**Angular grippers**

M/160300/M/11

Single acting Magnetic piston

Ø 8 to 25 mm

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Smooth, accurate movement
Long uninterrupted service life
Low weight
Compact size
Integral magnets for positional feedback

**Technical data**

**Medium:**
Compressed air, filtered lubricated or non-lubricated

**Operation:**
Single acting, angular, magnetic piston

**Operating pressure:**
29 to 101.5 psig (2 to 7 bar)
Ø 8 mm - 52.2 to 101.5 psig (3.6 to 7 bar)
Ø 10 mm - 43.5 to 101.5 psig (3 to 7 bar)

**Operating temperature:**
+32°F to +140°F (0°C to 60°C)
* Air supply must be dry enough to avoid ice formation at temperatures below 32°F (2°C)

**Mounting:**
Mounting holes on three faces

**Mechanical life:**
~ 5 million cycles before maintenance may be necessary

**Operating frequency:**
180 cycles per minute maximum

**Materials**
Body: aluminum alloy
Fingers: carbon steel
Elastomers: nitrile

**Barb fittings connections**
M3 x 1/8" tube ID, straight barb, part number 29217X303
M5 x 1/8" tube ID, straight barb, part number 29217X305

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### Theoretical closing gripping forces

<table>
<thead>
<tr>
<th>Model</th>
<th>Effective gripping force lb (N) at 72.5 psig (5 bar)</th>
<th>Air consumption in³ (cm³) at 72.5 psig (5 bar)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/160305/M/11</td>
<td>Opening</td>
<td>Closing</td>
</tr>
<tr>
<td>M/160306/M/11</td>
<td>0.135 (0.6)</td>
<td>0.225 (1)</td>
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<tr>
<td>M/160307/M/11</td>
<td>0.225 (1)</td>
<td>0.315 (1.4)</td>
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<tr>
<td>M/160308/M/11</td>
<td>0.63 (2.8)</td>
<td>2.25 (10)</td>
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<td>1.35 (6)</td>
<td>4.05 (18)</td>
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<td>M/160308/M/11</td>
<td>2.25 (10)</td>
<td>8.55 (38)</td>
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</tbody>
</table>

**Effective closing gripping forces = Theoretical closing gripping force x 0.85**

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Documents Provided by Coast Pneumatics
# Single Acting, Angular Gripper

Magnetic piston, Ø 12 & 20 mm

## Dimensions in mm

<table>
<thead>
<tr>
<th>Model</th>
<th>Ø</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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<th>G</th>
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<td>12</td>
<td>1.5</td>
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<td>28.5</td>
<td>52</td>
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<td>Ø 26 +0.05 deep</td>
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<td>4.5 (base); M3 x 0.5 deep</td>
<td>3.5 (side); Ø 3.2 (front)</td>
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<td>M3 x 0.5 deep 5</td>
<td>M3 x 0.5</td>
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<td>25</td>
<td>30°-10°</td>
<td>M4 x 0.7 deep 7</td>
<td>M5 x 0.8</td>
<td>M4 x 0.7</td>
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<td>M5 x 0.8 deep 8</td>
<td>M5 x 0.8</td>
<td>M4 x 0.7</td>
<td>M3 x 0.5</td>
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<td>36</td>
<td>38.5</td>
<td>30°-10°</td>
<td>M6 x 1 deep 10</td>
<td>M5 x 0.8</td>
<td>M5 x 0.8</td>
<td>M5 x 0.8</td>
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</table>
M/160300/M/12
Angular grippers Double acting
Magnetic piston Ø 8 ... 25 mm

Smooth, accurate movement
Long uninterrupted service life
Low weight
Compact size
Integral magnets for positional feedback

Technical data
Medium:
Compressed air filtered., lubricated or non-lubricated
Operation:
Double acting, angular, magnetic piston
Operating pressure:
14.5 to 101.5 psig (1 to 7 bar)
Ø 8 mm - 31.9 to 101.5 psig (2.2 to 7 bar)
Operating temperature:
32°F to 140°F (0°C to 60°C)
* Air supply must be dry enough to avoid ice formation at temperatures below 35°F (2°C)
Mounting:
Mounting holes on three faces
Mechanical life:
~ 5 million cycles before maintenance may be necessary
Operating frequency:
180 cycles per minute maximum

Materials
Body: aluminum alloy
Fingers: carbon steel
Elastomers: nitrile

Theoretical closing gripping forces

<table>
<thead>
<tr>
<th>Model</th>
<th>Effective gripping force lb (N) at 72.5 psig (5 bar)</th>
<th>Air consumption in3 (cm3) at 72.5 psig (5 bar)**</th>
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<tr>
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** per cycle

Effective closing gripping force = Theoretical closing gripping force x 0.85
Angular grippers Double acting
Magnetic piston Ø 8 ... 25 mm

