Roto
Window & Door
Technology

Roto NX

Hinge side A16 for timber and PVC profiles

The Tilt&Turn hardware system for windows and balcony doors shaping the industry once again

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1	**General information**	**4**
1.1	Additional information to be noted	4
1.2	Symbols	4
1.3	Limitation of liability	4
2	**Information on the product**	**6**
2.1	General hardware characteristics	6
2.2	Application diagrams	7
2.2.1	Timber and PVC	7
3	**Jigs**	**15**
3.1	Drilling jigs	15
3.1.1	Stay bearing, standard, and pivot rest	15
3.1.2	Stay bearing, adjustable	16
3.1.3	Rebate corner hinge	17
3.1.4	Stay bearing, standard, and pivot rest – single version	17
3.1.5	Stay bearing, standard, and pivot rest – double version	18
3.1.6	Drilling jig – rebate corner hinge	18
3.1.7	Stay bearing, adjustable	19
4	**Installation**	**21**
4.1	Drilling and routing dimensions	21
4.1.1	Stay bearing	21
4.1.2	Pivot rest	22
4.1.3	Rebate corner hinge	23
4.2	Hinge passage	24
4.2.1	PVC	24
4.2.2	Timber	25
4.3	Rebate corner hinge	25

1 General information

1.1 Additional information to be noted

For other mandatory components (locking side, frame components, etc.) and information (target groups, safety, maintenance, transport, disposal), see the other applicable documents.

INFO

These instructions are incomplete.

The other applicable documents for these instructions are:

for PVC profiles

- IMO_455 and IMO_146

for timber profiles

- IMO_456 and IMO_146

Failure to observe this documentation discharges the hardware manufacturer from their liability.

1.2 Symbols

Symbol	Meaning
■	First-level list
□	Second-level list
→	(Cross-)reference
▷	Result
▶	Unnumbered step
1.	Numbered step
a.	Numbered second-level step
⇨	Requirement

1.3 Limitation of liability

All information and instructions contained in this document have been compiled in consideration of the applicable standards and regulations, the latest developments in technology and many years of knowledge and experience.

The hardware manufacturer assumes no liability for damage caused by:

- Failure to comply with this document and all product-specific documents and other applicable directives (see the chapters entitled “Security” and “Stipulated use”).
- Improper use / misuse (see the chapters entitled “Security” and “Stipulated use”).
- Insufficient invitation to tender, non-compliance with installation specifications and non-compliance with the application diagrams (where available).
- Increased contamination.

Claims made by third parties against the hardware manufacturer on account of damage resulting from misuse or failure to comply with the obligation to give instructions on the part of hardware dealers, window, door and balcony door manufacturers and building element dealers or the builder are passed on accordingly.

The obligations agreed in the delivery contract, the general terms and conditions, the hardware manufacturer's terms and conditions of delivery and the legal provisions applicable when the contract was concluded shall apply.

The warranty only covers original Roto components.

We reserve the right to make technical changes as part of improvement to performance characteristics and further development.

2 Information on the product

2.1 General hardware characteristics

Components to use:

- Stay bearing – hinge side P
- Pivot rest – hinge side P
- Rebate corner hinge – hinge side A16
- Optional: rebate corner hinge extension – hinge side A16

INFO
Timber

Use pivot rest P 6/150.

Use stay bearing P 6/130 or P 6/150.

The maximum permitted sash weight is 130 kg.

INFO
PVC

Use pivot rest P 3/100, P 6/130 or P 6/150.

Use stay bearing P 3/130, P 6/130 or P 6/150.

The maximum permitted sash weight is 130 kg.

INFO

For rebate corner hinges without extension, the sash weight is max. 80 kg.

Maximum sash sizes and weights

The specifications, application diagrams and component assignments which can be found in the hardware manufacturer's product-specific documents provide information on the maximum permitted sash sizes and weights. The component with the lowest permitted load bearing capacity determines the maximum permitted sash weight.

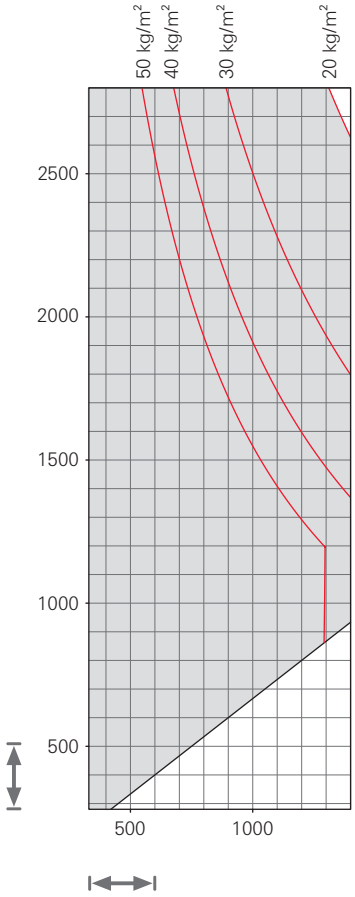
- Before using electronic data records and implementing them in window fabrication programs in particular, check that they match the specifications, application diagrams and component assignments.
- Never exceed the maximum permitted sash sizes and weights. If any points are unclear, contact the hardware manufacturer.

2.2 Application diagrams

2.2.1 Timber and PVC

2.2.1.1 Turn-Only / Tilt&Turn hardware for rectangular windows

80 kg (without extension)



= Impermissible application range

The specifications in the application diagram refer to the glass weight in kg/m².

