Die Mounted Cam Unit  General Description of CMSD

FOR PIERCE

Mounting width are 52mm and 90mm.
Structure to ease removal of spring
Available angle is 0° to 20° (52 in width), 0° to 15° (90 in width) and the travel is 55mm.

CMUSD Structure and Assembly / Disassembly

1) Remove hexagon socket head bolt (a) and pull guide bar (t) from cam holder (w) 30 mm to the rear. Remove the guide bar and cam slide (tqr).
2) Pull and remove the guide bar from the cam slider.

Assembly method of CMSD
1) Assemble components in the reverse order of disassembly.
   Make sure that there is no foreign matter on the sliding area and assemble components.
   The clearance between the guide bar/cam slider and the cam holder is controlled. Match the stamped serial number on the holder and slider before assembly.
   When cam is disassembled and then reassembled, please do not forget to assemble all bolts provided.

CMUSD Specifications

<table>
<thead>
<tr>
<th>Mounting Surface</th>
<th>Woring Surface Width</th>
<th>Travel</th>
<th>Standard Working Force (one million strokes)</th>
<th>Allowable Working Force (300,000 strokes)</th>
<th>Spring Force N(kgf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMSD52</td>
<td>52</td>
<td>00</td>
<td></td>
<td></td>
<td>606.7(62.1)</td>
</tr>
<tr>
<td>CMSD90</td>
<td>90</td>
<td>00</td>
<td></td>
<td></td>
<td>1213.4(124.2)</td>
</tr>
</tbody>
</table>

Option of CMSD

- Key Specification(-K)
  CMSD52
  LKU20-50(with 2-M8×15 bolts)
  CMSD90
  LKU32-50(with 2-M8×15 bolts)
Die Mounted Cam Unit

**FOR PIERCE**

**CAD FILE**

**Die Mounted Cam Unit**

---

**Table of Components**

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
<th>Qty</th>
<th>Material and Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cam Slider(Upper)</td>
<td>1</td>
<td>FC250</td>
</tr>
<tr>
<td>2</td>
<td>Cam Holder</td>
<td>1</td>
<td>FC250</td>
</tr>
<tr>
<td>3</td>
<td>Cam Driver</td>
<td>1</td>
<td>FC250 with Graphite</td>
</tr>
<tr>
<td>4</td>
<td>Cam Slider(Lower)</td>
<td>1</td>
<td>FC250 with Graphite</td>
</tr>
<tr>
<td>5</td>
<td>Guide Bar</td>
<td>1</td>
<td>SCM440 with Graphite</td>
</tr>
<tr>
<td>6</td>
<td>Positive Return Follower</td>
<td>2</td>
<td>S45C(1045)</td>
</tr>
<tr>
<td>7</td>
<td>Coil Spring</td>
<td>2</td>
<td>SWS26-150</td>
</tr>
<tr>
<td>8</td>
<td>Stopper</td>
<td>2</td>
<td>Urethane</td>
</tr>
<tr>
<td>9</td>
<td>Spring Plug</td>
<td>2</td>
<td>SAE1065 NH8</td>
</tr>
</tbody>
</table>

**Bolts for assembly are not indicated.**

---

**Spring Diagram**

(Striping Force at punch retraction of 5mm)

- Spring used: SWS26-150 (2 piece)
- Spring constant: 9.48N/mm (0.97kgf/mm)
- Guideline of spring durability: 500,000 strokes

**Working Force kN(tonf)**

<table>
<thead>
<tr>
<th>Standard Working Force</th>
<th>Spring Force N(kgf)</th>
<th>Total Weight kg</th>
<th>Catalog No.</th>
<th>Option Code</th>
<th>Travel S</th>
</tr>
</thead>
<tbody>
<tr>
<td>38.2</td>
<td>170.6</td>
<td>24.9</td>
<td>CMSD 90</td>
<td>00</td>
<td>55</td>
</tr>
</tbody>
</table>

---

**For detailed specification of the key, refer to page 1713.**

---

**Space for removing**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

**Die Mounted Cam Unit**

---

Copyright © Sankyo Oilless Industry, Inc. All Rights Reserved.
Die Mounted Cam Unit

