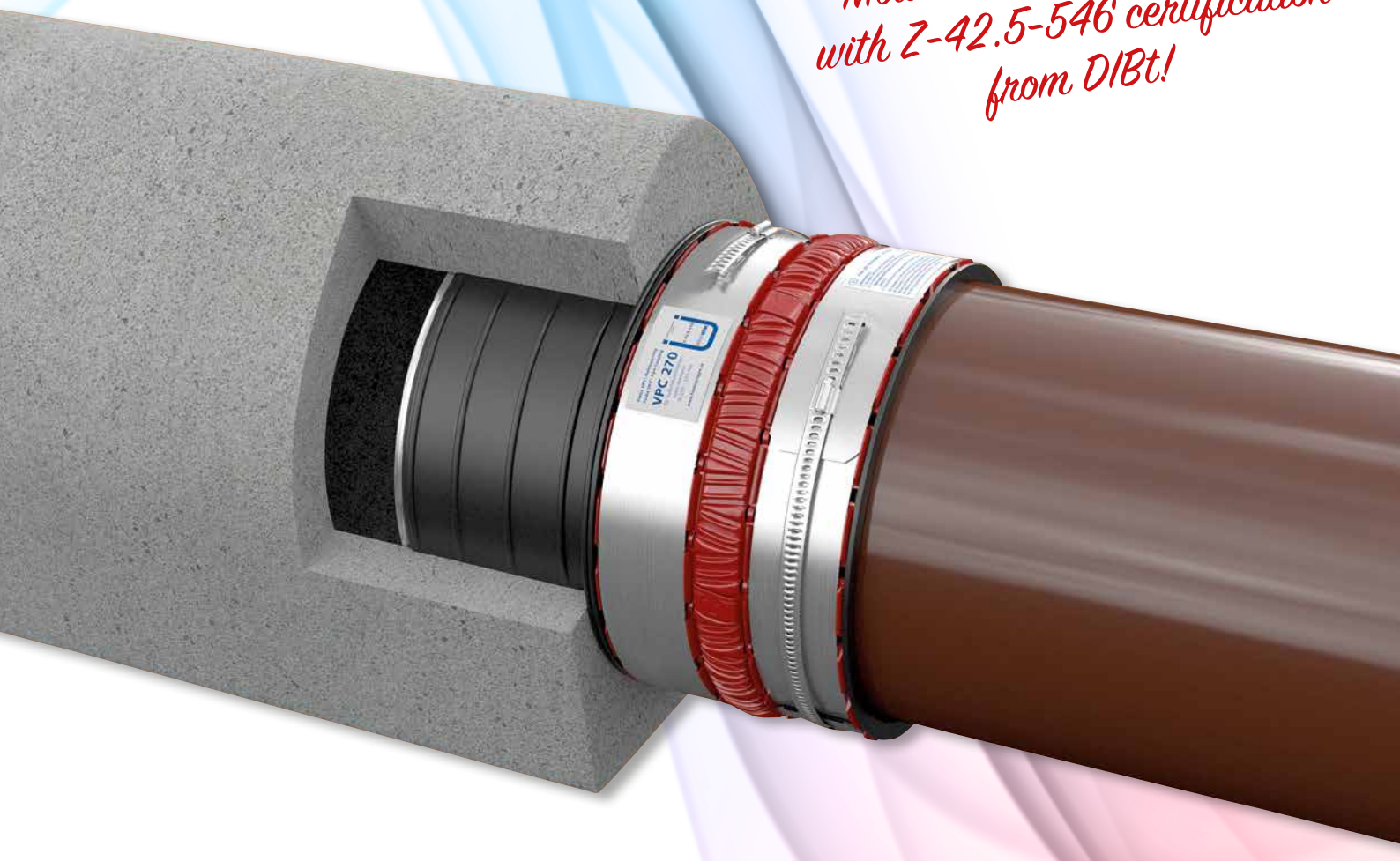
Funke Gruppe

Funke BI-Adapter®

System for connecting pipes with a non-circular outer geometry and nominal diameter from DN 100 to DN 1000

Models DN 150– 600 now with Z-42.5-546 certification from DIBt!



fast – flexible – sealed

resistant to oil and petrol (NBR quality)

also available in oil-resistant design

Funke BI-Adapter® – covers

Background

Goundworkers working at a construction site need to connect pipes that have the same diameter but are made of different materials virtually on a daily basis. They can connect such pipes by shaft mining, but this is an expensive, time-consuming approach, so they often resort to alternative solutions. However, depending on the materials that are available, they often end up with an improvised result that usually turns out not to be suitable for effective, long-term use. The Funke VPC® Pipe Coupling provides the perfect answer to this problem. It allows engineers to connect pipes that have the same nominal diameter and feature a circular outer geometry with one another, even if these pipes are made of different materials. But what can be done if the pipes have a circular geometry on the inside but different geometries on the outside?

