1. Door locking devices

Door locking devices with and without a checking device

The door locking devices from the AV series serve the purpose of monitoring and interlocking of 1- and 2-leaf lift landing doors. The safety locking devices fulfill the requirements of the Lift Directive 95/16/EG and the DIN EN 81-1 and -2.

There are variations with die-cast enclosure as well as thermoplastic enclosure, with one or two locking elements, either in right- or left-hand versions, with lever, pull strap or built-in blocks. The safety function can be observed through the transparent cover. The locking bolt has a travel of 22 mm, so that even after the lowering of the door, the mandatory engagement depth of 16 mm is safely maintained. The emergency unlocking device can be operated externally with a triangular key.

Function of the checking device

The European norm DIN EN 81-1, paragraph 7.7.5.1, states: "It shall not be possible, from positions normally accessible to persons, to operate the lift with a landing door open or unlocked, after one single action not forming part of the normal operating sequence."

This requirement is fulfilled by our door locking devices with magnetic checking device, types AV 15, AV 20 and AV 25.

The checking device functions with two permanent magnets, which with a closed door face one another with like poles, repelling each other. The magnet of the checking device is solidly connected to a locking piece, moveable in its axial direction. Consequently, the locking bolt is mechanically positively actuated to its release, the locking means contact is closed and the lift landing door is locked. On an opened lift landing door, the magnets do not face each other. As a result, the locking bolt is positively actuated and securely locked. The locking means contact is open. In the case of a fault (power failure), when the lift landing doors are opened, the locking means contact remains safeguarded from faulty locking and in the open position.
1. Door locking devices

Technical data

<table>
<thead>
<tr>
<th>AV 20/21</th>
<th>AV 15/18, AV 25/28</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standards: DIN EN 81, Directive 95/16/EG</td>
<td>Standards: DIN EN 81, Directive 95/16/EG</td>
</tr>
<tr>
<td>Enclosure: fibreglass reinforced thermoplastic, light-metal die-cast</td>
<td>Enclosure: fibreglass reinforced thermoplastic, light-metal die-cast</td>
</tr>
<tr>
<td>Protection class: IP 54 in accordance with IEC/EN 60529/DIN VDE 0470-1</td>
<td>Protection class: IP 20 in accordance with IEC/EN 60529/DIN VDE 0470-1</td>
</tr>
<tr>
<td>Locking bolts: brass D = 18 mm</td>
<td>Locking bolts: brass D = 18 mm</td>
</tr>
<tr>
<td>Contact material: silver</td>
<td>Contact material: silver</td>
</tr>
<tr>
<td>Switching element: changeover with double break, galvanically separated contact bridges</td>
<td>Switching element: changeover with double break, galvanically separated contact bridges</td>
</tr>
<tr>
<td>Rated impulse withstand voltage $U_{imp}$: 6 kV</td>
<td>Rated impulse withstand voltage $U_{imp}$: 6 kV</td>
</tr>
<tr>
<td>Rated insulation voltage $U_i$: 500 VAC 400 VAC</td>
<td>Rated insulation voltage $U_i$: 500 VAC 400 VAC</td>
</tr>
<tr>
<td>Thermal test current $I_{th}$: 10 A</td>
<td>Thermal test current $I_{th}$: 10 A</td>
</tr>
<tr>
<td>Rated operating current / voltage $I_e/U_e$: 2A/230 VAC; 2A/200 VDC</td>
<td>Rated operating current / voltage $I_e/U_e$: 2A/230 VAC; 2A/200 VDC</td>
</tr>
<tr>
<td>Short-circuit protection: 6 A (slow blow)</td>
<td>Short-circuit protection: 6 A (slow blow)</td>
</tr>
<tr>
<td>Emergency unlocking: with a triangular key M5 par DIN 22417</td>
<td>Emergency unlocking: with a triangular key M5 par DIN 22417</td>
</tr>
<tr>
<td>Permanent magnet: ceramic-oxide magnet with high coercive field intensity, flow change dependant on temperature 0.2 % / °C, is however reversible</td>
<td>Permanent magnet: ceramic-oxide magnet with high coercive field intensity, flow change dependant on temperature 0.2 % / °C, is however reversible</td>
</tr>
<tr>
<td>Ambient temperature: – 15 °C ... + 70 °C</td>
<td>Ambient temperature: – 15 °C ... + 70 °C</td>
</tr>
<tr>
<td>'X'-dimension: 11.5, 20, 30, 40, 45 mm</td>
<td>'X'-dimension: 11.5, 20, 30, 40, 45 mm</td>
</tr>
</tbody>
</table>

Installation instructions for door locking devices with magnetic checking device

The inclined section of the locking bolt allows the required closing ability of the door as required by DIN EN 81, paragraph 7.7.2.2. Corresponding to the chosen engagement depth (12 or 21 mm), the door edge must be rounded off to an edge length of 30 mm in the area of the locking bolt or provided with a fender or inclined section, if necessary. The corresponding "X"- or "Z"- dimensions are to be determined when ordering.

