



## **Complete Range – Foot switches**

Individual solutions for sophisticated technical requirements

# BERNSTEIN – We develop and produce **Foot switches for over 50 years**



## **Tailored to your applications – the modular foot switch concept from BERNSTEIN.**

BERNSTEIN, a leader in the field of industrial foot switches, incorporates more than 50 years of experience into the development and production of its products. The wide range of models reflects the specialisation of the company in foot switch solutions for different applications.

You will therefore find models with a pressure point being used where a 2-way circuit is to be operated with only one pedal. With their blocking function, switches with a pedal lock offer protection against inadvertent actuation even in the case of external influences such as heavy vibrations. Foot switches equipped with a bistable switching function allow constant machine operation even after releasing the pedal which is only interrupted when the pedal is operated again.

In addition, the switches can be equipped with fixed or hinged protective hoods, hinged pedal guards or emergency stop devices for manual operation. This ensures maximum possible safety in all work situations.

Specific switch solutions demonstrate the practical experience and requirement orientation of the company. A power contactor integrated into the housing, for example, enable a motor to be controlled without additional junction boxes. A foot switch featuring variable controlling current and voltage outputs with integral Hall element in the switch insert, is available for continuous control applications.



But the manufacturer also meets the demand for fast, simple commissioning. A product model with pre-assembled cable and plug offers immediate assistance in uncomplicated applications.

BERNSTEIN latest development is the first DGUV (BG)-approved enable foot switch. It is a technological further development of the classic foot switch and is unique on the market.

The comprehensive product portfolio of BERNSTEIN offers safety in many different work situations – wherever manual operation is not possible for ergonomic or safety reasons.

Resistance, extremely long life and mechanical stability are characteristic features of all our products and underline BERNSTEIN market position as the leading provider of industrial foot switches.

Customer specific versions of our foot switch range are available, our team will be happy to advise you.

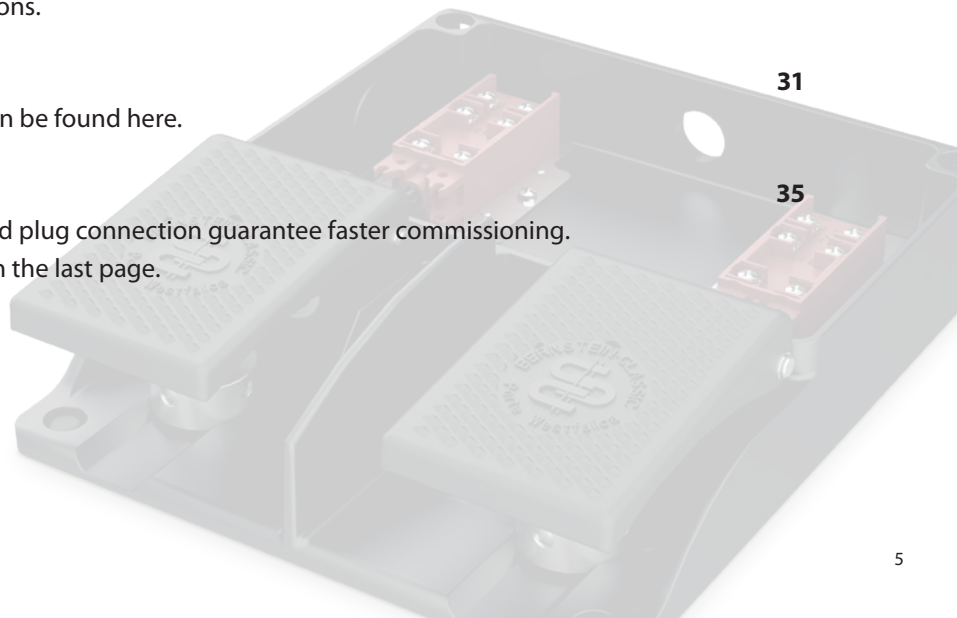
# Made for practical work

## Foot switches for every application

### **BERNSTEIN – Individual solutions for sophisticated technical requirements**

|  |           |
|--|-----------|
| <b>Standard foot switches</b>  | <b>6</b>  |
| Three modular housings of same length and height with different width dimensions for one (F1), two (F2) and three (F3) pedal versions.                                 |           |
| <b>Foot switch with protective shroud</b>  | <b>8</b>  |
| For protection against falling objects and a high degree of stability.   |           |
| <b>Foot switch with hinged protective shroud</b>   | <b>10</b> |
| Protection against falling objects and inadvertent pedal operation.  |           |
| <b>Foot switch with increased degree of protection IP 67</b>   | <b>11</b> |
| Foot switches with increased degree of protection.   |           |
| <b>Foot switch with pressure point</b>   | <b>12</b> |
| Two-stage switching via single pedal operation.  |           |
| <b>Foot switch with bistable switching function</b>  | <b>14</b> |
| After initially pressing the pedal, the switch setting is retained even after the pedal is released. The contact is not interrupted before the pedal is pressed again. |           |
| <b>Foot switch with footrest</b>   | <b>15</b> |
| Angled foot rest designed to reduce fatigue during operation.  |           |
| <b>Foot switch with pedal lock</b>   | <b>16</b> |
| Protection against inadvertent pedal operation.  |           |
| <b>Foot switch with hinged pedal protection</b>  | <b>17</b> |
| Protection against inadvertent pedal operation.  |           |
| <b>Foot switch with contactor</b>  | <b>18</b> |
| A built-in contactor in the base makes it possible for example, to control a motor without the need of an additional enclosure.  |           |
| <b>Foot switch with Emergency Stop button</b>  | <b>19</b> |
| Emergency Stop button directly available to the operator during remote operation.  |           |
| <b>Enable foot switch</b>  | <b>20</b> |
| Foot-operated command unit for release control.<br>First enabled switch approved by the German Social Accident Insurance (DGUV).                                       |           |

|   |           |
|---|-----------|
| <b>Foot switch with enable function</b>   | <b>22</b> |
| Foot-operated command unit with self-acting reset function.<br>Ideal to put machines with high safety requirements into the correct state of operation.   |           |
| <b>Foot switch with analogue output</b>   | <b>23</b> |
| A controller output corresponding to the pedal position enables infinitely variable control tasks.  |           |
| <b>Foot switch with AS-Interface connection</b>   | <b>24</b> |
| The AS-Interface provides an affordable, fast and flexible connection of foot switches into an AS-i system.   |           |
| <b>Foot switch with safety lock plus manual release</b>   | <b>26</b> |
| A normal work process and in case of emergency, a safe shutdown, is guaranteed.   |           |
| <b>Mobility handling for foot switches</b>  | <b>28</b> |
| The mobility handle option is a complementary accessory for the one (F1) and two (F2) pedal versions.   |           |
| <b>Spare parts</b>  | <b>29</b> |
| <b>Technical data</b>   | <b>28</b> |
| Electrical data, mechanical data, standard values for safety technology, standards and approvals.   |           |
| <b>The insulated foot switch</b>  | <b>29</b> |
| The KFMini – the ideal supplement to the metal foot switches.   |           |
| <b>FS-Switch</b>  | <b>30</b> |
| Foot switches for design-oriented applications.   |           |
| <b>Dimensioned drawings</b>   | <b>31</b> |
| All corresponding dimensional drawings can be found here.   |           |
| <b>Pre-assembled foot switch – CHECKLIST</b>  | <b>35</b> |
| Foot switches pre-assembled with cable and plug connection guarantee faster commissioning.<br>You will find the corresponding checklist on the last page. |           |



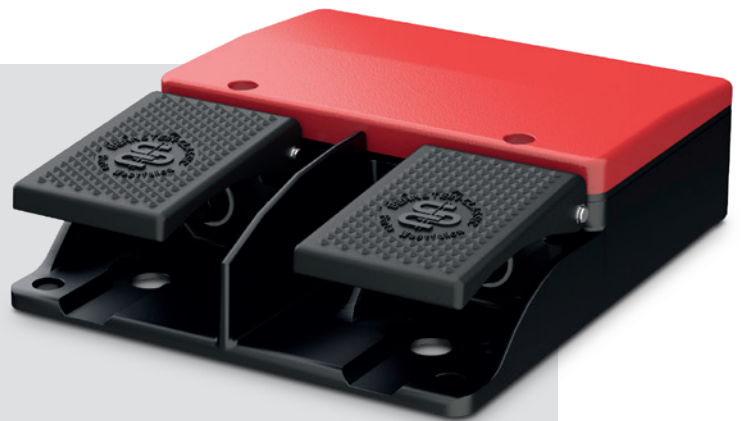
# Foot switches

## Standard version

Three basic enclosures of the same length and height with different width dimensions for one (F1), two (F2) and three (F3) pedals.