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<td>2.5</td>
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<td>M/160305/M/12</td>
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<td>18.5</td>
<td>20</td>
<td>15</td>
<td>Ø 9 +0.05 deep 1</td>
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<td>9</td>
<td>4.5</td>
<td>-</td>
<td>-</td>
<td>14.5</td>
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<td>23</td>
<td>17</td>
<td>Ø 11 +0.05 deep 1.5</td>
<td>16</td>
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<td>7.5</td>
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<td>19</td>
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<td>M/160307/M/12</td>
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<td>34</td>
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<td>Ø 17 +0.05 deep 1.5</td>
<td>22</td>
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<th>AC</th>
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<td>17.5</td>
<td>30° -10°</td>
<td>M2.5 x 0.45 deep 4.5 (base); M3 x 0.5 deep 3.5 (side); Ø3.2 (front)</td>
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<td>M5 x 0.8 deep 8</td>
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<td>M6 x 1 deep 10</td>
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<td>M5 x 0.8</td>
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Dimensions in mm
**M/160330/M/12**

180° Angular grippers, Double acting

Magnetic piston, Ø 16 ... 20 mm

Smooth, accurate movement
Long, uninterrupted service life
Low weight
Compact size
Integral magnets for positional feedback

**Technical data**

**Medium:**
Compressed air, filtered, lubricated or non-lubricated

**Operating pressure:**
29 to 101.5 psig (2 to 7 bar)

**Operating temperature:**
32°F to 140°F (0°C to 60°C)
* Air supply must be dry enough to avoid ice formation at temperatures below 35°F (2°C)

**Mounting:**
Mounting holes on three surfaces

**Mechanical life:**
~ 3 million cycles before maintenance may be necessary

**Operating frequency:**
100 cycles per minute maximum

**Materials**
Body: aluminum alloy
Fingers: carbon steel
Slide plate: carbon steel
Elastomers: nitrile

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### Theoretical closing gripping forces

**Model**

<table>
<thead>
<tr>
<th>M/160335/M/12</th>
<th>Effective gripping force lb (N) at 72.5 psig (5 bar)</th>
<th>Air consumption in3 (cm³) at 72.5 psig (5 bar)**</th>
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<tbody>
<tr>
<td>Opening</td>
<td>Closing</td>
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<td>14.4/L (64/L)</td>
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<td>30.15/L (134/L)</td>
<td>0.46(8.0)</td>
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**Effective closing gripping force = Theoretical closing gripping force x 0.85**

---

Documents Provided by Coast Pneumatics
M/160330/M/12

180° Angular grippers, Double acting
Magnetic piston, Ø 16 ... 20 mm

Dimensions in mm

<table>
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<tr>
<th>Model</th>
<th>Ø</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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<td>16</td>
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<td>90°</td>
<td>3°</td>
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<td>3°</td>
<td>30°</td>
<td>M5 x 0.8 deep 8</td>
<td>M4 x 0.7</td>
<td>43.5</td>
<td>M5 x 0.8</td>
<td>0.28</td>
</tr>
</tbody>
</table>
Actuators

**M/160340/M/11**

Parallel grippers, Single acting
Magnetic piston, Ø 10 ... 25 mm

Ideal for general purpose gripping applications
Smooth, accurate movement
Long, uninterrupted service life
Low weight
Compact size
Integral magnets for positional feedback

**Technical data**

**Medium:**
Compressed air, filtered, lubricated or non-lubricated

**Operation:**
Single acting, parallel, magnetic piston

Operating pressure:
36.25 to 101.5 psig (2.5 to 7 bar)
Ø 10 mm – 50.75 to 101.5 psig (3.5 to 7 bar)

Operating temperature:
32°F to 140°F (0°C to 60°C)
* Air supply must be dry enough to avoid ice formation at temperatures below 35°F (2°C)

**Mounting:**
Mounting holes on three faces

Gripping repeatability:
± 0.0004 inches (+/- 0.01 mm)

Mechanical life:
~ 5 million cycles before maintenance may be necessary

Operating frequency:
200 cycles per minute maximum

**Materials**

Body: aluminum alloy
Top plate: carbon steel
Fingers: carbon steel
External screws: carbon steel
Elastomers: nitrile

<table>
<thead>
<tr>
<th>Model</th>
<th>Effective gripping force lb (N) at 72.5 psig (5 bar)</th>
<th>Air consumption in³ (cm³) at 72.5 psig (5 bar)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/160343/M/11</td>
<td>0.45 (2) 1.10 (4.9) 0.10 (0.1)</td>
<td>**per cycle</td>
</tr>
<tr>
<td>M/160344/M/11</td>
<td>0.88 (3.9) 4.73 (21) 0.65 (0.65)</td>
<td></td>
</tr>
<tr>
<td>M/160345/M/11</td>
<td>1.55 (6.9) 8.19 (36.4) 1.40 (1.4)</td>
<td></td>
</tr>
<tr>
<td>M/160346/M/11</td>
<td>3.08 (13.7) 12.15 (54) 2.80 (2.8)</td>
<td></td>
</tr>
</tbody>
</table>

**Theoretical closing gripping forces**

Criteria of workpiece weight
When chucking a workpiece, weight should be within the range between 1/10 and 1/20 of the above gripping force.
When chucking and then moving a workpiece, the workpiece may protrude or drop. Therefore workpiece weight should be less than the above mentioned value.
(Reference value is 1/30-1/50)

