

Type WBN  
Type WBK

**Designation**

The designation consists of two parts:

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

**Example:**

Type WBN: HYDRA single hinge angular expansion joint with swivel flanges  
Type WBK: HYDRA gimbal hinge angular expansion joint with swivel flanges

**Standard version/materials:**

multi-ply bellows: 1.4541  
flange: P 265 GH (1.0425)  
operating temperature: up to 400°C

**Designation (example):**

W	B	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  
-> order number
- 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  $pD > 0.5$  bar
- liquid, if  $pD < 0.5$  bar

Design data:

max. allowable pressure PS [bar]

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

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test pressure PT [bar]

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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 lap-joint flanges

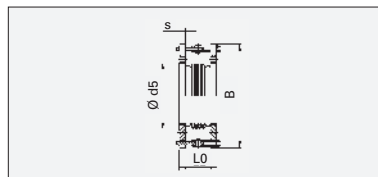
Single hinge version

Gimbal hinge version

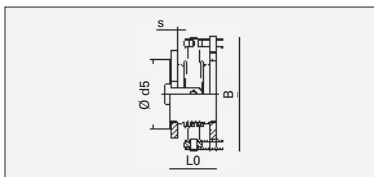
Type WBN 06...

Type WBK 06...

PN 6



Type WBN



Type WBK

Nominal diameter	Nominal angular movement absorption	Type	Order No., standard version		Overall length	Weight approx.	
			WBN	WBK		WBN	WBK
DN	2α <sub>N</sub>	WBN 06 ... WBK 06 ...	—	—	L <sub>0</sub>	G	G
—	degrees	—	—	—	mm	kg	kg
50	33	.0050.330.0	441221	441136	121	7	11
50	41	.0050.410.0	441222	441137	141	7	11
65	27	.0065.270.0	441223	441138	111	8	13
65	39	.0065.390.0	441224	441139	141	8	13
80	27	.0080.270.0	441225	441140	121	11	16
80	38	.0080.380.0	441226	441141	151	11	16
100	27	.0100.270.0	441227	441142	131	12	17
100	38	.0100.380.0	441228	441143	161	12	17
125	30	.0125.300.0	441229	441144	151	15	21
125	39	.0125.390.0	441230	441145	181	16	22
150	23	.0150.230.0	441231	441146	162	16	22
150	36	.0150.360.0	441232	441147	212	18	24
200	23	.0200.230.0	441233	441148	172	22	32
200	34	.0200.340.0	441234	441149	233	25	35
250	18	.0250.180.0	441235	441150	183	29	44
250	32	.0250.320.0	441236	441151	253	32	46
300	19	.0300.190.0	441237	—	183	38	—
300	34	.0300.340.0	441238	441153	263	41	59
350	18	.0350.180.0	441239	—	193	59	—
350	34	.0350.340.0	441240	441155	314	68	100
400	13	.0400.130.0	441241	—	213	68	—
400	27	.0400.270.0	441242	441157	343	77	116
450	13	.0450.130.0	441243	—	213	76	—
450	24	.0450.240.0	441244	441158	333	85	134

## Angular expansion joints with lap-joint flanges

Single hinge version

Gimbal hinge version

Type WBN 06...

Type WBK 06...

