

Type WFN  
Type WFK

### Designation

The designation consists of two parts:

1. the series, defined by 3 letters
2. the nominal size, defined by 10 digits

### Example:

Type WFN: HYDRA single hinge angular expansion joint with plain fixed flanges

Type WFK: HYDRA gimbal hinge angular expansion joint with plain fixed flanges

### Standard version/materials:

multi-ply bellows: 1.4541

flange: P 265 GH (1.0425)

operating temperature: up to 400°C

### Designation (example):

W	F	N	1	0	.	0	1	5	0	.	3	6	0	.	0
Type	Nominal pressure (PN10)		Nominal diameter (DN150)			Movement absorption, nominal ( $2\alpha = \pm 18 = 36^\circ$ )			Inner sleeve (0 = without)						

### Order text to Pressure Equipment Directive 97/23/EC

Please state the following with your order:

- for standard versions  
-> for different materials
- for different materials  
-> designation  
-> details of materials

According to the Pressure Equipment Directive 97/23/EC, the following information is required for testing and documentation:

Type of pressure equipment according to Art. 1:

- vessel volume V [l]

- piping – nominal size DN

Medium property according to Art. 9:

- group 1 – dangerous
- group 2 – all other fluids

State of medium:

- gaseous or liquid, if  $p_D > 0.5$  bar
- liquid, if  $p_D < 0.5$  bar

Design data:

max. allowable pressure PS [bar]

max./min. allowable temperature TS [°C]

test pressure PT [bar]

Optional:

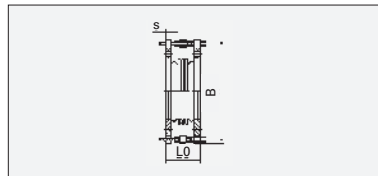
category \_\_\_\_\_

**Note:** Tell us the dimensions that deviate from the standard dimensions and we can match the expansion joint to your specification.

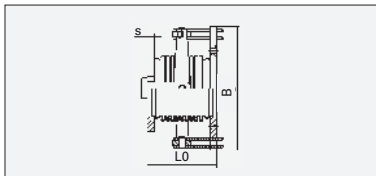
## Angular expansion joints with plain fixed flanges

Single hinge version  
Gimbal hinge version

Type WFN 06...  
Type WFK 06...  
PN 6



Type WFN



Type WFK

Nominal diameter	Nominal angular movement absorption	Type	Order No., standard version		Overall length	Weight approx.	
			WFN 06 ... WFK 06 ...	WFN		WFK	WFN
DN	2α <sub>N</sub>	—	—	—	L <sub>0</sub>	G	G
—	degrees	—	—	—	mm	kg	kg
50	33	.0050.330.0	442098	441321	140	7	11
50	41	.0050.410.0	442099	441322	160	7	11
65	27	.0065.270.0	442100	441323	130	8	13
65	39	.0065.390.0	442101	441324	160	9	13
80	27	.0080.270.0	442102	441325	140	11	16
80	38	.0080.380.0	442103	441326	170	12	17
100	27	.0100.270.0	442104	441327	140	12	17
100	38	.0100.380.0	442105	441328	170	13	18
125	30	.0125.300.0	442106	441329	160	15	21
125	39	.0125.390.0	442107	441330	190	16	22
150	23	.0150.230.0	442108	441331	170	17	23
150	36	.0150.360.0	442109	441332	220	17	24
200	23	.0200.230.0	442110	441333	180	22	32
200	34	.0200.340.0	442111	441334	240	24	35
250	18	.0250.180.0	442112	441335	180	29	44
250	32	.0250.320.0	442113	441336	260	31	46
300	19	.0300.190.0	442114	—	190	37	—
300	34	.0300.340.0	442115	441338	270	41	58
350	18	.0350.180.0	442116	—	200	58	—
350	34	.0350.340.0	442117	441340	310	67	98
400	13	.0400.130.0	442118	—	210	66	—
400	27	.0400.270.0	442119	441342	340	76	114
450	13	.0450.130.0	442120	—	210	74	—
450	24	.0450.240.0	442121	441343	330	83	132

