



Panew's Quality Assurance system has been certified to ISO 9001 in 1998 and each product must be passed 100% pressure test before delivery.

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## EXPANSION SAFETY INFINITELY SINCERITY, INNOVATION, SYNERGY

PMI



PT



Deflection Test



Oil & Dust Free Treatment



Spring Rate Test



Hydraulic Test



Installation



Fatigue Test

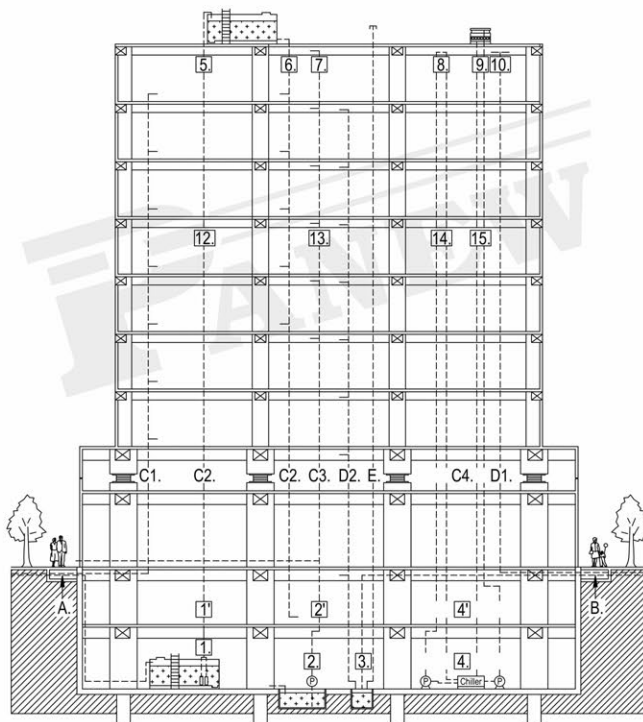


Burst Test



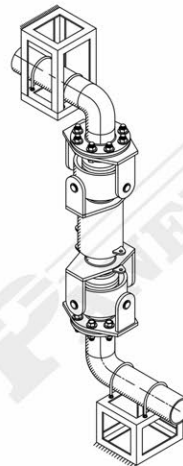
# PIPING SYSTEM FOR BASE ISOLATED BUILDINGS

## □ Piping Figure for Base Isolated Building



### 1. Expansion Joint for Large Offset

- Appropriate Product :
  - A. Medium and High Pressure Piping  
P-5850 ( Exp. Joint for Earthquake / Large Offset )
  - B. Drainage Piping  
P-1911 ( Exp. Joint for Drainage / Large Offset )
  - C. Ventilation Piping  
P-2700 ( Ventilation Connector / Large Offset )
- Installed Location :  
Location C. ~ E. in the figures



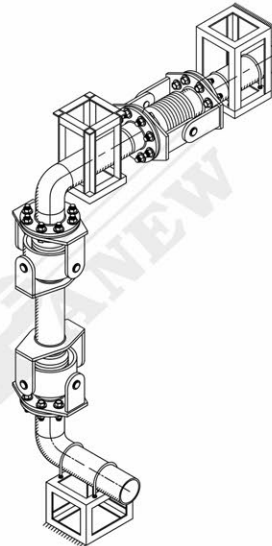
□ P-5850



□ P-1911

### 2. Expansion Joint for Lateral Offset.

- Appropriate Product :
  - A. Medium and High Pressure Piping
    - a. P-5000 / 5200 ( Universal Type Exp. Joint )
    - b. P-1105 / 1205 ( Braided Flexible Connector )
  - B. Drainage Piping  
P-1911 ( Exp. Joint for Drainage )
- Installed Location :  
Location A , B in the figures



□ P-5800+5600



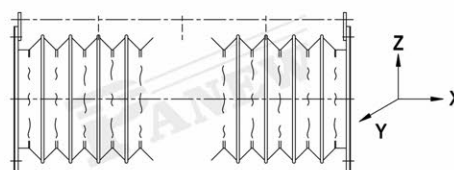
□ P-2700

### 3. Flexible Connector

- Appropriate Product :
  - A. P-2000 / 2200 ( Pump Connector )
  - B. P-1100 / 1200 ( Braided Flexible Connector )
  - C. P-8000 / 8200 ( Vibration Isolating Connector )
- Installed Location :  
Location 1~4, 1'~4' in the figures

### 4. Expansion Joint

- Appropriate Product :
  - A. P-3000 / 3200 ( Axial Expansion Joint )
  - B. P-7300 ( Stress Relieving Device )
- Installed Location :  
Location 5~10, 12~15 in the figures



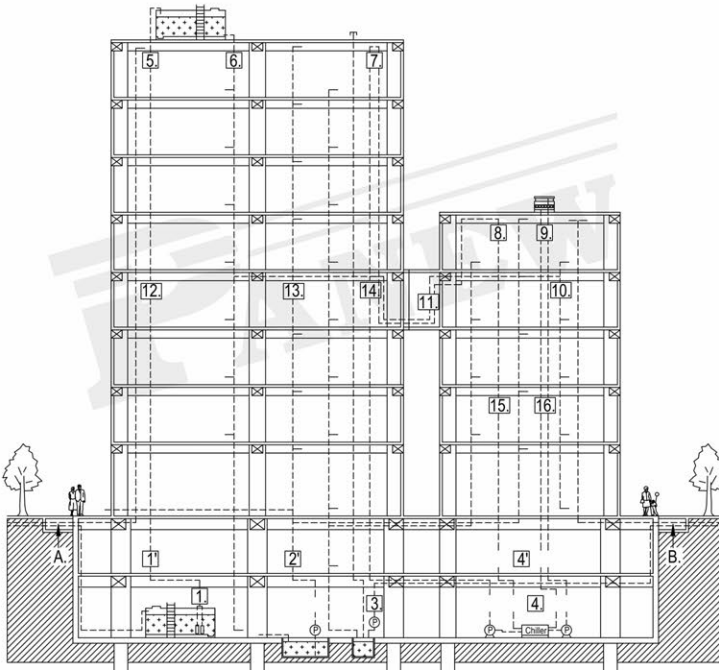
□ P-6422



□ P-2700

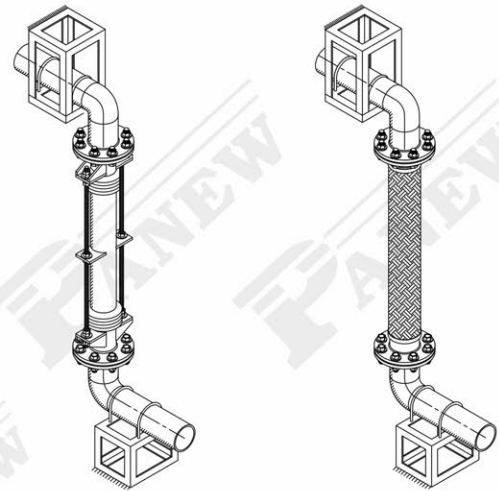
# PIPING SYSTEM FOR OTHER BUILDINGS

Piping Figure for other Buildings



1. Expansion Joint for Lateral Offset.

- Appropriate Product :
  - A. Medium and High Pressure Piping
    - a. P-5000 / 5200 ( Universal Type Exp. Joint )
    - b. P-1105 / 1205 ( Braided Flexible Connector )
  - B. Drainage Piping
    - P-1911 ( Exp. Joint for Drainage )
- Installed Location :
  - Location A , B , 11 in the figures



P-5000 / 5200

P-1105 / 1205

2. Flexible Connector

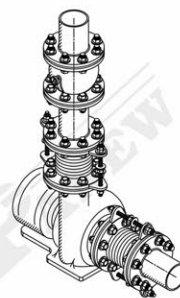
- Appropriate Product :
  - A. P-2000 / 2200 ( Pump Connector )
  - B. P-1100 / 1200 ( Braided Flexible Connector )
  - C. P-8000 / 8200 ( Vibration Isolating Connector )
- Installed Location :
  - Location 1~4, 1'~4' in the figures



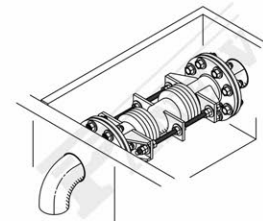
P-3000 / 3200

3. Expansion Joint

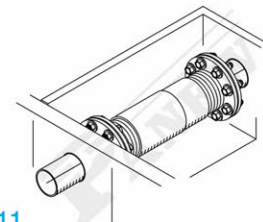
- Appropriate Product :
  - A. P-3000 / 3200 ( Axial Expansion Joint )
  - B. P-7300 ( Stress Relieving Device )
- Installed Location :
  - Location 5~10, 12~16 in the figures



P-2000 / 2200

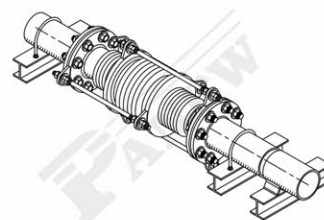
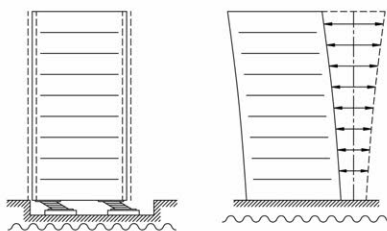


P-5000 / 5200 subsidence



P-1911 subsidence

Figures for Base Isolated and other Buildings during shift period.

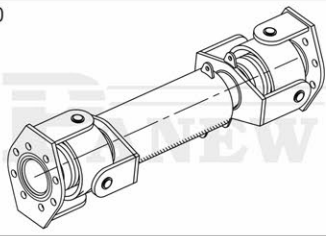
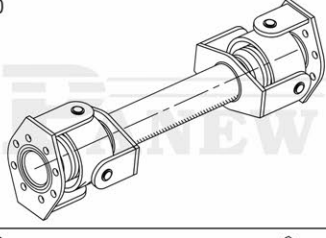
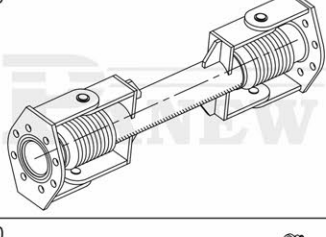
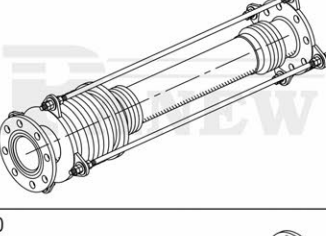
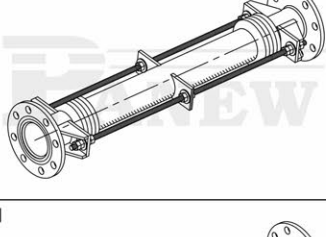
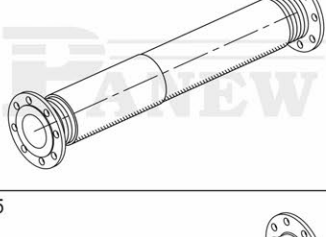
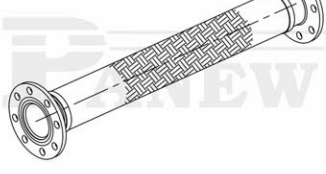