Funke Kunststoffe GmbH now also offers a solution for this specific scenario. The new Funke BI-Adapter® allows you to securely connect pipes that are circular on the inside only – pipes with a base or pipes with top reinforcement, for example – and it also allows you to connect ovoid pipes with circular pipes.

Benefits of the **Funke BI-Adapter®**

- Suitable for all conventional pipe materials
- Easy assembly
- Flexible use in combination with VPC® Pipe Coupling
- Designed to connect pipes that have non-circular outer geometries

Connecting a PVC-U CONNEX pipe to a concrete pipe with a base using a BI-Adapter

One product all scenarios

Product

The Funke BI-Adapter® consists of an inner sleeve, an expansion wedge made of 1.4404 stainless steel and an EPDM sealing collar. The EPDM-covered inner sleeve is inserted into the pipe. The user then widens it by driving in the wedge, which press fits it onto the inner wall of the pipe. Several sealing ribs arranged in a ring shape ensure that a tight joint is formed. The VPC® Pipe Coupling included in the delivery is then mounted and fastened on the other end of the BI-Adapter. This makes it possible to connect a pipe with a circular outer geometry. The outer diameter of the pipe to be connected must be in the clamping range of the VPC® Pipe Coupling being used. The Funke BI-Adapter® is available for pipes with nominal diameters from DN 150 to DN 1000. This method of connecting pipes has been approved by the German Institute for Structural Engineering (DIBt) and was assigned approval number Z-42.5-546. The BI-Adapters 100 to 200 are available as a rigid design for pipes with smaller nominal diameters.

Internal view of installed BI-Adapter

Replacing sections with HS® pipes

High marks for the BI-Adapter from iro laboratory

Green light after testing

Now it is 'official'. iro GmbH Oldenburg has inspected the Funke BI-Adapter® DN 300 in accordance with DIN 19523, a standard released in August 2008. The inspection tested the component's resistance to mechanical loads that arise when the component is cleaned with high-pressure water jets. The test showed that the product is resistant to high-pressure water jetting and cleaning.

Adapter subjected to endurance test

The inspection simulated mechanical loads that the component is exposed to when it is cleaned using high-pressure water jets. The test involves blasting a high-pressure water jet onto the test sample at a defined angle and from a set distance. This water jet is then moved along the inner surface of the part being tested.

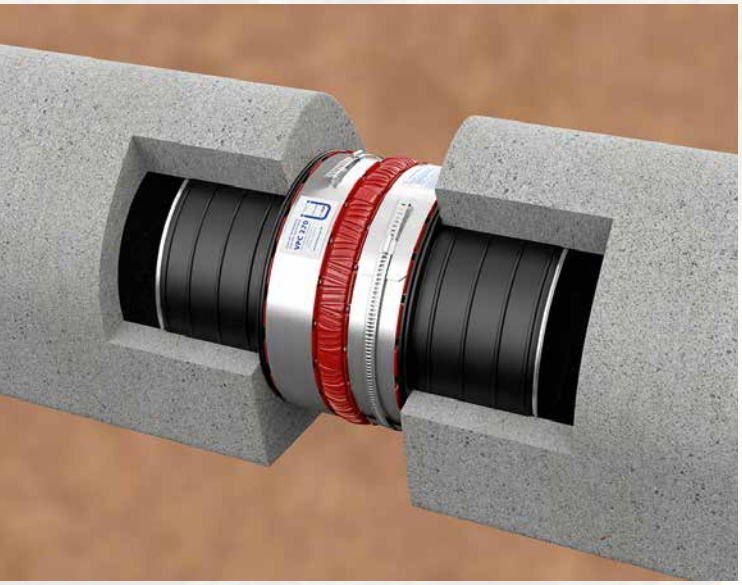
The inspector monitors the water pressure, water flow and diffusion angle of the water jet, ensuring that the hydraulic load remains within the defined range for the duration of the test. A special, wear-resistant ceramic insert focuses the water jet and ensures that the opening diameter of the jet and the load exerted on the sample do not change over the course of the inspection.

