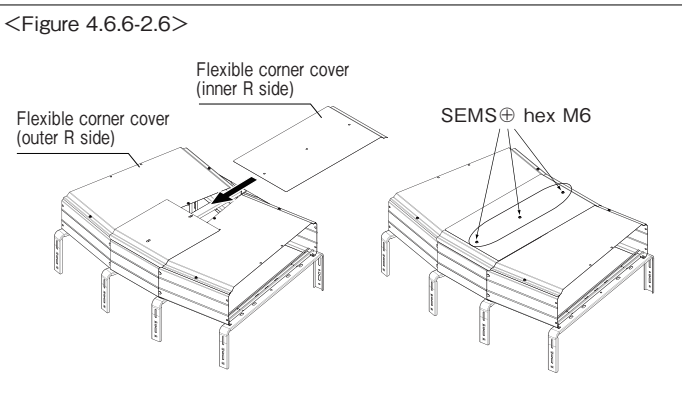
4 Install the piping and attach the duct cover reinforcement plate (the number and position may vary from those indicated in the figure, depending on the size of the duct).



5 Install the duct cover.



6 Attach the RFS cover reinforcing plate to the inner R side (round hole) and the outer R side (long hole) in this order and secure it with the hex bolts that are supplied.



4.6.7 RFSW flexible corner (walkway type)

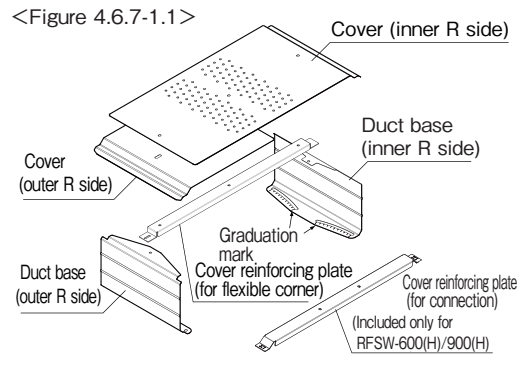
This corner part is angle adjustable in the horizontal plane.

※ Check [Design] Part before starting installation work.

2D Barcode for downloading the specification drawing



4.6.7-1 Product configuration



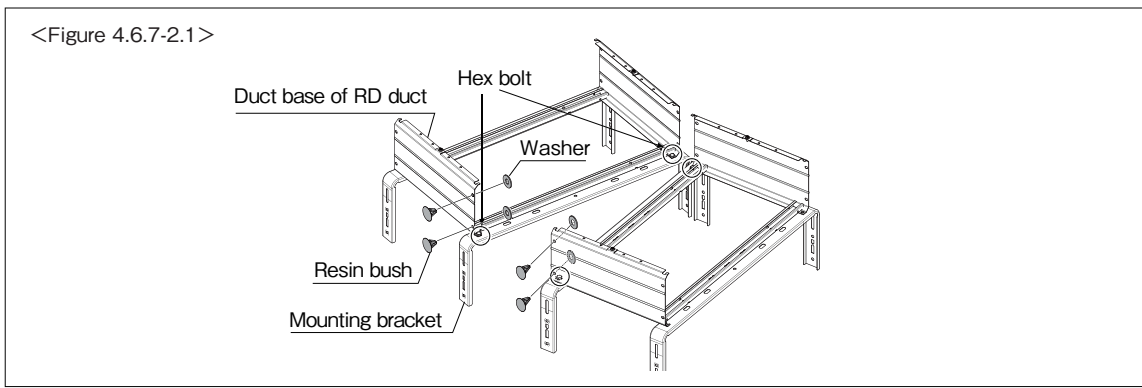
<Table 4.6.7-1.1> Set contents

Size	Cover (inner R side)	Cover (outer R side)	Duct base (inner R side)	Duct base (outer R side)	Cover reinforcing plate	Cover reinforcing plate (for connection)
300/300H	1	1	1	1	1	—
450/450H	1	1	1	1	1	—
600/600H	1	1	1	1	1	1
900/900H	1	1	1	1	1	1

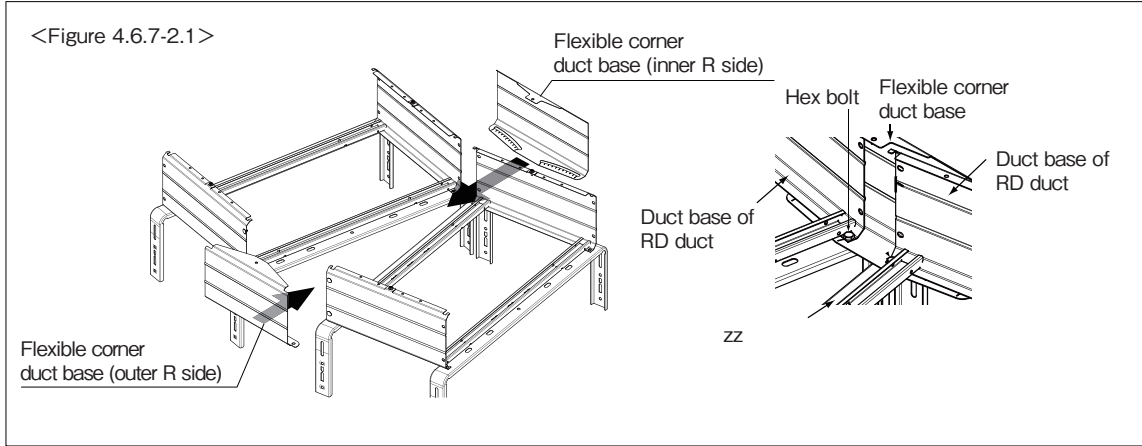
Size	Resin bush	Flat washer M8	Low-head hex M6 x 15L	Flat washer M6	SEMS hex M6 x 15L
300/300H	4	4	—	—	4
450/450H	4	4	—	—	4
600/600H	4	4	4	4	4
900/900H	4	4	4	4	5

4.6.7-2 Product configuration

1 Temporarily fix the duct base of the duct to the mounting bracket, using hex bolts and nuts (supplied with the mounting bracket). Insert the resin bush into the hole of the duct base (outer R side) from the outside, and fit the flat washer M8 to the tab on the bush from the inside and secure it.

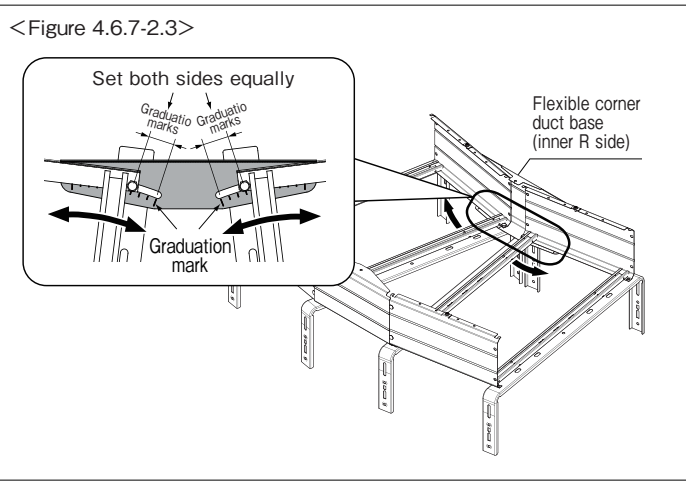


2 Remove the hex bolt that is temporarily fixed, insert the duct base (inner R side and outer R side) between the duct base and mounting bracket, and temporarily fix it again.

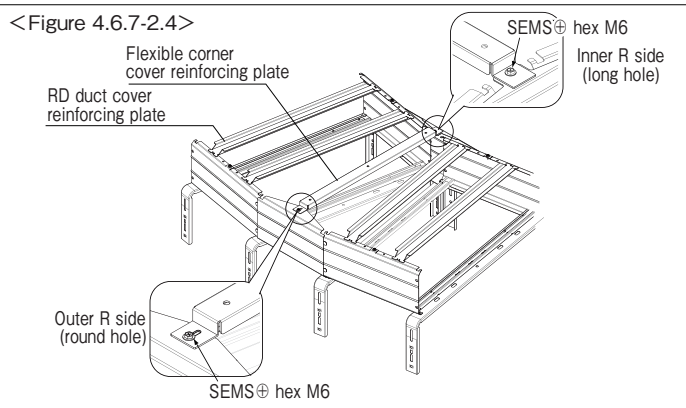


3 With reference to the graduation mark provided on the flexible corner duct base (inner R side), adjust the angle of the duct. When the angle has been adjusted, tighten and secure the hex bolts (inner R side and outer R side) that are temporarily fixed.

※ The angle can be adjusted in the range between 0° and 20°. To align the RD duct angle on both sides, use the same graduation mark on both sides.



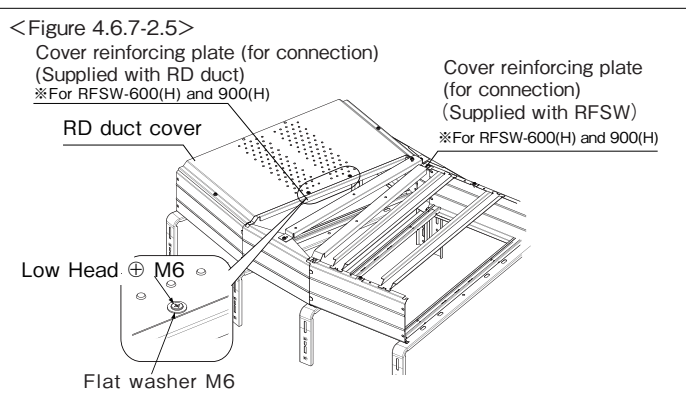
4 Install the piping and attach the duct cover reinforcement plate (the number and position may vary from those indicated in the figure, depending on the size of the duct).



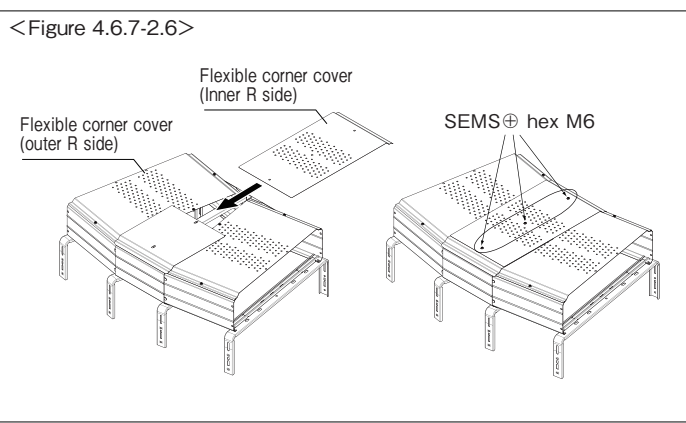
5 Install the duct cover.

- For RFSW-300(H)/450(H)
Secure it to the duct base, using the hex bolts supplied with the duct.
- For RFSW-600(H)/900(H)
Place two cover reinforcing plates (for connection), secure to the duct base using the hex bolts supplied with the duct, and secure to the cover reinforcing plates using the supplied bolts and nuts.

※ For the cover reinforcing plate (for connection), use the item (1 piece) supplied with the flexible corner and the item (1 piece) supplied with the duct.



6 Place the cover (outer R side) and the cover (inner R side) of the flexible corner in this order and secure them with the supplied hex bolts.



4.6.8 RT tee

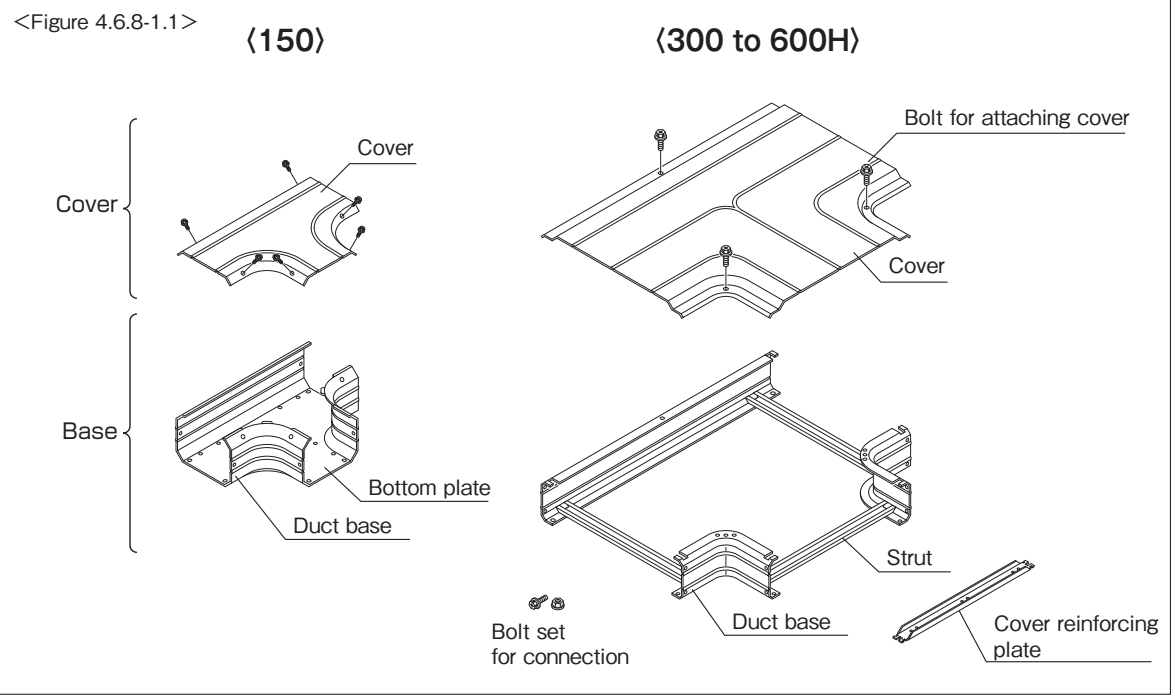
Plane surface type branching fittings.
Note that the attachment method differs depending on the size.

※ Also check the Design section before performing installation.

RT

2D Barcode for downloading the specification drawing

4.6.8-1 Product configuration



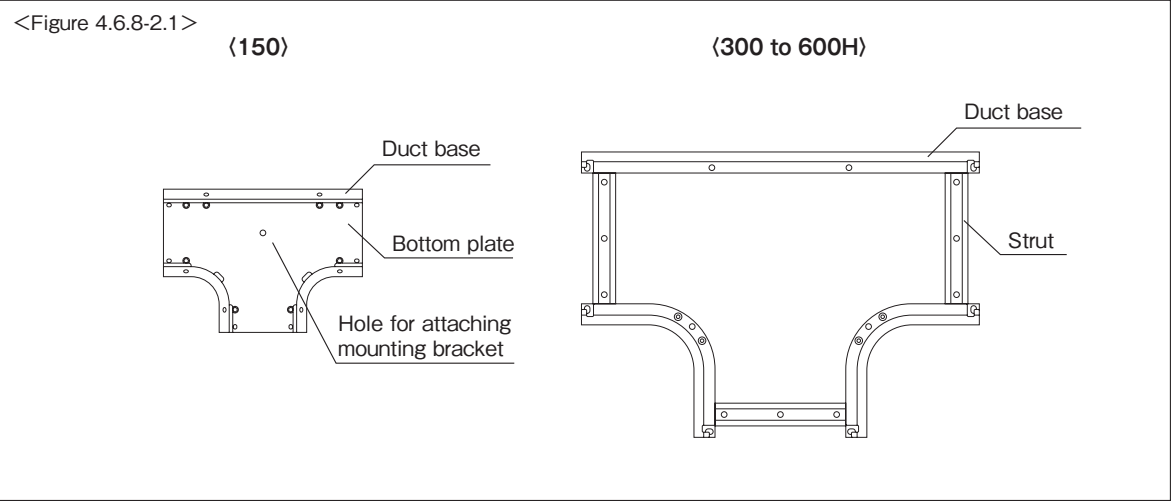
<Table 4.6.8-1.1> Set contents

Size	Base	Cover	Bottom plate	Cover reinforcing plate	Bolt for Cover	Bolt 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 4.6.8-1.2> Bolt specification

Item	Specifications	Material
Cover bolt	Sems hex M6×15L	SUS
Bolt set for connection	Sems hex M6×15L	SUS
	Flange nut M6	SUS

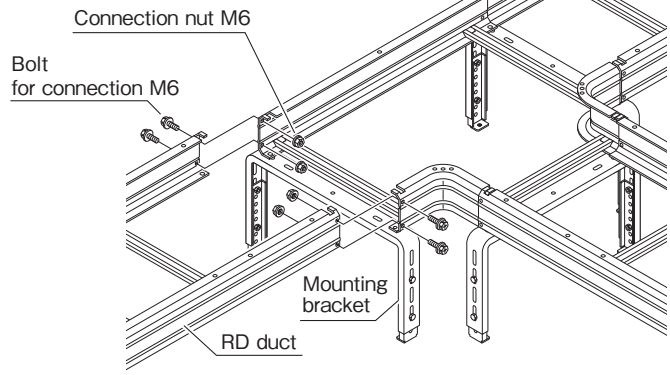
4.6.8-2 Base top view



4.6.8-3 Example of assembling and attaching RT (1) <300 to 600H>

1 Temporarily place RT on a Mounting bracket, and connect the duct.

<Figure 4.6.8-3.1>



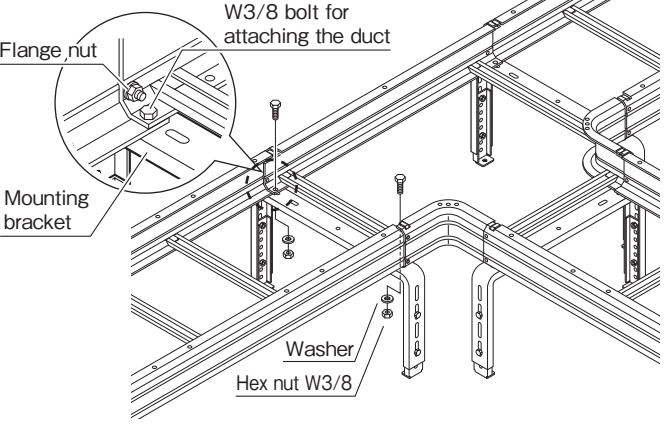
2 Fix the connection part to the mounting bracket.

