Original instructions

JSTD20
Two-hand device

Obsolete product!
Please see JSTD25 for replacement.
Read and understand this document

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The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.

Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, and installations subject to separate industry or government regulations.

Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE ABB JOKAB SAFETY PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

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While every effort has been taken to ensure the accuracy of the information contained in this manual ABB JOKAB SAFETY cannot accept responsibility for errors or omissions and reserves the right to make changes and improvements without notice. Performance data given in this document is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of ABB JOKAB SAFETY’S test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the ABB JOKAB SAFETY Warranty and Limitations of Liability.
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1 Introduction

Scope
The purpose of these instructions is to describe the two-hand device JSTD20 and to provide the necessary information required for assembly, installation, operations, checks and adjustments after installation, and maintenance. The instructions also include information necessary to connect JSTD20 to a safety circuit.

Audience
This document is intended for authorized installation personnel.

Prerequisites
It is assumed that the reader of this document has knowledge of the following:

- Basic knowledge of ABB Jokab Safety products.
- Knowledge of enabling devices.
- Knowledge of machine safety.

Special notes
Pay attention to the following special notes in the document:

⚠️ Warning! Danger of severe personal injury!
An instruction or procedure which, if not carried out correctly, may result in injury to the technician or other personnel.

⚠️ Caution! Danger of damage to the equipment!
An instruction or procedure which, if not carried out correctly, may damage the equipment.

NB: Notes are used to provide important or explanatory information.
2 Overview

General description

The JSTD20 two-hand device is intended for use where it is necessary to ensure that the operator’s hands will be kept outside the risk area.

The JSTD20 utilises a welded steel housing where two operating pushbuttons are protected by over hand guards. Between the pushbuttons there is space for an emergency pushbutton and two extra controls or indication lamps. The JSTD20 is available with or without an emergency stop pushbutton.

The device can be mounted directly on the machine, on the ABB Jokab Safety fencing system or on the JSTS30 or JSTS31 floor mount.

Safety regulations

⚠️ Warning!

Carefully read through this entire manual before using the device.

The devices shall be installed by a trained electrician following the Safety regulations, standards and the Machine directive.

Failure to comply with instructions, operation that is not in accordance with the use prescribed in these instructions, improper installation or handling of the device can affect the safety of people and the plant.

For installation and prescribed use of the product, the special notes in the instructions must be carefully observed and the technical standards relevant to the application must be considered.

In case of failure to comply with the instructions or standards, especially when tampering with and/or modifying the product, any liability is excluded.

Function description

To be able to operate the machine with the two-hand device, both the buttons on the device have to be operated within 0.5 seconds of each other. This is called concurrence. Both 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. These demands are supervised by a safety relay or similar.

To achieve the highest safety level with a two-hand device it's necessary to have a safety relay or a safety PLC that fulfill the standard EN 574 according to type IIIc.

The JSTD20 is equipped with a type of large over hand guards in accordance with EN 574. These prevent unintended activation by for instance a knee or elbow.
3 Connections

Each of the operating pushbuttons has one normally open and one normally closed contact. As an option an Emergency stop can be added to the JSTD20. Then there are two more NC-contacts to connect.

Left button

Emergency stop

Right button

Obsolete product!  
Please see JSTD25 for replacement.
4 Installation and maintenance

Installation

1. The installation of the two-hand device must be in accordance with a risk assessment for the individual application. Installation must only be carried out by competent personnel and in accordance with these instructions.

2. Make electrical connections according to the connection diagram. Maximum conductor size is 2.5 mm². Maximum torque is 1.0 Nm.

3. To ensure IP seal, use correct size cable gland and make sure the bottom lid with gasket is firmly attached. Use 4.0 Nm torque for the 8 M5 screws in the lid.

4. Use 4 M10 screws (torque 30-60 Nm depending on quality of screws and nuts) to fasten the station to a stand or another robust structure.

⚠️ **Warning!** All the safety functions must be tested before starting up the system.

Maintenance

**Daily checks:** The function of the two-hand control system should be checked daily. Check that the safety relay is de-energized and the machine is stopped when one or both of the JSTD20 pushbuttons are released. Check that the pushbuttons have a distinct operating function.

⚠️ **Warning!** The safety functions and the mechanics shall be tested regularly, at least once every year to confirm that all the safety functions are working properly.

⚠️ **Warning!** In case of breakdown or damage to the product, contact the nearest ABB Jokab Safety Service Office or reseller. Do not try to repair the product yourself since it may accidentally cause permanent damage to the product, impairing the safety of the device which in turn could lead to serious injury to personnel.

**Caution!** ABB Jokab Safety will not accept responsibility for failure of the switch functions if the installation and maintenance requirements shown in this sheet are not implemented. These requirements form part of the product warranty.

Minimum safety distance

When using a two-hand device the minimum allowed safety distance between the enabling device and the hazardous machine must be calculated. In order to ensure that the hazardous machine motion will be stopped before it can be reached, the minimum safety distance is calculated according to EN ISO 13855 (“Positioning of safeguards with respect to the approach speeds of parts of the human body”).

