



## 公司製造能力與品管流程 / Manufacturing Capabilities and Quality Assurance

### ■ 產品製造能力 / Manufactural Capability

鵬宇國際股份有限公司成立於1989年 / Established in 1989.

液壓成型 / Hydraulic Forming :  $\Phi 1'' \sim \Phi 3m$   
 滾壓成型 / Roll Forming : 最大口徑 $\Phi 7m$  / Max. Size  $\Phi 7m$   
 金屬橫擠壓成型 / Expanding Mandrel Forming  $\Phi 5'' \sim \Phi 16''$

橡膠擠壓成型 / Elastomeric Forming :  $\Phi 8mm \sim \Phi 12''$   
 模片組鐸成型 / Disc-Welded Forming 0.1 ~ mm  
 摺壓成型 / Press-Brake Forming : U-shape, V-shape and  $\Lambda$ -shape  
 L線自動焊接 / Automatic Welding of Bellows L-line : 0.1 ~ 3 mm

### ■ 製程檢測能力 / Process Testing Capability

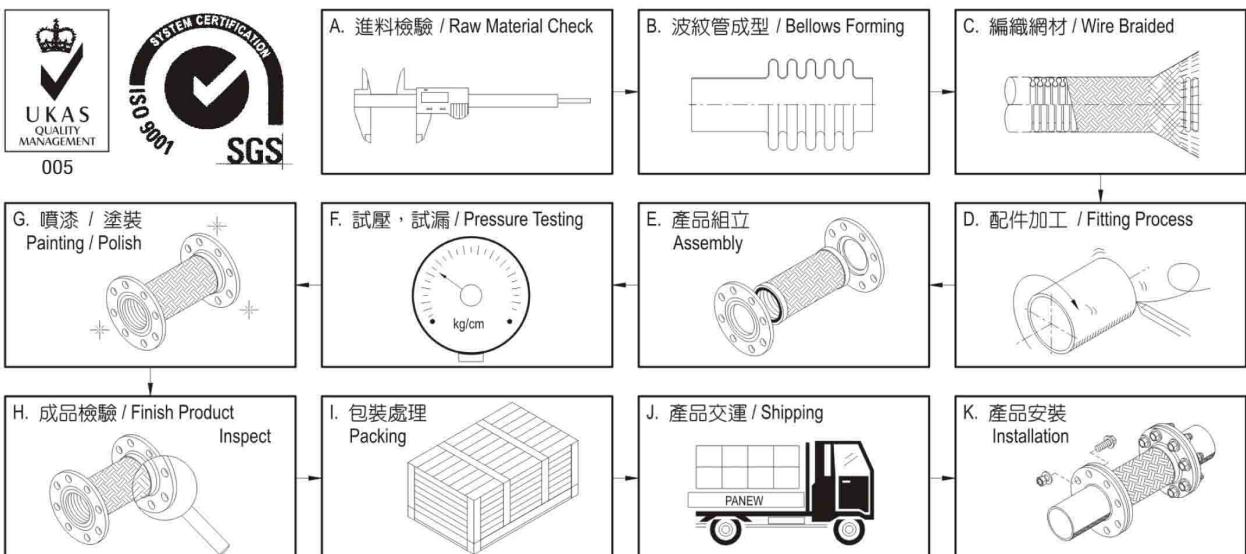
液壓檢測 / Hydraulic Test 1 ~ 250 kg/cm<sup>2</sup>  
 氣壓檢測 / Pneumatic Test 0.1 ~ 30 kg/cm<sup>2</sup>  
 爆破檢測 / Burst Test ~ 300 kg/cm<sup>2</sup>  
 彈性系數檢測 / Spring Rate Test  
 作動量檢測 / Deflection Test  $\Delta X / \Delta Y$   
 疲勞檢測 / Fatigue Test  
 材料可靠性鑑別(PMI) / Positive Material Identification

膜厚檢測 / Coating Thickness Test S.S. / C.S.  
 應力腐蝕檢測 / Stress-Corrosion Cracking Test  
 材質分析 / Material Analysis  
 真空檢測 / Vacuum Test  
 氮氣測漏檢測 / Mass Spectrometer Test  
 機械強度檢測 / Mechanical Strength Test

### ■ 品質保證 / Quality Assurance

鵬宇國際股份有限公司之品質系統，已取得ISO 9001品質系統認證。每項產品於出廠前，均經100%壓力檢測。

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



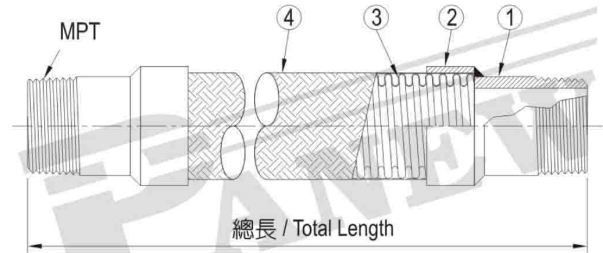
# P-1000 / 1000D 牙口式撓性接頭



## FLEXIBLE CONNECTOR WITH STEEL MALE SCREWED PT ENDS

### ※結構組合 ( CONSTRUCTION )

項次 Item	配件名稱 Parts	標準材料 Std. Material	選用材料 Option Material
1.	圓立布(ROUND NIPPLE)	SUS-304	SGP / SUS-316
2.	束環(COLLAR RING)	SUS-304	-
3.	波紋管(BELLOWS)	SUS-304	SUS-316L / 321
4.	編織網(WIRE BRAIDS)	SUS-304	-



### ※特性說明 / FEATURES:

降低噪音 / REDUCTION OF NOISE

高頻震動可被大幅削減

High static pipe vibration noise will be reduced greatly.

隔絕振動源 / VIBRATION ISOLATING

一般機械設備震動可經由撓性接頭隔離

Vibration of typical mechanical machines and equipments can be isolated through the use of the Panew Flexible Connector.

可撓性結構 / FLEXIBLE CONSTRUCTION

方便例行設備維修與管路拆裝清洗

Designed for simple maintenance, through routine cleaning, repairment, and replacement.



管線位移吸收 / PIPING OFFSET ABSORPTION

有效吸收角度與側向位移, 提升配管與設備安全

Lateral and angular offset will be absorbed effectively.

Improve the equipment and piping safety.

### ※ P-1000 規格說明 / STANDARD SPECIFICATION

H : Helical / A : Annular S : Single Braid / D : Double Braids

公稱軟管管徑 Nominal Hose I.D.		產品總長 Total Length		軟管規格 / Hose Specification			允許之側向位移 Allowable Movement		操作壓力 working pressure	單位重量 weight per unit
				外徑 O.D.	波紋管型式 Bellows Type	網材型式 Braids Type	Vibration	Static		
mm	inch	mm	inch	mm	H / A	S / D	mm	mm	kg/cm <sup>2</sup>	kg/set
15	1/2	250	10	18.5	H	S	27.7	46.8	60.0	0.2
20	3/4	250	10	25.6	H	S	24.6	44.2	40.5	0.2
25	1	250	10	32.8	H	S	21.4	40.4	30.0	0.3
32	1 1/4	250	10	45.5	H	S	15.8	23.1	35.0	0.6
40	1 1/2	300	12	55.5	A	S	25.5	38.7	29.5	0.8
50	2	300	12	69.5	A	S	18.6	26.8	20.5	1.1
65	2 1/2	350	14	84.0	A	S	30.0	42.6	16.5	1.6
*80	3	350	14	98.0	A	S	19.8	27.4	13.0	2.1

### ※ P-1000D 規格說明 / STANDARD SPECIFICATION

H : Helical / A : Annular S : Single Braid / D : Double Braids

公稱軟管管徑 Nominal Hose I.D.		產品總長 Total Length		軟管規格 / Hose Specification			允許之側向位移 Allowable Movement		操作壓力 working pressure	單位重量 weight per unit
				外徑 O.D.	波紋管型式 Bellows Type	網材型式 Braids Type	Vibration	Static		
mm	inch	mm	inch	mm	H / A	S / D	mm	mm	kg/cm <sup>2</sup>	kg/set
25	1	250	10	32.8	H	D	16.5	35.3	48.0	0.4
32	1 1/4	250	10	45.5	H	D	12.0	17.8	56.0	0.7
40	1 1/2	300	12	55.5	A	D	19.7	30.0	47.5	1.0
50	2	300	12	69.5	A	D	14.2	20.7	33.0	1.3
65	2 1/2	350	14	84.0	A	D	23.1	32.8	26.5	1.8
*80	3	350	14	98.0	A	D	15.2	20.9	21.0	2.3

#上表所示操作壓力以常溫25°C為基準, 其最小爆破壓力為4倍之操作壓力值。

The working pressure tabulated above is based on the room temperature ( about 25°C ) and minimum burst pressure is 4 times the working pressure.

#上表所示口徑 / 操作壓力 / 總長 / 作動量均為標準規格, 本公司亦可依客戶實際需求訂製。

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

\*特殊訂製, 請與我們的業務聯繫。Please contact our sales for the special order.

### ※溫度與壓力係數對照表 / Pressure Factor due to Temperature Rating

最大操作壓力 = P <sub>w</sub> x Pressure Factor	操作溫度 / Operating Temperature								
	25°C	75°C	125°C	175°C	225°C	275°C	325°C	350°C	375°C
壓力校正係數 Pressure Factor	1.00	0.89	0.78	0.72	0.67	0.64	0.61	0.60	0.58

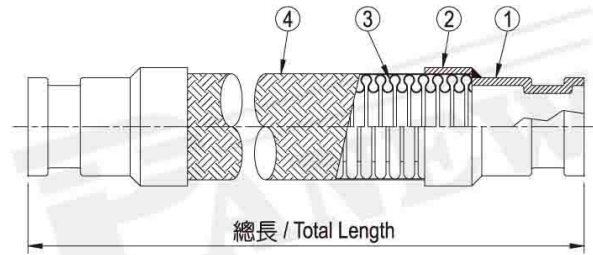
# P-1010 / B / D 滾溝式撓性接頭



## FLEXIBLE CONNECTOR WITH STEEL GROOVED PIPE ENDS

### ※ 結構組合 ( CONSTRUCTION )

項次 Item	配件名稱 Parts	標準材料 Std. Material	選用材料 Option Material
1.	滾溝管(GROOVED PIPE)	SUS-304	STPG / SUS-316
2.	束環(COLLAR RING)	SUS-304	-
3.	波紋管(BELLOWS)	SUS-304	SUS-316L / 321
4.	編織網(WIRE BRAIDS)	SUS-304	-



# 項次 1. 可為滾溝或車溝管，端視客戶需求或使用壓力而定。  
Item 1. could be grooved / cutting pipe against customer's request / system pressure.

### ※ P-1010 規格說明 / STANDARD SPECIFICATION

H : Helical / A : Annular S : Single Braid / D : Double Braids

公稱軟管管徑		產品總長		軟管規格 / Hose Specification			允許之側向位移		操作壓力	單位重量
Nominal Hose I.D.		Total Length		外徑	波紋管型式	網材型式	Allowable Movement		working pressure	unit weight
mm	inch	mm	inch	O.D.	Bellows Type	Braids Type	Vibration	Static	kg/cm <sup>2</sup>	(Cutting Pipe) kg/set
32	1 1/4	300	12	45.5	H	S	32.6	45.6	35.0	0.7
40	1 1/2	300	12	55.5	A	S	24.2	36.7	29.5	0.9
50	2	300	12	69.5	A	S	23.2	33.5	20.5	1.2
65	2 1/2	350	14	84.0	A	S	35.3	50.2	16.5	1.7
80	3	350	14	98.0	A	S	32.5	44.7	13.0	2.0
100	4	350	14	124.5	A	S	26.2	36.0	12.5	2.8
125	5	380	15	152.0	A	S	18.8	26.5	11.0	4.2
150	6	380	15	178.5	A	S	16.4	22.9	9.5	5.3
200	8	400	16	231.0	A	S	14.9	21.2	10.0	8.1
250	10	450	18	283.0	A	S	17.0	23.6	8.0	11.6
300	12	450	18	334.0	A	S	11.2	16.5	6.5	15.9
350	14	450	18	372.0	A	S	10.6	15.4	6.0	17.6
400	16	500	20	420.0	A	S	13.4	19.4	5.5	22.7

