Vacuum Plumbing Parts

NW (KF) Flexible Tubes

Related Products: For O-Ring of large diameter, refer to **P.1429**.

Standard



Compact



Connected with Stainless Steel Pipe



JIS Flanged



RoHS

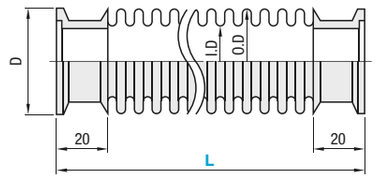
Type	Material	Standards	Operating Pressure	Allowable Leak Amount	Max. Operating Temp.
FRNW	EN 1.4301 Equiv.	ISO2861/1-1974 Compliant with JISB8365: 1988.	0.1MPa~-0.1MPa	1×10^{-9} Torr-ℓ/sec or lower	200°C
FRNFR					
FRNFC					
FRNFS	*				

* Flexible Tube: EN 1.4404 Equiv. Fitting: EN 1.4301 Equiv.

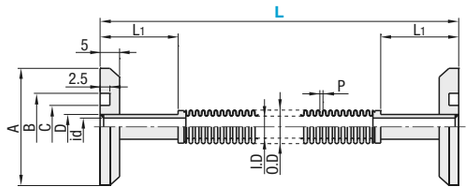
Features

These vacuum pipes are for auxiliary exhaust system of High Vacuum System or rough vacuum fitting of an Ultrahigh Vacuum System. The flexibility of the tube enables it to absorb the vibration from vacuum pumps and vacuum system to weaken the swing of vacuum fittings. Distance adjustment is available due to its flexibility of length.

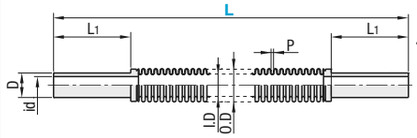
FRNW (Standard)



FRNFC (Compact)

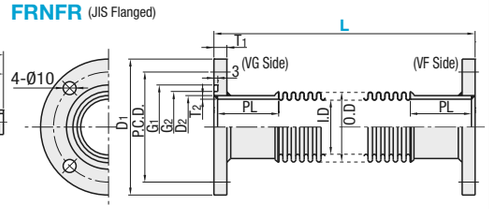


FRNFS (Connected with Stainless Steel Pipe)



For details of stainless steel pipe fittings, see **P.1297~1300**

FRNFR (JIS Flanged)



How to Connect

- Flanged connection at one side VG and the other side VF. Both ends fixed flange.

Applicable O-Ring Specifications

No.	O-Ring Size	Material
20	V34	NBR/Viton
25	V40	NBR/Viton
40	V55	NBR/Viton
50	V70	NBR/Viton

Part Number Type	No.	L 50mm Increment	I.D	O.D	D	Min. Bending Radius (mm)	Unit Price 1 ~ 4 pc(s). L100, 150	L200, 250	L300~2000 Unit Price	L300~2000 Additional Tube Price /50mm
FRNW	10	100~2000	12.5	16.5	30	40				
	16		21.5	28.5	30	50				
	25		26.5	36.5	40	70				
	40		41.5	54	55	100				
	50		50.5	65	75	160				

When L≥300: Total Price = Unit Price + [(Specified L Dimension -300) / 50] x Tube Price/50mm

Part Number Type	No.	L 50mm Increment	A	B	C	D	I.D	O.D	P	id	L1	Min. Bending Radius (mm)	Unit Price 1 ~ 4 pc(s). L100, 150	L200, 250	L300~1000 Unit Price	L300~1000 Additional Tube Price /50mm
FRNFC	16	100~1000	30	17.2	11	6.35	5.5	8.5	1.6	4.5	20	30				
	25		40	26.2	20	9.52	10	13.5	2.5	7	25	25				
	40		55	41.2	35	12.7	12.5	16.5	2.8	10	30	40				

When L≥300: Total Price = Unit Price + [(Specified L Dimension -300) / 50] x Tube Price/50mm

Part Number Type	No.	L 50mm Increment	D	I.D	O.D	P	id	L1	Min. Bending Radius (mm)	Unit Price 1 ~ 4 pc(s). L100, 150	L200, 250	L300~1000 Unit Price	L300~1000 Additional Tube Price /50mm
FRNFS	16	100~1000	6.35	5.5	8.5	1.6	4.5	20	30				
	25		9.52	10	13.5	2.5	7	25	25				
	40		12.7	12.5	16.5	2.8	10	30	40				

When L≥300: Total Price = Unit Price + [(Specified L Dimension -300) / 50] x Tube Price/50mm

Part Number Type	No.	L 50mm Increment	I.D	O.D	D1	D2	T1	T2	G1	G2	P.C.D.	PL	Unit Price 1 ~ 4 pc(s). L100, 150	L200, 250	L300~1000 Unit Price	L300~1000 Additional Tube Price /50mm
FRNFR	20	100~1000	26.5	36	80	27.2	8	2.1	44	34	60	30				
	25	150~1000	33	44	90	34	8	2.8	50	40	70	50				
	40	150~1000	50.5	65	105	48.6	10	2.8	65	55	85	50				
	50	150~1000	66	86	120	60.5	10	2.8	80	70	100	50				

When L≥300: Total Price = Unit Price + [(Specified L Dimension -300) / 50] x Tube Price/50mm

Ordering Example: Part Number - L → FRNW10 - 200

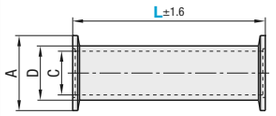
Both Sides Weld-On Vacuum Pipes

Both Sides NW Flanged



RoHS

Type	Material
FRNRF	EN 1.4301 Equiv.



