Door Hinges
บานพับประตู
Door Hinges

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</tr>
</tbody>
</table>
Hinge groups

The hinges in this catalogue are divided into the following groups:

- Butt Hinges - are not installed in the door frame or door panel, but screwed onto the door construction and frame construction.
- Drill-in hinges - includes all door hinges where components are drilled into door panels and door frames like screws.
- Continuous hinges - are screwed onto door and frame constructions and range from bottom to top of the door.
- Concealed hinges - are mounted in such way that they are not visible from outside when the door is closed.

Installation versions

A flush door is a door which frame and door panel are in one line.
A door which door panel has a rebate going over the frame is a rebated door.

Flush door
Rebated door

A mortise hinge is a hinge which winges are mortised into frame and panel.
A hinge which winges are screwed to the surface of frame and panel is a non-mortise hinge.

Mortise hinge
Non-mortise hinge

A mortise hinge is a hinge which winges are mortised into frame and panel.
A hinge which winges are screwed to the surface of frame and panel is a non-mortise hinge.

Mortise hinge
Non-mortise hinge
Door direction
ลักษณะการเปิดประตู

Depending of the pivot direction of a door, a door is classified as a left and right hand door. The door direction or side definition according to the german standard DIN 107. Please beware that this standard is different as the ANSI definition for left hand and right hand.

Visible position of the door hinges on the left = DIN left
Visible position of the door hinges on the right = DIN right

Furthermore, common definitions derive from the access direction.

In the EN standard for hinges (EN 1935:2002) is not specified where a hinge has to be fixed exactly. The recommendation shown below is only a guide and should be proved always against the door specifications.

Figure 1 – Use for medium weight doors. The benefit of this solution is that door will be held straight and won’t warped.

Figure 2 – Use for higher weight doors. This alternative is recommended when door closing device is fixed on the door.

Figure 3 – Use for door height over 2,100 mm. This solution is for constructions with a high risk of door warping.

Figure 4 – Use for door height over 2,100 mm. This version is especially recommended when door closers are fitted on the door.

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Hinge position recommendation
ขั้นแนะนำของตำแหน่งที่ติดตั้งปูน GPIO โดยที่ผู้ใช้ต้องตรวจสอบและปรับเปลี่ยนทางสภาพที่ใช้งานจริง

Figure 1 – Use for medium weight doors. The benefit of this solution is that door will be held straight and won’t warped.

Figure 2 – Use for higher weight doors. This alternative is recommended when door closing device is fixed on the door.

Figure 3 – Use for door height over 2,100 mm. This solution is for constructions with a high risk of door warping.

Figure 4 – Use for door height over 2,100 mm. This version is especially recommended when door closers are fitted on the door.

Figures 1-4 show different hinge solutions for different door heights and weights. The recommendations are based on the EN standard (EN 1935:2002) and should be adjusted according to the specific door and installation conditions.
Standards relevant to the architectural hardware industry

EN 1935: 2002 - Building hardware - single axis hinges

This European Standard specifies requirements for single-axis hinges for windows and doors opening only in one direction whose rotation axis is no more than 30 mm from the face of the sash or door. It covers both fixed pin and lift-off hinges.

The European standard classifies single-axis hinges using an 8 digit coding system. It is intended that this classification system will apply to all building hardware product standards so that complementary items of hardware can be specified to, for instance, a common level of corrosion resistance, category of use, etc. Each digit refers to a particular feature of the product measured against the standard’s performance requirements.

Scope

This European Standard specifies requirements for single-axis hinges for windows and doors opening only in one direction whose rotation axis is no more than 30 mm from the face of the sash or door. It covers both fixed pin and lift-off hinges.

Classification

Digit 1 - Category of use

Four categories of duty are identified:

- Category 1: Light duty
- Category 2: Medium duty
- Category 3: Heavy duty
- Category 4: Severe duty

Digit 2 - Durability

Three grades of durability for single-axis hinges are identified:

- Grade 3: 10,000 test cycles, for light duty hinges on windows.
- Grade 4: 25,000 test cycles, for light duty hinges on windows and doors.
- Grade 7: 200,000 test cycles, for medium, heavy and severe duty hinges on doors only.

Digit 3 - Test door mass

Eight door mass grades related to single-axis hinges are identified as shown in the following table.

<table>
<thead>
<tr>
<th>Test door mass grade</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door mass (kg)</td>
<td>10 kg</td>
<td>20 kg</td>
<td>40 kg</td>
<td>60 kg</td>
<td>80 kg</td>
<td>100 kg</td>
<td>120 kg</td>
<td>160 kg</td>
</tr>
</tbody>
</table>
Door Hinges Information

We reserve the right to alter specifications without notice (HTH Architectural Hardware 2015).

Digit 4 - Suitability for fire/smoke door use

Two grades of suitability are identified:

Grade 0: Not suitable for fire/smoke resistant door assemblies.
Grade 1: Suitable for use on fire/smoke resistant door assemblies, subject to satisfactory assessment of the contribution of the single-axis hinge to the fire resistance of special fire/smoke door assemblies. Such assessment is out side the scope of this European standard (See EN 1634-1).

Digit 5 - Safety

Single-axis hinges are required to satisfy the essential requirements of safety in use. Therefore, only Grade 1 is identified.

Digit 6 - Corrosion resistance

Five grades of corrosion resistance are identified in accordance with EN 1670

Grade 0: No defined corrosion resistance.
Grade 1: Mild resistance.
Grade 2: Moderate resistance.
Grade 3: High resistance.
Grade 4: Very high resistance.

Digit 7 - Security - Burglar resistance

Two grades of security are identified:

Grade 0: Not suitable to use with burglar-resistant door assemblies.
Grade 1: Suitable to use with burglar resistant door assemblies, subject to satisfactory assessment for contribution of hinges of the burglar-resistance of specified burglar-resistant door assemblies.

Digit 8 - Hinge grade

Fourteen grades are identified in this standard and are detailed in the following table. The full classification is shown in the standard.

<table>
<thead>
<tr>
<th>Hinge grade</th>
<th>Window/Door</th>
<th>Test cycles</th>
<th>Door mass</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>grade</td>
<td>runs</td>
<td>kg</td>
</tr>
<tr>
<td>1</td>
<td>Win</td>
<td>10,000</td>
<td>10 kg</td>
</tr>
<tr>
<td>2</td>
<td>Win</td>
<td>10,000</td>
<td>20 kg</td>
</tr>
<tr>
<td>3</td>
<td>Win/Dr</td>
<td>25,000</td>
<td>20 kg</td>
</tr>
<tr>
<td>4</td>
<td>Dr</td>
<td>200,000</td>
<td>40 kg</td>
</tr>
<tr>
<td>5</td>
<td>Win/Dr</td>
<td>25,000</td>
<td>40 kg</td>
</tr>
<tr>
<td>6</td>
<td>Dr</td>
<td>200,000</td>
<td>60 kg</td>
</tr>
<tr>
<td>7</td>
<td>Win</td>
<td>10,000</td>
<td>60 kg</td>
</tr>
<tr>
<td>8</td>
<td>Win/Dr</td>
<td>25,000</td>
<td>80 kg</td>
</tr>
<tr>
<td>9</td>
<td>Dr</td>
<td>200,000</td>
<td>80 kg</td>
</tr>
<tr>
<td>10</td>
<td>Dr</td>
<td>200,000</td>
<td>100 kg</td>
</tr>
<tr>
<td>11</td>
<td>Dr</td>
<td>200,000</td>
<td>120 kg</td>
</tr>
<tr>
<td>12</td>
<td>Dr</td>
<td>200,000</td>
<td>160 kg</td>
</tr>
<tr>
<td>13</td>
<td>Dr</td>
<td>200,000</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Dr</td>
<td>200,000</td>
<td></td>
</tr>
</tbody>
</table>
Example

ยกลดย่องแข็ง

The following marking denotes a single-axis hinge for use in medium duty situations, tested to 200,000 cycles, for use on doors with a mass up to 60 kg, with stated fire door suitability, high corrosion resistance, suitable for burglar-resistant doors, and a hinge grading of 10.