Dimension drawing 1 | Page 31



Dimension drawing 2 | Page 31

## Ordering Instructions for standard foot switches

### Single pedal foot switch F1

| Article number | Designation | Switching contacts |
|----------------|-------------|--------------------|
|----------------|-------------|--------------------|

#### Snap-action

|            |         | Pedal 1   |
|------------|---------|-----------|
| 6061300011 | F1-SU1Z | 1NC / 1NO |
| 6061400061 | F1-SU2Z | 2NC / 2NO |

#### Slow-action

|            |        | Pedal 1   |
|------------|--------|-----------|
| 6061100005 | F1-U1Z | 1NC / 1NO |
| 6061200003 | F1-U2Z | 2NC / 2NO |

### Two pedal foot switch F2

| Article number | Designation | Switching contacts |  |
|----------------|-------------|--------------------|--|
|----------------|-------------|--------------------|--|

#### Snap-action

|            |              | Pedal 1 (l.) | Pedal 2 (r.) |
|------------|--------------|--------------|--------------|
| 6062330021 | F2-SU1Z/SU1Z | 1NC / 1NO    | 1NC / 1NO    |
| 6062440065 | F2-SU2Z/SU2Z | 2NC / 2NO    | 2NC / 2NO    |

#### Slow-action

|            |            | Pedal 1 (l.) | Pedal 2 (r.) |
|------------|------------|--------------|--------------|
| 6062110013 | F2-U1Z/U1Z | 1NC / 1NO    | 1NC / 1NO    |
| 6062220015 | F2-U2Z/U2Z | 2NC / 2NO    | 2NC / 2NO    |



Dimension drawing 3 | Page 31

**Three pedal foot switch F3**

| Article number     | Designation       | Switching contacts |              |              |
|--------------------|-------------------|--------------------|--------------|--------------|
| <b>Snap-action</b> |                   |                    |              |              |
|                    |                   | Pedal 1 (l.)       | Pedal 2 (m.) | Pedal 3 (r.) |
| <b>6163444577</b>  | F3-SU2Z/SU2Z/SU2Z | 2NC / 2NO          | 2NC / 2NO    | 2NC / 2NO    |
| <b>Slow-action</b> |                   |                    |              |              |
|                    |                   | Pedal 1 (l.)       | Pedal 2 (m.) | Pedal 3 (r.) |
| <b>6063111025</b>  | F3-U1Z/U1Z/U1Z    | 1NC / 1NO          | 1NC / 1NO    | 1NC / 1NO    |



# Foot switches with protective shroud

The aluminium pressure die-cast protective shroud (F3: aluminium sand casting) fully shields the pedal at the top and sides while the wide base provides a high degree of stability. It reliably prevents accidental operation from above by falling objects or careless operation from the side. Due to its robust construction the protective shroud withstands a drop of 20 kg from a height of 1 m.



Dimension drawing 4 | Page 31



Dimension drawing 5 | Page 31

## Ordering Instructions for foot switches with protective shroud

Foot switches with protective shroud have "UN" in the article designation.

| Single pedal foot switch F1 |             |                    |                 | Two pedal foot switch F2 |                 |                           |                 |
|-----------------------------|-------------|--------------------|-----------------|--------------------------|-----------------|---------------------------|-----------------|
| Article number              | Designation | Switching contacts | Special feature | Article number           | Designation     | Switching contacts        | Special feature |
| <b>Snap-action</b>          |             |                    |                 | <b>Snap-action</b>       |                 |                           |                 |
|                             |             | Pedal 1            |                 |                          |                 | Pedal 1 (l.) Pedal 2 (r.) |                 |
| 6061800012                  | F1-SU1Z UN  | 1NC / 1NO          | Prot. shroud UN | 6062830022               | F2-SU1Z/SU1Z UN | 1NC / 1NO 1NC / 1NO       | Prot. shroud UN |
| 6061900062                  | F1-SU2Z UN  | 2NC / 2NO          | Prot. shroud UN | 6062940066               | F2-SU2Z/SU2Z UN | 2NC / 2NO 2NC / 2NO       | Prot. shroud UN |
| <b>Slow-action</b>          |             |                    |                 | <b>Slow-action</b>       |                 |                           |                 |
|                             |             | Pedal 1            |                 |                          |                 | Pedal 1 (l.) Pedal 2 (r.) |                 |
| 6061600006                  | F1-U1Z UN   | 1NC / 1NO          | Prot. shroud UN | 6062610014               | F2-U1Z/U1Z UN   | 1NC / 1NO 1NC / 1NO       | Prot. shroud UN |
| 6061700004                  | F1-U2Z UN   | 2NC / 2NO          | Prot. shroud UN | 6062720016               | F2-U2Z/U2Z UN   | 2NC / 2NO 2NC / 2NO       | Prot. shroud UN |



- Emergency Stop button
- Contactor on DIN rail as main power switch for can be delivered in single pedal version
- Customized installations (e.g. light indicators)

The foot switch is uniquely designed to allow inclusion of additional equipment.



Dimension drawing 6 | Page 31

#### Three pedal foot switch F3

| Article number     | Designation          | Switching contacts |              |              | Special feature |
|--------------------|----------------------|--------------------|--------------|--------------|-----------------|
| <b>Snap-action</b> |                      |                    |              |              |                 |
|                    |                      | Pedal 1 (l.)       | Pedal 2 (m.) | Pedal 3 (r.) |                 |
| <b>6063833045</b>  | F3-SU1Z/SU1Z/SU1Z UN | 1NC / 1NO          | 1NC / 1NO    | 1NC / 1NO    | Prot. shroud UN |
| <b>Slow-action</b> |                      |                    |              |              |                 |
|                    |                      | Pedal 1 (l.)       | Pedal 2 (m.) | Pedal 3 (r.) |                 |
| <b>6063611026</b>  | F3-U1Z/U1Z/U1Z UN    | 1NC / 1NO          | 1NC / 1NO    | 1NC / 1NO    | Prot. shroud UN |

# Foot switches with hinged protective shroud

The cast aluminium hinged protective shroud (which must be raised by the foot before the pedals can be operated), is optionally available for the F1 enclosure to provide protection against falling objects and inadvertent pedal operation.



Dimension drawing 7 | Page 32

## Ordering Instructions for foot switches with hinged protective shroud

Foot switches with hinged protective shroud have "UK" in the article designation and can only be delivered in single pedal version.

### Single pedal foot switch F1

| Article number | Designation | Switching contacts | Pressure point | Special feature        |
|----------------|-------------|--------------------|----------------|------------------------|
| 6161600071     | F1-U1Z UK   | 1NC / 1NO          |                | Hinged prot. shroud UK |

# Foot switches with protection degree IP67

Foot switches with increased degree of protection are dustproof and protected against partial submersion in water.

IP 67 foot switches are available in one and two pedal versions.



## Ordering Instructions for foot switches with increased protection degree IP67

### Single pedal foot switch F1

| Article number | Designation | Switching contacts |         | Special feature                                |
|----------------|-------------|--------------------|---------|--|
|                |             | Pedal 1            | Pedal 2 |  |
| 6161100469     | F1-U1Z      | 1NC / 1NO          |         | IP67   |
| 6161100424     | F1-U1Z      | 1NC / 1NO          |         | IP67, 3 cable entries                          |
| 6161600538     | F1-U1Z UN   | 1NC / 1NO          |         | IP67, Protective shroud UN                     |
| 6161600345     | F1-U1Z UN   | 1NC / 1NO          |         | IP67, 3 cable entries,<br>Protective shroud UN |

### Two pedal foot switch F2

| Article number | Designation                   | Switching contacts |           | Special feature   |
|----------------|-------------------------------|--------------------|-----------|---|
|                |                               | Pedal 1            | Pedal 2   |   |
| 6162610468     | F2-U1Z/U1Z UN                 | 1NC / 1NO          | 1NC / 1NO | IP67, 3 cable entries,<br>Protective shroud UN              |
| 6162000553     | F2-SU1ZUV1DR/<br>SU1ZUV1DR UN | 2NC / 2NO          | 2NC / 2NO | IP67, Pressure point D, Latching<br>R, Protective shroud UN |

# Foot switches with pressure point

The pressure point is a mechanical resistance during the actuating pedal travel. This provides the user with added physical signals about the actuator position (tactile feedback).

The pressure point applies when using two contact elements with differently adjusted forward travel (two-stage switch)

- Pedal pressed up to pressure point:  
Switching point for first contact element
- Pedal pressed as far as it will go beyond the pressure point:  
Switching point for second contact element.  
The first contact element remains switched on.
- The force of the pressure point can be freely selected:
  - 15 N
  - 30 N
  - 140 N
  - 200 N
  - 460 N



## Ordering Instructions for foot switches with pressure point

Foot switches with pressure point have "D" in the article code which is suffixed to the contact element code. The protective shroud "UN" and the pressure point "D" are often used in combination in one foot switch.