## Angular expansion joints with plain fixed flanges

Single hinge version  
Gimbal hinge version

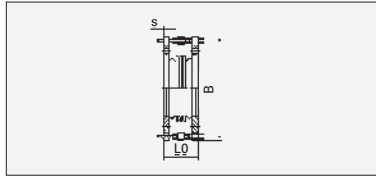
Type WFN 06...  
Type WFK 06...  
PN 6

Max. width approx.	Flange		Adjusting moment rate		
	drilling to DIN 1092	thick- ness	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
B	PN	s	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
mm	—	mm	Nm/bar	Nm/degrees	Nm/deg. bar
250	6	16	0.5	1.3	0.1
250	6	16	0.5	1	0.1
285	6	16	0.7	2.3	0.1
285	6	16	0.7	1.4	0.1
310	6	18	0.9	3	0.1
310	6	18	0.9	1.9	0.2
325	6	18	1.4	4.4	0.2
325	6	18	1.4	2.7	0.3
355	6	20	1.9	5.9	0.3
355	6	20	1.9	4.2	0.5
370	6	20	2.6	12	0.5
370	6	20	2.6	6.6	0.9
425	6	22	4	19	1.0
425	6	22	4	21	1.7
485	6	24	7	60	1.4
485	6	24	7	30	2.7
565	6	24	9	79	2.1
565	6	24	9	40	4.2
650	6	26	20	98	2.7
650	6	26	20	53	6.2
680	6	28	26	139	3.7
680	6	28	26	56	8.8
740	6	28	33	171	4.8
740	6	28	33	76	10.0

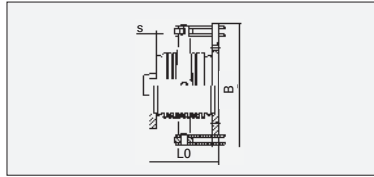
## Angular expansion joints with plain fixed flanges

Single hinge version  
Gimbal hinge version

Type WFN 06...  
Type WFK 06...  
PN 6



Type WFN



Type WFK

Nominal diameter	Nominal angular movement absorption	Type WFN 06 ... WFK 06 ...	Order No., standard version		Overall length	Weight approx.	
			WFN	WFK		WFN	WFK
DN	2α <sub>N</sub>	–	–	–	L <sub>0</sub>	G	G
–	degrees	–	–	–	mm	kg	kg
<b>500</b>	14	<b>.0500.140.0</b>	442122	–	220	83	–
<b>500</b>	26	<b>.0500.260.0</b>	442123	441344	350	96	156
<b>600</b>	13	<b>.0600.130.0</b>	442124	–	250	148	–
<b>600</b>	25	<b>.0600.250.0</b>	442125	441345	390	167	282
<b>700</b>	14	<b>.0700.140.0</b>	442126	–	280	170	–
<b>700</b>	25	<b>.0700.250.0</b>	442127	441346	440	212	375
<b>800</b>	11	<b>.0800.110.0</b>	442128	–	290	231	–
<b>800</b>	23	<b>.0800.230.0</b>	442129	441347	490	275	489

## Angular expansion joints with plain fixed flanges

Single hinge version  
Gimbal hinge version

Type WFN 06...  
Type WFK 06...  
PN 6

Max. width approx.	Flange		Adjusting moment rate		
	drilling to DIN 1092	thick-ness	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
B	PN	s	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
mm	–	mm	Nm/bar	Nm/degrees	Nm/deg. bar
800	6	28	40	272	6.5
800	6	28	40	121	14.0
950	6	37	77	382	10.0
950	6	37	77	170	22.0
1060	6	37	103	394	17.0
1060	6	37	103	312	36.0
1180	6	43	134	1007	21.0
1180	6	43	134	403	52.0

## Angular expansion joints with plain fixed flanges

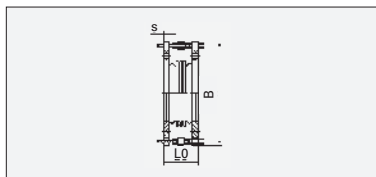
Single hinge version  
Gimbal hinge version