รายละเอียดผลิตภัณฑ์ ผลิตภัณฑ์สำหรับการใช้งาน ผลิตภัณฑ์ที่ทดสอบมี 200,000 รอบ สำหรับใช้งานกับประตูขนาดไม่เกิน 60 กก. โดยสามารถใช้ได้กับประตูที่มีความต้านทานการกัดกร่อน เหมาะสำหรับประตูที่มีความต้านทานการกัดกร่อน และเป็นผลิตภัณฑ์ GRADE 10

Classification code : 27:3:1:1:1:1:10:
การจัดเน้นรหัส : 27:3:1:1:1:1:1:10:

Adjusting the door weight

การปรับน้ำหนักของประตู

Normally, three hinges are fitted to each door. Their positions are determined by the weight of the door and its resistance to warping or whipping. Hinge specification is also determined by the adjusted door weight (based on the actual weight supplied by the manufacturer). The factors by which the door mass has to be adjusted for excessive widths of door are calculated by dividing the door height by its width. For a factor of 2 or greater, no allowance has to be made. When the factor is less than 2, the door mass has to be increased by the value required to bring the factor to 2 expressed as a percentage. These percentages are shown in the side loading calculations table shown right.

โดยปกติ เราจะติดตั้งลิ้นชักสามตัวในแบบประตู ตำแหน่งของการติดตั้งจะถูกกำหนดโดยน้ำหนักของประตูและการทนต่อการพังหรือการพับ ลักษณะรายละเอียดของแบบประตูจะถูกกำหนดโดยการปรับน้ำหนักของประตู (ข้อมูลที่บ้านผลิตหรือจากรูปภาพที่ผู้ผลิต) ดังนั้นน้ำหนักประตู จะต้องถูกปรับให้สอดคล้องกับความแข็งแรงของประตูที่ถูกกำหนดจากความต้านทานการพังของประตู หากค่าตัวแปรน้ำหนักอย่าง 2 ถึง 2.2 จะไม่มีการปรับใดๆ หากค่าตัวแปรน้อยกว่า 2 น้ำหนักประตูจะต้องเพิ่มโดยค่าที่ทำให้ค่าตัวแปรเป็น 2 ค่าที่แสดงในแบบขั้นตอนต่างๆ ต้องมีการปรับที่เหมาะสมด้วย

Side loading calculations

การคำนวนน้ำหนักเพิ่มขึ้นจากค่าเริ่มต้น

<table>
<thead>
<tr>
<th>Door size</th>
<th>Factor</th>
<th>Normal increase of Door height mass of door leaf %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,000</td>
<td>1,000</td>
<td>1,050</td>
</tr>
<tr>
<td>1,050</td>
<td>1,082</td>
<td>1,100</td>
</tr>
<tr>
<td>1,100</td>
<td>1,166</td>
<td>1,200</td>
</tr>
<tr>
<td>1,200</td>
<td>1,60</td>
<td>1,250</td>
</tr>
</tbody>
</table>

Adjusted door weight calculation table

ตารางการคำนวนการปรับน้ำหนักประตู

<table>
<thead>
<tr>
<th>Actual door weight</th>
<th>Door closer + 20%</th>
<th>(Backcheck) + 75%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra heavy use + 10%</td>
<td>Light use + 10%</td>
<td></td>
</tr>
</tbody>
</table>

Example

Ã¥®Á£·¬¥¥££ÀmA

HÅFÉLE

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ผลิตภัณฑ์และบริการใหม่: www.hafele.com
Additional tables to aid understanding of EN 1935 2002

Digit 8 - hinge grade, regarding information on door mass and test cycles:

We reserve the right to alter specifications without notice (HTH Architectural Hardware 2015).

Table B shows the mass range of typical doors

<table>
<thead>
<tr>
<th>Door type</th>
<th>Size mm</th>
<th>Mass kg</th>
<th>Duty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cupboard, wardrobe, cabinet, louvered doors and shutters</td>
<td>2,040 x 626 x 40</td>
<td>3.0–10.0</td>
<td>Light</td>
</tr>
<tr>
<td>Light internal large wardrobe and large louvered doors</td>
<td>2,040 x 926 x 40</td>
<td>10.0–17.5</td>
<td>Light</td>
</tr>
<tr>
<td>Medium internal doors</td>
<td>2,040 x 1,012 x 40</td>
<td>17.5–25.0</td>
<td>Medium</td>
</tr>
<tr>
<td>Heavy internal doors</td>
<td>2,040 x 1,012 x 40</td>
<td>25.0–37.5</td>
<td>Medium</td>
</tr>
<tr>
<td>Heavy internal doors</td>
<td>2,040 x 1,012 x 40</td>
<td>40.0–60.0</td>
<td>Heavy</td>
</tr>
<tr>
<td>Oversize or special external doors</td>
<td>2,040 x 1,200 x 40</td>
<td>55.0–110.0</td>
<td>Heavy</td>
</tr>
</tbody>
</table>

Table C gives estimated number of operations of typical doors and use. Failure to assess the likely frequency of operation of a door could lead to the specification of inadequate hinges and subsequent problems.

<table>
<thead>
<tr>
<th>Door type</th>
<th>Cycles/ day</th>
<th>Cycles/ annum</th>
</tr>
</thead>
<tbody>
<tr>
<td>High use/high duty situations:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large department store entrance</td>
<td>5,000</td>
<td>1,500,000</td>
</tr>
<tr>
<td>Large office building entrance</td>
<td>4,000</td>
<td>920,000</td>
</tr>
<tr>
<td>Cinema or theatre entrance</td>
<td>1,300</td>
<td>455,000</td>
</tr>
<tr>
<td>School entrance</td>
<td>1,250</td>
<td>225,000</td>
</tr>
<tr>
<td>Entrance door to school toilets</td>
<td>1,250</td>
<td>225,000</td>
</tr>
<tr>
<td>City centre shop entrance</td>
<td>1,000</td>
<td>300,000</td>
</tr>
<tr>
<td>Large city bank entrance</td>
<td>1,000</td>
<td>250,000</td>
</tr>
<tr>
<td>School corridor fire door</td>
<td>600</td>
<td>108,000</td>
</tr>
<tr>
<td>Town bank entrance</td>
<td>500</td>
<td>150,000</td>
</tr>
<tr>
<td>City centre restaurant entrance</td>
<td>500</td>
<td>150,000</td>
</tr>
<tr>
<td>Large office corridor fire door</td>
<td>450</td>
<td>104,000</td>
</tr>
<tr>
<td>Town centre shop entrance</td>
<td>400</td>
<td>120,000</td>
</tr>
<tr>
<td>Large office or factory toilet door</td>
<td>400</td>
<td>92,000</td>
</tr>
<tr>
<td>Hospital ward door</td>
<td>350</td>
<td>128,000</td>
</tr>
</tbody>
</table>

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3.9 AH
Lift-off hinge StarTec
บานพับแบบถอดใต้ StarTec

Features
- For timber frames
- For flush doors
- With fixed pin and washer with ball bearings
- Door removable

Technical data
- Max. door weight with 3 hinges: 48 kg
- Knuckle: Ø12 mm
- Pin: Ø7 mm
- Material thickness: 2.5 mm

Material/finish
- Stainless steel matt (304)
- DIN left: 926.20.303
- DIN right: 926.20.203

Packing: 2 pcs. incl. fixing material

Features
- For timber frames
- For flush doors
- With fixed pin and washer with ball bearings
- Door removable

Technical data
- Max. door weight with 3 hinges: 40 kg
- Knuckle: Ø12 mm
- Pin: Ø7 mm
- Material thickness: 2.5 mm

Material/finish
- Stainless steel matt (304)
- DIN left: 926.20.503
- DIN right: 926.20.403

Packing: 2 pcs. incl. fixing material

We reserve the right to alter specifications without notice (HTH Architectural Hardware 2015).
**Lift-off hinge StarTec**

**Features**
- For timber frames
- For flush doors
- With fixed pin and washer with ball bearings
- Door removable

**Technical data**
- Max. door weight with 3 hinges: 68 kg
- Knuckle: Ø16 mm
- Pin: Ø10 mm
- Material thickness: 3 mm

**Material/finish**

<table>
<thead>
<tr>
<th>DIN left</th>
<th>DIN right</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel matt (304)</td>
<td>926.20.103</td>
</tr>
</tbody>
</table>

Packing: 2 pcs. incl. fixing material

**Rising hinge StarTec**

**Features**
- For timber frames
- For flush doors
- With fixed pin and washer with ball bearings
- Door removable

**Technical data**
- Max. door weight with 3 hinges: 68 kg
- Knuckle: Ø16 mm
- Pin: Ø10 mm
- Material thickness: 3 mm
- Rising height by 90° opening: ~5 mm

**Material/finish**

<table>
<thead>
<tr>
<th>DIN left</th>
<th>DIN right</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel matt (304)</td>
<td>926.27.503</td>
</tr>
</tbody>
</table>

