Light-Duty Suspension System CS-2000 SL 45 / 60

The CS-2000 SL light-duty suspension system is specially designed for accepting small, lightweight control enclosures and features short extension arms. In addition to the components in light grey RAL 7035, a new version in anthracite grey RAL 7016 is now available that elegantly complements our CC-3000 and CC-4000 / CC-4000 SL control enclosures (see Page 72 onwards).

System structure

Individual components of the suspension system are combined with an optionally closed or partially open aluminium connection section to achieve the required configuration in accordance with the load diagram (with the exception of panel couplings).

Load diagram

The above diagram shows the load bearing capacity of the CS-2000 SL range of suspension systems (with the exception of panel couplings).

The load bearing capacity of the system changes depending on the type of connecting section used (partially open or closed) or whether an intermediate joint is used.

The following safety factor generally applies:

With an additional load of 75 kg, the suspension system can be subjected to load for 5 seconds without plastic deformation occurring.

The overview on Pages 106 / 107 is designed to help you determine the load bearing capacity of all BERNSTEIN suspension systems.

Materials

- Components: cast aluminium
- Installation opening: POM
- Bearing: POM
- Seals: CR
- Extruded aluminium connecting section
- Connecting section covers on open section: EPDM

Colours

- Suspension system components: light grey RAL 7035 alternatively: anthracite grey RAL 7016
- Connecting section: silver (natural) anodised

System features

- Installation opening at all joints
- Optionally closed or open connecting section can be used
- Clear passage opening in closed system:
  - $40 \, \text{mm} = 12.5 \, \text{cm}^2$ at narrowest point (bearing opening)
- Clear passage opening in partially open system:
  - $2.76 \, \text{cm}^2$ at narrowest point (entry of section in components)
  - $7.40 \, \text{cm}^2$ in closed tube
- Easily retrofittable swivel angle limitation on couplings and joints
- Couplings have a small narrow flange for mounting on very narrow enclosures
- Overhead installation of all components possible
- Modern industrial design
- Protection class IP 65 (closed aluminium connection section)
Enclosure preparation for mounting couplings

The geometry of the flange on the straight coupling and on the elbow coupling makes it possible to mount even extremely narrow enclosures. Two centrally arranged threads, with which the coupling is secured to narrow enclosures, are additionally provided for this purpose.

However, the coupling is mounted as standard by means of the four outer flange mounting threads, compatible and interchangeable with the flange mounting pattern of the CS-3000 suspension system. With a diameter of 43 mm, the hole for the cable leadthrough is adapted to the narrowest point in the suspension system (a minimum diameter of 40 mm is available in the bearing opening in the components).

Machining mounting surfaces for suspension systems

The various elements of the suspension systems can be mounted on walls or floors as well as on or at machines and systems. The corresponding machining drawings for the individual components of the suspension system are shown here.
Light-Duty Suspension System CS-2000 SL 45 / 60

Load, panel components

Mechanical properties
Max. load G 250 N
Max. System length L 1500 mm

System combinations

The large number of components and different versions of the connecting sections enable many different combinations. A selection of the possible configuration is shown below.
Assembling the connecting sections

[A] Open or closed section in straight coupling and elbow coupling:
Adhere seal to connecting section (1), fit connecting section in suspension system component (2, 3).

[B] Closed section in suspension system components with eight mounting screws:
Adhere seal to connecting section (1), fit connecting section in suspension system component (2, 3) while adjusting the section.

[C] Open section in suspension system components with eight mounting screws:
Adhere seal to connecting section, fit connecting section in suspension system component, only fit the four mounting screws on the closed part of the tubing, install cover seal.

Connecting sections

The connecting section is a drawn aluminium AlMgSi 0.5 bar. The surface is anodised and therefore corresponds to a colour similar to RAL 9006.
The connecting section can be used both in open as well as in completely closed cable ducts. The partly open section has an EPDM cover, coloured similar to RAL 7042.
This flexible plastic cover can be easily withdrawn and reinserted.

