



# Safety Control Devices

Meet existing safety standards!  
Keep hands outside of risk area!  
Safe stops and reliable restarts!

Why should I use  
Safety Control Devices? ..... 8:2

JSHD4 Three-Position  
Enabling Devices  
The Safest Solution..... 8:4  
Standard Features and Options..... 8:5  
Connection Types ..... 8:6  
Pendant Holster..... 8:8  
Special Applications  
and Custom Devices..... 8:9

JSTD1 Safeball™  
Category 4 Two-Hand  
Control Device..... 8:10

JSTD25 Two-Hand Control  
Station with Safeball..... 8:14

JSTD20 Conventional  
Two-Hand Control Device..... 8:16

Fox Foot-Operated  
Safety Switch..... 8:18

Component List  
Ordering Data/Article Numbers..... 8:22

# Why should I use Control Devices?

**...for the machine operator to be able to directly start and stop dangerous machine movement!**



## Three-Position Enabling Devices

Three-position devices, hold-to-run devices and enabling devices are used during trouble-shooting, programming and test running when no other safety components are possible or suitable. The device is held in the hand and...

**...the operator, in an emergency situation, can either press harder or entirely release the device to stop the machine.**

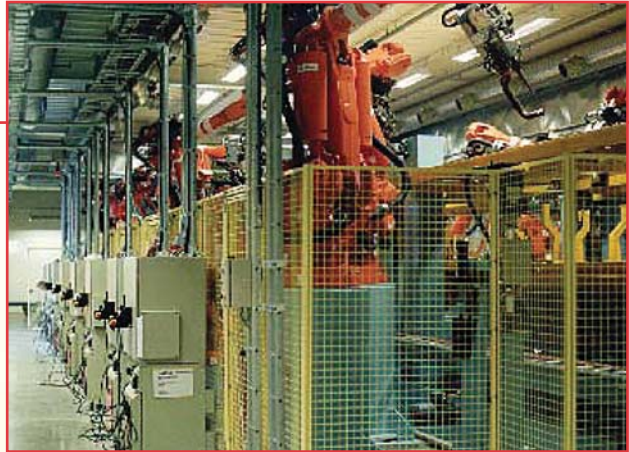


*JSHD4 Ergonomic Three-Position Devices with double three-position button, gives a stop signal when released or fully pressed in.*

**From Directive 98/37/EC, 1.2.5**

*"If, for certain operations, the machinery must be able to operate with its protection devices neutralized, the mode selector must simultaneously:*

***...permit movements only by controls requiring sustained action..."***



## Two-Hand Control Devices

A two-hand control device is used when it must guarantee that the operator's hands will be kept outside the risk area. If there is a risk that someone else other than the operator can reach into the machine without the operator seeing it, the safety device must be supplemented by something more—e.g. a light beam.

To be able to operate the machine with the two-hand device, all the buttons on the device have to be operated within 0.5 seconds of each other. This is called concurrence. All the buttons also have to be returned to their initial position before one can start again. If any button is released during the machine movement, the machine will be stopped. Using the stopping time, one can calculate the necessary safety distance. A safety distance of less than 100 mm must not be used.







**The two-hand device protects against “after-grasp”—if the operator by reflex tries to enter or reach into a machine during the dangerous machine movement.**



*JSTD1 Ergonomic Safeball is a two-hand control device with four built-in buttons.*

**From Directive 98/37/EC, 1.3.8**

*“Guards or protection devices designed to protect exposed persons against the risks associated with moving parts contributing to the work (such as cutting tools, moving parts of presses, cylinders, parts in the process of being machined, etc.) must be:*

*...otherwise, movable guards complying with requirements 1.4.1 and 1.4.2.2.B or protection devices such as sensing devices (e.g. nonmaterial barriers, sensor mats), remote-hold protection devices (e.g. two-hand controls), or protection devices intended automatically to prevent all or part of the operator’s device from encroaching on the danger zone in accordance with requirements 1.4.1 and 1.4.3.”*



## **Foot Operated Switches**

A foot operated switch is used when the operator has to hold the material during processing. The pedal must have a safety cover to prevent unintentional start. For seated work, one must also have a foot support to facilitate the operator holding his foot in the pedal’s off position. The highest safety level is secured by monitoring the pedal with a safety relay.



**From EN 693 Machine Tools Safety - Hydraulic Presses**

**“5.4.6.1:**

*...push button, foot switch and start control devices shall be adequately shrouded to prevent accidental operation. Foot switches shall permit access from one direction only and by one foot only.”*

# JSHD4 Three-Position Enabling Devices: The Safest Solution during Troubleshooting, Programming and Testing

When you're planning a machine safety solution that will help your company comply with the RIA 15.06 Standard consider the JSHD4 Three-Position Enabling Device. This hand-held device provides the highest level of protection for your employees by allowing the operator to be in control at all times. In addition, no one will be able to start the machine from the outside when the operator has stopped the machine with the Three-Position Enabling Device.

The pendant's distinct and redundant middle "run" position insures that the equipment can be stopped either by squeezing or releasing the enabling button. This unique device provides the extra margin of safety needed when conducting set-up, programming, testing, troubleshooting or servicing robotic or automated equipment.

## Ergonomic Design

The Jokab Safety Enabling Device has been ergonomically designed to allow multiple functions with one hand. The enabling button is actuated by grasping with the fingers to a distinct middle position, making it easy to hold for long periods of time. The enabling button incorporates two individual 3-position switches inside the rubber cover for redundancy.

The enabling device can have up to two extra buttons on the front and top to be used for software functions such as start/stop, forward/backwards or up/down. They can also be used to provide a reset for a safety relay or any other function the user requires.

## Technical Data

**Manufacturer**.....JOKAB SAFETY

**Ordering Data/Article Numbers**..... see page 8:22-8:25

**Material**..... Polyamid 6.6

### Electrical Contact Ratings

Three-position button.....30 VDC, max. 0.5 A  
(min. 10 mA, 10V)

Extra button..... 50 VAC/DC, max. 0.5 A

**Operating Temperature**.....-10°C to +50°C

**Mechanical Life**..... 1 million cycles to middle position

### Function Indication

Start..... Green LED

Stop..... Red LED

**Protection Class**..... IP 65



*Enabling Device with 8-Pin Receptacle, Extension Cable with Receptacle, and Jokab RT9 Safety Relay*

## Safety Level

A high level of safety can be achieved with the enabling device when it is used in conjunction with a safety relay. Although the Enabling Device has two 3-position switches for redundancy, a safety relay should be used to monitor the individual switches and interface cable for failure in order to achieve a control reliable system.

The Jokab Safety RT6, RT9, JSBT4 safety relays can be used in conjunction with the Enabling Device.

## Regulations & Standards

The Enabling Device is designed and approved in accordance with the following relevant standards: EN 292-1/2, EN 60204, IEC 204, VDE 0110, VDE 0113, BS 2771.

## Approvals



CERTIFIED BY  
**inspecta**



## Standard Features and Options

### Button Configurations

The 3-Position Enabling Device can have up to two auxiliary buttons on the front and top to be used for any functions the user desires. Common functions

such as jogging, start/stop, up/down or safety relay reset are achievable with one hand while maintaining the safety function.



**Enabling Device with Top and Front Buttons**



**Enabling Device with No Auxiliary Buttons**

### LED Options

One green LED and one red LED are available as function indicators for the Enabling Device. When the Enabling Device is cycled to position 3, the start

function in position 2 is not reinitiated when the enabling button returns from position 3 to position 1.



**Position 1 (Red LED)  
STOP Function**

Enabling Button  
Not Pressed or Released



**Position 2 (Green LED)  
START Function**

Enabling Button  
Pressed to the Middle Position



**Position 3 (Red LED)  
STOP Function**

Enabling Button Pressed Down  
Fully Past the Middle Position

### Bottom Plate

The Jokab Safety Enabling Device comes standard with a large bottom plate with provisions for mounting the actuators from the pendant holster JSNA-JSM-2A accessory. The large bottom plate accommodates both 4 pole and 8 pole connection types.





## Connection Types



### 8 Poles Male Mini Series Size II Plug with Cable

Standard cable lengths of 20, 30 or 40 feet in oil resistant PVC and 20 or 30 feet in PUR cable. (8MP Designator)



### 4 Poles Male Micro DC (M12) Plug with Cable

Standard cable lengths of 6, 10 or 15 meters in oil resistant PVC. (4MP Designator)



### 8 Conductors - Cable Only

Standard cable lengths of 20, 30 or 50 feet in oil resistant PVC, 18AWG wire. (8C Designator)



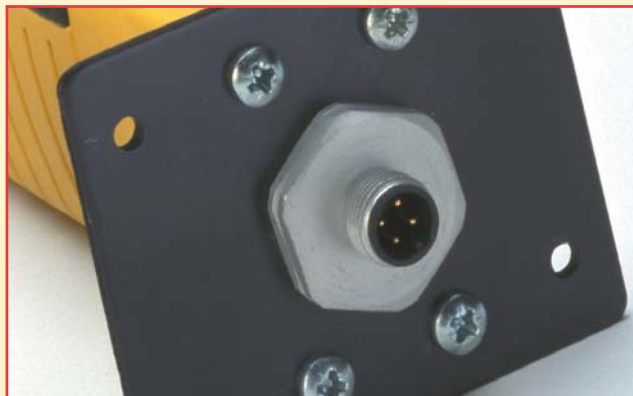
### 4 Conductors - Cable Only

Standard cable lengths of 16, 10 or 15 meters in oil resistant PVC, 18AWG wire. (4C Designator)



