

# Altech Corp.®

*Serving the Automation & Control Industry since 1984*



**Altech Corp.®**  
by  **BERNSTEIN**

## Suspension Systems



# Suspension Systems

Since 1984, Altech Corporation has grown to become a leading supplier of automation and industrial control components. Headquartered in Flemington, NJ, Altech has an experienced staff of engineering, manufacturing and sales personnel to provide the highest quality products with superior service. This is the Altech Commitment!

Bernstein offers several different suspension systems made of aluminum and stainless steel. These systems are designed for different duty and load requirements. Their modular construction allows the individual components to be combined to create a rugged system that will meet your application needs.

Our well trained technical experts welcome the opportunity to answer your technical questions and provide solutions to your automation and control needs. Give us a call or visit [www.altechcorp.com](http://www.altechcorp.com).



## *Quality Commitment*

Altech's control components meet diverse national and international standards such as UL, NEC, CSA, IEC, VDE and more. Altech provides superior customer service and delivery through Total Quality Management and Continuous Process Improvement. Altech is ISO 9001 approved. We perform these services with honesty and integrity and are committed to achieve these goals.



**Mechanical Load Information** ..... 4-5



**CS-2000 SL45/60**  
Light Duty Suspension System ..... 6-21

**CS-3000 neXt**

Light Duty Suspension System ..... 22-31



**CS-3000**  
Medium Duty Suspension System ..... 32-51

**CS-2000 System 80**

Heavy Duty Suspension System ..... 52-63



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Mechanical load

Different types of suspension systems can support different loads. The most important parameter when determining the right type of suspension system is the mechanical load in the respective application, which consists of the suspended enclosure with its built in components and the length of the extension arm.

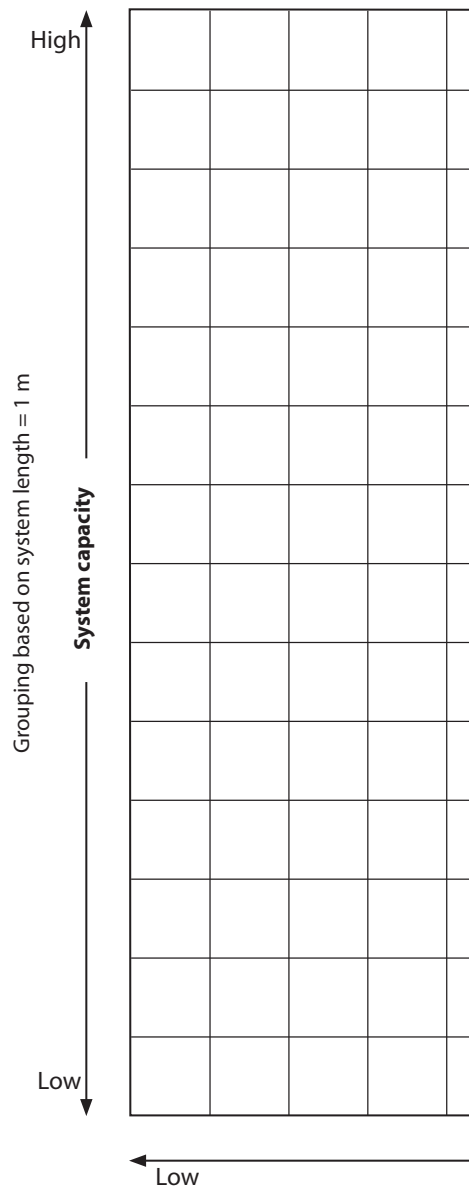
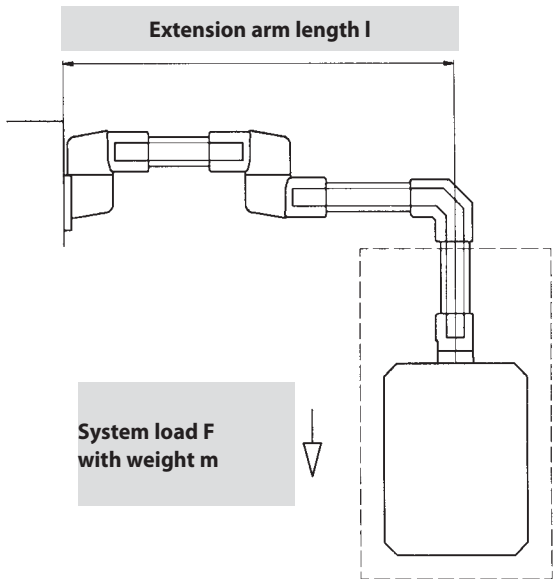
After determining the suspended weight and the length of the extension arm in the suspension system, the overview opposite will help you select the right system.

Please note that when using a turn/tilt coupling for mounting the enclosure at the end of the suspension system, the enclosure itself should not exceed a load of 300 N.

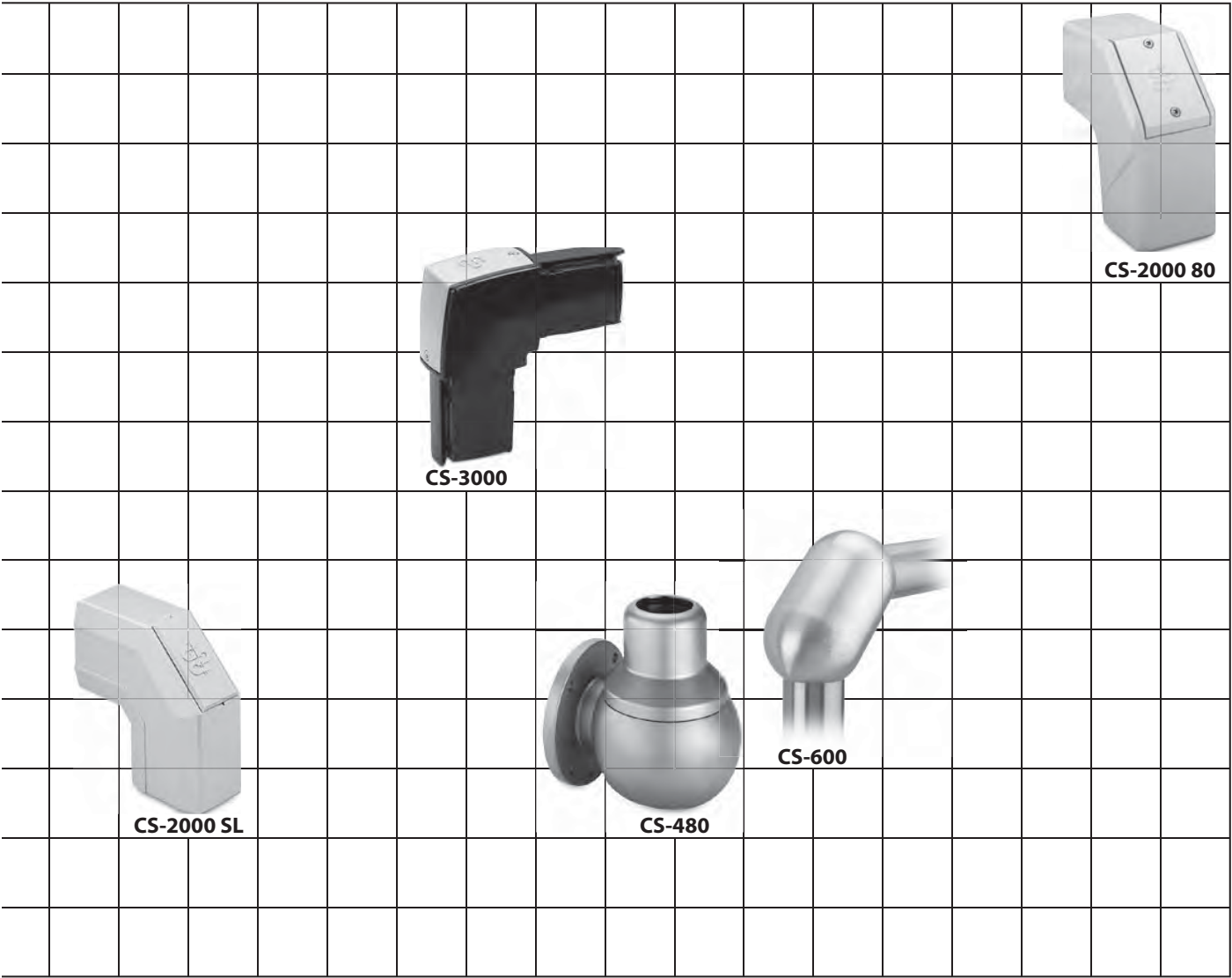
**Calculation of force F (system load) as a function of enclosure weight m:**  
 $F\text{ (N)} = m\text{ (kg)} \times g\text{ (ms}^{-2}\text{)}$

**System load F = enclosure weight m multiplied by acceleration due to gravity**  
 $F\text{ (N)} = m\text{ (kg)} \times 9,81\text{ (ms}^{-2}\text{)}$

The illustration opposite shows an overview of the various suspension systems. You will find more detailed information on the exact loads of the individual systems in the following sections.







Performance

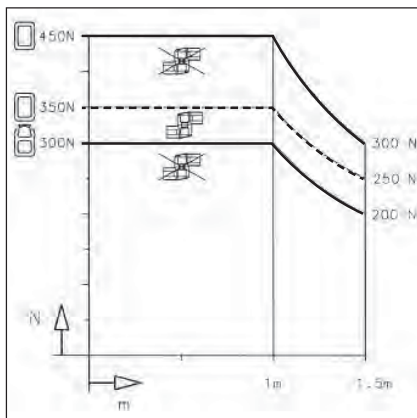
High

- Configuration options
- Mechanical stability
- Resistance

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).



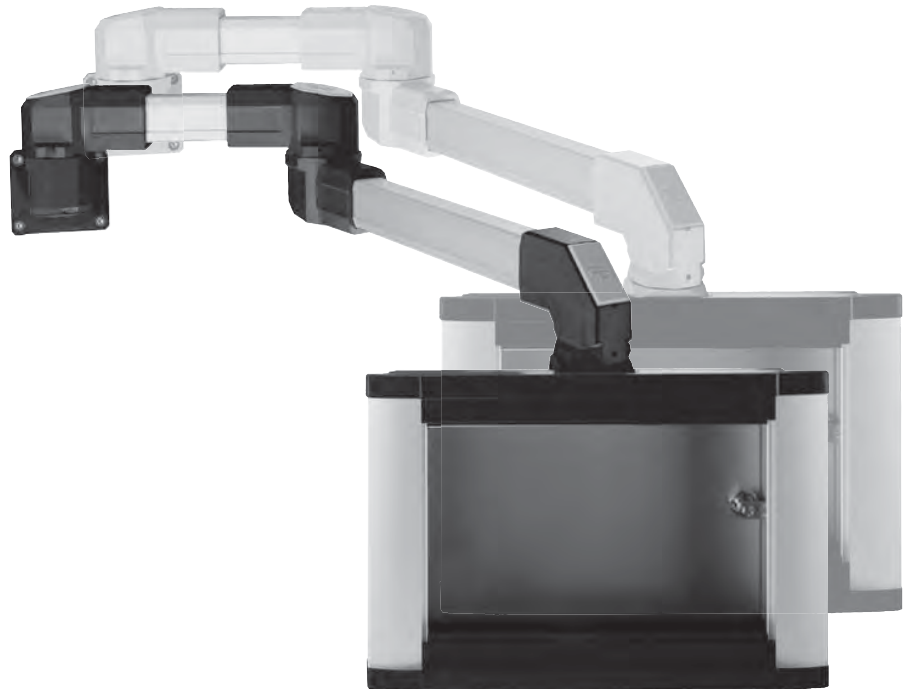
## Load diagram

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.



CS-2000 SL Standard  
RAL 7035 light grey and  
RAL 7016 anthracite grey

## 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

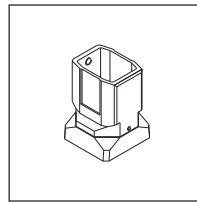
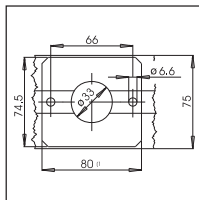
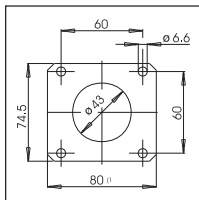
- Optionally closed or open connecting section can be used
- Clear passage opening in closed system:  $\varnothing 40 \text{ mm} = 12.5 \text{ cm}^2$  at narrowest point (bearing opening)
- Clear passage opening in partially open system:
  - $2.76 \text{ cm}^2$  at narrowest point (entry of section in components)
  - $7.40 \text{ cm}^2$  in closed tube
- Easily retrofitable 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)



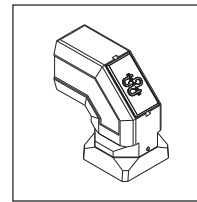
### Enclosure preparation for mounting couplings

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.

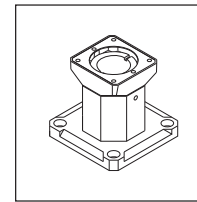
However, the coupling is mounted as standard by means of the four outer flange mounting threads, compatible and interchangeable with the flange mounting pattern of the CS-3000 suspension system. With a diameter of 43 mm, the hole for the cable leadthrough is adapted to the narrowest point in the suspension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



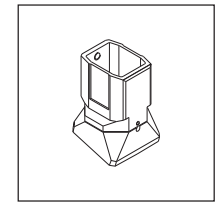
**Straight coupling**  
**Article number**  
**1015163000**  
**1015328000**



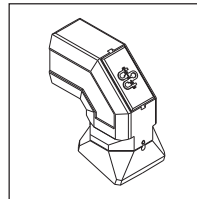
**Elbow coupling**  
**Article number**  
**1015165000**  
**1015329000**



**Base coupling**  
**Article number**  
**1015167000**  
**1015343000**

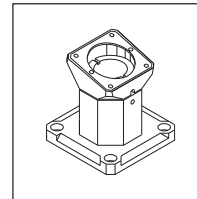


**Tilt coupling**  
**Article number**  
**1015164000**  
**1015330000**



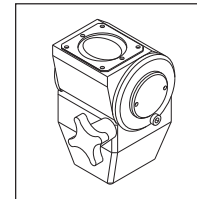
**Tilt elbow coupling**

**Article number**  
**1015166000**  
**1015331000**



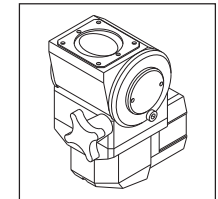
**Tilt base coupling**

**Article number**  
**1015168000**  
**1015344000**



**Turn/tilt coupling**

**Article number**  
**1015169000**  
**1015332000**

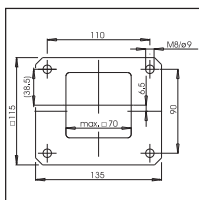


**Turn/tilt elbow coupling**

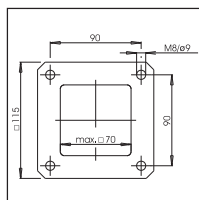
**Article number**  
**1015170000**  
**1015333000**

### Machining mounting surfaces for suspension systems

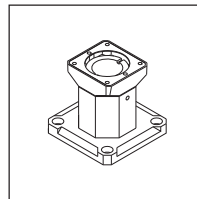
The various elements of the suspension systems can be mounted on walls or floors as well as on or at machines and systems. The corresponding machining drawings for the individual components of the suspension system are shown here.



**Wall joints**

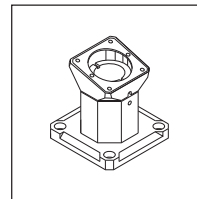


**Base and top joint components**



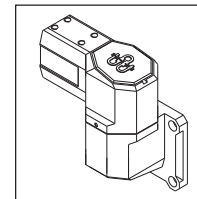
**Base coupling**

**Article number**  
**1015167000**  
**1015343000**



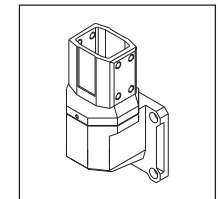
**Tilt base coupling**

**Article number**  
**1015168000**  
**1015344000**



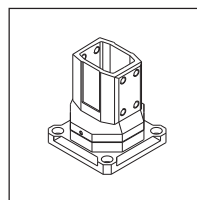
**Wall joint, horizontal outlet**

**Article number**  
**1015176000**  
**1015339000**



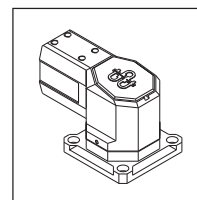
**Wall joint, vertical outlet**

**Article number**  
**1015177000**  
**1015338000**



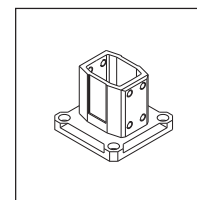
**Rotary base**

**Article number**  
**1015178000**  
**1015341000**



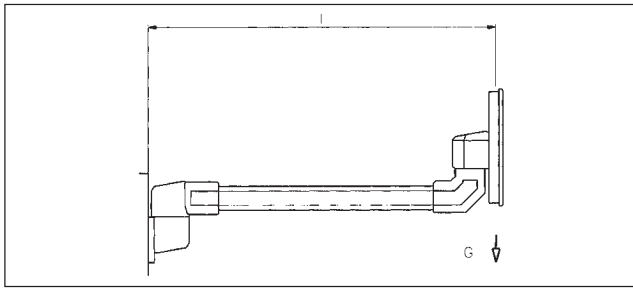
**Top joint**

**Article number**  
**1015175000**  
**1015340000**



**Base/wall flange**

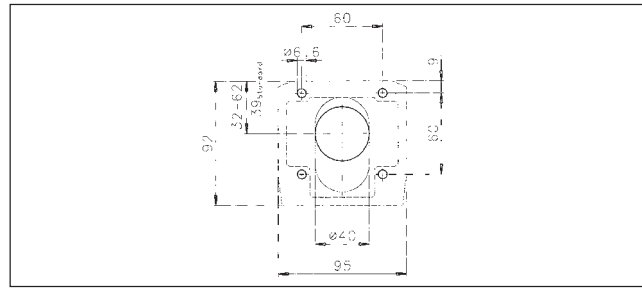
**Article number**  
**1015179000**  
**1015342000**



