



Roto Frank Constructional Hardware

German Window & Door Technology



Roto Frank Fenster- und Türtechnologie GmbH
Leinfelden - Echterdingen



Lieber Roto Partner,
Der vorliegende Katalog gibt Ihnen einen Überblick der Produkte der Roto Beschlagssysteme für ALU mit Fokus auf die in Asien-Pazifik gängige Anwendungen.

Für Anregungen, die der weiteren inhaltlichen Verbesserung dienen, sind wir sehr dankbar.

Wir wünschen Ihnen ein erfolgreiches Arbeiten mit der Roto Baubeschlagtechnik.

Dear Roto Partner
This catalogue will give you an overview of the product of the Roto hardware-systems for ALU with focus on the applications prevalent in Asia-Pacific.

We sincerely hope that this technical manual for Roto ALU hardware-systems will provide you proper application instruction.

Your suggestions and advice would be valuable for us to improve the technical documentation in the future and are highly appreciated.

We wish you great success with the hardware technology from Roto Frank.



Haftungsausschluss

Alle Angaben in dieser Broschüre wurden sorgfältig zusammengetragen und geprüft. Durch den technischen Fortschritt, Veränderungen der Gesetzgebung sowie durch Zeitablauf ergeben sich zwangsläufig Veränderungen. Bitte haben Sie deshalb Verständnis, dass wir für die Richtigkeit und Vollständigkeit des Inhaltes keine Gewähr übernehmen. Alle Rechte, insbesondere das Recht der Vervielfältigung und Verbreitung bleiben vorbehalten.

Liability exclusion

All descriptions in this catalogue were compiled carefully and reviewed. Because of technical progress, whether by means of legislation modification or by lapse of time, the results automatically lead to changes. We therefore hope you shall understand that we cannot be held liable for the correctness and completeness of the contents.

All rights, in particular the right to copy and circulate, reserved.

Contents

Information

About Roto Frank	4
Certificates.....	5
Product liability guidelines.....	6
Required space	9

Hardware List

Single sash outward opening window	20
Top hung window.....	22
Sliding door	32
Tilt & Turn T300DK	36
Tilt & Turn T540DK	38
Tilt & Turn Designo AluVersion	42
Tilt & Turn DesignoSTS AluVersion	44
Tilt & Turn ALU 200kg DK	46
Turn only ALU 300kg	48
Locking components for Turn-Only	50
Tilt only window	54
Dummy mullion slider	60
Locking components for door	64
Door hinge solutions	66
Tilt & Slide door (Alversa)	70
Lift & Slide door.....	74
Fold & Slide door (PATIO Fold)	80
Handle	84
Cylinder	97

Installation

ALU Tilt & Turn installation.....	98
Machining diagram for gear box and handle.....	105
Handle installation	106
Sliding door&Window installation	108
Child safety lock	111
Turn restrictor	112
Door Lock & Hinge installation.....	114
Casement Espag. installation	119
Friction hinge installation	120
Alversa installation.....	121
Patio Fold Installation	122
Security relevant components.....	130



Roto Frank was founded in 1935 by Mr. Wilhelm Frank, a German inventor and entrepreneur who registered more than 1200 patents in his life.

Roto invented the world first Tilt & Turn window hardware in 1935 and developed the hardware system for Aluminum window application in 1957.

Innovative hardware technology and systems for modern windows and doors have been a key factor for the success of Roto over the past 80 years. Our products represent the latest state-of-the-art advances in design, functionality, technology and durability and reassure our position as innovation leader in the global market.

10-year functional warranty on Roto brand products give our customers the confidence in our reliability as a long-term partner.

Today Roto Frank is one of the leading suppliers for window and door hardware, which sustains 12 production sites in Europe and America, and over 30 sales representative offices around the world.

Roto Frank Asia-Pacific Ptc.Ltd was established in Singapore in 2008, to extend our service to South-East Asia, South Asia, East Asia (except China) and Oceania.



Conditions of Limited Warranty & Maintenance Guideline

Products⁽¹⁾ supplied by Roto Frank Asia-Pacific Pte. Ltd. (hereinafter "Roto") are warranted against material defects and/or workmanship for a limited period of **10YEARS**^(2&3) for its designed function from the date of purchase under **normal** use and **maintenance** subject to the condition and limitations set forth herein.

This Limited Warranty is expressly limited to window and door manufacturers and authorized distributors that purchase the products directly from Roto for use in the ordinary course of business (hereinafter "customer") within assigned territory, and may not be assigned or transferred.

This Limited Warranty is applicable exclusively if connected hardware may only consist of components from Roto's respective systems. In the case of non-Roto-approved combinations, and/or inappropriately assembled hardware, and/or the use of non-original components, and/or product obtained from unauthorized channel, no warranty is applied.

This Limited Warranty does not cover normal wear and tear or discoloration⁽⁴⁾ on finishes, accidentally damaged or damaged during shipping, disaster or any force majeure, tampered or altered, and/or has been improperly installed, abused, misused, worn out, used for a purpose other than that for which it was intended, or in a manner inconsistent with any instructions regarding use of such product, or exceeding the maximum sash weight, nor does it cover corrosion⁽⁴⁾ related damage.

This limited warranty does not exempt or substitute the liability of the customer and end-user, if any.

Roto's obligation under this Limited Warranty shall be exclusively limited to repairing or replacing any product which Roto finds to be materially defective in its sole judgment and discretion after a good faith investigation into a warranty claim made in accordance with this Limited Warranty. If the product should become materially defective during the warranty period, Roto will, at its option, repair or replace it with a substantially similar product or part. Roto's liability is limited only to the replacement value of the materially defective product, which shall be the customer's exclusive remedy and Roto's sole liability for a warranty claim under this Limited Warranty.

This exclusive remedy shall not have failed of its essential purpose as long as Roto remains willing or able to repair or replace the defective product within a commercially reasonable time after being notified of customer's warranty claim.

Roto may, at its option, replace a materially defective product that has been discontinued with a substantially similar product.

Roto is NOT responsible for the cost of labor which may be required for the replacement of said product, and/or the cost of shipping replacement material and defective material between Roto's direct customer and any third party's location, and/or the cost of any interruptions in business occasioned by an inability to use any reason whatsoever. Any oral or written description of the product is for the sole purpose of identifying the product and shall not be construed as an express warranty.

THIS LIMITED WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED OR STATUARY. ROTO SHALL NOT, IN ANY EVENT, BE LIABLE TO A CUSTOMER FOR CONSEQUENTIAL, SPECIAL, EXEMPLARY, INCIDENTAL OR PUNITIVE DAMAGES OF ANY KIND OR LOSS OF ANTICIPATED BENEFITS OR PROFITS WHETHER IN CONTRACT OR TORT FOR BREACH OF WARRANTY, NEGLIGENCE, ON THE BASIS OF STRICT LIABILITY OR FOR ANY OTHER REASON, RESULTING FROM THE PURCHASE OR USE OF ANY PRODUCT OR ARISING FROM THE BREACH OF THIS LIMITED WARRANTY EVEN IF ROTO KNEW OF THE LIKELIHOOD OF SUCH DAMAGES.

If any provision of this Limited Warranty is held to be invalid, illegal, or unenforceable under any statute, regulation, ordinance, executive order, or other applicable rule of law, that provision will be deemed severed to the extent necessary to comply with such statute, regulation, ordinance, order, or rule. In the event such provision is deemed severed, Roto and its customer or other party having right under this Limited Warranty by law will negotiate in good faith to arrive at an alternative arrangement approximating the original intentions of this Limited Warranty. The remaining terms and conditions of this Limited Warranty will remain in effect.

No agent, employee or representative of Roto has any authority to bind Roto to any affirmation, representation, or warranty concerning Roto's products or parts, except as stated herein.

In order to make a quality claim under this Limited Warranty, a customer shall notify Roto with necessary evidence (i.e. picture and sample) and information (location, qty., condition, etc) as soon as the defect found, and cooperate with Roto and/or its representative to investigate the cause. The customer should assist to ship the defective product(s) to a location directed by Roto if required.

Roto shall inspect and determine whether such products are eligible to this Limited Warranty within a commercially reasonable time after receiving the claim with required information and evidence.

Roto may, at its opinion, to provide replacement for the claimed product(s) to the customer within a commercially reasonable time in good faith, before determining the eligibility of the claim.

Any Products that Roto determines are not eligible under this Limited Warranty, the sent replacement materials shall be invoiced to the customer for payment collection.

The following Maintenance Guideline is indispensable condition this Limited Warranty. Proper handling and maintenance shall be out by all direct and indirect customers during building phase including interior decoration and daily use

- The window and door should be kept free from deposits and soiling from building materials (building dust, plaster, cement etc.) at all time. Soiling from plaster, mortar or similar materials is to be removed gently before it cures.
 - Scratches on coated surface or electroplated surface may damage the protection layer and create potential risk of damage on coating layer or corrosion on metal material, which should be avoided and observed.
 - Aggressive vapors (e.g by means of formic acid or acetic acid, ammonia, amine or ammonia compounds, aldehydes, phenols, chlorine, tannic acid, etc.) in connection with even small formations of condensation can lead to fast corrosion of the metal components. No acetic-acid or cross linked acidic sealing compounds or those with the above mentioned contents may be used, since both the direct contact with the sealing compound and it's vaporization can attack the metal surface.
 - If the property could not be handed over to end user to carry out routine cleaning and maintenance after installation of the windows and doors, the metal surface of hardware components should be cleaned with water-wet towel then apply corrosion prevention lubricant (e.g CRC3-36, RP7, WD-40,etc), and the coated surface of handle and profile, the gasket should be cleaned with water gently and stay free from possible damage (e.g scratch, contact with hard and sharp objects, high temperature, etc) and pollution(chemicals, oil, pigment, etc)
 - The hardware and/or rebate areas shall be ventilated sufficiently so that they are not exposed either to direct wetness or to condensation, in particularly at the coastal area or industrial zone. Galvanized surface is not affected in a normal room climate if no long-lasting contact with water. Occasionally formed condensation water can dry rapidly if proper ventilation is applied.
 - Gaskets and plastic accessories should be cleaned by water or mild cleaning agent only, and should be kept free from contact with oil, paint, solvent and/or chemicals.
 - Certain types of timber (e.g oak) may contain a high concentration of (tannic-) acid, ensure that by means of a suitable surface treatment, these content substances cannot evaporate out of the timber if it's in vicinity of the window and door product. The hardware should not come in direct contact with untreated timber surfaces.
 - Hardware components are to be examined at least once a year for stability and wear and tear, and all movable parts and all locking points on the hardware are to be lubricated and tested. The hardware may only be cleaned with mild, PH-neutral cleaning agent in diluted form. Under no circumstances may aggressive, acidiferous cleaners or abrasive cleaning agents be used.
 - Opened balcony-doors and window sashes, as well as window and balcony-door sashes when not locked or in the ventilation position, provide only a shielding function and do not meet any demand on joint impermeability, water tightness, sound reduction, heat-insulation and burglary-resistance.
 - Below mis-use of products is not covered by warranty and should be avoided all the time:
 - o If obstacles are inserted on the opening vicinity between frame and sash, thus preventing or interfering with its stipulated use, and/or additional loads are applied to the windows or door sashes;
 - o When window and door sashes are pressed adversatively or uncontrolled (by wind), consequential damage on hardware or the frame material or other individual window or door components can arise.
 - o If while closing or opening (regardless swing or sliding), someone or part of the body reaches between the sash and frame, and/or are in the vicinity or sash moving path can cause serious bodily harm or be lethal.
- (1) The Products refer to Roto hardware system, Rotoi profile and accessories.
 - (2) The 10-Year warranty is applicable to:
 - (A) the function of hardware system from Roto, including multi-point locking mechanism, hinge side and handles.
 - (B) the physical property of Rotoi profile, and the weathering resistance of original coating or anodization on Rotoi profile, plastic accessories and gaskets. Roto does not warrant the surface quality if it was done by customers on mill finished profile.
 - (3) Rollers and die-casted strikers are warranted for 2 years. Electronic and magnetic devices are warranted for 1 year only.
 - (4) Coated and electroplated surface may perform differently in different climate or environment. Scratches during installation and using may also affect the performance then cause different result from lab test evaluation, hence could not be covered by the limited warranty.

General Product Information Colour

Colour in Catalogue	in Roto SAP	referent RAL Code
White	R07.2	RAL9016
Black	R06.2	RAL9005
Brown*	(Black) Brown	RAL8022
Silver*	(FC)9022	RAL9022

Some items with special description have different brown and silver colour.

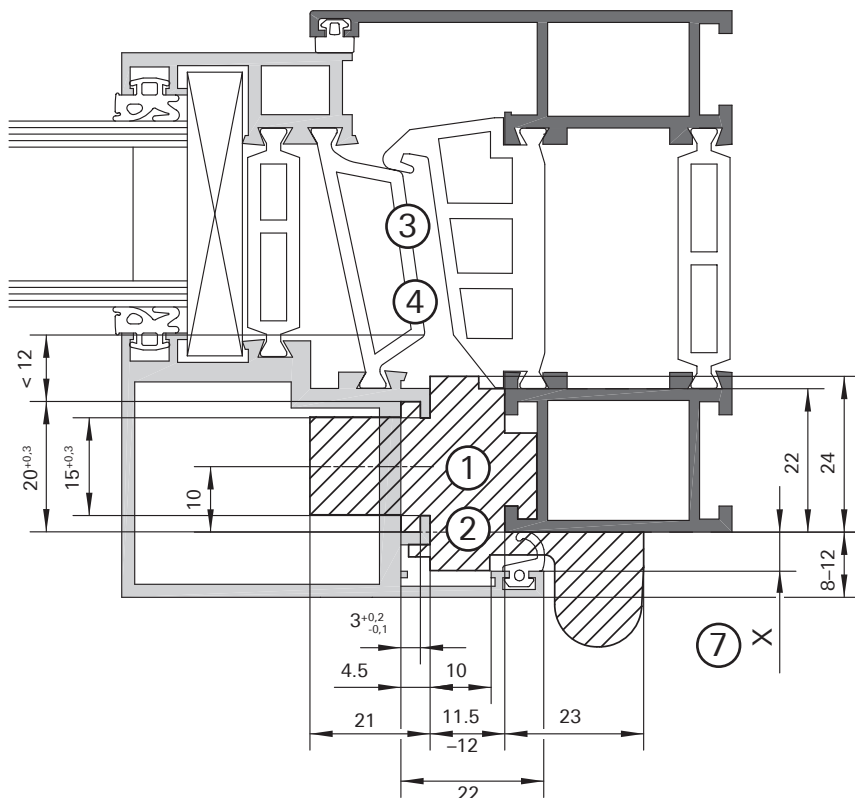
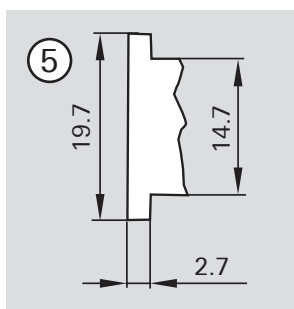
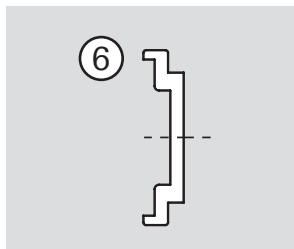


INFO

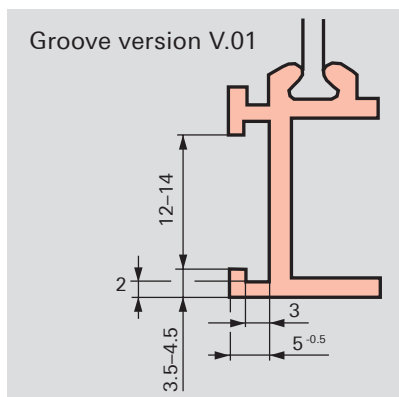
Colour deviations between product and representation are possible.

Required space AluVision T300 & AluVision T540

Suitable connecting-rod



Frame groove



 Space requirements for AluVision T540-10 (standard hardware)

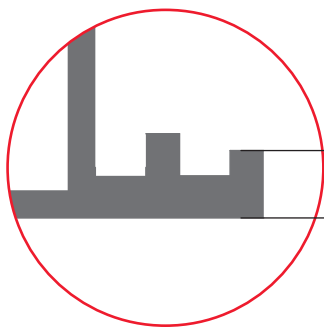
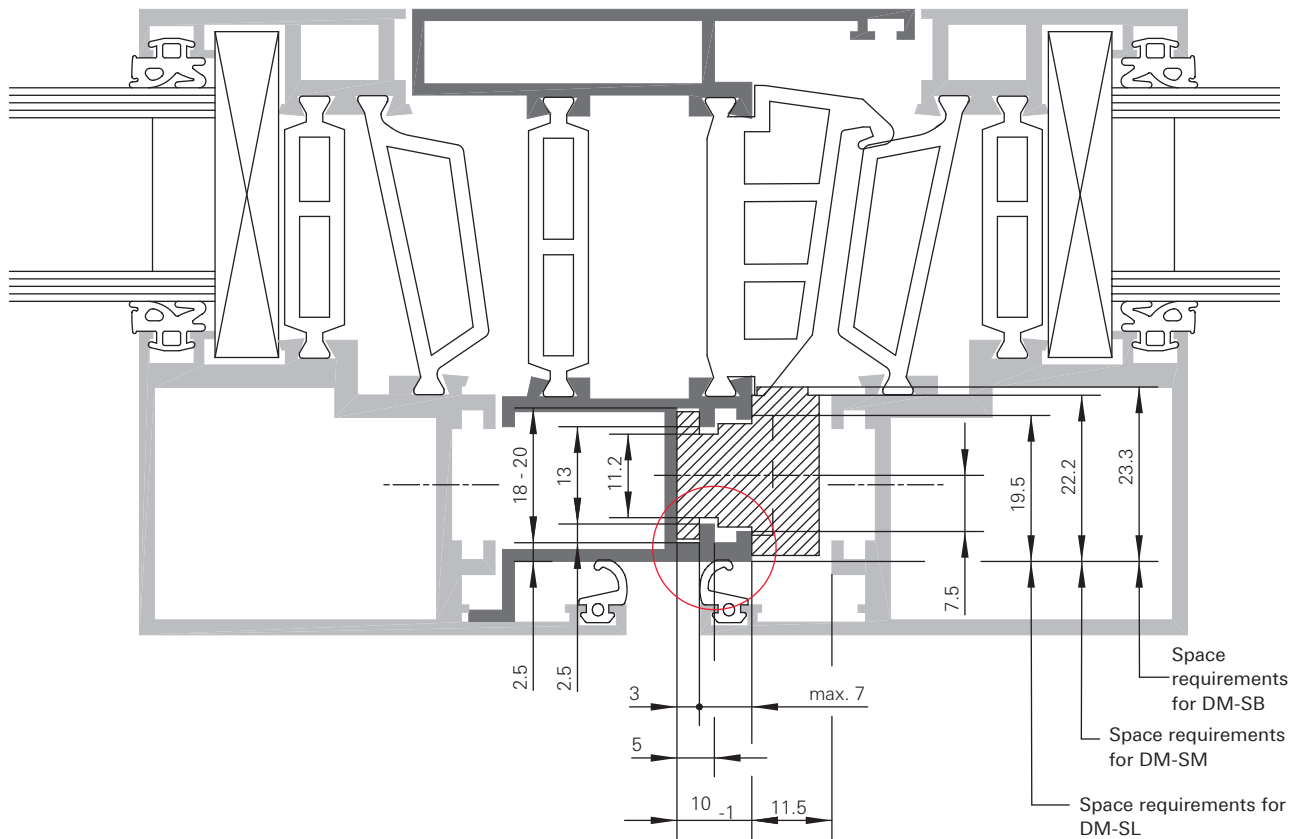
- ① Space requirements. The thick outlines are important contact areas for the Roto AluVision hardware system.
- ② It is imperative to adhere to the sash-frame alignment!
- ③ 12° for a sash width of 370 mm, 9° for a sash width of 500 mm with a profile thickness of maximum 100 mm.
- ④ No contact lip from the central gasket etc. may extend beyond the connecting-rod C-groove plane.
- ⑤ Minimal dimensions of the connecting-rod C-groove, in which the hardware components must slide easily, even after colour coating.
- ⑥ Specific connecting-rod profile for AluVision T540-10 (refer to the chapter "Connecting-rod coupling technology" for dimensions).
- ⑦ Recommended hinge passage.

	Min.	Max.
T300	3.5	---
T540-130Kg	4	---
T540-160Kg	5	---

Upon deviating dimensions, please consult with Roto!
All dimensions in mm.

2-sashed window without fixed centre-post profile (dummy mullion)

DM-SM/DM-SL/DM-SB

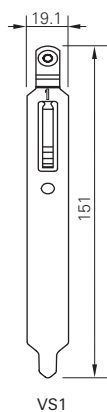


min. 3
max. 4.2

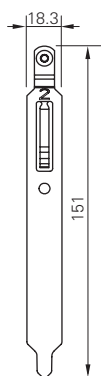


DM-SB

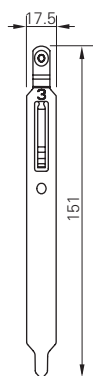
Shootbolt rod



VS1

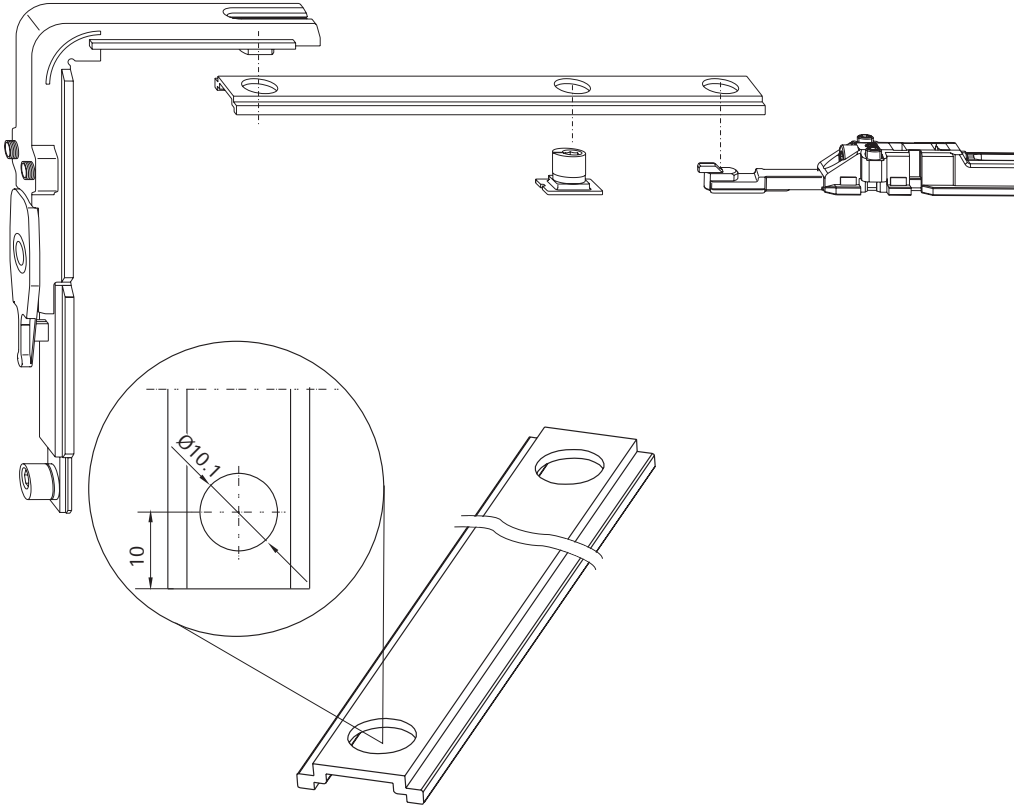


VS2

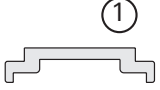
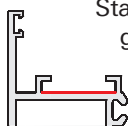
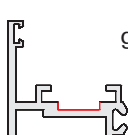


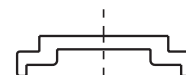
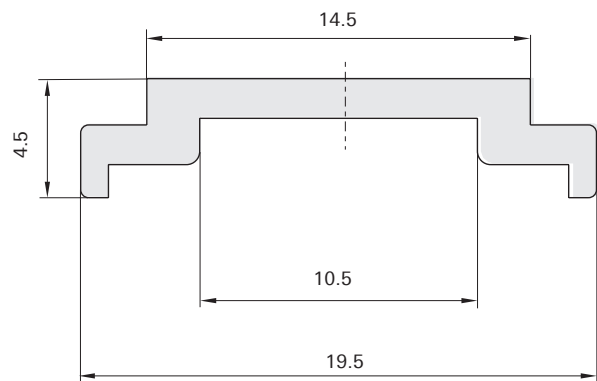
VS3

Connecting-rod coupling technology



Connecting-rod application

	
 Standard groove	<input checked="" type="checkbox"/>
 ECC groove	<input checked="" type="checkbox"/>



- ① Connecting-rod geometry applicable for sash profiles with and without extended connecting-rod C-groove (ECC groove).

Turn-Only hardware (EU hinge) – 80 kg

TU-ON



Limitation of sash formats depending on the glass thickness

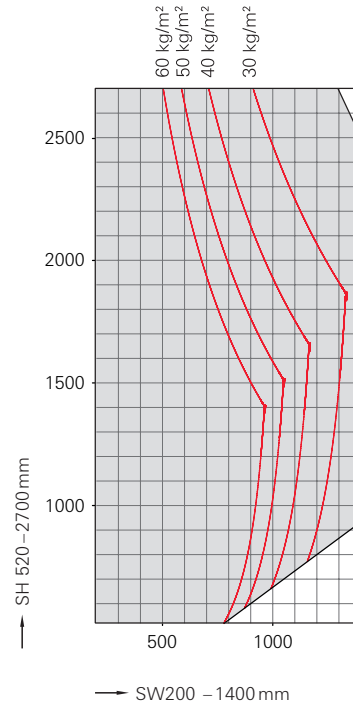
Application range

Sash width **SW**..... 200-1400mm
 Sash height **SH**..... 520-2700mm
 Sash weight **S.kg** max. 80 kg

The information in the application diagram refers to the glass weight in kg/m².

1 mm/m² glass thickness = 2.5 kg

 = Impermissible application range



Tilt-Only hardware, handle on top (EU hinge) – 70 kg

TI-ON



Limitation of sash formats depending on the glass thickness

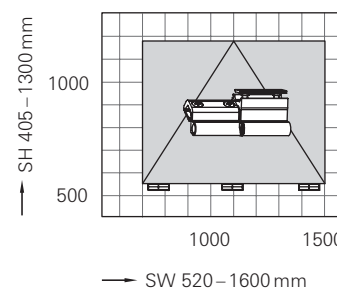
Application range

Sash width **SW**.....520 – 1600 mm
 Sash height **SH**.....405 – 1300 mm
 Sash weight **S.kg** max. 70 kg

The information in the application diagram refers to the glass weight in kg/m².

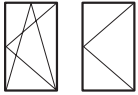
1 mm/m² glass thickness = 2.5 kg

 = Impermissible application range



Tilt&Turn and Turn-Only hardware 80 kg (T300)

T&T, TU-ON-adj



Limitation of sash formats depending on the glass thickness

Application range T&T

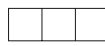
Sash width **SW** 390 – 1600 mm
 Sash height **SH** 580 – 2400 mm
 Sash weight **S.kg** max. 80 kg

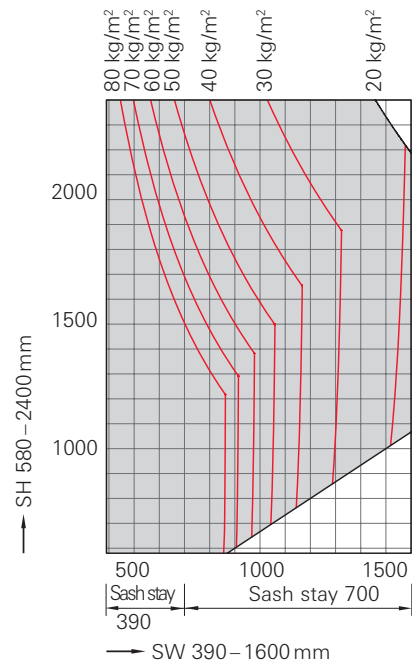
Application range TU-ON-adj

Sash width **SW** 370 – 1600 mm
 Sash height **SH** 500 – 2400 mm
 Sash weight **S.kg** max. 80 kg

The information in the application diagram refers to the glass weight in kg/m².

1 mm/m² glass thickness = 2.5 kg

 = Impermissible application range



Tilt&Turn / Turn-Only hardware 130 kg (T540-130Kg)

T&T, TU-ON



Limitation of sash formats depending on the glass thickness

Application range

Sash width **SW** 405 – 1600 mm

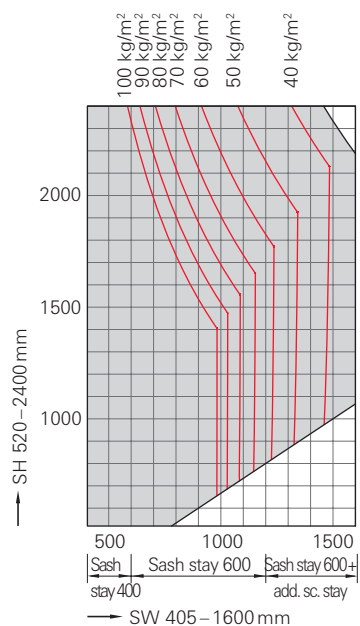
Sash height **SH** 520 – 2400 mm

Sash weight **S.kg** max. 130 kg

The information in the application diagram refers to the glass weight in kg/m².

1 mm/m² glass thickness = 2.5 kg

 = Impermissible application range



Tilt-Only hardware, handle on top, 130kg (T540-130Kg)

TI-ON



Limitation of sash formats depending on the glass thickness

Application range

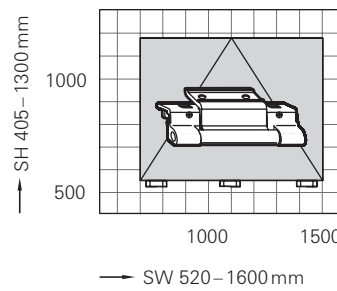
Sash width **SW** 520 – 1600 mm

Sash height **SH** 405 – 1300 mm

Sash weight **S.kg** max. 130 kg

The information in the application diagram refers to the glass weight in kg/m².

1 mm/m² glass thickness = 2.5 kg



 = Impermissible application range

Application diagram up to 160kg (T540-160Kg)

T&T



Limitation of sash formats depending on the glass thickness

Application range

Sash width **SW** 620–1600 mm

Sash height **SH** 1000–2700 mm

Sash weight **S.kg** max. 160 kg

The information in the application diagram refers to the glass weight in kg/m².

1 mm/m² glass thickness = 2.5 kg



= Impermissible application range

Calculation basis for application diagram:

(IFT Tool – Dated February 2013)

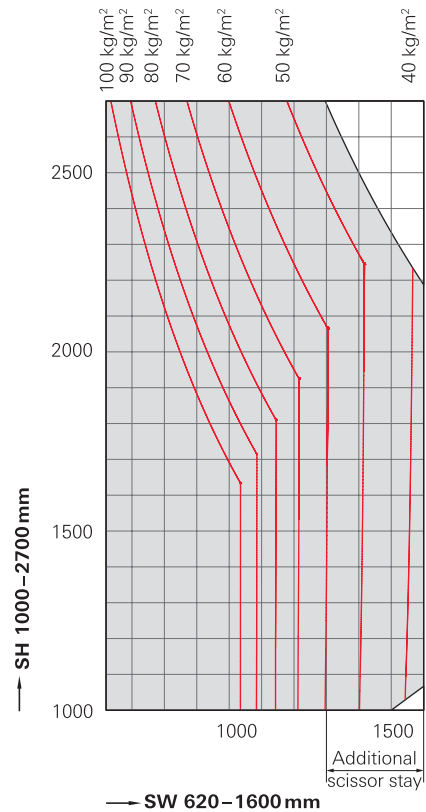
Deductible glass dimension **DGD** 20 mm

(Sash) profile weight **PW** 2 kg/m²



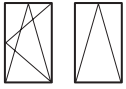
NOTE!

Lower deductible glass dimensions or higher profile weights must be checked separately.



Application diagram up to 100 kg without load transfer device (Designo Alu version)

T&T, TF, TI-ONs



Limitation of sash formats depending on the glass thickness

Application range

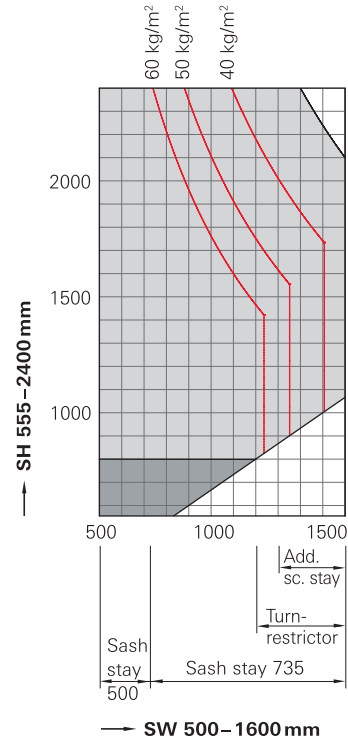
Sash width **SW** 500–1600 mm
 Sash height **SH** 555–2400 mm
 Sash weight **S.kg** max. 100 kg

The information in the application diagram refers to the glass weight in kg/m².