1 mm/m² glass thickness ≙ 2.5 kg

Application range

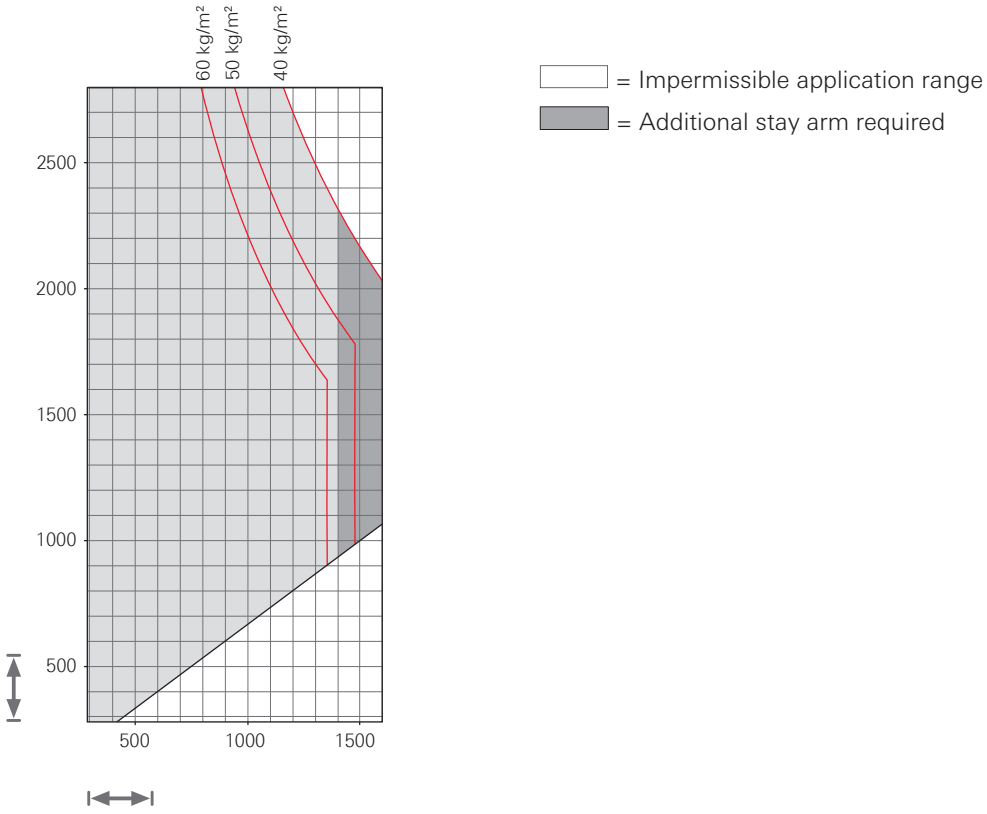
		Basic security	Security RC 1 N	Security RC 2 / RC 2 N	Security RC 3
	Sash rebate width	290 – 1400 mm	400 – 1400 mm	490 – 1400 mm	490 – 1400 mm
	Sash rebate height	280 – 2800 mm	280 – 2800 mm	600 – 2800 mm	600 – 2800 mm
	Sash weight	Max. 80 kg	Max. 80 kg	Max. 80 kg	Max. 80 kg

INFO

Observe directive TBDK for tractive force values as a function of the sash weights.

Further information can be found at www.guetegemeinschaft-schloss-beschlag.de.

130 kg (with extension)



The specifications in the application diagram refer to the glass weight in kg/m².

1 mm/m² glass thickness ≙ 2.5 kg

Application range

		Basic security	Security RC 1 N	Security RC 2 / RC 2 N	Security RC 3
	Sash rebate width	290 – 1600 mm	400 – 1600 mm	490 – 1400 mm	490 – 1400 mm
	Sash rebate height	280 – 2800 mm	280 – 2800 mm	600 – 2800 mm	600 – 2800 mm
	Sash weight	Max. 130 kg	Max. 130 kg	Max. 130 kg	Max. 130 kg

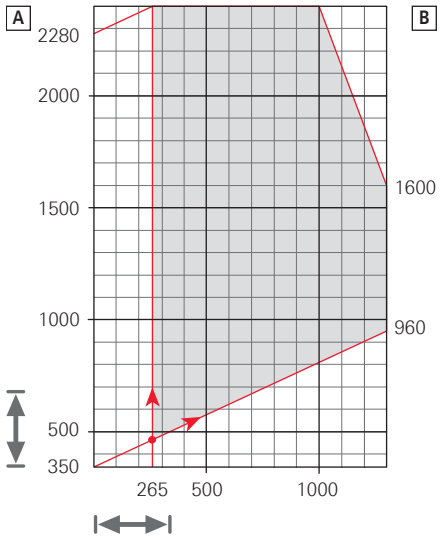
INFO

Observe directive TBDK for tractive force values as a function of the sash weights.

Further information can be found at www.guetegemeinschaft-schloss-beschlag.de.

2.2.1.2 Tilt&Turn hardware for pitched windows

Pitched angle 25°



[A] = Espagnolette side
[B] = Axis side
= Impermissible application range

The specifications in the application diagram refer to the glass weight in kg/m².

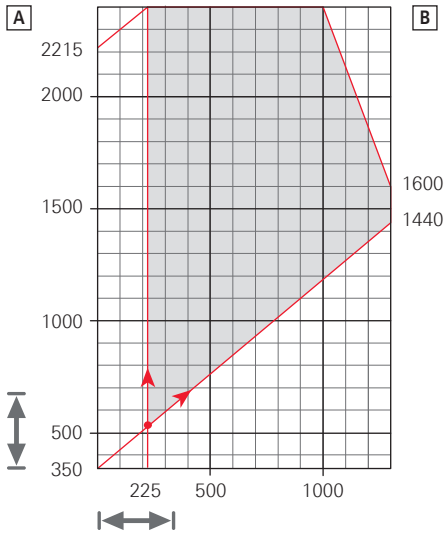
1 mm/m² glass thickness ≙ 2.5 kg

Application range

		Basic security
	Sash rebate width	See diagram
	Sash rebate height	See diagram
	Sash weight	Max. 80 kg

INFO
Observe directive TBDK for tractive force values as a function of the sash weights.
Further information can be found at www.guetegemeinschaft-schloss-beschlag.de.