P-8000

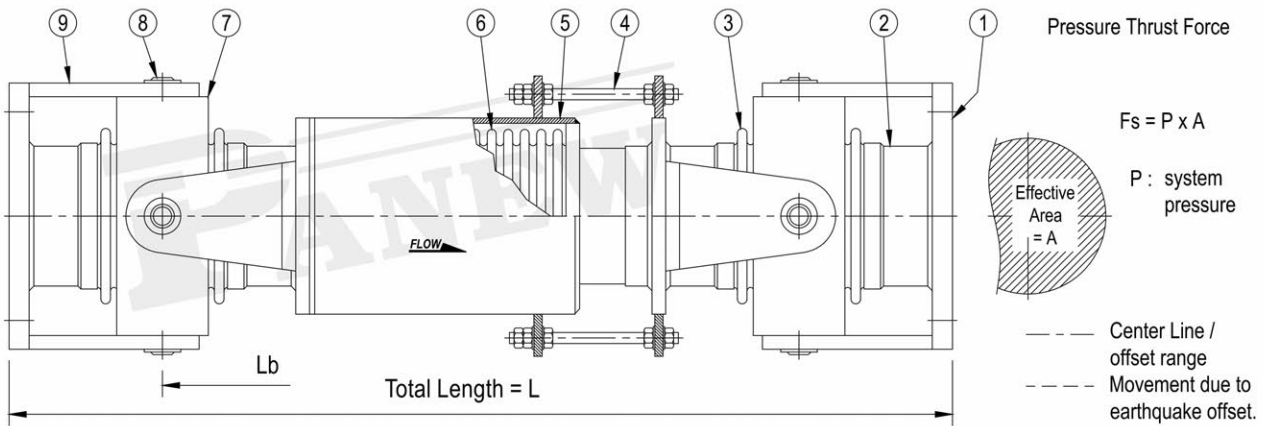


P-7300

**PRODUCTS MODELS USED FOR EARTHQUAKE OFFSET & FUNCTION COMPARISON.**

Product Model No. / Figure	Available System	Movement (mm)	Max. Press. (kg/cm <sup>2</sup> )	Max. Temp. (°C)	Config.	△H Offset
<input type="checkbox"/> P-5850 	Water steam Gas, Fuel	~ 800	20	300	Vertical	<input type="checkbox"/> ok ※ Anchor Required
<input type="checkbox"/> P-5800 	as above	~ 400	20	300	Vertical	<input type="checkbox"/> ok ※ Plus <input type="checkbox"/> P-5600 or <input type="checkbox"/> P-5000
<input type="checkbox"/> P-5640 	as above	~ 800	20	300	Horizontal	<input type="checkbox"/> ok ※ Plus <input type="checkbox"/> P-5600 or <input type="checkbox"/> P-5650
<input type="checkbox"/> P-8300 	as above	~ 200	20	300	Vertical Horizontal	<input type="checkbox"/> ok
<input type="checkbox"/> P-5000 	as above	~ 200	20	300	Vertical Horizontal	<input type="checkbox"/> ok ※ Anchor Required
<input type="checkbox"/> P-1911 	Sewage Drainage	~ 800	2	100	Vertical Horizontal	<input type="checkbox"/> ok
<input type="checkbox"/> P-1115 	Drainage	~ 200	10	300	Vertical	<input type="checkbox"/> ok ※ Base on special Design

## EXPANSION JOINT FOR EARTHQUAKE ISOLATION / LARGE OFFSET



### ※ Construction

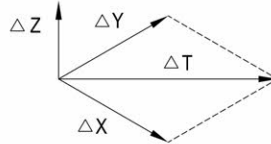
Item	Parts	Std. Material	Option Material
1.	Flange	SS-400	SUS-304/316
2.	End Pipe	STPG/SS-400	SUS-304/316
3.	Bellows 1.	SUS-304	SUS-316
4.	Shipping Rods	SS-400	SUS-304
5.	Cover Pipe	STPG/SS-400	SUS-304/316
6.	Bellows 2.	SUS-304	SUS-316
7.	Gimbal Ring	SS-400	SUS-304
8.	Pin	SS-400	SUS-304
9.	Holding Arm	SS-400	SUS304

# The standard Flange is based on JIS-10K, other flanges are available, like ANSI, DIN, BS ...etc.

# Our products are designed and manufactured according to EJMA. The Max. Life cycles of our products exceed 200 cycles.



Nr : Required Life Cycles

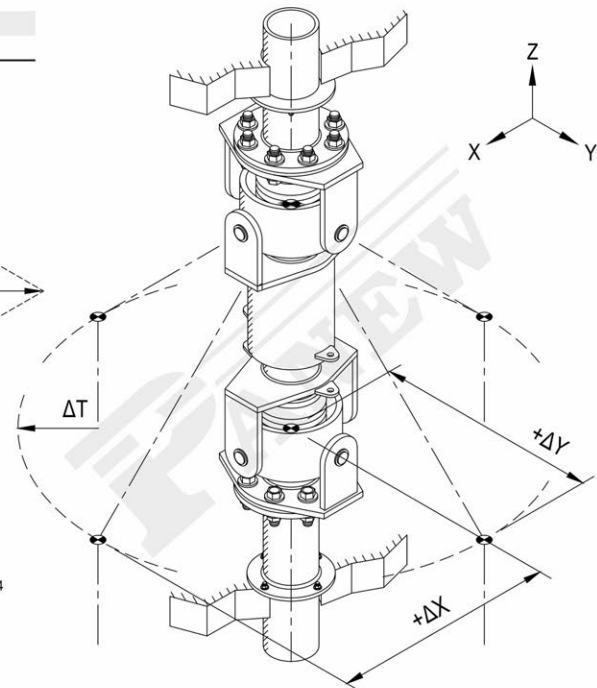


$$\Delta T = \sqrt{\Delta X^2 + \Delta Y^2}$$

$$L_a = \sqrt{\Delta T^2 + L_b^2}$$

$$L_a' = \sqrt{\Delta T_{max}^2 + L_b^2}$$

$$N_r = 200 / \left( \frac{L_a - L_b}{L_a' - L_b} \right)^{3.4}$$



※ Please contact our engineer for anchor strength.

### □ P-5850 / 10K-400mm Specification

\* The unit weight below is just for reference.

N.D.		Total Length (L)		Bellows Specification		Lateral Deflection	working pressure	Weight/pc (JIS-10K)
mm	inch	mm	inch	Φ O.D. (mm)	Eff. Area (cm <sup>2</sup> )	Δ T (mm)	kg/cm <sup>2</sup>	kg/pc
50	2	900	36	81.2	39.3	400	10	24.1
65	2-1/2	950	38	97.2	59.0	400	10	32.6
80	3	950	38	113.7	80.4	400	10	37.6
100	4	1000	40	139.7	127.1	400	10	50.5
125	5	1100	44	165.7	184.3	400	10	64.4
150	6	1100	44	196.7	257.6	400	10	81.7
200	8	1200	48	247.7	423.1	400	10	122.2
250	10	1300	52	305.7	646.5	400	10	197.3
300	12	1300	52	355.5	890.4	400	10	244.2

# The size, working pressure, total length, and movement tabulated above is the standard specification. We can also deliver products against your requests.

# The working pressure tabulated above is based on 70°C. The maximum operating pressure is 1.5 times the working pressure tabulated above.

## EXPANSION JOINT FOR EARTHQUAKE ISOLATION / LARGE OFFSET

### □ P-5850 / 16K-400mm Specification

\* The unit weight below is just for reference.

N.D.		Total Length (L)		Bellows Specification		Lateral Deflection △ T(mm)	working pressure kg/cm <sup>2</sup>	Weight/pc (JIS-16K) kg/pc
mm	inch	mm	inch	Φ O.D. ΦD (mm)	Eff. Area A (cm <sup>2</sup> )			
50	2	900	36	81.2	39.3	400	16	23.4
65	2-1/2	950	38	97.2	59.0	400	16	35.2
80	3	1000	40	113.7	80.4	400	16	45.7
100	4	1100	44	139.7	127.1	400	16	64.9
125	5	1300	52	165.7	184.3	400	16	82.7
150	6	1300	52	196.7	255.9	400	16	117.0
200	8	1300	52	247.7	420.9	400	16	181.9

### □ P-5850 / 10K-600mm Specification

\* The unit weight below is just for reference.

N.D.		Total Length (L)		Bellows Specification		Lateral Deflection △ T(mm)	working pressure kg/cm <sup>2</sup>	Weight/pc (JIS-10K) kg/pc
mm	inch	mm	inch	Φ O.D. ΦD (mm)	Eff. Area A (cm <sup>2</sup> )			
50	2	1100	44	81.2	39.3	600	10	27.9
65	2-1/2	1150	46	97.2	59.0	600	10	37.2
80	3	1150	46	113.7	80.4	600	10	43.0
100	4	1200	48	139.7	127.1	600	10	57.6
125	5	1300	52	165.7	184.3	600	10	72.7
150	6	1300	52	196.7	257.6	600	10	93.4
200	8	1500	60	247.7	423.1	600	10	141.6
250	10	1500	60	305.7	646.5	600	10	220.0
300	12	1700	64	355.5	890.4	600	10	285.8

### □ P-5850 / 16K-600mm Specification

\* The unit weight below is just for reference.

N.D.		Total Length (L)		Bellows Specification		Lateral Deflection △ T(mm)	working pressure kg/cm <sup>2</sup>	Weight/pc (JIS-16K) kg/pc
mm	inch	mm	inch	Φ O.D. ΦD (mm)	Eff. Area A (cm <sup>2</sup> )			
50	2	1100	44	81.2	39.3	600	16	27.3
65	2-1/2	1150	46	97.2	59.0	600	16	40.9
80	3	1300	52	113.7	80.4	600	16	54.6
100	4	1400	56	139.7	127.1	600	16	76.3
125	5	1500	60	165.7	184.3	600	16	93.6
150	6	1500	60	196.7	255.9	600	16	132.9
200	8	1700	68	247.7	420.9	600	16	199.6

### □ P-5850 / 10K-800mm

\* The unit weight below is just for reference.

N.D.		Total Length (L)		Bellows Specification		Lateral Deflection △ T(mm)	working pressure kg/cm <sup>2</sup>	Weight/pc (JIS-10K) kg/pc
mm	inch	mm	inch	Φ O.D. ΦD (mm)	Eff. Area A (cm <sup>2</sup> )			
50	2	1300	52	81.2	39.3	800	10	31.8
65	2-1/2	1400	56	97.2	59.0	800	10	42.7
80	3	1400	56	113.7	80.4	800	10	48.7
100	4	1500	60	139.7	127.1	800	10	66.2
125	5	1600	64	165.7	184.3	800	10	82.2
150	6	1600	64	196.7	257.6	800	10	107.0
200	8	1800	72	247.7	423.1	800	10	159.1
250	10	1800	72	305.7	646.5	800	10	247.9
300	12	2000	80	355.5	890.4	800	10	319.5

### □ P-5850 / 16K-800mm

\* The unit weight below is just for reference.

N.D.		Total Length (L)		Bellows Specification		Lateral Deflection △ T(mm)	working pressure kg/cm <sup>2</sup>	Weight/pc (JIS-16K) kg/pc
mm	inch	mm	inch	Φ O.D. ΦD (mm)	Eff. Area A (cm <sup>2</sup> )			
50	2	1300	52	81.2	39.3	800	16	31.1
65	2-1/2	1400	56	97.2	59.0	800	16	47.7
80	3	1600	64	113.7	80.4	800	16	63.0
100	4	1700	68	139.7	127.1	800	16	87.5
125	5	1800	72	165.7	184.3	800	16	106.4
150	6	1800	72	196.7	255.9	800	16	151.0
200	8	2000	80	247.7	420.9	800	16	226.5

# The size, working pressure, total length, and movement tabulated above is the standard specification. We can also deliver products against your requests.