1 mm/m² glass thickness = 2.5 kg

 = Impermissible application range

 = Tilt-depth regulator



Application diagram from 80 up to 150kg with load transfer device (*Designo Alu version*)

T&T, TF, TI-ONs, TU-ON



Limitation of sash formats depending on the glass thickness

Application range

Sash width **SW** 735–1600 mm

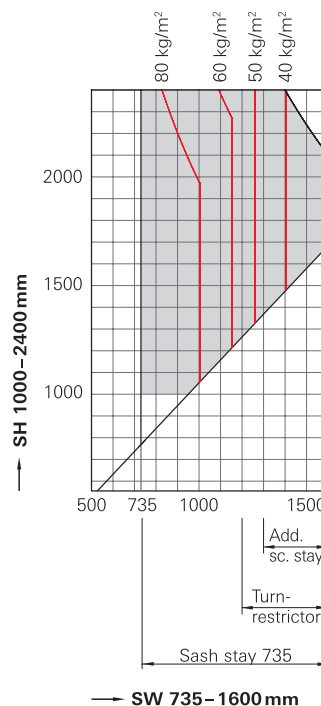
Sash height **SH** 1000–2400 mm

Sash weight **S.kg** 80 – 150 kg
(with load transfer device set 150 kg)

The information in the application diagram refers to the glass weight in kg/m².

1 mm/m² glass thickness = 2.5 kg

 = Impermissible application range



Turn-Only hardware 200 kg

TU-ON



Limitation of sash formats depending on the glass thickness

Application range


Sash width **SW** 600 – 1600 mm

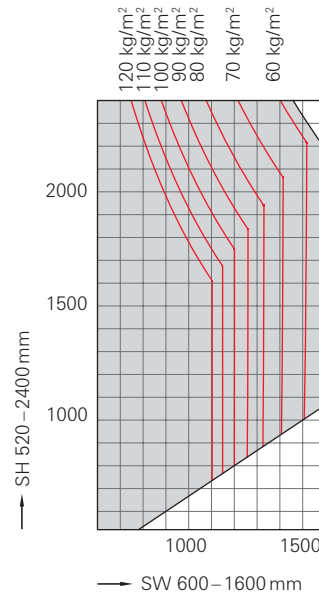
Sash height **SH** 520 – 2400 mm

Sash weight **S.kg** max. 200 kg

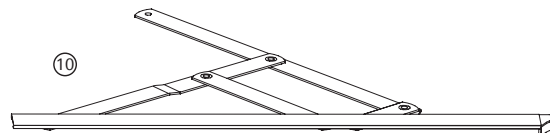
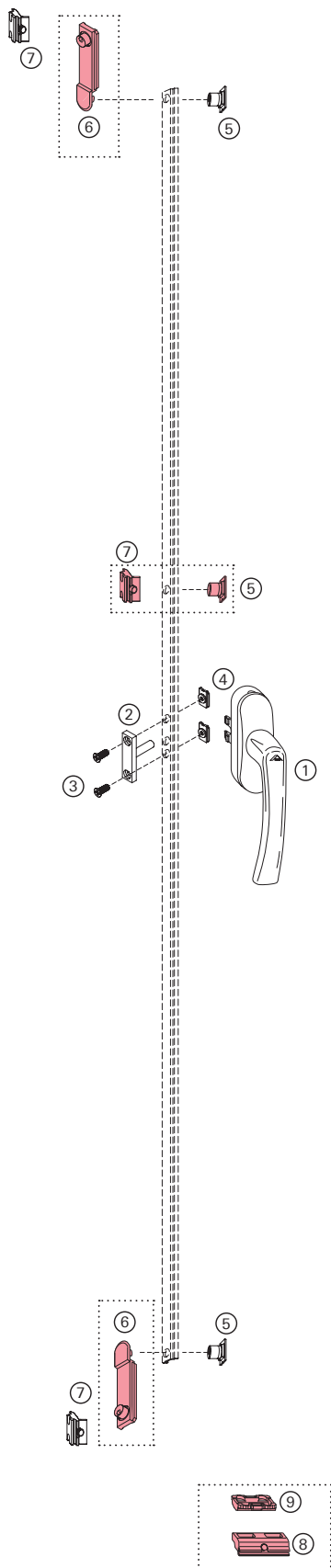
The information in the application diagram refers to the glass weight in kg/m².

1 mm/m² glass thickness = 2.5 kg

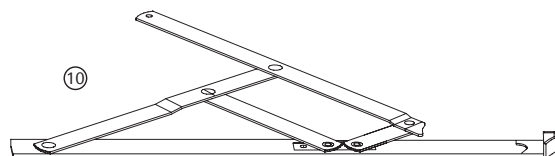
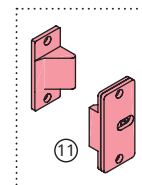
 = Impermissible application range



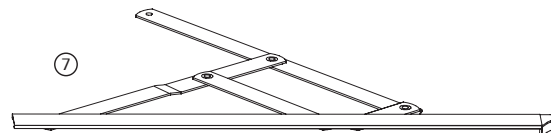
Single sash outward opening window - geared handle
 Sash weight max. 45kg (refer to friction hinge capacity)
 Recommended sash width:380-700mm;Sash height:400-1600mm



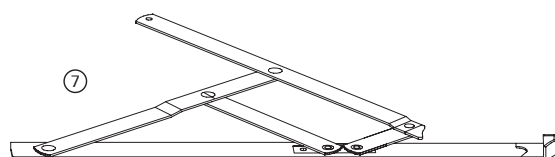
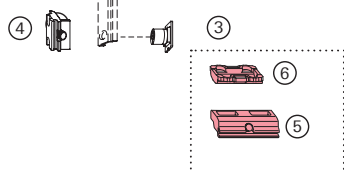
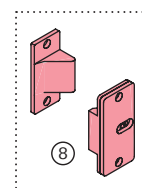
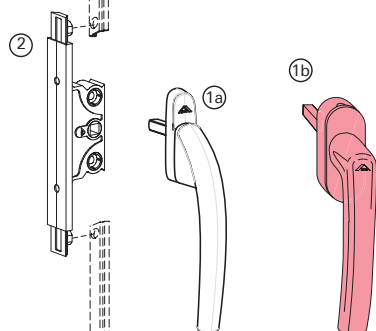
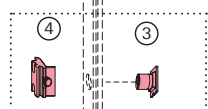
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|----|--------------------------|--------|
| 1 | Rotoline casement handle | P82 |
| 2 | T connector | P27 |
| 3 | Countersunk screw M5x8 | 728929 |
| 4 | Security connector | P27 |
| 5 | Insertable cam | P25 |
| 6 | Locking Pin 67 | 858811 |
| 7 | Striker | P26 |
| 8 | Hor. T&T striker | 728860 |
| 9 | Run-up block | 212008 |
| 10 | Friction hinge | P30 |
| 11 | Centre-closers | 771867 |



Single sash outward opening window - spindle handle
 Sash weight max. 45kg (refer to friction hinge capacity)
 Recommended sash width:380-700mm;Sash height:400-1600mm



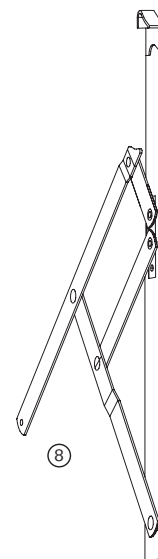
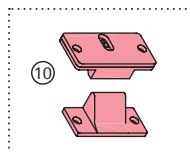
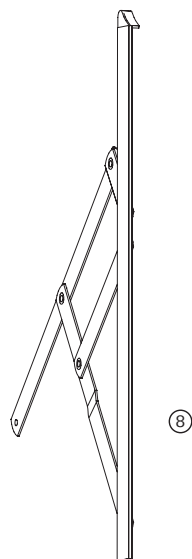
- | | | |
|----|--|--------|
| 1a | Rotoline handle for outward opening window | P86 |
| 1b | Rotoline handle | P84 |
| 2 | Flush encased gearbox BS=25mm | P27 |
| 3 | Insertable cam | P25 |
| 4 | Striker | P25 |
| 5 | Hor. T&T striker | 728860 |
| 6 | Run-up block | 212008 |
| 7 | Friction hinge | P30 |
| 8 | Centre-closers | 771867 |



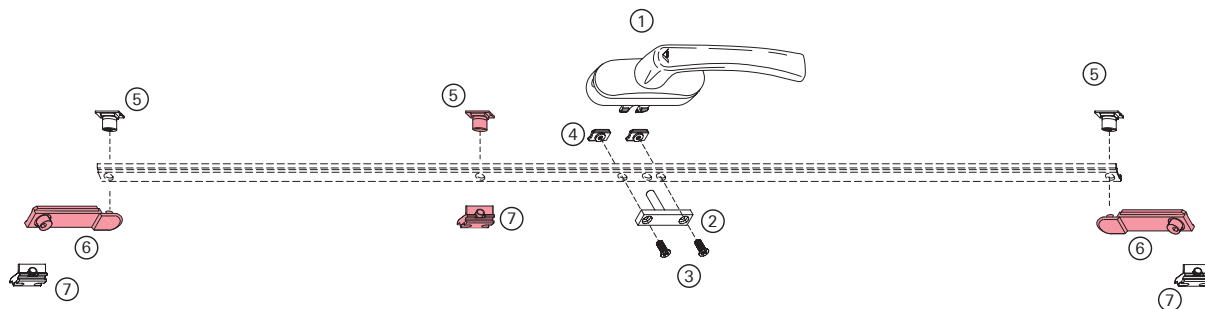
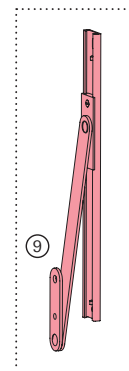
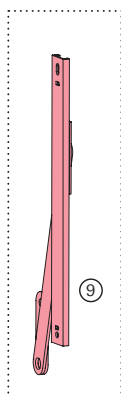
Top hung window - frontal operation

Sash weight max. 180kg (refer to friction hinge capacity)

Recommended sash width:300-1200mm;Sash height:300-2500mm



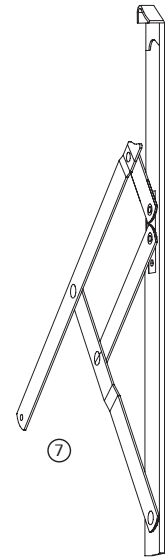
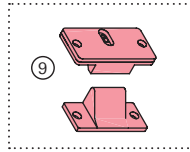
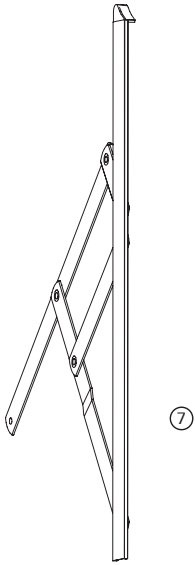
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|----|--------------------------|--------|
| 1 | Rotoline casement handle | P82 |
| 2 | T connector | P27 |
| 3 | Countersunk screw M5x8 | 728929 |
| 4 | Security connector | P27 |
| 5 | Insertable cam | P25 |
| 6 | Locking Pin 67 | 858811 |
| 7 | Striker | P26 |
| 8 | Friction hinge | P30 |
| 9 | Restrictor | P30 |
| 10 | Centre-closers | 771867 |



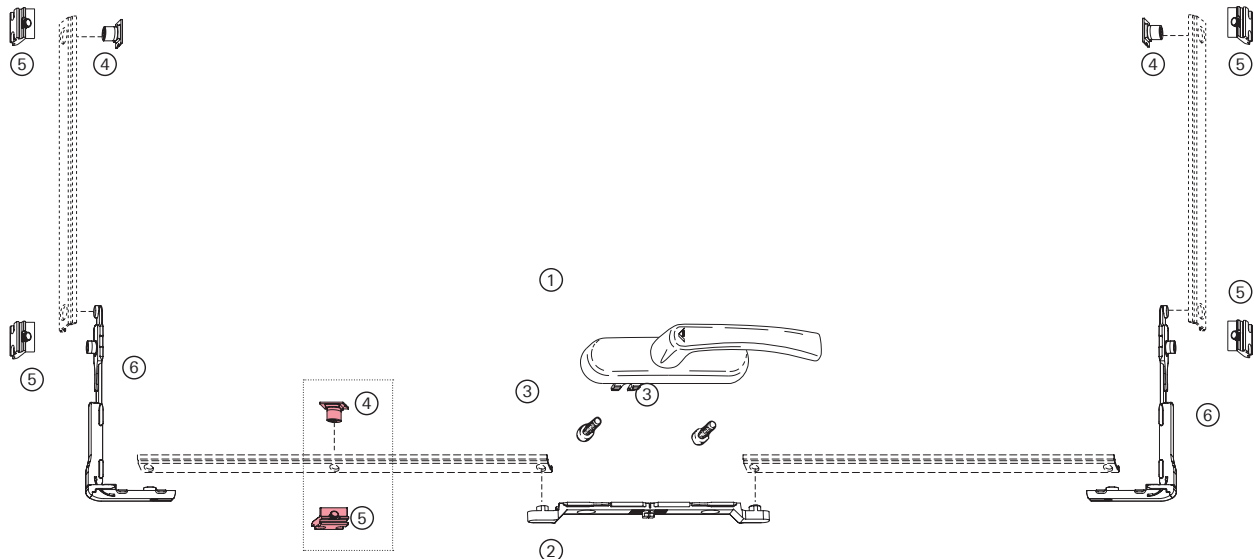
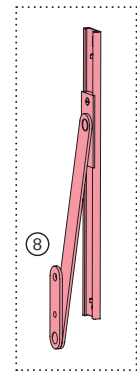
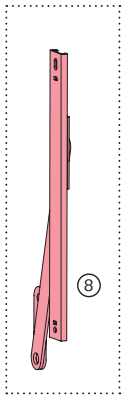
Top hung window - frontal operation

Sash weight max. 180kg (refer to friction hinge capacity)

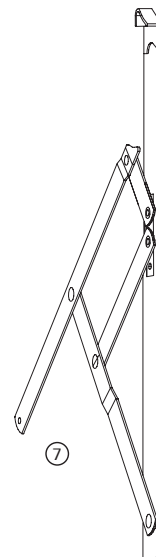
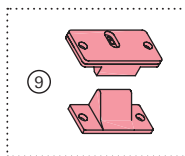
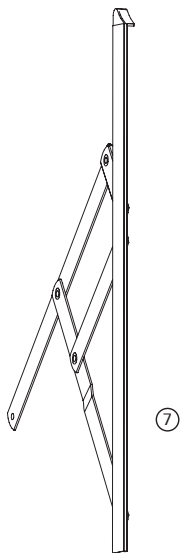
Recommended sash width:300-1200mm;Sash height:300-2500mm



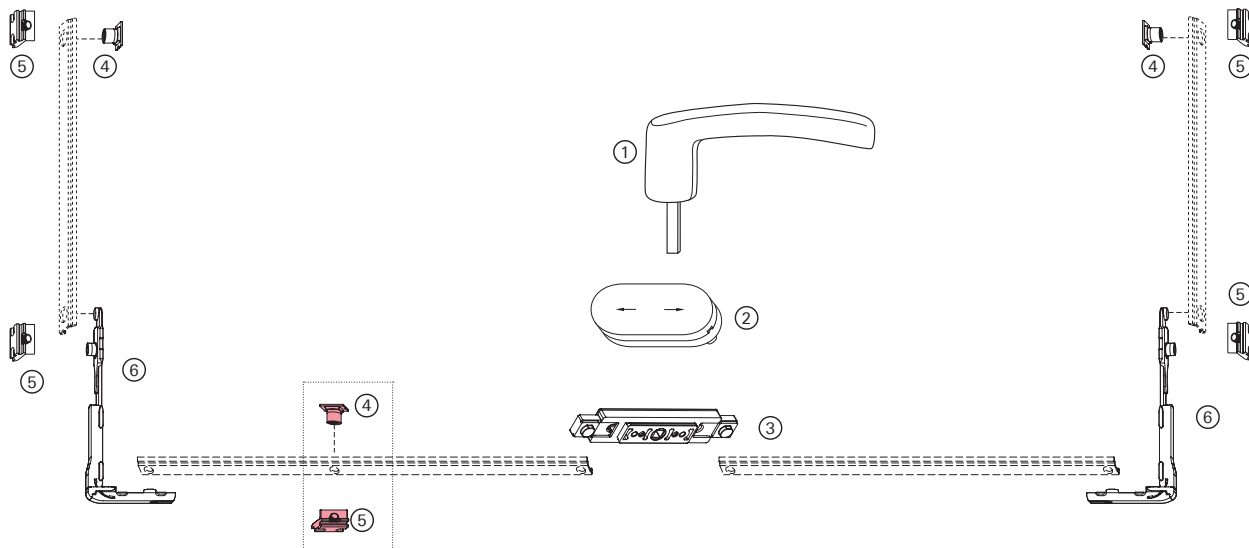
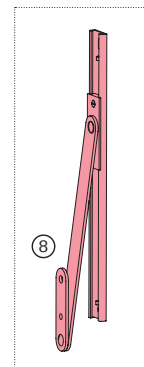
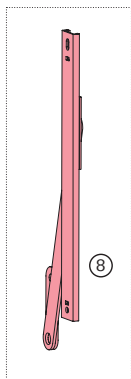
- | | | |
|---|-------------------------|--------|
| 1 | RotoLine geared handle | P82 |
| 2 | Center gear connector | 482264 |
| 3 | Flat-headed screw M5×12 | 728925 |
| 4 | Insertable cam | P25 |
| 5 | Striker | P26 |
| 6 | Corner drive | 858806 |
| 7 | Friction hinge | P30 |
| 8 | Restrictor | P30 |
| 9 | Centre-closers | 771867 |



Top hung window - operation from above
 Sash weight max. 180kg (refer to friction hinge capacity)
 Recommended sash width:300-1200mm;Sash height:300-2500mm

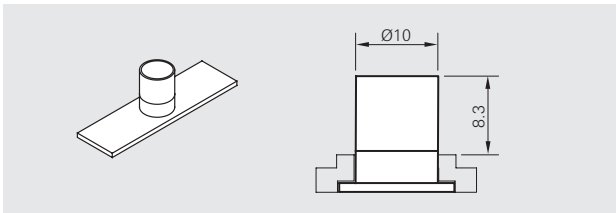
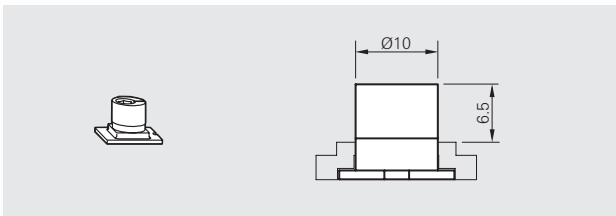
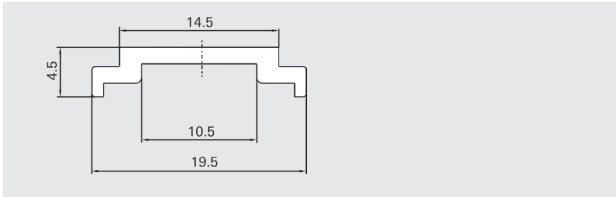
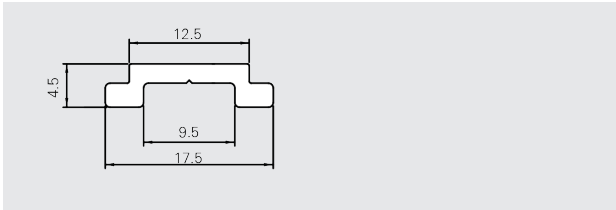


- | | | |
|---|---------------------------|--------|
| 1 | RotoLine service handle | P83 |
| 2 | RotoLine escutcheon plate | P83 |
| 3 | Top hung centre gear | 858815 |
| 4 | Insertable cam | P25 |
| 5 | Striker | P26 |
| 6 | Corner drive | 858806 |
| 7 | Friction hinge | P30 |
| 8 | Restrictor | P30 |
| 9 | Centre-closers | 771867 |



Connecting rod & Cam

(More cams, strikers are not listed below, we would check according your system drawing.)



Connecting rod standard

Material	Description	SAP
Aluminium	Silver 1pc=3m	741149

Connecting rod ECC groove

Material	Description	SAP
Aluminium	Silver 1pc=3m	333826
Aluminium	Black 1pc=3m	815319
PA66	1pc=3m	763768

Cam

Name	Description	SAP
Insertable cam		334671
	available for ECC groove	

Cam

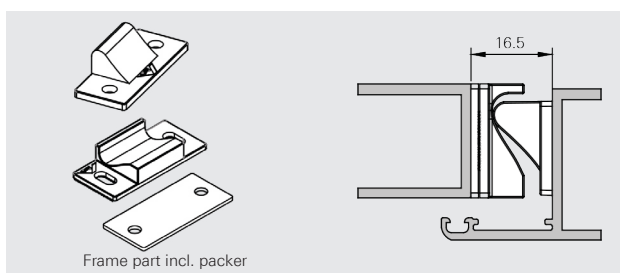
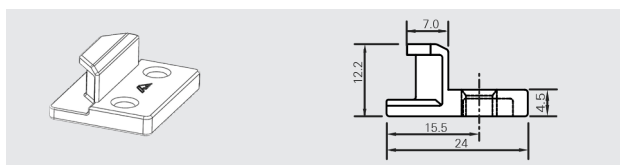
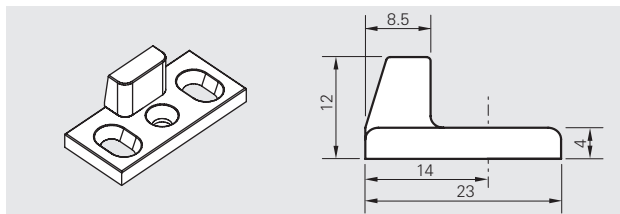
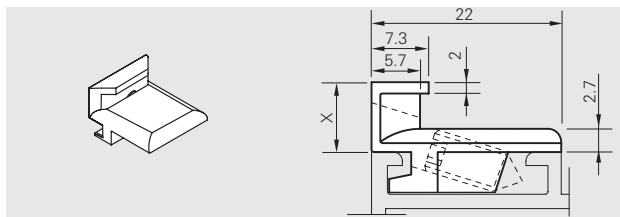
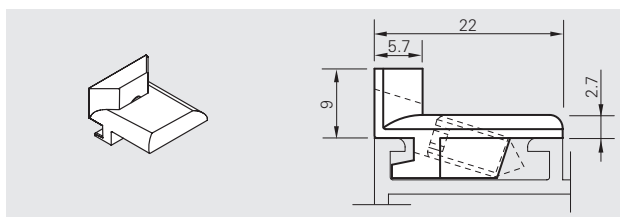
Name	Description	SAP
Mushroom cam	X=8.3	328732
	X=10	767006

Cam

Name	Description	SAP
Cam	X=8.3	570955
	X=12.8 (available for ECC groove)	382690

Striker

(More cams, strikers are not listed below, we would check according your system drawing.)



Striker		
Name		SAP
Striker		2007008

Striker for mushroom cams		
Name	Description	SAP
Striker	X=9mm	861274
	X=12mm	861273

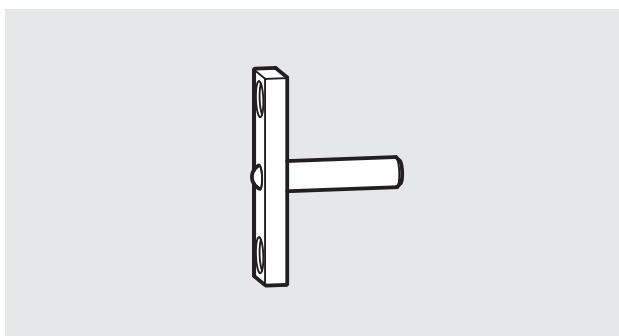
Striker		
Name	Description	SAP
Striker	Clearance 14-16mm	482261

Striker		
Name	Description	SAP
Striker	Clearance 16-17mm	482262

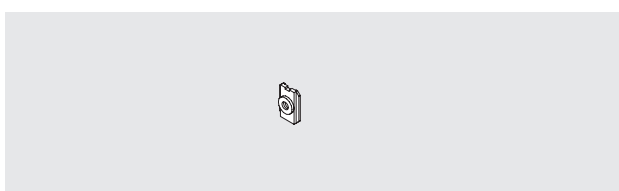
Striker		
Name	Description	SAP
Striker		779965

Center Closer for Outwards Opening		
Name	Description	SAP
Center Closer in set		771867

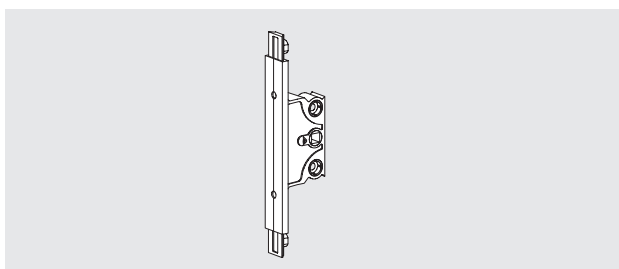
Hardware for outward opening window



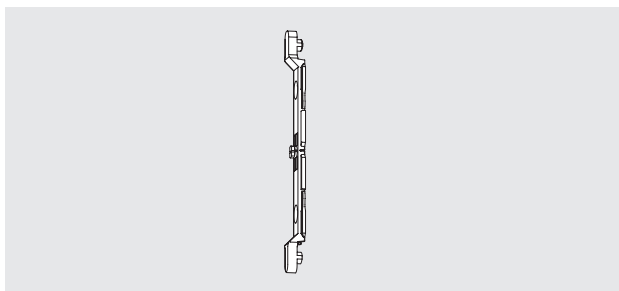
T connector	
SAP	Description
739482	17mm
739483	23mm
739481	25mm
739484	26mm
739485	30mm
739478	32mm
739486	35mm
739479	37mm
739480	47mm



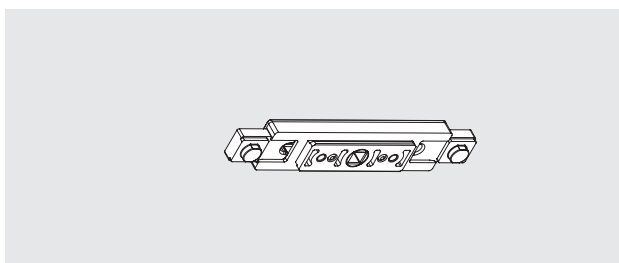
Security connector	
SAP	Description
447113	ECC



Flush encased gearbox	
SAP	Description
894381	BS=25

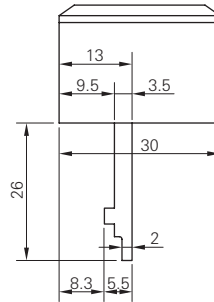
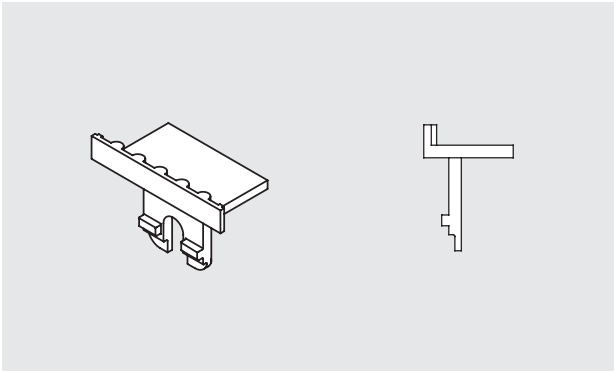


Center gear connector	
SAP	Description
482264	



Top hung centre gear	
SAP	Description
858815	

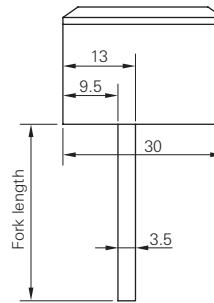
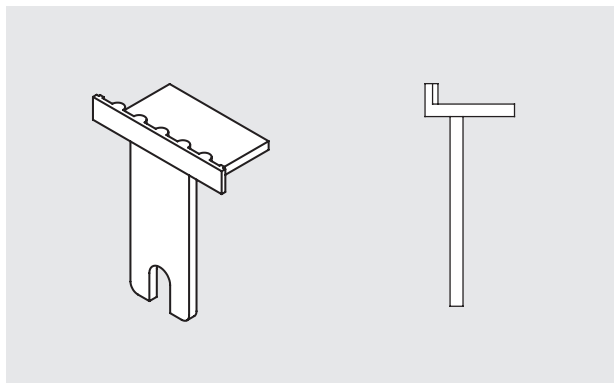
ALU geared-handle fork



Fork (Can be combined with mishandling device)

SAP	Description
-----	-------------

242817	26mm
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Fork

SAP	Description
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482309	32mm
--------	------

482310	37mm
--------	------

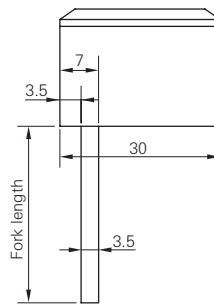
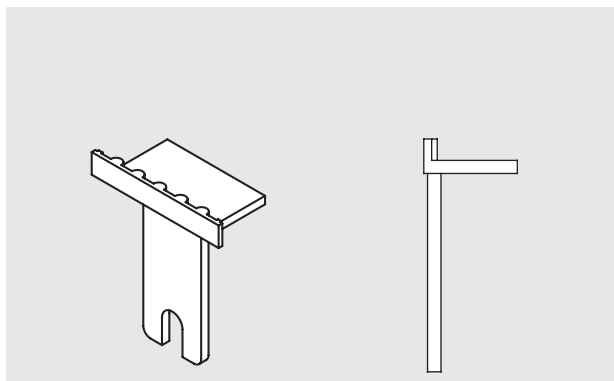
482315	53mm
--------	------

482312	46mm
--------	------

482314	50mm
--------	------

482317	55mm
--------	------

482318	60mm
--------	------



Fork: eccentric fork

SAP	Description
-----	-------------

637952	19mm
--------	------

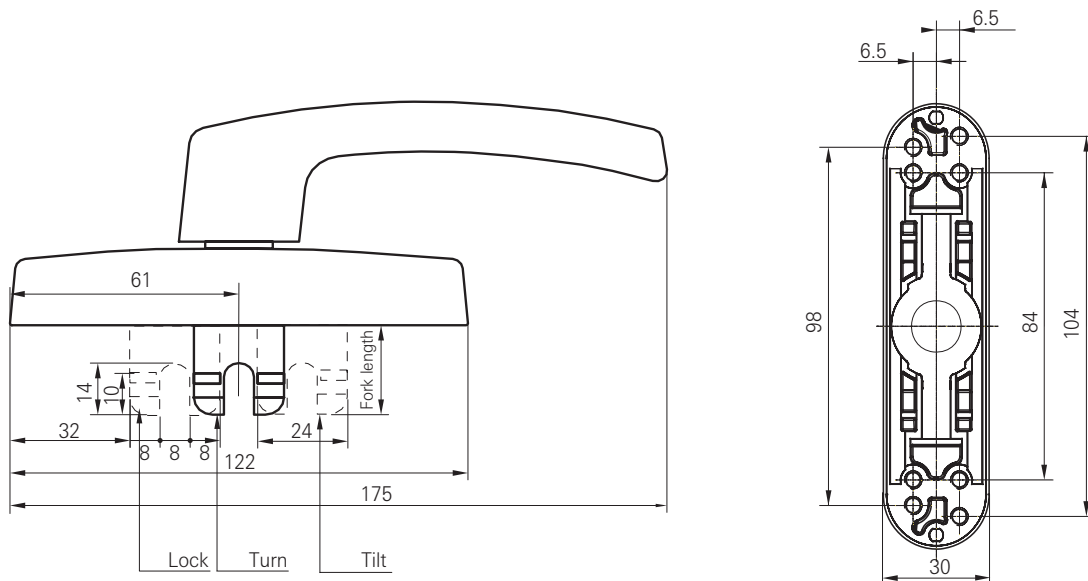
570787	26mm
--------	------

570788	32mm
--------	------

482311	37mm
--------	------

482313	46mm
--------	------

482316	53mm
--------	------



Friction hinge application

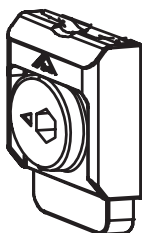
Sidehung window							
SAP	Length	Stack height	Guide track width	Min. sash width	Max. sash width	Max.sash weight	Max.opening angle
823188	10"	16	23	350mm	450mm	40kg	87°
823189	12"	16	23	380mm	570mm	40kg	87°
823191	16"	16	23	550mm	750mm	45kg	87°
769389	20"	16	23	600mm	800mm	48kg	87°

Tophung window							
SAP	Length	Stack height	Guide track width	Min.sash height	Max. sash height	Max.sash weight	Max.opening angle
785740	8"	16	23	300mm	450mm	35kg	50°
823189	12"	16	23	450mm	800mm	45kg	50°
823195	16"	16	23	750mm	1250mm ⁽¹⁾	60kg	50°
823196 ⁽²⁾	22"	16	23	1100mm	1500mm ⁽¹⁾	100kg	20°
823198 ⁽²⁾	26"	16	23	1450mm	2500mm ⁽¹⁾	180kg	20°

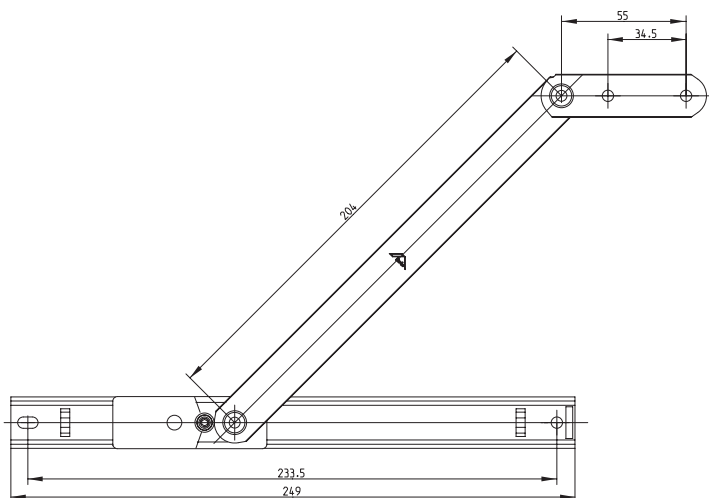
⁽¹⁾ Restrictor should be used as additional support.