Pitched angle 40°



[A] = Espagnolette side
[B] = Axis side
= Impermissible application range

The specifications in the application diagram refer to the glass weight in kg/m².

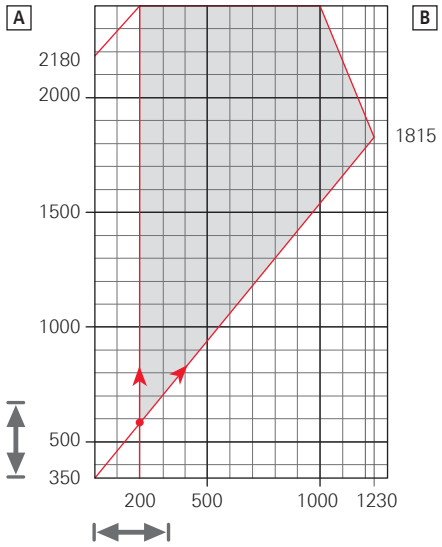
1 mm/m² glass thickness ≙ 2.5 kg

Application range

		Basic security
	Sash rebate width	See diagram
	Sash rebate height	See diagram
	Sash weight	Max. 80 kg

INFO
Observe directive TBDK for tractive force values as a function of the sash weights.
Further information can be found at www.guetegemeinschaft-schloss-beschlag.de.

Pitched angle 50°



[A] = Espagnolette side
[B] = Axis side
= Impermissible application range

The specifications in the application diagram refer to the glass weight in kg/m².

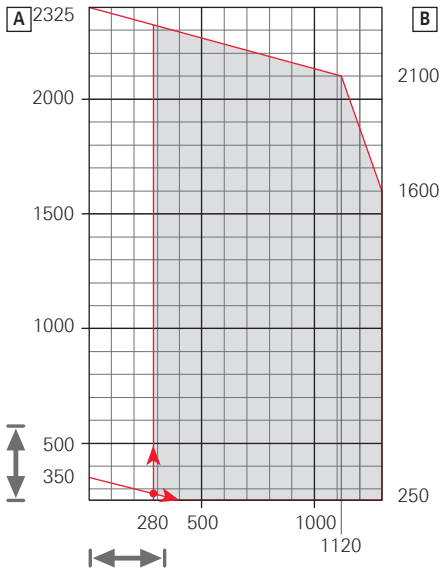
1 mm/m² glass thickness ≙ 2.5 kg

Application range

		Basic security
	Sash rebate width	See diagram
	Sash rebate height	See diagram
	Sash weight	Max. 80 kg

INFO
Observe directive TBDK for tractive force values as a function of the sash weights.
Further information can be found at www.guetegemeinschaft-schloss-beschlag.de.

Pitched angle -15°



[A] = Espagnolette side
[B] = Axis side
= Impermissible application range

The specifications in the application diagram refer to the glass weight in kg/m².

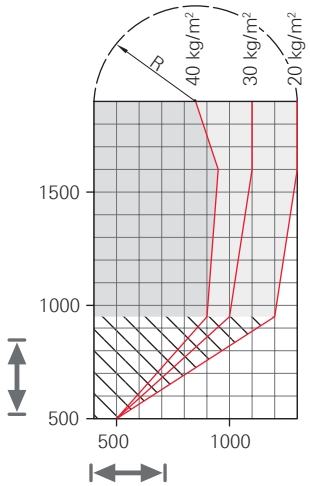
1 mm/m² glass thickness ≙ 2.5 kg

Application range

		Basic security
	Sash rebate width	See diagram
	Sash rebate height	See diagram
	Sash weight	Max. 80 kg

INFO
Observe directive TBDK for tractive force values as a function of the sash weights.
Further information can be found at www.guetegemeinschaft-schloss-beschlag.de.

2.2.1.3 Tilt&Turn hardware for arched windows



= Impermissible application range
= Additional stay arm required
= Additional stay arm possible but not required
= Additional stay arm not possible

The specifications in the application diagram refer to the glass weight in kg/m².

1 mm/m² glass thickness ≙ 2.5 kg

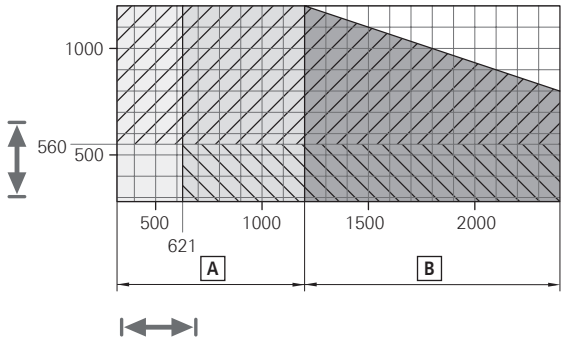
INFO
The radius (R) of the arched window must be equal to half the SRW.

Application range

		Basic security
↔	SRW	400 – 1300 mm
↕	SRH	500 – 1900 mm
⚖	S.kg	Max. 80 kg

INFO
Observe directive TBDK for tractive force values as a function of the sash weights.
Further information can be found at www.guetegemeinschaft-schloss-beschlag.de.

