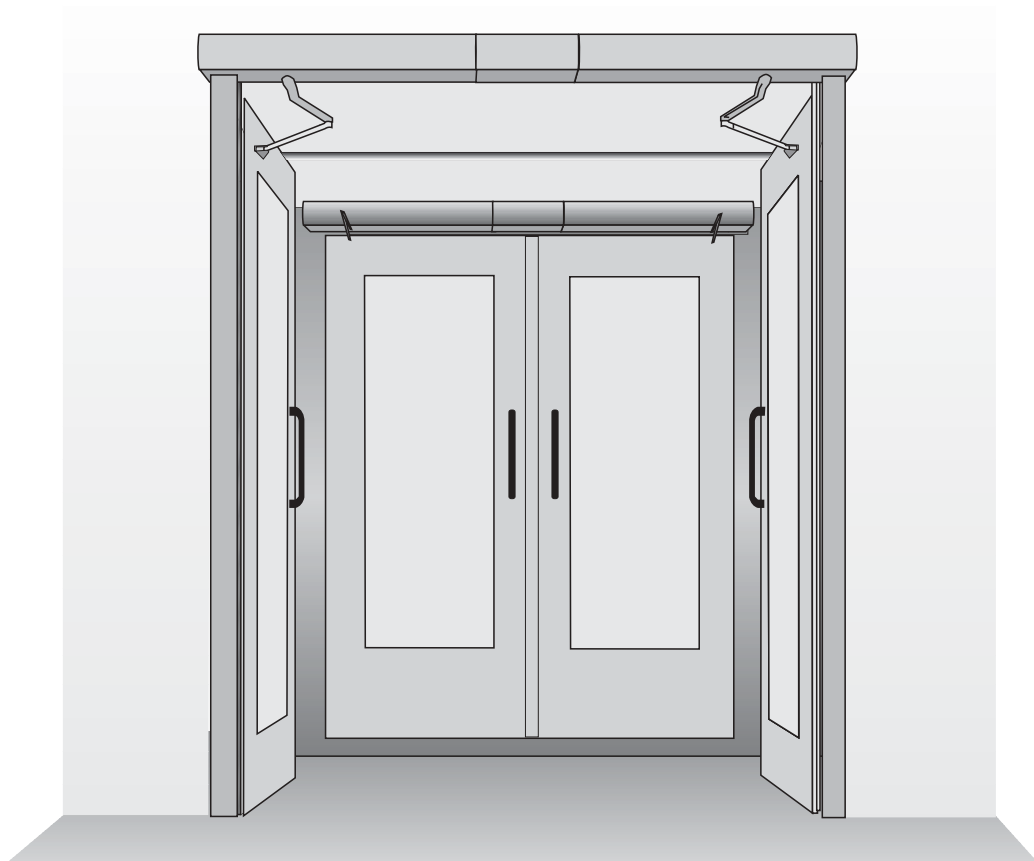


TSA 160

Swing Door Drive for Automatic Doors



Planning document



MATERIALPRÜFUNGSAMT NORDRHEIN-WESTFALEN

Prüfstelle, Überwachungsstelle und Zertifizierungsstelle gemäß § 28 BauO NRW

CERTIFICATE OF CONFORMITY
Reg.-No. 12 9820 - DO 14.1

This is to certify in accordance with § 22 para.2 No. 2 of the Building Code (Landesbauordnung) for the Land Baden-Württemberg, that

the building products: **Swing door drive "GEZE TSA 160 " complies with the requirements**

- set forth by the technical rules in accordance with the Technical Schedule A part 1 (edition 98/2), consecutive number 6.14 of DIN 18 263-4

the manufacturer: **GEZE GmbH
Postfach 1263
D-71229 Leonberg**

the production plant: **GEZE GmbH
Reinhold-Vöster-Str. 21-29
D-71229 Leonberg**


in accordance with the results of the

- product tests carried through by the MPA NRW
- internal product control carried through by the producer
- foreign control carried through by the MPA NRW

The manufacturer is therefore entitled to mark the building products, the packing or the delivery note with the sign of conformity (Ü-sign) in accordance with the ordinance regulating conformity signs.

Dortmund, 12.12.2000




(Dipl.-Phys. Karrenberg)
Leiter der Zertifizierungsstelle

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Fields of application

- Where help is needed:
 - Hospitals, rehabilitation centres
 - Old-peoples homes as well as homes and workshops for disabled persons
 - Public buildings, airports, stations
 - Canteens, waiter's swinging doors
 - Schools, kindergardens

- Where energy has to be saved:
 - Exterior doors, corridor end doors
 - Draught-proof systems
 - Workshops, ateliers, studios

- Where hygiene is required:
 - Food manufacturing shops, pharmaceutical industry
 - Hospitals, surgeries
 - Social rooms, toilets

- Where safety is the first priority:
 - For safety locks and access control
 - For fire prevention purposes (fire and smoke prevention) type TSA 160 F on single-leaf and double-leaf doors

- Where comfort is the choice:
 - In shops
 - In banks
 - In public buildings

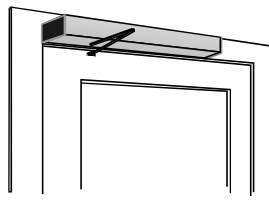
Product features

- TSA 160 is an electronically controlled, electrohydraulic swing door drive.
 - Opening is effected by a hydraulic pump system. The closing process is effected by a closing spring mechanism and adjustable hydraulic valves.
- Small exterior dimensions, i.e. the drive can also be installed with limited space conditions.
 - The closing force is infinitely variable from EN size 3 to 6 acc. to EN 1154 for different leaf widths.
 - Max. leaf width 1400 mm
 - Max. door weight 250 kg
 - Systems can be used for either pushing or pulling versions (hinge side and opposite hinge side)
- For single-leaf doors
 - TSA 160
only one system for door DIN left or DIN right (retrofittable) and usable for either pulling or pushing version
 - TSA 160 F
for smoke and fire-proof doors, pushing
- For double-leaf doors
 - Intermediate cover possible
 - TSA 160 - IS
including invisible closing sequenz control, concealed under the cover
 - TSA 160 F - IS
for smoke and fire-proof doors
 - TSA 160 - IS / TS
automatic 2nd closing leaf, 1st closing leaf with door closer function "permanently open" only.
- The motor is activated by an electronic system:
Start-up as required incl. evaluation of the sensors and the control units in the periphery.
- Same system for all doors in the house (single-leaf, double-leaf, fire-proof doors etc.)
reduces maintenance and installation work as well as stockkeeping of spare parts for mechanical equipment.

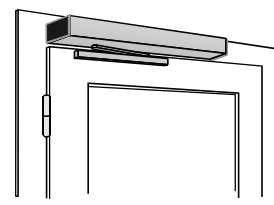
List of product variants

Swing door drive for interior and exterior doors

- TSA 160
pulling or pushing
for single-leaf or double-leaf
single-action doors

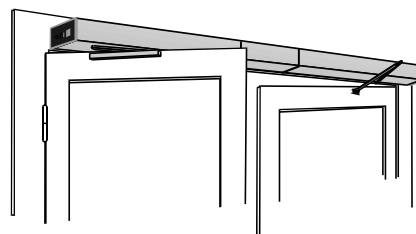


Opposite hinge side pushing
incl. linkage



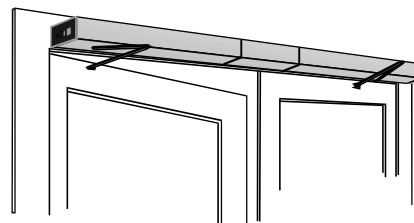
Hinge side, pulling
incl. guide rail

- TSA 160 pulling + TSA 160 pushing
for double-motion, double-leaf doors



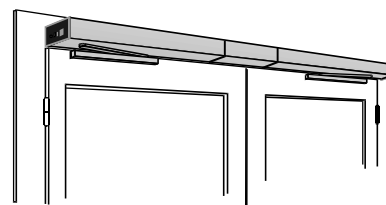
Hinge side pulling incl. guide rail
Opposite hinge side pushing incl. linkage

- TSA 160 - IS
pushing or pulling incl. integrated closer
control on double-leaf doors



Opposite hinge side, pushing
incl. linkage

- TSA 160 / 162
as "master/slave" combination with only one
combined control for both drives of
double-leaf doors



Hinge side, pulling
incl. guide rail

- TSA 160 - IS / TS
pushing or pulling incl. integrated closer control.
2nd closing leaf incl. automatic function,
1st closing leaf incl. door closer function and
permanently-open position

Swing door drive for smoke and fire-proof doors TSA 160 F

The TSA 160 F is a hold-open mechanism in accordance with the guidelines for hold-open systems issued by DIBt *)

The drive system is used to automatically open and close fire-proof doors. The system can be actuated via the usual pulse generators. Besides automatic opening and closing, the doors can also be held in an open position.

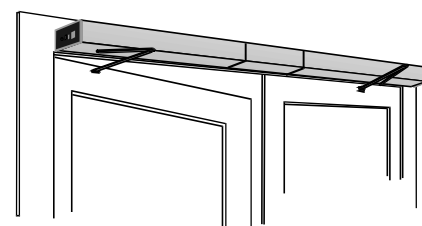
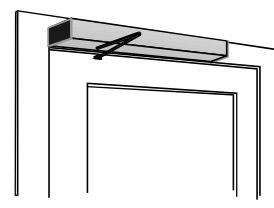
In the case of fire, the automatic function or the hold-open function must be switched off by a corresponding fire alarm system. The mains cable is interrupted by a mains PC board for power cutoff (F-accessories) and the normal door closing function the drive is maintained.

Door closers with automatic opening function (swing door drive) in accordance with DIN 18263 part 4 are therefore an integral part of hold-open mechanisms and require approval by the building supervision authorities.

- TSA 160 F
pushing incl. DIBt-approval for the use on single-leaf smoke and fire-proof doors.

- TSA 160 F-IS
pushing incl. integrated closer control; incl. DIBt-approval for the use on double-leaf doors.

- TSA 160 F - IS / TS
pushing incl. integrated closer control; incl. DIBt-approval for the use on double-leaf doors, 2nd closing leaf incl. automatic function 1st closing leaf incl. door closer function and permanently-open position.



*) DIBt: German Institute for Structural Engineering (Deutsches Institut für Bautechnik)

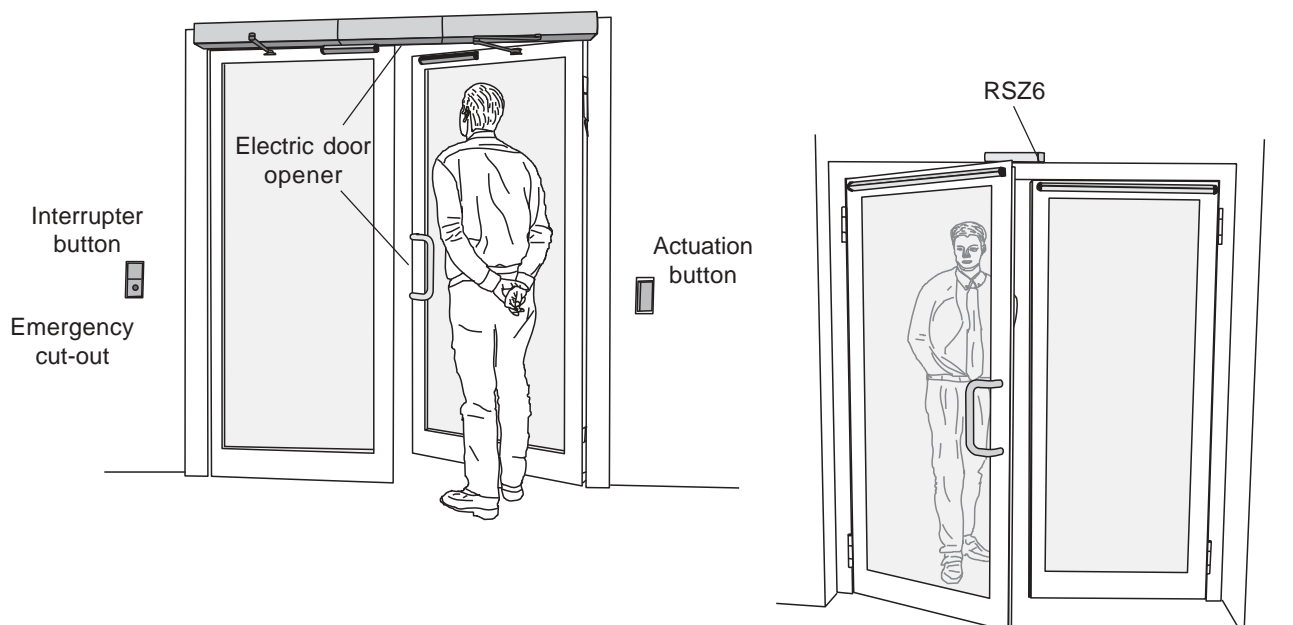
Accessories for TSA 160 F on fire-proof doors