※Bolts, nuts and washers for attaching the duct are supplied with the mounting bracket.

Perform piping, and then finally attach the cover reinforcing plate* and set the cover.

* 600/600H size only
※ For the coupler-free connection or when free coupler S/H type is used, attach the cover reinforcing plate also to the connection part. (600/600H size only)

<Figure 4.6.8-3.2>

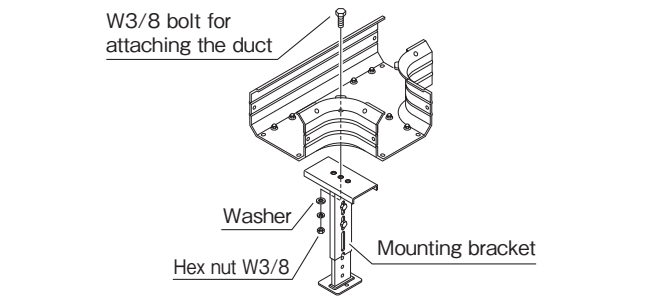


4.6.8-4 Example of assembling and attaching RT (2) <150>

1 Set the mounting bracket.

※Bolts, nuts and washers for attaching the duct are supplied with the mounting bracket.

<Figure 4.6.8-4.1>

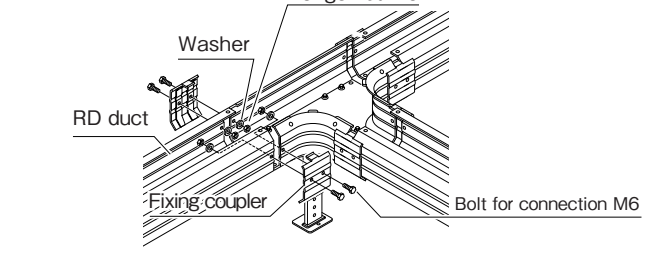


2 Connect the RD duct to RT by using the fixing coupler.

Reference [4.5.3] RSJ fixing coupler

Perform piping, and then finally set the cover.

<Figure 4.6.8-4.2>



4.6.9 RTW tee (walkway type)

Plane surface type branching fittings (walkway type).
Note that the reinforcing plate attachment position differs depending on the size.

※ Also check the Design section before performing installation.

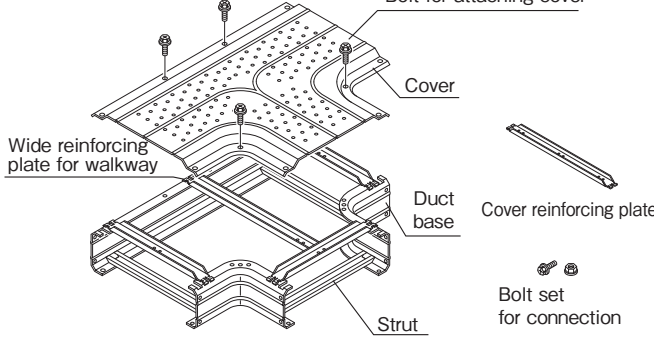
2D Barcode
for downloading
the specification
drawing



RTW

4.6.9-1 RTW tee (walkway type)

<Figure 4.6.9-1.1>



<Table 4.6.9-1.1> Set contents

Size	Cover	Base	Cover bolt
300/300H	1	1	4
450/450H	1	1	4
600/600H	1	1	3

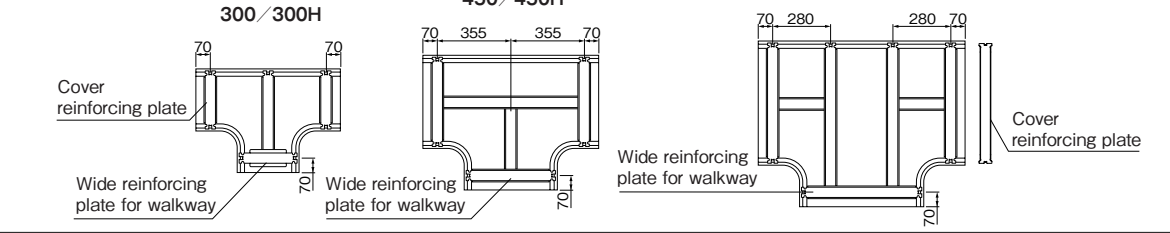
Size	Bolt set for connection	Wide reinforcing plate for walkway	Cover reinforcing plate
300/300H	8	1	2
450/450H	8	1	0
600/600H	8	1	2

<Table 4.6.9-1.2> Bolt specification

Item	Specifications	Material
Cover bolt	Sems ⊕ hex M6×15L	SUS
Bolt set for connection	Sems ⊕ hex M6×15L	SUS
	Flange nut M6	SUS

4.6.9-2 Position to attach the reinforcing plate

<Figure 4.6.9-2.1>



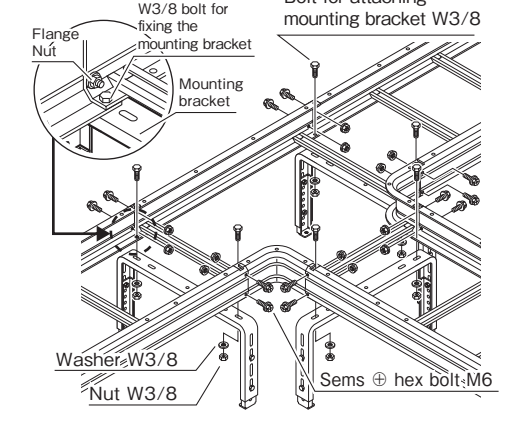
4.6.9-3 Installation of RTW

1 Fit in the duct bases each other with an overlap of 20mm, fix them to the mounting bracket, and then fix the overlapped parts by bolting from the sides.

※ Bolts, nuts and washers for attaching the duct are supplied with the mounting bracket.

Warning Be sure to set at least three mounting brackets.

<Figure 4.6.9-3.1>



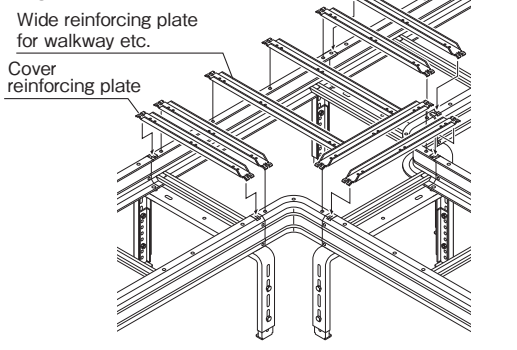
2 Perform piping, and then attach each reinforcing plate to the positions as shown in the table "Position to attach the reinforcing Plate" above.

Set the cover of tee (walkway type).

※ For beautiful finish, set the cover of tee (walkway type) first, and then set the cover of straight duct.

※ For the coupler-free connection or when free coupler S/H type is used, attach the cover reinforcing plate to the connection part. (600/600H size only)

<Figure 4.6.9-3.2>



4.6.10 RXN/RX cross

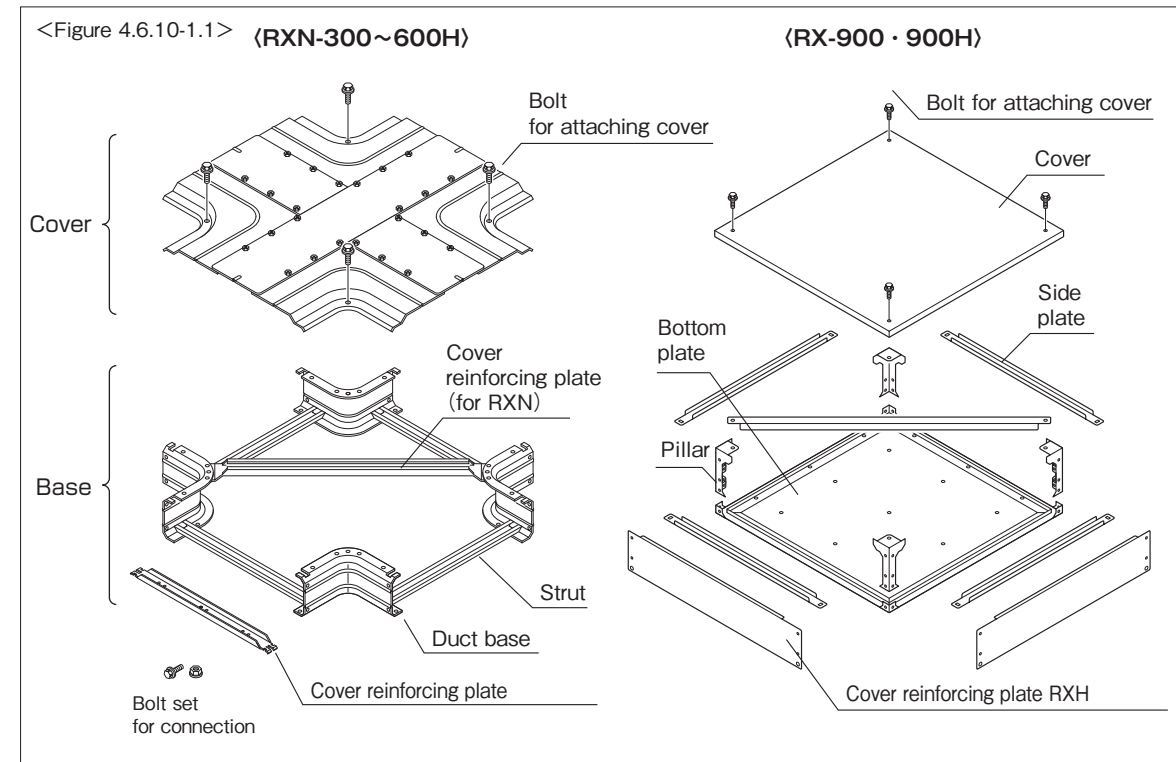
Plane surface type branching fittings.
Note that the attachment method differs depending on the size.

※ Also check the Design section before performing installation.

2D Barcode
for downloading
the specification
drawing



4.6.10-1 Product configuration



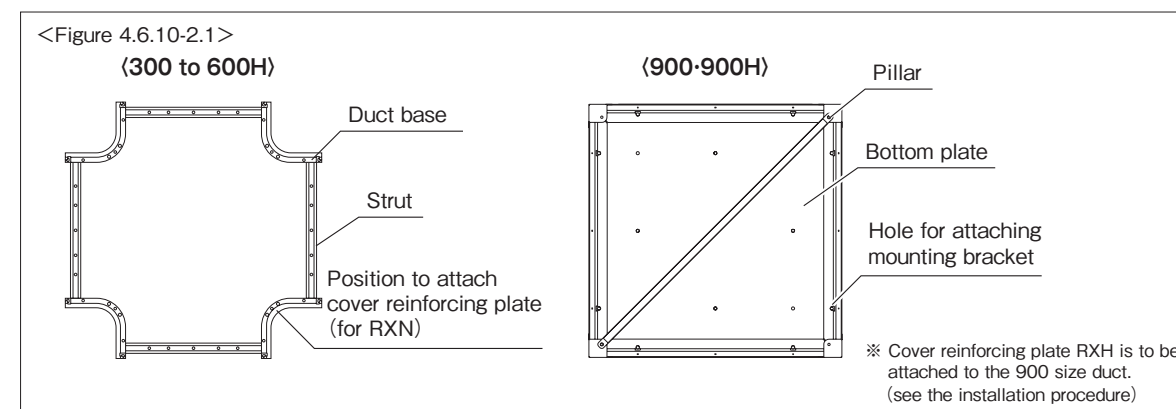
<Table 4.6.10-1.1> Set contents

Size	Cover	Base	Bottom plate	Side plate	Cover reinforcing plate for RD/RXN	Cover bolt	Pillar bolt	Side plate bolt	Bolt set for connection
300/300H	1	1	0	0	0/0	4	0	0	12
450/450H	1	1	0	0	0/1	4	0	0	12
600/600H	1	1	0	0	3/1	4	0	0	12
900/900H	1	1	1	2	4/1	4	8	16	16

<Table 4.6.10-1.2> Bolt specification

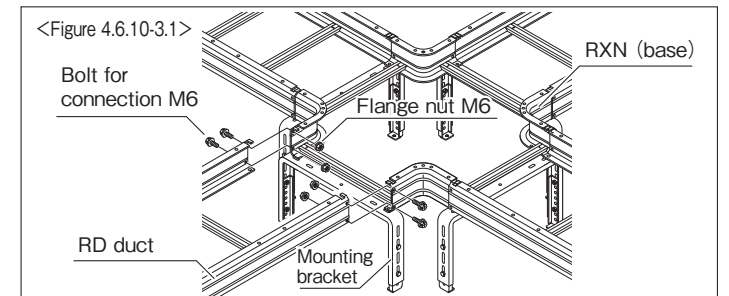
Item	Specifications	Material
Cover bolt	Sems ⊕ hex M6×15L	SUS
Pillar bolt	Sems ⊕ hex M6×15L	SUS
Side plate bolt	Sems ⊕ hex M6×15L	SUS
Bolt set for connection	Sems ⊕ hex M6×15L	SUS
	Flange nut M6	SUS

4.6.10-2 Base top view



4.6.10-3 Installation of RXN <300 to 600H>

1 Temporarily place the mounting bracket, and connect RXN and the duct.

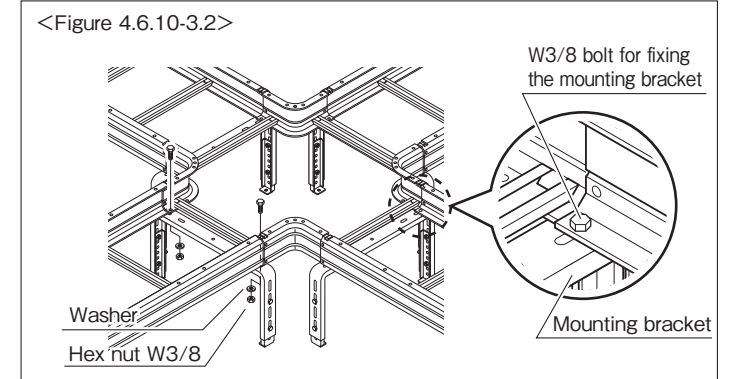


2 Fix RXN to the mounting bracket.

- ※ Bolts, nuts and washers for attaching the duct are supplied with the mounting bracket.
- ※ When using the reducer, set the mounting bracket at the strut.

Perform piping, and then finally attach the cover reinforcing plate* and set the cover.

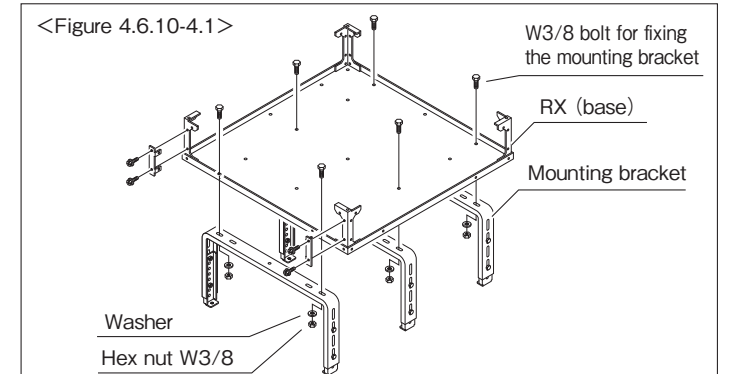
- * 600/600H size only
- ※ For the coupler-free connection or when free coupler S/H type is used, attach the cover reinforcing plate also to the connection part. (600/600H size only)



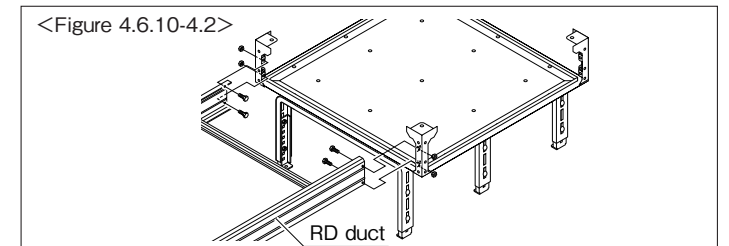
4.6.10-4 Example of assembling and attaching RZ <900/900H>

1 Set the mounting bracket at RX.

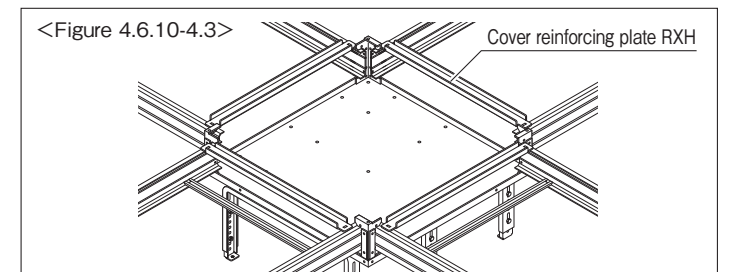
- ※ Bolts, nuts and washers for attaching the duct are supplied with the mounting bracket.



2 Attach the RD duct to the base.



3 Perform piping, and then if the branch duct is 900 or 900H, attach the supplied cover reinforcing plate RXH to the duct end, and finally set the cover.



