Sub-assemblies for two-hand control consoles

ZHS/03 Catalogue

Sub-assemblies for two-hand consoles
General remarks/background

Function/application
Two-hand control consoles (ZHS) belong to the group of non separating protective devices. Used for machines and plants with hazardous areas, they compel an operator to use both hands to perform a control instruction for a hazardous movement.

Two-hand control consoles are protective devices which require the simultaneous use of both hands as a minimum to be operated, i.e. hands are kept away from the hazardous area through the necessity to keep them both on the operating panel to initiate the operation of a machine or plant and keep it going as long as danger exists.

These consoles must satisfy the safety requirements specified in particular in EN 574 “Safety of machinery – two-hand control consoles”.

As hand-actuated command devices, two-hand control consoles must also satisfy all ergonomic requirements so that frequent use does not tire the operator, i.e. the design must be such as to present no strain to hands and wrists.

Last but not least, the sub-assemblies used should be designed in such a way that in addition to safety needs, operational requirements can also be satisfied in the form of simple assembly and commissioning and the provision of additional functionalities.

Two-hand control consoles are used preferably as protective devices in setting-up and single stroke operations near to the hazardous area as well as for manual feed and withdrawal work in a hazardous area. This will include the following.

- Metal presswork and similar
- Printing and paper processing machines
- Punching and similar metal working machines
- Machines of the chemicals industry
- Machines of the rubber and plastics industry etc.

Types of two-hand control consoles
From the aspect of control technology, i.e. in terms of the degree of safety, EN 574 : 1997 distinguishes between different types of two-hand control consoles.

The choice of type will depend on the application and its risk assessment.

Refer to EN 574 : 1997 for additional information.

Product overview
Even if two-hand control consoles may be integrated into a machine or plant structure, the discrete composition of individual sub-assemblies will usually be the more advantageous choice.

Advantages are to be derived both under aspects of safety and of design, logistics and cost. For example, the very fact that the proof of conformity required by EN 574 : 1997 covers 20 requirements to be satisfied by two-hand control consoles underlines the advantage of simply being able to fall back on ready-to-use sub-assemblies.

This catalogue shows a broad and perfected range of sub-assemblies for two-hand control consoles. It covers

- two-hand operating panels, either supplied already fitted with control devices or as an empty enclosure (in the case of primed panels the control devices are enclosed loosely);
- control actuating devices;
- stands, either with or without spacer ring, height-adjustment, foot-pedal switch, rollers;
- two-hand relay modules;
- customised versions and services as follows:
  - additional bore holes, special paint finishes etc.
  - the installation of additional control devices and illuminated indicator lights (and other electrical and electronic versions depending on design)
  - pre-wiring of the sub-assemblies, also on terminal strips (version SEPG...)
  - installation of two-hand relay modules in the operating panel of the type SEPG05.3... and SEPK02.0... for an additional change upon request
  - complete assembly of operating panel and stand.

Two-hand operating panels
SEP... type series

Versions
Two basic versions of operating panels are offered. One version is made of plastic (Lexan 503R1) and the other of die cast aluminium (Al-226). The range includes different operating panel versions made of sand-cast aluminium which are particularly suitable for special tasks.

All operating panel versions usually have a BG prototype test certificate, UL and CSA approval and satisfy the conformity requirements of EN 574 (up to 20 criteria depending on the manner of counting).

The two hinged basic versions SEPK... and SEPG... are hinged, therefore providing more favourable wiring and equipment conditions. They are characterised by a number of design features as follows:

- special ergonomic arrangement or integration of the control actuating devices
- the possibility to integrate up to 8 control and signalling devices in the central part of the panel in addition to the emergency-stop control device (in the case of SEPK02.0... additional punch-out bore holes)
- the operating panels on stands can be mounted with or without
  – spacer ring
  – height-adjustment
  – foot actuation
  – rollers
- favourable assembly options due to the divided enclosure
- “punch-out” cable outlets
- integration of relay modules of the type SRB-ZHK... with optional assembly brackets possible

The die cast aluminium versions also feature

- an ergonomically designed shelf area to support the edge of hands when actuating mushroom buttons
- the possibility to install terminal strips in the inside part
- a divided enclosure, with long hinges and additional bracket for fitting into the bottom part of the panel.

The two-hand operating panels of the SEP... type series comply with all safety requirements. They have protective hoods above the actuating buttons to protect against accidental actuation. Their design also avoids defeating the protective function by simple means, e.g. actuating with only one hand, with an elbow, a knee, hip, thigh or stomach.