Larger penetration depth for balancing the tolerance of dimension "X", for example, through lowering the door.
1. Door locking devices

1.4 Series AV 18 with one locking element

Condition of the door locking device with an opened and unlocked landing door

With an opened landing door and a released locking means cam, the locking bolt (2) is pulled back across the angled lever (3) by pulling the pull strap (4) in direction A or by rotating the roller lever in direction B against the force of the spring (5). Consequently, the locking means switch (7) is opened. The auxiliary contact (8) is closed.

Condition of the door locking device with a closed and locked landing door

With a closed landing door (1) and with an activated locking means cam, the locking bolt (2) engages into the landing door through the effect of the spring (5) and closes the locking means switch (7). The auxiliary contact (8) is opened.

Inclined section at locking bolts – various types

Mounting positions

Features

- light-metal die-cast enclosure
- without checking device
- protection class IP 20
- 10 A / 400 VAC
1. Door locking devices
1.4 Series AV 18 with one locking element

Notice
Dimension X or Z is to be given when placing an order (min. 25, max. 45 mm).
Standard dimensions: 25, 30, 40 and 45 mm.
The figure shows a door locking device with lever and without an auxiliary contact, with a cable entry (suffix E 1) in a right-hand version, the left-hand version is the mirror-image.

<table>
<thead>
<tr>
<th>lever position</th>
<th>R</th>
<th>W</th>
<th>actuating force at the roller</th>
<th>cam travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-C</td>
<td>54</td>
<td>23.5</td>
<td>5.5 N</td>
<td>9 N</td>
</tr>
<tr>
<td>A-D</td>
<td>65</td>
<td>28</td>
<td>4.5 N</td>
<td>7 N</td>
</tr>
</tbody>
</table>

AV 18 RH
with roller lever

AV 18 RH
IP 41 with roller lever

Notice
Dimension X or Z is to be given when placing an order (min. 11.5, max. 45 mm).
Standard dimensions: 11.5, 20, 30, 40 and 45 mm.
The figure shows a door locking device with lever and without an auxiliary contact, with a cable entry (suffix E 1) in a right-hand version. The left-hand version is the mirror-image.

<table>
<thead>
<tr>
<th>lever position</th>
<th>R</th>
<th>W</th>
<th>actuating force at the roller</th>
<th>cam travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-C</td>
<td>54</td>
<td>23.5</td>
<td>5.5 N</td>
<td>9 N</td>
</tr>
<tr>
<td>A-D</td>
<td>65</td>
<td>28</td>
<td>4.5 N</td>
<td>7 N</td>
</tr>
</tbody>
</table>
## 1. Door locking devices

### 1.4 Series AV 18 with one locking element

<table>
<thead>
<tr>
<th>Description</th>
<th>Dimensions</th>
<th>Type</th>
<th>Ordering Suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door locking device with pull strap right-hand version</td>
<td>AV 18 R</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>Door locking device with pull strap left-hand version</td>
<td>AV 18 L</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>Door locking device with lever right-hand version</td>
<td>AV 18 RH</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>Door locking device with lever left-hand version</td>
<td>AV 18 LH</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>Door locking device with lever right-hand version</td>
<td>AV 18 RH (IP 41)</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>Door locking device with lever left-hand version</td>
<td>AV 18 LH (IP 41)</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>Door locking device with block B right-hand version</td>
<td>AV 18 RB</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>Door locking device with block B left-hand version</td>
<td>AV 18 LB</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>Door locking device with block B2 right-hand version</td>
<td>AV 18 RB 2</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>Door locking device with block B2 left-hand version</td>
<td>AV 18 LB 2</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td>Auxiliary contact (NO)</td>
<td>–</td>
<td>–</td>
<td>K</td>
</tr>
<tr>
<td>Cable entry (5 holes)</td>
<td>–</td>
<td>–</td>
<td>E 1</td>
</tr>
<tr>
<td>Cable gland Pg 16</td>
<td>–</td>
<td>–</td>
<td>E 4</td>
</tr>
<tr>
<td>Inclined section 45° at locking bolt</td>
<td>–</td>
<td>–</td>
<td>U 45° N (D, R, L 45° N)</td>
</tr>
<tr>
<td>Triangular key M 5 200/350 mm</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

**Info**

- X-dimensions other than the above listed standard dimensions are available at additional cost.

