### 1 Safety Instructions (Continued)

3) An application which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.

- Ensure that the air supply system is filtered to 5 microns.

### 2 Specifications

2.1 Specifications

#### Allowable kinetic energy

<table>
<thead>
<tr>
<th>Diameter</th>
<th>0.07 MPa (with air cushion)</th>
<th>0.97 MPa (with air cushion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø120</td>
<td>28.3 J</td>
<td>56.6 J</td>
</tr>
<tr>
<td>Ø140</td>
<td>44.6 J</td>
<td>89.2 J</td>
</tr>
<tr>
<td>Ø160</td>
<td>72.0 J</td>
<td>128.4 J</td>
</tr>
<tr>
<td>Ø180</td>
<td>100 J</td>
<td>182.4 J</td>
</tr>
<tr>
<td>Ø200</td>
<td>142.0 J</td>
<td>216.0 J</td>
</tr>
<tr>
<td>Ø250</td>
<td>265 J</td>
<td>397 J</td>
</tr>
</tbody>
</table>

#### Lubrication

- SMC products have been lubricated for life at manufacture, and do not require lubrication in service.
- ISO VG32. Once lubricant is used in the system, lubrication must be continued because the original lubricant applied during manufacturing will be washed away.

### 3 Installation (Continued)

3.3 Piping

- Before piping make sure to clean up chips, cutting oil, dust etc.
- When installing piping or fittings, ensure sealant material does not enter inside the port. When using seal tape, leave 1.5 to 2 threads exposed on the end of the piping.

### 3.5 Electrical connection

- Provide a grounding connection to the actuator to avoid any spark arising from potential differences.

#### Rod end accessories

1. Rod end nut
2. Single knuckle joint
3. Double knuckle joint

- Mounting procedure:
  - Screw the nut (1) loosely onto the rod end thread.
  - Screw the accessory (2 or 3) onto the rod end thread.
  - Tighten the nut against the accessory to fix it in place.

#### Use hand wrenches of the following dimensions:

- Ø125: 3/4, 1/2
- Ø140, Ø160: 9/16
- Ø180, Ø200: 5/8
- Ø250, Ø300: 7/8

#### Warning

- Do not operate pneumatically operated machinery or equipment if not avoided, could result in death or serious injury.

- Do not service machinery/equipment or attempt to remove components until safety is confirmed.

- Only trained personnel should operate pneumatically operated machinery and equipment.

- Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced personnel.

- Do not service machinery/equipment or attempt to remove components until safety is confirmed.

- Before machinery/equipment is re-started, ensure all safety measures mentioned above. Switch off air and electrical supplies and exhaust all residual compressed air in the system.

- Mounting procedure:
  - Screw the nut (1) loosely onto the rod end thread.
  - Screw the accessory (2 or 3) onto the rod end thread.
  - Tighten the nut against the accessory to fix it in place.

#### Use hand wrenches of the following dimensions:

- Ø125: 3/4, 1/2
- Ø140, Ø160: 9/16
- Ø180, Ø200: 5/8
- Ø250, Ø300: 7/8

#### Warning

- Do not operate pneumatically operated machinery or equipment if not avoided, could result in death or serious injury.
7.2 Seal replacement

- Only use SMC seal kits as listed in the table below.

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>Single rod type</th>
<th>Double rod type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø130</td>
<td>CSTN130A-PS</td>
<td>CSTN192A-PS</td>
</tr>
<tr>
<td>Ø160</td>
<td>CSTN160A-PS</td>
<td>CSTN192A-PS</td>
</tr>
<tr>
<td>Ø180</td>
<td>CSTN180A-PS</td>
<td>CSTN192A-PS</td>
</tr>
<tr>
<td>Ø200</td>
<td>CSTN200A-PS</td>
<td>CSTN192A-PS</td>
</tr>
<tr>
<td>Ø250</td>
<td>CSTN250A-PS</td>
<td>CSTN192A-PS</td>
</tr>
<tr>
<td>Ø300</td>
<td>CSTN300A-PS</td>
<td>CSTN192A-PS</td>
</tr>
</tbody>
</table>

7.3 Disassembly procedure

- Loosen and disassemble the tie rods and tie rod nuts using suitable wrenches. The table below lists the width across flats of the tie rod nuts.

