Underground Drainage
Manhole & Inspection
Chambers
Prefabricated Polyethylene (PE)
Material
Production Material Polyethylene (PE)

- Virgin material: 100%
- Recycling-contents: no
- Foam-contents: no
- Crack-resistance: ≥ 200%
- Weldability: yes
Standards
<table>
<thead>
<tr>
<th>Products</th>
<th>According to Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspection chambers</td>
<td>EN 13598-1:2003</td>
</tr>
<tr>
<td>Manhole chambers</td>
<td>EN 13598-2:2009</td>
</tr>
<tr>
<td>Inspection/Manhole Chamber Size</td>
<td>EN 476</td>
</tr>
<tr>
<td>Gully Trap Z</td>
<td>BS 4660:2000</td>
</tr>
<tr>
<td>Water Tank</td>
<td>AS/NZS 4766 &amp; AS/NZS 4020</td>
</tr>
<tr>
<td>Grease Trap</td>
<td>DIN 4040 / EN 1825</td>
</tr>
<tr>
<td>Light Liquid Separator</td>
<td>EN 858 Class I</td>
</tr>
<tr>
<td><strong>Accessories</strong></td>
<td></td>
</tr>
<tr>
<td>Inlet seal</td>
<td>EN 681-1</td>
</tr>
<tr>
<td>Steps</td>
<td>BS EN 14396 : 2001</td>
</tr>
<tr>
<td><strong>Company</strong></td>
<td></td>
</tr>
<tr>
<td>Manufacturing/Sales/Distribution</td>
<td>MS ISO 9001:2008</td>
</tr>
</tbody>
</table>
Why ROMOLD?
Reduced Total Cost of Ownership (TCO) / Life Cycle Cost

- Faster and easier installation
- Lower transportation and handling costs
- Significant reduction in maintenance costs
- Reduced overall system cost – less load on STP – no infiltration
- Much longer working life
- Environmentally Friendly
UNDERGROUND DRAINAGE
MANHOLES & INSPECTION
CHAMBERS
UNDER GROUND GRAVITY DRAINAGE SYSTEM

INSPECTION CHAMBERS:

- NO PERSON ENTRY
- DEPTH < 1M
- DIA < 600 MM
- TYPICALLY IN HOUSE COMPOUND OR NEAR BUILDINGS

MANHOLE CHAMBERS:

- PERSON ENTRY WITH STEPS
- DEPTH < 6 M
- DIA 800 MM OR 1000 MM
- TYPICALLY IN MUNICIPAL OR LARGE INDUSTRY
<table>
<thead>
<tr>
<th>DN</th>
<th>Diameter ID (mm)</th>
<th>Height Range (mm)</th>
<th>Cover / Top opening ID (mm)</th>
<th>Person Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>500</td>
<td>350-1500</td>
<td>500</td>
<td>NO</td>
</tr>
<tr>
<td>600</td>
<td>600</td>
<td>350-1500</td>
<td>600</td>
<td>NO</td>
</tr>
<tr>
<td>800</td>
<td>800</td>
<td>800-1750</td>
<td>600*</td>
<td>YES**</td>
</tr>
<tr>
<td>1000</td>
<td>1000</td>
<td>1050-6000</td>
<td>600*</td>
<td>YES**</td>
</tr>
</tbody>
</table>

* DN 800/1000 manholes with corrosion resistant steps
** DN 800/1000 manholes conical tops with clear opening 600 mm
OVERVIEW

<table>
<thead>
<tr>
<th>Diameter (mm)</th>
<th>Height Range (mm)</th>
<th>Inlet DN (mm)</th>
<th>Outlet DN (mm)</th>
<th>Cover (mm)</th>
<th>Person Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>350-1500</td>
<td>110/160</td>
<td>110/160</td>
<td>500</td>
<td>NO</td>
</tr>
<tr>
<td>600</td>
<td>350-1500</td>
<td>OPTION1: 160/200/250</td>
<td>160/200/250</td>
<td>600</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OPTION2: 110/160</td>
<td>110/160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>800</td>
<td>800-1750</td>
<td>110/160</td>
<td>110/160</td>
<td>600</td>
<td>YES</td>
</tr>
<tr>
<td>1000</td>
<td>1050-6000</td>
<td>OPTION1: 200/250/315</td>
<td>200/250/315</td>
<td>600</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OPTION2: 110/160/200</td>
<td>110/160/200</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DN 800/1000 manholes with corrosion resistant steps
DN 800/1000 manholes conical top with clear opening of 600mm
DN 1000 manhole available with additional base benching configuration from 400mm - 630mm pipeline
INSPECTION CHAMBER DN 500