2.2.1.4 Tilt-Only hardware for rectangular windows



= Impermissible application range
= 2 tilt stays at the side
= 1 tilt stay at the top or 2 tilt stays at the side
= 2 tilt stays at the top or 2 tilt stays at the side
= Additional restrictor and cleaning stays
= Additional restrictor and cleaning stays for tilt stay(s) at the top
[A] = At least 2 hinges
[B] = At least 3 hinges

The specifications in the application diagram refer to the glass weight in kg/m².

1 mm/m² glass thickness ≙ 2.5 kg

Application range

		Basic security
	Sash rebate width	310 – 2400 mm [1]
	Sash rebate height	290 – 1200 mm
	Sash weight	Max. 80 kg

INFO
Observe directive TBDK for tractive force values as a function of the sash weights.

Further information can be found at www.guetegemeinschaft-schloss-beschlag.de.

INFO
Restrictor and cleaning stays recommended; mandatory for fanlights (in accordance with RAL RG 607 / 12).

Restrictor and cleaning stays up to max. 60 kg.

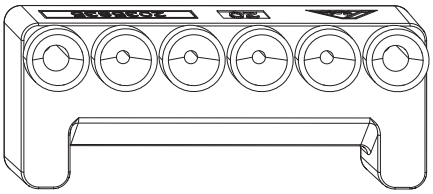
[1] SRW 310 – 449 mm with Turn-Only / Tilt-Only espagnolette only

3 Jigs

3.1 Drilling jigs

3.1.1 Stay bearing, standard, and pivot rest

Single version



Stay bearing and pivot rest	P 3/130	12/18-9 12/18-13	2035807
	P 3/130	12/20-9 12/20-13	2035834
	P 6/130; P 6/150	12/18-9 12/18-13	2035808
	P 6/130; P 6/150	12/20-9 12/20-13	2035835

INFO
Timber

Use pivot rest P 6/150.

Use stay bearing P 6/130 or P 6/150.

The maximum permitted sash weight is 130 kg.

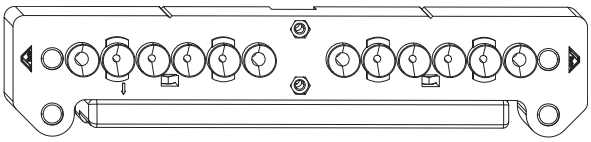
INFO
PVC

Use pivot rest P 3/100, P 6/130 or P 6/150.

Use stay bearing P 3/130, P 6/130 or P 6/150.

The maximum permitted sash weight is 130 kg.

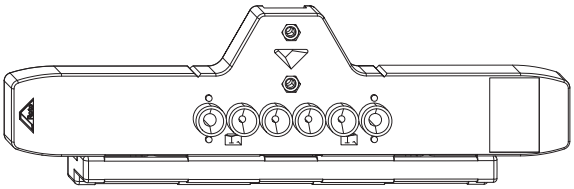
Double version



INFO
Drilling jig for systems 12-20/9 and 12-20/13.
Conversion to systems 12-18/9 and 12-18/13 possible.

		№
Stay bearing, standard, and pivot rest	P 3/130	230727
	P 6/130 P 6/150	788436

3.1.2 Stay bearing, adjustable



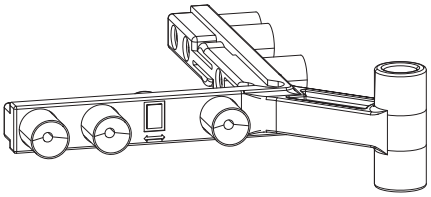
INFO
Drilling jig for systems 12-20/9 and 12-20/13.
Conversion to systems 12-18/9 and 12-18/13 possible.

		№
Stay bearing, adjustable – arched window	P 3/100	2002405
	P 6/100	2002406
Stay bearing, adjustable – Tilt-Only sash	P 3/100	2002103
	P 6/100	2002404

Installation (change of system)

		№
Stop for arched windows	12/18-9 12/18-13	2032487
Stop for Tilt-Only sashes	12/18-9 12/18-13	2032488

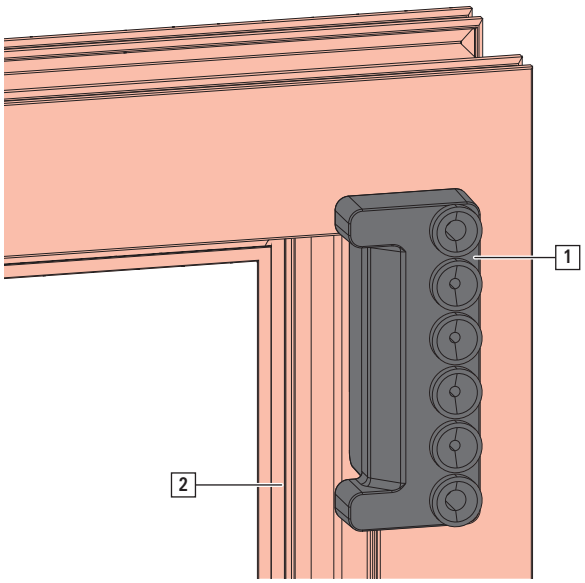
3.1.3 Rebate corner hinge



Rebate corner hinge, standard	2026795

3.1.4 Stay bearing, standard, and pivot rest – single version

1. Place the drilling jig [1] on the frame [2].



2. Drill holes.

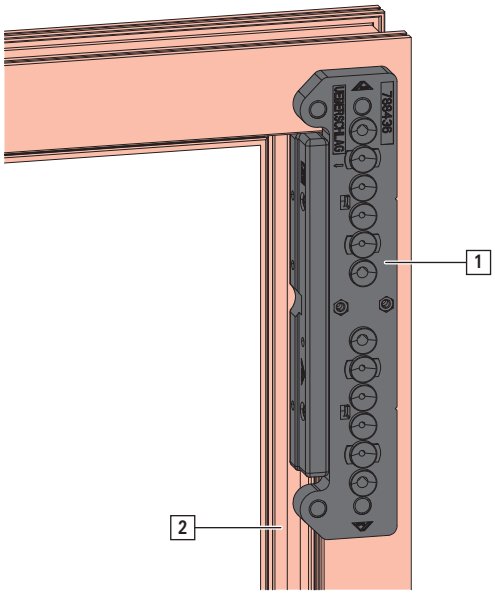
INFO
Timber

Predrilling required.