### Single pedal foot switch F1

| Article number     | Designation | Switching contacts | Pressure point | Special feature                   |
|--------------------|-------------|--------------------|----------------|-----------------------------------|
| <b>Snap-action</b> |             |                    |                |                                   |
|                    |             | Pedal 1            | Pedal 1        |                                   |
| 6161800073         | F1-SU1ZD UN | 1NC / 1NO          | 200 N          | Pressure point D, Prot. shroud UN |
| 6061900433         | F1-SU2ZD UN | 2NC / 2NO          | 200 N          | Pressure point D, Prot. shroud UN |
| <b>Slow-action</b> |             |                    |                |                                   |
| 6061600010         | F1-U1ZD UN  | 1NC / 1NO          | 200 N          | Pressure point D, Prot. shroud UN |
| 6061200007         | F1-U2ZD     | 2NC / 2NO          | 200 N          | Pressure point D                  |
| 6061700008         | F1-U2ZD UN  | 2NC / 2NO          | 200 N          | Pressure point D, Prot. shroud UN |

### Two pedal foot switch F2

| Article number     | Designation       | Switching contacts        | Pressure point            | Special feature                               |
|--------------------|-------------------|---------------------------|---------------------------|---|
| <b>Snap-action</b> |                   |                           |                           |   |
|                    |                   | Pedal 1 (l.) Pedal 2 (r.) | Pedal 1 (l.) Pedal 2 (r.) |   |
| 6162000418         | F2-SU1Z/SU2ZD UN  | 1NC / 1NO 2NC / 2NO       | 460 N                     | Pressure point D (Pedal 2), Prot. shroud UN   |
| 6062830417         | F2-SU1ZD/SU1ZD UN | 1NC / 1NO 1NC / 1NO       | 200 N 200 N               | Press. point D (Pedal 1+2), Prot. shroud UN   |
| 6162000503         | F2-SU4ZD/SU4ZD UN | 4NC / 4NO 2NC / 2NO       | 200 N 200 N               | Pressure point D (Pedal 1+2), Prot. shroud UN |
| <b>Slow-action</b> |                   |                           |                           |   |
| 6162610253         | F2-U1ZD/U1Z UN    | 1NC / 1NO 1NC / 1NO       | 140 N                     | Pressure point D (Pedal 1), Prot. shroud UN   |
| 6062620086         | F2-U1Z/U2ZD UN    | 1NC / 1NO 2NC / 2NO       | 200 N                     | Pressure point D (Pedal 2), Prot. shroud UN   |
| 6062220019         | F2-U2ZD/U2ZD      | 2NC / 2NO 2NC / 2NO       | 200 N 200 N               | Pressure point D (Pedal 1+2)                  |
| 6062720020         | F2-U2ZD/U2ZD UN   | 2NC / 2NO 2NC / 2NO       | 200 N 200 N               | Press. point D (Pedal 1+2), Prot. shroud UN   |
| 6062710376         | F2-U2ZD/U1Z UN    | 2NC / 2NO 1NC / 1NO       | 200 N                     | Pressure point D (Pedal 1), Prot. shroud UN   |

### Three pedal foot switch F3

| Article number     | Designation         | Switching contacts                     | Pressure point                         | Special feature                               |
|--------------------|---------------------|--|--|---|
| <b>Slow-action</b> |                     |  |  |   |
|                    |                     | Pedal 1 (l.) Pedal 2 (m.) Pedal 3 (r.) | Pedal 1 (l.) Pedal 2 (m.) Pedal 3 (r.) |   |
| 6063612423         | F3-U1Z/U1Z/U2ZD UN  | 1NC / 1NO 1NC / 1NO 1NC / 1NO          | 200 N                                  | Pressure point D (Pedal 3), Prot. shroud UN   |
| 6063721262         | F3-U2ZD/U2ZD/U1Z UN | 2NC / 2NO 2NC / 2NO 1NC / 1NO          | 200 N 200 N                            | Pressure point D (Pedal 1+2), Prot. shroud UN |

# Foot switches with latch-action switching

After initially pressing the pedal, the switch setting is retained even after the pedal is released. The contact is not interrupted before the pedal is pressed again (bistable).



Dimension drawing 8 | Page 32



Dimension drawing 9 | Page 32

## Ordering Instructions for foot switches with latch-action switching

Foot switches with latch-action switching have “Y” in the article code and can be delivered in single and two pedal versions.

### Single pedal foot switch F1

| Article number | Designation | Switching contacts | Special feature             |
|----------------|-------------|--------------------|-----------------------------|
|                |             | Pedal 1            |                             |
| 6161800247     | F1-SU1Y UN  | 1NC / 1NO          | Bistable Y, Prot. shroud UN |
| 6161000676     | F1-A2Y      | 2NC                | Bistable Y                  |
| 6061100001     | F1-U1Y      | 1NC / 1NO          | Bistable Y                  |
| 6061600002     | F1-U1Y UN   | 1NC / 1NO          | Bistable Y, Prot. shroud UN |

### Two pedal foot switch F2

| Article number | Designation     | Switching contacts |             | Special feature                         |
|----------------|-----------------|--------------------|-------------|---|
|                |                 | Pedal 1 (l.)       | Pedal2 (r.) |   |
| 6162840655     | F2-SU1Y/SU2Z UN | 1NC / 1NO          | 2NC / 2NO   | Bistable Y (Pedal 1), Prot. shroud UN   |
| 6062610018     | F2-U1Y/U1Y UN   | 1NC / 1NO          | 1NC / 1NO   | Bistable Y (Pedal 1+2), Prot. shroud UN |
| 6062610047     | F2-U1Y/U1Z UN   | 1NC / 1NO          | 1NC / 1NO   | Bistable Y (Pedal 1), Prot. shroud UN   |

# Foot switches with footrest

The sturdy tread face is covered with ribbed rubber and allows actuation of the foot switch with reduced operator fatigue due to its angle. It is equipped with six rubber feet to prevent slipping.



Dimension drawing 10 | Page 32

## Ordering Instructions for foot switches with footrest

Foot switches with footrest have "FS" in the article code and can only be delivered in single pedal versions.

### Single pedal foot switch F1

| Article number | Designation  | Switching contacts | Special feature              |
|----------------|--------------|--------------------|------------------------------|
| 6161700091     | F1-U2Z FS UN | 2NC / 2NO          | Prot. shroud UN, Footrest FS |



# Foot switches with pedal lock

The pedal cannot be operated before the locking lever is released by the foot. This prevents inadvertent actuation of the pedals even in the event of strong vibration/shaking caused by incorrect handling.



Dimension drawing 11 | Page 32

## Ordering Instructions for foot switches with pedal lock

Foot switches with pedal lock have "AT" in the article code and can be delivered in single and two pedal versions.

### Single pedal foot switch F1

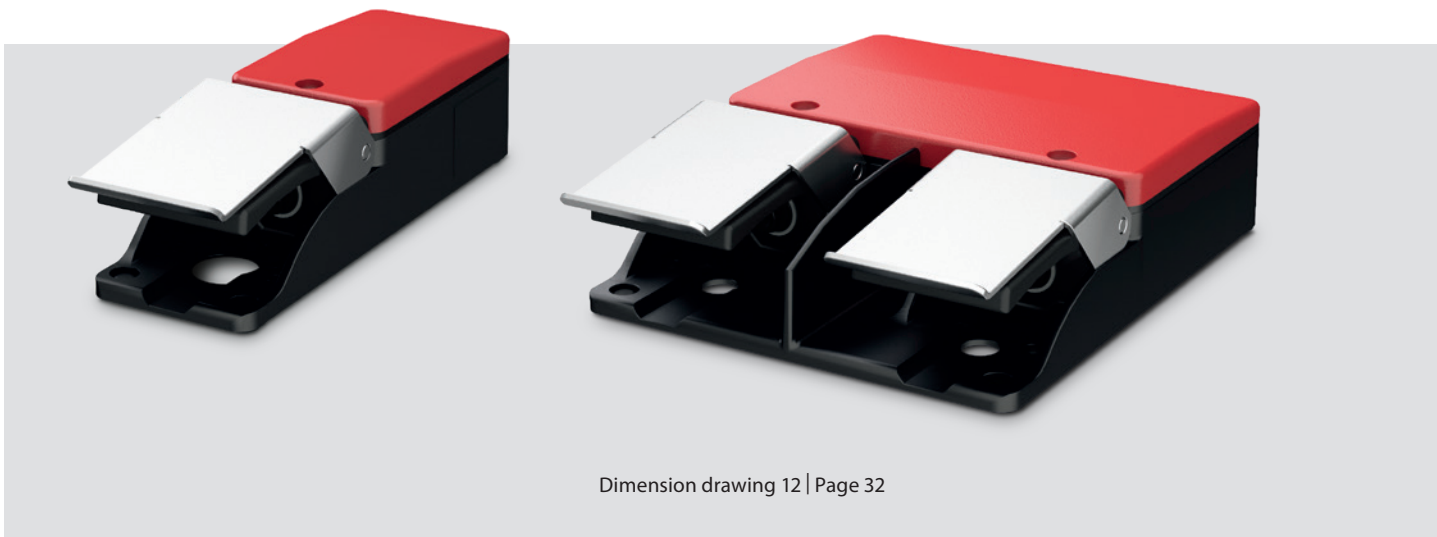
| Article number | Designation   | Switching contacts | Special feature                                  |
|----------------|---------------|--------------------|--|
| 6161800482     | F1-SU1Z AT UN | 1NC / 1NO          | Pedal lock AT, Prot. shroud UN                   |
| 6161100554     | F1-U1Z AT     | 1NC / 1NO          | Pedal lock AT                                    |
| 6161600400     | F1-U1Z AT UN  | 1NC / 1NO          | Pedal lock AT, Prot. shroud UN                   |
| 6161700483     | F1-U2Z AT UN  | 2NC / 2NO          | Pedal lock AT, Prot. shroud UN                   |
| 6161700660     | F1-U2ZD AT UN | 2NC / 2NO          | Pressure point D, Pedal lock AT, Prot. shroud UN |

