



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. This also applies for use in an explosive environment. BERNSTEIN offers Ex foot switches with Zone 1 and 2 approval.

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.

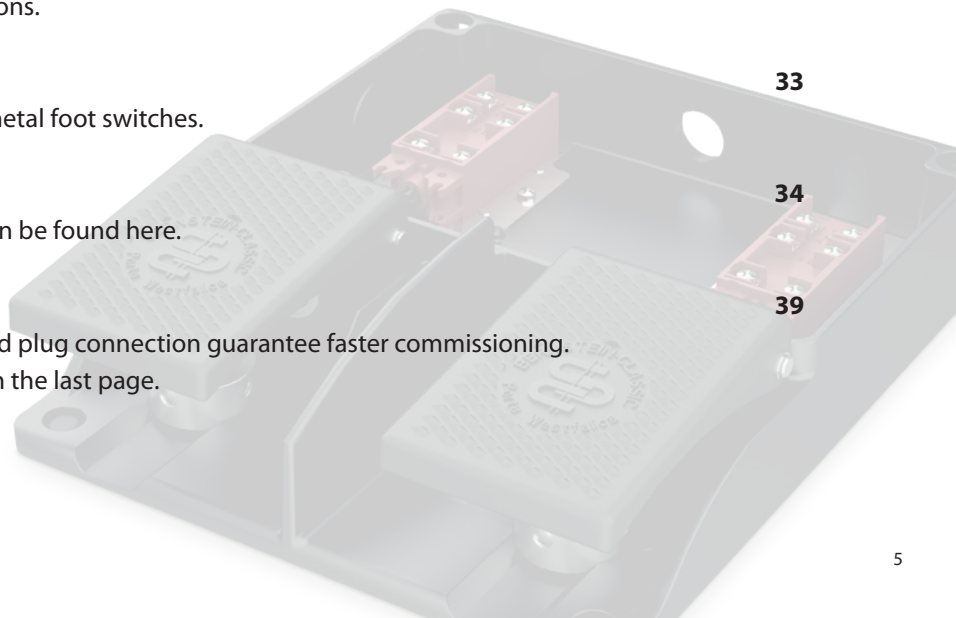
Made for practical work

Foot switches for every application

BERNSTEIN – Individual solutions for sophisticated technical requirements

Standard foot switches	6
Three modular housings of same length and height with different width dimensions for one (F1), two (F2) and three (F3) pedal versions.	
Foot switch with protective shroud	8
For protection against falling objects and a high degree of stability.	
Foot switch with hinged protective shroud	10
Protection against falling objects and inadvertent pedal operation.	
Foot switch with increased degree of protection IP 67	11
Foot switches with increased degree of protection.	
Foot switch with pressure point	12
Two-stage switching via single pedal operation.	
Foot switch with bistable switching function	14
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.	
Foot switch with footrest	15
Angled foot rest designed to reduce fatigue during operation.	
Foot switch with pedal lock	16
Protection against inadvertent pedal operation.	
Foot switch with hinged pedal protection	17
Protection against inadvertent pedal operation.	
Foot switch with contactor	18
A built-in contactor in the base makes it possible for example, to control a motor without the need of an additional enclosure.	
Foot switch with Emergency Stop button	19
Emergency Stop button directly available to the operator during remote operation.	
Enable foot switch	20
Foot-operated command unit for release control. First enabled switch approved by the German Social Accident Insurance (DGUV).	

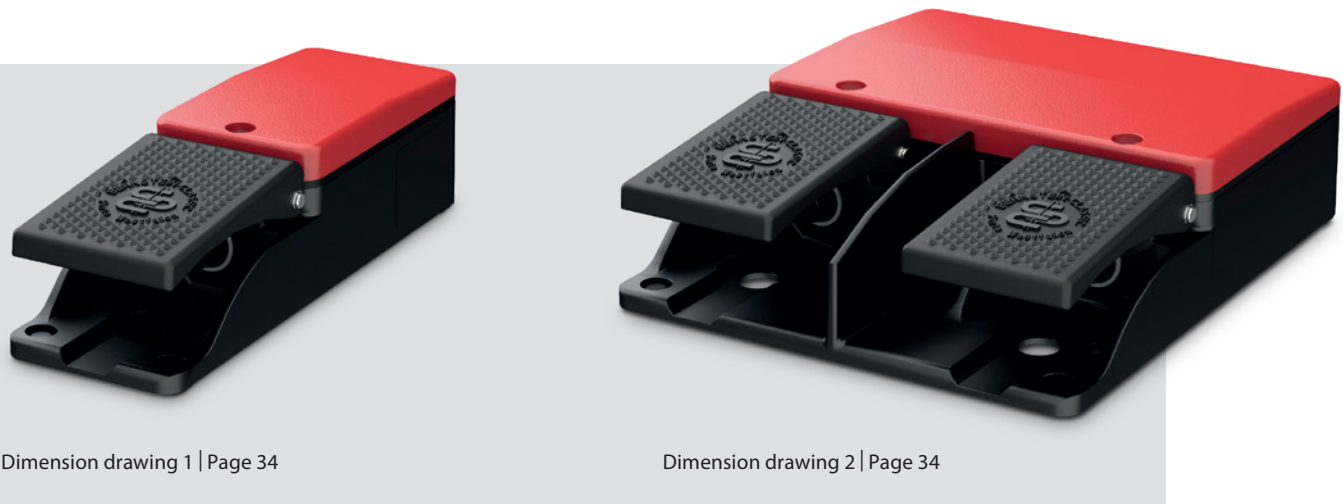
Foot switch with enable function	22
Foot-operated command unit with self-acting reset function. Ideal to put machines with high safety requirements into the correct state of operation.	
Foot switch with analogue output	23
A controller output corresponding to the pedal position enables infinitely variable control tasks.	
Foot switch with AS-Interface connection	24
The AS-Interface provides an affordable, fast and flexible connection of foot switches into an AS-i system.	
Foot switch with safety lock plus manual release	26
A normal work process and in case of emergency, a safe shutdown, is guaranteed.	
Foot switch Ex versions	28
ATEX-approved products for potentially explosive atmospheres (zone 1 and 2).	
Mobility handling for foot switches	29
The mobility handle option is a complementary accessory for the one (F1) and two (F2) pedal versions.	
Spare parts	30
Technical data	31
Electrical data, mechanical data, standard values for safety technology, standards and approvals.	
FS-Switch	32
Foot switches for design-oriented applications.	
The insulated foot switch	33
The KFMini – the ideal supplement to the metal foot switches.	
Dimensioned drawings	34
All corresponding dimensional drawings can be found here.	
Pre-assembled foot switch – CHECKLIST	39
Foot switches pre-assembled with cable and plug connection guarantee faster commissioning. 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.