Positive results

The inner surface of the test sample was checked for damages after it was exposed to the high-pressure water jet. The findings were positive: The BI-Adapter withstood the hydraulic loads exerted by the high-pressure water jets, and the inspection also confirmed that the seal was still functioning properly.

Special-purpose

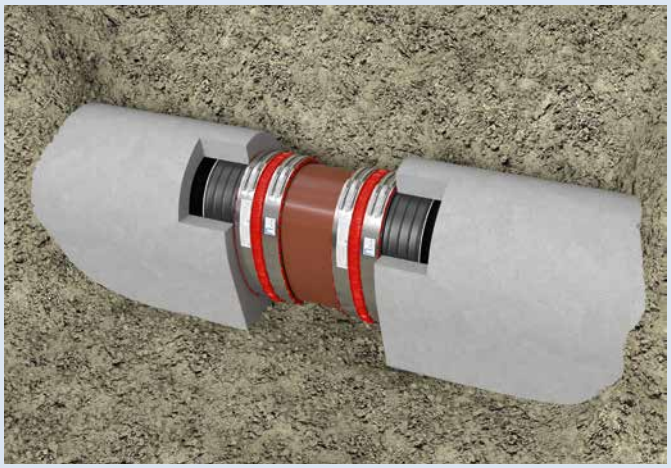
Funke BI-Adapter® Internal/Internal
Connecting concrete pipe to concrete pipe



The Funke BI-Adapter® Internal/Internal (DN 250–600) offers a simple solution for cases where an existing concrete pipe needs to be connected with a concrete pipe that does not have the correct dimensions. The BI-Adapter Internal/Internal allows you to securely connect the two pipe runs with each other, even if the tip end of the new pipe does not fit into the sleeve of the existing pipe.

Furthermore, the Funke BI-Adapter® Internal/Internal allows you to make repairs, for instance, when a concrete pipe has collapsed or has been damaged by a soil displacement hammer. The damaged sections of the pipe can be replaced with an HS® short pipe. In this case, a further VPC® Pipe Coupling is needed in addition to the BI-Adapter Internal/Internal.

Funke BI-Adapter® Ovoid/Ovoid



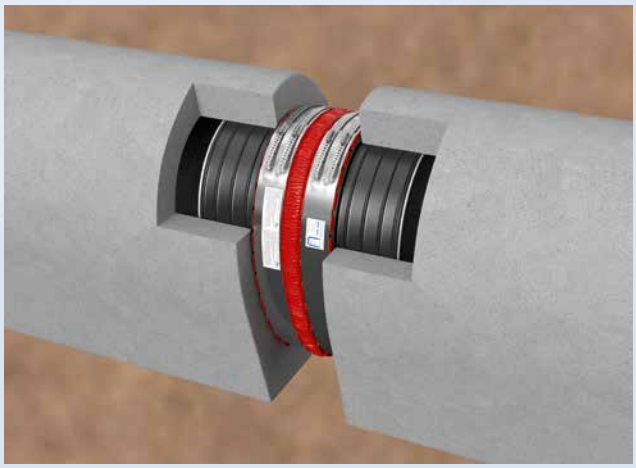
Funke developed a plastic ovoid-profile pipe to repair ovoid-shaped pipes. Gaps can be filled using two VPC® Pipe Couplings and two ovoid BI-Adapters (left photo).

Furthermore, an existing ovoid pipe can be extended by attaching new pipes with the same profile using two ovoid BI-Adapters and a VPC® Pipe Coupling (right photo).

models

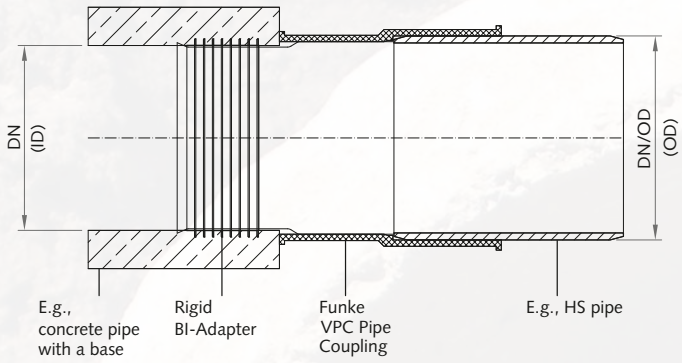
Funke BI-Adapter® Ovoid/Circular

The new ovoid-to-circular Funke BI-Adapter® (DN 200/300–800/1200) is suitable for connecting an ovoid pipe with a circular one. Until now, it was only possible to set up such a connection using a more complex chamber structure. However, the new part from Funke offers an alternative, inexpensive and easy method of connecting an ovoid pipe to a circular pipe.