4.6.11 RXNW/RXW cross (walkway type)

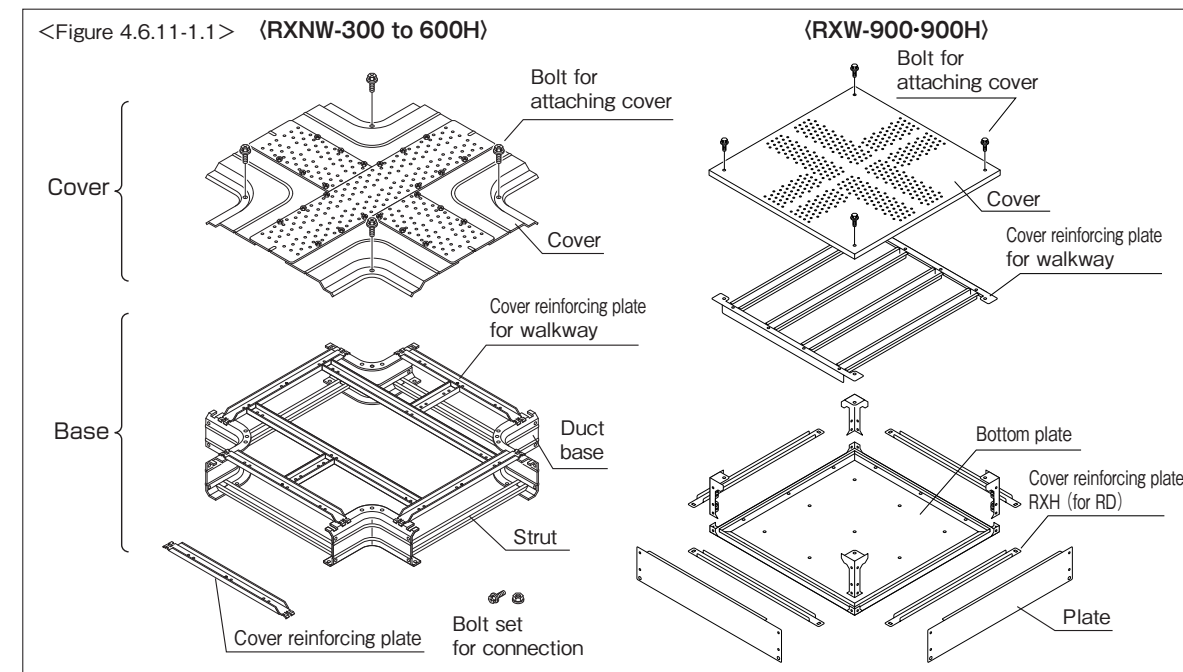
Plane surface type branching fittings.
Note that the reinforcing plate attachment position differs depending on the size.

※ Also check the Design section before performing installation.

2D Barcode
for downloading
the specification
drawing



4.6.11-1 Product configuration



<Table 4.6.11-1.1> Set contents

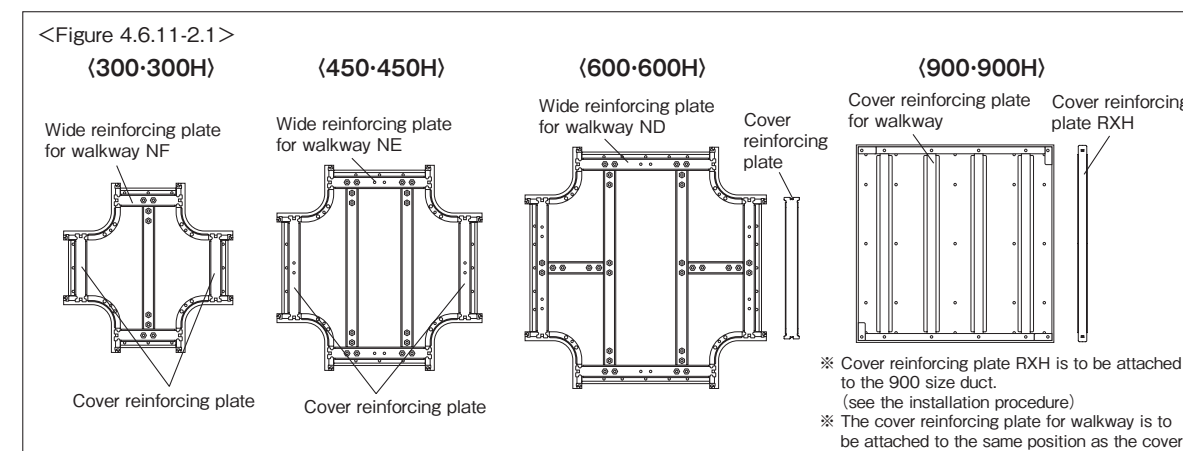
Size	Cover	Base	Bottom plate	Side plate	Cover reinforcing plate	Cover bolt	Pillar bolt	Bolt set for connection	Side plate bolt	Wide reinforcing plate for walkway	Wide reinforcing plate for walkway	Wide reinforcing plate for walkway	Cover reinforcing plate for walkway
300/300H	1	1	0	0	2	4	0	12	0	0	0	1	0
450/450H	1	1	0	0	2	4	0	12	0	0	1	0	0
600/600H	1	1	0	0	3	4	0	12	0	1	0	0	0
900/900H	1	1	1	2	4	4	8	16	0	0	0	0	1

<Table 4.6.11-1.2>

Bolt specification

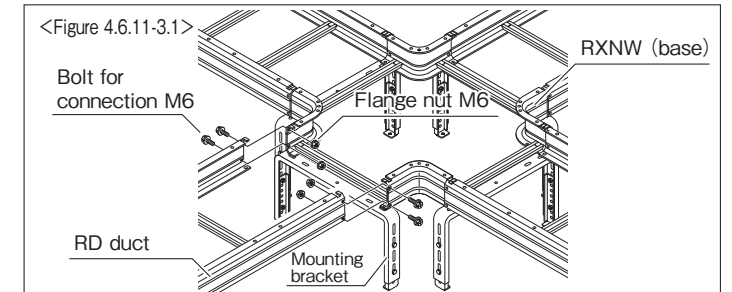
Item	Specifications	Material
Cover bolt	Sems ⊕ hex M6×15L	SUS
Pillar bolt	Sems ⊕ hex M6×15L	SUS
Side plate bolt	Sems ⊕ hex M6×15L	SUS
Bolt set for connection	Sems ⊕ hex M6×15L Flange nut M6	SUS

4.6.11-2 Position to attach the cover reinforcing plate (base top view)



4.6.11-3 Installation of RXNW <300 to 600H>

1 Temporarily place the mounting bracket, and connect RXNW and the duct.

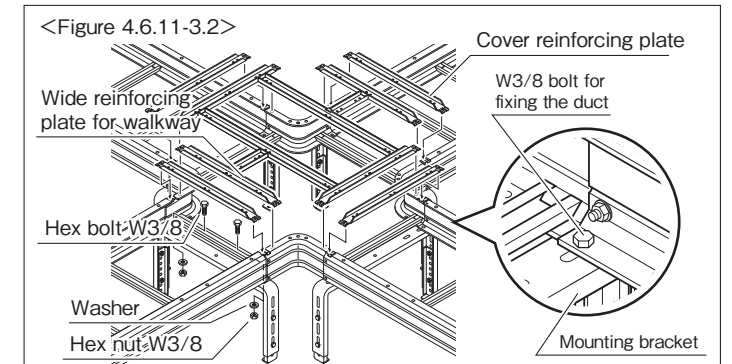


2 Fix RXNW to the mounting bracket.

- ※ Bolts, nuts, and washers for fixing the mounting bracket are supplied with the mounting bracket.
- ※ When using the reducer, set the mounting bracket at the strut.

Perform piping, and then finally attach each reinforcing plate and set the cover.

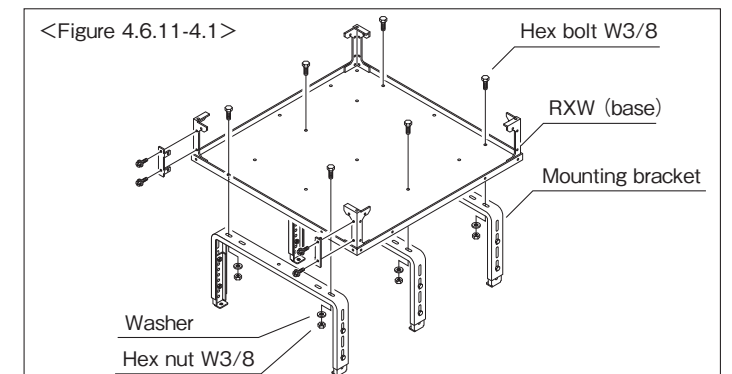
- ※ For the coupler-free connection or when free coupler S/H type is used, attach the cover reinforcing plate also to the connection part. (600/600H size only)



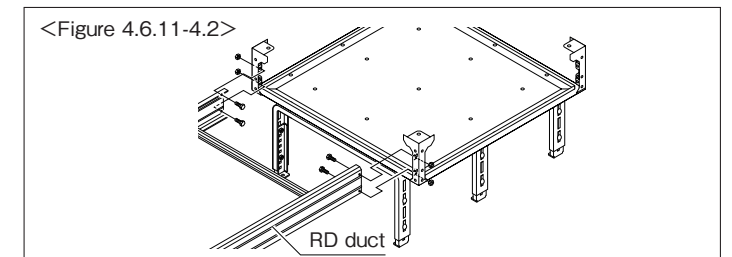
4.6.11-4 Installation of RXW <900/900H>

1 Set the mounting bracket at RXW.

- ※ Bolts, nuts, and washers for fixing the mounting bracket are supplied with the mounting bracket.

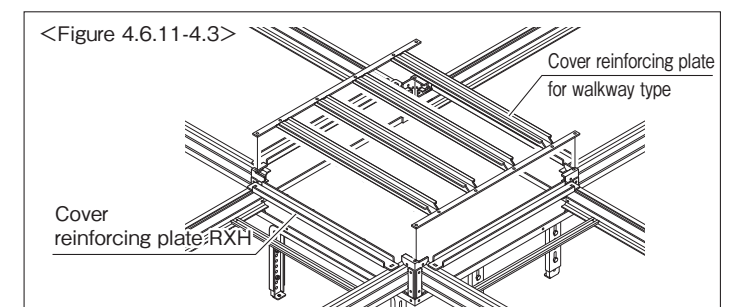


2 Attach the RD duct to the base.



3 Perform piping, and then attach each reinforcing plate.

If the branch duct is 900 or 900H, attach the supplied cover reinforcing plate RXH to the duct end, and finally set the cover.



4.6.12 90° inside vertical ell

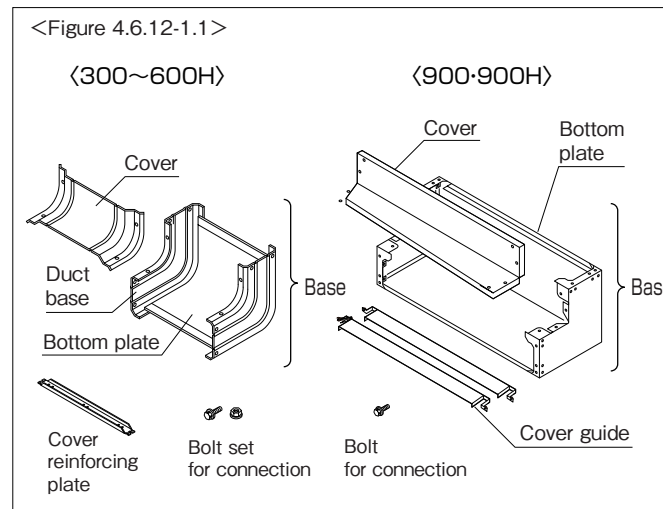
Elevation surface elbow 90° (rising) for 300 to 900H.
Note that there are different installation methods for 300 to 600H and for 900/900H.

※ Also check the Design section before performing installation.

2D Barcode
for downloading
the specification
drawing



4.6.12-1 Product configuration



<Table 4.6.12-1-2> Set contents

Size	Cover	Base	Bottom plate	Cover reinforcing plate /Cover guide	Cover* bolt	Bolt 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	8	8*

* Built in the main unit before shipment

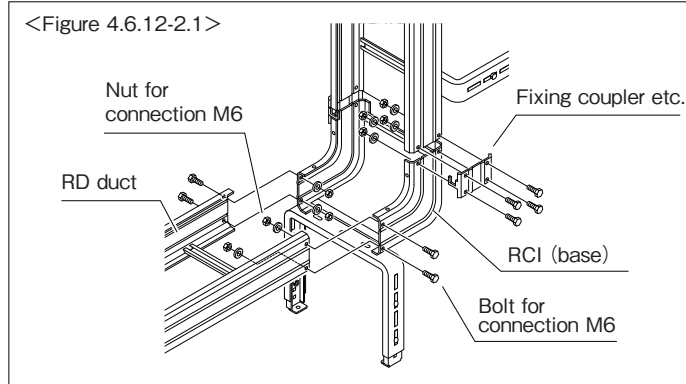
<Table 4.6.12-1-3> Bolt specification

Items	Specifications	Material
Cover bolt	Sems ⊕ hex M6×15L	SUS
Bolt set for connection	Sems ⊕ hex M6×15L	SUS
	Flange nut M6	SUS

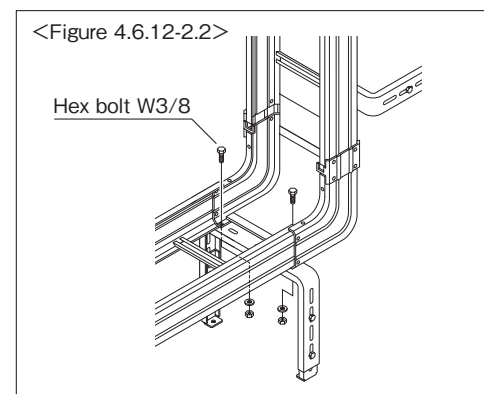
4.6.12-2 Example of assembling and attaching (1) <300 to 600H>

1 Attach the base to the duct.

※ During the work, temporarily place the base and duct on the mounting bracket etc. to prevent dangling.

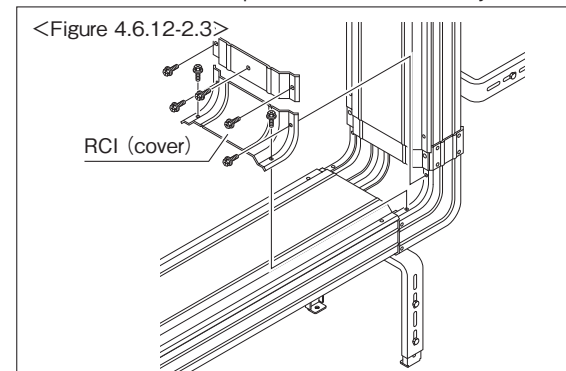


2 Fix them to the mounting bracket.



3 Perform piping, and then finally set the cover.

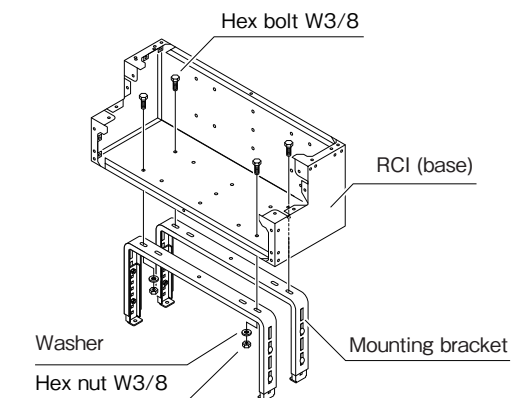
※ For the coupler-free connection or when free coupler S/H type is used, attach the cover reinforcing plate to the horizontal connected part. (600/600H size only)



4.6.12-3 Example of assembling and attaching (2) <900/900H>

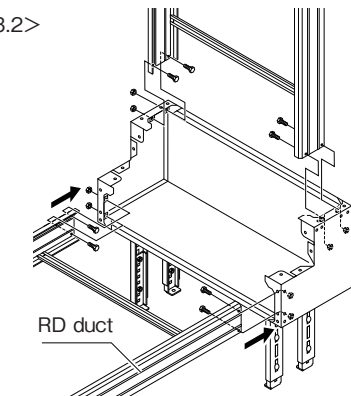
1 Mount the base to the mounting bracket.

<Figure 4.6.12-3.1>



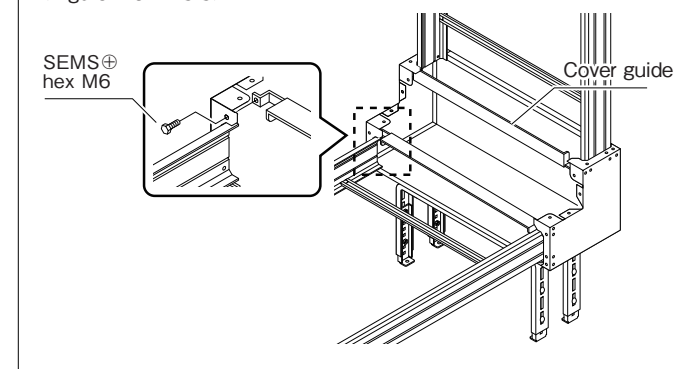
2 Insert the duct into the base of RCI and secure it.

<Figure 4.6.12-3.2>



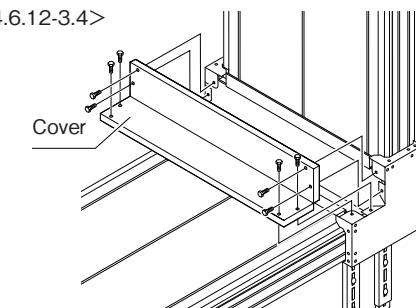
3 After piping work is completed, install the lid guide on RCI.

<Figure 4.6.12-3.3>



4 Install the duct cover, install the RCI cover, and the work is completed.

<Figure 4.6.12-3.4>



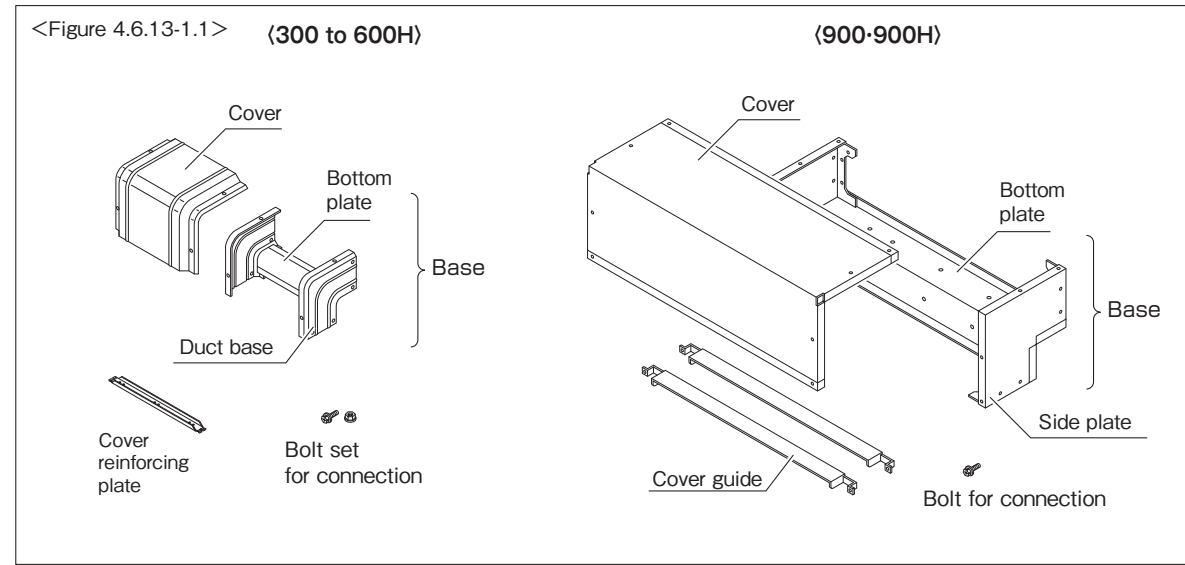
4.6.13 RCO 90° outside vertical ell

Elevation surface elbow 90° (falling) for 300 to 900H.
Note that there are different installation methods for 300 to 600H and for 900/900H.

