**Compact Cylinders**

**Stroke**
- 10 mm
- 20 mm
- 30 mm
- 40 mm
- 50 mm

**Rod Tip**
- AM
- BM
- CP
- DR
- ER
- FB

**Type**
- MSCCN
- MSCCS
- MSDD

**Features**
- Fixed Tapped
- Fixed Tapped (Tapped)
- Fixed Tapped (M2/Left-hand Thread)

**Configurable Stroke Type**

*New Cylinder Body End*
- Standard Type (Terminal )
- Rod Tip Type

*New Cylinder Body End Selection*
- Head with Pilot Type (Terminal C)
- Rod with Pilot Type (Terminal D)

*New Cylinder Sensor*
- Rod Tip-Threaded
- Head with Pilot Type (Terminal C)

**Cold Weather Resistance Specification**
- Usable in the ambient temperature range from -40°C to 120°C.
- Changes to heat resistant grease, fluororubber gaskets and cylinder sensors are not available.

**Surcharge for Cylinder Body End Shape**
- Surcharges will be indicated in ( )
- Head with Pilot Type (Terminal C)
- Rod with Pilot Type (Terminal D)

**Unit Price**
- MSDD
- MSCCS
- MSCCN

**Part Number**
- MD11
- MD12
- MD13

**Sensors for Cylinders**
- MD13
- ME33

---

**Table 2**

<table>
<thead>
<tr>
<th>Code</th>
<th>Code</th>
<th>Code</th>
<th>Code</th>
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<tbody>
<tr>
<td>TC</td>
<td>TH</td>
<td>TK</td>
<td>VT</td>
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</tbody>
</table>

**Bracket Selection List**
- AM
- BM
- CP
- DR
- ER
- FB

**Bracket Unit Price (Body Price +)**
- Surcharges for Piston Rod Tip Shape (Body Price +)
- Surcharges for Cylinder Body End Shape (Body Price +)
- Surchages for Gasket (Body Price +)

**Part Number**
- MD11
- MD12
- MD13
- MD14
- ME33

---

**Note**
- Please purchase sensors separately ( ).
## Rotary Clamp Cylinders - Overview

### Overview
The square and space-saving cylinders have built-in rotary (swing) clamping mechanisms. Suitable for clamping small workpieces such as electron tubes in limited spaces.

### Features
- **Space Saving / Square**
- **Precautions**
  - NPN Output
  - 5~20mA No Contact
  - 7~20mA AC Contact 2
  - 5~20mA No Contact 2
  - 5~50mA DC
  - 7~20mA AC Contact
  - 5~50mA DC
- **Applicable Fluid**
  - Double Acting

### Basic Specifications of Clamp Cylinders

<table>
<thead>
<tr>
<th>Stroke (mm)</th>
<th>bore x stroke (mm)</th>
<th>stroke on instroke side (mm)</th>
<th>stroke on rotating side (mm)</th>
<th>rotating angle (°)</th>
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<tbody>
<tr>
<td>60</td>
<td>Ø50 74 66 29 10.5 64 57 40 70 62 29 8.5 52 57 24 69</td>
<td>35 20 35 20</td>
<td>20 20</td>
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<td>35 35</td>
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<tr>
<td>80</td>
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<td>35 20 35 20</td>
<td>20 20</td>
<td>35 35</td>
</tr>
<tr>
<td>100</td>
<td>Ø50 74 66 29 10.5 64 57 40 70 62 29 8.5 52 57 24 69</td>
<td>35 20 35 20</td>
<td>20 20</td>
<td>35 35</td>
</tr>
</tbody>
</table>

### Precautions for Handling Rotary Clamp Cylinders
- **Never touch any moving part while the cylinder is in operation.** It is extremely dangerous because fingers may be caught between moving parts.
- **Sensors of all diameters (Contact / No Contact) are mountable to the cylinders.**
- **For enhanced wear resistance, the cylinders are equipped with two guide grooves compatible with all diameters.**
- **The square and space-saving cylinders have built-in rotary (swing) clamping mechanisms.**
- **High Rigidity**
- **Space Saving / Square**

### Design / Selection
- **Homing**
- **Mount an arm according to the following steps as shown below.**
- **Fit the arm with a water-proof gasket.**
- **Draw the rotating portion out of the piston rod.**
- **After plugging, flush the pipe thoroughly to protect it from solids or seal tape fragments.**
- **Protect the cylinder from dust by installing an air dryer or air filter upstream.**
- **Make sure that the piston rod rotates before the arm is fully moved.**
- **Be sure that the arm mounted onto the tip of the piston rod is located at the center position.**
- **Do not clamp while the arm is rotating.**
- **Clamping Position**
- **Never touch any moving part while the arm is rotating.** It is extremely dangerous because fingers may be caught between moving parts.

### Rotary Clamp Cylinder External Dimensions

### Rotary Clamp Cylinder External Dimensions

| Part Number | Unit Price | \( \text{MTV12} \) | \( \text{MTV12} \) | \( \text{MTV12} \) | \( \text{MTV12} \) | \( \text{MTV12} \) | \( \text{MTV12} \) | \( \text{MTV12} \) | \( \text{MTV12} \) | \( \text{MTV12} \) | \( \text{MTV12} \) | \( \text{MTV12} \) | \( \text{MTV12} \) | \( \text{MTV12} \) |
|-------------|------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| MT12/MTV12  | 60         | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            |
| MT15/MTV15  | 60         | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            |
| MT10/MTV10  | 60         | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            | 13.0            |

### Rotary Clamp Cylinders Sensors Specifications

<table>
<thead>
<tr>
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<tr>
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<td>Wire Ext.</td>
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<td>Unit Price</td>
<td>5 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9</td>
</tr>
</tbody>
</table>

**Note:** The above table provides a general overview of the rotary clamp cylinders. For detailed specifications and application information, consult the manufacturer’s documentation.