### 8 Poles Male Mini Series Size II Receptacle

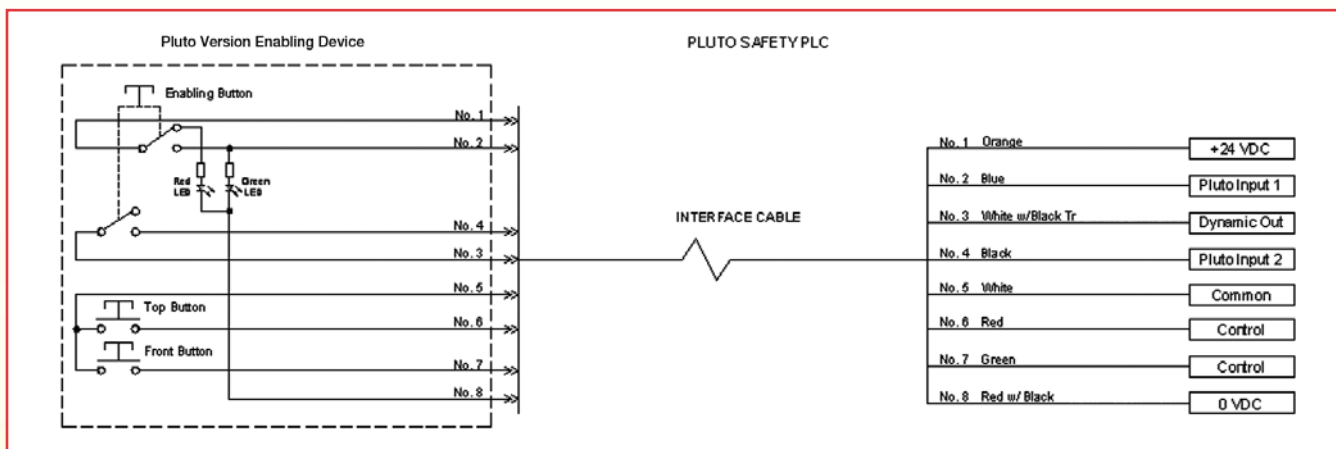
(8MR Designator)



### 4 Poles Male Micro DC (M12) Receptacle

(4MR Designator)

## Connection of Pluto Version Enabling Device to Pluto Safety PLC



## Accessories



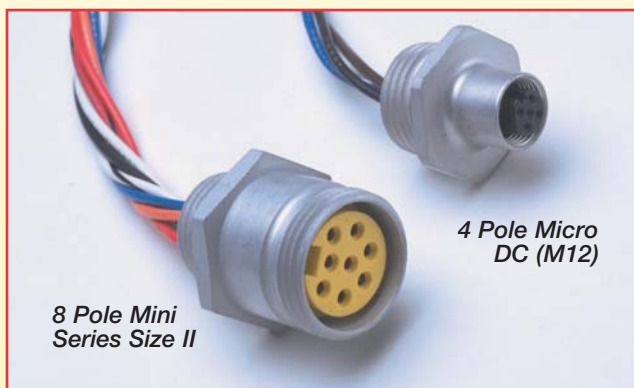
### 8 Pole Mini Series Size II

Available in standard cable lengths of 6, 12, 20, 30 or 40\* feet with 18AWG wire. Custom lengths are available upon request and are subject to a minimum quantity requirement. (\*only in PVC)



### 4 Pole Micro DC (M12)

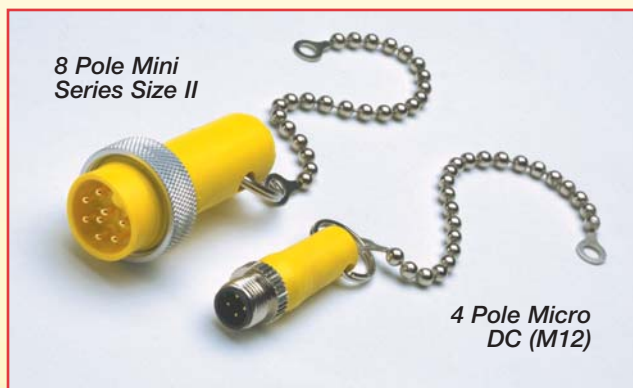
Standard cable lengths of 2, 5, or 10 meters with 18AWG wire in PVC or 22AWG wire in PUR cable. Custom lengths are available upon request and are subject to a minimum quantity requirement.



### Panel Mount Receptacles

Both 8 Pole Mini Series Size II and 4 Pole Micro DC (M12) style female versions available with 1/2" NPT mounting and 18AWG wire.

Standard wire lengths of 12, 36 or 72 inches for the 8 pole style and 0.3 or 1 meter for the 4 pole style. Custom lengths are available upon request and are subject to a minimum quantity requirement.



### Terminating Plugs

Both 8 Pole Mini Series Size II and 4 Pole Micro DC (M12) style male versions available with pins 1-2 and 3-4 shorted.

## Pendant Holster

The pendant holster can be used for a variety of applications, including:

- Disabling of robot hazardous motion
- Disabling of external reset buttons to prevent unintentional start-ups
- Disabling of input devices to allow access to the hazardous area of other equipment within a cell, such as transfer stations, while using the enabling device.

The non-safety NO contact on the pendant holster safety interlock switches can be used to provide a software or visual signal to indicate that the enabling device has been removed from the pendant holster.

### Interlock Switch Pendant Holster

The Enabling Device Pendant Holster consists of two safety interlock switches mounted to a U-channel wall mounting bracket. Each safety interlock switch contains two NC positive opening and one NO contact.

The actuator from each safety interlock switch is mounted to the standard large bottom plate of the enabling device. The enabling device is then inserted into the pendant holster. The safety interlock switches provide a very strong and secure holder for the enabling device while providing the customer user interface contact to perform various functions.

### Eden Pendant Holster

The Eden Enabling Device Pendant Holster consists of a two-piece metal bracket and is designed for use with the Adam and Eva non-contact, non-magnetic safety switch and the JSHD4 Enabling Device.

The top bracket (JSM53A) is formed to step-up near the center of the bracket. The lower end of this bracket is pre-drilled with four holes to attach the enabler pendant handle with screws and a M16 threaded opening for enabling device cable or bulkhead connector. The stepped-up end of the top bracket is drilled and tapped with two 4 mm holes to attach the Eva or Eva E side of the Eden Safety Switch. A beveled guide pin is welded to the underside of the stepped-up end of the top bracket and will fit into a pre-drilled hole with metal tube welded to the underside of the lower bracket.

The lower bracket (JSM54) is formed with a 90° angle that has pre-drilled holes for attachment to walls, panels or fencing. The rest of the bracket has two drilled and tapped 4 mm holes to attach the Adam or Adam E side of the Eden Safety Switch and is shaped to mate with the top bracket. This allows for the insertion of the guide pin into the pre-drilled hole and properly positions the Adam and Eva Safety Switch. The Eden Pendant Holster comes assembled with Enabling Device or can be ordered without the Enabling Device to retrofit your current enabling device.





## Special Applications and Custom Devices



### 3-Position Switches

For customers who would like to retrofit or incorporate switches into existing robot teach pendants or other devices, Jokab Safety North America offers three versions of our 3-Position Switches.



### Custom Preassembled 3-Position Enabling Devices

Custom preassembled systems can be designed to accommodate standard applications requirements. We have the capability of assembling small panels that include the enabling device, pendant holster and safety relay as an example.



### 3-Position Enabling Devices for Hazardous Locations

Special 3-Position Enabling Devices are available for hazardous location applications. These devices are blue in color for EX designation and have special internal wiring for interfacing to intrinsically safe barriers. A Jokab Safety Relay should still be used to make the entire system control reliable.



### Custom 3-Position Enabling Devices for Many Special Applications

The 3-Position Enabling Device can be customized to accommodate many special applications, including special cables, connection type or wiring configurations that are necessary to meet certain application criteria.

# JSTD1 Safeball™: A Unique New Category 4 Two-Hand Control Device

Safeball is a completely new approach to the design of one and two-hand safety devices. Instead of the conventional approach using ordinary push buttons and non-ergonomic protection for unintentional activation, a 'hands on' approach has been developed. Safeball consists of a spherical ball containing two embedded push button switches, one on each side of the ball. By using this push button configuration, the risk of unintentional activation is minimized and the device is simple and ergonomic to use.

Safeball can be utilized for either one-hand (one Safeball) or two-hand (two Safeballs) applications. In either application, and in order to meet the required level of safety, the Safeball(s) switches are monitored by specified/certified Jokab Safety safety relays.

In the case where two-hand control is used, both Safeballs i.e. all four push buttons have to be activated within 0.5 seconds. If one or more push buttons are released a Stop signal is given to the machine. In order to provide the highest level of safety the Safeball design provides the operator with a dual switching function and short circuit supervision in each hand.

Each Safeball is ergonomically designed and has both its cover and actuator made of environmental friendly polypropylene. The design allows for comfort of use for all hand sizes and operation from numerous gripping positions. Mounting of the Safeball is also very flexible allowing the device to be mounted in the most ergonomic position for the operator.

## When can a two-hand or one-hand control be used?

A two-hand control can be used when it is necessary to ensure that the operator is outside and must be prevented from reaching into the hazardous area. If the operator decides, after the start signal has been given to the machine, to make an 'after grasp' i.e. try to adjust the part that has been placed into the machine, then a dual stop signal is given to the machine.

A one-hand control device can be used when the operator cannot reach the hazardous area with his/her free hand or on less dangerous machines.

## Highest Safety Level

The Safeball is certified by DNV (Inspecta) in Sweden for use as a two-hand control device, when used with a JSBR4 Jokab Safety safety relay or Pluto Safety PLC, in accordance with the highest safety level in standard EN 574 (type IIIc) and EN 954-1/ISO 13849-1 (safety category 4).



JSTD25A  
Mounting Station

## Applications

- Two-Hand Device
- One-Hand Device

## Features

- Ergonomic
- Low activation force
- Flexible mounting
- Several grip possibilities
- Highest safety level (category 4)
- Two-channel switching in each hand

## Regulations and Standards

The JSTD1 Safeball is certified by DNV. Approval numbers are 01-MAL-CM-0101 (two-hand device) and 01-NAL-CM-0100 (one-hand device).

