

**HAAKE**®

## Chave de Bloqueio de Portas



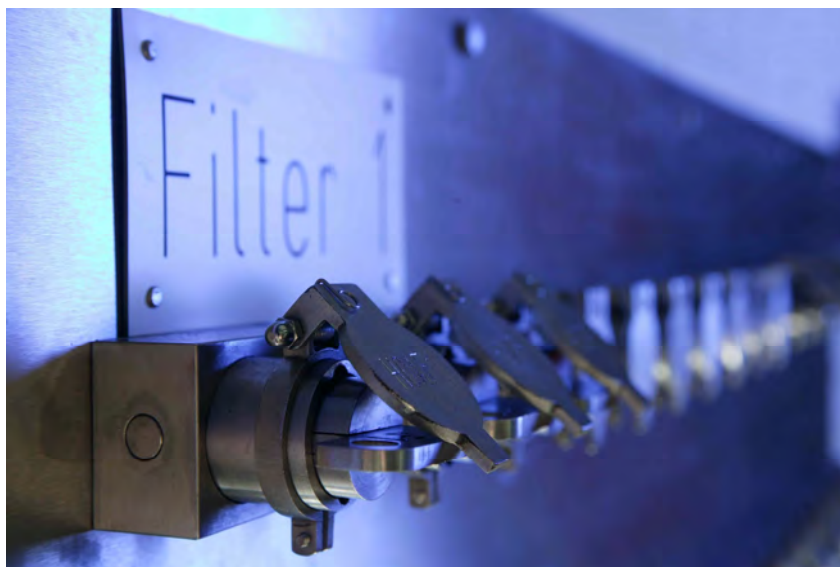
**CSA SOLUÇÕES**  
Control Safety Automation



## Safety of machinery

Hazardous machines and systems are frequently equipped with safety elements (safety doors) with a locking mechanism to protect the operator. Their function is:

- a) to prevent hazardous machine functions if the safety door is not closed and locked,
- b) to keep the safety door closed and locked until the risk of injury has passed.



# ROTARY SWITCH HST-S



The **HST-S** switch is used for isolating the machine. After the voltage has been switched off, the previously trapped key can be withdrawn and used for the next step (e.g. opening a safety door).

The unit is available as a cast aluminium housing or panel-mounted version.

Versions with multiple locks are also available (sheet-steel housing version with up to 2 locks, up to 5 for the panel-mounted version).

Moreover, versions in explosion-proof housings conforming to ATEX are also available (zones 21 and 22 and 1 and 2, documents available on request).

It is important to give consideration to the running-down duration of the drive when utilising this switch type to ensure that the hazard zone can only be reached when the drive is stationary.



HST-SU1  
Panel, one lock



HST-SA1  
Housing, one lock



HST-SU2  
Panel, two locks

## Features / Technical data:

Standard reference:	DIN EN 60947-1
Ambient temperature:	0 - 55°C
Mech. service life:	1 million actuations
Switch approval:	UL, CSA, equivalent to requirements of VDE 0660 Part 107
Material of lock / actuator:	stainless steel

Degree of protection:	housing version: IP 54
Degree of protection:	panel version: IP 2X

Rated continuous current (I <sub>u</sub> /I <sub>th</sub> ):	20A
Rated operating current (AC-15)	5A (240V)
Rated insulation voltage (U <sub>i</sub> ):	690 V
(which can vary in different approbations)	
Rated impulse withstand voltage resistance level (U <sub>imp</sub> ):	6kV
Short-circuit resistance (S <sub>i</sub> ):	max. 25 A (gl)
Connection cable cross section:	2 x 0.5 - 2 x 2.5 mm <sup>2</sup>

Please note: This switch is a control switch, NOT a load-break switch. Version with a load-break switch on request.

