ROTARING® Adjustable Levelling Rings reduce the risk of road and pavement damage thanks to its patented, easily adjustable interlocking rising rings.

**Product Attributes**
- Tapered, interlocking riser rings easily adjustable to match the road level profile
- Can be retrofitted to existing manholes
- Various height options available
- Reduces road damage and the long term cost of pavement maintenance
- Capable of infinite adjustment with road camber

**Applications**
- Stormwater and sewer manholes in municipal, residential and commercial applications

**Quality**

**Standards**
- NZS 3101, NZS 3109
- NZ Patent No. 590938
- NZ Design Register No. 414550
- Australian Patent No. 1569107

We are the supply partner of choice for New Zealand’s civil construction industry, specialising in water and infrastructure based solutions.
This patented design uses innovative interlocking technology to deliver perfectly aligned manhole covers that can be accurately adjusted to match the height and camber of the road surface.

The existing method of manhole construction often leads to ongoing maintenance issues that result in a poor ride for motorists, noise and vibration complaints, and expensive repair costs. The tapered interlocking riser rings are used in pairs so that the manhole cover can be precisely adjusted to match the height and camber of the road surface. The bevelled adjustable rings incorporate a dovetail key to resist lateral shear and may be used with a cast iron manhole frame with a shear key skirt on the underside.

**Product Attributes**

- Tapered, interlocking riser rings easily adjusted to match the road level profile
- Can be retrofitted to existing manholes
- Easy to assemble on site
- Various height options available
- Resists impact loadings during pavement construction and service
- Reduces road noise, vibration and complaints caused by loose manhole covers
- Reduces road damage and the long term cost of pavement maintenance
- Reinforced precast concrete components
- Capable of infinite adjustment with road camber

**Adjustable Levelling Ring Selection**

\[ \Omega \text{ range} = A-B+C \]

1. Measure depth from road surface to the top of manhole chamber lid at the centre of the opening. (Fig. 1) Dimension A
2. From this measurement deduct depth of cast iron or ductile iron service cover frame (Fig. 1) Dimension B
3. From Table 1, select the top and bottom ring sections using this net depth measure

**Example (Fig. 1):**

- Depth at manhole centre. A = 310 mm
- Less depth of C.I. Frame. B = 95 mm
- Plus depth of post construction surfacing as required. C = 0 mm
- Nett Depth required is 215 mm
- Select the ring combination from Table 1. In this example LRA600.B1T1

**FIG. 1** ROTARING® Adjustable Levelling Rings installation profile.
CI Manhole Lid

Galv brackets

Galv set screw

Top Ring

Base Ring

Manhole Chamber Lid

FIG. 2 Exploded view (N.T.S)
### Table 1: ROTARING® 600 Series Adjustment Levelling Ring Selection Table

<table>
<thead>
<tr>
<th>Concrete Adjustment Rings</th>
<th>Bottom ROTARING®</th>
<th>Top ROTARING®</th>
<th>ROTARING® Ø600 mm</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>172 – 222 mm</td>
<td>✓</td>
<td>–</td>
<td>✓</td>
<td>–</td>
</tr>
<tr>
<td>(0 – 50 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>202 – 252 mm</td>
<td>✓</td>
<td>–</td>
<td>–</td>
<td>✓</td>
</tr>
<tr>
<td>(30 – 80 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>232 – 282 mm</td>
<td>–</td>
<td>✓</td>
<td>✓</td>
<td>–</td>
</tr>
<tr>
<td>(60 – 110 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>262 – 312 mm</td>
<td>–</td>
<td>✓</td>
<td>–</td>
<td>✓</td>
</tr>
<tr>
<td>(90 – 140 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>292 – 342 mm</td>
<td>–</td>
<td>✓</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>(120 – 170 mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Each set of Rotarings are supplied with 4 galvanised locating brackets. Code: 99BKTSETLR600. Each bracket measures at 150 x 75 x 6 mm.