- Diameter 500 mm inspection chamber for gravity/non-pressure underground drainage and sewerage with no man-entry and no steps.
- Single piece inspection chamber up to depth 1500mm.
- All inspection chambers allow for 250 mm on-site height adjustment (except chamber of height 500mm which allows 150mm height adjustment). Top provided with horizontal gradient lines 1cm apart to enable cutting by simple saw. For example, chamber of height 750mm may be used for 500-750mm depth.

STANDARD

- EN 13598-1:2003

BASE BENCHING

- 5 Inlets: 1 nos. mainline up to 160mm and 4 nos. additional inlets up to 110 mm at 45° and 90° right and left of mainline. Side inlets 40mm higher.
- 1 Outlet: 160/110 mm (built in eccentric reducer for 160/110mm pipes)

<table>
<thead>
<tr>
<th>Code</th>
<th>Inner Diameter (mm)</th>
<th>Height (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5BC50.16.11/50</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>5BC50.16.11/75</td>
<td>500</td>
<td>750</td>
</tr>
<tr>
<td>5BC50.16.11/100</td>
<td>500</td>
<td>1000</td>
</tr>
<tr>
<td>5BC50.16.11/125</td>
<td>500</td>
<td>1250</td>
</tr>
<tr>
<td>5BC50.16.11/150</td>
<td>500</td>
<td>1500</td>
</tr>
</tbody>
</table>

INSPECTION CHAMBER DN 600

- Diameter 600 mm inspection chamber for gravity/non-pressure underground drainage and sewerage with no man-entry and no steps.
- Single piece inspection chamber up to depth 1500mm.
- All inspection chambers allow for 250 mm on-site height adjustment (except chamber of height 500mm which allows 150mm height adjustment). Top provided with horizontal gradient lines 1cm apart to enable cutting by simple saw. For example, chamber of height 750mm may be used for 500-750mm depth.

STANDARD

- EN 13598-1:2003

BASE BENCHING OPTION 1 - 3 INLETS

- 3 Inlets: Up to 250 mm - 1 nos. mainline and 2 nos. additional at 90° right and left of mainline without bed-drop.
- 1 Outlet: 250/200/160 mm (built in eccentric reducer for 250/200/160mm pipes)

BASE BENCHING OPTION 2 - 5 INLETS

- 5 Inlets: 1 nos. mainline up to 160mm and 4 nos. additional inlets up to 160 mm at 45° and 90° right and left of mainline. Side inlets 40mm higher.
- 1 Outlet: 160/110 (built in eccentric reducer for 160/110mm pipes)

<table>
<thead>
<tr>
<th>CODE</th>
<th>INNER DIAMETER (mm)</th>
<th>HEIGHT (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPTION 1 - 3 INLETS (250/200/160 mm)</td>
<td>OPTION 2 - 5 INLETS (160/110 mm)</td>
<td></td>
</tr>
<tr>
<td>3BLC60.25.20.16/50</td>
<td>5BC60.16.11/50</td>
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</tr>
<tr>
<td>3BLC60.25.20.16/75</td>
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<tr>
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<td>5BC60.16.11/100</td>
<td>600</td>
</tr>
<tr>
<td>3BLC60.25.20.16/125</td>
<td>5BC60.16.11/125</td>
<td>600</td>
</tr>
<tr>
<td>3BLC60.25.20.16/150</td>
<td>5BC60.16.11/150</td>
<td>600</td>
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</tbody>
</table>
MANHOLE CHAMBER DN 800

