

## Gaskets between components of inspection chambers $\varnothing 80, \varnothing 100, \varnothing 125$

### ITUPLAST® Preformed Butyl Mastic Connector An excellent product of the NPC Company, USA.

#### General

ITUPLAST is a special gasket/sealant intended for sealing between sections of the sewage and drainage inspection chambers.

The gasket/sealant is bitumen based in a special compound that adheres to the contact surfaces of the concrete, seals and preserves the flexibility for many years to come.

ITUPLAST complies with all requirements of American Standards for gasket/sealant of this type:

American Federal Specification SS-S-210A

AASHTO Designation M-198 75 I, Type B

ASTM Designation C990-91

#### Sizes and Packaging

There are 8 rolls in each box. Each roll is sufficient to seal one joint of 100 cm diameter manhole ring.

For smaller or larger sections cut or combine strips for the appropriate length. Cut with a craft knife.

Each roll is completely wrapped in suitable silicone paper, with paper separating between the rolls.



#### Application

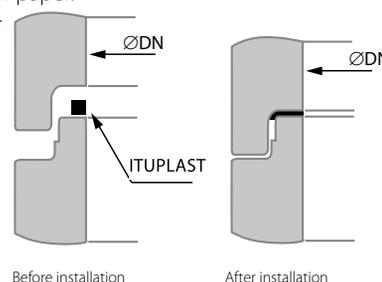
Use of ITUPLAST is simple, easy and quick.

Following the application instructions properly ensures good sealing.

The recommended stages of application are:

1. Clean the contact surfaces between the sections well.
2. Place a strip of ITUPLAST on the lower section as shown in the diagram after removing the lower protective strip of paper.
3. Make sure that the strips of ITUPLAST overlap.
4. Remove the upper strip of paper.
5. Carefully lower the upper section into position on the ITUPLAST.

6. Check that the ITUPLAST has not been dislodged from between the two sections during assembly.



In each carton there are 8 rolls. Total length is 28.8 meters. Carton price: NIS 1,150.

### SD97 Rubber Gasket

#### General

1. SD97 is a full rubber gasket intended for sealing between rings of the chamber.

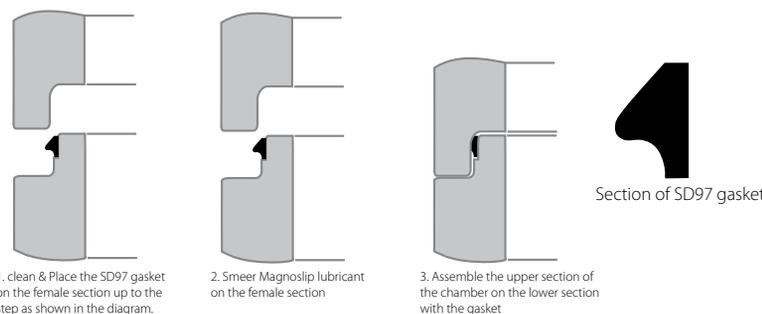
2. The SD97 gasket complies with the EN-681-1 Standard.

3. Use MAGNOSLIP lubricant.

4. The gasket is manufactured by Cordes, Germany or equivalent.

#### Recommended stages of implementation

1. Clean well the parts of the chamber that will be connected.
2. Place the SD97 gasket on the male section up to the staire as shown in the diagram.
3. Apply MAGNOSLIP lubricant to the female section.
4. Assemble the upper section of the chamber on the lower section with the gasket.



| Prices of SD97 Rubber Gaskets |                   |
|-------------------------------|-------------------|
| Suitable for ring diameter    | Unit price in NIS |
| $\varnothing 80$ (SD97-80)    | 258.-             |
| $\varnothing 100$ (SD97-100)  | 302.-             |
| $\varnothing 125$ (SD97-125)  | 360.-             |

### CSD-PLUS-3 Rubber Gasket with Sand Filling

1. The CDS-PLUS-3 gasket complies with the EN-681-1 Standard.

2. The gasket is pre-oiled and does not require lubricant.

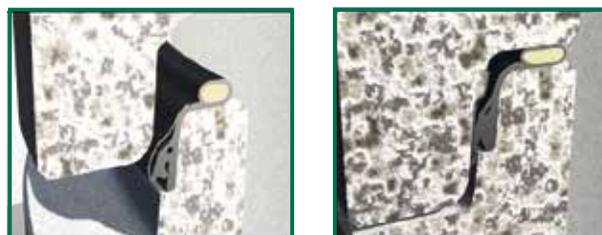
3. The gasket has a sand-filled ring to evenly disperse the vertical load between the components of the inspection chamber.