⁽²⁾ Sashes of 100kg must be fitted with 857579 cam adjust devices which are optional on lighter sashes.

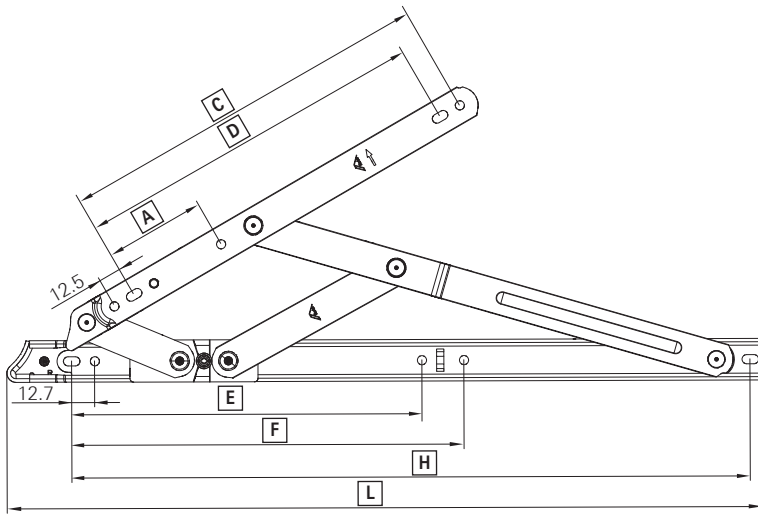
Optional accessories	
SAP	
857579 ⁽²⁾	Height adjustment blocks



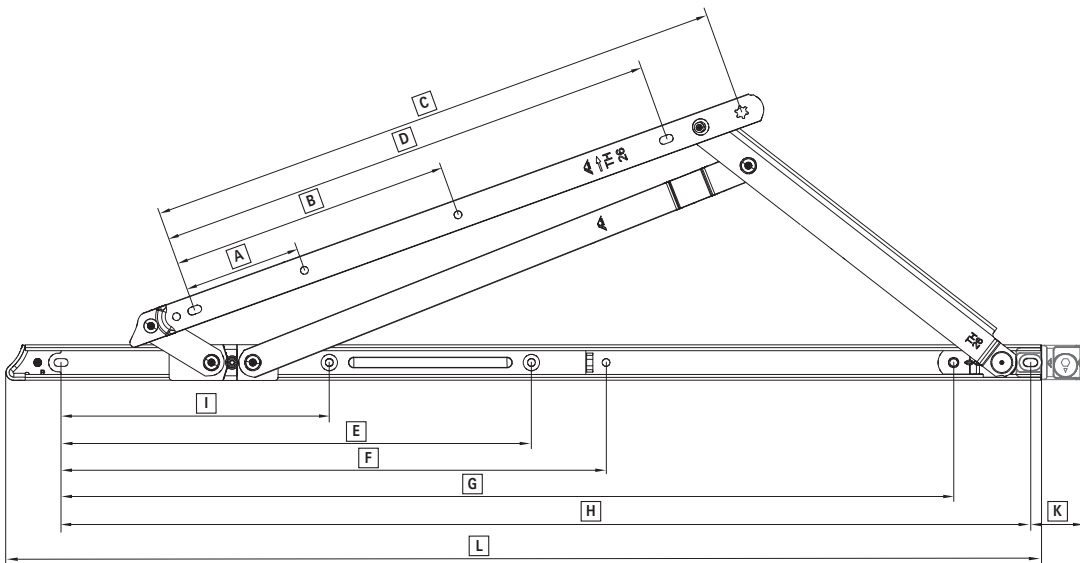
Restrictor		
SAP	Length	Stack Height
785746	10"	16mm



Friction hinge dimension in mm



Sidehung							
	L	A	C	D	E	F	H
10"	261	-	163.5	151	153.5	176.5	218.5
12"	312	37.5	189	174.5	191	214	269.5
16"	413	55	206	193.5	191.5	214.5	371
20"	517	130	288	275.5	209.5	356.5	473.5

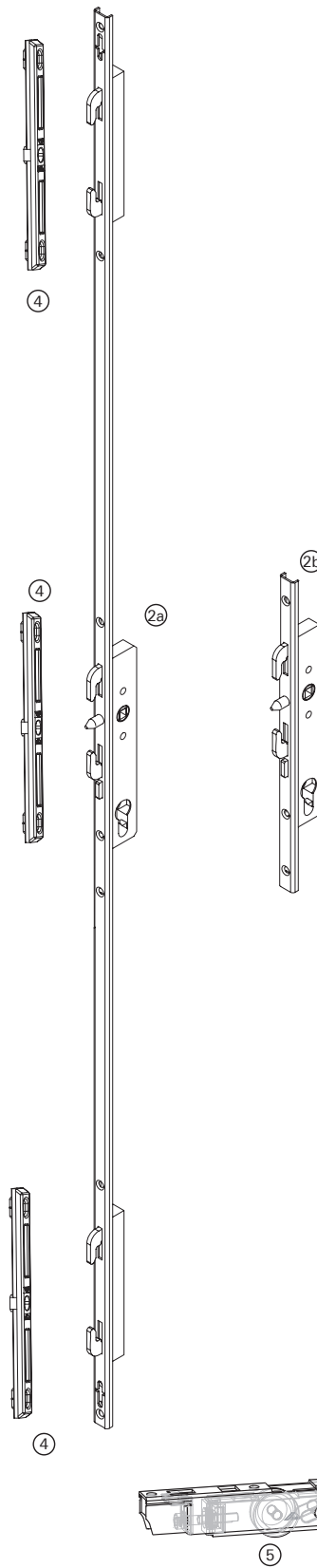


Tophung											
	L	A	B	C	D	I	E	F	G	H	K
8"	212	-	-	123.5	-	-	102.5	125.5	-	170	-
12"	312	37.5	-	189	174.5	-	191	214	-	269.5	-
16"	414	118	-	247.5	235	-	263.5	286.5	-	371	-
22"	565	90	-	248.5	197	160	280	323	473	523	36
26"	666	75	180	374	322.5	172.5	302.5	350.5	574	623.5	36

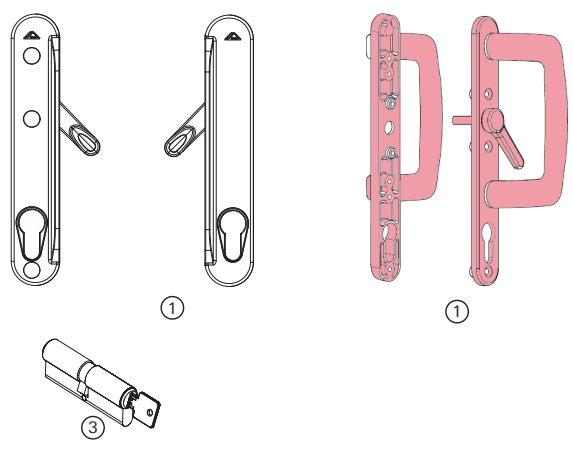
Sliding door

Sash weight max. 180kg (refer to roller capacity)

Recommended sash width: 600-1500mm; sash height: 2000-2700mm



Sliding espag. BS 20		
Item	Description	SAP
1	Inline Sliding handle	Page93-96
2a	Espag. BS=20 2000mm	833357
2b	Espag. BS=20 280mm	765558
3	Cylinder	Page97
4	Striker	808400
5	Roller	Page34
6	Buffer stop	Page35

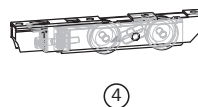
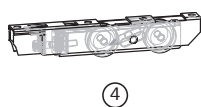
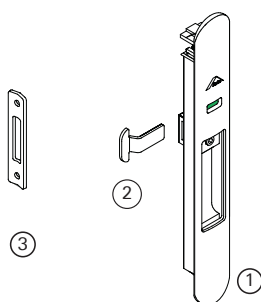


Sliding Window

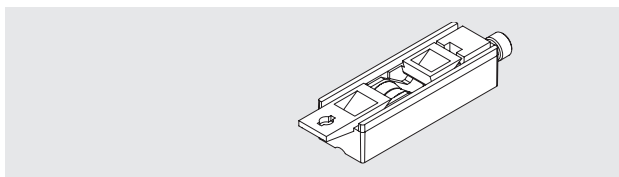
Sash weight max. refer to roller capacity

Recommended sash width: 600-1500mm; sash height: 500-2000mm

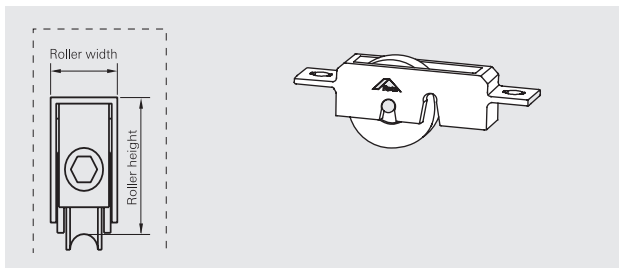
Sliding Window			
Item	Description		SAP
1	Single point handle	White	762608
		Black	762609
		Silver	762611
2	Hook	7mm	757681
		6.5mm	772319
3	Striker	13.5x64mm	757680
		17.4x64mm	776273
4	Roller		Page34



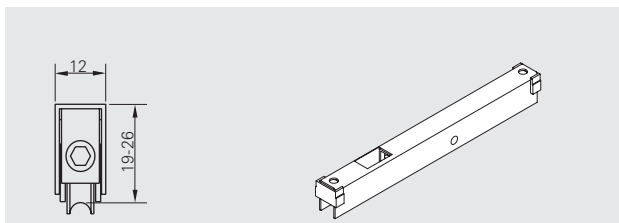
Roller



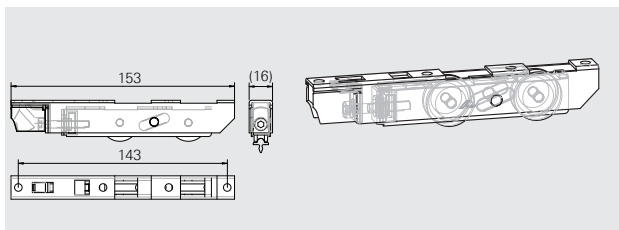
Single roller				
SAP	Width	Height	Max Sash Weight	Track
798251	20mm	15.5-20.5mm	60kg	R
798252	20mm	15.5-20.5mm	60kg	V



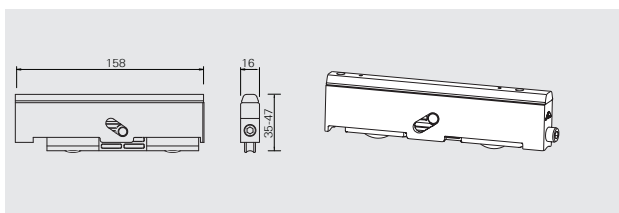
Single roller				
SAP	Width	Height	Max Sash Weight	Track
616040	12mm	15&23mm	90kg	R
616041			Packers for bogies	



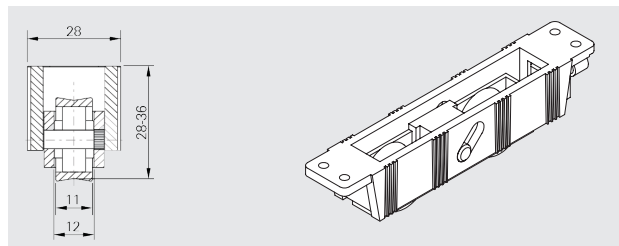
Tandem roller				
SAP	Width	Height	Max Sash Weight	Track
615951	12mm	19-26mm	120kg	R



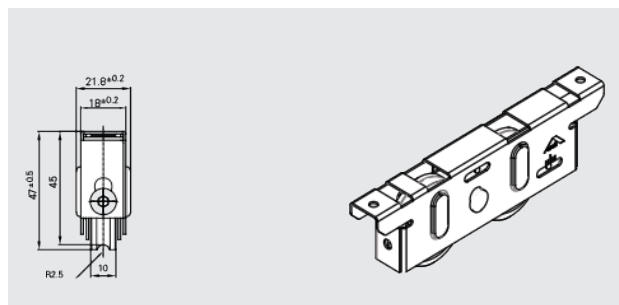
Tandem roller				
SAP	Width	Height	Max Sash Weight	Track
2022218	16mm	23.5-28.5mm	150kg	R
2022224	16mm	23.5-28.5mm	150kg	V
794819	packer			



Tandem roller				
SAP	Width	Height	Max Sash Weight	Track
609014	16mm	35-47mm	180kg	R

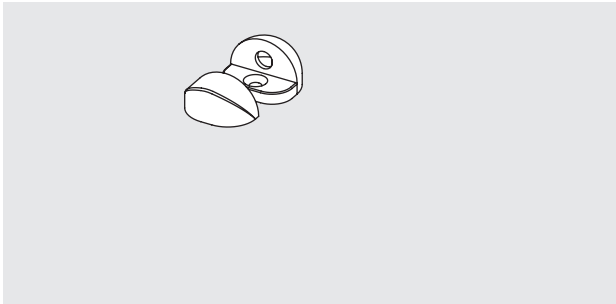


Tandem roller				
SAP	Width	Height	Max Sash Weight	Track
603940	28mm	28-36mm	180kg	V



Tandem Roller				
SAP	Width	Height	Max Sash Weight	Track
603939	22mm	45mm	300kg	R

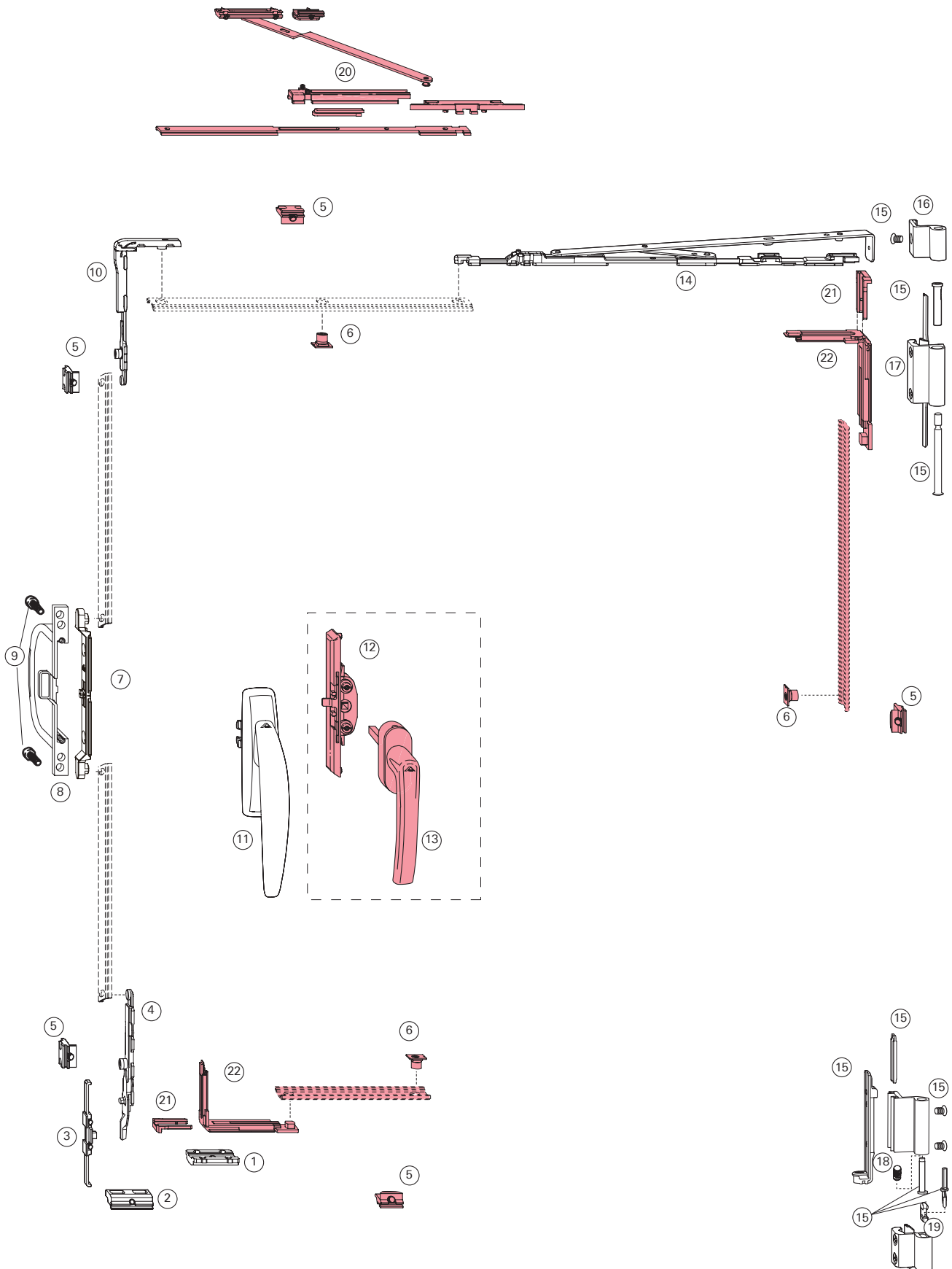
Buffer Stop



Buffer stop

SAP	Colour
317250	White
317251	Brown
335555	Black
449963	Silver

Tilt & Turn T300DK



Application
 Sash Width:390mm – 1600mm
 Sash Height:580mm – 2700mm
 Sash Weight max.:80kg



Basic sets

Sash Stays

Item	Name	SAP	Description
14	Sash stay 390	486462	FB \geq 390mm
	Sash stay 700	486461	FB \geq 700mm

Hinge-Side T&T

Item	Name	SAP	Description
16	Stay-arm hinge	486473	White(R07.2)
	Stay-arm hinge	486472	Black(R06.2)
	Stay-arm hinge	486471	Silver(R01.5)
17	Stay bearing	486477	White(R07.2)
	Stay bearing	486476	Black(R06.2)
	Stay bearing	486475	Silver(R01.5)
18	Corner hinge	486465	White(R07.2)
	Corner hinge	486464	Black(R06.2)
	Corner hinge	486463	Silver(R01.5)
19	Pivot rest	486469	White(R07.2)
	Pivot rest	486468	Black(R06.2)
	Pivot rest	486467	Silver(R01.5)
15	T300 hinge accessories	486454	

Locking components

Item	Name	SAP	Description
1	Run-up block	212008	
4	Tilt lock bolt	858807	
2	Hor. T&T striker	2005532	
3	Anti-jemmy device	858808	V.01
5	Striker	2007008	V.01
10	Corner drive	858806	

Size-related additional components

Item	Name	SAP	Description
6	Insertable cam	213700	
5	Striker	2007008	V.01
21,22	Corner drive C.L.	858800	
20	Add. scissors-stay	728806	V.01

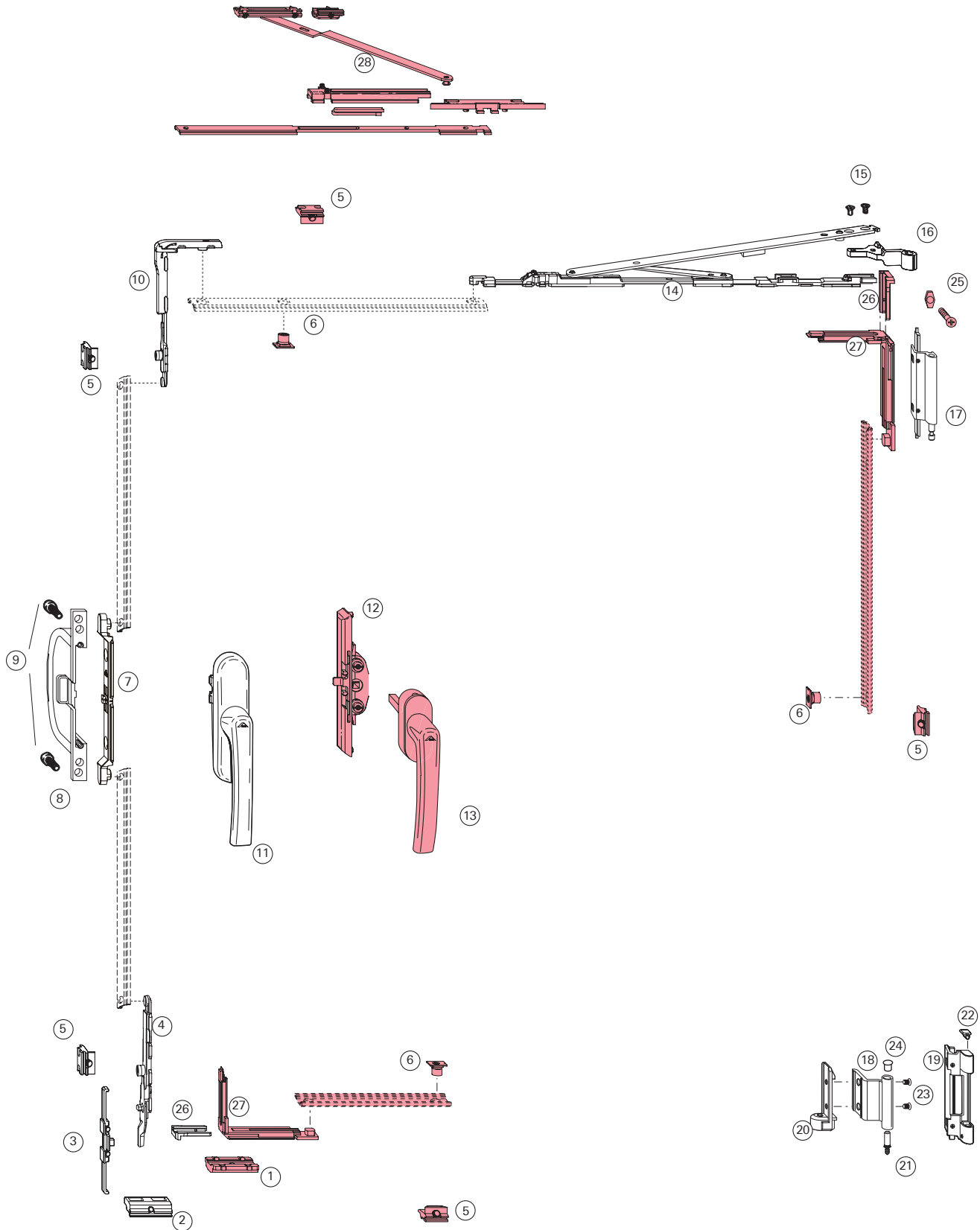
Espagnolettes and connectors

Item	Name	SAP	Description
11	T300 handle		Refer to page 82
7	Center gear connector	482264	
8	Mishandling device	858803	
9	Flat-headed screw M5 x 16	212678	

Replaceable components

Item	Name	SAP	Description
12	Flush encased gearbox	858804	
13	Rotoline handle		Refer to page 84

Tilt & Turn T540DK-130kg



Application
 Sash Width:405mm – 1600mm
 Sash Height:520mm – 3000mm
 Sash Weight max.:130kg



Basic sets

Sash Stays

Item	Name	SAP	Description
14	Sash stay 390	604937	FB<700mm
	Sash stay 700	604938	FB≥700mm

Hinge-Side T&T

Item	Name	SAP	Description
16	Stay-arm hinge	728701	White(R07.2)
	Stay-arm hinge	728700	Black(R06.2)
	Stay-arm hinge	728698	Silver(R01.5)
17	Stay bearing	728706	White(R07.2)
	Stay bearing	728705	Black(R06.2)
	Stay bearing	728703	Silver(R01.5)
18	Corner hinge	377501	White(R07.2)
	Corner hinge	377499	Black(R06.2)
	Corner hinge	377498	Silver(R01.5)
19	Pivot rest	728829	White(R07.2)
	Pivot rest	728828	Black(R06.2)
	Pivot rest	728826	Silver(R01.5)
20	Clamping corner bracket	377444	
21	Pivot-rest pin	377443	
22	End cap pivot rest,	377887	Black
23	Countersunk screw	728930	M5x9
24	End cap corner hinge,	377885	Black
15	Countersunk screw	728929	M5x8

130 kg upgrade-kit

Item	Name	SAP	Description
25	130 kg upgrade-kit	382885	

Locking components

Item	Name	SAP	Description
1	Run-up block	212008	
4	Tilt lock bolt	858807	
2	Hor. T&T striker	2005532	
3	Anti-jemmy device	858808	V.01
5	Striker	2007008	V.01
10	Corner drive	858806	

Size-related additional components

Item	Name	SAP	Description
6	Insertable cam	213700	
5	Striker	2007008	V.01
26,27	Corner drive C.L.	858800	
28	Add. scissors-stay	728806	V.01

Replaceable components (1)

Item	Name	SAP	Description
11	RotoLine geared handle		Refer to page 82
7	Centre gear connector	482264	
8	Mishandling device	858803	

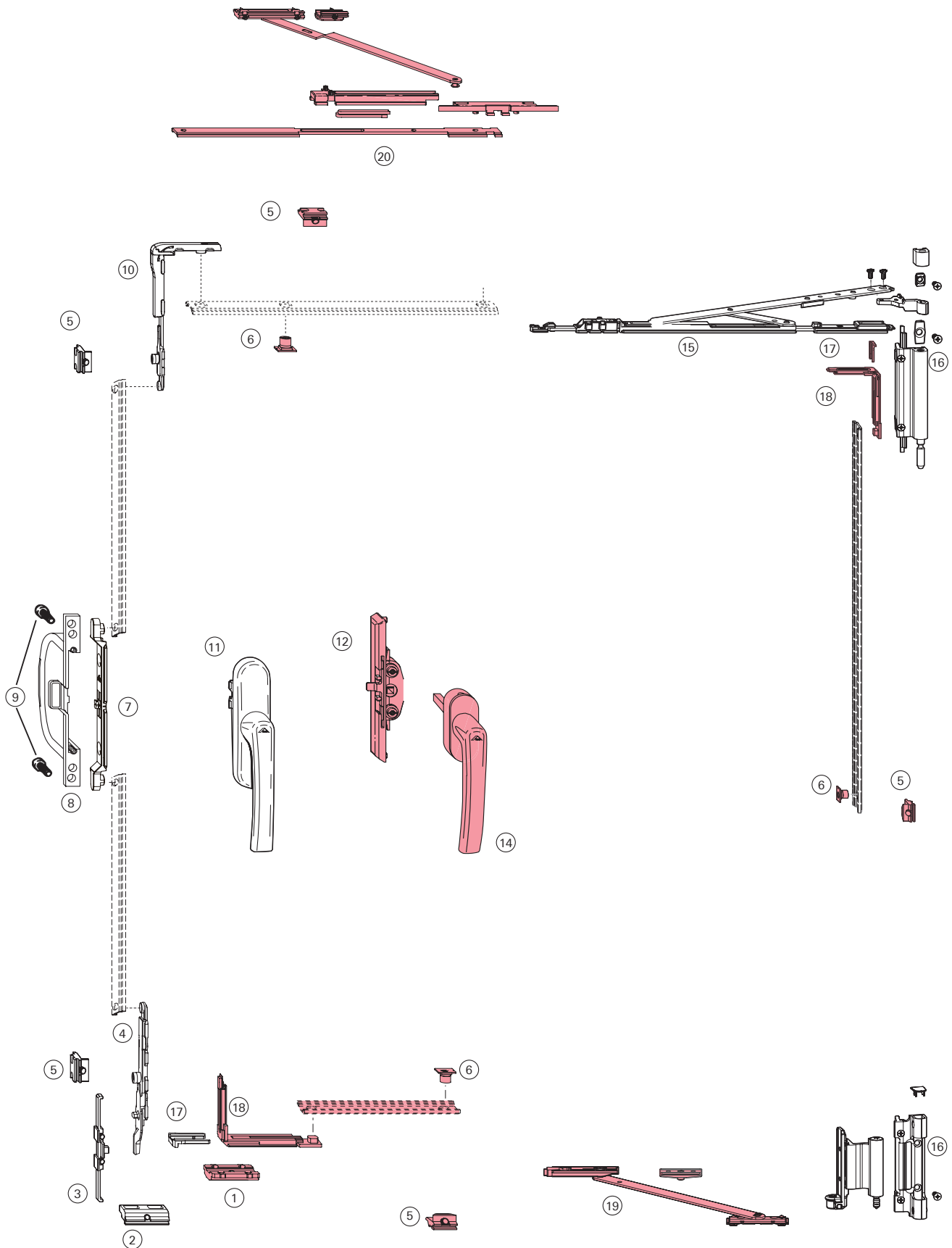
Replaceable components (1)

Item	Name	SAP	Description
9	Flat-headed screw M5 x 16	212678	

Replaceable components (2)

Item	Name	SAP	Description
12	Flush encased gearbox	858804	
13	Rotoline handle		Refer to page 84

Tilt & Turn T540DK-160kg



Application
 Sash Width:620 mm – 1600 mm
 Sash Height:1000 mm – 3000 mm
 Sash Weight max.:160kg



Basic sets

Locking components

Item	Name	SAP	Description
1	Run-up block	212008	
4	Tilt lock bolt	858807	
2	Hor. T&T striker	2005532	
3	Anti-jemmy device	858808	V.01
5	Striker	2007008	V.01
10	Corner drive	858806	

T&T Hinge side

Item	Name	SAP	Description
15	Sash stay 620	793404	
16	T&T hinge set(Clamp strip 2)	793429	L/White(R07.2)
		793428	R/White(R07.2)
		793427	L/Black(R06.2)
		793426	R/Black(R06.2)
		793425	L/Silver(R01.5)
		793424	R/Silver(R01.5)

Espagnolettes and handle

Item	Name	SAP	Description
11	RotoLine geared handle		Refer to page 82
7	Center gear connector	482264	
8	Mishandling device	858803	
9	Flat-headed screw M5 x 16	212678	

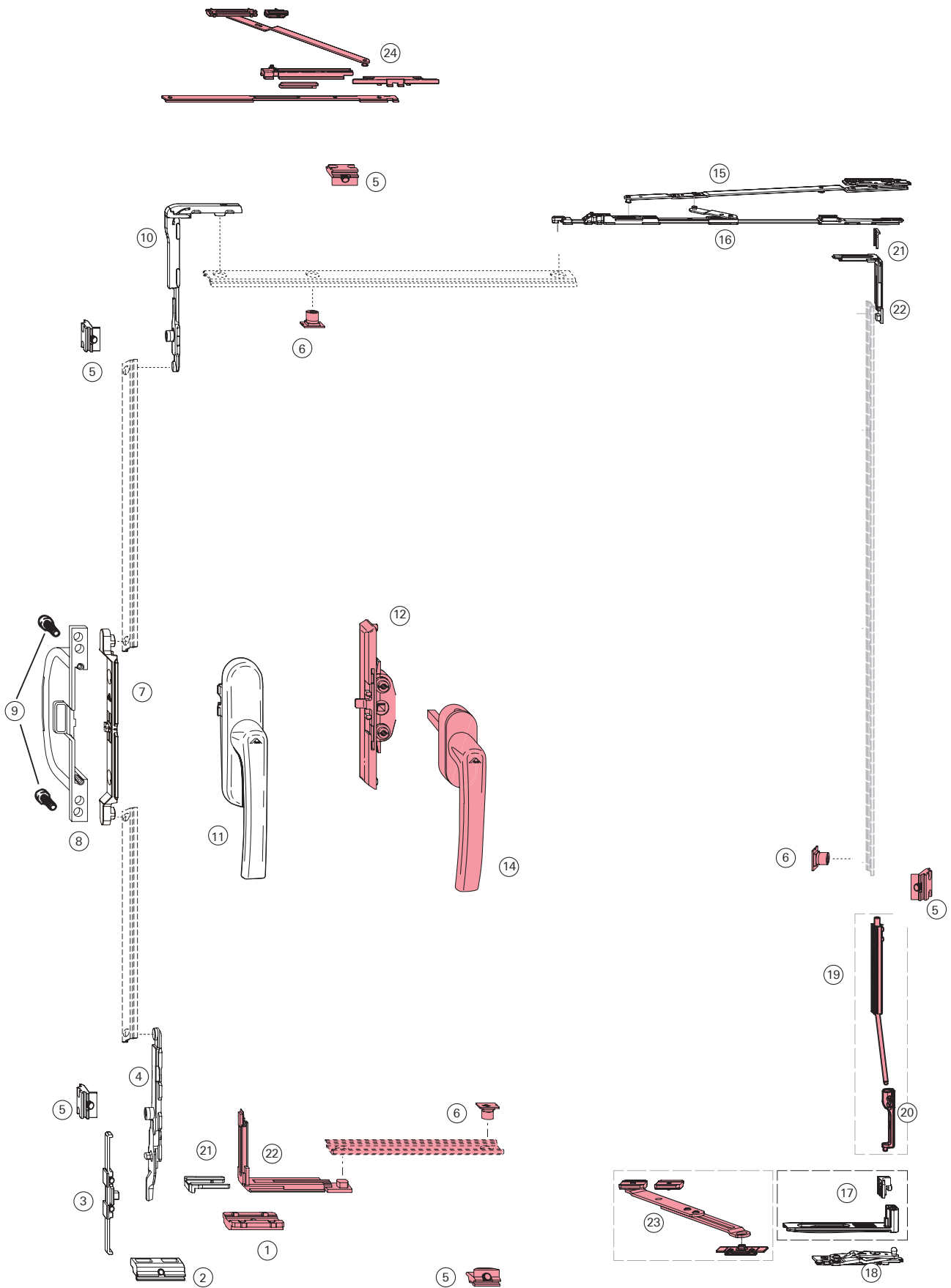
Espagnolettes and handle

Item	Name	SAP	Description
12	Flush encased gearbox	858804	
14	Rotoline handle		Refer to page 84