### Two pedal foot switch F1

| Article number | Designation          | Switching contacts |              | Pressure point |              | Special feature  |
|----------------|----------------------|--------------------|--------------|----------------|--------------|--|
|                |                      | Pedal 1 (l.)       | Pedal 2 (r.) | Pedal 1 (l.)   | Pedal 2 (r.) |  |
| 6162830500     | F2-SU1ZAT/SU1ZAT UN  | 1NC / 1NO          | 1NC / 1NO    |                |              | Pedal lock AT (Pedal 1+2), Prot. shroud UN                             |
| 6162930689     | F2-SU1ZAT/SU2ZDAT UN | 1NC / 1NO          | 2NC / 2NO    |                | 200 N        | Pressure point D (Pedal 2), Pedal lock AT (Pedal 1+2), Prot. shroud UN |
| 6162720504     | F2-U2ZAT/U2Z UN      | 2NC / 2NO          | 2NC / 2NO    |                |              | Pedal lock AT (Pedal 1), Prot. shroud UN                               |

# Foot switches with hinged pedal protection

The hinged pedal protection is placed on the pedal to provide protection against inadvertent pedal operation. The pedal cannot be operated before raising the protective guard with the foot.



Dimension drawing 12 | Page 32

## Ordering Instructions for foot switches with hinged pedal protection

Foot switches with hinged pedal protection have "PS" in the article designation and can only be delivered in single pedal versions.

| Single pedal foot switch F1 |             |                    |                     |
|-----------------------------|-------------|--------------------|---------------------|
| Article number              | Designation | Switching contacts | Special feature     |
| 6061400572                  | F1-SU2Z PS  | 2NC / 2NO          | Pedal protection PS |

# Foot switches with contactor

Foot switches with contactor LS combine an auxiliary power switch with a main power switch. Thus, the control of an engine can be realised without the need for an additional switch box. The contactor is directly mounted on a standard mounting rail in the shrouded enclosure.



Dimension drawing 13 | Page 33

## Ordering Instructions for foot switches with contactor

Foot switches with contactor have “LS22” in the article designation and can only be delivered in single pedal versions.

### Single pedal foot switch F1

| Article number | Designation     | Switching contacts | Special feature   |
|----------------|-----------------|--------------------|---|
| 6061800436     | F1-SU1Z LS22 UN | 1NC / 1NO          | Power contactor LS, Prot. shroud UN                     |
| 6061800439     | F1-SU1Y LS22 UN | 1NC / 1NO          | Latch-action switch. Y, Power cont. LS, Prot. shroud UN |

# Foot switches with Emergency Stop button

Since the foot switch is often used in different locations other than on an actual machine or system, a conforming “Emergency Stop” button is directly available to the operator on the command unit.



Dimension drawing 14 | Page 33

## Ordering Instructions for foot switches with Emergency Stop button

Foot switches with Emergency Stop button have “NA2” in the article designation and can be delivered in one and two pedal versions.

### Single pedal foot switch F1

| Article number | Designation   | Switching contacts | Special feature   |
|----------------|---------------|--------------------|---|
| 6061600435     | F1-U1Z NA2 UN | 1NC / 1NO          | Emergency Stop button NA2 in the housing cover, Prot. shroud UN |

### Two pedal foot switch F2

| Article number | Designation       | Switching contacts |            | Special feature  |
|----------------|-------------------|--------------------|------------|--|
|                |                   | Pedal 1 (l.)       | Pedal (r.) |  |
| 6162720700     | F2-U2Z/U2Z NA2 UN | 2NC / 2NO          | 2NC / 2NO  | Emerg. Stop butt. NA2 in the hous. cov., Prot. shroud UN |

# First approved enable foot switch by DGUV

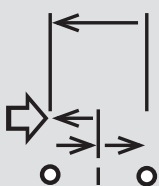
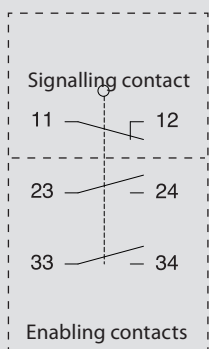
The BERNSTEIN three-stage-enable foot switch combines robust design and advanced technology. With many years of experience and expertise, BERNSTEIN is the preferred partner for industrial foot switches in industrial applications. Through the development of the first approved enable foot switch, BERNSTEIN succeeded again to convert this experience and expertise into customer value and to set new standards in safety technology.

The enable foot switch provides two enable contacts and one signalling contact and is available with or without latch.

If the pedal is pressed up to pressure point, the two enable contacts are closed. If the pedal is released, the enable contacts are open again. If the pedal is pressed up to the pressure point, the enable positive opening action contacts are opened. For the application of an enable device, the rules DIN EN ISO 12100 and DIN EN 60204-1 apply. Thanks to this signalling contact, a dynamic position detection is possible. Alternatively, a static position detection can be realised by means of a PNP output. It is thus possible to determine the actuation position one - the OFF position of the enable contacts (the actuator is not pressed) – or the position three – the OFF position of the operating contacts (the actuator is fully pressed) and to make this information directly available to the control system.

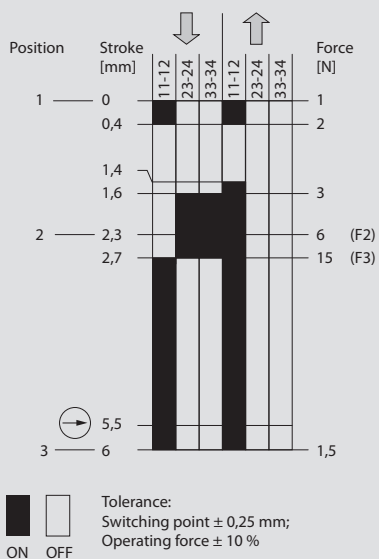
The approved enable foot switch can be only delivered in standard version without protective shroud UN.

Circuit symbol

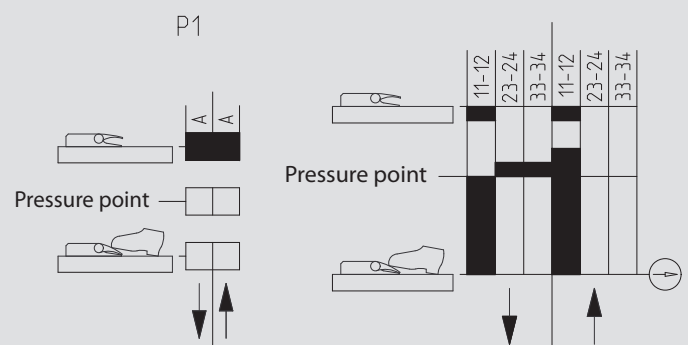


The indicated travels and forces refer to the switch-in contact of the foot switch with latching function.

Switching diagram



Switching diagram with PNP output



Example of a switching diagrams with static position monitoring in position 1.



Dimension drawing 15/16 | Page 33

## Ordering Instructions for enable foot switches (DGUV)

### Single pedal foot switch F1

| Article number | Designation | Switching contacts | Pressure point | Special feature                        |
|----------------|-------------|--------------------|----------------|--|
| 6061500559     | F1-ZSD      | 1NC / 2NO          | 200 N          | Pressure point D                       |
| 6061500567     | F1-ZSDR     | 1NC / 2NO          | 200 N          | Pressure point D, Latching R           |
| 6061500569     | F1-ZSP1D    | 1NC / 2NO          | 200 N          | Additional board 1*, Pressure point D  |
| 6061500570     | F1-ZSP3D    | 1NC / 2NO          | 200 N          | Additional board 3**, Pressure point D |

### Two pedal foot switch F2

| Article number | Designation  | Switching contacts |              | Pressure point |              | Special feature              |
|----------------|--------------|--------------------|--------------|----------------|--------------|------------------------------|
|                |              | Pedal 1 (l.)       | Pedal 2 (r.) | Pedal 1 (l.)   | Pedal 2 (r.) |                              |
| 6062500561     | F2-U1Z/ZSD   | 1NC / 1NO          | 1NC / 2NO    |                | 200 N        | Pressure point D (Pedal 2)   |
| 6062500568     | F2-ZSDR/ZSDR | 1NC / 2NO          | 1NC / 2NO    | 200 N          | 200 N        | Pressure point D, Latching R |

\* Additional board PNP for determination of switching position 1

\*\* Additional board PNP for determination of switching position 3

# Foot switches with enable function

Foot switches are often used as so-called "hold-to-run control device" (touch control) to bring a machine into operation. For this purpose, the enable foot switches equipped with the approved enable contact are ideally suited as they satisfy very demanding safety standards.