Packing: 2 pcs. incl. fixing material
### Lift-off hinge StarTec

**Features**
- For timber frames
- For flush doors
- With fixed pin and intermediate ring
- Suitable for DIN left and right hand

**Technical data**
- Knuckle: Ø18 mm
- Material thickness: 3 mm

| Height a in mm/inch | 127/5” |
| Width b in mm/inch | 100/4” |
| Max. door weight with 3 hinges kg | 80 |

**Material**
- Stainless steel matt (304)

**Packing**: 2 pcs. incl. fixing material

<table>
<thead>
<tr>
<th>Material code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>926.13.903</td>
<td>Standard hinge StarTec</td>
</tr>
</tbody>
</table>

### Standard hinge StarTec

**Features**
- For timber frames
- For flush doors
- With fixed pin
- Knuckle with four washers
- Suitable for DIN left and right hand
- ANSI drilling pattern
- Stainless steel matt (304)

**Technical data**
- Knuckle: Ø18 mm
- Material thickness: 3 mm

| Height a in mm/inch | 102/4” |
| Width b in mm/inch | 76/3” |
| Max. door weight with 3 hinges kg | 40 |

**Material**
- Stainless steel matt (304)

**Packing**: 2 pcs. incl. fixing material

<table>
<thead>
<tr>
<th>Material code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>926.17.130</td>
<td>Lift-off hinge StarTec</td>
</tr>
<tr>
<td>926.27.203</td>
<td>Standard hinge StarTec</td>
</tr>
<tr>
<td>926.13.703</td>
<td>Lift-off hinge StarTec</td>
</tr>
</tbody>
</table>

**Packing**: 2 pcs. incl. fixing material

<table>
<thead>
<tr>
<th>Material code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>926.13.903</td>
<td>Standard hinge StarTec</td>
</tr>
</tbody>
</table>
Features
• For timber frames
• For flush doors
• With fixed pin
• Knuckle with two ball bearings
• Suitable for DIN left and right hand
• ANSI drilling pattern

Technical data
• Knuckle: Ø11 mm
• Material thickness: 2 mm

Features
• For timber frames
• For flush doors
• With fixed pin
• Knuckle with two ball bearings
• Suitable for DIN left and right hand
• ANSI drilling pattern

Technical data
• Knuckle: Ø12 mm
• Material thickness: 2.5 mm

Height a in mm/inch
ความสูง ำ มม/นิ้ว 102/4”

Width b in mm/inch
ความกว้าง ำ มม/นิ้ว 76/3”

Max. door weight with 3 hinges kg
นานพานิ้งก้อยคับ 3 ตัว ำน רבคาดหมิ่ง สูงสุด กก. 40

<table>
<thead>
<tr>
<th>Material</th>
<th>Code 921.17.170</th>
<th>Code 926.25.903</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel matt (304)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stainless steel polished (304)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brass polished lacquered</td>
<td>921.17.170</td>
<td></td>
</tr>
<tr>
<td>Brass antique copper plated</td>
<td>921.17.175</td>
<td></td>
</tr>
<tr>
<td>Brass antique brass plated</td>
<td>921.17.171</td>
<td></td>
</tr>
</tbody>
</table>

Packing: 2 pcs. incl. fixing material
บรรจุ: 2 ชิ้น พร้อมบริการให้ค้อง

Height a in mm/inch
ความสูง ำ มม/นิ้ว 102/4”

Width b in mm/inch
ความกว้าง ำ มม/นิ้ว 76/3”

Max. door weight with 3 hinges kg
นานพานิ้งกoyer ำนับผ่าน 3 ตัว สูงสุด กก. 55

<table>
<thead>
<tr>
<th>Material</th>
<th>Code 921.17.140</th>
<th>Code 926.25.903</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel matt (304)</td>
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<td></td>
</tr>
<tr>
<td>Stainless steel polished (304)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brass polished lacquered</td>
<td>921.17.140</td>
<td></td>
</tr>
<tr>
<td>Brass antique copper plated</td>
<td>921.17.151</td>
<td></td>
</tr>
<tr>
<td>Brass antique brass plated</td>
<td>921.17.171</td>
<td></td>
</tr>
</tbody>
</table>

Packing: 2 pcs. incl. fixing material
บรรจุ: 2 ชิ้น พร้อมบริการให้ค้อง
### Standard hinge StarTec

**Features**
- For timber frames
- For flush doors
- With fixed pin
- Knuckle with four ball bearings
- Suitable for DIN left and right hand
- ANSI drilling pattern

**Technical data**
- Knuckle: Ø14 mm
- Material thickness: 3 mm

<table>
<thead>
<tr>
<th>Height a in mm/inch</th>
<th>102/4”</th>
<th>102/4”</th>
<th>102/4”</th>
<th>114/4.5”</th>
<th>127/5”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel matt (304)</td>
<td>926.20.803</td>
<td>921.08.202</td>
<td>926.13.103</td>
<td>921.17.025</td>
<td>926.25.103</td>
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<tr>
<td>Stainless steel polished (304)</td>
<td>926.41.211</td>
<td>926.41.231</td>
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<td>926.41.271</td>
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<tr>
<td>Stainless steel matt (316)</td>
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<td>926.20.905</td>
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<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Brass polished lacquered</td>
<td>926.20.880</td>
<td>926.20.980</td>
<td>926.13.180</td>
<td>–</td>
<td>926.25.180</td>
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<tr>
<td>Brass antique copper plated</td>
<td>926.20.819</td>
<td>926.20.919</td>
<td>–</td>
<td>–</td>
<td>926.25.119</td>
</tr>
<tr>
<td>Brass antique brass plated</td>
<td>926.20.809</td>
<td>926.20.909</td>
<td>–</td>
<td>–</td>
<td>926.25.109</td>
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<tr>
<td>Stainless steel (304) brass plated polished PVD</td>
<td>926.38.085</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>926.38.185</td>
</tr>
</tbody>
</table>

**Max. door weight with 3 hinges kg**
- 75
- 80

**Packing:** 2 pcs. incl. fixing material

### Door Hinges

**Butt Hinges**

**Features**
- For timber frames
- For flush doors
- With fixed pin
- Knuckle with two ball bearings
- Suitable for DIN left and right hand
- ANSI drilling pattern

**Technical data**
- Knuckle: Ø14 mm
- Material thickness: 3 mm

<table>
<thead>
<tr>
<th>Height a in mm/inch</th>
<th>114/4.5”</th>
<th>127/5”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel matt (304)</td>
<td>926.25.403</td>
<td>926.25.503</td>
</tr>
<tr>
<td>Brass polished lacquered</td>
<td>926.25.480</td>
<td>926.25.580</td>
</tr>
<tr>
<td>Brass antique copper plated</td>
<td>926.25.419</td>
<td>926.25.519</td>
</tr>
<tr>
<td>Brass antique brass plated</td>
<td>921.17.074</td>
<td>926.25.509</td>
</tr>
</tbody>
</table>

**Max. door weight with 3 hinges kg**
- 75
- 80

**Packing:** 2 pcs. incl. fixing material

**Technical data**
- Knuckle: Ø14 mm
- Material thickness: 3 mm

<table>
<thead>
<tr>
<th>Height a in mm/inch</th>
<th>114/4.5”</th>
<th>127/5”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel matt (304)</td>
<td>926.25.403</td>
<td>926.25.503</td>
</tr>
<tr>
<td>Brass polished lacquered</td>
<td>926.25.480</td>
<td>926.25.580</td>
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<tr>
<td>Brass antique copper plated</td>
<td>926.25.419</td>
<td>926.25.519</td>
</tr>
<tr>
<td>Brass antique brass plated</td>
<td>921.17.074</td>
<td>926.25.509</td>
</tr>
</tbody>
</table>
**Standard hinge StarTec**

**Features**
- For timber frames
- For flush doors
- With fixed pin
- Knuckle with four ball bearings
- Suitable for DIN left and right hand
- ANSI drilling pattern

**Technical data**
- Knuckle: Ø16 mm
- Material thickness: 4 mm

**Heavy duty hinge StarTec**

**Features**
- For timber frames
- For flush doors
- With fixed pin
- Knuckle with two ball bearings
- Suitable for DIN left and right hand
- Tested according to EN 1935:2002 hinge class 13
- Tested for fire resistance and smoke control