4. The sand-filled ring (Gap Lock) closes off the inner gap between the sections.

5. The gasket is manufactured by Cordes, Germany or equivalent.

#### Recommended stages of implementation

1. Clean well the parts of the manhole that will be connected.
2. Place the CDS-PLUS-3 gasket on the male section up to the staire as shown in the diagram.
3. Assemble the upper section of the manhole on the lower section with the gasket.



1. Clean the contact surface. The gasket is placed on male part. No lubricant has to be applied.

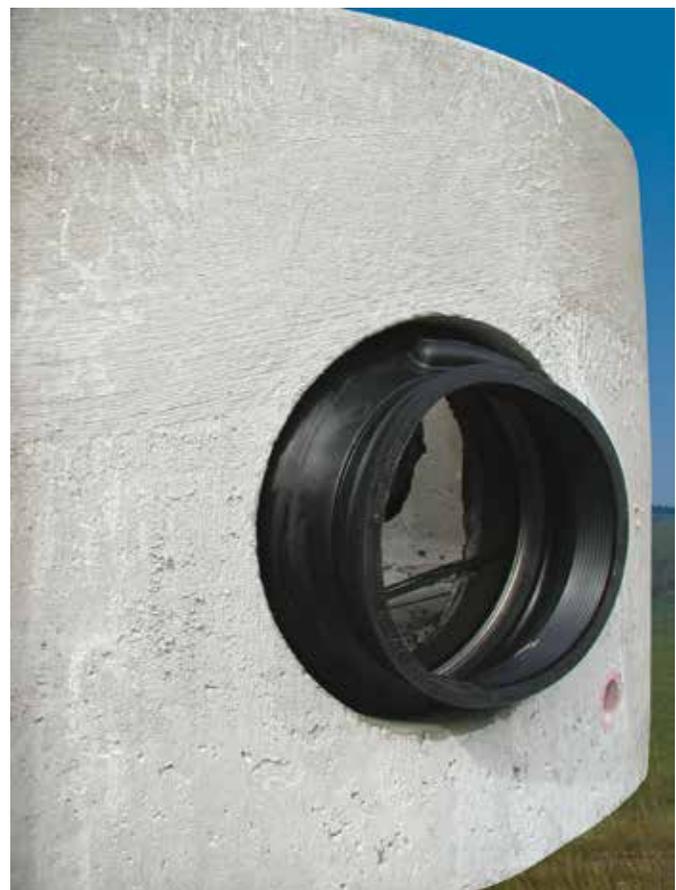
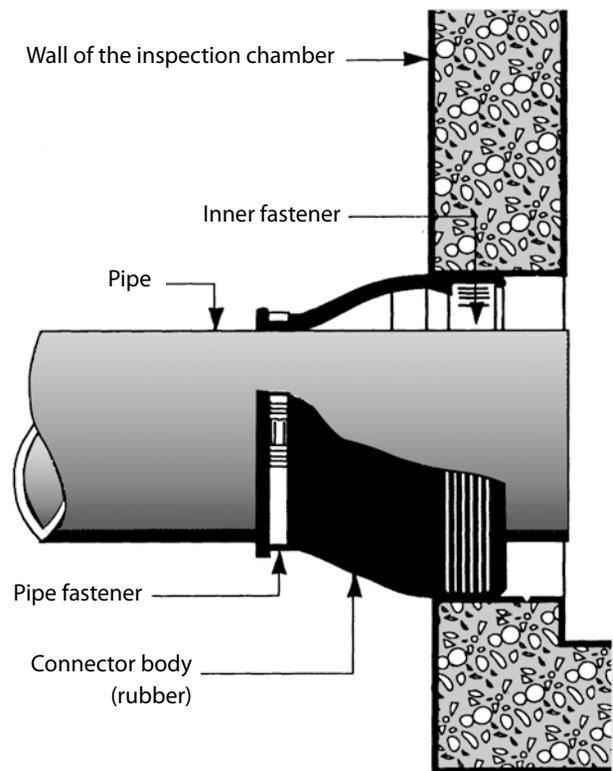
2. Lower the upper section in place on the lower section

| Prices of CDS-PLUS-3 Rubber Gaskets |                   |
|-------------------------------------|-------------------|
| Suitable for ring diameter          | Unit price in NIS |
| $\varnothing 80$ (CSD-PLUS-3-80)    | 626.-             |
| $\varnothing 100$ (CSD-PLUS-3-100)  | 723.-             |
| $\varnothing 125$ (CSD-PLUS-3-125)  | 844.-             |

## Specification and technical data of the ITUBIV® Pipe to Manhole

Connector - KOR-N-SEAL® Manufactured by the NPC Company, USA.