**Load, panel components**

**Mechanical properties**

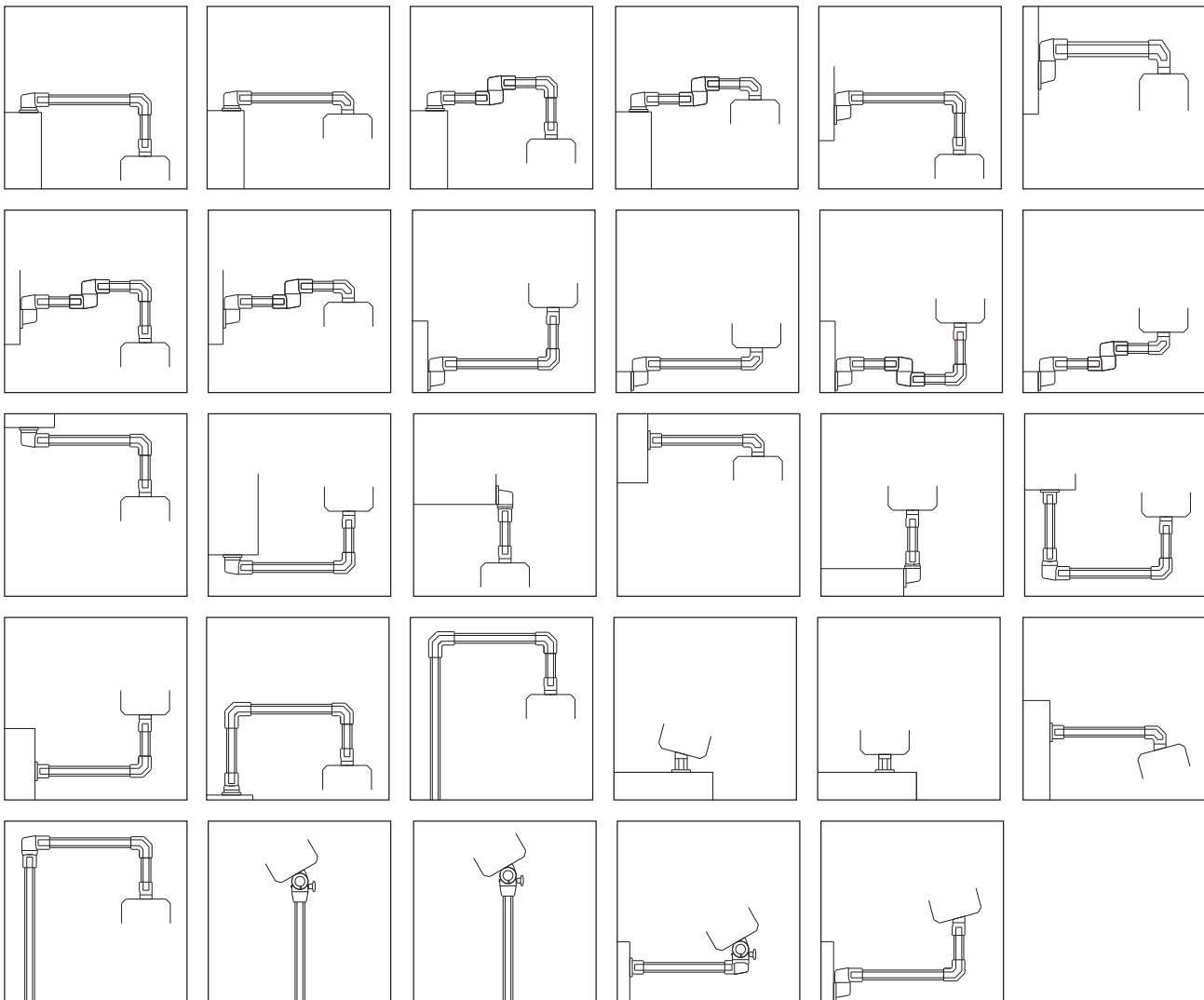
Max. load G 250 N  
Max. System length L 1500 mm



Drawing for preparing enclosure rear panel  
for attaching panel couplings

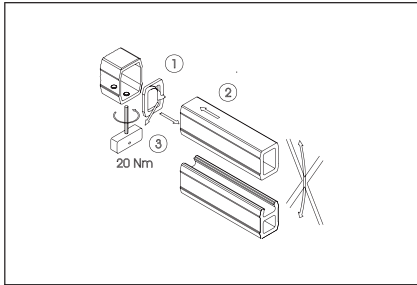
**System combinations**

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



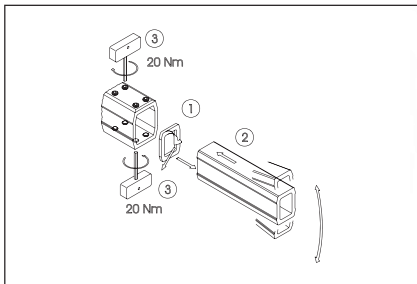


## Assembling the connecting sections



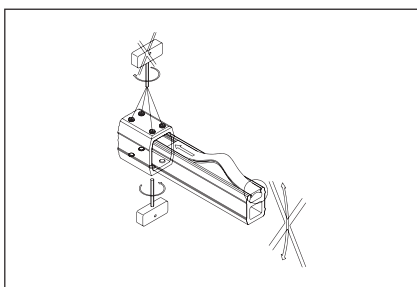
[A] Open or closed section in straight coupling and elbow coupling:

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:

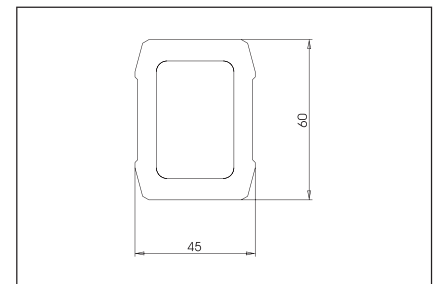
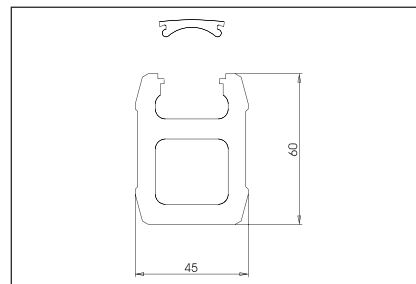
Adhere seal to connecting section, fit connecting section in suspension system component, only fit the four mounting screws on the closed part of the tubing, install cover seal.

## 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.

Open section	
Dimensions (mm)	Article number
45 x 60 x 250	9524001000
45 x 60 x 500	9524002000
45 x 60 x 750	9524003000
45 x 60 x 1000	9524004000
45 x 60 x 1250	9524005000
45 x 60 x 1500	9524006000
45 x 60 x 2000	9524008000

Closed section	
Dimensions (mm)	Article number
45 x 60 x 250	9524301000
45 x 60 x 500	9524302000
45 x 60 x 750	9524303000
45 x 60 x 1000	9524304000
45 x 60 x 1250	9524305000
45 x 60 x 1500	9524306000
45 x 60 x 2000	9524308000



You will find an aid for selecting the load bearing capacity on Pages 106/ 107.

Article		Straight coupling CS-2000 SL		Elbow coupling CS-2000 SL	
Article number	(colour)	1015163000	RAL 7035 light grey	1015165000	RAL 7035 light grey
		1015328000	RAL 7016 anthracite grey	1015329000	RAL 7016 anthracite grey



Details	Angle of rotation 300° with stop. Complete with installation material and seals	Installation opening with snap-on plastic cover. Angle of rotation 300° with stop. Complete with installation material and seals
Weight in lbs. (g)	1.6 (740)	2.1 (960)
Material	Aluminium	Aluminium
Accessories (retrofitable)	Swivel angle limiter 9805129000	Swivel angle limiter 9805129000
Application example		
Dimensions in mm		



## Turn/tilt coupling CS-2000 SL

**1015169000** RAL 7035 light grey  
**1015332000** RAL 7016 anthracite grey



## Turn/tilt elbow coupling CS-2000 SL

**1015170000** RAL 7035 light grey  
**1015333000** RAL 7016 anthracite grey



## Tilt coupling CS-2000 SL

**1015164000** RAL 7035 light grey  
**1015330000** RAL 7016 anthracite grey



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

6.6 (3000)  
Aluminium

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

7.3 (3300)  
Aluminium

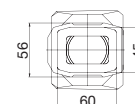
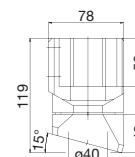
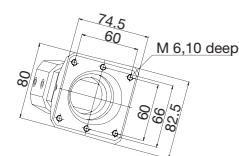
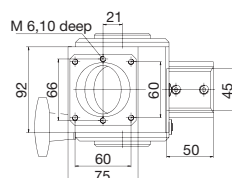
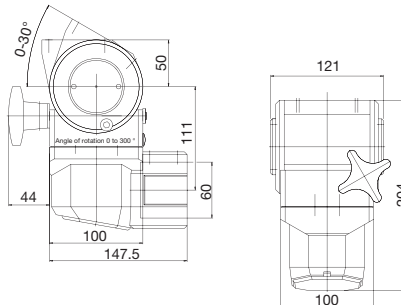
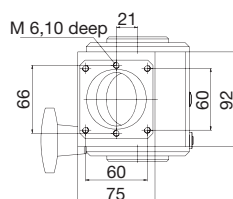
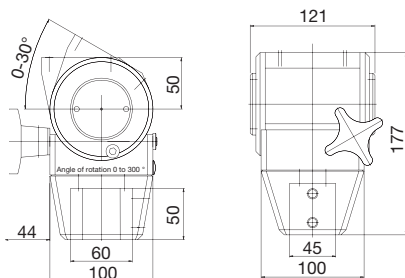
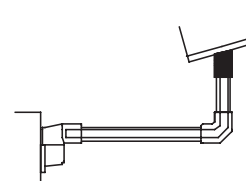
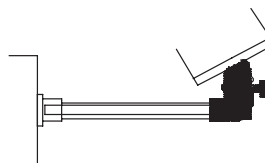
Tilt angle 15°. Angle of rotation 300° with stop. Complete with installation material and seals

2.4 (1100)  
Aluminium

## Swivel angle limiter 9805130000

## Swivel angle limiter 9805130000

## Swivel angle limiter 9805129000

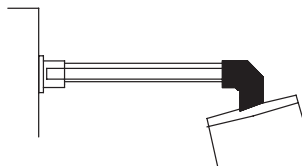


Article		Tilt elbow coupling CS-2000 SL	Base coupling CS-2000 SL
Article number	(colour)	1015166000 RAL 7035 light grey 1015331000 RAL 7016 anthracite grey	1015167000 RAL 7035 light grey 1015343000 RAL 7016 anthracite grey

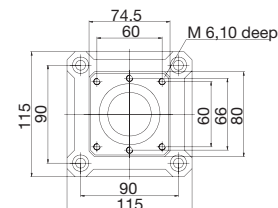
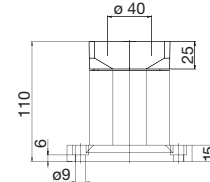
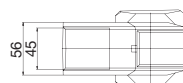
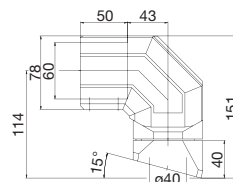
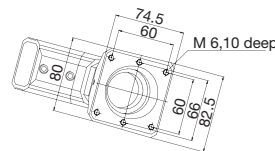


Details	Tilt angle 15°. Installation opening with snap-on plastic cover. Angle of rotation 300° with stop. Complete with installation material and seals	Integrated component. Angle of rotation 300° with stop. Complete with installation material for enclosure and seals
Weight in lbs. (g)	3.1 (1400)	2.6 (1180)
Material	Aluminium	Aluminium
Accessories (retrofitable)	Swivel angle limiter 9805129000	Swivel angle limiter 9805129000

## Application example



## Dimensions in mm





## Tilt base coupling CS-2000 SL

**1015168000** RAL 7035 light grey  
**1015344000** RAL 7016 anthracite grey



## Panel coupling

**1015232000** RAL 7035 light grey  
**1015346000** RAL 7016 anthracite grey



## Panel turn/tilt coupling S

**1015235000** RAL 7035 light grey  
**1015347000** RAL 7016 anthracite grey



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

2.6 (1200)  
Aluminium

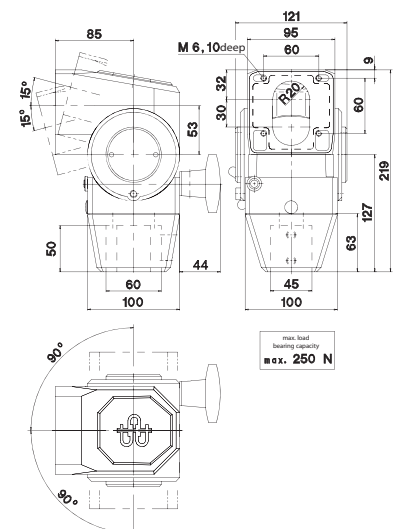
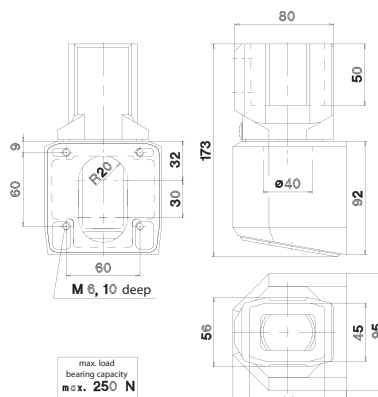
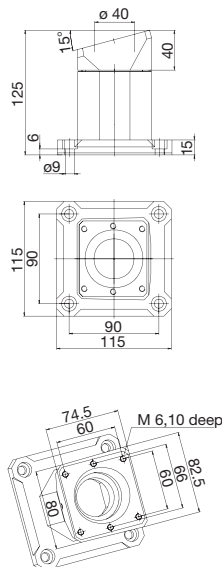
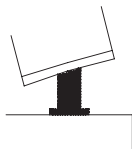
For rear connection of narrow and lightweight controller panels to the CS-2000 SL light-duty suspension system; the maximum load of this component is 250 N at a maximum system length of 1500 mm

6.6 (3000)  
Aluminium

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

7.5 (3400)  
Aluminium

## Swivel angle limiter 9805129000



Article		Panel elbow coupling		Panel tilt/turn elbow coupling W	
Article number	(colour)	1015233000	RAL 7035 light grey	1015236000	RAL 7035 light grey
		1015348000	RAL 7016 anthracite grey	1015349000	RAL 7016 anthracite grey



Details	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	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
Weight in lbs. (g)	6.6 (3000)	7.6 (3460)
Material	Aluminium	Aluminium
Accessories (retrofitable)		
Application example		
Dimensions in mm		

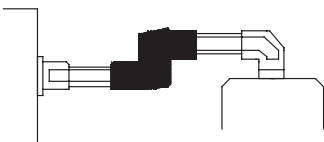
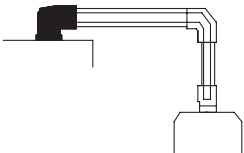
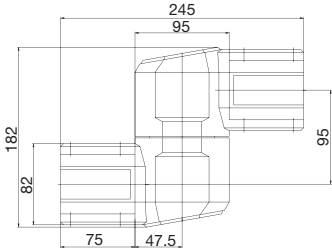
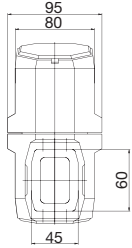
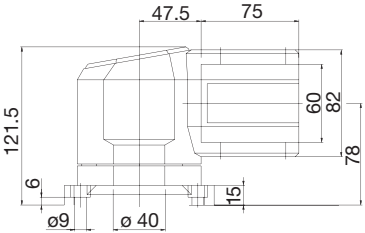
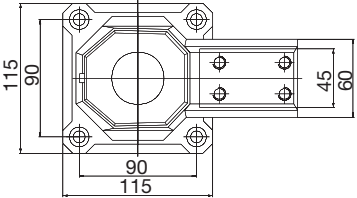
Elbow CS-2000 SL		Elbow for torque load CS-2000 SL		Plug-on joint CS-2000 SL	
<b>1015171000</b>	RAL 7035 light grey	<b>1015172000</b>	RAL 7035 light grey	<b>1015173000</b>	RAL 7035 light grey
<b>1015334000</b>	RAL 7016 anthrazit-grau	<b>1015335000</b>	RAL 7016 anthracite grey	<b>1015337000</b>	RAL 7016 anthracite grey



Installation opening with snap-on plastic cover. Complete with seals	Increased wall strength. Adjustment facility. Installation opening with snap-on plastic cover. Complete with seals	Swivel angle 300° with stop. Installation opening with snap-on plastic cover. Complete with seals
1.3 (590)	2.2 (1000)	4.1 (1850)
Aluminium	Aluminium	Aluminium
		<b>Swivel angle limiter</b> <b>9805132000</b>

Article		Intermediate joint CS-2000 SL	Top joint CS-2000 SL
Article number	(colour)	1015174000 RAL 7035 light grey 1015336000 RAL 7016 anthracite grey	1015175000 RAL 7035 light grey 1015340000 RAL 7016 anthracite grey



Details	Swivel angle 360° with limit stop. Installation openings both ends. Adjustment facility. Complete with seals	Swivel angle 300° with stop. Adjustment facility. Installation opening with snap-on plastic cover. Complete with seals
Weight in lbs. (g)	4.7 (2130)	3.8 (1720)
Material	Aluminium	Aluminium
Accessories (retrofitable)	Swivel angle limiter 9805132000	Swivel angle limiter 9805132000
Application example		
Dimensions in mm	 	 



## 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 300° with stop. Adjustment facility.  
Installation opening with snap-on plastic cover.  
Complete with seals

4.1 (1840)  
Aluminium

Swivel angle 300° with stop. Adjustment facility.  
Installation opening with snap-on plastic cover.  
Complete with seals

4.6 (2090)  
Aluminium

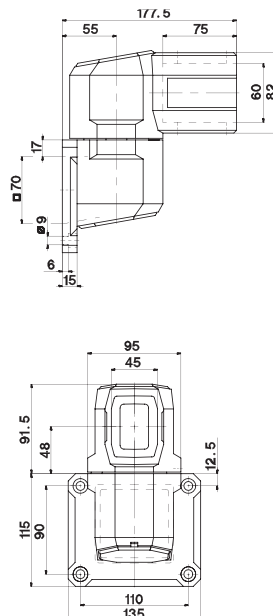
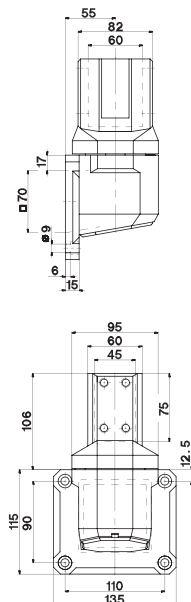
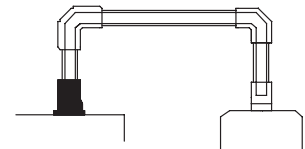
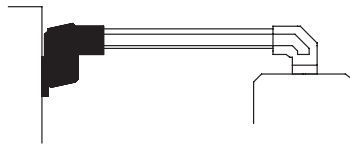
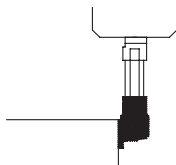
Angle of rotation 300° with stop Adjustment facility.  
Complete with seals