### ※ P-1010A 規格說明 / STANDARD SPECIFICATION

H : Helical / A : Annular D : Double Braids

250	10	450	18	283.0	A	D	13.1	18.1	13.0	13.3
300	12	450	18	334.0	A	D	8.6	12.7	10.5	17.9
350	14	450	18	372.0	A	D	8.2	11.8	10.0	19.8
400	16	500	20	420.0	A	D	10.3	14.9	9.0	25.6

### ※ P-1010B 規格說明 / STANDARD SPECIFICATION

H : Helical / A : Annular B-B : Braided Braids

250	10	450	18	283.0	A	B-B	14.8	20.5	10.0	12.3
300	12	450	18	334.0	A	B-B	9.8	14.3	10.0	16.4
350	14	450	18	372.0	A	B-B	9.2	13.3	11.0	20.8
400	16	500	20	420.0	A	B-B	11.6	16.8	8.5	26.6

### ※ P-1010D 規格說明 / STANDARD SPECIFICATION

H : Helical / A : Annular D(B-B) : Double Braided Braids

公稱軟管管徑		產品總長		軟管規格 / Hose Specification			允許之側向位移		操作壓力	單位重量
Nominal Hose I.D.		Total Length		外徑	波紋管型式	網材型式	Allowable Movement		working pressure	unit weight
mm	inch	mm	inch	O.D.	Bellows Type	Braids Type	Vibration	Static	kg/cm <sup>2</sup>	(Cutting Pipe) kg/set
65	2 1/2	350	14	84.0	A	S / D	27.2	38.7	26.5	1.9
80	3	350	14	98.0	A	D	24.9	34.1	21.0	2.3
100	4	350	14	124.5	A	D	20.1	27.6	20.0	3.2
125	5	380	15	152.0	A	D	14.5	20.3	18.0	4.8
150	6	380	15	178.5	A	D	12.6	17.5	15.5	5.9
200	8	400	16	231.0	A	D	11.5	16.2	16.0	9.4
250	10	450	18	283.0	A	D(B-B)	11.4	15.8	16.0	14.4
300	12	450	18	334.0	A	D(B-B)	7.5	11.0	16.0	19.5
350	14	450	18	372.0	A	D(B-B)	7.1	10.2	18.0	25.0
400	16	500	20	420.0	A	D(B-B)	8.9	12.9	14.0	31.5

# 上表所示操作壓力以常溫25°C為基準，其最小爆破壓力為4倍之操作壓力值。

The working pressure tabulated above is based on the room temperature ( about 25°C ) and minimum burst pressure is 4 times the working pressure.

# 上表所示口徑 / 操作壓力 / 總長 / 作動量均為標準規格，本公司亦可依客戶實際需求訂製。

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

# P-1100 / 1200 法蘭式撓性接頭

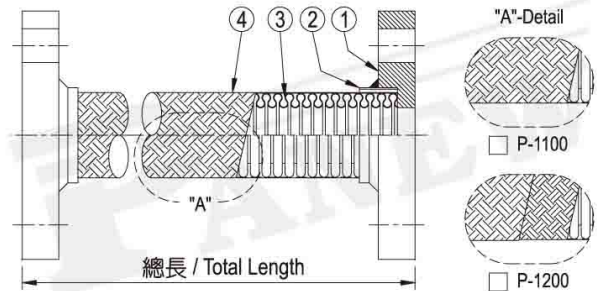


## FLEXIBLE CONNECTOR WITH STEEL FLANGE ENDS

### ※結構組合 ( CONSTRUCTION )

項次 Item	配件名稱 Parts	標準材料 Std. Material	選用材料 Option Material
1.	法蘭 (FLANGE)	SS-400	SUS-304 / SUS-316
2.	束環 (COLLAR RING)	SUS-304	-
3.	波紋管 (BELLOWS)	SUS-304	SUS-316L / 321
4.*	編織網 (WIRE BRAIDS)	SUS-304	-

# 法蘭標準規格 ( Flange Standard ) : JIS-10K  
其餘規格亦可依實際需求選用, 如ANSI, DIN, BS ...等。  
Other standard flanges are available, like ANSI, DIN, BS ...etc.



### ※ P-1100 規格說明 / STANDARD SPECIFICATION

公稱軟管管徑 Nominal Hose I.D.		產品總長 Total Length		軟管規格 / Hose Specification			允許之側向位移 Allowable Movement		操作壓力 working pressure	單位重量 unit weight (JIS-10K)
				外徑 O.D.	波紋管型式 Bellows Type	網材型式 Braids Type	Vibration	Static		
mm	inch	mm	inch	mm	H / A	S / D	mm	mm	kg/cm <sup>2</sup>	kg/set
32	1 1/4	200	8	45.5	H	S	27.6	39.6	35.0	3.2
40	1 1/2	200	8	55.5	A	S	20.5	31.2	29.5	3.4
50	2	230	9	69.5	A	S	29.1	41.8	20.5	4.1
65	2 1/2	230	9	84.0	A	S	23.8	34.0	16.5	5.7
80	3	230	9	98.0	A	S	21.9	30.2	13.0	5.8
100	4	230	9	124.5	A	S	17.6	24.3	12.5	7.0
125	5	280	11	152.0	A	S	20.7	29.2	11.0	10.9
150	6	280	11	178.5	A	S	17.4	24.3	9.5	14.3
200	8	300	12	231.0	A	S	15.7	22.3	10.0	17.9
250	10	330	13	283.0	A	S	17.3	24.0	8.0	27.8
300	12	350	14	334.0	A	S	13.3	19.5	6.5	31.8
350	14	350	14	372.0	A	S	12.2	17.7	6.0	39.8
400	16	400	16	420.0	A	S	14.7	21.2	5.5	56.5

### ※ P-1100B 規格說明 / STANDARD SPECIFICATION

公稱軟管管徑 Nominal Hose I.D.		產品總長 Total Length		軟管規格 / Hose Specification			允許之側向位移 Allowable Movement		操作壓力 working pressure	單位重量 unit weight (JIS-16K)
				外徑 O.D.	波紋管型式 Bellows Type	網材型式 Braids Type	Vibration	Static		
mm	inch	mm	inch	mm	H / A	B-B	mm	mm	kg/cm <sup>2</sup>	kg/set
250	10	330	13	283.0	A	B-B	15.0	20.8	10.0	28.3
300	12	350	14	334.0	A	B-B	11.6	16.9	10.0	32.2
350	14	350	14	372.0	A	B-B	10.6	15.3	11.0	43.0
400	16	400	16	420.0	A	B-B	12.7	18.4	8.5	60.2

### ※ P-1200 規格說明 / STANDARD SPECIFICATION

公稱軟管管徑 Nominal Hose I.D.		產品總長 Total Length		軟管規格 / Hose Specification			允許之側向位移 Allowable Movement		操作壓力 working pressure	單位重量 unit weight (JIS-16K)
				外徑 O.D.	波紋管型式 Bellows Type	網材型式 Braids Type	Vibration	Static		
mm	inch	mm	inch	mm	H / A	S / D	mm	mm	kg/cm <sup>2</sup>	kg/set
65	2 1/2	230	9	84.0	A	D	18.3	26.1	26.5	5.6
80	3	230	9	98.0	A	D	15.9	21.9	21.0	7.6
100	4	230	9	124.5	A	D	12.3	16.8	20.0	10.0
125	5	280	11	152.0	A	D	15.3	21.6	18.0	15.0
150	6	280	11	178.5	A	D	12.8	17.8	15.5	19.4
200	8	300	12	231.0	A	D	11.3	15.9	16.0	25.3
250	10	330	13	283.0	A	D	12.5	17.3	13.0	41.4
300	12	350	14	334.0	A	D	9.3	13.7	10.5	51.4
350	14	350	14	372.0	A	D	8.3	12.0	10.0	70.5
400	16	400	16	420.0	A	D	9.9	14.3	9.0	97.7

### ※ P-1200B 規格說明 / STANDARD SPECIFICATION

公稱軟管管徑 Nominal Hose I.D.		產品總長 Total Length		軟管規格 / Hose Specification			允許之側向位移 Allowable Movement		操作壓力 working pressure	單位重量 unit weight (JIS-16K)
				外徑 O.D.	波紋管型式 Bellows Type	網材型式 Braids Type	Vibration	Static		
mm	inch	mm	inch	mm	H / A	D (B-B)	mm	mm	kg/cm <sup>2</sup>	kg/set
250	10	330	13	283.0	A	D (B-B)	10.8	15.0	16.0	42.3
300	12	350	14	334.0	A	D (B-B)	8.1	11.9	16.0	52.7
350	14	350	14	372.0	A	D (B-B)	7.2	10.4	18.0	75.2
400	16	400	16	420.0	A	D (B-B)	8.6	12.4	14.0	102.9

# 上表所示操作壓力以常溫25°C為基準, 其最小爆破壓力為4倍之操作壓力值。

The working pressure tabulated above is based on the room temperature ( about 25°C ) and minimum burst pressure is 4 times the working pressure.