The contact and the switching function of these switches is identical with those of the enable foot switches. The pedal position is recognizable dynamically with the signalling contact or statically with the additional board. The foot switches with enable function are with or without latching function and with protective shroud available.



Dimension drawing 17/18 | Page 33

## Ordering Instructions for foot switch with enable function

### Single pedal foot switch F1

| Article number | Designation | Switching contacts | Pressure point | Special feature  |
|----------------|-------------|--------------------|----------------|--|
| 6061000558     | F1-ZSD UN   | 1NC / 2NO          | 200 N          | Pressure point D, Prot. shroud UN                      |
| 6061000560     | F1-ZSDR UN  | 1NC / 2NO          | 200 N          | Pressure point D, Latching R, Prot. shroud UN          |
| 6061000564     | F1-ZSP1D UN | 1NC / 2NO          | 200 N          | Additional board 1*, Pressure point D, Prot. shroud UN |

\* Additional board PNP for determination of switching position 1

### Two pedal foot switch F2

| Article number | Designation       | Switching contacts |              | Pressure point |              | Special feature   |
|----------------|-------------------|--------------------|--------------|----------------|--------------|---|
|                |                   | Pedal 1 (l.)       | Pedal 2 (r.) | Pedal 1(l.)    | Pedal 2 (r.) |   |
| 6062000562     | F2-U1Z/ZSD UN     | 1NC / 1NO          | 1NC / 2NO    | 200 N          | 200 N        | Pressure point D (Pedal 2), Prot. shroud UN                       |
| 6062000563     | F2-U1Z/ZSDR UN    | 1NC / 1NO          | 1NC / 2NO    | 200 N          | 200 N        | Pressure point D (Pedal 2), Latching R, Prot. shroud UN           |
| 6062000565     | F2-ZSP1D/ZSP1D UN | 1NC / 2NO          | 1NC / 2NO    | 200 N          | 200 N        | Additional board 1*, Press. point D (Pedal 1+2), Prot. shroud UN  |
| 6062000566     | F2-ZSP3D/ZSP3D UN | 1NC / 2NO          | 1NC / 2NO    | 200 N          | 200 N        | Additional board 3**, Press. point D (Pedal 1+2), Prot. shroud UN |

\* Additional board PNP for determination of switching position 1

\*\* Additional board PNP for determination of switching position 3



# Foot switches with analogue output

This version of foot switch has a variable controlling current and voltage output that is directly proportional to the pedal position. A programmable signalling output is additionally activated when a predetermined pedal position is reached.

The analogue output can be delivered in a 0–5 V, 0–10 V, 0–20 mA or 4–20 mA version. The foot switch is available in single pedal version. Two and three pedal versions on request.



Dimension drawing 19 | Page 34

## Ordering Instructions for foot switch with analogue output

| Single pedal foot switch F1 |               |                    |                 |
|-----------------------------|---------------|--------------------|-----------------|
| Article number              | Designation   | Switching contacts | Special feature |
| 6161500723                  | F1-AU0-5      |                    |                 |
| 6161500724                  | F1-AU0-10     |                    |                 |
| 6161500725                  | F1-AI0-20     |                    |                 |
| 6161500726                  | F1-AI4-20     |                    |                 |
| 6161000727                  | F1- AU0-5 UN  |                    | Prot. shroud UN |
| 6161000728                  | F1- AU0-10 UN |                    | Prot. shroud UN |
| 6161000729                  | F1- AI0-20 UN |                    | Prot. shroud UN |
| 6161000730                  | F1- AI4-20 UN |                    | Prot. shroud UN |

# Foot switches with safety lock plus manual release



Dimension drawing 20 | Page 34

## Ordering Instructions for foot switches with safety lock plus manual release

### Single pedal foot switch F1

| Article number | Designation      | Switching contacts | Pressure point | Special feature  |
|----------------|------------------|--------------------|----------------|--|
| 6161000560     | F1-SU1ZUV1ZDR UN | 2NC / 2NO          | 200 N          | Pressure point D, Latching, Prot. shroud UN                            |
| 6161000203     | F1-SU1Z/UV1ZD UN | 1NC / 2NO          | 200 N          | Pressure point D, Latching, Prot. shroud UN                            |
| 6161000626     | F1-SU1ZCA2ZDR UN | 3NC / 1NO          | 200 N          | Pressure point D, Latching, Prot. shroud UN                            |
| 6161000443     | F1-UV1Z/UV1ZD    | 2NC / 2NO          | 200 N          | Pressure point D, Latching   |
| 6161000532     | F1-UV1Z/UV1ZD UN | 2NC / 2NO          | 200 N          | Pressure point D, Latching, Protective unlatch button, Prot. shroud UN |

### Two pedal foot switch F2

| Article number | Designation             | Switching contacts |              | Pressure point |            | Special feature  |
|----------------|-------------------------|--------------------|--------------|----------------|------------|--|
|                |                         | Pedal 1 (l.)       | Pedal 2 (r.) | Pedal 1(l.)    | Pedal (r.) |  |
| 6162000486     | F2-SU1ZUV1ZD/SU1Z UN    | 2NC / 2NO          | 1NC / 1NO    | 460 N          |            | Latching (Pedal 1), Pressure point D (Pedal 1) Prot. shroud UN   |
| 6162000364     | F2-SU1ZSU1ZD/SU1Z UN    | 2NC / 2NO          | 1NC / 1NO    | 200 N          |            | Latching (Pedal 1), Pressure point D (Pedal 1) Prot. shroud UN   |
| 6162000553     | F2-SU1ZUV1D/SU1ZUV1D UN | 2NC / 2NO          | 2NC / 2NO    | 200 N          | 200 N      | Latching (Pedal 1+2), Press. point D (Pedal 1+2) Prot. shroud UN |
| 6162000338     | F2-SU1ZUV1D/SU1ZUV1D UN | 1NC / 2NO          | 1NC / 2NO    | 200 N          | 200 N      | Latching (Pedal 1+2), Press. point D (Pedal 1+2) Prot. shroud UN |
| 6162000709     | F2-SU1ZCA2ZD/SU1ZCA2ZD  | 3NC / 1NO          | 3NC / 1NO    | 200 N          | 200 N      | Latching (Pedal 1+2), Press. point D (Pedal 1+2) Prot. shroud UN |
| 6162000583     | F2-UV1ZD/UV1ZD UN RAST  | 1NC / 1NO          | 1NC / 1NO    | 200 N          | 200 N      | Latching (Pedal 1+2), Press. point D (Pedal 1+2) Prot. shroud UN |

### Pedal pressed up to pressure point

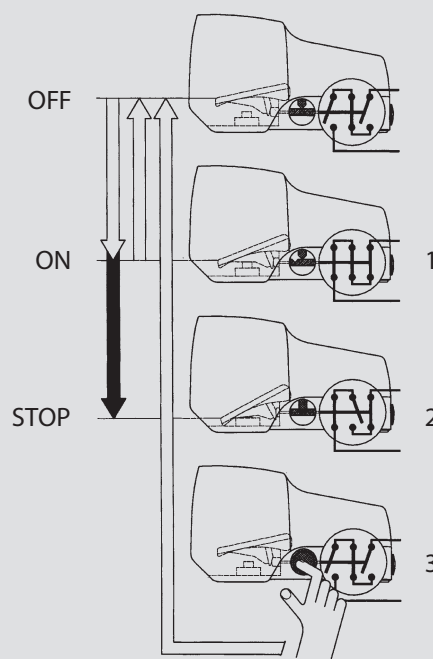
The make contact is closed and the work process is started.

### Pedal pressed beyond resistance of the pressure point in an emergency situation

The make contact is interrupted and locked, the work process is interrupted. In this phase the lock remains in the Off position even when the pedal is not pressed. This reliably prevents uncontrolled restart of the machine or moving parts.

### Release

Only after the hazardous situation has been remedied does manual release (pushbutton on the side of the enclosure) release the contacts again and the work process can be restarted by pressing the pedal as far as the pressure point.