# The working pressure tabulated above is based on 70°C. The maximum operating pressure is 1.5 times the working pressure tabulated above.

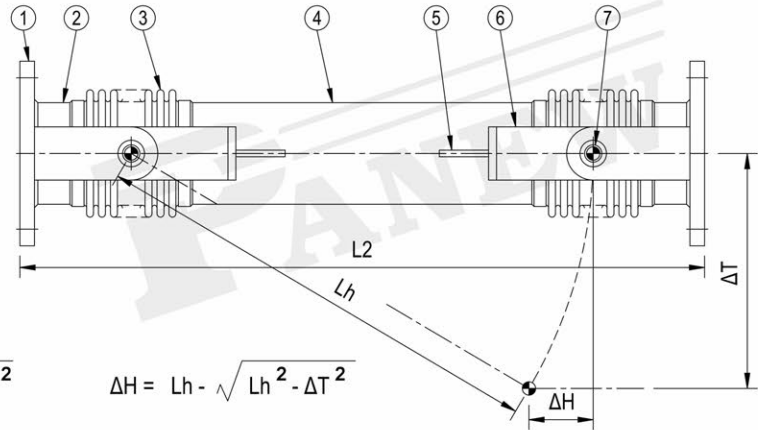
## MULTIPLE EXPANSION JOINTS FOR LARGE OFFSET / HORIZONTAL

### ※ Construction

Item	Parts	Std. Material
1.	Flange	SS-400 / SUS-304
2.	End Pipe	STGP / SUS-304
3.	Bellows	SUS-304
4.	Mid. Pipe	STGP / SUS-304
5.	Rib	SS-400 / SUS-304
6.	Hinge Arm	SS-400 / SUS-304
7.	Pin	SS-400 / SUS-304

※The materials tabulated above are the standard. Other materials are available.

### □ P-5640

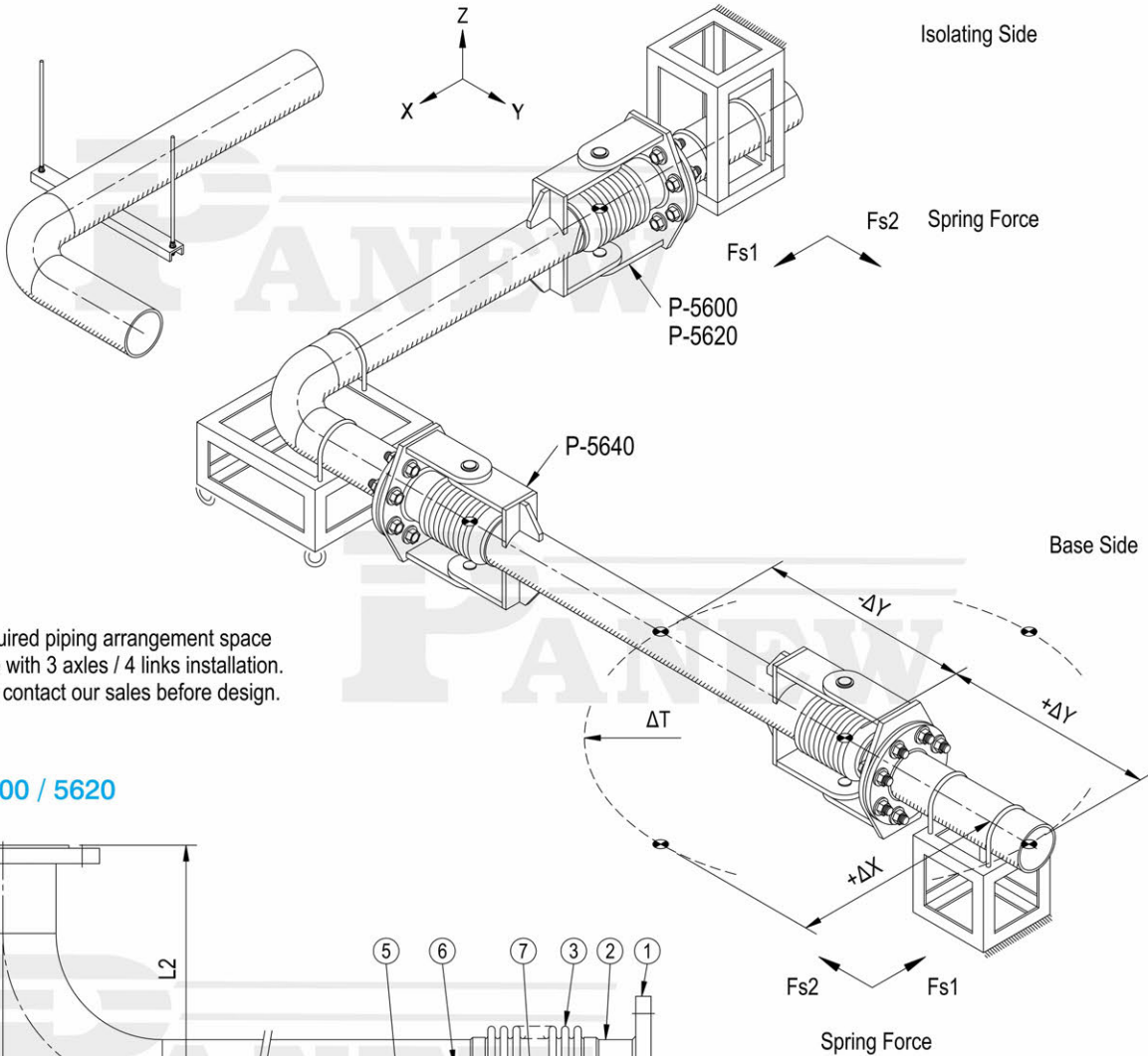


$$\Delta T = \sqrt{\Delta X^2 + \Delta Y^2}$$

$$\Delta H = Lh - \sqrt{Lh^2 - \Delta T^2}$$

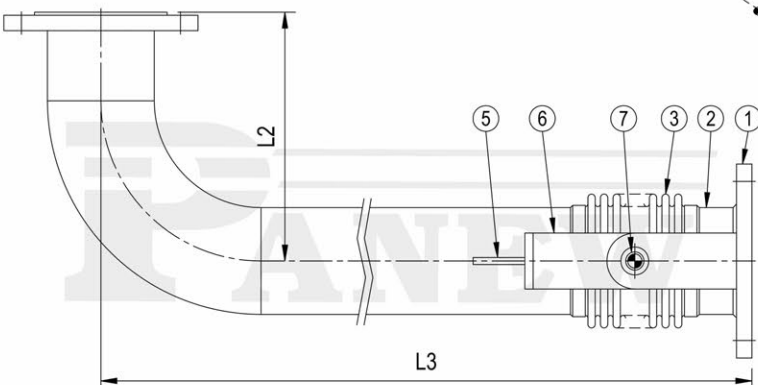
※ Horizontal Arrangement with P-5640 + P-5600 ( 3 axes / 4 link ).

Max. Movement absorption  $\Delta T =$   200  400  600  800 mm



※The required piping arrangement space is large with 3 axes / 4 links installation. Please contact our sales before design.

### □ P-5600 / 5620



※ Please feel free to contact us for more products design and piping arrangement information.

# P-5640 + 5650



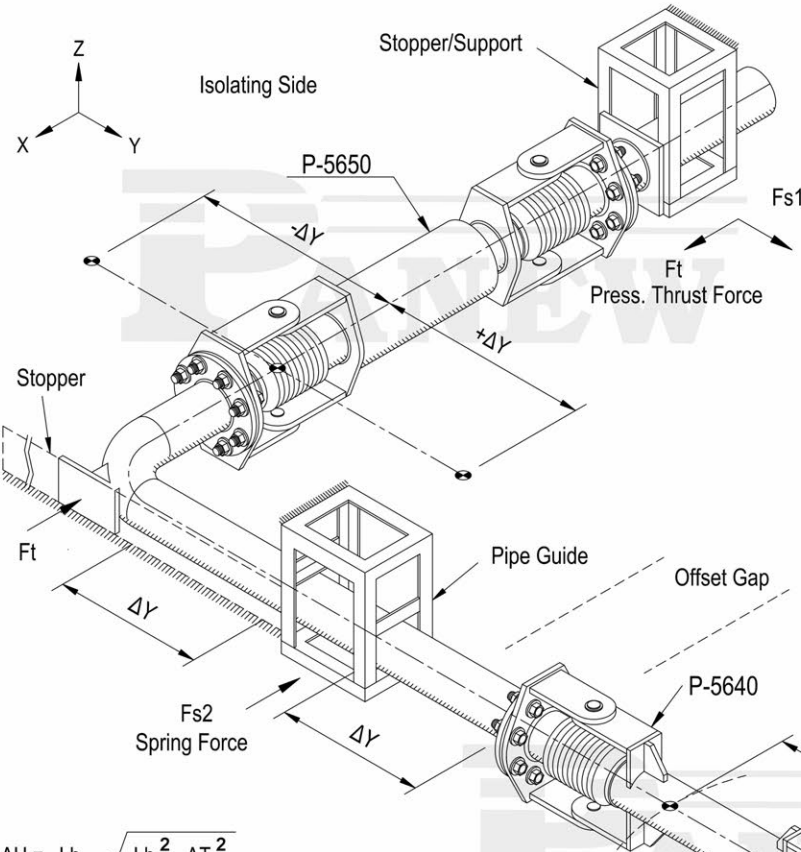
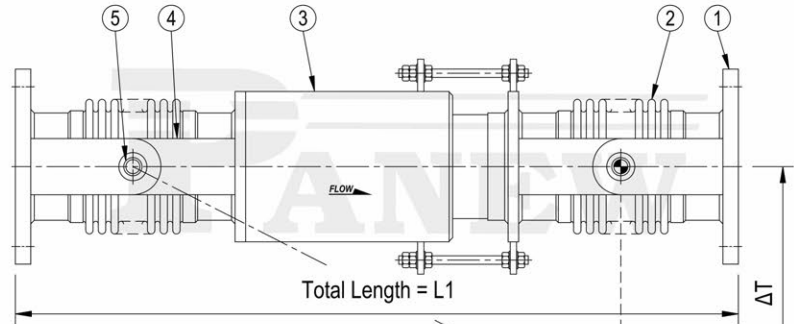
## MULTIPLE EXPANSION JOINTS FOR LARGE OFFSET / HORIZONTAL

### ※ Construction

Item	Parts	Std. Material
1.	Flange	SUS-304
2.	Bellows	SUS-304
3.	P-3800 Joint	SUS-304
4.	Hinge Arm	SUS-304
5.	Pin	SUS-304

※The materials tabulated above are the standard. Other materials are available.