## Approvals



## JSTD1 Safeball Technical Data

**Manufacturer**..... JOKAB SAFETY  
**Ordering Data/Article Numbers**.....see page 8:26-8:28  
**Color**..... black and yellow  
**Weight**.....0.2 kg with 2 m cable  
                                     0.7 kg with 10 m cable  
                                     0.1 kg with 4x0.25 m wires

## Size

Height.....approximately 71 mm  
Diameter.....minimum 68 mm, maximum 72 mm  
Base.....42 mm

**Temperature**.....0°C to +55°C (operating)  
-20°C to +70°C (storing)

**Protection Class**.....IP67  
(not intended for use below water surface)

**Operating Force**.....approx. 2 N

**Actuator Travel**..... 1.3 +/- 0.6 mm

**Max. Switching Load.....**30 V/2A DC, resistive load

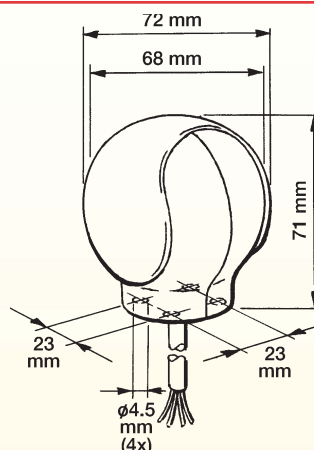
**Recommended Load.....** 24 V/10mA DC, resistive load

**Min. Switching Load.....**6 V/10mA DC, resistive load

**Contact Resistance**.....100 mOhm

**Mechanical Life**.....>1x10<sup>6</sup> operations at max 1 Hz

**Material**..... polypropylene



### Chemical Resistance at 20°C

Chemical	Resistance
Alcohols	Good
Paraffin Oil	Good
Milk	Good
Silicon Oil	Good
Acetone	Good

**Electrical Life**.....dependent upon electrical load characteristics

### Connection Cable

JSTD1-A.....2m PVC-cable, 4 x 0.75mm<sup>2</sup>

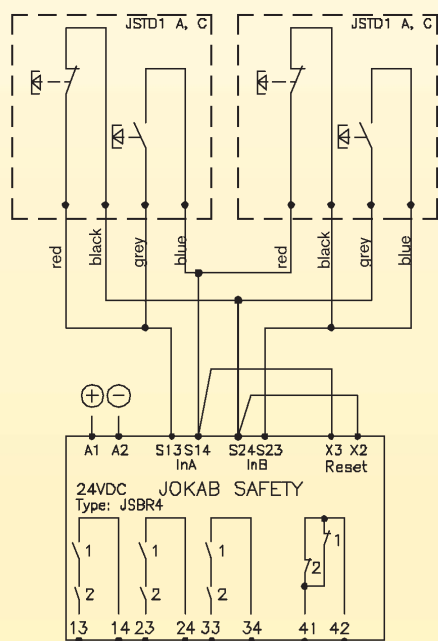
JSTD1-B, JSTD1-E.....4 x 0.75mm<sup>2</sup> wires, approx. 0.20m

JSTD1-C.....10m PVC-cable, 4 x 0.75mm<sup>2</sup>

## JSTD1 Safeball Electrical Connections

## Two-Hand Control Device

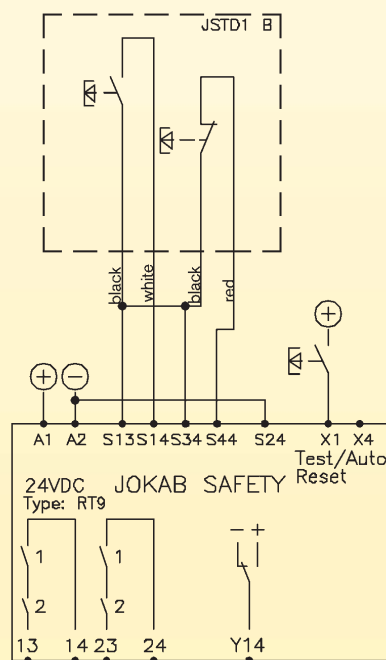
The Safeballs are designed to be connected to a Jokab Safety JSBR4 safety relay or safety PLC to achieve the requirements for a two-hand device. By connecting the Safeballs in this electrical configuration Type IIlc, the highest safety level according to European standard EN 574 is achieved.



*Example of two Safeballs connected to Jokab Safety relay JSBR4. The reaction time at 'stop' is < 15 ms.*

## One-Hand Control Device

When used as a one-hand device the Safeball is designed to be connected to a Jokab Safety RT6, RT7 or RT9 safety relay in order to achieve the highest possible safety level for this type of control.



*Example of a single Safeball connected to Jokab Safety relay RT6. The reaction time at 'stop' is < 20 ms.*



## JSTD1 Safeball Function

### Two-Hand Control Device

The two-hand control device is made by using two Safeballs, each having two internal push buttons. The Safeballs must be mounted a minimum distance between each other (see Mounting specifications on page 5). By utilizing two push buttons in each device a double safety function is provided in each hand.

The highest safety level is achieved by connecting all four push buttons to the Jokab Safety JSBR4 safety relay. The safety relay gives a dual and supervised safety function and requires input activation within 0.5 seconds in order to start the machine. It also checks that all four push buttons have returned to their deactivated positions before a new start is allowed. The JSBR4 safety relay also provides a stop signal if one or more push buttons are released.

### One-Hand Control Device

Safeball is also a very practical method of providing a one-hand control device as it is very easy to find and activate by the machine operator. One-hand devices should only be used when the operator cannot reach into the hazardous area with his/her free hand or on less dangerous machines. Before installation necessary risk assessment must be made to determine suitability of this type of control. To achieve the highest safety level for one-hand control the Safeball must be connected to the Jokab Safety RT6 safety relay.

### Versions

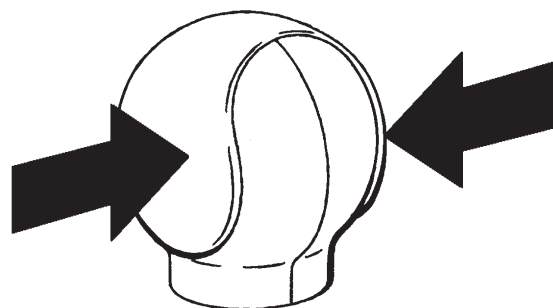
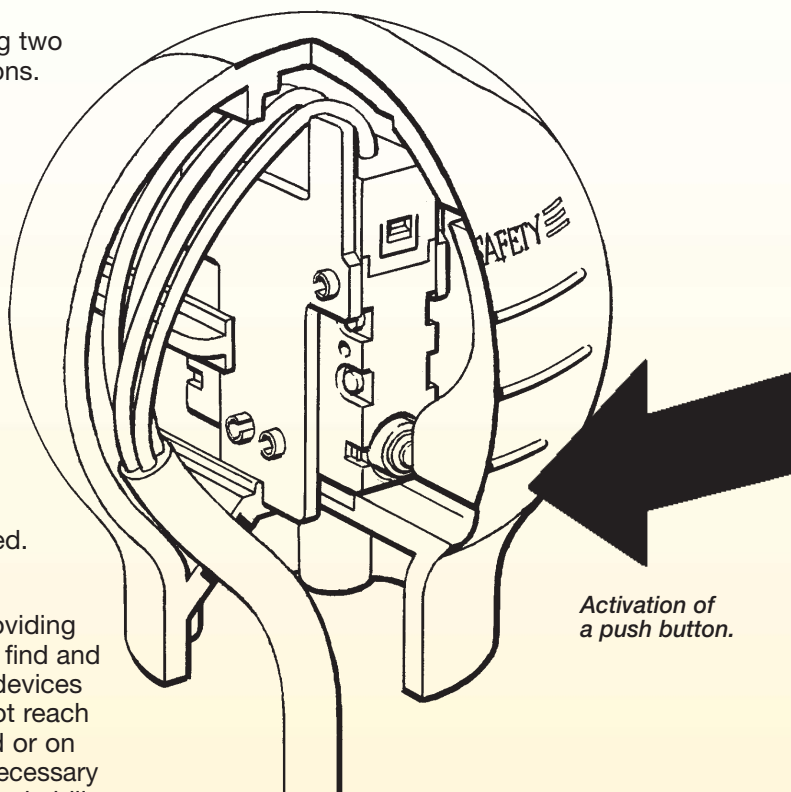
Safeball is available in several versions to meet different environmental conditions and mounting methods.

**JSTD1-A** The standard version with actuators made of plastic and 2 m cable.

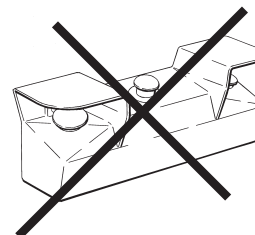
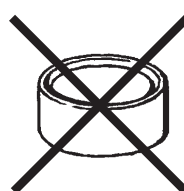
**JSTD1-B** Made as standard version but without cable. Instead it has four wires each 0.20m long.

**JSTD1-C** Same as JSTD1-A but with 10 m cable.

**JSTD1-E** Same as JSTD1-B but with 2 NO contacts.



*A top cover is not needed as activation switches are fitted on each side of the Safeball.*



## JSTD1 Safeball Mounting

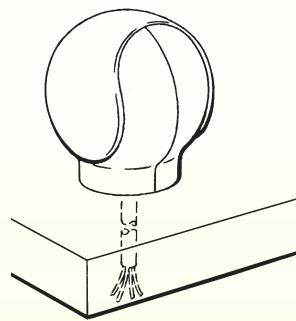
The Safeballs can be mounted in many different ways. They can be mounted on a table, a machine, on a support or wherever suitable for ergonomic reasons. The Safeball can be mounted in a fixed position or on a tilt and rotational support. This flexibility of mounting permits the Safeball to be fitted in the best ergonomic position for the ease of operation by the operator.

The distance requirement between two Safeballs or between a Safeball and a wall or edge of a table depends on how the Safeball is mounted. Safeball can be mounted with four M5 screws or ST4.8 self-tapping screws. If required, the connection cable can be taken out at the side of the lower part of the Safeball. There are two prepared outlets provided for this purpose.

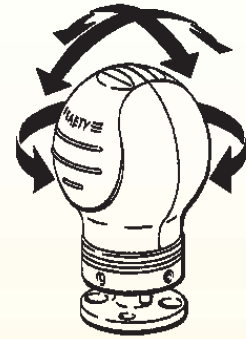
### Mounting Methods

To be an approved two-hand device, both Safeballs must be mounted a minimum distance apart in order to prevent operation of both balls with one hand. Safeballs must be fitted a minimum distance from edges of tables or a wall.

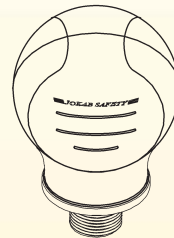
It is essential that Safeballs are correctly installed in order to prevent unintended activation of the devices with part of the body in combination for example with a wall.



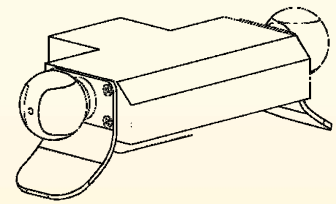
Mounting on a table.



Mounting with ball joint, which can be rotated and angled.