**Type WFN 10...**  
**Type WFK 10...**  
**PN 10**

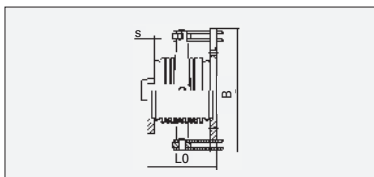
## Angular expansion joints with plain fixed flanges

Single hinge version  
Gimbal hinge version

**Type WFN 10...**  
**Type WFK 10...**  
**PN 10**



Type WFN



Type WFK

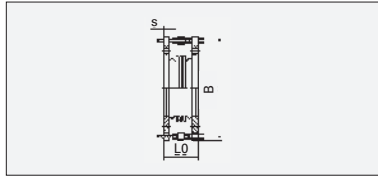
Nominal diameter	Nominal angular movement absorption	Type	Order No., standard version		Overall length	Weight approx.	
			WFN 10 ... WFK 10 ...	WFN		WFK	WFN
DN	2α <sub>N</sub>	–	–	–	L <sub>0</sub>	G	G
–	degrees	–	–	–	mm	kg	kg
50	31	.0050.310.0	442130	441348	140	10	14
50	37	.0050.370.0	442131	441349	160	10	14
65	26	.0065.260.0	442132	441350	130	11	16
65	37	.0065.370.0	442133	441351	170	11	17
80	25	.0080.250.0	442134	441352	140	12	17
80	36	.0080.360.0	442135	441353	180	13	18
100	26	.0100.260.0	442136	441354	150	15	20
100	36	.0100.360.0	442137	441355	190	16	21
125	25	.0125.250.0	442138	441356	170	17	24
125	34	.0125.340.0	442139	441357	210	18	24
150	23	.0150.230.0	442140	441358	180	23	32
150	36	.0150.360.0	442141	441359	240	24	33
200	22	.0200.220.0	442142	441360	190	28	42
200	32	.0200.320.0	442143	441361	240	30	44
250	18	.0250.180.0	442144	441362	190	38	68
250	30	.0250.300.0	442145	441363	270	42	73
300	23	.0300.230.0	442146	–	220	49	–
300	29	.0300.290.0	442147	441365	260	51	90
350	17	.0350.170.0	442148	–	200	67	–
350	26	.0350.260.0	442149	441366	270	72	112
400	12	.0400.120.0	442150	–	220	88	–
400	26	.0400.260.0	442151	441367	370	104	158
450	13	.0450.130.0	442152	–	240	116	–
450	25	.0450.250.0	442153	441368	360	132	241

Max. width approx.	Flange		Adjusting moment rate		
	drilling to DIN 1092	thick- ness	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
B	PN	s	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
mm	–	mm	Nm/bar	Nm/degrees	Nm/deg. bar
275	16	19	0.5	1.3	0.1
275	16	19	0.5	1	0.1
295	16	20	0.7	2.3	0.1
295	16	20	0.7	2.3	0.2
310	16	20	0.9	4.6	0.1
310	16	20	0.9	2.8	0.2
335	16	22	1.4	6.7	0.2
335	16	22	1.4	4.2	0.4
355	16	22	1.8	8.8	0.4
355	16	22	1.8	5.5	0.6
385	16	24	2.6	21	0.6
385	16	24	2.6	12	1.0
450	10	24	4	33	1.1
450	10	24	4	25	1.7
540	10	26	7	60	1.4
540	10	26	7	36	2.8
600	10	28	9	77	2.8
600	10	28	9	55	3.8
660	10	28	20	118	2.8
660	10	28	20	67	4.8
710	10	32	26	306	4.1
710	10	32	26	123	9.8
810	10	37	33	376	5.3
810	10	37	33	167	12.0

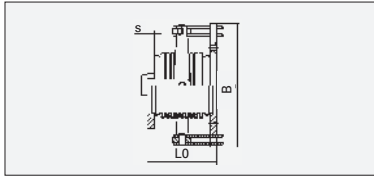
## Angular expansion joints with plain fixed flanges