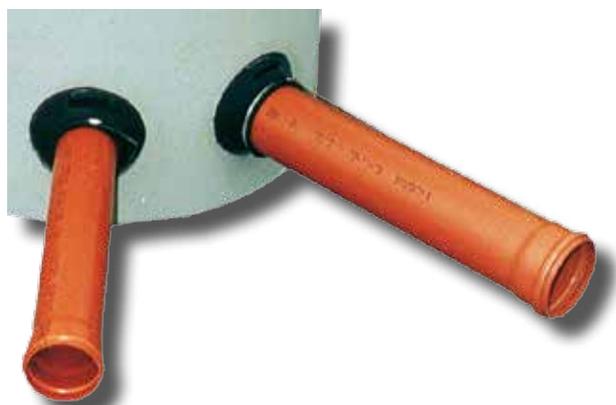
1. The ITUBIV Pipe to Manhole Connector is a special rubber connector that connects at one end to the opening in the wall of the chamber and at the free end to the pipe coming in to the chamber. The connection created between the pipe and the inspection chamber is water tight and flexible, and is suitable for all types of pipes, PVC, steel, PE, fiberglass and more.
2. The ITUBIV Pipe to Manhole Connector complies with all the requirements of the stringent American Standard, ASTM-C923 for Pipe to Manhole Connectors.
3. The ITUBIV Pipe to Manhole Connector is pre-installed in openings drilled in the walls of the inspection chambers.
4. The connection and sealing between the pipes and the walls of the inspection chambers are generated by the connector itself without use of adhesives, mortar or any other sealant materials. The chamber is supplied to the site with the connector already installed at the factory.
5. The angular deflection that the ITUBIV connector permits is 7° (7°=12%) in each direction (according to the requirement of ASTM-C923).
6. When the incline of the line is greater than 7° (12%) – the Wolfman Company can drill boreholes at a slope appropriate to the slope of the line and install ITUBIV connectors in them.
7. The vertical and horizontal deflections that the ITUBIV connectors facilitate are 2.5 cm.
8. The maximum work pressure for an ITUBIV connector is 10 PSI (0.7 atmospheres) according to the requirement of the ASTM-C923 Standard.
9. The rubber from which the ITUBIV connector is manufactured is EPDM rubber complying with the requirements of the American ASTM-C923 Standard and is durable to industrial wastewater that includes acids and bases, animal and vegetable oils and seepage of fuel and oils into the sewage.
10. All the metal components of the connector are manufactured from stainless steel 304 type.
11. The NPC Company, USA is the leading company in the world for flexible Pipe to Manhole Connectors for sewage.



**ITUBIV® Pipe to Manhole Connector - KOR-N-SEAL®** Manufactured by the NPC Company, USA.

| Model        | Suitable for pipes             |                          | Required hole diameter (cm) | Type and number of bands for tightening on pipe | Unit price in NIS |
|--------------|--------------------------------|--------------------------|-----------------------------|---|-------------------|
|              | Plastic (outer diameter in mm) | Steel (nominal diameter) |                             |   |                   |
| S106-7(T)    | 110                            | "4                       | 18                          | (X1) I-80                                       | 426.-             |
| S406-12B(T)  | 160                            | "6                       | 31                          | (X1) I-128                                      | 519.-             |
| S406-12A(T)  | 200 ; 225                      | "8                       | 31                          | (X1) I-180                                      | 529.-             |
| S406-12(T)   | 250                            | -                        | 31                          | (X1) I-180                                      | 861.-             |
| S106-16B(WP) | 280                            | "10                      | 41                          | (X1) I-190                                      | 861.-             |
| (S106-16A(WP | 315                            | "12                      | 41                          | (X1) I-218                                      | 899.-             |
| S106-16(WP)  | 355                            | "14                      | 41                          | (X1) I-242                                      | 1,235.-           |
| S106-20A(WP) | 400                            | "16                      | 51                          | (X1) I-306                                      | 1,296.-           |
| S106-20(WP)  | 450                            | "18                      | 51                          | (X1) I-306                                      | 1,760.-           |
| S206-24(WP)  | 500                            | "20                      | 61                          | (X4) I-180                                      | 1,933.-           |
| S206-28      | 630                            | "24                      | 71                          | (X4) I-218                                      | 2,325.-           |
| S206-30      | -                              | "26                      | 76                          | (X4) I-218                                      | 2,513.-           |
| S206-32      | 710                            | "28                      | 81                          | (X4) I-242                                      | 2,697.-           |
| S206-34      | -                              | "30                      | 86                          | (X4) I-258                                      | 2,911.-           |

- Steel pipes are appropriate when there is no outer concrete coating in the region of the connection.
- ITUBIV connectors are installed in openings drilled at the factory.
- ITUBIV connectors exist also in additional sizes and for other pipes. In these cases please contact the Engineering Department at Wolfman Industries.
- Regarding supply times and connectors in stock, please consult the Engineering Department at Wolfman Industries.