- Diameter 800 mm manhole chamber for gravity/non-pressure underground drainage and sewerage with man-entry and corrosion resistant steps. Top clear opening 600mm.
- Single piece manhole chamber up to depth 1750mm
- All manhole chambers allow for 250 mm on-site height adjustment. Top provided with horizontal gradient lines 1cm apart to enable cutting by simple saw. For example, chamber of height 1750mm may be used for 1500-1750mm depth

STANDARD
- EN 13598-2:2009

BASE BENCHING

- 5 Inlets: Up to 160mm - 1 nos. mainline and 4 nos. additional inlets at 45° and 90° right and left of mainline. Side inlets 60mm higher
- 1 Outlet: 160/110mm (built in eccentric reducer for 160/110mm pipes)

<table>
<thead>
<tr>
<th>Code</th>
<th>Inner Diameter (mm)</th>
<th>Height (mm)</th>
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</thead>
<tbody>
<tr>
<td>5BC80.16.11.60/100</td>
<td>800</td>
<td>1000</td>
</tr>
<tr>
<td>5BC80.16.11.60/125</td>
<td>800</td>
<td>1250</td>
</tr>
<tr>
<td>5BC80.16.11.60/150</td>
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<td>1500</td>
</tr>
<tr>
<td>5BC80.16.11.60/175</td>
<td>800</td>
<td>1750</td>
</tr>
</tbody>
</table>

MANHOLE CHAMBER DN 1000

- Diameter 1000 mm manhole chamber for gravity/non-pressure underground drainage and sewerage with man-entry and corrosion resistant steps. Top clear opening 600mm.
- Single piece manhole chamber up to depth 1750mm and modular beyond that up to 6000mm depth
- All manhole chambers allow for 250 mm on-site height adjustment. Top provided with horizontal gradient lines 1cm apart to enable cutting by simple saw. For example, chamber of height 6000mm may be used for 5750-6000mm depth

STANDARD
- EN 13598-2:2009

BASE BENCHING OPTION 1 - 3 INLETS

- 3 Inlets: Up to 315 mm - 1 nos. mainline and 2 nos. additional at 90° right and left of mainline without bed-drop
- 1 Outlet: 315/250/200 mm (built in eccentric reducer for 315/250/200 mm pipes)

BASE BENCHING OPTION 2 - 5 INLETS

- 5 Inlets: 1 nos. mainline up to 200mm and 4 nos. additional inlets up to 160 mm at 45° and 90° right and left of mainline. Side inlets 80mm higher.
- 1 Outlet: 200/160/110 mm (built in eccentric reducer for 200/160/110 mm pipes)

ADDITIONAL BASE BENCHING OPTIONS
Additional base benching options for pipeline ranging from 400 mm to 630mm also available.

DN 1000 SINGLE PIECE (UP TO 1.75M)

<table>
<thead>
<tr>
<th>Code</th>
<th>Inner Diameter (mm)</th>
<th>Height (mm)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>1250</td>
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<tr>
<td>3BLC100.31.25.20.60/150</td>
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<td>1500</td>
</tr>
<tr>
<td>3BLC100.31.25.20.60/175</td>
<td>1000</td>
<td>1750</td>
</tr>
<tr>
<td>5BC100.20.16.11.60/125</td>
<td>1000</td>
<td>1250</td>
</tr>
<tr>
<td>5BC100.20.16.11.60/150</td>
<td>1000</td>
<td>1500</td>
</tr>
<tr>
<td>5BC100.20.16.11.60/175</td>
<td>1000</td>
<td>1750</td>
</tr>
</tbody>
</table>
DN 1000 MODULAR SYSTEM (1.75M - 6.0M)

- Beyond 1.75M depth the system is of modular design. Manhole of any depth can be very easily assembled on site by putting together modular parts. The assembly is done by simply pushing one modular part on the other without the need of any adhesive, chemical or equipment.

- All elevations and upper unit supplied with Triple-Safety (three sided lip/element) seal according to EN 681-1 for a water tight and easy connection on site.