Single hinge version  
Gimbal hinge version

**Type WFN 10...**  
**Type WFK 10...**  
**PN 10**



Type WFN



Type WFK

Nominal diameter	Nominal angular movement absorption	Type <b>WFN 10 ...</b> <b>WFK 10 ...</b>	Order No., standard version		Overall length	Weight approx.	
			<b>WFN</b>	<b>WFK</b>		<b>WFN</b>	<b>WFK</b>
DN	$2\alpha_N$	—	—	—	L <sub>0</sub>	G	G
—	degrees	—	—	—	mm	kg	kg
<b>500</b>	14	<b>.0500.140.0</b>	442154	—	250	128	—
<b>500</b>	25	<b>.0500.250.0</b>	442155	441369	380	146	267
<b>600</b>	12	<b>.0600.120.0</b>	442156	—	270	190	—
<b>600</b>	23	<b>.0600.230.0</b>	442157	441370	410	216	372

## Angular expansion joints with plain fixed flanges

Single hinge version  
Gimbal hinge version

**Type WFN 10...**  
**Type WFK 10...**  
**PN 10**

Max. width approx.	Flange		Adjusting moment rate		
	drilling to DIN 1092	thickness	$c_r$	$c_{ca}$	$c_p$
B	PN	s	$c_r$	$c_{ca}$	$c_p$
mm	—	mm	Nm/bar	Nm/degrees	Nm/deg. bar
860	10	37	40	429	7.1
860	10	37	40	191	15.0
980	10	43	77	588	11.0
980	10	43	77	261	23.0

## Angular expansion joints with plain fixed flanges

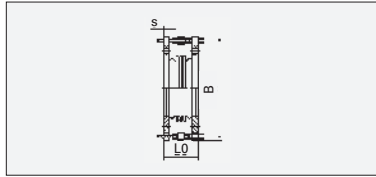
Single hinge version  
Gimbal hinge version

Type WFN 16...  
Type WFK 16...  
PN 16

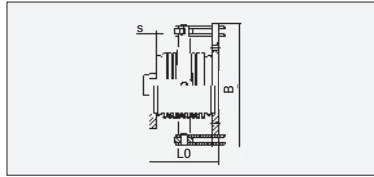
## Angular expansion joints with plain fixed flanges

Single hinge version  
Gimbal hinge version

Type WFN 16...  
Type WFK 16...  
PN 16



Type WFN



Type WFK

Nominal diameter	Nominal angular movement absorption	Type WFN 16 ... WFK 16 ...	Order No., standard version		Overall length	Weight approx.	
			WFN	WFK		WFN	WFK
DN	2α <sub>N</sub>	—	—	—	L <sub>0</sub>	G	G
—	degrees	—	—	—	mm	kg	kg
50	25	.0050.250.0	442158	441371	130	10	14
50	34	.0050.340.0	442159	441372	160	10	14
65	25	.0065.250.0	442160	441373	140	11	16
65	34	.0065.340.0	442161	441374	180	12	17
80	23	.0080.230.0	442162	441375	150	13	18
80	32	.0080.320.0	442163	441376	180	13	19
100	24	.0100.240.0	442164	441377	160	15	22
100	33	.0100.330.0	442165	441378	190	16	23
125	24	.0125.240.0	442166	441379	170	19	28
125	33	.0125.330.0	442167	441380	220	20	29
150	22	.0150.220.0	442168	441381	180	23	35
150	31	.0150.310.0	442169	441382	230	25	37
200	22	.0200.220.0	442170	441383	190	42	63
200	31	.0200.310.0	442171	441384	250	45	66
250	14	.0250.140.0	442172	441385	210	51	79
250	23	.0250.230.0	442173	441386	280	58	86
300	15	.0300.150.0	442174	—	230	74	—
300	22	.0300.220.0	442175	441387	320	81	120
350	12	.0350.120.0	442176	—	210	113	—
350	19	.0350.190.0	442177	441388	300	123	193