Timber must not splinter or crack.

3.1.5 Stay bearing, standard, and pivot rest – double version

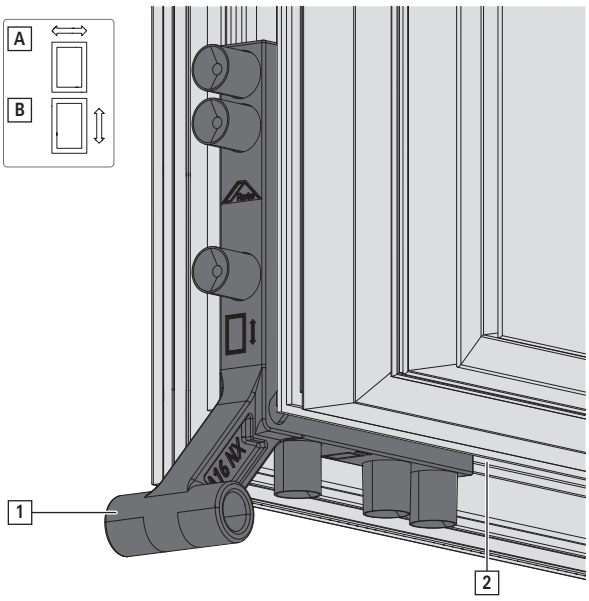
1. Place the drilling jig [1] on the frame [2].



2. Drill holes.

3.1.6 Drilling jig – rebate corner hinge

1. Place the drilling jig [1] in the hardware groove [2].
   Pay attention to the alignment of the drilling jig:
   [A] Horizontal hardware groove
   [B] Vertical hardware groove



2. Drill holes.

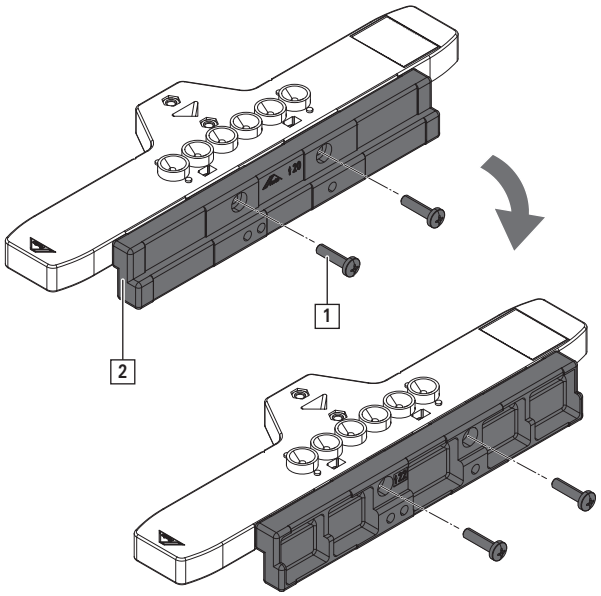
3.1.7 Stay bearing, adjustable

3.1.7.1 Adjusting the rebate-clearance system

INFO
System 12/20-13 is preset. Conversion is only necessary if a different system is used.

Shown using a drilling jig for Tilt-Only sash as an example.

1. Undo the screws [1].

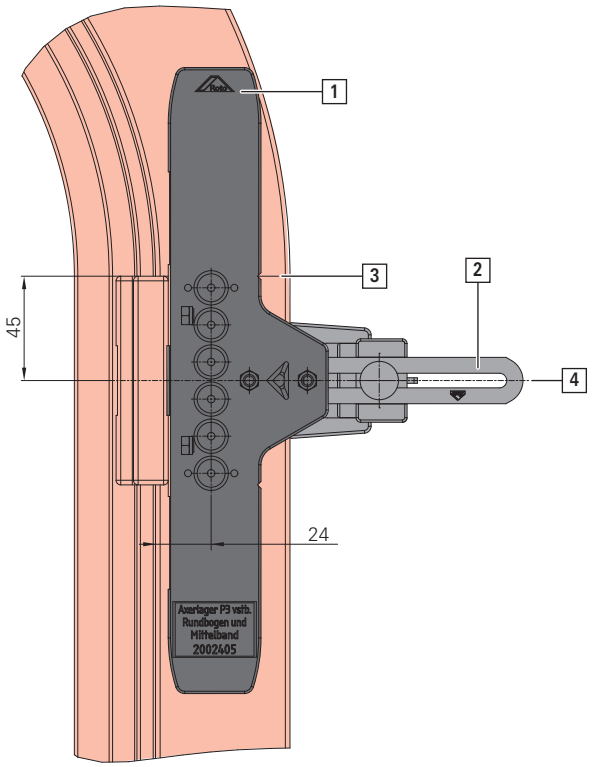


2. Turn the drilling plate [2]. Set system 12/18-9 or 12/18-13.

3. Secure the screws.

3.1.7.2 Drilling jig – arched stay bearing

1. Position the drilling jig [1] including clamping retainer [2] on the frame with the marking at the start of the arch [3].
   [4] = centre of stay bearing