# 上表所示口徑 / 操作壓力 / 總長 / 作動量均為標準規格, 本公司亦可依客戶實際需求訂製。

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# P-1400 軟管外型尺寸規格



## SPECIFICATION OF SINGLE BRAIDED FLEXIBLE HOSE

### ※ P-1400 螺旋成型軟管 ( Helical Corrugated Hose )

公稱軟管管徑		波紋管規格 / Bellows Spec.			網材規格 / Braids Spec.			最小彎曲半徑		單位重量 / Weight		操作壓力
		內徑	外徑	壁厚	線徑	股數	錠數	Min. Bend Radius		波紋管	單網型	
Nominal Hose I.D.		I.D.	O.D.	Thick.	Wire Φ	Thread	Bunch	Static	Flexing	Bellows	Braided	Working Pressure
mm	inch	mm	mm	mm	mm	no./bunch	no.	mm	mm	kg/m	kg/m	kg/cm <sup>2</sup>
8	1/4	7.8	11.0	0.20	0.3	5	24	30	85	0.07	0.17	108.0
10	3/8	10.5	15.2	0.25	0.3	7	24	35	100	0.13	0.27	81.0
15	1/2	13.4	18.5	0.30	0.3	8	24	40	115	0.17	0.32	60.0
20	3/4	19.1	25.6	0.30	0.3	8	32	50	130	0.24	0.45	40.5
25	1	25.4	32.8	0.30	0.3	9	36	65	150	0.32	0.58	30.0
32	1 1/4	32.5	40.6	0.30	0.4	6	48	75	170	0.41	0.82	30.0
40	1 1/2	38.5	47.6	0.35	0.4	8	48	95	225	0.61	1.16	29.0
50	2	51.0	61.5	0.40	0.4	10	48	115	255	0.81	1.49	21.0

### ※ P-1400 單環成型軟管 ( Annular Corrugated Hose )

\* : Braided Braids

公稱軟管管徑		波紋管規格 / Bellows Spec.			網材規格 / Braids Spec.			最小彎曲半徑		單位重量 / Weight		操作壓力
		內徑	外徑	壁厚	線徑	股數	錠數	Min. Bend Radius		波紋管	單網型	
Nominal Hose I.D.		I.D.	O.D.	Thick.	Wire Φ	Thread	Bunch	Static	Flexing	Bellows	Braided	Working Pressure
mm	inch	mm	mm	mm	mm	no./bunch	no.	mm	mm	kg/m	kg/m	kg/cm <sup>2</sup>
20	3/4	20.0	30.0	0.3	0.3	9	36	85	130	0.38	0.64	41.0
25	1	26.5	37.5	0.3	0.4	6	48	100	155	0.51	0.92	39.5
32	1 1/4	33.0	45.5	0.3	0.4	8	48	115	170	0.63	1.18	35.0
40	1 1/2	40.5	55.5	0.4	0.4	10	48	150	230	1.03	1.72	29.5
50	2	51.5	69.5	0.4	0.4	11	48	165	240	1.32	2.07	20.5
65	2 1/2	64.5	84.0	0.4	0.4	9	72	195	280	1.65	2.57	16.5
80	3	77.0	98.0	0.4	0.4	10	72	220	305	1.97	2.99	13.0
100	4	102.0	124.5	0.4	0.5	10	72	275	380	2.61	4.21	12.5
125	5	127.0	152.0	0.5	0.5	10	96	375	530	4.05	6.18	11.0
150	6	152.5	178.5	0.5	0.5	12	96	435	610	4.87	7.42	9.5
200	8	200.0	231.0	0.6	0.7	11	96	570	810	7.65	12.25	10.0
250	10	249.0	283.0	0.6	0.7	10	128	660	915	9.54	15.11	8.0
300	12	298.0	334.0	0.8	0.7	12	128	945	1390	15.17	21.85	6.5
350	14	334.0	372.0	0.8	0.7	13	128	1015	1470	17.01	24.25	6.0
400	16	382.0	420.0	0.8	0.7	15	128	1160	1680	19.45	27.81	5.5
250*	10	249.0	283.0	0.8	0.5	25	128	760	1050	9.54	16.65	10.0
300*	12	298.0	334.0	0.8	0.6	25	128	1090	1595	15.17	25.40	10.0
350*	14	334.0	372.0	0.8	0.7	25	128	1170	1690	17.01	30.94	11.0
400*	16	382.0	420.0	0.8	0.7	25	128	1335	1935	19.45	33.38	8.5

#上表所示操作壓力以常溫25°C為基準，其最小爆破壓力為4倍之操作壓力值。

The working pressure tabulated above is based on the room temperature ( about 25°C ) and minimum burst pressure is 4 times the working pressure.

#上表所示口徑 / 操作壓力 / 總長 / 作動量均為標準規格，本公司亦可依客戶實際需求訂製。

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

### ※ 設計計算公式 ( Design Equation )

內壓作用於波紋管之周向薄膜應力

Bellows circumferential membrane stress due to pressure.

$$S_2 = P D_m / ( 2 t_p ( 0.571 + 2 w / q ) )$$

內壓作用於波紋管之子午向薄膜應力

Bellows meridional membrane stress due to pressure.

$$S_3 = P w / ( 2 t_p )$$

內壓作用於波紋管之子午向彎曲應力

Bellows meridional bending stress due to pressure.

$$S_4 = P w^2 C_p / ( 2 t_p^2 )$$

內壓作用於編織網之拉應力

Wire braids tensile stress due to pressure.

$$S_b = P D_m^2 / ( a b d^2 \cos( \theta / 2 ) )$$

※判定 / Judgement :

$$S_2 \leq S_{ab}, S_3 + S_4 \leq C_m * S_{ab}, S_b \leq S_{sw}$$

#符號說明 / Nomenclature :

S<sub>ab</sub> : Allowable stress of bellows material.

S<sub>sw</sub> : Allowable stress of wire braids material.

C<sub>m</sub> : Material strength factor of bellows.

P : Internal Pressure.

D<sub>m</sub> : Mean diameter of bellows convolutions.

t<sub>p</sub> : Bellows material thickness after forming.

w : Convolution height of bellows.

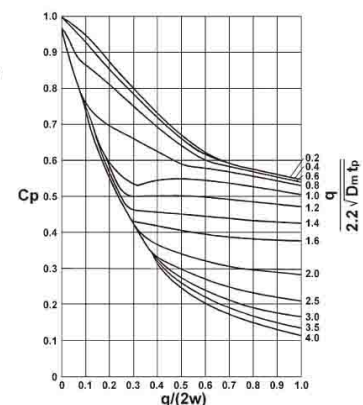
q : Convolution pitch of bellows.

a : Thread no. per carrier of the wire braids.

b : Carrier no. of the wire braids.

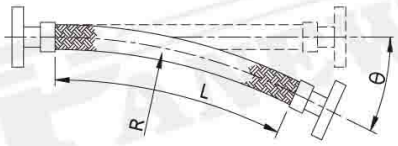
d : Diameter of the wire thread.

θ : Intersected angle of the wire braids.



□ 作動量計算說明 ( Normal Calculation for the Flexible Hose )

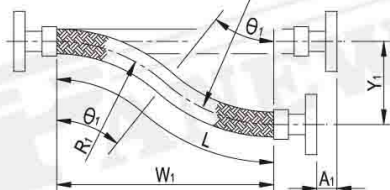
A. 角度變位 ( Angular Motion )



$$L = \pi R \theta / 180$$

B. 側向變位 ( Offset Motion )

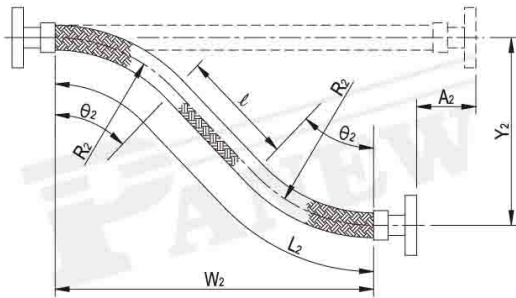
B1.  $\theta_1 < 30^\circ$ ,  $\theta_1 = 90 L_1 / (\pi R_1)$



$$Y_{1/\max} = 2 R_1 (1 - \cos \theta_1) \quad W_1 = 2 R_1 \sin \theta_1$$

$$A_1 = \pi R_1 \theta_1 / 90 - 2 R_1 \sin \theta_1$$

B2.  $\theta_1 > 30^\circ$ ,  $\theta_2 = 30^\circ$



$$l = L_2 - R_2 \theta_2 \pi / 90 \quad W_2 = 2 R_2 \sin \theta_2 + l \cos \theta_2$$

$$Y_{2/\max} = 2 R_2 (1 - \cos \theta_2) + l \sin \theta_2 \quad A_2 = L_2 - W_2$$

# 符號說明 :

Nomenclature :

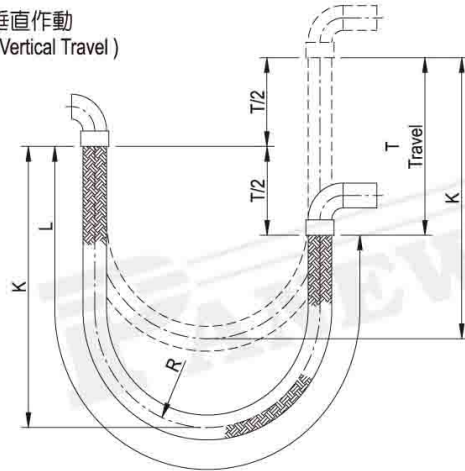
$\theta$  = 彎曲角度 ( Angle of Bend / degree )

$Y$  = 側向變位量 ( Offset Motion / mm )

$W$  = 於側向偏位時之軟管直線投影長度 ( Projected Linear Length At Offset / mm )

C1. 放射狀變位 ( Radial Motion )  
Class "A" Traveling Loops

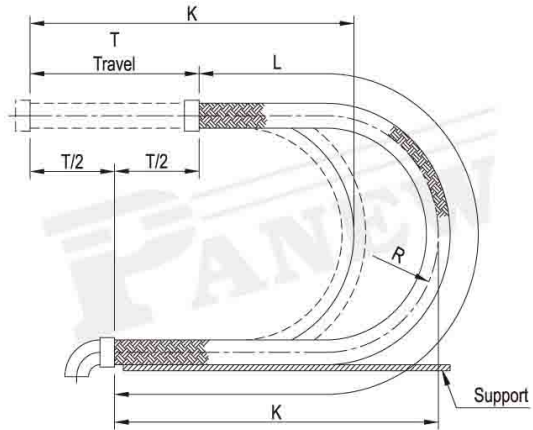
1. 垂直作動 ( Vertical Travel )



$$L = 4 R + T / 2$$

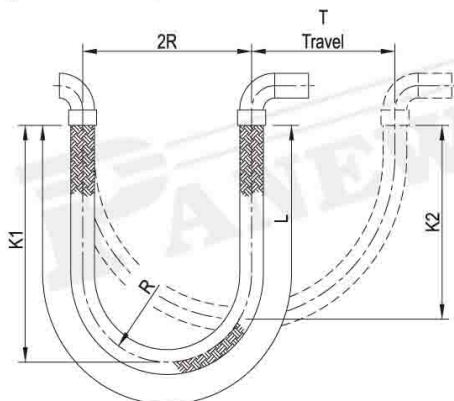
$$K = 1.43 R + T / 2$$

2. 水平作動 ( Horizontal Travel )



C2. 放射狀變位 ( Radial Motion )  
Class "B" Traveling Loops

1. 水平作動 ( Horizontal Travel )

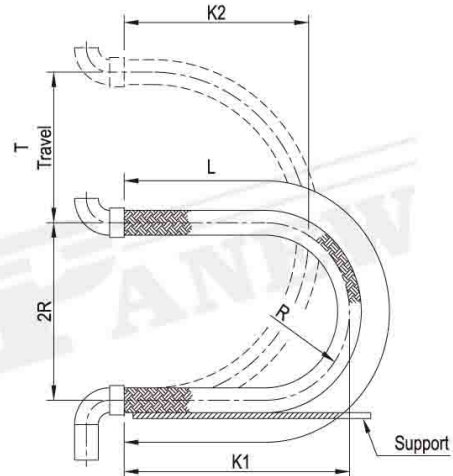


$$L = 4 R + 1.571 T$$

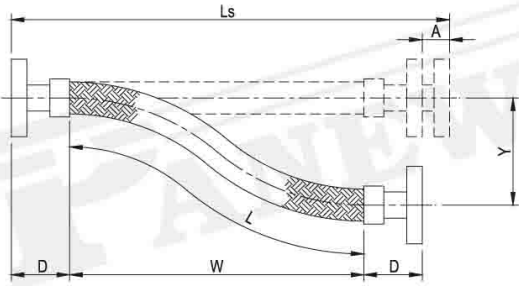
$$K_1 = 1.43 R + 0.785 T$$

$$K_2 = 1.43 R + T / 2$$

2. 垂直作動 ( Vertical Travel )



□ 軟管長度製作與設定 (Manufactural and Setting Length of the Flexible Hose)



- A: 於側向偏位時之軸向長度縮減量 / Axial compressive movement due to the max. offset.
- D: 接頭長度(含束環) / End fitting length. (Include the collar width.)
- L: 軟管有效長度 / Effective length of the flexible hose.
- Ls: 軟管安裝設定長度 / Setting length of the flexible hose.
- Lm: 軟管製造長度 / Manufacturing Length of the flexible hose with fittings.
- W: 於側向偏位時之有效軟管直線投射長度 / Projected linear length at the max. offset.
- Xc: 因管線熱膨脹所產生之軸向壓縮量 / Axial comp. movement due to thermal expansion.
- Y: 最大側向偏位量 / Maximum offset movement.