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 34

Three pedal foot switch F3				
Article number	Designation	Switching contacts		
Snap-action				
		Pedal 1 (l.)	Pedal 2 (m.)	Pedal 3 (r.)
6163444577	F3-SU2Z/SU2Z/SU2Z	2NC / 2NO	2NC / 2NO	2NC / 2NO
Slow-action				
		Pedal 1 (l.)	Pedal 2 (m.)	Pedal 3 (r.)
6063111025	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 34



Dimension drawing 5 | Page 34

Ordering Instructions for foot switches with protective shroud

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

Single pedal foot switch F1			
Article number	Designation	Switching contacts	Special feature
Snap-action			
		Pedal 1	
6061800012	F1-SU1Z UN	1NC / 1NO	Prot. shroud UN
6061900062	F1-SU2Z UN	2NC / 2NO	Prot. shroud UN
Slow-action			
		Pedal 1	
6061600006	F1-U1Z UN	1NC / 1NO	Prot. shroud UN
6061700004	F1-U2Z UN	2NC / 2NO	Prot. shroud UN

Two pedal foot switch F2			
Article number	Designation	Switching contacts	Special feature
Snap-action			
		Pedal 1 (l.) Pedal 2 (r.)	
6062830022	F2-SU1Z/SU1Z UN	1NC / 1NO 1NC / 1NO	Prot. shroud UN
6062940066	F2-SU2Z/SU2Z UN	2NC / 2NO 2NC / 2NO	Prot. shroud UN
Slow-action			
		Pedal 1 (l.) Pedal 2 (r.)	
6062610014	F2-U1Z/U1Z UN	1NC / 1NO 1NC / 1NO	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 34

Three pedal foot switch F3

Article number	Designation	Switching contacts			Special feature
Snap-action					
		Pedal 1 (l.)	Pedal 2 (m.)	Pedal 3 (r.)	
6063833045	F3-SU1Z/SU1Z/SU1Z UN	1NC / 1NO	1NC / 1NO	1NC / 1NO	Prot. shroud UN
Slow-action					
		Pedal 1 (l.)	Pedal 2 (m.)	Pedal 3 (r.)	
6063611026	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 35

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
6161700213	F1-U2ZD UK	2NC / 2NO	140 N	Pressure point D, 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 Pedal 1	Special feature
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, Protective shroud UN

Two pedal foot switch F2

Article number	Designation	Switching contacts Pedal 1 Pedal 2	Special feature
6162610468	F2-U1Z/U1Z UN	1NC / 1NO 1NC / 1NO	IP67, 3 cable entries, Protective shroud UN
6162000553	F2-SU1ZUV1DR/ SU1ZUV1DR UN	2NC / 2NO 2NC / 2NO	IP67, Pressure point D, Latching 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
Snap-action				
		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
Slow-action				
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
		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
Slow-action						
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
		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 35