※ Also check the Design section before performing installation.



4.6.13-1 Product configuration



<Table 4.6.13-1.1> Set contents

Size	Cover	Base	Bottom plate	Cover reinforcing plate /Cover guide	Cover* bolt	Bolt 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	8*

* Built in the main unit before shipment

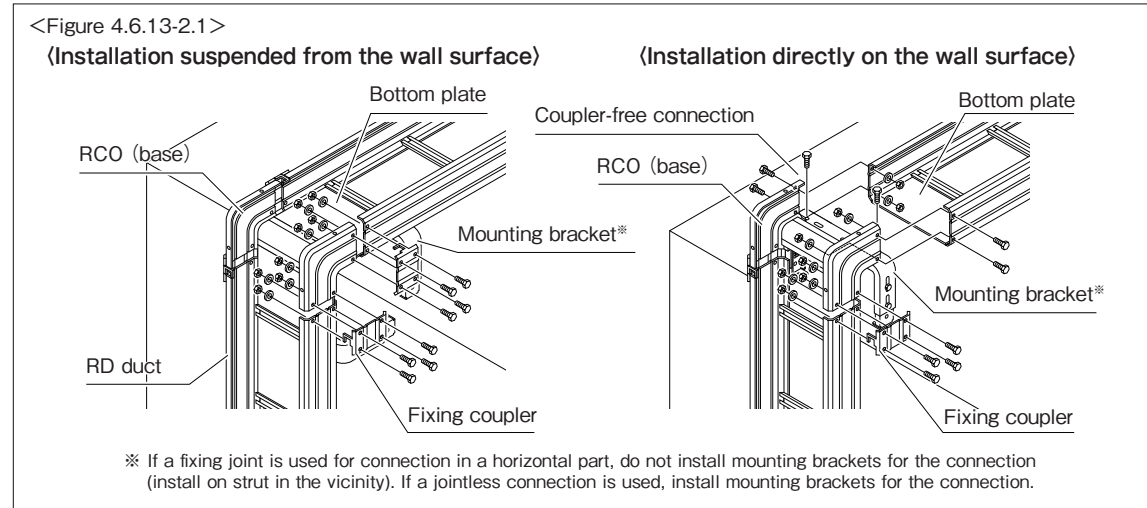
<Table 4.6.13-1.2> Bolt specification

Items	Specifications	Material
Cover bolt	Sems ⊕ hex M6×15L	SUS
Bolt for connection	Sems ⊕ hex M6×15L Flange nut M6	SUS

4.6.13-2 Installation of RCO (1) <300 to 600H>

1 Connect the base of RCO to the duct.

※ For the installation on the wall surface, attach the bottom plate to the part connected to RCO.

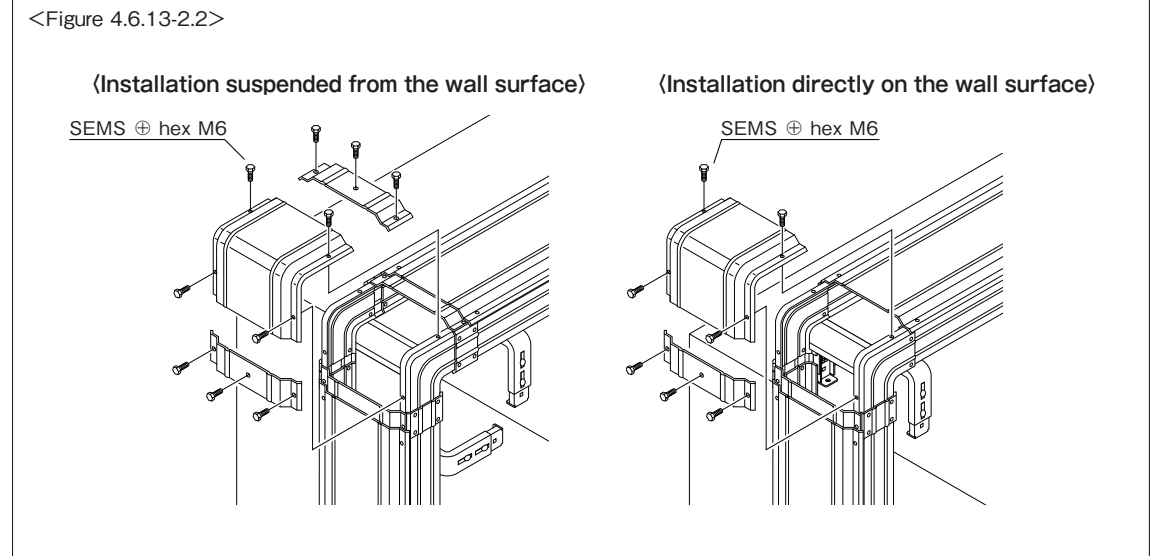


※ If a fixing joint is used for connection in a horizontal part, do not install mounting brackets for the connection (install on strut in the vicinity). If a jointless connection is used, install mounting brackets for the connection.

2 Perform piping, and then finally attach the cover reinforcing plate* and set the cover.

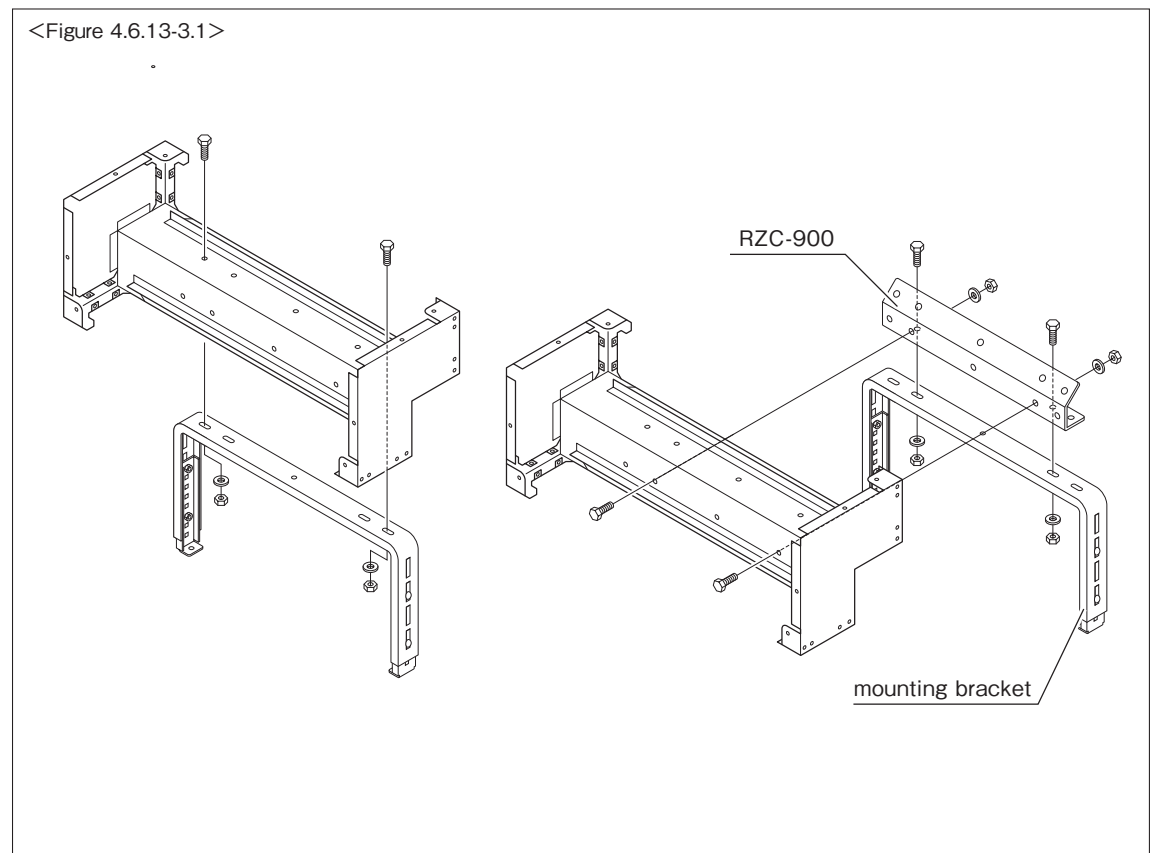
* When the horizontal part is connected by the coupler-free connection + mounting bracket, attach the cover reinforcing plate. (600/600H size only)

Note For installation on the wall, it is necessary to take measures to prevent bolts from loosening. For details, see [2.3] Installation method (on the wall surface).

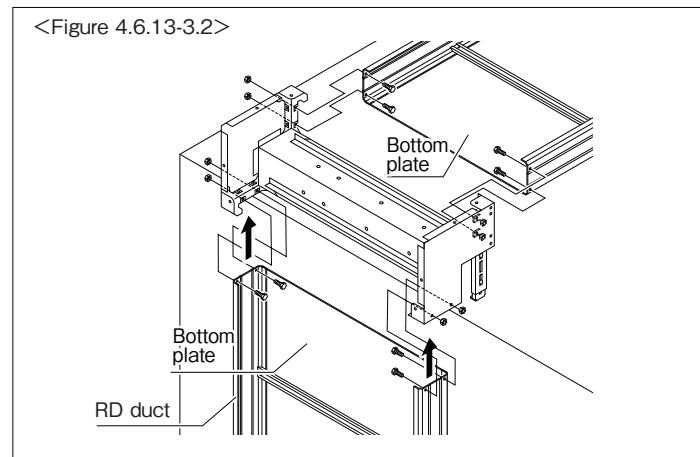


4.6.13-3 Installation of RCO (2) <900/900H>

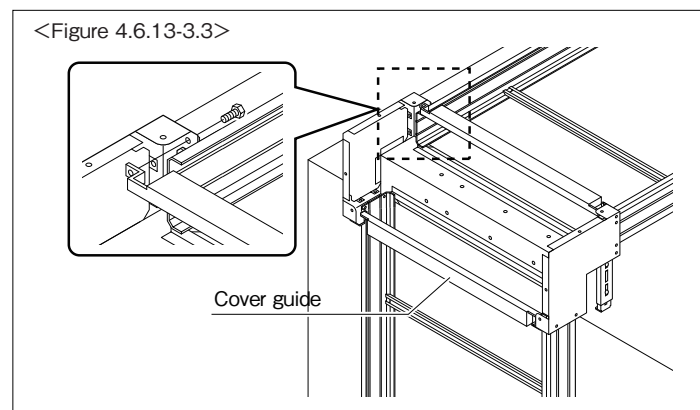
1 Attach the RCO base part to the mounting bracket etc.



2 Mount the duct to RCO.

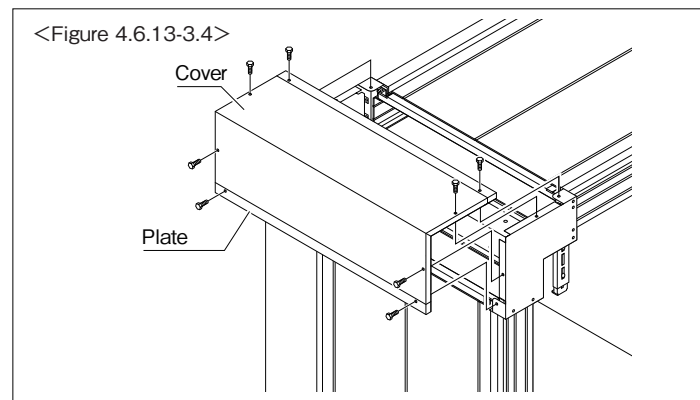


3 After piping work is completed, install the lid guide on RCO.



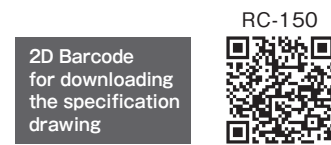
4 After the duct lid is mounted, install The RCO lid, and the work is completed.

Note
For installation on the wall, it is necessary to take measures to prevent bolts from loosening.
For details, see [2.3] Installation method (on the wall surface).

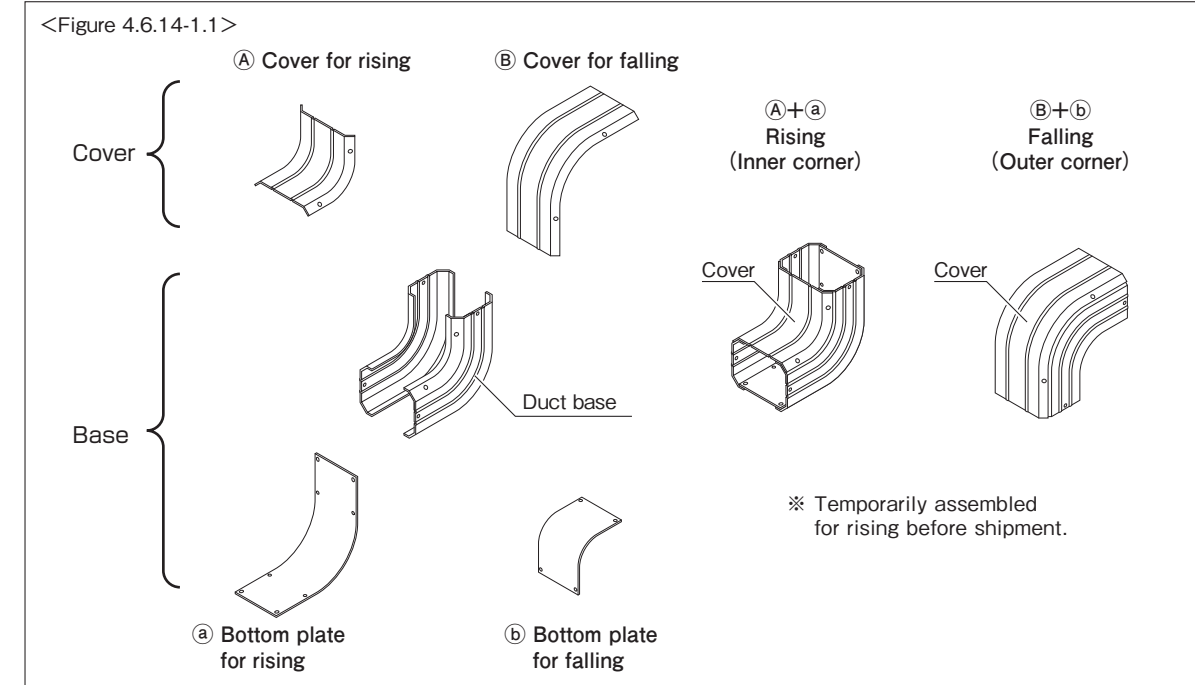


4.6.14 RC 90° vertical ell (150)

Elevation surface elbow 90° for 150 size.
By exchanging the supplied parts (cover and bottom plate), this can be used for both "rising" and "falling".
※ Also check the Design section before performing installation.