**Technical data**
- Max. door weight according to EN 1935:2002
- Knuckle: Ø14 mm
- Material thickness: 3 mm

**Technical specifications**

<table>
<thead>
<tr>
<th>Height a in mm/inch</th>
<th>Width b in mm/inch</th>
<th>Max. door weight with 3 hinges kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>114/4.5&quot;</td>
<td>102/4&quot;</td>
<td>90</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stainless steel matt (304)</th>
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<tbody>
<tr>
<td>921.17.035</td>
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<td>Stainless steel brass polished lacquered</td>
</tr>
<tr>
<td>926.34.480</td>
</tr>
<tr>
<td>Stainless steel antique copper plated</td>
</tr>
<tr>
<td>926.34.419</td>
</tr>
<tr>
<td>Stainless steel antique brass plated</td>
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<tr>
<td>926.34.409</td>
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</table>

<table>
<thead>
<tr>
<th>Height a in mm/inch</th>
<th>Width b in mm/inch</th>
<th>Max. door weight with 3 hinges kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>102/4&quot;</td>
<td>76/3&quot;</td>
<td>120</td>
</tr>
<tr>
<td>102/4&quot;</td>
<td>89/3.5&quot;</td>
<td>120</td>
</tr>
<tr>
<td>120</td>
<td>120</td>
<td>120</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stainless steel matt (304)</th>
</tr>
</thead>
<tbody>
<tr>
<td>926.90.203</td>
</tr>
<tr>
<td>Stainless steel brass polished</td>
</tr>
<tr>
<td>926.33.203</td>
</tr>
<tr>
<td>Stainless steel antique copper plated</td>
</tr>
<tr>
<td>926.33.305</td>
</tr>
<tr>
<td>Stainless steel antique brass plated</td>
</tr>
<tr>
<td>926.33.403</td>
</tr>
<tr>
<td>Stainless steel antique copper plated</td>
</tr>
<tr>
<td>926.33.280</td>
</tr>
<tr>
<td>Stainless steel antique brass plated</td>
</tr>
<tr>
<td>926.33.286</td>
</tr>
</tbody>
</table>

Packing: 2 pcs. incl. fixing material

**EN 1935**

- Tested according to the requirements of EN 1935:2002
- Hinge class 13
- Tested for fire resistance and smoke control

Packing: 2 pcs. incl. fixing material

**New products and systems:**

Hafele's new products and systems.

[www.hafele.com](http://www.hafele.com)
### Standard hinge StarTec

**Features**
- For timber frames
- For flush doors
- With fixed pin
- Knuckle with four ball bearings
- Suitable for DIN left and right hand

**Technical data**
- Knuckle: Ø14 mm
- Material thickness: 3 mm

<table>
<thead>
<tr>
<th>Height a in mm/inch (ความสูง คง)</th>
<th>Width b in mm/inch (ความกว้าง คง)</th>
<th>Max. door weight with 3 hinges kg (น้ำหนักสูงสุด 3 ตัว)</th>
</tr>
</thead>
<tbody>
<tr>
<td>127/5”</td>
<td>89/3.5”</td>
<td>70</td>
</tr>
</tbody>
</table>

- Brass polished lacquered
- Brass antique copper plated
- Brass antique brass plated
- Stainless steel (304) brass plated polished PVD

**Packing:** 2 pcs. incl. fixing material

### Door Hinges

**Butt Hinges**

**Features**
- For timber frames
- For flush doors
- With fixed pin
- Knuckle with four ball bearings
- Suitable for DIN left and right hand

**Technical data**
- Knuckle: Ø14 mm
- Material thickness: 3 mm

<table>
<thead>
<tr>
<th>Height a in mm/inch (ความสูง คง)</th>
<th>Width b in mm/inch (ความกว้าง คง)</th>
<th>Max. door weight with 3 hinges kg (น้ำหนักสูงสุด 3 ตัว)</th>
</tr>
</thead>
<tbody>
<tr>
<td>127/5”</td>
<td>89/3.5”</td>
<td>70</td>
</tr>
</tbody>
</table>

- Brass polished lacquered
- Brass antique copper plated
- Brass antique brass plated

**Packing:** 2 pcs. incl. fixing material

---

We reserve the right to alter specifications without notice (HTH Architectural Hardware 2015).

New products and systems: [www.hafele.com](http://www.hafele.com)

ผลิตภัณฑ์และวัสดุกราฟิกใหม่: [www.hafele.com](http://www.hafele.com)
### Door Hinges

**Butt Hinges**

#### Standard hinge StarTec

**Features**
- For timber frames
- For flush doors
- With anti-lift securing device
- With fixed pin
- Knuckle with two ball bearings
- Suitable for DIN left and right hand

**Technical data**
- Knuckle: Ø12 mm
- Material thickness: 2.5 mm

#### Door Hinges

**Butt Hinges**

#### StarTec

**Features**
- For timber frames
- For flush doors
- With anti-lift securing device
- With fixed pin
- Knuckle with two ball bearings
- Suitable for DIN left and right hand
- ANSI drilling pattern

**Technical data**
- Knuckle: Ø14 mm
- Material thickness: 3 mm

### Technical Specifications

<table>
<thead>
<tr>
<th>Height a in mm/inch</th>
<th>Width b in mm/inch</th>
<th>Max. door weight with 3 hinges kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>102/4&quot;</td>
<td>71/2.75&quot;</td>
<td>45</td>
</tr>
</tbody>
</table>

**Stainless steel matt (304)**
- Height a: 102 mm
- Width b: 71 mm
- Max. door weight with 3 hinges: 45 kg

**Packing**: 2 pcs. incl. fixing material

---

**Stainless steel matt (304)**
- Height a: 102 mm
- Width b: 71 mm
- Max. door weight with 3 hinges: 70 kg

**Brass polished lacquered**
- Height a: 102 mm
- Width b: 71 mm

**Packing**: 2 pcs. incl. fixing material

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**New products and systems**: [www.hafele.com](http://www.hafele.com)

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### Standard hinge StarTec

**Features**
- For timber frames
- For rebated doors
- With fixed pin
- Knuckle with two ball bearings
- Suitable for DIN left and right hand

**Technical data**
- Knuckle: Ø14 mm
- Material thickness: 3 mm

**Features**
- Suitable for lightweight application only
- Short hinge knuckle not usable for excessive load or extra wide doors
- Stainless steel pin

**Technical data**
- Knuckle: Ø13 mm
- Material thickness: 4 mm

<table>
<thead>
<tr>
<th>Height a in mm/inch</th>
<th>102/4&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. door weight with 3 hinges kg</td>
<td>58</td>
</tr>
<tr>
<td>Stainless steel matt (304)</td>
<td>926.25.803</td>
</tr>
</tbody>
</table>

**Technical data**
- Knuckle: Ø14 mm
- Material thickness: 3 mm

---

### Parliament hinge StarTec

**Features**
- Suitable for lightweight application only
- Short hinge knuckle not usable for excessive load or extra wide doors
- Stainless steel pin

**Technical data**
- Knuckle: Ø13 mm
- Material thickness: 4 mm

<table>
<thead>
<tr>
<th>Height a in mm</th>
<th>102</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width b in mm</td>
<td>127</td>
</tr>
<tr>
<td>Max. door weight with 3 hinges kg</td>
<td>40</td>
</tr>
<tr>
<td>Projection C in mm</td>
<td>76</td>
</tr>
<tr>
<td>Brass chrome plated matt</td>
<td>921.08.596</td>
</tr>
<tr>
<td>Brass polished lacquered</td>
<td>921.08.598</td>
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</tbody>
</table>

**Technical data**
- Knuckle: Ø13 mm
- Material thickness: 4 mm

---

**Technical data**
- Knuckle: Ø13 mm
- Material thickness: 4 mm

**Packing:** 2 pcs. incl. fixing material

---

**Technical data**
- Knuckle: Ø14 mm
- Material thickness: 3 mm

**Packing:** 2 pcs. incl. fixing material

---

**Technical data**
- Knuckle: Ø14 mm
- Material thickness: 3 mm

**Packing:** 2 pcs. incl. fixing material
Spring hinge StarTec

Features
• For timber or steel frames
• For flush doors
• Maintenance-free polymer friction bearing
• Spring force can be adjusted and locked in position
• Suitable for DIN left and right hand
• UL listed 847H, ANSI A117.1

Installation
• Relax
- Slacken security screw on the side of the knuckle
- Press down and simultaneously turn the hexagon socket screw in the knuckle anti-clockwise. Repeat this action until the hinge is completely relaxed. Then install the hinges.
• Tighten
- Turn the hexagon socket screw in the knuckle clockwise and set spring force of all hinges equally as required.
- Re-tighten security screw firmly.