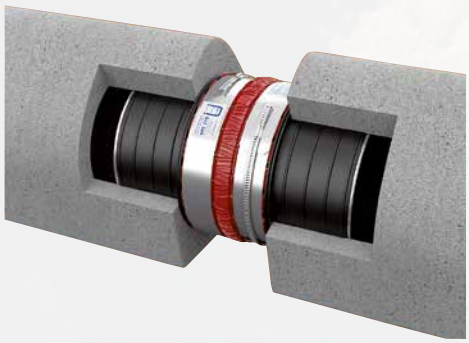
Rigid Funke BI-Adapter®
DN 100 – 200

Top view

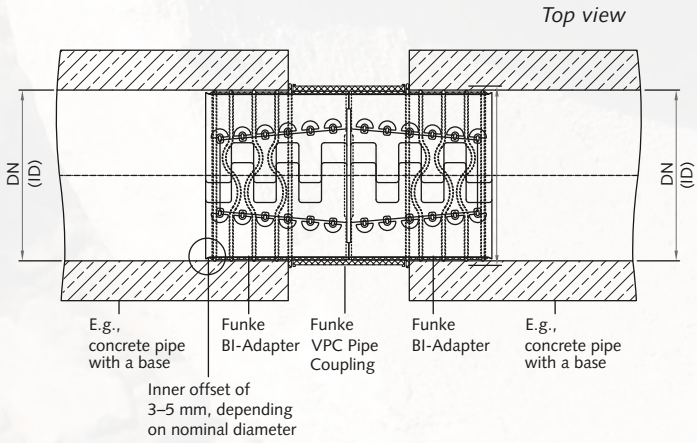


Description	Code	Existing pipe Inner diameter (ID) mm (range from – to)	Connecting pipe Outer diameter (OD) mm (range from – to)
Rigid BI-Adapter 100	BIA100S	99.5 – 101.5	102 – 133
Rigid BI-Adapter 125	BIA125S	124.5 – 126.5	102 – 133
Rigid BI-Adapter 150 Version **A** **Concrete to plastic**	BIA150SA	149.5 – 151.5	123 – 161
Rigid BI-Adapter 150 Version **B** **Concrete to clay**	BIA150SB	149.5 – 151.5	160 – 192
Rigid BI-Adapter 200 Version **A** **Concrete to plastic**	BIA200SA	199.5 – 201.5	183 – 226
Rigid BI-Adapter 200 Version **B** **Concrete to clay**	BIA200SB	199.5 – 201.5	218 – 261

Funke BI-Adapter® Internal/Internal
Connecting concrete pipe to concrete pipe



Top view

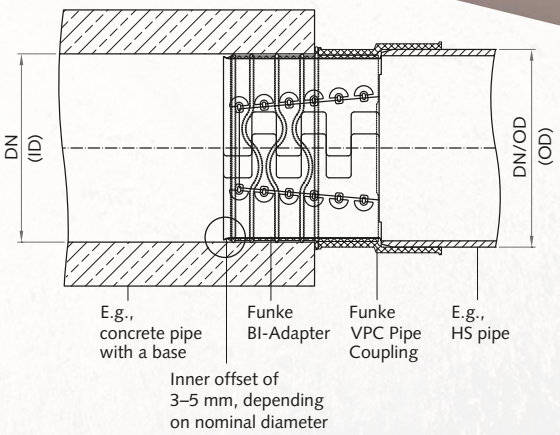


DN	Code	Existing pipe Inner diameter (ID) mm (range from – to)	VPC Pipe Coupling Clamping range mm (range from – to)
250	BIAII250	245 – 255	218 – 261
300	BIAII300	295 – 305	270 – 324
400	BIAII400	395 – 405	360 – 430
500	BIAII500	495 – 505	450 – 520
600	BIAII600	595 – 605	555 – 625

Tangential tensioner is required for professional assembly from VPC 290 onwards.
For 225, 700, 800 and 1000 contact manufacturer