### □ P-5650



### □ P-5650 / 5640

Nominal Dia.	ΔT = 800 (mm)		
	P-5650	P-5640	
	L1 (mm)	L2 (mm)	
2 in.	50 mm	1300	2300
2-1/2 in.	65 mm	1400	2400
3 in.	80 mm	1400	2400
4 in.	100 mm	1500	2500
5 in.	125 mm	1600	2600
6 in.	150 mm	1600	2600
8 in.	200 mm	1800	2800
10 in.	250 mm	1800	2800
12 in.	300 mm	2000	3000

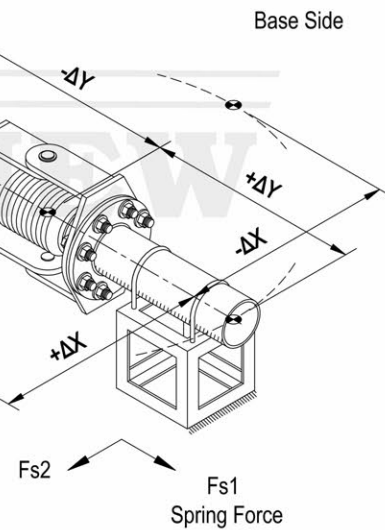
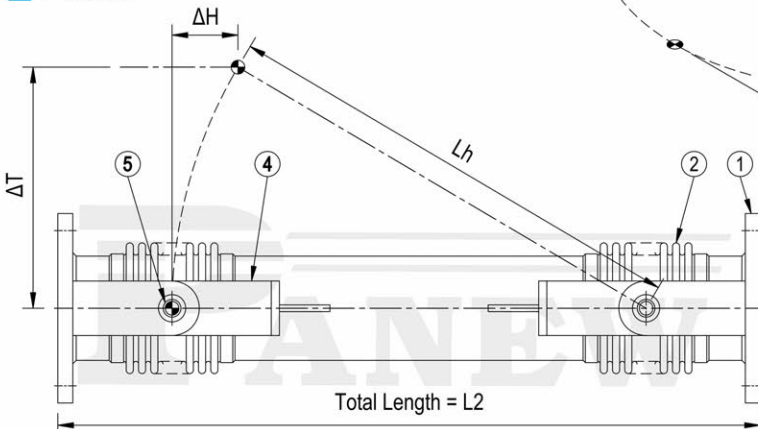
※ Rated Press. = 10 kg/cm<sup>2</sup>

※ The specification tabulated above are the std. Special designs are available.

$$\Delta H = L_h - \sqrt{L_h^2 - \Delta T^2}$$

$$\Delta T = \sqrt{\Delta X^2 + \Delta Y^2}$$

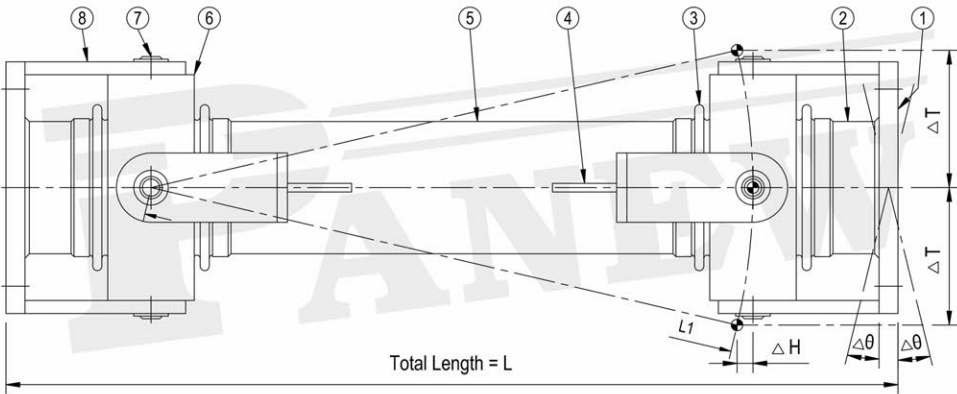
### □ P-5640



※ Pipe Support, Pipe Stopper, and Pipe Guide are designed case by case. Please contact our engineers for more information.



## GIMBAL / UNIVERSAL TYPE EXPANSION JOINT



Arch height

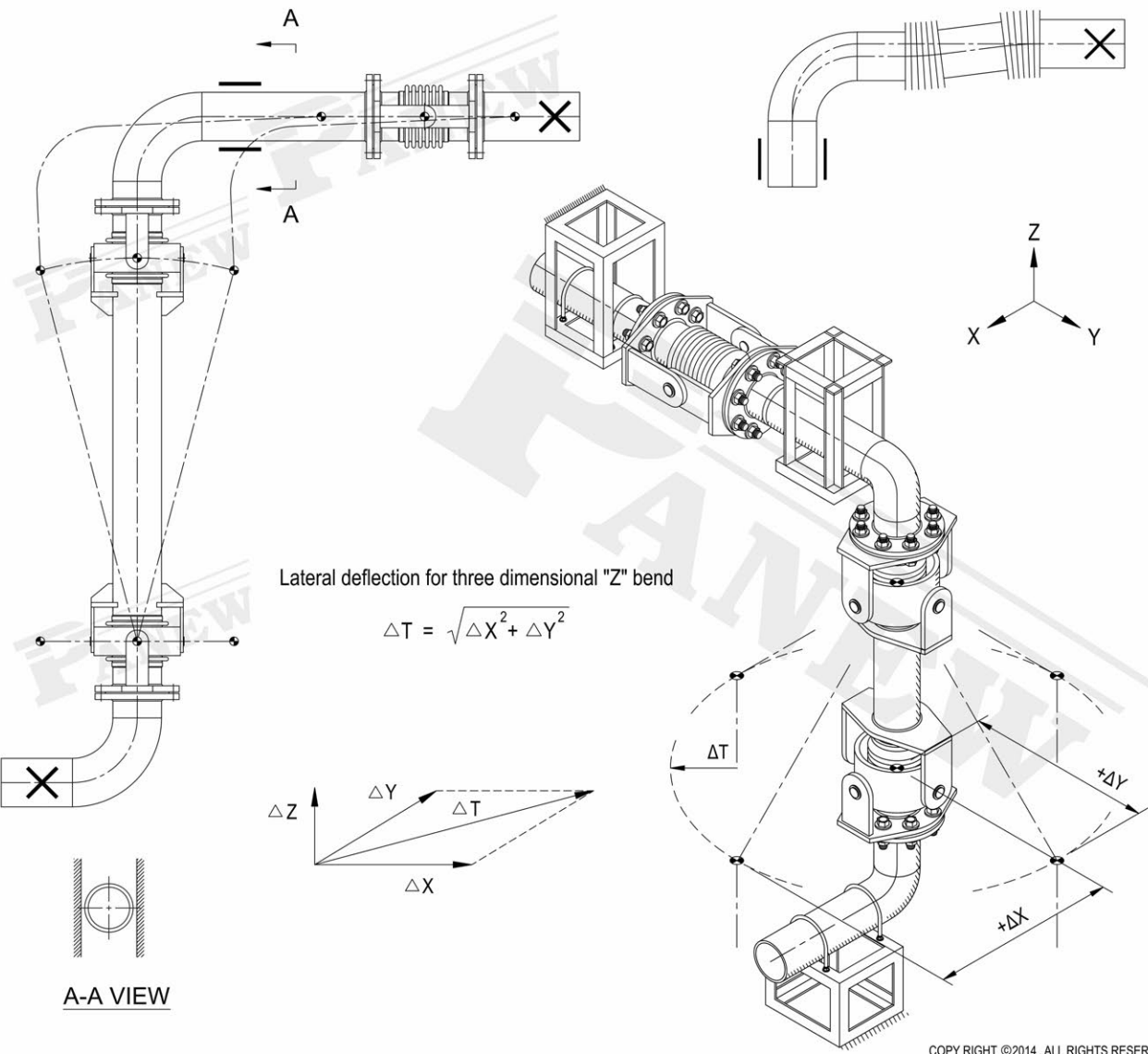
$$\Delta H = L1 - \sqrt{L1^2 - \Delta T^2}$$

--- Free / Movement due to cold deflection.  
 - - - Movement due to thermal expansion.

※ Construction

Item	Parts	Std Material	Option Material
1.	Flange	SS-400	SUS-304/316
2.	End Pipe	SGP/SS-400	SUS-304/316
3.	Bellows	SUS-304	SUS-316
4.	Bracket	SS-400	SUS-304
5.	Mid. Pipe	SGP/SS-400	SUS-304/316
6.	Gimbal Ring	SS-400	SUS-304
7.	Pin	SS-400	SUS-304
8.	Holding Arm	SS-400	SUS-304

# The standard Flange is based on JIS-10K, other flanges are available, like ANSI, DIN, BS ...etc.  
 # Our products are designed and manufactured according to EJMA. The Max. life cycles of our products exceed 200 cycles.



## GIMBAL / UNIVERSAL TYPE EXPANSION JOINT

### □ P-5800 Specification

\* The unit weight below is just for reference.

N.D.		Total Length (L)		Bellows Specification		Lateral Deflection △ T(mm)	working pressure kg/cm <sup>2</sup>	Weight/pc (JIS-10K) kg/pc
mm	inch	mm	inch	φ O.D. φD (mm)	Eff. Area A (cm <sup>2</sup> )			
50	2	700	28	81.2	70.7	250	10	14.8
65	2-1/2	750	30	97.2	86.7	250	10	20.6
80	3	800	32	113.7	101.2	250	10	28.0
100	4	900	36	139.7	127.2	250	10	35.2
125	5	1050	42	165.7	153.2	250	10	51.3
150	6	1050	42	196.7	181.1	250	10	64.7
200	8	1200	48	247.7	232.1	250	10	96.4
250	10	1200	48	305.7	286.9	250	10	160.5
300	12	1300	52	355.5	336.7	250	10	203.8
350	14	1400	56	399.0	378.2	250	10	287.7
400	16	1500	60	458.7	432.7	250	10	369.2

### □ P-5820 Specification

\* The unit weight below is just for reference.

N.D.		Total Length (L)		Bellows Specification		Lateral Deflection △ T(mm)	working pressure kg/cm <sup>2</sup>	Weight/pc (JIS-16K) kg/pc
mm	inch	mm	inch	φ O.D. φD (mm)	Eff. Area A (cm <sup>2</sup> )			
50	2	700	28	81.2	70.2	250	16	15.8
65	2-1/2	750	30	97.2	86.2	250	16	22.8
80	3	800	32	113.7	100.7	250	16	34.2
100	4	900	36	139.7	126.7	250	16	46.8
125	5	1050	42	165.7	152.7	250	16	66.0
150	6	1050	42	196.7	180.5	250	16	94.0
200	8	1200	48	247.7	231.5	250	16	142.9
250	10	1200	48	305.7	286.3	250	16	224.9
300	12	1300	52	355.5	336.1	250	16	319.7
350	14	1400	56	399.0	377.6	250	16	426.8
400	16	1500	60	458.7	431.9	250	16	584.3

### □ P-5800 Specification

\* The unit weight below is just for reference.

