



METAL EXPANSION JOINT

FLUID SYSTEM CO.,LTD

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Metal Expansion Joint

FSE-500 Stainless steel flexible joint

Stainless Steel Flexible Flange Couplings Bellows with Tie Rods,
FM Approved

Application

Used for flexible connection of inlet or outlet of various kinds of pumps and valves to absorb vibration and reduce the noise.

Construction

Item	Parts	Material	Note
1	Bellow	SUS304	SUS316/321
2	Flange	FCD 40	ANSI150/JIS10K
3	Tie rod	S15C	
4	Rubber washer	NR	



350A-600A Welding type

40A-300A Non welding type

Specifications

Nominal bore		Total Length		Bellow Specification		Movement Max. Offset	Working Range	
				Life Length	OD		W/P	W/T
mm	inch	mm	inch	mm	mm	mm	Kg/cm ²	℃
50	2	150	6	120	70.0	15.0	10	110
65	2 1/2	150	6	120	86.5	14.0	10	110
80	3	150	6	108	101.7	3.9	10	110
100	4	150	6	108	128.0	9.5	10	110
125	5	150	6	105	156.5	8.2	10	110
150	6	150	6	105	183.5	6.9	10	110
200	8	200	8	150	234.0	10.5	10	110
250	10	200	8	140	289.0	7.1	10	110
300	12	200	8	140	341.0	5.9	10	110
350	14	230	9	140	397.7	5.2	10	110
400	16	230	9	180	496.1	8.1	10	110
450	18	250	10	180	508.0	7.4	10	110
500	20	250	10	180	562.0	6.5	10	110
550	22	250	10	180	604.0	6.0	10	110
600	24	250	10	180	656.0	5.4	10	110

Note: Non-welding type Standard size is 50A-300A for 350A-600A is a welding type

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Metal Expansion Joint

Stainless steel expansion joint FSE-150SG

Feature

- 1.Stainless Steel Tube Connection for Axial Movement
- 2.FM Approved
- 3.OMEGA Bellows

Construction

	Parts	Material	Remark
1	Bellow	SUS304	SUS316/321
2	Flange	FCD40	SS400/SUS304/316
3	Tube end	FCD40	SS400/SUS304/316
4	Internal sleeve	SUS304	SUS316
5	Tie rods	SS400	



FSE-150SG series Expansion Joints (Van Stoned)

Size Range	DN40 ~ DN300 (1-1/2" ~ 12")	DN40 ~ DN300 (1-1/2" ~ 12")
Pressure/Temperature rating	10 kg/cm2 at 120°C	16 Bar at 120°C
Cycle Life	Nc > 1,000 times	Nc > 1,000 times

Specification 10 bar Fitted with JIS 10K flanges)

DN		OAL	Thickness of Flange	Bellows Length	Axial Movement	Axial Spring Rate	Effective Area
mm	ins	mm	mm	mm	mm	N/mm	cm ²
40	1 1/2	300	16	180	+10 -40	22	20
50	2	300	16	180	+10 -40	32	31
65	2 1/2	300	18	180	+10 -40	49	49
80	3	300	18	180	+10 -40	57	67
100	4	300	18	180	+10 -40	62	106
125	5	300	20	180	+10 -40	68	164
150	6	300	22	180	+10 -40	113	229
200	8	300	22	180	+10 -40	134	384
250	10	300	24	180	+10 -40	198	588
300	12	300	24	180	+10 -40	214	825

※Other size, pressure, axial movement, material is available on request

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Feature

- 1.Stainless Steel Tube Connection for Axial Movement
- 2.FM Approved
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Construction

	Parts	Material	Remark
1	Bellow	SUS304	SUS316/321
2	Flange	FCD40	SS400/SUS304/316
3	Tube end	FCD40	SS400/SUS304/316
4	Internal sleeve	SUS304	SUS316
5	Tie rods	SS400	



FSE-150SG series Expansion Joints (Van Stoned)