For

- TSA 160 F
- TSA 160 F - IS
- TSA 160 F - IS / TS

the following items are required for the use on fire-proof doors:

- Smoke switch with energy supply e.g. RSZ 6
- probably additional smoke detectors in accordance with the guidelines for hold-open mechanisms
- break key (manually operated release button) in accordance with the guidelines for hold-open
- electric door opener, approved for fire-proof doors (customer)
- Mounting plate TSA 160



TSA 160 Invers and TSA 160 Z Invers

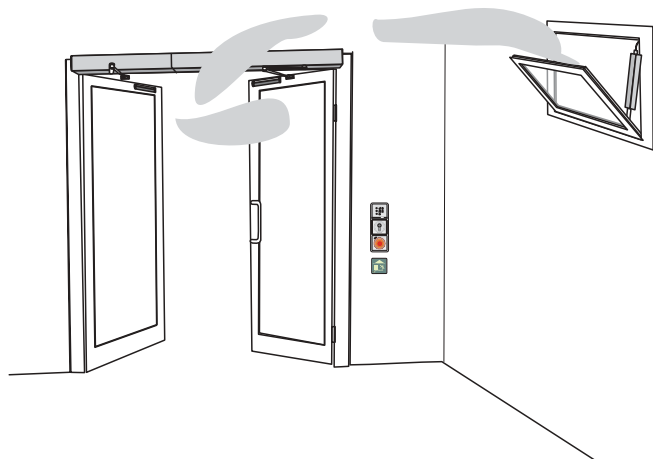
Functional description

Single or double-leaf doors are kept close by the escape route locking mechanism. The door is monitored via an emergency exit system which controls all safety-relevant functions. The doors are electro-hydraulically closed and opened through spring force. This ensures that the doors can be reliably opened and kept permanently open in the case of power failure.



Automatic function

The system is released at the emergency exit system via the key-operated switch (or e.g. card reader), which activates the actuation elements of the automatic door drives. As soon as the sensors respond, the drives open the doors through spring force. Upon lapse of the pre-set hold-open time, the doors close automatically with all safety elements being active. This means that the sensors will stop the movement of the door if a person is within the swing of the door and the door will not close until the obstacle has been removed.



Smoke/heat extracting system
View of the door: opposite hinge side featuring
TSA 160 Z Invers

Smoke/heat extracting system – fresh air

If an alarm has been released by the smoke detector or the fire alarm system the doors are immediately unlocked and mechanically opened to allow secure smoke extraction. The doors remain open until the alarm has been reset.

Escape way function

If the red emergency button is operated by a fleeing person, the doors are immediately unlocked and mechanically opened through spring force. Thus the escape route is free. The operation of the emergency button at the same time releases an alarm which is transmitted to the control centre.



TSA 160 WC-compartments for the handicapped

Functional description

After the pad switch had been operated, the toilet door opens and closes automatically upon lapse of a presettable hold-open time.

By operating the changeover switch inside the toilet cabin, the user activates the illuminated sign "OCCUPIED" outside the compartment as well as the control lamp at the changeover switch. Simultaneously the interior and exterior pad switch is switched off. Thus the door can neither be opened by a third person nor by the user himself by accident.

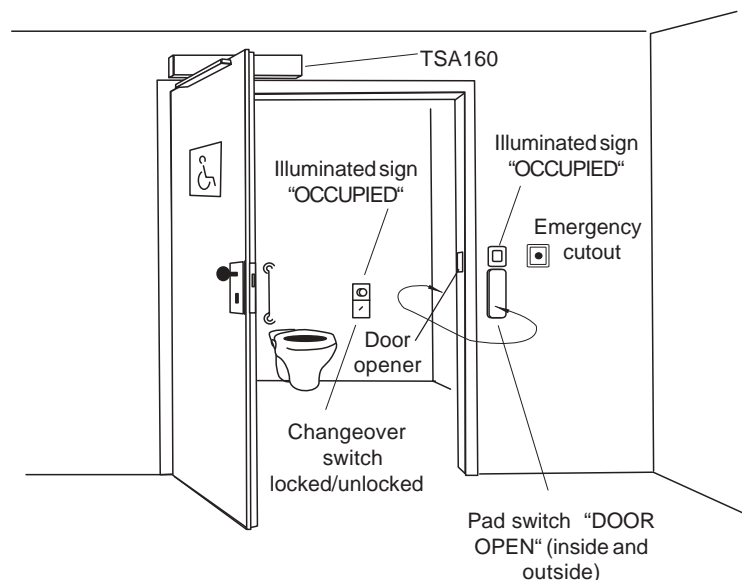
The live door opener prevents that the doors can be opened manually.

To leave the lavatory, the user again operates the changeover switch; the sign "OCCUPIED" outside the compartment as well as the control lamp go out.

By operating the interior pad switch "DOOR OPEN", the door will immediately open.

In the case of power failure the user has the possibility to open the door manually by pushing or pulling it open, the closed-circuit opener is unlocked.

The door can also be opened from inside by operating the door handle even if the system is live. In an emergency the door can also be manually opened from outside using a key or by operating the emergency cutout.



Description of drive

■ Field of application:

- For single-leaf or double-leaf swing doors made of metal, timber, all-glass or PVC u
- Type-tested for the use on single-leaf and double-leaf smoke and fire-proof doors, pushing version
- Outside dimensions of drive: W x H X D = 690 x 100 x 120 mm
- Max. leaf width 1400 mm
- Min. hinge centre

TSA 160 F - IS	1470 mm
TSA 160 F- IS / TS	1260 mm
- Max. weight of leaf 250 kg
- Max. soffit depth

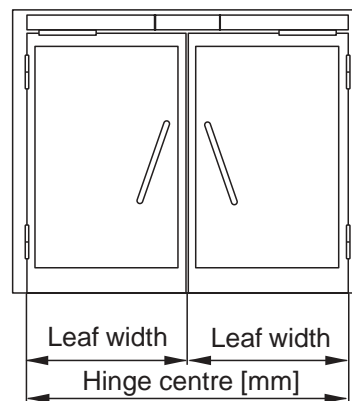
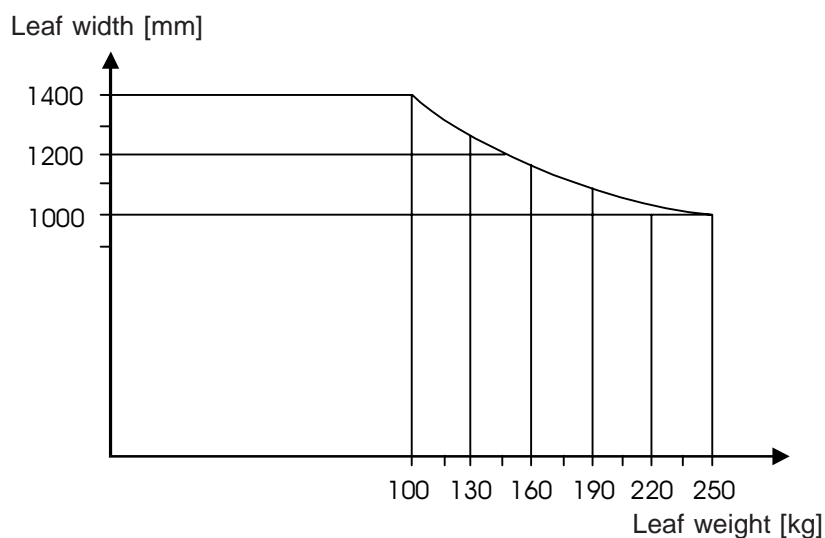
pushing function (TSA 160)	350mm
pulling function (TSA 160 Z)	200 mm
- For dry rooms only, ambient temperature -10° to +60°C

■ Adjustable functions:

- Opening speed: via hydraulic valve
- Closing speed: within range 75° ... 0°
- Opening and closing damping: via hydraulic valve
- Latching action: via hydraulic valve
- Closing force, infinitely: EN size 3 ... 6 (DIN 2 ... 5)
- Approach delay: 0 – 5 seconds
- Adjustable hold-open time: 0 ... 60 s
(via jumper 0...10; 10...60 s)
- Door opening angle: max. 115°

*not required for TSA 160 Invers, the closing force is generated electrically

TSA 160 maximum leaf width as a function of leaf weight



Hint:

The doors have to be equipped with hinges suitable for automatic function.
A door stopper is recommended in any case.

	pushing function		pulling function	
	minimum spring pre-tension	maximum spring pre-tension	minimum spring pre-tension	maximum spring pre-tension
Closer size acc. to EN 1154	Size 3 Size 6			
Closing moments:				
moment exerted by the closing spring when door is closed	20 Nm > 60 Nm		8 Nm 30 Nm	
Opening moments:				
moment exerted by the closing spring when door is opened automatically	150 Nm 90 Nm		70 Nm 40 Nm	
moment that has to be exerted manually to open the door	35 Nm 110 Nm		13 Nm 45 Nm	

TSA 160 minimum and maximum leaf widths, hinge sizes

Single-leaf doors	minimum door width (mm)	maximum door width (mm)
TSA 160 pushing	690	1400
TSA 160 pulling	950 bei AV = 0 mm ^{*1)} 890 bei AV = 60 mm ^{*1)}	1400 1400
TSA 160 Z	690	1400

*1) AV ... drive unit position

Double-leaf doors	minimum hinge size (mm)	maximum hinge size (mm)	minimum leaf width 2nd closing leaf (mm) ^{*2)}	minimum leaf width 1st closing leaf (mm) ^{*2)}	maximum leaf width (mm)
TSA 160 IS pushing	1470	2800	690	400	1400
TSA 160 Z-IS pulling	1470	2800	690	650	1400
TSA 160 IS/TS pushing	1260	2800	690	400	1400
TSA 160 Z-IS/TS pulling	1360	2800	690	650	1400

On smoke and fire-proof doors:

Single-leaf doors	minimum door width (mm)	maximum door width (mm)
TSA 160 F pushing	690	1400

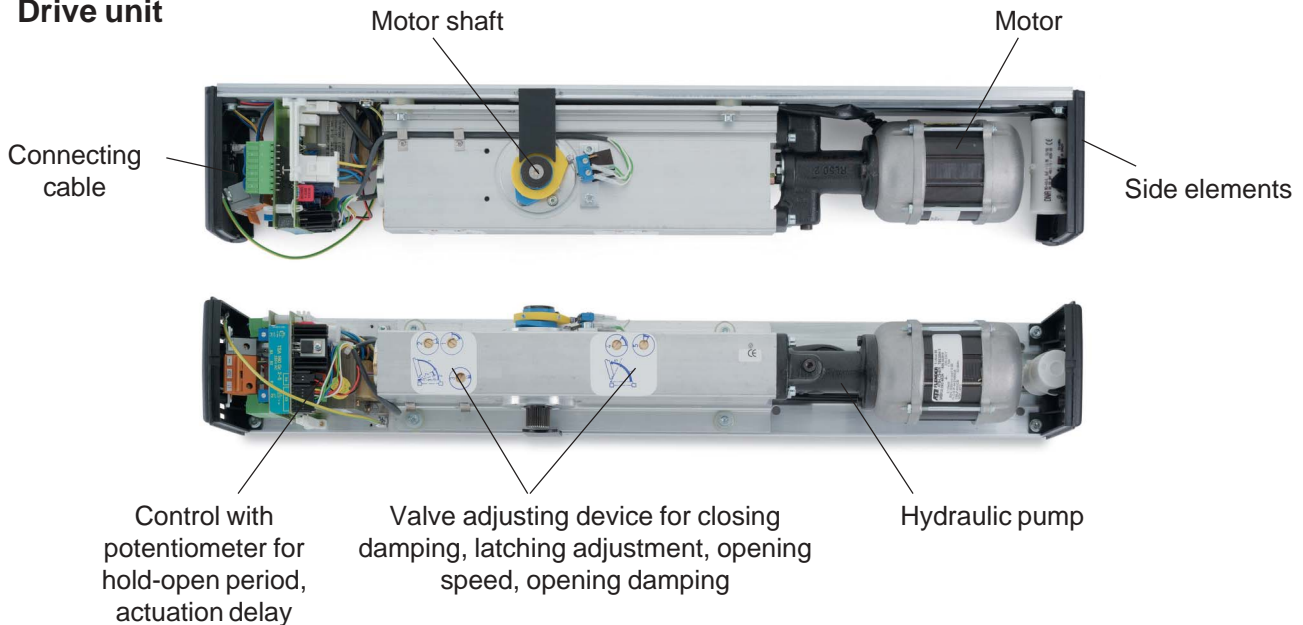
Double-leaf doors	minimum hinge size (mm)	maximum hinge size (mm)	minimum leaf width 2nd closing leaf (mm) ^{*2)}	minimum leaf width 1st closing leaf (mm) ^{*2)}	maximum leaf width (mm)
TSA 160 F-IS pushing	1470	2800	690	400	1400
TSA 160 F-IS/TS pushing	1260	2800	690	400	1400

^{*2)} The minimum hinge size must be observed!