Funke BI-Adapter®
DN 150 – 1000

Top view



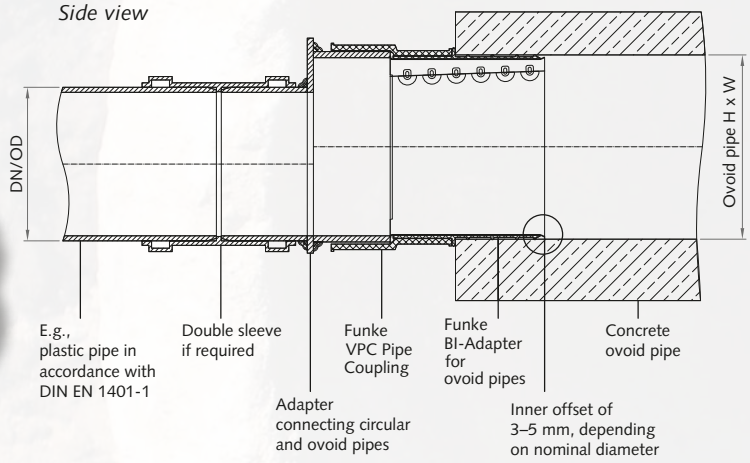
BI-Adapter	Code	Existing pipe Inner diameter (ID) mm (range from–to)	Connecting pipe Outer diameter (OD) mm (range from–to)	VPC included in delivery
DN 150	BIA150	145 – 155	123 – 161	VPC125
DN 200	BIA200	195 – 205	183 – 226	VPC200 K
DN 225	BIA225220	220 – 230	218 – 261	VPC220
DN 250	BIA250220	245 – 255	218 – 261	VPC220
	BIA250290		240 – 290	VPC290
DN 300	BIA300270	295 – 305	270 – 324	VPC270
	BIA300360		295 – 360	VPC360
	BIA300382		315 – 382	VPC382*
DN 350	BIA350382	345 – 355	315 – 382	VPC382
	BIA350400		330 – 400	VPC400
	BIA350415		345 – 415	VPC415
DN 400	BIA400430	395 – 405	360 – 430	VPC430
	BIA400465		395 – 465	VPC465
	BIA400500		430 – 500	VPC500*
DN 450	BIA450485	445 – 455	415 – 485	VPC485
	BIA450500		430 – 500	VPC500
DN 500	BIA500520	495 – 505	450 – 520	VPC520
	BIA500565		495 – 565	VPC565
	BIA500590		520 – 590	VPC590*
DN 600	BIA600640	595 – 605	570 – 640	VPC640
	BIA600660		590 – 660	VPC660
	BIA600690		620 – 690	VPC690*
DN 700	BIA700730	695 – 705	660 – 730	VPC730
DN 800	BIA800835	795 – 805	765 – 835	VPC835
	BIA800890		820 – 890	VPC890*
DN 900	BIA900940	895 – 905	870 – 940	VPC940
DN 1000	BIA10001030	995 – 1005	980 – 1030	VPC1030
	BIA10001070		1020 – 1070	VPC1070

**Including compensation ring*

Tangential tensioner is required for professional assembly from VPC 290 onwards.

Funke BI-Adapter® Ovoid/Circular
Transition ovoid pipe to circular pipe

Side view



Nominal diameter DN/OD	Code
Ovoid 200 / 300 to DN/OD 315	EIK200300315
Ovoid 250 / 375 to DN/OD 315	EIK250375315
Ovoid 300 / 450 to DN/OD 400	EIK300450400
Ovoid 350 / 525 to DN/OD 500	EIK350525500
Ovoid 400 / 600 to DN/OD 500	EIK400600500

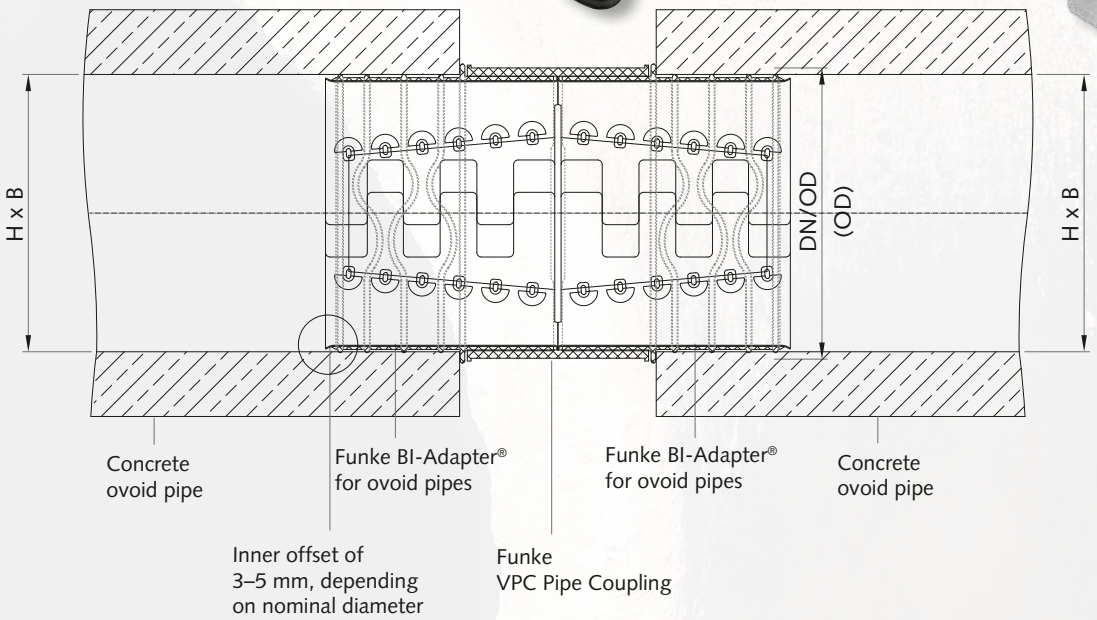
Tangential tensioner is required for professional assembly from VPC 290 onwards.