## CS910 type penetration connectors

For use with PVC pipes in sewage/drainage systems

| Seal model | Suitable for PVC pipe of diameter (mm) d | Bore diameter required in the manhole wall (mm) D | Unit price in NIS |
|------------|--|---|-------------------|
| CS910-110  | 110                                      | 138   | 284.-             |
| CS910-160  | 160                                      | 186   | 303.-             |
| CS910-200  | 200                                      | 226   | 311.-             |
| CS910-250  | 250                                      | 276   | 353.-             |
| CS910-315  | 315                                      | 341   | 463.-             |
| CS910-355  | 355                                      | 382   | 494.-             |
| CS910-400  | 400                                      | 426   | 573.-             |
| CS910-500  | 500                                      | 526   | 684.-             |



Seal shape

CS910 penetration connectors comply with the requirements of the DIN-4090 Standard. The penetration connector is a rubber connector that is installed in the opening drilled in the wall of the manhole. The diameter of the connector is a little larger than the diameter of the bore and thus pressure is generated between the connector and the walls of the bore when the connector is inserted into its location.

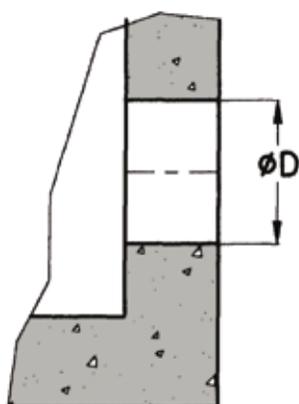
The CS910 penetration connector is suitable for PVC pipes. The pipe must be forcibly inserted into the connector. Prior to insertion of the pipe, the interior of the connector and the edge of the pipe should be applied with **MAGNOSLIP®** type lubricant. Ensure that the pipe has an appropriate phase and not a sharp one. Insertion of the pipe inwards generates pressure on the rubber connector caught between the pipe and the walls of the bore in the wall of the manhole. This pressure and the shape of the connector result in water tightness. The flexibility of the connector is limited in comparison to an **ITUBIV®** type Pipe to Manhole Connector.

The maximum angular deflection is 4° (4°=7%)

Seal CS-910 installed in a hole

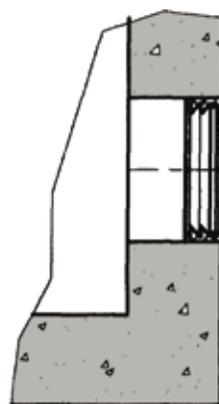


### Mount seal cs910 and insert a pipe in the drilled bore



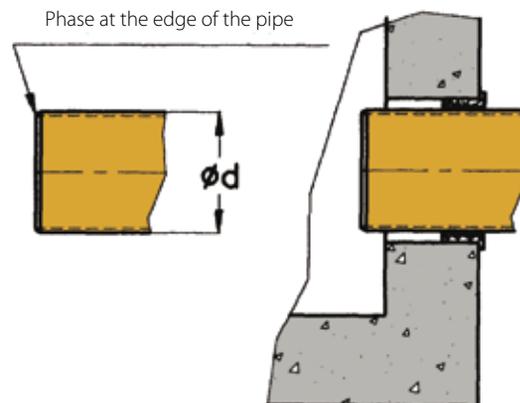
#### Stage 1

Preparation of a suitable bore in the manhole wall (done at the factory).



#### Stage 2

Assembly of the penetration connector in the hole. Preparation of the pipe and application of **MAGNOSLIP®** lubricant (on site).