Dimension drawing 9 | Page 35

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 35

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 35

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

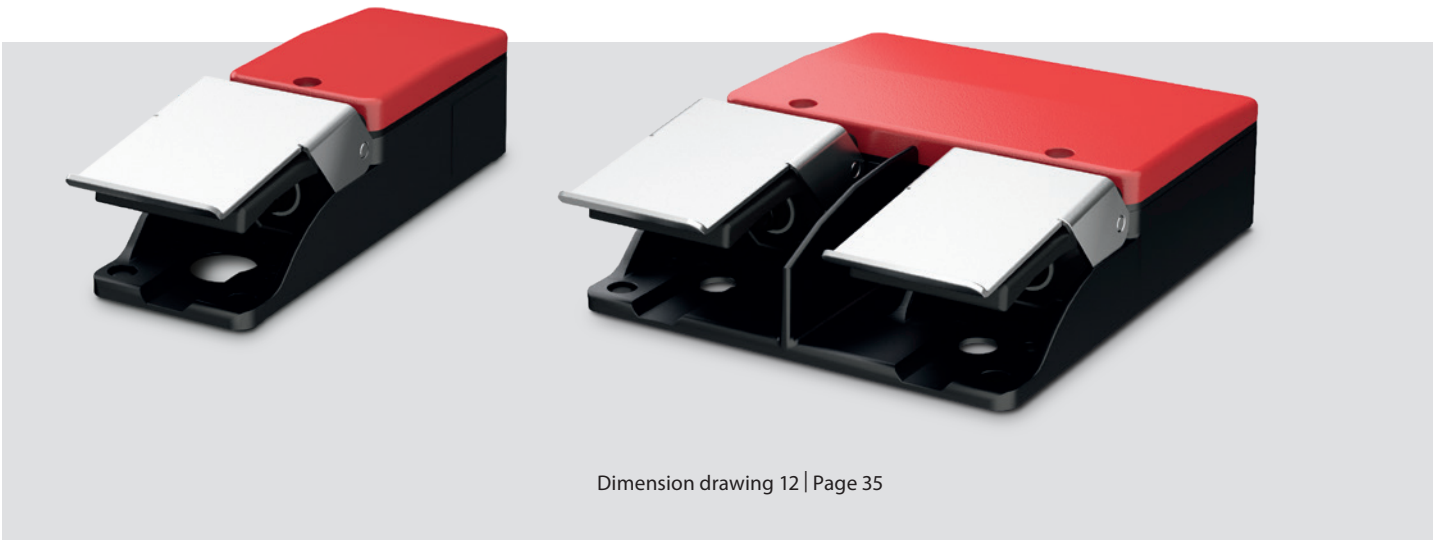
Two pedal foot switch F1

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 35

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 36

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 36

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

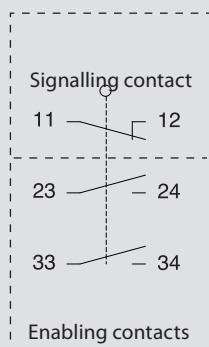
The BERNSTEIN three-stage-enable foot switch combines robust design and advanced technology. With many years of experience and expertise, BERNSTEIN is the preferred partner for industrial foot switches in industrial applications. Through the development of the first approved enable foot switch, BERNSTEIN 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.

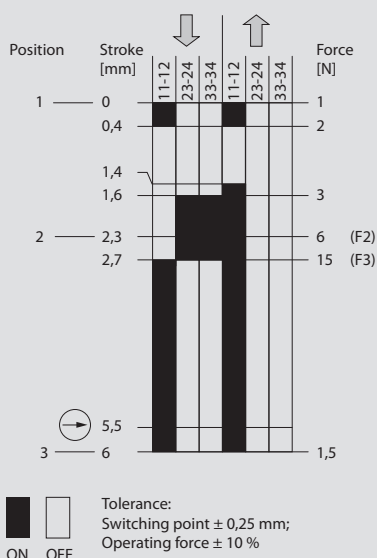
If the pedal is pressed up to pressure point, the two enable contacts are closed. If the pedal is released, the enable contacts are open again. If the pedal is pressed up to the pressure point, the enable positive opening action contacts are opened. For the application of an enable device, the rules 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.

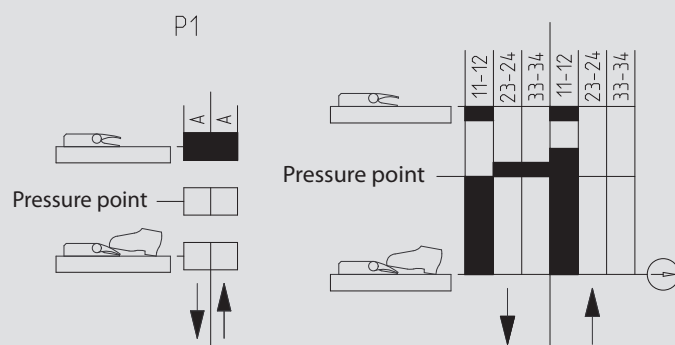
Circuit symbol



Switching diagram



Switching diagram with PNP output



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

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



Dimension drawing 15/16 | Page 36

Ordering Instructions for enable foot switches (DGVU)

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 36

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
6073700085	F1-ASI-ZSD UN		200 N	ASI-ZS, Pressure point D, Prot. shroud UN
6073700086	F1-ASI-ZSDR UN		200 N	ASI-ZS, Pressure point D, Latching R, 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	Pressure point D (Pedal 2), Prot. shroud UN
6062000563	F2-U1Z/ZSDR UN	1NC / 1NO	1NC / 2NO		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 37