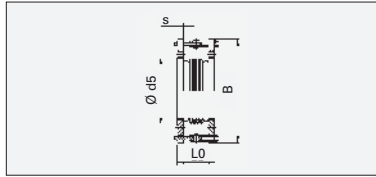
PN 6

Max. width approx.	Flange			Adjusting moment rate		
	drilling to DIN 1092	rim diameter	thick-ness	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
B	PN	d5	s	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
mm	—	mm	mm	Nm/bar	Nm/degrees	Nm/deg. bar
250	6	90	16	0.5	1.3	0.1
250	6	90	16	0.5	1	0.1
285	6	107	16	0.7	2.3	0.1
285	6	107	16	0.7	1.4	0.1
310	6	122	18	0.9	3	0.1
310	6	122	18	0.9	1.9	0.2
325	6	147	18	1.4	4.4	0.2
325	6	147	18	1.4	2.7	0.3
355	6	178	20	1.9	5.9	0.3
355	6	178	20	1.9	4.2	0.5
370	6	202	20	2.6	12	0.5
370	6	202	20	2.6	6.6	0.9
425	6	258	22	4	19	1.0
425	6	258	22	4	21	1.7
485	6	312	24	7	60	1.4
485	6	312	24	7	30	2.7
565	6	365	24	9	79	2.1
565	6	365	24	9	40	4.2
650	6	410	26	20	98	2.7
650	6	410	26	20	53	6.2
680	6	465	28	26	139	3.7
680	6	465	28	26	56	8.8
740	6	520	28	33	171	4.8
740	6	520	28	33	76	10.0

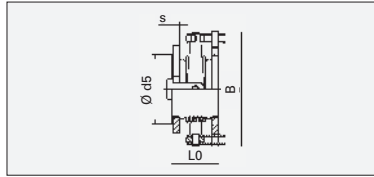
## Angular expansion joints with lap-joint flanges

Single hinge version  
Gimbal hinge version

**Type WBN 06...**  
**Type WBK 06...**  
**PN 6**



Type WBN



Type WBK

Nominal diameter	Nominal angular movement absorption	Type <b>WBN 06 ...</b> <b>WBK 06 ...</b>	Order No., standard version		Overall length	Weight approx.	
			<b>WBN</b>	<b>WBK</b>		<b>WBN</b>	<b>WBK</b>
DN	2α <sub>N</sub>	–	–	–	L <sub>0</sub>	G	G
–	degrees	–	–	–	mm	kg	kg
<b>500</b>	14	<b>.0500.140.0</b>	441245	–	224	86	–
<b>500</b>	26	<b>.0500.260.0</b>	441246	441159	354	99	159
<b>600</b>	13	<b>.0600.130.0</b>	441247	–	254	151	–
<b>600</b>	25	<b>.0600.250.0</b>	441248	441160	394	170	285
<b>700</b>	14	<b>.0700.140.0</b>	441249	–	284	173	–
<b>700</b>	25	<b>.0700.250.0</b>	441250	441161	446	217	380
<b>800</b>	11	<b>.0800.110.0</b>	441251	–	296	238	–
<b>800</b>	23	<b>.0800.230.0</b>	441252	441162	496	282	496

## Angular expansion joints with lap-joint flanges

Single hinge version  
Gimbal hinge version

**Type WBN 06...**  
**Type WBK 06...**  
**PN 6**

Max. width approx.	Flange			Adjusting moment rate		
	drilling to DIN 1092	rim diameter	thick-ness	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
B	PN	d5	s	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
mm	–	mm	mm	Nm/bar	Nm/degrees	Nm/deg. bar
800	6	570	28	40	272	6.5
800	6	570	28	40	121	14.0
950	6	670	37	77	382	10.0
950	6	670	37	77	170	22.0
1060	6	775	37	103	394	17.0
1060	6	775	37	103	312	36.0
1180	6	880	43	134	1007	21.0
1180	6	880	43	134	403	52.0

## Angular expansion joints with lap-joint flanges

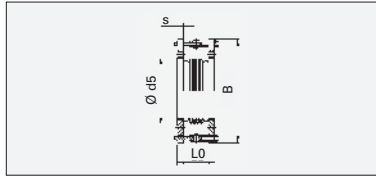
Single hinge version  
Gimbal hinge version

Type WBN 10...  
Type WBK 10...  
PN 10

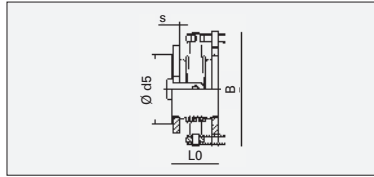
## Angular expansion joints with lap-joint flanges