#### Stage 3

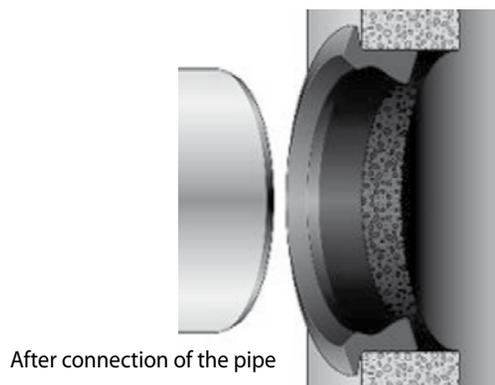
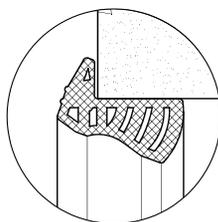
Insertion of the pipe into the connector (on site)

## CONTOUR SEAL®

CONTOUR SEAL connectors are intended to serve as a flexible and water tight connection element between large and heavy pipes and inspection chambers (manholes) in sewage and drainage systems. CONTOUR SEAL connectors are "Heavy Duty" connectors manufactured by NPC, USA and they comply with all the requirements of the American ASTM-C923 Standard.

### General Data

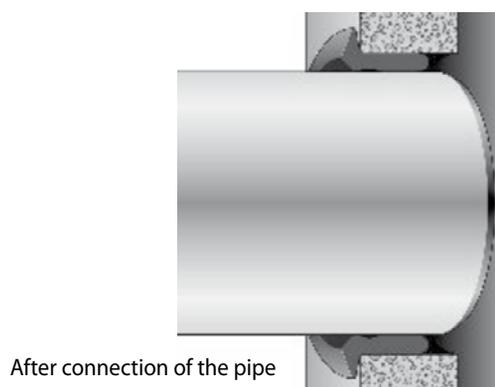
1. Complies with the ASTM-C923 Standard.
2. Suitable for round or rectangular inspection chambers.
3. Made from EPDM rubber.
4. Suitable for concrete pipes.
5. Maximum angular deflection is 5° (5°=8%).



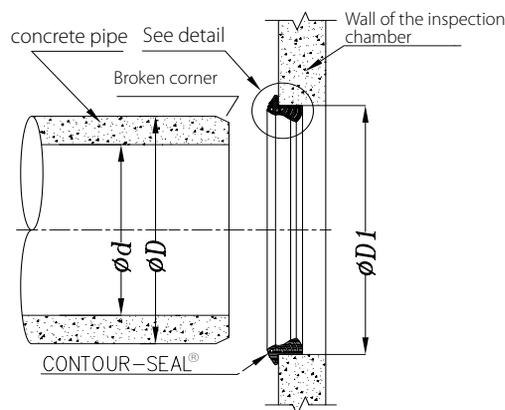
### Assembly method

1. The connector is usually assembled at the factory within the opening in the wall of the inspection chamber.
2. The concrete pipe being connected must have a cut edge with a chamfer. It is extremely important and recommended to be done at the factory.
3. The edge of the pipe and the connector should be applied with MAGNOSLIP lubricant.
4. Insert the pipe into the connector such that the center of the pipe will be in the center of the connector. In certain cases, the inspection chamber should be pushed onto the pipe (when connecting the chamber to a pipe in front of it on a slope).

The cost of sawing the pipe is not included in the price of the connector and will be charged separately.



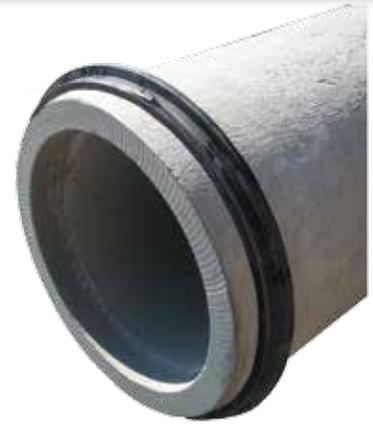
| Gasket model | Suitable for a concrete pipe with diameter Ød (cm) | External diameter of the pipe stem (cm) ØD | Required hole diameter in the manhole wall (cm) ØD1 | Unit price in NIS |
|--------------|--|--|---|-------------------|
| KON-40       | 40   | 55   | 63.0  | 1,443.-           |
| KON-50       | 50   | 67   | 74.7  | 1,657.-           |
| KON-60       | 60   | 80   | 87.5  | 1,872.-           |
| KON-80       | 80   | 104.8                                      | 112.0   | 2,253.-           |
| KON-100      | 100  | 129.6                                      | 137.0   | 2,843.-           |
| KON-125      | 125  | 160  | 167.5   | 3,380.-           |



Inspection chambers with CONTOUR SEAL connectors.

## WATER STOP

- Suitable for rigid connection of a concrete pipe to a new pre-fabricated manhole.
- Suitable for rigid connection of a concrete pipe to a manhole cast on site.
- Suitable for rigid connection of a concrete pipe to a manhole existing at the site.