## Ordering code

HST-S - - -


Contact versions:  
11 = 1Ö+1S   20 = 2Ö   22 = 2Ö + 2S   40 = 4Ö

Number of locks:  
 (housing version up to 2, panel version up to 5)

Version:  
U = panel version   A = housing version

# ROTARY SWITCH with solenoid HST-M



For certain applications (e.g. machines with running-down duration, access to a safety door controlled by the PLC), it is important that it should not be possible to withdraw the key each time from a key switch. In the case of this series of electrical rotary switches fitted with a solenoid, the key can only be turned and removed when external power is applied (e.g. from a standstill monitor or a timer). A rotary switch with a selectable contact configuration (see below) and a microswitch with positively-opened contacts are actuated by turning and withdrawing the key. The magnet is characterised by 100% ON duration. However, the voltage is applied to the solenoid via a pushbutton in order to avoid continuous heating. The unit is available as a panel version (HST-MU) and in a metal housing (HST-MA). Versions with multiple locks are also available (up to 4 locks for panel and housing version).

A version in an explosion-proof housing conforming to ATEX is also available (zones 21 and 22 and 1 and 2, documents available on request).

## Features / Technical data:

Standard reference:	DIN EN 60947-1, DIN EN 1088
Ambient temperature:	0 - 55°C
Mech. service life:	1 million actuations
Switch approval:	UL, CSA, equivalent to requirements of VDE 0660 Part 107
Material for lock / actuator:	Stainless steel
Degree of protection:	housing version:..IP 54
Degree of protection:	panel version: IP 2X

## Switch data:

Rated continuous current (Iu/Ith):	20A
Rated operating current (AC-15):	5A (240V)
Rated insulation voltage (Ui):	690 V
(which can vary in different approbations)	
Rated impulse withstand voltage resistance level (Uimp):	6kV
Short-circuit resistance (Si.):	max. 25 A (gl)
Connection cable cross section:	switch: 2 x 0.5 - 2 x 2.5 mm <sup>2</sup>
	Terminal block: 0.2 - 2.5 mm <sup>2</sup>

## Solenoid data:

Operating voltage:	DC: 24V / 110V AC: 110V / 230V
Coil value:	attraction: 35 W, retention: 8 W
ON duration:	100 %

## Ordering code

HST-M

—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

Solenoid voltage: 24D = 24VDC, 110A = 110VAC, 230A = 230VAC

Contact versions: 11 = 1Ö+1S  
20 = 2Ö 22 = 2Ö + 2S 40 = 4Ö

Number of locks:  
(housing version up to 4, panel version up to 4)

Version:  
U = panel version A = housing version



HST-MU1  
Panel, one lock



HST-MA1  
Housing, one lock



HST-MU-3  
Panel, three locks

# DOOR INTERLOCK HST-TS



This door interlock comprises a lock element and locking bolt element and can be used on sliding and hinged doors. The unit is made of stainless steel, making it suitable for use in rough environments where it is subject to high stress.

The flexible locking bolt design means the door interlock can also be used without any problems on misaligned and sagging doors. Versions with the locking bolt positioned on the left (L), right (R), top (O) and bottom (U) are available (a total of 4 mounting positions).

The key is inserted and turned to open the safety door. The locking bolt can then be turned through 90° and withdrawn. The key is trapped. Locking the safety door is realised in reverse fashion, with the locking bolt being inserted and rotated. The key is then free and can be removed.

Mounting: M8 tapped blind holes (from behind), M6 locking bolt.

A version with an additional personal safety key (HST-TS2) can also be supplied for applications involving a full body access area. The operator takes the key with him into the hazardous area. The door therefore cannot be locked as long as a person is still in the hazardous area.

## Features / Technical data:

Sturdy design for use in rough conditions

Practically maintenance-free

4 installation versions available

Standard reference:

DIN EN 12100; DIN EN 1088;

Ambient temperature:

-25°C ... +80 °C (as a result of dust cap seal, higher temperatures on request)

Material:

stainless steel

Mounting:

2 x M8 und 2 x M6

Locking force:

5000N (axial)

Mech. service life:

1 million actuations



HST-TS1-R

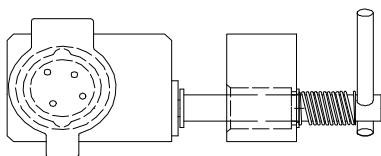


HST-TS1K-R

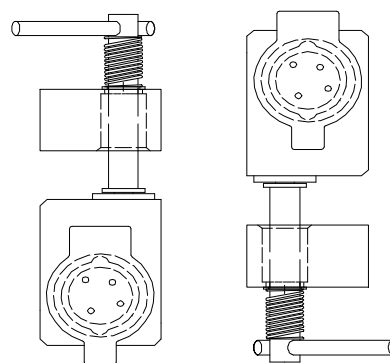
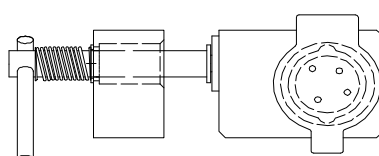