- All extensions and upper unit are with corrosion resistant steps

<table>
<thead>
<tr>
<th>CODE</th>
<th>INNER DIAMETER (mm)</th>
<th>HEIGHT (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3BL100.31.25.20/65</td>
<td>1000</td>
<td>650</td>
</tr>
<tr>
<td>5B100.20.16.11/65</td>
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<td>1000</td>
</tr>
<tr>
<td>1000</td>
<td>750</td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>U 100.60/110/FIBS/ES</td>
<td>Conical with top opening 600mm</td>
<td>1100</td>
</tr>
<tr>
<td>U 100.60/135/FIBS/ES</td>
<td>Conical with top opening 600mm</td>
<td>1350</td>
</tr>
<tr>
<td>U 100.60/160/FIBS/ES</td>
<td>Conical with top opening 600mm</td>
<td>1600</td>
</tr>
</tbody>
</table>

* Additional base configuration for pipeline ranging from 400mm to 630mm available

MODULAR SYSTEM - EXAMPLE

- To build a manhole of any desired height on site simply choose the right type of base (option 1/2), correct number of elevation units and top upper cone of appropriate height

- Please note below is just one way of building manhole of a height from modular parts but the client has the flexibility to use optimal parts as per his requirement; for example,
  Manhole of 2750mm = Base + U 100.60/135/FIBS/ES + E100/75/FIBS/ES or Base + U100.60/160/FIBS/ES + E100/50/FIBS/ES

- To obtain pricing for any height in modular system take price of Base Unit + Upper Unit + price of appropriate number of modular extensions of 500 mm/750mm/1000mm. For example price of manhole of 2000 mm = price of Base Unit (height .65M) + price of Upper Unit U 100/135/FIB/ES (height 1.35M)

<table>
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<th>Type</th>
<th>DESCRIPTION</th>
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<th>Height (mm)</th>
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<tr>
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<td>Base + U100/135</td>
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<td>2000</td>
</tr>
<tr>
<td>Modular</td>
<td>Base + U100/160</td>
<td>1000</td>
<td>2250</td>
</tr>
<tr>
<td>Modular</td>
<td>Base + U100/135 + E100/50</td>
<td>1000</td>
<td>2500</td>
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<tr>
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<td>3000</td>
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<tr>
<td>Modular</td>
<td>Base + U100/160 + E 100/100</td>
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<td>3250</td>
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<td>Base + U100/160 + E 100/100 + E 100/50</td>
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<td>3750</td>
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<td>4000</td>
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<tr>
<td>Modular</td>
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<td>4250</td>
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<td>Modular</td>
<td>Base + U100/160 + 3 x E100/100</td>
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<td>5750</td>
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<tr>
<td>Modular</td>
<td>Base + U100/135 + 4 x E 100/100</td>
<td>1000</td>
<td>6000</td>
</tr>
</tbody>
</table>
PE CHAMBER – DESIGN
MONOLITHIC SINGLE PIECE & MODULAR

Single Piece
– Up to 1.75M depth

Modular
For easy
– Transport
– Site handling
– Assembly on demand
### BASE BENCHING DESIGN – MANY OPTIONS

<table>
<thead>
<tr>
<th>Diameter mm</th>
<th>Height Range mm</th>
<th>Pipeline Multiple &amp; Single Inlets</th>
</tr>
</thead>
<tbody>
<tr>
<td>DN 500</td>
<td>350 – 1500</td>
<td>Up to 160mm</td>
</tr>
<tr>
<td>DN 600</td>
<td>350 – 1500</td>
<td>Up to 250mm</td>
</tr>
<tr>
<td>DN 800</td>
<td>1000 – 1750</td>
<td>Up to 160mm</td>
</tr>
<tr>
<td>DN 1000</td>
<td>1000 – 6000</td>
<td>Up to 315mm Additional Up to 630mm</td>
</tr>
</tbody>
</table>
PRODUCT RANGE

Manhole DN 1000: H = 6,30m
PRODUCT CAPABILITY DEPTH – 9M
According to EN 14396:2001/EN 13101-1/DIN 1264-2
MANHOLE CHAMBERS INSTALLATION
INSTALLATION OVERVIEW

