

The logo for 'mak' is displayed in a bold, blue, lowercase sans-serif font. To the left of the text is a circular graphic containing a technical drawing of a pipe fitting with various bolts and a gasket.

mak

A large blue steel fitting with multiple ports and a central support structure. A worker in a dark jacket and blue pants is visible in the background, working on the fitting. The text 'DN1400' is visible on the fitting's frame.

**STEEL
FITTING
MANUFACTURER**

A circular inset image showing a close-up of a welding process. Bright sparks are flying from the point where a welding torch meets a metal pipe.

About Us

Mak Armatura located in Poland with its headquarter in Łódź, has thirty years of experience in distributing product for urban infrastructure.

We also specialized in the production of a wide range of fitting from DN40 to DN1400

The company name 'Mak Armatura' is written in a bold, white, sans-serif font. Below the text is a thick, horizontal orange bar.

Mak Armatura

SINCE 1994

The text 'Call Us Today' is in a white sans-serif font. Below it are two phone numbers: '+48 696 111 673' and '+48 656 60 17', both in a larger, bold, white sans-serif font.

Call Us Today
+48 696 111 673
+48 656 60 17

Poland, Łódź 92-402
Street: Zakładowa 147P

www.mak-armatura.com.pl



About Us

Mak Armatura is a company running by Paweł Koliński, created in 1994 by father Adam Koliński.

We specialized in the production of a wide range of fitting systems that include dismantling joints, flange adaptors , couplings, wedge-shaped adjusting rings and many other constructions on customer requirement. Our advantage is that we are open to projects, with any non- standard specifications.

As a result of professional cooperations with many European supplier we also distribute products needed for urban infrastructure such as water distribution, wast water treatment or gas distribution.

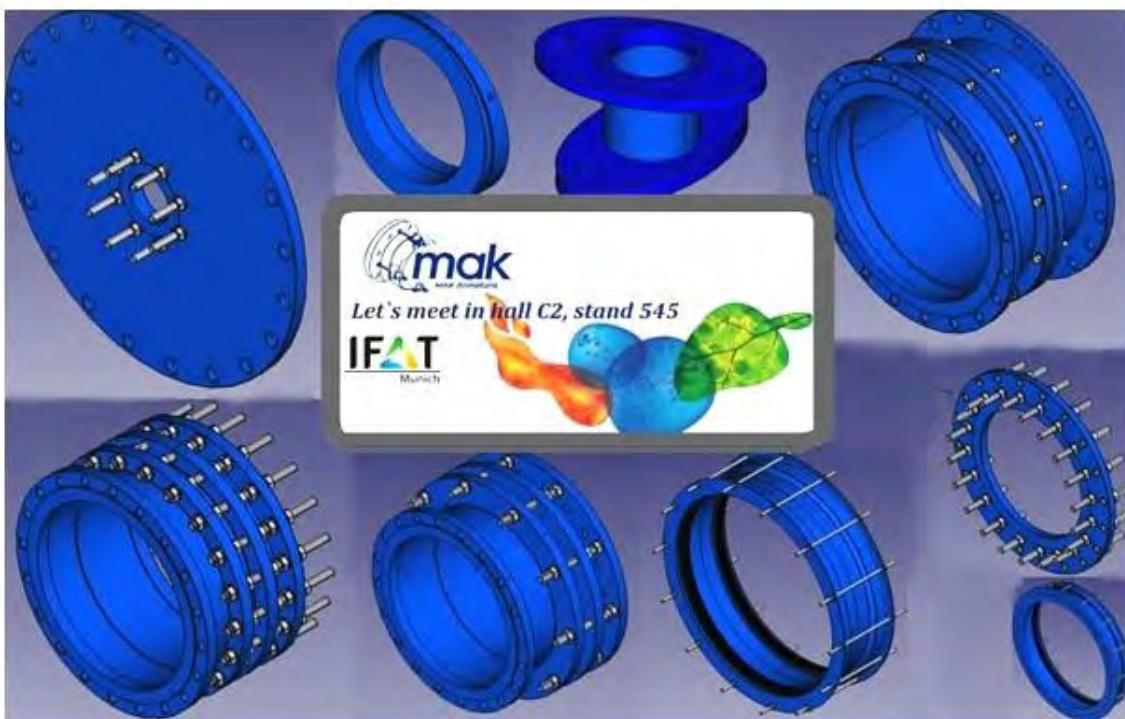
Mak Armatura

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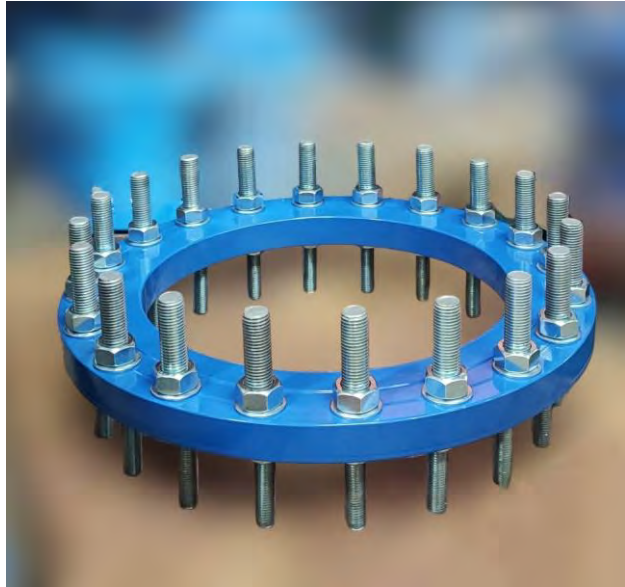
www.mak-armatura.com.pl

Fitting requirements accordance with the standards

DN	GGG	GG	Steel (ISO)	Steel (DIN)	Asbestos			PVC	PEHD	Resins (Hobas)	Stoneware
					PN 10	PN 12,5	PN 16				
40	56	56	48,3	51,0				50	50		
50	66	66/70	60,3	57,0				63	63		
65	82		76,1	70,0				75	75		
80	98	98/100/104	88,9	88,9	98	100	104	90	90		
100	118	118/122/128	114,3	108,0	120	124	130	110	110/125		131
125	144	144/149/155	139,7	133,0	149	153	159	140	140		159
150	170	170/176/184	168,3	159,0	178	182	190	160/180	160/180		186
175		196/203/213	193,7	191,0				200			
200	222	222/230/242	219,1	216	234	240	252	225	200/225	220	242/251
225		248/259/271	229,1	241				250			278
250	274	274/286/298	273	267	286	296	308	280	250/280	272	296/318
300	326	326/340/356	323,9	318	342	352	368	315	315	324	351/374
350	378	378/394/412	355,6	368	400	410	428	400	355	376	417/430
400	429	429/448/470	406,4	419	456	470	488	450	400	407/401	484/490
450	480	480/504		470	510	524	546				548
500	532	532/558	508	521	564	582	606	560	450/500	530/501	581/607
600	635	634	610	622	678	698	726	630	560/630	616	687/721
700	738	738	711,2					710	710	718	790/831
750		790	762								
800	842	842	812,8					800	800	820	895/941
900	945	945	914,4					900	900	924	1002
1000	1048	1048	1016					1000	1000	1026	1109
1200	1255	1256	1220							1229	1320
1400	1462		1420							1439	1550