HST-TS2-R

HST-TS1-R



HST-TS1-L

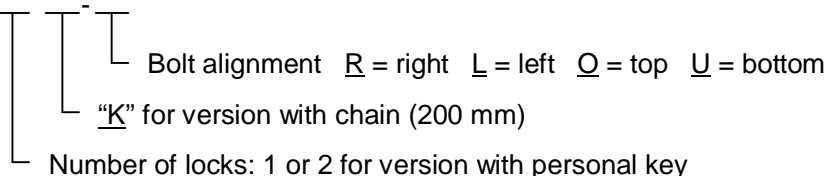


HST-TS1-O

HST-TS1-U

## Ordering code

HST-TS



# KEY EXCHANGE UNIT HST-X



Key exchange units are normally used to multiply the number of keys or for linking certain sequences of a safety system. One or more primary keys are inserted in order to free a desired number of secondary keys.

A key exchange unit is usually used as an interface (e.g. between a switch and the safety doors).

The advantage of this system is the modular design. This means that additional lock elements can be added later (e.g. when another safety door needs to be secured).

A key exchange unit consists of bolt interlocks and comprises x primary modules and y secondary modules. The number of units is limited to 4 modules. For applications in which several keys have to be exchanged the exchange unit HST-W is on offer.

Mounting: M8 tapped blind holes (from behind). Versions with through-holes instead of blind holes are also available.

## Features / Technical data:

Sturdy design for use in rough conditions

Practically maintenance-free

Keys are actuated successively

2 installation versions available (horizontal and vertical)

Standard reference: DIN EN 12100; DIN EN 1088;

Ambient temperature: -25°C ... +80 °C (as a result of dust cap seal, higher temperatures on request)

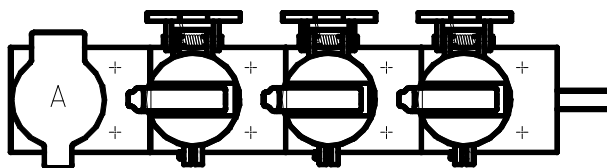
Material: stainless steel

Mounting: 2 x M8

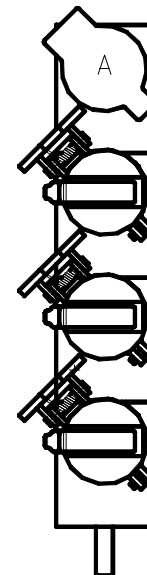
Mech. service life: 1 million actuations



1 x HST-X-E-H  
3 x HST-X-A-H



1 x HST-X-E-H  
3 x HST-X-A-H



1 x HST-X-E-V  
3 x HST-X-A-V

## Ordering code

**(NOTE: always specify the number of primary and secondary locks in the case of exchange units - see example, max. 4 modules total)**

HST-X - - -

Desired mounting position H = horizontal V = vertical

Primary or secondary lock E = primary A = secondary



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# KEY EXCHANGE UNIT HST-W



In addition to the modular key exchange unit, an exchange unit is frequently used which releases the other keys via a cam disk system. This system is used in applications involving a large number of doors or valves (e.g. precipitators).

The objective is the same as for the HST-X exchange unit, namely multiplication of keys or linkage of certain sequences of a safety system. One or more primary keys are inserted in order to free a desired number of secondary keys.

This type of exchange unit can be supplied as an integration unit (e.g. for installation in an existing switch cabinet) and a mounted version in a housing.

Different sizes are available here, depending on the number of keys needed.

Please specify your application and the number of primary and secondary locks required.

