

## U216x (B/E/C/M/R/K/L)

NB 100 – NB 4000



### ► Type U216x (B/E/C/M/R/K/L)

Type key ► page 20

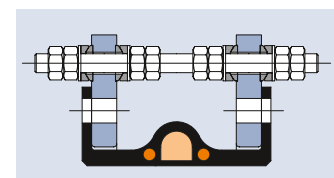
U2 1 6 M  
 └─ Tie rod variant  
 └─ Support ring variant  
 └─ Number of arches  
 └─ Type

## Lateral expansion joint with one arch

- Design:** Thick-walled, single-arch rubber bellows with full faced rubber flanges, split backing flanges with tie rods and embedded support rings at the arch foot
- Nominal diameters:** NB 100 to NB 4000, intermediate sizes possible
- Installation length:** Standard  $L_e = 250$  to  $350$  mm (► page 195)  
Other installation lengths on request
- Pressure:** Depending on the nominal diameter up to 25 bar  
Vacuum-proof up to 0.5 bar absolute
- Movement:** For lateral movements (► page 195)  
Installation gap tolerances possible in the context of axial compression and extension
- Stiffness rate:** The embedded support rings and reinforcements generate large stiffness rates
- Arch:** Optionally filled with foam rubber, to avoid turbulence and accumulation of solid matter (► page 39)  
Observe the restriction on specified movement (► page 195)

### Application:

Cooling water systems, desalination plants, drinking water supply, plant construction, e.g. in pipelines, on pumps, as dismantling joints, on condensers and vessels



## Rubber bellows

Rubber grades			Carrier
up to 100 °C:	EPDM	Cooling water, hot water, seawater, acids, dilute chlorine compounds	Nylon fabric Kevlar fabric Polyester fabric Steel mesh Glass fibre fabric
	EPDM, drinking water approved	Drinking water	
	EPDM, white, food grade	Foodstuffs	
	EPDM, abrasion-resistant	Abrasive materials, Water-sand extraction	
	EPDM, insulating	Electrical systems construction	
	IIR	Hot water, acids, bases, gases	
	CSM	Strong acids, bases, chemicals	
	NBR	Oils, petrol, solvents, compressed air	
	NBR, bright, food grade	Oil, fatty foods	
up to 80 °C:	CR	Cooling water, slightly oily water, seawater	
up to 70 °C:	NR	Abrasive materials	
up to 150 °C:	HNBR	Oils, petrol, solvents, compressed air	
up to 180 °C:	FPM	Corrosive chemicals, petroleum distillates	
up to 200 °C:	Silicon (Q)	Air, saltwater atmosphere	
	Silicon (Q), white, food grade	Foodstuffs, medical technology	

## Flanges

**Design:** Single-part or multi-part backing flanges with clearance holes and holder for tie rods (control unit type B, E, C, M)

Single-part or multi-part round backing flanges with clearance holes and control unit plates (control unit type R, K, L)

**Flange norms:** DIN, ANSI, AWWA, BS, JIS, special measurements (▶ page 280)

**Materials:**

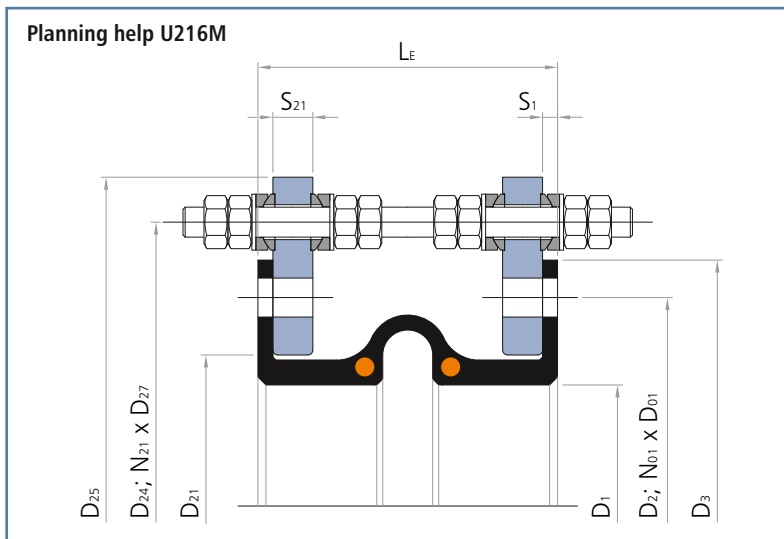
- Carbon steel: 1.0038 (S235JRG2)  
1.0570 (S355J2G3)
- Stainless steel: 1.4301 (X5CrNi18-10)  
1.4571 (X6CrNiMoTi17-12-2)
- Aluminium: AlMg3
- Other materials on request