Single hinge version  
Gimbal hinge version

Type WBN 10...  
Type WBK 10...  
PN 10



Type WBN



Type WBK

Nominal diameter	Nominal angular movement absorption	Type	Order No., standard version		Overall length	Weight approx.	
			WBN 10 ... WBK 10 ...	WBN		WBK	WBN
DN	2α <sub>N</sub>	–	–	–	L <sub>0</sub>	G	G
–	degrees	–	–	–	mm	kg	kg
50	31	.0050.310.0	441253	441163	131	10	14
50	37	.0050.370.0	441254	441164	151	10	14
65	26	.0065.260.0	441255	441165	121	11	16
65	37	.0065.370.0	441256	441166	162	12	16
80	25	.0080.250.0	441257	441167	132	12	17
80	36	.0080.360.0	441258	441168	162	13	18
100	26	.0100.260.0	441259	441169	142	15	20
100	36	.0100.360.0	441260	441170	182	16	22
125	25	.0125.250.0	441261	441171	162	18	23
125	34	.0125.340.0	441262	441172	202	19	25
150	23	.0150.230.0	441263	441173	173	23	32
150	36	.0150.360.0	441264	441174	233	24	33
200	22	.0200.220.0	441265	441175	183	29	43
200	32	.0200.320.0	441266	441176	234	31	45
250	18	.0250.180.0	441267	441177	183	45	69
250	30	.0250.300.0	441268	441178	264	50	74
300	23	.0300.230.0	441269	–	224	57	–
300	29	.0300.290.0	441270	441180	264	60	91
350	17	.0350.170.0	441271	–	204	68	–
350	26	.0350.260.0	441272	441181	274	73	113
400	12	.0400.120.0	441273	–	226	92	–
400	26	.0400.260.0	441274	441182	376	108	161
450	13	.0450.130.0	441275	–	246	135	–
450	25	.0450.250.0	441276	441183	366	154	244

Max. width approx.	Flange			Adjusting moment rate		
	drilling to DIN 1092	rim diameter	thick-ness	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
B	PN	d5	s	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
mm	–	mm	mm	Nm/bar	Nm/degrees	Nm/deg. bar
275	16	92	19	0.5	1.3	0.1
275	16	92	19	0.5	1	0.1
295	16	107	20	0.7	2.3	0.1
295	16	107	20	0.7	2.3	0.2
310	16	122	20	0.9	4.6	0.1
310	16	122	20	0.9	2.8	0.2
335	16	147	22	1.4	6.7	0.2
335	16	147	22	1.4	4.2	0.4
355	16	178	22	1.8	8.8	0.4
355	16	178	22	1.8	5.5	0.6
385	16	208	24	2.6	21	0.6
385	16	208	24	2.6	12	1.0
450	10	258	24	4	33	1.1
450	10	258	24	4	25	1.7
540	10	320	26	12	60	1.4
540	10	320	26	12	36	2.8
600	10	370	28	17	77	2.8
600	10	370	28	17	55	3.8
660	10	410	28	20	118	2.8
660	10	410	28	20	67	4.8
710	10	465	32	26	306	4.1
710	10	465	32	26	123	9.8
810	10	520	37	44	376	5.3
810	10	520	37	44	167	12.0

## Angular expansion joints with lap-joint flanges

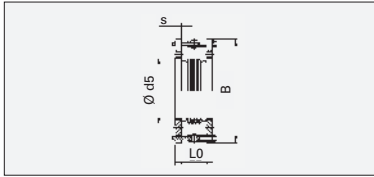
Single hinge version  
Gimbal hinge version

**Type WBN 10...**  
**Type WBK 10...**  
**PN 10**

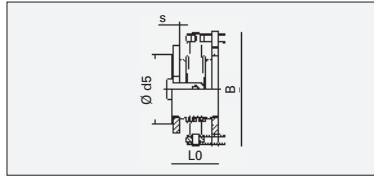
## Angular expansion joints with lap-joint flanges

