

Control Units with Rubber Flanged Expansion Joint



Control Units

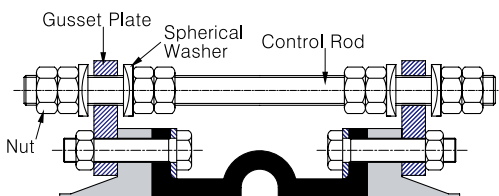
Control units are designed to minimize possible failure of the expansion joint from excessive motions caused by failure of anchoring/guiding, abnormal thermal fluctuation and pressure surge etc. Control unit assemblies can be set at the maximum allowable extension and compression of rubber expansion joint and absorb static pressure thrust developed at the expansion joint. When used in this manner, control units are additional safety factor and can minimize possible damage to adjacent equipment.

Use of Control Units

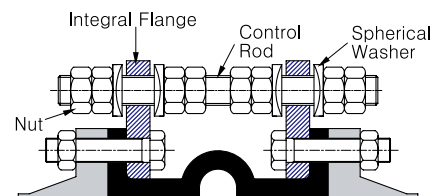
Rubber expansion joints must be installed between two fixed anchor points in piping and piping anchors must take end thrusts produced by internal pressure or thermal changes. When it is impossible to provide adequate anchors, control units must be used to restrain the piping system

Kurbo supplies various control unit configurations for individual piping system as shown below.

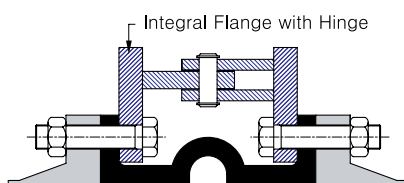
GP : Gusset Plate with control rod



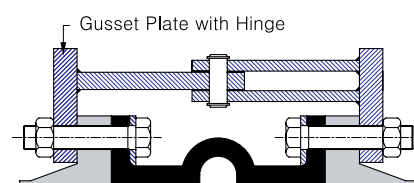
IF : Integral Flange with control rod



HG-I : Hinge with integral gusset

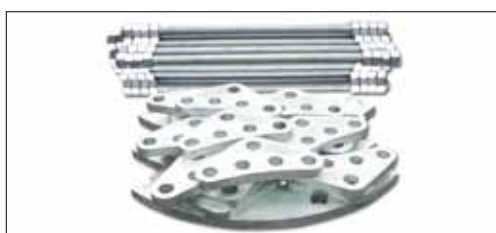


HG-S : Hinge with separate gusset



Features

- Protect expansion joints from over-extension and over-compression
- Galvanized carbon steel rods are standard. Stainless steel and other materials available as material selection varies with environmental conditions
- Optional internal nuts or compression sleeves available : To prevent over-compression. Double nuts are recommended for field adjustment and compression sleeve shall be field trimmed
- Available with rubber washers/grommets : To isolate vibration.
- Available with spherical washers : To prevent binding during offset.
- Available with hinges with integral gusset or separate gusset : To allow for angular movement in one plane.
- Gimbals available : To allow for angular movement in two directions.
- Available with integral flange : To provide equal distribution of forces and prevent stress concentration. Also to prevent any transmission of noise and vibration to mating flange.