4.6.14-1 Product configuration



<Table 4.6.14-1.1> Set contents

Size	Cover	Bottom plate	Duct base	Bolt for cover/bottom plate
150	2	2	2	8

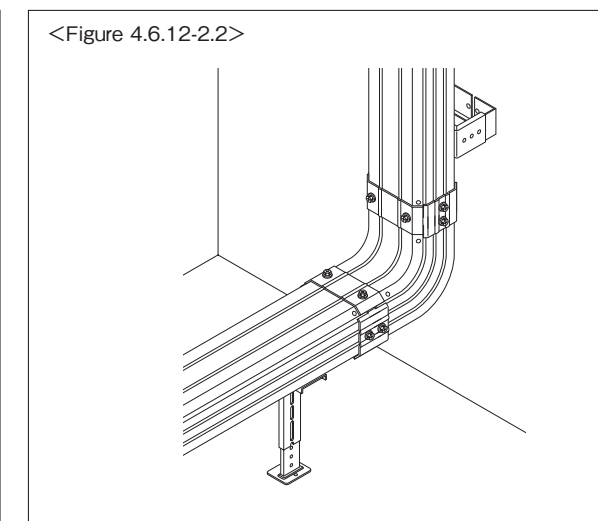
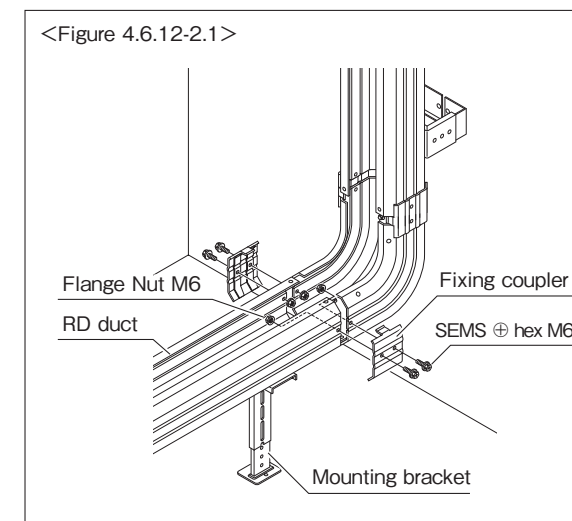
<Table 4.6.14-1.2> Bolt specification

Specifications	Material
Sems ⊕ hex M6×15L	SUS

4.6.14-2 Example of assembling and attaching RC

1 Assemble the base and attach it to the duct by using the fixing coupler.

2 Perform piping, and then finally set the cover.



4.6.15 RCF 45° vertical ell

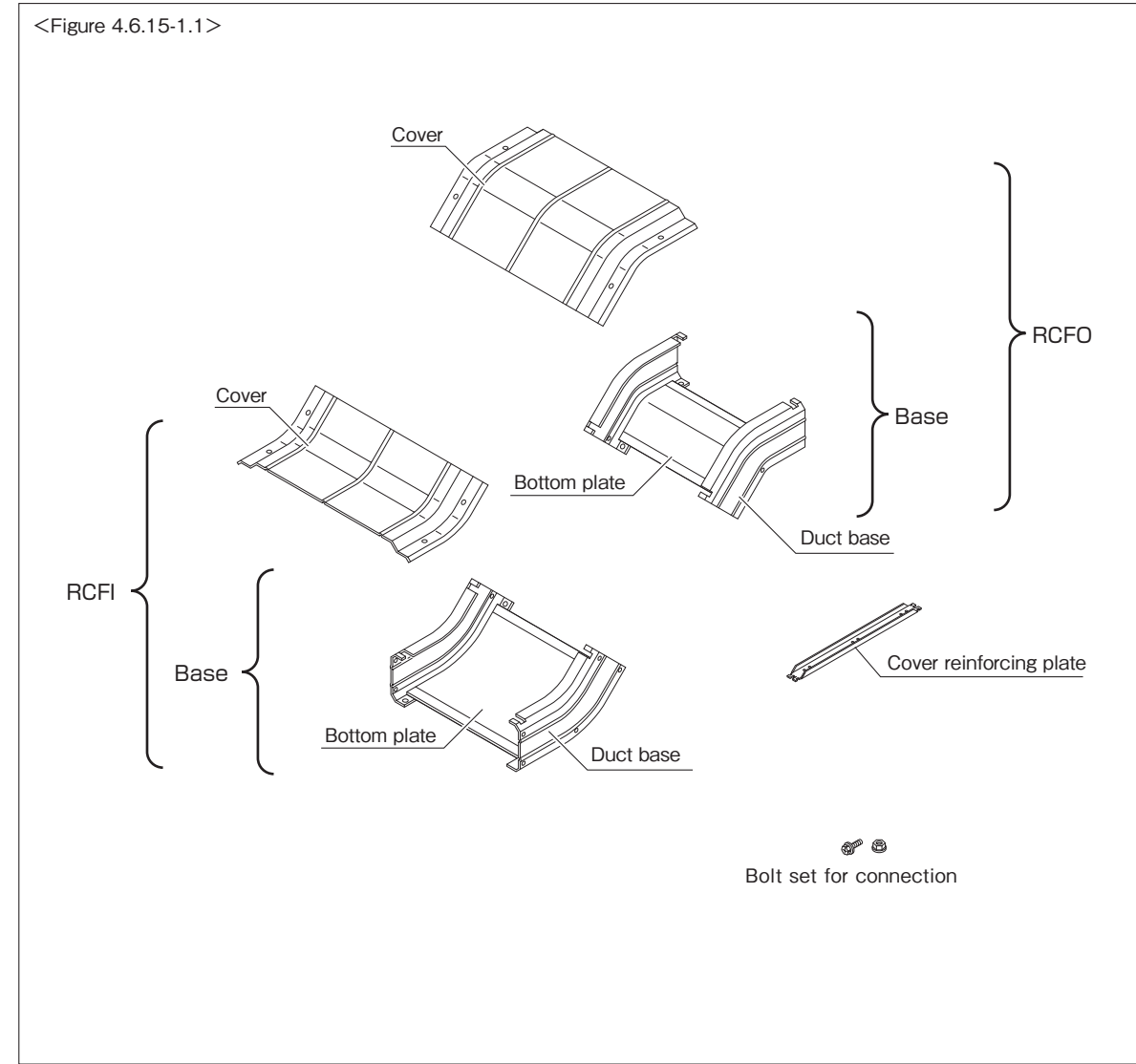
Elevation surface 45° elbow.
This is the set of the rising type (RCFI) and the falling type (RCFO).

※ Also check the Design section before performing installation.

2D Barcode
for downloading
the specification
drawing



4.6.15-1 Product configuration



<Table 4.6.15-1.1> Set contents

Size	Cover	Base	Bottom plate	Cover bolt*	Bolt set for connection	Cover 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

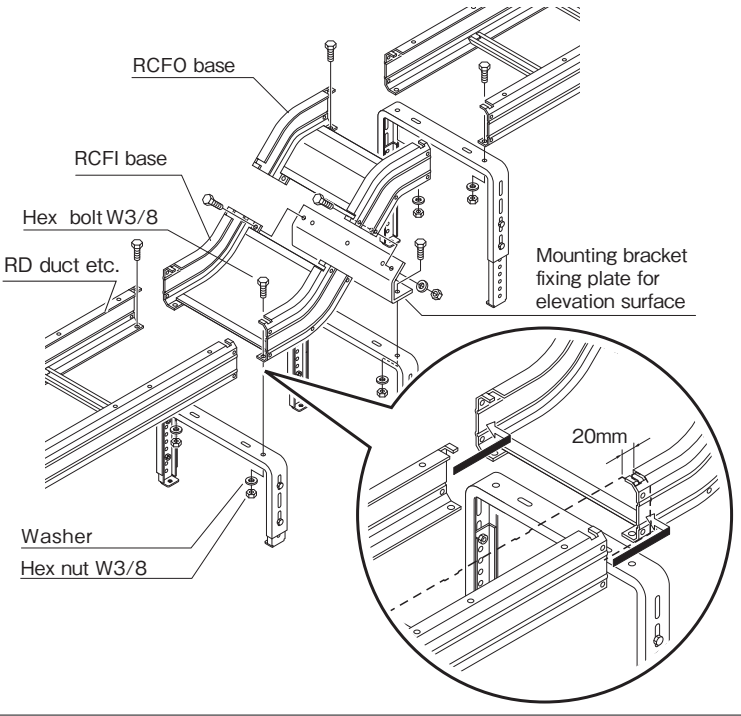
<Table 4.6.15-1.2> Bolt specification

Items	Specifications	Material
Cover bolt	Sems ⊕ hex M6×15L	SUS
Bolt set for connection	Sems ⊕ hex M6×15L	SUS
	Flange nut M6	SUS

4.6.15-2 Installation of RCF (coupler-free connection)

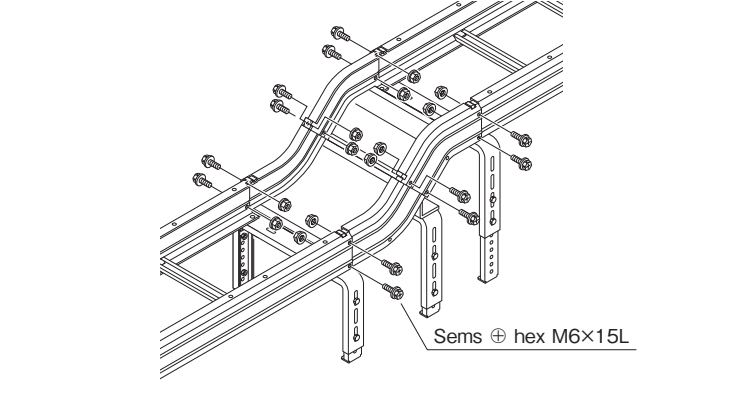
1 Fit the end of the duct base and that of the duct base of vertical ell with an overlap of 20mm, and fix the bottom of overlapped part of duct bases to the mounting bracket or the mounting bracket fixing plate for elevation surface by using the W3/8 hex bolt.

<Figure 4.6.15-2.1>



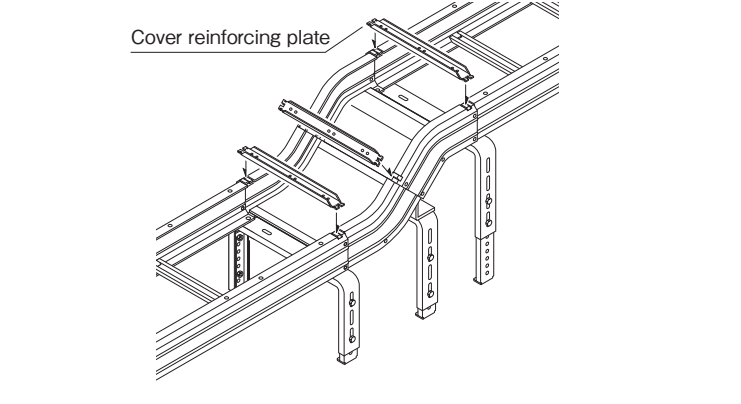
2 Fix the side surface of overlapped part of the duct base ends with bolts.

<Figure 4.6.15-2.2>



3 After the piping work is completed, attach the supplied cover reinforcing plate* to the part connected to the duct, and then set the cover in the order from the lower part. Set the cover with an overlap of 20mm.

<Figure 4.6.15-2.3>



* 600 (H) / 900 (H) only
and for coupler-free connection or
connection using the free coupler
S/H type only.

4.7 Bottom plate

Table of contents

4.7.1 Bottom plate list	146
4.7.2 RDB bottom plate set for RD duct	147
4.7.3 REB bottom plate set for 90° flat ell	150
4.7.4 RFB bottom plate set for 45° flat ell	151
4.7.5 RTS bottom plate set for tee	152
4.7.6 RDBJ bottom plate for coupler	153
4.7.7 RJB retrofit bottom plate for coupler	154
4.7.8 RNB bottom net	155

4.7.1 Bottom plate list

RDB bottom plate set for RD duct

REB bottom plate set for 90° flat ell

RFB bottom plate set for 45° flat ell

RTS bottom plate set for tee

RDBJ bottom plate for coupler

RJB retrofit bottom plate for coupler

RNB bottom net

RDB-B resin bush for bottom plate

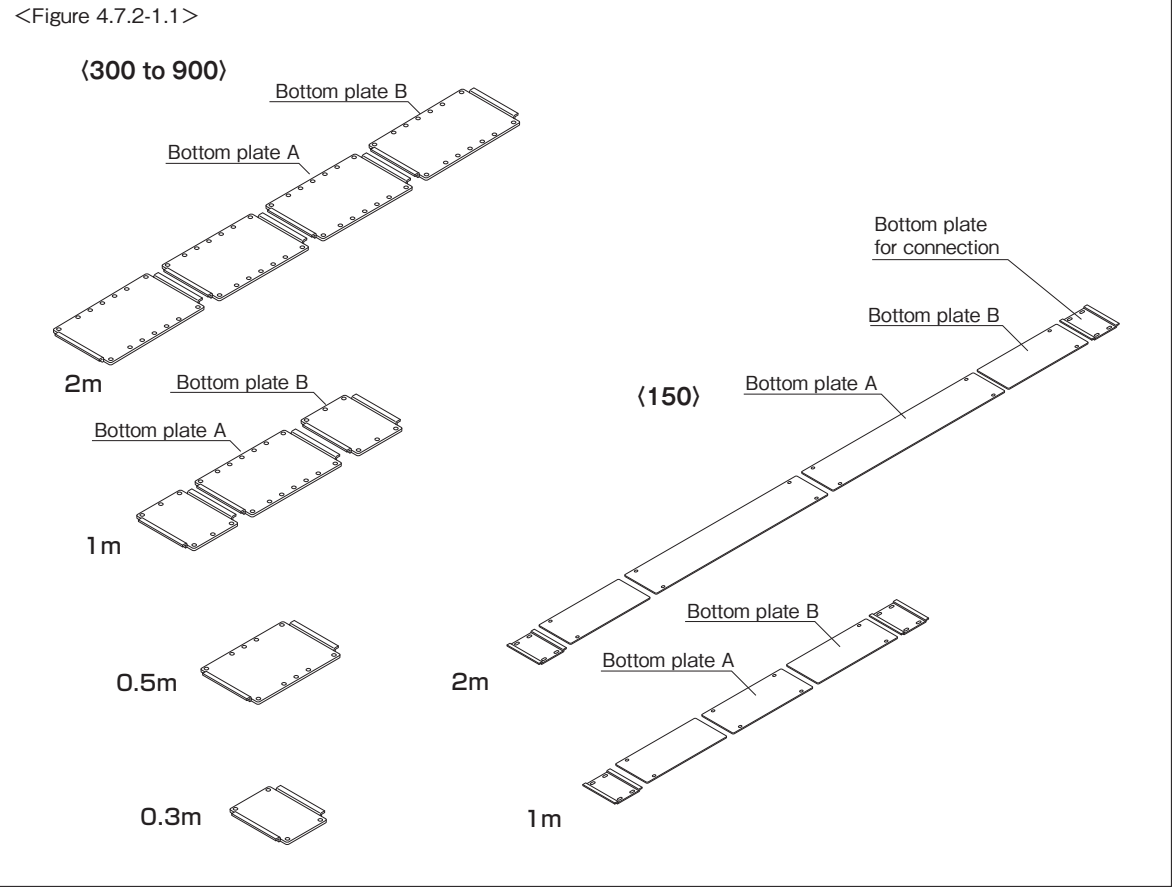
4.7.2 RDB bottom plate set for RD duct

Bottom plate for RD duct (straight pipe).
For 150 size, the bottom plate for connection part (bottom plate for coupler) 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 installation.

2D barcode for downloading the specification drawing



4.7.2-1 Product configuration



<Table 4.7.2-1.1> Set contents (300~900)

Size	Bottom plate A	Bottom plate B	Bolt 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 coupler	Bolt 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> Bolt specification

Items	Specifications	Material
Bolt set for connection	Sems ⊕ hex bolt M6 × 15L	SUS
	Hex nut M6	SUS
	Flat washer M6	SUS

4.7.2-3 Installation of RDB

1 Attaching bottom plate in advance (bottom plate for duct 2m/1m/0.5m/0.3m)

After the duct connecting is completed, attach bottom plate (A) , bottom plate (B) , and (bottom plate for coupler*) in order by using the supplied bolts from inside the duct base as shown in the figure.

- * The bottom plate for coupler is standardly supplied with 150 size, but separately sold for other than 150 size.
 - * As for the bottom plate for coupler, use the fixing coupler type or free coupler A type, and it is to be used only when the mounting bracket is not set at the connection part.
- Also note that the attachment method differs when the part connected next to it is the duct 0.3m/0.5m, flat ell, or tee.

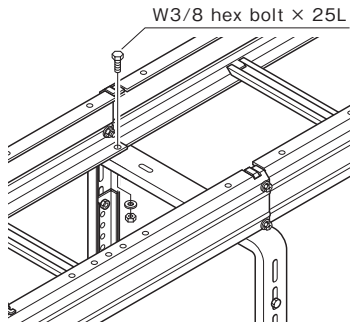
Reference [4.7.6] RDBJ

- Note**
- There is a directionality in bottom plate (B).
 - The bottom plate for coupler is not needed when the mounting bracket is set at the connection part.

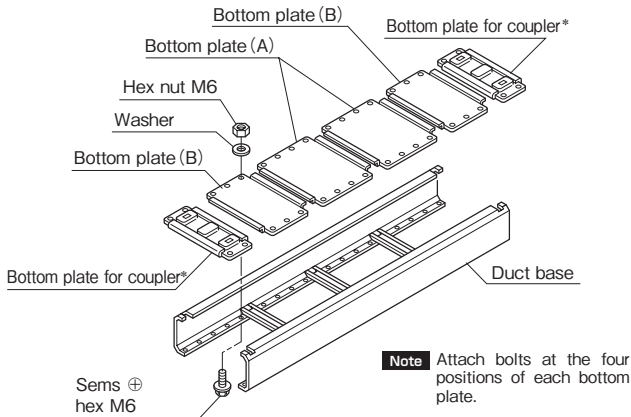
Installation for attaching the mounting bracket to the connection part

<Figure 4.7.2-3.1.4>

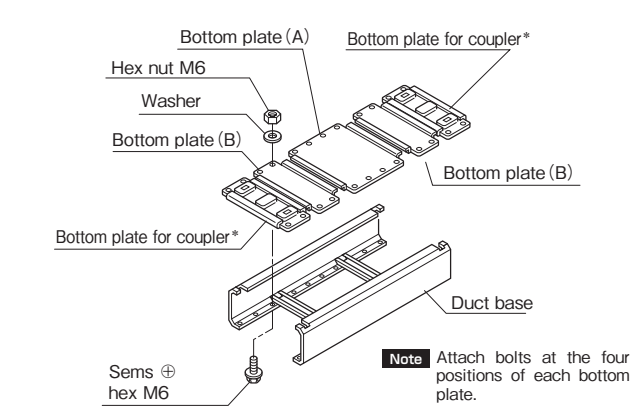
The bottom plate for coupler is not needed because the mounting bracket is used as the bottom plate.



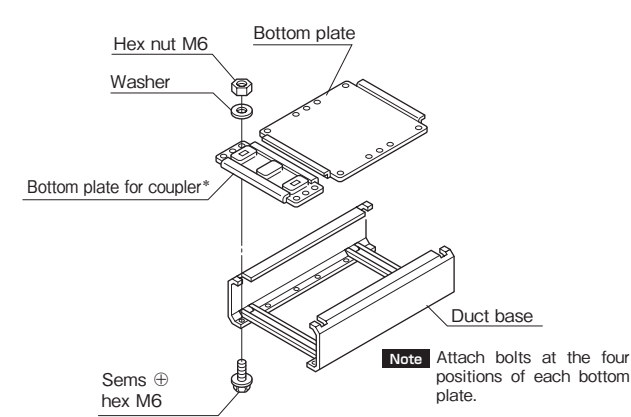
<Figure 4.7.2-3.1.1> Installation for 2m



<Figure 4.7.2-3.1.2> Installation for 1m



<Figure 4.7.2-3.1.3> Installation for 0.3m/0.5m



2 Retrofit attachment of the bottom plate (bottom plate for duct 2m/1m/0.5m/0.3m)

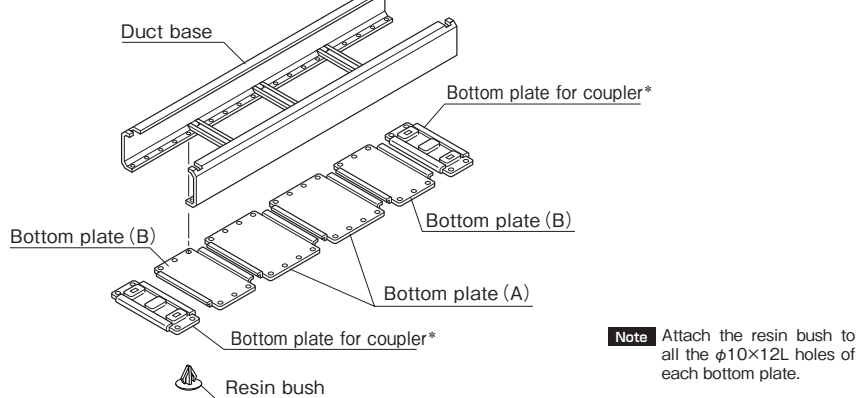
Make a 20mm clearance at the duct connection part, and connect ducts by using the coupler base such as RSJ or RFJ, and then attach bottom plate A, bottom plate B, and (bottom plate for coupler*) in order by using the resin bush for bottom plate from the bottom side of duct base.