1. 於下表查出軟管所需之有效長度 L  
Get the effective length of the flexible hose below.  $W = L - A$
2. 計算所需軟管總長與設定長度 / Calculate the total length and setting length.  
when  $A \leq Xc$  ,  $Ls = Lm = L + 2 \times D$   
when  $0 < Xc < A$  ,  $Lm = L + 2 \times D$  ,  $Ls = Lm + Xc - A$

※軟管有效長度與側向位移對照表 / Min. effective length of the hose for specific offset movement

□ 徑 SIZE		側向位移量 / Offset Movement = Y ( mm )																		
		30	40	50	60	70	80	90	100	120	140	160	180	200	220	240	260	280	300	
1/4 in	8 mm	L	103	123	143	163	183	203	223	243	283	323	363	403	443	483	523	563	603	643
	A	6	9	11	14	17	19	22	25	30	35	41	46	51	57	62	68	73	78	
3/8	10	L	111	131	151	171	191	211	231	251	291	331	371	411	451	491	531	571	611	651
	A	6	8	11	14	16	19	22	24	30	35	40	46	51	56	62	67	73	78	
1/2	15	L	119	139	159	179	199	219	239	259	299	339	379	419	459	499	539	579	619	659
	A	5	8	11	13	16	19	21	24	29	35	40	45	51	56	61	67	72	78	
3/4	20	L	126	146	166	186	206	226	246	266	306	346	386	426	466	506	546	586	626	666
	A	5	8	10	13	16	18	21	24	29	34	40	45	50	56	61	66	72	77	
1	25	L	135	157	177	197	217	237	257	277	317	357	397	437	477	517	557	597	637	677
	A	5	7	10	12	15	18	20	23	28	34	39	45	50	55	61	66	71	77	
1 1/4	32	L	144	167	187	207	227	247	267	287	327	367	407	447	487	527	567	607	647	687
	A	4	7	9	12	15	17	20	23	28	33	39	44	49	55	60	65	71	76	
1 1/2	40	L	167	193	216	238	258	278	298	318	358	398	438	478	518	558	598	638	678	718
	A	4	6	8	10	13	16	18	21	26	32	37	43	48	53	59	64	69	75	
2	50	L	171	197	221	243	263	283	303	323	363	403	443	483	523	563	603	643	683	723
	A	4	6	8	10	13	16	18	21	26	32	37	42	48	53	58	64	69	74	
2 1/2	65	L	184	213	238	262	283	303	323	343	383	423	463	503	543	583	623	663	703	743
	A	3	5	7	9	12	15	17	20	25	31	36	41	47	52	57	63	68	73	
3	80	L	192	222	249	273	295	316	336	356	396	436	476	516	556	596	636	676	716	756
	A	3	5	7	9	11	14	17	19	25	30	35	41	46	51	57	62	68	73	
4	100	L	214	248	277	304	329	352	374	394	434	474	514	554	594	634	674	714	754	794
	A	3	4	6	8	10	12	15	17	23	28	34	39	44	50	55	60	66	71	
5	125	L	253	292	327	358	387	414	440	464	509	551	591	631	671	711	751	791	831	871
	A	2	4	5	7	9	10	13	15	19	24	30	35	41	46	51	57	62	67	
6	150	L	271	313	350	384	415	444	472	497	546	590	632	672	712	752	792	832	872	912
	A	2	3	5	6	8	10	12	14	18	23	28	33	39	44	49	55	60	65	
8	200	L	312	361	404	442	478	511	543	572	627	678	726	771	814	854	894	934	974	1014
	A	2	3	4	5	7	8	10	12	16	20	24	29	34	39	44	50	55	60	
10	250	L	355	411	459	503	544	582	617	651	713	771	825	876	924	970	1014	1056	1097	1137
	A	2	3	4	5	6	7	9	10	14	17	21	25	30	34	39	44	49	55	
12	300	L	438	506	566	620	670	716	760	801	878	949	1015	1077	1136	1192	1245	1297	1347	1395
	A	1	2	3	4	5	6	7	8	11	14	17	20	24	28	31	35	40	44	
14	350	L	451	521	582	638	689	737	782	824	903	976	1044	1108	1169	1226	1281	1334	1385	1435
	A	1	2	3	4	5	6	7	8	11	14	17	20	23	27	30	34	38	43	
16	400	L	482	557	623	682	737	788	836	882	966	1044	1117	1185	1250	1311	1370	1427	1481	1534
	A	1	2	3	4	4	5	6	8	10	13	15	18	22	25	28	32	36	40	

※藍色字體為螺旋管，如需其它資料，請隨時與我們聯絡。 / Blue prints above are for Helical Hoses. For more information, please feel free to contact us.

□常見接頭型式(End Fittings Types)

接頭編號/Fitting Model 適用口徑/Available Size	接頭編號/Fitting Model 適用口徑/Available Size	接頭編號/Fitting Model 適用口徑/Available Size	接頭編號/Fitting Model 適用口徑/Available Size
<b>BN</b> $\phi 1/2'' \sim \phi 14''$ 	<b>BL</b> $\phi 1/2'' \sim \phi 14''$ 	<b>BF</b> $\phi 1/2'' \sim \phi 10''$ 	<b>BD</b> $\phi 1/2'' \sim \phi 10''$ 
<b>BB</b> $\phi 1/2'' \sim \phi 10''$ 	<b>BO</b> $\phi 1/2'' \sim \phi 14''$ 	<b>BF</b> $\phi 2'' \sim \phi 24''$ 	<b>BD</b> $\phi 2'' \sim \phi 24''$ 
<b>QD</b> 	<b>QM</b> $\phi 1/2'' \sim \phi 6''$ 	<b>QN</b> 	<b>QE</b> $\phi 1/2'' \sim \phi 6''$ 
<b>QD</b> $\phi 1/2'' \sim \phi 6''$ 	<b>QC</b> $\phi 1/2'' \sim \phi 6''$ 	<b>QN</b> $\phi 1/2'' \sim \phi 6''$ 	<b>QP</b> $\phi 1/2'' \sim \phi 6''$ 
<b>PP</b> $\phi 1/2'' \sim \phi 16''$ 	<b>GP</b> $\phi 1-1/2'' \sim \phi 10''$ 	<b>CP</b> $\phi 1-1/2'' \sim \phi 10''$ 	<b>KF</b> $\phi 3/8'' \sim \phi 6''$ 
<b>EP</b> $\phi 1-1/2'' \sim \phi 10''$ 	<b>RP</b> $\phi 1-1/2'' \sim \phi 10''$ 	<b>PT</b> $\phi 1/2'' \sim \phi 3''$ 	<b>SM</b> $\phi 1/2'' \sim \phi 2''$ 
<b>SF</b> $\phi 1/2'' \sim \phi 2''$ 	<b>PC</b> $\phi 1/2'' \sim \phi 3''$ 	<b>SN</b> $\phi 1/2'' \sim \phi 2''$ 	<b>SNM</b> $\phi 1/2'' \sim \phi 2''$ 
<b>SNF</b> $\phi 1/2'' \sim \phi 2''$ 	<b>UU</b> $\phi 1/2'' \sim \phi 1-1/2''$ 	<b>US</b> $\phi 1/2'' \sim \phi 3''$ 	<b>UT</b> $\phi 1/2'' \sim \phi 3''$ 

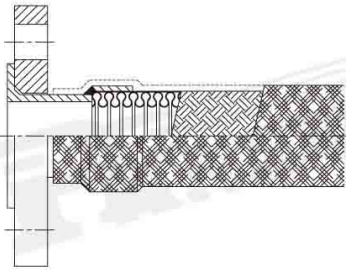
#上表為常見接頭型式，如需其他接頭資訊，請聯繫我們的業務人員。

The End fittings tabulated above are common types. If you need other end fittings types, please contact our sales for more information.

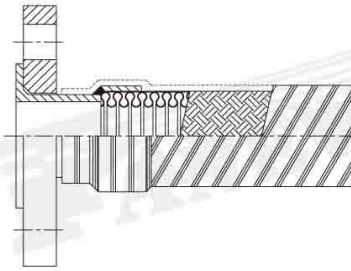


□ 特殊軟管說明 ( Special Design Flexible Hose )

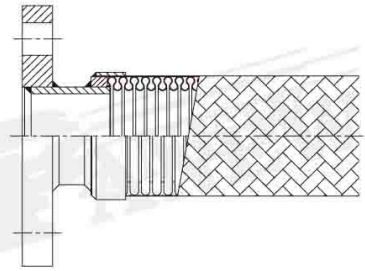
1.1 P-1140 橡膠包覆軟管  
( Rubber Covered Hose )



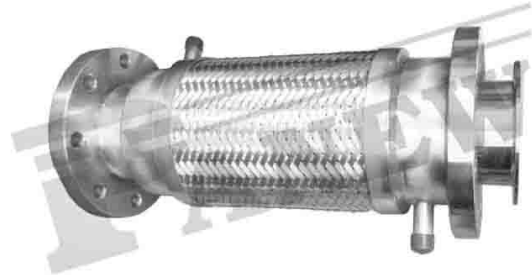
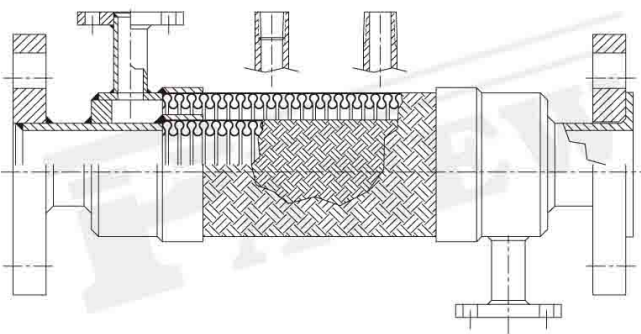
1.2 P-1160 防蝕貼布包覆軟管  
( Anticorrosive Tape Covered Hose )



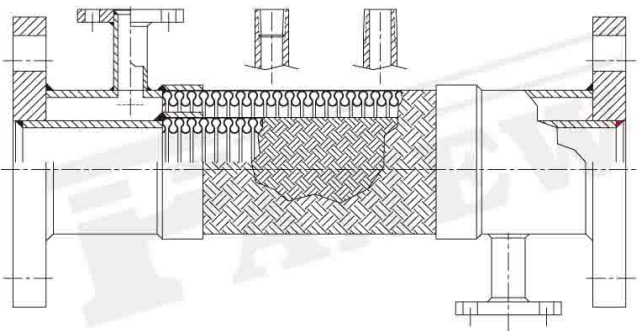
1.3 P-1300 片網編織軟管  
( Band Braids Hose )