Size-related additional components

Item	Name	SAP	Description
6	Insertable cam	213700	
5	Striker	2007008	V.01
18	Corner drive CL	858800	
19	Turn restrictor	728809	
20	Add. scissors-stay	728806	V.01

Tilt & Turn AL Designo

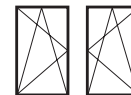


Application

Sash Width:500 mm – 1600 mm

Sash Height:555mm – 3000 mm

Sash Weight max.:150kg



Basic sets

Locking components

Item	Name	SAP	Description
1	Run-up block	212008	
4	Tilt lock bolt	858807	
2	Hor. T&T striker	2005532	
3	Anti-jemmy device	858808	V.01
5	Striker	2007008	V.01
10	Corner drive	858806	

T&T Hinge side

Item	Name	SAP	Description
15	Sash stay 500	624957	L,No.4
		624956	R,No.4
	Sash stay 735	624959	L,No.4
		624958	R,No.4
16	Scissor-stay guide 500	740836	500<SW<735
	Scissor-stay guide 735	740838	SW>735
17	Corner hinge	739700	L,Incl. adjusting piece
		739699	R,Incl. adjusting piece
18	Pivot rest	624974	L,No.4
		624973	R,No.4

Espagnolettes and handle

Item	Name	SAP	Description
11	RotoLine geared handle		Refer to page 82
7	Center gear connector	482264	
8	Mishandling device	858803	
9	Flat-headed screw M5 x 16	212678	

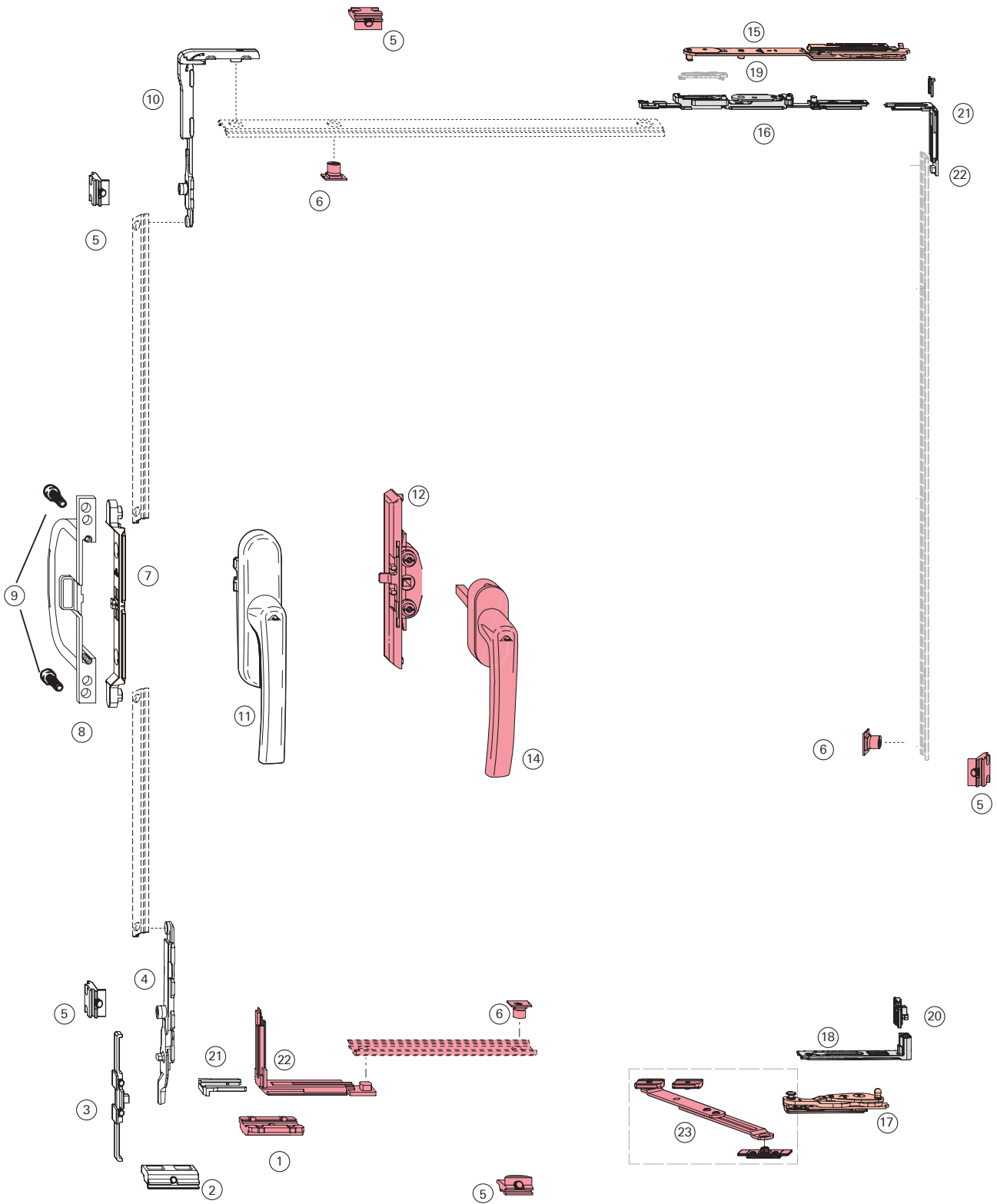
Espagnolettes and handle

Item	Name	SAP	Description
12	Flush encased gearbox	858804	
14	Rotoline handle		Refer to page 84

Size-related additional components

Item	Name	SAP	Description
6	Insertable cam	213700	
5	Striker	2007008	V.01
21,22	Corner drive CL	858800	
23	Turn restrictor	740814	
24	Add. scissors-stay	728806	V.01
19,20	Load transfer device	739694	L/V.01
		739693	R/V.01

Tilt & Turn AL Designo STS 80kg



Application

Sash Width:370 mm – 1300 mm

Sash Height:530mm – 2700 mm

Sash Weight max.:80kg



Basic sets

Locking components

Item	Name	SAP	Description
1	Run-up block	212008	
4	Tilt lock bolt	858807	
2	Hor. T&T striker	2005532	
3	Anti-jemmy device	858808	V.01
5	Striker	2007008	V.01
10	Corner drive	858806	

T&T Hinge side

Item	Name	SAP	Description
15	Sash stay 370-900mm	835333	L
		835332	R
	Sash stay >900mm	837394	L
		837393	R
16	Scissor-stay guide 370-900mm	835337	L
	Scissor-stay guide 370-900mm	835336	R
	Scissor-stay guide >900mm	740859	
19	Tilt distance restrictor	837506	370-900mm
	SH<800mm reduce tilt distance	502834	>900mm
18+20	Corner hinge set	740847	L
		740846	R
17	Pivot rest	835326	L
		835325	R

Espagnolettes and handle

Item	Name	SAP	Description
11	RotoLine geared handle		Refer to page 82
7	Center gear connector	482264	
8	Mishandling device	858803	
9	Flat-headed screw M5 x 16	212678	

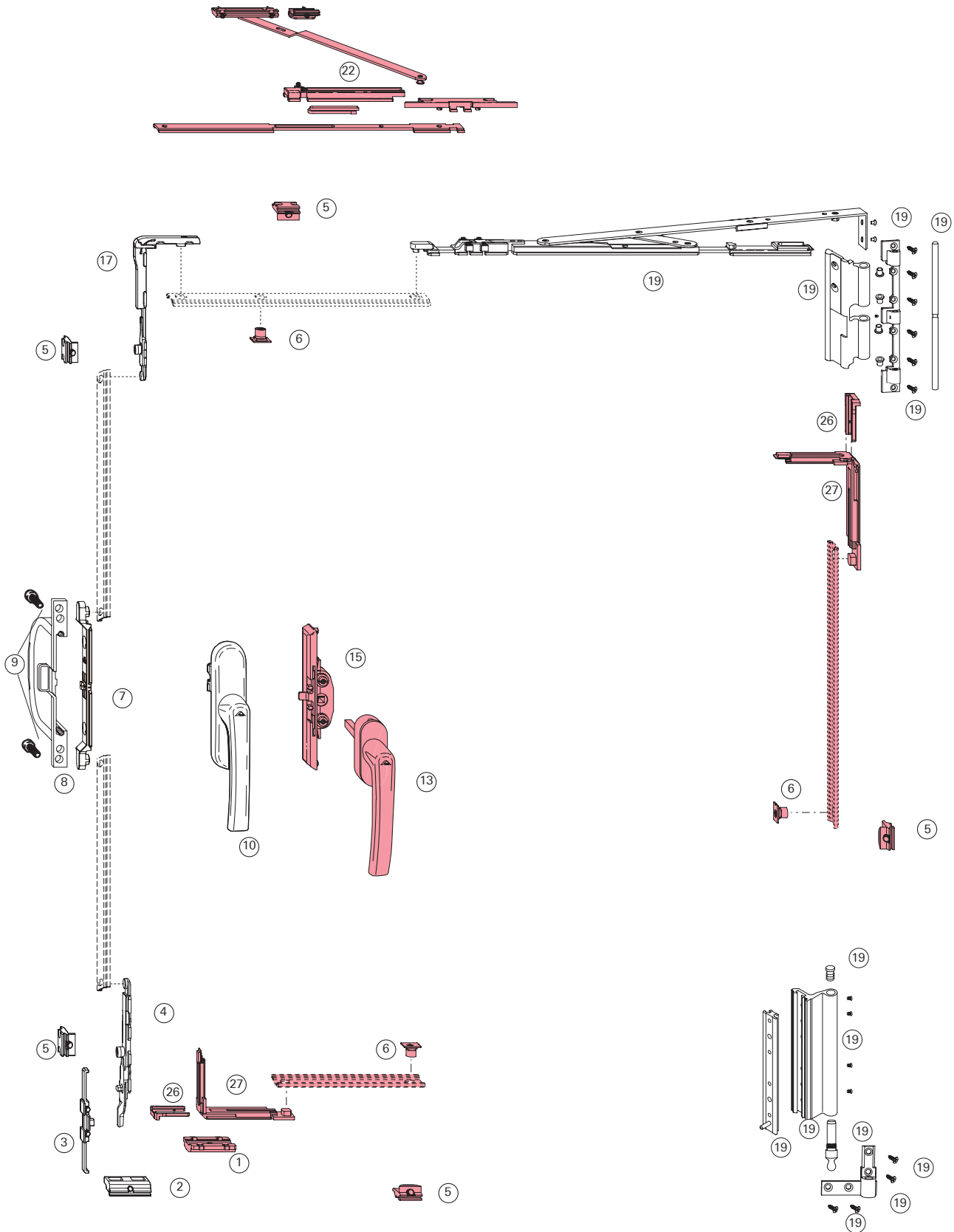
Espagnolettes and handle

Item	Name	SAP	Description
12	Flush encased gearbox	858804	
14	Rotoline handle		Refer to page 84

Size-related additional components

Item	Name	SAP	Description
6	Insertable cam	213700	
5	Striker	2007008	V.01
21,22	Corner drive CL	858800	
23	Turn restrictor	740814	

Tilt & Turn ALU 200kg DK



Application
 Sash Width:680 mm – 1600 mm
 Sash Height:520 mm – 3000 mm
 Sash Weight max.:200kg



Basic sets

Sash Stays

Item	Name	SAP	Description
19	200Kg hinge sets	380008	Special colour/R
	200Kg hinge sets	380009	Special colour/L

Note: Specified profile design is required!

Locking components

Item	Name	SAP	Description
1	Run-up block	212008	
4	Tilt lock bolt	858807	
2	Hor. T&T striker	2005532	
3	Anti-jemmy device	858808	
5	Striker	2007008	V.01
17	Corner drive	858806	

Size-related additional components

Item	Name	SAP	Description
6	Insertable cam	213700	
5	Striker	2007008	V.01
26,27	Corner drive CL	858800	
22	Add. scissors-stay	728806	

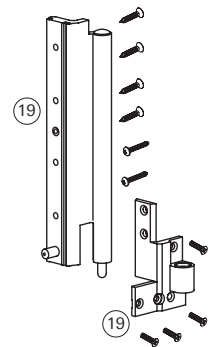
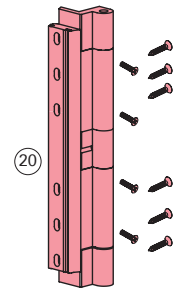
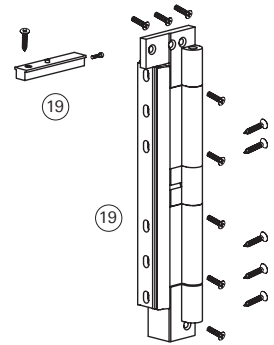
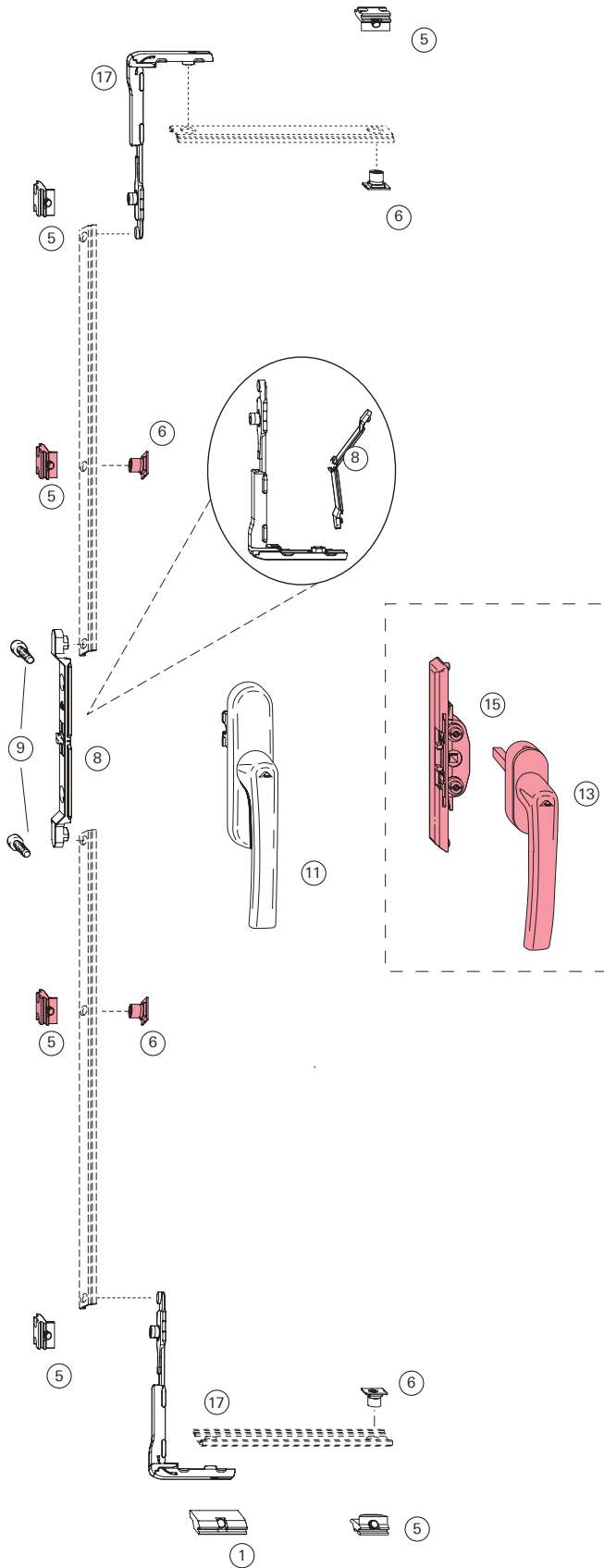
Espagnolettes and handle

Item	Name	SAP	Description
10	RotoLine geared handle		Refer to page 82
7	Centre gear connector	482264	
8	Mishandling device	858803	
9	Flat-headed screw M5 x 16	212678	

Replaceable components

Item	Name	SAP	Description
15	Flush encased gearbox	858804	
13	Rotoline handle		Refer to page 84

Turn only OverViews ALU 300kg



Application
 Sash Width:690 mm – 1600 mm
 Sash Height:520 mm – 3000 mm
 Sash Weight max.:300kg



Basic sets

Hinge-Side

Item	Name	SAP	Description
19	300Kg hinge set R	570868	White
	300Kg hinge set L	570869	White

Note: Specified profile design is required!

Hinge-Side additional components

Item	Name	SAP	Description
20	TU-ON central hinge 300kg	572913	Silver
	TU-ON central hinge 300kg	570870	White

Locking components

Item	Name	SAP	Description
1	Run-up wedge	684282	
5	Striker	2007008	V.01
17	Corner drive	858806	
6	Insertable cam	213700	

Size-related additional components

Item	Name	SAP	Description
6	Insertable cam	213700	
5	Striker	2007008	V.01

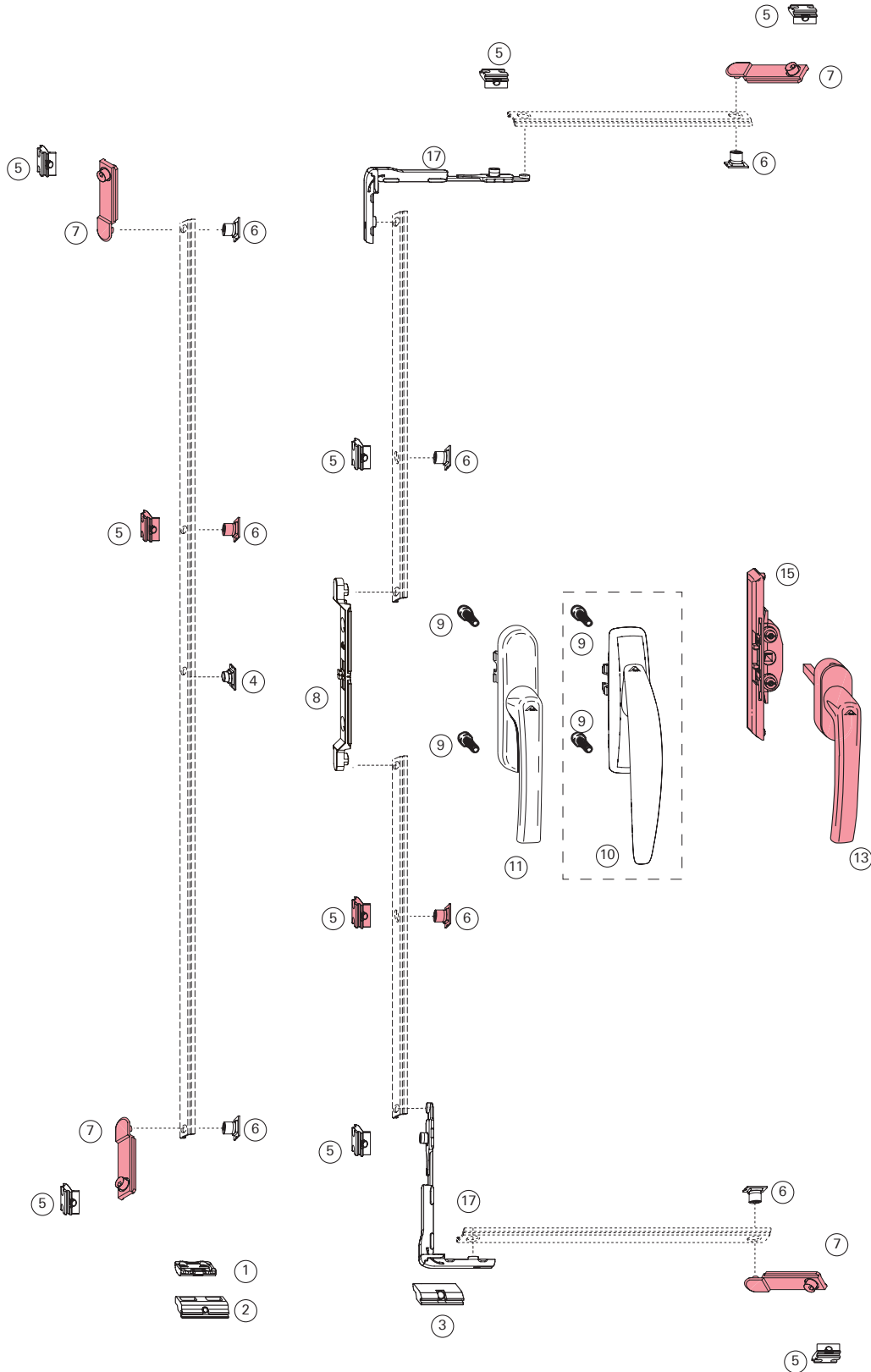
Espagnolettes and handle (1)

Item	Name	SAP	Description
8	Centre gear connector	482264	
9	Flat-headed screw M5x12	728925	
11	RotoLine geared handle		Refer to page 82

Espagnolettes and handle (2)

Item	Name	SAP	Description
15	Flush encased gearbox	858804	
13	Rotoline handle		Refer to page 84

Locking components for Turn-Only

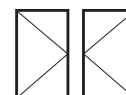


Application

Sash Width:refer to hinge

Sash Height:refer to hinge

Sash Weight max.:refer to hinge



Locking components

Espagnolettes and connectors (1)

Item	Name	SAP	Description
8	Centre gear connector	482264	
9	Flat-headed screw M5x12	728925	
11	RotoLine geared handle		Refer to page 82
10	T300 handle		Refer to page 82

Espagnolettes and connectors (2)

Item	Name	SAP	Description
4	Insertable connector-bolt	334672	
9	Flat-headed screw M5x12	728925	
11	RotoLine geared handle		Refer to page 82
10	T300 handle		Refer to page 82

Espagnolettes and connectors (3)

Item	Name	SAP	Description
15	Flush encased gearbox	858805	
13	Rotoline handle		Refer to page 84

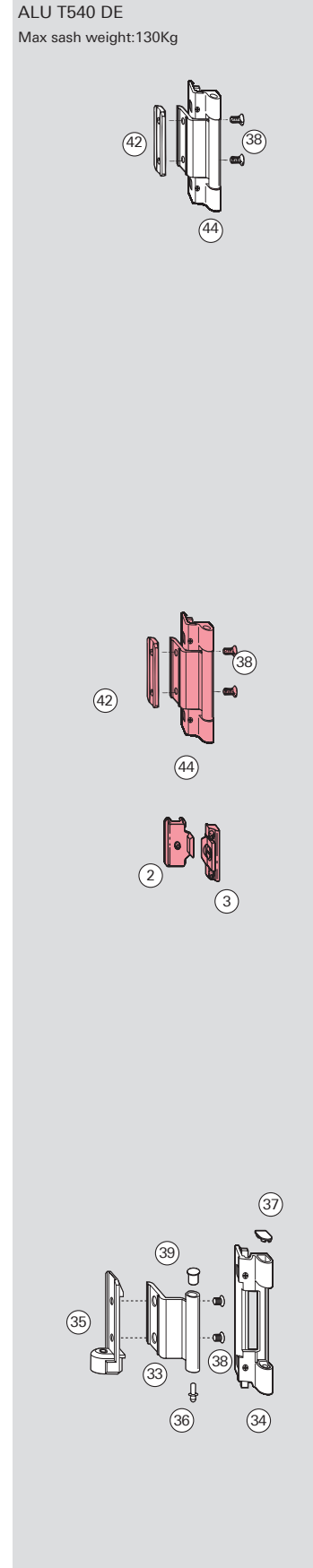
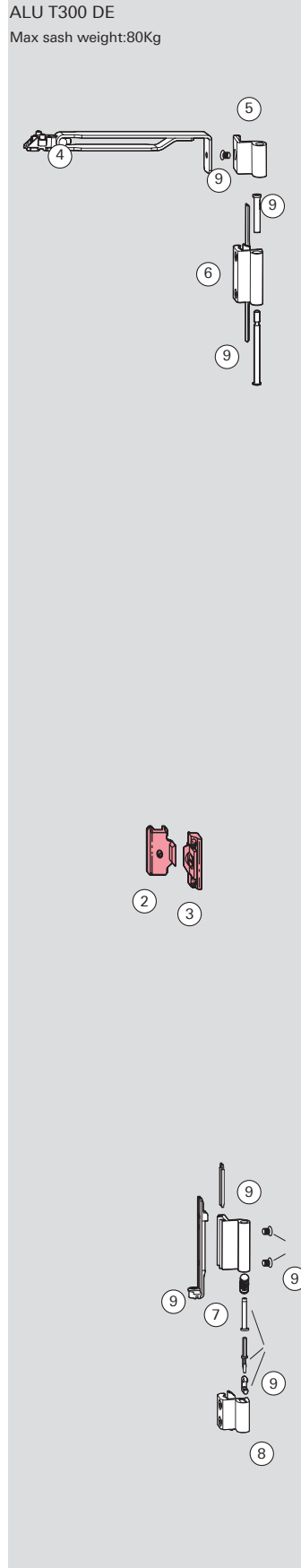
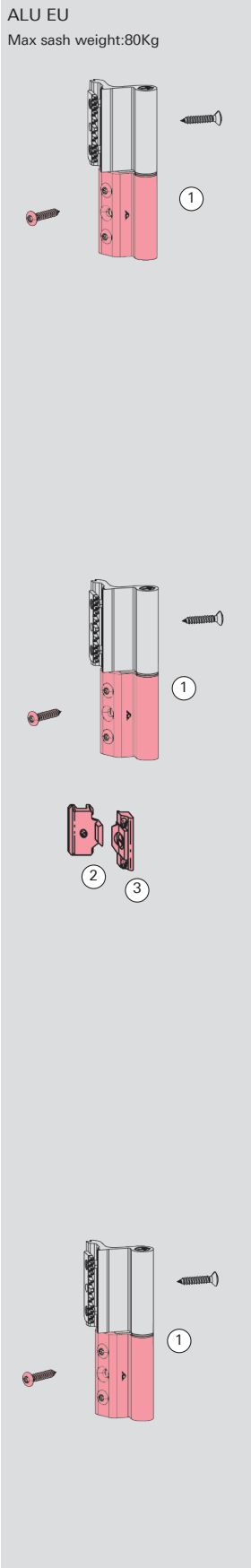
Locking components (1)

Item	Name	SAP	Description
1	Run-up block	212008	
2	Hor. T&T striker	2005532	
5	Striker	2007008	V.01
6	Insertable cam	213700	
7	Locking pin 76.5	858811	Can only be used on both ends

Locking components (2)

Item	Name	SAP	Description
17	Corner drive	858806	
5	Striker	2007008	V.01
6	Insertable cam	213700	
7	Locking pin 76.5	858811	Can only be used on both ends
3	Run-up wedge	684282	

Hinge solutions for Turn-Only



Application range

Sash Width:refer to page 12-19

Sash Height:refer to page 12-19

Sash Weight max.:refer to page 12-19

Hinge-Side

ALU EU with additional hole

Item	Name	SAP	Description
1	ALU EU	817168	Silver(R01.5)/L
	ALU EU	817167	Silver(R01.5)/R
	ALU EU	817198	Black(R06.2)/L
	ALU EU	817173	Black(R06.2)/R
	ALU EU	817195	White(R07.2)/L
	ALU EU	817174	White(R07.2)/R
	Self-Drilling screw-ST4.8x28	823001	

Concealed centre closer

Item	Name	SAP	Description
2	MVT concealed striker-closer	728884	
3	Concealed striker-closer	728885	V.01

ALU T300 DE

Item	Name	SAP	Description
4	T300 Rebate hinge	486537	
5	Stay-arm hinge	486473	White(R07.2)
	Stay-arm hinge	486472	Black(R06.2)
	Stay-arm hinge	486471	Silver(R01.5)
6	Stay bearing	486477	White(R07.2)
	Stay bearing	486476	Black(R06.2)
	Stay bearing	486475	Silver(R01.5)
7	Corner hinge	486465	White(R07.2)
	Corner hinge	486464	Black(R06.2)
	Corner hinge	486463	Silver(R01.5)
8	Pivot rest	486469	White(R07.2)
	Pivot rest	486468	Black(R06.2)
	Pivot rest	486467	Silver(R01.5)
9	T300 hinge accessory	486454	

Concealed centre closer

Item	Name	SAP	Description
2	MVT concealed striker-closer	728884	
3	Concealed striker-closer	728885	V.01

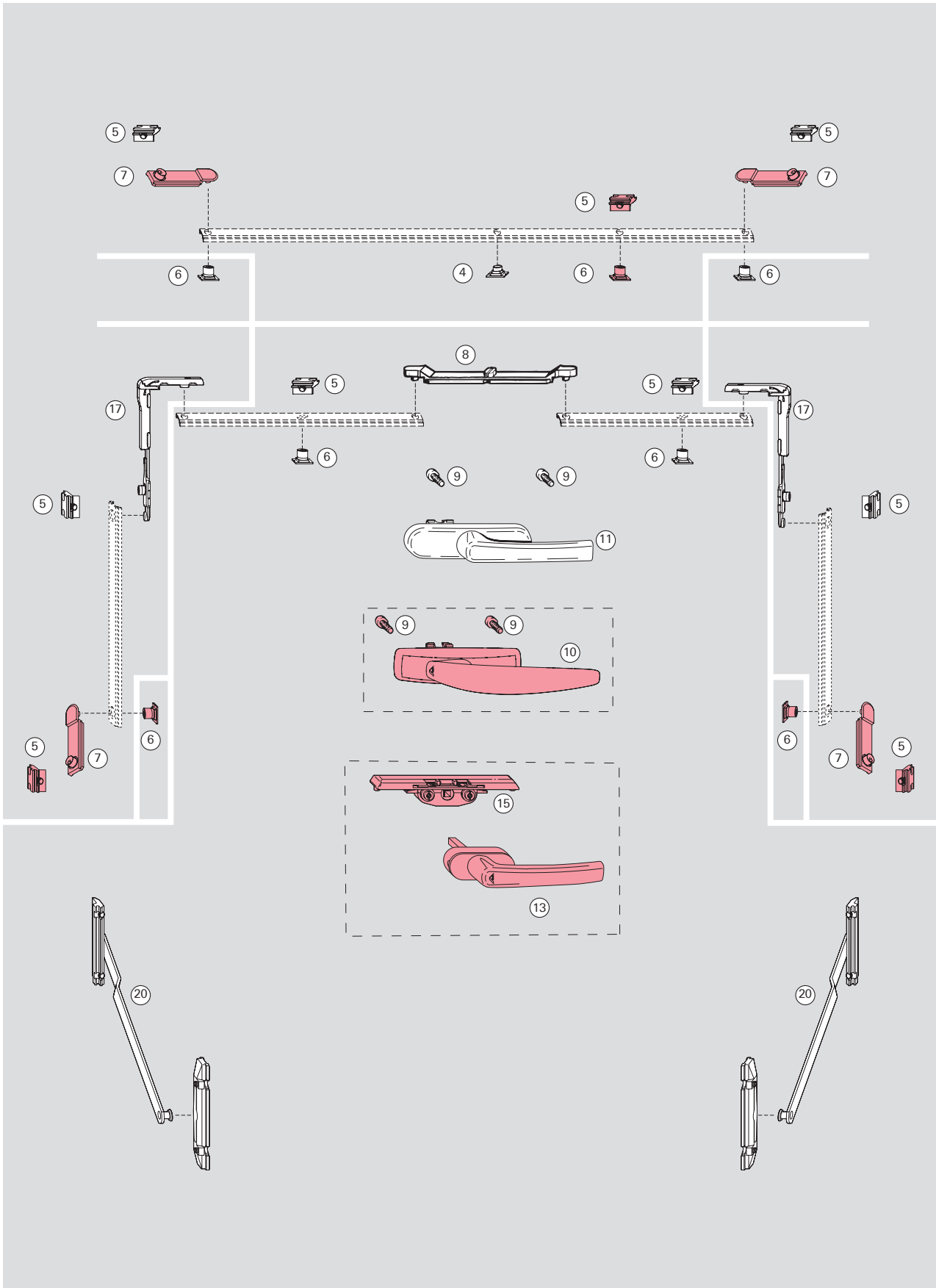
ALU T540 DE

Item	Name	SAP	Description
44	Turn-only hinge	728771	White(R07.2)
	Turn-only hinge	728770	Black(R06.2)
	Turn-only hinge	728768	Silver(R01.5)
42	Clamping support-strip TU-ON	212055	
38	Countersunk screw	728930	
33	Corner hinge	377501	White(R07.2)
		377499	Black(R06.2)
		377498	Silver(R01.5)
34	Pivot rest	728829	White(R07.2)
		728828	Black(R06.2)
		728826	Silver(R01.5)
35	Clamping corner bracket	377444	
36	Pivot-rest pin	377443	
37	End cap pivot rest	377887	
38	Countersunk screw	728930	
39	End cap corner hinge	377885	