Technical data
• Max. door weight with 3 hinges: 60 kg
• Knuckle: Ø18 mm
• Material thickness: 3.5 mm

Technical data
- Flange width b mm

<table>
<thead>
<tr>
<th>Flange width b mm</th>
<th>40</th>
<th>46</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel chrome plated matt</td>
<td>926.10.041</td>
<td>926.10.141</td>
</tr>
<tr>
<td>Steel brass plated polished</td>
<td>926.10.080</td>
<td>–</td>
</tr>
</tbody>
</table>

Responsibilities
• Adjustment of spring force
• Fixing of adjustment spring force with security screw

Technical data
- Spring hinge
- StarTec
- 6WDU7HF

Features
• For timber or steel frames
• For flush doors
• Maintenance-free polymer friction bearing
• Spring force can be adjusted and locked in position
• Suitable for DIN left and right hand
• UL listed 847H, ANSI A117.1

Installation
• Relax
- Slacken security screw on the side of the knuckle
- Press down and simultaneously turn the hexagon socket screw in the knuckle anti-clockwise. Repeat this action until the hinge is completely relaxed. Then install the hinges.
• Tighten
- Turn the hexagon socket screw in the knuckle clockwise and set spring force of all hinges equally as required.
- Re-tighten security screw firmly.

Technical data
• Max. door weight with 3 hinges: 60 kg
• Knuckle: Ø18 mm
• Material thickness: 3.5 mm

Technical data
- Flange width b mm

<table>
<thead>
<tr>
<th>Flange width b mm</th>
<th>40</th>
<th>46</th>
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<tbody>
<tr>
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<td>Steel brass plated polished</td>
<td>926.10.080</td>
<td>–</td>
</tr>
</tbody>
</table>

Responsibilities
• Adjustment of spring force
• Fixing of adjustment spring force with security screw

Technical data
- Spring hinge
- StarTec
- 6WDU7HF
Spring hinge StarTec

Features
- For timber or steel frames
- For flush doors
- Maintenance-free polymer friction bearing
- Spring force can be adjusted and locked in position
- Suitable for DIN left and right hand

Fixing
- Relax
  - Slacken security screw on the side of the knuckle
  - Press down and simultaneously turn the hexagon socket screw in the knuckle anticlockwise. Repeat this action until the hinge is completely relaxed. Then install the hinges.
- Tighten
  - Turn the hexagon socket screw in the knuckle clockwise and set spring force of all hinges equally as required.
  - Re-tighten security screw firmly.

Technical data
- Max. door weight with 3 hinges: 60 kg
- Knuckle: Ø18 mm
- Material thickness: 3.5 mm
- Flange width b mm

<table>
<thead>
<tr>
<th>Material</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel matt (304)</td>
<td>926.35.003</td>
</tr>
<tr>
<td>Steel brass plated polished</td>
<td>926.35.086</td>
</tr>
</tbody>
</table>

Packing: 3 pcs. incl. fixing material

A = Adjustment of spring force
B = Fixing of adjustment spring force with security screw

خصائص
- لولا أو سطح مرن
- لولا مع مثبتة
- أدراج لطيفة مطلقة
- مناسبة لجوانب الباب من اليمين واليسار

الثقيف
- إرادة
  - عرض ضبطة على الجانب
  - ضغط وتحرك معاً في مثبت الهر المختصر في الاتجاه العكسي. ضعف هذه العملية حتى تصل الاعتمد إلى الراحة. ثم حفظ ال[${}^{2}$‌
  - قوة الربيع يمكن ضبطها وتحويلها على الإحكاف
  - ختم ضبطة الهر

البيانات التكنولوجية
- وزن الباب 3 أطlass: 60 كج.
- مثبط: Ø18 مم.
- كثافة المواد: 3.5 مم.

الرمل: 3 تحليق. يحتوي أيضًا مواد التثبيت.

A = ضبط قوة الربيع
B = ضبط قوة الربيع مع ضباطة
Accessories for hinges StarTec
อุปกรณ์เสริมสำหรับบานพับ StarTec

Countersunk head screw
สกรูหัวจมสำหรับบานพับ

<table>
<thead>
<tr>
<th>Hinge material thickness mm</th>
<th>Screw size d x l mm</th>
<th>Stainless steel</th>
<th>Brass polished</th>
<th>Antique copper</th>
<th>Antique brass</th>
</tr>
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<tbody>
<tr>
<td>2.0/2.5</td>
<td>4.0 x 25</td>
<td>909.00.949</td>
<td>909.00.951</td>
<td>909.00.953</td>
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</tr>
<tr>
<td>3</td>
<td>4.5 x 32</td>
<td>909.00.950</td>
<td>909.00.952</td>
<td>909.00.954</td>
<td>909.00.956</td>
</tr>
</tbody>
</table>

Features
- For fixing the butt hinge to metal frames
  คุณสมบัติ
  - สำหรับยึดบานพับกับเฟรมโลหะ

Material/finish
วัสดุ/การชุบ:
Stainless steel matt
สแตนเลสสตีล

Cat. No. รหัสสินค้า: 926.22.300
**Heavy duty hinge StarTec**

**Features**
- For timber frames
- For heavy duty flush doors
- Maintenance-free polymer friction bearing
- Torsion-proof screw-in pins
- Suitable for DIN left hand and DIN right hand
- Tested according to DIN EN 1935:2002-05 hinge class 13

**Technical data**
- Max. door weight according to DIN EN 1935:2002-05 HC 13 120 kg
- Max. door weight with 2 hinges 130 kg (Reference door 2,000 x 1,000 x 40 mm)
- Knuckle Ø20 mm
- Pin Ø9 mm
- Material thickness 3 mm

**Material/finish**
- Stainless steel matt (304)
- Cat. No. 924.93.003

**EN 1935**

**Features**
- For timber frames
- For heavy duty flush doors
- Maintenance-free polymer friction bearing
- Torsion-proof screw-in pins
- Suitable for DIN left hand and DIN right hand
- Tested according to DIN EN 1935:2002-05 hinge class 13

**Technical data**
- Max. door weight according to DIN EN 1935:2002-05 HC 13 120 kg
- Max. door weight with 2 hinges 160 kg (Reference door 2,000 x 1,000 x 40 mm)
- Knuckle Ø20 mm
- Pin Ø9 mm
- Material thickness 3 mm

**Material/finish**
- Stainless steel matt (304)
- Cat. No. 924.93.103

* For doors under extra heavy duty please use additionally carrying pins.

* โปรแกรมสั่งผลิตในไทยมีให้บริการในประเทศไทยเท่านั้น
Heavy duty hinge StarTec

Features
• For timber frames
• For heavy duty flush doors
• Maintenance-free polymer friction bearing
• Torsion-proof screw-in pins
• Suitable for DIN left hand and DIN right hand
• Tested according to DIN EN 1935:2002-05 hinge class 14

Technical data
• Max. door weight according to DIN EN 1935:2002-05 HC 14 160 kg
• Max. door weight with 2 hinges 260 kg
  (Reference door 2,000 x 1,000 x 40 mm)
• Knuckle Ø20 mm
• Pin Ø9 mm
• Material thickness: 3 mm

Material/finish
Cat. No.
Stainless steel matt (304) 924.93.203

Packing: 2 pcs. incl. fixing material

Note
Carrying pins are used with butt hinges for architectural doors. The use of carrying pins is highly recommended with heavy duty doors (public buildings). They ease the load on the fixing screws and stabilize the hinge flange recessed in the door. However, carrying pins only increase the stability, not the maximum door weight!