Mounting with 22 or 30 mm threaded adapter

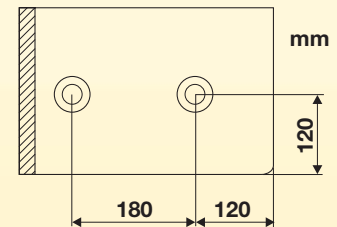
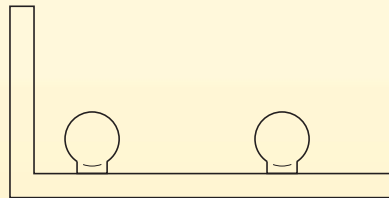


Example of alternative mounting method.

*Note: When Safeballs are mounted in such a way that the distance between them can be adjusted to less than the specified minimum, the mounting screws must be locked to ensure any changes in the distance between the two balls cannot be made.*

### Mounting Distance

Table mounting two Safeballs. In order to prevent cheating, the distances shown are the minimum allowed.



### Safety Distance

The Safety distance is the distance between the Safeballs and the dangerous machine movement. The safety distance requirement can be calculated using the following formula for Safeball according to approving authority and EN 999:

**S = KxT+C where —**

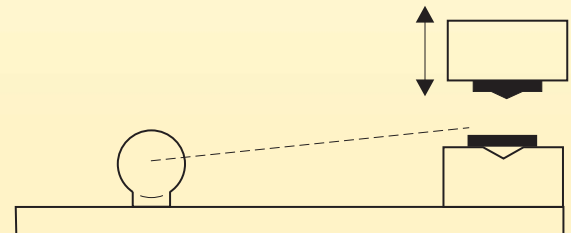
S = safety distance in mm

K = hand speed, 1600 mm/s

T = total stopping time for the dangerous movement  
(including the response time of the safety relays in seconds)

C = Constant = 0 mm for Safeball

*Note: S must never be less than 100 mm.*



*Safety distance is the distance between the Safeballs and the dangerous machine movement.*

## JSTD25 Two-Hand Control Station with Safeball

With a JSTD25 you have a prepared two-hand station that is easy to install, while utilizing the good ergonomics of the Safeball. There are several variants to meet differing needs. All versions meet EN 574, EN954-1 and EN13849-1 and are supplied with the internal connections made to simplify installation.

### JSTD25A/B/D/E for Fixed Installation

JSTD25A, B, D and E are supplied with two Safeballs mounted on steel housing and replaces a traditional two-hand device. It is available with an emergency stop button and ball joint fixtures for the Safeballs.

Three 22mm openings are prepared on the top for buttons or signal lamps. A hatch is supplied for wire routing in the base and securing holes for mounting on the rear. The Safeballs are connected to terminal blocks for the user to connect the external wiring through one of the two inlet alternatives (underneath or at the rear).



*JSTD25A Two-Hand Control Unit with 2 Safeballs*



*JSTD25B Two-Hand Control Unit with 2 Safeballs and Emergency Stop Button*

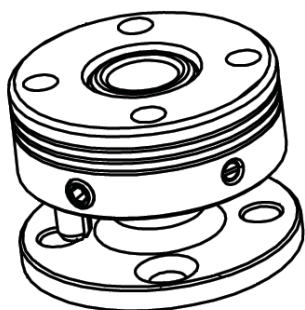


*JSTD25D Two-Hand Control Unit with two Safeballs mounted with two JSM C5 Ball and Socket Table Mounts*

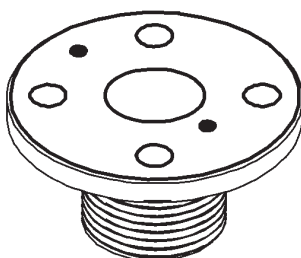


*JSTD25E Two-Hand Control Unit mounted with two JSM C5 Ball and Socket Table Mounted Safeballs and Emergency Stop Button*

## JSTD25A/B/D/E Accessories



*JSM C5 Angled Ball Joint for installation of a Safeball on a table or a steel housing. Included on JSTD25D and JSTD25E (see above).*



*JSNA-SB Adapter for mounting Safeball in any opening designed to hold standard 22 mm or 30 mm devices.*

*JSTS31 Stand with spacer ring for JSTD25A-E*

*JSTS30 Stand without spacer Ring for JSTD25A-E*

*Adjustable Height 850-1100 mm*

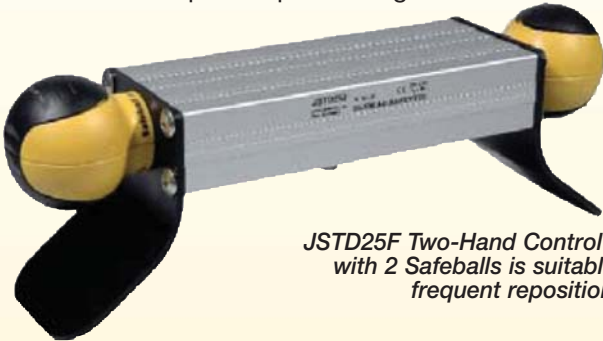




### JSTD25F/G for Mobile Installation

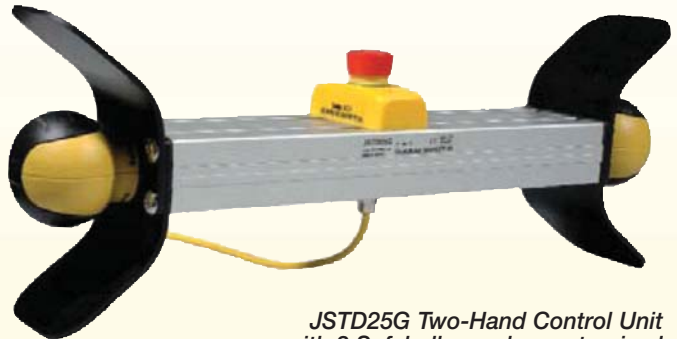
JSTD25F is supplied with two Safeballs mounted on the ends of an aluminum profile, shielded by over hand guards and replaces a traditional two-hand device. It is installed with the aid of grooves in the aluminum profile. It is connected to an M12 connector underneath.

The JSTD25F can be equipped with an external Smile Emergency Stop and an Eden Sensor for position control. Its low weight makes this particularly suitable for frequent repositioning.



*JSTD25F Two-Hand Control Unit with 2 Safeballs is suitable for frequent repositioning.*

JSTD25G is similar to JSTD25F except the dimensions, additional equipment and type of connection can, to a large extent, be customized before delivery. It can also be equipped with doubled protection plates for use in particularly severe conditions.



*JSTD25G Two-Hand Control Unit with 2 Safeballs can be customized for your particular application.*

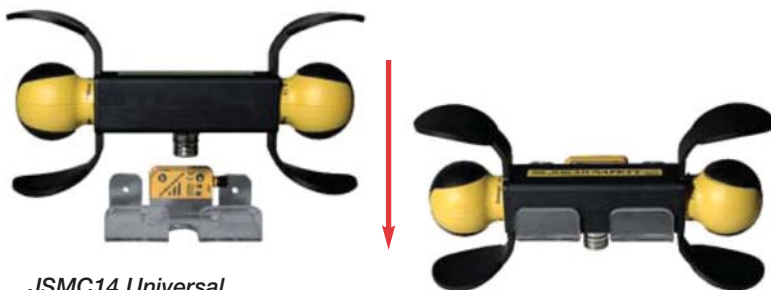
### JSTD25P-1 for Mobile Installation with a Built-In Eden Sensor

JSTD25P-1 is supplied with two Safeballs mounted on the ends of an aluminum profile, shielded by over hand guards and is portable. It includes a built-in Eden Sensor for position control.

The JSTD25P-1 was developed as a portable two-hand device where the response of the machine to operation can vary at different operating stations — since each station can be connected separately. Connection is made via an 8+1 Zylind connector. Accessories include a connector, spiral cable with connector and universal suspension shelf.



### JSTD25P-1 Accessories



*JSMC14 Universal Suspension Shelf*



*JSTK40S 4 m long Spiral Cable with Connector*

*JSTK80S 8 m long Spiral Cable with Connector*

# JSTD20 Conventional Two-Hand Control Device

The conventional JSTD20 two-hand device utilizes a welded steel housing. Two operating push buttons are protected by over hand flanges. Between these push buttons there is space for a emergency push button and two extra controls or indication lamps. Below each of the operating push buttons is one normally open and one normally closed contact. To start and run the machine both push buttons must be activated within 0.5 seconds. If one or both push buttons are released a stop signal is given to the machine, and all contacts must return to their deactivated positions before a new start is allowed.

The design is robust and can withstand harsh environments and long use. The push buttons and contact blocks are easy to assemble for quick and easy installation. The device can be mounted directly on the machine, on the Jokab Safety fencing system or on the JSTS30 floor mount. For use with movable Two hand devices the JSTS31 floor mount, which is provided with a distance ring to fulfill the requirements of EN 574, is recommended. The JSTD20 is available with or without emergency stop push button.

## Why use a two-hand device?

A two hand device can be used when it is necessary to ensure that the operator is outside and must be prevented from reaching into the hazardous area. If the operator decides, after the start signal has been given to the machine, to make an 'after grasp' i.e. try to adjust the part that has been placed inside the machine, then a dual stop signal is given to the machine.

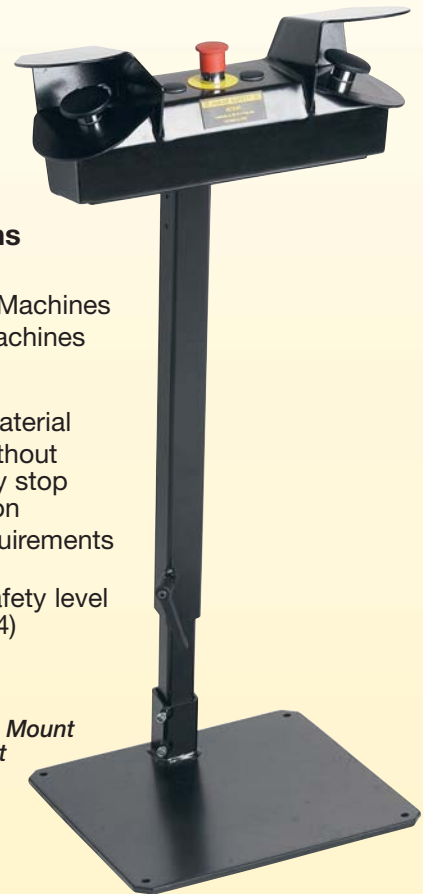
The new JSTD20 is equipped with a new type of large over hand flange according to EN 574. These prevent unintended activation by a knee or elbow.