N.D.		Total Length (L)		Bellows Specification		Lateral Deflection △ T(mm)	working pressure kg/cm <sup>2</sup>	Weight/pc (JIS-10K) kg/pc
mm	inch	mm	inch	φ O.D. φD (mm)	Eff. Area A (cm <sup>2</sup> )			
50	2	1200	48	81.2	70.7	400	10	23.9
65	2-1/2	1300	52	97.2	86.7	400	10	32.4
80	3	1400	56	113.7	101.2	400	10	43.8
100	4	1500	60	139.7	127.2	400	10	52.2
125	5	1600	64	165.7	153.2	400	10	79.1
150	6	1700	68	196.7	181.1	400	10	94.9
200	8	1900	76	247.7	232.1	400	10	137.9
250	10	1900	76	305.7	286.9	400	10	230.9
300	12	2000	80	355.5	336.7	400	10	287.3
350	14	2200	88	399.0	378.2	400	10	389.9
400	16	2200	88	458.7	432.7	400	10	497.2

### □ P-5820 Specification

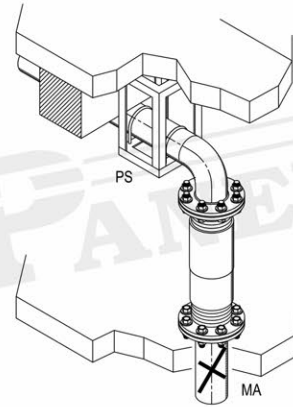
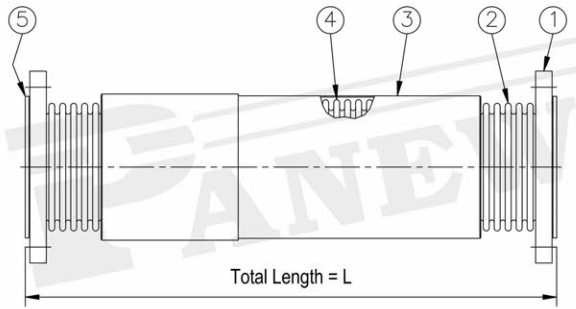
\* The unit weight below is just for reference.

N.D.		Total Length (L)		Bellows Specification		Lateral Deflection △ T(mm)	working pressure kg/cm <sup>2</sup>	Weight/pc (JIS-16K) kg/pc
mm	inch	mm	inch	φ O.D. φD (mm)	Eff. Area A (cm <sup>2</sup> )			
50	2	1200	48	81.2	70.2	400	16	25.4
65	2-1/2	1300	52	97.2	86.2	400	16	36.2
80	3	1400	56	113.7	100.7	400	16	52.7
100	4	1500	60	139.7	126.7	400	16	71.7
125	5	1600	64	165.7	152.7	400	16	101.0
150	6	1700	68	196.7	180.5	400	16	137.8
200	8	1900	76	247.7	231.5	400	16	200.5
250	10	1900	76	305.7	286.3	400	16	323.0
300	12	2000	80	355.5	336.1	400	16	442.4
350	14	2200	88	399.0	377.6	400	16	592.9
400	16	2200	88	458.7	431.9	400	16	800.1

# The size, working pressure, total length, and movement tabulated above is the standard specification. We can also deliver products against your requests.

# The working pressure tabulated above is based on 70°C. The maximum operating pressure is 1.5 times the working pressure tabulated above.

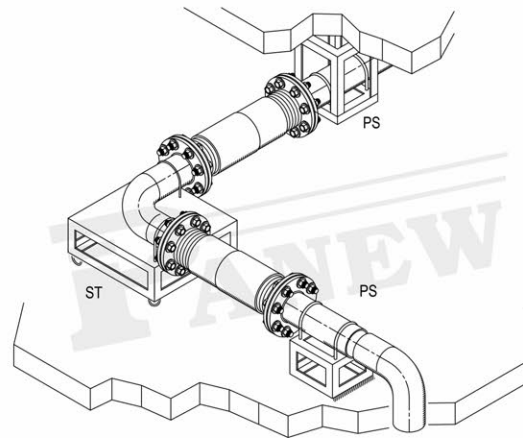
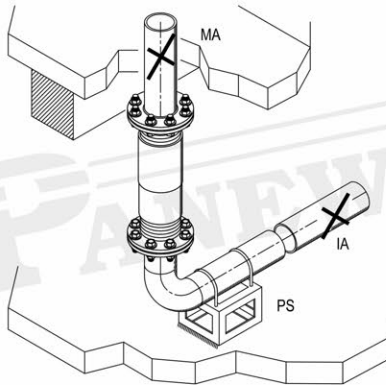
## EXPANSION JOINT FOR SEWAGE DRAINAGE / LARGE OFFSET



### ※ Construction

※ Available Flanges : JIS, ANSI, DIN, BS...etc.

Item	Parts	Std. Material	Option Material
1.	FLANGE	SUS-304	SS-400 / SUS-316
2.	BELLOWS 1.	SUS-304	SUS-316L
3.	COVER	SUS-304	SUS-316L
4.	BELLOWS 2.	SUS-304	SUS-316L
5.	LINING	EPDM / EPR	CR, IR, IIR, NBR...



### □ P-1911 / 10K-600mm Specification

\* The unit weight below is just for reference.

N.D.		Total Length (L)		Bellows Specification		Lateral Deflection	working pressure	Weight/pc (JIS-10K)
mm	inch	mm	inch	Φ O.D.	Eff. Area	Δ T(mm)	kg/cm <sup>2</sup>	kg/pc
40	1-1/2	1000	40	65.7	25.8	600	2	---
50	2	1000	40	81.2	39.3	600	2	---
65	2-1/2	1000	40	97.2	59.0	600	2	---
80	3	1100	44	113.7	80.4	600	2	---
100	4	1200	48	139.7	127.1	600	2	---
125	5	1300	52	165.7	184.3	600	2	---
150	6	1350	54	196.7	257.6	600	2	---
200	8	1500	60	247.7	423.1	600	2	---
250	10	1600	64	305.7	646.5	600	2	---

### □ P-1911 / 10K-800mm Specification

\* The unit weight below is just for reference.

N.D.		Total Length (L)		Bellows Specification		Lateral Deflection	working pressure	Weight/pc (JIS-10K)
mm	inch	mm	inch	Φ O.D.	Eff. Area	Δ T(mm)	kg/cm <sup>2</sup>	kg/pc
40	1-1/2	1200	48	65.7	25.8	800	2	---
50	2	1200	48	81.2	39.3	800	2	---
65	2-1/2	1200	48	97.2	59.0	800	2	---
80	3	1350	54	113.7	80.4	800	2	---
100	4	1500	60	139.7	127.1	800	2	---
125	5	1600	64	165.7	184.3	800	2	---
150	6	1700	68	196.7	257.6	800	2	---
200	8	1900	76	247.7	423.1	800	2	---
250	10	1900	76	305.7	646.5	800	2	---

# The size, working pressure, total length, and movement tabulated above is the standard specification. We can also deliver products against your requests.

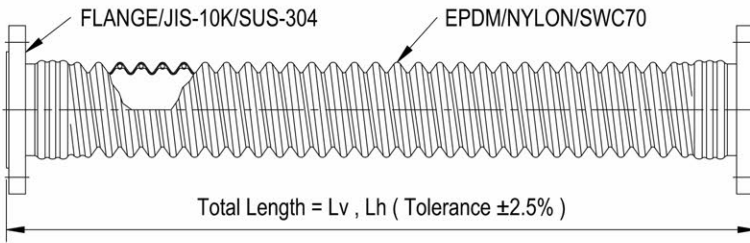
# The working pressure tabulated above is based on 100°C. The maximum operating pressure is 1.5 times the working pressure tabulated above.

# The unit weight of the products tabulated above are based on JIS-10K flanges. If you need more information, please feel free to contact us any time.

# P-2701



## DRAINAGE / VENTILATION RUBBER EXPANSION JOINT FOR ISOLATING FLOOR

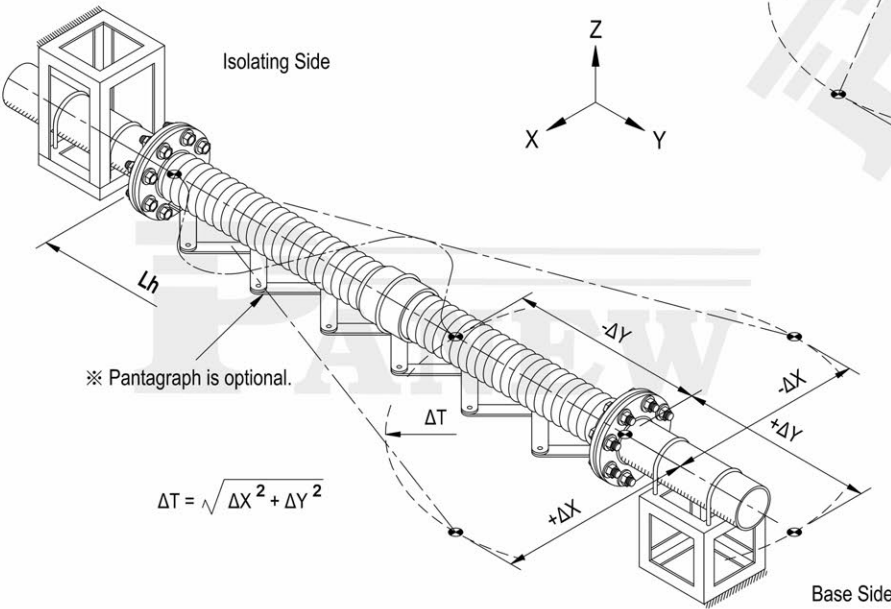
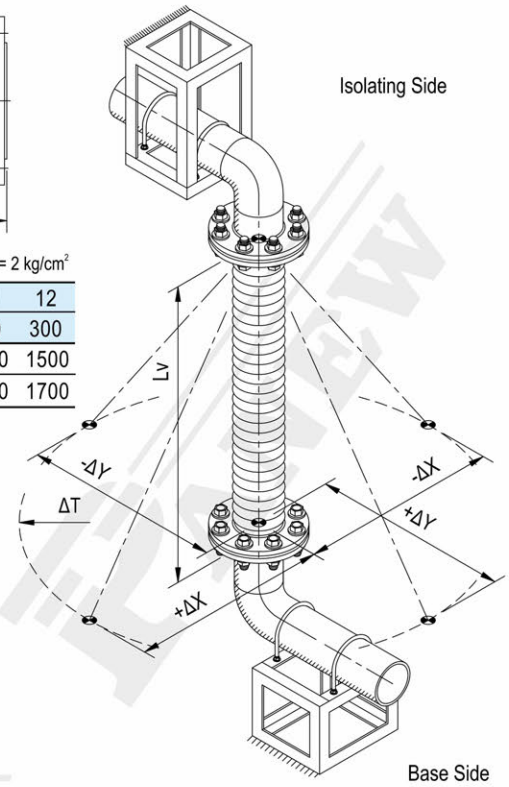


### □ P-2701V Specification

※ Rated Press. = 2 kg/cm<sup>2</sup>

Nominal Dia.	in.	2	2-1/2	3	4	5	6	8	10	12
	mm	50	65	80	100	125	150	200	250	300
ΔT(mm)	600	Lv (mm)	1200	1200	1300	1300	1400	1400	1500	1500
	800	Lv (mm)	1400	1400	1500	1500	1600	1600	1700	1700

※ The size, rated pressure, total length, and movement tabulated above is the standard products. We can also deliver products against your requests.