Reduction flange XR type A, Type B

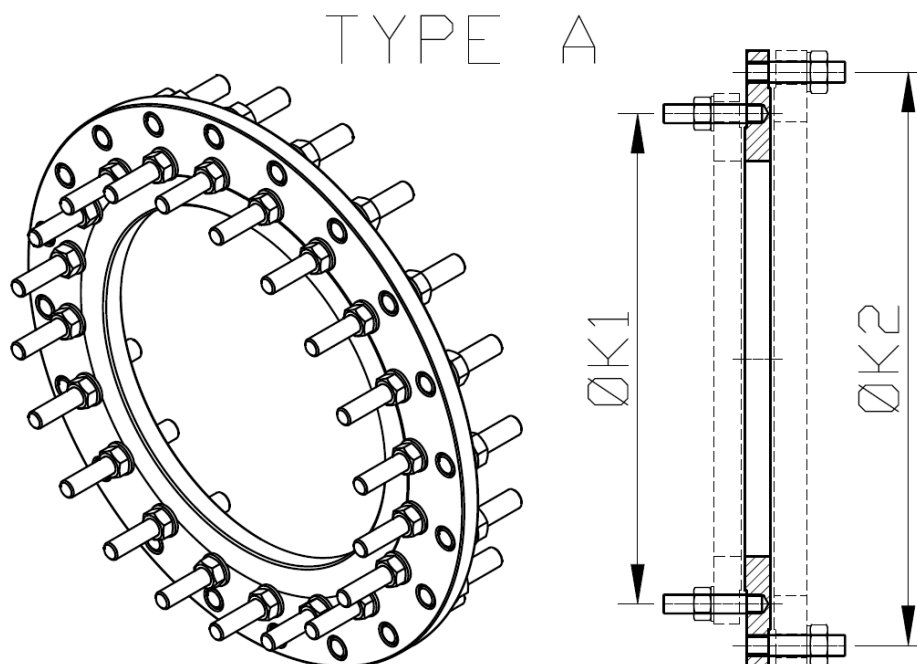


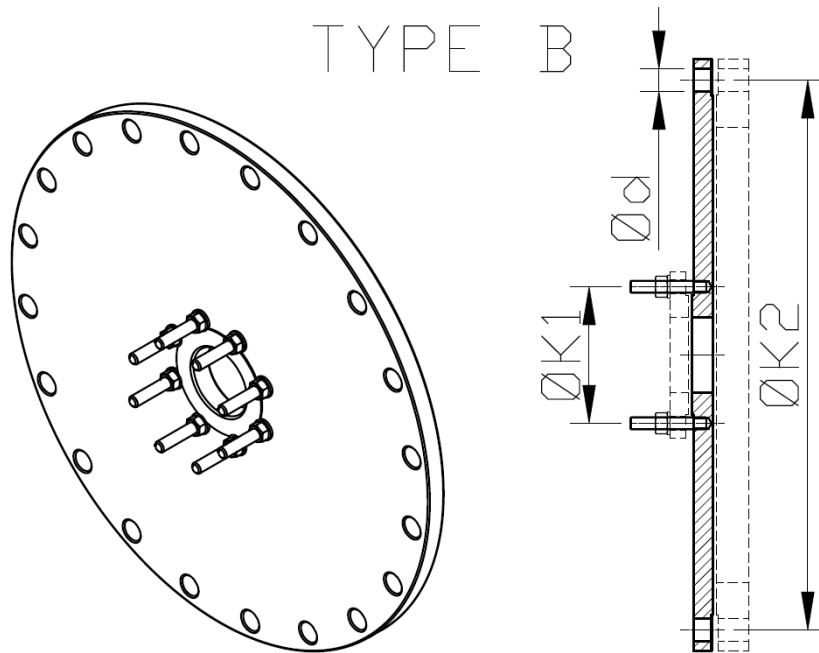
Reducing flanges enable joining armature of differing nominal diameters and flange drilling.

Kołnierze umożliwiają połączenie armatury o różnych średnicach nominalnych i owierceniach.

Фланцы осуществляют соединение арматуры различных номинальных диаметров и резьб.

There are many connection possibilities depending on nominal pressure PN10/16 or diameter DN50/DN1200. We fabricate XR Flanges in A or B type according existing norm or customer requirement.



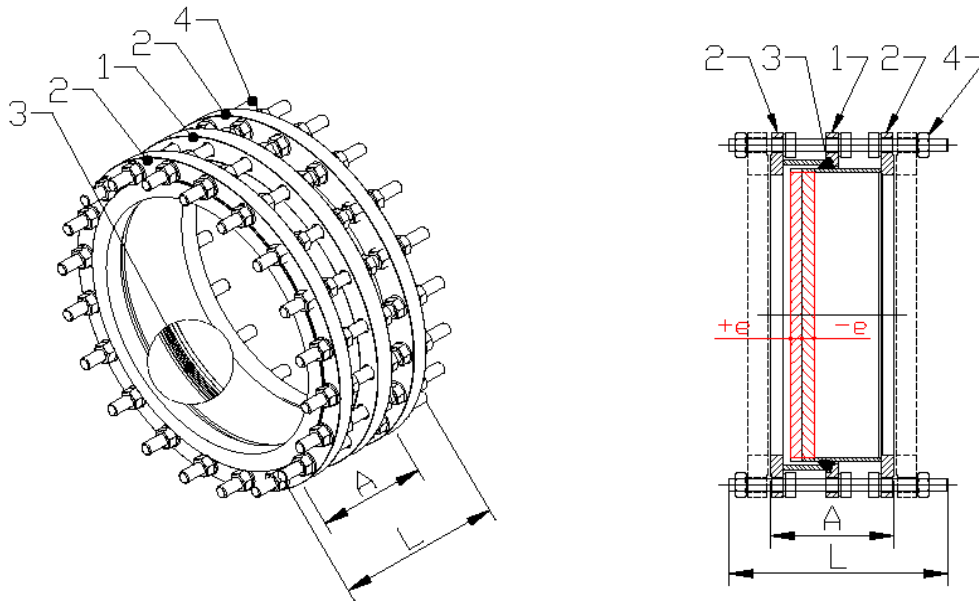


DN	TYPE	ØK1			ØK2			WEIGHT KG
		ØK1	RODS		ØK2	RODS		
100/50	A	180	8	M16X50	125	4	M16X50	6,3
100/65	A	180	8	M16X50	145	4	M16X50	6,5
100/80	A	180	8	M16X50	160	8	M16X50	6,9
125/50	A	210	8	M16X50	125	4	M16X50	8,2
125/65	A	210	8	M16X50	145	4	M16X50	8,1
150/50	B	240	8		125	4	M16X50	11,0
150/100	A	240	8	M20X60	180	8	M16X50	9,7
150/125	A	240	8	M20X60	210	8	M16X50	11,2
200/125	B	295	8		210	8	M16X50	13,7
200/150	A	295	8	M20x60	240	8	M20x60	13,5
250/100	B	350	12		180	8	M16X50	21,9
250/150	B	350	12		240	8	M20X60	20,0
250/200	A	350	12	M20X60	295	8	M20X60	21,3
250/225	A	350	12	M20X60	325	8	M20X60	20,8
300/100	B	400	12		180	8	M16X50	27,1
300/150	B	400	12		240	8	M20X60	26,0
300/200	B	400	12		295	8	M20X60	24,8
300/250	A	400	12	M20X60	350	12	M20X60	22,6
450/300	B	565	20		400	12	M20X60	55,0
500/450	A	620	20	M24x70	565	20	M24x70	110,0
600/500	A	725	20	M27x120	620	20	M24x70	120,0
700/600	B	840	24		725	20	M27x120	130
800/700	A	950	24	M30x150	840	24	M27x120	150
900/500	B	1050	28		620	20	M24x70	160
900/600	B	1050	28		725	20	M27x120	135
900/800	A	1050	28	M30x150	950	24	M30x150	50

Dismantling Joint type F3 DN 40 - DN 1400



<p>Use:</p> <ul style="list-style-type: none"> Facilitates assembly and dismantling of armature. 	<p>Zastosowanie:</p> <ul style="list-style-type: none"> Ułatwia montaż i demontaż armatury. 	<p>Применение:</p> <ul style="list-style-type: none"> Вставка облегчает монтаж и демонтаж фланцевых арматур
<p>Characteristics:</p> <ul style="list-style-type: none"> Transfers all axial forces of a pipe network. Thanks to the expansion range „e” it is possible to adjust the joint to the demands of pipelines. 	<p>Cechy charakterystyczne:</p> <ul style="list-style-type: none"> Przenosi wszystkie siły osiowe rurociągu. Dzięki zakresowi kompensacji „e”, możliwe dostosowanie łącznika do określonych wymagań rurociągu. 	<p>Признаки:</p> <ul style="list-style-type: none"> Переносит все осевое усилие трубопровода. Благодаря компенсации "e" можно приспособить вставку к определенному требованию трубопровода.
<p>Technical data:</p> <ul style="list-style-type: none"> Flanges drilled for PN 10 /PN 16 according to PN-EN 1092-1 Epoxy coated 250 µm Other possibilities on customer request 	<p>Dane techniczne:</p> <ul style="list-style-type: none"> Owiert kołnierza PN 10 / PN 16 według PN-EN 1092-1 Średnia grubość powłoki epoksydowej 250 µm Na życzenie możliwe jest inne wykonanie 	<p>Технические данные:</p> <ul style="list-style-type: none"> Фланцы PN 10/PN 16 по PN-EN 1092-1 Эпоксидное покрытие 250 µm По запросу возможное их исполнение.