A two-hand device only protects the operator using it. Large machines operated by several operators can be equipped with one control for each operator.

To calculate the correct safety distance, which depends on the machine's stopping time including the relay's reaction time, the use of the Jokab Safety SMART Stop Time Monitor is recommended.

## Highest Safety Level

Correct connection to a JSBR4 Jokab Safety safety relay ensures the highest level of safety with dual and supervised safety function and requires input activation of both operating push buttons within 0.5 seconds (two hand device type III C according to EN 574 and category 4 according to EN 954-1/EN ISO 13849-1). If the emergency push button is installed it should be provided with two normally closed contacts and be connected to a separate safety relay, e.g. from the RT series or Pluto.



## Applications

- Presses
- Punching Machines
- Cutting Machines

## Features

- Durable material
- With or without emergency stop push button
- Fulfills requirements of EN 574
- Highest safety level (category 4)

*Optional Floor Mount  
with or without  
Distance Ring*

## Regulations and Standards

The JSTD20 is designed and approved in accordance with appropriate standards. Examples of such are: EN 418, EN 574, EN 954-1/EN ISO 13849-1, EN 999, EN 60947-1 and EN 60947-5-1.

## Approvals







# Fox Foot-Operated Safety Switch: Gives the Operator Extra Safety

The Fox, foot-operated safety switch, is used when the operator has to have both hands free during crucial safety device bypass operations. Fox is very safe because of its unique three-position function, doubled contacts and robust safety cover. Fox has been developed for industrial applications—i.e. it has high mechanical durability. Fox is used for set up on presses, bending machines, during adjustment of machinery, etc. Fox is available in single and double pedal versions. The double pedal is used for such tasks as jogging forward and reverse.

## Safety Cover Protects Against Unintentional Actuation

To prevent accidental machine start by a person or falling objects, the Fox was designed with a robust metal safety cover. This feature fulfills the requirements outlined by EN 693 Machine Tools - Safety - Hydraulic Presses 5.4.6.1 that also requires that the switch permit access from one direction only. The robust aluminum safety cover can withstand harsh environments.

## Three-Position Function - Fox 31/32

A safe three-position foot-operated device means that:

- Stop signals are provided in the top and bottom positions.
- Start/ready signals for separate starting are provided in a distinct middle position.
- After a stop in the bottom position, a start or clear signal cannot be given before the reset knob has been operated and then the pedal pushed into its middle position.

## Two-Position Function - Fox 21/22

A two-position foot-operated device means that:

- A stop signal is provided in the top, or pedal released, position.
- A start/ready signal for separate starting is given in the bottom, or fully depressed, position.

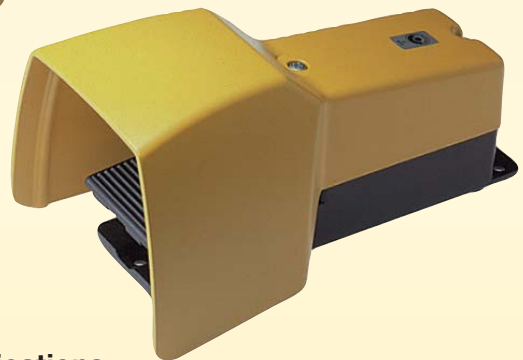
## Safety Level

A high safety level is secured by monitoring the pedal's double contacts with one of our safety relays (see Connection Examples on page 4:46 in the Safety Relay section.)

Furthermore, the third 'emergency' position of the Fox 31/32 pedal enhances safety and is required during bypass for teach mode or jog mode.



*Fox foot-operated switches are available in single and double pedal versions.*



## Applications

- Presses
- Rolls
- Bending Machines
- Machine Adjustment, etc.

## Features

- Control device that frees the hands
- Three-position pedal
- Highest safety level (category 4)
- Robust

## Approvals



## Fox Technical Data (all versions)

Manufacturer.....	JOKAB SAFETY
Ordering Data/Article Numbers.....	see page 8:29
Color.....	yellow and black
Rated Insulating Voltage Ui.....	690 V
Connection Cable Cross Sections	
Single Resp. Multi-Strand.....	1 - 4 mm <sup>2</sup>
Fine Wire with Core End Bush (DIN 46228).....	0.75 - 2.5 mm <sup>2</sup>
Terminal Screws.....	M4
Short Circuit Protection, Fusible Cut-Out (gL).....	25A max.
Insulation Requirements met up to.....	480V~
Ambient Operating Temperature.....	-15°C to +60°C

Switching Capacity AC-15.....	220 - 240 V, 6A 380 - 440 V, 4A 500 V, 3A
-------------------------------	---

Degree of Protection as per  
EN 60529, DIN VDE 0470/1.....IP65

Mechanical Life (Number of Operations)	
Position 2.....	1 x 10 <sup>6</sup>
Position 3.....	3 x 10 <sup>5</sup>

### Material

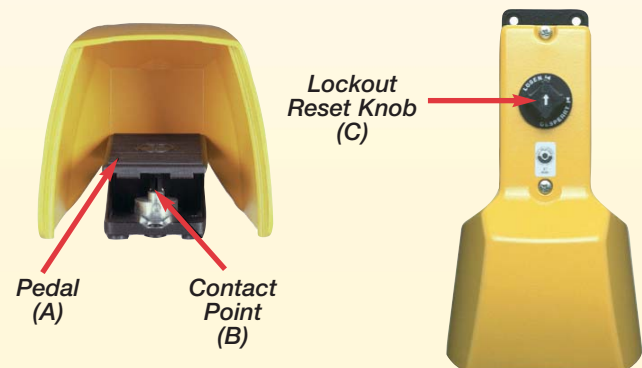
Safety Cover.....	Aluminum
Pedal.....	Shockproof thermoplastic

### Weight (approx. with safety cover)

Fox 31.....	1.7 kg
Fox 32.....	3.0 kg

## Fox Pedal Function

1. The Pedal (A) is in its initial position. The contacts are open and the machine is stopped.
2. The contacts are closed when the pedal (A) is pressed down until the distinct contact point (B) is reached and the machine can now start.
3. In an emergency situation, if the operator presses the pedal to the bottom, a stop signal is immediately sent to the machine (the contacts open). The switch is mechanically locked in this position it has to be reset before a new start can be made.
4. Reset: The contacts will only be disengaged after the knob (C) is reset and the pedal is returned to its initial position (A).



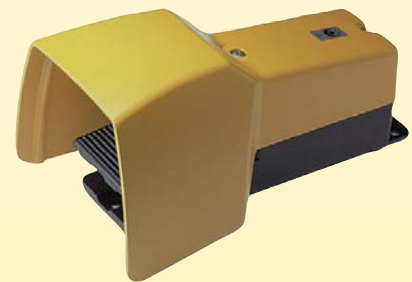
## Fox Versions



**Fox 31**  
Pedal with three-position  
execution and reset knob.



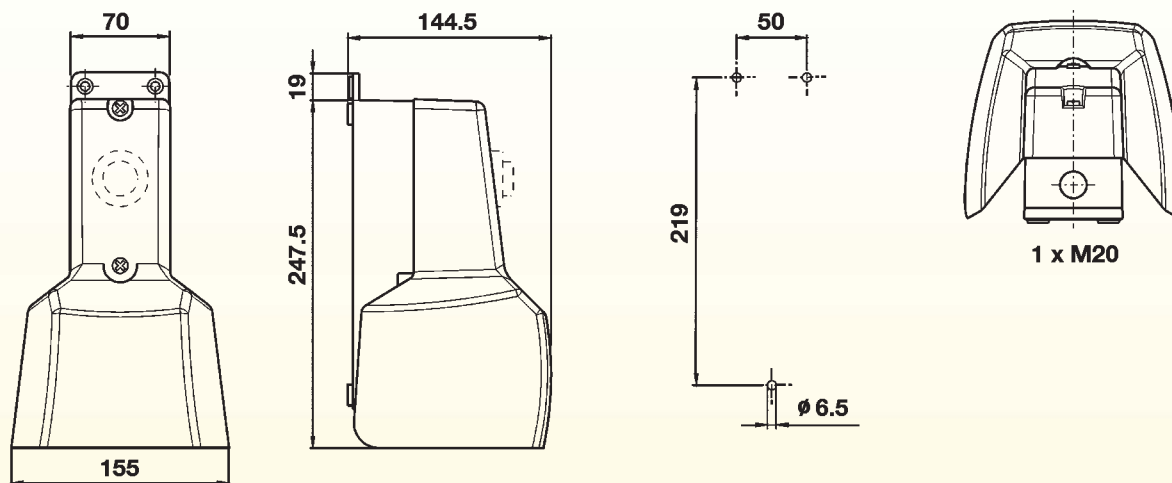
**Fox 32**  
Double pedal with three-position  
execution and reset knob.