**Coating:** Primed, hot-dip galvanised, special paint

## Optional accessories

**Protective hood:** UV protection cover  
Ground protective cover  
Fire protection cover  
(▶ page 50)

**Flow liners:** Cylindrical flow liner  
Conical flow liner  
Telescoping flow liner  
(▶ page 49)



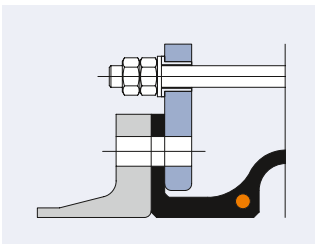
## Tie rods



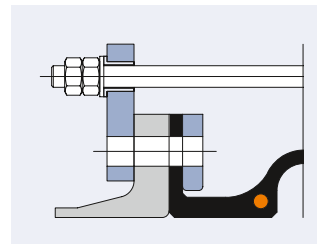
**Design:** Dimensioning according to design pressure (test pressure) based on the Pressure Equipment Directive

**Materials:** Carbon steel in strength class 8.8 or stainless steel

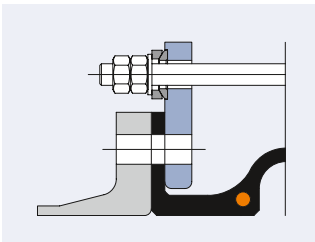
**Coating:** Spherical bearings and ball disks PTFE-coated  
Tie rods galvanised or hot-dip galvanised



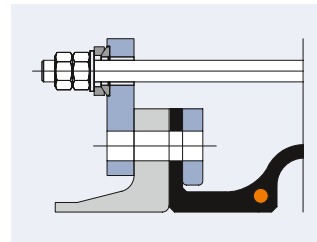
**Type U216B**  
Tie rods mounted outside in rubber bushing to accommodate reaction forces in the event of pressure (up to NB 300)



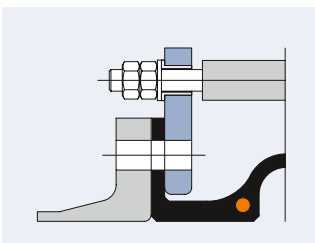
**Type U216R**  
Control unit plate: Tie rods mounted outside in rubber bushing to accommodate reaction forces in the event of pressure (up to NB 300)



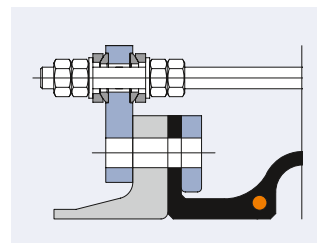
**Type U216E**  
Tie rods mounted outside in spherical bearings and ball disks to accommodate the reaction forces in the event of pressure



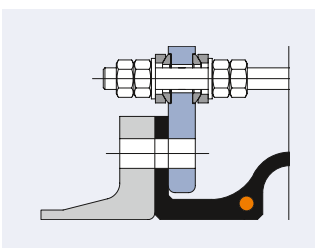
**Type U216K**  
Control unit plate: Tie rods mounted outside in spherical bearings and ball disks to accommodate the reaction forces in the event of pressure



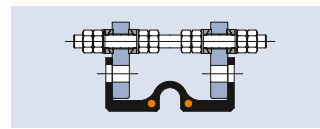
**Type U216C**  
Tie rods mounted outside in rubber bushing and inside in the thrust limiter to accommodate stresses in the event of pressure and vacuum (up to NB 300)



**Type U216L**  
Control unit plate: Tie rods mounted outside and inside in spherical bearings and ball disks to accommodate the reaction forces in the event of pressure and vacuum



**Type U216M**  
Tie rods mounted outside and inside in spherical bearings and ball disks to accommodate the reaction forces in the event of pressure and vacuum