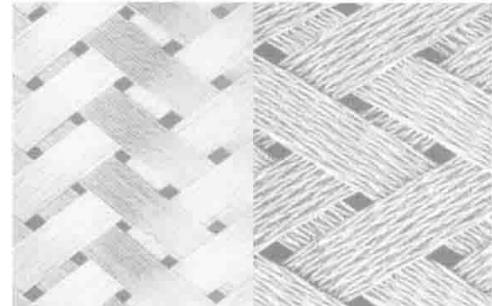
2.1 P-1125 夾套式軟管 - 第一型 ( Jacket Type Hose - type 1 )



2.2 P-1120 夾套式軟管 - 第二型 ( Jacket Type Hose - type 2 )



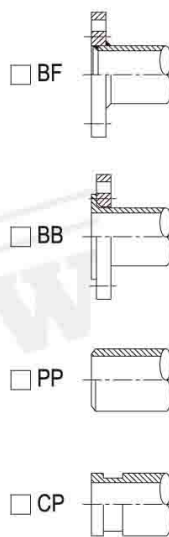
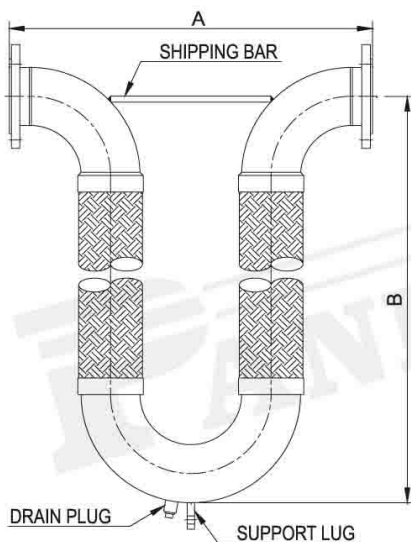
網材型式 ( Braids Type )



平織網 ( Flat Wire Braids ) / 辮索網 ( Braided Braids )

3. P-1180 回路式伸縮軟管  
( Loop Compensator )

端口型式 / Ends Type



+ : 伸長 / extension - : 壓縮 / compression

□徑 / SIZE		尺寸說明 Dimension		作動量 Movement
in	mm	A / mm	B / mm	mm
2"	50	400	450	+100/-75
		450		
2-1/2"	65	450	650	± 100
		500		
3"	80	600	750	± 100
		650		
4"	100	750	900	± 100
		800		
5"	125	900	1050	± 100
		950		
6"	150	1050	1200	± 100
		1100		
8"	200	1300	1450	± 100
		1400		

# P-1700 內襯鐵氟龍軟管



## FLEXIBLE HOSE WITH PTFE LINING & REINFORCEMENTS

### 結構組合與功能說明 / Profile Designation of the Flexible Hose with PTFE lining

Type	結構說明 / Profile Designation	外型說明 / Profile	口徑 / Size
<input type="checkbox"/> I	<input type="checkbox"/> PTFE 直管 / Straight Tube <input type="checkbox"/> PTFE 波紋管 / Convoluted Tube <input type="checkbox"/> 加強環 PTFE 波紋管 / Convoluted & Reinforced Tube		Φ3/8" ~ Φ6" Φ1/2" ~ Φ6" Φ1/2" ~ Φ6"
<input type="checkbox"/> II	1. PTFE 直管 / Straight Tube 2. 外覆加強層 / Exterior Reinforcement <input type="checkbox"/> 橡膠 / Rubber <input type="checkbox"/> 金屬網 / Wire Braids <input type="checkbox"/> 矽膠 / Silicone		Φ3/8" ~ Φ6"
<input type="checkbox"/> III	1. PTFE 波紋管 / Convoluted Tube 2. 外覆加強層 / Exterior Reinforcement <input type="checkbox"/> 橡膠 / Rubber <input type="checkbox"/> 金屬網 / Wire Braids <input type="checkbox"/> 矽膠 / Silicone		Φ1/2" ~ Φ6"
<input type="checkbox"/> IV	1. PTFE 波紋管 / Convoluted Tube 2. 外覆加強層 / Exterior Reinforcement <input type="checkbox"/> 橡膠 / Rubber <input type="checkbox"/> 金屬網 / Wire Braids <input type="checkbox"/> 矽膠 / Silicone 3. 彈簧套 / Spring Guard		Φ1/2" ~ Φ2"
<input type="checkbox"/> V	1. PTFE 波紋管 / Convoluted Tube 2. 外覆加強層 / Exterior Reinforcement <input type="checkbox"/> 橡膠 / Rubber <input type="checkbox"/> 金屬網 / Wire Braids <input type="checkbox"/> 矽膠 / Silicone 3. 波紋管套 / Bellows Guard		Φ1/2" ~ Φ6"
<input type="checkbox"/> VI	1. PTFE 直管 / Straight Tube 2. 金屬波紋管包覆 / Metal Bellows Cover 3. 金屬網包覆 / Wire Braids Cover		Φ1/2" ~ Φ6"

### 結構組合與功能說明 / Profile Designation of the Flexible Hose with PTFE lining

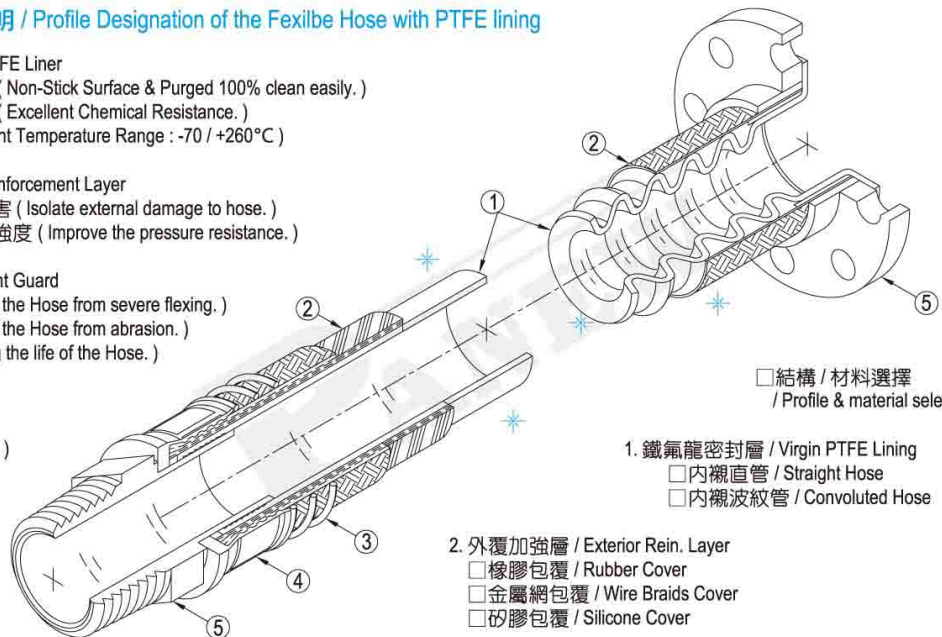
- 鐵氟龍密封層 / Virgin PTFE Liner
  - 易潔淨且光滑之材料 (Non-Stick Surface & Purged 100% clean easily.)
  - 極佳耐化學侵蝕特性 (Excellent Chemical Resistance.)
  - 極佳耐溫特性 (Excellent Temperature Range : -70 / +260°C)

- 外覆加強層 / Exterior Reinforcement Layer
  - 保護內管免受外部傷害 (Isolate external damage to hose.)
  - 提高軟管本體之耐壓強度 (Improve the pressure resistance.)

- 作動保護裝置 / Movement Guard
  - 壁免過度彎曲 (Protect the Hose from severe flexing.)
  - 避免摩擦管體 (Protect the Hose from abrasion.)
  - 提高使用壽命 (Prolong the life of the Hose.)

- 壓接束環 / Collar Ring  
壓接軟管與接頭配件 (Connect Hose and Fitting.)

- 常用管接頭，請參閱第8頁，亦可依客戶實際需求選用訂製。(Common End Fittings on page 8 are for reference only. We can offer other fittings against your inquiry.)



結構 / 材料選擇 / Profile & material selection

- 鐵氟龍密封層 / Virgin PTFE Lining
  - 內襯直管 / Straight Hose
  - 內襯波紋管 / Convoluted Hose

- 外覆加強層 / Exterior Rein. Layer
  - 橡膠包覆 / Rubber Cover
  - 金屬網包覆 / Wire Braids Cover
  - 矽膠包覆 / Silicone Cover

- 作動保護裝置 (Movement Guard)

彈簧套 / Spring Guard

波紋管套 / Bellows Guard

其它 / Others

□ 軟管安裝注意事項 (INSTALLATION HINTS)



1. 震動吸收 (Absorption of Vibration)

<p>A1. 90° Bend Installed</p> <p>適當長度與彎曲半徑 Proper length and bending radius</p>	<p>A2.</p> <p>長度太短 Length is too short.</p>	<p>A3.</p> <p>長度太長 Length is too long</p>
<p>B1.</p> <p>震動方向必須與軟管軸方向垂直 The vibration direction must be perpendicular to the axis of the hose.</p>	<p>B2.</p> <p>加裝 90° 彎頭可吸收多方向震動 Installed with the elbow to absorb any directional vibration.</p>	

2.1 吸收往覆式作動 (Absorption of Reciprocating Movements)

<p>A1. 選用適當長度 Select the proper installed length before installation.</p> <p>適當長度與彎曲半徑 Proper length and bending radius</p> <p>長度太短 Length is too short.</p>	<p>A2.</p> <p>配合空間選用適當長度 Select the proper installed length according to the installed space.</p>
<p>B1. 需於同一平面上作動，以免產生扭矩 (第一型) Move in one plane in order to prevent the torsion during the piping displacement. (Type I)</p>	<p>C1. 作動時不可小於彎曲半徑 Not to exceed the min. bending radius during piping displacement.</p>
<p>B2. 需於同一平面上作動，以免產生扭矩 (第二型) Move in one plane in order to prevent the torsion during the piping displacement. (Type II)</p>	

□ 軟管安裝注意事項 ( INSTALLATION HINTS )



2.2 吸收往覆式作動 ( Absorption of Reciprocating Movements )

<p>D1. 適時提供支撐與滑輪，以減少下垂變形 Prevent the sagging with the support and roller.</p>	<p>無提供支撐與滑輪時，將導致下垂變形 The hose will be sagged without support and roller</p>
<p>E1. 適當加裝彎頭可避免過度彎曲與扭矩發生 Avoid torque and excessive bends with the elbows.</p> <p>側向 + 角度位移 Lateral and angular movements</p>	<p>E3. 適當加裝彎頭可避免過度彎曲與扭矩發生 Avoid torque and excessive bends with the elbows.</p>
<p>E2. 適當加裝彎頭可避免過度彎曲與扭矩發生 Avoid torque and excessive bends with the elbows.</p> <p>側向位移 Lateral movements</p>	<p>E3. 適當加裝彎頭可避免過度彎曲與扭矩發生 Avoid torque and excessive bends with the elbows.</p>

3. 吸收熱膨脹量 ( Absorption of Thermal Expansion )