### Features / Technical data:

Sturdy design for use in rough conditions

Practically maintenance-free

Keys are actuated successively

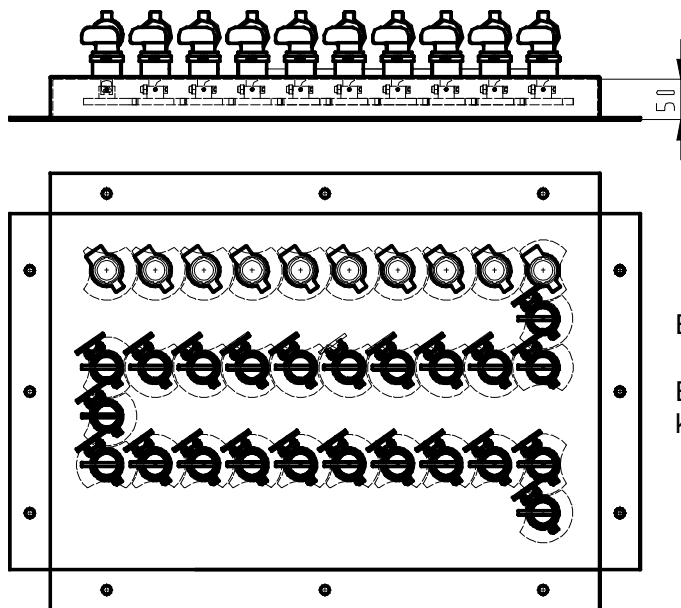
2 installation versions available (mounted and integrated version)

Standard reference: DIN EN 12100; DIN EN 1088;

Dimensions: on request

Ambient temperature: -25°C ... +80 °C (as a result of the dust cap seal, higher temperatures on request)

Mech. service life: 1 million actuations



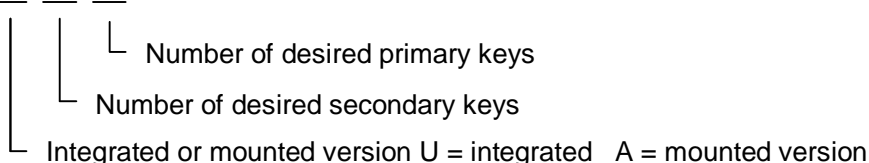
Example: HST-WA-10/23

Exchange unit in housing with 10 primary keys and 23 secondary keys

### Ordering code

(NOTE: always specify the number of primary and secondary locks in the case of exchange units - see example)