- * The bottom plate for coupler is standardly supplied with 150 size, but separately sold for other than 150 size.
 - * As for the bottom plate for coupler, use the fixing coupler type or free coupler A type, and it is to be used only when the mounting bracket is not set at the connection part.
- Also note that the attachment method differs when the part connected next to it is the duct 0.3m/0.5m, flat ell, or tee. (see [4.7.6] RDBJ)

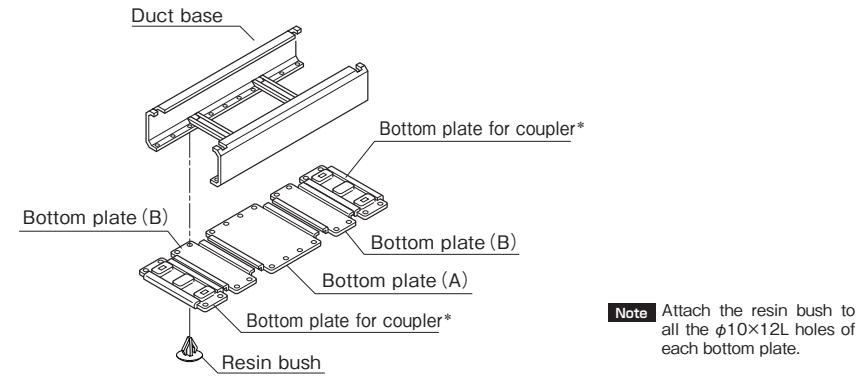
- Note**
- There is a directionality in bottom plate(B).
 - The bottom plate for coupler is not needed when the mounting bracket is set at the connection part.
- Retrofit installation is not possible for 900 type or coupler-free connection.**

Reference [3.6.2] Bottom plate usable position

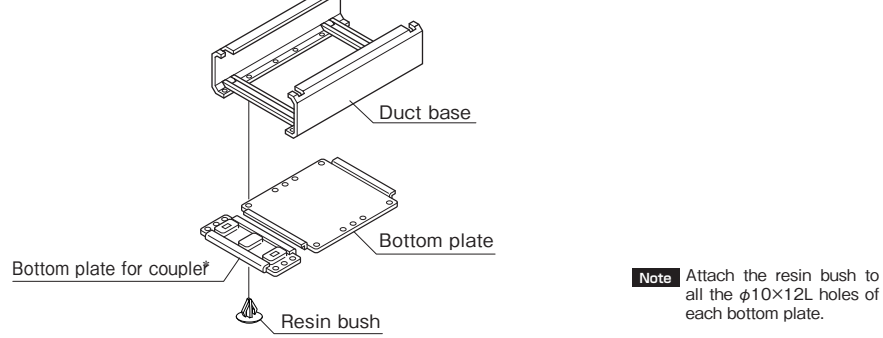
<Figure 4.7.2-3.2.1> Installation for 2m



<Figure 4.7.2-3.2.2> Installation for 1m



<Figure 4.7.2-3.2.3> Installation for 0.3m/0.5m



4.7 Bottom plate

• 4.7.3 REB bottom plate set for [Installation]
90° flat ell

4.7 Bottom plate

• 4.7.4 RFB bottom plate set for [Installation]
45° flat ell

4.7.3 REB bottom plate set for 90° flat ell

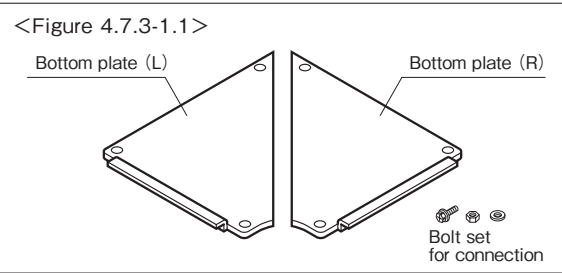
This is the 300 to 600H size bottom plate set for 90° flat ell.

- ※ The bottom plate is standardly supplied with 150 size.
- ※ Also check the Design section before performing installation.

2D barcode
for downloading
the specification
drawing



4.7.3-1 Product configuration



<Table 4.7.3-1.1> Set contents

Bottom plate L	Bottom plate R	Bolt set for connection
1	1	6

<Table 4.7.3-1.2> Bolt specification

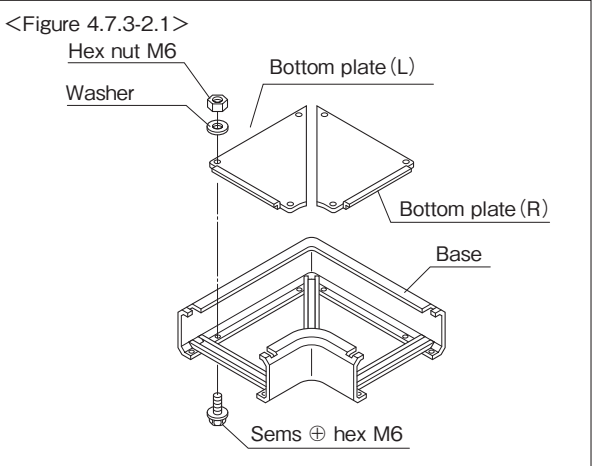
Items	Specifications	Material
Bolt set for connection	Sems ⊕ hex bolt M6 × 15L	SUS
	Hex nut M6	SUS
	Flat washer M6	SUS

4.7.3-2 Installation of REB

Attaching bottom plate for 90° flat ell in advance

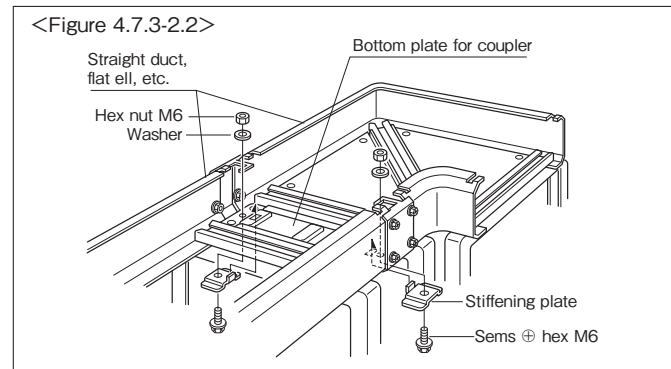
Note Retrofit attachment of the bottom plate is not possible.

Attach the bottom plate (R) and (L) by using the supplied bolts from the base opening side.

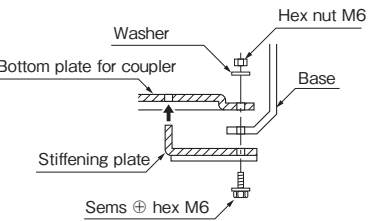


Supplement For the connection method using coupler and not setting the mounting bracket at the connection part

Drop the bottom plate for coupler from the base opening side, and attach it to the bottom of base along with the stiffening plate by using the supplied bolt.



<Figure 4.7.3-2.3>
Cross-section view of
attaching bottom plate for coupler



4.7.4 RFB bottom plate set for 45° flat ell

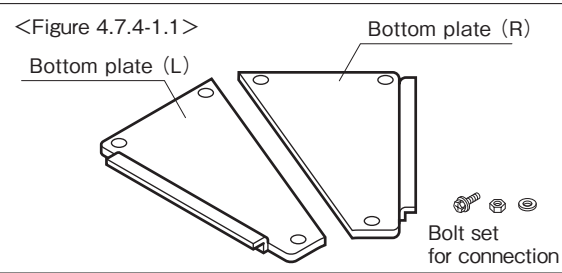
This is the 300 to 600H size bottom plate set for 45° flat ell.

- ※ The bottom plate is standardly supplied with 150 size.
- ※ Also check the Design section before performing installation.

2D barcode
for downloading
the specification
drawing



4.7.4-1 Product configuration



<Table 4.7.4-1.1> Set contents

Bottom plate L	Bottom plate R	Bolt set for connection
1	1	6

<Table 4.7.4-1.2> Bolt specification

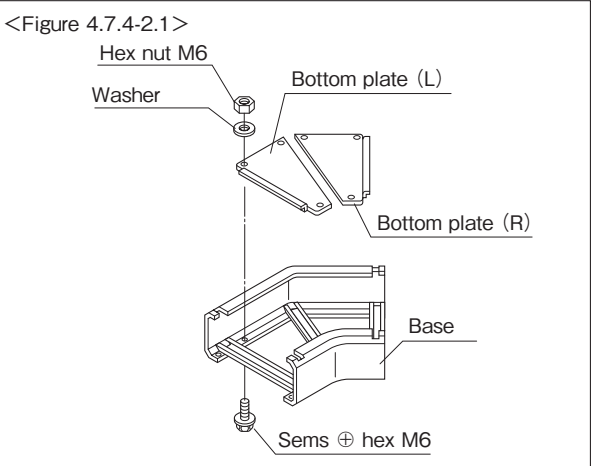
Items	Specifications	Material
Bolt set for connection	Sems ⊕ hex bolt M6 × 15L	SUS
	Hex nut M6	SUS
	Flat washer M6	SUS

4.7.4-2 Installation of RFB

Attaching bottom plate for 45° flat ell in advance

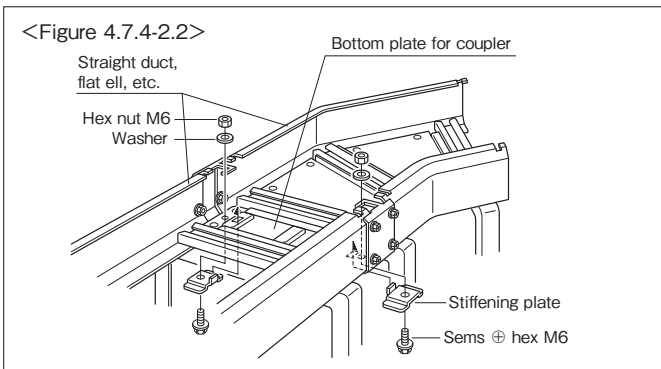
Note Retrofit attachment of the bottom plate is not possible.

Attach the bottom plate (R) and (L) by using the supplied bolts from the base opening side.

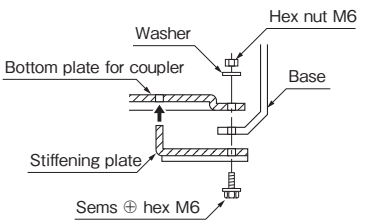


Supplement For the connection method using coupler and not setting the mounting bracket at the connection part

Drop the bottom plate for coupler from the base opening side, and attach it to the bottom of base along with the stiffening plate by using the supplied bolt.



<Figure 4.7.4-2.3>
Cross-section view of
attaching bottom plate for coupler



4.7.5 RTS bottom plate set for tee

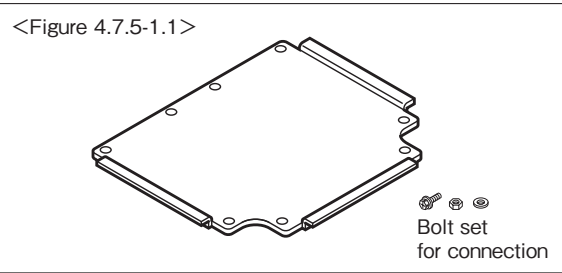
This is the 300 to 600H size bottom plate set for tee.

- ※ The bottom plate is standardly supplied with 150 size.
- ※ Also check the Design section before performing installation.

2D barcode
for downloading
the specification
drawing



4.7.5-1 Product configuration



<Table 4.7.5-1.1> Set contents

Bottom plate	Bolt set for connection
1	8

<Table 4.7.5-1.2> Bolt specification

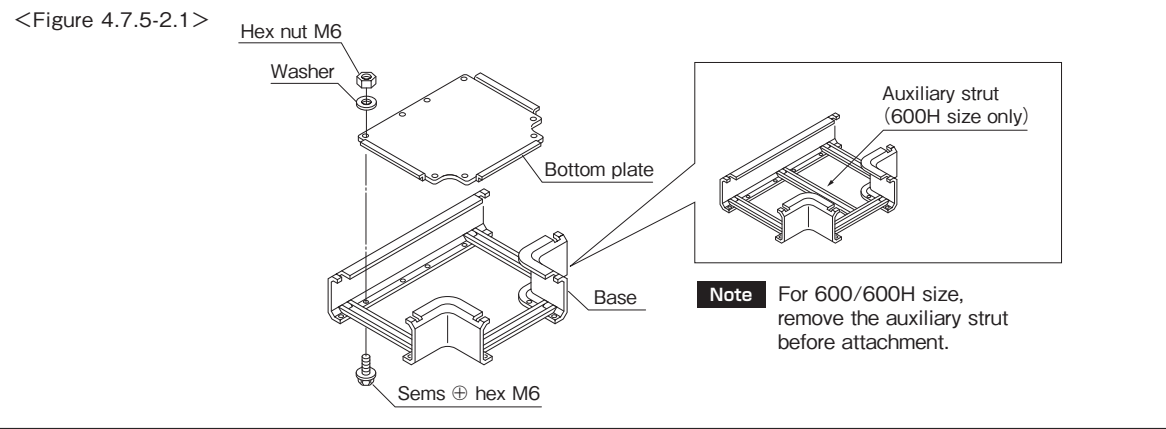
Items	Specifications	Material
Bolt set for connection	Sems ⊕ hex bolt M6 × 15L	SUS
	Hex nut M6	SUS
	Flat washer M6	SUS

4.7.5-2 Installation of RTS

Attaching bottom plate for tee in advance

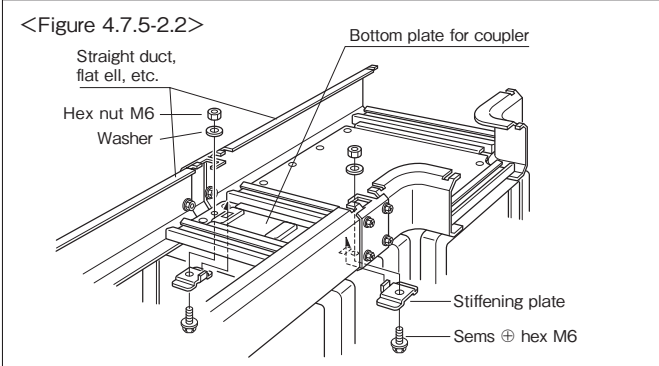
Note Retrofit attachment of the bottom plate is not possible.

Attach the bottom plate by using the supplied bolts from the base opening side.

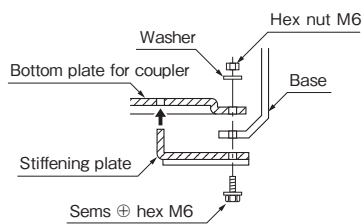


Supplement For the connection method using coupler and not setting the mounting bracket at the connection part

Drop the bottom plate for coupler from the base opening side, and attach it to the bottom of base along with the stiffening plate by using the supplied bolt.



<Figure 4.7.5-2.3> Cross-section view of attaching bottom plate for coupler



4.7.6 RDBJ bottom plate for coupler

This is used for the installation using the bottom plate and in which the fixing coupler or free coupler is used and the mounting bracket is not set at the connection part.

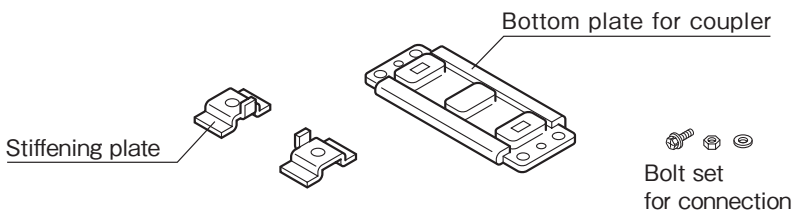
- ※ For 150 size, two bottom plates for duct are standardly included.
- ※ Also check the Design section before performing installation.

2D barcode
for downloading
the specification
drawing



4.7.6-1 Product configuration

<Figure 4.7.6-1.1>



<Table 4.7.6-1.1> Set contents

Bottom plate	Stiffening plate	Bolt set for connection
1	2	4

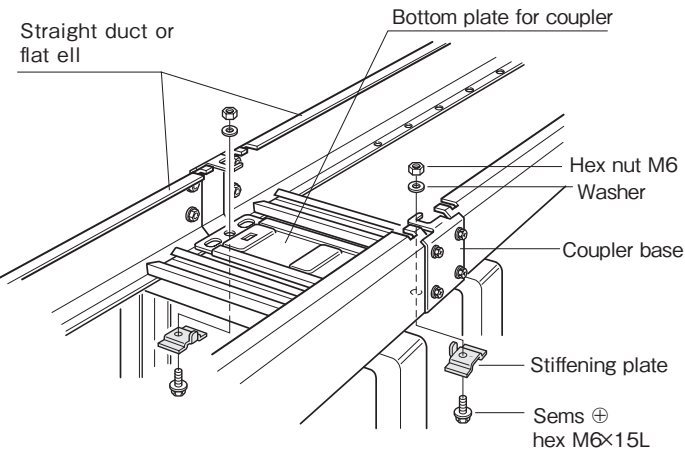
<Table 4.7.6-1.2> Bolt specification

Items	Specifications	Material
Bolt set for connection	Sems ⊕ hex bolt M6 × 15L	SUS
	Hex nut M6	SUS
	Flat washer M6	SUS

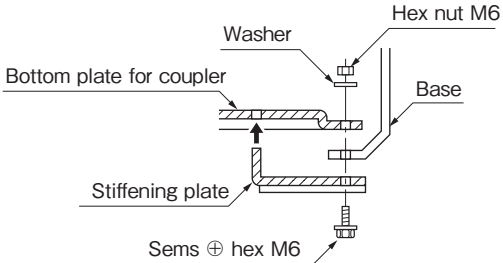
4.7.6-2 Installation of RDBJ

Make a 20mm clearance at the duct connection part, and connect ducts by using the RSJ coupler base, and then attach bottom plate A first, and bottom plate B next, from inside the duct by referring to the figure of [4.7.2-3.1.1]. Temporarily place the bottom plate for coupler from the duct opening side, and attach it from the bottom along with the stiffening plate by using the supplied bolts.