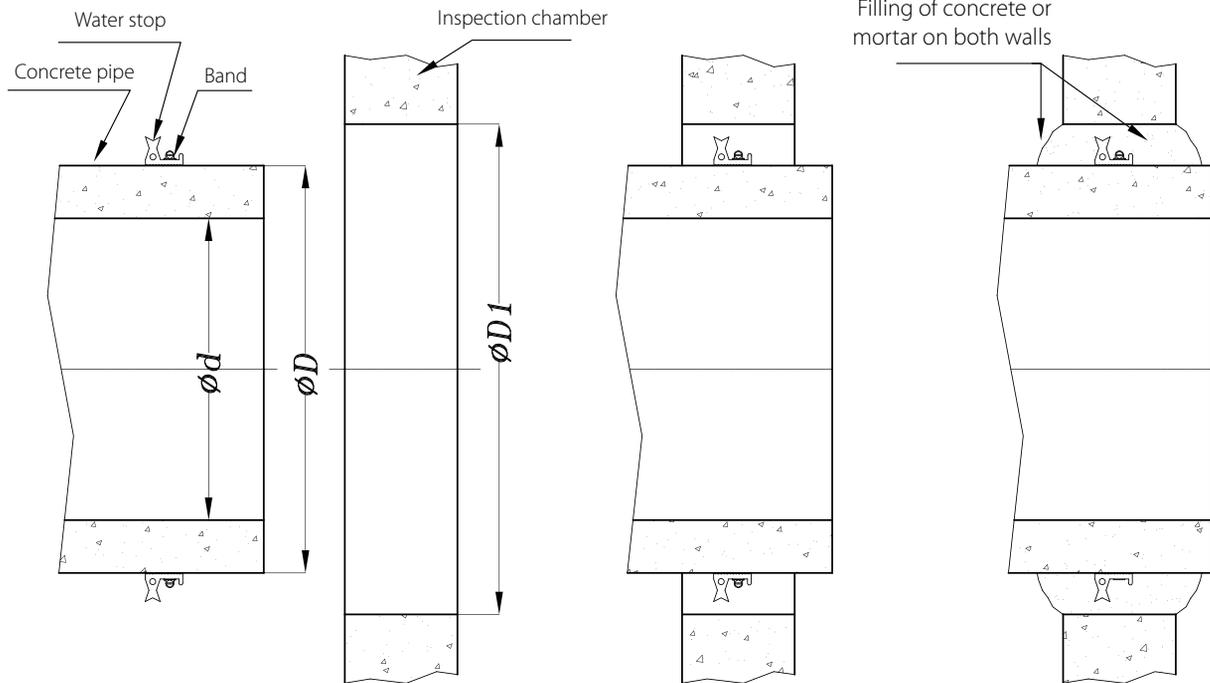


**Remark:** The Water Stop is intended to be installed on the edge of the pipe (It is recommended to saw the male or female section).

| Water stop model | Suitable for concrete pipe with nominal diameter $\varnothing d$ (cm) | External diameter of the pipe stem (cm) $\varnothing D$ | Hole diameter (cm) $\varnothing D1$ | Required band length (cm) | Band type | Unit price including bands in NIS |
|------------------|---|---|-------------------------------------|---------------------------|-----------|-----------------------------------|
| WS-40            | 40  | 55  | 63                                  | 182                       | B40       | 734.-                             |
| WS-50            | 50  | 67  | 74                                  | 222                       | B50       | 970.-                             |
| WS-60            | 60  | 80  | 87                                  | 263                       | B60       | 1,112.-                           |
| WS-80            | 80  | 104.8   | 112                                 | 341                       | B80       | 1,421.-                           |
| WS-100           | 100   | 129.6   | 137                                 | 419                       | B100      | 1,803.-                           |
| WS-125           | 125   | 160   | 167                                 | 515                       | B125      | 2,225.-                           |
| WS-150           | 150   | 186   | 193                                 | 597                       | B150      | 2,557.-                           |
| WS-180           | 180   | 220   | 230                                 | 703                       | B180      | 3,079.-                           |

- The D1 diameter in the table is the minimal recommended diameter. Larger diameters can be supplied upon request.

### Recommendations for installation of a Water Stop



#### Stage 1

Assemble the Water Stop – WS – on the pipe, assemble the bands and fasten using a screwdriver or key.

#### Stage 2

Insert the pipe in place in the center of the opening in the manhole wall

#### Stage 3

Fill the space with concrete or mortar on both walls.