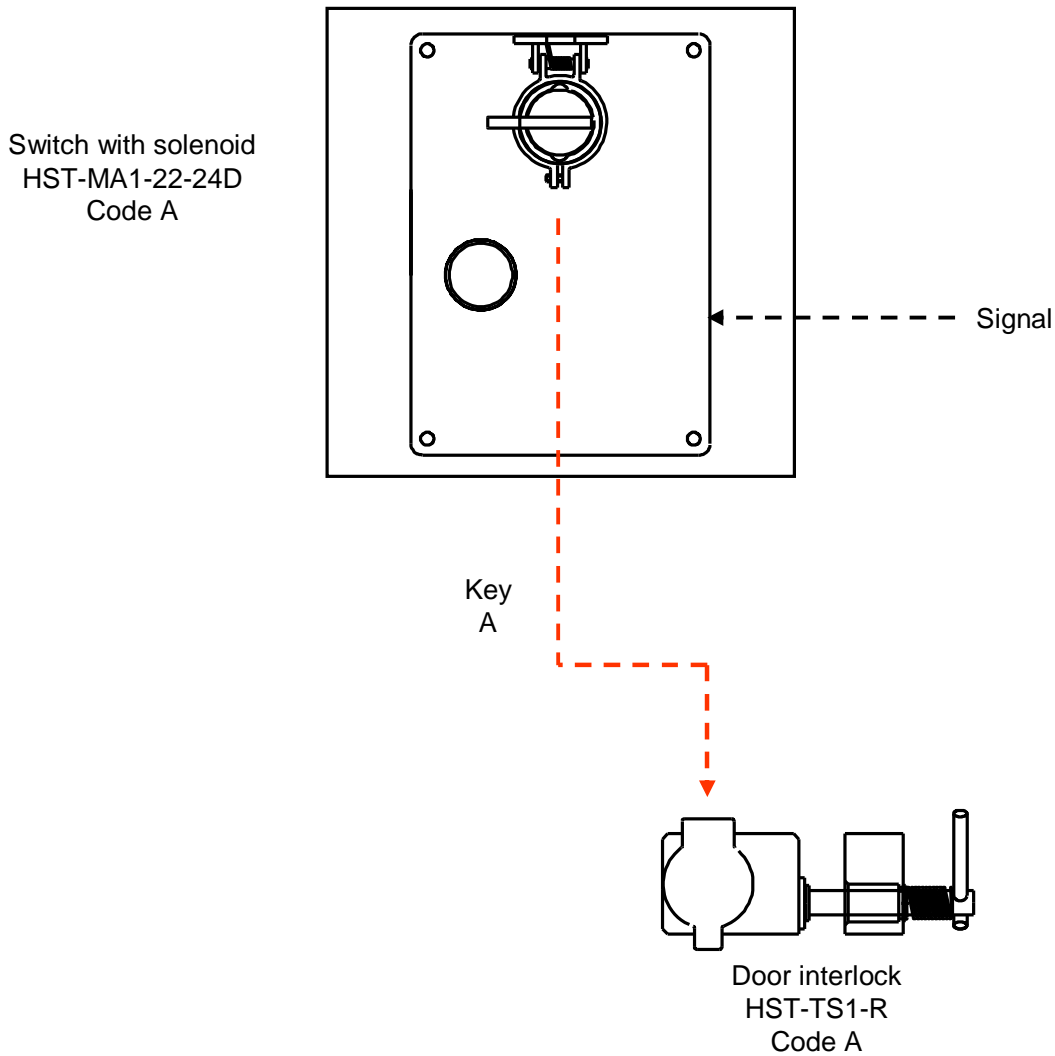
HST-W \_\_\_ - \_\_\_ / \_\_\_



# EXAMPLES



This example shows the shutting down of a machine with running-down time and a single safety door (part-body access). The rotary switch with solenoid HST-M... is used for this purpose. The machine control system generates a signal which is applied to the rotary switch solenoid after the machine has shut down and is stationary. Key A can now be turned, removed and used for opening the door interlock HST-TS... .