**Ordering details**

1. Door locking device AV 18 = AV 18
2. Right-hand version = R
3. Roller lever H = H
4. Cable entry (5 holes) = E 1
5. Dimension X = 30 mm = X 30
6. Inclined section at locking bolt 45° bottom-side = U 45° N

© Protection class IP 41
EC-Type Approval Certificate

Certificate no.: ATV 76/4

Approval site: TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile
Westendstraße 199, D-80686 München
(Kennnummer 0635)

Möddingshofe 30
D-42279 Wuppertal

Date of application: 1998-05-06

Manufacturer: K.A. Schmersal GmbH & Co.
Möddingshofe 30
D-42279 Wuppertal

Product, type: Interlock device with sliding latch as a component in an interlock device for landing doors,
type AV 18

Testing laboratory: TÜV Bau- und Betriebstechnik GmbH
Zentralabteilung Aufzüge und Sicherheitsbauteile
Gottlieb-Daimler-Str. 7, D-70794 Filderstadt

Date and number of test report: 1998-07-04
ATV 76/4

EC-directive: 95/16/EC

Test results: The safety component fulfills the basic safety requirements of the directive for the area of application described in the attached appendix of this EC-Type Approval Certificate.

Date of issuance: 1998-07-04

Peter Tkalec

Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile
Appendix to the EC-Type Approval Certificate No. ATV 76/4 from 1998-07-04

1 Range of application

1.1 Interlock device with sliding latch as a component in an interlock device for landing doors, type AV 18.

1.2 The interlock may only be used as a component of an interlock device for landing doors, provided that a separate Type Approval Certificate according to the Directive 95/16/EC is present for the co-ordination of the interlock to a particular door construction and for the existing additional components, if applicable, which are involved in the locking of the landing doors and their supervision.

1.3 Nominal values of the electrical safety devices (locking means switch):

- alternating current 230 V, 2 A
- direct current 200 V, 2 A

2 Conditions

2.1 The interlock must engage at least 12 mm all together (or at least 8 mm for switching the electrical safety device of the interlock) into or behind the part to be locked so that the effective engagement depth of at least 7 mm is guaranteed at the departure of the car.

2.2 The approval drawing MZ 50048, edition E, pages 1 to 4 as well as the written notices and dimensions are to be abided.

2.3 For the interlock device, different versions, mounting positions, operating devices, and additional control switches (auxiliary switches) than those cited in this approval drawing may not be utilised.

2.4 The electrical safety devices for the supervision of the closed position of the landing door (door switch) have not been tested for placement nor version by this Type Approval Test of the door locking device.

2.5 Through additional measures, it must be prevented that the elevator can be put into motion with an open or unlocked door through a single, non-operational intervention (checking device).

3 Notice

3.1 For the purpose of identification and information about the principle construction, the approval drawing MZ 50048, edition E, pages 1 to 4 with a seal of approval from 04.07.1998 is to be attached with the EC-Type Approval Certificate ATV 76/4 and its appendix.

3.2 A sign with the information for identification of the component with the name of the manufacturer, the Type Approval Identification Number and the type description must be present on the interlock device.

3.3 The EC-Type Approval Certificate may only be utilised in conjunction with the obligatory appendix.
1. Door locking devices

1.5 Series AV 21 with one locking element

**Condition of the door locking device with an opened and unlocked landing door**

With an opened landing door and a released locking means cam, the locking bolt (2) is pulled back across the angled lever (3) by pulling the pull strap (4) in direction A or by rotating the roller lever in direction B against the force of the spring (5). Consequently, the locking means switch (7) is opened and the auxiliary contact (8) is closed.