Weight depends on the operational condition, such as material and shape of workpiece or claw, speed and direction of moving workpiece (straight advance, rotation or swing, etc.)
M/160340/M/11
Parallel grippers, Single acting
Magnetic piston, Ø 10 ... 25 mm

<table>
<thead>
<tr>
<th>Model</th>
<th>Ø</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/160343/M/11</td>
<td>10</td>
<td>17</td>
<td>1.6/0.2 (open)</td>
<td>13 + 0.4 (closed)</td>
<td>4.5</td>
<td>25 max</td>
<td>16.5</td>
<td>59.5</td>
<td>5.5 - 0.03</td>
<td>43</td>
<td>15</td>
</tr>
<tr>
<td>M/160344/M/11</td>
<td>16</td>
<td>26</td>
<td>2.3 (open)</td>
<td>18 + 0.6/-0.2 (closed)</td>
<td>6.5</td>
<td>37.5 max</td>
<td>19</td>
<td>71</td>
<td>7 - 0.03</td>
<td>52</td>
<td>17.5</td>
</tr>
<tr>
<td>M/160345/M/11</td>
<td>20</td>
<td>36</td>
<td>1.5/-0.9 (open)</td>
<td>24 + 0.1/-0.9 (closed)</td>
<td>8.5</td>
<td>49 max</td>
<td>23</td>
<td>83.5</td>
<td>8 - 0.04</td>
<td>60.5</td>
<td>20</td>
</tr>
<tr>
<td>M/160346/M/11</td>
<td>25</td>
<td>42</td>
<td>1.0/-0.7 (open)</td>
<td>28 ± 0.4 (closed)</td>
<td>10</td>
<td>57.5 max</td>
<td>27</td>
<td>95</td>
<td>10 - 0.03</td>
<td>68</td>
<td>23</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>Ø</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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</tr>
</thead>
<tbody>
<tr>
<td>M/160343/M/11</td>
<td>10</td>
<td>20</td>
<td>23</td>
<td>17</td>
<td>Ø 11 + 0.05 deep</td>
<td>1.5</td>
<td>16</td>
<td>10</td>
<td>7.5</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>M/160344/M/11</td>
<td>16</td>
<td>23</td>
<td>34</td>
<td>26</td>
<td>Ø 17 + 0.05 deep</td>
<td>1.5</td>
<td>22</td>
<td>14</td>
<td>7.5</td>
<td>12</td>
<td>14</td>
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<tr>
<td>M/160345/M/11</td>
<td>20</td>
<td>26</td>
<td>45</td>
<td>35</td>
<td>Ø 21 + 0.05 deep</td>
<td>1.5</td>
<td>26</td>
<td>16</td>
<td>8</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>M/160346/M/11</td>
<td>25</td>
<td>30</td>
<td>52</td>
<td>40</td>
<td>Ø 26 + 0.05 deep</td>
<td>1.5</td>
<td>32</td>
<td>20</td>
<td>9</td>
<td>18</td>
<td>20</td>
</tr>
</tbody>
</table>

Dimensions in mm
Actuators

M/160340/M/12
Parallel grippers, Double acting
Magnetic piston, Ø 10 ... 25 mm

Ideal for general purpose gripping applications
Smooth, accurate movement
Long, uninterrupted service life
Low weight
Compact size
Integral magnets for positional feedback

Technical data
Medium:
Compressed air, filtered, lubricated or non-lubricated
Operation:
Double acting, parallel, magnetic piston
Operating pressure:
14.5 to 101.5 psig (1 to 7 bar)
Ø 10 mm - 26.1 to 101.5 psig (1.8 to 7 bar)
Ø 16 mm - 17.4 to 101.5 psig (1.2 to 7 bar)
Operating temperature:
32°F to 140°F (0°C to 60°C)
* Air supply must be dry enough to avoid ice formation at temperatures below 35°F (2°C)
Mounting:
Mounting holes on three faces
Gripping repeatability:
+/- 0.0004 inches (+/- 0.01 mm)
Mechanical life:
~ 5 million cycles before maintenance may be necessary
Materials
Body: aluminum alloy
Top plate: carbon steel
Fingers: carbon steel
External screws: carbon steel
Elastomers: nitrile

---

Theoretical closing gripping forces

Model Effective gripping force lb (N) at 72.5 psig (5 bar)
Opening Closing
M/160343/M/12 3.29 (14.6) 2.12 (9.4) 0.02 (0.3)
M/160344/M/12 7.65 (34) 5.74 (25.5) 0.09 (1.5)
M/160345/M/12 13.70 (60.9) 10.28 (45.7) 0.20 (3.3)
M/160346/M/12 19.58 (87) 15.08 (67) 0.38 (6.4)

** per cycle

---

Criteria of workpiece weight
When chucking a workpiece, weight should be within the range between 1/10 and 1/20 of the above gripping force.
When chucking and then moving a workpiece, the workpiece may protrude or drop. Therefore, workpiece weight should be less than the above mentioned value.
(Reference value is 1/30-1/50)
Weight depends on the operational condition, such as material and shape of workpiece or claw, speed and direction of moving workpiece (straight advance, rotation or swing, etc.)