1. Excavate/Bedding
2. Inlet
3. Outlet
4. Backfill/Compact
5. Install Cover
STEP 1 – EXCAVATE/BEDDING

- 15 cm deeper
- 60 cm wider
- Level chamber
STEP 2 - INLET

• Drill hole with cup saw
• Insert Romold EN 681–1 seal
• Push pipe
STEP 2 - INLET ACCESSORIES

CUP SAW CONNECTOR

CUP SAW FOR INLET SEALS

STANDARD INLET SEAL

Jul 2012
STEP 2 – INLET
TYPES OF PIPES

Jul 2012
STEP 2 – INLET PIPE CONNECTION

According to EN 1277, EN 681–1 & DIN 4060

Jul 2012
STEP 3 - OUTLET

- Chamber spigot multi diameter
- Cut off smaller spigot
- Slip outlet pipe socket

Jul 2012
STEP 3 – OUTLET PIPE CONNECTION

PVC PIPE

PE PIPE

PIPE PE

CLAY PIPE

(ELECTRO FUSION)

CAST IRON

Jul 2012
STEP 4 – BACKFILL/COMPACT

- Align chamber horizontally
- Under pack with hand stamper
- Check alignment
- Back fill in layers of 20–40 cm
- Compact with vibrating stamper (50 Kg)
- D pr = 97%

Backfilling Material
- Non-cohesive*
- Rounded gravel < 32mm
- Broken < 16mm

* In case of significant cohesive material use quarry dust as bedding and backfill material for appropriate compaction

Jul 2012
STEP 5 - COVER

• Adjust Height
• Install concrete load bearing ring
• Install EN 124 cover & frame
• Asphalt Road
STEP 5 – LOAD BEARING RING
ON ROAD INSTALLATION OVERVIEW

Load Bearing ring conducts traffic load away from the PE manhole.

It is important to ensure that no direct contact occurs between the ring and PE manhole.

The ring should be wider (10mm) and higher (70mm) than chamber.
STEP 5 – LOAD BEARING RING

TYPICAL ROMOLD INSTALLATION

- Load distribution ring conducts load away from chamber
- Bedding for ring must be planar and free from point loads – grit/sand/mass concrete (PCC). > 100 MN/m2
- Ring must not touch chamber – 10 mm wider & 70mm higher
STEP 5 – LOAD BEARING DESIGN (PRE-CAST)
STEP 5 – ON ROAD INSTALLATION
LOAD BEARING RING (PRE-CAST)
STEP 5 – ON ROAD INSTALLATION
OPTIONALLY CAST IN-SITU LOAD BEARING RING

Optionally the load bearing ring may be cast in-situ and reinforced with 8mm steel.

The dimensions and principle of ensuring that PE manhole is not in touch with the ring remains the same as Pre-Cast ring above.
TRAFFIC LOAD

ROMOLD PE CHAMBER

CONCRETE CHAMBER

Chamber Weight/Dead Load

Traffic Load/Live Load
TRAFFIC LOAD

ROMOLD PE CHAMBER

CONCRETE CHAMBER

Chamber Weight/Dead Load

Traffic Load/Live Load
HIGH WATER LEVEL INSTALLATION

Jul 2012
UPLIFT/BUOYANCY

ROMOLD PE CHAMBER

CONCRETE CHAMBER

Chamber Weight/
Dead Load
Uplift/Buoyancy

G = ca. 160 kg

G = ca. 3,5 to
UPLIFT/BUOYANCY

Static Calculation

of the uplift retention of a buried ROMOLD PE-LLD manhole DN 1000 against groundwater.

7 Summary

The uplift retention of the determined manhole has a safety-factor of 1.8 against groundwater.
The requirement of the DIN 1054 with a safety-factor of min. 1.4 is fulfilled.

[Dipl. Ing Wilfried Berner]
ROMOLD GmbH

Jul 2012
HIGH WATER LEVEL

- Add dry cement 125 Kg/m³ of backfill
- Or in case of significant cohesive material use quarry dust as bedding and backfill material
- Discuss with Romold

Jul 2012
ON ROAD INSTALLATION OVERVIEW

Load Bearing ring conducts traffic load away from the PE manhole.

