

Features of Pipe Frame Systems



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MISUMI Pipe Frame System is designed to combine various shapes and sizes of pipes and joints freely and economically. We provide the system for industrial equipment that serves for streamlining of logistics and limited space.

Joint Mechanism

There are two joining methods, metal joints and plastic joints for Pipe Frame Systems.

Aluminum extruded Pipe Frames and Stainless Steel Pipe Frames are applicable to metal joints only. For Stainless Steel Pipe Frames, please use the special metal joints.)

Metal Joints (P840)	Plastic Joints (P842~)
	
Feature	Feature
<ul style="list-style-type: none"> • Rigid • Quick jointing by screw-together assembly • Can be disassembled freely 	<ul style="list-style-type: none"> • Economical and lightweight • Needs 24 hours to bond joints and pipes by adhesives. • Once jointed, they cannot be disassembled.

Material Specifications

Pipe

- (1) Aluminum Extruded Pipe Frame (A6N01SS-T5 Aluminum Alloy, 6061-T6 Aluminum Alloy, Thickness 1.7mm)
- (2) Hot Zinc Plating Steel Pipe Frame (Cold Rolled Steel Plate Low Carbon Steel Thickness 0.7mm)
Plastic Coating Thickness 1mm (Refer to **P837**.)
* Hereafter described as "Plastic Coated Pipe Frame"
- (3) Stainless Steel Pipe Frame (430 Stainless Steel Thickness 1.0mm)

Metal Joints

- (1) Stainless Steel (304 Stainless Steel) Thickness 2.3mm
- (2) SAPH Thickness 2.6mm Cathodic Electrodeposition Coating (**P840**)

Plastic Joints

AAS Resin (**P842~P844**)

Chemical Resistance (Pipe Frames, Plastic Films, Plastic Joints)

Strong resistance to inorganic acid, alkali, salt and non-polar oil.

The plastic coating may dissolve or swell when it contacts organic solvents such as ketone, ester, aromatics and chlorinated hydrocarbon.

Appearance after 7 Days of Immersion at Room Temperature

Chemical	Appearance
Distilled Water	No Change
10% Acetic Acid	No Change
10% Hydrochloric Acid	No Change
3% Sulfuric Acid	No Change
10% Sodium Hydroxide	No Change
Ethanol	No Change
n-Heptanes	No Change
Regular Gasoline	Expansion and Whitening
Machine Oil	No Change
Toluene	Dissolution
Methylethylketone	Dissolution

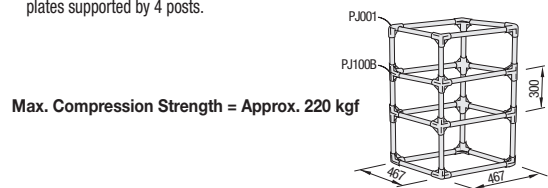
Allowable Load on Pipe Frame

Test with product supported at both ends and concentrated load cast on the center. Use with lighter load than these test values.

	Plastic Coated		Stainless Steel Pipe Frame	
L Dimension (mm)	Allowable Load (N) (kgf)	Allowable Load (N) (kgf)	Allowable Load (N) (kgf)	Allowable Load (N) (kgf)
450	1372	140	1509	154
900	686	70	755	77
1000	568	58	625	64
1100	519	53	571	58
1300	431	44	474	48
1500	382	39	420	43
1800	313	32	345	35

Compression Strength of Pipe Frame

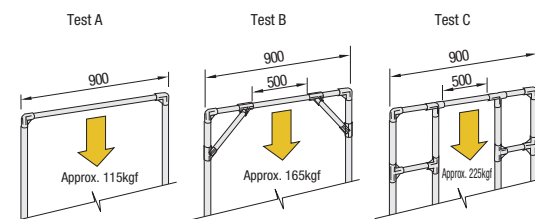
The structure below is assembled with plastic coated pipe frames and plastic joints. When tested with uniformly-distributed load applied on upper and lower parallel plates supported by 4 posts.



Max. Compression Strength = Approx. 220 kgf

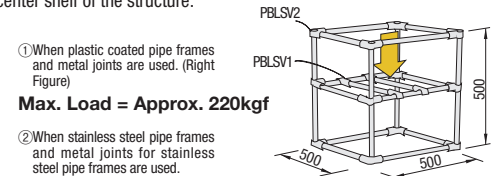
Comparison of Structure Strength

Strength Comparison with Concentrated Load on the Center



Joint Strength by Metal Joints

Load value that may cause joint misalignment when the load is applied on the center shelf of the structure.



① When plastic coated pipe frames and metal joints are used. (Right Figure)

Max. Load = Approx. 220kgf

② When stainless steel pipe frames and metal joints for stainless steel pipe frames are used.