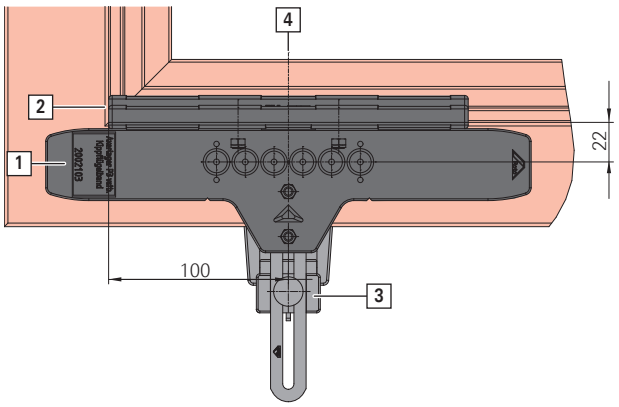


2. Secure the clamping retainer.

3. Drill holes.

3.1.7.3 Drilling jig – Tilt-Only sash stay bearing

1. Position the drilling jig [1] (optionally with clamping retainer [3]) on the lower edge of the frame [2].
   [4] = centre of stay bearing



2. Optional: secure the clamping retainer.

3. Drill holes.

4 Installation

4.1 Drilling and routing dimensions

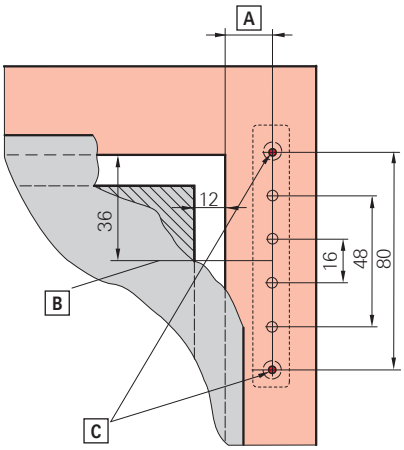
INFO

Predrilling required.

Timber must not splinter or crack.

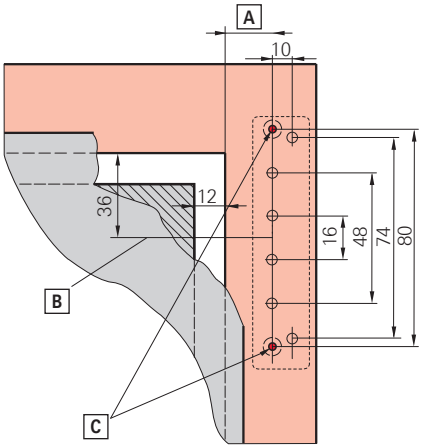
4.1.1 Stay bearing

Standard – P 3/130 | P 6/130



Assignment	Meaning	System
[A]	16.5 mm	12/18–9, 12/18–13
	18.5 mm	12/20–9, 12/20–13
	19.5 mm	12/21–13
	20.5 mm	12/22–13
[B]	Stay bearing centre	–
[C]	P 3/130 stay bearing, drill hole Ø 3 mm, 4 mm deep P 6/130 stay bearing, drill hole Ø 6 mm, 9 mm deep	–

Standard – P 6/150

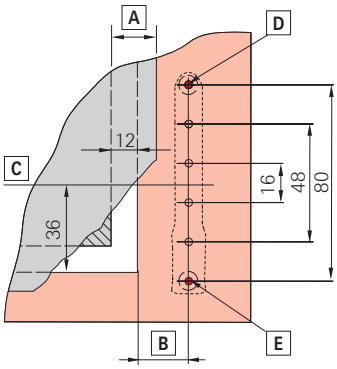


Assignment	Meaning	System
[A]	16.5 mm	12/18–9, 12/18–13
	18.5 mm	12/20–9, 12/20–13
	19.5 mm	12/21–13
	20.5 mm	12/22–13

Assignment	Meaning	System
[B]	Stay bearing centre	–
[C]	P 6/150 stay bearing, drill hole Ø 6 mm, 9 mm deep	–