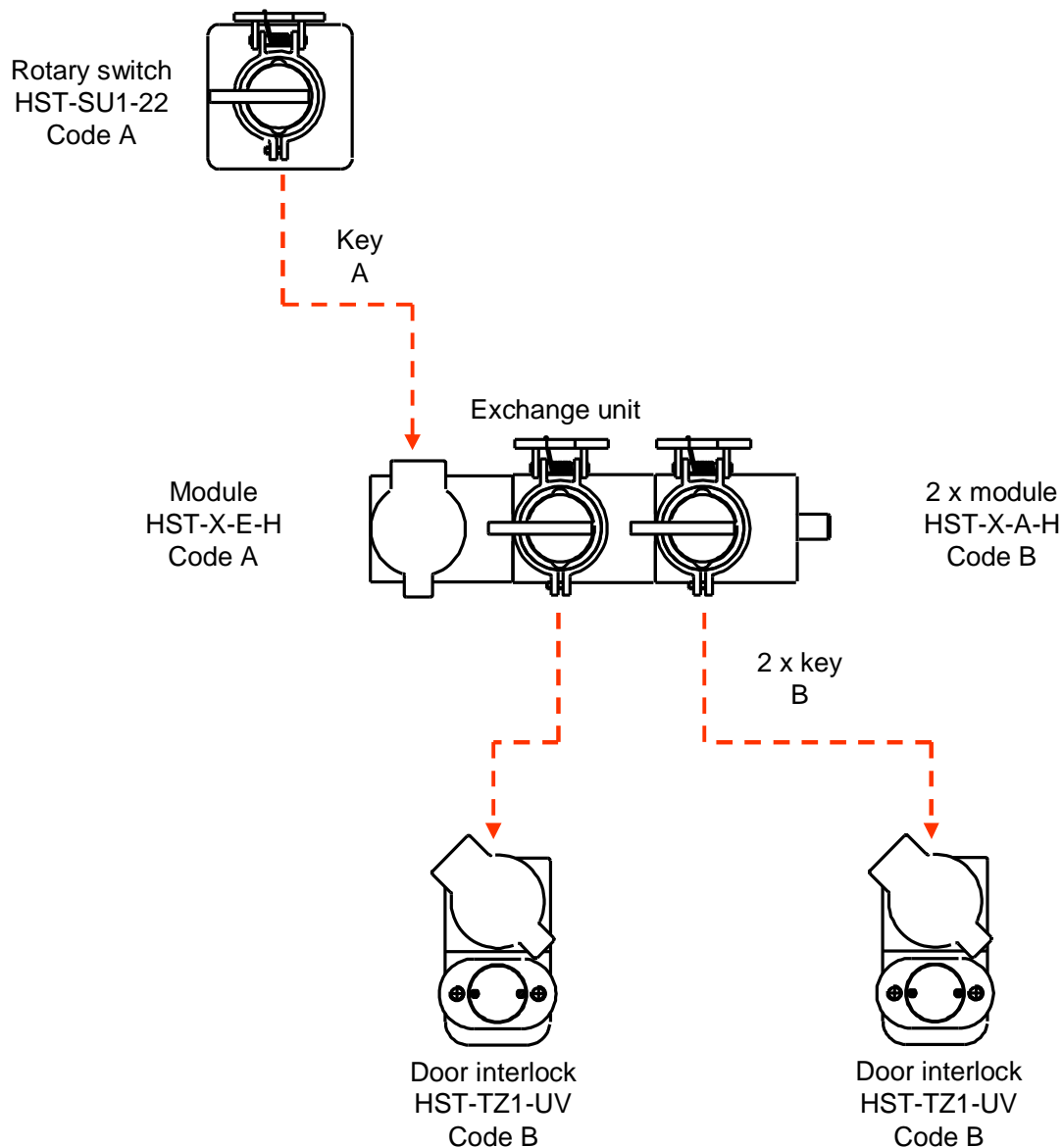




# EXAMPLES



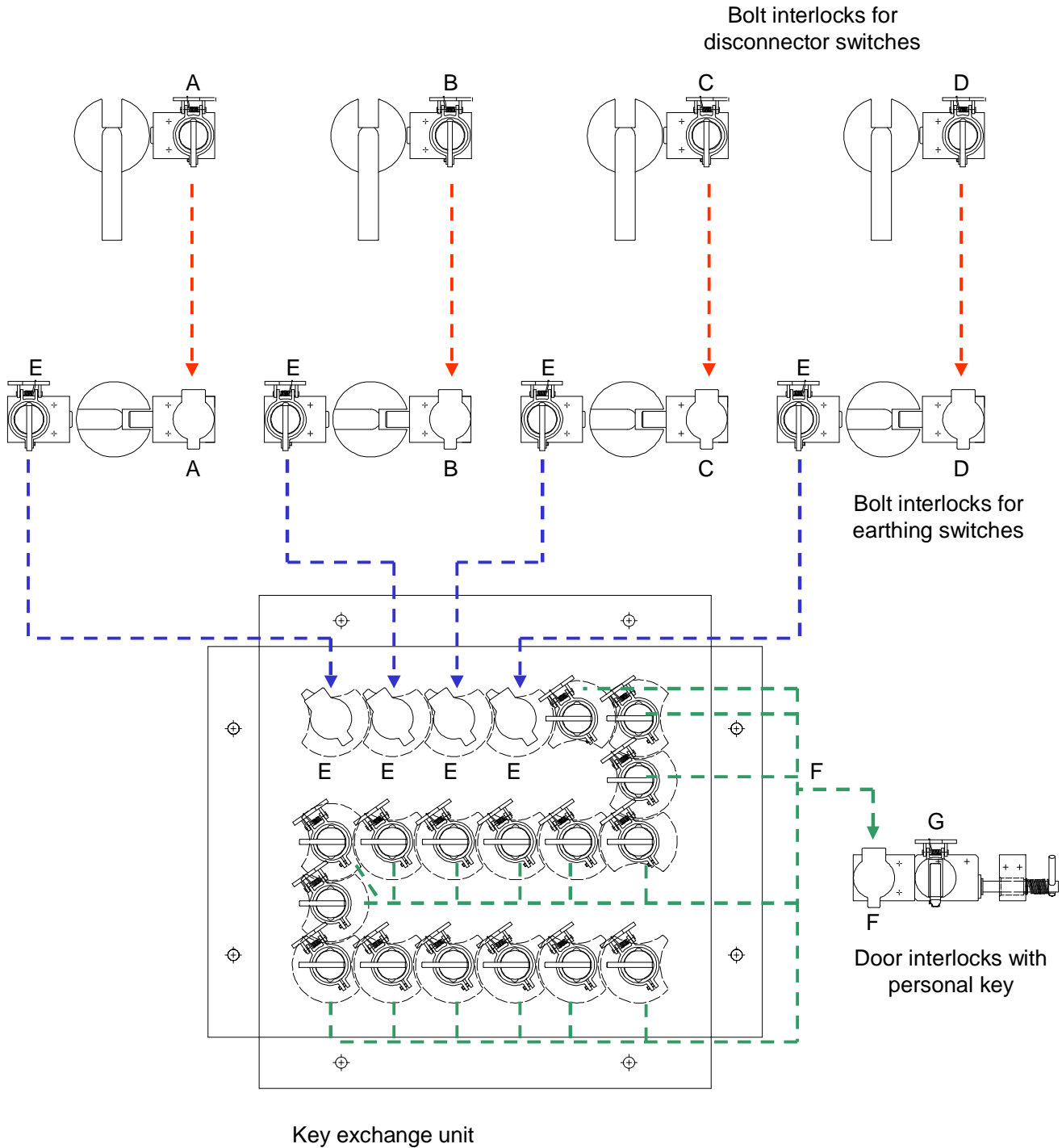
This example shows the shutting down of a machine without running-down time and two safety doors (part-body access). The rotary switch HST-SU... is used for this purpose. After switching-off, key A can be removed from the rotary switch and be used for releasing the two B keys in the key exchange unit HST-X.... The two door interlocks HST-TZ... of the safety doors can be opened with the B keys.