Safety function on foot switches with mechanical lock (SiPf)

### Three pedal foot switch F3

#### Slow-action con

| Article number    | Designation                        | Switching contacts |              |              | Pressure point |              |              | Special feature   |
|-------------------|------------------------------------|--------------------|--------------|--------------|----------------|--------------|--------------|---|
|                   |                                    | Pedal 1 (l.)       | Pedal 2 (m.) | Pedal 3 (r.) | Pedal 1 (l.)   | Pedal 2 (m.) | Pedal 3 (r.) |   |
| <b>6163500703</b> | F3-SU1ZA2ZD/SU2ZD/SU1ZA2ZD<br>Rast | 3NC / 1NO          | 2NC / 2NO    | 3NC / 1NO    | 200 N          | 30 N         | 200 N        | Pressure point D (Pedal 1+2+3),<br>Latching (Pedal 1+3) |

# Foot switches supplemented by mobility handling

The mobility handle option is a complementary accessory for the one (F1) and two (F2) pedal versions. Modification to the foot switch is not required and has retro fitting possibility.

## Ordering Instructions for mobility handling

### Mobility handling for foot switches

| Article number | Designation |
|----------------|-------------|
|----------------|-------------|

|            |       |
|------------|-------|
| 3996000229 | F1-TV |
|------------|-------|

|            |       |
|------------|-------|
| 3996000230 | F2-TV |
|------------|-------|



Dimension drawing 21 | Page 34



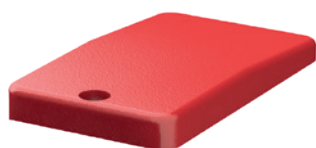
Dimension drawing 22 | Page 34

# Spare parts



## Cover

|                       |                               |                               |
|-----------------------|-------------------------------|-------------------------------|
| <b>Article number</b> | <b>3906010475</b>             | <b>3906020501</b>             |
| <b>Designation</b>    | F1-COVER incl. Seal and Screw | F2-COVER incl. Seal and Screw |



## Protective shroud

|                       |  |  |
|-----------------------|--|--|
| <b>Article number</b> | <b>3906010719</b>                            | <b>3906020720</b>                            |
| <b>Designation</b>    | F1-PROTECTIVE SHROUD UN incl. Seal and Screw | F2-PROTECTIVE SHROUD UN incl. Seal and Screw |



## Foot pedal

|                       |                          |                   |
|-----------------------|--------------------------|-------------------|
| <b>Article number</b> | <b>3515900149</b>        | <b>3311373073</b> |
| <b>Designation</b>    | Foot pedal               | Spindle RD6x70    |
| <b>Article number</b> | <b>2650000004</b>        |                   |
| <b>Designation</b>    | Half ring (2 are needed) |                   |



# Technical data

| Electrical data  |           |   |
|--|-----------|---|
| <b>Rated insulation voltage</b>  | $U_i$     | 400 V AC<br>250 V AC (in type designation „ZS“, „EX“)   |
| <b>Rated impulse strength</b>  | $U_{imp}$ | 4 kV *<br>2,5 kV (in type designation „C“, „ZS“, „EX“) *                                      |
| <b>Conventional thermal current</b>                                    | $I_{the}$ | 10 A<br>5 A (in type designation „ZS“, „EX“)  |
| <b>Utilisation category</b>  |           | AC-15, $U_e / I_e$ 240 V / 3 A<br>AC-15, $U_e / I_e$ 240 V / 1,5 A (in type designation „ZS“) |
| <b>Positive opening</b>  |           | according to IEC/EN 60947-5-1, Addendum K<br>(when reaching the pedal stop)                   |
| <b>Overvoltage category (switch-in contact with enabling function)</b> |           | III (according to IEC 60664-1)  |
| <b>Protection class</b>  |           | I   |

\* does not apply to "MI" and "MI RG" in article designation

| Mechanical data  |   |
|--|---|
| <b>Enclosure</b>   | Cast aluminium (powder-coated)  |
| <b>Cover, Protective shroud UN</b>                             | Cast aluminium (powder-coated)  |
| <b>Foot pedal</b>  | Thermoplastic   |
| <b>Operating temperature (with no icing / no condensation)</b> | -30°C to +80°C (-20°C to +65°C in type designation "EX")                                      |
| <b>Storage temperature</b>                                     | -30°C bis +80°C (-20°C to +65°C in type designation "EX")                                     |
| <b>Mechanical service life</b>                                 | $> 1 \times 10^6$ switching cycles when using switches with potentiometer $5 \times 10^4$     |
| <b>Switching frequency</b>                                     | 50 min <sup>-1</sup> when using switches with potentiometer 20 min <sup>-1</sup>              |
| <b>Type of connection</b>                                      | Screw connections (M3,5)  |
| <b>Conductor cross sections</b>                                | Single-wire 0,5 – 1,5 mm <sup>2</sup> or stranded wire with ferrule 0,5 – 1,5 mm <sup>2</sup> |
| <b>Cable entry</b>   | M20 × 1,5   |
| <b>Weight with cover</b>                                       | F1 ≈ 0,6 kg, F2 ≈ 1,7 kg, F3 ≈ 3,0 kg   |
| <b>Weight with protective shroud UN</b>                        | F1 ≈ 1,5 kg, F2 ≈ 2,6 kg, F3 ≈ 5,4 kg   |
| <b>Protection class</b>  | Protection class depends on type. Standard is IP65.   |

| Standard values for safety technology |  |
|---------------------------------------|--|
| <b>B10d</b>                           | $20 \times 10^5$   |
|                                       | $6 \times 10^6$ Restrictions in article designation "C" *  |
|                                       | $2 \times 10^6$ Restrictions in article designation "D" *  |
|                                       | $4 \times 10^6$ Restrictions in article designation "EX" * |
|                                       | $1 \times 10^5$ Restrictions in article designation "ZS" * |

\* Once a restriction exists, the lowest value needs to be applied.

This technical data is generic to our standard foot switch range, please refer to individual technical data sheets for exact product information as the technical data above may vary.

| Standards                                      |
|--|
| VDE 0660 T100, DIN EN 60947-1, IEC 60947-1     |
| VDE 0660 T200, DIN EN 60947-5-1, IEC 60947-5-1 |

| Approvals*  |
|---|
| CCSAUS A300, Q300 (same polarity)                   |
| cUL <sub>US</sub> B300 (in type designation "ZS")   |
| DGUV (Only switches that have an appropriate label) |

\* Approvals depend on type.  
More information can be found in the data sheet.

# Foot switches with insulating encapsulation



## Foot switches with plastic housing

As an optimal supplement to the metal foot switches, the product program through its modern design. This is only a brief overview of the series. Contact us for detailed product information.



## Technical Data

- Enclosure: Thermoplastic (fibre glass-reinforced)
- Actuator element: Thermoplastic (fibre glassreinforced)
- Ambient temperature: -20 °C to +80 °C
- Protection class IP65

## Product features

- Multi pedal version possible
- Different coloured pedals (Black, Grey, Blue, Yellow, Red)
- Other colours on request

## Accessories

- 2 m connection cable

## Ordering Instructions for KFMini

### Single pedal foot switch F1

| Article number | Designation | Switching contacts | Pedal colour |
|----------------|-------------|--------------------|--------------|
| 6069100004     | KFM1-SU1 SW | 1NC / 1NO          | black        |
| 6069100005     | KFM1-SU2 SW | 2NC / 2NO          | black        |
| 6069100008     | KFM1-SU1 RT | 1NC / 1NO          | red          |
| 6069100009     | KFM1-SU1 BL | 1NC / 1NO          | blue         |
| 6069100010     | KFM1-SU1 GE | 1NC / 1NO          | yellow       |
| 6069100012     | KFM1-SU1 GR | 1NC / 1NO          | grey         |

