Rubber Seal

Rotary Joint

- Oldham coupling
- Operating pressure range: $-100 \text{ kPa}$ to $0.7 \text{ MPa}$
- Allowable rpm: $200 \text{ min}^{-1}$
- Max. start-up rotation torque: $0.50 \text{ N} \cdot \text{m}$ or less
- Service life: $10 \text{ million rotations}$
- Number of circuits: $8 \text{ circuits}$

*1 Reference value
*2 When no pressure applied.
*3 Under SMC’s life test conditions.

Application

Different pressures can be used at neighboring ports.

Related Equipment

Low Torque Rotary Joint

MQR Series

- Metal seal type
- Long service life*

<table>
<thead>
<tr>
<th>Series</th>
<th>Service life</th>
<th>Series</th>
<th>Service life</th>
</tr>
</thead>
<tbody>
<tr>
<td>MQR1</td>
<td>1 billion rotations</td>
<td>MQR8</td>
<td>0.2 billion rotations</td>
</tr>
<tr>
<td>MQR2</td>
<td>0.5 billion rotations</td>
<td>MQR12</td>
<td>0.1 billion rotations</td>
</tr>
<tr>
<td>MQR4</td>
<td>0.3 billion rotations</td>
<td>MQR16</td>
<td>0.1 billion rotations</td>
</tr>
</tbody>
</table>

* Under SMC’s life test conditions.

Max. start-up rotation torque: $0.003$ to $0.50 \text{ N} \cdot \text{m}$ or less

MQR-X229
Rubber Seal

Rotary Joint

MQR-X229

How to Order

MQR | F 8 – M5 – X229

Option
- Nil
- Standard
- Flange

Rubber seal
- Connection diameter: M5 x 0.8
- Number of circuits

Option/Mounting Bracket

<table>
<thead>
<tr>
<th>Number of circuits</th>
<th>Flange part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 circuits</td>
<td>MQR8-F-X229</td>
</tr>
</tbody>
</table>

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of circuits (Number of ports)</td>
<td>8 circuits</td>
</tr>
<tr>
<td>Fluid</td>
<td>Air</td>
</tr>
<tr>
<td>Seal structure</td>
<td>Rubber seal</td>
</tr>
<tr>
<td>Guide structure</td>
<td>Bearing supported at both ends</td>
</tr>
<tr>
<td>Flow-rate characteristics</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>0.50 [dm³/(s·bar)]</td>
</tr>
<tr>
<td>b</td>
<td>0.40</td>
</tr>
<tr>
<td>Cv</td>
<td>0.17</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
</tr>
<tr>
<td>Minimum operating pressure</td>
<td>−100 kPa (10 Torr)</td>
</tr>
<tr>
<td>Maximum operating pressure</td>
<td>0.7 MPa</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>5 to +40°C Note 1) Note 2)</td>
</tr>
<tr>
<td>Fluid temperature</td>
<td></td>
</tr>
<tr>
<td>Start-up torque (Reference value)</td>
<td></td>
</tr>
<tr>
<td>When no pressure applied</td>
<td>0.5 N·m or less</td>
</tr>
<tr>
<td>When 0.7 MPa pressure applied</td>
<td>0.8 N·m or less</td>
</tr>
<tr>
<td>Allowable rpm (Reference value)</td>
<td>200 min⁻¹</td>
</tr>
<tr>
<td>Weight</td>
<td>0.53 kg</td>
</tr>
</tbody>
</table>

Note 1) Temperature rise: 50°C
<Conditions>
- Supply pressure: 0.7 MPa
- Rotation number: 200 min⁻¹(rpm)
Example) When the ambient temperature is 20°C, the surface temperature of the rotary joint is 70°C.

Note 2) The surface temperature of the rotary joint should not be more than 80°C. (Including the heat generated by adiabatic compression, etc.)

Note 3) The start-up torque may increase temporarily depending on the period of non-operation. For rotational torque with rotation number, refer to "Change in Rotational Torque with Rotation Number".

Construction

Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Aluminum</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Spool</td>
<td>Aluminum</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Gasket</td>
<td>H-NBR</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Plate</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Radial bearing</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Retaining ring</td>
<td>Carbon steel</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>O-ring</td>
<td>Special NBR</td>
<td>+ Fluorine grease applied</td>
</tr>
<tr>
<td>8</td>
<td>Bolt</td>
<td>Carbon steel</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Flange</td>
<td>Aluminum</td>
<td>+ Only for the MQR8</td>
</tr>
<tr>
<td>10</td>
<td>Bolt</td>
<td>Carbon steel</td>
<td></td>
</tr>
</tbody>
</table>
Change in Rotational Torque with Rotation Number

<table>
<thead>
<tr>
<th>Rotation number [rpm]</th>
<th>Rotational torque [N]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.1 MPa</td>
</tr>
<tr>
<td></td>
<td>0.5 MPa</td>
</tr>
<tr>
<td></td>
<td>0.7 MPa</td>
</tr>
<tr>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>3.0</td>
</tr>
</tbody>
</table>

No pressure applied

Note) These values show reference values and are not guaranteed.

Dimensions

Note) Indicates flange dimensions.
**Warning**

1. **Protection Cover**
   - A protective cover is recommended to minimize the risk of human injury.
   - If a moving part poses a risk of human injury and/or damage to machinery/equipment, then a structure which prevents direct contact with that part should be adopted.