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>Width across flats of tie rod nuts (mm)</th>
<th>Width across flats of hex cap screws (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø130</td>
<td>32</td>
<td>4</td>
</tr>
<tr>
<td>Ø160</td>
<td>24</td>
<td>6</td>
</tr>
<tr>
<td>Ø180</td>
<td>27</td>
<td>6</td>
</tr>
<tr>
<td>Ø200</td>
<td>27</td>
<td>6</td>
</tr>
<tr>
<td>Ø250</td>
<td>33</td>
<td>10</td>
</tr>
<tr>
<td>Ø300</td>
<td>36</td>
<td>10</td>
</tr>
</tbody>
</table>

- Separate the covers, cylinder tube and piston rod assembly.
- Clean the old grease and place all of the parts on a clean cloth in a clean environment.
- Remove the old tube gaskets, rod seal and cushion seals, piston seal and wear ring using a fine screwdriver wherever necessary.
- If a magnet is present on the piston do not remove it. The magnet is not replaceable.

7.4 Lubrication procedure

- Apply lubricant to:
  - rod seal
  - rod seal groove on the holder
  - piston surface
  - piston seal groove
  - piston seal
  - tube gaskets
  - cushion seals
  - piston rod surface
  - cylinder tube surface
  - wear ring

- Lubricate the parts with the grease packs provided with the seal kit. For additional grease, use the grease pack listed below.

<table>
<thead>
<tr>
<th>Product</th>
<th>Grease pack number</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>GRA-S-310</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>GRA-S-500</td>
<td>20</td>
</tr>
</tbody>
</table>

- The amount of lubricant to be applied is listed in the following table.

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>Stroke up to 100 mm</th>
<th>For each additional 50 mm stroke (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø130</td>
<td>15 ± 17</td>
<td>2</td>
</tr>
<tr>
<td>Ø140</td>
<td>20 ± 22</td>
<td>3</td>
</tr>
<tr>
<td>Ø160</td>
<td>24 ± 28</td>
<td>3</td>
</tr>
<tr>
<td>Ø180</td>
<td>27 ± 29</td>
<td>4</td>
</tr>
<tr>
<td>Ø200</td>
<td>30 ± 32</td>
<td>4</td>
</tr>
<tr>
<td>Ø250</td>
<td>36 ± 38</td>
<td>5</td>
</tr>
<tr>
<td>Ø300</td>
<td>36 ± 38</td>
<td>5</td>
</tr>
</tbody>
</table>

8 Limitations of use

- Do not exceed any of the specifications listed in section 2 of this document or the specific product catalogue.
- Air equipment has standard air leakage within certain limits. Do not use the equipment where vibration could lead to equipment failure. Contact SMC for this specific application.
- External impacts on the cylinder body could result in spark and/or cylinder damage. Avoid any application where foreign objects can hit the cylinder. In such situations install a suitable guard to prevent such impacts.
- Do not install or use this actuator in applications where the piston rod can impact foreign objects.
- Avoid applications where the piston rod end and the application joining parts create a possible ignition source.
- Use only ATEX certified auto switches. Order them separately.
- Do not use in the presence of strong magnetic fields that could generate a surface temperature higher than the value given for the temperature class.

9 Contacts

- AUSTRIA (43) 2382 62820-0
- LATVIA (371) 781 77 00
- BELGIUM (30) 3 355 1646
- LITHUANIA (370) 5 268 9126
- BULGARIA (30) 2 514 4402
- CZECH REP. (420) 541 424 611
- NORWAY (47) 67 12 90 20
- DENMARK (45) 7255 2900
- POLAND (48) 221 9560
- ESTONIA (372) 661 0370
- PORTUGAL (351) 21 471 1880
- FINLAND (358) 207 51513
- ROMANIA (40) 21 320 5111
- FRANCE (33) 1 667 1000
- SWEDEN (46) 444 05752
- GERMANY (49) 6120 300
- SLOVENIA (386) 78 855 412
- GREECE (30) 210 271 7285
- SPAIN (34) 945 184 100
- HUNGARY (30) 1 511 3990
- SWEDEN (46) 8 603 3200
- IRELAND (353) 1 403 9000
- UNITED KINGDOM (44) 1908 563888

SMC Corporation

URL: http://www.smcworld.com (Global) http://www.smceu.com (Europe)
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