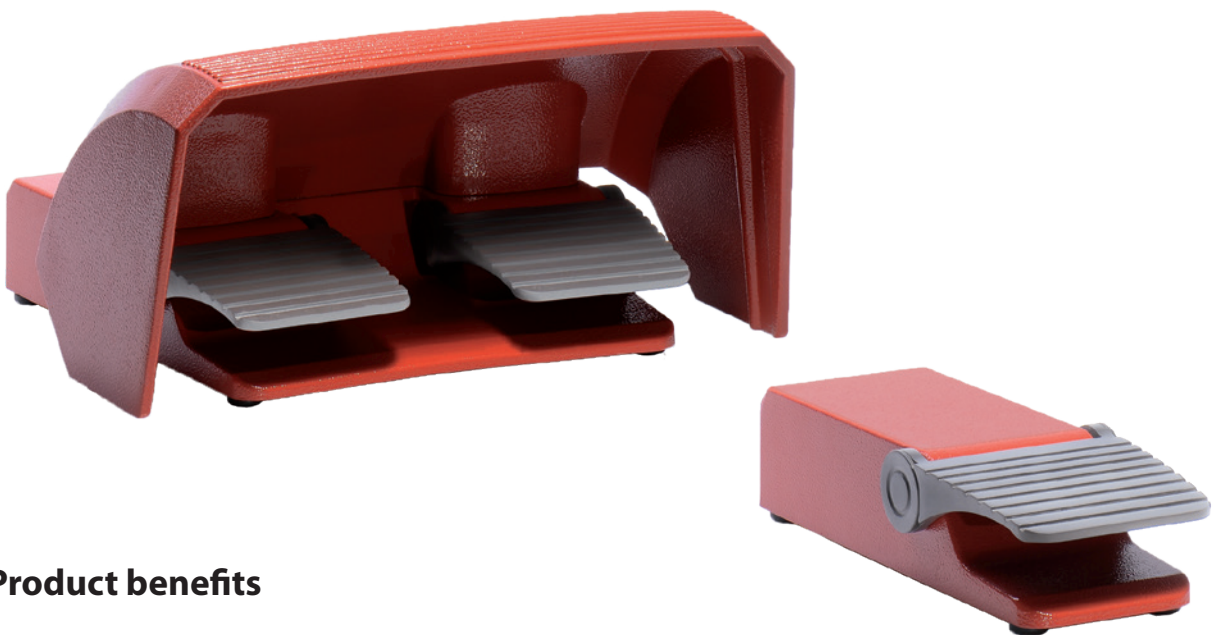
### Two pedal foot switch F2

| Article number | Designation     | Switching contacts |              | Pedal colour |
|----------------|-----------------|--------------------|--------------|--------------|
|                |                 | Pedal 1 (l.)       | Pedal 2 (r.) |              |
| 6069200006     | KFM2-SU1/SU1 SW | 1NC / 1NO          | 1NC / 1NO    | black        |
| 6069200007     | KFM2-SU2/SU2 SW | 2NC / 2NO          | 2NC / 2NO    | black        |



# Foot switches for design-oriented applications

The BERNSTEIN switch division have developed a new ergonomically designed footswitch – function finds form with this new product, especially with its new easy cleaning characteristics. These advancements further enhance the already successful BERNSTEIN footswitch range.



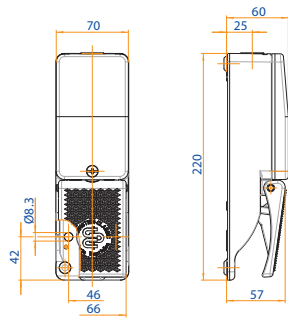
## Product benefits

- New modern design
- Trouble free cleaning with reduced dirt traps
- Improved ergonomic features
- Modular expandability
- Optional integrated cable bend protection
- Mobility handle option (without protective cover)
- Internal and external pressure point
- IP67

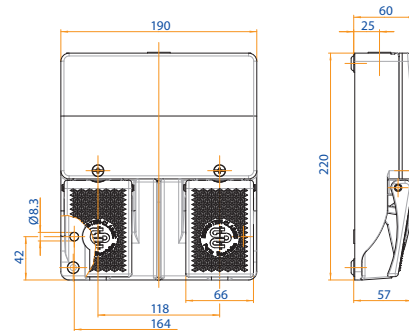
## Ordering Instructions for FS

| Foot switch FS    |                |                    |              |                 |
|-------------------|----------------|--------------------|--------------|-----------------|
| Article number    | Designation    | Switching contacts |              | Special feature |
|                   |                | Pedal 1 (l.)       | Pedal 2 (r.) |                 |
| <b>6060600026</b> | FS1-500-UN-0 N | 1NC / 1NO          |              | Prot. shroud UN |

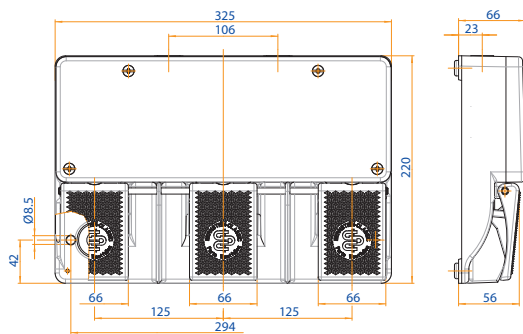
1) Standard foot switch F1 | Page 6



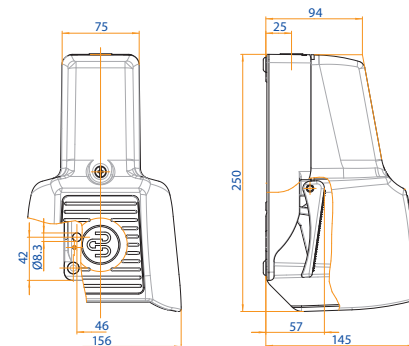
2) Standard foot switch F2 | Page 6



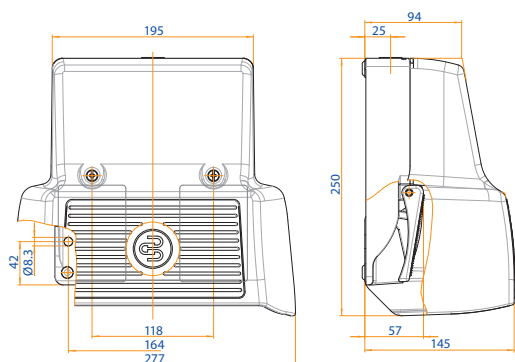
3) Standard foot switch F3 | Page 7



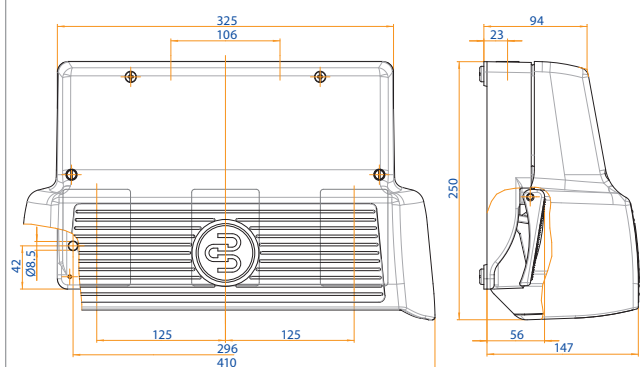
4) Foot switch with protective shroud F1 | Page 8



5) Foot switch with protective shroud F2 | Page 8

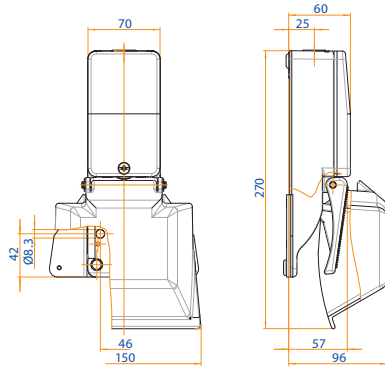


6) Foot switch with protective shroud F3 | Page 9

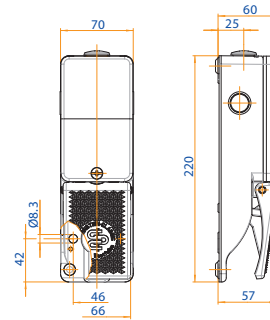


# Dimensional drawings

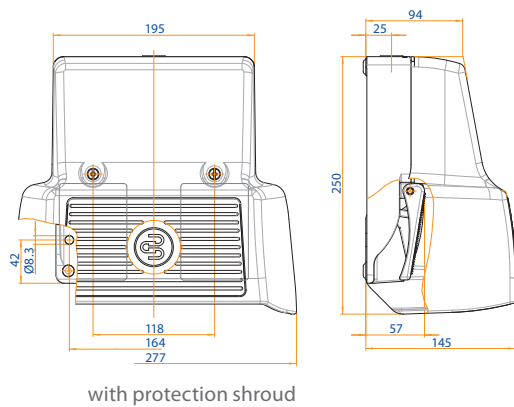
7) Foot switch with hinged protective shroud F1 | Page 10



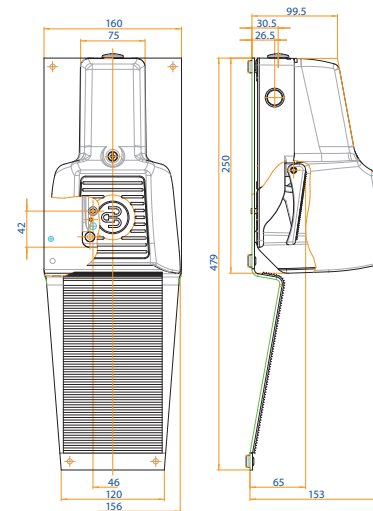
8) Foot switch with latch-action switching F1 | Page 14



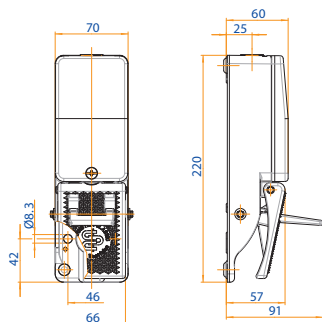
9) Foot switch with latch-action switching F2 | Page 14