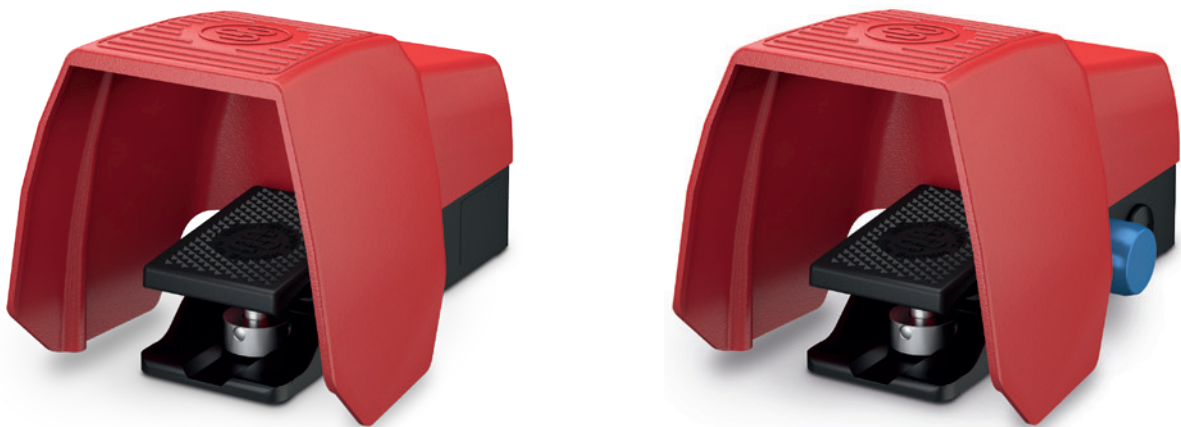
Ordering Instructions for foot switch with analogue output

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 AS-Interface connection

The AS-Interface provides an affordable, fast and flexible connection of foot switches into an AS-i system. Thanks to the M12 plug connection, the foot switches can quickly and easily be replaced using the “plug & play” principle in case a fault should occur.



Dimension drawing 20 | Page 37

Ordering Instructions for foot switches with AS-Interface connection

Foot switches with AS-Interface connection have “ASI” in the article designation and can be delivered in single pedal versions. Standard and “enabled” foot switches are available with an AS-Interface connection, please refer to the appropriate section for more information on “enabled” foot switch versions.

Single pedal foot switch F1 with AS-Interface connection			
Article number	Designation	Switching contacts	Special feature
6073700076	ASI F1 UN		AS-Interface, Prot. shroud UN

Single pedal enable foot switch F1 with AS-Interface connection			
Article number	Designation	Switching contacts	Special feature
6073700085	F1-ASI-ZSD UN		AS-Interface, Enabling function, Pressure point, Prot. shroud UN
6073700086	F1-ASI-ZSDR UN		AS-Interface, Enabling function, Latching, Press. point, Prot. shroud UN



These and other foot switches are
also available with AS-Interface
connection on demand.

Foot switches with safety lock plus manual release

Dimension drawing 21 | Page 37

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

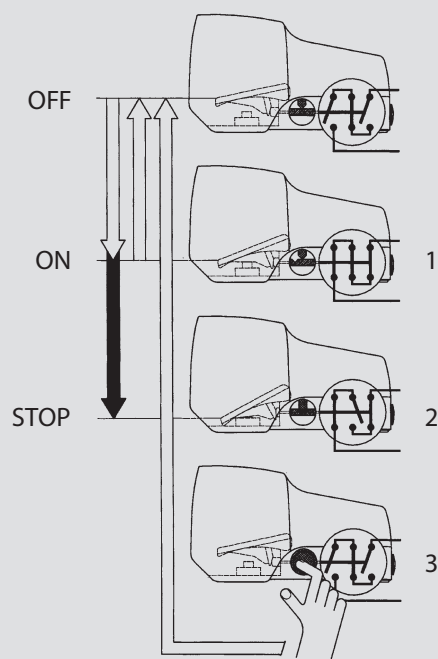
The make contact is closed and the work process is started.

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.)	
6163500703	F3-SU1ZA2ZD/SU2ZD/SU1ZA2ZD Rast	3NC / 1NO	2NC / 2NO	3NC / 1NO	200 N	30 N	200 N	Pressure point D (Pedal 1+2+3), Latching (Pedal 1+3)

Foot switches for potentially explosive atmospheres

BERNSTEIN offers you a wide range of single and double pedal foot switches designed to meet the exacting requirements of zone 1 and 2 potentially explosive atmospheres (other approvals on demand). The foot switches have factory fitted connection cables which are available in different lengths.



Dimension drawing 22 | Page 37



Dimension drawing 23 | Page 37

Ordering Instructions for foot switches in potentially explosive atmospheres

Foot switches for potentially explosive atmospheres have "EX" 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
6096198014	F1-SU1Z EX 5M	1NC / 1NO	5 m Connection cable
6096198015	F1-SU1Z EX 9M	1NC / 1NO	9 m Connection cable
6096197017	F1-SU1Z EX UN -2M-	1NC / 1NO	2 m Connection cable, Prot. shroud UN
6096197019	F1-SU1Z EX UN -5M-	1NC / 1NO	5 m Connection cable, Prot. shroud UN
6096197020	F1-SU1Z EX UN -9M-	1NC / 1NO	9 m Connection cable, Prot. shroud UN