---

Workpiece grip point

Effective closing gripping force = Theoretical closing gripping force x 0.85
Parallel grippers, Double acting
Magnetic piston, Ø 10 ... 25 mm

Grip point limitation range

<table>
<thead>
<tr>
<th>Model</th>
<th>Ø</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
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<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/160343/M/11</td>
<td>10</td>
<td>17</td>
<td>13</td>
<td>4.5</td>
<td>25 max.</td>
<td>16.5</td>
<td>59.5</td>
<td>5.5 - 0.03</td>
<td>43</td>
<td>15</td>
<td>6</td>
</tr>
<tr>
<td>M/160344/M/11</td>
<td>16</td>
<td>26</td>
<td>24</td>
<td>6.5</td>
<td>37.5 max</td>
<td>19</td>
<td>71</td>
<td>7 - 0.03</td>
<td>52</td>
<td>17.5</td>
<td>8</td>
</tr>
<tr>
<td>M/160345/M/11</td>
<td>20</td>
<td>36</td>
<td>29</td>
<td>8.5</td>
<td>49 max</td>
<td>23</td>
<td>83.5</td>
<td>8 - 0.04</td>
<td>60.5</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>M/160346/M/11</td>
<td>25</td>
<td>42</td>
<td>30</td>
<td>10</td>
<td>57.5 max</td>
<td>27</td>
<td>95</td>
<td>10 - 0.03</td>
<td>68</td>
<td>23</td>
<td>12</td>
</tr>
</tbody>
</table>

Dimensions in mm
M/160350/M/11
Parallel grippers - precision, Single acting
Magnetic piston, Ø 8 ... 20 mm

Ideal for applications demanding accuracy and precise repeatability
Smooth, accurate movement
Long, uninterrupted service life
Low weight
Compact size
Integral magnets for positional feedback

Technical data
Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
Single acting, parallel, magnetic piston

Operating pressure:
101.5 psig (7 bar) maximum - See website for minimum operating pressures

Operating temperature:
32°F to 140°F (0°C to 60°C)
* Air supply must be dry enough to avoid ice formation at temperatures below 2°C

Mounting:
Mounting holes on three faces

Gripping repeatability:
+/- 0.0004 inches (+/- 0.01 mm)

Accuracy to center:
+/- 0.003 inches (+/- 0.07 mm)

Mechanical life:
~ 5 million cycles before maintenance may be necessary

Operating frequency:
120 cycles per minute maximum

Materials
Body: aluminum alloy
Fingers: stainless steel
Guide rail: stainless steel
Elastomers: nitrile

M/160354/M/11
Effective gripping force lb (N) at 72.5 psig (5 bar) Minimu m operating Air consumption in3 (cm3)

<table>
<thead>
<tr>
<th>Model</th>
<th>Opening</th>
<th>Closing</th>
<th>Pressure</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/160354/M/11</td>
<td>0.61 (2.7)</td>
<td>0.92 (4.1)</td>
<td>58.00 (4)</td>
<td>0.004 (0.06)</td>
</tr>
<tr>
<td>M/160355/M/11</td>
<td>0.54 (2.4)</td>
<td>1.53 (6.8)</td>
<td>50.75 (3.5)</td>
<td>0.010 (0.16)</td>
</tr>
<tr>
<td>M/160356/M/11</td>
<td>1.22 (5.4)</td>
<td>4.50 (20)</td>
<td>36.25 (2.5)</td>
<td>0.042 (0.7)</td>
</tr>
<tr>
<td>M/160357/M/11</td>
<td>1.64 (7.3)</td>
<td>7.65 (34)</td>
<td>36.25 (2.5)</td>
<td>0.096 (1.6)</td>
</tr>
</tbody>
</table>

Theoretical closing gripping forces

M/160354/M/11

Effective closing gripping forces = Theoretical closing gripping force x 0.85
Parallel grippers - precision, Single acting