System description

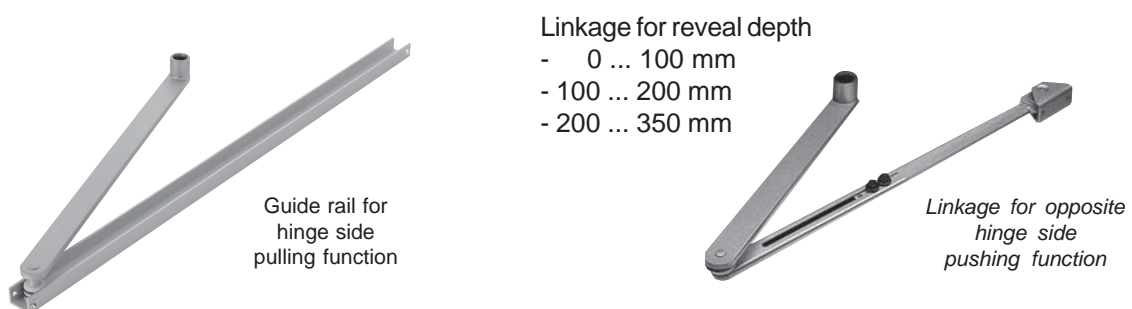
The product is a modular system, consisting of:

■ Drive unit



■ Guide rail or standard linkage

The possible use depends on the type of application. A pushing-version linkage is required for smoke and fire-proof doors with TSA 160 drive (DIN 18263 part 4).



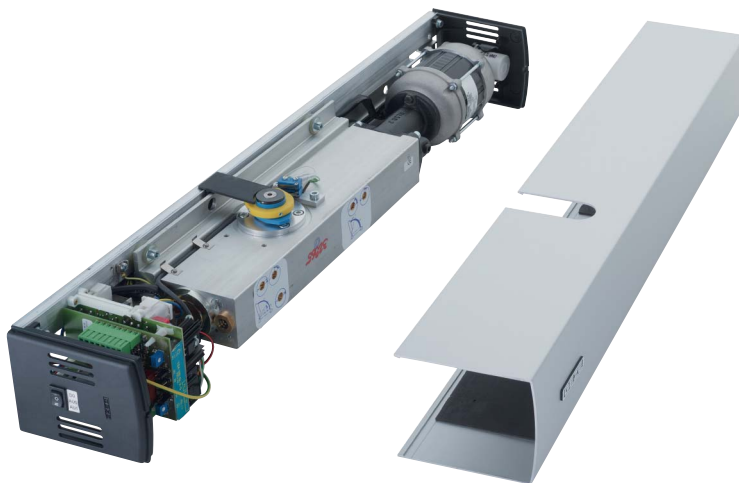
■ Intermediate cover and add-on cover set

All necessary connections and ancillary parts are aesthetically covered

- Intermediate cover for optical and functional connection of two drives.
- Add-on cover set for single-leaf systems to extend to full door width



Technical Features

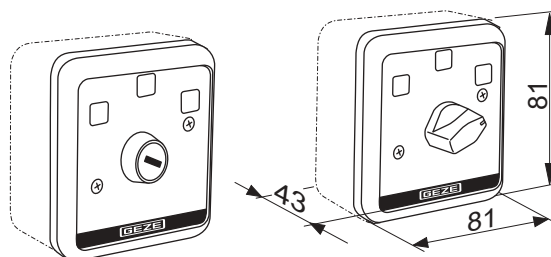


- Max. leaf width: 1400 mm
- EN size: EN 3 to EN 6 (DIN size 2 ... 5)
- Max. leaf weight: 250 kg
- Dimensions: Length 690 mm
Height 100 mm (without spindle and lever)
Depth 120 mm (mounting plate plus 8 mm)
- Closed position of door: Closing pressure by spring action
- Power supply: 230 V AC, +10%/-14%, 50/60 Hz
- Power consumption: 200 VA with 230 V AC
- The motor is switched off as soon as the preset open position of the door is reached or upon lapse of the preset motor running time.
- Motor temperature control by integrated thermoswitch.
- Power failure manual door closer function
hydraulically controlled closing
- Integrated programme position II = automatic function
position I = permanently open
position 0 = off
- Supply voltage for peripheral appliances: 24 V DC, 800 mA
- Weight of drive: ca. 13 kg

Connection possibilities for actuation elements

all known approach monitor elements can be connected, e.g.:

- Radar movement detector for temperature-independent response, even direction sensing
- Infra-red movement detector
- Passive infra-red movement detector
- Pushbuttons of all kind, such as Code-card reader, key-operated switch, radio control unit etc.
- Door opener:
24 V DC open-circuit or closed-circuit principle *)
24 V AC open-circuit principle
- Lock switch contact:
Must be installed in strikeplate if the door is locked manually
- Internal programme switch
(external as an option) also available as key-operated programme switch, with 3 positions:
 - Off
 - Automatic operation
 - Permanently open



Available as flush or surface-mounted version

*) Explanation:

Open-circuit principle

Typical application: entrance door, compulsory for fire-proof doors

The locking process is made by the open-circuit principle, i.e. the door remains closed as long as the lock is not live or actuated. The door is unlocked either by short-term actuation or permanent contact (permanently open). In the case of power failure the door remains locked and can only be opened mechanically via the cylinder or the door handle.

Closed-circuit principle

Typical application: RWS system

The door is locked as long as the system or the door opener is live. To open the door the circuit is closed for a short time by willingly breaking the contact. The holding magnet of the door opener falls off and the door is released.

Breaking of circuit means permanently open.

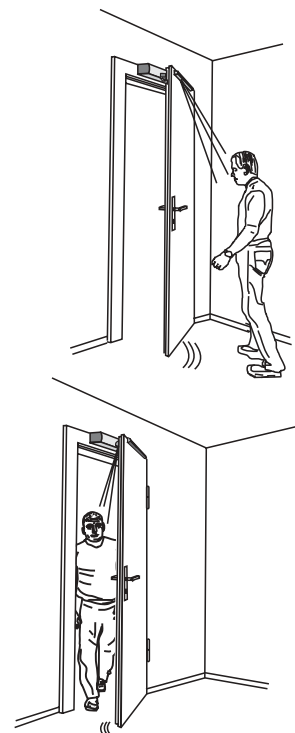
In the case of power failure the door is forcibly unlocked.

Safety sensors

Field of application

Safety sensors are used to monitor the swiveling area of automatic doors. The door stops moving as soon as one or several persons step within the detection range of the *sensor*.

- If the safety sensor "OPEN" (SA) is used, the door movement stops as soon as the sensor detects an obstacle. Wall recognition possible.
- The safety sensor "CLOSE" (SZ) actuates the drive of the closing door and opens them again.



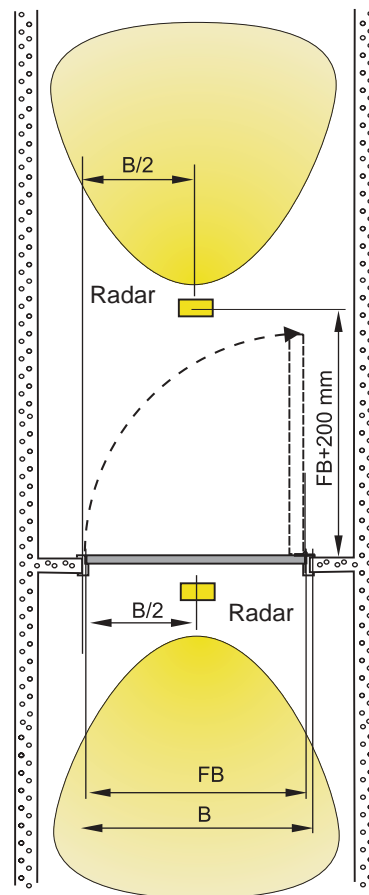
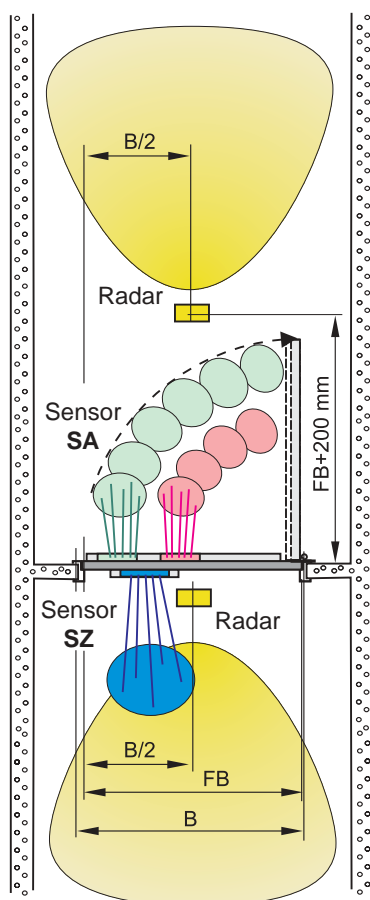
Incl. radar, on both sides and

SA = Safety sensor "OPEN"

SZ = Safety sensor "CLOSE"

Incl. radar on both sides

safety sensors
AIR16

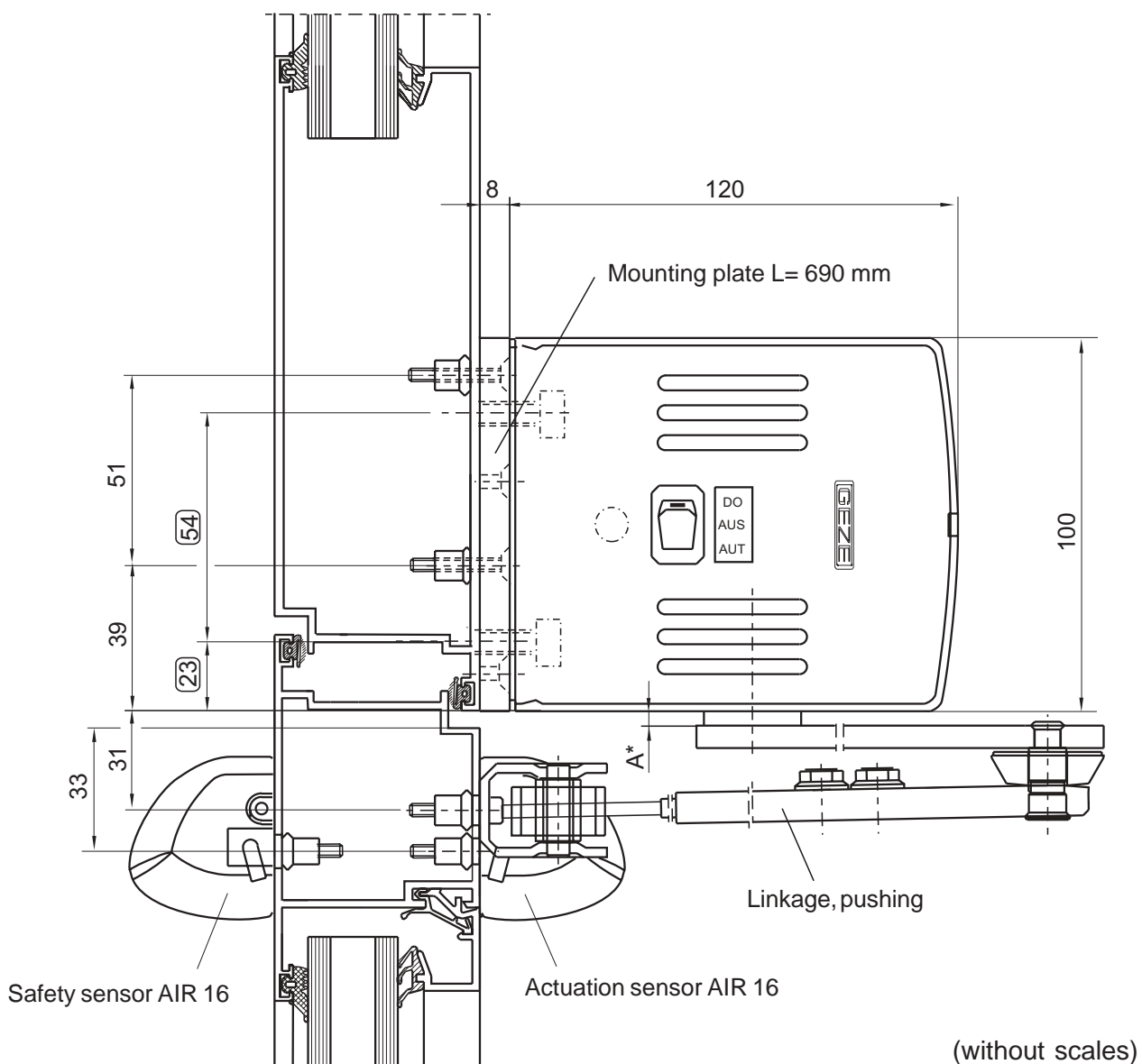


FB = Width of the leaf

B = Width of the system
(possibly double-leaf)