<Figure 4.7.6-2.1> Drawing of attaching bottom plate for coupler



<Figure 4.7.6-2.2> Cross-section view of attaching bottom plate for coupler



4.7.7 RJB retrofit bottom plate for coupler

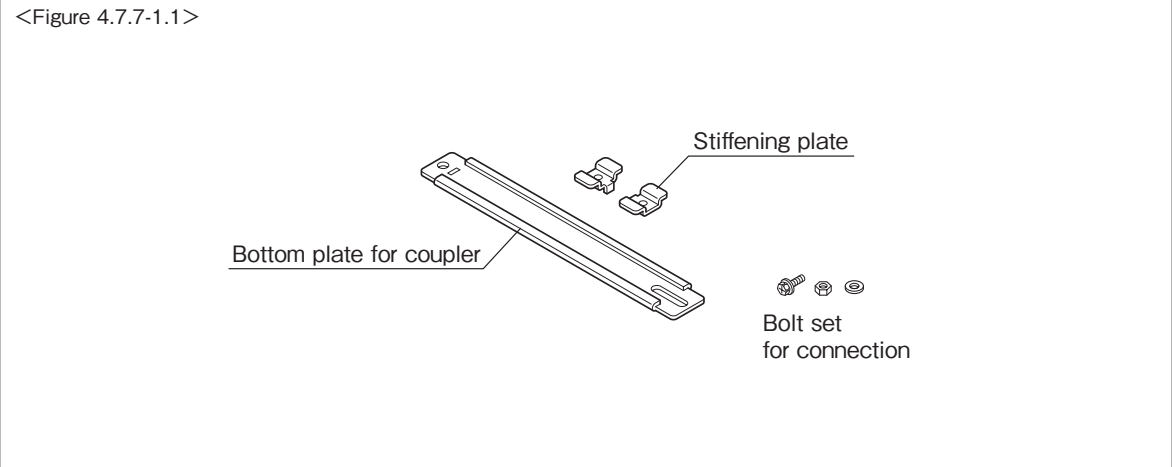
This is the bottom plate for coupler part (RSJ) used in a special case. This is used when the bottom plate is attached to the part connecting a straight duct and fittings or 0.3m/0.5m duct.

※ Also check the Design section before performing installation.

2D barcode for downloading the specification drawing

RJB

4.7.7-1 Product configuration

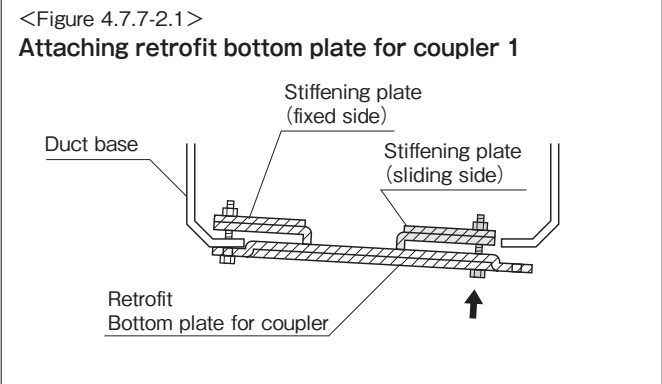


<Table 4.7.7-1.1> Set contents		
Bottom plate	Stiffening plate	Bolt set for connection
1	2	2

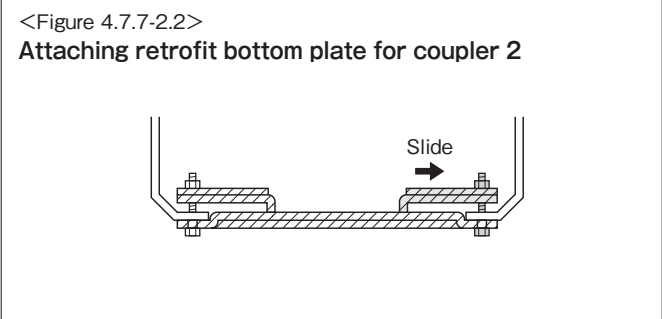
<Table 4.7.7-1.2> Bolt specification		
Items	Specifications	Material
Bolt set for connection	Sems ⊕ hex bolt M6 × 15L	SUS
	Hex nut M6	SUS
	Flat Washer M6	SUS

4.7.7-2 Installation of RJB

1 Insert RJB from the bottom of the duct base by sandwiching the duct base with the stiffening plate.



2 Push the stiffening plate on the sliding side, slide the stiffening plate, and tighten the supplied screws.



4.7.8 RNB bottom net

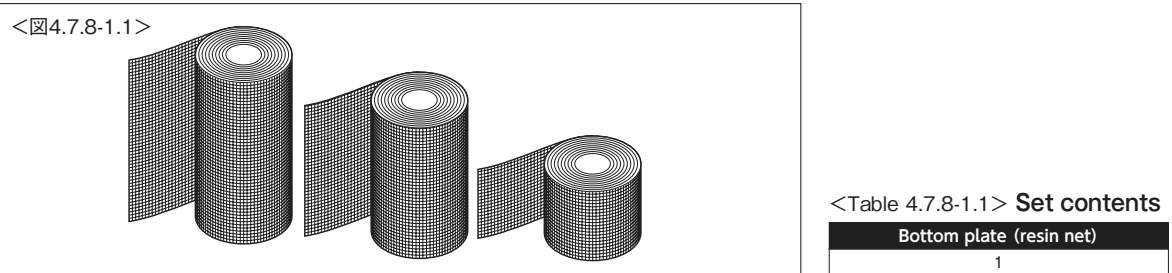
This is the simple bottom plate (net) for the straight duct. This is attached by using the resin bush for bottom plate.

※ Also check the Design section before performing installation.

2D barcode for downloading the specification drawing

RNB

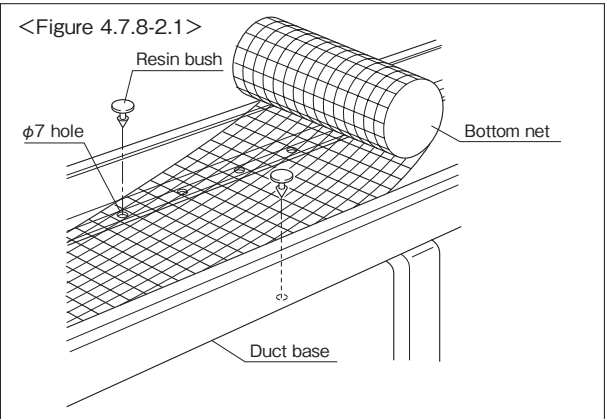
4.7.8-1 Product configuration



4.7.8-2 Installation of RNB (1): Attachment in advance

Note The bottom net cannot be attached to fittings.

Roll out the bottom net on the duct base, and attach it by inserting the resin bush for bottom plate into the $\phi 7$ hole of the duct base.

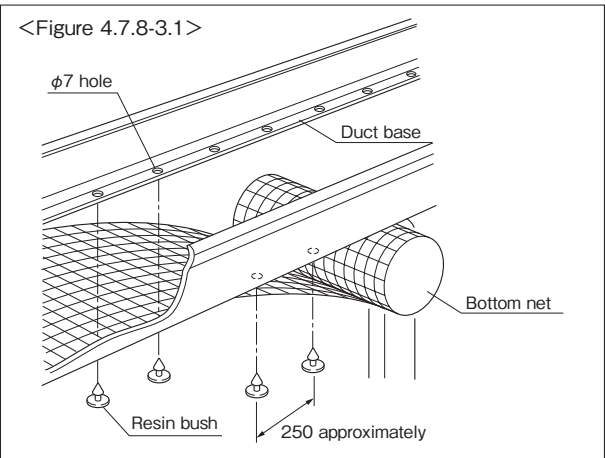


4.7.8-3 Installation of RNB (2): Retrofit attachment

Note

- Retrofit attachment of bottom net is not possible for 900 size.
- The bottom net cannot be attached to fittings. (Excluding RE)

After piping, attach the bottom net by inserting the resin bush for bottom plate into the $\phi 7$ hole of the duct base as shown from the bottom. At this time, use the resin bush for bottom plate at an interval of approximately 250mm to prevent dangling of the bottom net.



4.8 Others

Table of contents

4.8.1 List of other members

4.8.2 REC end cap

4.8.3 RPH PD supporting bracket

4.8.4 RDK RD strut set

4.8.5 RSK RD duct partitioning bracket for H type

4.8.6 RDS caution sticker

156

157

158

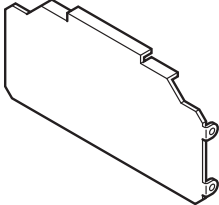
159

159

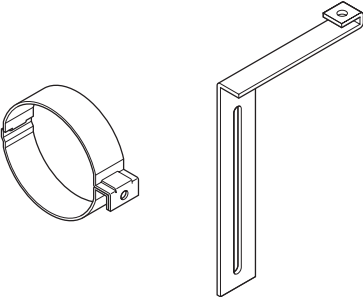
160

4.8.1 List of other members

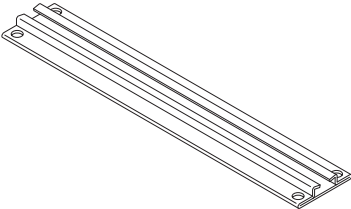
REC end cap



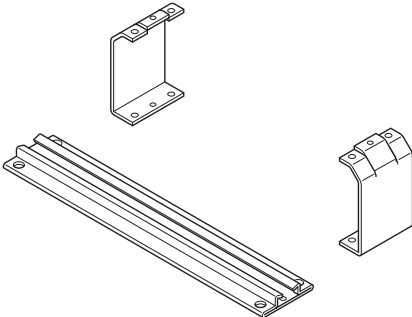
RPH PD supporting bracket



RDK RD strut set R



RSK RD duct partitioning bracket for H type



RDS caution sticker



4.8.2 REC end cap

This is the part to cover the opening of straight duct or fittings (except some parts), etc.

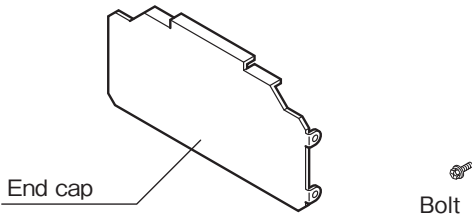
※ Also check the Design section before performing installation.

2D barcode for downloading the specification drawing



4.8.2-1 Product configuration

<Figure 4.8.2-1.1>



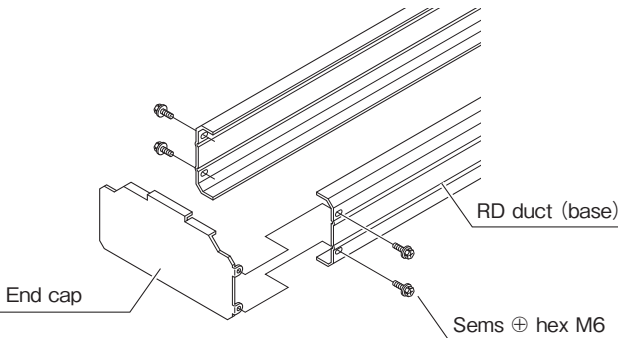
<Table 4.8.2-1.1> Set contents

Items	Quantity
End cap	1
Bolt (Sems ⊕ hex M6×15L - SUS)	4

4.8.2-3 Installation of REC

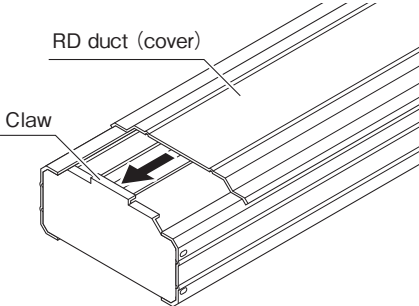
1 Attach the end cap to the RD duct base.

<Figure 4.8.2-3.1>



2 After piping, attach the cover 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 PD fixing coupler PDB-N etc. as necessary.

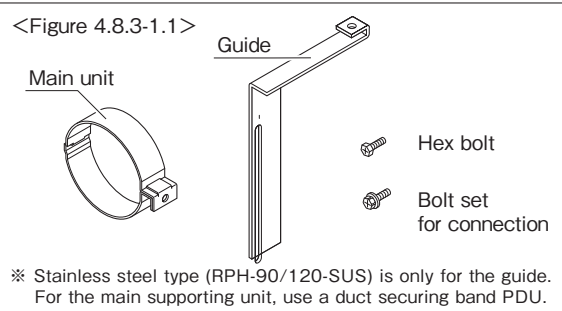
※ In the duct base of RD duct, several holes (24 holes for 2m) are prepared for attaching bolts, into which the W3/8 or M10 bolts can be inserted.

※ Also check the Design section before performing installation.

2D barcode for downloading the specification drawing



4.8.3-1 Product configuration



<Table 4.8.3-1.1> Set contents

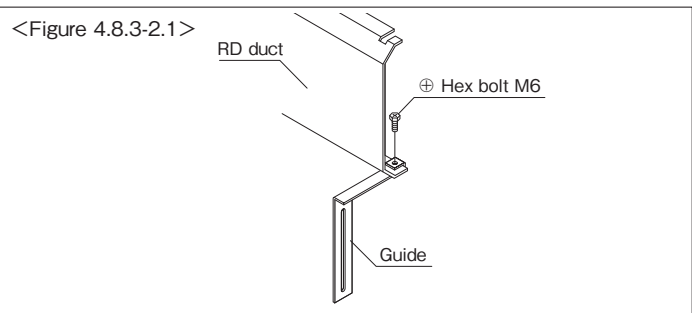
Items	Quantity
Main unit	1
Guide	1
Hex bolt	1
Bolt set for connection	1

<Table 4.8.3-1.2> Bolt specification

Items	Specifications	Material
Hex bolt	⊕ Hex bolt M6×14L	SUS
Specifications	Sems ⊕ hex bolt M6×20L	SUS

4.8.3-2 Installation of RPH

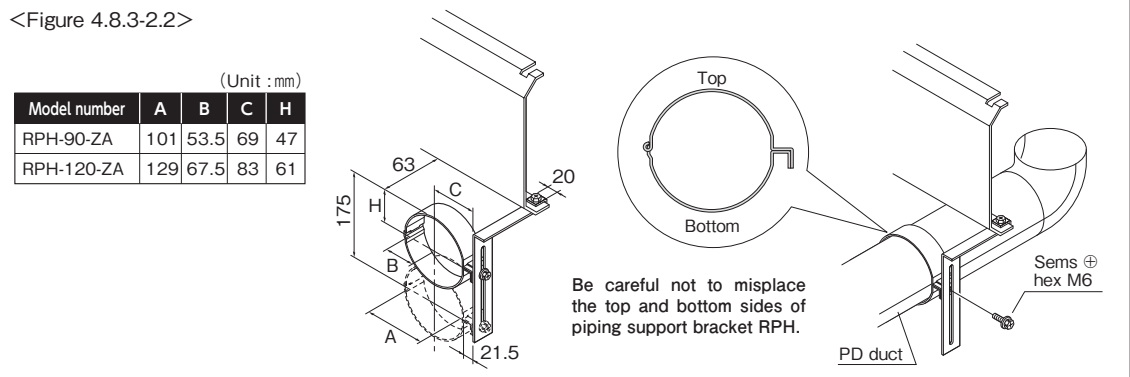
1 Attach the guide by matching the position of guide to the branching position.



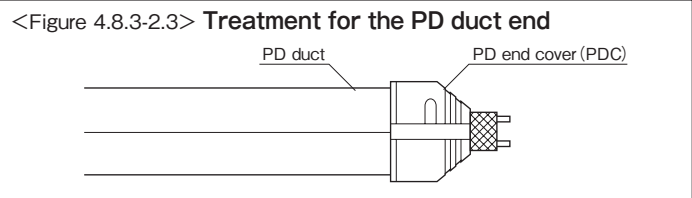
2 Perform piping, protect the piping with the PD duct, adjust the height, and then fix with the piping support bracket RPH.

※ Bolts, nuts, and washers for fixing the mounting bracket are supplied with the mounting bracket.

Note Be careful not to misplace the top and bottom sides of piping support bracket RPH. **Reference** <Figure 4.8.3-2.2>



3 Perform the treatment for the piping end. Use the PD end cover PDC for the piping end.



4.8.4 RDK RD strut set

This is used as the support of piping in hanging the RD duct from the ceiling (with the cover of duct facing downward).

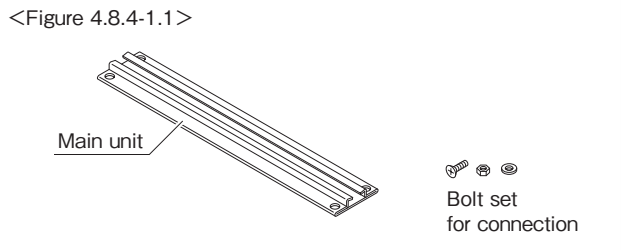
Note For ceiling mounted installation (with the lid facing downwards), please remove the cover reinforcement plate that comes standard with the 600 (H) size duct and some corner parts for safety reasons.

※ Also check the Design section before performing installation.