The minimum safety distance is calculated according to the formula:

\[ S = (K \times T) + C \]

Where

- \( S \) = minimum safety distance (mm)
- \( K \) = approach speed of a hand; 1600 mm/s
- \( T \) = total stopping time for the dangerous movement, including the relay response time in seconds
- \( C \) = constant for possible encroachment while the actuators are operated.

\( C = 0 \) mm due to the large over hand guards.

⚠️ **Warning!** The minimum mounting distance must never be less than 100 mm.
5 Application examples

Application example

Two-hand device, JSTD20A or JSTD20B connected to JSBR4 safety relay and RT6 safety relay (JSTD20B). JSBR4 manages the two-hand control and RT6 managing the Emergency stop.
6 Model overview

<table>
<thead>
<tr>
<th>Type</th>
<th>Article number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSTD20A</td>
<td>2TLA020007R2000</td>
<td>Two-hand device, without emergency stop</td>
</tr>
<tr>
<td>JSTD20B</td>
<td>2TLA020007R2100</td>
<td>Two-hand device, with emergency stop</td>
</tr>
<tr>
<td>JSTD20C</td>
<td>2TLA020007R2200</td>
<td>Only housing, no buttons</td>
</tr>
</tbody>
</table>

Accessories

<table>
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<tr>
<th>Type</th>
<th>Article number</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>JSTS30</td>
<td>2TLA020007R4000</td>
<td>Floor stand</td>
</tr>
<tr>
<td>JSTS31</td>
<td>2TLA020007R4100</td>
<td>Floor stand with distance ring</td>
</tr>
<tr>
<td>JSTS32</td>
<td>2TLA020007R4200</td>
<td>Distance ring</td>
</tr>
</tbody>
</table>

The Jokab Safety branded product with article number beginning with 2TLJ is fully compatible with the ABB branded product with article number beginning with 2TLA.

Dimensions

Blind plug covering Ø22 cable outlet.

NB: All measurements in millimetres.
# Technical data

## Manufacturer

| Address | ABB JOKAB SAFETY  
Varlabergsvägen 11  
SE-434 39 Kungsbacka  
Sweden |

## Electrical characteristics

| Contact material | Silver alloy on brass |
| Termination | Screw clamp terminals, up to cross section 2.5 mm². |
| Utilisation categories | AC-15 240V 3A  
DC-13 240V 0.27A |
| Thermal Current (Ith) | 10A |
| Rated insulation/withstand voltages | 690V rms |
| Contact resistance | 20 mohm |

## General

| Protection class | IP65 |
| Ambient temperature | -10…+70°C (operating)  
-20…+70°C (storage) |
| Size | See drawing |
| Material | Housing: 3 mm Steel  
Gasket: Rubber  
Pushbuttons: Plastic |
| Colour | Black housing  
Black pushbutton  
Black floor stand |
| Weight | JSTD20: 6.4 Kg  
JSTS30: 20 Kg  
JSTS31: 23 Kg |
| Operating pushbutton |  |
| Diameter | 60 mm |
| Operating force | Approximately 9 N |
| Operating distance | 3.5 ± 1 mm |
| Mechanical life | 10⁶ operations |
| Emergency pushbutton (JSTD20B only) | |
| Diameter | 40 mm |
| Operating force | 40 N |
| Mechanical life | 3x10⁵ operations |
| Contacts | Mechanically separated contact blocks |
| Operating pushbutton | 1 NO + 1 NC |
| Emergency pushbutton | 2 x NC |
Obsolete product!
Please see JSTD25 for replacement.

<table>
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<th>Safety-related characteristic data and Conformity</th>
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<tr>
<td>Conformity</td>
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<td>EN ISO 13849-1</td>
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<td>Certifications</td>
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8 EC Declaration of conformity

EC Declaration of conformity
(according to 2000/14/EC, Annex 2A)

We ABB AB
JOKAB Safety
Varlabergsvägen 11
SE-434 39 Kungsbacka
Sweden

declare that the safety components of ABB AB make with
the type designations and safety functions as listed below, is in
conformity with the Directive
2006/42/EG

Authorised to compile the technical file
ABB AB
JOKAB Safety
Varlabergsvägen 11
SE-434 39 Kungsbacka
Sweden

Product
Two hand control device JSTD1 (A-C, E-G),
Safeball
Two hand control desk JSTD25 (A-H, K, P)
Two hand control desk JSTD20 (A-B)

Certificate
11-SKM-CM-0108
11-SKM-CM-0108 (not including the desk)
11-SKM-CM-0109

Notified body
Inspekt A8 Sweden
Box 30100
SE-104 28 Stockholm
Sweden
Notified body No. 0499

Used harmonized standards

Jesper Kristensson
PRU Manager
Kungsbacka 2013-08-10

www.abb.com
www.jokabsafety.com

Original

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