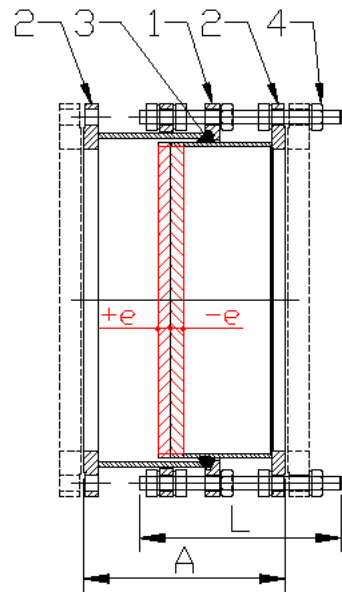
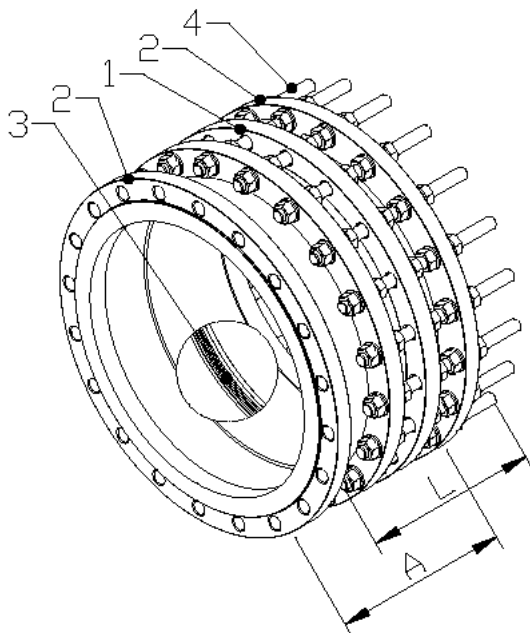
1. Sliding Flange (epoxy coating in blue RAL5005 steel S235JR, stainless steel)
2. Main Flange Spigot (epoxy coating in blue RAL5005 steel S235JR, stainless steel)
3. Gasket Ring (EPDM or NBR)
4. Fasteners (optionally hot-dip galvanized, galvanized or made of stainless steel)
- L. Rods Length
- A. Length in canter position
- e. Expansion range

DN	+/- (e)	PN10			PN16		
		A	L	Kg	A	L	Kg
		[mm]			[mm]		
40	25	180	300	8	180	300	8
50		180	300	10	180	310	10
65		180	300	12	180	310	12
80		200	330	16	200	330	16
100		200	330	20	200	330	20
125		200	330	25	200	330	25
150		200	350	34	200	350	34
200		220	380	48	220	380	52
250		220	380	65	230	400	73
300		220	400	72	250	430	85
350		230	400	94	260	450	110
400		230	420	122	270	450	132
450		250	430	140	270	470	180
500		260	450	162	280	500	215
600		260	460	205	300	500	300
700		260	460	256	300	520	350
800	290	500	352	320	560	424	
900	290	500	405	320	560	491	
1000	290	500	484	340	600	662	
1200	320	570	744	360	650	985	
1400	360	630	980	380	680	1220	

Dismantling joint type F4 DN50 - DN1400



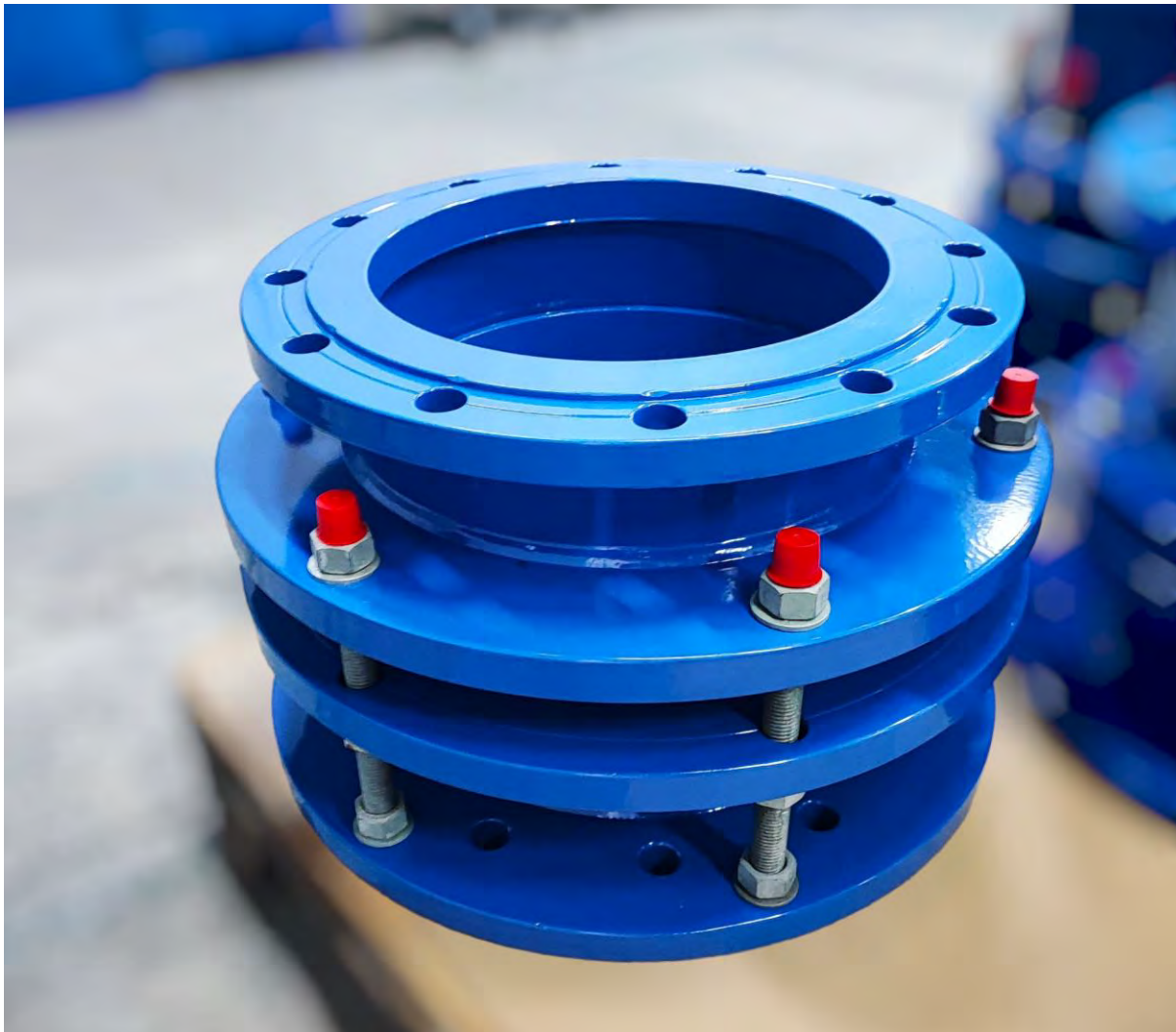
<p>Use:</p> <ul style="list-style-type: none"> Facilitates assembly and dismantling of armature. 	<p>Zastosowanie:</p> <ul style="list-style-type: none"> Ułatwia montaż i demontaż armatury. 	<p>Применение:</p> <ul style="list-style-type: none"> Вставка облегчает монтаж и демонтаж фланцевых арматур
<p>Characteristics:</p> <ul style="list-style-type: none"> Transfers all axial forces of a pipe network. Thanks to the expansion range „e” it is possible to adjust the joint to the demands of pipelines. 	<p>Cechy charakterystyczne:</p> <ul style="list-style-type: none"> Przenosi wszystkie siły osiowe rurociągu. Dzięki zakresowi kompensacji „e”, możliwe dostosowanie łącznika do określonych wymagań rurociągu. 	<p>Признаки:</p> <ul style="list-style-type: none"> Переносит все осевое усилие трубопровода. Благодаря компенсации "e" можно приспособить вставку к определенному требованию трубопровода.
<p>Technical data:</p> <ul style="list-style-type: none"> Flanges drilled for PN 10 /PN 16 according to PN-EN 1092-1 Epoxy coated 250 µm Other possibilities on customer request 	<p>Dane techniczne:</p> <ul style="list-style-type: none"> Owiert kołnierza PN 10/ PN 16 według PN-EN 1092-1 Średnia grubość powłoki epoksydowej 250 µm Na żądanie możliwe jest inne wykonanie 	<p>Технические данные:</p> <ul style="list-style-type: none"> Фланцы PN 10/PN 16 по PN-EN 1092-1 Эпоксидное покрытие 250 µm По запросу возможное их исполнение.