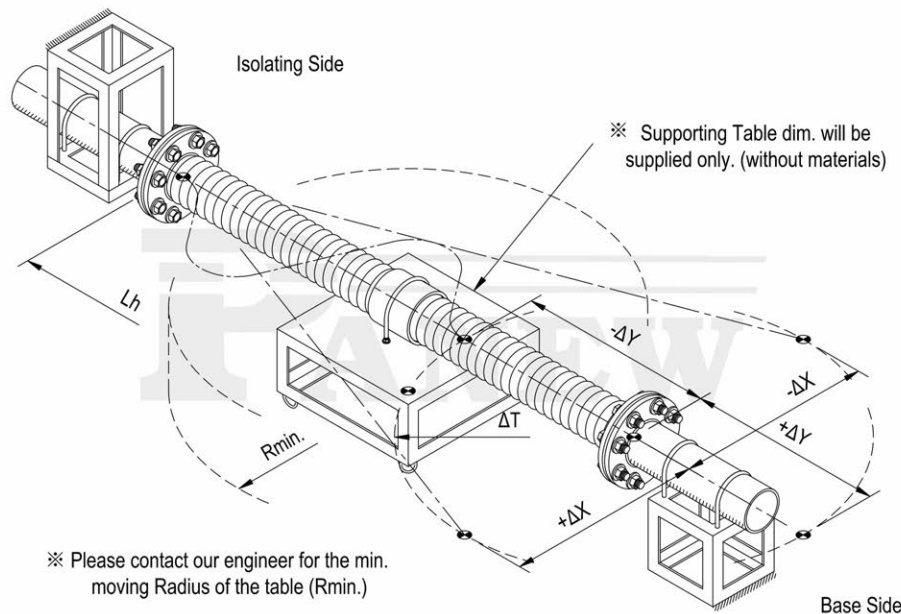
### □ P-2701H

Nominal Dia. ΔT = 600 (mm)		
in.	mm	Lh (mm)
2	50	1500
2-1/2	65	1600
3	80	1600
4	100	1700
5	125	1700
6	150	1700
8	200	1800
10	250	1800
12	300	1800

※ Rated Press. = 2 kg/cm<sup>2</sup>

Nominal Dia. ΔT = 800 (mm)		
in.	mm	Lh (mm)
2	50	1900
2-1/2	65	2000
3	80	2000
4	100	2100
5	125	2100
6	150	2100
8	200	2200
10	250	2200
12	300	2200

※ The specification tabulated above is the standard. Special designs are available.



# P-8300 + 5000



## MULTIPLE EXPANSION JOINTS / HORIZONTAL

### ※ Construction

Item	Parts	Std. Material
1.	Flange	SS-400 / SUS-304
2.	End Pipe	STPG / SUS-304
3.	Bellows 1.	SUS-304
4.	Mid. Pipe	STPG / SUS-304
5.	Rod	SS-400 / SUS-304
6.*	Bellows 2.	SUS-304
7.	Lug	SS-400 / SUS-304

※ The materials tabulated above are the standard. Other materials are available.

### □ P-8300

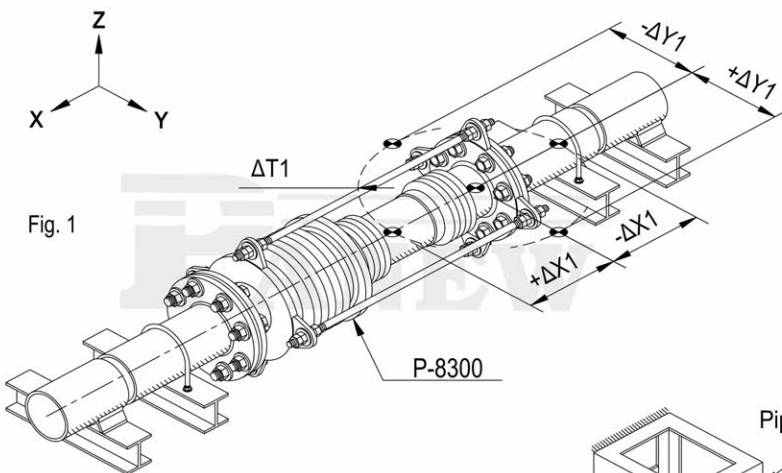
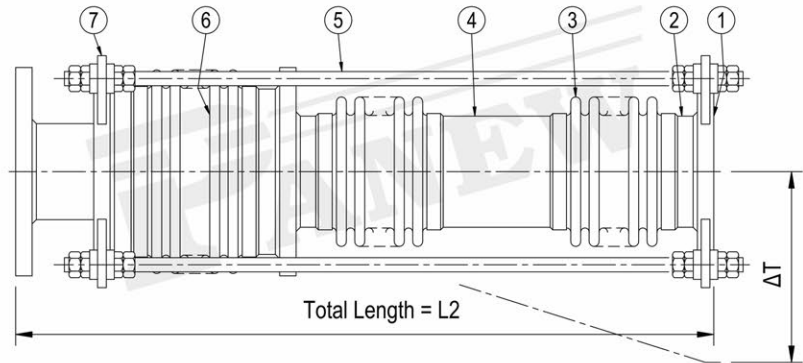


Fig. 1

### □ P-8300 / 5000 (Fig.2)

Nominal Dia.	ΔT = 150 (mm)	Nominal Dia.	
		P-8300	P-5000
in.	mm	L1 (mm)	L2 (mm)
4	100	1400	1100
5	125	1400	1100
6	150	1400	1200
8	200	1450	1200
10	250	1550	1300
12	300	1600	1400

※ Rated Press. = 10 kg/cm<sup>2</sup>

※ The specification tabulated above are the std. Special designs are available.

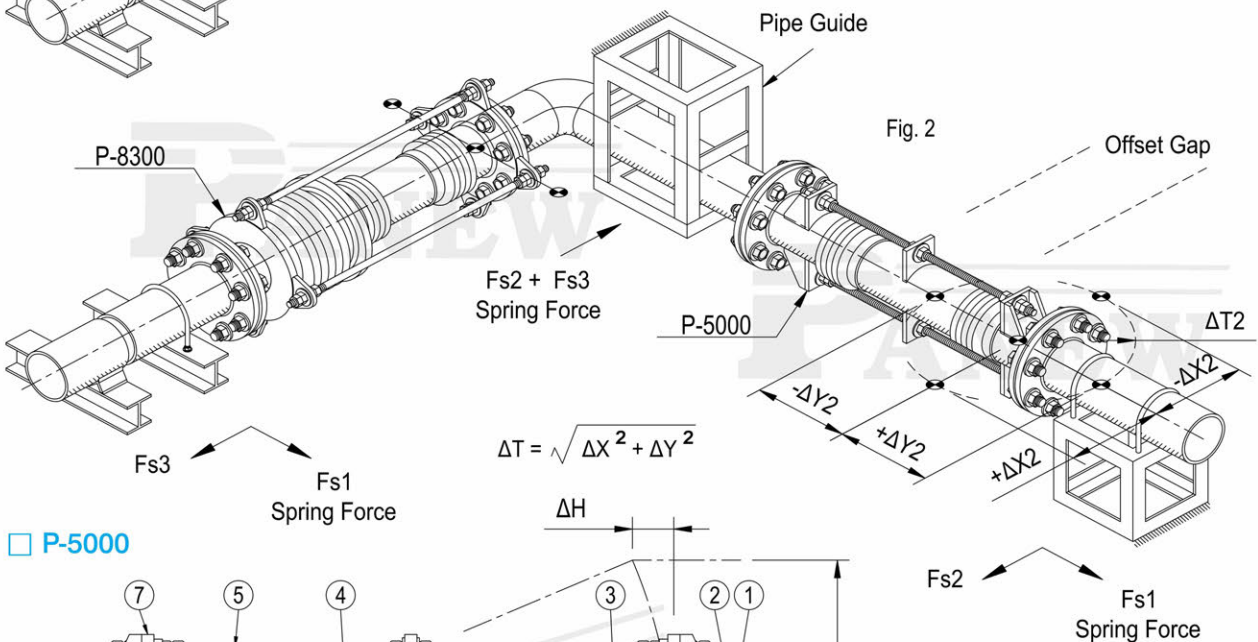
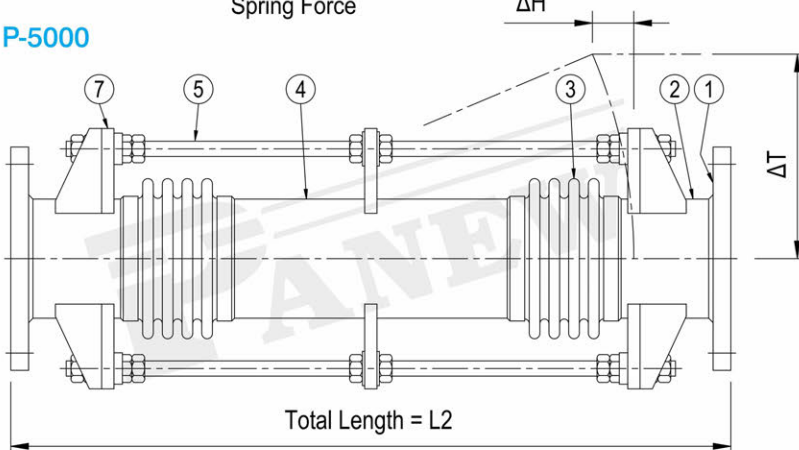


Fig. 2

### □ P-5000



$$\Delta T = \sqrt{\Delta X^2 + \Delta Y^2}$$

※ Single P-8300 installation as Fig. 1.  
ΔX = ΔY = ΔT = 50 mm

※ Pipe Support, Pipe Stopper, and Pipe Guide are designed case by case. Please contact our engineers for more information.

# P-8300 + 5200



## MULTIPLE EXPANSION JOINTS / HORIZONTAL

### ※ Construction

Item	Parts	Std. Material
1.	Flange	SS-400 / SUS-304
2.	End Pipe	STPG / SUS-304
3.	Bellows 1.	SUS-304
4.	Mid. Pipe	STPG / SUS-304
5.	Rod	SS-400 / SUS-304
6.*	Bellows 2.	SUS-304
7.	Lug	SS-400 / SUS-304

※ The materials tabulated above are the standard. Other materials are available.

### □ P-8300

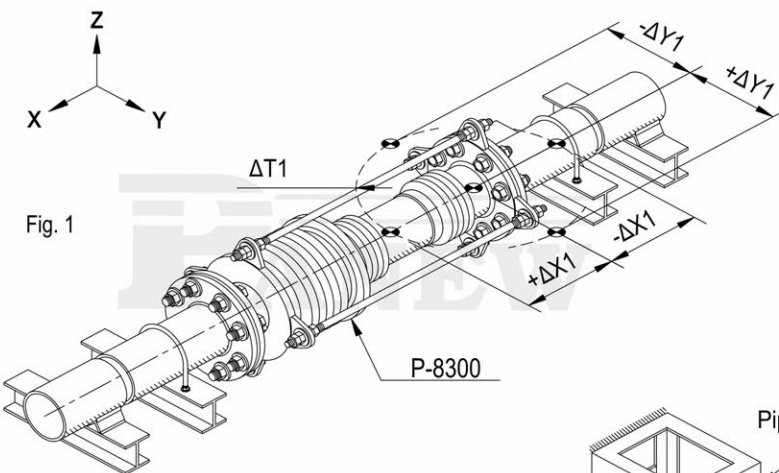
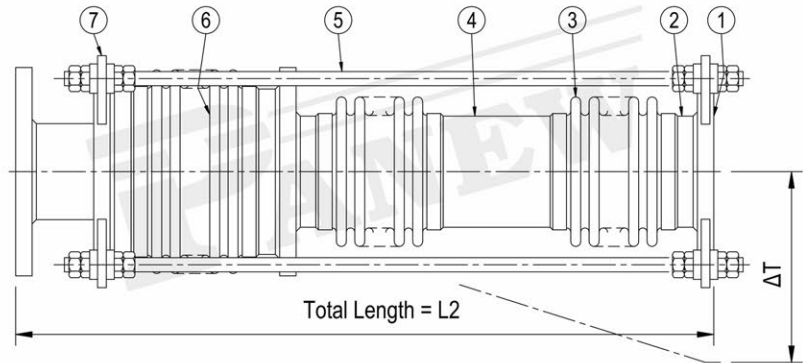


Fig. 1

### □ P-8300 / 5200 (Fig.2)

Nominal Dia.	ΔT = 150 (mm)	P-8300 / 5200 (Fig.2)	
		P-8300	P-5200
in. mm		L1 (mm)	L2 (mm)
4 100		1400	1100
5 125		1400	1100
6 150		1400	1200
8 200		1450	1200
10 250		1550	1300
12 300		1600	1400

※ Rated Press. = 16 kg/cm<sup>2</sup>

※ The specification tabulated above are the std. Special designs are available.