It is important to ensure that no direct contact occurs between the ring and PE manhole.

The ring should be wider (10mm) and higher (70mm) than chamber.
Traffic Load

ROMOLD PE CHAMBER

CONCRETE CHAMBER

Chamber Weight/Dead Load
Traffic Load/Live Load
MANHOLE TESTING AND STANDARDS
LOAD ON CHAMBER

A  STABILITY OF FLOW PROFILE  VACUUM TEST
B  TIGHTNESS                JOINT EN 681-1
C  IMPACT RESISTANCE        IMPACT TEST
D  RING STIFFNESS           2 kPa
E  COVER LOAD               TEST LOAD

EN 13598

July 2013
RING STIFFNESS

No collapse under load of ground and groundwater

2 kPa to allow safe installation in any type of soil condition

July 2013
Sketch
Load distribution ring
BARD 66 VS

Specification of concrete
min. B 25 acc. to DIN 1045
or C 20/25 acc. to EN 206-1

Minimum steel-reinforcement requirements
acc. to DIN 1045 or EN 206-1

ROMOLD PE-Chambers
Load distribution ring BARD 66 VS

ROMOLD GmbH
D-83355 Freilassing

Zeichnungs-Nr.: Bard 68 VS-englisch
Date: 04.02.2008
Scale: 1:10
Sketch
Installation load distribution ring
BARD 66 VS

Cover Cl. D acc. to EN 124;
on demand height adjustment ring;
both items not supplied by Romold

*) Height adjustment ring only on demand
Note:
The distance to the 1st step should be in respect to the national safety regulations.

Wiedergabe sowie Vervielfältigung dieser Unterlage, Verwertung
und Mitteilung ihres Inhaltes nicht gestattet, so weit nicht ausdrücklich
zugestanden. Zwiderhandlungen verpflichten zu Schadensersatz.

ROMOLD PE-Chambers
Installation load distribution ring
BARD 66 VS

Zeichnungs-Nr.: Einbau BARD 66 VS-englisch

Date: 04.02.2008
Scale: 1:10

ROMOLD GmbH
D-83395 Freilassing
Corrosion
Concrete Manhole Europe – Corrosion – Leakage

Negative impact
• Structural Integrity
• Infiltration of ground water
• Flow profile
• Maintenance Cost
• Durability

![Image of manhole structures with annotations on corrosion and leakage]
Romold Manhole – No Corrosion

1994 Rosendorf, Germany (>6.0m Depth)
### Chemical Resistance Table

| Acetaldehyde 100% | Acetic acid 10% | Acetone 100% | Acetyl chloride 90% | Acrylic acid 90% | Acrylonitrile 90% | Acrylonitrile 100% | Acrylonitrile 90% |
| Calcium hyposulfite | Calcium nitrate | Calcium chloride | Calcium perborate | Calcium permanganate | Calcium peroxide | Calcium oligo | Calcium sulfoaluminate |
| Calcium sulfoaluminate | Calcium sulfoaluminate | Calcium sulfoaluminate | Calcium sulfoaluminate | Calcium sulfoaluminate | Calcium sulfoaluminate | Calcium sulfoaluminate | Calcium sulfoaluminate |
| Iron (III) sulfoxide | Iron (II) sulfoxide | Iron (II) sulfoxide | Iron (III) sulfoxide | Iron (II) sulfoxide | Iron (III) sulfoxide | Iron (II) sulfoxide | Iron (II) sulfoxide |
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EASIER HANDLING
TIME COMPARISON
NOTES:

- FOLLOWING PROJECT COMPLETION TIME COMPARISON BETWEEN ROMOLD PREFABRICATED PE MANHOLE AND IN-SITU RCC MANHOLES. THIS COMPARISON WAS DONE BASED ON A SPECIFIC PROJECT BY A LARGE CLIENT. THE TIME ESTIMATES FOR RCC MANHOLES WERE OBTAINED FROM LEADING CIVIL CONTRACTOR WHO WAS ASKED TO QUOTE FOR THE SAME PROJECT.