**Condition of the door locking device with a closed and locked landing door**

With a closed landing door (1) and an activated locking means cam, the locking bolt (2) engages by the effect of the spring (5) into the landing door (1) and closes the locking means switch (7). The auxiliary contact (8) is opened.
1. Door locking devices
1.5 Series AV 21 with one locking element

Inclined section at locking bolts – various types

Mounting positions

Standard contact equipment

Locking means contact

Auxiliary contact
### Door locking devices
#### Series AV 21 with one locking element

<table>
<thead>
<tr>
<th>Description</th>
<th>Dimensions</th>
<th>Type</th>
<th>Ordering suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door locking device with pull strap</td>
<td>Right-hand version</td>
<td>AV 21 R</td>
<td>–</td>
</tr>
<tr>
<td>Door locking device with pull strap</td>
<td>Left-hand version</td>
<td>AV 21 L</td>
<td>–</td>
</tr>
<tr>
<td>Door locking device with lever</td>
<td>Right-hand version</td>
<td>AV 21 RH</td>
<td>–</td>
</tr>
<tr>
<td>Door locking device with lever</td>
<td>Left-hand version</td>
<td>AV 21 LH</td>
<td>–</td>
</tr>
<tr>
<td>Door locking device with block B</td>
<td>Right-hand version</td>
<td>AV 21 RB</td>
<td>–</td>
</tr>
<tr>
<td>Door locking device with block B</td>
<td>Left-hand version</td>
<td>AV 21 LB</td>
<td>–</td>
</tr>
<tr>
<td>Door locking device with block B2</td>
<td>Right-hand version</td>
<td>AV 21 RB 2</td>
<td>–</td>
</tr>
<tr>
<td>Door locking device with block B2</td>
<td>Left-hand version</td>
<td>AV 21 LB 2</td>
<td>–</td>
</tr>
<tr>
<td>Cable entry (4 holes)</td>
<td>–</td>
<td>–</td>
<td>E 2</td>
</tr>
<tr>
<td>Cable gland Pg 16</td>
<td>–</td>
<td>–</td>
<td>E 4</td>
</tr>
<tr>
<td>Inclined section 45° at locking bolt</td>
<td>–</td>
<td>–</td>
<td>U 45° (D, R, L)</td>
</tr>
<tr>
<td>Triangular key M5 200/350 mm</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

**Ordering details**

1. Door locking device AV 21 = AV 21
2. Left-hand version = L
3. Cable entry (4 holes) = E 2
4. Dimension X = 30 mm = X 30
5. Inclined section at locking bolt = U

= AV 21 L E 2 X 30 U

---

**Notice**

The figure shows a door locking device in the left-hand version; the right-hand version is a mirror image. Standard dimensions: 11.5, 20, 30, 40 and 45 mm.
EC-Type Approval Certificate

Certificate no.: ATV 529
Approval site: TÜV Bau- und Betriebstechnik GmbH
Unternehmensgruppe TÜV Süddeutschland
Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile
Westendstraße 199, D-80686 München
(Kennnummer 0635)
Möddingshofe 30
D-42279 Wuppertal
Date of application: 1998-05-06
Manufacturer: K.A. Schmersal GmbH & Co.
Möddingshofe 30
D-42279 Wuppertal
Product, type: Interlock with sliding latch in a waterproof version as a component of an interlock device for landing doors, type AV 21
Testing laboratory: TÜV Bau- und Betriebstechnik GmbH
Zentralabteilung Aufzüge und Sicherheitsbauteile
Gottlieb-Daimler-Str. 7, D-70794 Filderstadt
Date and number of test report: 1998-07-07
EU-Directive: 95/16/EC
Test results: The safety component fulfils the basic safety requirements of the directive for the area of application described in the attached appendix of this EC-Type Approval Certificate.
Date of issuance: 1998-07-07

Zertifizierungsstelle für Aufzüge und Sicherheitsbauteile

...
Appendix to the EC-Type Approval Certificate No. ATV 529 from 1998-07-07

1 Range of application

1.1 Interlock with sliding latch in a waterproof version as a component in an interlock device for landing doors, type AV 21.

1.2 The interlock may only be used as a component of an interlock device for landing doors, provided that a separate Type Approval Certificate according to the Directive 95/16/EC is present for the co-ordination of the interlock to a particular door construction and for the existing additional components, if applicable, which are involved in the locking of the landing doors and their supervision.

1.3 Nominal values of the electrical safety devices (locking means switch):

- alternating current: 230 V, 2 A
- direct current: 200 V, 2 A

2 Conditions

2.1 The interlock must engage at least 12 mm all together (or at least 8 mm for switching the electrical safety device of the interlock) into or behind the part to be locked so that the effective engagement depth of at least 7 mm is guaranteed at the departure of the car.