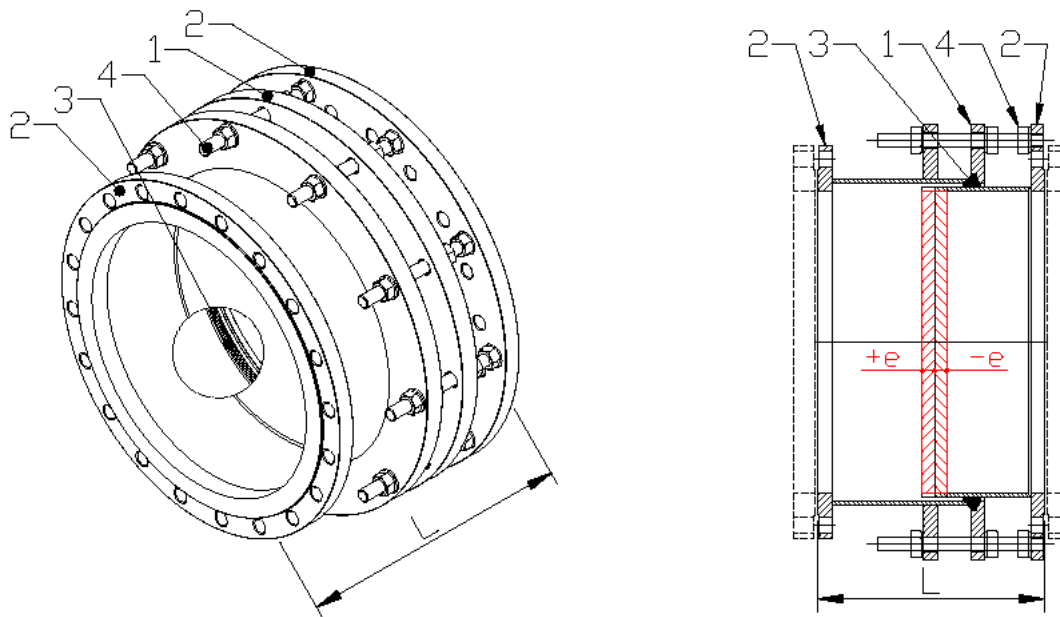
1. Sliding Flange (epoxy coating in blue RAL5005 steel S235JR, stainless steel)
 2. Main Flange Spigot (epoxy coating in blue RAL5005 steel S235JR, stainless steel)
 3. Gasket Ring (EPDM or NBR)
 4. Rods, Washers, Nuts (zinc coated, stainless steel, hot dipped galvanized)
- L. Rods Length
 A. Length in canter position
 e. Expansion range

DN	+/- (e)	PN10			PN16		
		A	L	Kg	A	L	Kg
		[mm]			[mm]		
50	25	300	250	13	330	330	13
65		300	250	16	330	330	16
80		300	250	21	330	330	21
100		330	330	27	330	330	27
125		330	330	34	330	330	34
150		350	330	51	350	350	51
200		350	330	62	350	350	64
250		350	330	88	350	350	102
300		350	330	100	375	370	116
350		350	330	124	425	350	162
400		375	360	160	425	350	204
450		375	360	176	425	350	232
500		375	360	202	450	380	312
600		400	400	268	475	450	416
700		400	400	330	475	450	444
800		450	450	454	525	450	610
900	450	450	522	525	450	692	
1000	475	480	632	550	600	890	
1200	525	525	950	600	620	1300	
1400	550	560	1180	625	640	1550	

Dismantling Joint type FM DN80-DN1400



<p>Use:</p> <ul style="list-style-type: none"> Facilitates assembly and dismantling of armature. 	<p>Zastosowanie:</p> <ul style="list-style-type: none"> Ułatwia montaż i demontaż armatury. 	<p>Применение:</p> <ul style="list-style-type: none"> Вставка облегчает монтаж и демонтаж фланцевых арматур
<p>Characteristics:</p> <ul style="list-style-type: none"> Transfers all axial forces of a pipe network. Thanks to the expansion range „e” it is possible to adjust the joint to the demands of pipelines. 	<p>Cechy charakterystyczne:</p> <ul style="list-style-type: none"> Przenosi wszystkie siły osiowe rurociągu. Dzięki zakresowi kompensacji „e”, możliwe dostosowanie łącznika do określonych wymagań rurociągu. 	<p>Признаки:</p> <ul style="list-style-type: none"> Переносит все осевое усилие трубопровода. Благодаря компенсации "e" можно приспособить вставку к определенному требованию трубопровода.
<p>Technical data:</p> <ul style="list-style-type: none"> Pressure lever PN10/PN16 Epoxy coated RAL 5005 - 250 µm 	<p>Dane techniczne:</p> <ul style="list-style-type: none"> Owiert kołnierza PN 10 / PN 16 według PN-EN 1092-1 Średnia grubość powłoki 250 	<p>Технические данные:</p> <ul style="list-style-type: none"> Фланцы PN 10/PN 16 по PN-EN 1092-1 Эпоксидное покрытие 250 µm



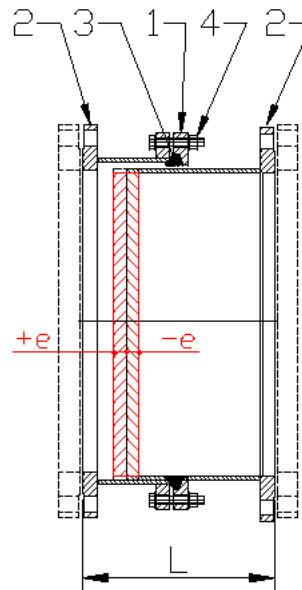
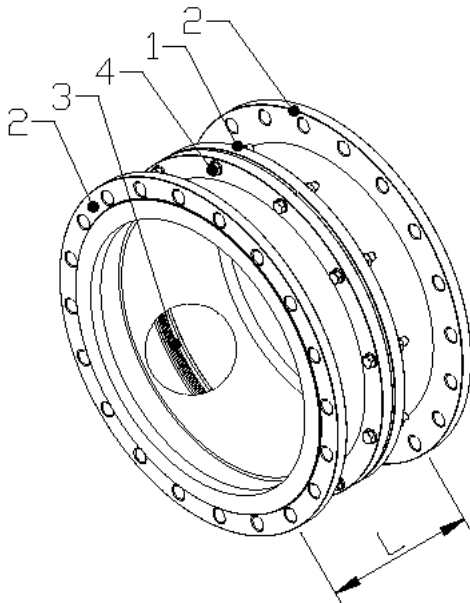
1. Sliding Flange (epoxy coating in blue RAL5005 steel S235JR, stainless steel)
2. Main Flange Spigot (epoxy coating in blue RAL5005 steel S235JR, stainless steel)
3. Gasket Ring (EPDM or NBR)
4. Fasteners (galvanized steel or stainless steel)
- L. Rods Length
- e. Expansion range

DN	Expansion rang [e]	PN10	PN 16
		Lenght [L]	Lenght [L]
80	8	180	180
100	10	200	200
125	10	205	205
150	10	210	210
200	10	225	335
250	15	250	250
300	15	300	300
350	15	325	325
400	20	350	350
500	20	400	400
600	20	450	450
700	25	500	500
800	25	500	500
1000	30	550	550
1200	30	580	580
1400	30	620	620