Concealed centre closer

Item	Name	SAP	Description
2	MVT concealed striker-closer	728884	
3	Concealed striker-closer	728885	V.01

Locking components for Tilt-Only



Application

Sash Width:refer to page 12-19

Sash Height:refer to page 12-19

Sash Weight max.:refer to page 12-19



Locking components

Espagnolettes and connectors (1)

Item	Name	SAP	Description
8	Centre gear connector	482264	
9	Flat-headed screw M5x12	728925	
11	RotoLine geared handle		Refer to page 82
10	T300 handle		Refer to page 82

Espagnolettes and connectors (2)

Item	Name	SAP	Description
4	Insertable connector-bolt	334672	
9	Flat-headed screw M5x12	728925	
11	RotoLine geared-handle		Refer to page 82
10	T300 handle		Refer to page 82

Espagnolettes and connectors (3)

Item	Name	SAP	Description
15	Flush encased gearbox	858805	
13	Rotoline handle		Refer to page 84

Locking components (1)

Item	Name	SAP	Description
5	Striker	2007008	V.01
6	Insertable cam	213700	
7	Locking pin 76.5	858811	Can only be used on both ends

Locking components (2)

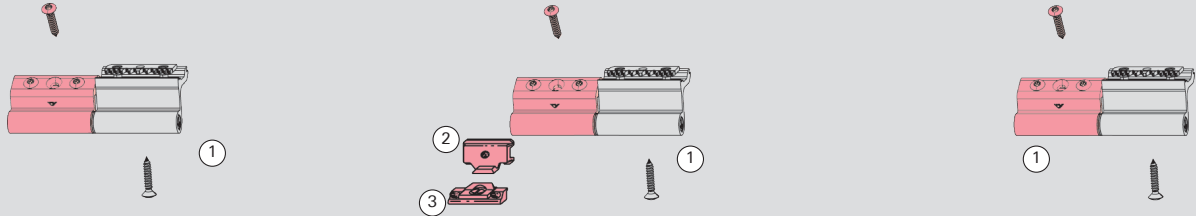
Item	Name	SAP	Description
17	Corner drive	858806	
5	Striker	2007008	V.01
6	Insertable cam	213700	
7	Locking pin 76.5	858811	Can only be used on both ends

Stay-arm

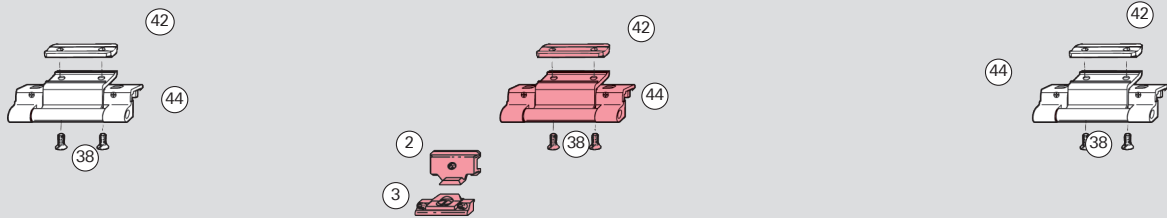
Item	Name	SAP	Description
20	Tilt-only stay-arm	728862	

Hinge solutions for Tilt-Only

ALU EU



ALU T540 DD



Application

Sash Width:refer to page 12-19

Sash Heigh:refer to page 12-19

Sash Weight max.:refer to page 12-19



Hinge-Side

ALU EU Hinge

Item	Name	SAP	Description
1	ALU EU	817168	Silver(R01.5)/L
	ALU EU	817167	Silver(R01.5)/R
	ALU EU	817198	Black(R06.2)/L
	ALU EU	817173	Black(R06.2)/R
	ALU EU	817195	White(R07.2)/L
	ALU EU	817174	White(R07.2)/R
	Self-Drilling screw-ST4.8x28	823001	

Concealed centre closer

Item	Name	SAP	Description
2	MVT concealed striker-closer	728884	
3	Concealed striker-closer	728885	

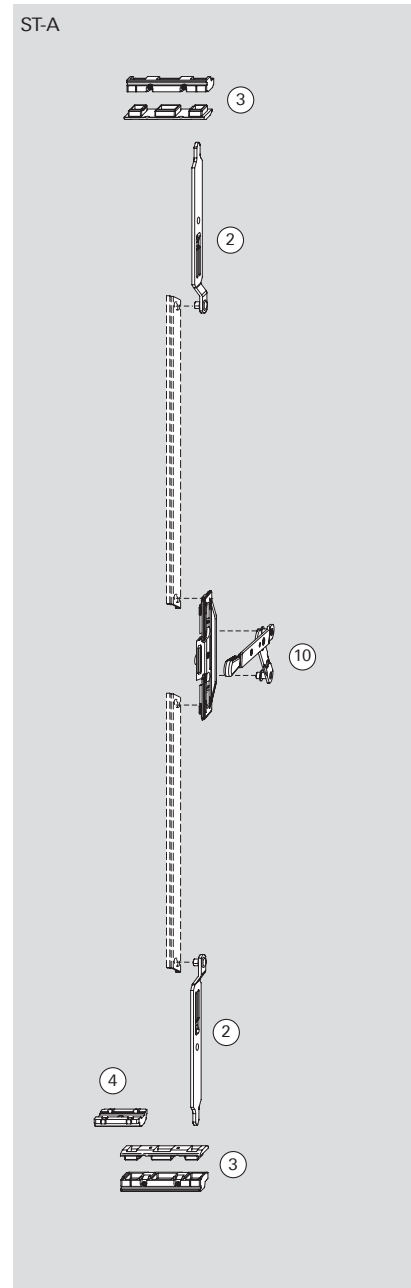
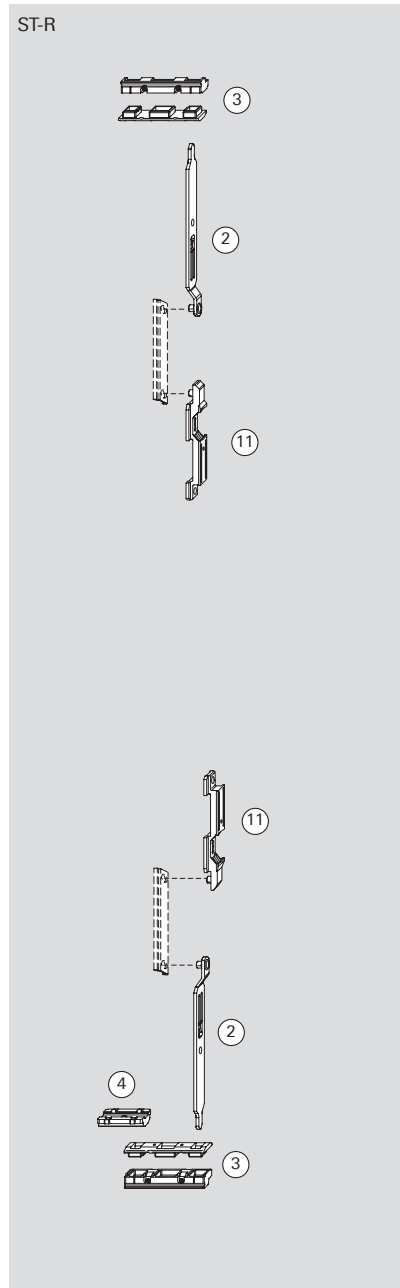
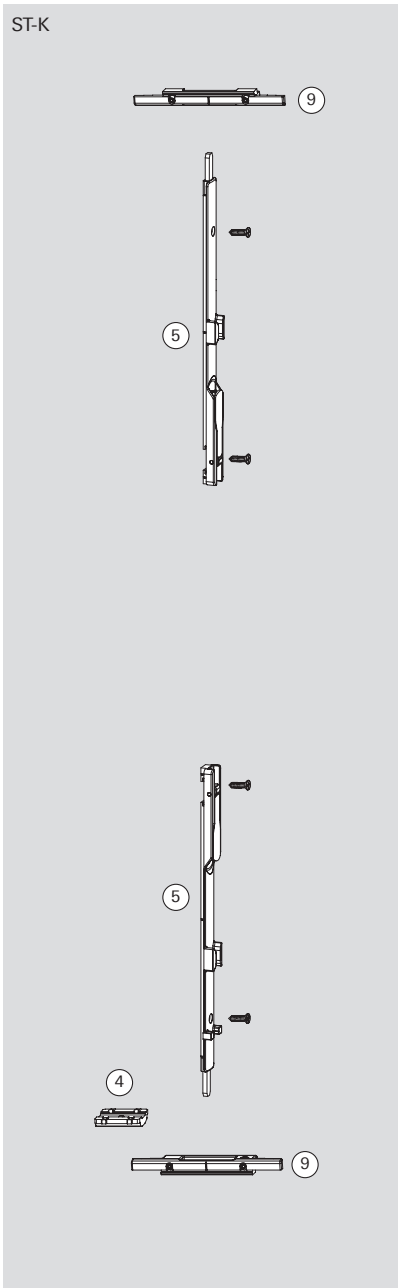
ALU T540

Item	Name	SAP	Description
44	Turn-only hinge	728771	White(R07.2)
	Turn-only hinge	728770	Black(R06.2)
	Turn-only hinge	728768	Silver(R01.5)
42	Clamping support-strip TU-ON	212055	
38	Countersunk screw	728930	

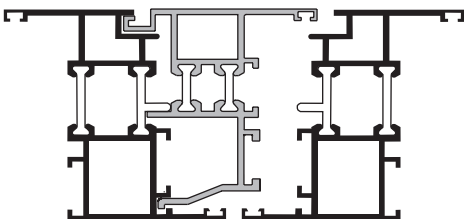
Concealed centre closer

Item	Name	SAP	Description
2	MVT concealed striker-closer	728884	
3	Concealed striker-closer	728885	

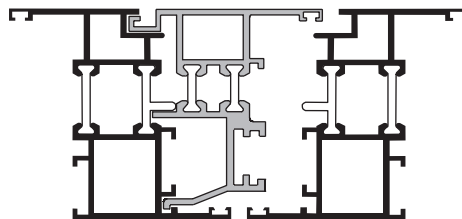
Dummy mullion slider

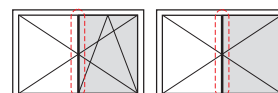


Space requirement for ST-K



Space requirement for ST-K/ST-R/ST-A





Lever-operated espagnolette, concealed. (DM)

ST-K

Item	Name	SAP	Description
5	Finger shoot bolt	858810	
9	Multi-ported striker	858809	
4	Run-up block	212008	

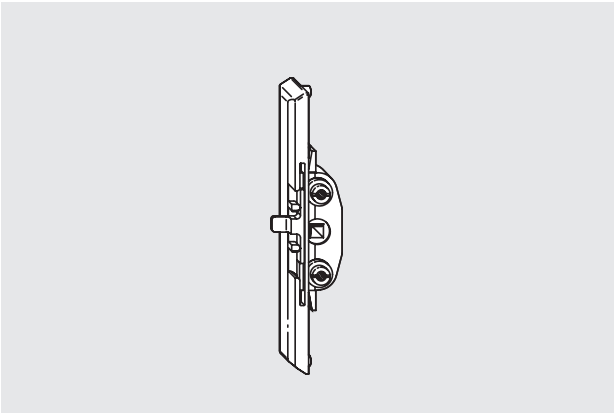
ST-R

Item	Name	SAP	Description
11	Slider	212141	VS1
	Slider	212142	VS2
	Slider	212143	VS3
2	Shootbolt rod	212144	VS1
	Shootbolt rod	212145	VS2
	Shootbolt rod	212146	VS3
3	Multi-ported striker	728912	VB1/2
	Multi-ported striker	728913	VB3/4
	Multi-ported striker	728914	VB5/6
4	Run-up block	212008	

ST-A

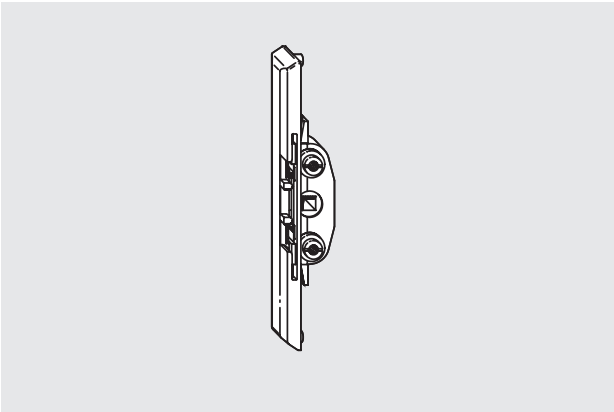
Item	Name	SAP	Description
10	DM-SM espagnolette	728964	
2	Shootbolt rod	212144	VS1
	Shootbolt rod	212145	VS2
	Shootbolt rod	212146	VS3
3	Multi-ported striker	728912	VB1/2
	Multi-ported striker	728913	VB3/4
	Multi-ported striker	728914	VB5/6
4	Run-up block	212008	

Flush encased gearbox



Flush encased gearbox with integrated mishandling device for windows handles

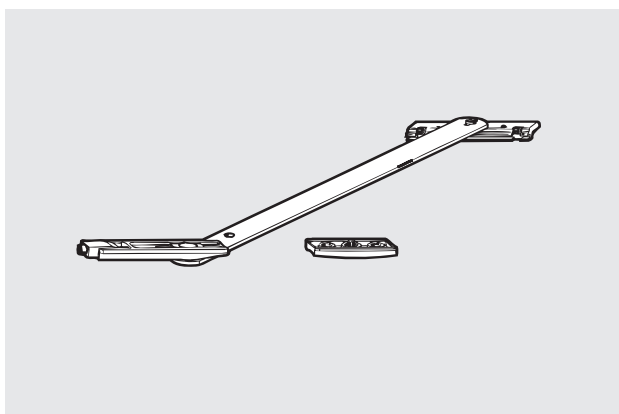
858804



Flush encased gearbox without mishandling device for windows handles

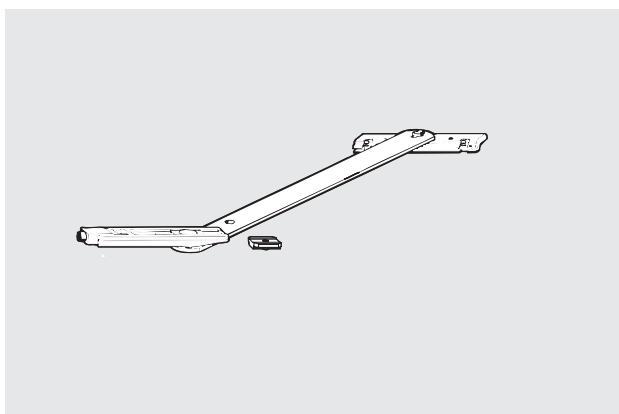
893747

Accessories



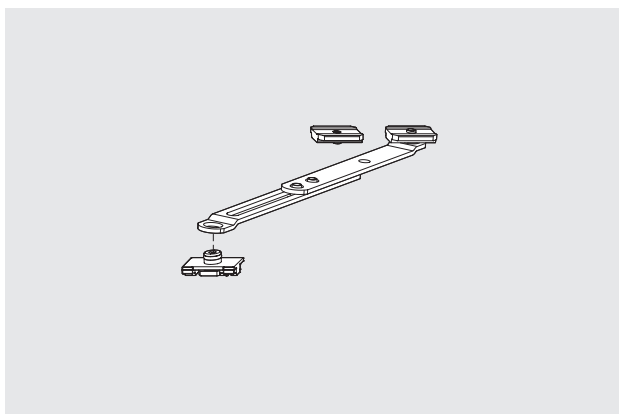
Turn-restrictor	728809
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Note: In the turn-modus, the opening angle of the window sash is limited by the turn-restrictor.



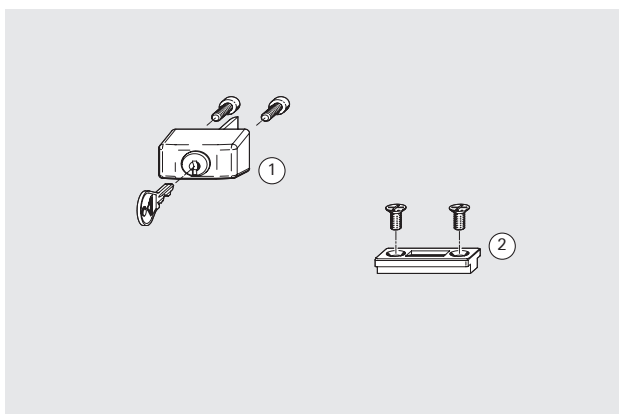
Turn-restrictor	896913
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Note: For FB<500mm



Turn-restrictor set	740814
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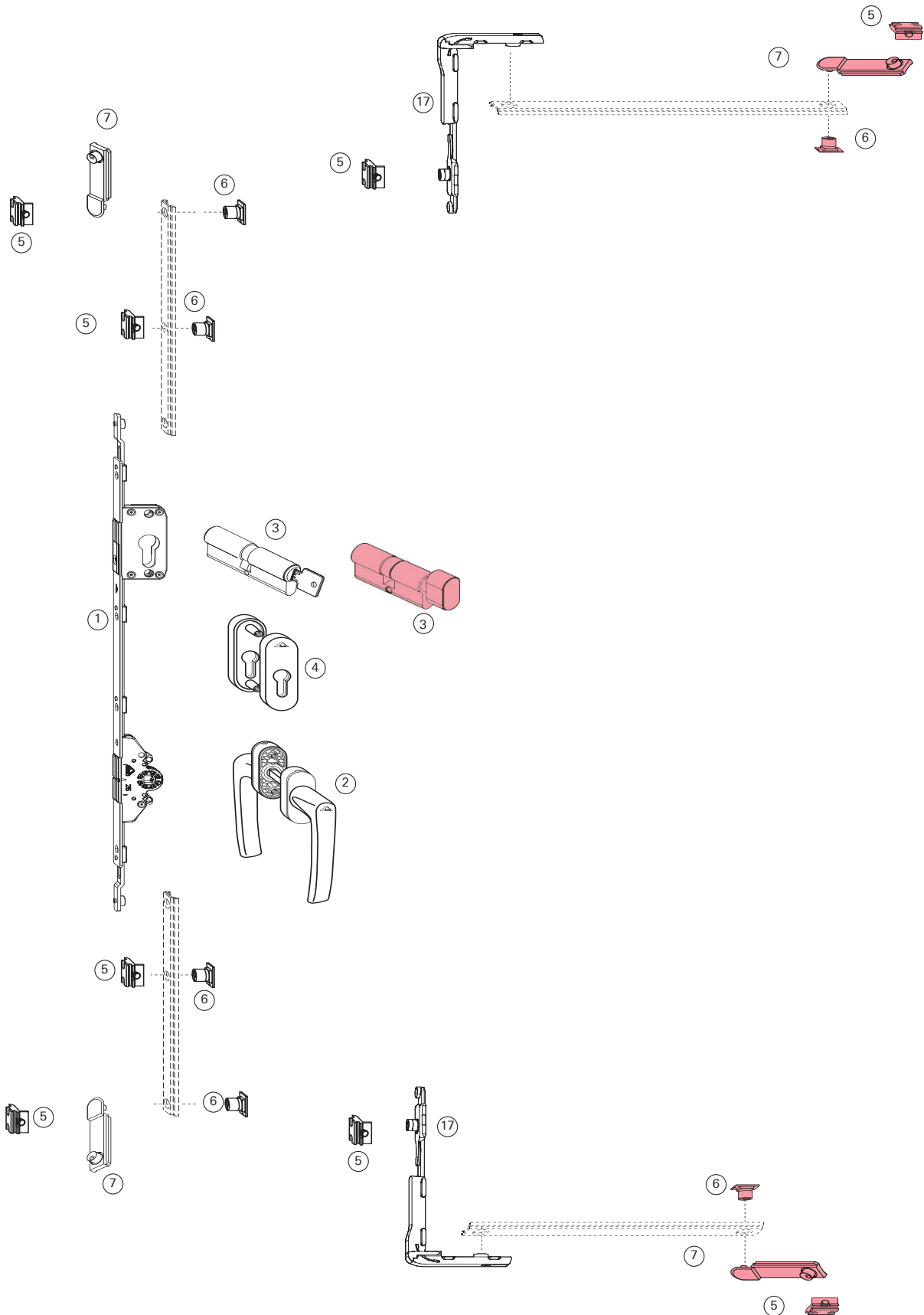
Note: For Designo Alu



Child safety lock			
Item	Name	Description	SAP
1	Child safety lock	White	728819
	Child safety lock	Silver	728815
2	Locking plate+screw		728916

Note: Child safety lock with cylinder locking 1 key 2 Flat-headed screws
Locking plate with 2 countersunk screws M5 x 16

Locking components for balcony door



Application

Sash Width:refer to hinge

Sash Height:refer to hinge

Sash Weight max.:refer to hinge



Balcony door with cylinder lock

Lockable component

Item	Name	SAP	Description
1	Balcony door with cylinder lock	811483*	25mm
	Balcony door with cylinder lock	811484*	30mm
	Balcony door with cylinder lock	811495*	35mm
	Balcony door with cylinder lock	811496*	40mm
	*Distance 250mm between cylinder and handle		
2	Rotoline double sided handle		Refer to page 85
3	Cylinder		Refer to page 97
4	Cylinder cover		Refer to page 87

Locking components (1)

Item	Name	SAP	Description
5	Striker	2007008	V.01
6	Insertable cam	334671	

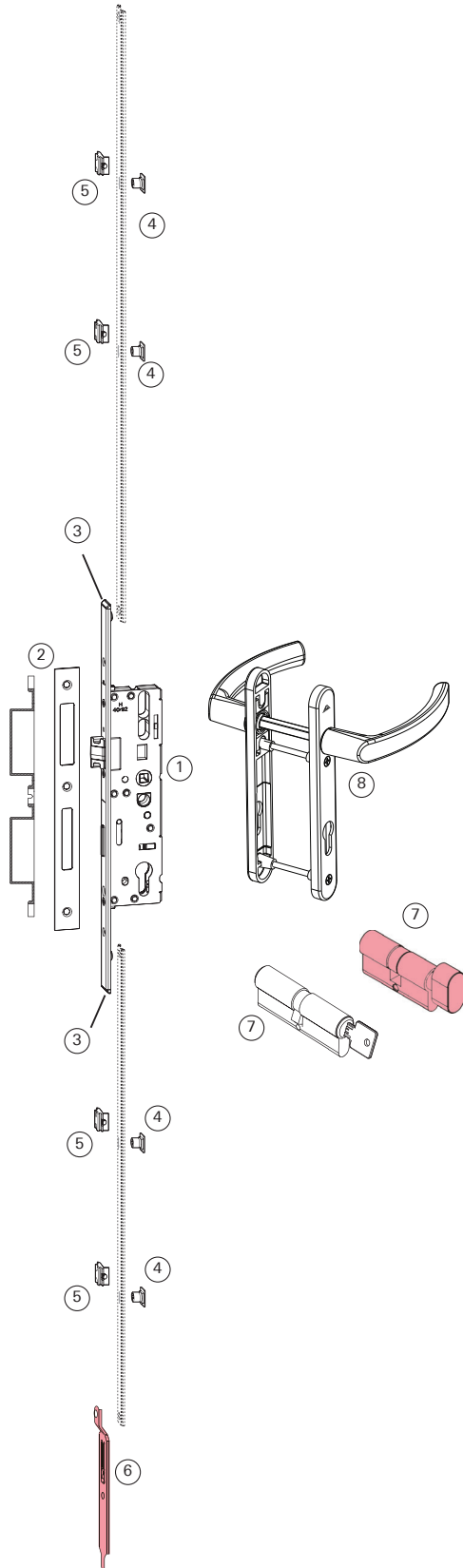
Locking components (2)

Item	Name	SAP	Description
5	Striker	2007008	V.01
6	Insertable cam	334671	
7	Locking pin 67	858811	Can only be used on both ends

Locking components (3)

Item	Name	SAP	Description
5	Striker	2007008	V.01
6	Insertable cam	334671	
17	Corner drive	858806	

Locking components for entrance door



Application

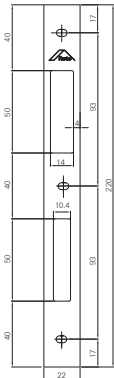
Sash Width:refer to hinge
 Sash Height:refer to hinge
 Sash Weight max.:refer to hinge

Main lock for entrance door

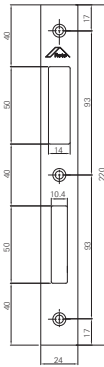
Locking components

Item	Name	SAP	Description	
1	H650 Main lock U 4.5x20	2003563	BS29mm	
		2003564	BS34mm	
		2003565	BS39mm	
2	Striker plate and dust box		Refer to below	
3	End cap	640885	U 4.5x20	
4	Insertable cam	334671		
5	Striker	2007008	V.01	
6	Shootbolt		Refer to page 58	
7	Cylinder		Refer to page 97	
8	RotoStark handle	857086	White	
		SashThickness 58-75mm	857087	Black
			857088	Silver
			857089	Black Brown
9	Mortice Lock BS=30mm	891322	BS30mm	

Striker plate



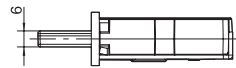
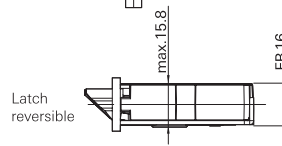
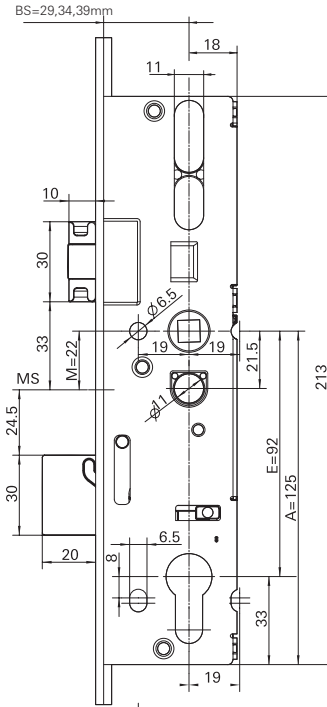
896163



571190 Endcap&Packer in black

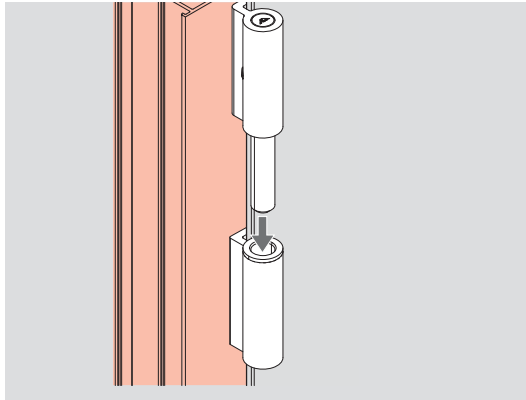


862143

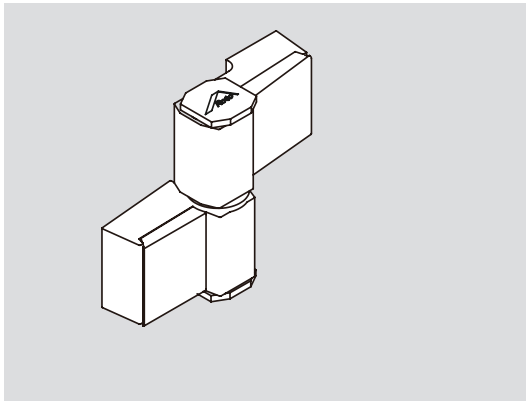


Door hinge solutions

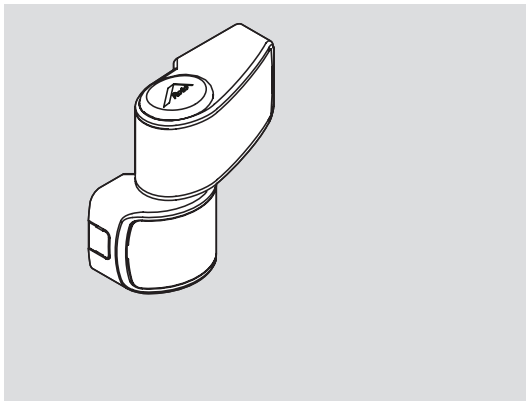
Solid B 130R



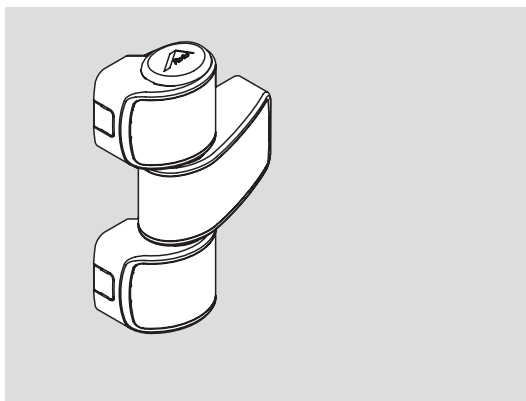
Quo

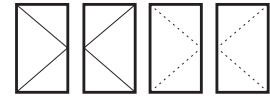


ATB 80

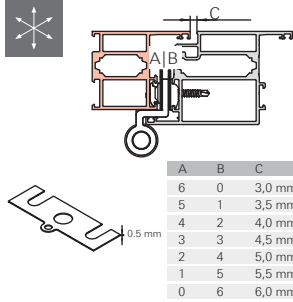


ATB120



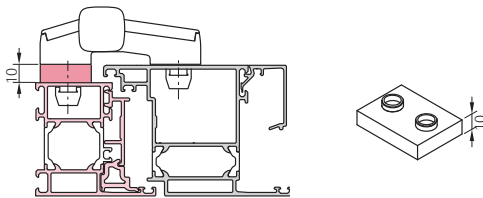


Solid B hinge		Sash Weight max.120kg
SAP	Colour	Description
816000	White(RAL9016)	
816568	Black(RAL9005)	
834669	Silver	



Surface mounted hinge Quo (w screws M8x40)		Sash Weight max.90kg
SAP	Colour	Description
487444	White(RAL9016)	20.5*42mm incl. fitting, L/R
487497	Black(RAL9005)	20.5*42mm incl. fitting, L/R
487495	Silver R01.1	20.5*42mm incl. fitting, L/R
570874	Special color	20.5*42mm incl. fitting, L/R

Spacer element for Quo hinge on stepped profiles		
Description	Colour	SAP
10mm	White(RAL9016)	570975
10mm	Silver(R01.1)	570973
10mm	Black(RAL9005)	570976
10mm	special color	570977

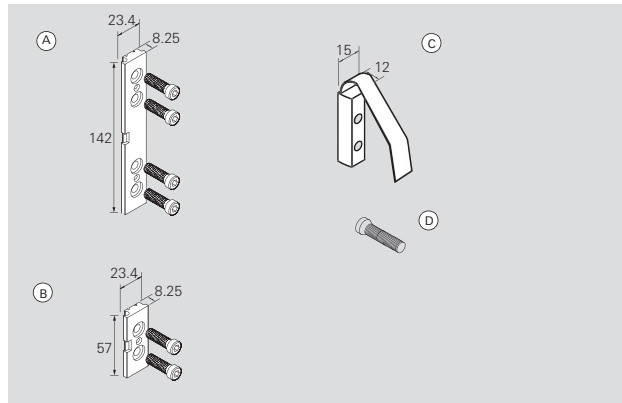


Surface mounted hinge 80 ATB		Sash Weight max.100kg		
Description	Colour	SAP	Version	Direction
80 ATB	White(RAL9016)	548290	I	Left
80 ATB	White(RAL9016)	548294	I	Right
80 ATB	Black(RAL9005)	565485	I	Left
80 ATB	Black(RAL9005)	565493	I	Right
80 ATB	Dark brown(RAL8077)	548292	I	Left
80 ATB	Dark brown(RAL8077)	548296	I	Right
80 ATB	Delta silver	548293	I	Left
80 ATB	Delta silver	548297	I	Right