Magnetic piston, Ø 8 ... 20 mm

Dimensions in mm
### M/160350/M/11

Parallel grippers - precision, Single acting
Magnetic piston, Ø 8 ... 20 mm

**Dimensions in mm**

<table>
<thead>
<tr>
<th>Model</th>
<th>Ø</th>
<th>A</th>
<th>B</th>
<th>C</th>
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<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/160350/M/11</td>
<td>14.7</td>
<td>5</td>
<td>4.5</td>
<td>17</td>
<td>12</td>
<td>0.03</td>
<td>20</td>
<td>15.5 + 1.5 (open) 9 + 0.5 (closed)</td>
<td>36</td>
<td>17</td>
<td>Ø 11 + 0.05 deep 1.5</td>
</tr>
<tr>
<td>M/160356/M/11</td>
<td>16</td>
<td>8</td>
<td>6</td>
<td>24</td>
<td>16</td>
<td>0.03</td>
<td>30</td>
<td>22 + 1.8 (open) 12 + 1.3 (closed)</td>
<td>50</td>
<td>26</td>
<td>Ø 17 + 0.05 deep 1.5</td>
</tr>
<tr>
<td>M/160357/M/11</td>
<td>20</td>
<td>8</td>
<td>6</td>
<td>30</td>
<td>22</td>
<td>0.03</td>
<td>40</td>
<td>30 + 24 + 0.5 (open) 16 + 1.4 (closed)</td>
<td>62</td>
<td>35</td>
<td>Ø 21 + 0.05 deep 1.5</td>
</tr>
<tr>
<td>Model</td>
<td>Ø</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>G</td>
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<td>K</td>
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</tr>
<tr>
<td>M/160350/M/11</td>
<td>10</td>
<td>11</td>
<td>17</td>
<td>7</td>
<td>0.025</td>
<td>29</td>
<td>6</td>
<td>M3 x 0.5 M3 x 0.5 deep 4.5</td>
<td>Ø2.5 + 0.02 deep 2.5 M4 x 0.7 deep 6</td>
<td>Ø 3.4</td>
<td></td>
</tr>
<tr>
<td>M/160356/M/11</td>
<td>14</td>
<td>20</td>
<td>9</td>
<td>0.025</td>
<td>36</td>
<td>8</td>
<td>M5 x 0.8 M4 x 0.7 deep 5</td>
<td>Ø3 + 0.02 deep 3 M4 x 0.7 deep 6</td>
<td>Ø 3.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M/160357/M/11</td>
<td>20</td>
<td>27</td>
<td>12</td>
<td>0.025</td>
<td>43</td>
<td>8</td>
<td>M5 x 0.8 M4 x 0.7 deep 7</td>
<td>Ø4 + 0.02 deep 3.5 M5 x 0.8 deep 8</td>
<td>Ø 4.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ACT-164**

Documents Provided by Coast Pneumatics
Actuators

M/160350/M/12
Parallel grippers - precision, Double acting
Magnetic piston, Ø 8 ... 20 mm

Ideal for applications demanding accuracy and precise repeatability
Smooth, accurate movement
Long, uninterrupted service life
Low weight
Compact size
Integral magnets for positional feedback

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
Single acting, parallel, magnetic piston
Operating pressure:
101.5 psig (7 bar) maximum - See website for minimum operating pressures

Operating temperature:
32°F to 140°F (0°C to 60°C)
* Air supply must be dry enough to avoid ice formation at temperatures below 2°C

Mounting:
Mounting holes on three faces

Gripping repeatability:
+/- 0.0004 inches (+/- 0.01 mm)
Accuracy to center:
+/- 0.003 inches (+/- 0.07 mm)

Mechanical life:
~ 5 million cycles before maintenance may be necessary

Operating frequency:
120 cycles per minute maximum

Materials
Body: aluminum alloy
Fingers: stainless steel
Guide rail: stainless steel
Elastomers: nitrile

Theoretical closing gripping forces

Effective closing gripping forces = Theoretical closing gripping force x 0.85
M/160350/M/12
Parallel grippers < precision, Double acting
Magnetic piston, Ø 8 ... 20 mm

Dimensions in mm

<table>
<thead>
<tr>
<th>Ø</th>
<th>A</th>
<th>B</th>
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<th>D</th>
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<th>G</th>
<th>H</th>
<th>I</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/160354/M/11</td>
<td>8</td>
<td>8</td>
<td>3</td>
<td>2.5</td>
<td>15</td>
<td>7 ± 0.03</td>
<td>9 + 1.5 (open)</td>
<td>5 + 0.5 (closed)</td>
<td>20</td>
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<tr>
<td>M/160354/M/11</td>
<td>8</td>
<td>13 ± 0.05</td>
<td>9</td>
<td>1.2</td>
<td>8</td>
<td>1.5</td>
<td>Ø1.5 -0.03</td>
<td>4</td>
<td>1.5</td>
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<tr>
<td>M/160354/M/11</td>
<td>8</td>
<td>9.7</td>
<td>12</td>
<td>5 ± 0.025</td>
<td>17</td>
<td>4</td>
<td>M3 x 0.5</td>
<td>M2.5 x 0.45 deep 4</td>
<td>Ø 1.5 + 0.02 deep 1</td>
</tr>
<tr>
<td>M/160354/M/11</td>
<td>8</td>
<td>M2 x 0.4 deep 3.5</td>
<td>10</td>
<td>4.5</td>
<td>15</td>
<td>M3 x 0.5 deep 3</td>
<td>0.02</td>
<td></td>
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</tbody>
</table>
Actuators

**M/160350/M/12**
Parallel grippers - precision, Double acting
Magnetic piston, Ø 8 ... 20 mm

<table>
<thead>
<tr>
<th>Model</th>
<th>Ø</th>
<th>A</th>
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<th>C</th>
<th>D</th>
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<th>I</th>
<th>K</th>
</tr>
</thead>
<tbody>
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<td>M/160355/M/11 10</td>
<td>14.7</td>
<td>5</td>
<td>4.5</td>
<td>17</td>
<td>12 ± 0.03</td>
<td>20</td>
<td>15.5 + 1.5 (open) 9 + 0.5 (closed)</td>
<td>36</td>
<td>17</td>
<td>Ø 11 + 0.05 deep 1.5</td>
<td></td>
</tr>
<tr>
<td>M/160356/M/11 16</td>
<td>20</td>
<td>8</td>
<td>6</td>
<td>24</td>
<td>16 ± 0.03</td>
<td>30</td>
<td>22 + 1.8 (open) 12 + 1.3 (closed)</td>
<td>50</td>
<td>26</td>
<td>Ø 17 + 0.05 deep 1.5</td>
<td></td>
</tr>
<tr>
<td>M/160357/M/11 20</td>
<td>24</td>
<td>8</td>
<td>8</td>
<td>30</td>
<td>22 ± 0.03</td>
<td>40</td>
<td>30 + 2.4/-0.5 (open) 16 + 1.4 (closed)</td>
<td>62</td>
<td>35</td>
<td>Ø 21 + 0.05 deep 1.5</td>
<td></td>
</tr>
</tbody>
</table>