3.2 (1460)  
Aluminium

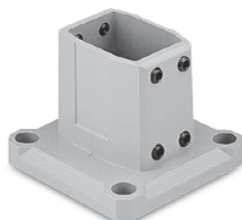
Swivel angle limiter 9805132000

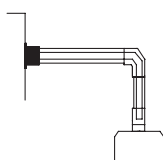
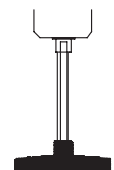
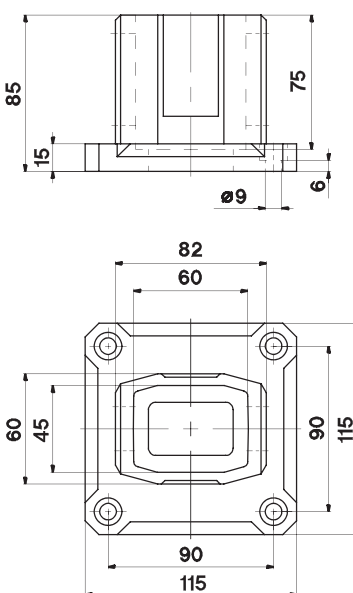
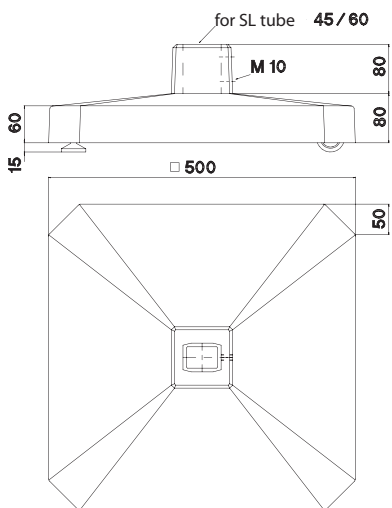
Swivel angle limiter 9805132000

Swivel angle limiter 9805132000



Article		Base, wall flange CS-2000 SL	Free-standing base CS-2000 SL
Article number	(colour)	1015179000 RAL 7035 light grey 1015342000 RAL 7016 anthracite grey	1015180000 RAL 7035 light grey 1015345000 RAL 7016 anthracite grey



Details	Adjustment facility. Complete with seals	Base for free-standing applications
Weight in lbs. (g)	1.5 (690)	26.1 (11820)
Material	Aluminium	Aluminium
Accessories (retrofitable)		
Application example		
Dimensions in mm		



## **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
- Clean lines, thanks to smooth transitions between the tube and system components (very easy to clean)
- Coated tube fastening screws for sealing the thread holes and secure connections
- 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
- Modular flexible system lets you upgrade the couplings (also after installation), e.g. with adapters for slim enclosures or with tilt adapters
- Well designed ergonomics for simple and virtually fatigue free operation
- An ideal solution from a single source with BERNSTEIN control enclosures



## 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.



Smooth combination through an intelligent design for easy-cleaning



Additional connection security through component design at the mounting area



User friendly adjustment at any time – without disassembling the complete system

### 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
- Cable and assembly access covers on all deflection points in the 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)

# The new BERNSTEIN Aluminium Suspension System CS-3000 *neXt*

The CS-3000 neXt combines functionality with an appealing design. The new system is an important addition to the CS-3000 series, it is easy to clean and benefits from simplified installation, outstanding visual characteristics such as smooth transitions between tube and component and the high quality which BERNSTEIN is known for. The wide range of components, the high strength of the system and the load capacity provide individual solutions.



## Product features

- Light-duty suspension system for lightweight control enclosures up to 110 lbs. (50 kg) with an extension arm length of 1 m
- Modular system for rapid implementation of individual solutions
- Maximum system length: 59 inches (1.5 meters)
- Compatible with the CS-3000 series
- Panel couplings



## Materials

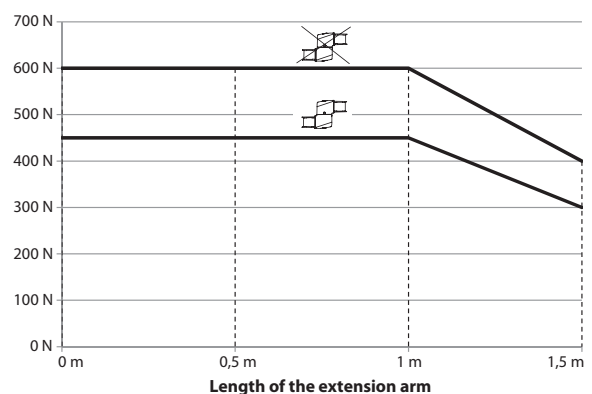
- Anodised aluminium profiles
- Components: Aluminium die cast
- Aluminium covers on installation openings
- Bearings: POM
- Seals: Neoprene

## Colour

- Components: white aluminium, RAL 9006
- Tubes: Aluminium, naturally anodised
- Components and tubes can all be optionally powder-coated to a wide variety of RAL colours

## Load diagram for static load capacity

**CS-3000**  
*neXt*



## Features

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### Reducing elbow

- For combination of the CS-3000 with the light-duty suspension system CS-3000 neXt
- Fields of application:
  - Higher loads / extension arm lengths by using the CS-3000 in the horizontal
  - For connection of flat enclosures with narrow components and tubes in the vertical

### Panel coupling

- For connection at the rear of displays / monitors with VESA
- For connection of flat control enclosures via the rear panel
- VESA flange size, hole pattern 75 and 100
- Suspension system attachment in vertical and horizontal version possible
- Individual colour combination of all components in accordance with RAL colours





### Assembly

- Short assembly times and therefore extensive cost savings:
  - Slide the tube onto the component
  - Slightly press down
  - Tighten screws
- Cable and installation openings at all joints in the system
- Use of a DVI connector is possible

### Tubes

- Standard lengths of 250 mm up to 1500 mm in 250 mm steps

### Function

- Turning range of the rotary components: 300°
- Regulation of the rotation angle via swivel angle limiter

[illegible]

## Elbow Coupling

**1017300003** RAL 9006 white aluminium  
**1017300018** RAL 7016 anthracite grey



## Panel Coupling S

**1017300004** RAL 9006 white aluminium  
**1017300019** RAL 7016 anthracite grey



## Panel Coupling W

**1017300005** RAL 9006 white aluminium  
**1017300020** RAL 7016 anthracite grey



- Angle of rotation 300° with stop
- Screw-fit installation opening

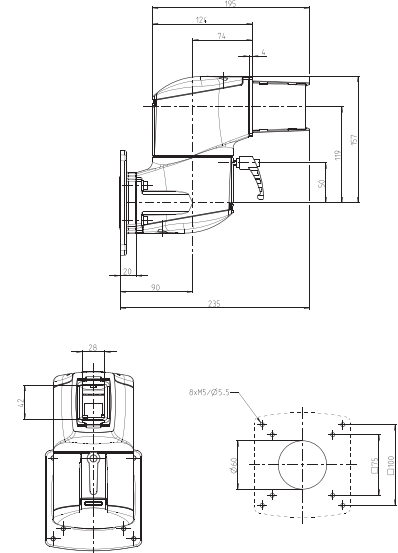
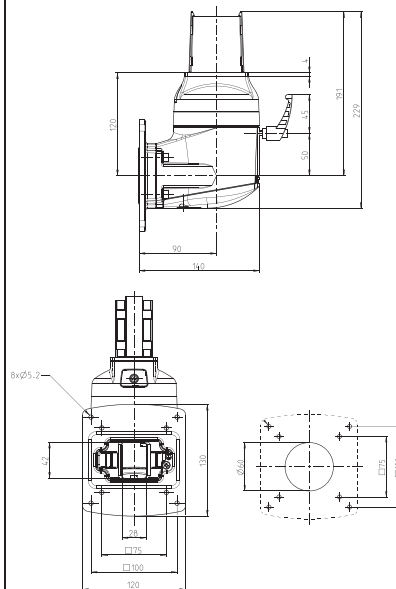
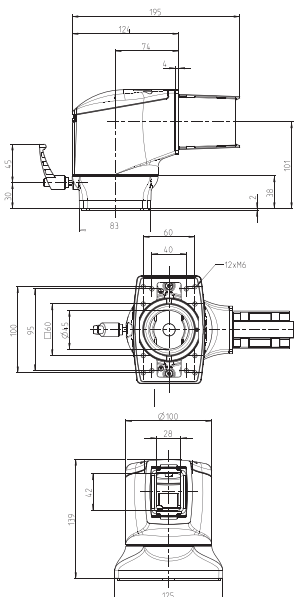
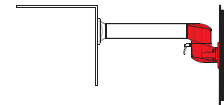
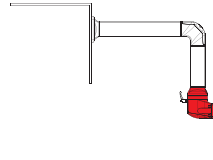
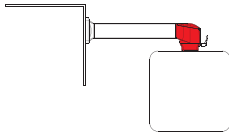
- For attachments to the rear of panels / displays or control enclosures with screw-fit rear panel
- Standard hole pattern VESA 75/100
- Angle of rotation 300° with stop
- Screw-fit installation opening

- For attachments to the rear of panels / displays or control enclosures with screw-fit rear panel
- Standard hole pattern VESA 75/100
- Angle of rotation 300° with stop
- Screw-fit installation opening

Aluminium

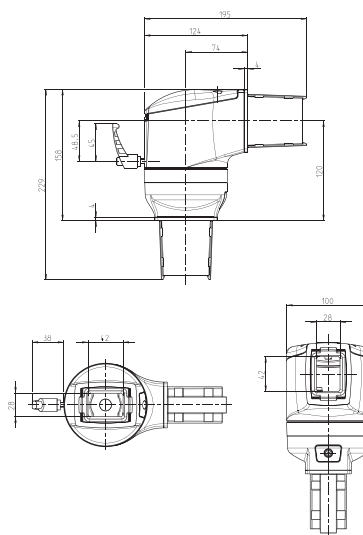
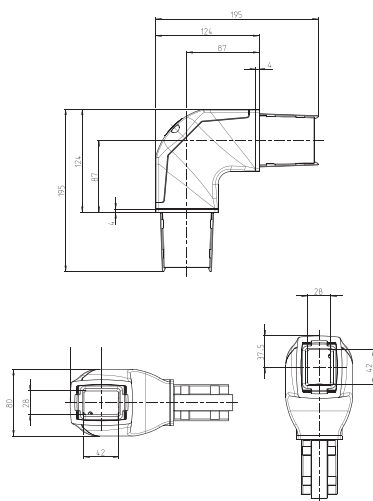
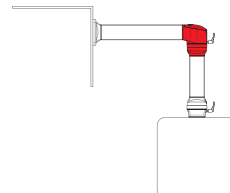
Aluminium

Aluminium





A schematic diagram of a gas furnace venting system. A horizontal vent pipe, shown in white with a red section, extends from a furnace (represented by a white box) to a vertical vent pipe. The vertical vent pipe passes through the roof, with a red cap at the termination point. The diagram illustrates the path of exhaust gases from the furnace to the exterior.



## Reducing Elbow

**1017300009** RAL 9006 white aluminium  
**1017300024** RAL 7016 anthracite grey



## Intermediate Joint

**1017300009** RAL 9006 white aluminium  
**1017300024** RAL 7016 anthracite grey



## Top Joint

**1017300014** RAL 9006 white aluminium  
**1017300029** RAL 7016 anthracite grey



- Elbow coupling for combination of CS-3000 neXt and CS-3000 suspension systems
- Screw-fit installation opening

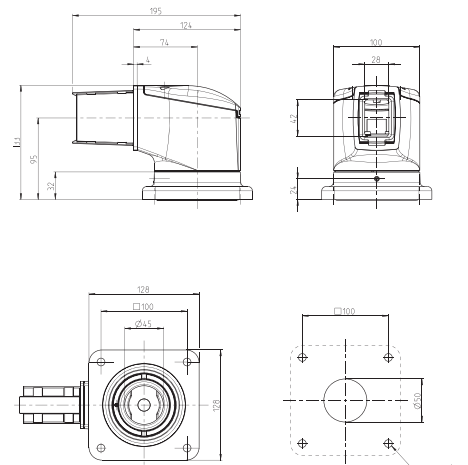
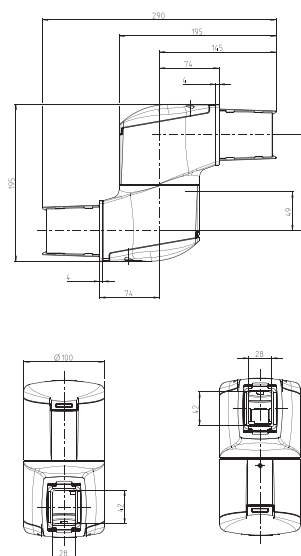
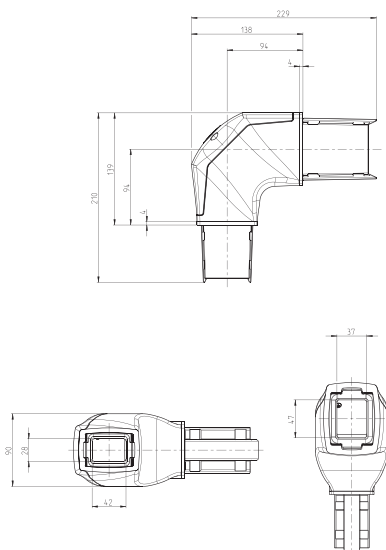
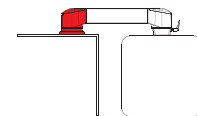
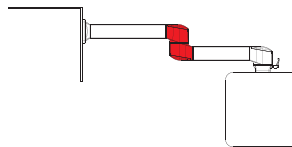
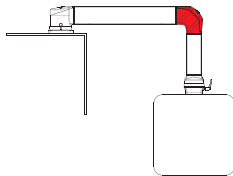
Aluminium

- Elbow coupling for combination of CS-3000 neXt and CS-3000 suspension systems
- Screw-fit installation opening

Aluminium

- Angle of rotation 300° with stop
- Screw-fit installation opening

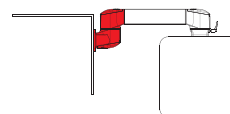
Aluminium





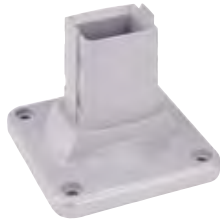


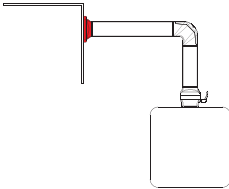

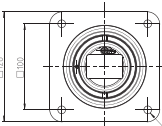
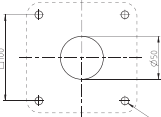
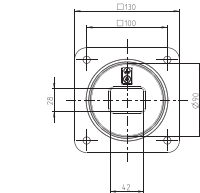
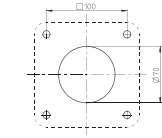
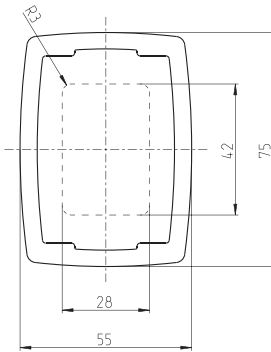
A diagram showing a vertical pipe with a red elbow fitting. A horizontal pipe is connected to the side of the vertical pipe at the elbow. The elbow is labeled with a red '90'.



**Dimensions in mm**

<b>Base / Wall Flange</b>	<b>Base, Rotary</b>	<b>CS-3000 neXt Tubing</b>
<b>1017300015</b> RAL 9006 white aluminium	<b>1017300013</b> RAL 9006 white aluminium	
<b>1017300030</b> RAL 7016 anthracite grey	<b>1017300028</b> RAL 7016 anthracite grey	



	<p>● Angle of rotation 300° with stop</p>	<p>Length 55 x 75 x 250 mm    <b>9524700001</b></p> <p>Length 55 x 75 x 500 mm    <b>9524700002</b></p> <p>Length 55 x 75 x 750 mm    <b>9524700003</b></p> <p>Length 55 x 75 x 1000 mm    <b>9524700004</b></p> <p>Length 55 x 75 x 1250 mm    <b>9524700005</b></p> <p>Length 55 x 75 x 1500 mm    <b>9524700006</b></p>
Aluminium	Aluminium	
		
 	 	

**Flexible and efficient:**

### The BERNSTEIN CS-3000

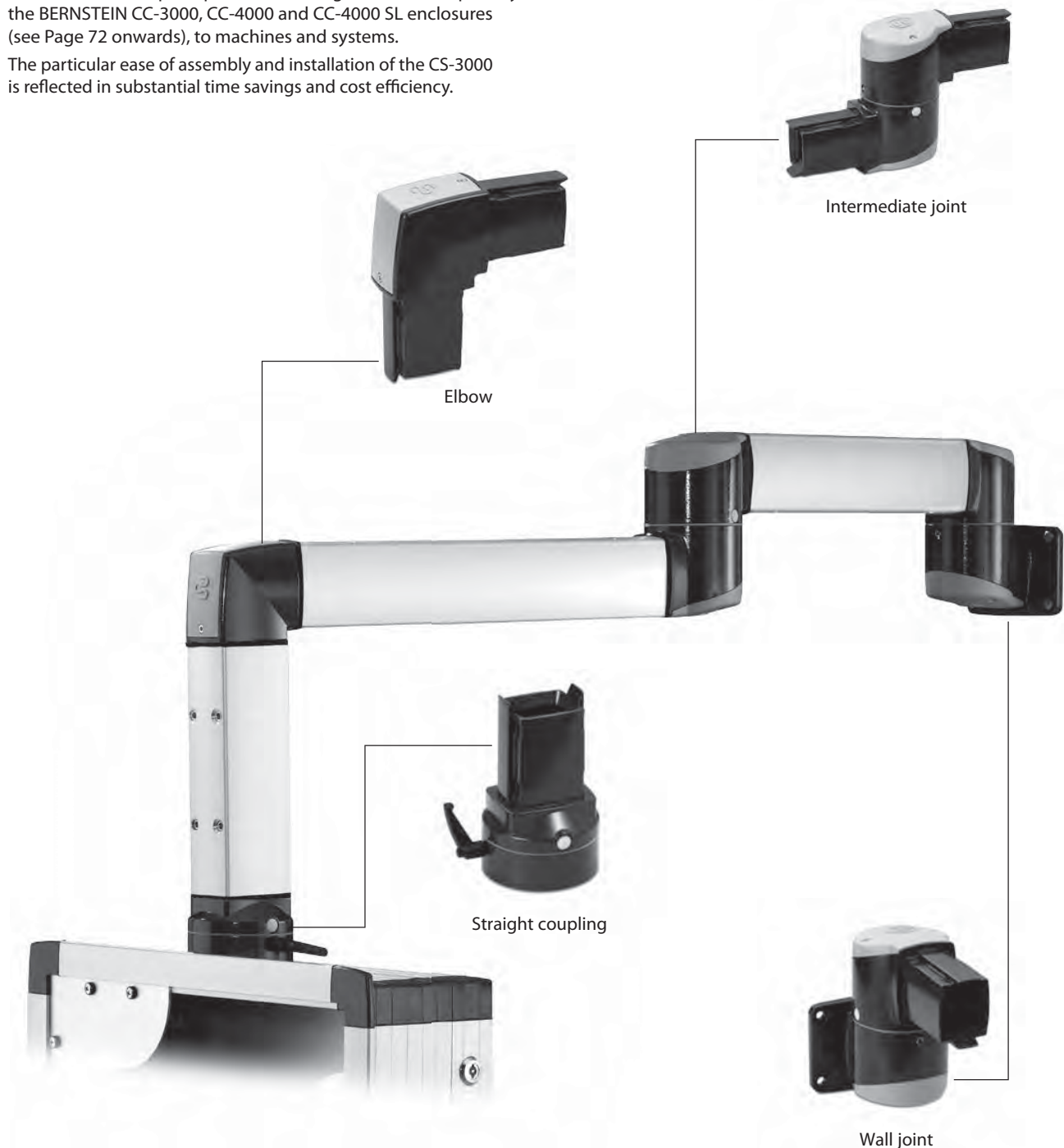
Designers and manufacturers expect modern suspension systems to feature variable configuration, progressive design and complete ease installation.