2D barcode for downloading the specification drawing



4.8.4-1 Product configuration



<Table 4.8.4-1.1> Set contents

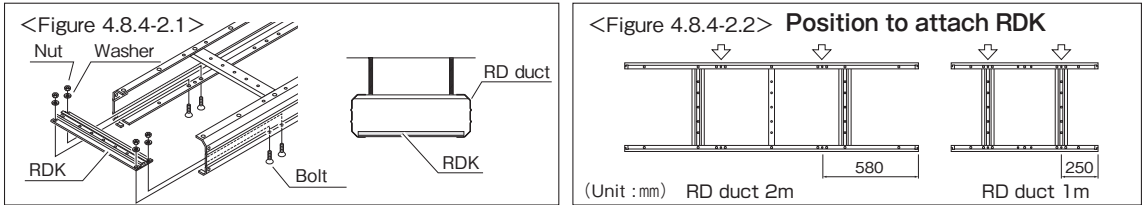
Items	Quantity
Main unit	1
Bolt set for connection	4

<Table 4.8.4-1.2> Bolt specification

Items	Specifications	Material
Bolt	⊕ Countersunk bolt M6×12L	SUS
Washer	Flat Washer φ6.5 × φ18	SUS
Nut	Hex nut M6	SUS

4.8.4-2 Installation of RDK

1 Attach RDK to RD by using the supplied bolts.



4.8.5 RSK RD duct partitioning bracket for H type

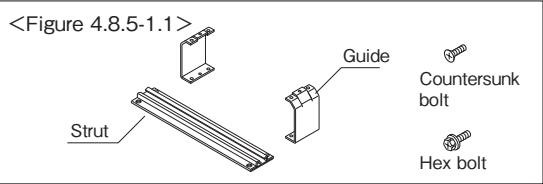
This is the insulation compression preventing bracket for the polyphyletic ducting system. This can be attached to the H type duct of 2m and 1m.

※ Also check the Design section before performing installation.

2D barcode for downloading the specification drawing



4.8.5-1 Product configuration

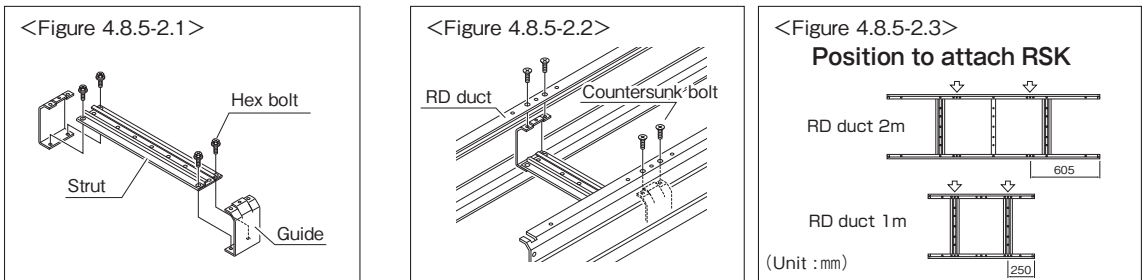


<Table 4.8.5-1.1> Set contents

Items / Specifications	Quantity
Strut	1
Guide	2
Countersunk bolt (⊕ Countersunk M6×L12 SUS)	4
Hex bolt (sems ⊕ hex bolt M6×L15 SUS)	4

4.8.5-2 Installation of RSK

1 Attach the strut to the guide. 2 Install piping under the partitioning bracket, and attach RSK to the duct (duct base).



4.8.6 RDS caution sticker

It is used as a reminder not to use the duct (except walkway type) as a passageway or step.

4.8.6-1 Product configuration

<Figure 4.8.6-1.1>

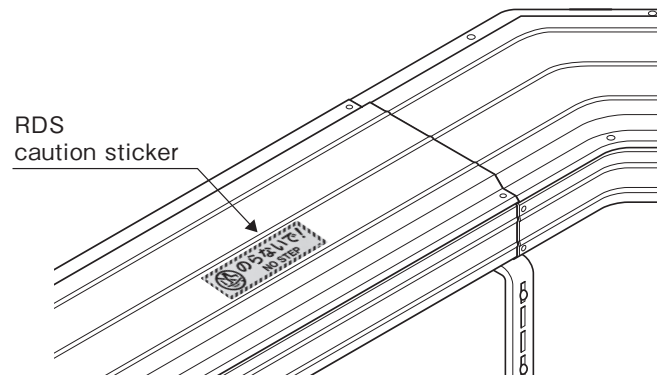


4.8.6-2 Example RDS usage

1 Affix it on the duct cover.

- Note**
- Remove dusts and dirt from the surface before putting the sticker on.
 - Once a sticker is removed, its adherence deteriorates and it becomes difficult to put it on again.
 - Store it in a dry place away from direct sunlight.

<Figure 4.8.6-2.1>



Materials

5 Materials

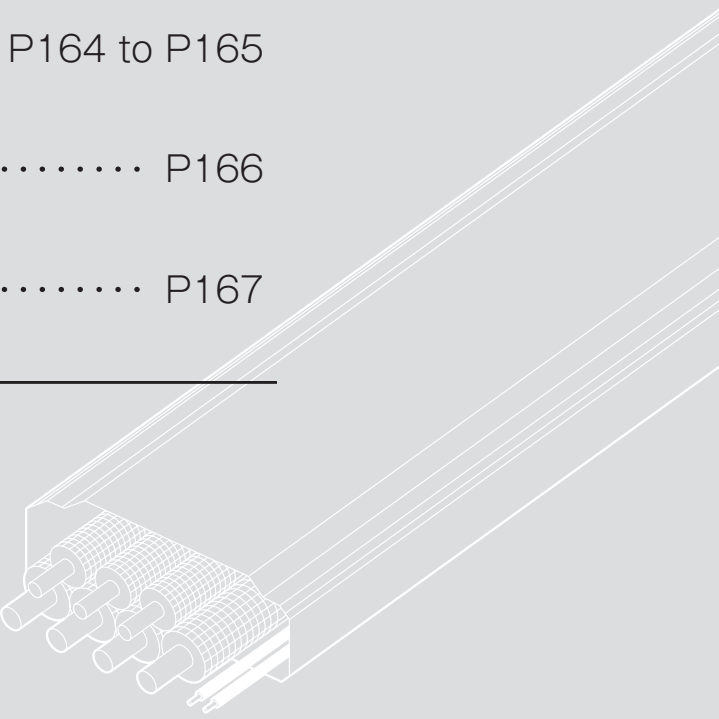
Specifications by Ministry of Land,
Infrastructure,
Transport and Tourism P162 to P163

About the corrosion resistance
of RD-ZA type P163

View of snow accumulation P164 to P165

Copper pipe P166

SI units P167



5 Materials

Table of contents	5.1 Specifications by Ministry of Land, Infrastructure, Transport and Tourism	162
	5.2 About the corrosion resistance of RD-ZA type	163
	5.3 View of snow accumulation	164
	5.4 Copper pipe	166
	5.5 SI units	167

5.1 Specifications by Ministry of Land, Infrastructure, Transport and Tourism

5.1.1 Standard specifications for Public building construction by Ministry of Land, Infrastructure, Transport and Tourism

The heat insulating decorative case must be made of resin, aluminum alloy, hot-dip aluminum-zinc alloy-coated steel sheet, hot-dip zinc-coated steel sheet or material, hot-dip zinc-coated steel sheet with powder coating, stainless steel sheet, etc. The resin case must be weather-resistant and able to withstand temperatures ranging from - 20°C to 60°C.

(Page 84, Standard Specifications 2022 Edition)

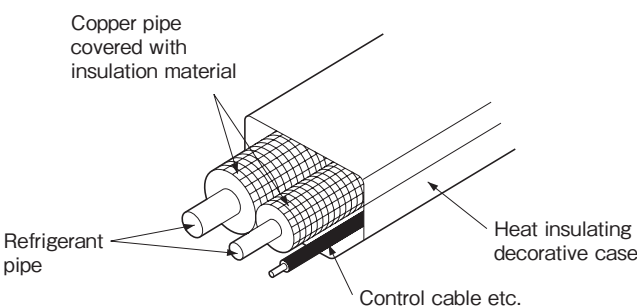
5.1.2 Supervision guidelines of machinery and equipment installation by Ministry of Land, Infrastructure, Transport and Tourism

(8) Heat insulating decorative case

The Standard Specifications prescribes that the heat insulating decorative case must be made of weather resistant resin, aluminum alloy, hot-dip aluminum-zinc alloy-coated steel sheet, hot-dip zinc-coated steel sheet or material, hot-dip zinc-coated steel sheet with powder coating, stainless steel sheet, etc. It must be of molded pipe, elbow, etc., and it must be excellent in water resistance, weatherability, and workability. The resin case must be able to withstand temperatures ranging from - 20°C to 60°C.

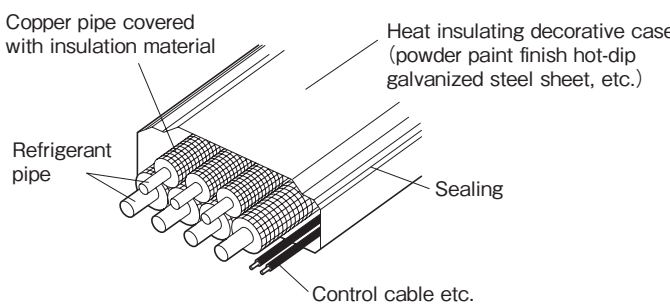
(Page 304, Supervision Guidelines, 2022 Edition)

<Table 5.1.2-1>

Classification / Refrigerant pipe		Insulation thickness (mm)			
Classification of heat insulation	Material and Installation 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 part to be fixed with bolt) 3. Sealing (part 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 10×20mm) PAIR COIL KHE			
		• Coated copper pipe (Insulation thickness 20mm) NEOCOIL KHE NEOPIPE KHE			
		• Heat insulating decorative case SLIMDUCT SD SLIMDUCT LD SLIMDUCT PD			

<Table 5.1.2-2>

Classification / Refrigerant pipe		Insulation thickness (mm)			
Classification of heat insulation	Material and Installation 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 part to be fixed with bolt) 3. Sealing (part 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	



Copper pipe covered with insulation material

Heat insulating decorative case (powder paint finish hot-dip galvanized steel sheet, etc.)

Refrigerant pipe

Sealing

Control cable etc.

Product meeting the conditions	
• Coated copper pipe (Insulation thickness 10 mm) NEOCOIL / NEOPIPE • Coated copper pipe (Insulation thickness 10×20mm) PAIRCOIL KHE • 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 325, Supervision guidelines of installation 2018 Edition)

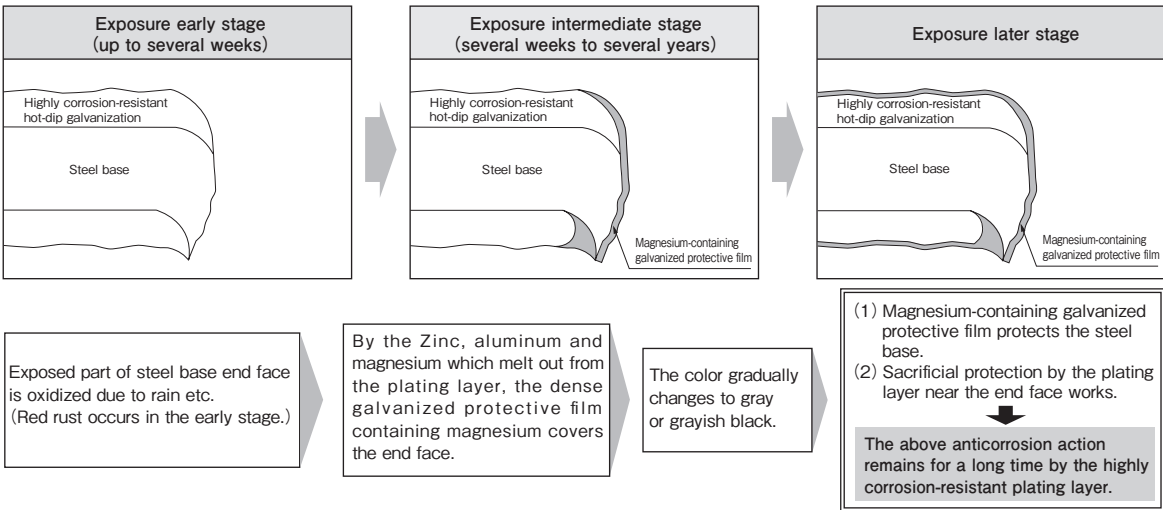
5.2 About the corrosion resistance of RD-ZA type

The RD-ZA series with "Highly corrosion-resistant hot-dip zinc-coated steel sheet (JIS G3323 K27 compliant)*" provides the corrosion resistance equal to or greater than hot-dip zinc-coated steel sheets (HDZT77) or Galvalume steel sheets (AZ150), and it can be used not only in general outdoor environments but also in salt-damage and severe salt-damage areas where 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 installation, aluminum and magnesium will melt out from the plating layer of the plane surface. The dense zinc-based 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 zinc-coated steel sheet: Coating layer of zinc, 6% aluminum, and 3% magnesium

<Figure 5.2-1> Mechanism of corrosion resistance production in the end face



5.3View of snow accumulation

5.3.1The Building Standards Act

The Building Standards Act prescribes conditions related to the snow load.

Article 86, Enforcement Ordinance of the Installation 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 installation of facility (regulation of ensuring snow-piling space)

- For a facility with a roof (rooftop part) of 3m in horizontal length and 2m of deepest snow beam, ensure the space of at least 2m from the wall surface for piling snow.

5.3.2Calculation 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 cover

Select an appropriate RD duct type by checking the strength of cover.

Reference [1.4.2] Load capacity and strength/Strength of cover (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 brackets

Find the required quantity of mounting brackets (x) by dividing the total load by the load capacity of mounting bracket.

Reference [1.4.3] Load capacity and strength/Load capacity (allowable load) of mounting bracket
[3.4.8] Standard pitch between bases (mounting brackets)

Example

Required quantity of mounting brackets (x)
• Load capacity of mounting bracket = 6,374N
x = 11,310N÷6,374N
≒ 1.77



Two pieces of mounting bracket are required for one piece of RDW-900 (installation 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 bracket 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 bracket
= 22cm² (bolt part included)
y = 11,304N ÷ 4 ÷ 22
≒ 128.45



Load for 1cm² = 128.45N
(Reference : 47.5N for CR-A/CR-W1015 1cm²)

5.3.3Other 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 part of installation 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 installation (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 insulation 10mm	Thickness of insulation 20mm	Thickness of insulation 15mm
6.35	0.8	0.14	0.18	—
9.52	0.8	0.21	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※1	2.07	
	2.65	—	3.73	
53.98	1.5	2.32※1	—	
	2.8	—	4.18	

(Note 1) Values in the table are the theoretically calculated values, and not the measured values.
※1…Thickness of the insulation 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 72×10 ⁻¹
	1×10 ⁻⁵	1	1.019 72×10 ⁻⁶
	9.806 65	9.806 65×10 ⁵	1

Viscosity	Pa·s	cP	P
	1	1×10 ¹	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/m ²	MPa or N/mm ²	kgf/mm ²	kgf/cm ²
	1	1×10 ⁻⁶	1.019 72×10 ⁻⁷	1.019 72×10 ⁻⁵
	1×10 ⁶	1	1.019 72×10 ⁻¹	1.019 72×10
	9.806 65×10 ⁶	9.806 65	1	1×10 ²

Kinematic viscosity	m ² /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

Note 1Pa=1N/m², 1MPa=1N/mm²

Pressure	Pa	kPa	MPa	bar	kgf/cm ²	atm	mmHg	mmHg or Torr
	1	1×10 ⁻³	1×10 ⁻³	1×10 ⁻⁵	1.019 72×10 ⁻⁵	9.869 23×10 ⁻⁵	1.019 72×10 ⁻¹	7.500 62×10 ⁻³
	1×10 ³	1	1×10 ⁻³	1×10 ⁻²	1.019 72×10 ⁻²	9.869 23×10 ⁻³	1.019 72×10 ⁰	7.500 62
	1×10 ⁶	1×10 ³	1	1×10	1.019 72×10	9.869 23	1.019 72×10 ³	7.500 62×10 ³
	1×10 ⁹	1×10 ⁶	1×10 ⁻¹	1	1.019 72	9.869 23×10 ⁻¹	1.019 72×10 ⁴	7.500 62×10 ⁶
	9.806 65×10 ⁴	9.806 65×10	9.806 65×10 ⁻²	9.806 65×10 ⁻¹	1	9.678 41×10 ⁻¹	1×10 ⁴	7.355 59×10 ²
	1.013 25×10 ⁶	1.013 25×10 ³	1.013 25×10 ⁻¹	1.013 25	1.033 23	1	1.033 23×10 ⁴	7.600 00×10 ²
	9.806 65	9.806 65×10 ⁻³	9.806 65×10 ⁻⁶	9.806 65×10 ⁻⁵	1×10 ⁻⁴	9.678 41×10 ⁻⁴	1	7.355 59×10 ⁻²
	1.333 22×10 ⁵	1.333 22×10 ⁻¹	1.333 22×10 ⁻⁴	1.333 22×10 ⁻³	1.359 51×10 ⁻³	1.315 79×10 ⁻³	1.359 51×10	1

Note 1Pa=1N/m²

Work, Energy, Heat	J	kW·h	kgf·m	kcal
	1	2.777 78×10 ⁻⁷	1.019 72×10 ⁻¹	2.388 89×10 ⁻⁴
	3.600×10 ⁶	1	3.670 98×10 ⁶	8.600 0×10 ²
	9.806 65	2.724 07×10 ⁻⁶	1	2.342 70×10 ⁻³

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 72×10 ⁻¹	1.359 62×10 ⁻³	8.600 0×10 ⁻¹
	9.806 65	1	1.333 33×10 ⁻²	8.433 71
	7.355×10 ³	7.5×10	1	6.325 29×10 ²

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 ² ·°C)
	1	8.600 0×10 ⁻¹

Note 1cal=4.18605J
(depends on the calculation method)

Thermal conductivity coefficient	W/(m ² ·K)	kcal/(h·m ² ·°C)
	1	8.600 0×10 ⁻¹

Note 1cal=4.18605J
(depends on the calculation method)

Specific heat	J/(kg·K)	kcal/(kg·°C)
	1	2.388 89×10 ⁻⁴

Note 1cal=4.18605J
(depends on the calculation method)

SLIMDUCT™RD Design and installation materials

August 2024

INABA DENKI SANGYO CO., LTD.
Inaba Denko Products Overseas Sales Department

4-11-14, ITACHIBORI, NISHI-KU, OSAKA, JAPAN 550-0012
Tel : +81 (0) 6-4391-1920 Fax : +81 (0) 6-4391-1935
E-MAIL : inabadenko-overseas@gr-inaba.com