

PRAKTO INSPECTION CHAMBERS FOR SEWER SYSTEMS

1 INTRODUCTION

1.1 Why use plastic inspection chambers?

The water supply and sewerage companies that process wastewater, the communal and the planning services and operators set stricter requirements for the security of sewer systems and the protection of environment. When discussing communal problems it turns out that very often an order to

connect the concerned household to the sewer mains. This allows the possibility to inspect the household wastewater and to clean and check the inspection chamber itself. They have guaranteed tightness, strength and low weight, which makes them suitable to serve as an assembly unit in a complete sewer

system with long and trouble-free service life. The use of plastic materials both for the pipes and for the chambers can bring significant practical and economic benefits resulting in low cost throughout their service life.

1.2 Service life

To demonstrate the durable performance of polyolefin (polyethylene and polypropylene) pipes, the European Association of plastic pipes and fittings manufacturers - Teppfa - in collaboration with the manufacturers of raw materials Borealis and LyondellBell conducted a research on the basis of validated data

sufficient to declare at least 100 years of expected service life of the pipes that are manufactured according to the standards. The scope of this research included the study of their thermal oxidative degradation, maximum allowable stress, long-term behavior at permanent tensile and the influence of

temperature. The research extended over both newly manufactured pipes and pipes that have been in use for 40 years. All the methods were applied in accordance with valid international standards (ISO) and the knowledge acquired from the science of polymer materials.

2 APPLICATION

2.1 Plastic inspection chambers in the public sector

A chamber built in accordance with applicable standards means a structural unit that facilitates the optimal flow of wastewater in gravity sewer systems. Such systems are usually designed for

places where changes in the horizontal or vertical permanent way of pipelines are intended or changes in the cross section or gradient of pipelines, as well as the places where other sections of

the sewer system either join or start. It serves ventilation purposes but also for introducing appliances for cleaning or inspection and controlling devices.

2.2 Saving costs by using plastic inspection chambers

- lower financial cost
- easy installation
- require less space
- almost maintenance-free
- no corrosion
- longer life

As in most European countries, in Bulgaria too, it is a common finding that the use and acceptance of the inaccessible plastic chambers is still growing. Nowadays the development of technologies has advanced so much

that thanks to the modern systems for cleaning and inspection, the sewers equipped with Pipelife chambers can be tested and maintained according to the standard BDS EN 476.

3 BENEFITS

In more than 200 000 cases the PRAKTO chambers have proven their advisability and efficiency by demonstrating following benefit:

- Lego type functional construction! Coupling-equipped inlets and outlets with sealing rings. Guaranteed water-tightness of the chamber structure, preventing any penetration of water inside it and any leaks to the soil.
- Easy attainment of the designed height by means of a riser pipe and telescopic cover.
- Guaranteed high chemical resistance, abrasive resistance, and mechanical strength of the product as a whole.

- Depending on the surface conditions and loading, the chambers can be coupled with the following covers:
 - polypropylene cover A15 (1.5 t) – for use in lawns (lockable version)
 - cast-iron cover A15 (1.5 t), B125 (12.5 t) и D400 (40 t) – for use in lawns, sidewalks and traffic areas
 - cast-iron grid for street drainage B125 (12.5 t)
- Excellent hydraulic features – smooth surface, anti-loss stretched-out shape and easy entrance of the inspection equipment.
- Low specific weight of each and every component of the chamber unit – it guarantees easy handling, easy installation, with no need of any additional equipment.
- Long service life even with aggressive water.
- Profitable from economic point of view in terms of • Transport • Storage • Installation • Service
- Save room
- Can be recycled

Proven practical value in thousands of cases!

Pipelife inspection chambers have been approved by the construction supervision body based on permission by the Austrian construction supervision body.

The results of performed static tests showed that with regard to the security and appropriateness for use of the inspection chambers they were found to meet the requirements for issuance of a permission by the construction supervision body.

Here are further details to confirm the right choice of this type of chambers that have been installed by leading construction companies in public building, parking lots, lawns, etc.