Max. width approx.	Flange		Adjusting moment rate		
	drilling to DIN 1092	thickness	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
B	PN	s	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
mm	—	mm	Nm/bar	Nm/degrees	Nm/deg. bar
275	16	19	0.4	2.5	0.1
275	16	19	0.4	1.6	0.1
295	16	20	0.7	3.6	0.1
295	16	20	0.7	4	0.2
310	16	20	0.9	8	0.2
310	16	20	0.9	5	0.2
335	16	22	1.4	12	0.3
335	16	22	1.4	7.3	0.4
365	16	22	1.8	15	0.4
365	16	22	1.8	11	0.6
395	16	24	2.6	21	0.6
395	16	24	2.6	16	0.9
500	16	26	8	55	1.1
500	16	26	8	34	1.7
540	16	29	12	85	1.8
540	16	29	12	61	3.2
600	16	37	17	139	2.8
600	16	37	17	77	4.8
720	16	37	27	208	2.7
720	16	37	27	104	5.2

## Angular expansion joints with plain fixed flanges

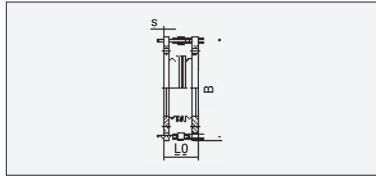
Single hinge version  
Gimbal hinge version

Type WFN 25...  
Type WFK 25...  
PN 25

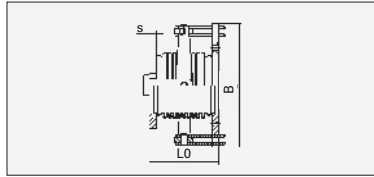
## Angular expansion joints with plain fixed flanges

Single hinge version  
Gimbal hinge version

Type WFN 25...  
Type WFK 25...  
PN 25



Type WFN



Type WFK

Nominal diameter	Nominal angular movement absorption	Type	Order No., standard version		Overall length	Weight approx.	
			WFN 25 ... WFK 25 ...	WFN   WFK		WFN	WFK
DN	2α <sub>N</sub>	—	—	—	L <sub>0</sub>	G	G
—	degrees	—	—	—	mm	kg	kg
50	22	.0050.220.0	442178	441389	140	10	15
50	30	.0050.300.0	442179	441390	170	11	16
65	23	.0065.230.0	442180	441391	150	13	17
65	30	.0065.300.0	442181	441392	180	13	18
80	22	.0080.220.0	442182	441393	150	15	21
80	28	.0080.280.0	442183	441394	180	16	22
100	22	.0100.220.0	442184	441395	160	18	26
100	27	.0100.270.0	442185	441396	180	19	27
125	22	.0125.220.0	442186	441397	180	23	35
125	29	.0125.290.0	442187	441398	230	25	36
150	20	.0150.200.0	442188	441399	180	40	63
150	27	.0150.270.0	442189	441400	230	43	66
200	14	.0200.140.0	442190	441401	200	51	77
200	22	.0200.220.0	442191	441402	270	57	83
250	14	.0250.140.0	442192	—	230	72	—
250	20	.0250.200.0	442193	441403	290	77	116
300	14	.0300.140.0	442194	—	250	118	—
300	19	.0300.190.0	442195	441404	340	128	201
350	11	.0350.110.0	442196	—	250	159	—
350	18	.0350.180.0	442197	441405	320	169	261

Max. width approx.	Flange		Adjusting moment rate		
	drilling to DIN 1092	thickness	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
B	PN	s	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
mm	—	mm	Nm/bar	Nm/degrees	Nm/deg. bar
275	40	20	0.4	4.5	0.1
275	40	20	0.4	2.8	0.1
295	40	22	0.7	6.4	0.1
295	40	22	0.7	4	0.2
310	40	24	0.9	10	0.2
310	40	24	0.9	7.1	0.2
340	40	24	1.4	14	0.3
340	40	24	1.4	10	0.3
365	40	26	1.8	26	0.4
365	40	26	1.8	16	0.7
460	40	28	4.7	36	0.6
460	40	28	4.7	22	0.9
500	25	32	8	78	1.1
500	25	32	8	55	2.0
570	25	37	12	141	1.9
570	25	37	12	88	3.0
670	25	43	22	185	2.9
670	25	43	22	103	5.0
750	25	47	27	366	3.1
750	25	47	27	209	5.4