<table>
<thead>
<tr>
<th>Dimensions (mm)</th>
<th>Article number</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 x 60 x 250</td>
<td>9524001000</td>
</tr>
<tr>
<td>45 x 60 x 500</td>
<td>9524002000</td>
</tr>
<tr>
<td>45 x 60 x 750</td>
<td>9524003000</td>
</tr>
<tr>
<td>45 x 60 x 1000</td>
<td>9524004000</td>
</tr>
<tr>
<td>45 x 60 x 1250</td>
<td>9524005000</td>
</tr>
<tr>
<td>45 x 60 x 1500</td>
<td>9524006000</td>
</tr>
<tr>
<td>45 x 60 x 2000</td>
<td>9524008000</td>
</tr>
</tbody>
</table>

You will find an aid for selecting the load bearing capacity on Pages 106/107.
# Light-Duty Suspension System CS-2000 SL 45 / 60

<table>
<thead>
<tr>
<th>Article</th>
<th>Straight coupling CS-2000 SL</th>
<th>Elbow coupling CS-2000 SL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article number (colour)</td>
<td>1015163000 RAL 7035 light grey</td>
<td>1015165000 RAL 7035 light grey</td>
</tr>
<tr>
<td></td>
<td>1015328000 RAL 7016 anthracite grey</td>
<td>1015329000 RAL 7016 anthracite grey</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Details</th>
<th>Angle of rotation 300° with stop. Complete with installation material and seals</th>
<th>Installation opening with snap-on plastic cover. Angle of rotation 300° with stop. Complete with installation material and seals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight in lbs. (g)</td>
<td>1.6 (740) Aluminium</td>
<td>2.1 (960) Aluminium</td>
</tr>
<tr>
<td>Material</td>
<td>Aluminium</td>
<td>Aluminium</td>
</tr>
<tr>
<td>Accessories (retrofitable)</td>
<td>Swivel angle limiter 9805129000</td>
<td>Swivel angle limiter 9805129000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Application example</th>
<th></th>
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</table>

<table>
<thead>
<tr>
<th>Dimensions in mm</th>
<th></th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Straight coupling CS-2000 SL</th>
<th>Elbow coupling CS-2000 SL</th>
</tr>
</thead>
</table>

![Diagram of Light-Duty Suspension System CS-2000 SL 45 / 60](image-url)
**Light-Duty Suspension System CS-2000 SL 45 / 60**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1015169000 RAL 7035 light grey</td>
<td>1015170000 RAL 7035 light grey</td>
<td>1015164000 RAL 7035 light grey</td>
</tr>
<tr>
<td>1015332000 RAL 7016 anthracite grey</td>
<td>1015333000 RAL 7016 anthracite grey</td>
<td>1015330000 RAL 7016 anthracite grey</td>
</tr>
</tbody>
</table>

- **Angle of rotation 300° with stop.**
  - Infinitely variable inclination from 0 to 30°.
  - Complete with installation material and seals.
  - Enclosure max. 300 N

- **Swivel angle limiter**

<table>
<thead>
<tr>
<th>6.6 (3000) Aluminium</th>
<th>7.3 (3300) Aluminium</th>
<th>2.4 (1100) Aluminium</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Swivel angle limiter 9805130000</th>
<th>Swivel angle limiter 9805130000</th>
<th>Swivel angle limiter 98051290000</th>
</tr>
</thead>
</table>

- **Tilt coupling CS-2000 SL**
  - Angle 15°. Angle of rotation 300° with stop.
  - Complete with installation material and seals.
## Light-Duty Suspension System CS-2000 SL 45 / 60

### Article

<table>
<thead>
<tr>
<th>Article number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1015166000</td>
<td>Tilt elbow coupling CS-2000 SL</td>
</tr>
<tr>
<td>1015331000</td>
<td>Base coupling CS-2000 SL</td>
</tr>
</tbody>
</table>

### Tilt elbow coupling CS-2000 SL

- **Material:** Aluminium
- **Weight:** 3.1 (1400) lbs.
- **Application example:**

### Base coupling CS-2000 SL

- **Material:** Aluminium
- **Weight:** 2.6 (1180) lbs.
- **Application example:**

### Details

<table>
<thead>
<tr>
<th>Article</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9805129000</td>
<td>Swivel angle limiter</td>
</tr>
</tbody>
</table>

### Application example

- **Dimensions in mm:**

### Accessories (retrofitable)

<table>
<thead>
<tr>
<th>Article number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9805129000</td>
<td>Swivel angle limiter</td>
</tr>
</tbody>
</table>