4 COMPONENTS OF PRAKTO INSPECTION CHAMBERS

Telescopic cover with grating



Telescopic cover without grating



Fixed cover



Lockable fixed cover



Sleeve



Riser pipe



Base / Bottom



5 NOMENCLATURE

5.1 Base

Straight flow base - ST (1 inlet, 1 outlet)



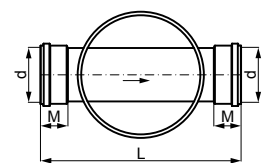
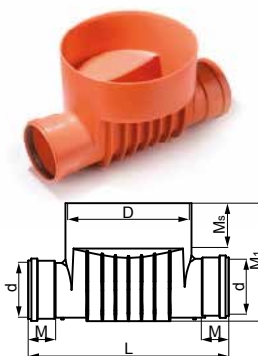
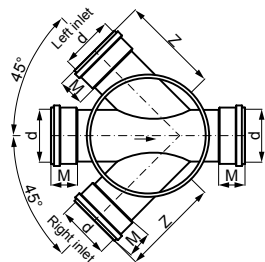
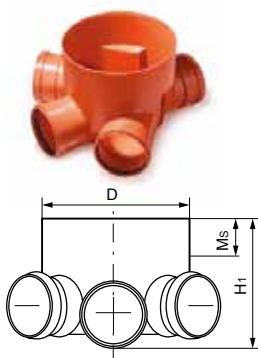
Base diameter	Diameters of joined pipes					
	Ø 110	Ø 160	Ø 200	Ø 250	Ø 315	Ø 400
Ø 400	-	✓	✓	✓	✓	✓

Collection base - RML (3 inlets, 1 outlet)



Base diameter	Diameters of joined pipes				
	Ø 110	Ø 160	Ø 200	Ø 250	Ø 315
Ø 400	✓	✓	✓	-	-

5.1.1 Product range



PP base bottom - RML

d (mm)	D (mm)	L (mm)	H1 (mm)	MS (mm)	M (mm)	Z (mm)	PRODUCT CODE
110	400	564	295	118	75	280	KGSG-RML400/110
160	404	584	343	118	80	295	KGSG-RML400/160 G3
200	404	620	384	118	86	313	KGSG-RML400/200 G3

PP base bottom - ST

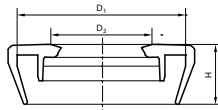
d (mm)	D (mm)	L (mm)	H1 (mm)	MS (mm)	M (mm)	Z (mm)	PRODUCT CODE
160	404	584	343	118	80	295	KGSG-ST400/160 G3
200	404	620	384	118	86	313	KGSG-ST400/200 G3
250	404	845	758	310	130	585	KGSG-ST400/250
315	404	823	790	310	138	545	KGSG-ST400/315
400	404	809	800	310	150	509	KGSG-ST400/400

5.2 Rising



DN	PRODUCT CODE
DN/OD400	ECO Corr_DW/OD400/400kg/m²/6m CoCorr_DW/OD400/400kg/m²/6
DN/OD400	Sealing ring OD PRAGMA 400mm

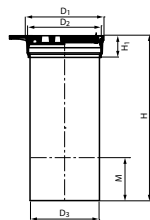
5.3 Sleeve for telescopic cover intended for double-layered corrugated pipe



DN	D1 (mm)	D2 (mm)	H (mm)	PRODUCT CODE
DN/OD400	399	315	72	TSR_PRDW400/315 CoCorr_DW/OD400/400kg/m ² /6 ...

5.4 Type of covers

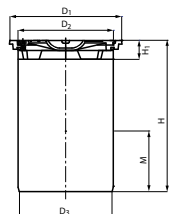
5.4.1 Cover with telescopic pipe



Telescopic cover with grating DN400 for 1.5 t load

Cover / grating				Telescopic pipe			PRODUCT CODE
Dimensions (mm)	D1 (mm)	D2 (mm)	H1 (mm)	D3 (mm)	H (mm)	M (mm)	
370x370	370	316	62	315	395	200	Prakto-Cover G 400-1,5τ.