Size Range	DN40 ~ DN300 (1-1/2" ~ 12")	DN40 ~ DN300 (1-1/2" ~ 12")
Pressure/Temperature rating	10 kg/cm2 at 120°C	16 Bar at 120°C
Cycle Life	Nc > 1,000 times	Nc > 1,000 times

Specification 16bar Fitted with DIN PN16 flanges

DN		OAL	Thickness of Flange	Bellows Length	Axial Movement	Axial Spring Rate	Effective Area
mm	ins	mm	mm	mm	mm	N/mm	cm ²
40	1 1/2	300	16	180	+10 -40	23	20
50	2	300	18	180	+10 -40	39	33
65	2 1/2	300	18	180	+10 -40	60	51
80	3	300	20	180	+10 -40	70	69
100	4	300	20	180	+10 -40	105	110
125	5	300	22	180	+10 -40	154	172
150	6	300	22	180	+10 -40	205	241
200	8	300	24	180	+10 -40	296	403
250	10	300	26	180	+10 -40	401	611
300	12	300	28	180	+10 -40	474	851

※Other size, pressure, axial movement, material are available on request

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Metal Expansion Joint

Axial Expansion joint FSE-400SP

Multiply bellows welded to weld ends, with internal sleeve Designed pressure/temperature pipeline.



FSE-400SP (weld ends) Axial Expansion Joints	
Size Range	DN15 ~ DN600 (1/2" ~ 24")
Pressure/Temperature rating	16bars at 120°C
Cycle Life	Nc > 1,000 times

Specification

Size		OAL	Thickness of Weld Ends	Axial Movement	Axial Spring Rate	Effective Area
mm	ins	mm	mm	mm	N/mm	cm ²
15	1/2	350	2.8	+10 -40	14	6
20	3/4	350	2.9	+10 -40	14	6
25	1	350	3.4	+10 -40	22	8
32	1 1/4	350	3.6	+10 -40	25	13
40	1 1/2	350	3.7	+10 -40	36	20
50	2	350	3.9	+10 -40	52	32
65	2 1/2	350	5.2	+10 -40	90	49
80	3	350	5.5	+10 -40	105	67
100	4	350	6.0	+10 -40	152	122
125	5	350	6.6	+10 -40	161	176
150	6	350	7.1	+10 -40	230	258
200	8	350	8.2	+10 -40	272	414
250	10	350	9.3	+10 -40	386	658
300	12	350	9.5	+10 -40	434	904
350	14	350	9.5	+10 -40	535	1171
400	16	350	9.5	+10 -40	688	1515
450	18	350	9.5	+10 -40	764	1886
500	20	350	9.5	+10 -40	1053	2324
550	22	350	9.5	+10 -40	1144	2779
600	24	350	9.5	+10 -40	1236	3274

※Other size, pressure rating, axial movement, and material are available on request

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Metal Expansion Joint

FSE-400SG Axial Stainless expansion joint

Multiply bellows welded to welding flange ends, with internal sleeve, Tie rods.

Designed to absorb axial movement of medium and/or low pressure/temperature pipeline.

Construction

No.	Parts	Standard Material	Optional Material
1	Bellows	SUS304	SUS316
2	Internal Sleeve	SUS304	SUS316
3	Flanges	Carbon Steel	SUS.304/SUS316
4	Tube Ends	Carbon Steel	SUS304/SUS316
5	Tie Rods	Carbon Steel	SUS304/SUS316



Specification

Size		OAL	Bellow OD	Axial Movement	Axial Spring Rate	Effective Area	Pressure
mm	ins	mm	mm	mm	N/mm	cm ²	Kg/cm ²
40	1 1/2	350	58	+10 -40	36	20	16
50	2	350	76	+10 -40	52	32	16
65	2 1/2	350	92	+10 -40	90	49	16
80	3	350	106	+10 -40	105	67	16
100	4	350	113	+10 -40	152	122	16
125	5	350	163	+10 -40	161	176	16
150	6	350	190	+10 -40	230	258	16
200	8	350	252	+10 -40	272	414	16
250	10	350	315	+10 -40	386	658	16
300	12	350	366	+10 -40	434	904	16
350	14	400	398	+10 -40	535	1171	16
400	16	400	463	+10 -40	688	1515	16
500	20	450	564	+10 -40	1053	2324	16
600	24	500	34	+10 -40	1236	3274	16

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Metal Expansion Joint

FSE-700/700H

FSE-700/700H stainless steel link expansion joint The model can release the stress distributing to every point averagely. it can do the best effective to absorb expansion/compression of pipe line. FSE-700/700H is design to absorb large amounts of axial movement.