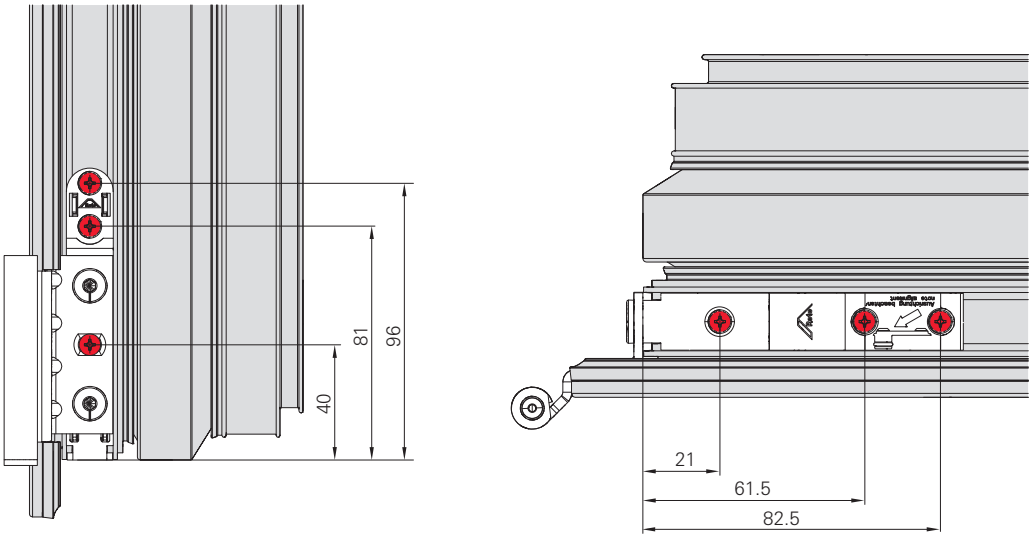
4.1.2 Pivot rest

P 3/130 | P 6/130 | P6/150

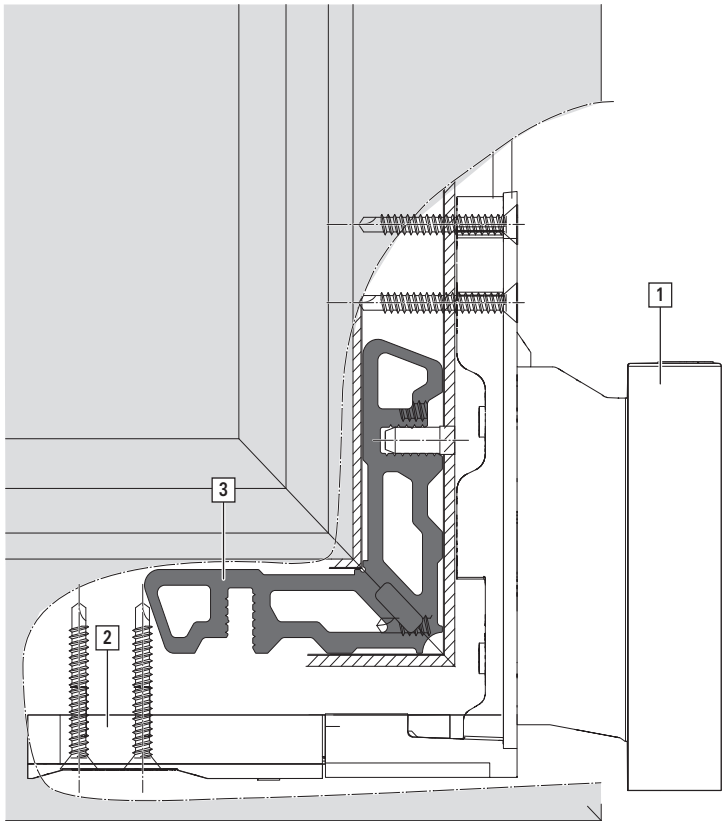


Assignment	Meaning	System
[A]	Overlap width	-
[B]	16.5 mm	12 / 18-9, 12 / 18-13
	18.5 mm	12 / 20-9, 12 / 20-13
	19.5 mm	12 / 21-13
	20.5 mm	12 / 22-13
[C]	Pivot rest centre	-
[D]	P 3 / 130 pivot rest, drill hole Ø 3 mm, 3 mm deep P 6 / 130 pivot rest, drill hole Ø 6 mm, 3 mm deep P 6 / 150 pivot rest, top drill hole Ø 6 mm, 3 mm deep	-
[E]	P 3 / 130 pivot rest, drill hole Ø 3 mm, 3 mm deep P 6 / 130 pivot rest, drill hole Ø 6 mm, 9 mm deep P 6 / 150 pivot rest, drill hole Ø 6 mm, 19 mm deep	-

4.1.3 Rebate corner hinge



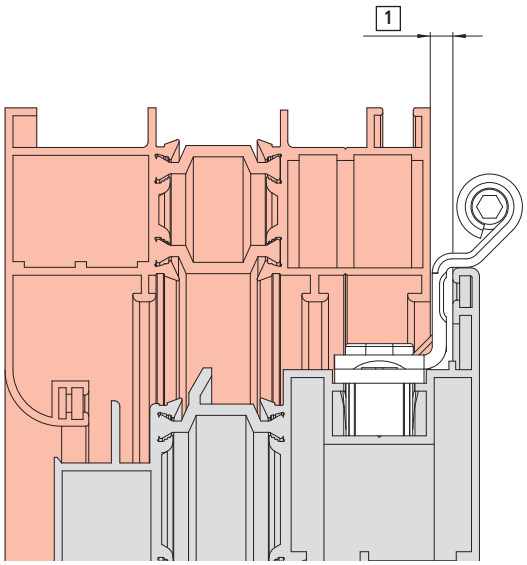
Example of screw fixing for rebate corner hinge in aluminium profile with 16 mm hardware groove



[1] Rebate corner hinge
[2] Extension
[3] Corner connector

4.2 Hinge passage

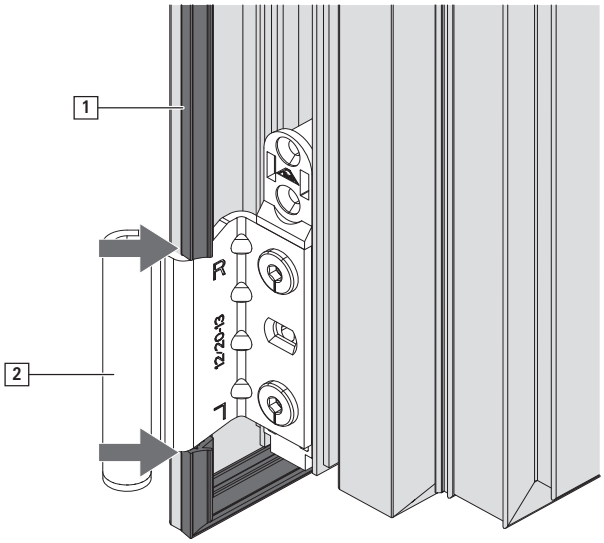
4.2.1 PVC



[1] Hinge passage

3 – 4 mm	Cut out the gasket in the area of the hinge roller. Only partial gasket compression adjustment possible.
> 4 mm	Gasket does not have to be cut out. Complete gasket compression adjustment possible.