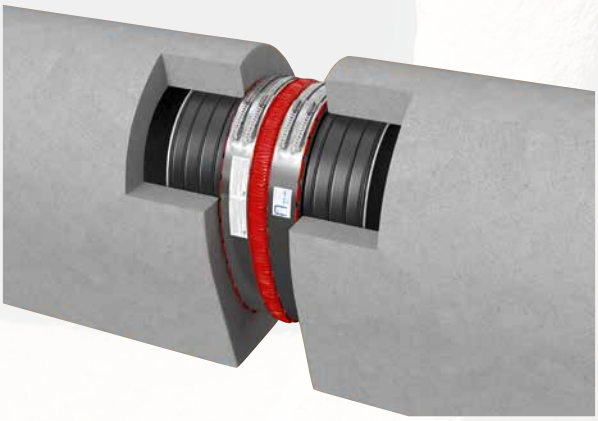
Transition ovoid pipe/circular pipe from 500/750
Transition from an ovoid pipe to circular pipes

Nominal diameter DN/OD	Code
Ovoid 500 / 750 to DN/OD 500	EIUK500750500
Ovoid 600 / 900 to DN/OD 630	EIUK600900630
Ovoid 700 / 1050 to DN/OD 710	EIUK7001050710
Ovoid 800 / 1200 to DN/OD 800	EIUK8001200800

Funke BI-Adapter® Ovoid/Ovoid

Top view

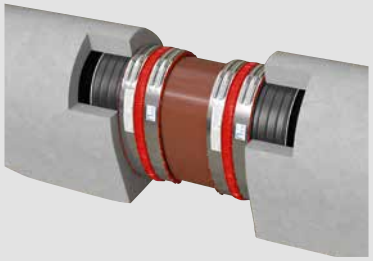




Nominal diameter DN/OD	Code
Ovoid 200 / 300	BIAIIEI200300
Ovoid 250 / 375	BIAIIEI250375
Ovoid 300 / 450	BIAIIEI300450
Ovoid 350 / 525	BIAIIEI350525
Ovoid 400 / 600	BIAIIEI400600
Ovoid 500 / 750	BIAIIEI500750
Ovoid 600 / 900	BIAIIEI600900

Scope of delivery: 2 BI-Adapters, 1 VPC Pipe Coupling.
For professional installation, the tangential spanner is required for the VPC 290 and larger versions.

Funke Ovoid Rocker Pipe



Nominal diameter DN/OD	Length [mm]	Code
Ovoid 200 / 300	500	EIROHR050200300
Ovoid 250 / 375	500	EIROHR050250375
Ovoid 300 / 450	500	EIROHR050300450
Ovoid 350 / 525	500	EIROHR050350525
Ovoid 400 / 600	500	EIROHR050400600
Ovoid 500 / 750	1000	EIROHR100500750
Ovoid 600 / 900	1000	EIROHR100600900

When using a Rocker Pipe, a second VPC Pipe Coupling is required in addition to the BI-Adapter ovoid/ovoid set (not included in the delivery).