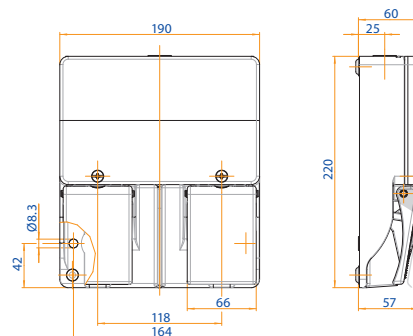
10) Foot switch with footrest F1 | Page 15

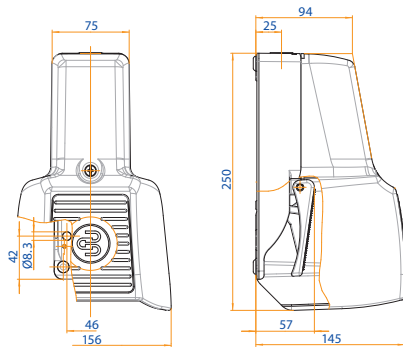
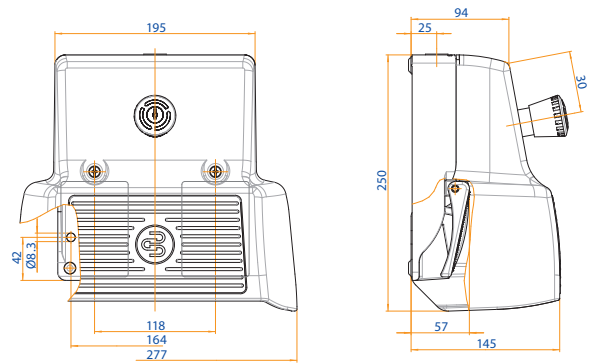
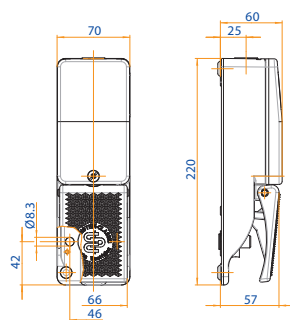
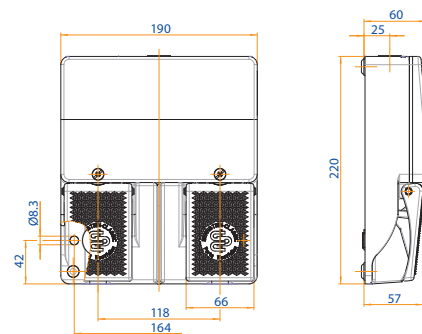
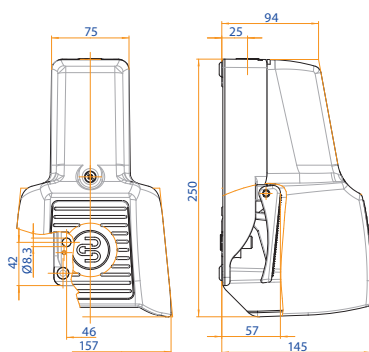
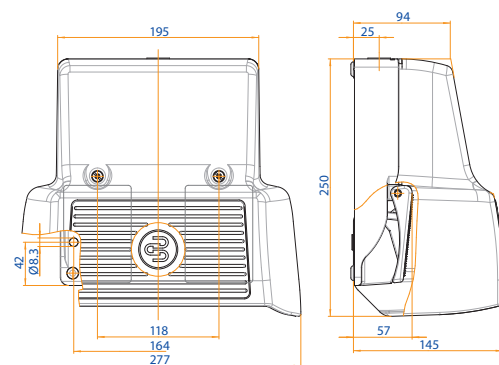


11) Foot switch with pedal lock F1 | Page 16



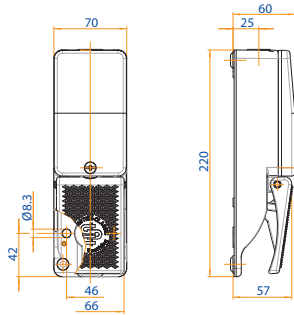
12) Foot switch with hinged pedal protection F2 | Page 17



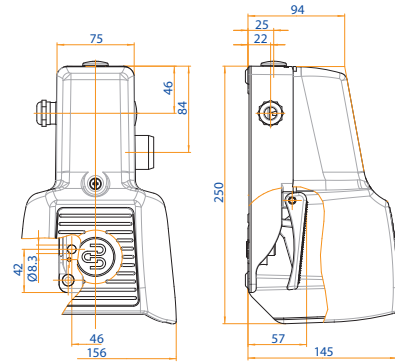
**13) Foot switch with contactor F1 | Page 18**

**14) Foot switch with Emergency stop button F2 | Page 19**

**15) DGUV approved enable foot switch F1 | Page 20/21**

**16) DGUV approved enable foot switch F2 | Page 20/21**

**17) Foot switch with enable function F1 | Page 22**

**18) Foot switch with enable function F2 | Page 22**


# Dimensional drawings

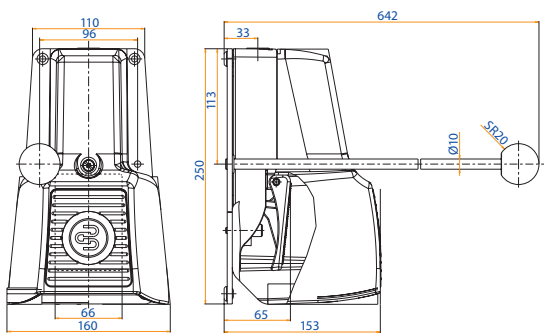
19) Foot switch with analogue output F1 | Page 23



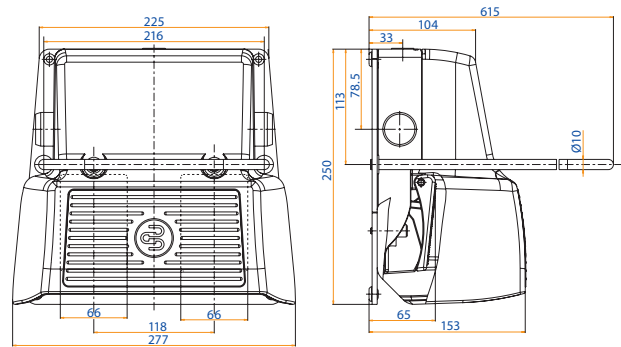
20) Foot switch with safety lock + manual release F1 | Page 24



21) Foot switch with mobility handling F1 | Page 26



22) Foot switch with mobility handling F2 | Page 26



# Checklist

## for assembled foot switches



Customer \_\_\_\_\_ Customer No. \_\_\_\_\_ Telephone \_\_\_\_\_

Address \_\_\_\_\_ Telefax \_\_\_\_\_

Contact person \_\_\_\_\_ Department \_\_\_\_\_

Pricing enquiry \_\_\_\_\_ Target \_\_\_\_\_

Sample \_\_\_\_\_ Annual requirement \_\_\_\_\_

Order \_\_\_\_\_ Delivery date \_\_\_\_\_

### 1 Variation of customising

BERNSTEIN switch  
+ cable + open end

BERNSTEIN switch  
+ cable + connector

Application of the foot switch (brief application description):

### 2 Foot switch

Type of switch: \_\_\_\_\_

Article number: \_\_\_\_\_

#### Contact assignment / Internal wiring:

Connection conductor cross-sections: from 0,5 to 1,5 mm<sup>2</sup>

Cable gland  plastic  metal

Clamping glands: plastic

### 3 Cable

| Cable-Type / No. conduct. | 4 (3+PE)                 | 5 (4+PE)                 | 6 (5+PE)                 | 7 (6+PE)                 | 8 (7+PE)                 | 9 (8+PE)                 | 10 (9+PE)                |
|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Standard                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| EMV compliant (CY)        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Steel wire braiding (SY)  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| UL-approval               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Cable length in m: \_\_\_\_\_

Other cables Manufacturer: \_\_\_\_\_

Article number: \_\_\_\_\_

### 4 Industrial connectors — Standard Harting, other manufacturers possible on request.

| Size                | 3A                                   | 10A                                  |
|---------------------|--------------------------------------|--------------------------------------|
| Inserts             | Pin                                  | Pin                                  |
| No. of contacts     | 3+PE                                 | 10+PE                                |
|                     | <input type="checkbox"/> 09200032611 | <input type="checkbox"/> 09200102612 |
|                     | 4+PE                                 |                                      |
|                     | <input type="checkbox"/> 09200102612 |                                      |
| Hood to cable entry | <input type="checkbox"/> 19200031440 | <input type="checkbox"/> 19200101440 |

Other connectors

Manufacturer: \_\_\_\_\_

Article number: \_\_\_\_\_

### 5 Remarks



**We make  
safety happen.**



**We keep your  
visions safe.**

## Contact

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