FOR PIERCE

Table of Components

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Qty</th>
<th>Material and Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cam Slider(Upper)</td>
<td>1</td>
<td>FC250</td>
</tr>
<tr>
<td>2</td>
<td>Cam Holder</td>
<td>1</td>
<td>FC250</td>
</tr>
<tr>
<td>3</td>
<td>Cam Driver</td>
<td>1</td>
<td>FC250 with Graphite</td>
</tr>
<tr>
<td>4</td>
<td>Cam Slider(Lower)</td>
<td>1</td>
<td>FC250 with Graphite</td>
</tr>
<tr>
<td>5</td>
<td>Guide Bar</td>
<td>1</td>
<td>SCM440 with Graphite</td>
</tr>
<tr>
<td>6</td>
<td>Positive Return Follower</td>
<td>2</td>
<td>S45C (1045)</td>
</tr>
<tr>
<td>7</td>
<td>Coil Spring</td>
<td>2</td>
<td>SWSB6-150</td>
</tr>
<tr>
<td>8</td>
<td>Stopper</td>
<td>2</td>
<td>Urethane</td>
</tr>
<tr>
<td>9</td>
<td>Spring Plug</td>
<td>2</td>
<td>SAE1065 NH8</td>
</tr>
</tbody>
</table>

For detailed specification of the key, refer to page 1713.

Order

<table>
<thead>
<tr>
<th>Option Code</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>Dedicated key is attached. (It is not assembled to the main unit.)</td>
</tr>
<tr>
<td>WC</td>
<td>The mounting surface width (W) is changed within the range 91 mm - 150 mm (1 mm increments).</td>
</tr>
</tbody>
</table>

N12

Position of piercing center to be set within cam width.

Order

CMSD90 – 05 – 55 – WC120
CMSD90 – 05 – 55 – K

Refer to page 559 for detailed specifications of tapped holes and dowel pin holes (prepared hole, finish hole) for retainer.

Spring Diagram

(38.2 kN (3.9 tonf))

Spring Diagram

(76.4 kgf (7.8 tonf))

Final Load

(170.6 kgf (17.5 tonf))

Initial Load

(1213.4 kgf (124.2 tonf))

Initial deflection

5.0 mm

Spring Diagram

(175 kgf (17.5 tonf))

Length at initial load 141

Initial deflection 5.0

Length at final load 86

Working Force

(kN (tonf))

Spring Force

(kgf)

Allowable Working Force

(Millions strokes)

Total Weight

(kg)

Catalog No. (W) (θ) S

<table>
<thead>
<tr>
<th>Standard Working Force (Millions strokes)</th>
<th>Working Force (kN (tonf))</th>
<th>Spring Force (kgf)</th>
<th>Total Weight (kg)</th>
<th>Catalog No. (W) (θ) S</th>
</tr>
</thead>
<tbody>
<tr>
<td>38.2 (3.9)</td>
<td>76.4 (7.8)</td>
<td>170.6 (17.5)</td>
<td>1213.4 (124.2)</td>
<td>25.9 CMSD 90 05 55</td>
</tr>
</tbody>
</table>
# Die Mounted Cam Unit

## FOR PIERCE

### Table of Components

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Qty</th>
<th>Material and Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cam Slider(Upper)</td>
<td>1</td>
<td>FC250</td>
</tr>
<tr>
<td>2</td>
<td>Cam Holder</td>
<td>1</td>
<td>FC250 with Graphite</td>
</tr>
<tr>
<td>3</td>
<td>Cam Driver</td>
<td>1</td>
<td>FC250 with Graphite</td>
</tr>
<tr>
<td>4</td>
<td>Cam Slider(Lower)</td>
<td>1</td>
<td>FC250 with Graphite</td>
</tr>
<tr>
<td>5</td>
<td>Guide Bar</td>
<td>1</td>
<td>SCM440 with Graphite</td>
</tr>
<tr>
<td>6</td>
<td>Positive Return Follower</td>
<td>2</td>
<td>S45C(1045)</td>
</tr>
<tr>
<td>7</td>
<td>Coil Spring</td>
<td>2</td>
<td>SW526-150</td>
</tr>
<tr>
<td>8</td>
<td>Stopper</td>
<td>2</td>
<td>Urethane</td>
</tr>
<tr>
<td>9</td>
<td>Spring Plug</td>
<td>2</td>
<td>SAE1065 NHB</td>
</tr>
</tbody>
</table>

**Space for removing**

For detailed specification of the key, refer to page 1713.