Dismantling joint type FP DN80- DN1400

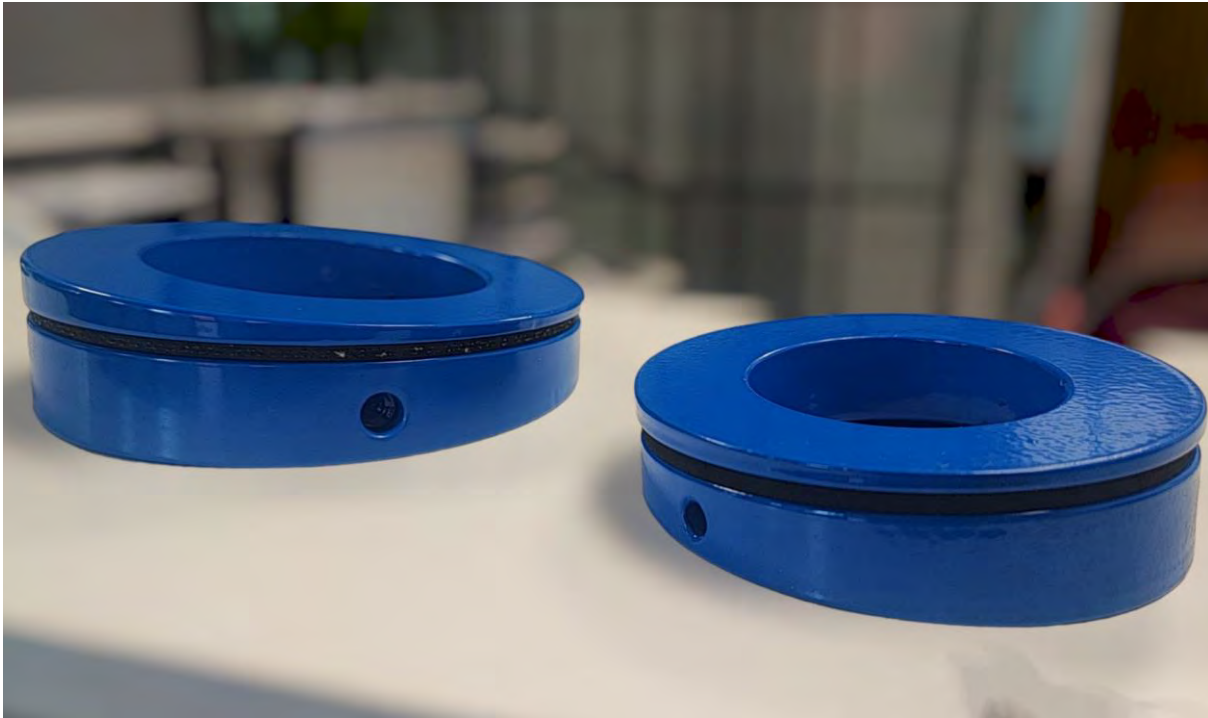


1. Sliding Flange (epoxy coating in blue RAL5005 steel S235JR, stainless steel)
 2. Main Flange Spigot (epoxy coating in blue RAL5005 steel S235JR, stainless steel)
 3. Gasket Ring (EPDM or NBR)
 4. Fasteners (galvanized, optionally hot-dip galvanized or made of stainless steel)
- L. Rods Length
A. Length in canter position
e. Expansion range



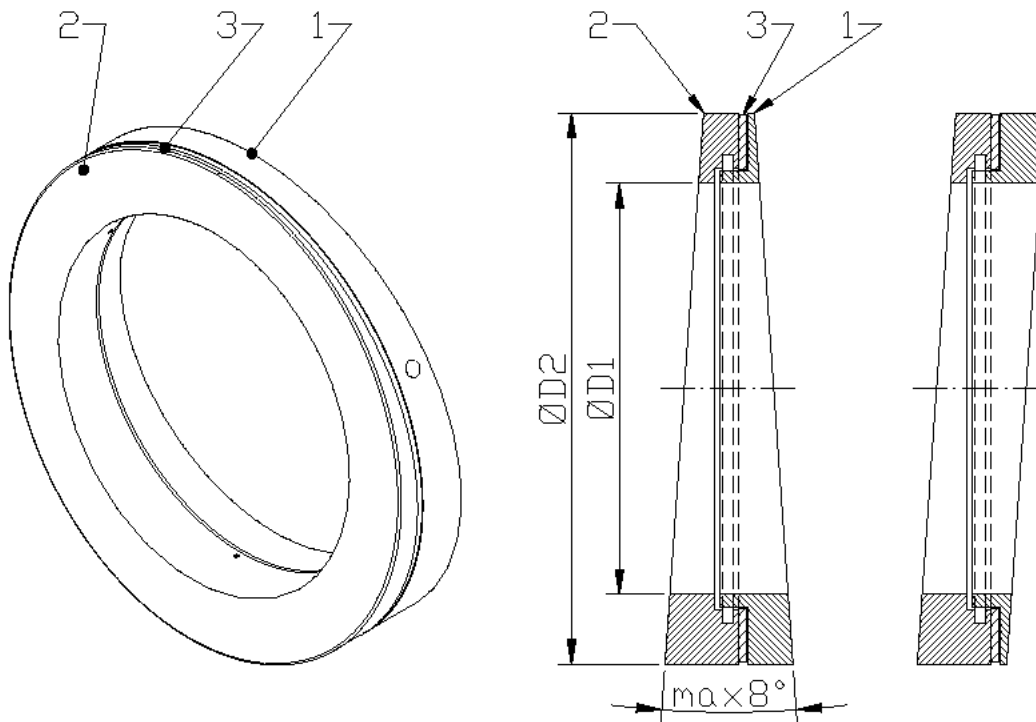
DN	Expansion range [e]	PN10		PN 16	
		Length [L]	Weight [kg]	Length [L]	Weight [kg]
80	40 (60)*	300 (290)*	15	300 (290)*	15
100	40 (115)*	300 (435)*	20	300 (435)*	20
125	40	300	24	300	24
150	40 (100)*	300 (480)*	30	300 (480)*	30
200	40 (100)*	300 (480)*	42	300 (480)*	42
250	50 (100)*	350 (480)*	65	350 (480)*	65
300	50 (100)*	350 (480)*	81	350 (480)*	85
350	50	350	96	350	102
400	50	380	120	350	130
500	50	380	144	380	162
600	50	380	192	380	240
700	50	380	240	380	273
800	50	380	300	390	330
900	50	380	344	390	384
1000	50	380	400	390	486
1200	50	520	612	550	745
1400	50	700	715	720	833

Wedge-shaped adjusting ring



Use	Zastosowanie	Применение:
<ul style="list-style-type: none"> • Excellent solution for joining two flanges which are not parallel or their distance from each other is too big. • Possibility of smooth adjustment of ring angle. • Maximum angular deflection of flanges: 8° 	<ul style="list-style-type: none"> • Pierścień doskonale nadaje się do połączenia dwóch kołnierzy które nie schodzą się równolegle lub ich odległość jest zbyt duża • Możliwość płynnej regulacji kąta odchylenia. • Maksymalne dopuszczalne odchylenie kołnierzy przy zastosowaniu pierścienia wynosi 8° 	<ul style="list-style-type: none"> • Клиновое кольцо оптимально годиться для соединения двух фланцев, которые не смыкаются параллельно или когда расстояние между ними слишком большое. • Возможность плавной регулировки угла рыскания.

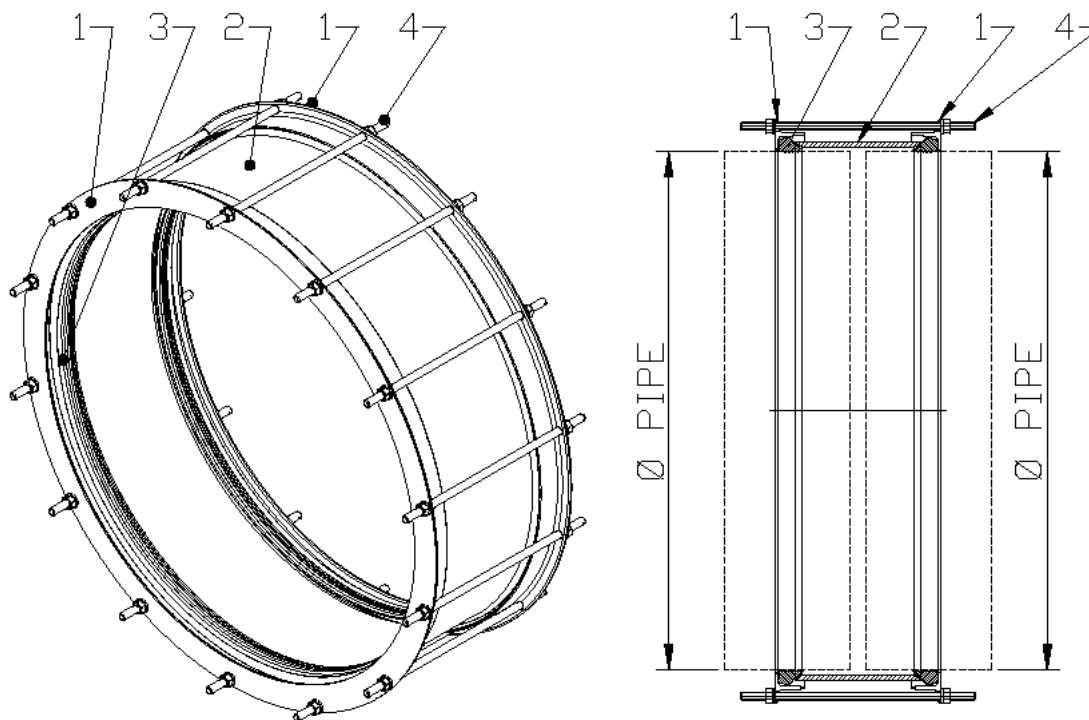
1. Adjustable Ring (epoxy coating in blue RAL5005 steel S235JR)
2. Adjustable Ring (epoxy coating in blue RAL5005 steel S235JR)
3. Gasket Ring (EPDM or NBR)