- PLEASE NOTE THAT IN CASE OF HIGH WATER TABLE RCC MANHOLE ESTIMATES ARE HIGHER THAN BELOW WHEREAS ROMOLD PE MANHOLE PRICES REMAIN THE SAME.

**RCC MANHOLE SPECIFICATION**
- Earth work Excavation, with shutters on all sides
- 10mm steel to be used all around of 9" X 9"
- Sulphate Resistant water proof Cement, PCC:1:3:6
- Bottom Raft 9" with 10 mm steel, PCC 1:3:6

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ADVANTAGES vs.
CONVENTIONAL SYSTEM
Brick / RCC / Precast RCC
• **Significantly Faster, Safer, Easier Installation**
  - Hours (Romold) vs. Days (brick/concrete)
  - Light weight and easy to handle – no large machines
  - Safer – public and workers

• **Completely Water Tight**
  - No infiltration or ex-filtration
  - Chamber and all joints with EN 681–1 seals

• **Maintenance Free**
  - No corrosion – no rehabilitation – no repair
  - Excellent hydraulic flow – less blockages
  - Sealed to minimize water/dirt/silt entry

• **Flexibility of Connections**
  - Different size/type pipe connected on site
  - Easy and fast in 1 to 2 minutes on site
• **Durable**
  • Highly resistant to corrosive chemicals, abrasion, load
  • 50 > years working life
  • Resilient to natural earth movement – no cracks

• **Environmentally Friendly and Hygienic**
  • Watertight system
  • No pollution of ground water and ecosystem
  • Much lower risk of in/exfiltration – Major study of municipal sewers performance by German Federal Ministry of Education and Research

• **Consistent Quality**
  • Latest International Norms
  • Consistent – Not dependent on site conditions or personnel skills

• **Easier Logistics**
  • Light weight / Modular – No need for heavy equipment/cranes
  • Robust on site
REFERENCE PROJECTS
EUROPE REFERENCE PROJECTS ON ROAD
ON SITE INSTALLATION IN EUROPE

Sep 2013
MAURITIUS REFERENCE PROJECTS
REFERENCE PROJECTS

• Government WMA Plain Wilhems Lot2 & Lot1B
• Intercontinental Hotel
• Anahita
• Villas Valriche
• Trou-aux-Biches
• MCB Ebene
• Helvetia
• Jeetoo Hospital
• St Regis Hotel
• Le Sofitel Hotel
• Azuri
GOVERNMENT INSTALLATION IN MAURITIUS

Sep 2013
ON SITE INSTALLATION IN MAURITIUS
ON SITE INSTALLATION IN MAURITIUS
ON SITE INSTALLATION IN MAURITIUS

Sep 2013
HIGH WATER TABLE INSTALLATION IN MAURITIUS
INDIA REFERENCE PROJECTS
SRI CITY

July 2013
SRI CITY

Romold DN 600 with 315mm uPVC pipe
3 July 2012

RE: Romold Polyethylene Manholes

To Whom It May Concern:

We highly recommend Romold products for infrastructure. We have been using Romold manholes for about 1 year now and have found their products and service both in terms of technical and on site support to be of exceptional quality.

Sri City has used and studied various alternatives and finally concluded that the best option for manholes is Romold. Their manholes come prefabricated with complete benching enabling very fast installation even in water logged areas and have helped us build a robust leak proof sewerage network with minimal maintenance needs. Romold design is extremely well thought out and strong with structural ribbing/projections that provide a bond and avoid any uplift.

Further, we have found that Romold manholes system, including top quality accessories such as rubber seals and corrosion resistant steps, provide for a very flexible and easy installation. For example, connecting inlet pipes anywhere with their rubber seal is very easy, elegant and a modern leak proof method. We are able to install a Romold manhole in 2-3 hours.

In closing, we wish to thank the Romold team for their support and are sure to work with them on a long term basis.

Sincerely,

Ramana Chinnakotla
Director, Infrastructure & Utilities
Sri City (P) Limited
THANK YOU