Kurbo Control Unit Dimensions and Rating

Nominal Pipe Size		Dimensions (mm)			Number of Control Rod Required									
		Plate O.D.	Plate Thick.	Dia. Rod	Max. Pressure of System-bar									
DN	inch									2	3	4	6	8
25	1	184	10	M12	78.7									
32	1.25	195	10	M12	65.4									
40	1.5	203	10	M12	55.2									
50	2	241	10	M16	59.8									
65	2.5	269	10	M16	47.2									
80	3	279	10	M16	38.1									
100	4	318	10	M16	26.4	39.7	52.9							
125	5	343	10	M16	17.4	26.1	34.7							
150	6	369	12	M16	13.5	20.2	26.9							
200	8	447	12	M20	14.1	21.2	28.2							
250	10	518	19	M22	12.2	18.3	24.4	36.6						
300	12	607	19	M24	10.2	15.3	20.4	30.5						
350	14	658	19	M24	7.9	11.8	15.8	23.7						
400	16	734	19	M27	8.0	12.0	15.9	23.9	31.9					
450	18	771	19	M27	6.5	9.8	13.0	19.5	26.0					
500	20	835	19	M27	5.4	8.1	10.8	16.3	21.7					
550	22	897	25	M30	5.5	8.2	11.0	16.4	21.9					
600	24	962	25	M30	4.7	7.0	9.4	14.1	18.8					
650	26	1017	25	M30	4.1	6.1	8.2	12.2	16.3					
700	28	1085	32	M33	4.4	6.6	8.8	13.3	17.7					
750	30	1154	32	M36	4.6	6.9	9.1	13.7	18.3					
800	32	1230	32	M36	4.1	6.1	8.1	12.2	16.3					
850	34	1292	38	M39	4.4	6.6	8.8	13.1	17.5					
900	36	1363	38	M39	3.9	5.9	7.9	11.8	15.8					
950	38	1431	38	M39	3.6	5.3	7.1	10.7	14.3					
1000	40	1459	38	M39		4.9	6.5	9.7	13.0					
1050	42	1528	38	M39		4.3	5.7	8.6	11.4					
1100	44	1586	38	M39		3.9	5.3	7.9	10.5					
1150	46	1637	38	M39		3.6	4.8	7.3	9.7					
1200	48	1704	38	M42		3.9	5.2	7.8	10.4					
1250	50	1762	38	M42		3.6	4.8	7.2	9.6					
1300	52	1819	38	M42		3.4	4.5	6.7	9.0					
1350	54	1904	38	M48		4.0	5.3	8.0	10.6					
1400	56	1965	38	M48		3.7	5.0	7.4	9.9					
1450	58	2022	38	M48		3.5	4.7	7.0	9.3					
1500	60	2074	45	M48		3.3	4.4	6.6	8.7					
1550	62	2137	45	M48			4.1	6.2	8.2					
1650	66	2252	50	M48			3.7	5.5	7.3					
1800	72	2417	50	M48			3.1	4.7	6.2					
1950	78	2611	50	M56			3.7	5.6	7.4					
2100	84	2783	55	M56			3.2	4.9	6.5					
2250	90	2979	65	M64				3.7	5.5	7.4				
2400	96	3165	65	M68				3.8	5.7	7.5				
2550	102	3336	65	M68				3.4	5.0	6.7				
2700	108	3506	65	M68				3.0	4.5	6.0				
2850	114	3686	65	M68				2.7	4.1	5.4				
3000	120	3849	65	M68				2.5	3.7	4.9				
3300	132	4205	65	M68				2.1	3.1	4.1				
3600	144	4523	65	M68				1.7	2.6	3.5				

WARNING : Control Units must be used to protect expansion joints from excessive movements if piping is not properly anchored. Expansion joint may operate in pipelines or equipment carrying fluid and/or gases at elevated temperatures and pressures, so precaution should be taken to make sure these parts are installed and inspected regularly. Care is required to protect personnel in the event of leakage or splash.

- The values are based on mild steel material and 65% of yield strength of the Rod. Number of rods are depending upon maximum test pressure. Dimensions will change when using high tensile steel. For more details and proper installation, contact Kurbo.
- Plate O.D. is based on Kurbo standard design and 150lbs standards of ANSI/ASME B16.5 Class 150, ANSI/ASME B16.47 Class 150 Series A and AWWA C207 Class D 150lbs.
- For control unit length, customer should provide flange specification or mating flange thickness.

Control Units with Steel Flange Type Expansion Joint

Control Units

Control units are designed to minimize possible failure of the expansion joint from excessive motions caused by failure of anchoring/guiding, abnormal thermal fluctuation and pressure surge etc. Control unit assemblies can be set at the maximum allowable extension and compression of rubber expansion joint and absorb static pressure thrust developed at the expansion joint. When used in this manner, control units are additional safety factor and can minimize possible damage to adjacent equipment.

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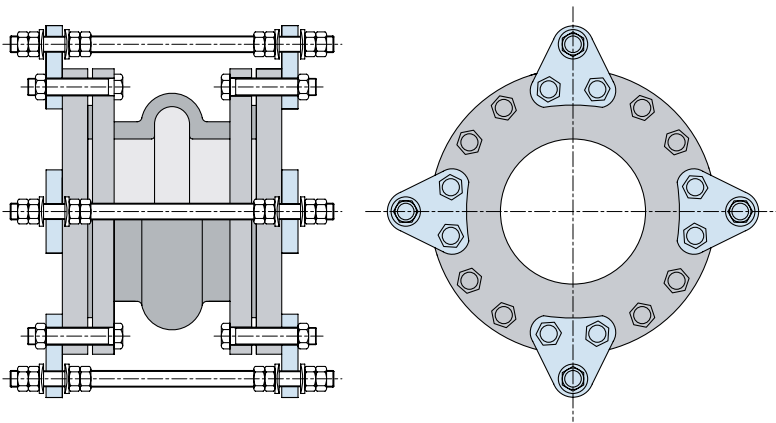
Kurbo supplies various control unit configurations for individual piping system as illustrated on next page.