### Spring Diagram

**Cam Diagram**

**Table of Components**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Qty</th>
<th>Material and Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cam Slider(Upper)</td>
<td>1</td>
<td>FC250</td>
</tr>
<tr>
<td>2</td>
<td>Cam Holder</td>
<td>1</td>
<td>FC250 with Graphite</td>
</tr>
<tr>
<td>3</td>
<td>Cam Driver</td>
<td>1</td>
<td>FC250 with Graphite</td>
</tr>
<tr>
<td>4</td>
<td>Cam Slider(Lower)</td>
<td>1</td>
<td>FC250 with Graphite</td>
</tr>
<tr>
<td>5</td>
<td>Guide Bar</td>
<td>1</td>
<td>SCM440 with Graphite</td>
</tr>
<tr>
<td>6</td>
<td>Positive Return Follower</td>
<td>2</td>
<td>S45C(1045)</td>
</tr>
<tr>
<td>7</td>
<td>Coil Spring</td>
<td>2</td>
<td>SW526-150</td>
</tr>
<tr>
<td>8</td>
<td>Stopper</td>
<td>2</td>
<td>Urethane</td>
</tr>
<tr>
<td>9</td>
<td>Spring Plug</td>
<td>2</td>
<td>SAE1065 NHB</td>
</tr>
</tbody>
</table>

A: Bolts for assembly are not indicated.

### Option

- **Option Code**: Specification
- **K**: Dedicated key is attached. (It is not assembled to the main unit.)
- **WC**: The mounting surface width (W) is changed within the range 91 mm - 150 mm (1 mm increments).
- **N12**: Dowel pin holes of cam holder and cam driver are changed to h12H7.

For detailed specifications of tapped holes and dowel pin holes (prepared hole, finish hole) for retainer.

### Work Force

<table>
<thead>
<tr>
<th>Working Force</th>
<th>Spring Force</th>
<th>Total Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>38.2</td>
<td>76.4</td>
<td>170.6</td>
</tr>
<tr>
<td>(3.9)</td>
<td>(7.8)</td>
<td>(17.5)</td>
</tr>
<tr>
<td>1713.4</td>
<td>1213.4</td>
<td>27.3</td>
</tr>
<tr>
<td>(124.2)</td>
<td>(124.2)</td>
<td>(17.5)</td>
</tr>
</tbody>
</table>

For detailed specifications of tapped holes and dowel pin holes (prepared hole, finish hole) for retainer.

### Working Force

- **K**: Dedicated key is attached. (It is not assembled to the main unit.)
- **WC**: The mounting surface width (W) is changed within the range 91 mm - 150 mm (1 mm increments).
- **N12**: Dowel pin holes of cam holder and cam driver are changed to h12H7.

For detailed specifications of tapped holes and dowel pin holes (prepared hole, finish hole) for retainer.

### Table of Components

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Qty</th>
<th>Material and Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cam Slider(Upper)</td>
<td>1</td>
<td>FC250</td>
</tr>
<tr>
<td>2</td>
<td>Cam Holder</td>
<td>1</td>
<td>FC250 with Graphite</td>
</tr>
<tr>
<td>3</td>
<td>Cam Driver</td>
<td>1</td>
<td>FC250 with Graphite</td>
</tr>
<tr>
<td>4</td>
<td>Cam Slider(Lower)</td>
<td>1</td>
<td>FC250 with Graphite</td>
</tr>
<tr>
<td>5</td>
<td>Guide Bar</td>
<td>1</td>
<td>SCM440 with Graphite</td>
</tr>
<tr>
<td>6</td>
<td>Positive Return Follower</td>
<td>2</td>
<td>S45C(1045)</td>
</tr>
<tr>
<td>7</td>
<td>Coil Spring</td>
<td>2</td>
<td>SW526-150</td>
</tr>
<tr>
<td>8</td>
<td>Stopper</td>
<td>2</td>
<td>Urethane</td>
</tr>
<tr>
<td>9</td>
<td>Spring Plug</td>
<td>2</td>
<td>SAE1065 NHB</td>
</tr>
</tbody>
</table>

A: Bolts for assembly are not indicated.