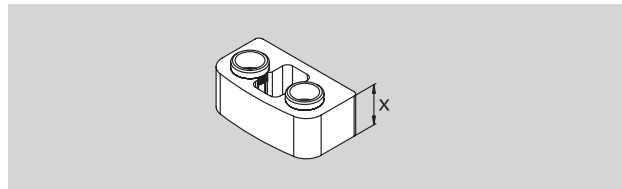
*l=20.5mm*42mm

Surface mounted hinge 120 ATB		Sash Weight max.160kg		
Description	Colour	SAP	Version	Direction
120 ATB	White(RAL9016)	548386	I	Left
120 ATB	White(RAL9016)	548390	I	Right
120 ATB	Dark brown(RAL8077)	548388	I	Left
120 ATB	Dark brown(RAL8077)	548392	I	Right
120 ATB	Black(RAL9005)	568358	I	Left
120 ATB	Black(RAL9005)	568359	I	Right
120 ATB	Delta silver	548389	I	Left
120 ATB	Delta silver	548393	I	Right

Rearward spacer elements and screws		
Item	Name	SAP
A+B	For ATB 120 (Spacers+Screws)	548946
C	For ATB 80 Spacer+Spring Plate	2002999
D	For ATB 80 Screw M8x40	2028770



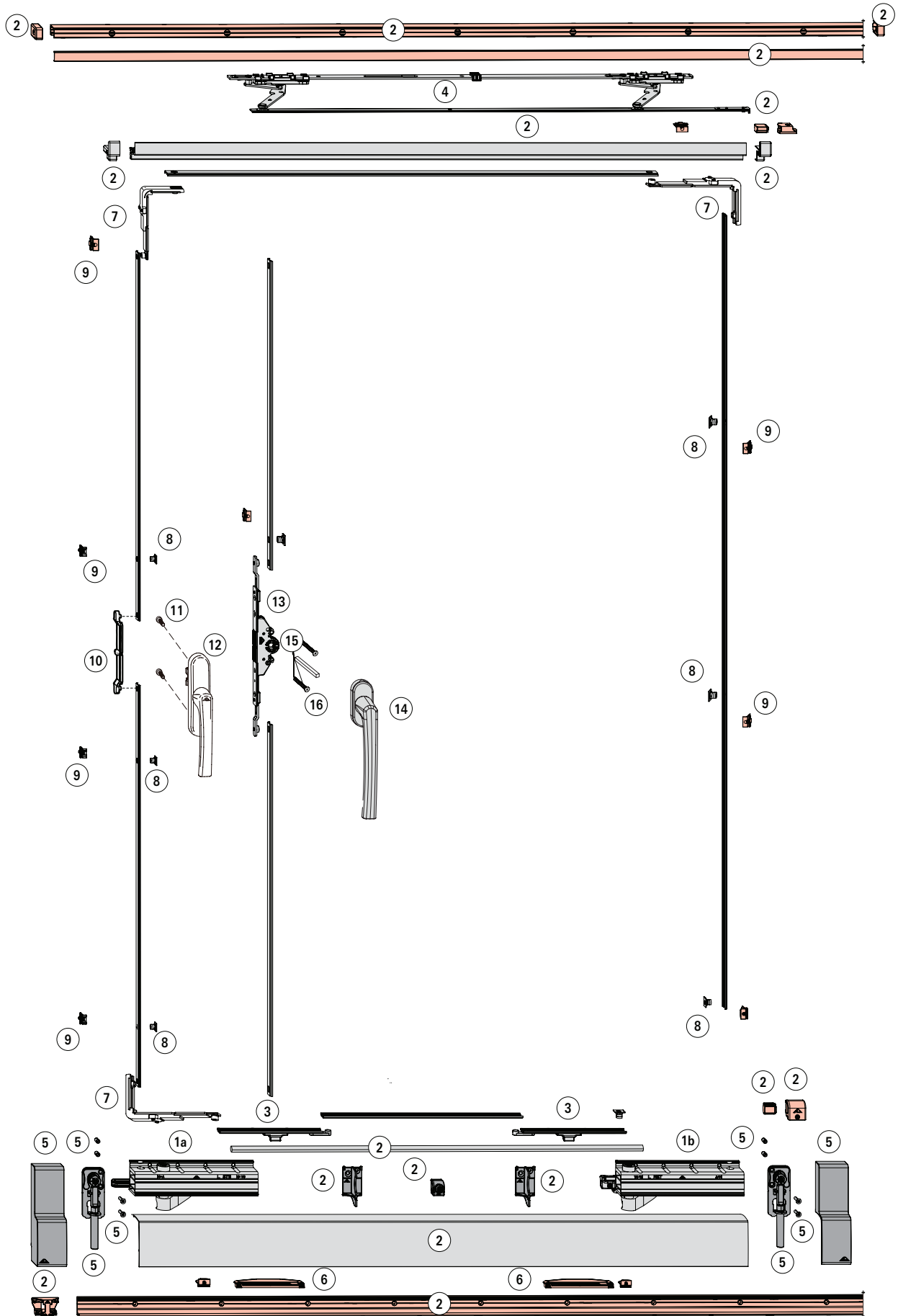
Spacer element on stepped profiles		
Description	Colour	SAP
40x22x10mm	White(RAL9016)	548492
40x22x10mm	Dark brown(RAL8077)	548494
40x22x10mm	Black(RAL9005)	568361
40x22x10mm	Delta silver	548495



Stainless-steel spring	
SAP	
548487	

Metal adjustment key for gasket compression	
SAP	
547206	

Tilt & Slide door (Roto Alversa KS)
Diagram A



Application

Sash Width **SW**:670-1680mm
 Sash Height **SH**:930-2380mm
 Sash Weight **S.kg**:max. 160kg

1. Title Slide bogie set

pos.	Weight	DIN	Qty	SAP
Bogies	up to 160kg	Left	1	799896
including: 1a+1b		Right	1	799897
not dep. countersunk tapping-screws ST4.8x50			8	

2. Track set

SR/mm	FW/mm	color	SAP
670 - 930	1930	White R07.2	767086
931 - 1280	2630	White R07.2	767088
1281 - 1680	3430	White R07.2	767090
1681 - 2000	4130	White R07.2	769844
670 - 930	1930	Black R06.2	767081
931 - 1280	2630	Black R06.2	767083
1281 - 1680	3430	Black R06.2	767085
1681 - 2000	4130	Black R06.2	769843
670 - 930	1930	Silver R01.5	767051
931 - 1280	2630	Silver R01.5	767053
1281 - 1680	3430	Silver R01.5	767075
1681 - 2000	4130	Silver R01.5	769841

3. Bullet catch track set

Left+Right	774107
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4. Scissors-slider

SW/mm	SAP
600 - 900	810456
901 - 1250	810457
1251 - 1650	810458

5. Reinforcement bracket sets 100-160 kg

Color	SAP
White R07.2	793518
Black R06.2	793517
Silver R01.5	793515

6. Guide striker set (2 Pieces) V.01

	776013
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7. Corner drive

	858806
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8. Insertable cam

	334671
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9. Striker V.01

	2007008
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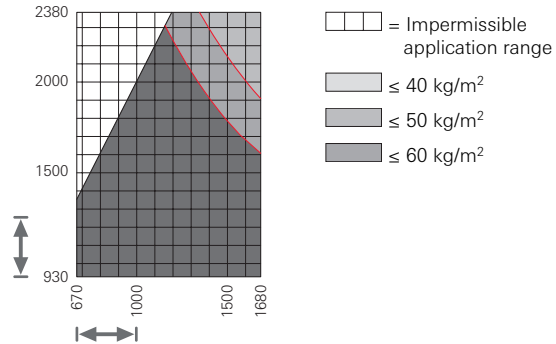
Espagnolettes and connectors (1)

Item	Name	Description	SAP
10	Centre gear connector		482264
11	Flat-headed screw	M5x12	728925
12	RotoLine geared handle		Refer to page 82

Espagnolettes and connectors (2)

Item	Name	Description	SAP
14	RotoLine handle		Refer to page 84
15	Short screw	M5*80	735124
16	Short spindle	7x7x80	737985
13	Flush-encased gearbox		
	BS=25		625430
	BS=30		625431
	BS=35		625432
	BS=40		625433

Application Diagram



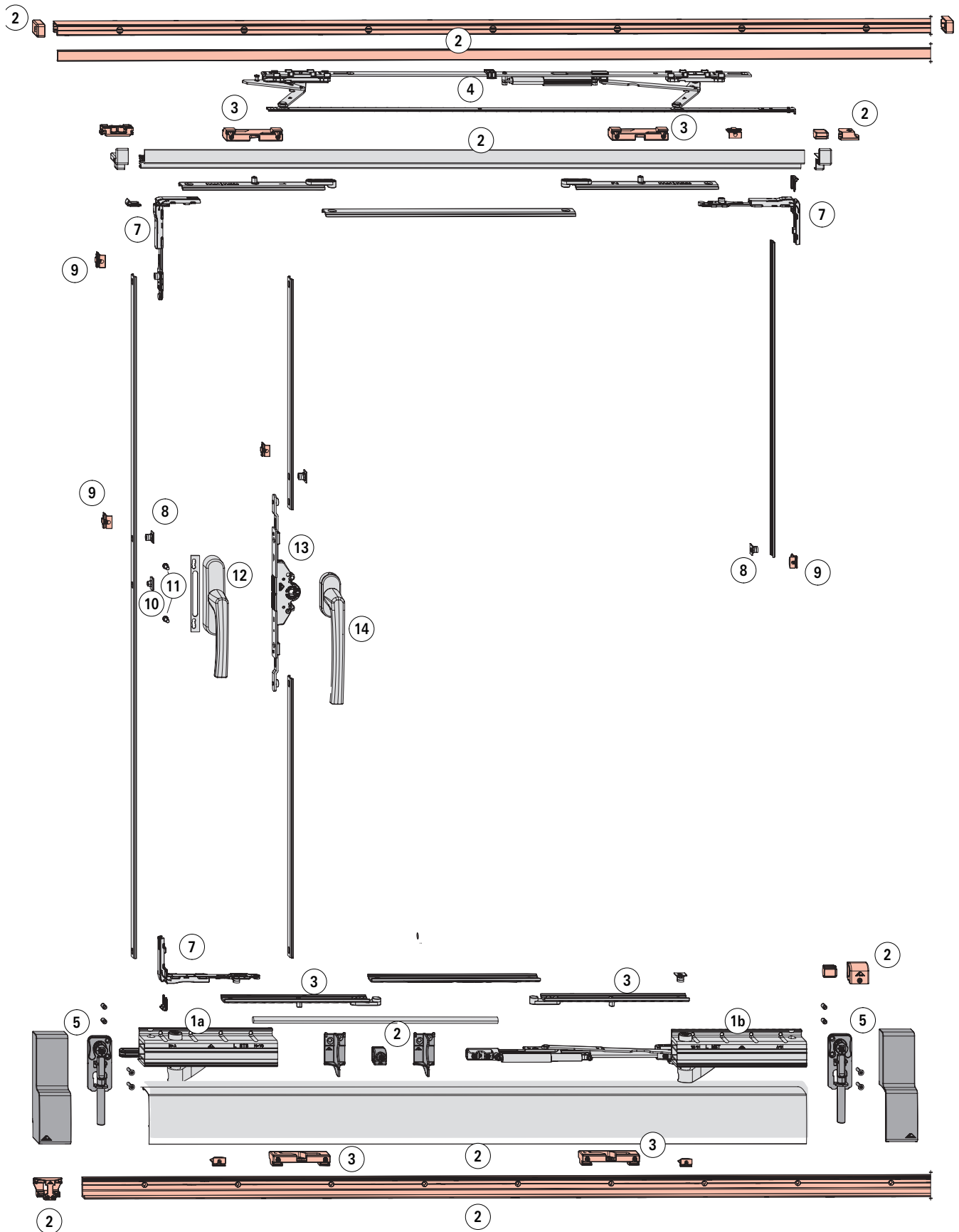
The glass weight in kg/m

1 mm² glass thickness = 2.5 kg

SH:SW = max. 2:1

M dimension = max. 62 mm

Parallel & Slide with night ventilation (Roto Alversa PS)
Diagram A



Application

Sash Width **SW**:760-2000mm
 Sash Height **SH**:930-2700mm
 Sash Weight **S.kg**:max. 200kg

1.Parallel&Slide bogie set

pos.	Weight	DIN	Qty	SAP
Bogies	up to 160kg	Left	1	799898
		Right	1	799900
not dep. countersunk tapping-screws ST4.8x50			8	
Bogies(not dep.)	160-200kg	Left	1	799901
		Right	1	799902
not dep. countersunk tapping-screws ST4.8x50			16	

2.Track set

SR/mm	FW/mm	color	SAP
670 - 930	1930	White R07.2	767086
931 - 1280	2630	White R07.2	767088
1281 - 1680	3430	White R07.2	767090
670 - 930	1930	Black R06.2	767081
931 - 1280	2630	Black R06.2	767083
1281 - 1680	3430	Black R06.2	767085
670 - 930	1930	Silver R01.5	767051
931 - 1280	2630	Silver R01.5	767053
1281 - 1680	3430	Silver R01.5	767075

3.Night vent set

V.01 Left	782305
V.01 Right	782306
incl. 4x ins.cams, 4xV.01 strikers	

4.Scissors-slider

SW/mm		SAP
720 - 900	Left	772220
	Right	772225
901 - 1250	Left	772221
	Right	772226
1251 - 1650	Left	772222
	Right	772227
1651 - 2000	Left	772223
	Right	772228

5. Reinforcement bracket sets (must always used)

Color	SAP
White R07.2	793518
Black R06.2	793517
Silver R01.5	793515

7.Corner drive

858806

8.Insertable cam

334671

9.Striker V.01

2007008

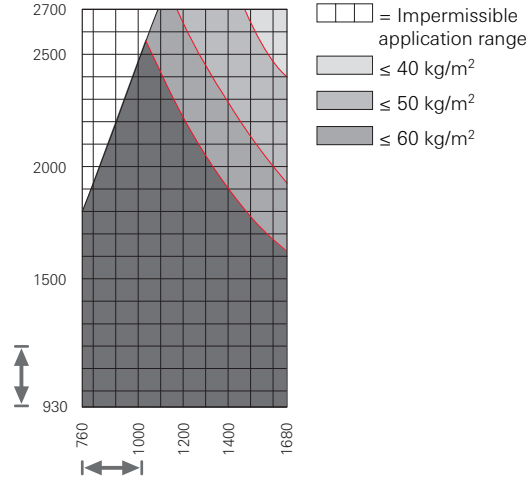
Espagnolettes and connectors (1)

Item	Name	Description	SAP
10	Centre gear connector		482264
11	Flat-headed screw	M5x12	728925
12	RotoLine geared handle		Refer to page 82

Espagnolettes and connectors (2)

Item	Name	Description	SAP
14	RotoLine handle		Refer to page 84
13	Flush-encased gearbox		
	BS=25		625430
	BS=30		625431
	BS=35		625432
	BS=40		625433

Diagram 160kg



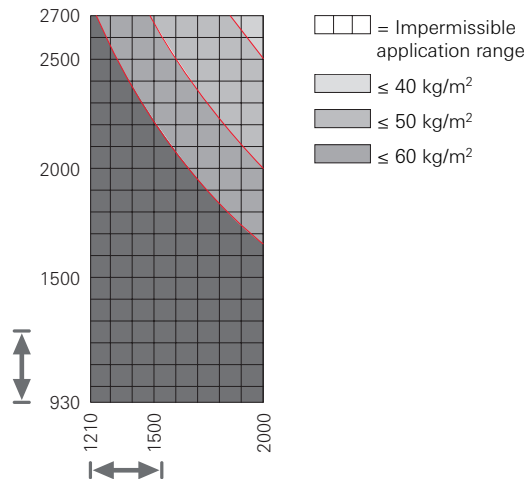
The glass weight in kg/m

1 mm/m² glass thickness = 2.5 kg

SH:SW = max. 2:1

M dimension = max. 68 mm

Diagram 200kg



The glass weight in kg/m

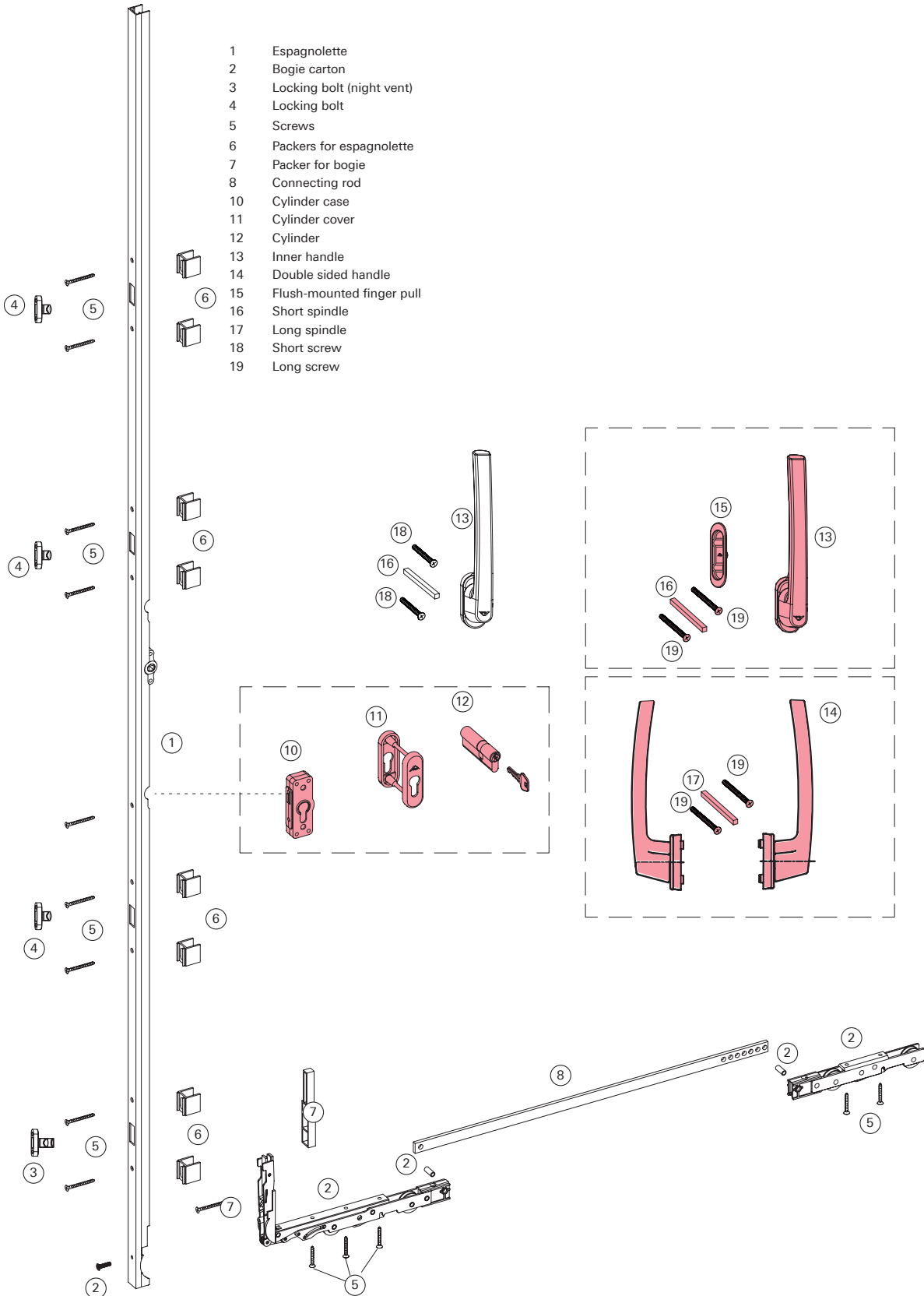
1 mm/m² glass thickness = 2.5 kg

SH:SW = max. 2:1

M dimension = max. 68 mm

For other Alversa PS with/without night ventilation, PS Air, PS Air Com and Diagram C, please ask your Roto partner.

HS 150 Lift & Slide door

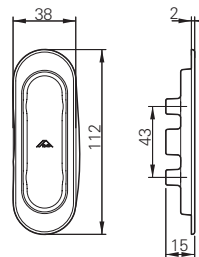
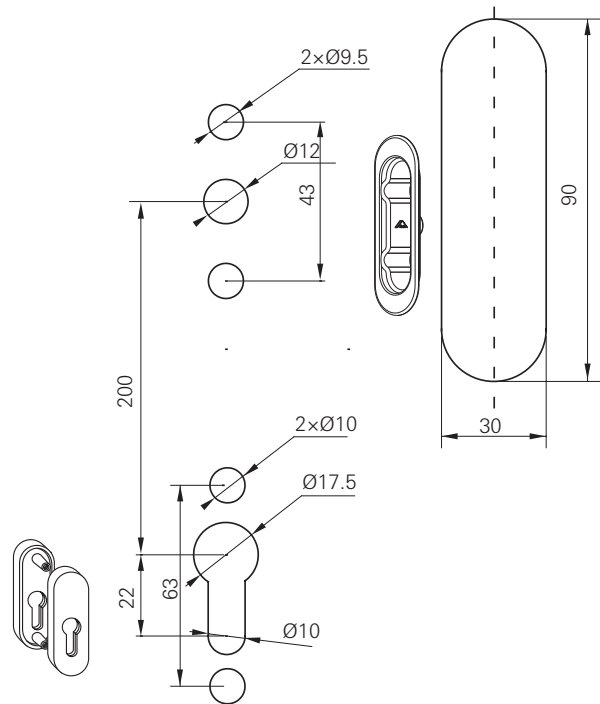
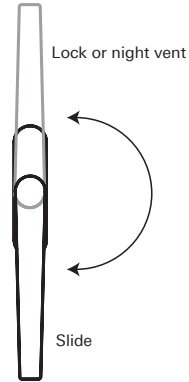


HS 150 Application range

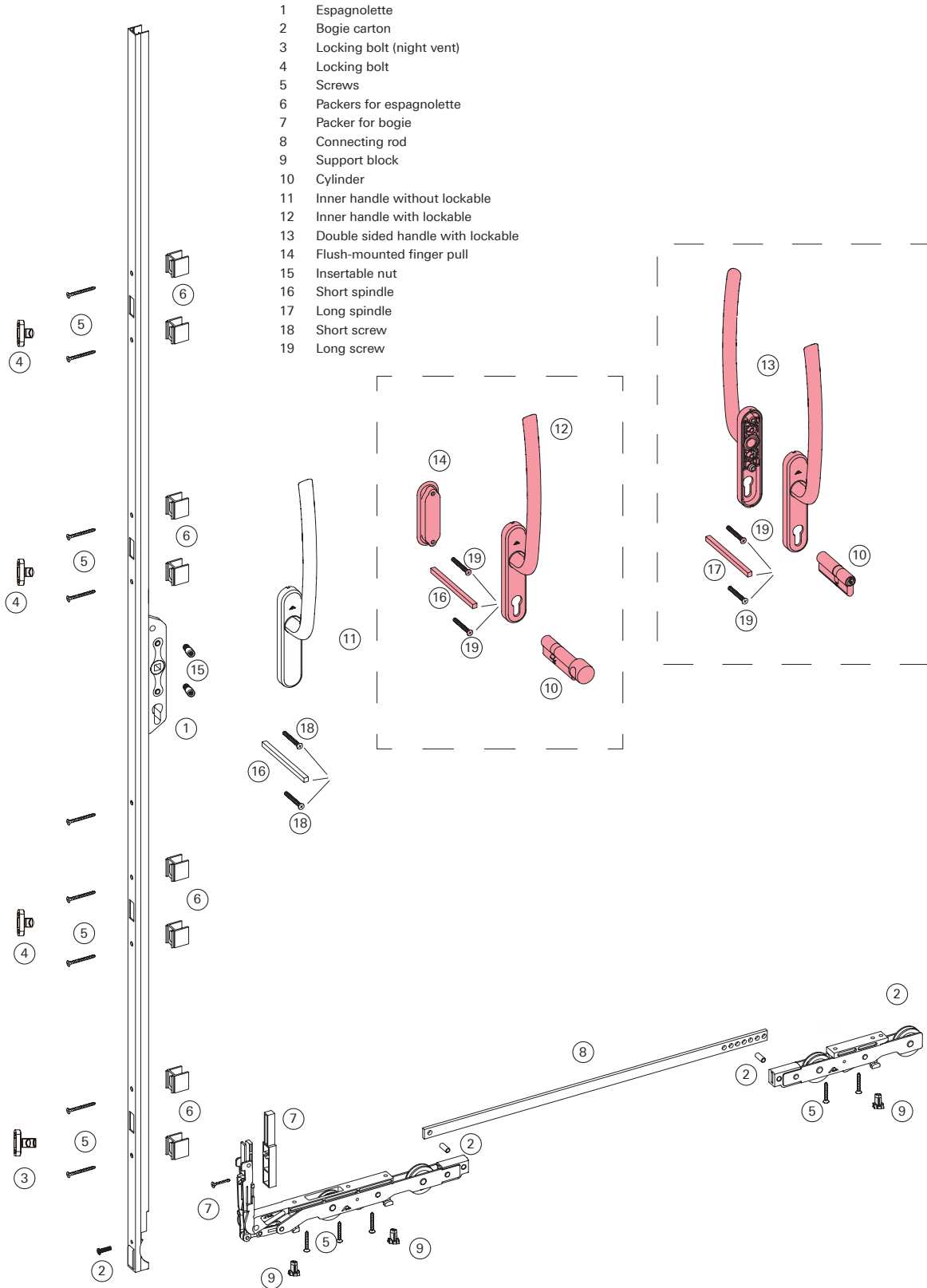
SW - 700mm – 2800mm
 SH - 1800mm – 2600mm
 Max. sash weight - 150kg

HS 150 Lift & Sliding door

No.	SAP No.	Name	Specification
1	633426	Espagnolette	SH:1801-2200mm
	633427	Espagnolette	SH:2201-2600mm
2	734290	Bogie carton incl. 1pc screw M5x13 and 2pcs pin	22mm
3	595651	Locking bolt (night vent)	Height:15mm
	634418	Locking bolt (night vent)	Height:17mm
4	595650	Locking bolt	Height:15mm
	613246	Locking bolt	Height:17.5mm
5	643122	Screws set(10*4.2*56+6*4.2*32)	
6	595654	Packers(8pcs) for espag.	Thickness:16mm
	600513	Packers(8pcs) for espag.	Thickness:19mm
	601952	Packers(8pcs) for espag.	Thickness:23mm
	606766	Packers(8pcs) for espag.	Thickness:30mm
7	840774	Packer for bogie +1pc screw 4.8x20	Thickness:16mm
	840775	Packer for bogie +1pc screw 4.8x20	Thickness:19mm
	840777	Packer for bogie +1pc screw 4.8x20	Thickness:23mm
	840779	Packer for bogie +1pc screw 4.8x20	Thickness:30mm
8	634852	Connecting rod	SW:700-1500mm
	643639	Connecting rod	SW:1501-1800mm
	634853	Connecting rod	SW:1801-2100mm
	643643	Connecting rod	SW:2101-2400mm
	634854	Connecting rod	SW:2401-2800mm
10	631368	Cylinder case with 2 pins	
11		Cylinder Cover	Refer to P85
12		Cylinder	Refer to P97
13		Inner handle	Refer to P88
14		Double side handle	Refer to P88
15	605543	Flush-mounted finger pull White	
	605551	Flush-mounted finger pull Black	
	643293	Flush-mounted finger pull Silver	
16	737985	Short spindle	7x7x80
17	737986	Long spindle	7x7x150
18	735124	Short screw	M5x80
19	735145	Long screw	M5x150



HS 300 Lift & Slide door



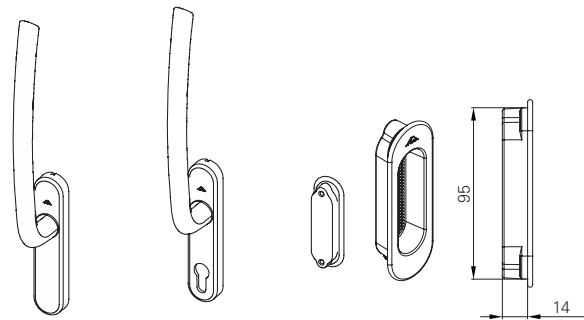
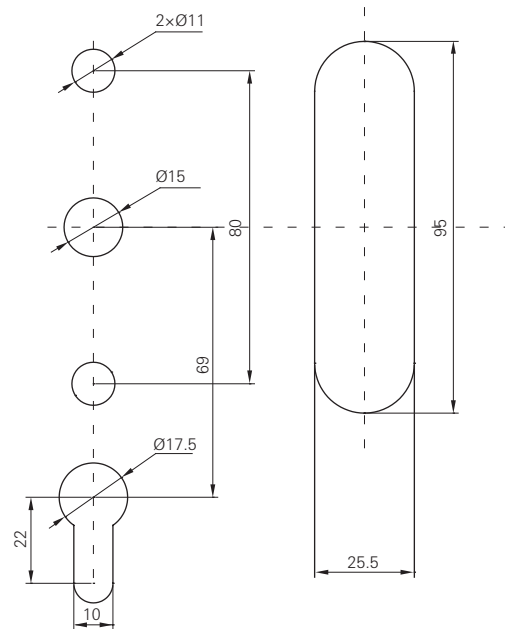
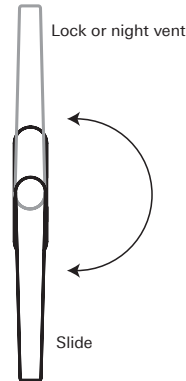
HS 300 Application range

SW - 750 mm – 3000 mm
 SH - 1800 mm – 3100 mm
 Max. sash weight - 300kg/400kg

HS 300 Lift & Sliding door

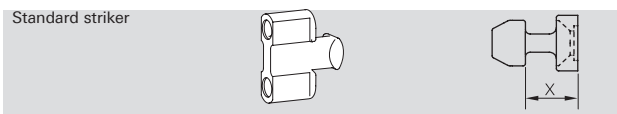
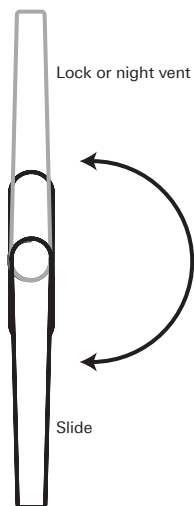
No.	SAP No.	Name	Specification
1	840378	Espagnolette BS=37.5mm	SH:1801-2200mm
	840379	Espagnolette BS=37.5mm	SH:2201-2600mm
	840382	Espagnolette BS=37.5mm	SH:2601-3100mm
	896124*	Espag. with 3Cams BS=37.5mm inkl. dampf Cylinder	SH:1801-2200mm
	896160*	Espag. with 3Cams BS=37.5mm inkl. dampf Cylinder	SH:2201-2600mm
	896161*	Espag. with 4Cams BS=37.5mm inkl. dampf Cylinder	SH:2601-3100mm
2	734288	Bogie carton incl. 1pc screw M5x13 and 2pcs pin	22mm
3	595651	Locking bolt (night vent)	Height:15mm
	634418	Locking bolt (night vent)	Height:17mm
4	595650	Locking bolt	Height:15mm
	613246	Locking bolt	Height:17.5mm
5	896162	Screws 10pcs 4.2x63 6pcs 4.2x32	300kg
6	600513	Packers(8pcs) for espag.	Thickness:19mm
	601952	Packers(8pcs) for espag.	Thickness:23mm
	606766	Packers(8pcs) for espag.	Thickness:30mm
7	840775	Packer for bogie +1pc screw 4.8x20	Thickness:19mm
	840777	Packer for bogie +1pc screw 4.8x20	Thickness:23mm
	840779	Packer for bogie +1pc screw 4.8x20	Thickness:30mm
8	634852	Connecting rod	SW:750-1600mm
	643639	Connecting rod	SW:1601-1900mm
	634853	Connecting rod	SW:1901-2200mm
	643643	Connecting rod	SW:2201-2500mm
	634854	Connecting rod	SW:2501-3000mm
9	762901	Support block	300kg
10		Cylinder	P97
11	642895	Inner handle without lockable	White
	642884	Inner handle without lockable	Black
	642896	Inner handle without lockable	Silver
12	642899	Inner handle with lockable	White
	642898	Inner handle with lockable	Black
	642900	Inner handle with lockable	Silver
13	642903	Double sided handle with lockable	White
	642902	Double sided handle with lockable	Black
	642904	Double sided handle with lockable	Silver
14	642881	Flush-mounted finger pull	White
	642880	Flush-mounted finger pull	Black
	642882	Flush-mounted finger pull	Silver
15	635152	Insertable nut	
16	644120	Short spindle	10x10x80
17	644121	Long spindle	10x10x150
18	735124	Short screw	M5x80
19	735145	Long screw	M5x150
20	626567	upgrade set 400kg (incl. bogie set, 2pcs connecting plate, 4pcs connecting pin)	
21		Need to cut the connecting rod to suitable length.	

* no pictures. need to special striker. Please ask your Roto partner.