Installation length (L <sub>E</sub> ) at design pressure															
up to 10 bar L <sub>E</sub> = 250 mm						up to 10 bar L <sub>E</sub> = 300 mm					up to 10 bar L <sub>E</sub> = 350 mm				
higher pressures on request															
NB	Movement				A cm <sup>2</sup>	Movement				A cm <sup>2</sup>	Movement				A cm <sup>2</sup>
	mm	mm	mm	°		mm	mm	mm	°		mm	mm	mm	°	
100	34	14	17	0	346	41	22	33	0	460	47	24	43	0	573
125	34	14	16	0	434	41	22	32	0	560	47	24	42	0	683
150	34	14	16	0	531	41	22	31	0	670	47	24	40	0	804
175	34	14	15	0	661	41	22	30	0	814	47	24	39	0	962
200	34	14	15	0	755	41	22	29	0	919	47	24	38	0	1,075
250	34	14	15	0	1,018	41	22	28	0	1,207	47	24	37	0	1,385
300	34	14	14	0	1,333	41	22	27	0	1,548	47	24	36	0	1,750
350	34	14	14	0	1,698	41	22	26	0	1,940	47	24	35	0	2,165
400	34	14	13	0	2,059	41	22	26	0	2,324	47	24	34	0	2,570
450	34	14	13	0	2,489	41	22	25	0	2,781	47	24	33	0	3,048
500	34	14	13	0	2,951	41	22	25	0	3,267	47	24	32	0	3,557
550	34	14	13	0	3,421	41	22	24	0	3,761	47	24	32	0	4,072
600	34	14	12	0	3,993	41	22	24	0	4,359	47	24	31	0	4,693
650	34	14	12	0	4,536	41	22	24	0	4,927	47	24	31	0	5,281
700	34	14	12	0	5,204	41	22	23	0	5,621	47	24	30	0	5,999
750	34	14	12	0	5,809	41	22	23	0	6,249	47	24	30	0	6,648
800	34	14	12	0	6,576	41	22	23	0	7,044	47	24	30	0	7,466
850	34	14	12	0	7,238	41	22	22	0	7,729	47	24	29	0	8,171
900	34	14	11	0	8,091	41	22	22	0	8,610	47	24	29	0	9,076
950	34	14	11	0	8,825	41	22	22	0	9,366	47	24	29	0	9,852
1000	34	14	11	0	9,764	41	22	22	0	10,333	47	24	29	0	10,843
1050	34	14	11	0	10,568	41	22	22	0	11,159	47	24	28	0	11,690
1100	34	14	11	0	11,613	41	22	21	0	12,233	47	24	28	0	12,788
1150	34	14	11	0	12,469	41	22	21	0	13,110	47	24	28	0	13,685
1200	34	14	11	0	13,581	41	22	21	0	14,250	47	24	28	0	14,849
1250	34	14	11	0	14,527	41	22	21	0	15,218	47	24	27	0	15,837
1300	34	14	11	0	15,725	41	22	21	0	16,445	47	24	27	0	17,087
1350	34	14	11	0	16,742	41	22	21	0	17,483	47	24	27	0	18,146
1400	34	14	11	0	18,027	41	22	21	0	18,796	47	24	27	0	19,483
1450	34	14	11	0	19,113	41	22	20	0	19,906	47	24	27	0	20,612
1500	34	14	10	0	20,485	41	22	20	0	21,305	47	24	27	0	22,035
1600	34	14	10	0	23,100	41	22	20	0	23,970	47	24	26	0	24,745
1650	34	14	10	0	24,328	41	22	20	0	25,221	47	24	26	0	26,016
1700	34	14	10	0	25,873	41	22	20	0	26,793	47	24	26	0	27,612
1800	34	14	10	0	28,832	41	22	20	0	29,804	47	24	26	0	30,666
1900	34	14	10	0	31,889	41	22	19	0	32,910	47	24	25	0	33,816
1950	34	14	10	0	33,329	41	22	19	0	34,373	47	24	25	0	35,299
2000	34	14	10	0	35,133	41	22	19	0	36,204	47	24	25	0	37,154
2100	34	14	10	0	38,533	41	22	19	0	39,655	47	24	25	0	40,649
2200	34	14	10	0	42,091	41	22	19	0	43,263	47	24	25	0	44,301
2250	34	14	10	0	43,744	41	22	19	0	44,938	47	24	25	0	45,996
2300	34	14	10	0	45,806	41	22	19	0	47,028	47	24	25	0	48,111
2400	34	14	10	0	49,678	41	22	19	0	50,950	47	24	24	0	52,077
2500	34	14	10	0	53,707	41	22	18	0	55,030	47	24	24	0	56,200
2550	34	14	10	0	55,572	41	22	18	0	56,917	47	24	24	0	58,107
2600	34	14	9	0	57,893	41	22	18	0	59,266	47	24	24	0	60,481
2700	34	14	9	0	62,237	41	22	18	0	63,660	47	24	24	0	64,918
2800	34	14	9	0	66,737	41	22	18	0	68,210	47	24	24	0	69,513
2850	34	14	9	0	68,813	41	22	18	0	70,309	47	24	24	0	71,631
2900	34	14	9	0	71,394	41	22	18	0	72,918	47	24	24	0	74,264
3000	34	14	9	0	76,209	41	22	18	0	77,783	47	24	23	0	79,173
3100	34	14	9	0	81,181	41	22	18	0	82,805	47	24	23	0	84,239
3150	34	14	9	0	83,469	41	22	18	0	85,116	47	24	23	0	86,570
3200	34	14	9	0	86,309	41	22	18	0	87,984	47	24	23	0	89,462
3300	34	14	9	0	91,595	41	22	18	0	93,320	47	24	23	0	94,842
3400	34	14	9	0	97,038	41	22	17	0	98,813	47	24	23	0	100,379
3450	34	14	9	0	99,538	41	22	17	0	101,336	47	24	23	0	102,922
3600	34	14	9	0	108,395	41	22	17	0	110,270	47	24	23	0	111,924
3800	34	14	9	0	120,380	41	22	17	0	122,356	47	24	22	0	124,098
4000	34	14	9	0	132,993	41	22	17	0	135,070	47	24	22	0	136,900

Recommended sizes  
Additional possible sizes

Reduction of movement for expansion joints with filled arch:  
axial compression: -50 %; axial extension: -75 %; lateral displacement: -50 %.  
In the event of lateral displacement and simultaneous axial extension the above movements are reduced (▶ page 29).

**Individual fabrication possible**