- **Weight in lbs. (g):**
  - Tilt angle 15°. Installation opening with snap-on plastic cover. Angle of rotation 300° with stop. Complete with installation material and seals
  - Integrated component. Angle of rotation 300° with stop. Complete with installation material for enclosure and seals

- **Material:**
  - Aluminium

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## Light-Duty Suspension System CS-2000 SL 45 / 60

### Tilt base coupling CS-2000 SL
<table>
<thead>
<tr>
<th>Code</th>
<th>Colour Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1015168000</td>
<td>RAL 7035 light grey</td>
</tr>
<tr>
<td>1015344000</td>
<td>RAL 7016 anthracite grey</td>
</tr>
</tbody>
</table>

### Panel coupling
<table>
<thead>
<tr>
<th>Code</th>
<th>Colour Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1015232000</td>
<td>RAL 7035 light grey</td>
</tr>
<tr>
<td>1015346000</td>
<td>RAL 7016 anthracite grey</td>
</tr>
</tbody>
</table>

### Panel turn/tilt coupling S
<table>
<thead>
<tr>
<th>Code</th>
<th>Colour Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1015235000</td>
<td>RAL 7035 light grey</td>
</tr>
<tr>
<td>1015347000</td>
<td>RAL 7016 anthracite grey</td>
</tr>
</tbody>
</table>

### Integrated component
- Angle of rotation 300° with stop. Fixed inclination of 15°. Complete with installation material for enclosure and seals.

**Maximum load:** 250 N at a maximum system length of 1500 mm.

### Panel coupling
- **Maximum load:** 250 N at a maximum system length of 1500 mm.

### Panel turn/tilt coupling S
- **Maximum load:** 250 N at a maximum system length of 1500 mm.

### Swivel angle limiter
**9805129000**

- Aluminium

### Specifications
- **Tilt base coupling CS-2000 SL**
  - **Max. load**: 7.5 kN (3400 lbf)
  - **Material**: Aluminium

- **Panel coupling**
  - **Max. load**: 6.6 kN (3000 lbf)
  - **Material**: Aluminium

- **Panel turn/tilt coupling S**
  - **Max. load**: 2.6 kN (1200 lbf)
  - **Material**: Aluminium

- **Swivel angle limiter**
  - **Max. load**: 2.6 kN (1200 lbf)
  - **Material**: Aluminium
## Light-Duty Suspension System CS-2000 SL 45 / 60

### Article
<table>
<thead>
<tr>
<th>Article number</th>
<th>Panel elbow coupling</th>
<th>Panel tilt/turn elbow coupling W</th>
</tr>
</thead>
<tbody>
<tr>
<td>1015233000</td>
<td>RAL 7035 light grey</td>
<td>RAL 7035 light grey</td>
</tr>
<tr>
<td>1015348000</td>
<td>RAL 7016 anthracite grey</td>
<td>RAL 7016 anthracite grey</td>
</tr>
</tbody>
</table>

### Details
- **Weight in lbs. (g):**
  - Panel elbow coupling: 6.6 (3000)
  - Panel tilt/turn elbow coupling W: 7.6 (3460)
- **Material:**
  - Panel elbow coupling: Aluminium
  - Panel tilt/turn elbow coupling W: Aluminium

### Application example
- For rear connection of narrow and lightweight controller panels to the CS-2000 SL light-duty suspension system; the maximum load of this component is 250 N at a maximum system length of 1500 mm.

### Dimensions in mm

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**Note:** The dimensions provided may not be exhaustive and should be cross-referenced with the manufacturer's specifications for accuracy.
Light-Duty Suspension System CS-2000 SL 45 / 60

**Elbow CS-2000 SL**
- 1015171000 RAL 7035 light grey
- 1015334000 RAL 7016 anthrazit-grau

**Elbow for torque load CS-2000 SL**
- 1015172000 RAL 7035 light grey
- 1015335000 RAL 7016 anthracite grey

**Plug-on joint CS-2000 SL**
- 1015173000 RAL 7035 light grey
- 1015337000 RAL 7016 anthracite grey

- **Swivel angle limiter**: 9805132000
- **Increased wall strength. Adjustment facility.**
- **Swivel angle 300° with stop.**
- **Installation opening with snap-on plastic cover. Complete with seals**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium</td>
<td>1.3 (590)</td>
<td>2.2 (1000)</td>
<td>4.1 (1850)</td>
</tr>
</tbody>
</table>