## Drilling openings, ladders and stairs (stepping rungs)

Drilling openings in round and rectangular inspection chambers (in bottom sections and rings)

| Diameter range in cm | Diameter of available drills in cm | Price of drilling an opening in NIS |
|----------------------|------------------------------------|-------------------------------------|
| Up to 27Ø            | 11Ø ; 18Ø ; 20Ø ; 24Ø              | 163.-                               |
| 28Ø to 50Ø           | 28Ø ; 31Ø ; 35Ø ; 41Ø              | 205.-                               |
| 51Ø to 61Ø           | 51Ø ; 56Ø ; 61Ø                    | 350.-                               |
| 62Ø to 81Ø           | 63Ø ; 66Ø ; 71Ø ; 74Ø ; 76Ø ; 81Ø  | 364.-                               |
| 82Ø to 101Ø          | 87Ø ; 91Ø ; 96Ø ; 101Ø             | 528.-                               |
| 102Ø to 122Ø         | 112Ø ; 121Ø                        | 765.-                               |
| More than 123Ø       | 137Ø ; 141Ø ; 148Ø                 | 1,112.-                             |

- Drilling openings in manhole bases and rings is done at the request of the customer, in coordination with the Technical Department at the factory in Haifa.
- Great precision is achieved in the location of the openings in terms of angle and height.
- The drilling of openings is intended for sewage, water, drainage and electricity chambers.
- Supply of manhole bases and rings with drilled openings is prompt.
- It is possible to obtain manhole bases with bores at various inclines for sewage lines in which the inclines are very steep – for an additional charge of 30% above the cost of a regular drilling.

## Ladders for inspection chambers

The ladders are supplied as kits for assembly on site by the contractor.

| Type of material the ladder is made of | Price in NIS per m-length of ladder | Price in NIS per m-length of protection cage |
|--|-------------------------------------|--|
| Galvanized steel                       | 630.-                               | 1,232.-                                      |
| Stainless steel – 304                  |                                     |  |
| Stainless steel - 316                  |                                     |  |
| Fiberglass                             |                                     |  |

Prices by agreement



### Remarks:

- The vertical distance between the rungs of the ladder is 35 cm.
- Width (inner) of the ladder is 35 cm.
- The ladder kit is supplied with anchoring bolts. The anchoring bolts of the galvanized steel ladder are galvanized. The anchoring bolts for stainless steel and fiberglass ladders are from stainless steel.

## Stepping rungs – stairs

- Made from plastic with a steel core.
- Outer width of a step is 30 cm.

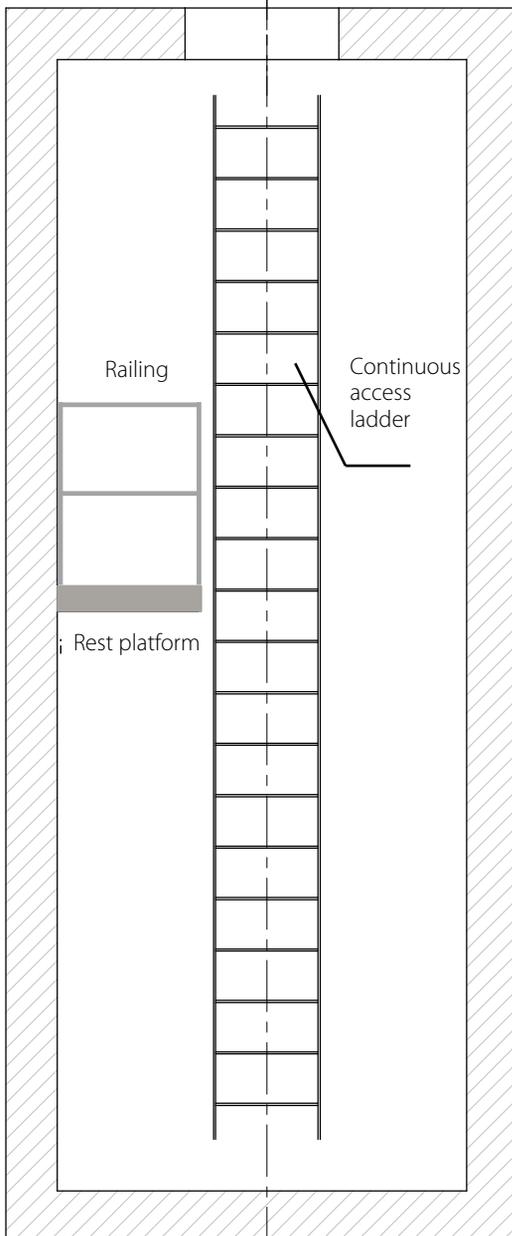
| Price of single staire NIS/unit | Price of installed staire in rectangular inspection chambers up to 150x150, in round chambers up to Ø150 (regular chambers) NIS /unit | Price of installed staire in rectangular inspection chambers greater than 150x150, in round chambers greater than Ø150 NIS/unit | Price of installed staire in monolithic round chambers Ø125-Ø240 and closure chambers NIS /unit |
|---------------------------------|---|---|---|
| 81.-                            | 88.-  | 204.-   | 204.-   |