Dimensions in mm
Ideal for applications where operating space is restricted
Smooth, accurate movement
Long, uninterrupted service life
Low weight, compact size
Integral magnets for positional feedback

**Technical data**

**Medium:** Compressed air, filtered, lubricated or non-lubricated

**Operating pressure:**
- M/160364/M/12: 29 to 101.5 psig (2 to 7 bar)
- M/160365/M/12: 21.75 to 101.5 psig (1.5 to 7 bar)

**Operating temperature:**
32°F to 140°F (0°C to 60°C)
* Air supply must be dry enough to avoid ice formation at temperatures below 35°F (2°C)

**Mounting:**
Mounting holes on three faces

**Gripping repeatability:**
+/- 0.003 inches (+/- 0.07mm)

**Accuracy to center:**
+/- 0.004 inches (+/- 0.1mm)

**Materials**

- Body: aluminum alloy
- Fingers: carbon steel
- Bearings: stainless steel
- Elastomers: nitrile
- Barb fittings connections
  - M3 x 1/8” tube ID, straight barb, part number 29217X303
  - M5 x 1/8” tube ID, straight barb, part number 29217X305

**Theoretical gripping forces**

<table>
<thead>
<tr>
<th>Model</th>
<th>Effective gripping force lb (N) at 72.5 psig (5 bar)</th>
<th>Air consumption in3 (cm3) at 72.5 psig (5 bar)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/160364/M/12</td>
<td>3.76 (16.7)</td>
<td>0.084 (1.4)</td>
</tr>
<tr>
<td>M/160365/M/12</td>
<td>9.90 (44)</td>
<td>0.258 (4.3)</td>
</tr>
</tbody>
</table>

**M/160364/M/12**

- Gripping force lb (N)
- Grip point L in. (mm)
- Workpiece grip point

**M/160365/M/12**

- Gripping force lb (N)
- Grip point L (mm)
- Workpiece grip point

**ACT-170**
M/160360/M/12
Parallel grippers - low profile, Double acting
Magnetic piston, Ø 8 ... 12 mm

Dimensions in mm
Actuators

M/160380/M/12
Parallel grippers - three jaw, Double acting
Magnetic piston, Ø 16 ... 20 mm

Ideal for gripping spheres or components with circular faces
Smooth, accurate movement
Long, uninterrupted service life
Low weight, compact size
Integral magnets for positional feedback

Technical data
Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
Double acting, three jaw parallel, magnetic piston

Operating pressure:
29 to 101.5 psig (2 to 7 bar)
21.75 to 101.5 psig (1.5 to 7 bar)
M/160386/M/12

Operating temperature:
32°F to 140°F (+0°C to 60°C)
* Air supply must be dry enough to avoid ice formation at temperatures below 35°F (2°C)

Mounting:
Mounting holes on base

Gripping repeatability:
+/- 0.004 inches (+/- 0.01 mm)

Mechanical life:
~ 5 million cycles before maintenance may be necessary

Operating frequency:
200 cycles per minute maximum

Materials
Body: aluminum alloy
Top plate: carbon steel
Fingers: carbon steel
External screws: carbon steel
Elastomers: nitrile

Barb fittings connections
M3 x 1/8" tube ID, straight barb, part number 29217X303
M5 x 1/8" tube ID, straight barb, part number 29217X305

---

Model Effective gripping force lb (N) at 72.5 psig (5 bar) Air consumption in3 (cm3)
Opening Closing at 72.5 psig (5 bar)**

<table>
<thead>
<tr>
<th>Model</th>
<th>Effective gripping force lb (N)</th>
<th>Air consumption in3 (cm3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/160385/M/12</td>
<td>6.08 (27)</td>
<td>0.08 (1.4)</td>
</tr>
<tr>
<td>M/160386/M/12</td>
<td>8.10 (38)</td>
<td>0.20 (3.3)</td>
</tr>
</tbody>
</table>

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Grip point limitation range

Theoretical closing gripping forces

Effective closing gripping forces = Theoretical closing gripping force x 0.85
Criteria of workpiece weight

When chucking a workpiece, weight should be within the range between 1/10 and 1/20 of the above gripping force.

When chucking and then moving a workpiece, the workpiece may protrude or drop. Therefore, workpiece weight should be less than the above mentioned value. (Reference value is 1/30-1/50)

Weight depends on the operational conditions such as material and shape of workpiece or claw, speed and direction of moving workpiece (straight advance, rotation or swing, etc.)