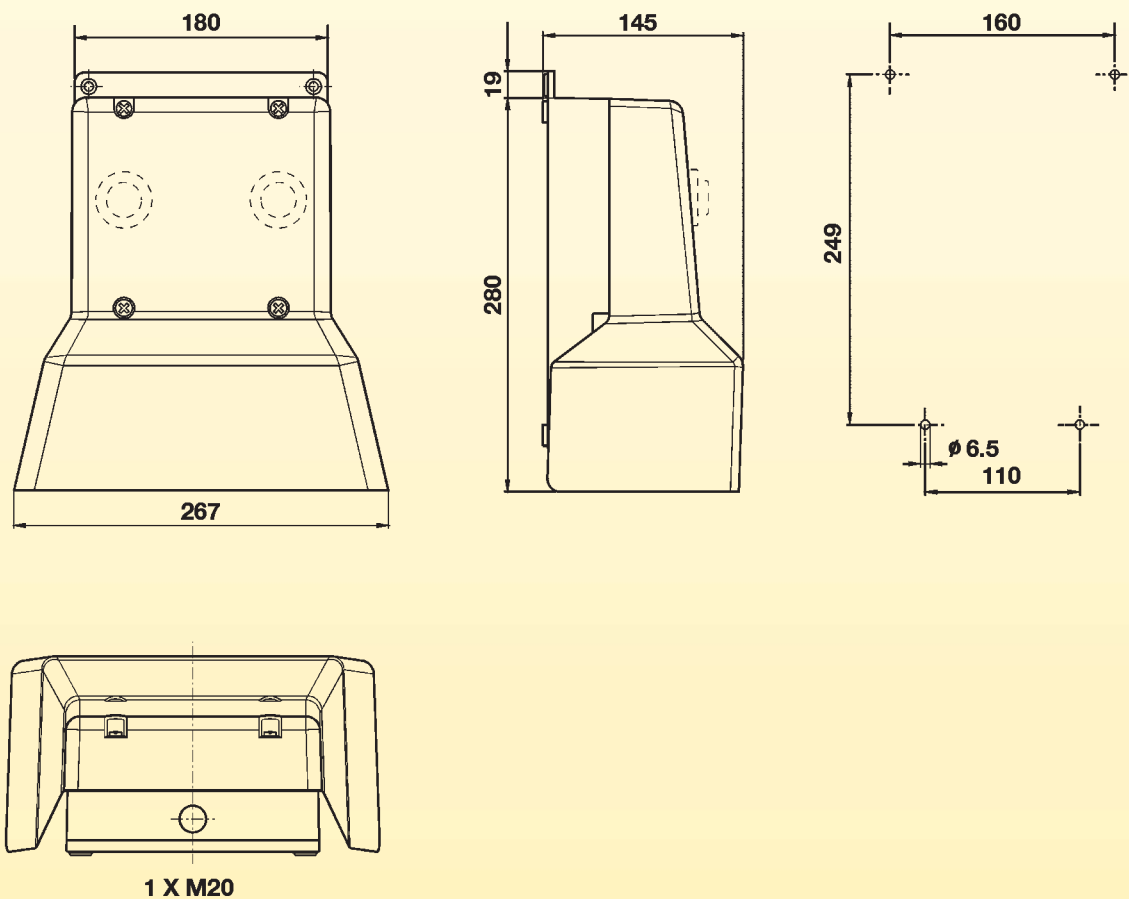
**Fox 21**  
Pedal with two-position  
execution.

*Note: Also available in  
a double pedal - Fox 22.*

## Fox 31/21 Dimensions



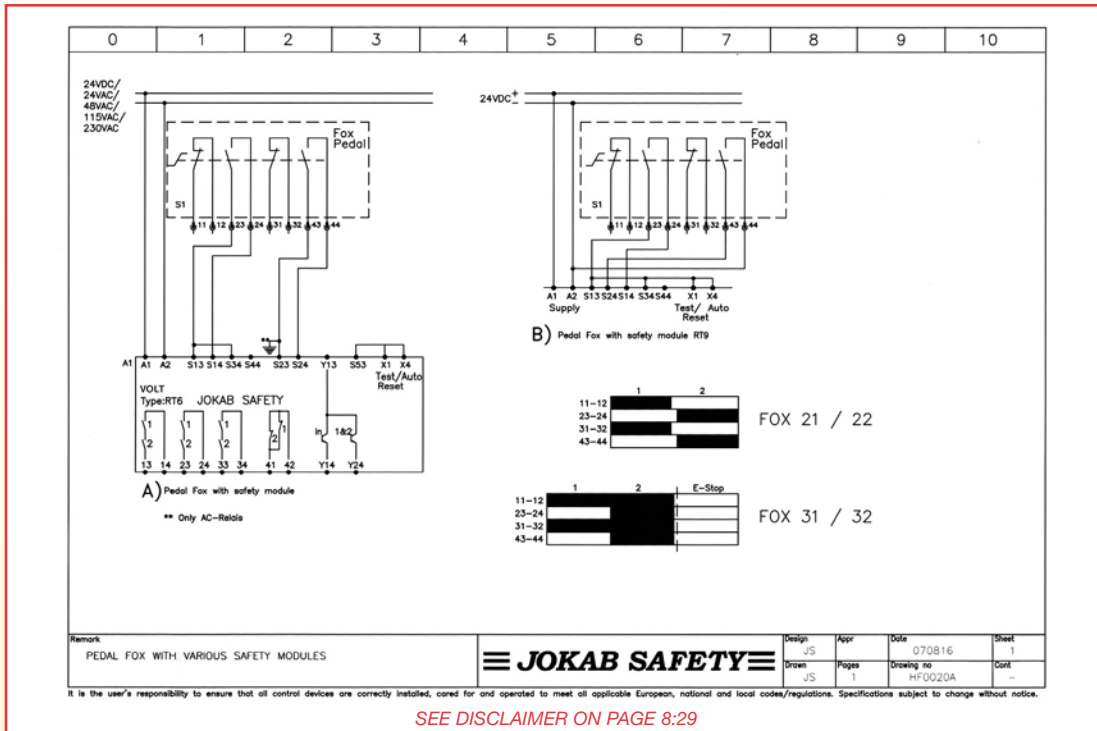
## Fox 32/22 Dimensions





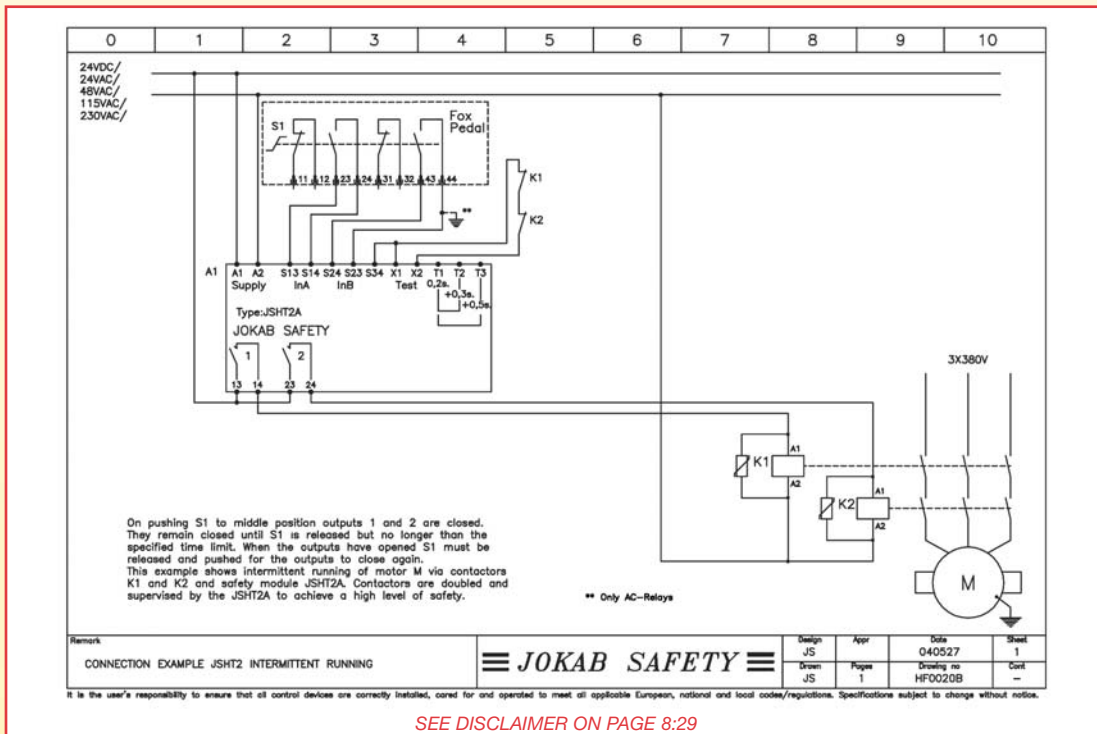
## Fox Connection Example

### Fox Pedal with Various Safety Modules



## Fox 21 Connection Example

### Fox with JHT2 Intermittent Running



## Component List - Three-Position Enabling Device

Designation	Part Number	Article Number	Description
4 Pole Enabling Device with Receptacle	JSNAHD4L-4MR	50-002-72	Three-position enabling device with large bottom plate, red and green function indicator LEDs and 4 pole male micro DC (M12) receptacle.
4 Pole Enabling Device with 6 meters molded Cable and Connector	JSNAHD4L-4MP-6M	50-002-71	Three-position enabling device with large bottom plate, red and green function indicator LEDs and 4 pole micro DC (M12) male straight plug, single ended with 6 meters of yellow oil resistant PVC cable.
4 Pole Enabling Device with 6 meters Cable Only	JSNAHD4L-4C-6M	50-002-68	Three-position enabling device with large bottom plate, red and green function indicator LEDs and 6 meters of yellow oil resistant PVC cable, 18 AWG conductors, OD = 0.29".
4 Pole Enabling Device with 15 meters Cable Only	JSNAHD4L-4C-15M	50-002-02	Three-position enabling device with large bottom plate, red and green function indicator LEDs and 15 meters of yellow oil resistant PVC cable, 18 AWG conductors, OD = 0.29".
4 Pole Interface Cables	JSNA-4PFSE-2M	50-102-26	4 pole micro DC (M12) female straight plug, single ended with 2 meters of yellow oil resistant PVC cable, 18 AWG conductors, OD = 0.29".
	JSNA-4PFSE-5M	50-102-27	4 pole micro DC (M12) female straight plug, single ended with 5 meters of yellow oil resistant PVC cable, 18 AWG conductors, OD = 0.29".
	JSNA-4PFSE-10M	50-102-25	4 pole micro DC (M12) female straight plug, single ended with 10 meters of yellow oil resistant PVC cable, 18 AWG conductors, OD = 0.29".
	JSNA-4PMFEX-2M	50-102-29	4 pole micro DC (M12) male/female straight plugs, double ended with 2 meters of yellow oil resistant PVC cable, 18 AWG conductors.
	JSNA-4PMFEX-5M	50-102-30	4 pole micro DC (M12) male/female straight plugs, double ended with 5 meters of yellow oil resistant PVC cable, 18 AWG conductors.
	JSNA-4PMFEX-10M	50-102-28	4 pole micro DC (M12) male/female straight plugs, double ended with 10 meters of yellow oil resistant PVC cable, 18 AWG conductors.
4 Pole Panel Mount Receptacles	JSNA-4PFR-0.3M	50-102-23	4 pole micro DC (M12) female panel mount receptacle, 1/2" - 14 NPT thread mounting, 18 AWG - 0.3 meter long conductors.
	JSNA-4PFR-1M	50-102-24	4 pole micro DC (M12) female panel mount receptacle, 1/2" - 14 NPT thread mounting, 18 AWG - 1 meter long conductors.
4 Pole Termination Plug	JSNA-4PM-SP1	50-102-38	4 pole micro DC (M12) male termination plug, pins 1 and 2 shorted and pins 3 and 4 shorted, 6" long ball chain with split ring.