## Intermediate platforms/rest platforms (landings) and ladders in deep inspection chambers

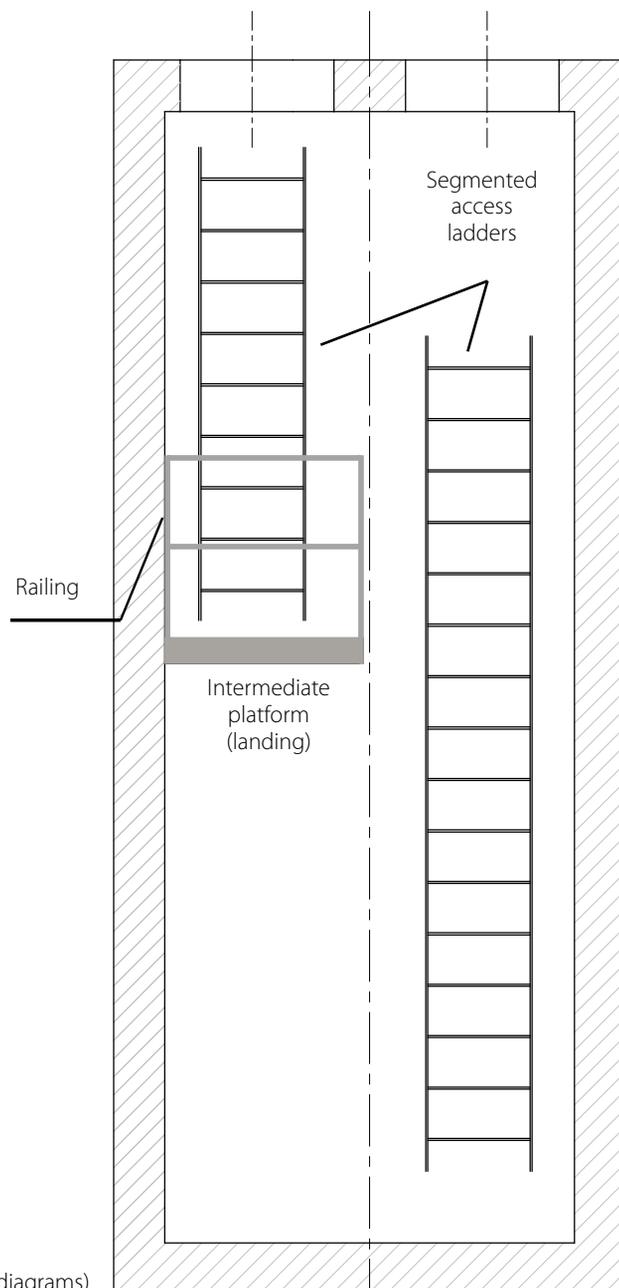
### Important rules:

1. It is prohibited to install safety cages around ladders in inspection chambers according to safety regulations.
2. It is recommended to install rest platform/intermediate platforms in inspection chambers deeper than 6 meters according to the decision of the planner.
3. The net height above and below the intermediate platform/rest platform shall be at least 2 meters.
4. The intermediate platform/rest platform shall be planned in a manner that does not interfere with the possibility of rescuing a person from the inspection chamber.
5. The rest platform is a platform installed at the side of a continuous access ladder (from top to bottom) and serves for resting when climbing up or down.
6. The intermediate platform is a horizontal structure (standing platform) between two segments of ladder and is used when the ladders are not continuous but graduated.
7. Intermediate platforms/rest platforms shall be equipped with a handrail.
8. It is recommended that ladders/rest platforms/intermediate platforms in deep inspection chambers be manufactured from stainless steel. It is possible to integrate fiberglass lattices. The anchoring bolts shall be made solely of stainless steel 316.
9. The intermediate meet the standard 5988 Part 1.
10. In terms of safety **it is clearly preferable to use rest platforms rather than intermediate platforms in deep inspection chambers.**



Deep inspection chamber with a rest platform

(Schematic diagrams)



Deep inspection chamber with an intermediate platform