Single hinge version  
Gimbal hinge version

**Type WBN 10...**  
**Type WBK 10...**  
**PN 10**



Type WBN



Type WBK

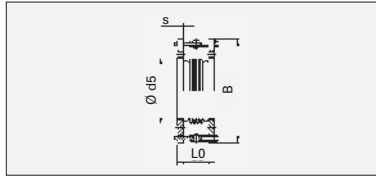
Nominal diameter	Nominal angular movement absorption	Type <b>WBN 10 ...</b> <b>WBK 10 ...</b>	Order No., standard version		Overall length	Weight approx.	
			<b>WBN</b>	<b>WBK</b>		<b>WBN</b>	<b>WBK</b>
DN	$2\alpha_N$	–	–	–	L <sub>0</sub>	G	G
–	degrees	–	–	–	mm	kg	kg
<b>500</b>	14	<b>.0500.140.0</b>	441277	–	256	148	–
<b>500</b>	25	<b>.0500.250.0</b>	441278	441184	386	169	272
<b>600</b>	12	<b>.0600.120.0</b>	441279	–	276	196	–
<b>600</b>	23	<b>.0600.230.0</b>	441280	441185	416	222	377

Max. width approx.	Flange			Adjusting moment rate		
	drilling to DIN 1092	rim diameter	thick-ness			
B	PN	d5	s	$c_r$	$c_{ca}$	$c_p$
mm	–	mm	mm	Nm/bar	Nm/degrees	Nm/deg. bar
860	10	570	37	54	429	7.1
860	10	570	37	54	191	15.0
980	10	670	43	77	588	11.0
980	10	670	43	77	261	23.0

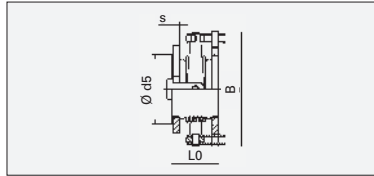
## Angular expansion joints with lap-joint flanges

Single hinge version  
Gimbal hinge version

### Type WBN 16... Type WBK 16... PN 16



Type WBN



Type WBK

Nominal diameter	Nominal angular movement absorption	Type	Order No., standard version		Overall length	Weight approx.	
			WBN	WBK		WBN	WBK
DN	2α <sub>N</sub>	WBN 16 ... WBK 16 ...	—	—	L <sub>0</sub>	G	G
—	degrees	—	—	—	mm	kg	kg
50	25	.0050.250.0	441281	441186	122	10	14
50	34	.0050.340.0	441282	441187	152	10	14
65	25	.0065.250.0	441283	441188	132	11	16
65	34	.0065.340.0	441284	441189	163	12	17
80	23	.0080.230.0	441285	441190	143	13	18
80	32	.0080.320.0	441286	441191	173	14	19
100	24	.0100.240.0	441287	441192	153	16	22
100	33	.0100.330.0	441288	441193	183	17	24
125	24	.0125.240.0	441289	441194	163	19	27
125	33	.0125.330.0	441290	441195	214	20	29
150	22	.0150.220.0	441291	441196	173	23	36
150	31	.0150.310.0	441292	441197	224	25	37
200	22	.0200.220.0	441293	441198	195	43	64
200	31	.0200.310.0	441294	441199	245	46	67
250	14	.0250.140.0	441295	441200	214	52	81
250	23	.0250.230.0	441296	441201	285	59	88
300	15	.0300.150.0	441297	—	235	76	—
300	22	.0300.220.0	441298	441202	325	83	121
350	12	.0350.120.0	441299	—	215	116	—
350	19	.0350.190.0	441300	441203	305	126	195