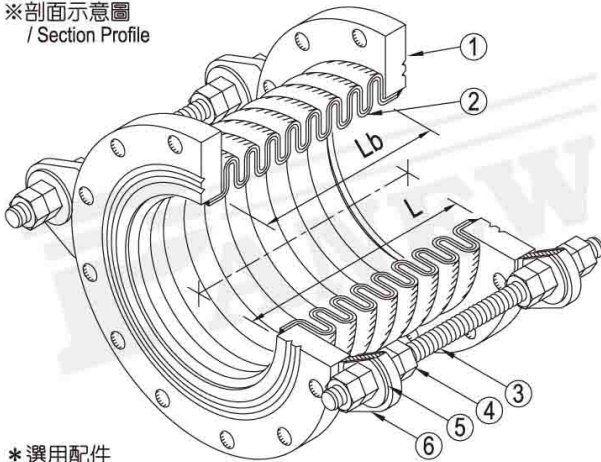
<p>A. 吸收較小之熱膨脹量 ( Absorb small amount of thermal expansion )</p> <p>安裝軟管於位移中心線下限處 Install the hose by half of the movement.</p>	<p>熱膨脹方向不可平行軟管軸方向 Thermal direction cannot be parallel to the axis of the hose</p>
<p>B. 吸收較大之熱膨脹量 ( Absorb large amount of thermal expansion )</p> <p>90° Bend Installed</p> <p>U-shaped Installed</p>	

# P-2000 撓性接頭(防震接頭)



## FLEXIBLE STEEL PUMP CONNCTOR

※剖面示意圖  
/ Section Profile



\*選用配件  
/ Optional Fittings

### ※結構組合 ( CONSTRUCTION )

項次 Item	配件名稱 Parts	標準材料 Std. Material	選用材料 Option Material
1.	法蘭(FLANGE)	SS-400	SUS-304 / SUS-316
2.	波紋管(BELLOWS)	SUS-304	SUS-316 / SUS-316L
3.*	束縛螺桿(TIE RODS)	SS-400	SUS-304
4.*	螺帽(NUTS)	SS-400	SUS-304
5.*	墊片(WASHER)	SS-400	SUS-304
6.*	鐔耳(LUG)	SS-400	SUS-304 / SUS-316

#法蘭標準規格 ( Flange Standard ) : JIS-10K

其餘規格亦可依實際需求選用，如ANSI, DIN, BS ...等。

Other standard flanges are available, like ANSI, DIN, BS ...etc.

#本產品依EJMA規範設計生產，產品於最大作動量時，其壽命達1000次以上。

Our products are designed and manufactured according to EJMA. The Max. life cycles of our products exceed 1000 cycles.

### □ P-2000性能規格表(Specification)

公稱管徑 N.D.		# 產品總長 Total Length (L)		波紋管規格 (Bellows Specification)				容許偏差(Allowable Deviation)			工作壓力 Working Pressure	單品重量 Weight/pc
mm	inch	mm	inch	有效長度 Eff. Length	外徑 O.D.	有效面積 Eff. Area	彈性係數 Spring Rate	軸向 Axial	側向 Lateral	角度 Angular	kg/cm <sup>2</sup>	kg/pc
				Lb(mm)	Φ D(mm)	cm <sup>2</sup>	kg/mm	Δ X(mm)	Δ Y(mm)	Δ θ (deg.)		
40	1-1/2	130	5	96	65.7	25.8	10.3	± 15	10.0	10.0	10.0	4.5
50	2	150	6	120	81.2	39.3	12.7	± 15	10.0	10.0	10.0	5.3
65	2-1/2	150	6	120	97.2	59.0	15.6	± 15	10.0	10.0	10.0	6.8
80	3	150	6	120	113.7	80.4	13.2	± 15	10.0	8.0	10.0	6.8
100	4	150	6	120	139.7	127.1	16.5	± 15	10.0	10.0	10.0	8.2
125	5	150	6	108	165.7	184.3	21.9	± 15	8.0	10.0	10.0	13.0
150	6	150	6	105	196.7	257.6	29.7	± 15	5.6	10.0	10.0	16.4
200	8	200	8	150	247.7	423.1	26.4	± 15	8.7	10.0	10.0	22.4
250	10	200	8	140	305.7	646.5	62.1	± 15	5.2	10.0	10.0	33.0
300	12	200	8	140	355.5	890.4	73.0	± 15	4.4	9.0	10.0	37.8
350	14	200	8	140	399.0	1123.4	61.9	± 15	4.5	9.1	10.0	46.5
400	16	250	10	200	458.7	1470.5	61.8	± 15	8.2	10.0	10.0	63.8
450	18	250	10	180	500.0	1727.6	52.9	± 15	7.3	10.0	10.0	79.0
500	20	250	10	180	551.0	2123.7	58.2	± 15	6.5	9.5	10.0	90.9
550	22	250	10	180	602.0	2558.9	109.0	± 15	5.0	8.2	10.0	115.6
600	24	250	10	180	653.0	3036.6	118.9	± 15	4.5	7.6	10.0	124.6
650	26	280	11	200	718.0	3594.4	127.9	± 15	5.5	8.3	10.0	146.1
700	28	280	11	200	775.0	4225.6	139.0	± 15	5.1	7.7	10.0	165.4
750	30	280	11	200	825.0	4821.3	148.6	± 15	4.7	7.2	10.0	198.5
800	32	280	11	200	876.0	5469.4	160.1	± 15	4.4	6.8	10.0	212.7
850	34	280	11	200	926.0	6144.5	169.9	± 15	4.1	5.9	10.0	225.5
900	36	300	12	200	970.0	6771.0	178.4	± 15	3.4	5.9	9.5	247.8
950	38	300	12	200	1020.0	7519.9	188.1	± 15	3.3	5.7	9.0	273.0
1000	40	300	12	200	1070.0	8308.0	197.8	± 15	3.4	5.7	8.5	293.6
1050	42	300	12	200	1140.0	9305.7	135.8	± 15	3.2	5.5	8.0	333.2
1100	44	300	12	200	1192.0	10216.0	142.3	± 15	3.6	6.1	7.5	345.2
1150	46	300	12	200	1242.0	11131.4	148.5	± 15	2.3	4.1	7.5	388.9
1200	48	300	12	200	1293.0	12105.5	154.9	± 15	2.9	5.1	7.0	418.0
1250	50	300	12	200	1344.0	13120.5	161.3	± 15	3.6	6.3	6.5	435.0
1300	52	300	12	200	1394.0	14155.3	167.5	± 15	2.6	4.6	6.5	449.5
1350	54	300	12	200	1445.0	15251.2	173.8	± 15	1.8	3.1	6.5	515.8

#上表所示口徑 / 操作壓力 / 總長 / 作動量均為標準規格，本公司亦可依客戶實際需求訂製。

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

#上表所示工作壓力以溫度100°C為基準，其最大使用壓力為 1.5 倍之工作壓力值。

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

#上表所示產品重量，均以 JIS-10K為準，如需其它規格重量或相關資料，請隨時與我們聯絡。

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

# P-2200 撓性接頭(防震接頭)



## FLEXIBLE STEEL PUMP CONNCTOR

### □ P-2200性能規格表 (Specification)

公稱管徑 N.D.		# 產品總長 Total Length (L)		波紋管規格 (Bellows Specification)				容許偏差 (Allowable Deviation)			工作壓力 Working Pressure	單品重量 Weight/pc
				有效長度 Eff. Length	外徑 O.D.	有效面積 Eff. Area	彈性係數 Spring Rate	軸向 Axial	側向 Lateral	角度 Angular		
mm	inch	mm	inch	Lb(mm)	Φ D(mm)	cm <sup>2</sup>	kg/mm	Δ X(mm)	Δ Y(mm)	Δ θ (deg.)	kg/cm <sup>2</sup>	kg/pc
40	1-1/2	130	5	96	65.7	25.4	20.3	± 15	7.2	6.4	16	4.6
50	2	150	6	120	81.2	38.7	25.0	± 15	8.7	6.2	16	5.2
65	2-1/2	150	6	120	97.2	58.4	30.8	± 15	10.0	9.3	16	7.0
80	3	150	6	108	113.7	79.6	28.9	± 15	9.9	7.9	16	9.1
100	4	150	6	108	139.7	126.1	36.2	± 15	8.6	10.0	16	12.0
125	5	150	6	105	165.7	183.1	43.4	± 15	6.9	10.0	16	18.4
150	6	150	6	105	196.7	255.9	58.9	± 15	5.8	10.0	16	23.0
200	8	200	8	150	247.7	420.9	52.5	± 15	8.8	8.2	16	31.9
250	10	200	8	140	305.7	643.6	89.6	± 15	6.0	10.0	16	49.7
300	12	200	8	140	355.5	887.1	104.1	± 15	5.0	10.0	16	60.5
350	14	200	8	140	399.0	1119.7	88.3	± 15	5.1	10.0	16	86.4
400	16	250	10	180	458.7	1464.9	107.0	± 15	7.0	10.0	16	119.6
450	18	250	10	180	500.0	1720.6	105.2	± 15	7.5	10.0	16	151.2
500	20	250	10	180	551.0	2115.6	115.9	± 15	6.6	10.0	16	177.3
550	22	250	10	180	602.0	2551.8	127.2	± 15	6.0	9.4	16	209.3
600	24	250	10	180	653.0	3028.8	138.8	± 15	4.7	7.8	16	236.1

#上表所示口徑 / 操作壓力 / 總長 / 作動量均為標準規格，本公司亦可依客戶實際需求訂製。

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

#上表所示工作壓力以溫度100°C為基準，其最大使用壓力為1.5倍之工作壓力值。

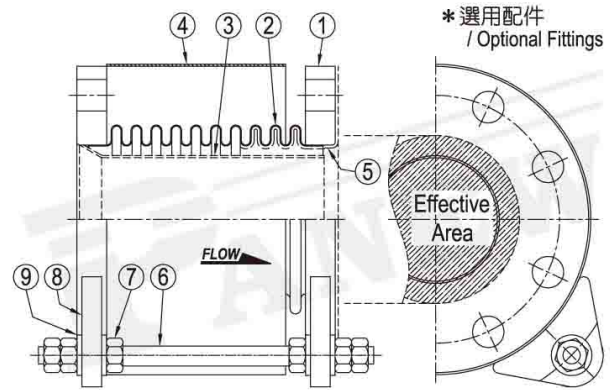
The working pressure tabulated above is based on 100°C. The maximum operating pressure is 1.5 times the working pressure tabulated above.

#上表所示產品重量，均以JIS-16K為準，如需其它規格重量或相關資料，請隨時與我們聯絡。

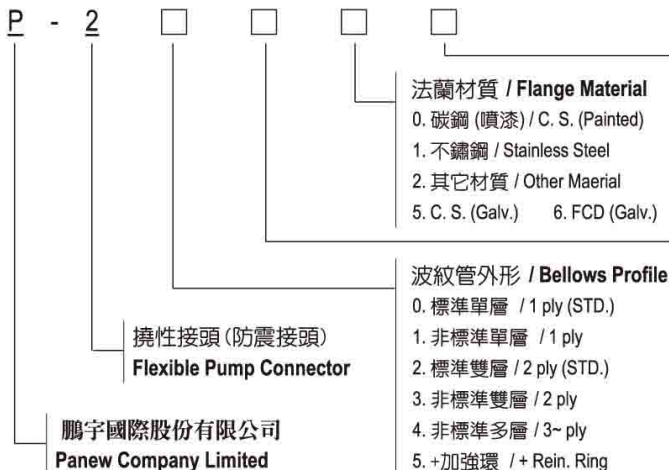
The unit weight of the products tabulated above are based on JIS-16K Flange. If you need more information, please feel free to contact us any time.