Carrying pin StarTec

Features
• For the frames side of flanged hinges
• Screw stainless steel (304)

Material/finish
Cat. No.
Housing steel nickel plated 924.25.503

40

924.25.603
Door Hinges
Butt Hinges

Double action spring hinge StarTec

Features
- For timber frames
- For flush doors
- 180° swing action on both sides
- Suitable for DIN left and right hand
- With plastic washer improved swing action

Max. door weight kg

<table>
<thead>
<tr>
<th>15</th>
<th>22</th>
<th>27</th>
<th>40</th>
</tr>
</thead>
</table>

Height mm

| 75 | 100 | 125 | 150 |

Knuckle Ø mm

| 21 | 21 | 21 | 26 |

Door thickness mm


Max. door width mm

| 600 | 700 | 700 | 750 |

Steel nickel plated

| 927.01.070 | 927.01.170 | 927.01.270 | 927.01.370 |

Steel brass plated polished

| 927.01.081 | 927.01.181 | 927.01.281 | 927.01.381 |

Stainless steel matt

| 927.01.003 | 927.01.103 | 927.01.203 | 927.01.303 |

Max. door weight kg

| 15 kg | 22 kg | 27 kg | 40 kg |

Height mm

| 75 mm | 100 mm | 125 mm | 150 mm |

Knuckle Ø mm

| 21 mm | 21 mm | 21 mm | 26 mm |

Door thickness mm

| 18–25 mm | 25–30 mm | 30–35 mm | 35–40 mm |

Max. door width mm

| 600 mm | 700 mm | 700 mm | 750 mm |

Steel nickel plated

| 927.01.070 | 927.01.170 | 927.01.270 | 927.01.370 |

Steel brass plated polished

| 927.01.081 | 927.01.181 | 927.01.281 | 927.01.381 |

Stainless steel matt

| 927.01.003 | 927.01.103 | 927.01.203 | 927.01.303 |

For door weight max. 15 kg

For door weight max. 22 kg

For door weight max. 27 kg

For door weight max. 40 kg
### Concealed mortise hinge

**Features**
- For installation in wall recesses
- For flush wooden or metal doors
- Suitable for DIN left hand and DIN right hand
- Certified for fire resistant and smoke control doors in compliance with ANSI 156.1 and NFPA 80

**Technical data**
- Max. door height: 2,150 mm
- Max. door width: 1,200 mm
- Door thickness: 45 mm

**Note**
The number of hinges to be used depends on the door size and weight.

<table>
<thead>
<tr>
<th>Max. door size mm</th>
<th>Max. door weight kg</th>
<th>No. of hinges</th>
</tr>
</thead>
<tbody>
<tr>
<td>900 x 2,150</td>
<td>68</td>
<td>2</td>
</tr>
<tr>
<td>1,200 x 2,150</td>
<td>113</td>
<td>4</td>
</tr>
</tbody>
</table>

**Material/finish**
Steel chrome plated matt

Cat. No. 921.07.116
Pivot door hinge StarTec

Features
- Stainless steel thickness 2.5 mm
- For solid wood or timber doors with thickness 40–45 mm
- Maximum door size (height x width) 2,000 x 900 mm
- Maximum carrying weight at 60 kg

Material/finish

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel (304)</td>
<td>927.98.000</td>
</tr>
</tbody>
</table>

Packaging: 2 pcs. incl. fixing material

Pivot door hinge StarTec

Features
- สแตนเลสหนา 2.5 มม.
- สำหรับประตูไม้หรือไม้ป่าหนา 40-45 มม.
- ขนาดประตูสูง x กว้าง 2,000 x 900 มม.
- น้ำหนักยึดสูงสุดได้ 60 กก.

Material/finish

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>สแตนเลส (304)</td>
<td>927.98.000</td>
</tr>
</tbody>
</table>

บรรจุ 2 ชิ้น พร้อมวัสดุติดตั้ง
Concealed mortise hinge CIR

Features
- For flush doors
- For concealed mounting
- Maintenance-free polymer friction bearing
- Suitable for DIN left hand and DIN right hand

Technical data
- Max. door weight: 70 kg
- Adjustment facility:
  Side each ±3 mm,
  closing pressure each ±1.5 mm

Installation

Material/finish | Cat. No.  | अंकीय कोड |
----------------|-----------|-------------|
Steel galvanized | 927.54.090 |           |

Cover cap for CIR

Material/finish | Cat. No.  | अंकीय कोड |
----------------|-----------|-------------|
Plastic chrome plated matt | 927.54.141 |           |
Plastic brass plated | 927.54.180 |           |

Routing jig for CIR

Material | Cat. No.  | अंकीय कोड |
---------|-----------|-------------|
Steel | 927.54.200 |           |

New products and systems: www.hafele.com

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Concealed mortise hinge StarTec

Features
- For timber frames
- For flush doors
- For concealed mounting

Technical data
- Max. opening angle 180°

Finish
A Housing: Zinc alloy chrome plated satin
B Housing: Zinc alloy brass plated polished
C Housing: Zinc alloy antique brass
D Housing: Zinc alloy antique copper

Features
- For timber frames
- For flush doors
- For concealed mounting

Technical data
- Max. opening angle 180°

Finish
A Housing: Zinc alloy chrome plated satin
B Housing: Zinc alloy brass plated polished
C Housing: Zinc alloy antique brass
D Housing: Zinc alloy antique copper

<table>
<thead>
<tr>
<th>Version</th>
<th>Door thickness mm</th>
<th>Dimensions mm</th>
<th>Material/finish</th>
<th>Packing: 1 pc.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>นูมุต consenting</td>
<td>(มม.)</td>
<td></td>
<td>รวม: 1 ชิ้น</td>
</tr>
</tbody>
</table>
| With 4 fixing screws  | ตัวกะรุกมี 4 ชิ้น | A   12.4 | B  44 | C  4 | D  18.3 | E  18.7 | F  5 | G  341.18.421
| 19–24     | นูมุต consenting | นูมุต consenting | การรุกมี 4 ชิ้น | ตัวกะรุกมี 4 ชิ้น |
| With 8 fixing screws  | ตัวกะรุกมี 8 ชิ้น | A   27.8 | B  116 | C  7 | D  41 | E  61.3 | F  9.1 | G  341.18.433
| 38–43     | นูมุต consenting | นูมุต consenting | การรุกมี 8 ชิ้น | ตัวกะรุกมี 8 ชิ้น |
| With 8 fixing screws  | ตัวกะรุกมี 8 ชิ้น | A   33.6 | B  137.2 | C  12 | D  50 | E  73.8 | F  11 | G  341.18.433
| 43–47     | นูมุต consenting | นูมุต consenting | การรุกมี 8 ชิ้น | ตัวกะรุกมี 8 ชิ้น |

 conception of the image.
**Concealed mortise hinge**

**Features**
- For timber frames
- For flush doors
- For concealed mounting
- Fire rated version is available on request

**Technical data**
- Max. opening angle 180°

**Finish**

<table>
<thead>
<tr>
<th>Version</th>
<th>Door thickness mm</th>
<th>Dimensions mm Width mm</th>
<th>Door panel width in mm</th>
<th>Door weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without plastic slide plates</td>
<td>13–16</td>
<td>9.5</td>
<td>42</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>19–24</td>
<td>12.7</td>
<td>44.5</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>25–27</td>
<td>15.8</td>
<td>70</td>
<td>34.1</td>
</tr>
<tr>
<td></td>
<td>28–34</td>
<td>19</td>
<td>95.3</td>
<td>52.1</td>
</tr>
<tr>
<td></td>
<td>35–38</td>
<td>25.4</td>
<td>117.5</td>
<td>65.3</td>
</tr>
<tr>
<td>With plastic slide plates</td>
<td>41–45</td>
<td>29</td>
<td>117.5</td>
<td>62.5</td>
</tr>
<tr>
<td></td>
<td>48–51</td>
<td>36</td>
<td>139</td>
<td>74.5</td>
</tr>
</tbody>
</table>

**Calculation table**

Determining the number of required door hinges.  

Example: A door 700 mm wide, weighs 45 kg and has a thickness of 41 mm would require three concealed hinges.  

<table>
<thead>
<tr>
<th>Door panel width in mm</th>
<th>Door weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>25</td>
</tr>
<tr>
<td>200</td>
<td>50</td>
</tr>
<tr>
<td>300</td>
<td>75</td>
</tr>
<tr>
<td>400</td>
<td>100</td>
</tr>
<tr>
<td>500</td>
<td>125</td>
</tr>
<tr>
<td>600</td>
<td>150</td>
</tr>
<tr>
<td>700</td>
<td>175</td>
</tr>
</tbody>
</table>

**Legend**

- 2 | 3 |
- 4 | > 4 |

---

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AH 3.29

18.03.2010

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Concealed mortise hinge StarTec

Features
• For timber frames
• For flush doors
• For concealed mounting

Technical data
• Max. opening angle 180º
• Max. door height: 2,000 mm
• Max. door width: 1,000 mm
• Min. door thickness: 40 mm
• Adjustment facility: Continuously 3D adjustable height ±1.5 mm, side and closing pressure ±1 mm

Installation

Routing pattern for frame and door

Weight chart

<table>
<thead>
<tr>
<th>Material/finish</th>
<th>DIN left</th>
<th>DIN right</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc alloy nickel plated matt</td>
<td>927.32.006</td>
<td>927.32.016</td>
</tr>
<tr>
<td>Zinc alloy nickel plated polished</td>
<td>927.32.007</td>
<td>927.32.017</td>
</tr>
<tr>
<td>Zinc alloy brass plated polished</td>
<td>927.32.008</td>
<td>927.32.018</td>
</tr>
</tbody>
</table>