Funke BI-Adapter® 100 – 1000

Description	Code	Inner diameter Existing pipe mm (range from–to) (BI-Adapter)	Outer diameter Connecting pipe mm (range from–to) (VPC Pipe Coupling)	PVC-U DIN EN 1401	PP DIN EN 1852	PE DIN EN 12666		
Connecting nominal diameter of DN 100 with BIA 100 (rigid)				**110**	**110**	**110**		
BI-Adapter 100S with VPC100	BIA100S	99.5 – 101.5 mm	102 – 133 mm	x	x	x		
Connecting nominal diameter of DN 125 with BIA 125 (rigid)				**125**	**125**	**125**		
BI-Adapter 125 with VPC100	BIA125S	124.5 – 126.5 mm	102 – 133 mm	x	x	x		
Connecting nominal diameter of DN 150 with BIA 150 (rigid)				**160**	**160**	**160**		
BI-Adapter 150SA with VPC125	BIA150SA	149.5 – 151.5 mm	123 – 161 mm	x	x	x		
Connecting nominal diameter of DN 150 with BIA 150 (rigid)				**160**	**160**	**160**		
BI-Adapter 150SB with VPC150	BIA150SB	149.5 – 151.5 mm	160 – 192 mm	x	x	x		
Connecting nominal diameter of DN 150 with BIA 150				**160**	**160**	**160**		
BI-Adapter 150 with VPC125	BIA150	145 – 155 mm	123 – 161 mm	x	x	x		
Connecting nominal diameter of DN 200 with BIA 200				**200**	**200**	**225**		
BI-Adapter 200 with VPC200K	BIA200	195 – 205 mm	183 – 226 mm	x	x	x		
Connecting nominal diameter of DN 225 with BIA 225				**225**	**225**	**n.s.**		
BI-Adapter 225 with VPC220	BIA225220	220 – 230 mm	218 – 261 mm	x	x	–		
Connecting nominal diameter of DN 250 with BIA 250				**250**	**250**	**280**		
BI-Adapter 250 with VPC220	BIA250220	245 – 255 mm	218 – 261 mm	x	x	–		
BI-Adapter 250 with VPC290	BIA250290		240 – 290 mm	x	x	x		
Connecting nominal diameter of DN 300 with BIA 300				**315**	**315**	**355**		
BI-Adapter 300 with VPC270	BIA300270	295 – 305 mm	270 – 324 mm	x	x	–		
BI-Adapter 300 with VPC360	BIA300360		295 – 360 mm	x	x	x		
BI-Adapter 300 with VPC382 and compensation ring	BIA300382		315 – 382 mm	x	x	x		
Connecting nominal diameter of DN 400 with BIA 400				**400**	**400**	**450**		
BI-Adapter 400 with VPC430	BIA400430	395 – 405 mm	360 – 430 mm	x	x	–		
BI-Adapter 400 with VPC465	BIA400465		395 – 465 mm	x	x	x		
BI-Adapter 400 with VPC500 and compensation ring	BIA400500		430 – 500 mm	x	x	x		
Connecting nominal diameter of DN 500 with BIA 500				**500**	**500**	**560**		
BI-Adapter 500 with VPC520	BIA 500520	495 – 505 mm	450 – 520 mm	x	x	–		
BI-Adapter 500 with VPC565	BIA500565		495 – 565 mm	x	x	x		
BI-Adapter 500 with VPC590 and compensation ring	BIA500590		520 – 590 mm	x	x	x		
Connecting nominal diameter of DN 600 with BIA 600				**630**	**630**	**630**		
BI-Adapter 600 with VPC640	BIA600640	595 – 605 mm	570 – 640 mm	x	x	x		
BI-Adapter 600 with VPC660	BIA600660		590 – 660 mm	x	x	x		
BI-Adapter 600 with VPC690 and compensation ring	BIA600690		620 – 690 mm	x	x	x		
Connecting nominal diameter of DN 700 with BIA 700				**710**	**710**	**710**		
BI-Adapter 700 with VPC730	BIA 700730	695 – 705 mm	660 – 730 mm	x	x	x		
Connecting nominal diameter of DN 800 with BIA 800				**800**	**800**	**800**		
BI-Adapter 800 with VPC835	BIA 800835	795 – 805 mm	765 – 835 mm	x	x	x		

Figures in mm, E = eccentric ring The dimensions comply with the relevant standards and guidelines. Maximum tolerances are not taken into account.