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by **BERNSTEIN**

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Light-Duty Suspension System CS-2000 SL 45 / 60

### Intermediate joint CS-2000 SL
- Article number: 1015174000, 1015336000
- Material: Aluminium
- Weight in lbs. (g): 4.7 (2130), 3.8 (1720)
- Accessories (retrofitable): Swivel angle limiter 9805132000
- Dimensions in mm:

### Top joint CS-2000 SL
- Article number: 1015175000, 1015340000
- Material: Aluminium
- Weight in lbs. (g): 4.7 (2130), 3.8 (1720)
- Accessories (retrofitable): Swivel angle limiter 9805132000
- Dimensions in mm:
Light-Duty Suspension System CS-2000 SL 45 / 60

Wall joint, vertical outlet CS-2000 SL

- 1015177000: RAL 7035 light grey
- 1015338000: RAL 7016 anthracite grey

Wall joint, horizontal outlet CS-2000 SL

- 1015176000: RAL 7035 light grey
- 1015339000: RAL 7016 anthracite grey

Base, rotary CS-2000 SL

- 1015178000: RAL 7035 light grey
- 1015341000: RAL 7016 anthracite grey

- Swivel angle limiter: 9805132000
- aluminium: 4.1 (1840)

- Swivel angle limiter: 9805132000
- aluminium: 4.6 (2090)

- Swivel angle limiter: 9805132000
- aluminium: 3.2 (1460)

Swivel angle 300° with stop. Adjustment facility. Installation opening with snap-on plastic cover. Complete with seals.
## Light-Duty Suspension System CS-2000 SL 45 / 60

<table>
<thead>
<tr>
<th>Details</th>
<th>Adjustment facility, Complete with seals</th>
<th>Base for free-standing applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight in lbs. (g)</td>
<td>1.5 (690)</td>
<td>26.1 (11820)</td>
</tr>
<tr>
<td>Material</td>
<td>Aluminium</td>
<td>Aluminium</td>
</tr>
<tr>
<td>Accessories (retrofitable)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Application example

### Dimensions in mm

- **Base, wall flange CS-2000 SL**
  - Article number: 1015179000
  - Colour: RAL 7035 light grey
- **Free-standing base CS-2000 SL**
  - Article number: 1015180000
  - Colour: RAL 7035 light grey
- **Base for free-standing applications**
  - Article number: 1015342000
  - Colour: RAL 7016 anthracite grey
- **Base for free-standing applications**
  - Article number: 1015345000
  - Colour: RAL 7016 anthracite grey

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**Note:** The dimensions are given in millimeters. The diagrams illustrate the various components and their application examples.
BERNSTEIN Aluminium Suspension Systems

CS-3000 and CS-3000
next

Flexible, easy to assemble, ergonomic
Flexibility in operation and monitoring: The BERNSTEIN CS-3000 Family

In the main, system constructors expect modern suspension systems to feature variable configuration, progressive design and complete ease of installation. BERNSTEIN sets standards with the CS-3000 family: Modern industrial design, well-conceived ergonomics and multiple component combinations to create an innovative system solution on a modular principle.

Product features

- Long service life and safe operation thanks to anodised aluminium tubes
- Modular flexible system lets you upgrade the couplings (also after installation), e.g. with adapters for slim enclosures or with tilt adapters
- Clean lines, thanks to smooth transitions between the tube and system components (very easy to clean)
- Well designed ergonomics for simple and virtually fatigue free operation
- Coated tube fastening screws for sealing the thread holes and secure connections
- An ideal solution from a single source with BERNSTEIN control enclosures
- Relative appearance and connection of narrow profiles thanks to the possibility of reducing the cross section from square to round tube
- Protection class IP 65
Assembly

Thanks to the particularly easy way the CS-3000 family components combine, assembly is quick and simple, which for the system builder means great time savings and cost reductions.

In addition to the ‘clamping’ connection of the tube fastening screws:

- Sixfold positive connection is achieved via component design in the tube attachment area (optional additional safety screw for vertical mounting is not required)
- One person can install the complete system
- Stepless adjustment of system alignment by means of the tube fastening screws
- Readjustment possible at any time without disassembling the complete system
- Different tube lengths offer the possibility of variability in assembly
- Tubes machined at one end so that users can cut to required length (machining templates supplied)
- Cable and assembly access covers on all deflection points in the system