Side view and installation dimensions TSA 160

- Opposite hinge side, pushing, incl. Mounting plate
- For door widths 690 – 1400 mm
- To be used vor TSA160Z Invers as well

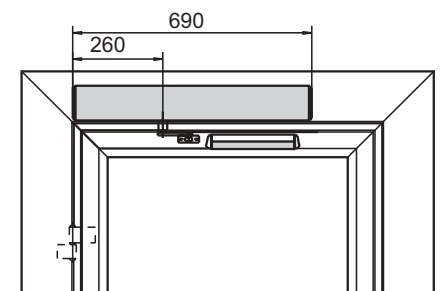


*A
Spindle extension
optional 24, 30, 45 mm
not illustrated above

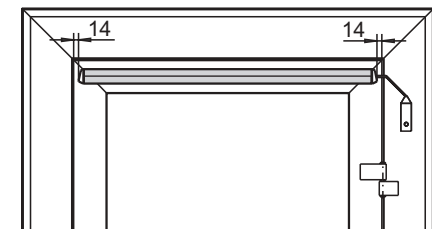
Dimensions for direct mounting of drive

Further details see installation drawing No 70423-9-9920
(Swing door drive TSA 160 size 2-5 incl. safety and actuation sensor)

■ Dimensions of drive and sensors door DIN right pushing



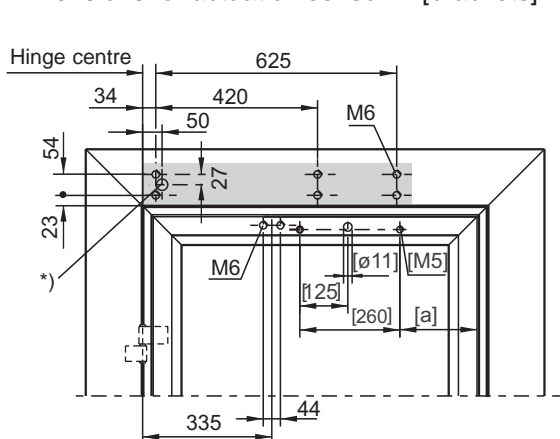
Drive and actuation sensor
opposite hinge side



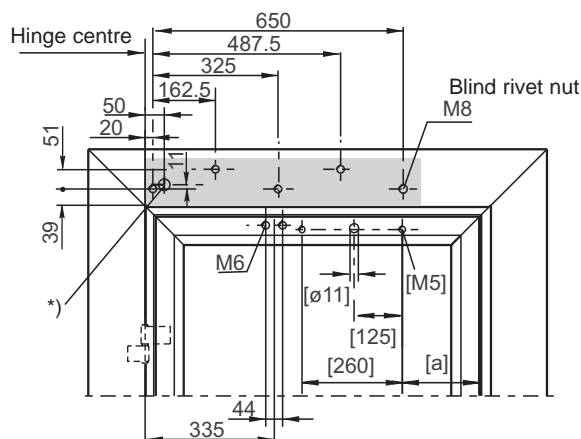
Safety sensor hinge side

□ Mounting dimensions drive door DIN right pushing

Dimensions for actuation sensor in [brackets]



Mounting dimensions for direct mounting



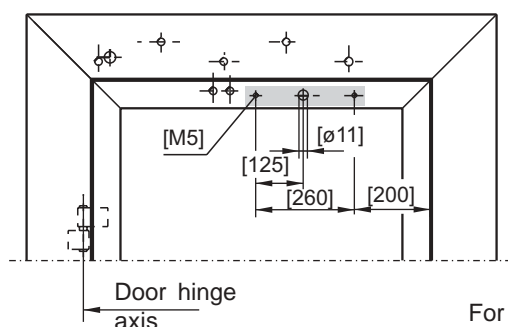
Mounting dimensions
when mounting plate is used

*) If cable entry is from the rear make boring $\varnothing 20$

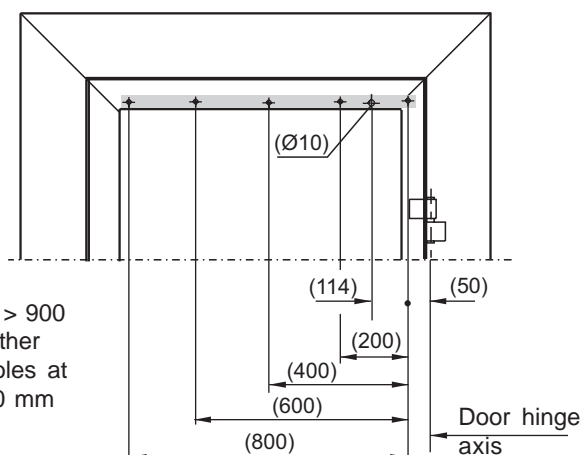
Doorwidth, [mm]	Overall dimensions a [mm]
< 900	doorwidth - 700 ($a_{\min} = 25$)
900 - 1400	200

□ Mounting dimensions safety sensor (DIN right door)

Actuation sensor, dimensions in [brackets]



Safety sensor, dimensions in [brackets]

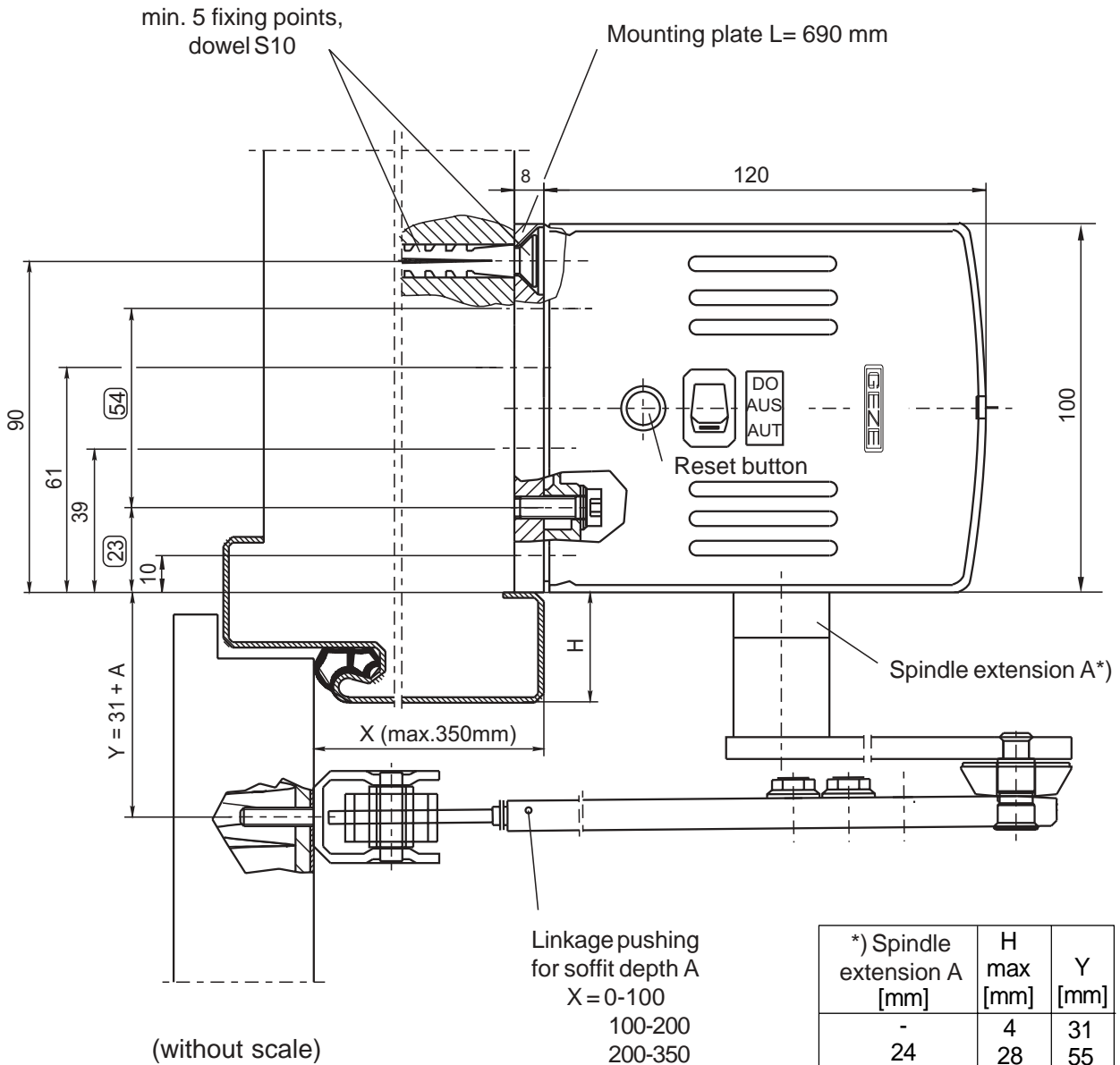


For door widths > 900 mm make further tapered boreholes at intervals of 200 mm

Side view and installation dimensions TSA 160 and TSA 160 F-IS

For double-leaf doors with integrated closing sequence control

- Opposite hinge side, pushing, incl. mounting plate and steel frame
- Door widths 690 – 1400 mm

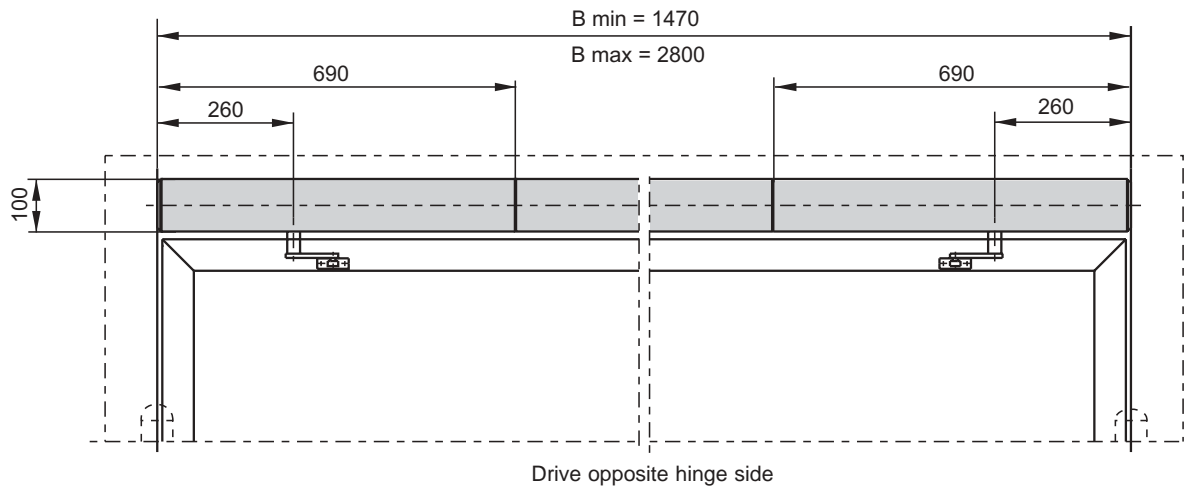


□ Dimensions for direct mounting of drive

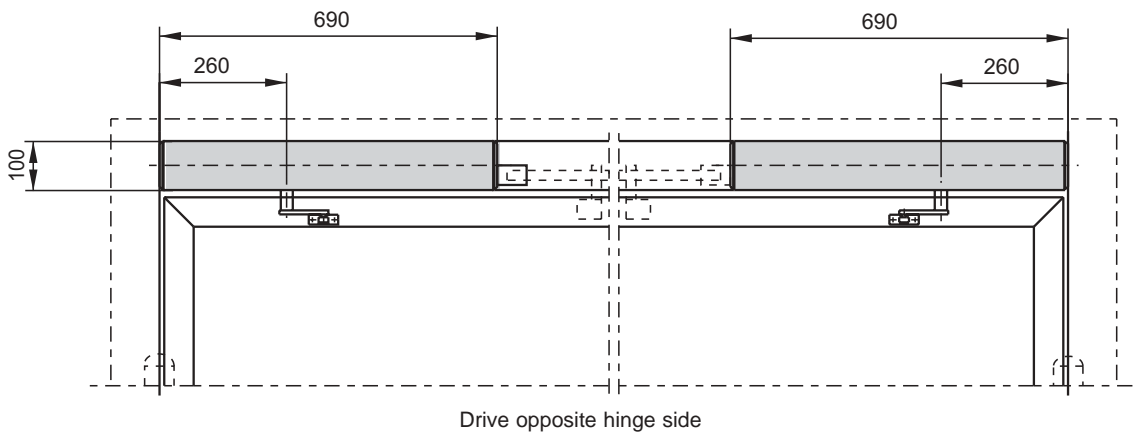
Further details see installation drawing No 70437-9-9910 (Swing door drive TSA 160F / F-IS)