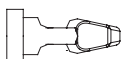
Striker for Lift & Slide door

Handle position



2-sashed open striker

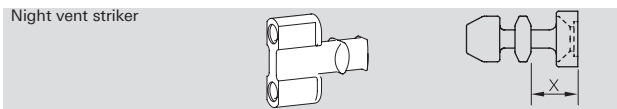
No.	SAP No.	Name	Specification
1	595652	Striker	Height:20mm



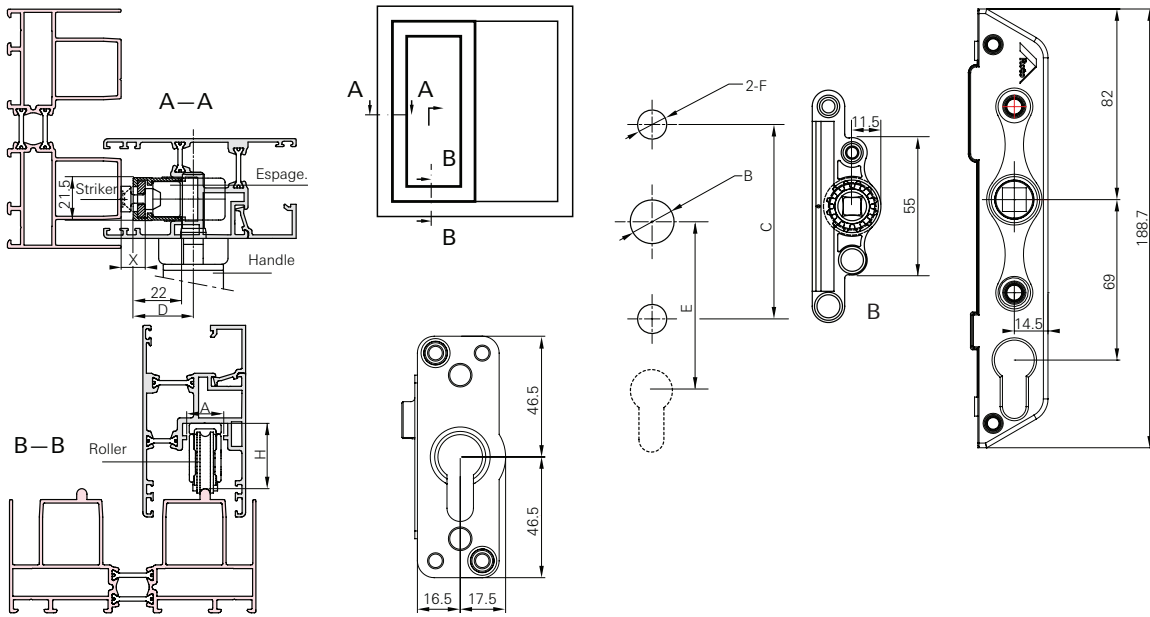
Note:

1. Both the bogie packer and the espag. packer thickness must be the same.

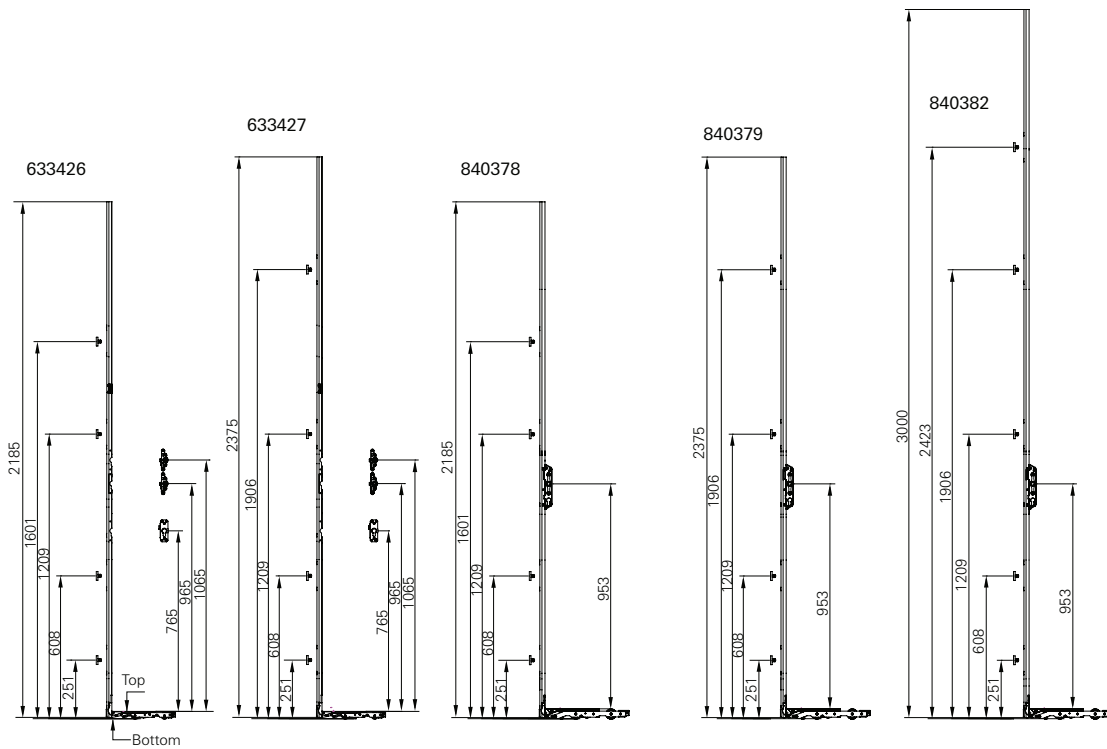
2. The bogie's lifting height is 7mm



Profile suggestion on Lift & Slide door

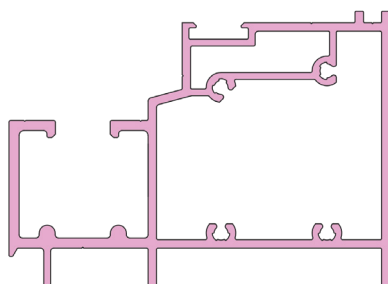
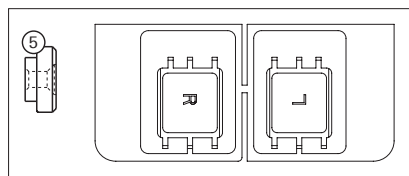
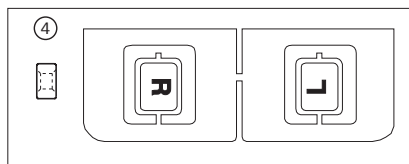
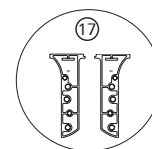
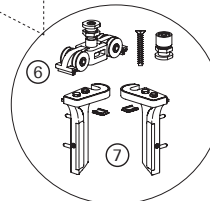
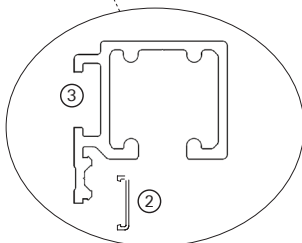
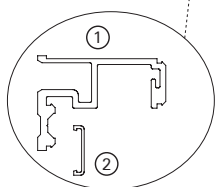
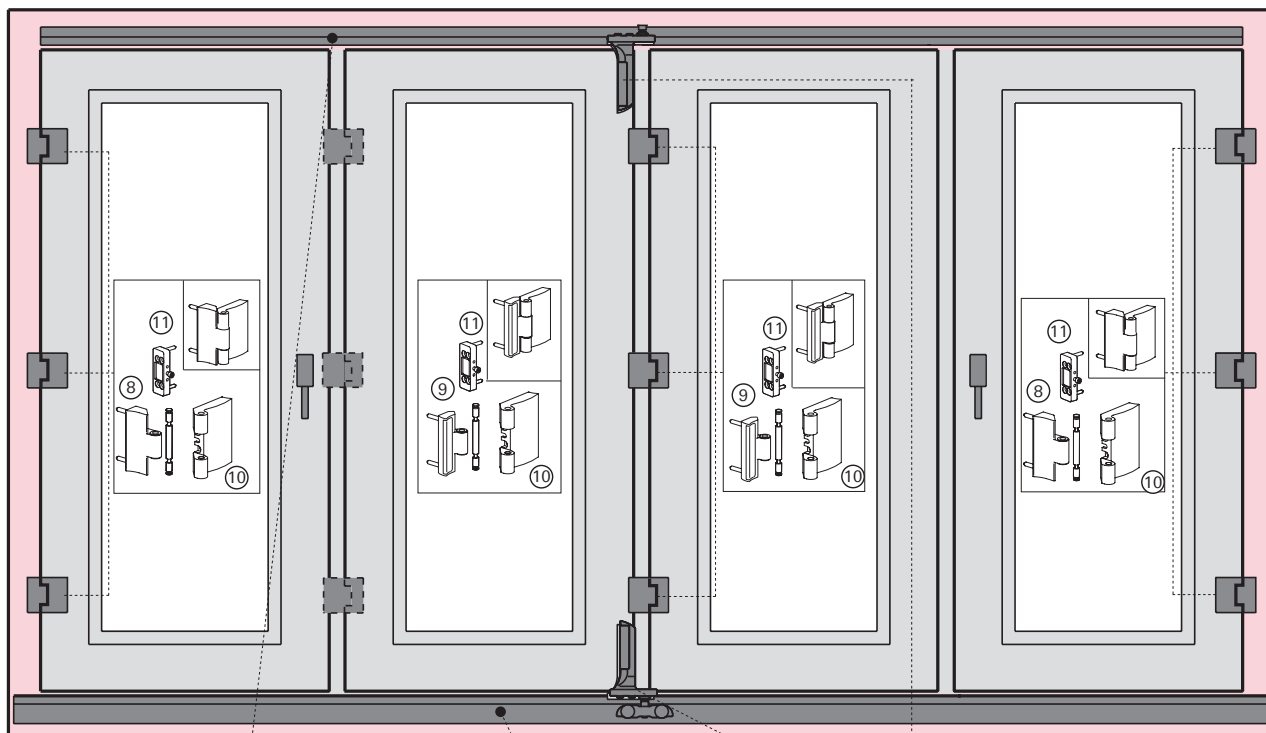


Installation parameters								
	Bogie width A	B	C	D	E	F	G	H
HS150	22mm	12mm	43mm	25mm	/	10mm	39.5mm	31mm
HS300	22mm	18mm	80mm	37.5mm	69mm	10mm	52mm	42mm



Fold & Slide door (PATIO Fold)

SW - 450 mm – 900 mm
 SH - 600 mm – 2800 mm
 Sash weight max. - 100 kg
 The door length max.-6000 mm



12 Enhanced threshold for barrier-free living.

Patio Fold & Slide door hardware formed by two parts:

1. Folding part:

The folding part is not installed in the hardware groove, so there is no difference between "C-groove" profile and "U-groove" profile. It's only related to the folding modes and the folding sash's quantity

2. Locking part:

The locking part is installed in the hardware groove, so pls refer to the Turn-ony door's application.

Hardware list

1. Guide rail top		
SAP	Colour	Length
571420	Silver(Anod.)	4500mm
614284	Silver(Anod.)	5800mm
859066	Black(Anod.)	4500mm
859068	Black(Anod.)	5800mm

2. Guide track cover			
SAP	Colour	Length	Description
206898	White	6000mm	Narrow
491001	Brown	6000mm	Narrow
770352	Black	6000mm	Narrow

3. Roller track bottom		
SAP	Colour	Length
859069	Silver(Anod.)	4500mm
859080	Silver(Anod.)	5800mm
836929	Black(Anod.)	4500mm
836930	Black(Anod.)	5800mm

4. Guide rail accessory	
SAP	Colour
626452	White
626450	Brown
626449	Silver
770354	Black

5. Track accessory	
SAP	Colour
643863	White
738957	Brown
643865	Silver
770353	Black

6. Bogie carton	642422
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7. Bogie bracket with pin 30mm	
SAP	Colour
642423	White
738980	Brown
642435	Silver
768892	Black

8. Frame hinge-bearing (packaged unit: 3 pcs.)		
SAP	Colour	Description
734525	White	10mm
739900	Brown	10mm
734527	Silver	10mm
768764	Black	10mm

9. Sash hinge-bearing (packaged unit: 3 pcs.)		
SAP	Colour	Description
734365	White	30mm
738914	Brown	30mm
734367	Silver	30mm
768887	Black	30mm

10. Hinge (packaged unit: 3 pcs.)		
SAP	Colour	Description
733366	White	40mm
738894	Brown	40mm
733368	Silver	40mm
768757	Black	40mm

11. Hinge-fixing insert for Aluminium (packaged unit: 3 pcs.)	734492
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12. Enhanced threshold (for barrier-free living, profile related)		
SAP	Colour	Length
859081	Silver(Anod.)	4500mm
859082	Silver(Anod.)	5800mm
836925	Black(Anod.)	4500mm
836926	Black(Anod.)	5800mm

13. Packers for frame hinge-bearing (packaged unit: 3 pcs.)		
SAP	Colour	Type
312831	White	1mm
312833	Silver	1mm
768889	Black	1mm

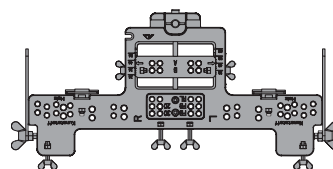
14. Sash locking device	
SAP	Colour
340208	White
375241	Silver
340211	Black

15. Sash stoppers	
SAP	Colour
444807	White
444809	Silver
768940	Black

16. Enhanced threshold accessory	858296
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17. Bogie packer 6mm	
SAP	Colour
737260	White
739898	Brown
737262	Silver
768895	Black

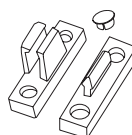
Drilling jig for hinges and bracket	643365
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13. Packers for frame hinge-bearing



14. Sash locking device



15. Sash stoppers



Patio Fold variations and application of sash retaining devices

Diagram 330

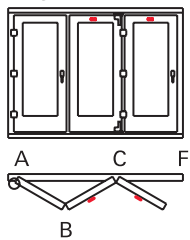


Diagram 321

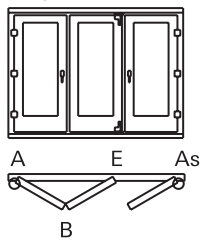


Diagram 431

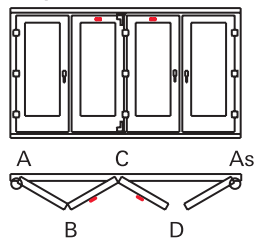


Diagram 532

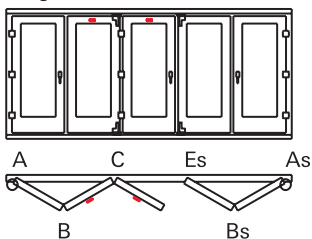


Diagram 541

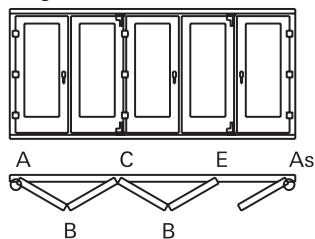


Diagram 550

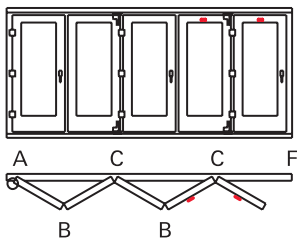


Diagram 633

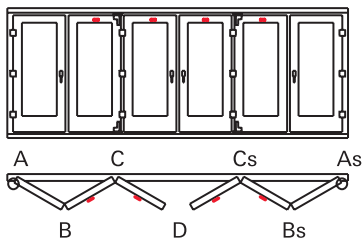


Diagram 651

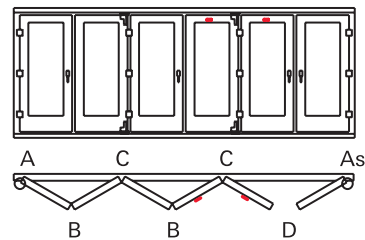


Diagram 743

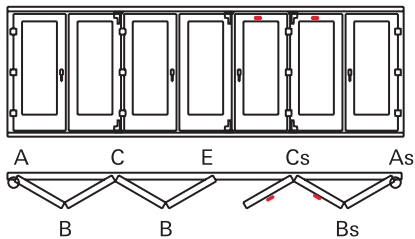


Diagram 761

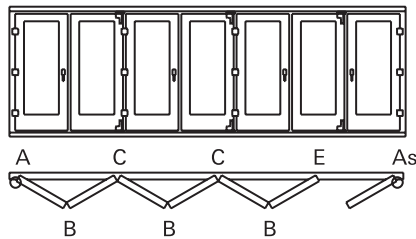


Diagram 770

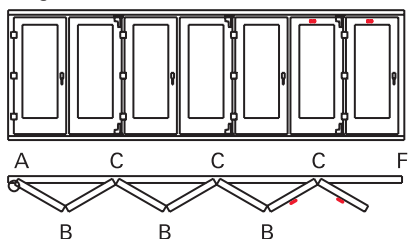
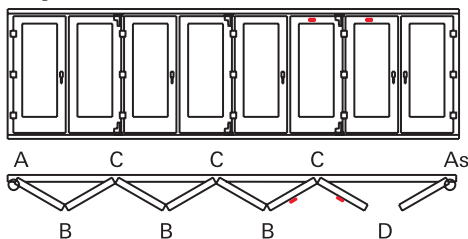


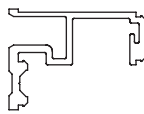

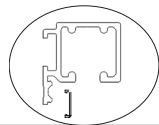




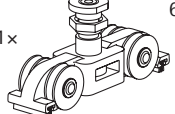


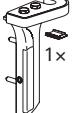
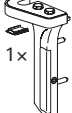
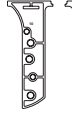
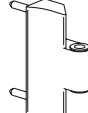
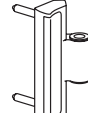
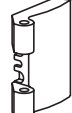
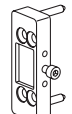



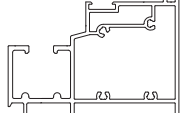



Diagram 871

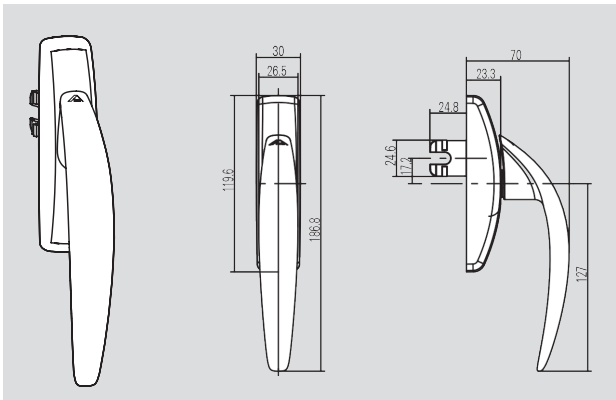


Fold part hardware Qty.

Note:  means standard roller track
 means Enhanced threshold

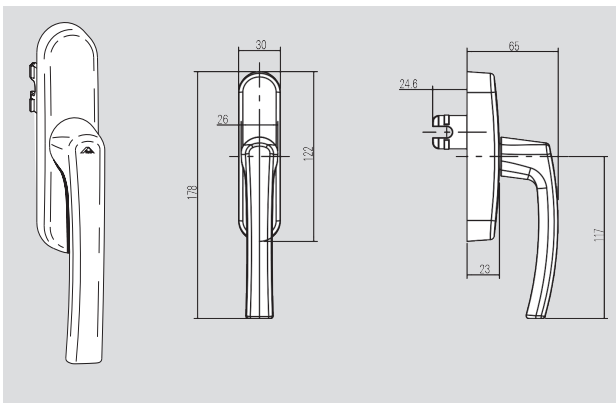
330	321	431	532	541	550	633	651	743	761	770	871	853	Name	Illustration
1	1	1	1	1	1	1	1	1	1	1	1	1	Guide track top	
1	1	1	1	1	1	1	1	1	1	1	1	1		
2	2	2	2	2	2	2	2	2	2	2	2	2	Guide track cover	
1	1	1	1	1	1	1	1	1	1	1	1	1		
1	1	1	1	1	1	1	1	1	1	1	1	1	Roller track	
0	0	0	0	0	0	0	0	0	0	0	0	0		
1	1	1	1	1	1	1	1	1	1	1	1	1	Guide track accessory	6x  1x  1x
1	1	1	1	1	1	1	1	1	1	1	1	1		
1	1	1	1	1	1	1	1	1	1	1	1	1	Roller track accessory	6x  1x  1x
0	0	0	0	0	0	0	0	0	0	0	0	0		
1	1	1	2	2	2	2	2	3	3	3	3	3	Bogie carton	1x  6x  1x 
1	1	1	2	2	2	2	2	3	3	3	3	3		
1	1	1	2	2	2	2	2	3	3	3	3	3	Bogie bracket Bogie packer	1x  1x  1x 
1	1	1	2	2	2	2	2	3	3	3	3	3		
1	2	2	2	2	1	2	2	2	2	1	2	2	Frame hinge-bearing	3x 
1	2	2	2	2	1	2	2	2	2	1	2	2		
2	1	2	3	3	4	4	4	5	5	6	6	6	Sash bearing	3x 
2	1	2	3	3	4	4	4	5	5	6	6	6		
3	3	4	5	5	5	6	6	7	7	7	8	8	Hinge	3x 
3	3	4	5	5	5	6	6	7	7	7	8	8		
3	3	4	5	5	5	6	6	7	7	7	8	8	Hinge-fixing insert	3x  12x  6x  3x 
3	3	4	5	5	5	6	6	7	7	7	8	8		
0	0	0	0	0	0	0	0	0	0	0	0	0	Enhanced threshold	
1	1	1	1	1	1	1	1	1	1	1	1	1		
0	0	0	0	0	0	0	0	0	0	0	0	0	Enhanced threshold accessory	
1	1	1	1	1	1	1	1	1	1	1	1	1		

Rotoline handle (geared)



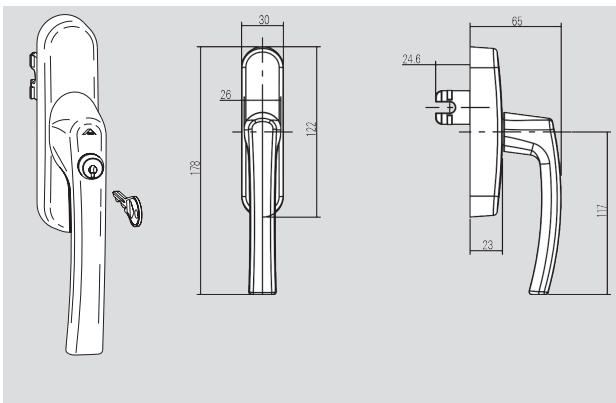
T300 handle

SAP	Description
489717	Silver,26mm
486163	White(R07.2),26mm
486162	Black(R06.2),26mm



RotoLine geared handle

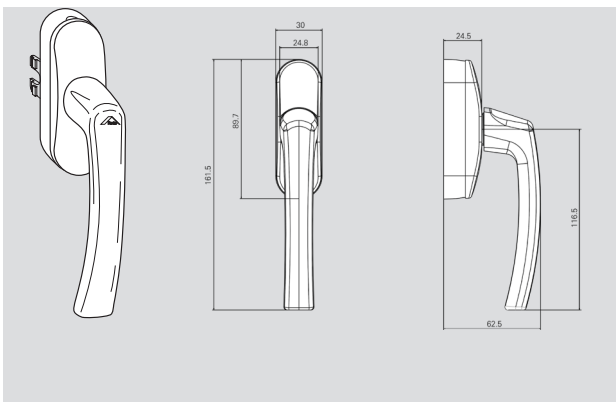
SAP	Description
328366	Silver,26mm
328207	White(R07.2),26mm
328208	Black(R06.2),26mm



RotoLine lockable geared handle *

SAP	Description
214172	Silver,26mm
214177	White(R07.2),26mm

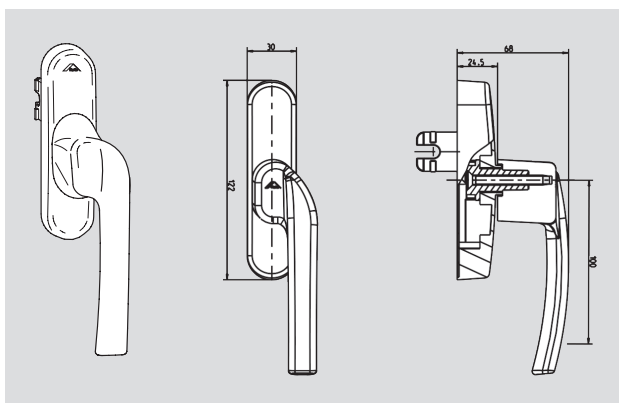
* Duplicate key



Rotoline casement handle

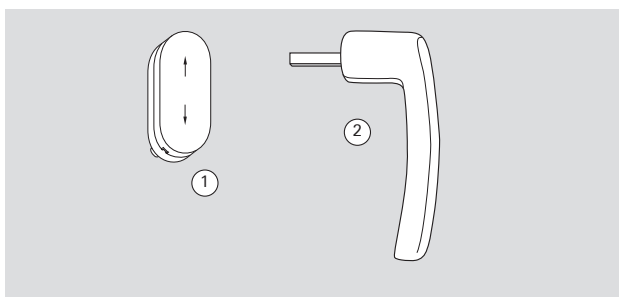
SAP	Description
736988	Silver,without fork
736989	White(R07.2),without fork
736990	Black(R06.2),without fork

Rotoline handle (geared)



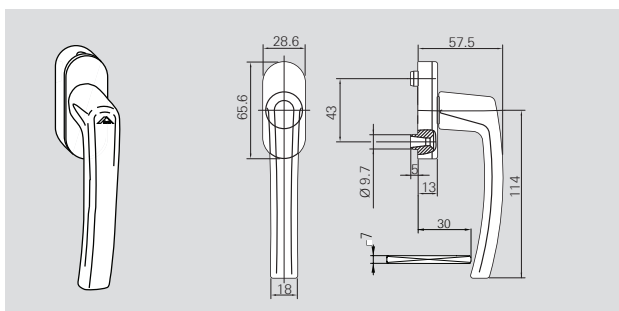
RotoLine cranked geared-handle with logo(Fork:26mm)

SAP	Description
477543	White R07.2/26mm L
477544	White R07.2//26mm R
477855	Silver R01.5/26mm L
477856	Silver R01.5/26mm R
477857	Black R06.2/26mm L
477858	Black R06.2/26mm R



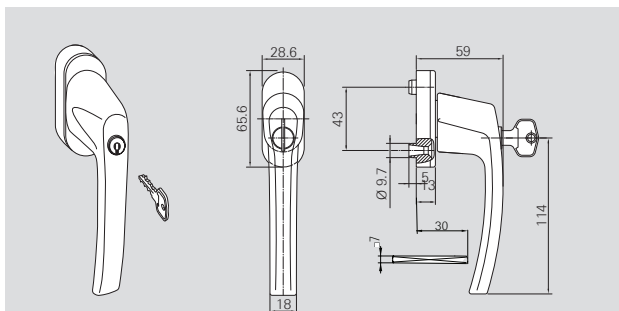
Removable handle

Item	Name	Description	SAP
1	RotoLine escutcheon plate	R07.2 White	571050
	RotoLine escutcheon plate	Silver	571064
	RotoLine escutcheon plate	R05.3 Bronze	571065
2	RotoLine service handle	R07.2 White	571034
	RotoLine service handle	Silver	642369
	RotoLine service handle	R05.3 Bronze	571035



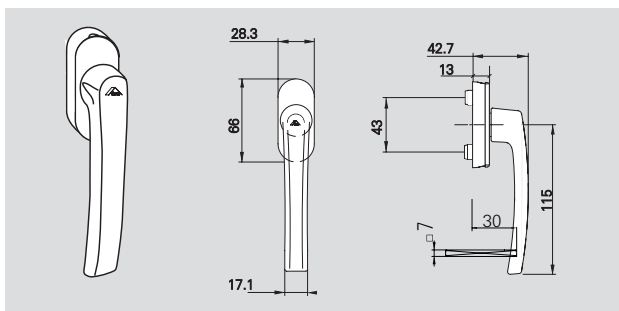
Rotoline handle without Spindle

SAP No.	Colour	Spindle length
2003357	White	without spindle
2003358	Black	without spindle
2003389	Silver	without spindle
2003390	Brown	without spindle



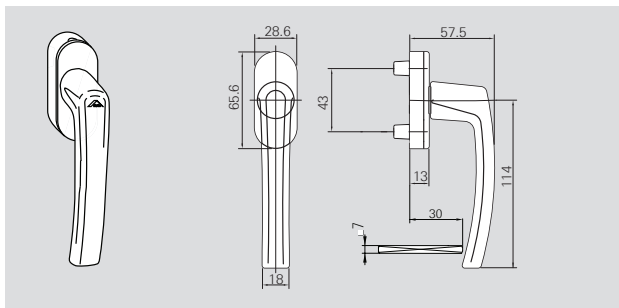
Rotoline lockable handle

SAP No.	Colour	Spindle length
2003391	White	without spindle
2003392	Black	without spindle
2003393	Silver	without spindle
2003394	Brown	without spindle



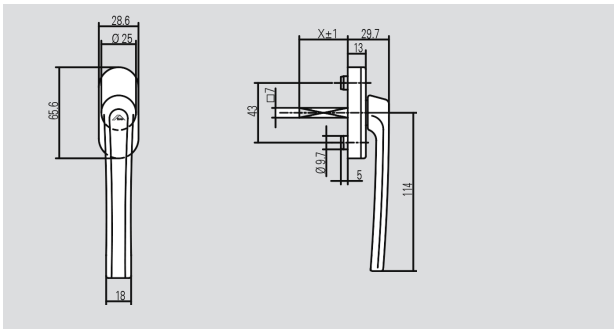
Rotoline low-height handle without spindle

SAP No.	Colour	Spindle length
899771	White	without spindle
899772	Black	without spindle
899774	Silver	without spindle
899773	Brown	without spindle



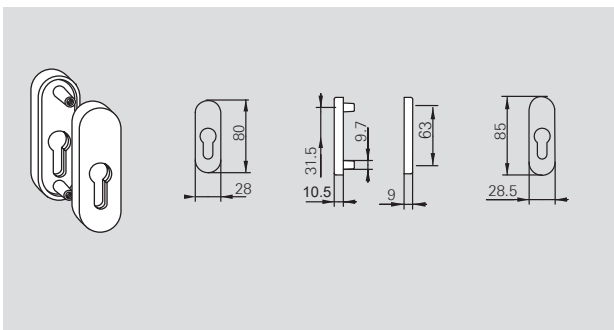
Rotoline handle without spindle Outside

SAP No.	Colour	Spindle length
2006213	White	without spindle
2006239	Black	without spindle
2006240	Silver	without spindle
2006241	Brown	without spindle



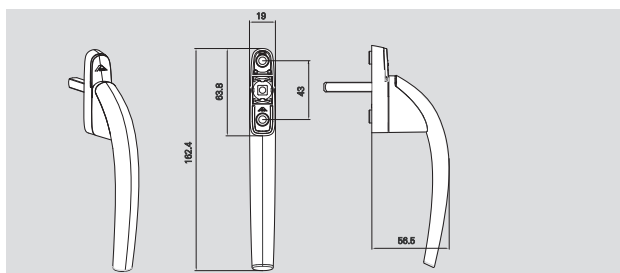
Rotoline Flat Handle for Patio Fold

SAP No.	Colour	Spindle length
2022005	White	55mm
2022006	Black	55mm
2022008	Silver	55mm
2022007	Brown	55mm



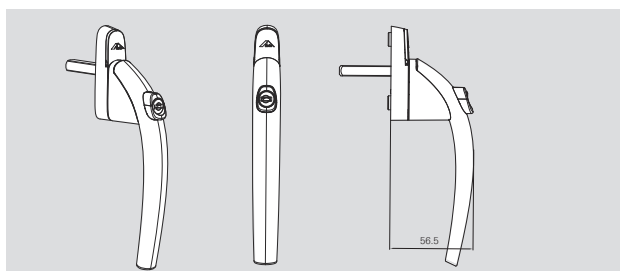
Cylinder cover

SAP No.	Colour
570992	White
614441	Black
570990	Silver
823332	Brown



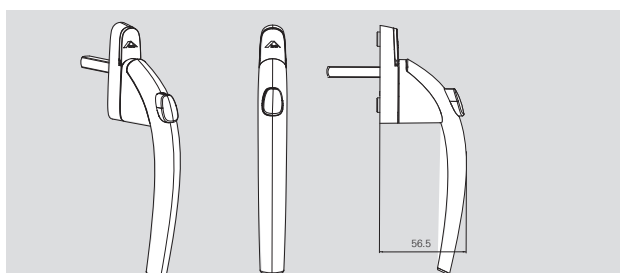
RSW MK5 handle for outward opening window

SAP No.	Colour	Spindle length
773381	White	43mm
773382	Black	43mm
773384	Silver	43mm
2007527	Brown	43mm
2007554	White	55mm
2007528	Black	55mm
2007555	Silver	55mm
2007556	Brown	55mm



RSW lockable MK5 handle for outward opening window

SAP No.	Colour	Spindle length
773451	White	43mm
773452	Black	43mm
773454	Silver	43mm
833307	Brown	43mm
2007562	White	55mm
2007557	Black	55mm
2007563	Silver	55mm
2007564	Brown	55mm

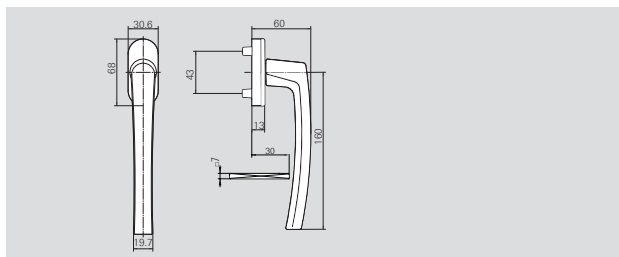
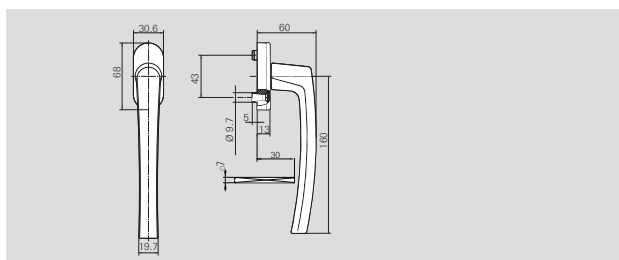


RSW Pushbutton MK5 handle for outward opening w.