2. **Securely Tighten**
   - Securely tighten all stationary parts and connected parts so that they will not become loose.
   - Secure fastening is particularly important when the rotary joint has a high operating frequency.

3. **Provide Devices**
   - Provide safety devices in drive circuit.
   - Collisions, or foreign material introduced by the air source, may cause scuffing or burning of rotating parts, which in turn leads to increased rotational torque.
   - Install safety devices in the drive circuit accordingly.

4. **Do Not Use**
   - Do not use in an emergency shutdown air circuit.
   - This product is not designed for use in a safety circuit performing emergency shutdown. Other reliable safety protection means should be adopted for such systems.

5. **Ensure Room**
   - Ensure room for maintenance.
   - Leave sufficient space for maintenance work.

6. **Release Pressure**
   - Release residual pressure.
   - Do not use for power transmission.
   - When using vacuum supply, loosen the suction filter, or equivalent, to prevent infiltration of dirt and foreign material via the adsorption pad or exhaust port.

7. **Do Not Disassemble**
   - Do not disassemble the product or make any modifications, including additional machining.
   - It may cause human injury and/or an accident.

8. **This Product**
   - This product is not guaranteed for zero leakage.
   - It cannot be used for vacuum holding or pressure holding in pressure vessels, etc. Please consult with SMC for leakage amount.

**Caution**

1. **Mounting**
   - Allow freedom of movement when securing the shaft.
   - If you do not allow some freedom of movement when fixing the shaft, any eccentricity will cause abnormal wear, leading to malfunction, breakdown, and possible human injury and/or damage to machinery/equipment.

2. **Selection**
   - Confirm the specifications.
   - The product advertised in this catalog is designed according to use in industrial compressed air systems. If the product is used in conditions where pressure, temperature, etc. are out of specification, damage and/or malfunction may be caused. Do not use in these conditions. (Refer to specifications.)

3. **Do Not Use**
   - Do not use for power transmission.
   - This product is not designed to be used as bearings for transmitting power from a drive source, such as a motor. Such use may lead to rotation faults, or damage.

**Safety Instructions**

Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” on the SMC website, http://www.smcworld.com

---

**Design**

**Piping**

**Warning**

1. **Treatment of Excessive Drain**
   - Do not use compressed air containing chemicals, synthetic oils containing organic solvents, salts, or corrosive gases, etc., as these can cause damage or malfunctions.

2. **Lubrication**
   - The cylinder has been lubricated for life at the factory and can be used without any further lubrication. However, in the event that it is additionally lubricated, be sure to use class 1 turbine oil (with no additive) ISO VG32. For details about lubricant manufacturers’ brands, refer to the SMC website. Additionally, please contact SMC for details about class 2 turbine oil (with additives) ISO VG32.
   - Once lubricant is utilized within the system, since the original lubricant applied within the product during manufacturing will be washed away, please continue to supply lubrication to the system. Without continued lubrication, malfunctions could occur.
   - If turbine oil is used, refer to the corresponding Material Safety Data Sheet (MSDS).

**Caution**

1. **Wrap Sealant Tape**
   - When screwing together pipes and fittings, etc., be certain that chips from the pipe threads and sealant material do not get inside the piping. Also, when sealant tape is used, leave approximately 3 thread ridges exposed at the end of the threads.

2. **Screw and Tightening**
   - Use the tightening torques in the table below, when screwing a fitting onto a piping port.

<table>
<thead>
<tr>
<th>Connection thread</th>
<th>Proper tightening torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>M5</td>
<td>1.5 to 2 N·m</td>
</tr>
</tbody>
</table>

**Reference**

Fastening M5 thread fittings
- Tighten manually, and then tighten a further quarter-turn using the fastening tool.
- If using miniature fittings, tighten manually, and then tighten a further quarter-turn using the fastening tool. If there are two gaskets, such as a universal elbow or universal tee, the final tightening should be doubled to a half-turn.

**Note**

Over-tightening of fittings may cause fracturing of the thread sections or deformation of the gaskets, leading to air leaks. If the fittings are under-tightened, the loosening of thread and air leaks may occur.

---

**Mounting**

**Warning**

1. **Lubrication**
   - Use clean air.
   - Do not use compressed air containing chemicals, synthetic oils containing organic solvents, salts, or corrosive gases, etc., as these can cause damage or malfunctions.

2. **Caution**
   - Use the product within the range of specifications for fluid and ambient temperature.

**Air Supply**

**Warning**

1. **Lubrication**
   - Install air filters.
   - Install filters at the upstream side of the rotary joint. The filtration degree should be 5 μm or less.

2. **Install Aftercooler**
   - Install an aftercooler, air dryer or water separator (drain catch), etc.
   - Air containing excessive drainage can cause malfunction of valves and other pneumatic equipment. To prevent this, install an aftercooler, air dryer or water separator, etc.

**Operating Environment**

**Warning**

1. **During Maintenance**
   - Do not use in environments where there is a danger of corrosion.
   - Refer to the construction drawings regarding rotary joint materials.

2. **Do Not Use**
   - Do not use in dusty locations or where water, oil, etc. will splash on the equipment.

**Maintenance**

**Warning**

1. **Drain Flushing**
   - Remove condensate from air filters at regular intervals.