### Option

- **Option Code**: Specification
- **K**: Dedicated key is attached. (It is not assembled to the main unit.)
- **WC**: The mounting surface width (W) is changed within the range 91 mm - 150 mm (1 mm increments).
- **N12**: Dowel pin holes of cam holder and cam driver are changed to h12H7.

For detailed specifications of tapped holes and dowel pin holes (prepared hole, finish hole) for retainer.

### Work Force

<table>
<thead>
<tr>
<th>Working Force</th>
<th>Spring Force</th>
<th>Total Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>38.2</td>
<td>76.4</td>
<td>170.6</td>
</tr>
<tr>
<td>(3.9)</td>
<td>(7.8)</td>
<td>(17.5)</td>
</tr>
<tr>
<td>1713.4</td>
<td>1213.4</td>
<td>27.3</td>
</tr>
<tr>
<td>(124.2)</td>
<td>(124.2)</td>
<td>(17.5)</td>
</tr>
</tbody>
</table>

For detailed specifications of tapped holes and dowel pin holes (prepared hole, finish hole) for retainer.
Die Mounted Cam Unit

FOR PIERCE

CMSD90 – 15 – 55

Table of Components

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
<th>Qty</th>
<th>Material and Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cam Slider(upper)</td>
<td>1</td>
<td>FC250</td>
</tr>
<tr>
<td>2</td>
<td>Cam Holder</td>
<td>1</td>
<td>FC250</td>
</tr>
<tr>
<td>3</td>
<td>Cam Driver</td>
<td>1</td>
<td>FC250 with Graphite</td>
</tr>
<tr>
<td>4</td>
<td>Cam Slider(lower)</td>
<td>1</td>
<td>FC250 with Graphite</td>
</tr>
<tr>
<td>5</td>
<td>Guide Bar</td>
<td>1</td>
<td>SCM440 with Graphite</td>
</tr>
<tr>
<td>6</td>
<td>Positive Return Follower</td>
<td>2</td>
<td>S45C(1045)</td>
</tr>
<tr>
<td>7</td>
<td>Coil Spring</td>
<td>2</td>
<td>SW526-150</td>
</tr>
<tr>
<td>8</td>
<td>Stopper</td>
<td>2</td>
<td>Urethane</td>
</tr>
<tr>
<td>9</td>
<td>Spring Plug</td>
<td>2</td>
<td>SAE1065 NH8</td>
</tr>
</tbody>
</table>

Bolts for assembly are not indicated.

Spring Diagram

- (Stripping Force at punch retraction of 5mm)
  - Spring used SW526-150 (2 pieces)
  - Spring constant 9.48N/mm (0.97kgf/mm)
  - Guideline of spring durability 500,000 strokes

Final Load 1213.4
Initial Load 170.6
Length at initial load 141
Initial deflection ±5.0
Free length 150

Table of Working and Spring Force

<table>
<thead>
<tr>
<th>Working Force kN(tonf)</th>
<th>Spring Force N(kgf)</th>
<th>Total Weight kg</th>
<th>Catalog No.</th>
<th>(W)</th>
<th>(θ)</th>
<th>Travel S</th>
</tr>
</thead>
<tbody>
<tr>
<td>38.2 (3.9)</td>
<td>76.4 (7.8)</td>
<td>170.6 (17.5)</td>
<td>CMSD</td>
<td>90</td>
<td>15</td>
<td>55</td>
</tr>
</tbody>
</table>

For detailed specification of the key, refer to page 1713.