BERNSTEIN sets standards with the CS-3000:

Modern industrial design, well-conceived ergonomics!

The combinable components create an innovative system solution based on modular principles for attaching enclosures, especially the BERNSTEIN CC-3000, CC-4000 and CC-4000 SL enclosures (see Page 72 onwards), to machines and systems.

The particular ease of assembly and installation of the CS-3000 is reflected in substantial time savings and cost efficiency.



**In addition to the positively locking tube mounting screws other features include:**

- **Six-fold form-fit** thanks to component contour in tube attachment area (the otherwise optional safety hole additionally required for overhead installation is rendered unnecessary)
- **One-man installation** of the complete system
- **Infinitely variable system alignment** by means of tube mounting screws
- **Subsequent alignment** at any time without dismantling the complete system
- Cable and installation openings at all joints in the system
- Different tube lengths for variable configuration
- Tube machined at one end can be cut to required length (machining templates supplied)
- **Adjustable torque** (firmness) of all rotary components (coarse adjustment), fine adjustment by means of clamping lever or screw



Intelligent design with smooth flowing transition lines for ease of cleaning



Six-fold form-fit thanks to component contour in tube attachment area

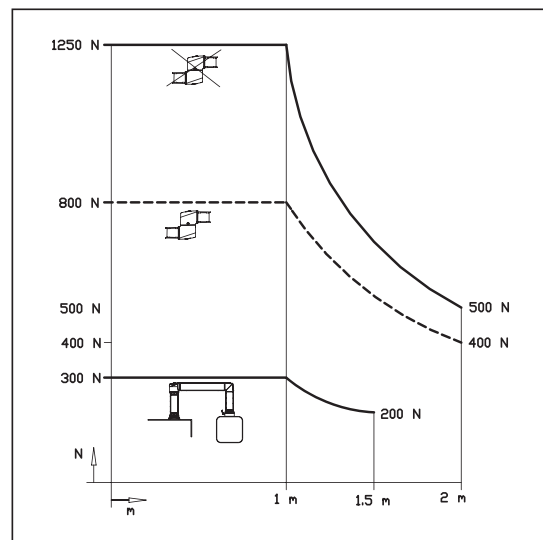


Effortless readjustment possible at any time without the need to dismantle the complete system

## Other system features:

- Anodises aluminium tubes for long service life and reliable operation
- Smooth flowing transition lines from the tube to other components prevent dirt built-up (easy to clean)
- Coated tube mounting screws for sealing threaded holes and secure screw connections
- Elegant appearance with narrow sections connected by adapting the cross section from square to round tube
- Modular coupling configurations possible (also subsequently), e.g. with adapter for narrow enclosures or tilt adapter
- Well-conceived ergonomics for easy and virtually fatigue-free operation
- An ideal single-source solution for BERNSTEIN control enclosures
- Protection class IP 65

## Load diagram

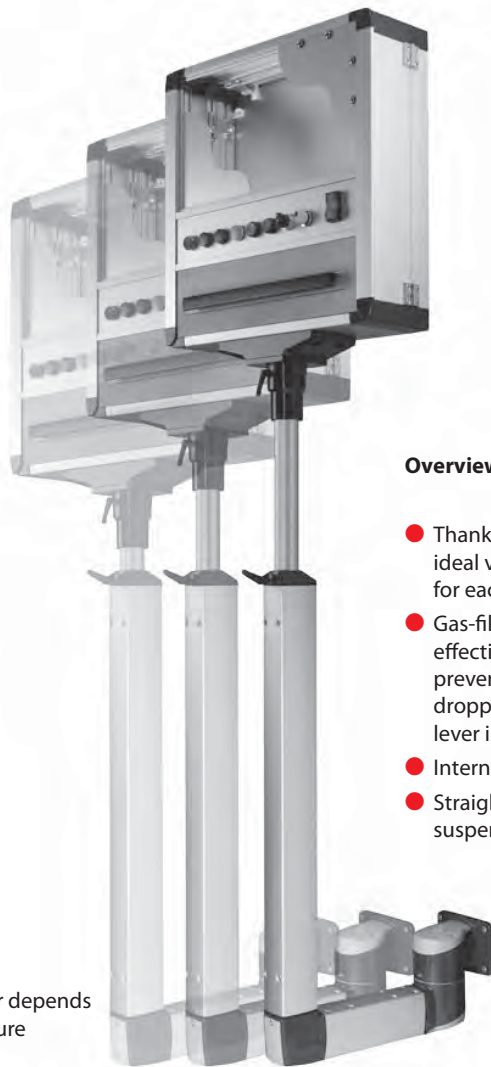


## CS-3000 HV – Vertically adjustable modules for optimum ergonomics

With the vertically adjustable CS-3000 HV, BERNSTEIN offers an innovative expansion to the CS-3000 suspension system. Flexible height adjustment and internal cable routing make the HV version even easier to install and operate.

With a variable lift range of 250 mm, the support system can be adjusted infinitely variable to the required working height. The integrated gas-filled damper system ensures the enclosure can be raised with minimum effort while preventing it from dropping suddenly after the clamping lever is released. This means added convenience but above all greater safety.

The CS-3000 HV is available as an optionally mobile stand base or wall-mounted version and can be easily integrated in an existing CS-3000 system.



### Overview of advantages:

- Thanks to the 250 mm variable lift, the ideal viewing height can be adjusted for each operator
- Gas-filled damper system provides effective support during lifting and prevents the supported enclosure dropping suddenly after the clamping lever is released
- Internal cable routing
- Straightforward integration in CS-3000 suspension system

### Selection criteria

- Selection of the size of gas-pressurised damper depends on the total weight and the ambient temperature
- The total weight is calculated from:  
Enclosure + installed equipment + coupling components

Ambient temperature	Damper force/total weight			
	100 N (6–11 kg)	150 N (11–19 kg)	200 N (19–29 kg)	300 N (29–39 kg)
	100 N (5.5–10.5 kg)	150 N (10.5–18 kg)	200 N (18–27.5 kg)	300 N (27.5–37 kg)
40°C	100 N (6–11 kg)	150 N (11–19 kg)	200 N (19–29 kg)	300 N (29–39 kg)
30°C	100 N (5.5–10.5 kg)	150 N (10.5–18 kg)	200 N (18–27.5 kg)	300 N (27.5–37 kg)
20°C	100 N (5–10 kg)	150 N (10–17 kg)	200 N (17–26 kg)	300 N (26–35 kg)

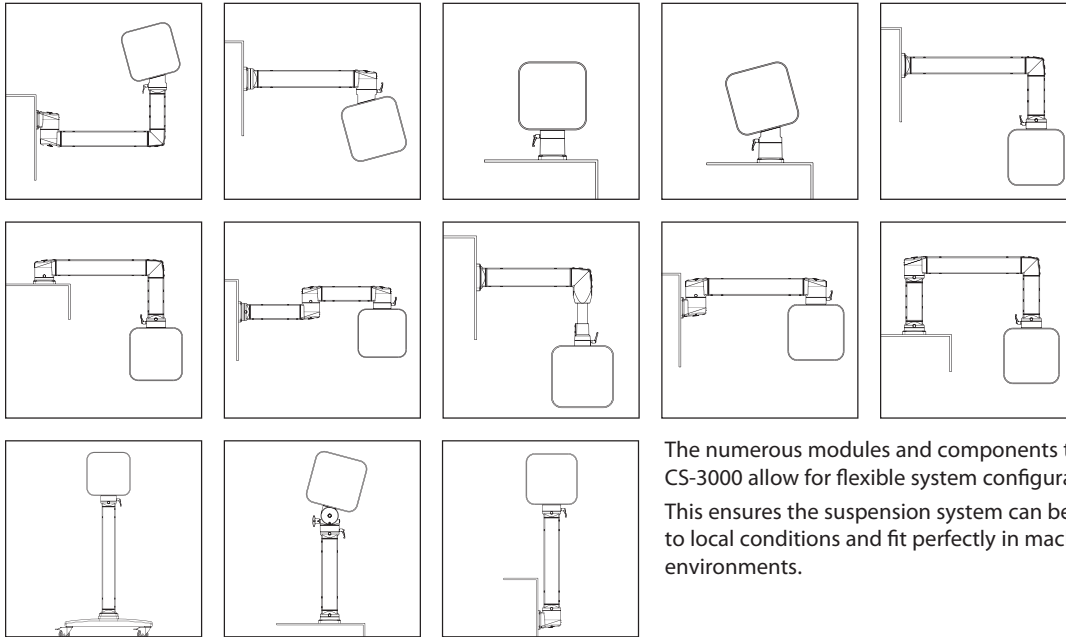
### Materials

- Anodised aluminium tubing
- Pressure die-cast aluminium components
- Polyamide covers for installation openings
- POM bearing
- Neoprene seals

### Colours


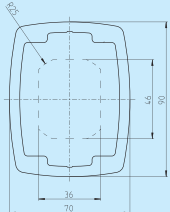
- Suspension system components: anthracite grey RAL 7016
- Connecting tubes: silver (natural) anodised

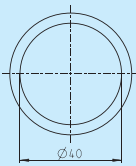

## Application examples for CS-3000 suspension system – Versatile configuration options




The numerous modules and components that make up the CS-3000 allow for flexible system configuration.

This ensures the suspension system can be uniquely adapted to local conditions and fit perfectly in machine and system environments.

Square aluminium tubing			
	Standard lengths (available from stock)	Article number	Tube cross sections
	Length 70 x 90 x 250 mm	9524500001	
	Length 70 x 90 x 500 mm	9524500002	
	Length 70 x 90 x 750 mm	9524500003	
	Length 70 x 90 x 1000 mm	9524500004	
	Length 70 x 90 x 1250 mm	9524500005	
	Length 70 x 90 x 1500 mm	9524500006	
	Length 70 x 90 x 1750 mm	9524500007	
	Length 70 x 90 x 2000 mm	9524500008	
	<b>Tubes machined at one end</b> (machining templates supplied, available from stock)		
Length 70 x 90 x 1000 mm	9524500009		
Length 70 x 90 x 2000 mm	9524500010		
If one of our standard lengths does not suit your requirements, we can also supply tubes machined at one end. Simply shorten to the required length and use the supplied template to machine the shortened end.			
<b>Machined tubes to required lengths</b> We can also supply completely machined tubes to the length you require (price and delivery time on request).			

Round aluminium tubing			
Round aluminium tubes in different lengths. We can also supply completely machined tubes to the length you require. (prices and delivery time on request)			
	Length 48 x 4 x 250 mm	9521400000	
	Length 48 x 4 x 500 mm	9521401000	
	Length 48 x 4 x 750 mm	9521402000	
	Length 48 x 4 x 1000 mm	9521403000	

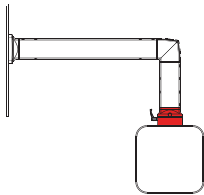
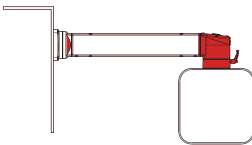
CS-3000 Bent Tube			
	<b>Custom bent tubes are now available!</b> <b>Contact us for additional information.</b>		

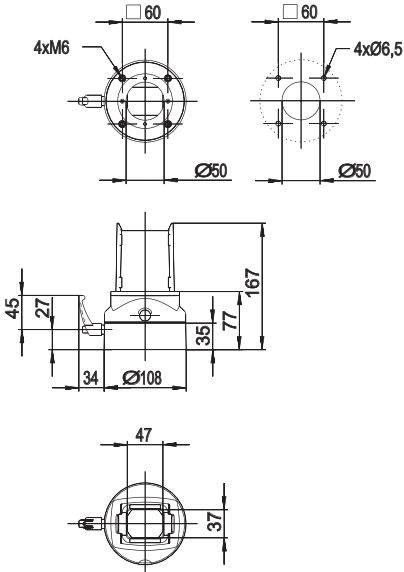
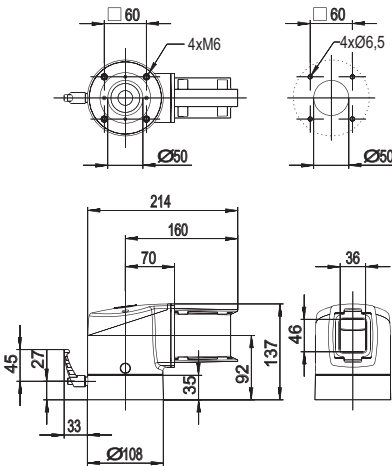


Article		Straight Coupling	Elbow Coupling
Article number	(colour)	1015300177 RAL 9006 white aluminium 1015300001 RAL 7016 anthracite grey	1015300178 RAL 9006 white aluminium 1015300002 RAL 7016 anthracite grey



Details	Angle of rotation 300° with stop <b>Adapter 101.5300.011</b> for attachment to sections < 120 mm)	Angle of rotation 300° with stop, installation opening including screw-fit plastic cover
Weight in lbs. (g)	3.2 (1450)	4.6 (2070)
Material	Aluminium	Aluminium
Accessories (retrofitable)	Swivel angle limiter 9805296000	Swivel angle limiter 9805296000

Application example		
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Dimensions in mm		
------------------	---	---

## Tilt Couplier 15° A

**1015300179** RAL 9006 white aluminium  
**1015300013** RAL 7016 anthracite grey



## Tilt Couplier 15° B

**1015300180** RAL 9006 white aluminium  
**1015300014** RAL 7016 anthracite grey



## Tilt Elbow Couplier 15° A

**1015300181** RAL 9006 white aluminium  
**1015300015** RAL 7016 anthracite grey



Angle of rotation 300° with stop, fixed tilt of 15°  
(variant A tilted back)

3.7 (1680)  
Aluminium

Angle of rotation 300° with stop, fixed tilt of 15°  
(variant B tilted forward)

3.7 (1680)  
Aluminium

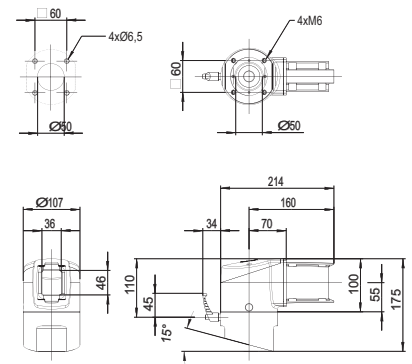
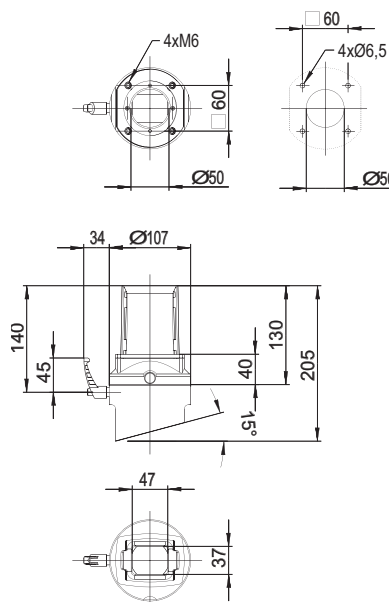
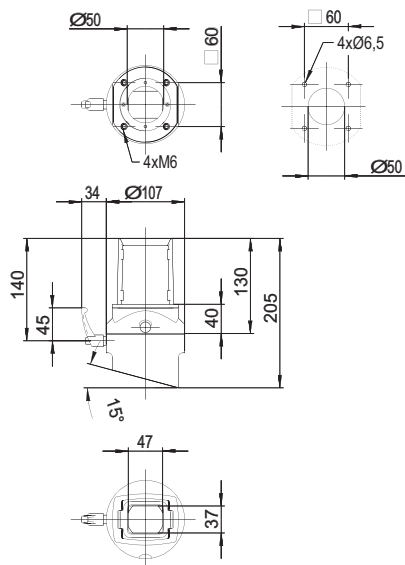
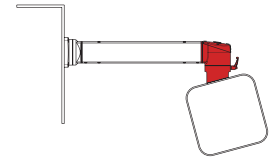
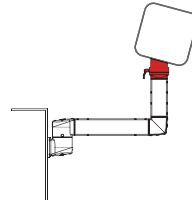
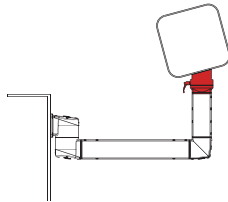
Angle of rotation 300° with stop, fixed tilt of 15°,  
installation opening including screw-fit plastic  
cover (variant A tilted back)

4.8 (2160)  
Aluminium

Swivel angle limiter 9805296000

Swivel angle limiter 9805296000

Swivel angle limiter 9805296000



## Article

Article number (colour)

## Tilt elbow coupling 15° B

**1015300182** RAL 9006 white aluminium  
**1015300016** RAL 7016 anthracite grey

## Base Coupling

**1015300183** RAL 9006 white aluminium  
**1015300017** RAL 7016 anthracite grey



## Details

Angle of rotation 300° with stop, fixed tilt of 15°, installation opening including screw-fit plastic cover (variant B tilted forward)

Angle of rotation 300° with stop

Weight in lbs. (g)

4.8 (2160)

4.7 (2120)

Material

Aluminium

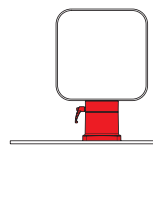
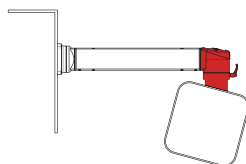
Aluminium