Features

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- Galvanized carbon steel rods are standard. Stainless steel and other materials available as material selection varies with environmental conditions
- Optional internal nuts or compression sleeves available : To prevent over-compression. Double nuts are recommended for field adjustment and compression sleeve shall be field trimmed.
- Available with rubber washers/grommets : To isolate vibration.
- Available with spherical washers : To prevent binding during offset.
- Available with hinges with integral gusset or separate gusset : To allow for angular movement in one plane.
- Gimbals available : To allow for angular movement in two direction.
- Available with integral flange : To provide equal distribution of forces and prevent stress concentration. Also to prevent any transmission of noise and vibration to mating flange.



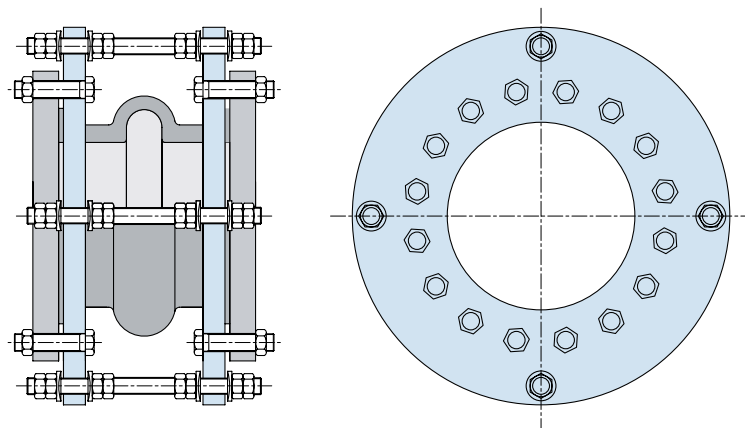
GP: Gusset plate with control rod



Type GP

Gusset plate (control rod plate) with control rod and flat/spherical washer. This type is used for equal dispersion of axial and lateral forces. Compression sleeve can be used to restrain axial compression.

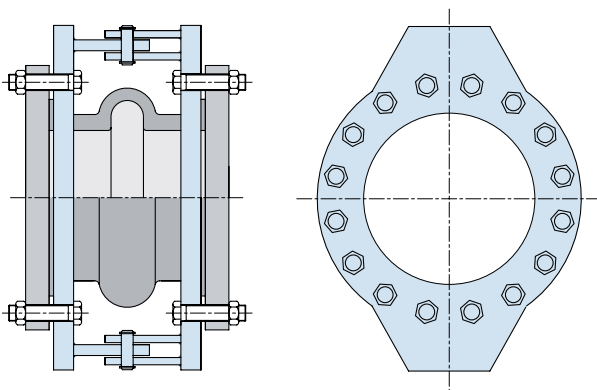
IF: Integral flange with control rod



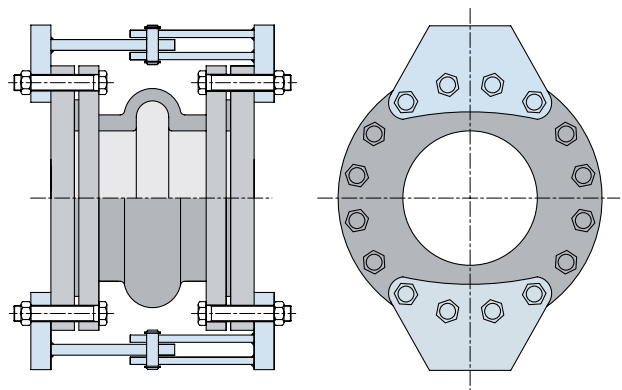
Type IF

Integral flange with control rod and optional spherical washer : Used to provide equal distribution of forces and prevent stress concentration. Also for no loads transmission to mating pipe flanges.

HG-I: Hinge with integral gusset



HG-S: Hinge with separate gusset



Type HG-I and Type HG-S

Hinged expansion joints are used to take up angular movement in one plane. For absorption of lateral movement, 2 hinged expansion joints are required. For large diameter expansion joints, integral flanges can be split in half or more segments. Hinges shall have a pin in a slot on both sides. The slotted hole allows for small amount of axial movement.

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