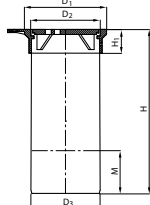
The telescopic pipe has no sealing for the vertical pipe



Telescopic cover without grating DN400 for 1.5 t load

Cover / grating				Telescopic pipe			PRODUCT CODE
Dimensions (mm)	D1 (mm)	D2 (mm)	H1 (mm)	D3 (mm)	H (mm)	M (mm)	
370x370	370	316	62	315	395	200	Prakto-Cover 400 -1,5τ.

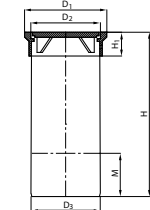
The telescopic pipe has no sealing for the vertical pipe



Telescopic cover with grating DN400 for 12.5 t load

Cover / grating				Telescopic pipe			PRODUCT CODE
Dimensions (mm)	D1 (mm)	D2 (mm)	H1 (mm)	D3 (mm)	H (mm)	M (mm)	
380x380	380	332	110	315	540	200	Prakto-Cover G 400-B125

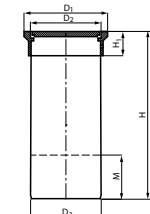
The telescopic pipe has no sealing for the vertical pipe



Telescopic cover without grating DN400 for 12.5 t load

Cover / grating				Telescopic pipe			PRODUCT CODE
Dimensions (mm)	D1 (mm)	D2 (mm)	H1 (mm)	D3 (mm)	H (mm)	M (mm)	
380x380	380	332	110	315	540	200	Prakto-Cover 400-B125

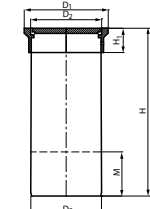
The telescopic pipe has no sealing for the vertical pipe



Telescopic cover with grating DN400, D400 (40 t load)

Cover / grating				Telescopic pipe			PRODUCT CODE
Dimensions (mm)	D1 (mm)	D2 (mm)	H1 (mm)	D3 (mm)	H (mm)	M (mm)	
380x380	380	322	90	315	540	200	Prakto-Cover G 400-D400

The telescopic pipe has no sealing for the vertical pipe

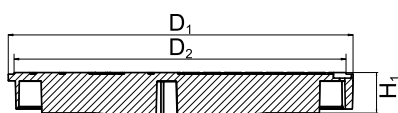
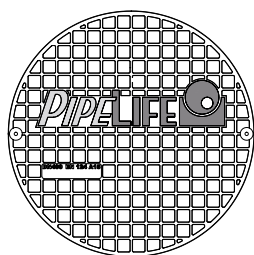


Telescopic cover without grating DN400, D400 (40 t load)

Cover / grating				Telescopic pipe			PRODUCT CODE
Dimensions (mm)	D1 (mm)	D2 (mm)	H1 (mm)	D3 (mm)	H (mm)	M (mm)	
380x380	380	322	90	315	540	200	Prakto-Cover 400-D400

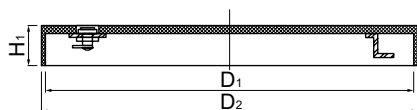
The telescopic pipe has no sealing for the vertical pipe

5.4.2 Cover without telescopic pipe



Plastic PP cover for 1.5 t load

Cover / grating				PRODUCT CODE
Dn (mm)	D2 (mm)	H1 (mm)	H2 (mm)	
400	355	53,9	-	KGDOV400-combi



Polymer cover DN400, A15 lockable

Cover / grating				PRODUCT CODE
Dn (mm)	D1 (mm)	D2 (mm)	H1 (mm)	
400	460	470	50	Prakto-Cover DN400-1.5t_lock

6 CASCADE SEWER MANHOLE

This is a cascade type of grey water embouchement by means of feeding pipe that ends at the manhole with vertical section discharging at the manhole bottom. No stilling pool for pipelines with diameter Ø250 and drop height from 0.5 to 1.0 m.