### ※結構組合 (CONSTRUCTION)

項次 Item	配件名稱 Parts	標準材料 Std. Material	選用材料 Option Material
1.	法蘭 (FLANGE)	SS-400	SUS-304 / SUS-316
2.	波紋管 (BELLOWS)	SUS-304	SUS-316 / SUS-316L
3.*	內套管 (SLEEVE)	SUS-304	SUS-316 / SUS-316L
4.*	外筒 (COVER)	SS-400	SUS-304 / SUS-316
5*	內塗層 (COATING)	PTFE	---
6.	束縛螺桿 (TIE RODS)	SS-400	SUS-304
7.	螺帽 (NUTS)	SS-400	SUS-304
8.	鐸耳 (LUG)	SS-400	SUS-304 / SUS-316
9.	墊片 (WASHER)	SS-400	SUS-304



### ※型號說明 (Model No.)



#### 螺桿、鐸耳材質 / Rods, Lugs Material

- A. Rods (C.S.) / Lugs (C.S.)    B. Rods (SS-304) / Lugs (SS-304)
- C. Rods (C.S.) / Lugs (SS-304)    D. Rods (SS-304) / Lugs (C.S.)

#### \* 結構分類 / Structure Profile

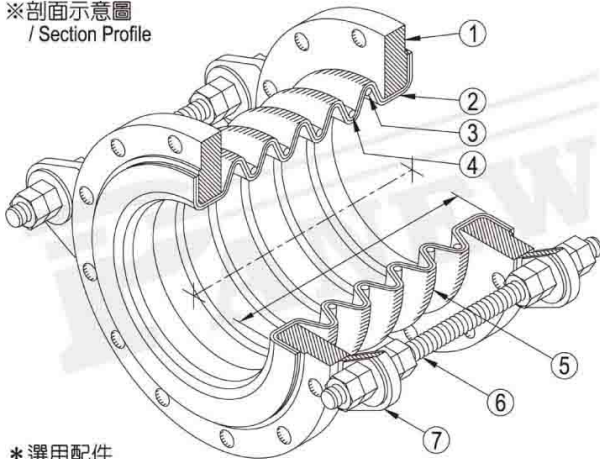
- 0. 兩端焊接固定 / Two Fixed Ends + 項次 / Item 6. 7. 8. 9.
- 1. 兩端焊接固定 / Two Fixed Ends + 項次 / Item 3. 6. 7. 8. 9.
- 2. 兩端焊接固定 / Two Fixed Ends + 項次 / Item 4. 5. 6. 7. 8. 9.
- 3. 兩端焊接固定 / Two Fixed Ends + 項次 / Item 3. 4. 6. 7. 8. 9.
- 4. 兩端焊接固定 / Two Fixed Ends
- 5. 兩端焊接固定 / Two Fixed Ends + 項次 / Item 3.
- 6. 兩端焊接固定 / Two Fixed Ends + 項次 / Item 4.
- 7. 兩端焊接固定 / Two Fixed Ends + 項次 / Item 3. 4.
- 8. 兩端活動 / Two Floating Ends
- 9. 一端固定一端活動 / One Fixed End & One Floating End

# P-2900 鐵氟龍伸縮接頭



## EXPANSION JOINT OF MULTIPLE PTFE BELLOWS & REINFORCEMENTS

※剖面示意圖  
/ Section Profile



\* 選用配件  
/ Optional Fittings

### ※結構組合 (CONSTRUCTION)

項次 Item	配件名稱 Parts	標準材料 Std. Material	選用材料 Option Material
1.#	法蘭(FLANGE)	SS-400	SUS-304 / 316
2.	波紋管(BELLOWS)	PTFE	--
3.*	內加強環(INT. RING)	SUS-304	SS-400 / SUS-316
4.*	外加強環(EXT. RING)	SUS-304	SS-400 / SUS-316
5.*	加強層(REIN. LAYER)	--	PTFE / SUS-304 / RUBBER
6.*	拉桿(ROD)	SS-400	SUS-304 / 316
7.*	固定耳(LUG)	SS-400	SUS-304 / 316

# 法蘭標準規格 (Flange Standard) : JIS-10K

其餘規格亦可依實際需求選用, 如ANSI, DIN, BS ...等。

Other standard flanges are available, like ANSI, DIN, BS ...etc.

※下表所示尺寸 / 性能均為標準規格, 本公司亦可依客戶實際需求訂製。

The specification tabulated below is the standard. Others are available against requests.

### ※性能規格表 / SPECIFICATION

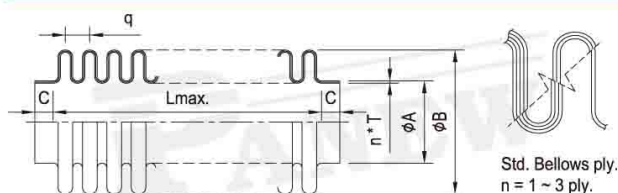
△X : 軸向變位 (axial com. / ext.) △Y : 側向變位 (lateral offset) △θ : 角度變位 (Angular Rotation)

型號說明 Profile / Type	性能規格 Specification																		
	Type		I / II / VI			III				IV				V					
	Size	△X	△Y	△θ	L	△X	△Y	△θ	L	△X	△Y	△θ	L	△X	△Y	△θ	L		
	in	mm	I	II/VI	deg.	mm	mm	mm	deg.	mm	mm	mm	deg.	mm	mm	mm	deg.	mm	
I STD.	1	25	12	8	10	65					12			70	16			200	
	1 1/4	32	14	12	16	70					14	5		75	21	7		220	
	1 1/2	40	17	14	18	75					17			80	23			240	
	2	50	20	17	22	82					20			90	27			260	
	2 1/2	65	22	20	26	88					22	8	15	95	29	10	20	200	
	3	80	24	24	32	92					24			100	31			270	
II PTFE	4	100	26	25	33	95	9.2	1.7			26	2		110	32	14		300	
	5	125	29			105	9.0	1.5		150	29			120	34				
	6	150	32		26	115	8.8	1.2			32			130	38		16		
	8	200	40			125	16	2.4	2.5	200	34	14		140	45			400	
	10	250	42	20		135	15	1.9			36			150	48				
	12	300	44		27	145		2.1		220	37			160	50				
III Wire Braid	14	350				150		1.9			40			165	53				
	16	400	46			160		1.7	2.0			18		170		20	15	450	
	18	450			15	180	16	1.5	1.8					180					
	20	500	48			200		1.4	1.6	230	42			200		56			
	22	550		12	16	210								200					
	24	600	49			220	27	3.3	2.0	340		20		220		22			
IV Steel Plate	26	650				230	48	3.2	3.6	360	46			240	61			600	
	28	700				240								240					
	30	750				250								260					
	32	800	50			260	47	4.3	3.0	380				260					
	34	850				270													
	36	900				280													
V Wire Braids	38	950		10	13	290	46	3.8	2.6	400	48	12	8	280	64	14	10		
	40	1000				300													
	42	1050				305									65			700	
	44	1100				310					49			300					
	46	1150	52			315													
	48	1200				320	44	3.2	2.4	420									
VI Rubber	50	1250				325								320	67				
	52	1300				330					50								
	56	1400				340						10	5				16	7	800
	60	1500	54	8	10	350													
	64	1600				360													
												52			360	70			

# 液壓成型波紋管外型尺寸規格(薄壁型)



## HYDRAULIC FORMED BELLOWS SPECIFICATION (Thin)



### ※ 波紋管規格 (Bellows Specifications)

公稱軟管管徑		波紋管規格 / Bellows Spec.								標準材質 / STD. Material			額定壓力 Rated Pressure kg/cm <sup>2</sup>		
		直部 / Tangent Dia.	外徑	波距	壁厚	層數	長度	直部長	SUS-304	SUS-316L	SUS-316Ti				
Nominal Hose I.D.	ΦA(O.D.)	Φ I.D.	ΦB	q	T	n	Lmax.	C	AISI-304	AISI-316L	AISI-316Ti	Pressure			
mm	inch	mm	mm	mm	mm	ply.	mm	mm	1.4301	1.4435	1.4571				
8	1/4	8.2	8.0	12.7	1.6	0.10	1	~2000	5~30		◎	◎	F.V.~18		
		10.6	10.4	15.0	1.6	0.10	1	~2000	5~30	◎	◎	◎	F.V.~19		
		10.6	10.4	15.0	2.2	0.10	1	~2000	5~30	◎	◎	◎	F.V.~23		
		10.6	10.2	15.0	2.2	0.10	2	~300	5~30	◎	◎	◎	F.V.~47		
10	3/8	10.6	10.0	15.0	2.2	0.10	3	~300	5~30	◎	◎	◎	F.V.~70		
		10.6	10.4	16.2	2.2	0.10	1	~2000	5~30	◎	◎	◎	F.V.~13		
		10.6	10.2	16.2	2.2	0.10	2	~300	5~30	◎	◎	◎	F.V.~24		
		10.6	10.0	16.2	2.2	0.10	3	~300	5~30	◎	◎	◎	F.V.~36		
		10.6	10.3	15.6	2.2	0.15	1	~2000	5~30			◎	F.V.~36		
		12.2	12.0	20.0	2.1	0.10	1	~2000	5~30	◎	◎	◎	F.V.~6		
		13.1	12.9	19.0	2.0	0.10	1	~2000	5~30			◎	F.V.~11		
		14.4	14.2	20.0	2.1	0.10	1	~2000	5~30	◎		◎	F.V.~13		
15	1/2	14.4	14.0	20.0	2.1	0.10	2		5~30	◎		◎	F.V.~26		
		16.54	16.3	23.6	2.0	0.12	1	~2000	5~30	◎			F.V.~10		
		16.5	16.0	22.0	2.3	0.13	2	~300	5~30			◎	F.V.~45		
		16.5	16.0	22.0	2.7	0.13	2	~300	5~30			◎	F.V.~50		
		16.6	16.3	23.6	2.0	0.15	1	~2000	5~30	◎	◎		F.V.~15		
		16.6	16.3	24.7	2.3	0.15	1	~2000	5~30		◎	◎	F.V.~11		
		16.6	16.3	25.3	2.3	0.15	1	~2000	5~30	◎			F.V.~10		
		16.6	16.0	25.3	2.3	0.15	2	~300	5~30	◎	◎		F.V.~18		
		16.6	16.2	22.3	3.2	0.20	1	~2000	5~30	◎			F.V.~53		
		16.6	16.1	22.3	3.2	0.25	1	~2000	5~30	◎			F.V.~78		
		20	3/4	18.6	18.3	27.5	2.7	0.15	1	~2000	5~30			◎	F.V.~10
				18.6	18.3	28.0	2.7	0.15	1	~2000	5~30	◎			F.V.~9
18.6	18.0			28.0	2.7	0.15	2	~300	5~30	◎			F.V.~18		
19.8	19.5			29.0	2.7	0.13	1	~2000	5~30			◎	F.V.~7		
22.4	22.2			32.0	3.2	0.10	1	~2000	5~30	◎		◎	F.V.~5		
22.4	22.0			32.0	3.2	0.10	2	~300	5~30	◎		◎	F.V.~10		
22.4	21.8			32.0	3.2	0.10	3	~300	5~30	◎			F.V.~15		
22.4	22.1			32.0	3.2	0.15	1	~2000	5~30	◎		◎	F.V.~9		
22.4	22.0			32.0	3.2	0.20	1	~2000	5~30	◎	◎		F.V.~16		
22.4	22.1			32.0	3.2	0.18	2	~300	5~30	◎			F.V.~26		
25	1			25.3	25.0	37.0	3.7	0.10	1	~2000	5~30		◎		F.V.~3
				25.3	25.0	37.0	4.3	0.10	1	~2000	5~30		◎		F.V.~3
		25.3	25.0	37.0	4.6	0.10	1	~2000	5~30		◎		F.V.~3		
		25.4	25.0	36.0	4.3	0.15	1	~2000	5~30	◎		◎	F.V.~9		
		25.5	25.1	37.0	3.7	0.20	1	~2000	5~30		◎		F.V.~9		
		25.5	25.1	37.0	4.3	0.20	1	~2000	5~30	◎	◎		F.V.~12		
		25.5	25.1	37.0	4.6	0.20	1	~2000	5~30	◎	◎		F.V.~13		
		32	1-1/4	31.9	31.7	45.5	3.0	0.10	1	~2000	5~30	◎	◎	◎	F.V.~2
32.0	31.7			45.5	3.4	0.13	1	~2000	5~30	◎	◎	◎	F.V.~3		
32.0	31.7			45.5	3.0	0.15	1	~2000	5~30	◎	◎	◎	F.V.~4		
34.0	33.8			47.4	3.5	0.10	1	~2000	5~30		◎	◎	F.V.~2		
35.8	35.4			50.0	4.5	0.20	1	~2000	5~30	◎			F.V.~7		
35.8	35.0			50.0	4.5	0.20	2	~300	5~30	◎			F.V.~15		