# EXAMPLES



This example shows the more complex shutdown of a precipitator (high voltage) in a power station with disconnecter switches and earthing switches and a multitude of access openings (manholes). Firstly, 4 disconnecter switches should be switched off and interlocked with the aid of bolt interlocks. 4 earthing switches are then activated and interlocked via an exchange unit using these keys. The door interlocks on the manholes (full-body access) can then be opened using the freed keys and a key exchange unit.



# Enquiry

Please copy, fill out and return by fax

Firm: \_\_\_\_\_ Name/Dept.: \_\_\_\_\_ Fax: \_\_\_\_\_

1. Number of doors to be interlocked: \_\_\_\_\_

2. If more than one door has to be interlocked, should it be possible to open ALL doors simultaneously?

- NO      \_\_\_\_\_ →      No exchange unit necessary  
 YES     \_\_\_\_\_ →      Exchange unit necessary

3. Is full-body accessing of the safety door possible (hazardous area can be viewed)?

- NO      \_\_\_\_\_ →      Single interlock version  
 YES     \_\_\_\_\_ →      Interlock with personal key necessary

4. Interlock version (depends on safety door configuration):

- Right     Left      e.g. standard interlock or with chain, slam-type interlock  
 Top       Bottom    e.g. slam-type interlock

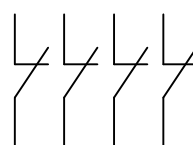
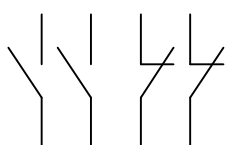
5. What engraving (max. 5 digits) is required on the key, in the lock and on the dust cap? \_\_\_\_\_

6. Has the machine a running-down time, or is access to the safety doors enabled by the machine control?

- NO      \_\_\_\_\_ →      Single key switch  
     Mounted version in housing       Integrated version for panel  
 YES     \_\_\_\_\_ →      Switch with solenoid       24V DC  
     Mounted version in housing       Integrated version for panel       110V AC  
     230V AC

7. Desired contact configuration of built-in switch (for version with or without solenoid)

- 2 N.O. / 2 N.C. contacts       4 N.C. contacts



(N.C means: the contact opens when the machine has been switched off and the key removed.)