DN	Min 0° [mm]	Max 8° [mm]	D1	D2
50	24	31	58	102
65	25	34	71	127
80	31	41	89	142
100	36	48	108	162
125	34	48	133	192
150	35	51	163	218
200	42	61	216	273
250	48	71	267	328
300	50	74	318	378
350	52	79	368	438
400	54	89	420	490
500	67	109	520	595
600	73	120	622	674
700	84	141	710	810

Coupling Type A

<ul style="list-style-type: none"> • Adapters are tailor made for a given outside pipe diameter with a tolerance: +/- 5 mm. • Other possibilities on request, eg. stepped adapter, non-standard flange size or drilling. • Working pressure 10 bar. 	<ul style="list-style-type: none"> • Łączniki wykonywane są na określonej średnicy zewnętrznej rury z tolerancją +/- 5 mm. • Na życzenie możliwe inne wykonanie, np. redukcyjne, bądź z kołnierzami o nietypowych owierceniach lub wymiarach. • Ciśnienie robocze do 10 barów. 	<ul style="list-style-type: none"> • Муфты выпускаются на определённый наружный диаметр трубы с допуском +/- 5 мм • Под заказ возможно другое исполнение, например, редуцированное, либо с фланцем нетипичных размеров или с рассверловкой. • Давление: до 10 баров.
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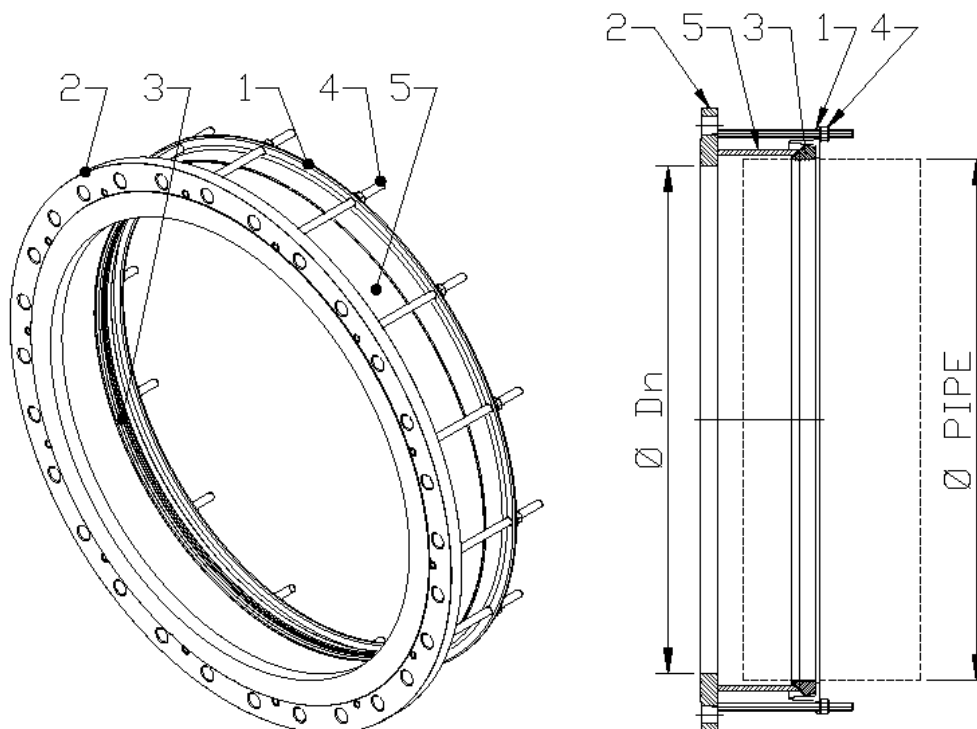


1. Counter Flange (epoxy coating in blue RAL5005 steel S235JR, stainless steel)
2. Main Body (epoxy coating in blue RAL5005 steel S235JR, stainless steel)
3. Gasket Ring (EPDM or NBR)
4. Fasteners (zinc coated, stainless steel, hot dipped galvanized)

Flange adaptor Type B

<ul style="list-style-type: none"> Adapters are tailor made for a given outside pipe diameter with a tolerance: +/- 5 mm. Other possibilities on request, eg. stepped adapter, non-standard flange size or drilling. Working pressure 10 bar. Can work on vacuum 	<ul style="list-style-type: none"> Adapters are tailor made for a given outside pipe diameter with a tolerance: +/- 5 mm. Other possibilities on request, eg. stepped adapter, non-standard flange size or drilling. Working pressure 10 bar. Can work on vacuum 	<ul style="list-style-type: none"> Муфты выпускаются на определённый наружный диаметр трубы с допуском +/- 5 мм Под заказ возможно другое исполнение, например, редукционное, либо с фланцем нетипичных размеров или с рассверловкой. Давление: до 10 баров.
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- Counter Flange (epoxy coating in blue RAL5005 steel S235JR, stainless steel)
- Flange with bolting holes
- Gasket Ring (EPDM or NBR)
- Fasteners (zinc coated, stainless steel, hot dipped galvanized)
- Main Body
- Fasteners (zinc coated, stainless steel, hot dipped galvanized)

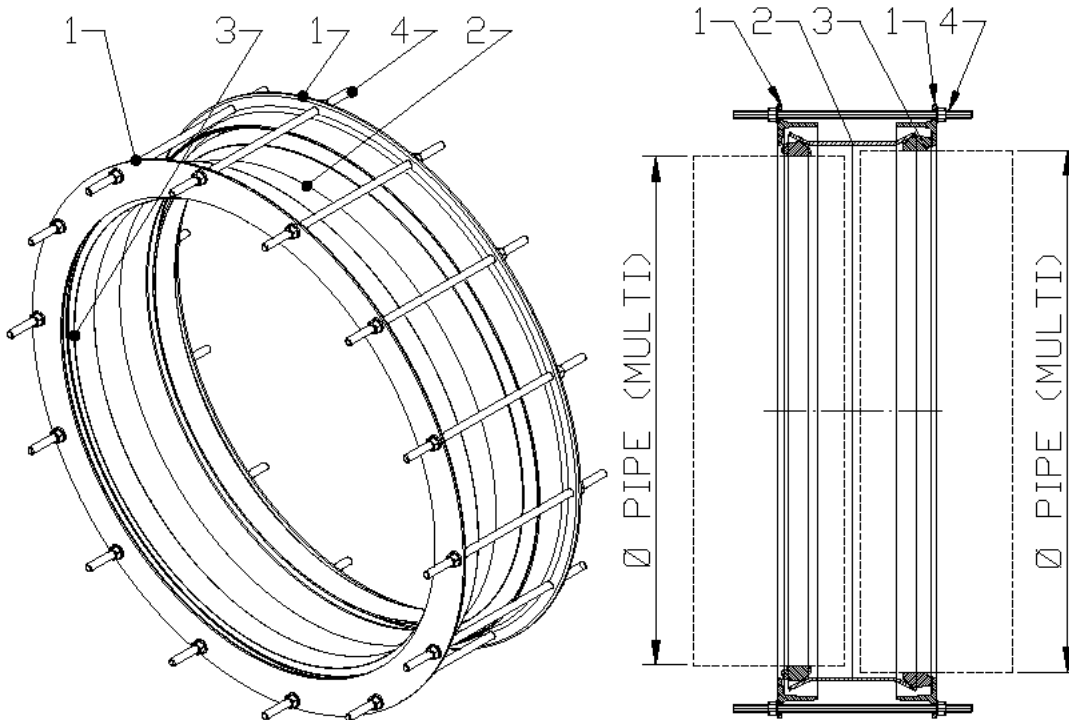


Multidiameter Coupling

- Adapters are tailor made for a given outside pipe diameter with a tolerance: +/- 15 mm.
- Other possibilities on request, eg. stepped adapter, non-standard flange size or drilling.
- Working pressure 10 bar.