Accessories (retrofitable)

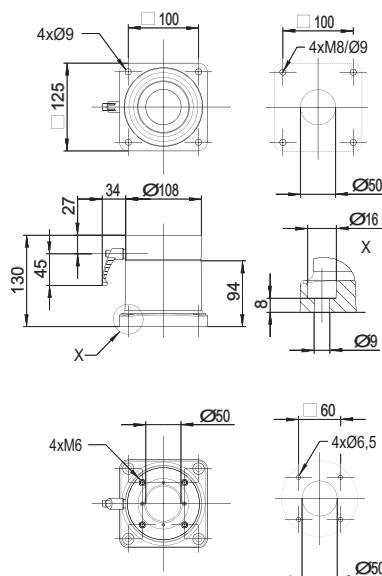
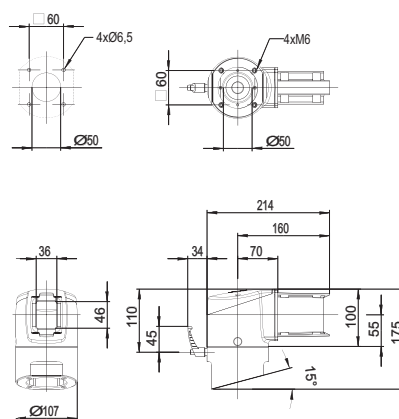
Swivel angle limiter **9805296000**

Swivel angle limiter **9805296000**

## Application example



## Dimensions in mm



## Tilt Base Couplier 15° A

**1015300184** RAL 9006 white aluminium  
**1015300018** RAL 7016 anthracite grey



## Tilt Base Couplier 15° B

**1015300185** RAL 9006 white aluminium  
**1015300019** RAL 7016 anthracite grey



## Straight Coupling 48

**1013056000** RAL 9006 white aluminium  
**1013050000** RAL 7016 anthracite grey



Angle of rotation 300° with stop, fixed tilt of 15°  
(variant A tilted back)

5.2 (2340)

Aluminium

Angle of rotation 300° with stop, fixed tilt of 15°  
(variant B tilted back)

5.2 (2340)

Aluminium

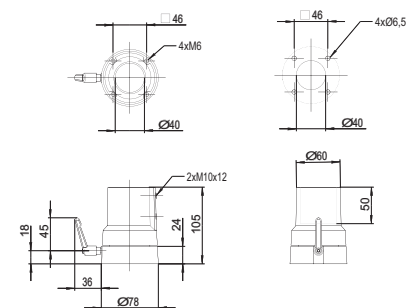
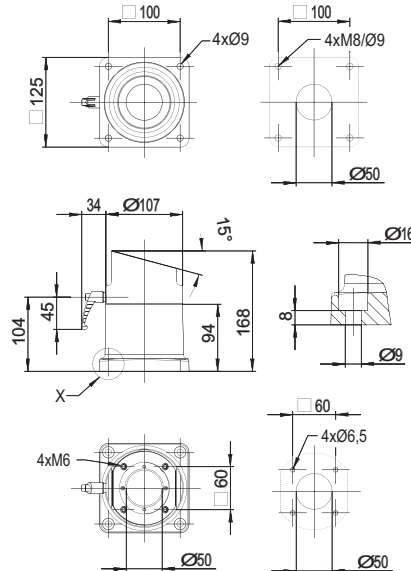
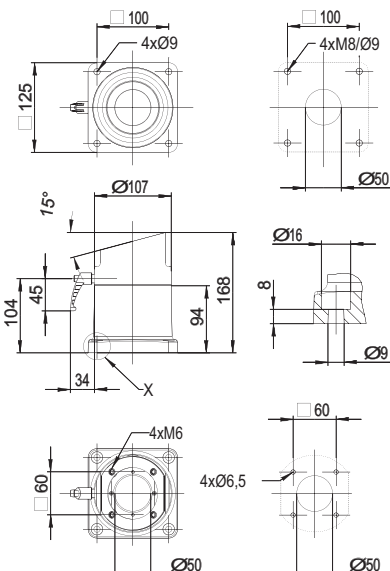
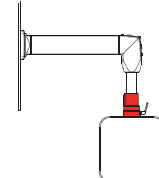
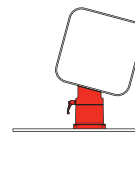
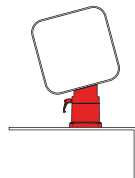
Angle of rotation 300° with stop, only compatible  
with 48 mm round tube,  
required for attachment to 80 mm section

3.9 (1760)

Aluminium

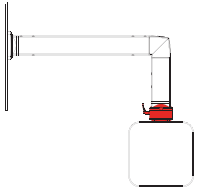
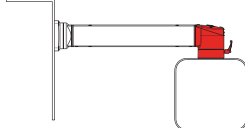
Swivel angle limiter 9805296000

Swivel angle limiter 9805296000

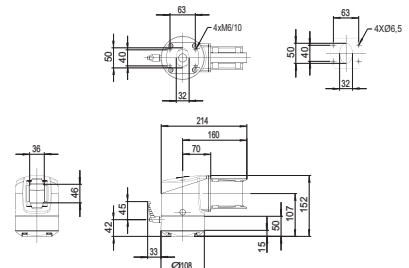
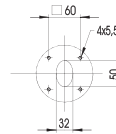
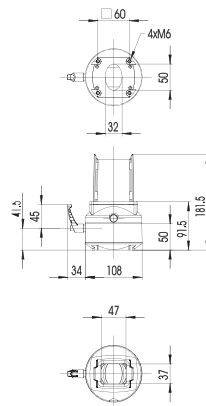


<b>Article</b>		<b>Coupling for Siemens SIMATIC Pro®</b>	<b>Elbow coupling for Siemens SIMATIC Pro®</b>
<b>Article number</b>	(colour)	<b>1015300187</b> RAL 9006 white aluminium <b>1015300043</b> RAL 7016 anthracite grey	<b>1015300074</b> RAL 7016 anthracite grey



<b>Details</b>	Customised coupling for Siemens SIMATIC Pro®, angle of rotation 300° with stop	Customised coupling for Siemens SIMATIC Pro®, angle of rotation 300° with stop, installation opening including screw-fit plastic cover
Weight in lbs. (g)	3.5 (1580)	4.9 (2200)
Material	Aluminium	Aluminium
<b>Accessories</b> (retrofitable)	<b>Swivel angle limiter</b> <b>9805296000</b>	<b>Swivel angle limiter</b> <b>9805296000</b>
<b>Application example</b>		

## Dimensions in mm



## Base coupling for Siemens SIMATIC Pro®

1015300075

RAL 7016 anthracite grey

## Tilt coupling 15° for Siemens SIMATIC Pro®

See Details

RAL 7016 anthracite grey

## Tilt elbow coupling 15° for Siemens SIMATIC Pro®

See Details

RAL 7016 anthracite grey



Customised coupling for Siemens SIMATIC Pro®, angle of rotation 300° with stop

5.0 (2250)

Aluminium

Customised coupling for Siemens SIMATIC Pro®, angle of rotation 300° with stop, fixed tilt of 15° (variant A tilted back, variant B tilted forward)

1015300076 Tilt elbow coupling 15° A

1015300077 Tilt elbow coupling 15° B

4.0 (1810)

Aluminium

Customised coupling for Siemens SIMATIC Pro®, angle of rotation 300° with stop, fixed tilt of 15°, installation opening including screw-fit plastic cover (variant A tilted back, variant B tilted forward)

1015300078 Tilt elbow coupling 15° A

1015300079 Tilt elbow coupling 15° B

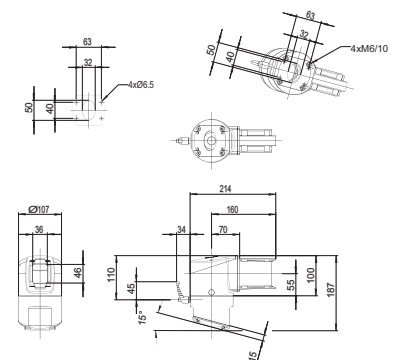
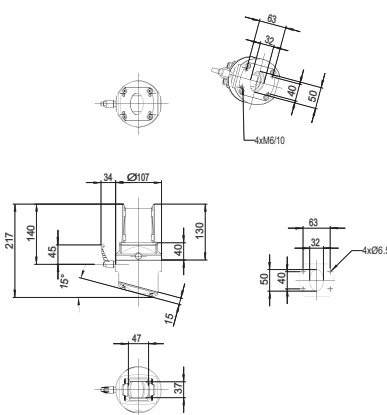
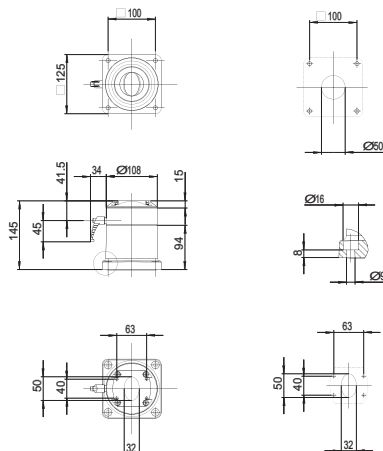
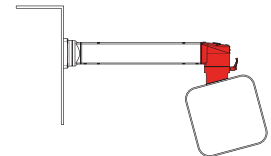
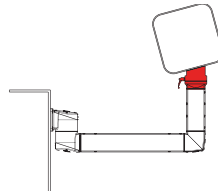
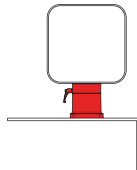
5.1 (2290)

Aluminium

Swivel angle limiter 9805296000

Swivel angle limiter 9805296000

Swivel angle limiter 9805296000





The image displays two views of a mechanical component. The left view is a front view showing a cylindrical body with a square base, a top flange with four mounting holes, and a side handle. The right view is a side view showing the component's profile, including the circular end face with a central hole and the side handle.

### Dimensions in mm

## Elbow

**1015300195** RAL 9006 white aluminium  
**1015300008** RAL 7016 anthracite grey

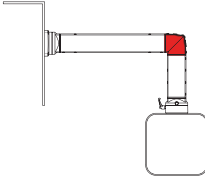
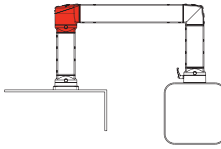
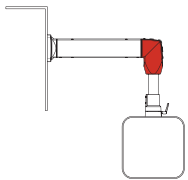
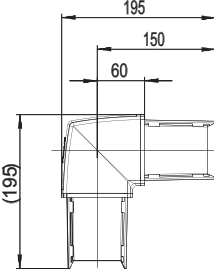
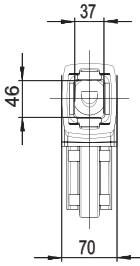
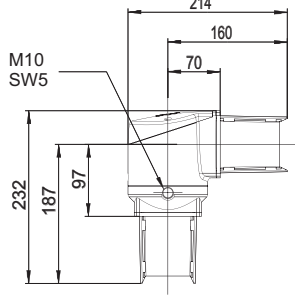
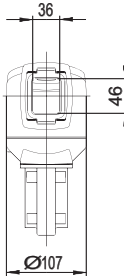
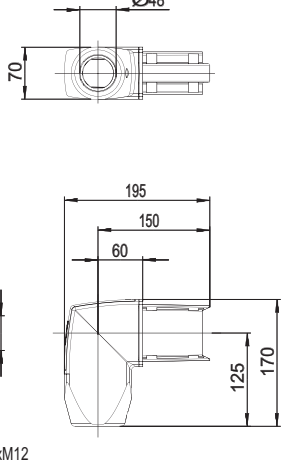
## Elbow, Rotary

**1015300196** RAL 9006 white aluminium  
**1015300009** RAL 7016 anthracite grey

## Elbow, Reduced RD 48

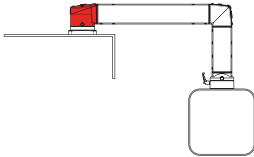
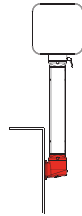
**1015300197** RAL 9006 white aluminium  
**1015300020** RAL 7016 anthracite grey

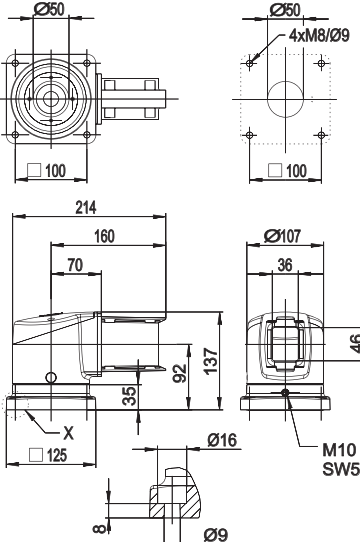
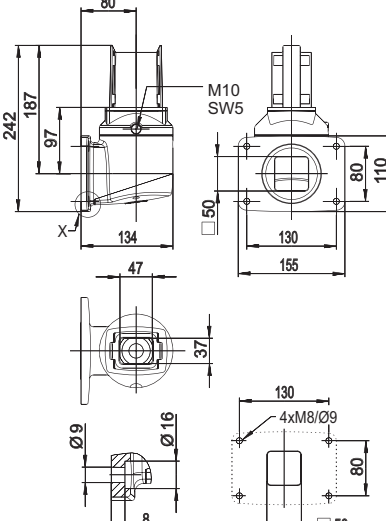


With installation opening including screw-fit plastic cover	Angle of rotation 300° with stop, installation opening including screw-fit plastic cover	Reducer elbow from the square tube to 48 mm round tube
3.7 (1680)	5.4 (2460)	4.2 (1920)
Aluminium	Aluminium	Aluminium
	<b>Swivel angle limiter</b> 9805296000	
		
 	 	

<b>Article</b>		<b>Top Joint</b>	<b>Wall Joint S</b>
<b>Article number</b>	(colour)	<b>1015300198</b> RAL 9006 white aluminium <b>1015300003</b> RAL 7016 anthracite grey	<b>1015300199</b> RAL 9006 white aluminium <b>1015300006</b> RAL 7016 anthracite grey



<b>Details</b>	Angle of rotation 300° with stop, installation opening including screw-fit plastic cover	Angle of rotation 300° with stop, installation opening including screw-fit plastic cover
	Weight in lbs. (g) 5.0 (2250)	Weight in lbs. (g) 5.4 (2450)
	Material Aluminium	Material Aluminium
<b>Accessories</b> (retrofitable)	<b>Swivel angle limiter</b> 9805296000	<b>Swivel angle limiter</b> 9805296000
<b>Application example</b>		

<b>Dimensions in mm</b>		
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## Wall Joint W

**1015300200** RAL 9006 white aluminium  
**1015300007** RAL 7016 anthracite grey



## Intermediate Joint

**1015300201** RAL 9006 white aluminium  
**1015300004** RAL 7016 anthracite grey



## Base / Wall Flange

**1015300204** RAL 9006 white aluminium  
**1015300010** RAL 7016 anthracite grey



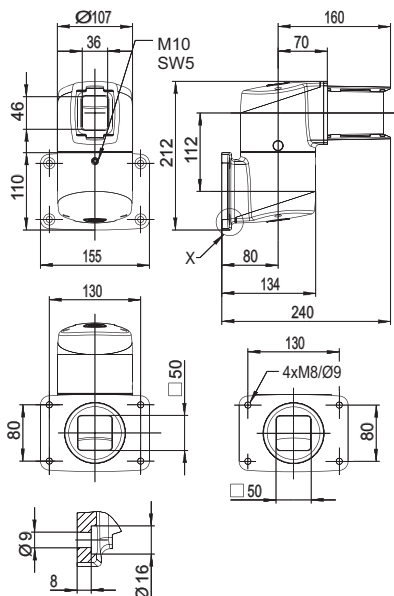
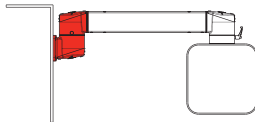
Angle of rotation 300° with stop, 2 installation openings including screw-fit plastic covers

2930

Aluminium

Swivel angle limiter

9805296000



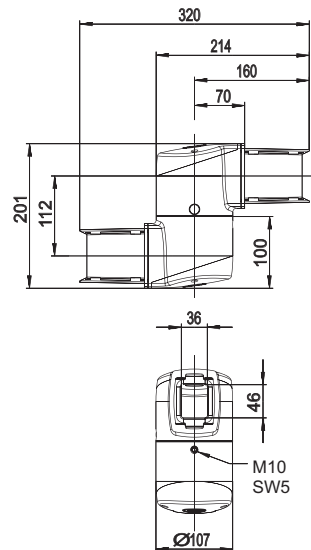
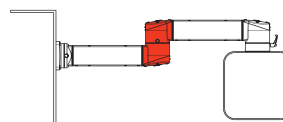
Angle of rotation 300° with stop, 2 installation openings including screw-fit plastic covers

2940

Aluminium

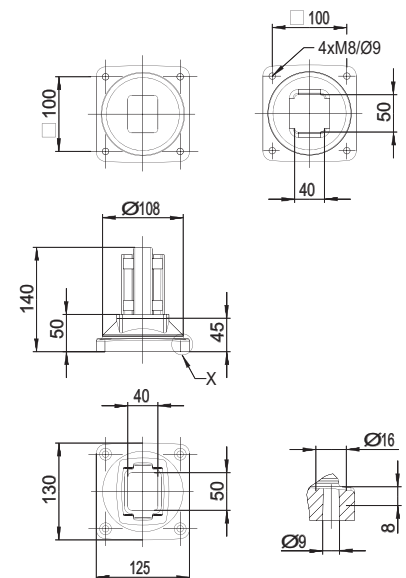
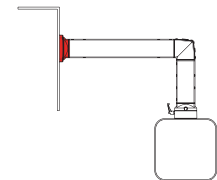
Swivel angle limiter

9805296000



1300

Aluminium



## Article

Article number (colour)

## Base, Rotary

**1015300205** RAL 9006 white aluminium  
**1015300005** RAL 7016 anthracite grey

## CS-3000 HV module, vertically adjustable

See Details RAL 7016/anodised aluminium



## Details

Angle of rotation 300° with stop

**1015300022 CS-3000 HV 1000/100**  
**1015300029 CS-3000 HV 1000/150**  
**1015300031 CS-3000 HV 1000/200**  
**1015300033 CS-3000 HV 1000/300**  
Modular height 1000 mm; see introduction for detailed information on selection of suitable damper force.