Two pedal foot switch F2

Article number	Designation	Switching contacts		Special feature
		Pedal 1 (l.)	Pedal 2 (r.)	
6096198022	F2-SU1Z/SU1Z EX -2M-	1NC / 1NO	1NC / 1NO	2 m Connection cable
6096198024	F2-SU1Z/SU1Z EX -5M-	1NC / 1NO	1NC / 1NO	5 m Connection cable
6096197029	F2-SU1Z/SU1Z EX UN -5M-	1NC / 1NO	1NC / 1NO	5 m Connect. cable, Prot. shroud UN
6096197030	F2-SU1Z/SU1Z EX UN -9M-	1NC / 1NO	1NC / 1NO	9 m Connect. cable, Prot. shroud UN

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 24 | Page 38



Dimension drawing 25 | Page 38

Spare parts

Cover

Article number	3906010475	3906020501
Designation	F1-COVER incl. Seal and Screw	F2-COVER incl. Seal and Screw



Protective shroud

Article number	3906010719	3906020720
Designation	F1-PROTECTIVE SHROUD UN incl. Seal and Screw	F2-PROTECTIVE SHROUD UN incl. Seal and Screw



Foot pedal

Article number	3515900149	3311373073
Designation	Foot pedal	Spindle RD6x70
Article number	2650000004	
Designation	Half ring (2 are needed)	



Technical data



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

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

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

Standard values for safety technology

B10d	20×10^5
	6×10^6 Restrictions in article designation "C" *
	2×10^6 Restrictions in article designation "D" *
	4×10^6 Restrictions in article designation "EX" *
	1×10^5 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

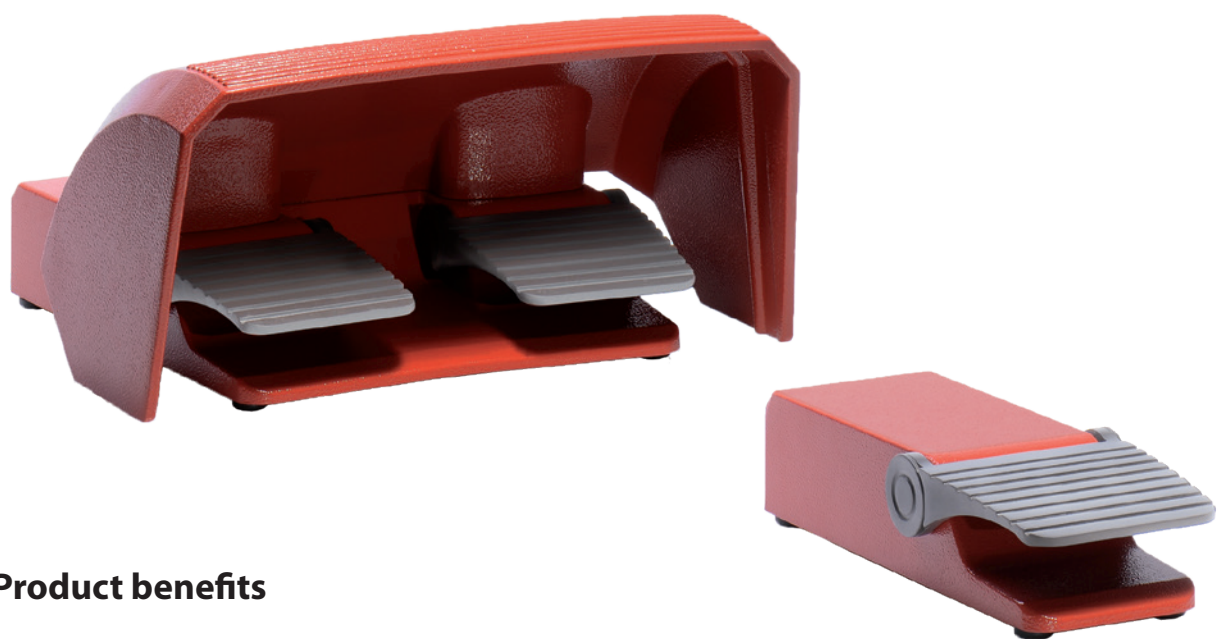
Approvals*

CCSAUS A300, Q300 (same polarity)
cUL _{US} 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 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.)		
6060600026	FS1-500-UN-0 N	1NC / 1NO		Prot. shroud UN	
6060700028	FS2-500-500-UN-0 C	1NC / 1NO	1NC / 1NO	Prot. shroud UN	

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

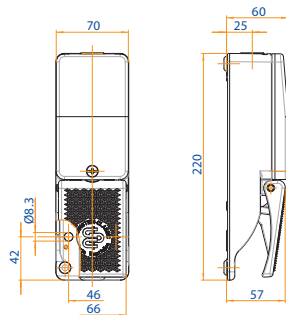
Article number	Designation	Switching contacts	Pedal colour
6069100004	KFM1-SU1 SW	1NC / 1NO	black
6069100005	KFM1-SU2 SW	2NC / 2NO	black
6069100008	KFM1-SU1 RT	1NC / 1NO	red
6069100009	KFM1-SU1 BL	1NC / 1NO	blue
6069100010	KFM1-SU1 GE	1NC / 1NO	yellow
6069100012	KFM1-SU1 GR	1NC / 1NO	grey