Construction

Item	Parts	Material	Remark
1	Bellows	SUS304	SUS316/321
2	Flange	SS400	SUS304/316/321
3	Internal Sleeve	SUS304	
4	Tube Ends	SS400	
5	Tie Rods	SS400	
6	Support Flange	SS400	



Specification

Nominal Bore		Total Length	Bellows	Axial Movement		working Pressure kg/cm2
mm	Ins	mm	O.D.	mm		FSE-700/700H
40	1½	700	60	+20	-80	10/16
50	2	700	78	+20	-80	10/16
65	2½	700	92	+20	-80	10/16
80	3	700	107	+20	-80	10/16
100	4	900	130	+20	-80	10/16
125	5	900	163	+20	-80	10/16
150	6	900	190	+20	-80	10/16
200	8	900	243	+20	-80	10/16
250	10	900	295	+20	-80	10/16
300	12	900	345	+20	-80	10/16

The size, total length, pressure, and movement tabulated above are standard. we can also produce products according your requirements.

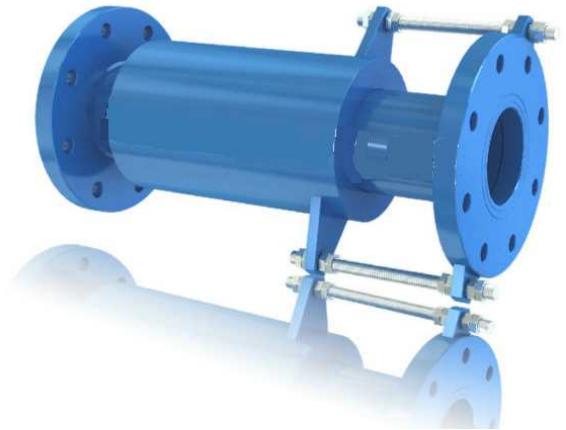
Metal Expansion Joint

FSE-1100/1100H External Pressure Expansion joint

Connects with one or more corrugated pipes through the middle control serially, both sides separately and seal the ledger wall welding after in closing board, and connected with each other by tube. The main absorption axial translation, has perfect compensation quality, good heat preservation performance, has the merits of remaining medium may remove and so on.

Construction

ITEM	PARTS	MATERIAL	REMARK
1	BELLOWS	SUS304	SUS316/321
2	FLANGE	SS400	SUS304/316/321
3	SLEEVE PIPE	STPG/SS400	SUS304/316
4	RING PLATE	SS400	SUS304/316
5	INTERNAL SLEEVE	SUS304	SUS316
6	COVER PIPE	STPG/SS400	SUS304/316
7	END PIPE	STPG/SS400	SUS304/316
8	TIE RODS	S15C/SS400	SUS316



Specification

DN (mm)	Total Length (mm)	Bellows O.D. (mm)	Effec. Area (cm ²)	Force to Compress (kg)	Axial Movement (mm)	Max Working pressure (kg/cm ²)	
						EH-1100	EH-1100H
32	600	49	14.5	60	+50 / -50	10	16
40	600	58	17.6	75	+60 / -60	10	16
50	600	76	30.4	110	+60 / -60	10	16
65	700	92	43.8	205	+70 / -70	10	16
80	700	106	62.8	261	+80 / -80	10	16
100	700	133	107.7	303	+80 / -80	10	16
125	700	163	162.9	630	+80 / -80	10	16
150	900	190	227.5	1154	+100 / -100	10	16
200	900	252	385.3	1905	+100 / -100	10	16
250	900	315	670.1	1932	+100 / -100	10	16
300	900	366	923.5	2353	+100 / -100	10	16
350	1100	398.1	1102	2192	+110 / -110	10	16
400	1100	462.8	1464	2689	+120 / -120	10	16
500	1100	564	2235	3322	+120 / -120	10	16
600	1200	666	3167	3956	+120 / -120	10	16

Metal Expansion Joint

Universal Expansion Joints

Universal expansion joint is just like two hinged joint. this joint is in role of absorbing the horizontal movement from building expansion corner, when installing, it must be at the fully extended length and at 90 to the line of movement. the tie rods cannot be adjusted or removed to ensure the proper function of the unit.