Dimensions in mm

<table>
<thead>
<tr>
<th>Model</th>
<th>Ø</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/160380/M/12 16</td>
<td>16</td>
<td>53</td>
<td>23</td>
<td>27</td>
<td>2</td>
<td>12.5</td>
<td>M4 x 0.7 deep</td>
<td>7</td>
<td>10</td>
<td>5</td>
<td>2.5</td>
</tr>
<tr>
<td>M/160380/M/12 20</td>
<td>20</td>
<td>63.5</td>
<td>30.5</td>
<td>28</td>
<td>2</td>
<td>13</td>
<td>M5 x 0.8 deep</td>
<td>8</td>
<td>12.5</td>
<td>7</td>
<td>3.0</td>
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</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>Ø</th>
<th>L</th>
<th>M</th>
<th>Ø</th>
<th>P</th>
<th>Q</th>
<th>R</th>
<th>S</th>
<th>T</th>
<th>AA</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/160386/M/12 16</td>
<td>16</td>
<td>Ø 32</td>
<td>Ø 42</td>
<td>Ø 3 - 0.005</td>
<td>7 - 0.03</td>
<td>M3 x 0.5</td>
<td>9.5 + 0.9/-0.4 (open)</td>
<td>5.5 + 0.9/-0.4 (closed)</td>
<td>7.5</td>
<td>Ø 17 + 0.05 deep</td>
<td>1.5</td>
</tr>
<tr>
<td>M/160386/M/12 20</td>
<td>20</td>
<td>Ø 38</td>
<td>Ø 54</td>
<td>Ø 3 - 0.005</td>
<td>8 - 0.04</td>
<td>M4 x 0.7</td>
<td>13 + 1.6/-0.4 (open)</td>
<td>7 + 1.2/-0.4 (closed)</td>
<td>8</td>
<td>Ø 21 + 0.05 deep</td>
<td>1.5</td>
</tr>
</tbody>
</table>
**Actuators**

M/160390/M/12
Parallel grippers - long stroke, Double acting
Magnetic piston, Ø 12 ... 25 mm

Ideal for handling wide components
Smooth, accurate movement
Long, uninterrupted service life
Low weight
Compact size

**Technical data**

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operating pressure:
29 to 101.5 psig (2 to 7 bar)

Operating temperature:
32°F to 140°F (0°C to 60°C)
* Air supply must be dry enough to avoid ice formation at temperatures below 35°F (+2°C)

Mounting:
Mounting holes on two faces

Materials
Body: aluminum alloy
Piston rods: stainless steel
External nuts: carbon steel
Elastomers: nitrile

Barb fittings connections
M3 x 1/8" tube ID, straight barb, part number 29217X303
M5 x 1/8" tube ID, straight barb, part number 29217X305

---

<table>
<thead>
<tr>
<th>Model</th>
<th>Effective gripping force lb (N) at 72.5 psig (5 bar)</th>
<th>Air consumption in3 (cm3) per cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/160394/M/12</td>
<td>6.08 (27) 6.08 (27)</td>
<td>0.24 (4)</td>
</tr>
<tr>
<td>M/160395/M/12</td>
<td>12.36 (55) 12.36 (55)</td>
<td>0.57 (9.5)</td>
</tr>
<tr>
<td>M/160396/M/12</td>
<td>19.13 (85) 19.13 (85)</td>
<td>1.13 (18.8)</td>
</tr>
<tr>
<td>M/160397/M/12</td>
<td>30.38 (135) 30.38 (135)</td>
<td>2.28 (38)</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Model</th>
<th>Effective gripping force lb (N) at 72.5 psig (5 bar)</th>
<th>Grip point L in. (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/160394/M/12</td>
<td>101.5 psig (7 bar) 72.5 psig (5 bar) 43.5 psig (3 bar)</td>
<td>0.34 (10) 0.79 (20) 1.19 (30) 1.57 (40) 1.97 (50) 2.36 (60) 2.76 (70)</td>
</tr>
<tr>
<td>M/160395/M/12</td>
<td>101.5 psig (7 bar) 72.5 psig (5 bar) 43.5 psig (3 bar)</td>
<td>0.39 (10) 0.79 (20) 1.18 (30) 1.57 (40) 1.97 (50) 2.36 (60) 2.76 (70)</td>
</tr>
<tr>
<td>M/160396/M/12</td>
<td>101.5 psig (7 bar) 72.5 psig (5 bar) 43.5 psig (3 bar)</td>
<td>0.39 (10) 0.79 (20) 1.18 (30) 1.57 (40) 1.97 (50) 2.36 (60) 2.76 (70)</td>
</tr>
<tr>
<td>M/160397/M/12</td>
<td>101.5 psig (7 bar) 72.5 psig (5 bar) 43.5 psig (3 bar)</td>
<td>0.39 (10) 0.79 (20) 1.18 (30) 1.57 (40) 1.97 (50) 2.36 (60) 2.76 (70)</td>
</tr>
</tbody>
</table>

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Pneumatic parts, compressors, cylinders, solenoids, valves, flow control, miscellaneous.
Parallel grippers - long stroke, Double acting
Magnetic piston, Ø 12 ... 25 mm