Weight in lbs. (g)

3.9 (1780)

15.5 (7030)

Material

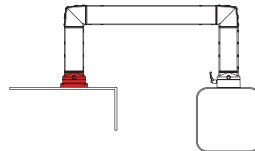
Aluminium

Aluminium

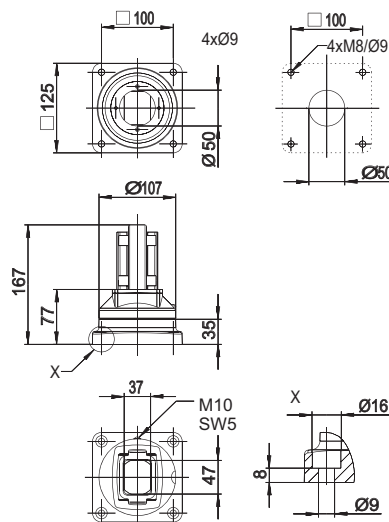
## Accessories (retrofitable)

**Swivel angle limiter 9805296000**

## Application example



## Dimensions in mm



## CS-3000 HV module, vertically adjustable

See Details

RAL 7016/anodised aluminium



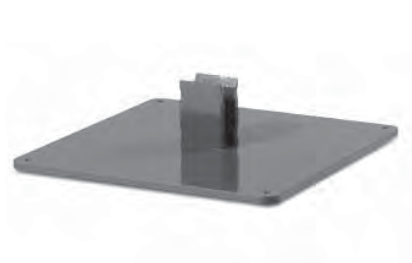
## Large free-standing base

**1015300206** RAL 9006 white aluminium  
**1015300027** RAL 7016 anthracite grey



## Small free-standing base

**1015300207** RAL 9006 white aluminium  
**1015300028** RAL 7016 anthracite grey



**1015300023** CS-3000 HV 800/100  
**1015300030** CS-3000 HV 800/150  
**1015300032** CS-3000 HV 800/200  
**1015300034** CS-3000 HV 800/300  
Modular height 800 mm; see Page 123 for detailed information on selection of suitable damper force.

13.3 (6020)

Aluminium

25.1 (11660)

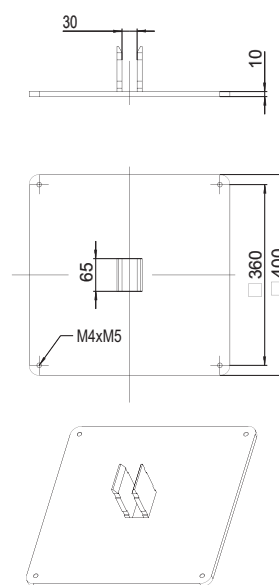
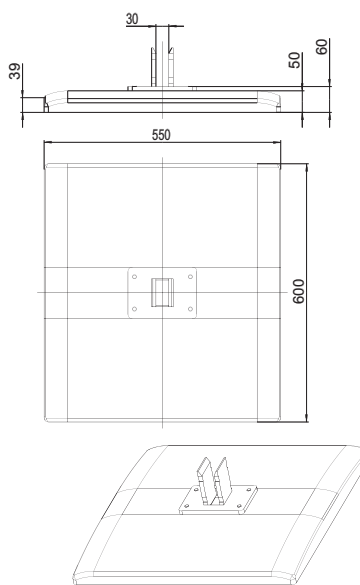
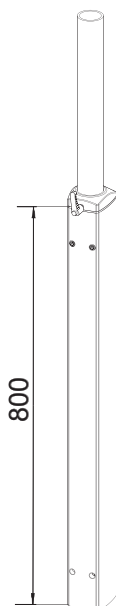
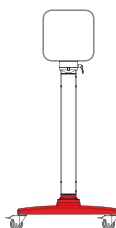
Steel / Aluminium

29.1 (13220)

Steel

## Castors and Support feet

## Castors and Support feet





## Article

Article number (colour)

## Tube Adaptor

**1015300208** RAL 9006 white aluminium  
**1015300039** RAL 7016 anthracite grey

## Adapter (narrow section)

**1015300209** RAL 9006 white aluminium  
**1015300011** RAL 7016 anthracite grey



## Details

Required for connecting tubes shortened directly at place of installation: Tubes machined at one end and of unspecified lengths can be cut to size and connected to the system with the tube adaptor

Only to be used together with couplings (for attachment to BERNSTEIN enclosures with depths <120 mm)

Weight in lbs. (g)

1.6 (720)

.7 (300)

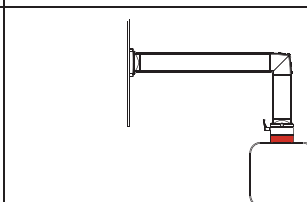
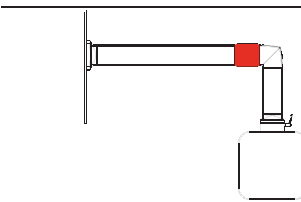
Material

Aluminium

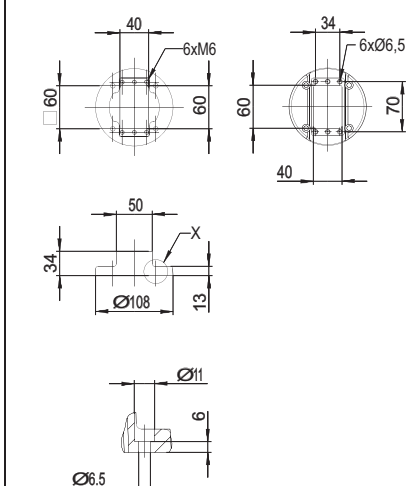
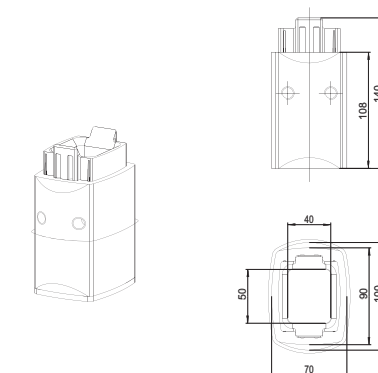
Aluminium

## Accessories (retrofitable)

## Application example



## Dimensions in mm



## Coupling Head

**9808017400** RAL 9006 white aluminium  
**9806818000** RAL 7016 anthracite grey

## Bent Tube

**Customer-specific** Anodised aluminium

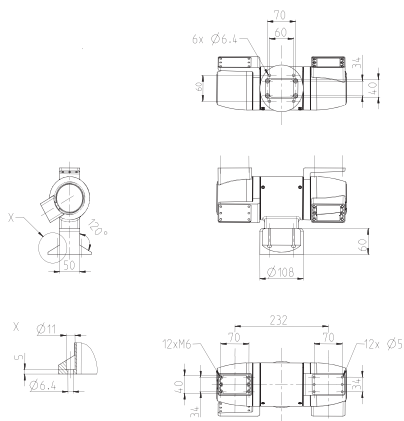
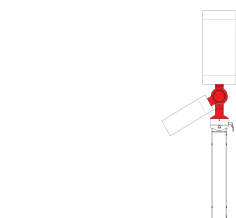


Coupling head for infinitely variable, pivoted attachment of CC-4000 and CC-4000 control enclosures (infinitely variable from 0° to 30°) and keyboard consoles (infinitely variable from 0° to 20°) to coupling components CS-3000.

Bent tube manufactured to individual specifications (dimensions min. 500 mm, max. 1.500 mm)  
Reduced assembly time due to its elbow free design, snag free cable routing, no limitation of the load bearing capacity compared to traditional systems with straight tubes.

7.5 (3400)  
Aluminium

Depending on version  
Aluminium



## CS-3000 Bent Tube

Design, simple assembly and ease of cleaning as well as variety of components, load bearing capacity and quality are important criteria for the choice of a suitable suspension system. All of these characteristics are offered by BERNSTEIN's CS-3000 Family including the new Bent Tube. Unlike traditional types of configurations (tube – elbow – tube), the exceptional single piece construction offers a wide range of application opportunities. It is particularly suitable for operator control panels or console enclosures with suspension arm attachments on the bottom, as it reduces the possibility of projection impact injury to machine operator and surrounding people.



### Product features

- Material: Anodised aluminium
- Cross-sectional dimension of the tube: 70 x 90 mm (to match CS-3000 components)
- No limitation of the load bearing capacity compared to traditional systems with straight tubes
- Reduced assembly time due to its elbow free design
- Snag free cable routing
- Manufactured to individual specifications (dimensions min. 500 mm, max. 1000 mm)



### Application examples



## Accessories

### Article



#### Swivel angle limiter CS-3000

**9805296000**

- Swivel angle limiter for coupling and joint components
- Adjustable in steps of 13.7°
- Contains ten Ø 10 mm steel balls

#### Apparatus castors

**9808015300**



- Castor set, consisting of 2 steering castors and 2 steering castors with total locking for free-standing bases
- Load-bearing capacity of each castor 70 kg

#### Floor anchoring

**9808014100**



- Floor anchoring set for the large stand

#### Signal lamp adapter

**9805317000 Joint components**  
**9805318000 Elbow components**



- For connecting commercially available 25 mm diameter signal lamps to CS-3000 suspension system components

#### Adapter flange

**9806649000**



- For enclosure with door section and / or keyboard

### Article



#### Swivel angle limiter CS-3000 neXt

**9806906000**

- Swivel angle limiter for coupling and joint components
- Adjustable in steps of 30°
- Contains 6 swivel angle limiter

#### Levelling feet

**9808012900**



- Height-adjustable feet (1 set = 4 pieces) for free-standing bases

#### Industrial castors

**9808012800**



- Castor set, consisting of 4 steering castors with locking brake
- Load-bearing capacity of each castor 50 kg

#### Adapter plate

**9806678000**



- For connecting adapter flange to coupling 48

(9806520000 required together with coupling RD 48 for attachment to CC-4000 section 80)

#### Screw cover set

**9806590000**



- Plastic covers for sealing the tube fastening screws RAL 9006
- Kit contains 50 pcs.

# Heavy Duty Suspension System

With its large number of components, the BERNSTEIN CS-2000 System 80 suspension system offers technically perfected solutions for a wide range of applications.

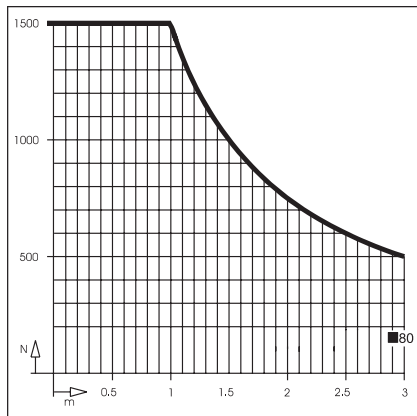
## Loads Up to 330 lbs. with a 3 Foot Arm Length

### System structure

The following conditions are decisive for selecting the right system:

- Load of overall system
- Clear cable leadthrough if necessary
- Design
- System constellation

After determining the correct size of suspension system, the corresponding components and tubes are selected to build up the required system.



### Materials


- Aluminium components: cast aluminium
- Cast steel components: GGG 40
- Welded steel structures: St 37
- Support tubes: St 37
- Bearings: St/PTFE or POM
- Seals: CR
- Installation openings: cast aluminium
- Gaiters: PVC

### System features

- Installation openings at all joints for easy cable installation
- Integrated strain relief for gripping cables
- Wide range of available components for variable configurations
- Maintenance-free no-play bearings in all joints and couplings
- Adjustment facilities for precisely aligning support tubes
- Wall and intermediate joints with adjustable torque and retrofitable swivel angle limiter (available as accessory)
- Flange couplings with adjustable firmness and retrofitable rotation angle limiter
- Overhead installation of all components possible

### Tubing

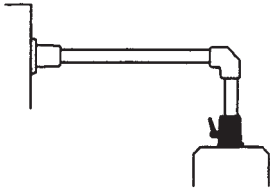

The steel tubes for the CS-2000 System 80 suspension system are available in different lengths (tube lengths in accordance with DIN 7168). The steel tubes are supplied powder-coated in RAL 7035 (light grey). Weight: 11.0 kg/m

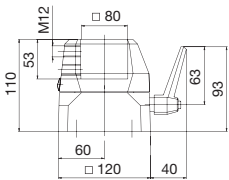
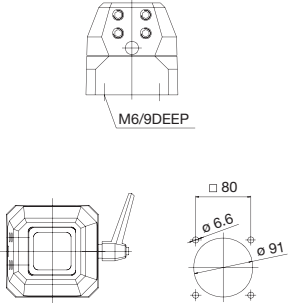
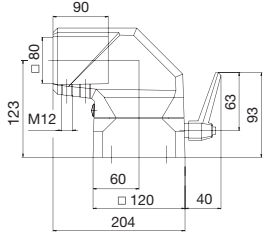
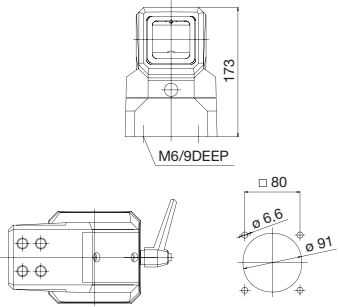
Available tube lengths		
	Length mm	Article number
	250	9527114000
	500	9527115000
	750	9527116000
	1000	9527117000
	1250	9527118000
	1500	9527119000
	2000	9527121000
	3000	9527123000

<b>Article</b>		<b>Standard coupling, flange CS-2000</b>	<b>Elbow coupling, flange CS-2000</b>
<b>Article number</b>	(colour)	<b>1016702000</b> RAL 7035 light grey	<b>1016705000</b> RAL 7035 light grey

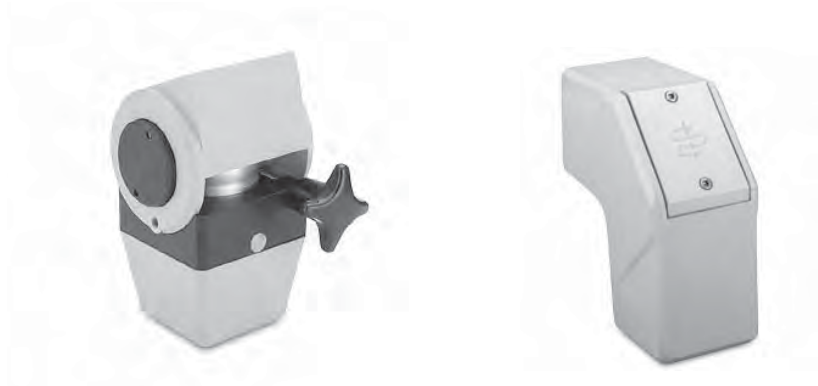


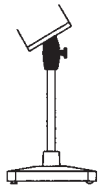
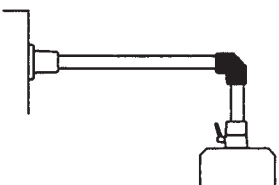
<b>Details</b>	Angle of rotation 300° with stop. Complete with seals and mounting screws. Adjustable torque	Angle of rotation 300° with stop. Complete with seals and mounting screws. Adjustable torque. Installation opening
Weight in lbs. (g)	7.2 (3270)	9.1 (4100)
Material	Aluminium	Aluminium
<b>Accessories</b> (retrofitable)	<b>Swivel angle limiter</b> 9805176000	<b>Swivel angle limiter</b> 9805176000 <b>Signal lamp adapter</b> 9805189000

<b>Application example</b>		
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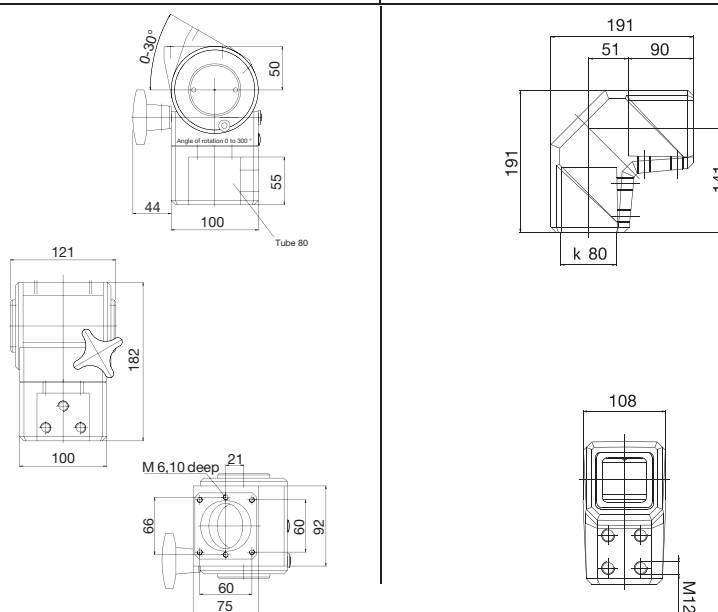
<b>Dimensions in mm</b>	 	 
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Article	Turn/tilt coupling CS-2000	Elbow CS-2000
Article number (colour)	1016321000 RAL 7035 light grey	1016708000 RAL 7035 light grey



Details	Angle of rotation 300° with stop. Infinitely variable inclination from 0 to 30°. Complete with seals and mounting screws	Installation opening. Complete with seals
Weight in lbs. (g)	6.4 (2900)	6.4 (2900)
Material	Aluminium and PA	Aluminium
Accessories (retrofitable)	Swivel angle limiter 9805130000	Signal lamp adapter 9805189000
Application example		

## Dimensions in mm





## Elbow for torque load CS-2000

1016711000

RAL 7035 light grey

## Intermediate joint CS-2000

1016471000

RAL 7035 light grey

## Top joint CS-2000

1016714000

RAL 7035 light grey



Increased load bearing capacity. Complete with seals. Installation opening

With gaiter attached with zip fastener. Swivel angle 180° with stop on both sides. Torque adjustment

Angle of rotation 306° with stop. Complete with seals and mounting screws.