- 2nd closing leaf = drive TSA 160 F-IS
1st closing leaf = drive TSA 160 or 1st closing leaf closer TS 160
- 2nd and 1st closing leaf incl. drive TSA 160 F

■ **TSA 160 F-IS incl. integrated closing sequence control**

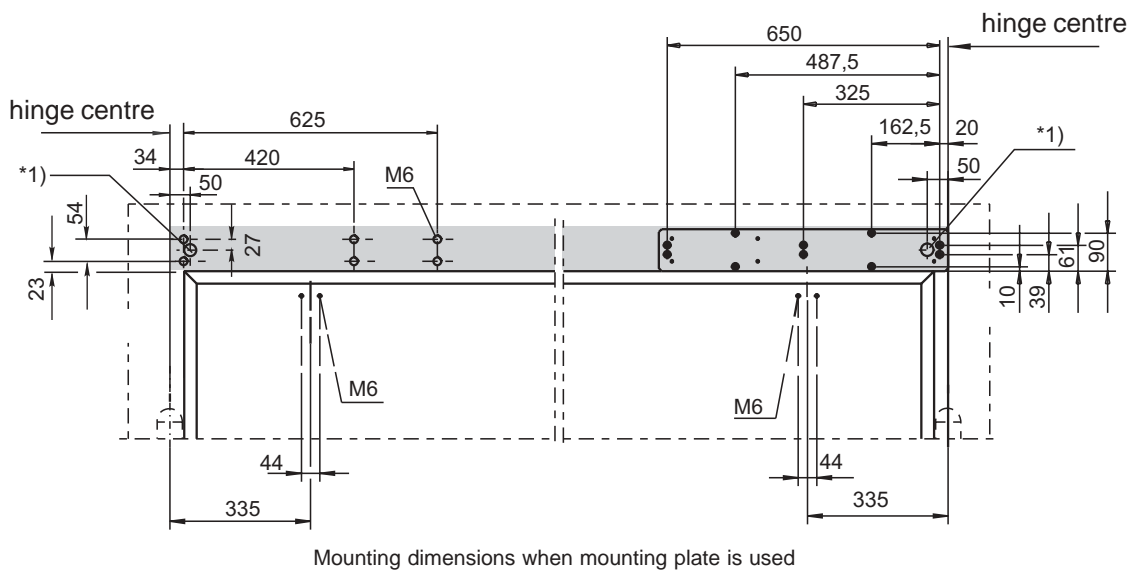


■ **TSA 160 F incl. external closing sequence control**



Mounting dimensions DIN right pushing
(Dimensions for direct fixing)

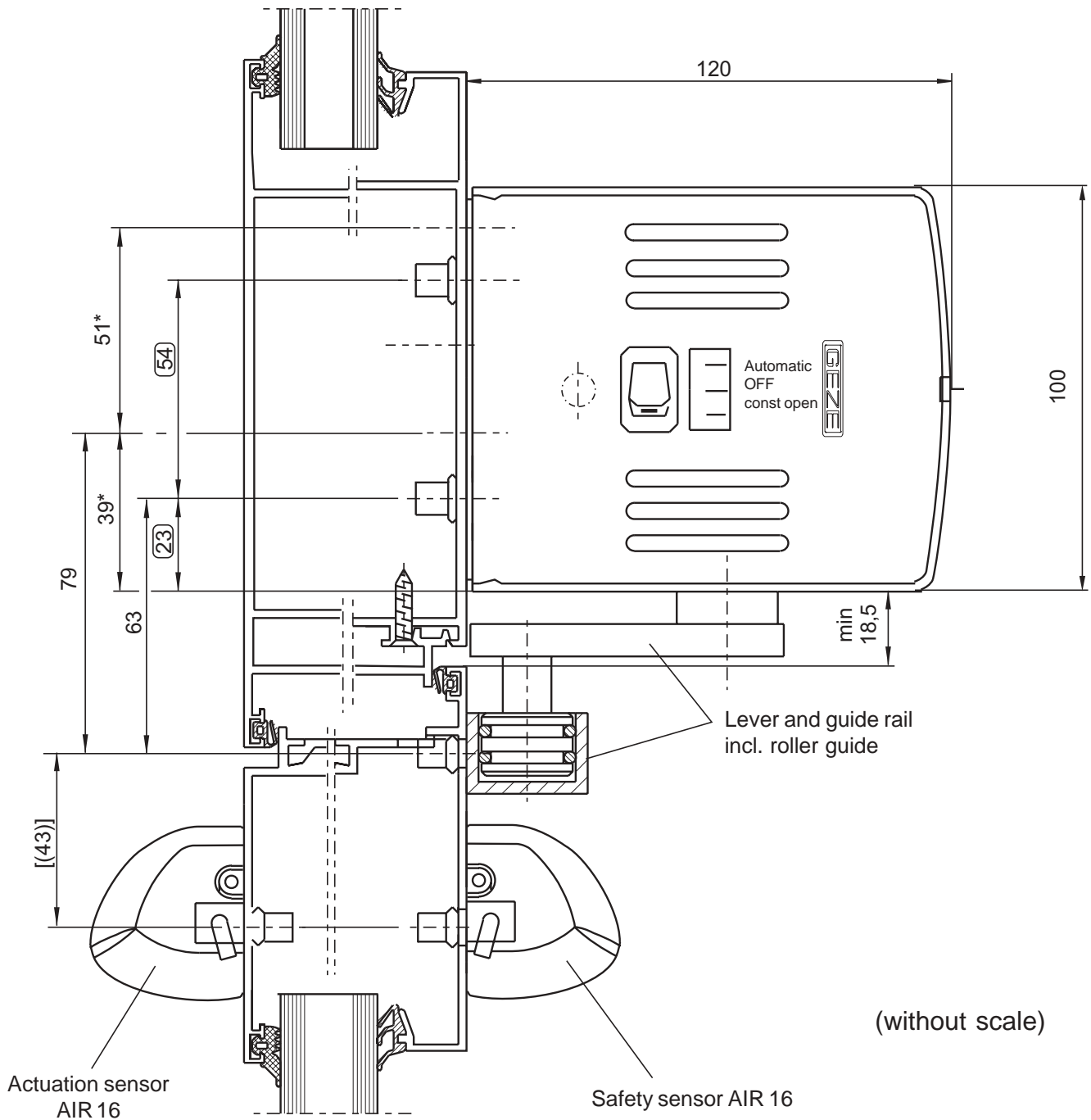
Mounting dimensions DIN left pushing
(Dimensions incl. mounting plate)



*1) If cable entry is from the rear, make boring \varnothing 20

Side view and installation dimensions TSA 160 pulling

- Hinge side, pulling, incl. safety and actuation sensor
- For door widths 890 – 1400 mm



□ Dimensions for direct mounting of drive

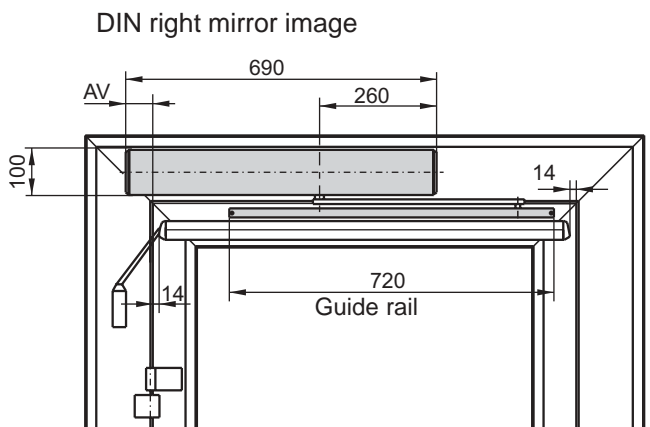
* Dimensions for mounting of drive with mounting plate (mounting plate not illustrated)

() dimensions for safety sensor, [] dimensions for actuation sensor

Further details see installation drawing No 70423-9-9921

(Swing door drive TSA 160 incl. safety and actuation sensor)

■ **Drive DIN left pulling incl. guide rail and safety sensor**



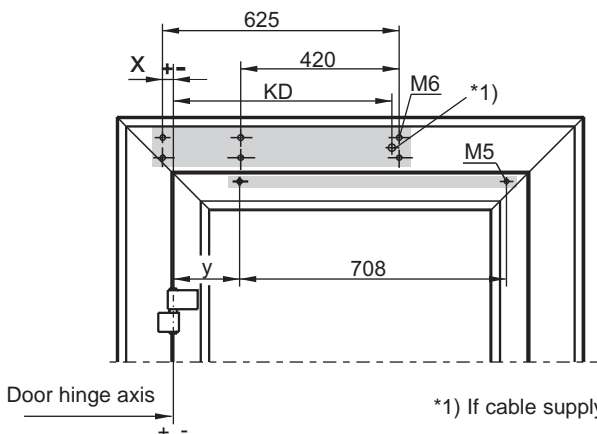
Mounting of basic drive TSA 160 pulling

incl.: AV 60 mm... AV 0 mm
Min. leaf width: 890 mm ... 950 mm

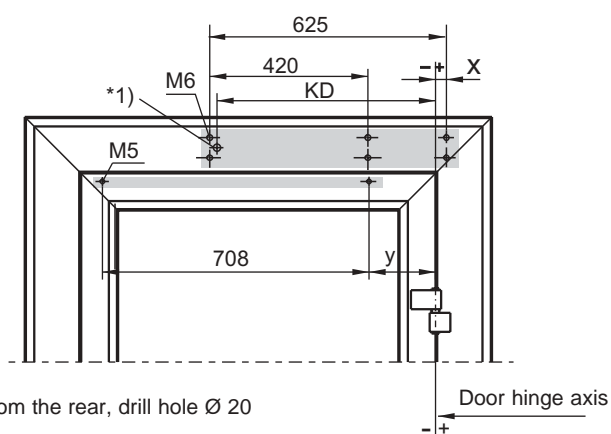
Leaf width: FB	890	900	910	920	930	940	950
Door opening angle	110°	105°	103°	97°	93°	89°	85°
Drive unit position AV	60	50	40	30	20	10	0
Distance ± x	29	19	9	-1	-11	-21	-31
Distance y	176	186	196	206	216	226	236
Cable lead-through KD	580	590	600	610	620	630	640