# 液壓成形波紋管外型尺寸規格與端部接頭式樣

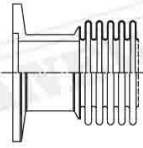
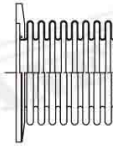
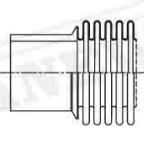
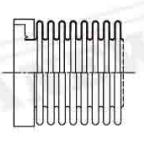
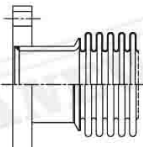
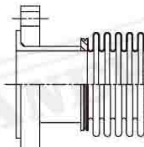
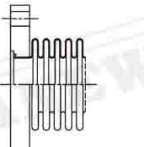
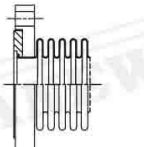
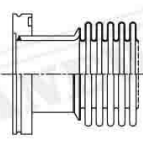
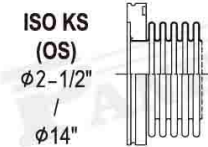
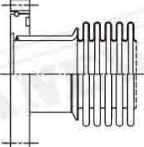
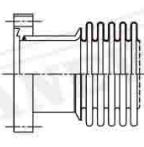


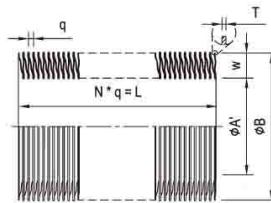
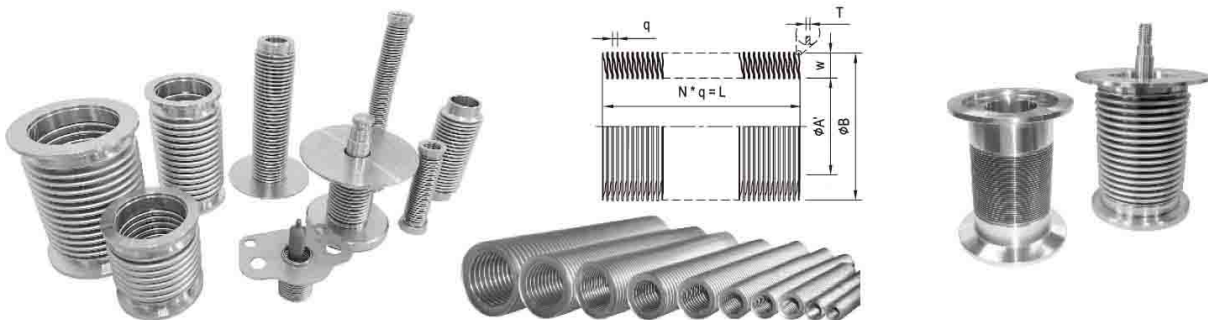
## HYDRAULIC FORMED BELLOWS SPECIFICATION & END FITTINGS

### ※ 波紋管規格 (Bellows Specifications)

公稱軟管管徑 Nominal Hose I.D.		波紋管規格 / Bellows Spec.								標準材質 / STD. Material			額定壓力
		直部 / Tangent Dia.	外徑	波距	壁厚	層數	長度	直部長	SUS-304	SUS-316L	SUS-316Ti	Rated Pressure	
mm	inch	ΦA(O.D.)	Φ I.D.	ΦB	q	T	n	Lmax.	C	AISI-304	AISI-316L	AISI-316Ti	kg/cm <sup>2</sup>
40	1-1/2	38.0	37.8	54.5	3.5	0.10	1	~2000	5~30			◎	F.V.~1.4
		38.0	37.8	55.0	4.0	0.13	1	~2000	5~30			◎	F.V.~2
		38.0	37.5	55.0	3.8	0.13	2	~300	5~30			◎	F.V.~4
		38.2	38.0	54.0	5.0	0.10	1	~2000	5~30		◎		F.V.~1.7
		38.2	38.0	54.0	5.2	0.10	1	~2000	5~30		◎		F.V.~1.7
		38.3	38.0	55.0	5.0	0.15	1	~2000	5~30			◎	F.V.~3
		38.3	38.0	55.0	5.2	0.15	1	~2000	5~30			◎	F.V.~3
		38.4	38.1	54.0	5.0	0.15	1	~2000	5~30	◎			F.V.~4
		38.4	38.1	54.0	5.2	0.15	1	~2000	5~30	◎			F.V.~4
		38.4	38.0	54.0	5.0	0.20	1	~2000	5~30	◎	◎		F.V.~6
50	2	50.4	50.1	68.0	4.6	0.15	1	~2000	5~30			◎	F.V.~2
		50.4	50.1	68.0	6.0	0.15	1	~2000	5~30	◎		◎	F.V.~3
		50.4	50.1	68.0	6.3	0.15	1	~2000	5~30	◎		◎	F.V.~3
		50.5	50.1	68.0	6.0	0.20	1	~2000	5~30	◎	◎		F.V.~5
		50.5	50.1	68.0	6.3	0.20	1	~2000	5~30	◎	◎		F.V.~6
65	2-1/2	62.4	62.0	82.0	5.0	0.20	1	~2000	5~30			◎	F.V.~6
		66.4	66.0	90.0	4.3	0.20	1	~2000	5~30	◎			F.V.~3
80	3	76.4	76.0	96.5	5.8	0.20	1	~2000	5~30		◎	◎	F.V.~4
100	4	100.4	100.0	124.5	6.3	0.20	1	~2000	5~30		◎	◎	F.V.~2
150	6	149.2	148.7	175.5	11.5	0.25	1	~2000	5~30		◎		F.V.~4
250	10	250.6	250.0	293.0	15.0	0.30	1	~2000	5~30		◎		F.V.~2

### ※ 常見接頭配接 (Common End Fittings)

<b>KF P (KP)</b> $\phi 3/8"$ / $\phi 6"$ 	<b>KF D (KD)</b> $\phi 3/8"$ / $\phi 6"$ 	<b>PP</b> $\phi 1/2"$ / $\phi 10"$ 	<b>WP</b> $\phi 1/2"$ / $\phi 10"$ 
<b>BF</b> $\phi 1/2"$ / $\phi 14"$ 	<b>BB</b> $\phi 1/2"$ / $\phi 14"$ 	<b>BL</b> $\phi 1/2"$ / $\phi 14"$ 	<b>BO</b> $\phi 1/2"$ / $\phi 14"$ 
<b>ISO KP (OP)</b> $\phi 2-1/2"$ / $\phi 14"$ 	<b>ISO KS (OS)</b> $\phi 2-1/2"$ / $\phi 14"$ 	<b>ISO KF (OK)</b> $\phi 2-1/2"$ / $\phi 14"$ 	<b>CF</b> $\phi 1/2"$ / $\phi 6"$ 



# P-1000 / 2000 規格澄清表 ( Specification Sheet )



一般軟管 / Flexible Hose ( P-1000 系列 / series )     撓性接頭 / Pump Connector ( P-2000 系列 / series )

客戶名稱 / Customer :		日期 / Date :		單號 / Inquiry No. :		
工程名稱 / Project :		業務員 / Sales :				
項次 No.	產品性能規格說明 Specification of the Product	客戶欄 / By Buyer		製造商專用欄 / By Manufacturer		圖示說明 / Figure
		需求條件 Condition	☑ Yes/No		澄清變更說明 Clarification	
			Y	N		
1	品號 / Item No.					
*2	數量 / Quantity					
*3	口徑 / Nominal Size					
*4a	尺寸限制	全長 / Overall length				
4b	Dim. Limitations	最大外徑 / Max. O.D.				
5	型號規格 / Type specification					
*6	接頭規格 / Connection specification					
*7a	流體說明	介質 / Medium				
7b	Fluid information	流速 / Velocity (m/s)				
8a	壓力 (kg/cm <sup>2</sup> ) Pressure	設計 / Design				
*8b		操作 / Operating				
8c		測試 / Testing				
9a	溫度 (°C) Temperature	設計 / Design				
*9b		操作 / Operating				
9c		最高/最低 (max./min.)				
10a	作動量 (mm) Movement	軸向壓縮 / Axial Comp.				
10b		軸向伸長 / Axial Ext.				
10c		側向 / Lateral				
10d		角度 / Angular				
11	疲勞壽命 / Fatigue Life (cycles)					
12a	彈性係數 Spring Rate	軸向 / Axial (kg/mm)				
12b		側向 / Lateral (kg/mm)				
12c		角度 / Angular (kg*m/deg.)				
13a	端口容許負載 Allowable End Loading	彎矩 / Bending Moment (kg*m)				
13b		軸向力 / Axial Force (kg)				
13c		側向力 / Lateral Force (kg)				
*14a	結構材質 Materials of Construction	波紋管 / Bellows				
14b		網材 / Wire Braid				
*14c		端管 / End Pipe				
*14d		接頭 / Connection				
15a	螺桿需求 Rods	束縛螺桿 / Tie Rod				
15b		設限螺桿 / Limit Rod				
15c		運送螺桿 / Shipping Rod				
16	水平/垂直安裝 (Horiz. / Vert. installed)					
17	波紋管固溶化處理 / Bellows annealing					
18a	RT檢驗	Bellows Long-Seam				
18b	X-Ray Testing	Pipe Long-Seam				
19a	PT檢驗 Penetrant Testing	Bellows Long-Seam				
19b		Bellows Attached-Seam				
19c		Pipe Attached-Seam				
20a	彈性係數檢測 Spring Rate check	Axial (kg/mm)				
20b		Lateral (kg/mm)				
20c		Angular (kg*m/deg.)				
21	噴漆膜厚檢測 / Paint thickness check ( μ m)					
22	拋光處理 / Polishment process					
23	潔淨處理 / Cleanness process					
24	名牌標示 / Name Plate					
符號說明 / Nomenclature :				附註說明 / Remarks :		
1. "*" : 必要條件 / necessary conditions				#1 :		
2. "-", "No", "N/A" : 無需求 / not required				#2 :		
3. "Yes", "√" : 需要 / required				#3 :		
4. "#1", "#2" : 詳如附註說明 / as Remarks						