Function and using:

1. It can be instead of two hinged joint to absorb the universal movement.
2. It can be instead of two gimbal joint, maybe used in the offset pipe as shown.
3. Used in building expansion corner to absorb subsidence because of uneven settlement

Construction

Item	Parts	Material	Remark(Option)
1	Bellows	SUS321	SUS316
2	Flange	SS400	SUS304
3	Middle Tube	SGP	SUS304
4	Tie Rods	S25C	



Specification

Nominal Bore		Max. W/P FSE-800 / 800H	Bellows OD	Force to Deflect Max.	Length to 25mm Lateral Movement	Length For each Extra 25mm
mm	ins	kg/cm ²	mm	kg	mm	mm
50	2	10 / 16	76	4.0	600	210
65	2 1/2	10 / 16	92	10.6	600	210
80	3	10 / 16	106	8.1	700	210
100	4	10 / 16	133	8.9	700	210
125	5	10 / 16	163	28.7	750	210
150	6	10 / 160	190	37.7	750	210
200	8	10 / 16	252	73.3	800	210
250	10	10 / 16	315	265	800	240
300	12	10 / 16	366	205	1000	360
350	14	10 / 16	396	266	1000	360
400	16	10 / 16	460	432	1000	360
500	20	10 / 16	561	470	1200	480
600	24	10 / 16	663	791	1200	480

The size, total length, pressure, and movement tabulated above is standard. we can also produce products according your requirements.

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Metal Expansion Joint

FSE-900/900H Gimbal expansion joint

Gimbal expansion joints prevent the axial movement of the bellows yet allow angular rotation in one plane only (hinged), or permit angular rotation in any plane (gimbal). Hinge and gimbal expansion joints also restrain the pressure thrust forces through the use of hinge/gimbal hardware.

Stainless Steel Compensator Joint For Large Lateral Movement

The main ways to compensate multi plane displacement of the synthesis of curved duct is deflection angle because the equalizing ring, shaft and the flap can withstand the pressure thrust and other additional external force function the inflation festival self-absorption intrinsic pressure thrust force, will have the external force to the pipeline therefore the pipeline support's establishment may simplify. Universal hinged bellows t compensates for any upward angular displacement of the pipeline.

Construction

ITEM	PARTS	MATERIAL	REMARK
1	Bellows	SUS304	SUS316/321
2		SS400	
3	Tube Ends	SGP/SS400	SUS304/316
4		SS400	SUS304
5	Pin	SS400	SUS304
6	Gimbal Ring	SS400	SUS304
7	Brackes	SS400	SUS304
8	End Pipes	SGP/SS400	SUS304/316



FSE-900/900H Gimbal expansion joint specification

DN	Total Length	Bellows O.D.	Effect. Area	Lateral Def.	Max. W/P (kg/cm2)	
(mm)	(mm)	(mm)	(cm2)	(mm)	FSE-900	FSE-900H
50	900	76	30.4	200	10	16
65	900	92	43.8	200	10	16
80	1000	106	62.8	200	10	16
100	1100	133	107.7	200	10	16
125	1250	163	162.9	200	10	16
150	1250	190	227.5	200	10	16
200	1400	252	385.3	200	10	16
250	1500	315	670.1	200	10	16
300	1600	366	923.5	200	10	16
350	1700	398.1	1102	200	10	16
400	1800	462.8	1464	200	10	16
500	1900	564	2235	200	10	16
600	2200	666	3167	200	10	16

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