18.7 (8500)

Aluminium

21.4 (9700)

Steel

45.4 (20620)

GGG

## Signal lamp adapter

9805189000

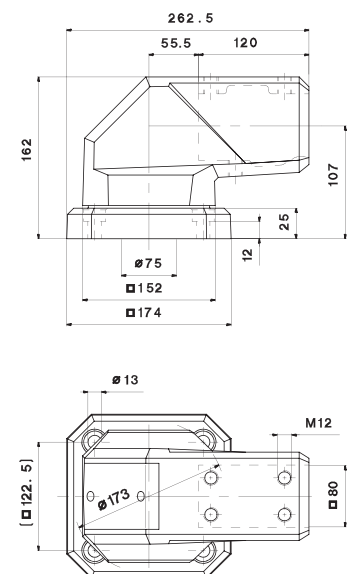
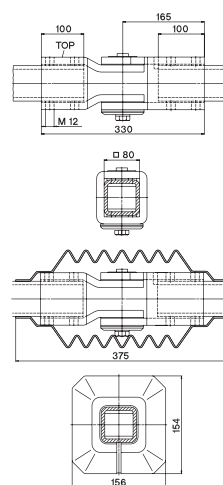
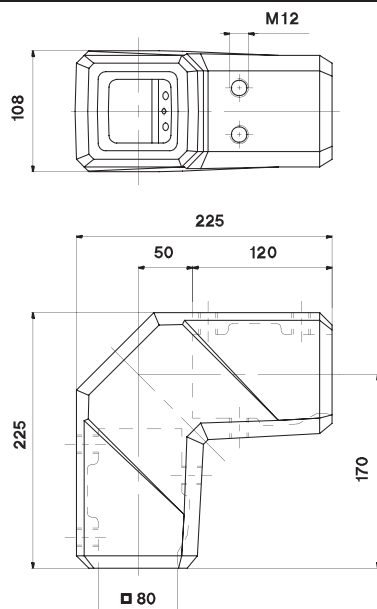
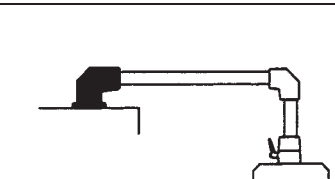
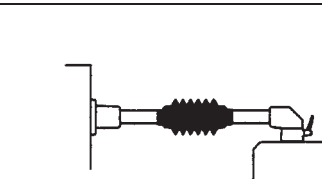
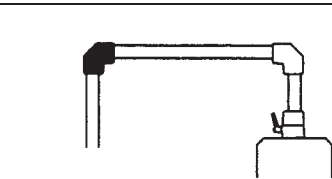
## Swivel angle limiter

## Swivel angle limiter

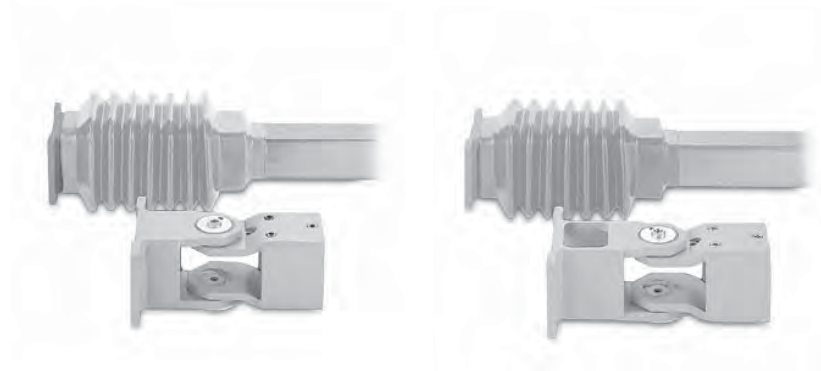
9805177000

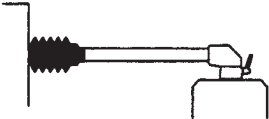
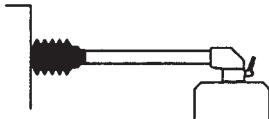
## Signal lamp adapter

9805188000

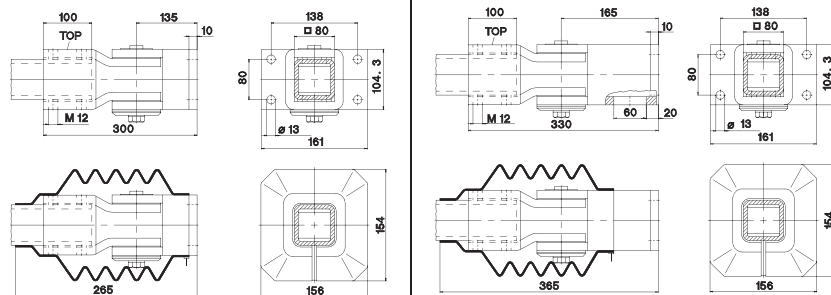


Article		Wall joint CS-2000	Wall joint for cable leadthrough CS-2000
Article number	(colour)	1016473000 RAL 7035 light grey	1016474000 RAL 7035 light grey



Details	With gaiter attached with zip fastener. Swivel angle 180° with stop on both sides. Torque adjustment	With gaiter attached with zip fastener. Swivel angle 180° with stop on both sides. Torque adjustment
Weight in lbs. (g)	20.4 (9250)	20.9 (9500)
Material	Steel	Steel
Accessories (retrofitable)	Swivel angle limiter 9805062000	Swivel angle limiter 9805062000
Application example		

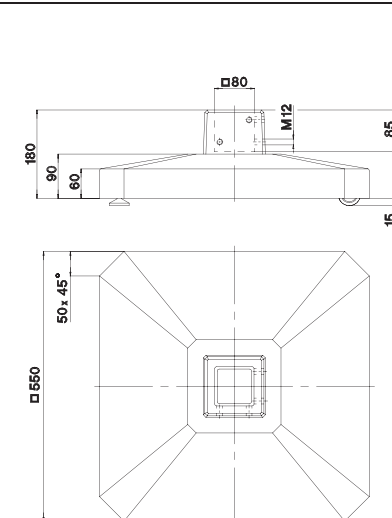
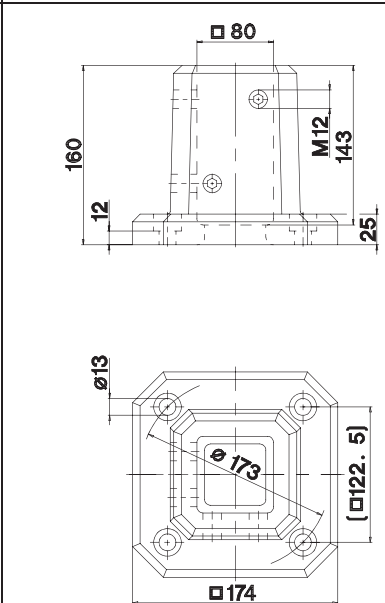
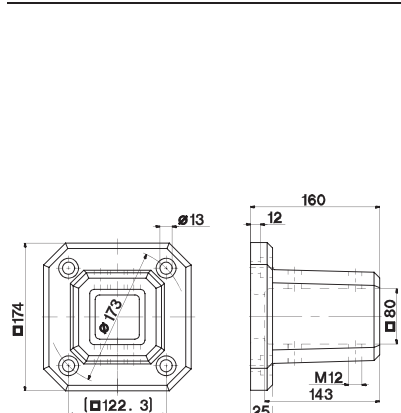
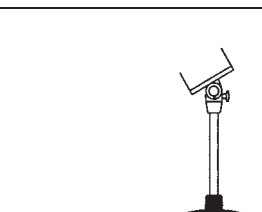
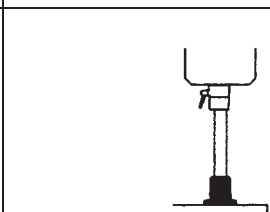
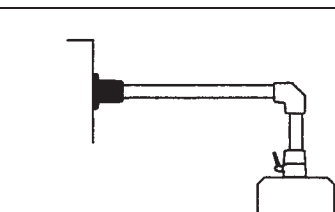
## Dimensions in mm



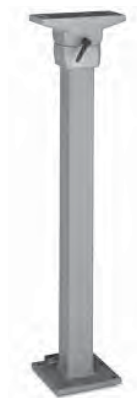
<b>Wall flange CS-2000</b>	<b>Base CS-2000</b>	<b>Free-standing base CS-2000</b>
<b>1016472000</b> RAL 7035 light grey	<b>1016475000</b> RAL 7035 light grey	<b>1016323000</b> RAL 7035 light grey



Complete with seals	Complete with seals	For free-standing applications
20.1 (9100)	20.4 (9240)	31.5 (14300)
GGG	GGG	Aluminium
		<b>Castors and Support feet</b>



Article		Support column, upright version	Support column, suspended version, 250 mm tube
Article number	(colour)	1016558000 RAL 7035 light grey	1016555000 RAL 7035 light grey



Details		
Weight in lbs. (g)	60.0 (27220)	224 (102000)
Material	Steel / Aluminium	Steel / Aluminium
Accessories (retrofitable)		
Application example		

Dimensions in mm		
------------------	--	--

Support column, suspended version, 500 mm tube

1016556000

RAL 7035 light grey

Support column, suspended version, 750 mm tube

1016557000

RAL 7035 light grey

Adapter flange CS-2000

9806213000

RAL 7035 light grey



231 (105000)

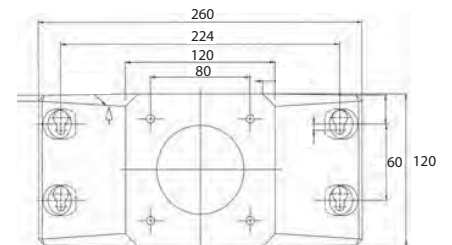
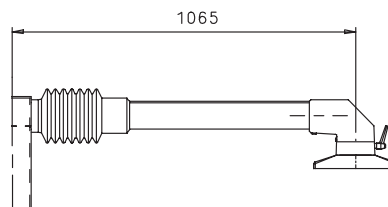
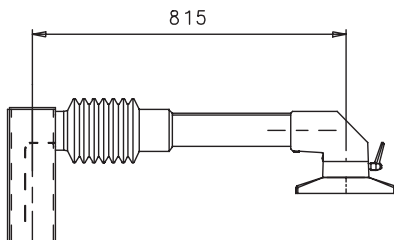
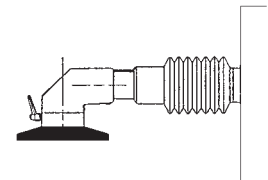
Steel / Aluminium

90 (41000)

Steel / Aluminium

2.4 (1100)

Aluminium



Article		Tilt adapter CS-2000 15° = 460	Tilt adapter CS-2000 30° = 600
Article number	(colour)	1016459000 RAL 7035 light grey	1016460000 RAL 7035 light grey



Details	A = 15°, B = 39	A = 30°, B = 66
Weight in lbs. (g)	1.0 (460)	1.3 (600)
Material	Aluminium	Aluminium
Accessories (retrofitable)		
Application example		

Dimensions in mm		
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Tilt adapter CS-2000 60° = 800

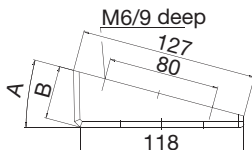
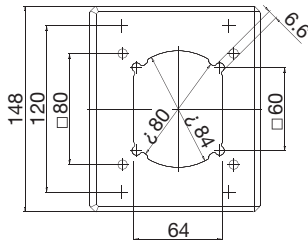
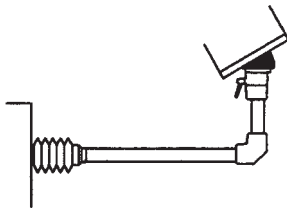
1016461000

RAL 7035 light grey

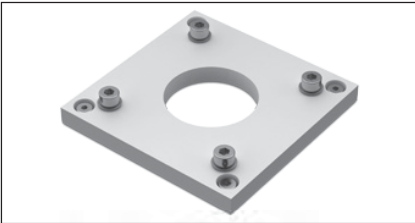
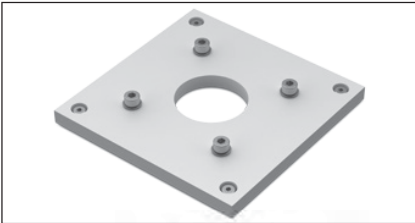
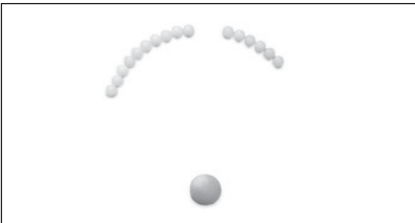
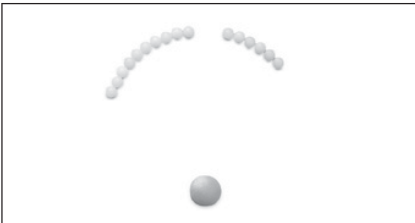




A = 60°, B = 111

1.8 (800)  
Aluminium

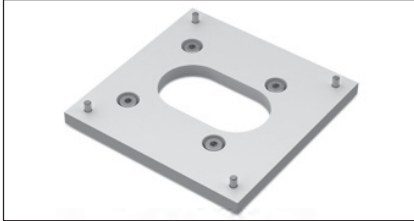




Article	CS-1000 VESA 75/M4	CS-1000 VESA 100/M4
Article number	9806675000	9806676000
		
Design	For rear attachment of monitors or similar with VESA 75 flange on CS-1000 suspension arm system	For rear attachment of monitors or similar with VESA 100 flange on CS-1000 suspension arm system
Article	Swivel angle limiter for coupling components, CS-2000 SL system	Swivel angle limiter for coupling components, CS-2000 System 80
Article number	9805129000	9805176000
		
Design	Easy-to-retrofit swivel angle limiter. After installation, the balls limit the swivel angle. Adjustable in steps of 8.5°. Material PA.	Easy-to-retrofit swivel angle limiter. After installation, the balls limit the swivel angle. Adjustable in steps of 9°. Material PA.
Article	Signal lamp adapter CS-2000 System 80	Fixed castors for large free-standing bases CS-2000 SL and CS-2000 System 80
Article number	9805189000	9806043000
		
Design	Easy-to-retrofit signal lamp adapter. Installation opening for signal lamp tubes with outside diameter of 25 mm, secured on side with setscrews. Colour: RAL 7035 light grey Material aluminium.	Complete with installation material and instructions for large free-standing bases. Set of 2.

## CS-2000 SL Panel VESA 100/M4

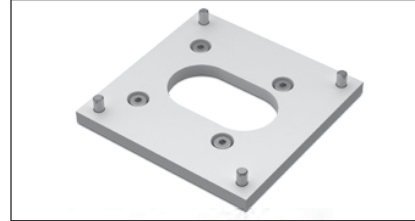
9806677000



For rear attachment of monitors or similar with VESA 100 flange by means of CS-2000-SL panel couplings (with M4 thread for monitors)

## CS-2000 SL Panel VESA 100/M6

9806698000



For rear attachment of monitors or similar with VESA 100 flange by means of CS-2000-SL panel couplings (with M4 thread for monitors)

## Swivel angle limiter for wall and intermediate joints CS-2000 System 80

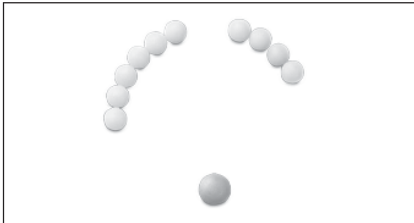
9805062000



Swivel angle limiter as retrofitable accessory kit for wall and intermediate joints. Swivel angle range adjustable and fixed in steps of 15°. Material steel.

## Swivel angle limiter for joint components System CS-2000 SL

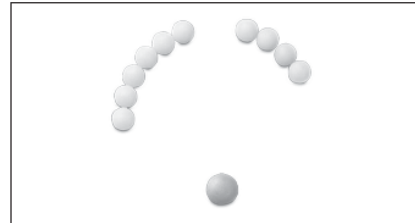
9805132000



Easy-to-retrofit swivel angle limiter. After installation, the balls limit the swivel angle. Adjustable in steps of 14°. Material PA

## Swivel angle limiter for joint components CS-2000 System 80

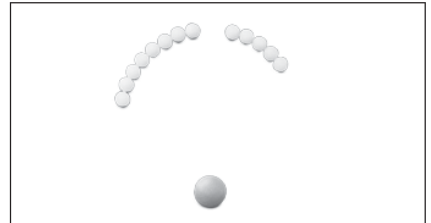
9805177000



Easy-to-retrofit swivel angle limiter. After installation, the balls limit the swivel angle. Adjustable in steps of 8.5°. Material PA

## Swivel angle limiter for turn/tilt couplings System CS-2000 SL and CS-2000 System 80

9805130000



Easy-to-retrofit swivel angle limiter. After installation, the balls limit the swivel angle. Adjustable in steps of 8.5°. Material PA

## Swivel castors for large free-standing bases CS-2000 SL and CS-2000 System 80

9806044000



Complete with installation material and instructions for large free-standing bases. Set of 2

## Adjustment feet for large free-standing bases CS-2000 SL and CS-2000 System 80

9806045000



Complete with installation material and instructions for large free-standing bases. Set of 2

# Stainless Steel Suspension System

## Product features

The CS-480 NR suspension system was specifically developed for mounting control enclosures in hygienic areas in the food and pharmaceuticals industries.

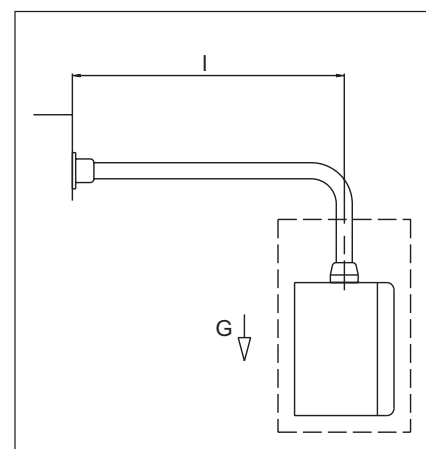
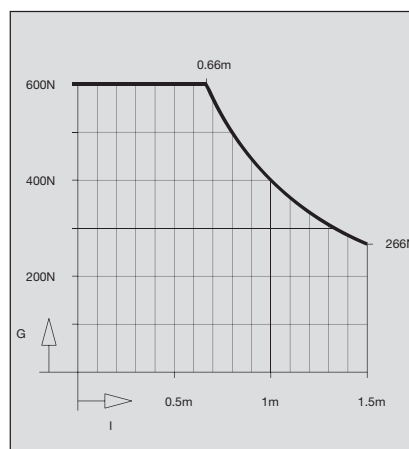
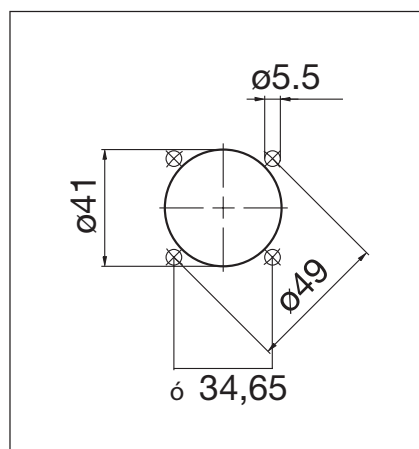
Thanks to the variety of different models, the CS-480 NR ensures absolute flexibility. You have the choice between a combination of tubes shaped to customer specifications and suspension system components or, if time is pressing, you can combine the preshaped tubes and coupling sleeves available from stock with the suspension system components.

## System features

- Installation openings at bearing components with horizontal outlet
- Easy mounting by clamping the support tubes
- Load bearing capacity 400 N at 1 m
- Protection class IP66/NEMA 4X
- Material 1.4305
- Torque preset at factory

## Enclosure preparation for mounting couplings

The dimensions of the coupling hole pattern for preparing the enclosure are shown in the following drawing.