Max. Load = Approx. 160kgf

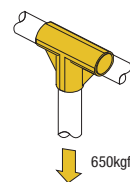
Please note the maximum load is the value of the static load, and impact load may be lower than this value.

Adhesive Strength by Plastic Joints

The right figure shows adhesive tension strength 24 hours after PJ201B is bonded to a pipe frame (by adhesive). Then measured the tension strength.

(Aluminum extruded pipe frame and stainless steel pipe frame cannot be bonded.)

Adhesive Strength = Approx. 650 kgf

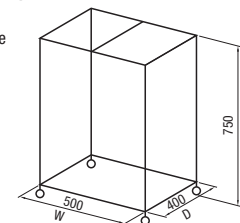


Selection Steps for Pipe Frame System

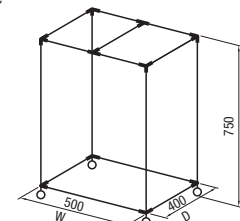
1. Selection Steps (Ex.) To assemble a "Cart" with plastic coated pipe frames and plastic joints (Excludes top plate)

Procedure① Rough sketch of cart shape

- Determine the dimensions for width (W), depth (D) and height (H), and whether the casters are used or not.
EX. W500, D400,
H750, with 4 casters



Procedure② Mark positions for pipe frames to be jointed.



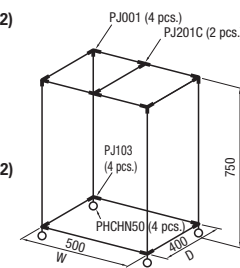
Procedure③ Select joint parts.

P841 Refer to "Selection of Plastic Joints" on

PJ001 (P842) PJ201C (P842)

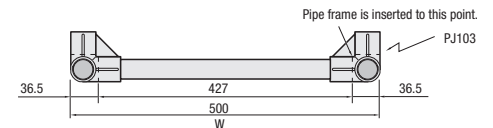


PJ103 (P842) PHCHN50 (P842)

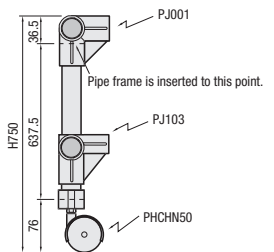


Procedure④ Calculate pipe frame length. (P858)

- Pipe Frame Length in W Direction (Pipe Frame Length between Two PJ001s and PJ103s)
=W-36.5x2
=500-73
=427



- Pipe Frame Length in D Direction (Pipe Length between PJ001s and PJ103s or PJ201Cs.)
=D-36.5x2
=400-73
=327



- Pipe Frame Length in H Direction (Length between PJ001 and PJ103 minus Caster Height)
=H-76-36.5
=750-112.5=637.5=637

Procedure⑤ Select color.

Select color for pipe frames and plastic joints. (Ex.) S (Dark Gray)

2. Make selected parts list.

The above pipe frame cart is assembled with the following parts. Please place an order with the Part Number below.

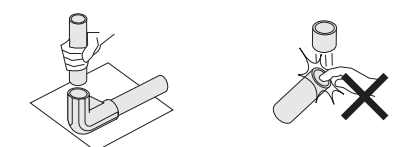
Part Number	Qty.	Part Number	Qty.
PFS28-S-427	4	PJ201C-S	2
PFS28-S-327	5	PJ103-S	4
PFS28-S-637	4	PHCHN50	4
PJ001-S	4	(PFBONDN1000	1)

If no adhesive is available at hand (**P841**)

3. Notes for Assembly

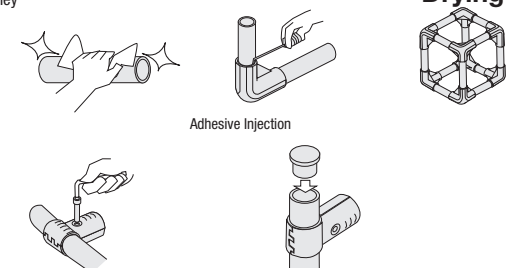
(1) Temporary Assembly

- During the temporary assembly, insert pipe frames completely.
- Be careful not to cut your hands with sharp ends of the cut frames.



(2) Plastic Joints

- Adhesive should be applied on Joints and Pipes after the temporary assembly, since they can't be separated once bonded.
- Clean the bond surface before applying adhesive.
- Apply adhesive on a flat table.
- Apply adhesive twice to make sure it is completed.
- Liquid adhesive should be injected evenly not to spill over.
- Do not move the joints and pipe frames for 24 hours after adhesive application.



(3) Metal Joints

- Metal joints may become damaged if clamped insufficiently.
- Tighten the screws with a hex wrench.
- Attach PJ503 (inner cap) on the frame ends with adhesive.