Packing: 1 pc. incl. fixing material

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Concealed mortise hinge StarTec

Features
- For timber frames
- For flush doors
- For concealed mounting

Technical data
- Max. opening angle: 180°
- Min. door thickness: 40 mm
- Max. door weight: 40 kg with 2 hinges, 50 kg with 3 hinges
- Adjustment facility: Continuously 3D adjustable height and side ±2 mm, closing pressure ±1 mm

Material/finish

<table>
<thead>
<tr>
<th>Material/finish</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc alloy chrome plated matt</td>
<td>927.91.604</td>
</tr>
<tr>
<td>Zinc alloy nickel plated matt</td>
<td>927.91.606</td>
</tr>
</tbody>
</table>

Installation

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Concealed mortise hinge StarTec

Features
- For timber frames
- For flush doors
- For concealed mounting

Technical data
- Max. opening angle 180°
- Min. door thickness: 40 mm
- Max. door weight: 80 kg with 2 hinges, 100 kg with 3 hinges
- Adjustment facility: Continuously 3D adjustable height ±3 mm, side ±3/-2 and closing pressure ±1 mm

Material/finish

<table>
<thead>
<tr>
<th>Material/finish</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc alloy chrome plated matt</td>
<td>927.91.634</td>
</tr>
<tr>
<td>Zinc alloy nickel plated matt</td>
<td>927.91.636</td>
</tr>
</tbody>
</table>

Installation

3. We reserve the right to alter specifications without notice. HAEFELE Architectural Hardware 2015.
Concealed mortise hinge StarTec

**Features**
- For timber frames
- For flush doors
- For concealed mounting

**Technical data**
- Max. opening angle 180°
- Min. door thickness: 40 mm
- Max. door weight: 60 with 3 hinges,
- Adjustment facility: Continuously 3D adjustable height ±3 mm, side +3/-2
  and closing pressure ±1 mm,
  closing force with 3 settings

**Material/finish**
- Zinc alloy chrome plated matt
  Cat. No. 927.91.614
- Zinc alloy nickel plated matt
  Cat. No. 927.91.616

**Installation**

**Doors close automatically by closing mechanism**

ังจะปิดอัตโนมัติโดยกลไกการปิด
Concealed mortise hinge StarTec

Features
- For timber frames
- For flush doors
- For concealed mounting

Technical data
- Max. opening angle: 180°
- Min. door thickness: 40 mm
- Max. door weight: 120 kg with 2 hinges, 140 kg with 3 hinges
- Adjustment facility: Continuously 3D adjustable height ±3 mm, side +3/-2 and closing pressure ±1 mm

Material/finish
- Zinc alloy chrome plated matt
  Cat. No. 927.91.624
- Zinc alloy nickel plated matt
  Cat. No. 927.91.629

Installation

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Concealed mortise hinge StarTec

**Features**
- For timber frames
- For flush doors
- For concealed mounting

**Technical data**
- Max. opening angle: 180°
- Min. door thickness: 40 mm
- Max. door weight: 200 kg with 2 hinges
- Adjustment facility: Continuously 3D adjustable height ±3 mm, side ±3/-2 and closing pressure ±1 mm

**Installation**

**Material/finish**

<table>
<thead>
<tr>
<th>Material/finish</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc alloy chrome plated matt</td>
<td>927.91.644</td>
</tr>
<tr>
<td>Zinc alloy nickel plated matt</td>
<td>927.91.646</td>
</tr>
</tbody>
</table>
Concealed mortise hinge TECTUS TE 540 3D A8

**Features**
- For frames made of wood, steel or aluminium
- For doors with doubling elements up to 8 mm
- For flush doors
- For concealed mounting
- Suitable for DIN left hand and DIN right hand

**Technical data**
- Max. opening angle 180°
- Min. door thickness: 40 mm
- Max. door weight: 100 kg
- Adjustment facility: Continuously 3D adjustable side and height ±3 mm and closing pressure ±1 mm
- Router bit Ø: 24 mm

**Installation**

**Material**
- Steel cover plates, plastic coated
- Aluminium link

**Finish**
- Stainless steel coloured
- Silver coloured

**Cat. No.**
- 924.17.304
- 924.17.321

**Packing:** 2 pcs.

**Preparing installation**

We reserve the right to alter specifications without notice (HTH Architectural Hardware 2015).
Concealed mortise hinge TECTUS TE 640 3D A8

Features
- For frames made of wood, steel or aluminium
- For doors with doubling elements up to 8 mm
- For flush doors
- For concealed mounting
- Suitable for DIN left hand and DIN right hand

Technical data
- Max. opening angle 180º
- Min. door thickness: 40 mm
- Max. door weight: 160 kg
- Adjustment facility: Continuously 3D adjustable side and height ±3 mm and closing pressure ±1 mm
- Router bit Ø: 24 mm

Installation

Material
- Steel cover plates, plastic coated
- Aluminium link

Finish
- Stainless steel coloured
- Silver coloured

Cat. No.
- 924.17.504
- 924.17.521

Preparing installation: 为客户安装做准备。
Drill-in hinge StarTec

Frame part

Features
- For timber lining frames
- For rebated doors
- Suitable for DIN left hand and DIN right hand
- Maintenance-free friction bearing
- To use in combination with receiver

Technical data
- Max. door weight: 40 kg
- Knuckle: Ø15 mm
- Drilling bit Ø7.2 mm

Material/finish
<table>
<thead>
<tr>
<th>Material/finish</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel nickel plated</td>
<td>922.32.271</td>
</tr>
<tr>
<td>Stainless steel matt</td>
<td>922.32.203</td>
</tr>
</tbody>
</table>

Packing: 1 pc.

Wing part

Features
- For rebated timber doors
- Suitable for DIN left hand and DIN right hand

Technical data
- Max. door weight: 40 kg
- Knuckle: Ø15 mm
- Drilling bit Ø6.8 mm

Material/finish
<table>
<thead>
<tr>
<th>Material/finish</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel nickel plated</td>
<td>922.32.071</td>
</tr>
<tr>
<td>Stainless steel matt</td>
<td>922.32.003</td>
</tr>
</tbody>
</table>

Packing: 1 pc.
Drill-in hinge StarTec

Frame part

Features
- For timber lining frames
- For rebated doors
- Suitable for DIN left hand and DIN right hand
- Maintenance-free friction bearing technology
- To use in combination with receiver

Technical data
- Max. door weight: 70 kg
- Knuckle: Ø15 mm
- Drilling bit Ø7.2 mm

Material/finish
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat. No.</td>
<td>922.32.471</td>
</tr>
<tr>
<td>Steel nickel plated</td>
<td>Stainless steel matt</td>
</tr>
</tbody>
</table>

Wing part

Features
- For rebated timber doors
- Suitable for DIN left hand and DIN right hand
- Maintenance-free friction bearing technology

Technical data
- Max. door weight: 70 kg
- Knuckle: Ø15 mm
- Drilling bit Ø6.8 mm

Material/finish
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat. No.</td>
<td>922.32.503</td>
</tr>
<tr>
<td>Steel nickel plated</td>
<td>Stainless steel matt</td>
</tr>
</tbody>
</table>

Packing: 1 pc.

With frame part to lining frames
กับส่วนกรอบผนังชิ้นใน
With frame part to steel frames
กับส่วนกรอบเหล็ก
Screw-on pocket StarTec
ตัวรับฐานนายพับส่วนติดวงบ StarTec

Features
• For timber lining frames
• Material: Steel
• Finish: Galvanized
• Mounting: For DIN left hand and DIN right hand use

Model | Installation height, mm | Cat. No. |
--- | --- | --- |
V 3611 | 5.8 | 922.08.090 |
V 3612 | 7.8 | 922.08.190 |
V 3613 | 9.8 | 922.08.290 |
V 3614 | 9.8 | 922.08.390 |

Packing: 1 pc.

Note
Re-drill pin holes with 7.2 mm when using drilling jig (922.15.514).

Cover cap StarTec
ฝาครอบรูเจาะ StarTec

Features
• Area of application: For screw-on pockets, for covering the rebate holes in the frame
• Diameter: 10 mm

Material | Colour | Cat. No. |
--- | --- | --- |
Plastic | Light brown RAL 1011 | 922.08.441 |
| Black RAL 9005 | 922.08.407 |
| White RAL 9016 | 922.08.400 |

Packing: 1 pc.