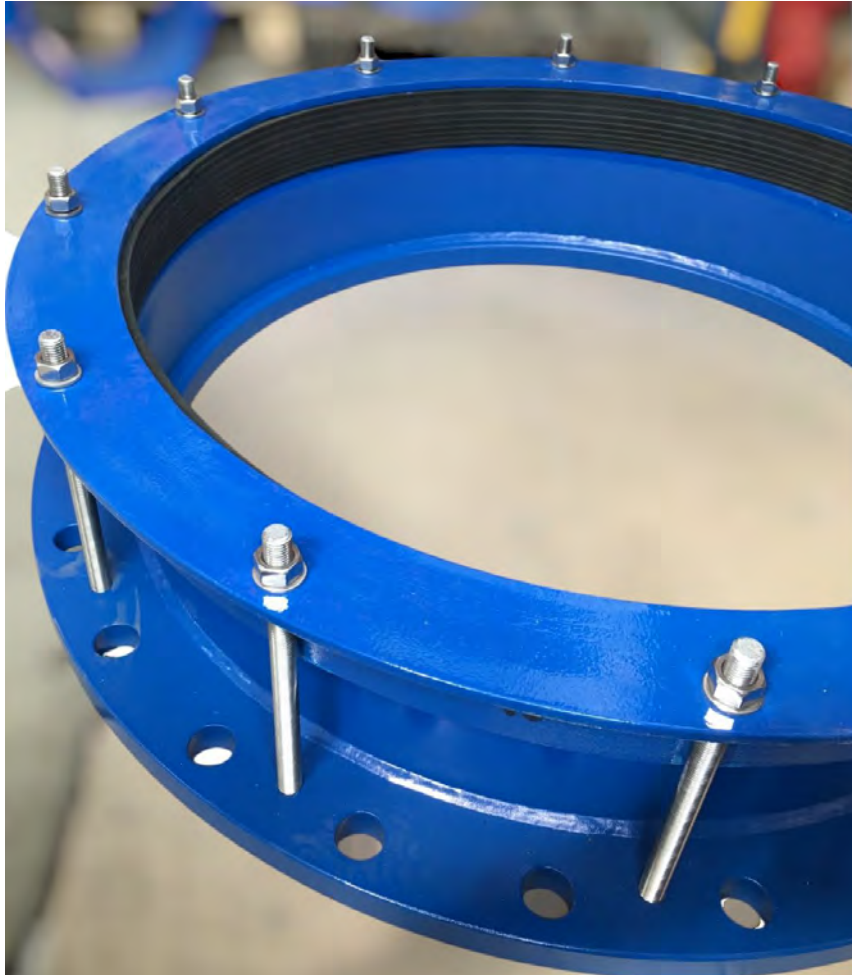
- Łączniki wykonywane są na określoną średnicę zewnętrzną rury z tolerancją +/- 15 mm.
- Na życzenie możliwe inne wykonanie, np. redukcyjne, bądź z kołnierzami o nietypowych owierceniach lub wymiarach.
- Ciśnienie robocze do 10 barów.

- Муфты выпускаются на определённый наружный диаметр трубы с допуском +/- 15мм
- Под заказ возможно другое исполнение, например, редукционное, либо с фланцем нетипичных размеров или с рассверловкой.
- Давление: до 10 баров.



1. Counter Flange (epoxy coating in blue RAL5005 steel S235JR, stainless steel)
2. Main Body (Steel S235JR, Epoxy coating, Stainless steel)
3. Gasket Ring (EPDM or NBR)
4. Fasteners (zinc coated, stainless steel, hot dipped galvanized)

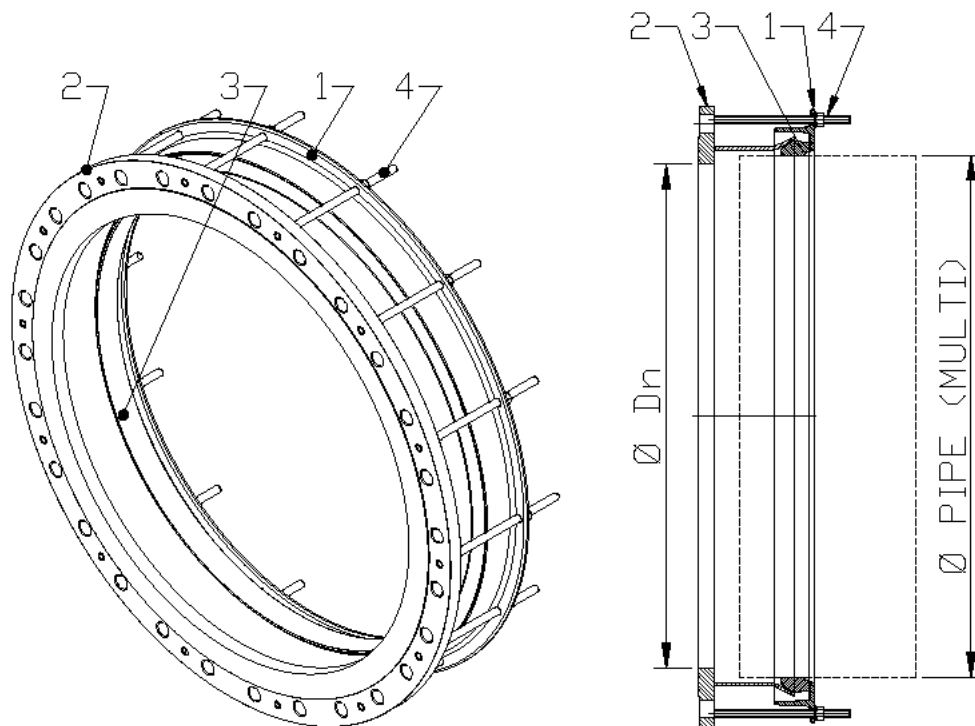
Multidiameter flange adaptor



- Adapters are tailor made for a given outside pipe diameter with a tolerance: +/- 15 mm.
- Other possibilities on request, eg. stepped adapter, non-standard flange size or drilling.
- Working pressure 10 bar.
- Can work on vacuum

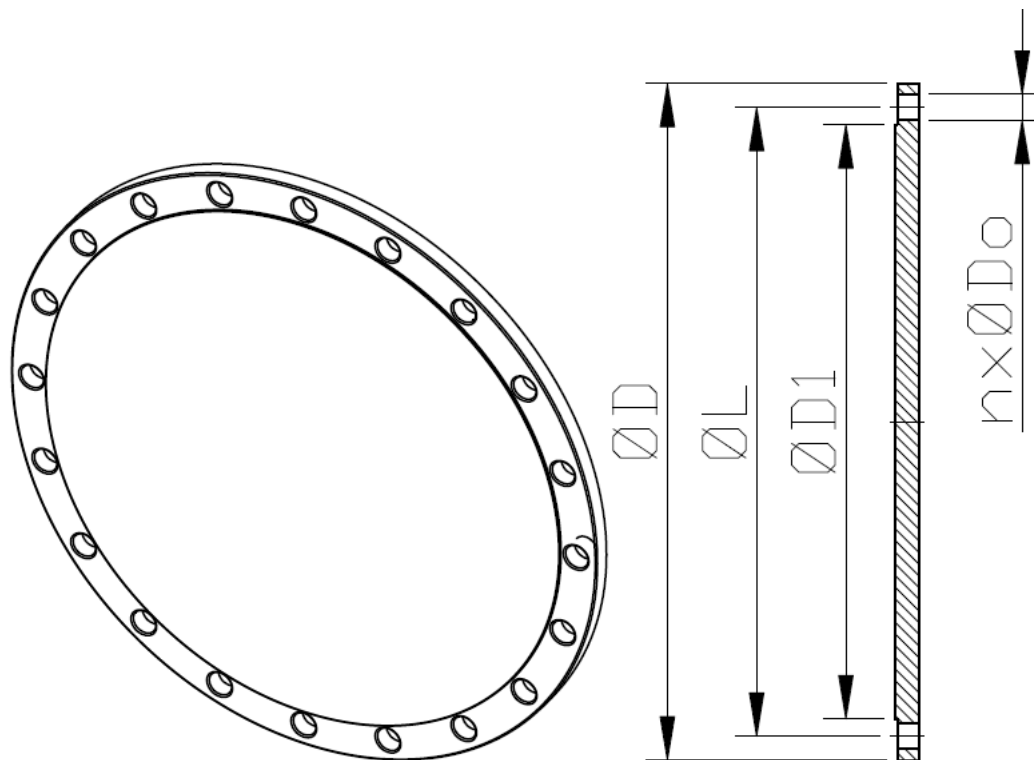
- Łączniki wykonywane są na określoną średnicę zewnętrzną rury z tolerancją +/- 15 mm.
- Na życzenie możliwe inne wykonanie, np. redukcyjne, bądź z kołnierzami o nietypowych otwiereniach lub wymiarach.
- Ciśnienie robocze do 10 barów.
- Możliwa praca na podciśnieniu

- Муфты выпускаются на определённый наружный диаметр трубы с допуском +/- 15 мм
- Под заказ возможно другое исполнение, например, редукционное, либо с фланцем нетипичных размеров или с рассверловкой.
- Давление: до 10 баров.