Two pedal foot switch F2

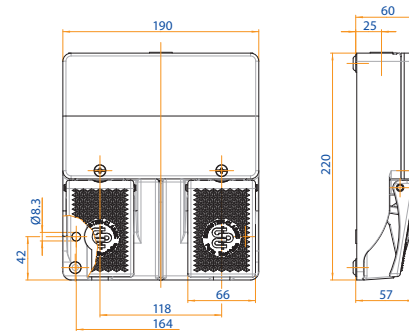
Article number	Designation	Switching contacts		Pedal colour
		Pedal 1 (l.)	Pedal 2 (r.)	
6069200006	KFM2-SU1/SU1 SW	1NC / 1NO	1NC / 1NO	black
6069200007	KFM2-SU2/SU2 SW	2NC / 2NO	2NC / 2NO	black

Dimensional drawings

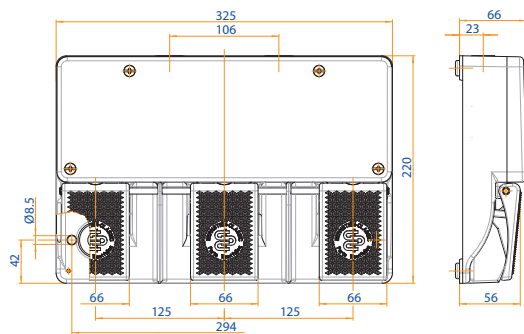
1) Standard foot switch F1 | Page 6



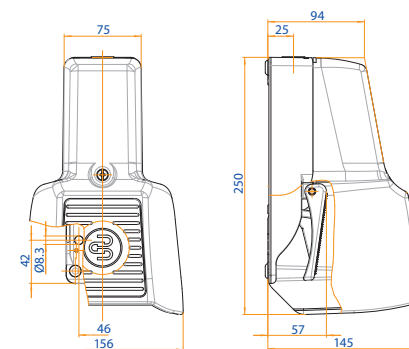
2) Standard foot switch F2 | Page 6



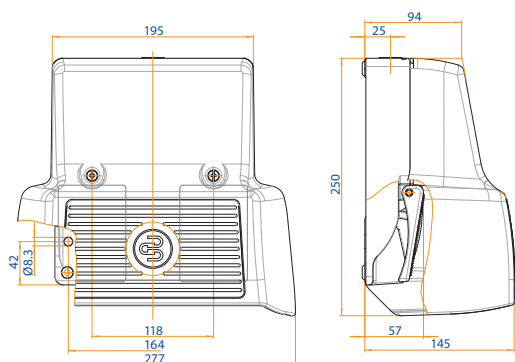
3) Standard foot switch F3 | Page 7



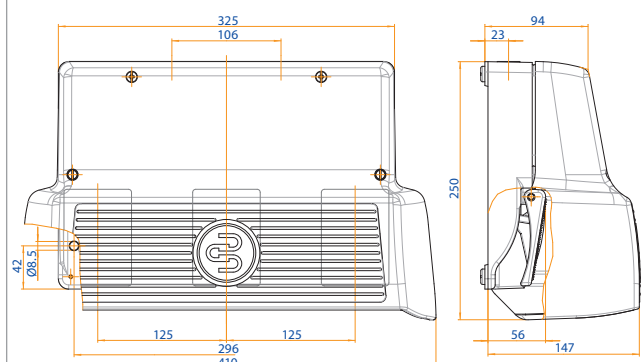
4) Foot switch with protective shroud F1 | Page 8

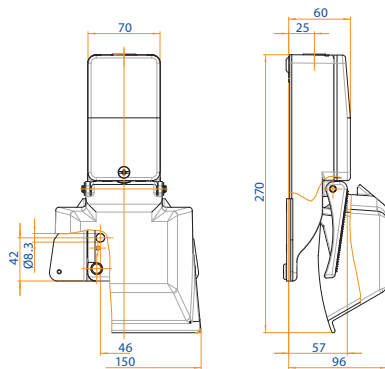
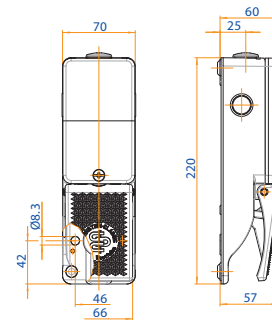
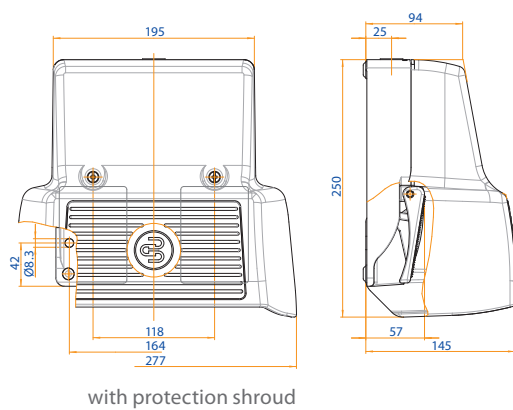
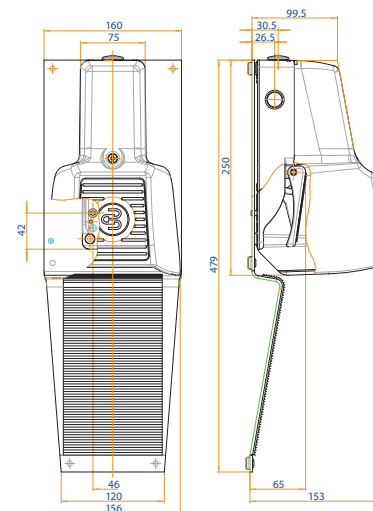
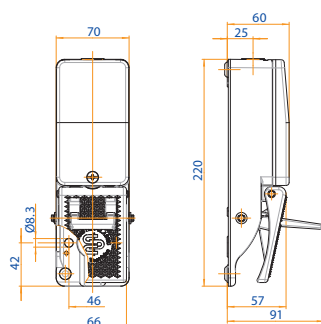
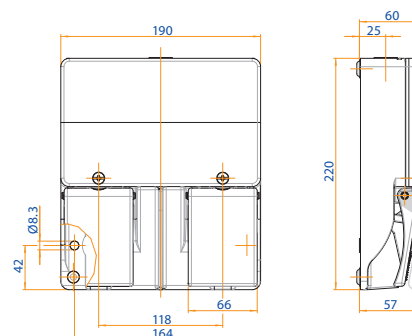