## Materials and surfaces

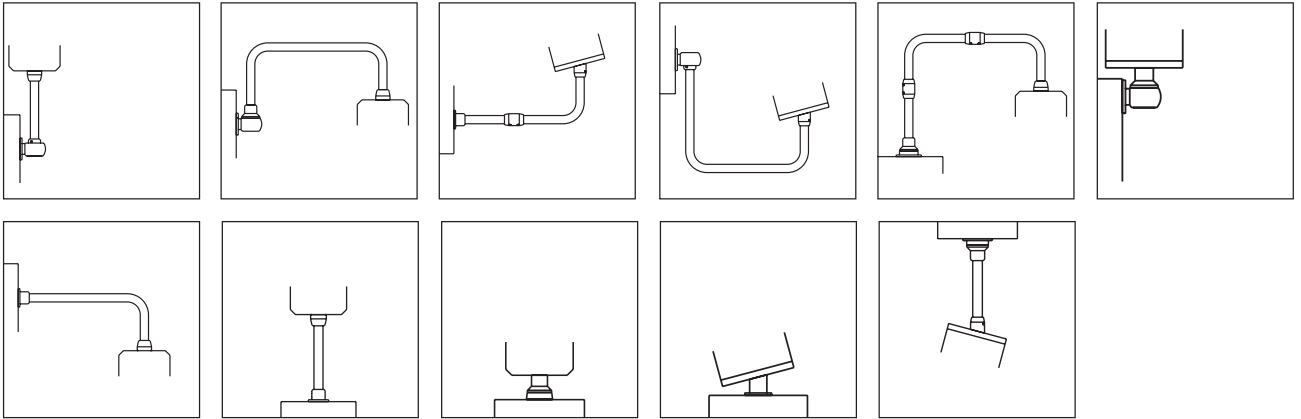
Stainless steel support tubes 1.4301  
 Stainless steel components 1.4305  
 Bearings POM  
 O-rings NBR

## Load diagram

Refer to the diagram for the load bearing capacity of the CS-480 NR suspension system. Approval for higher loads is to be obtained separately. The system length  $l$  refers to the length specification in the diagram.


## System combinations

The following selection illustrates the high degree of flexibility that can be achieved in configuring the suspension system:




### Support tubes

Support tubes with 48.3 mm outside diameter; wall thickness 3.6 mm, straight tubes

	Length mm	Article number
	250	9523501000
	500	9523502000
	750	9523503000
	1000	9523504000
	1250	9523505000
	1500	9523506000

### Increased flexibility with L-shaped tubes and coupling sleeves

The use of L-shaped tubes and coupling sleeves together with straight support tubes can render unnecessary time-consuming manufacture of support tubes to customer specifications, L-shaped tubes

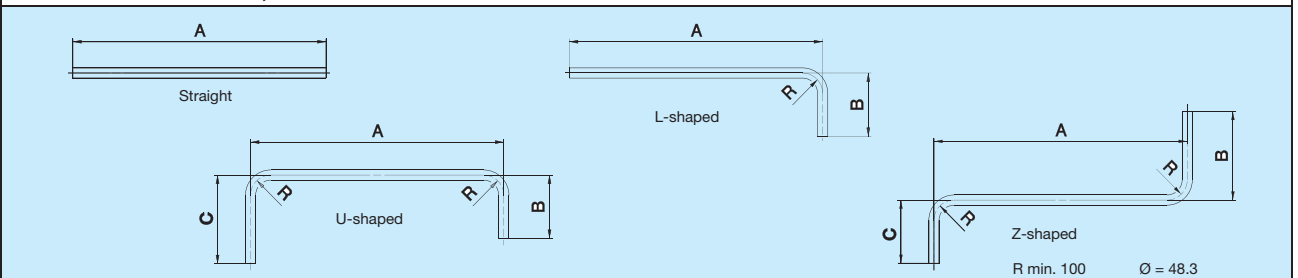
	250 x 250	9523500001
	500 x 500	9523500011
	Coupling sleeve	1013051200

### Support tubes to customer specifications

Different versions of formed support tubes for the BERNSTEIN CS-480 NR suspension system are available on request. To order customised tubes simply quote the shape (e.g. straight, L-, U- or Z-shaped) and the dimensions.

#### Note:

Dimension B and C min. 220 mm; dimension A in U and Z version min. 320 mm



<b>Article</b>	<b>Straight coupling (for attaching enclosure)</b>	<b>Tilt coupling (for attaching enclosure)</b>
<b>Article number</b> (colour)	<b>1013050100</b>	<b>1013050300</b>



<b>Details</b>	Flange coupling for mounting enclosures. Angle of rotation 340° with limit stop. Preset torque. Maintenance-free bearings. Complete with seals and mounting material	Rigid flange coupling with 15° tilt for mounting enclosures. Complete with seals and mounting material
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Weight in lbs. (g)	3.1 (1400)	2.2 (1000)
Material	Stainless steel	Stainless steel

<b>Accessories</b> (retrofitable)		

<b>Application example</b>		
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<b>Dimensions in mm</b>		

## Rotary base coupling, external mounting

1013050700



## Rotary base coupling, internal mounting

1013050800



## Base tilt coupling

1013050400



Rotary base coupling (external mounting) for directly mounting enclosures on machines or floors. Angle of rotation 340° with limit stop. Preset torque. Maintenance-free bearings. Complete with seals and mounting material

9.9 (4500)

Stainless steel

Rotary base coupling (internal mounting) for directly mounting enclosures on machines or floors. Angle of rotation 340° with limit stop. Preset torque. Maintenance-free bearings. Complete with seals and mounting material

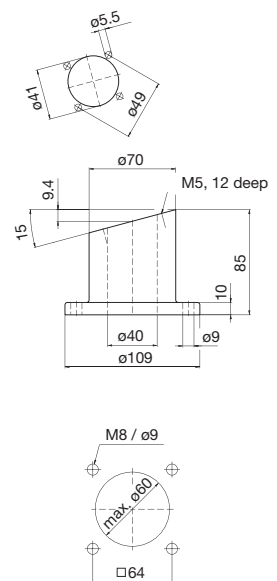
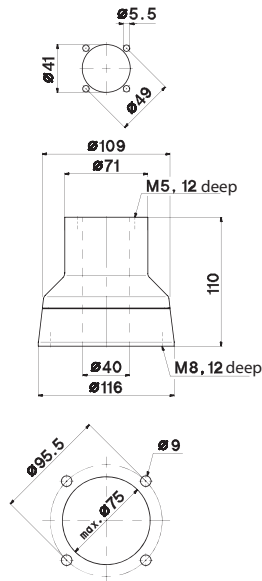
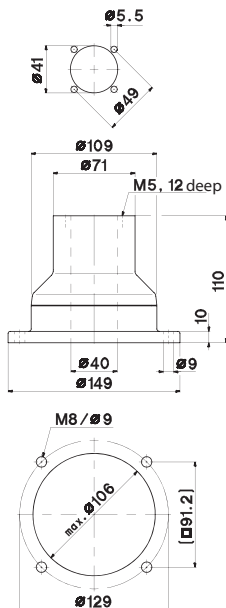
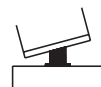
9.1 (4100)

Stainless steel

Rigid tilt coupling with 15° tilt for directly mounting enclosures on horizontal surfaces. Complete with seals and mounting material

4.2 (1900)

Stainless steel



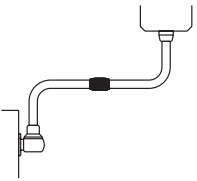
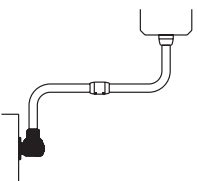
<b>Article</b>	<b>Coupling sleeve</b>	<b>Wall joint S</b>
<b>Article number</b> (colour)	<b>1013051200</b>	<b>1013050900</b>

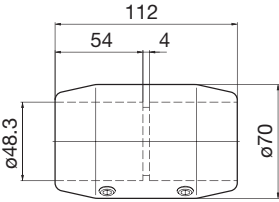
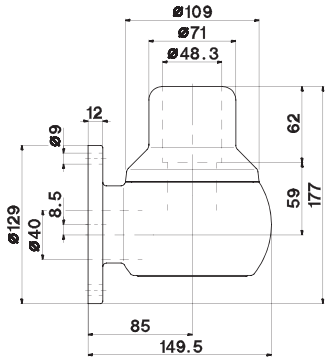
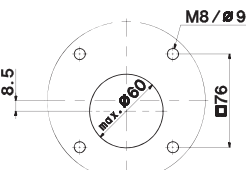


<b>Details</b>	Coupling sleeve for easy assembly and disassembly of tube configurations. Complete with seals	Wall joint with vertical outlet for mounting on vertical surfaces. Cover for easy cable installation. Angle of rotation 340° with limit stop. Preset torque. Maintenance-free bearings. Complete with seals
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Weight in lbs. (g)	3.3 (1500)	16.1 (7300)
Material	Stainless steel	Stainless steel

<b>Accessories</b> (retrofitable)		

<b>Application example</b>		
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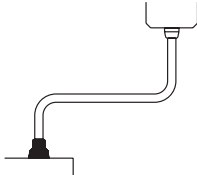

<b>Dimensions in mm</b>		 
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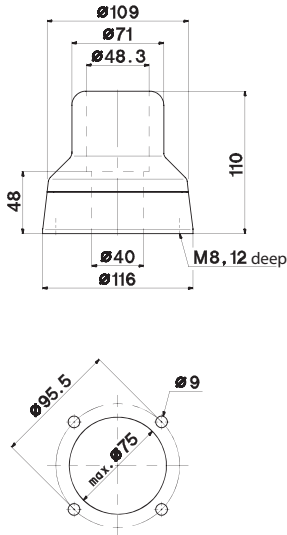
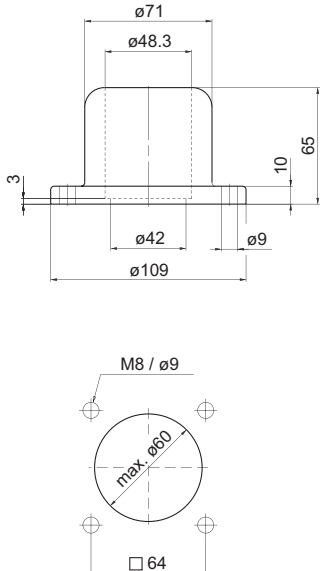


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<b>Article</b>	<b>Rotary base socket, internal mounting</b>	<b>Base / wall flange</b>
<b>Article number</b> (colour)	<b>1013050600</b>	<b>1013050200</b>



<b>Details</b>	Rotary base for mounting on machines or floors. Angle of rotation 340° with limit stop. Preset torque. Maintenance-free bearings. Complete with seals	Base or wall flange for mounting on horizontal and vertical surfaces. Complete with seals
Weight in lbs. (g)	8.4 (3800)	3.1 (1400)
Material	Stainless steel	Stainless steel
<b>Accessories</b> (retrofitable)		
<b>Application example</b>		

<b>Dimensions in mm</b>		
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**TITLE** - Title to the products of ALTECH shall remain with ALTECH until payment is made in full by Customer. Such reservation of title is for the purpose of securing the purchase price and shall not relieve Customer of the duty to inspect the products upon receipt, to notify ALTECH of any deficiencies or defects, and to exercise due care in the use, installation, operation, and maintenance of the products when on the premise of the Customer or under the control of the Customer. Notwithstanding any reservation of title by ALTECH, risk of loss shall pass to customer at any time of shipment.

**SHIPMENT AND DELIVERY** - All orders for destination in the mainland United States (less Hawaii, Alaska and non-continental United States possessions) will be shipped F.O.B. Flemington, N.J. All destination, shipping and other charges shall be paid by the Customer in accordance with ALTECH's then current shipping and billing practices.

Delivery dates given in the acceptance of any order are approximate. ALTECH shall not be liable for delays in delivery or in performance due to causes beyond its reasonable control including acts of God, acts of Customer, acts of civil or military authority, fires, strikes or other labor disturbances, war, riot or delays in transportation. In the event of such delay, the date of delivery or performance shall be extended for a period equal to the time lost by reason of the delay.

**PRICE** - PRICES in any ALTECH publication are subject to change without prior notification. Catalog prices are based on prices published in the current price list. All written quotations are valid for thirty (30) days from the date of quotation. Customer shall pay all sales, use, excise or similar taxes whenever ALTECH must itself pay and/or collect such tax from Customer arising out of the sale.

**PAYMENT** - Customer agrees to make payment within thirty (30) days of date of the invoice from ALTECH. Customer agrees to pay a late payment charge of one and one-half percent (1.5% per month, or the maximum late payment charge permitted by applicable law, whichever is less, on any unpaid amount for each calendar month (or fraction thereof) that such payment is in default. Orders amounting to less than \$100.00 will be billed at \$100.00 plus freight. Full carton purchases are required. In the event of referral to an attorney for collection, reasonable attorney's fees for collection of the overdue amount shall be paid by Customer. In the event payment is not received within 30 days from the date of invoice, any discount shall be cancelled and the full list price will be due.

**LIMITED WARRANTY** - ALTECH warrants to Customer that the equipment purchases shall be free from defects in material and workmanship under normal use and service for a period of one year from shipment.

Written notice as an explanation of the circumstances of any claim that the equipment has proved defective in material or workmanship shall be given promptly by the Customer to ALTECH.

ALTECH will not be liable for any misuse, improper operations, improper installation, improper maintenance, alteration, modification, accident or unusual degradation of the equipment or parts due to an unsuitable installation environment.

No representation of other affirmation of facts, including but not limited to statements regarding capacity, suitability for use or performance of the equipment, shall be or be deemed to be a warranty or representation by ALTECH for any purpose, nor give rise to any liability or obligation of ALTECH whatsoever.

Customer's sole and exclusive remedy in the event of breach of warranty, as set forth herein, is expressly limited to (1) the correction of the defect by adjustment, repair, modification, or replacement, or (2) issuance of a credit or refund of the purchase price for the defective equipment at ALTECH's election and sole expense.

EXCEPT AS SPECIFICALLY PROVIDED IN THIS AGREEMENT, THERE ARE NO OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

THIS WARRANTY EXTENDS ONLY TO THE CUSTOMER FROM ALTECH OR ITS AUTHORIZED DISTRIBUTOR.

**LIMITATION OF LIABILITY** - IN NO EVENT, SHALL ALTECH BE LIABLE FOR LOSS OF PROFITS, INDIRECT, SPECIAL, CONSEQUENTIAL OR OTHER SIMILAR DAMAGES ARISING OUT OF ANY BREACH OF THIS AGREEMENT OR OBLIGATIONS UNDER THE AGREEMENT.

ALTECH SHALL NOT BE LIABLE FOR ANY DAMAGES CAUSED BY DELAY IN SHIPMENT, INSTALLATION OR FURNISHING OF EQUIPMENT OR SERVICES UNDER THIS AGREEMENT.

No action arising out of any claimed breach of this Agreement may be brought by either party more than two (2) years after the cause of action has accrued.

**PATENT INDEMNITY** - ALTECH shall defend or settle any suit or proceeding brought against Customer based on a claim that any equipment made to ALTECH design and furnished hereunder constitutes an infringement of any existing United States patent, provided (ALTECH) is notified promptly in writing and is given complete authorization and information required for the defense, and ALTECH shall pay all damages and costs awarded against Customer, but shall not be responsible for any costs, expense or compromise incurred or made by Customer without ALTECH's prior written consent. If any equipment is in ALTECH's opinion likely to or does become the subject of a claim for patent infringement, ALTECH may at its option and expense procure for Customer the right to continue using the device, modify it to become non-infringing, but in the event ALTECH is not reasonably able to modify, substitute, or otherwise procure for Customer the right to continue using it, ALTECH will remove such equipment and refund to Customer the amount paid in excess of a reasonable rental for past use.

ALTECH shall not be liable for any infringement or claim based upon use of the equipment in combination with other equipment not supplied by ALTECH or with modifications made by Customer.

The foregoing states the entire liability of ALTECH to Customer arising from patent infringement.

**SELLER'S REMEDIES** - Should Customer fail to make any payment within ten (10) days of its due date, or fail to perform any other of the Customer's obligation hereunder upon thirty (30) days written notice, or should Customer be or become insolvent or be a party to any bankruptcy receivership proceeding prior to full payment of all amounts payable hereunder, ALTECH may: (a) with or without demand or notice to customer declare the entire amount unpaid immediately due and payable; (b) enter upon the premises where the equipment may be found and remove it (Customer shall assemble the equipment and make it available to ALTECH at a place reasonably convenient to both parties and shall permit and assist ALTECH in effecting the retaking and removal of the equipment); and (c) sell any or all the equipment as permitted under applicable law, applying the proceeds of the sale to payment of the expenses of retaking, repairing and selling the equipment, reasonable attorney fees and to the satisfaction of all indebtedness then due and unpaid under this Agreement. Any surplus shall be paid to Customer and any deficiency shall be paid to ALTECH by Customer.

The remedies provided herein shall be cumulative and in addition to all other remedies provided by law or equity or under the Uniform Commercial Code.

**GOVERNING LAW** - This agreement will be governed by the Laws of the State of New Jersey.

**GENERAL** - This Agreement shall only become effective and binding when either (a) it has been accepted and executed by an authorized representative of ALTECH, or (b) the equipment has been shipped to Customer, with or without acceptance in writing hereon. Notice of acceptance is hereby waived by Customer. Customer hereby acknowledges receipt of a true and complete copy hereof.

No addition to or modification of any of the Terms and Conditions of Sale as they appear herein shall be binding upon ALTECH unless signed in writing by duly authorized representative of ALTECH in Flemington, N.J.

Typographical and clerical errors in quotations, orders and acknowledgments are subject to correction.

This Agreement is not assignable without the prior written consent of ALTECH. Any attempt to assign any of the rights, duties or obligations of this Agreement without such consent is void.

If any provision or provisions of this Agreement shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability, of the remaining provisions shall not in any way be affected or impaired thereby.

ALTECH is not responsible for failure to fulfill its obligation under this Agreement due to causes beyond its control, or except as agreed herein.

THE CUSTOMER ACKNOWLEDGES THAT HE HAS READ THE AGREEMENT, UNDERSTANDS IT, AND AGREES TO BE BOUND BY ITS TERMS AND CONDITIONS. FURTHERMORE, THE CUSTOMER AGREES THAT IT IS THE COMPLETE AND EXCLUSIVE STATEMENT OF THE AGREEMENT BETWEEN THE PARTIES, WHICH SUPERSEDES ALL PROPOSALS OR PRIOR AGREEMENTS, ORAL OR WRITTEN, EXPRESSED OR IMPLIED, AND ALL OTHER COMMUNICATIONS BETWEEN THE PARTIES RELATING TO THE SUBJECT MATTER OF THIS AGREEMENT.



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DIN Rail

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