Grip point limitation range

Dimensions in mm

<table>
<thead>
<tr>
<th>Model</th>
<th>Ø</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/160394/M/12</td>
<td>12</td>
<td>44</td>
<td>84.4 + 1.4/-1.0 (open) 60 + 1.0/-0.9 (closed)</td>
<td>6.5</td>
<td>6</td>
<td>8</td>
<td>12</td>
<td>Ø 6</td>
<td>34</td>
<td>21</td>
<td>38.5</td>
</tr>
<tr>
<td>M/160395/M/12</td>
<td>16</td>
<td>50</td>
<td>102.4 + 1.4/-1.0 (open) 70 + 1.0/-1.0 (closed)</td>
<td>8</td>
<td>8</td>
<td>10</td>
<td>13.5</td>
<td>Ø 8</td>
<td>38</td>
<td>28</td>
<td>43.5</td>
</tr>
<tr>
<td>M/160396/M/12</td>
<td>20</td>
<td>60</td>
<td>124.4 + 1.5/-1.1 (open) 84 + 1.1/-1.9 (closed)</td>
<td>10.5</td>
<td>10</td>
<td>12</td>
<td>21</td>
<td>Ø 10</td>
<td>46</td>
<td>34</td>
<td>58</td>
</tr>
<tr>
<td>M/160397/M/12</td>
<td>25</td>
<td>66</td>
<td>145 + 1.5/-1.1 (open) 94.6 + 1.1/-1.9 (closed)</td>
<td>11</td>
<td>12</td>
<td>14</td>
<td>26</td>
<td>Ø 10 &amp; Ø 12</td>
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<td>39</td>
<td>67.5</td>
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</table>

<table>
<thead>
<tr>
<th>Model</th>
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<th>A</th>
<th>B</th>
<th>C</th>
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<th>I</th>
<th>K</th>
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</thead>
<tbody>
<tr>
<td>M/160394/M/12</td>
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<td>21</td>
<td>11.5</td>
<td>15</td>
<td>9.5</td>
<td>3.5</td>
<td>24</td>
<td>4</td>
<td>27</td>
<td>39</td>
<td>29</td>
</tr>
<tr>
<td>M/160395/M/12</td>
<td>16</td>
<td>23.5</td>
<td>14</td>
<td>15</td>
<td>11</td>
<td>3.5</td>
<td>27</td>
<td>5</td>
<td>32</td>
<td>45</td>
<td>34</td>
</tr>
<tr>
<td>M/160396/M/12</td>
<td>20</td>
<td>33</td>
<td>17.5</td>
<td>-</td>
<td>16</td>
<td>5</td>
<td>32.5</td>
<td>8</td>
<td>40</td>
<td>59</td>
<td>40</td>
</tr>
<tr>
<td>M/160397/M/12</td>
<td>25</td>
<td>41</td>
<td>18.5</td>
<td>-</td>
<td>16.5</td>
<td>10</td>
<td>35.5</td>
<td>10</td>
<td>44</td>
<td>69</td>
<td>49</td>
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<table>
<thead>
<tr>
<th>Model</th>
<th>Ø</th>
<th>A</th>
<th>B</th>
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<th>G</th>
<th>H</th>
<th>I</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/160394/M/12</td>
<td>12</td>
<td>20</td>
<td>90°</td>
<td>1</td>
<td>16</td>
<td>M5 x 0.8</td>
<td>M5 x 0.8</td>
<td>22.7</td>
<td>27</td>
<td>99</td>
<td>76</td>
</tr>
<tr>
<td>M/160395/M/12</td>
<td>16</td>
<td>20</td>
<td>90°</td>
<td>1</td>
<td>19.5</td>
<td>M5 x 0.8</td>
<td>M6 x 1</td>
<td>27.5</td>
<td>32.5</td>
<td>60</td>
<td>123</td>
</tr>
<tr>
<td>M/160396/M/12</td>
<td>20</td>
<td>30</td>
<td>90°</td>
<td>3</td>
<td>23</td>
<td>M5 x 0.8</td>
<td>M8 x 1.25</td>
<td>34</td>
<td>37</td>
<td>70</td>
<td>147</td>
</tr>
<tr>
<td>M/160397/M/12</td>
<td>25</td>
<td>30</td>
<td>90°</td>
<td>3</td>
<td>25</td>
<td>M5 x 0.8</td>
<td>M10 x 1.5</td>
<td>40.5</td>
<td>44</td>
<td>84</td>
<td>169</td>
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<table>
<thead>
<tr>
<th>Model</th>
<th>Ø</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/160394/M/12</td>
<td>12</td>
<td>M4 x 0.7</td>
<td>20</td>
<td>30°</td>
<td>0.23</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>M/160395/M/12</td>
<td>16</td>
<td>M5 x 0.8</td>
<td>23.5</td>
<td>30°</td>
<td>0.40</td>
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<td></td>
</tr>
<tr>
<td>M/160396/M/12</td>
<td>20</td>
<td>M6 x 1</td>
<td>29</td>
<td>45°</td>
<td>0.76</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M/160397/M/12</td>
<td>25</td>
<td>M8 x 1.25</td>
<td>31</td>
<td>45°</td>
<td>1.10</td>
<td></td>
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<td></td>
<td></td>
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