□ **Mounting dimensions for direct mounting,**

Rebate DIN left pulling function



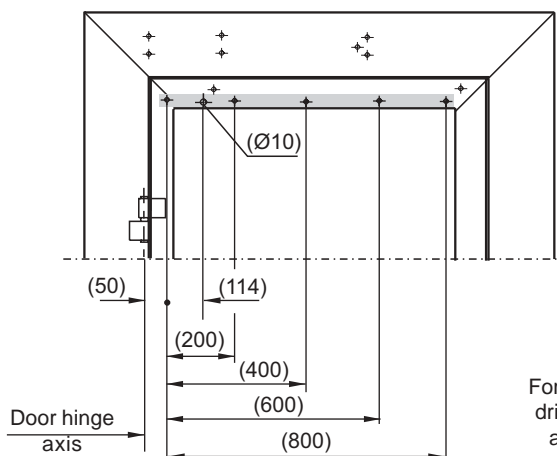
Rebate DIN right pulling function



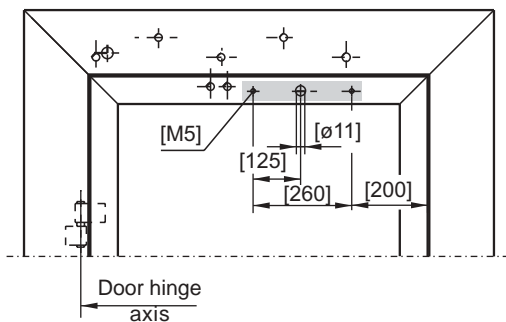
*1) If cable supply is made from the rear, drill hole Ø 20

□ **Mounting dimensions safety sensor in (brackets)**

Safety sensor, dimensions in [brackets]



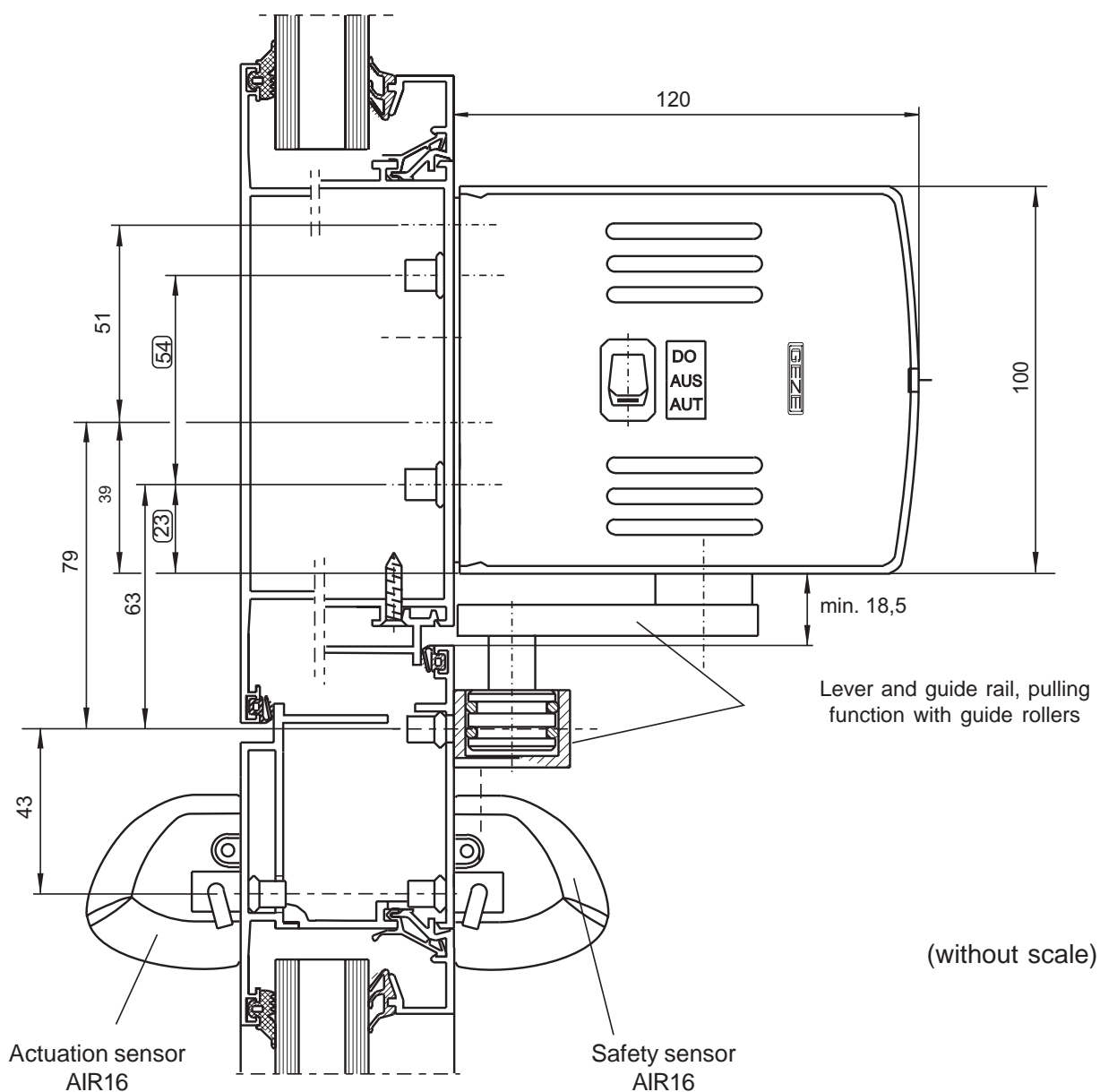
Actuation sensor, dimensions in [brackets]



For widths of door >900 mm
drill additional tapped holes
at an interval of 200 mm

Side view and installation dimensions, 1- and 2- leafs TSA 160 Z and TSA 160 Z-IS

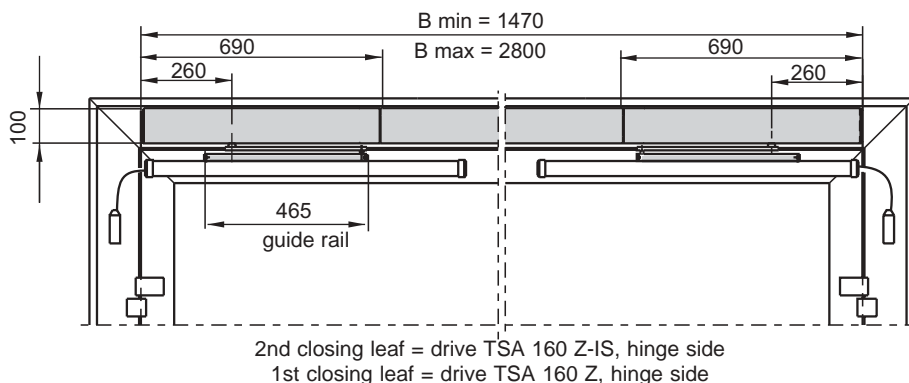
- Hinge side, pulling, incl. safety and actuation sensor
- For door widths 690 – 1400 mm
- 2nd closing leaf = drive TSA 160Z -IS
1st closing leaf = drive TSA 160 Z



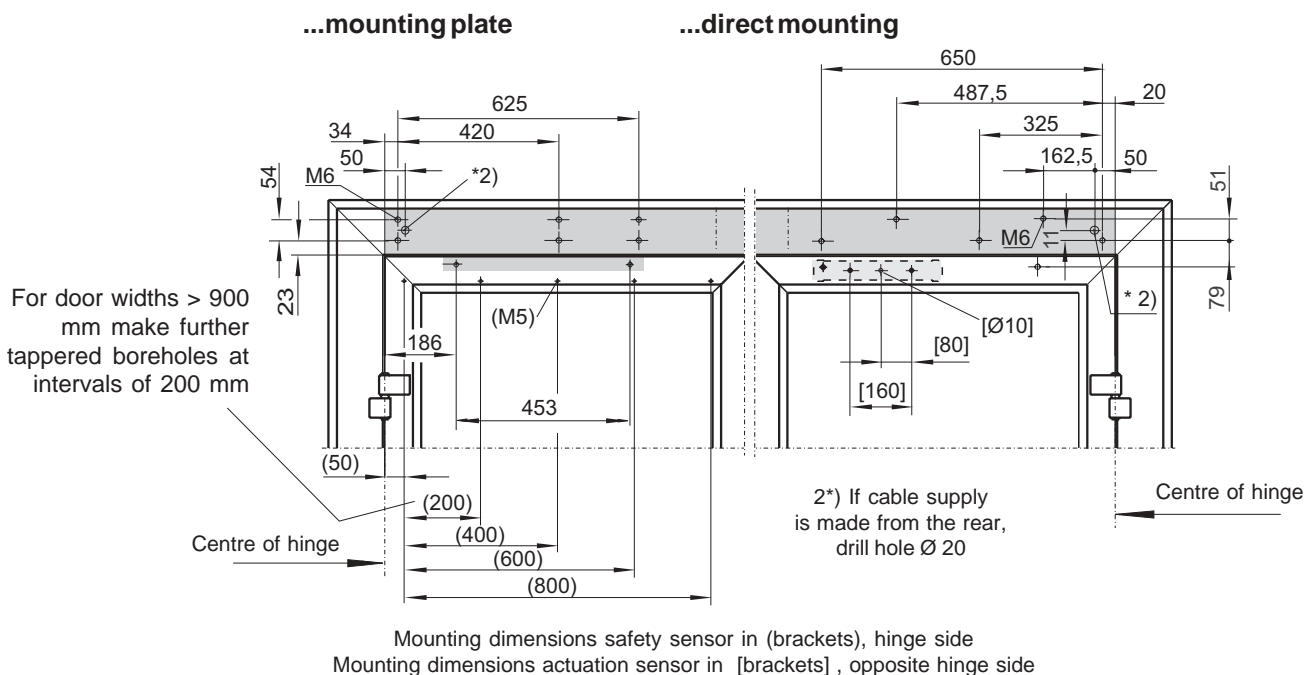
□ Dimensions for direct mounting of drive

Further details see installation drawing No 70477-9-9804
(Swing door drive TSA 160 Z-IS incl. safety and actuation sensor)

■ **TSA 160 Z-IS incl. integrated closing sequence control**

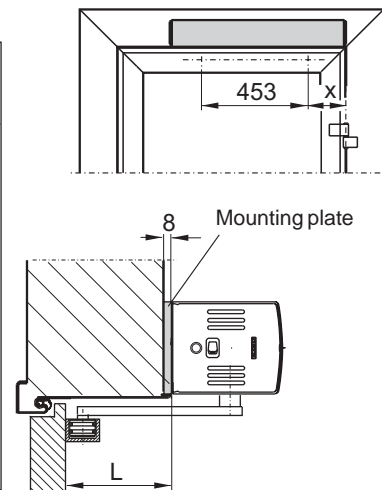


□ **Mounting dimensions DIN left or right pulling:**

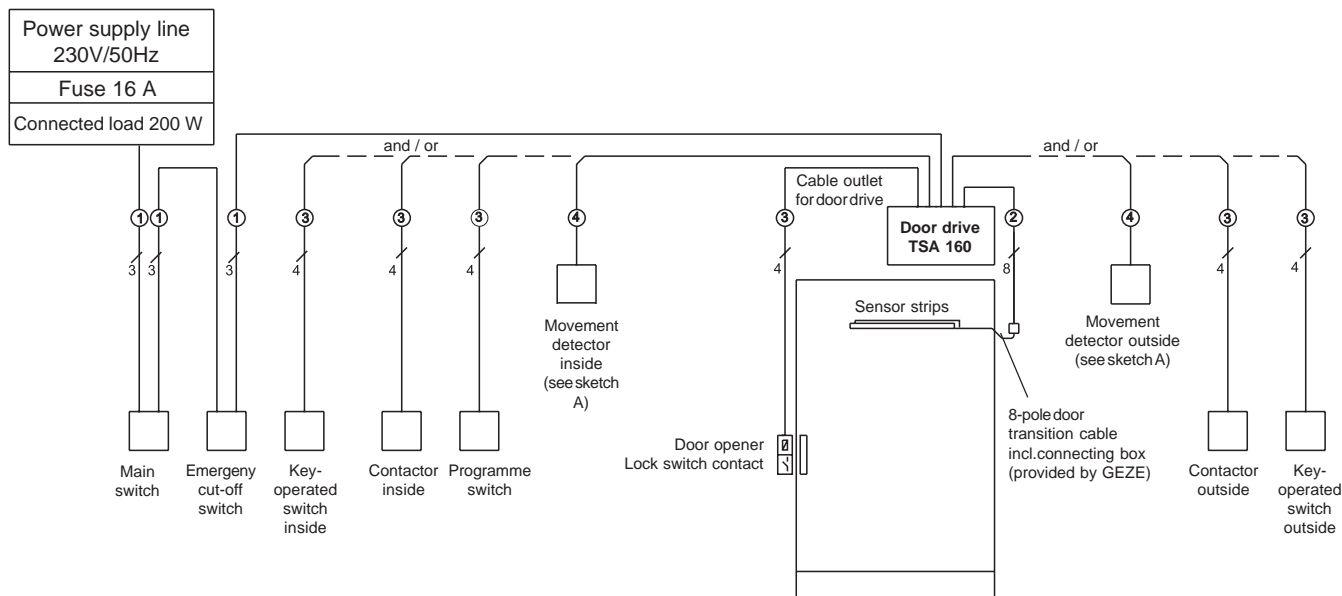


□ **guide rail pulling, for different soffit depths TSA 160 Z**

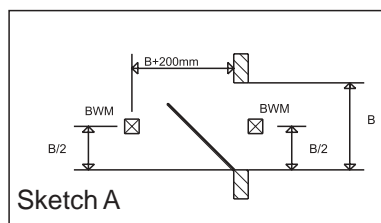
Soffit depth "L" from - to (mm)	Dimension "X" (mm) for guide rail with TSA160Z	min. door width (mm)	Opening angle in degrees
> 0 - 25	186	690	109-113
> 25 - 50	192	690	113 - 115
> 50 - 75	203	690	115 - 110
>75 - 100	215	690	110 - 105
> 100 - 125	229	690	105 - 100
>125 - 150	244	703	100 - 97
> 150 - 175	262	721	97 - 95
> 175 - 200	280	739	95 - 90



Cable plan single-leaf door



Positioning of the movement detectors



Cross-sections of cable

- ① = NYM-J 3x1,5 mm²
- ② = J-Y(ST)Y 2x4x0,6 mm
- ③ = J-Y(ST)Y 2x2x0,6 mm
- ④ = Cable conduit with $\varnothing 16$ mm

Allow cable to protrude at least 1 m out of the wall

Note:

Any warranty and service agreements will be rejected if GEZE products are combined with third-party products.