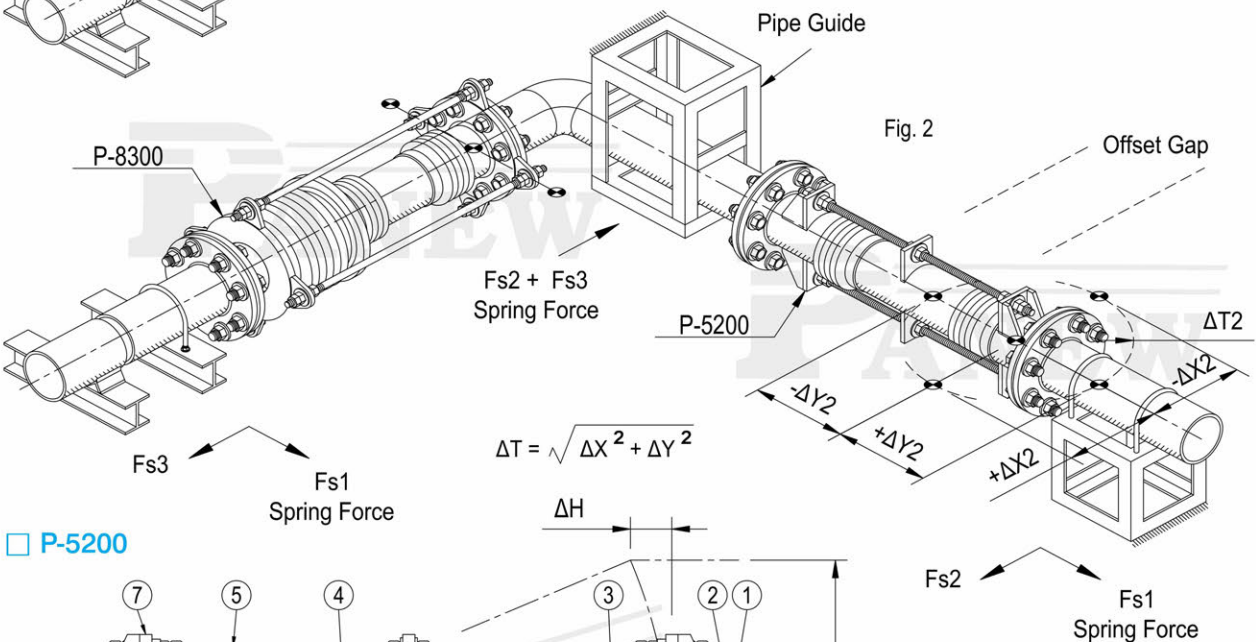
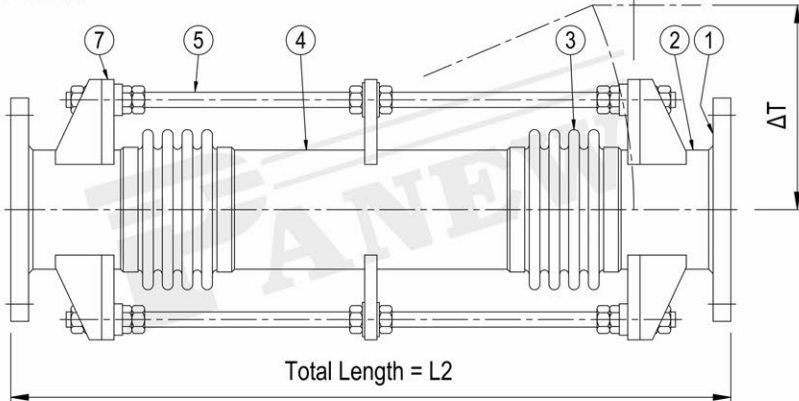


Fig. 2

### □ P-5200

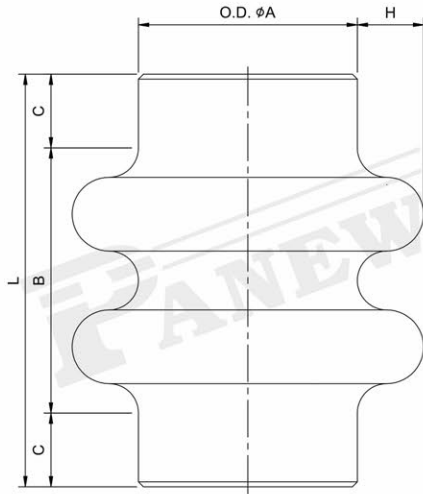


※ Single P-8300 installation as Fig. 1.  
ΔX = ΔY = ΔT = 50 mm

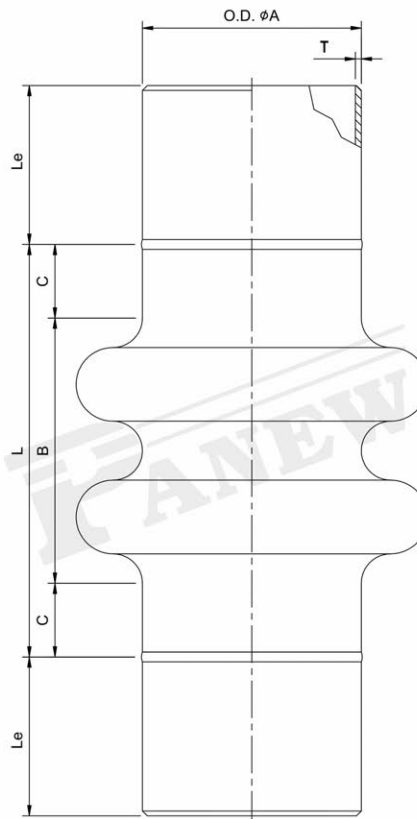
※ Pipe Support, Pipe Stopper, and Pipe Guide are designed case by case. Please contact our engineers for more information.

## ANGULAR STRESS RELIEVING DEVICE

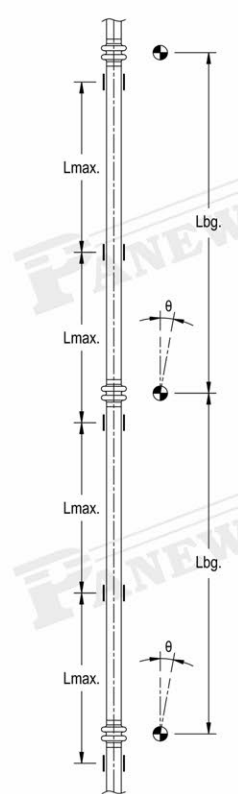
### □ P-7300 Economic Type



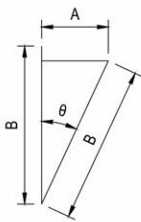
### □ P-7300E End Pipe Type



### ※ Installation



### ※ Offset / Angular Rotation Table



A / B	θ (deg.)
1/500	0.115
1/200	0.286
1/100	0.573
1/50	0.286

### □ P-7300 / P-7300E Specification

N.D.		Product Profile					Spring Rate		Axial Movement (ΔX)		Angular Rot.	Rated
		φA	B	C	H	L	Axial (Kx)	Angular (Kθ)	> 10 <sup>4</sup> cycles	> 10 <sup>5</sup> cycles	> 10 <sup>6</sup> cycles	pressure
mm	inch	mm	mm	mm	mm	mm	kg/mm	kg-m/deg.	mm	mm	deg.	kg/cm <sup>2</sup>
80	3	89.1	108	20	27	148	2140	60	±2.5	±1.5	1.6	20
100	4	114.3	108	20	27	148	2134	89	±2.6	±1.7	1.6	20
125	5	141.3	144	20	36	184	4297	278	±3.0	±1.9	1.6	20
150	6	165.2	152	20	38	192	4165	357	±3.3	±2.1	1.6	20
200	8	216.3	200	20	50	240	5352	788	±4.3	±2.8	1.6	20

# The material of the main device is made with stainless steel SUS-304. The material of the end pipe could be manufactured and delivered against your request.

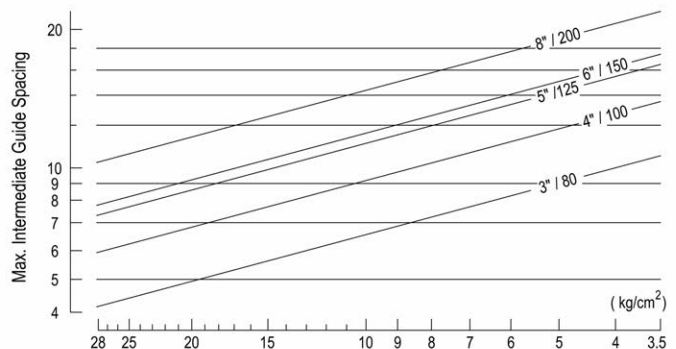
# The size, rated pressure, total length, and movement tabulated above is the standard products. We can also deliver products against your requests.

# The rated pressure tabulated above is based on 50°C. The maximum operating pressure is 2 times the rated pressure tabulated above.