Note
Re-drill pin holes with 7.2 mm when using drilling jig (922.15.514).
Accessories for drill-in hinges StarTec
อุปกรณ์เสริมสำหรับบานพับแบบฝังแกน

Drilling jig for drill-in hinges
ชุดเจาะบานสำหรับบานพับแบบฝังแกน

**Features**
- For mounting frame and wing parts with Cat. No. 922.32.271/071/471/571
- Allows combined installation to frame and wing

**Supplied with**
1 Drilling jig  
1 Drill bit Ø6.8 mm  
1 Adjusting ring for drill bit  
1 Brace Ø15 mm  
1 Set mounting instructions

**Drill bit Ø6.8 mm with adjusting ring  
Brace Ø15 mm**

**Features**
- สำหรับติดบานพับแบบฝังแกนเข้ากับส่วนต่างๆ  
- สามารถติดต่ำงบานกับบานพับรวมกัน

**ประเภทตัวอย่าง**
- แบบเจาะ 1 ชิ้น  
- ลูกศกขนาด Ø6.8 มม. 1 ชิ้น  
- แท่นปรับ 1 ชิ้น  
- แขนบังคับ Ø15 มม. 1 ชิ้น  
- คู่มือการใช้งาน

**Material**

<table>
<thead>
<tr>
<th>วัสดุ</th>
<th>รหัส</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastic</td>
<td>922.15.514</td>
</tr>
</tbody>
</table>

**Packing:** 1 set  

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**New products and systems:** www.hafele.com

*ผลิตภัณฑ์และวัสดุใหม่: www.hafele.com*
Drill-in hinge StarTec

**Features**
- For blind timber frames
- For rebated and flush doors
- Suitable for DIN left hand and DIN right hand
- Standard certified in compliance with EN 1935:2002

**Technical data**
- Max. door weight according to EN 1935:2003 HC12: 100 kg
- Knuckle: Ø16 mm

**Material/finish**
- Steel white galvanized
- Cat. No.: 922.24.190

**Packing:**
- 20 pcs.

---

Features
- For blind and lining timber frames
- For rebated interior doors
- Maintenance-free friction bearing technology
- Suitable for DIN left hand and DIN right hand
- Tested according to EN 1935:2003 hinge class 10

**Technical data**
- Max. door weight according to EN 1935:2003 HC10: 60 kg
- Knuckle: Ø15 mm

**Material/finish**
- Steel nickel plated
- For blind frame: Cat. No. 922.40.170
- For lining frame: Cat. No. 922.40.070

**Packing:**
- 2 pcs.
**Drill-in hinge StarTec**

**Features**
- For blind timber frames
- For rebated doors
- Maintenance-free friction bearing technology
- 3 Dimensionally adjustable: Height +4 mm, side and closing pressure +3/-2 mm
- Suitable for DIN left hand and DIN right hand
- Standard certified in compliance with EN 1935:2002 hinge class 10

**Technical data**
- Max. door weight according to EN 1935:2002 HC 10: 60 kg
- Knuckle: Ø16 mm

**Material/finish**
- Steel white galvanized
- Cat. No.: 922.24.390

---

**EN 1935**

**Features**
- For blind timber frames
- For rebated interior doors
- Maintenance-free friction bearing technology
- 3 Dimensionally adjustable: Height +4 mm, side and closing pressure +3/-2 mm
- Suitable for DIN left hand and DIN right hand
- Standard certified in compliance with EN 1935:2002 hinge class 13

**Technical data**
- Max. door weight according to EN 1935:2002 HC 13: 120 kg
- Knuckle: Ø16 mm

**Material/finish**
- Steel white galvanized
- Cat. No.: 922.24.490
Decorative sleeve StarTec

Features
- For 2-part drill-in hinges Ø16 mm
- Plastic

Features
- For 2-part, 3D adjustable drill-in hinges Ø16 mm
- Plastic

Features
- For 2-part, 3D adjustable drill-in hinges Ø20 mm
- Plastic

Finish | Cat. No. | Features
--- | --- | ---
Nickel colour matt | 922.24.916 | 2-part, 3D adjustable drill-in hinges Ø16 mm.
Chrome colour polished | 922.24.912 | 2-part, 3D adjustable drill-in hinges Ø16 mm.
Brass colour polished | 922.24.918 | 2-part, 3D adjustable drill-in hinges Ø16 mm.
White, RAL 9016 | 922.24.917 | 2-part, 3D adjustable drill-in hinges Ø16 mm.

Packing: 2 pcs.

Finish | Cat. No. | Features
--- | --- | ---
Nickel colour matt | 922.24.926 | 2-part, 3D adjustable drill-in hinges Ø20 mm.
Chrome colour polished | 922.24.922 | 2-part, 3D adjustable drill-in hinges Ø20 mm.
Brass colour polished | 922.24.928 | 2-part, 3D adjustable drill-in hinges Ø20 mm.
White, RAL 9016 | 922.24.937 | 2-part, 3D adjustable drill-in hinges Ø20 mm.

Packing: 2 pcs.

Finish | Cat. No. | Features
--- | --- | ---
Nickel colour matt | 922.24.936 | 2-part, 3D adjustable drill-in hinges Ø20 mm.
Chrome colour polished | 922.24.932 | 2-part, 3D adjustable drill-in hinges Ø20 mm.
Brass colour polished | 922.24.938 | 2-part, 3D adjustable drill-in hinges Ø20 mm.
White, RAL 9016 | 922.24.937 | 2-part, 3D adjustable drill-in hinges Ø20 mm.

Packing: 2 pcs.
Mounting aids for drill-in hinges StarTec

Features
- For mounting drill-in hinge Cat. No. 922.24.190

Supplied with
- 2 Drilling jigs
- 1 Drill bit Ø7.3 mm with adjusting ring

Version | Cat. No. |  
--- | --- |  
For rebated doors | 922.24.802 |  
For flush doors | 922.24.812 |  

Features
- For mounting drill-in hinge Cat. No. 922.24.190

Supplied with
- 2 Drilling jigs
- 1 Drill bit Ø7.3 mm with adjusting ring

Version | Cat. No. |  
--- | --- |  
For rebated doors | 922.24.802 |  
For flush doors | 922.24.812 |  

Packing: 1 tool set

• For mounting drill-in hinge Cat. No. 922.24.190

Supplied with
- 2 Drilling jigs
- 1 Drill bit Ø7.3 mm with adjusting ring

Version | Cat. No. |  
--- | --- |  
For rebated doors | 922.24.802 |  
For flush doors | 922.24.812 |  

Packing: 1 tool set

We reserve the right to alter specifications without notice (HTH Architectural Hardware 2015).
**Mounting aids for drill-in hinges StarTec**

### Features
- For mounting drill-in hinge Cat. No. 922.40.070 and 922.40.170
- Suitable for left and right hand side

### Supplied with
- 2 Drilling jigs
- 1 Crank with crank head
- 1 Stepped drill bit Ø7.2 mm with adjusting ring

### Version

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<td>สำหรับติดตั้งบนบานแบง</td>
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<td>For lining frame สำหรับบานฝาผ้า</td>
<td>สำหรับบานฝาผ้า</td>
<td>922.15.538</td>
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### For rebated doors สำหรับประตูบานประตูบาน

- Drill bit Ø7.0 mm with adjusting ring ผลิตภัณฑ์ 07.0 มม. พร้อมแรม
- Hexagonal socket bit กลมหายเห็น
- Allen key กลมหายเห็น

### For flush doors สำหรับประตูบานประตูบาน

- Drill bit Ø7.0 mm with adjusting ring ผลิตภัณฑ์ 07.0 มม. พร้อมแรม
- Hexagonal socket bit กลมหายเห็น
- Allen key กลมหายเห็น

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**Door Hinges**

**Drill-in Hinges**

**StarTec**

New products and systems: [www.hafele.com](http://www.hafele.com)
Mounting aids for drill-in hinges StarTec

Features

• For mounting drill-in hinge Cat. No. 922.24.490

Supplied with

2 Drilling jigs
1 Drill bit Ø8.6 with adjusting ring
1 Hexagon socket bit
1 Allen key

Version

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Packing: 1 tool set  
บรรจุ 1 ชุด

For rebated doors
สำหรับประตูบานเป็นร่อง

For flush doors
สำหรับประตูบานเป็นติด

Drill bit Ø8.6 mm with adjusting ring
ลองจิ๊กเบรค Ø8.6 mm.

Hexagonal socket bit
สกรูหัวสี่เหลี่ยม

Allen key
กุญแจคิว