### Table 2: Rotaring® 600 Series Weight

<table>
<thead>
<tr>
<th>Ring Type</th>
<th>B1</th>
<th>B2</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (kg)</td>
<td>56</td>
<td>93</td>
<td>54</td>
<td>74</td>
<td>93</td>
</tr>
</tbody>
</table>

### Base Ring Types

- **FIG. 3** Base Ring Type B1
- **FIG. 4** Base Ring Type B2
Top Ring Types

FIG. 5 Top Ring Type T1

FIG. 6 Top Ring Type T2

FIG. 7 Top Ring Type T3

D4.25 ROTARING 600 ADJUSTABLE LEVELLING RINGS RAINWATER PGS
Installation

New Manhole

- Install the top and bottom adjustable ring assembly onto the manhole chamber lid.
- Using a straight edge, align the plane of the top ring with the pavement surface by contra-rotating the adjustable rings.
- Fit the set screws and angle brackets to the ductile iron service cover frame as shown in Fig. 8 below with the heads facing down. (If older cast iron service covers are being reused, then 16 mm dia holes will need to be drilled through the frame flange).
- Make the final height adjustments using the set screws, and ensuring the service cover frame exactly matches the road surface profile. When service covers are being adjusted prior to resurfacing, allow for example, an additional 10 mm for a seal coat or 40 mm for a new asphalt surface.
- Ensure the angle brackets are a snug fit around the top adjustable ring.
- Place chalk marks down the sides of the adjustable rings and service cover frame at one of the reference marks.
- Temporarily dismantle the top adjustable ring and frame assembly.
- If a new rebated manhole chamber lid is not being installed, it is recommended that five 16 mm dia steel reinforcing starter rods are set into pre-drilled holes in the manhole chamber lid.
- Apply a bead of Butyl Mastic Manhole Sealant, SM9020, to the face of the bottom adjustable ring spigot.
- Place the top ring onto the bottom ring ensuring it is aligned with the chalked match marks.
- Trowel on an initial layer of high strength concrete mortar (SikaGrout 212) on to the top ring.
- Place service cover frame, ensuring the set screw heads rest firmly on the top of the adjustable ring. The concrete mortar (SikaGrout 212) must fill the entire cavity between top ring and frame flange, and squeeze out between the two surfaces.
- Re-check and ensure the frame is still aligned exactly, and matches the surface profile.
- Trowel on the balance of the concrete haunching around the assembly and up to the finished surface.
- Allow concrete to cure before trafficking.

Retro-fit to Existing Manhole

- Ensure there is sufficient depth between the existing or new road surface and the top of the manhole chamber lid to accommodate the height of the new adjustable ring assembly and service cover.
- Breakout and remove the old service cover and concrete down to the top of the manhole chamber lid.
- Lightly scrabble the concrete surface, broom and wash down to ensure a clean surface is achieved.
- Install top and bottom adjustable ring assembly onto the manhole chamber lid and complete installation as described above for a new manhole installation.

Also refer to Technical Guide D4.24 Rotaring 500 Adjustable Levelling Rings.
DRILL AND INSERT 5 X 16 mm Ø DEFORMED REINFORCING BAR FOR RETROFITTING TO EXISTING MANHOLE OR NON-REBATED CHAMBER LIDS

REFER TO ANGLE BRACKET DETAIL

4 X 16 mm Ø X 90mm SET SCREW

USE HIGH STRENGTH EPOXY MORTAR WHEN THICKNESS < 12mm

16mm WASHER

CONCRETE HAUNCHING

80mm MAX.

TEMPORARY EXPANDABLE FLAT STEEL SHEET METAL FORMER HELD IN POSITION WITH TIMBER CROSS BRACES

BUTAL MASTIC SEALANT

WRAP EXPOSED THREAD WITH DENSO TAPE

FIG. 8 ROTARING® installation detail
We are the supply partner of choice for New Zealand's civil construction industry, specialising in water and infrastructure based solutions.