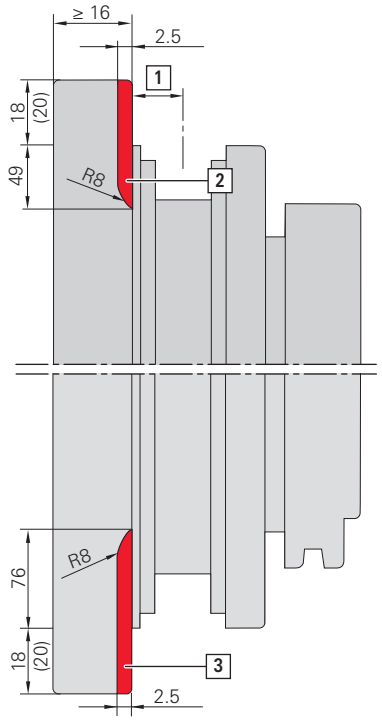
1. Cut out the gasket [1] in the area of the rebate corner hinge [2].



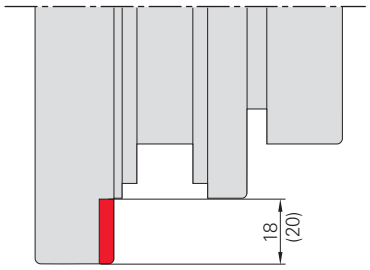
4.2.2 Timber

For timber profiles without an overlap gasket or with a small overlap gasket, route the sash overlap for rebate corner hinge and stay hinge.

Sash
Side view



Sash
Top view



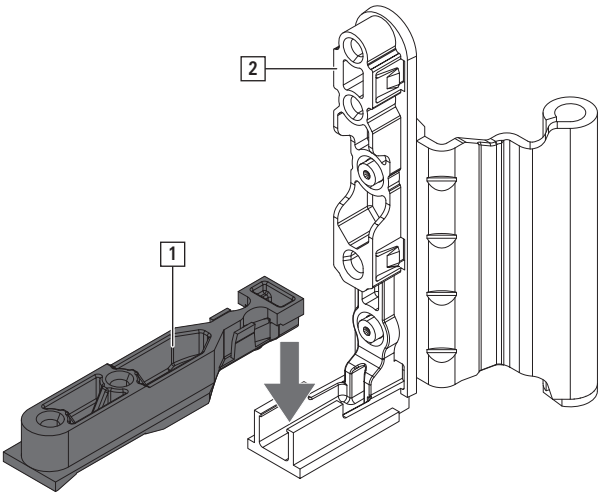
[1] Hardware axis
[2] Stay hinge
[3] Rebate corner hinge

4.3 Rebate corner hinge

Rebate corner hinge extension

INFO
- Timber and PVC: sash weight > 80 kg.

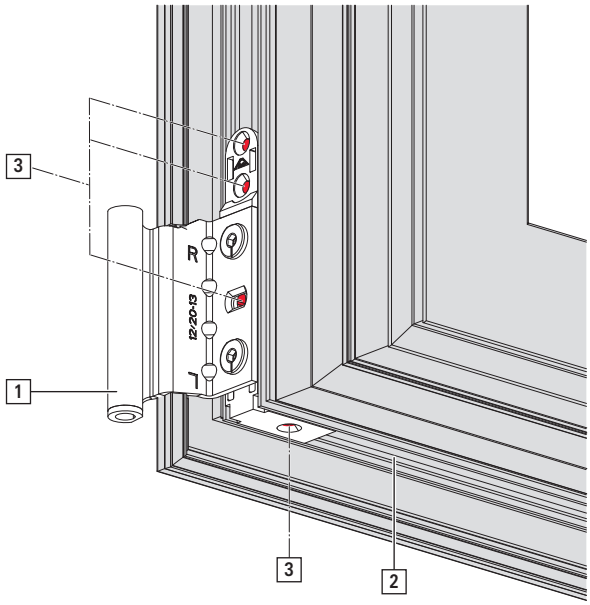
1. Push the extension [1] into place in the rebate corner hinge [2].



Installing the rebate corner hinge

Without extension

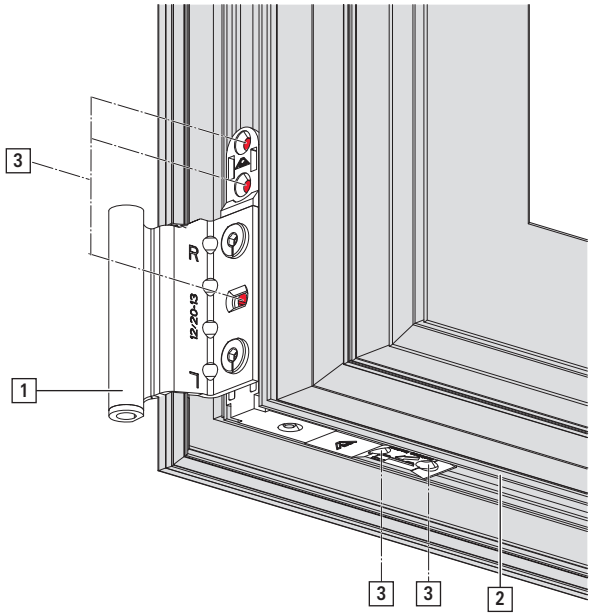
1. Place the rebate corner hinge [1] on the sash [2].



2. Fasten the rebate corner hinge with four screws [3].

With extension

1. Place the rebate corner hinge with extension [1] on the sash [2].



2. Fasten the corner hinge with five screws [3].

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