Cascade manhole solutions in consideration of diameter:

A Drawing of pipe manhole ≥ 250 mm

B Drawing of pipe manhole ≥ 250 mm



1 inlet

2 coupling

3 Y-pipe fitting 45°

4 elbow 45°

5 elbow 45°

7 JOINING PRAKTO INSPECTION CHAMBERS

PRAKTO inspection chambers are designed and manufactured for convenient and secure joining of:

1) Smooth wall PVC pipe

2) Corrugated pipe PP-B PRAGMA – by means of pipe adaptor PRAGMA to smooth-wall pipes PVC



8 MAINTENANCE, CLEANING AND INSPECTION

The modern inspection and cleaning technologies render human intervention useless. Therefore, the conventional heavy, unpractical, though accessible, manholes for cleaning and control lose ground in the area of sewer mains.

Easy and convenient maintenance

The manhole bottom has a smooth surface and special shape, which is a prerequisite for ensuring optimal hydraulic properties for liquid flowing. Clogging and accumulation of dregs is avoided to great extent that would otherwise require intensive maintenance.

Inspection

The fast and easy access for the inspection and cleaning equipment to the sewer system ensures trouble-free removal of dregs buildup in satisfaction of the requirements of all aspects involved in the process of system operation.



9 INSTALLATION OF SEWER MANHOLES

Pipelife PRAKTO inspection sewer chamber are installed similarly to the connection of sewer piping systems along with pertaining fittings. The sealing of inlet and outlet joints of pipelines, and the sealing of riser pipe as well is ensured by means of factory-fitted sealing rings.

9.1 Instructions for installation of the base to the riser pipe

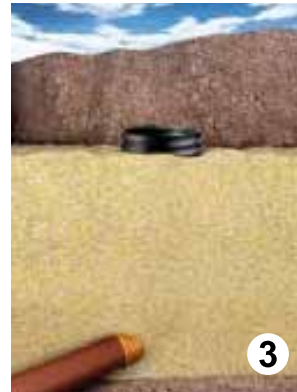
1. Check the manhole and sealing aptness before installation. Close the inlets that won't be used with a suitable KG-coupling cap (KGM.....).

Position the manhole on the pad prepared in advance in accordance with BDS EN 1610. The material and the pad sealing should comply with design requirements. Level the manhole with great precision.

Connect the mains pipes to the manhole in accordance with the requirements.

In case the pipework is made of another material such as ceramics, concrete, cast-iron or corrugated pipe, then use the appropriate adaptors from Pipelife product range.

2. Install the vertical riser pipe of the type ECO Corr DW/OD400/400kg/m2/6m:
Lubricate the sealing (PRK400) with Pipelife lubricant and insert the riser in the base until it stops at the coupling part. Level the riser pipe with great precision.
Shorten the riser pipe to meet the required height.
Start backfilling evenly – layer by layer, each layer thick about 20-30 cm, and compact every layer as you go. Comply with all design requirements!
3. Backfill and compact manually around the base with sand, ballast or gravel (particle size not greater than 20 mm, irregularity grade U \geq 10)
4. Install the telescopic cover:
- Position the rubber sealing sleeve on the vertical pipe. Lubricate. Insert the telescopic component into the sealing component (vertical pipe) and adjust it to the specified designed height.
- Backfill with material (concrete or asphalt) under the flanges of the cover to ensure good connection and interaction with the cover of the pad.



9.2 Instructions for installation of the manhole covers

1. Cover, version KGBET, of the type can be stepped on:
 - Position the manhole cover on the already installed vertical corrugated pipe CO Corr_DW/DN400 by screwing the lock bolt.
2. Cover, fixed version:
 - Depending on the load, position the concrete ring or the cast-iron frame on the load-bearing surface so as to ensure even distribution of frame surface loading to the road pavement (consider the anticipated vibration).

9.3 Further instructions

There should be at least 2 cm distance between the vertical pipe and the manhole cover 2 cm so that the main body could be free from any dynamic load.

The manhole padding should be at least 15 cm thick and made of soil material such as sand, ballast, or gravel (particle size up to 20 mm, U \geq 10). The sand bag density should be DPr \geq 97% according to Proctor.

Compact the layers of soil and the layers of road pavement carefully to grade DPr 97% according to Proctor.

If the underground water level is high, backfill the main body of the manhole above the pipe joint with at least 30 cm of sand, ballast or gravel (particle size up to 20 mm, U \geq 10).