5) Foot switch with protective shroud F2 | Page 8



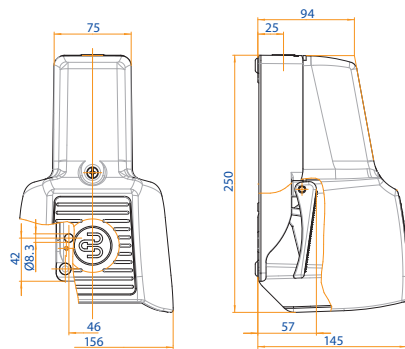
6) Foot switch with protective shroud F3 | Page 9



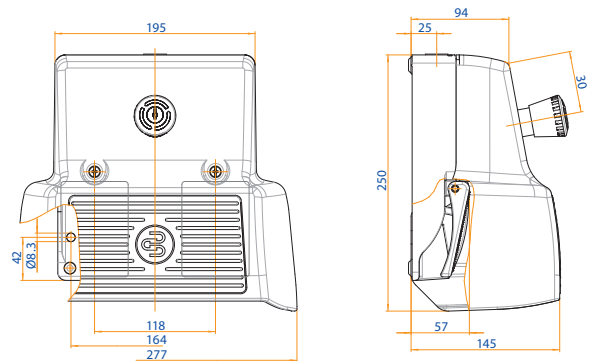
7) Foot switch with hinged protective shroud F1 | Page 10

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


Dimensional drawings

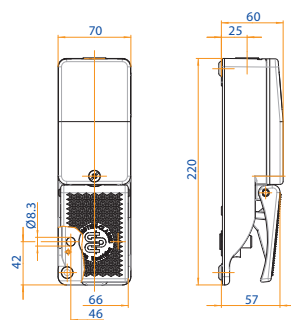
13) Foot switch with contactor F1 | Page 18



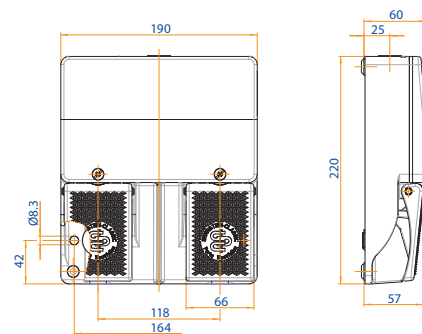
14) Foot switch with Emergency stop button F2 | Page 19



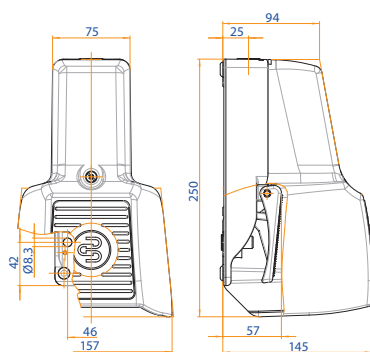
15) DGUV approved enable foot switch F1 | Page 20/21



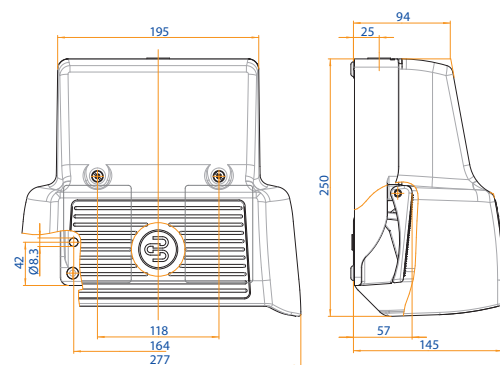
16) DGUV approved enable foot switch F2 | Page 20/21