Overview of connection options

Connection to pipe systems with outer diameters in mm										
GRP DIN EN 16556/16865	Ultra Rib 1 et 2 DIN EN 13476	Robukan PP DIN EN 13476	Cast iron (GGG) DIN EN 598	SML	Clay N DIN EN 295	Clay H DIN EN 295	Fibre cement class B	Fibre cement class A	Asbestos cement	Concrete pipe/ reinforced concrete DIN EN 1916/ V1201/4032
116	–	–	118	110	122-131	–	118	116	116	144
x	–	–	x	x	x	–	x	x	x	–
142	–	–	144	135	159	–	143	141	141	–
–	–	–	–	–	–	–	–	–	–	–
167	170	174	170	160	178-186	–	170	168	168	198
–	–	–	–	x	–	–	–	–	–	–
167	170	174	170	160	178-186	–	170	168	168	198
x	x	x	x	x	x	–	x	x	x	–
167	170	174	170	160	178-186	n.s.	170	168	168	198
–	–	–	–	x	–	–	–	–	–	–
220	225	235	222	210	242	254	222	220	220	252
x	x	–	x	x	–	–	x	x	x	–
n.s.	n.s.	n.s.	n.s.	n.s.	263-271	n.s.	n.s.	n.s.	n.s.	295-335
–	–	–	–	–	–	–	–	–	–	–
272	280	292	274	274	299	318	274	n.s.	274	310
–	–	–	–	–	–	–	–	–	–	–
x	x	-	x	x	–	–	x	–	x	–
324	335	346	326	326	355	376	328	n.s.	328	420-460
–	–	–	–	–	–	–	–	n.s.	–	–
x	x	x	x	x	x	–	x	n.s.	x	–
x	x	x	x	x	x	x	x	n.s.	x	–
427	450	461	429	429	486	492	448	442	432	530-570
x	–	–	x	x	–	–	–	–	–	–
x	x	x	x	x	x	x	x	x	x	–
x	x	x	x	x	x	x	x	x	x	–
530	560	585	532	532	581	609	556	552	540	640-690
–	–	–	–	–	–	–	–	–	–	–
x	x	–	x	x	–	–	x	x	x	–
x	x	x	x	x	x	–	x	x	x	–
616	n.s.	693	635	635	687	725	664	n.s.	n.s.	760-800
x	n.s.	–	x	x	–	–	–	n.s.	–	–
x	n.s.	–	x	x	–	–	–	n.s.	–	–
x	n.s.	–	x	x	x	–	x	n.s.	–	–
718	n.s.	n.s.	738	n.s.	n.s.	862	n.s.	750	n.s.	880
x	–	–	–	–	–	–	–	–	–	–
820	894	n.s.	842	n.s.	n.s.	964	n.s.	856	n.s.	1000
x	–	–	x	–	–	–	–	–	–	–

Tolerances determined by the manufacturer are also possible. Please note the information regarding the inner diameters from the respective pipe manufacturer.

Installing the **Funke BI-Adapter®**
DN 150 – 1000

Scope of delivery: BI-Adapter, VPC® Pipe Coupling, tapping block, special lubricant for the Funke BI-Adapter®, brush and installation manual

Expose the concrete pipe and create sufficient space around the collector **(1)**. Remove all impurities from inside the concrete pipe and thoroughly clean the surface. If the inner surfaces have suffered major damage due to erosions, they need to be repaired with suitable filling material before the BI-Adapter is installed. Check the nominal diameters and make sure that they match the specifications on the BI-Adapter **(2)**.

Then fully cover the inner surface of the concrete pipe with the special lubricant provided using the brush that was included in the delivery **(3+4)**. Insert the BI-Adapter into the concrete pipe **(5)** and turn it so that the expansion wedge is facing upwards. Make sure that the BI-Adapter is inserted up to the stop in the main pipe **(6)**. Then push the expansion wedge by hand until there is a light preload.

Take the tapping block that was included in the delivery and hammer it **(7)** to fix the expansion wedge firmly in place. Make sure once again that the BI-Adapter is mounted securely.

Slide the cardboard template included in the delivery onto the expansion wedge until it reaches the pipe opening **(8)**. This is an important measure to ensure that no flying sparks reach and damage the inner surface of the pipe. The protruding end of the expansion edge can now be cut off with an angle grinder **(9)**. Then take the VPC® Pipe Coupling included in the delivery and a short pipe (must be provided by customer) and connect these with each other **(10)**. The inner surface of the short pipe should be chamfered at the bottom if the direction of the flow is from the concrete pipe into the plastic pipe.

Take into account the clamping range of the connecting pipe when assembling the component. Connect the short pipe fitted with the VPC® Pipe Coupling to the BI-Adapter **(11–13)**. Use Tangential Spanner tool for installations of VPC® Pipe Couplings with nominal diameter greater than or equal to 290 mm. The pipes or moulded parts to be connected must be coated with a lubricant and installed in accordance with DIN EN 1610. Please follow the in-depth installation manual that is enclosed with the VPC® Pipe Coupling.

Completely installed connection **(14–15)**.

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