## Angular expansion joints with lap-joint flanges

Single hinge version  
Gimbal hinge version

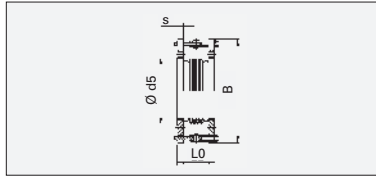
### Type WBN 16... Type WBK 16... PN 16

Max. width approx.	Flange			Adjusting moment rate		
	drilling to DIN 1092	rim diameter	thick-ness	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
B	PN	d5	s	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
mm	—	mm	mm	Nm/bar	Nm/degrees	Nm/deg. bar
275	16	92	19	0.4	2.5	0.1
275	16	92	19	0.4	1.6	0.1
295	16	107	20	0.7	3.6	0.1
295	16	107	20	0.7	4	0.2
310	16	122	20	0.9	8	0.2
310	16	122	20	0.9	5	0.2
335	16	147	22	1.4	12	0.3
335	16	147	22	1.4	7.3	0.4
365	16	178	22	1.8	15	0.4
365	16	178	22	1.8	11	0.6
395	16	208	24	2.6	21	0.6
395	16	208	24	2.6	16	0.9
500	16	258	26	8	55	1.1
500	16	258	26	8	34	1.7
540	16	320	29	12	85	1.8
540	16	320	29	12	61	3.2
600	16	375	37	17	139	2.8
600	16	375	37	17	77	4.8
720	16	410	37	27	208	2.7
720	16	410	37	27	104	5.2

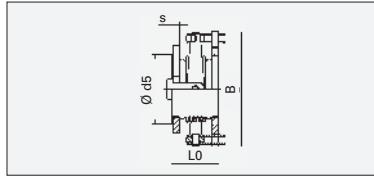
## Angular expansion joints with lap-joint flanges

Single hinge version  
Gimbal hinge version

Type WBN 25...  
Type WBK 25...  
PN 25



Type WBN



Type WBK

Nominal diameter	Nominal angular movement absorption	Type	Order No., standard version		Overall length	Weight approx.	
			WBN 25 ... WBK 25 ...	WBN		WBK	WBN
DN	2α <sub>N</sub>	—	—	—	L <sub>0</sub>	G	G
—	degrees	—	—	—	mm	kg	kg
50	22	.0050.220.0	441301	441204	133	10	15
50	30	.0050.300.0	441302	441205	163	11	15
65	23	.0065.230.0	441303	441206	143	12	17
65	30	.0065.300.0	441304	441207	173	13	18
80	22	.0080.220.0	441305	441208	144	15	21
80	28	.0080.280.0	441306	441209	174	16	22
100	22	.0100.220.0	441307	441210	154	18	26
100	27	.0100.270.0	441308	441211	184	19	27
125	22	.0125.220.0	441309	441212	185	24	35
125	29	.0125.290.0	441310	441213	235	25	36
150	20	.0150.200.0	441311	441214	185	41	64
150	27	.0150.270.0	441312	441215	235	43	66
200	14	.0200.140.0	441313	441216	205	52	78
200	22	.0200.220.0	441314	441217	276	58	84
250	14	.0250.140.0	441315	—	236	74	—
250	20	.0250.200.0	441316	441218	296	79	118
300	14	.0300.140.0	441317	—	256	121	—
300	19	.0300.190.0	441318	441219	346	131	203
350	11	.0350.110.0	441319	—	258	163	—
350	18	.0350.180.0	441320	441220	328	173	265

## Angular expansion joints with lap-joint flanges

Single hinge version  
Gimbal hinge version

Type WBN 25...  
Type WBK 25...  
PN 25

Max. width approx.	Flange			Adjusting moment rate		
	drilling to DIN 1092	rim diameter	thick-ness	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
B	PN	d5	s	c <sub>r</sub>	c <sub>α</sub>	c <sub>p</sub>
mm	—	mm	mm	Nm/bar	Nm/degrees	Nm/deg. bar
275	40	92	20	0.4	4.5	0.1
275	40	92	20	0.4	2.8	0.1
295	40	107	22	0.7	6.4	0.1
295	40	107	22	0.7	4	0.2
310	40	122	24	0.9	10	0.2
310	40	122	24	0.9	7.1	0.2
340	40	147	24	1.4	14	0.3
340	40	147	24	1.4	10	0.3
365	40	178	26	1.8	26	0.4
365	40	178	26	1.8	16	0.7
460	40	208	28	4.7	36	0.6
460	40	208	28	4.7	22	0.9
500	25	258	32	8	78	1.1
500	25	258	32	8	55	2.0
570	25	320	37	12	141	1.9
570	25	320	37	12	88	3.0
670	25	375	43	22	185	2.9
670	25	375	43	22	103	5.0
750	25	410	47	27	366	3.1
750	25	410	47	27	209	5.4