In addition:

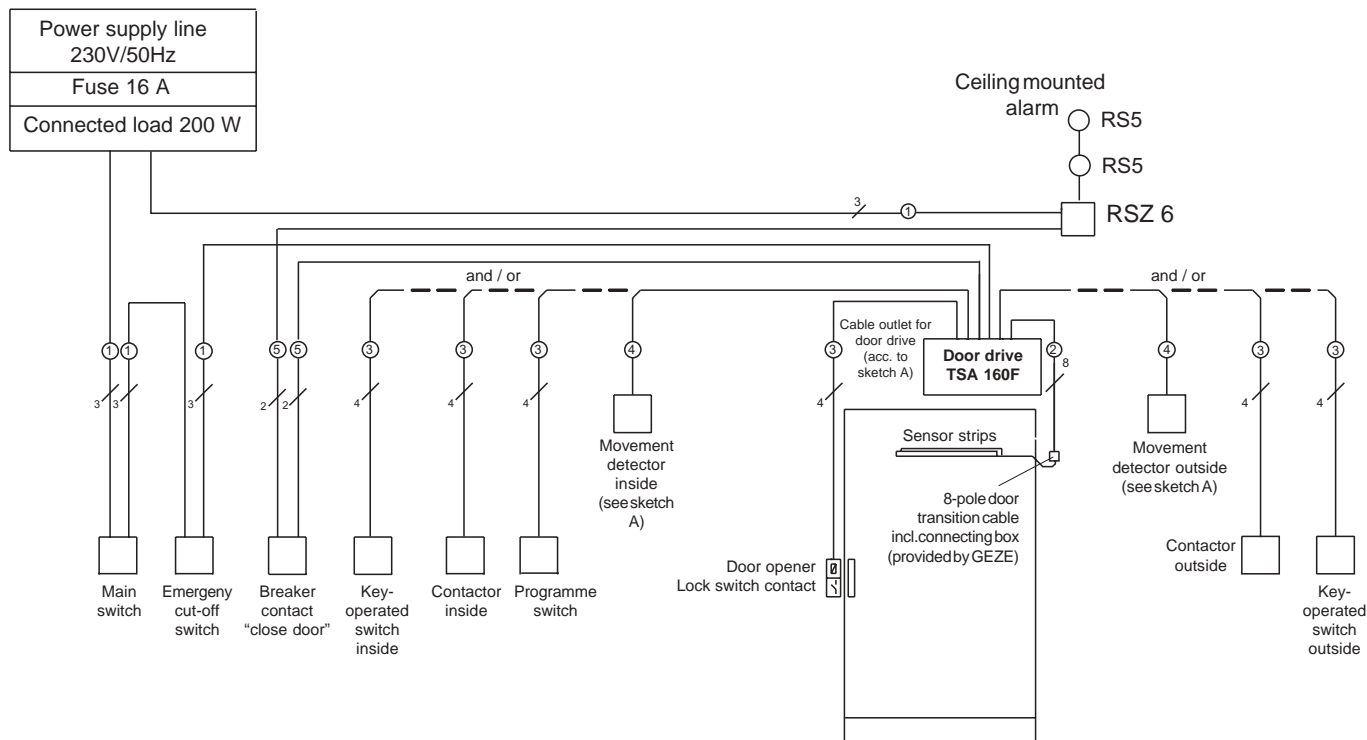
Wiring diagram 70423/9-9750

For the installation and operation of the entire system the guidelines (ZH1/494) for power-operated windows, doors and gates (issued by the Association for Accident Prevention and Industrial Medicine, 53757 Sankt Augustin) have to be observed. In addition to this the mounting and operating instructions as well as all other documents referring to this product have to be observed.

**Cable plan single-leaf
TSA 160
230V 50Hz**

Cable plan

single-leaf smoke and fire-proof door, incl. central smoke control unit



Cross-sections of cable

- ① = NYM-J 3x1,5 mm²
- ② = J-Y(ST)Y 2x4x0,6 mm
- ③ = J-Y(ST)Y 2x2x0,6 mm
- ④ = Cable conduit with Ø16 mm
- ⑤ = J-Y(ST)Y 2x0,6 mm

Allow cable to protrude at least 1 m out of the wall

IMPORTANT:

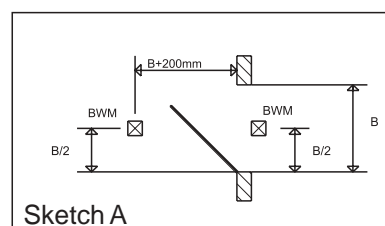
The breaker contact must be installed in close proximity to the door and must not be concealed by the open door

Note:

Any warranty and service agreements will be rejected if GEZE products are combined with third-party products.

For the installation and operation of the entire system the guidelines (ZH1/494) for power-operated windows, doors and gates (issued by the Association for Accident Prevention and Industrial Medicine, 53757 Sankt Augustin) have to be observed. In addition to this the mounting and operating instructions as well as all other documents referring to this product have to be observed.

Positioning of the movement detectors



Sketch A

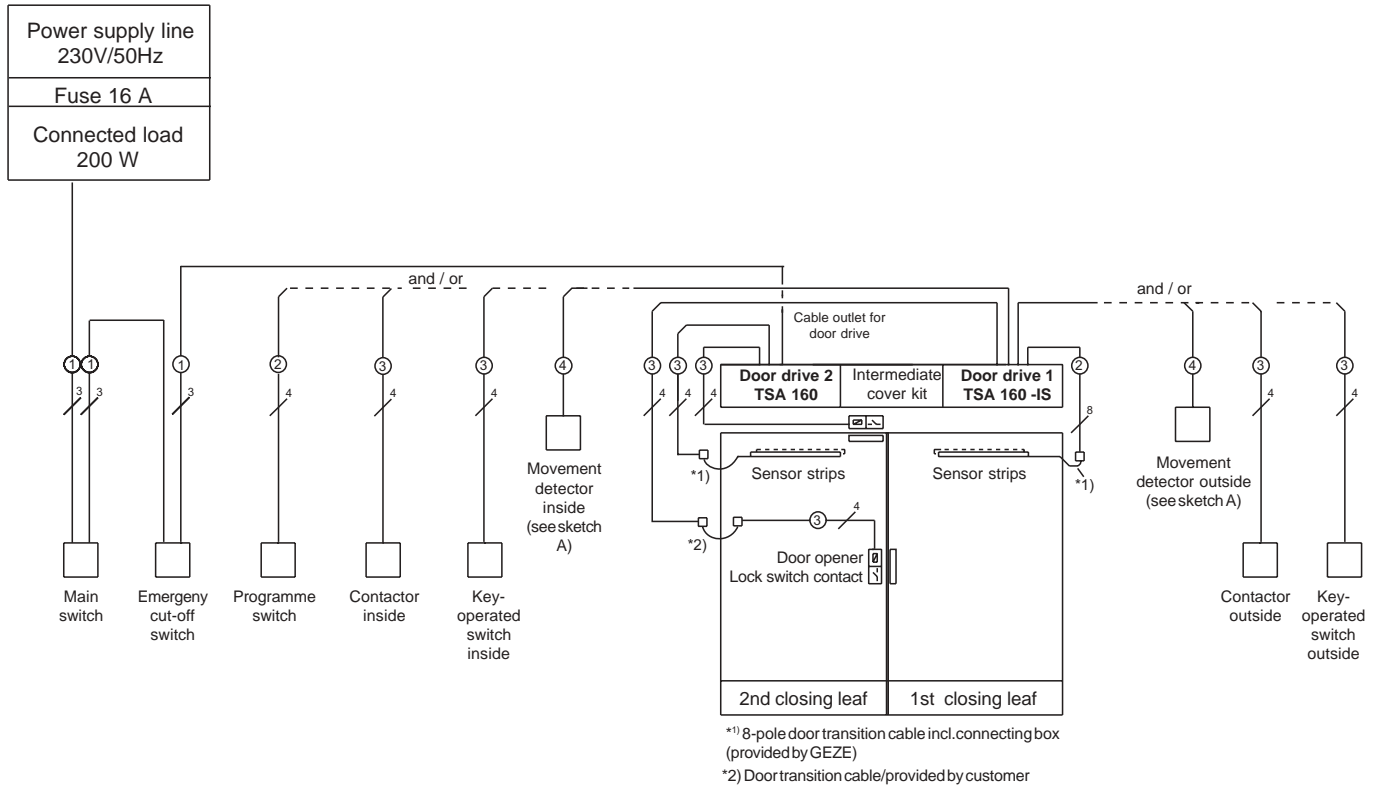
In addition:

Wiring diagram 70423/9-9750

**Cable plan single-leaf
TSA 160 F incl. RSZ 6
230 V 50 Hz**

Cable plan

double-leaf door incl. integrated closer control



Cross-sections of cable

- ① = NYM-J 3x1,5 mm²
- ② = J-Y(ST)Y 2x4x0,6 mm
- ③ = J-Y(ST)Y 2x2x0,6 mm
- ④ = Cable conduit with Ø16 mm

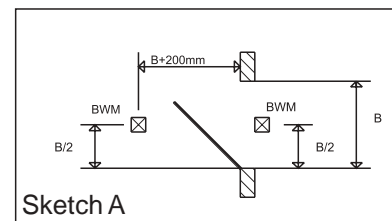
Allow cable to protrude at least 1 m out of the wall

Note:

Any warranty and service agreements will be rejected if GEZE products are combined with third-party products.

For the installation and operation of the entire system the guidelines (ZH1/494) for power-operated windows, doors and gates (issued by the Association for Accident Prevention and Industrial Medicine, 53757 Sankt Augustin) have to be observed. In addition to this the mounting and operating instructions as well as all other documents referring to this product have to be observed.