2.2 The approval drawing MZ.50119-51A, edition 07.97, pages 1 to 5 as well as the written notices and dimensions are to be abided.

2.3 For the interlock device, different versions and operating devices than those cited in this approval drawing may not be utilised.

2.4 The electrical safety devices for the supervision of the closed position of the landing door (door switch) have not been tested for placement nor version by this Type Approval Test of the door locking device.

2.5 Through additional measures, it must be prevented that the elevator can be put into motion with an open or unlocked door through a single, non-operational intervention (checking device).

3 Notice

3.1 For the purpose of identification and information about the principle construction, the approval drawing MZ.50119-51A, edition 07.97, pages 1 to 5 with a seal of approval from 07.07.1998 is to be attached with the EC-Type Approval Certificate ATV 529 and its appendix.

3.2 A sign with the information for identification of the component with the name of the manufacturer, the Type Approval Identification Number and the type description must be present on the interlock device.

3.3 The EC-Type Approval Certificate may only be utilised in conjunction with the obligatory appendix.
1. Door locking devices

1.7 Accessories AY 03

Bearing block with lever for door locking device with pull strap

fig. 12

Notice
*Pull bar dimension Y is to be given when placing an order
max. dimension Y = 1000 mm

<table>
<thead>
<tr>
<th>lever position</th>
<th>R</th>
<th>W</th>
<th>cam travel</th>
<th>max. actuation force on the roller in door locking devices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[mm]</td>
<td>[mm]</td>
<td></td>
<td>AV 15</td>
</tr>
<tr>
<td>B-C</td>
<td>41</td>
<td>21</td>
<td>25</td>
<td>9.5 N</td>
</tr>
<tr>
<td>B-D</td>
<td>52</td>
<td>27</td>
<td>30</td>
<td>7.5 N</td>
</tr>
<tr>
<td>A-D</td>
<td>65</td>
<td>34</td>
<td>40</td>
<td>6.0 N</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>description</th>
<th>weight [g]</th>
<th>type</th>
<th>ordering suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>bearing block</td>
<td>350</td>
<td>AY 03</td>
<td>–</td>
</tr>
<tr>
<td>pull bar, *length as ordered</td>
<td>–</td>
<td>–</td>
<td>Y ...</td>
</tr>
</tbody>
</table>

Ordering details
1. bearing block = AY 03
2. dimension Y = 450 mm = Y 450

= AY 03 Y 450
1. Door locking devices

1.7 Accessories AW 01

Angled transmission (i= 1:1) with lever

fig. 13

<table>
<thead>
<tr>
<th>lever position</th>
<th>R [mm]</th>
<th>W [mm]</th>
<th>cam travel [mm]</th>
<th>AV 15</th>
<th>AV 18</th>
<th>AV 25</th>
<th>AV 28</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-C</td>
<td>54</td>
<td>28</td>
<td>35</td>
<td>7 N</td>
<td>7 N</td>
<td>17 N</td>
<td>17 N</td>
</tr>
<tr>
<td>A-D</td>
<td>65</td>
<td>34</td>
<td>40</td>
<td>6 N</td>
<td>6 N</td>
<td>14 N</td>
<td>14 N</td>
</tr>
</tbody>
</table>

Notice

* Pull bar dimension Y is to be given when placing an order, max. dimension Y = 1000 mm. The figure shows the left-hand version, the right-hand version is the mirror image.

<table>
<thead>
<tr>
<th>description</th>
<th>weight [g]</th>
<th>type</th>
<th>ordering suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>angle transmission, right-hand version</td>
<td>550</td>
<td>AW 01 R</td>
<td>–</td>
</tr>
<tr>
<td>angle transmission, left-hand version</td>
<td>550</td>
<td>AW 01 L</td>
<td>–</td>
</tr>
<tr>
<td>pull bar, *length as ordered</td>
<td>–</td>
<td>–</td>
<td>Y ...</td>
</tr>
</tbody>
</table>

Ordering details

1. angle transmission = AW 01
2. right-hand version = R
3. dimension Y = 450 mm = Y 450

= AW 01 R Y 450
1. Door locking devices
1.7 Accessories H 92, H 105

Lever for door locking device H 92

Lever for door locking device H 105