Part Number Type	No.	L 10mm Increment	A	C	D	Unit Price 1 ~ 4 pc(s). Unit Price	L Pipe Price /100mm
FRNRF	10	110~1000	30	10	13.8		
	16		30	17.5	21.7		
	25		40	23	27.2		
	40		55	37.1	42.7		

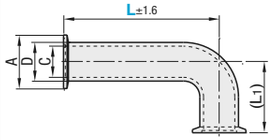
For the type with L dimension of 100mm, select FRNWN in **P.1375**.
<Price Calculation Example>: Price = Unit Price + L Pipe Price
For L pipe price, a charge is added for every 100mm of L dimension. 110 ~ 200: Round up to 200.

NW Flanged x Elbow



RoHS

Type	Material
FRNRE	EN 1.4301 Equiv.



Part Number Type	No.	L 10mm Increment	A	C	D	(L1)	Unit Price 1 ~ 4 pc(s). Unit Price	L Pipe Price /100mm
FRNRE	16	100~1000	30	17.5	21.7	58.1		
	25		40	23	27.2	58.1		
	40		55	37.1	42.7	67.6		

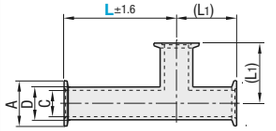
<Price Calculation Example>: Price = Unit Price + L Pipe Price
For L pipe price, a charge is added for every 100mm of L dimension. 110 ~ 200: Round up to 200.

NW Flanged x Tees



RoHS

Type	Material
FRNRT	EN 1.4301 Equiv.



Part Number Type	No.	L 10mm Increment	A	C	D	(L1)	Unit Price 1 ~ 4 pc(s). Unit Price	L Pipe Price /100mm
FRNRT	16	100~1000	30	17.5	21.7	45.4		
	25		40	23	27.2	48.6		
	40		55	37.1	42.7	67.6		

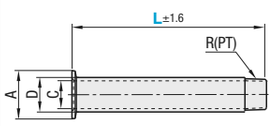
<Price Calculation Example>: Price = Unit Price + L Pipe Price
For L pipe price, a charge is added for every 100mm of L dimension. 110 ~ 200: Round up to 200.

NW Flanged x Threaded



RoHS

Type	Material
FRNRFA	EN 1.4301 Equiv.



Part Number Type	No.	L 10mm Increment	A	C	D	R(PT)	Unit Price 1 ~ 4 pc(s). Unit Price	L Pipe Price /100mm
FRNRFA	16	100~1000	30	7.1	10.5	1/8		
	25		40	9.4	13.8	1/4		
	40		55	12.7	17.3	3/8		

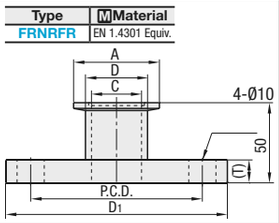
<Price Calculation Example>: Price = Unit Price + L Pipe Price
For L pipe price, a charge is added for every 100mm of L dimension. 110 ~ 200: Round up to 200.

NW Flanged x VF Flanged



RoHS

Type	Material
FRNRFR	EN 1.4301 Equiv.



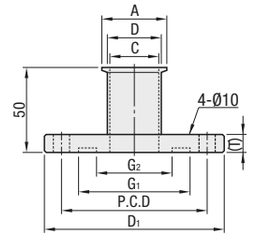
Part Number Type	No.	A	C	D	D1	(T)	P.C.D.	Unit Price 1 ~ 4 pc(s). Unit Price
FRNRFR	10	30	10	13.8	70	8	50	
	16	30	17.5	21.7	70	8	50	
	25	40	23	27.2	80	8	60	
	40	55	37.1	42.7	105	10	85	

NW Flanged x VG Flanged



RoHS

Type	Material
FRNRVG	EN 1.4301 Equiv.



Part Number Type	No.	A	C	D	D1	G1	G2	(T)	P.C.D	Applicable O-Ring Size	Unit Price 1 ~ 4 pc(s).
FRNRVG	10	30	10	13.8	70	34	24	8	50	V24	
	16	30	17.5	21.7	70	34	24	8	50	V24	
	25	40	23	27.2	80	44	34	8	60	V34	
	40	55	37.1	42.7	105	65	55	10	85	V55	

Ordering Example: Part Number - L → FRNRF25 - 300

Common Specifications

Max. Operation Temperature: 200°C
Surface Finish: Shot Blasted