Note: For Pluto Version Enabling Devices, add a P1 at the end of the part number — example: JSNAHD4L-8MR-P1.

## Component List - Three-Position Enabling Device

Designation	Part Number	Article Number	Description
8 Pole Enabling Device with Receptacle	JSNAHD4L-8MR	50-002-80	Three-position enabling device with large bottom plate, red and green function indicator LEDs and 8 pole mini-series size II male receptacle.
	JSNAHD4BL-8MR	50-002-34	Three-position enabling device with top and front auxiliary buttons, large bottom plate, red and green function indicator LEDs and 8 pole mini-series size II male receptacle.
8 Pole Enabling Device with 20 feet molded Cable and Connector  <i>Also available in 30 and 40 foot cables.</i>	JSNAHD4L-8MP-20	50-002-77	Three-position enabling device with large bottom plate, red and green function indicator LEDs and 8 pole male mini-series size II straight plug, single ended with 20 feet of yellow oil resistant PVC cable.
	JSNAHD4BL-8MP-20	50-002-29	Three-position enabling device with top and front auxiliary buttons, large bottom plate, red and green function indicator LEDs and 8 pole male mini-series size II straight plug, single ended with 20 feet of yellow oil resistant PVC cable.
8 Pole Enabling Device with 20 feet Cable Only  <i>Also available in 30 and 50 foot cables.</i>	JSNAHD4L-8C-20	50-002-74	Three-position enabling device with large plate, red and green function indicator LEDs and 20 feet of yellow oil resistant PVC cable, 18 AWG conductors, OD = 0.35".
	JSNAHD4BL-8C-20	50-002-25	Three-position enabling device with top and front auxiliary buttons, large bottom plate, red and green function indicator LEDs and 20 feet of yellow oil resistant PVC cable, 18 AWG conductors, OD = 0.35".
8 Pole Interface Cables	JSNA-8PFSE-6	50-102-51	8 pole mini-series size II female straight plug, single ended with 6 feet of yellow oil resistant PVC cable, 18 AWG conductors, OD = 0.35".
	JSNA-8PFSE-12	50-102-47	8 pole mini-series size II female straight plug, single ended with 12 feet of yellow oil resistant PVC cable, 18 AWG conductors, OD = 0.35".
	JSNA-8PFSE-20	50-102-48	8 pole mini-series size II female straight plug, single ended with 20 feet of yellow oil resistant PVC cable, 18 AWG conductors, OD = 0.35".
	JSNA-8PFSE-30	50-102-49	8 pole mini-series size II female straight plug, single ended with 30 feet of yellow oil resistant PVC cable, 18 AWG conductors, OD = 0.35".
	JSNA-8PFSE-40	50-102-50	8 pole mini-series size II female straight plug, single ended with 40 feet of yellow oil resistant PVC cable, 18 AWG conductors, OD = 0.35".
	JSNA-8PMFEX-6	50-102-56	8 pole mini-series size II male/female straight plugs, double ended with 6 feet of yellow oil resistant PVC cable, 18 AWG conductors.
	JSNA-8PMFEX-12	50-102-52	8 pole mini-series size II male/female straight plugs, double ended with 12 feet of yellow oil resistant PVC cable, 18 AWG conductors.

Note: For Pluto Version Enabling Devices, add a P1 at the end of the part number — example: JSNAHD4L-8MR-P1.



## Component List - Three-Position Enabling Device

Designation	Part Number	Article Number	Description
	<b>JSNA-8PMFEX-20</b>	50-102-53	8 pole mini-series size II male/female straight plugs, double ended with 20 feet of yellow oil resistant PVC cable, 18 AWG conductors.
	<b>JSNA-8PMFEX-30</b>	50-102-54	8 pole mini-series size II male/female straight plugs, double ended with 30 feet of yellow oil resistant PVC cable, 18 AWG conductors.
	<b>JSNA-8PMFEX-40</b>	50-102-55	8 pole mini-series size II male/female straight plugs, double ended with 40 feet of yellow oil resistant PVC cable, 18 AWG conductors.
<b>8 Pole Panel Mount Receptacles</b>	<b>JSNA-8PFR-1</b>	50-102-44	8 pole mini-series size II female panel mount receptacle, 1/2" - 14 NPT thread mounting, 18 AWG - 12" long conductors.
	<b>JSNA-8PFR-3</b>	50-102-45	8 pole mini-series size II female panel mount receptacle, 1/2" - 14 NPT thread mounting, 18 AWG - 36" long conductors.
	<b>JSNA-8PFR-6</b>	50-102-46	8 pole mini-series size II female panel mount receptacle, 1/2" - 14 NPT thread mounting, 18 AWG - 72" long conductors.
<b>8 Pole Termination Plug</b>	<b>JSNA-8PM-SP1</b>	50-102-61	8 pole mini-series size II male termination plug, pins 1 and 2 shorted, pins 3 and 4 shorted, pins 5 through 8 not connected, 6" long ball chain with split ring.
<b>European Version Enabling Devices with Receptacle</b>	<b>JSHD4</b>	20-002-00	Three-position enabling device with top and front auxiliary buttons, large bottom plate, red and green function indicator LEDs and 12 pole male ITT Cannon bayonet style metallic receptacle.
	<b>JSHD4D</b>	20-002-01	Three-position enabling device with front auxiliary button, large bottom plate, red and green function indicator LEDs and 12 pole male ITT Cannon bayonet style metallic receptacle.
	<b>JSHD4E</b>	20-002-03	Three-position enabling device with top auxiliary button, large bottom plate, red and green function indicator LEDs and 12 pole male ITT Cannon bayonet style metallic receptacle.
	<b>JSHD4F</b>	20-002-04	Three-position enabling device with large bottom plate, red and green function indicator LEDs and 12 pole male ITT Cannon bayonet style metallic receptacle.
<b>European Version Interface Cables</b>	<b>JSHK5</b>	20-002-00	12 pole ITT Cannon female straight plastic connector, single ended with 5 meters of black PVC cable, 22 AWG conductors, OD = 5.9 mm (0.23").
	<b>JSHK10</b>	20-002-00	12 pole ITT Cannon female straight plastic connector, single ended with 10 meters of black PVC cable, 22 AWG conductors, OD = 5.9 mm (0.23").
	<b>JSHK15</b>	20-002-00	12 pole ITT Cannon female straight plastic connector, single ended with 15 meters of black PVC cable, 22 AWG conductors, OD = 5.9 mm (0.23").

Note: For Pluto Version Enabling Devices, add a P1 at the end of the part number — example: JSNAHD4L-8MR-P1.

## Component List - Three-Position Enabling Device

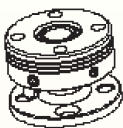
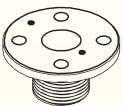
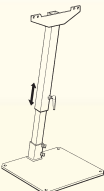
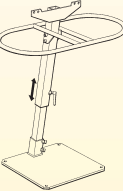
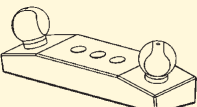

Designation	Part Number	Article Number	Description
	JSHK20	20-002-00	12 pole ITT Cannon female straight plastic connector, single ended with 20 meters of black PVC cable, 22 AWG conductors, OD = 5.9 mm (0.23").
	JSHK25	20-002-00	12 pole ITT Cannon female straight plastic connector, single ended with 25 meters of black PVC cable, 22 AWG conductors, OD = 5.9 mm (0.23").
	JSHD2C	20-001-10	Three-position switch.
Three-Position Enabling Switches	JSHD4H2	20-002-45	Three-position enabling switch for recessed panel or teach pendant mounting.
	JSHD4H2A	20-002-02	Three-position enabling switch for external panel or teach pendant mounting.
Interlock Switch Pendant Holster	JSNA-JSM-2A	50-102-63	Pendant holster for enabling devices. Comes assembled with JSM5A wall mounting bracket, two JSNY5A safety interlock switches, two M20-1/2" NPT metal adapters, hardware for mounting the two JSNY5A safety interlock switches actuators to the enabling device large bottom plate.
Eden Pendant Holster Enabling Device Bracket	JSM53A	20-205-26	Pendant holster for enabling devices. For use with Eva or Eva E safety proximity switch actuator and JSNA enabling devices. Pre-drilled and tapped with 4 mm threaded holes for Eva devices. Comes with M16 threaded opening for enabling device cable or bulkhead connector. Pre-drilled to mount directly to JSNA enabling device handles. For use with JSM54 wall bracket.
Eden Pendant Holster Wall Bracket	JSM54	20-205-28	Pendant holster wall bracket for enabling devices. For use with Adam or AdamE safety proximity switch and JSNA enabling devices. Pre-drilled and tapped with 4 mm threaded holes for Adam devices. For use with JSM53A enabling device holster.
<p><i>Note: For Pluto Version Enabling Devices, add a P1 at the end of the part number — example: JSNAHD4L-8MR-P1. For Enabling Devices with Integrated Eden Pendant Holster, add an E to the part number — example: JSNAHD4BLE-8MR-P1.</i></p>			
Accessories and Spare Parts	JSNA-PCG.5B	50-013-53	Plastic cable gland with 1/2" NPT threads, cable OD range=0.170" to 0.470". Locknut not included.
	JSNA-1-50S	50-013-20	Metal locknut for 1/2" NPT threads.
	JSNY5A	20-022-00	Safety interlock switch with 2 NC, positive opening and 1 NO contact, 10N actuator holding force, and two M20 conduit entries. Actuator included.
	JSM5A	40-005-03	Wall mounting bracket for pendant holster.
	M16-0.5	50-013-43	M16 to 1/2" NPT metal adapter.
	M20-0.5	50-013-21	M20 to 1/2" NPT metal adapter.
	JSNYN1	20-032-00	Spare actuator for JSNY5A safety interlock switch.
	JSM50C	20-205-07	Large bottom plate for enabling devices.
	JSMS8F	41-900-05	Bottom plate screws.