Special features of the operating panels include the tough and ergonomic version made of die cast aluminium and plastic as well as the prototype test certificate from the test and certification office of the iron and metal technical committee of the mechanical engineering employers’ liability insurance association (Fachausschuss Eisen + Metall III der Maschinenbau BG), Düsseldorf. This will not cover customised versions.

SEP... operating panels are suitable for actuation both by fingers and hands. They are intended for stationary installation on a machine or for mobile use in combination with stands of the STP... type series.

Pre-equipment/pre-wiring
Two-hand operating panels of the SEP... type series are supplied either as empty enclosures or with integrated control devices (in the case of the primed operating panels the control devices are enclosed loosely). Standard bore holes are 22.3 mm (30.5 mm upon request). A choice can be made between the different contact arrangements of the control devices as well as between different makes (Elan, Siemens). Refer also to the chapter on control actuating devices.

1) Only oil- and drill-emulsion-resistant to a certain extent. Chemicals resistance table available on request.

Upon request it is also possible to install additional switching devices and/or to provide pre-wiring. It is similarly possible to integrate the two-hand relay module of the type SRB-ZHK into the operating panels of the type SEPG05.3... and SEPK02.0. Customised requests concerning command and signalling devices must adhere to general and machine-related standards and regulations.

Special versions
The operating panels of the types SEPG05.3..., SEPK02.0... and SEP05.2... with a large centre part are particularly suitable for the installation of additional switching devices for extended functions.

SEP07... is particularly suitable if two-hand control operations are performed predominantly in a seated position.

Separate assembly of a two-hand control console is possible using the sub-assemblies SEP09... (observe minimum distance in accordance with EN 574:1997, Annex A, Point A.1 et. seq.).

Remarks
In operating panels of the type series SEP05... and SEP07... the emergency-stop control device is generally supplied with an installation diameter of 22.3 mm. In the case of empty panels the bore hole is also generally 22.3 mm.

A two-hand operating panel is supplied as standard with one control actuating device under each cover hood and one emergency-stop control device (in the case of primed operating panels the control devices are enclosed loosely).

Two-hand operating panels with installation bore holes of 30.5 mm diameter continue to be available as special versions upon request.

Design features
Ergonomically designed, tough aluminium or plastic enclosure with covers above the two-hand operating buttons to protect against unintentional actuation.

Anodised aluminium cover plate on the bottom and rear side.

The two-hand operating panels of the type SEPG05.3... and SEPK02.0... are hinged and do not have a removable aluminium cover plate.

Age-resistant neoprene seals between the aluminium cover plate and enclosure protect the integrated devices from dust, oil and splashwater.

Two fixing bore holes are provided outside the area intended for the installation of the control actuating devices.

The class of protection is IP 65.

Enclosure colour: standard RAL 7004 (signal grey powder coated) for two-hand operating panels made of die cast aluminium and RAL 7035 (dyed light grey) for two-hand operating panels made of plastic. Primed versions and other colours upon request.

Due to the large of number of connection possibilities the product is delivered without glands for cable entries.

All operating panels are suitable for permanent installation to a machine or for mobile use in combination with our STP... stands.

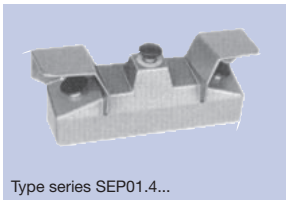
Customisations
Please describe all customisations in writing and using sketches.

Examples:
- No paint finish, just primed
- Special paint finishes
- Fewer or more bore holes
- Additional control and signalling devices
- Name plates or name strips
- Metric threaded bore holes
- Installation of two-hand relay modules of the type SRB-ZHK (only possible in operating panels of the type SEPG05.3... and SEPK02.0...).
- Installation of sensor buttons of the type BWT...


Type series SEPK02.0...


Type series SEPG05.3...


Type series SEP01.0...


Type series SEP01.4...


Type series SEP05.1...


Type series SEP05.2...


Type series SEP07.0...


Type series SEP09.0...

Type designation

Example: **SEP... 01 . 0 . 2 . 1 . 22/95 .S**

- Basic type
- Enclosure shape
- Control device equipment
- Control device make
- Control device installed diameter
- Exclusive OR contact complement of the control actuating devices with separate contact elements
- Customisation (as required)