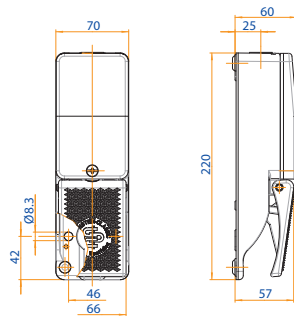
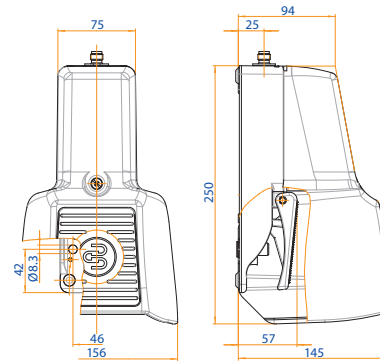
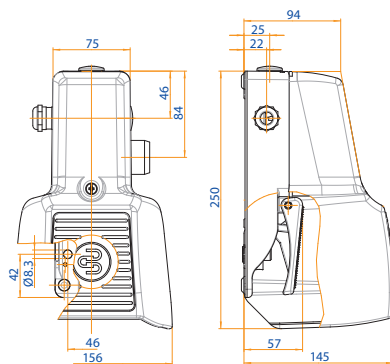
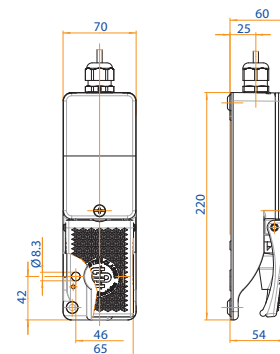
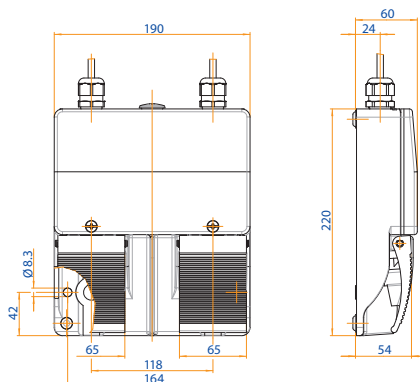


17) Foot switch with enable function F1 | Page 22



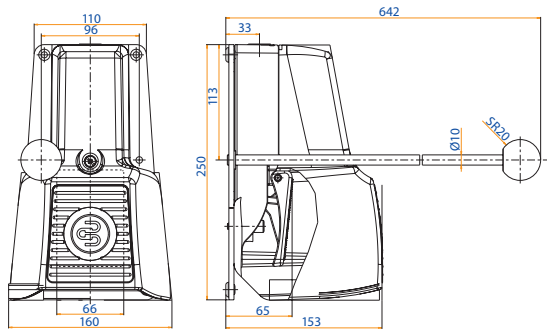
18) Foot switch with enable function F2 | Page 22



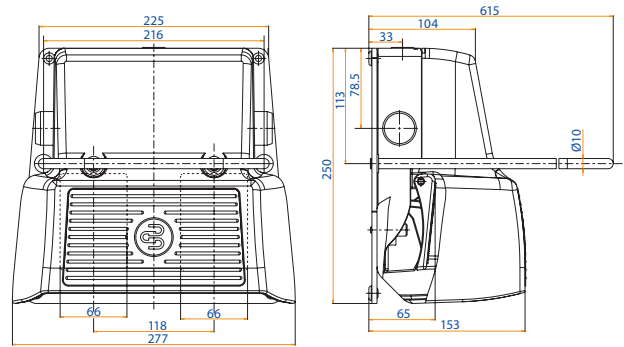
19) Foot switch with analogue output F1 | Page 23

20) Foot switch with AS-Interface connection F1 | Page 24

21) Foot switch with safety lock + manual release F1 | Page 26

22) Foot switch for potent. explosive atmospheres F1 | Page 28

23) Foot switch for potent. explosive atmospheres F2 | Page 28


Dimensional drawings

24) Foot switch with mobility handling F1 | Page 29



25) Foot switch with mobility handling F2 | Page 29



Notes

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 mm²

☐ 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

**DETECT****We make
safety happen.****PROTECT****We keep safe
your visions.**

Contact

International Headquarters BERNSTEIN AG

Hans-Bernstein-Straße 1
32457 Porta Westfalica
Fon +49 571 793-0
Fax +49 571 793-555
info@bernstein.eu
www.bernstein.eu

Denmark

BERNSTEIN A/S
Fon +45 7020 0522
Fax +45 7020 0177
info.denmark@bernstein.eu

France

BERNSTEIN S.A.R.L.
Fon +33 1 64 66 32 50
Fax +33 1 64 66 10 02
info.france@bernstein.eu

Italy

BERNSTEIN S.r.l.
Fon +39 035 4549037
Fax +39 035 4549647
info.italy@bernstein.eu

United Kingdom

BERNSTEIN Ltd
Fon +44 1922 744999
Fax +44 1922 457555
sales@bernstein-ltd.co.uk

Austria

BERNSTEIN GmbH
Fon +43 2256 62070-0
Fax +43 2256 62618
office@bernstein.at

Switzerland

BERNSTEIN (Schweiz) AG
Fon +41 44 775 71-71
Fax +41 44 775 71-72
info.schweiz@bernstein.eu

Hungary

BERNSTEIN Kft.
Fon +36 1 4342295
Fax +36 1 4342299
info@hu.bernstein.eu

China

**BERNSTEIN Safe Solutions
(Taicang) Co., Ltd.**
Fon +86 512 81608180
Fax +86 512 81608181
info@bernstein-safesolutions.cn

www.bernstein.eu