1. Counter Flange (epoxy coating in blue RAL5005 steel S235JR, stainless steel)
2. Flange
3. Main Body (Steel S235JR, Epoxy coating, Stainless steel)
4. Gasket Ring (EPDM or NBR)
5. Fasteners (zinc coated, stainless steel, hot dipped galvanized)

X Flange

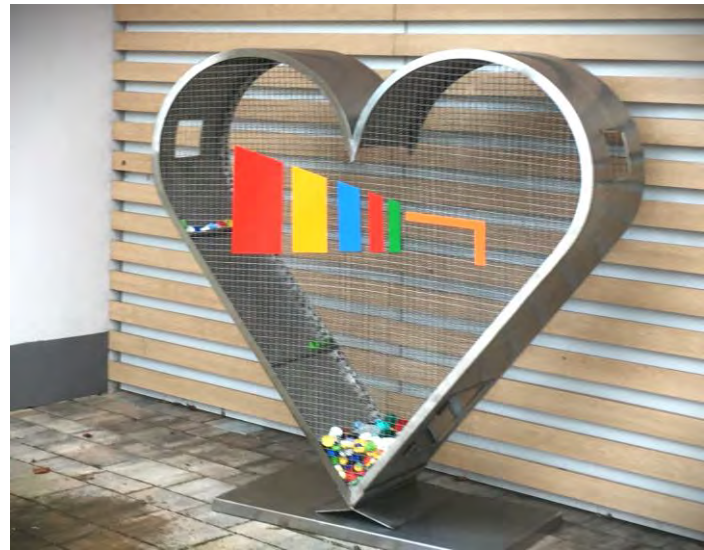


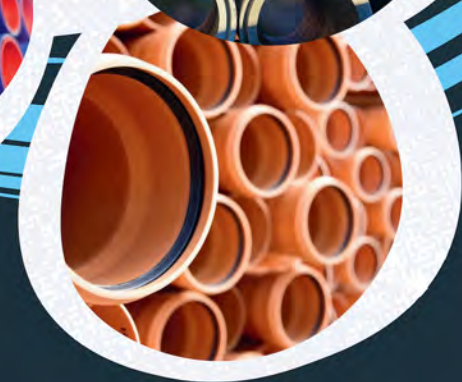
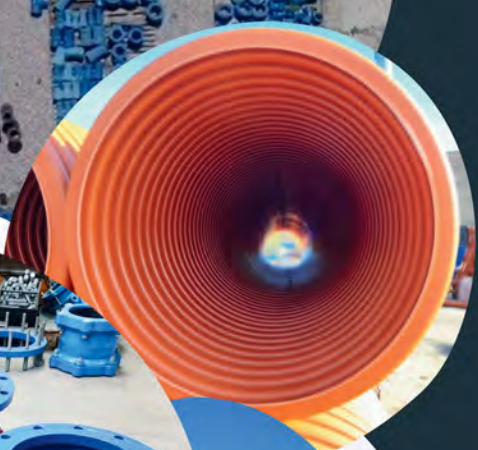
Blank X Flange useful for plugging a pipe terminated with a flange fitting.
 Offer of flanges are in many possibilities depends on customer request.

DN	$\varnothing D$	$\varnothing L$	n
	Outside Diameter	Diameter of bolt circle	Nr. Of bolting holes
80	200	160	8
100	220	180	8
125	250	210	8
150	285	240	8
200	340	295	8
250	395	350	12
300	445	400	12
350	505	460	16
400	565	515	16
450	615	565	20
500	670	620	20
600	780	725	20
700	895	840	24
800	1015	950	24
900	1115	1050	28
1000	1230	1160	28

Other construction

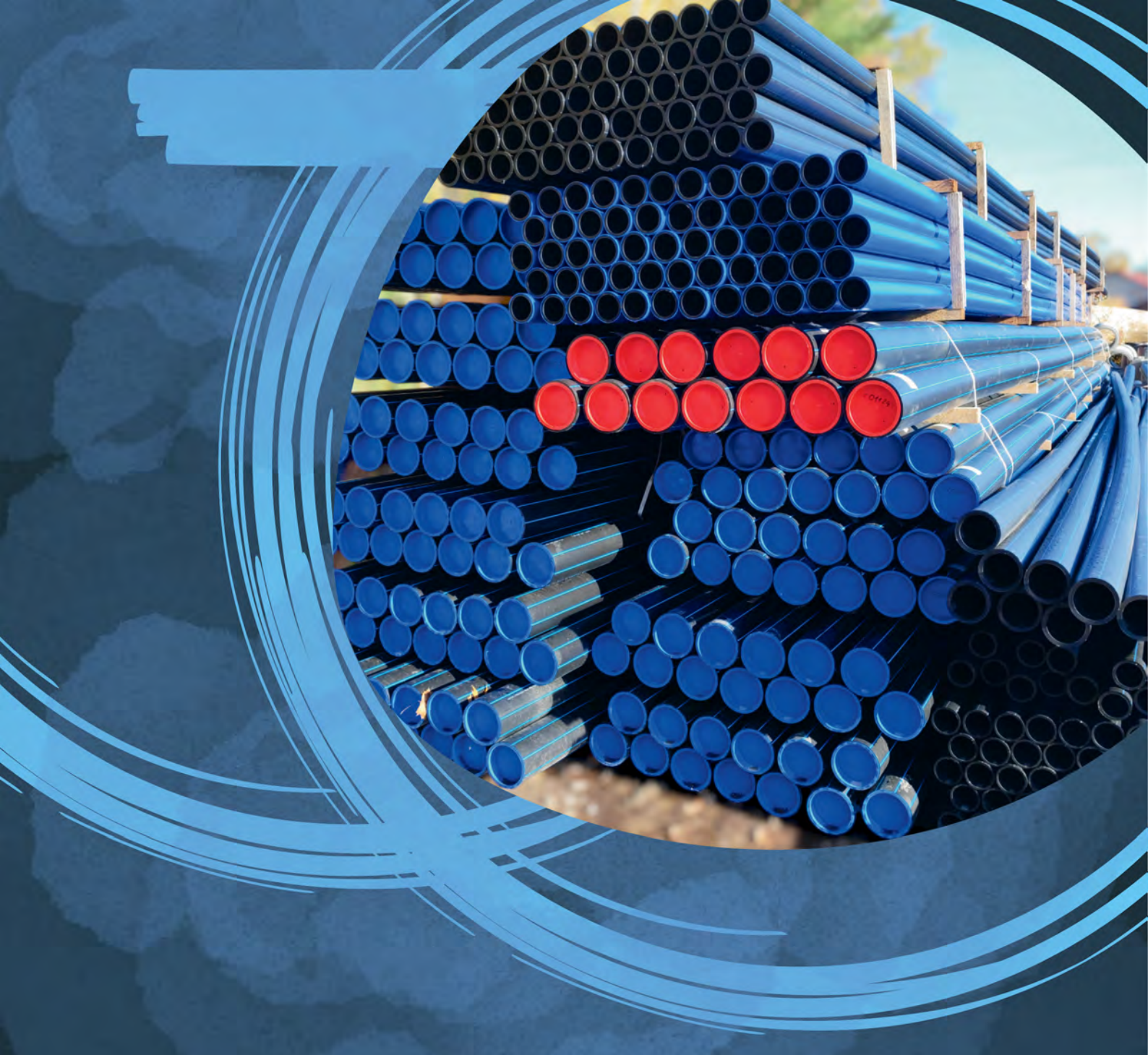
We can fabricate any non-standards construction from steel on customer requests.





Contents

- P.1. DN data sheet
- P.2. Reduction flange XR type A, Type B
- P.4. Dismantling Joint type F3
- P.6. Dismantling Joint type F4
- P.8. Dismantling Joint type FM
- P.10. Dismantling Joint type FP
- P.12. Wedge-shaped adjusting ring
- P.14. Coupling Type A
- P.15. Flange Adapter Type B
- P.16. Multidiameter Coupling
- P.17. Multidiameter Flange Adapter
- P.19. Flanges
- P.20. Other constructions



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