Positioning of the movement detectors

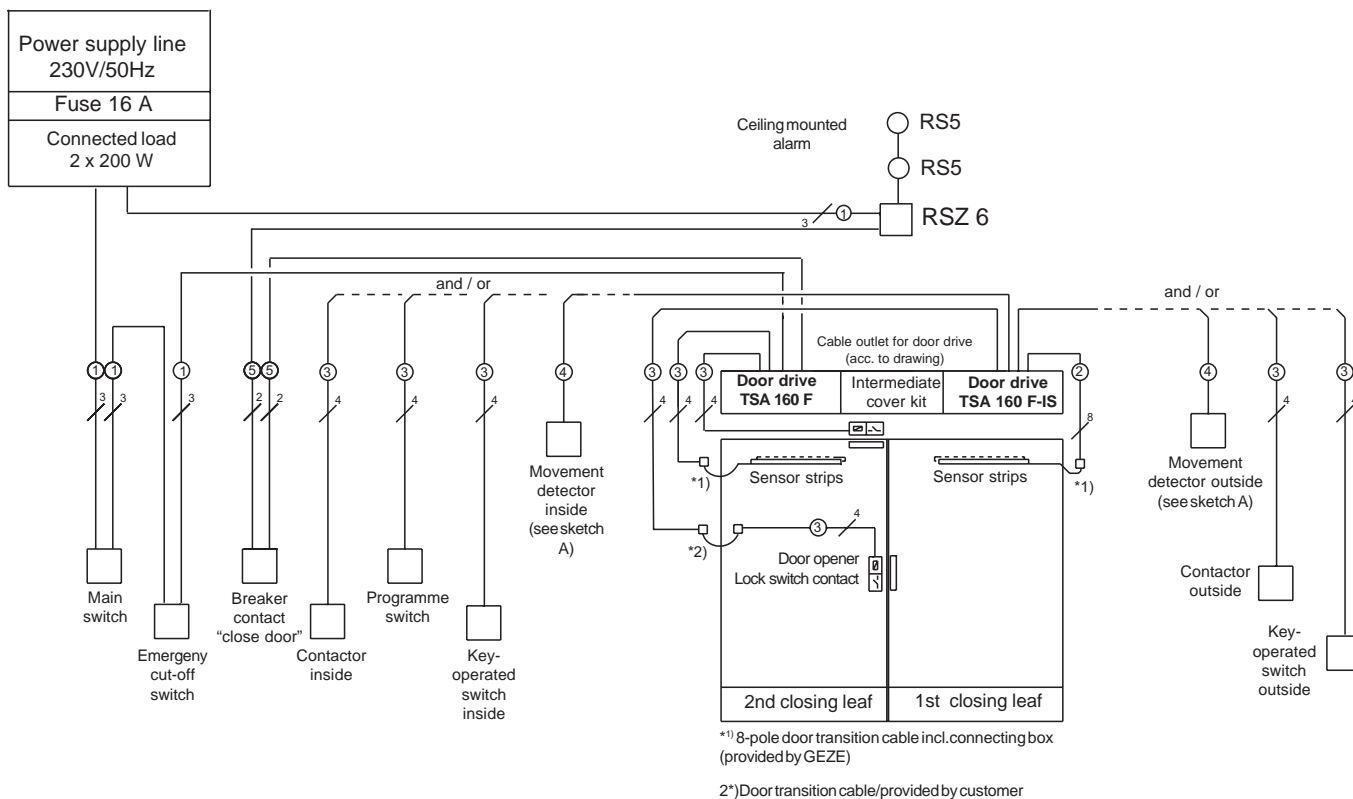


In addition:

Wiring diagram 70423/9-9750

**Cable plan double-leaf
TSA 160 - IS
230 V 50 Hz**

Cable plan double-leaf door incl. central smoke control unit



Cross-sections of cable

- ① = NYM-J 3x1,5 mm²
- ② = J-Y(ST)Y 2x4x0,6 mm
- ③ = J-Y(ST)Y 2x2x0,6 mm
- ④ = Cable conduit with Ø16 mm
- ⑤ = J-Y(ST)Y 2x0,6 mm

Allow cable to protrude at least 1 m out of the wall

IMPORTANT:

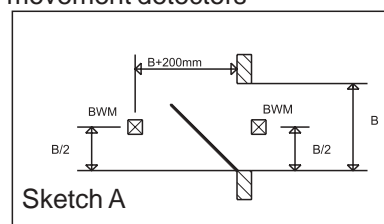
The breaker contact must be installed in close proximity to the door and must not be concealed by the open door

Note:

Any warranty and service agreements will be rejected if GEZE products are combined with third-party products.

For the installation and operation of the entire system the guidelines (ZH1/494) for power-operated windows, doors and gates (issued by the Association for Accident Prevention and Industrial Medicine, 53757 Sankt Augustin) have to be observed. In addition to this the mounting and operating instructions as well as all other documents referring to this product have to be observed.

Positioning of the movement detectors

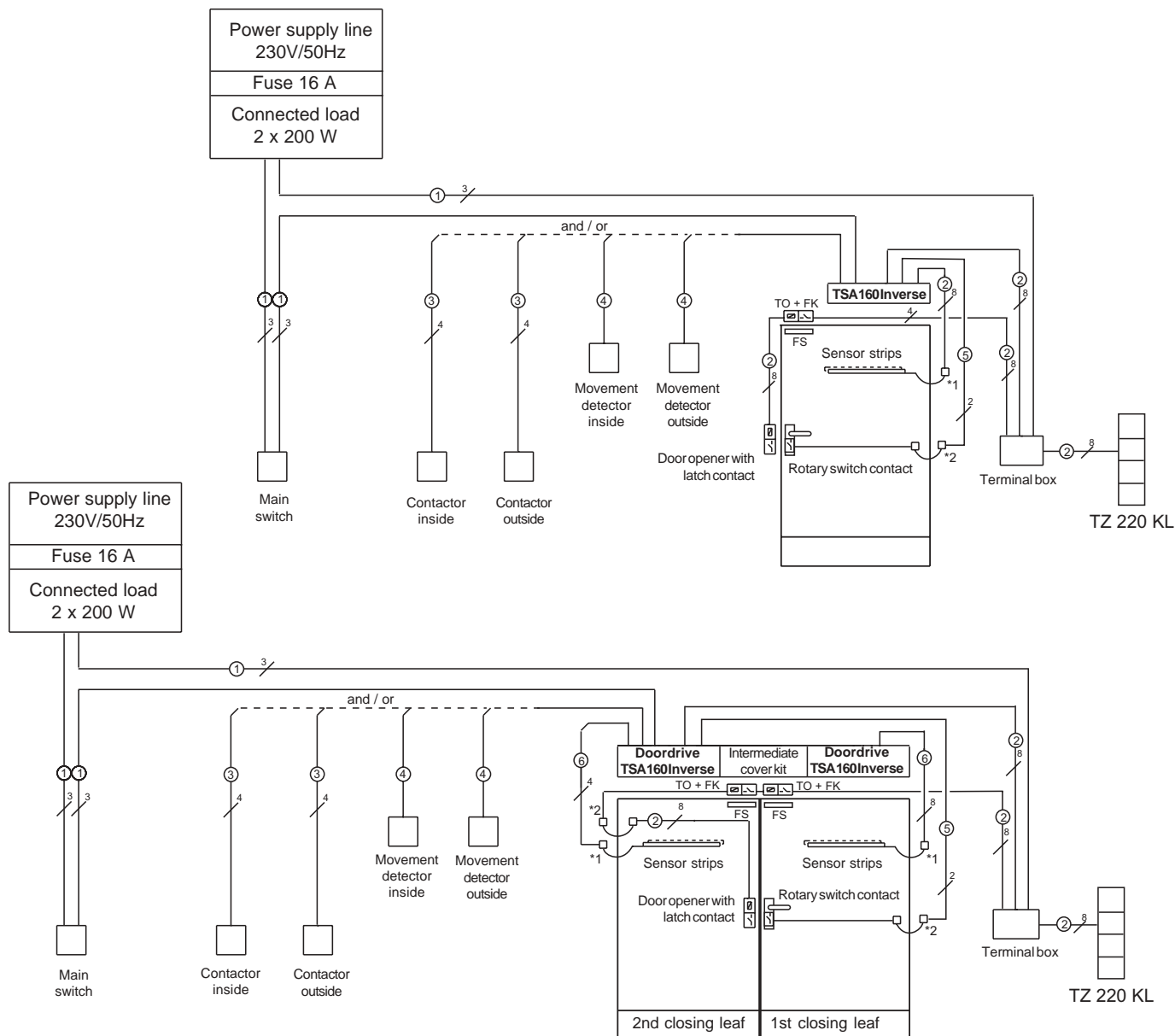


In addition:

Wiring diagram 70423/9-9750

**Cable plan double-leaf
TSA 160F -IS incl. RSZ 6
230 V 50 Hz**

Cable plan single and double-leaf with door control unit TZ 220



Cross-sections of cable

- ① = NYM-J 3x1,5 mm²
- ② = J-Y(ST)Y 2x4x0,6 mm
- ③ = J-Y(ST)Y 2x2x0,6 mm
- ④ = Cable conduit with Ø 16 mm
- ⑤ = LiYY(ST)Y 2x0,14 mm²
- ⑥ = LiYY 4x2x0,25 mm²

Allow cable to protrude at least 1 m out of the wall

*1) 8-pole door transition cable incl. connecting box (provided by GEZE)

*2) Door transition cable/provided by customer

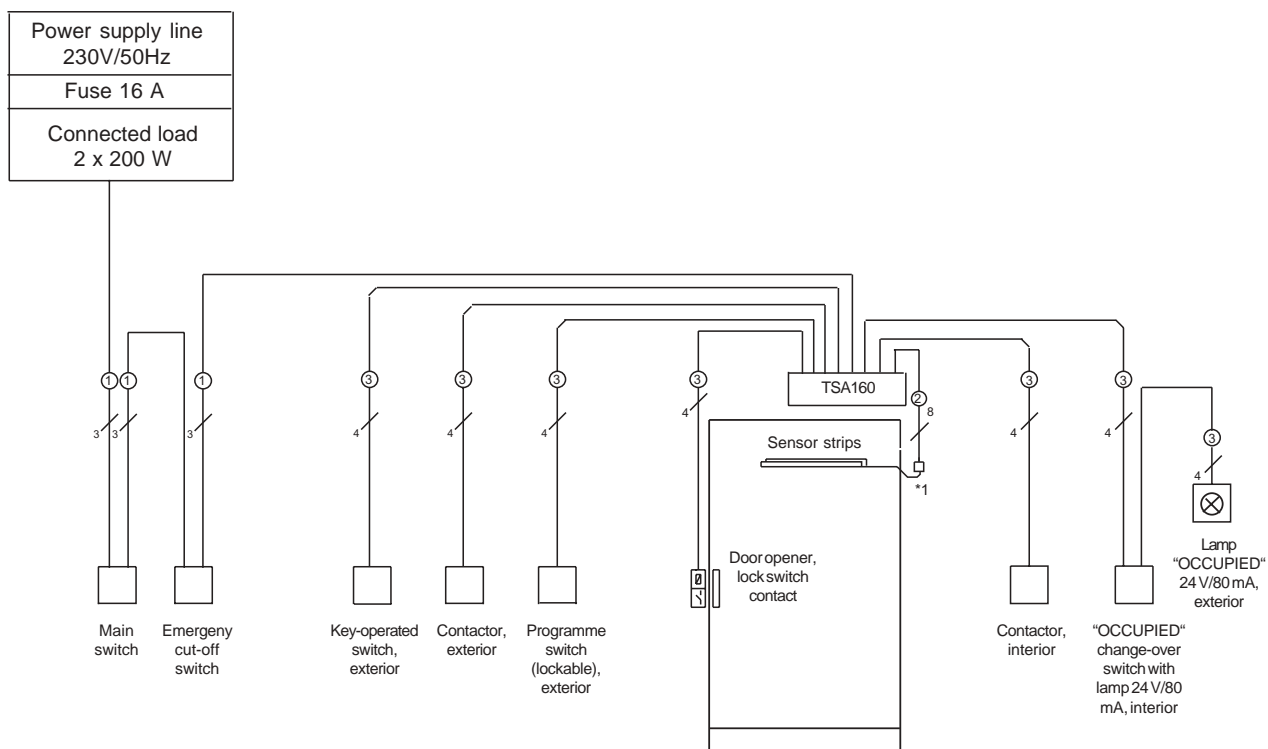
In addition:

Wiring diagram TSA 160 Invers: 70423/9-9758

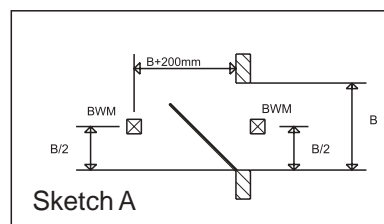
Wiring diagram TZ 220: 21208-9-0952

**Wiring diagram TSA 160 Invers
with TZ 220 single and double-leaf
320 V 50 Hz**

Cable plan TSA 160 WC-compartment for the handicapped



Positioning of the movement detectors



Cross-sections of cable

- ① = NYM-J 3x1,5 mm²
- ② = J-Y(ST)Y 2x4x0,6 mm
- ③ = J-Y(ST)Y 2x2x0,6 mm

Allow cable to protrude at least 1 m out of the wall

In addition:

Wiring diagram 70423/9-9750
Auxiliary wiring diagram WC-control70712/9-961

IMPORTANT:

The breaker contact must be installed in close proximity to the door and must not be concealed by the open door

Note:

Any warranty and service agreements will be rejected if GEZE products are combined with third-party products.

**Wiring diagram TSA 160 WC-
compartment for the handicapped**
single-leaf
230 V 50 Hz

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