## Component List - One and Two-Hand Control Devices

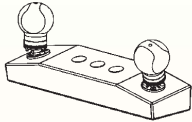
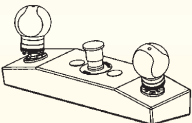
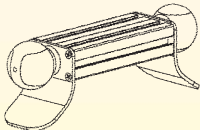
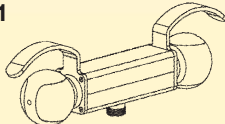
Designation	Article Number	Description
JSTD20_A	20-007-20	2 hand device with conventional operating buttons. Operating push-buttons are 60mm in diameter, black, 9N operating force, 1 NO + 1 NC contacts, rated current of 10A. Buttons are mounted in black painted steel housing designed for two-hand applications. Ingress protection IP65. Terminal blocks within housing for connection to buttons. Highest level of safety can be achieved when using in conjunction with a JSBR4 safety relay for two-hand buttons or a Pluto Safety PLC.
JSTD20_B	20-007-21	2 hand device with conventional operating buttons and e-stop button. Operating push buttons are 60mm in diameter, black, 9N operating force, 1 NO + 1 NC contacts, rated current of 10A. E-stop button diameter is 40mm, 40N operating force, 2 NC positive opening contacts, rated current of 10A. Buttons are mounted in black painted steel housing designed for two-hand applications. Ingress protection IP65. Terminal blocks within housing for connection to buttons. Highest level of safety can be achieved when using in conjunction with a JSBR4 safety relay for two-hand buttons and RT9/RT6 safety relay for e-stop button or a Pluto Safety PLC.
JSTD20_C	20-007-22	JSTD20 housing only, for two-hand device. Steel and black painted. Accepts up to 60mm operating buttons for two-hand device and 40mm e-stop button.
JSTD1_A	20-007-30	Safeball device with 1NO & 1NC independent switches for dual channel switching as a one hand device, maximum load of 30VDC - 2A resistive. Ergonomic design with several grip possibilities, low activation force (approx. 2N) and flexible mounting options. Provides highest level of safety for use in two hand control applications when using two Safeballs in conjunction with a JSBR4 safety relay or Pluto Safety PLC. IP67 protection degree, plastic body, 2 meter molded cable.
JSTD1_B	20-007-31	Safeball device with 1NO & 1NC independent switches for dual channel switching as a one hand device, maximum load of 30VDC - 2A resistive. Ergonomic design with several grip possibilities, low activation force (approx. 2N) and flexible mounting options. Provides highest level of safety for use in two hand control applications when using two Safeballs in conjunction with a JSBR4 safety relay or Pluto Safety PLC. IP67 protection degree, plastic body, 0.25m wires x 4 for direct connection into an enclosure.
JSTD1_C	20-007-32	Safeball device with 1NO & 1NC independent switches for dual channel switching as a one hand device, maximum load of 30VDC - 2A resistive. Ergonomic design with several grip possibilities, low activation force (approx. 2N) and flexible mounting options. Provides highest level of safety for use in two hand control applications when using two Safeballs in conjunction with a JSBR4 safety relay or Pluto Safety PLC. IP67 protection degree, plastic body, 10 meter molded cable.
JSTD1_E	20-007-34	Safeball device with 2 NO independent switches for dual channel switching as a one hand device, maximum load of 30VDC - 2A resistive. Ergonomic design with several grip possibilities, low activation force (approx. 2N) and flexible mounting options. Provides highest level of safety for use in two hand control applications when using two Safeballs in conjunction with a JSBR4 safety relay or Pluto Safety PLC. IP67 protection degree, plastic body, 0.25m wires x 4 for direct connection into an enclosure.



## Component List - One and Two-Hand Control Devices

Designation	Article Number	Description
<b>JSM C5</b> 	20-007-09	Flexible mount for mounting the Safeball to Enclosures, Extrusion or table tops. Includes all hardware.
<b>JSNA-SB Adapter</b> 	50-004-03	Safeball adapter for integration into 22mm or 30mm punched enclosures. Two are required for a Safeball pair.
<b>JSTS30</b> 	20-007-40	Floor mount stand for JSTD20/25 two-hand devices. Black painted steel with adjustable height lever.
<b>JSTS31</b> 	20-007-41	Floor mount stand for JSTD20/25 two-hand devices. Black painted steel with adjustable height lever and distance ring.
<b>JSTS32</b>	20-007-42	Distance ring for JSTS30 Floor mount stand 2 hand device with JSTD1B Safeballs.
<b>JSTD25A</b> 	20-007-50	Safeball each with 1NO & 1NC independent switches, maximum load of 30VDC - 2A resistive. Ergonomic design with several grip possibilities and low activation force (approx. 2N). Buttons are mounted in black painted steel housing designed for two-hand applications. Terminal blocks within housing for connection to buttons. Highest level of safety can be achieved when using in conjunction with a JSBR4 safety relay or Pluto Safety PLC.
<b>JSTD25B</b> 	20-007-51	2 hand device with JSTD1B Safeballs and e-stop button. Safeball each with 1NO & 1NC independent switches, maximum load of 30VDC - 2A resistive. Ergonomic design with several grip possibilities and low activation force (approx. 2N). E-stop button diameter is 40mm, 40N operating force, 2 NC positive opening contacts, rated current of 10A. Buttons are mounted in black painted steel housing designed for two-hand applications. Terminal blocks within housing for connection to buttons. Highest level of safety can be achieved when using in conjunction with a JSBR4 safety relay for two-hand buttons and RT9/RT6 safety relay for e-stop button or a Pluto Safety PLC.
<b>JSTD25C</b>	20-007-52	2 hand device and E-Stop mounting enclosure. Black painted steel housing designed for two-hand applications. Terminal blocks within housing for connection to buttons.

## Component List - One and Two-Hand Control Devices

Designation	Article Number	Description
<b>JSTD25D</b> 	20-007-53	2 hand device with JSTD1B Safeballs and JSMC5 ball and socket mounting supports. Safeball each with 1NO & 1NC independent switches, maximum load of 30VDC - 2A resistive. Ergonomic design with several grip possibilities and low activation force (approx. 2N). Buttons are mounted in black painted steel housing designed for two-hand applications. Terminal blocks within housing for connection to buttons. Highest level of safety can be achieved when using in conjunction with a JSBR4 safety relay or Pluto Safety PLC.
<b>JSTD25E</b> 	20-007-54	2 hand device with JSTD1B safeballs and JSMC5 ball and socket mounting supports and e-stop button. Safeball each with 1NO & 1NC independent switches, maximum load of 30VDC - 2A resistive. Ergonomic design with several grip possibilities and low activation force (approx. 2N). E-stop button diameter is 40mm, 40N operating force, 2 NC positive opening contacts, rated current of 10A. Buttons are mounted in black painted steel housing designed for two-hand applications. Terminal blocks within housing for connection to buttons. Highest level of safety can be achieved when using in conjunction with a JSBR4 safety relay for two-hand buttons and RT9/RT6 safety relay for e-stop button or a Pluto Safety PLC.
<b>JSTD25F</b> 	20-007-60	2 hand device with JSTD1B Safeballs. Safeballs each have 1NO & 1NC independent switches, maximum load of 30VDC - 2A resistive. Ergonomic design with several grip possibilities and low activation force (approx. 2N). Buttons are side mounted 44x88 extruded aluminum profile designed for two-hand applications. Pre-wired to a M12 4 pin connector with protective flanges of the safeballs. Highest level of safety can be achieved when used in conjunction with a JSBR4 safety relay or Pluto Safety PLC.
	20-007-64	Protective plates for Safeball (kit) including fasteners
<b>JSTD25G</b>	20-007-62	2 hand device with JSTD1B Safeballs. Safeballs each have 1NO & 1NC independent switches, maximum load of 30VDC - 2A resistive. Ergonomic design with several grip possibilities and low activation force (approx. 2N). Buttons are side mounted 44x88 extruded aluminum profile designed for two-hand applications. Pre-wired to molded yellow cable with protective flanges of the safeballs. Integrated Smile illuminated E-Stop. Highest level of safety can be achieved when used in conjunction with a JSBR4 safety relay for two-hand buttons and RT9/RT6 safety relay for e-stop button or a Pluto Safety PLC.
<b>JSTD25P-1</b> 	20-007-65	2 hand device with JSTD1B Safeballs. Safeballs each have 1NO & 1NC independent switches, maximum load of 30VDC - 2A resistive. Ergonomic design with several grip possibilities and low activation force (approx. 2N). Buttons are side mounted on black aluminum profile designed for two-hand applications. Pre-wired to a 9 pin Zylind connector with dual protective flanges of the safeballs. Integrated Eva inside housing for Eden sensor holster JSMC14. Highest level of safety can be achieved when used in conjunction with a JSBR4 safety relay or Pluto Safety PLC.
<b>JSTKO-A</b>	20-007-66	Connector for JSTD25P-1
<b>JSTK40S</b>	20-007-67	4m long spiral cable for JSTD25P-1
<b>JSTK80S</b>	20-007-68	8m long spiral cable for JSTD25P-1
<b>JSMC14</b>	20-007-80	Universal suspension shelf for JSTD25P-1

## Component List - Fox 3 and 2-Position Foot Pedals

Designation	Article Number	Description
<b>Fox 31</b>	20-160-01	Safety foot switch Fox 3 position single foot pedal. IP 65 yellow powder coated aluminum housing with shock proof thermoplastic pedal. 2NO and 2 NC contacts with M20 cable entry. Manual reset knob for third position activation.
<b>Fox 32</b>	20-160-02	Safety foot switch Fox 3 position double foot pedal. IP 65 yellow powder coated aluminum housing with shock proof thermoplastic pedal. 2NO and 2 NC contacts with M20 cable entry for each pedal. Manual reset knob for third position activation.
<b>Fox 21</b>	20-160-21	Safety foot switch Fox 2 position single foot pedal. IP 65 yellow powder coated aluminum housing with shock proof thermoplastic pedal. 2NO and 2 NC contacts with M20 cable entry.
<b>Fox 22</b>	20-160-22	Safety foot switch Fox 2 position double foot pedal. IP 65 yellow powder coated aluminum housing with shock proof thermoplastic pedal. 2NO and 2 NC contacts with M20 cable entry for each pedal.

This document and any attachments may include suggested specifications, drawings, schematics and similar materials from Jokab Safety North America, Inc. ("Jokab"). Use of such information and/or documentation by the recipient is subject to and conditioned upon your acceptance of the terms of the General Document Disclaimer which can be found at [www.jokabsafety.com](http://www.jokabsafety.com). Your acceptance of the terms of such General Document Disclaimer is conclusively presumed unless you notify Jokab in writing of your disagreement with the terms of such Disclaimer immediately upon receipt of this document, and you return to Jokab all specifications, drawings, schematics and similar materials provided to you by Jokab in this document.