※ Max. Intermediate Guide Spacing / Operating Pressure Figure & Table

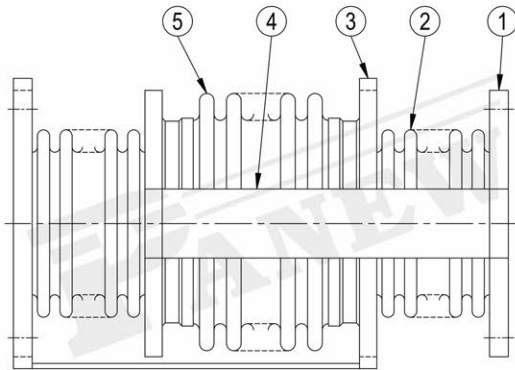
$$L_{bg} = 2 \times L_{max.}$$

Pipe Size	3"	4"	5"	6"	8"
Pressure	Lmax. (m)				
4	10.0	13.0	15.5	16.2	21.0
6	8.2	11.2	13.4	14.0	17.6
8	7.2	10.2	12.0	12.8	15.8
10	6.6	9.2	11.2	11.6	14.2
12	6.2	8.5	10.5	11.2	13.7
14	5.8	7.9	10.1	10.5	13.0
16	5.5	7.5	9.6	10.1	12.2



## PRESSURE BALANCED FLEXIBLE CONNECTOR

### □ Economic Type



□ P-8000

□ P-8020

#### ※ Construction

Item	Parts	Std. Material	Optional Material
1.	Flange	SS-400	SUS-304 / SUS-316
2.	Flow Bellows	SUS-304	SUS-316 / SUS-316L
3.	Neck Ring	SS-400	SUS-304 / SUS-316
4.	Arm Plate	SS-400	SUS-304 / SUS-316
5.	Bal. Bellows	SUS-304	SUS-316 / SUS-316L

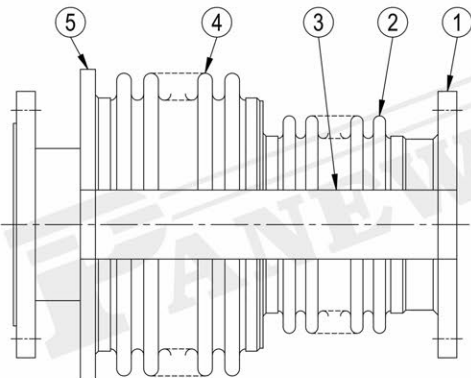
### □ P-8000 Specification

N.D.		Total Length (L)		Spring Rate	Axial Movement	Rated pressure
mm	inch	mm	inch	Kx kg/mm	ΔX mm	kg/cm <sup>2</sup>
50	2	400	16	41.4	±15	10
65	2-1/2	400	16	53.9	±15	10
80	3	450	18	51.7	±15	10
100	4	450	18	74.2	±15	10
125	5	450	18	71.6	±15	10
150	6	450	18	101.8	±15	10
200	8	450	18	138.8	±15	10
250	10	500	20	239.1	±15	10
300	12	550	22	264.9	±15	10

### □ P-8020 Specification

50	2	450	18	78.9	±15	20
65	2-1/2	450	18	104.4	±15	20
80	3	500	20	95.6	±15	20
100	4	500	20	148.5	±15	20
125	5	500	20	142.1	±15	20
150	6	500	20	202.1	±15	20
200	8	500	20	243.2	±15	20
250	10	550	22	226.0	±15	20
300	12	600	24	353.5	±15	20

### □ Sleeving Type



□ P-8200

□ P-8220

#### ※ Construction

Item	Parts	Std. Material	Optional Material
1.	Flange	SS-400	SUS-304 / SUS-316
2.	Flow Bellows	SUS-304	SUS-316 / SUS-316L
3.	Arm Plate	SS-400	SUS-304 / SUS-316
4.	Bal. Bellows	SUS-304	SUS-316 / SUS-316L
5.	Neck Ring	SS-400	SUS-304 / SUS-316

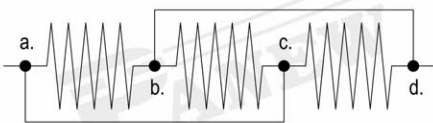
### □ P-8200 Specification

N.D.		Total Length (L)		Spring Rate	Axial Movement	Rated pressure
mm	inch	mm	inch	Kx kg/mm	ΔX mm	kg/cm <sup>2</sup>
50	2	400	16	41.4	±15	10
65	2-1/2	400	16	53.9	±15	10
80	3	450	18	51.7	±15	10
100	4	450	18	74.2	±15	10
125	5	450	18	71.6	±15	10
150	6	450	18	101.8	±15	10
200	8	450	18	138.8	±15	10
250	10	500	20	239.1	±15	10
300	12	550	22	264.9	±15	10

### □ P-8220 Specification

50	2	450	18	78.9	±15	20
65	2-1/2	450	18	104.4	±15	20
80	3	500	20	95.6	±15	20
100	4	500	20	148.5	±15	20
125	5	500	20	142.1	±15	20
150	6	500	20	202.1	±15	20
200	8	500	20	243.2	±15	20
250	10	550	22	226.0	±15	20
300	12	600	24	353.5	±15	20

### ※ Vibration Isolating



Path : 1. a.→b.→d. 2. a.→c.→d.

#The size, rated pressure, total length, and movement tabulated above is the standard products.

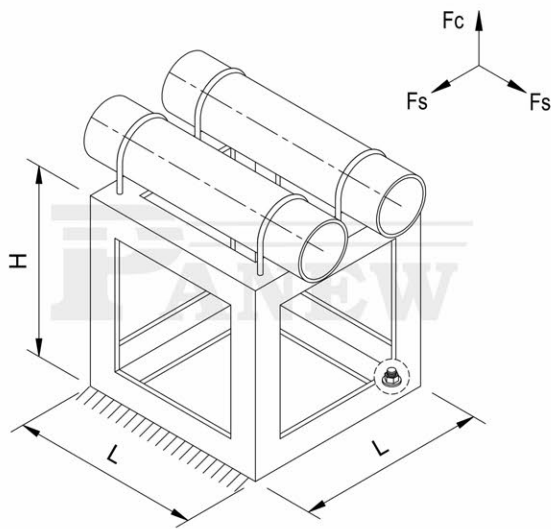
We can also deliver products against your requests.

#The rated pressure tabulated above is based on 50°C. The maximum operating pressure is 1.5 times the rated pressure tabulated above.

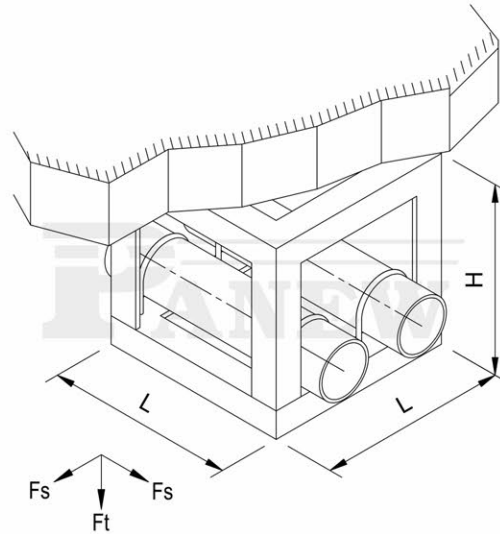


## ANCHORING STRUCTURE & REACTION FORCE FOR REFERENCE

□ Anchoring Frame on Floor



□ Anchoring Frame on Ceiling



□ The data tabulated below is available for Anchoring Structure under 750mm height.

Unit : mm

Allowable F.		Frame Dim.		Angle Bar	Floor Fixed		Ceiling Fixed	
Fs	Ft	H	L	L □-□-□	ΦD	set	ΦD	set
250 (kg)	500	250	300	L40x40x5	M10	4	M10	4
			500	L40x40x5	M10	4	M10	4
			1000	L40x40x5	M10	4	M10	4
	900	500	300	L40x40x5	M12	4	M12	4
			500	L40x40x5	M12	4	M12	4
			1000	L40x40x5	M12	4	M12	4
	900	750	300	L40x40x5	M12	4	M12	4
			500	L40x40x5	M12	4	M12	4
			1000	L40x40x5	M12	4	M12	4
500 (kg)	900	250	300	L50x50x5	M12	4	M12	4
			500	L50x50x5	M12	4	M12	4
			1000	L50x50x6	M12	4	M12	4
	1200	500	300	L50x50x5	M16	4	M16	4
			500	L50x50x5	M12	4	M12	4
			1000	L50x50x6	M12	4	M12	4
	2000	750	300	L50x50x5	M20	4	M16	8
			500	L50x50x5	M16	4	M16	4
			1000	L50x50x6	M12	4	M16	4
750 (kg)	900	250	300	L50x50x5	M12	4	M12	4
			500	L50x50x5	M12	4	M12	4
			1000	L50x50x6	M12	4	M12	4
	1600	500	300	L50x50x6	M20	4	M20	4
			500	L50x50x6	M16	4	M16	4
			1000	L50x50x6	M12	4	M12	4
	2000	750	300	L65x65x6	M16	8	M16	8
			500	L65x65x6	M16	4	M16	4
			1000	L65x65x6	M12	4	M16	4

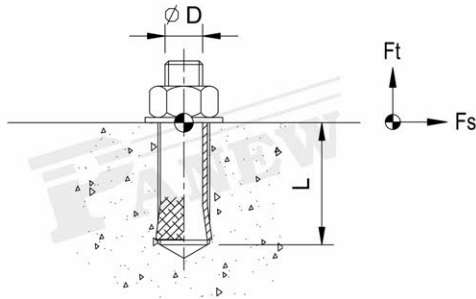
Allowable F.		Frame Dim.		Angle Bar	Floor Fixed		Ceiling Fixed			
Fs	Ft	H	L	L □-□-□	ΦD	set	ΦD	set		
1000 (kg)	1200	250	300	L50x50x5	M16	4	M16	4		
			500	L50x50x6	M12	4	M16	4		
			1000	L65x65x6	M12	4	M12	4		
	900	500	300	L50x50x6	M16	4	M16	4		
			500	L50x50x6	M12	4	M12	4		
			1000	L65x65x6	M12	4	M12	4		
	1600	750	500	L65x65x6	M20	4	M20	4		
			500	L65x65x6	M16	4	M16	4		
			1000	L65x65x6	M16	4	M16	4		
1500 (kg)	2000	250	300	L50x50x5	M16	8	M16	8		
			500	L65x65x6	M16	4	M20	4		
			900	1000	L75x75x6	M12	4	M12	4	
	2000	500	500	L65x65x6	M12	8	M16	8		
			1200	1000	L75x75x6	M12	4	M16	4	
			---	750	500	L65x65x6	M16	8	---	---
	1600	750	1000	L75x75x6	M16	4	M20	4		
			1600	250	500	L65x65x6	M16	4	M20	4
			900	1000	L75x75x9	M12	4	M12	4	
2000 (kg)	---	500	500	L65x65x6	M16	8	---	---		
			1600	500	L75x75x9	M16	4	M20	4	
			2000	750	1000	L75x75x9	M16	8	M16	8
	2000	250	500	L75x75x6	M12	8	M16	8		
			1200	1000	L90x90x7	M16	4	M16	4	
			2000	500	1000	L90x90x7	M16	4	M16	8
	2500	750	1000	L90x90x7	M16	8	M20	8		

※ Diagonal braces are required for strengthening the Anchoring Structure.  
For more technical information, please feel free to contact us.

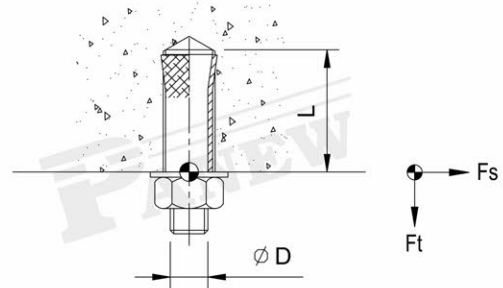
## CONCRETE ANCHOR BOLT & INSTALLATION HINT

※ Installation & Allowable load of Concrete Anchor Bolt

Installation on Floor



Installation on Ceiling



Installation & Allowable Load Data Table

Bolt N.D.	Concrete Thick. (mm)				Fs(kg)	Rod Effective Depth (mm)
	120	150	180	200		
ΦD (mm)	Ft Peak Load (kg)					
M 8	280	280	280	280	500	40
M10	350	350	350	350	800	45
M12	650	650	650	650	1200	60
M16	950	950	950	950	2150	70
M20	1250	1250	1250	1250	3350	90

Bolt N.D.	Concrete Thick. (mm)				Fs(kg)	Rod Effective Depth (mm)
	120	150	180	200		
ΦD (mm)	Ft Peak Load (kg)					
M 8	280	280	280	280	500	40
M10	350	350	350	350	800	45
M12	650	650	650	650	1200	60
M16	950	950	950	950	2150	70
M20	1250	1250	1250	1250	3350	90

※ Notice while install the Expansion Joint used for large movement