SAP No.	Colour	Spindle length
773436	White	43mm
773437	Black	43mm
773439	Silver	43mm
2007565	Brown	43mm
2007567	White	55mm
2007566	Black	55mm
2007568	Silver	55mm
2007569	Brown	55mm

Patio S 160mm

(Spindle 7x7mm)



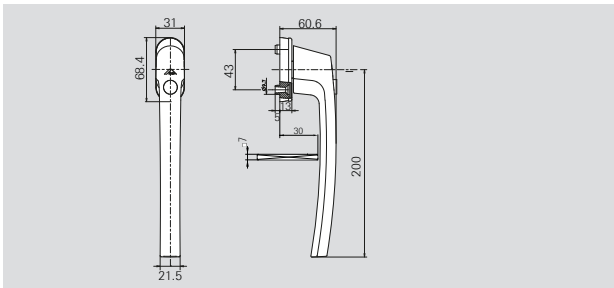
Rotoline Patio S handle 160mm

SAP No.	Colour	Spindle length
799566	White	without spindle
799567	Black	without spindle
799569	Silver	without spindle
2003411	Brown	without spindle

Rotoline Patio S handle 160mm Outside for door

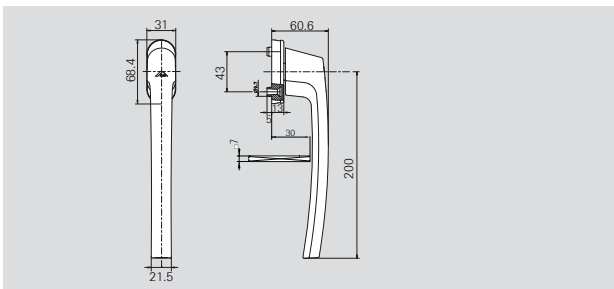
SAP No.	Colour	Spindle length
899775	White	without spindle
899776	Black	without spindle
899778	Silver	without spindle
2003412	Brown	without spindle

Patio Handle 200mm
(Spindle 7x7mm)



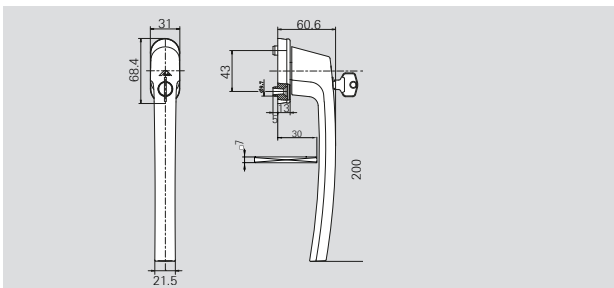
Patio handle with push button 180° lock-in position

SAP	Colour	Spindle length
2005069	White	without spindle
2005056	Black	without spindle
2005057	Silver	without spindle
2005058	Brown	without spindle



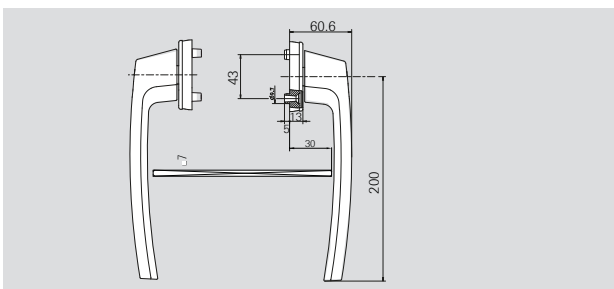
Patio handle 180° lock-in position without spindle

SAP	Colour	Spindle length
894767	White	without spindle
894768	Black	without spindle
894769	Silver	without spindle
894780	Brown	without spindle



Patio handle lockable 180° lock-in position

SAP	Colour	Spindle length
2005094	White	without spindle
2005095	Black	without spindle
2005096	Silver	without spindle
2005097	Brown	without spindle



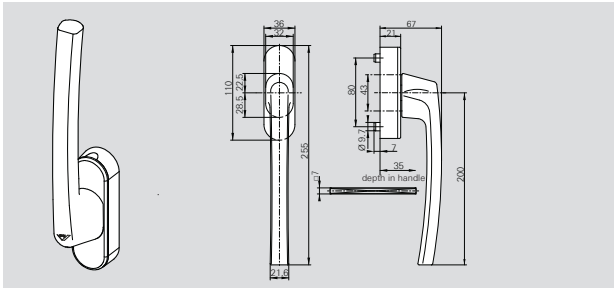
Patio Inowa handle 180° lock-in position wo Spindle (Inside)

SAP	Colour	Spindle length
894767	White	without spindle
894768	Black	without spindle
894769	Silver	without spindle
894780	Brown	without spindle

Patio Inowa handle 180° lock-in position wo Spindle (Outside)

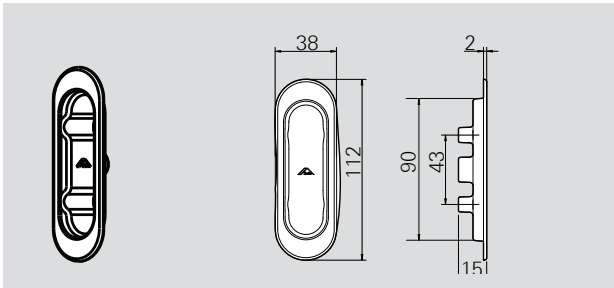
SAP	Colour	Spindle length
894782	White	without spindle
894783	Black	without spindle
894784	Silver	without spindle
894785	Brown	without spindle

Patio Lift 150 (Spindle 7x7mm)



PatioLift 150 Handle (Inner side)

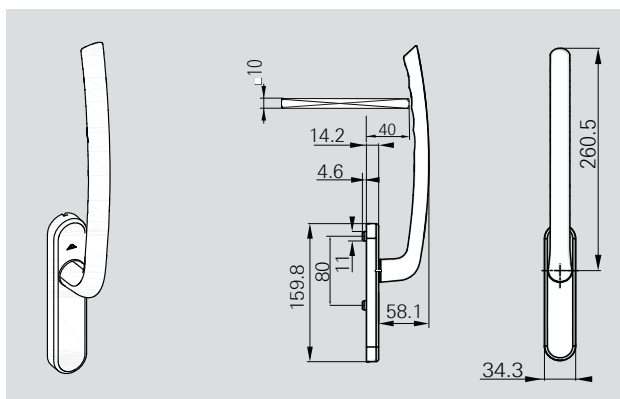
SAP No.	Colour	Spindle length
642877	White	without spindle
642876	Black	without spindle
642878	Silver	without spindle



Flush-mounted Finger Pull

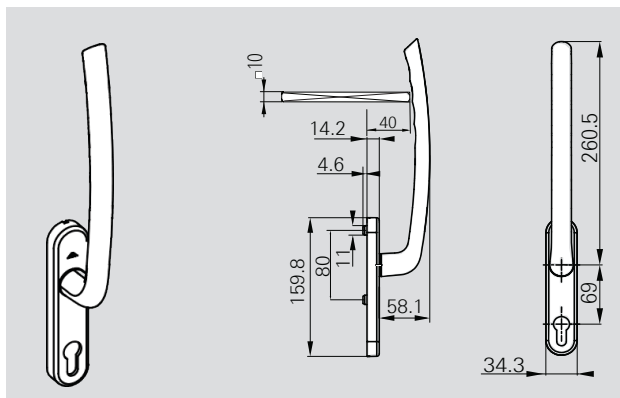
SAP	Colour
605543	White
605551	Black
643293	Silver
823764	Brown

Patio Lift 300
(Spindle 10x10mm)



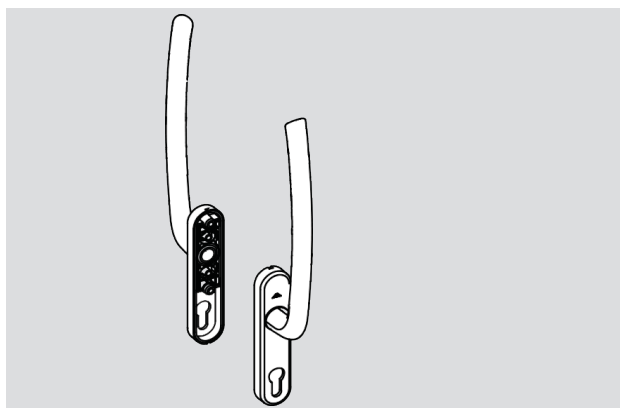
PatioLift 300 Handle without cylinder hole (Inner side)

SAP	Colour	Spindle length
642895	White	without spindle
642884	Black	without spindle
642896	Silver	without spindle



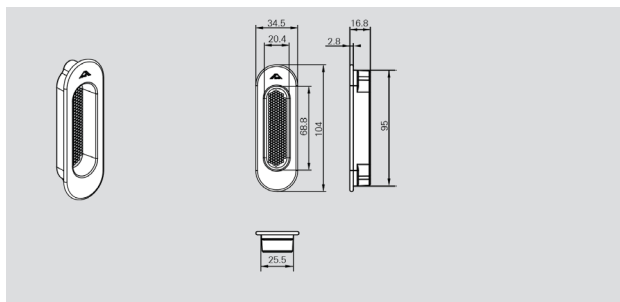
PatioLift 300 Handle with cylinder hole (Inner side)

SAP	Colour	Spindle length
642899	White	without spindle
642898	Black	without spindle
642900	Silver	without spindle



PatioLift 300 Double Sided Handle

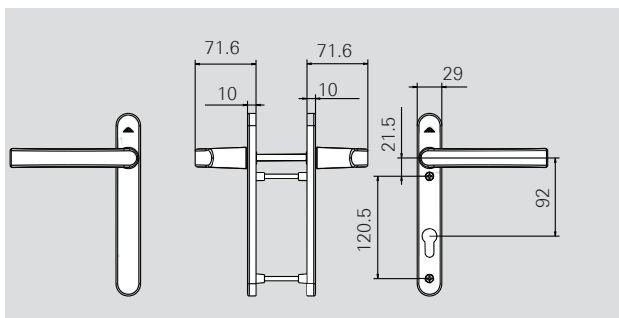
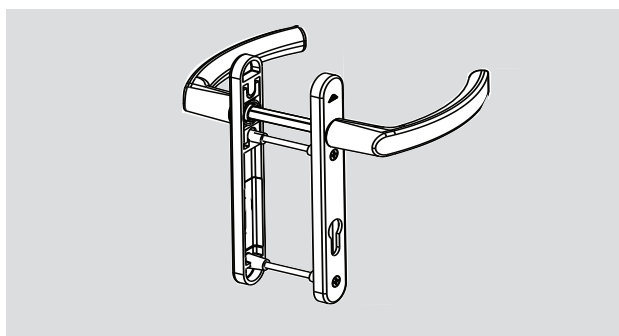
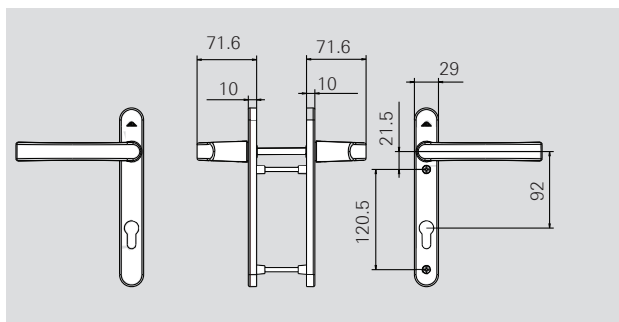
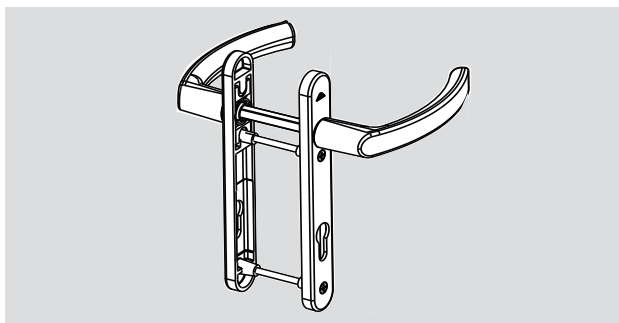
SAP	Colour	Spindle length
642903	White	without spindle
642902	Black	without spindle
642904	Silver	without spindle



PatioLift 300 Flush-mounted Finger Pull

SAP	Colour	Spindle length
642881	White	without spindle
642880	Black	without spindle
642882	Silver	without spindle

Door handle Roto Stark (Spindle 8x8mm)



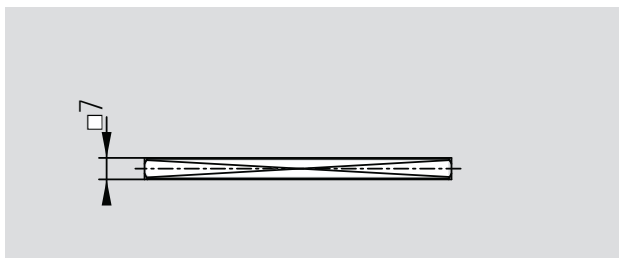
Handle RotoStark

SAP	Colour	Sash Thickness
857086	White	58-75mm
857087	Black	58-75mm
857088	Silver	58-75mm
857089	Brown	58-75mm

Handle RotoStark for halfcylinder(outside blind)

SAP	Colour	Sash Thickness
2003000	White	58-75mm
2003001	Black	58-75mm
2003003	Silver	58-75mm
2003002	Brown	58-75mm

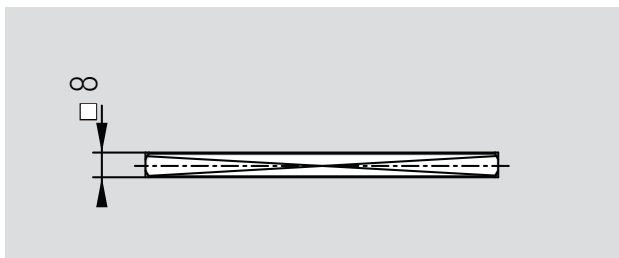
Spindle



Spindle for Window/Sliding door

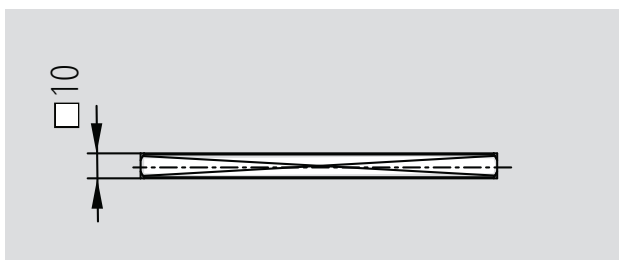
SAP	Length
2005221	7x7x35mm
2005222	7x7x45mm
2005223	7x7x50mm
2005234	7x7x55mm
2005235	7x7x60mm
619207	7x7x70mm
736495	7x7x75mm
737985	7x7x80mm
2005237	7x7x100mm
571391	7x7x126mm
737986	7x7x150mm

Other length please ask Roto partner



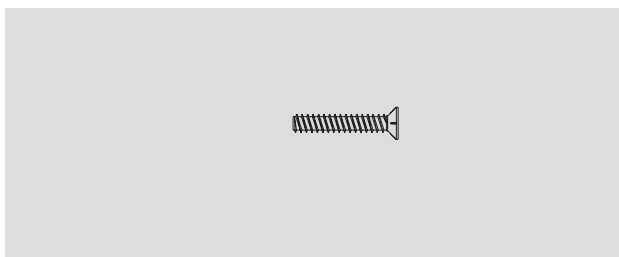
Spindle for Door

SAP	Length
837804	8x8x165mm



Spindle for PatioLift 300

SAP	Length
644120	10x10x80mm
644121	10x10x150mm










Screw for handle

SAP	Length	
2027712	M5x65mm	double side handle
2029651	M5x50mm	

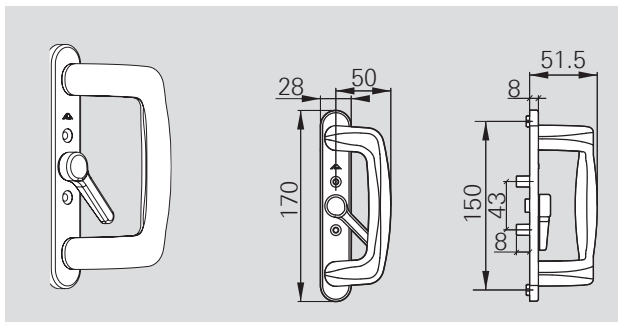
Handle for sliding window & door

Possible combination

Inside Outside	I1		I2		I3	
	A1		Combination1, with screw set Typ.1	Combination2, with screw set Typ.1	Combination3, with screw set Typ.1	
A2		Combination4, with screw set Typ.2	Combination5, with screw set Typ.2	Combination6, with screw set Typ.2		
A3		Combination7, with screw set Typ.2	Combination8, with screw set Typ.2	Combination9, with screw set Typ.2		
A4		X		Combination10, with screw set Typ.3		

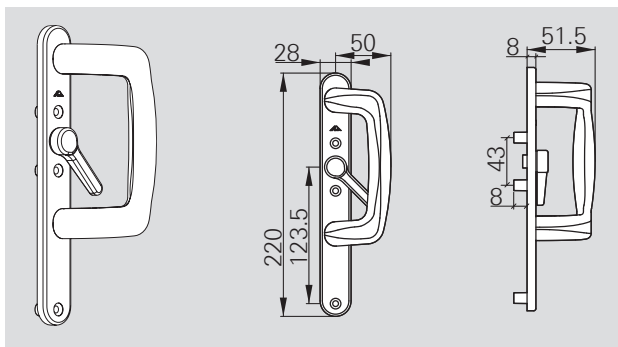
Screw set Typ.1(LH) 1 Spindle 2 Raised countersunk head screws 2 Countersunk screws 1 Pan-head tapping screw	793275	Sash thickness 46~50mm
	793254	Sash thickness 51~56mm
	793253	Sash thickness 57~61mm
Screw set Typ.2(LH) 1 Spindle 3 Raised countersunk head screws 4 Countersunk screws 1 Pan-head tapping screw	793278	Sash thickness 38~47mm
	793277	Sash thickness 48~57mm
	793276	Sash thickness 58~67mm
Screw set Typ.3(LH) 1 Spindle 3 Raised countersunk head screws 4 Countersunk screws	793281	Sash thickness 38~47mm
	793280	Sash thickness 48~57mm
	793279	Sash thickness 58~67mm

* screw need to be cut 3~5mm shorter to fit the profile.



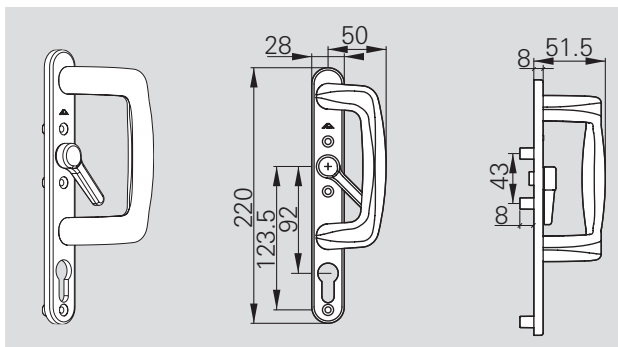
Non-locking pull handle with lever (I1)

SAP No.	Colour
774436	White
774438	Black
774439	Silver
823763	Brown



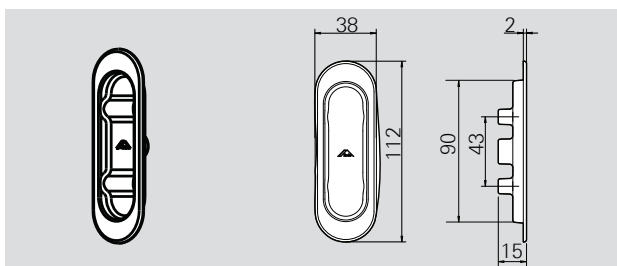
Non-locking pull handle with long-plate and lever (I2)

SAP No.	Colour
770009	White
770008	Black
770012	Silver
2003415	Brown



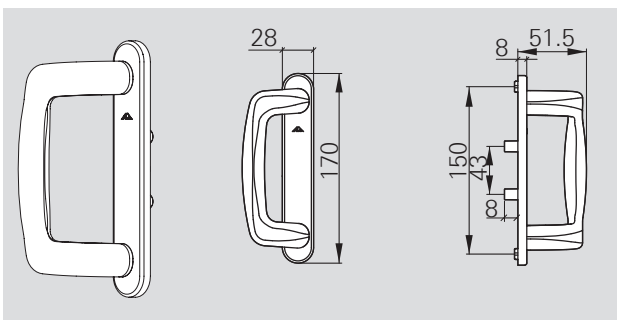
Locking pull handle with lever (I3)

SAP No.	Colour	Specification
770011	White	
770010	Black	
770013	Silver	
833308	Brown	



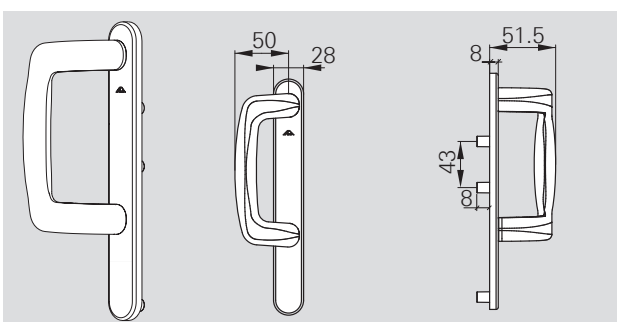
Flush-mounted finger pull (A1)

SAP No.	Colour
605543	White
605551	Black
643293	Silver
823764	Brown



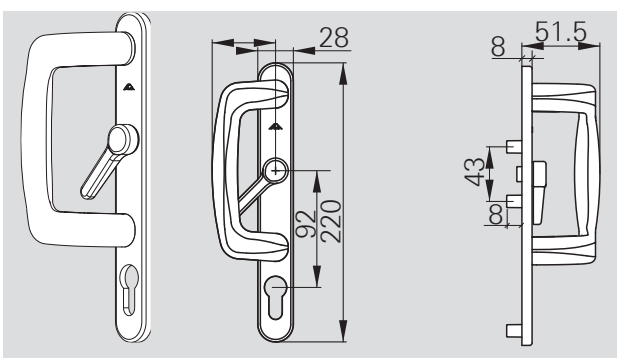
Non-locking pull handle (A2)

SAP No.	Colour
774442	White
774444	Black
774445	Silver
833310	Brown



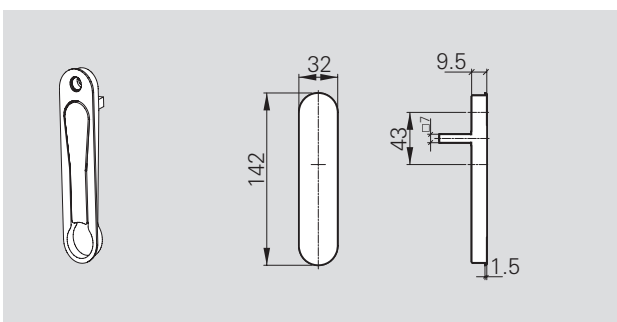
Non-locking pull handle with long-plate (A3)

SAP No.	Colour
770005	White
769984	Black
770014	Silver
2003418	Brown



Locking pull handle with lever (A4)

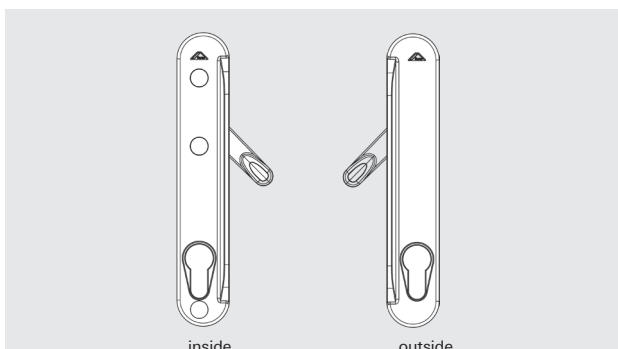
SAP No.	Colour
770007	White
770006	Black
770015	Silver
833309	Brown



Pop-up handle (Spindle length 26mm)

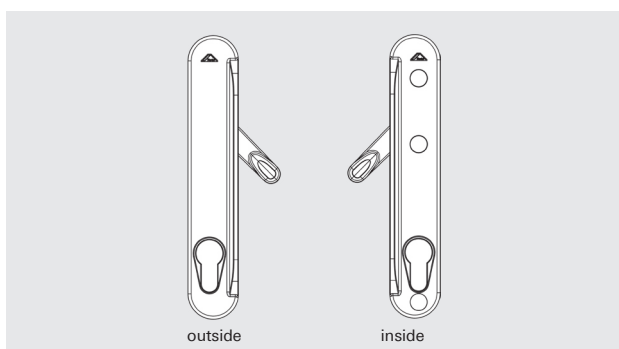
SAP No.	Colour
570810	White
614295	Black
643288	Silver (Spindle length 21.5mm)
823334	Brown

Roto Slim handle for Sliding Door



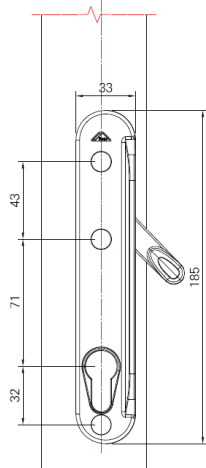
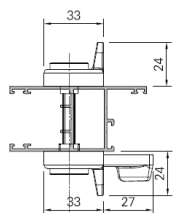
RotoSlim Inline Handle for DIN Left

SAP No.	Colour	
834116	White	incl. the cover cap in white
834118	Black	incl. the cover cap in black
834132	Silver	incl. the cover cap in black
834130	Brown	incl. the cover cap in black



RotoSlim Inline Handle for DIN Right

SAP No.	Colour	
834117	White	incl. the cover cap in white
834119	Black	incl. the cover cap in black
834133	Silver	incl. the cover cap in black
834131	Brown	incl. the cover cap in black

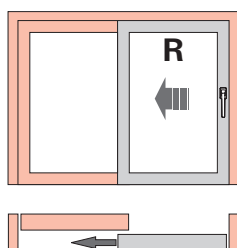
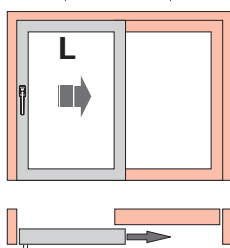


Kit RotoSlim Handle incl. 1x Spindle and 3x Screws

SAP	Sash Thickness	Spindle Length	Screw Length
839364	25-28mm	35mm	30mm
839365	35-38mm	45mm	40mm
839366	48-52mm	58mm	55mm
839367	58-62mm	65mm	65mm

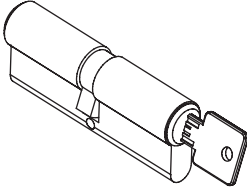
Cover Cap (Additional Order)

SAP	Colour	Package
839368	White	300pcs
839369	Black	300pcs

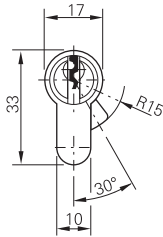
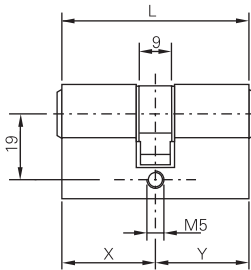


Cylinder

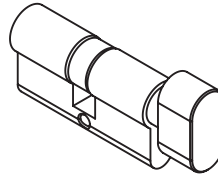
1. Standard cylinder



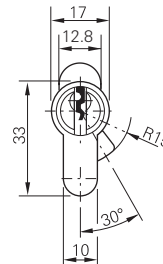
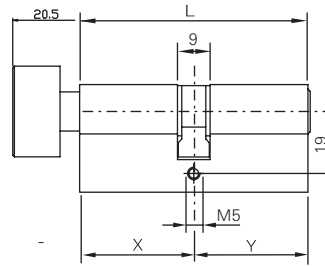
Standard cylinder
both side key operated,
min. length of each side 27.5mm



2. Standard cylinder with flat knob



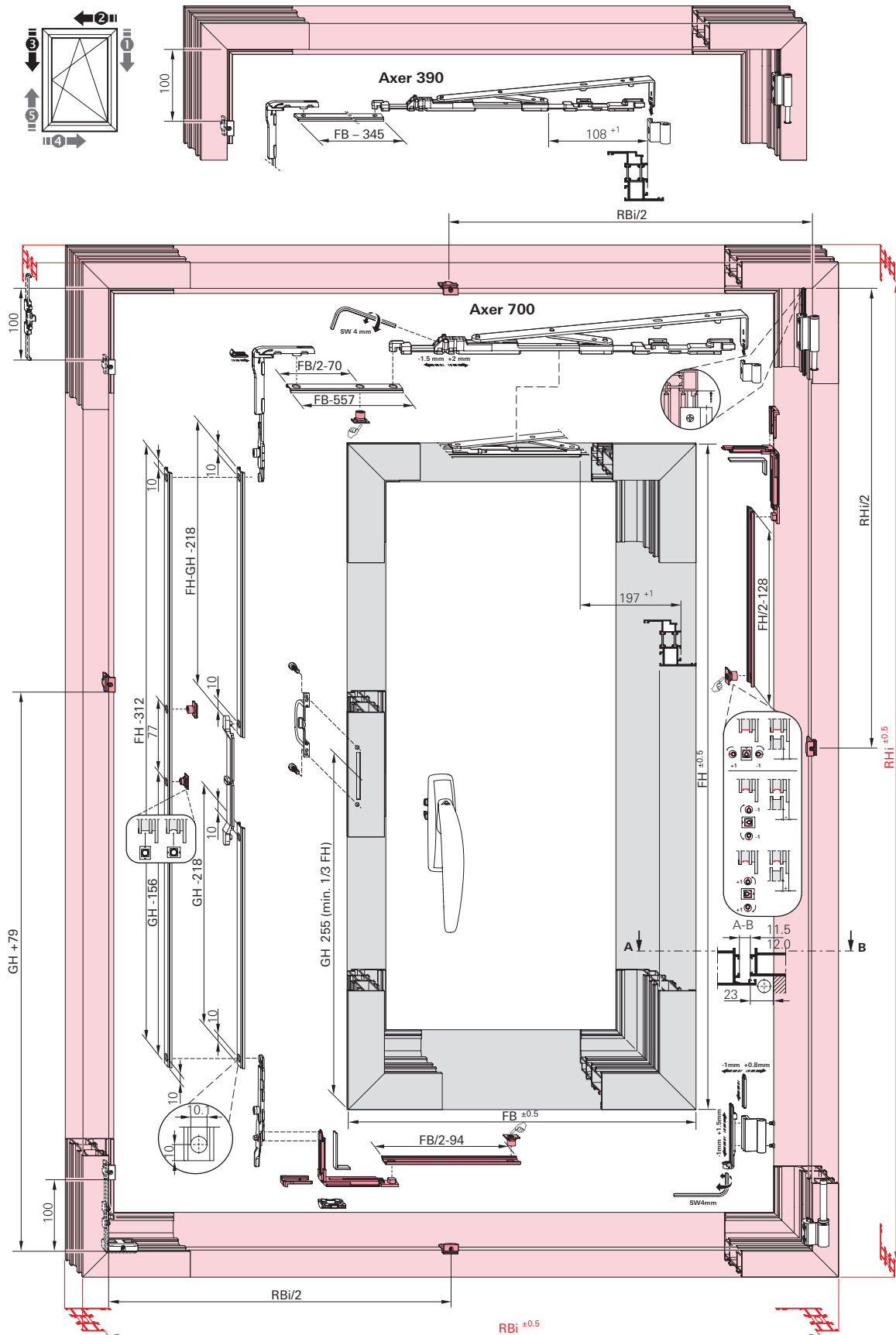
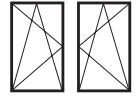
With flat-knob on room side
min. length of each side 27.5mm



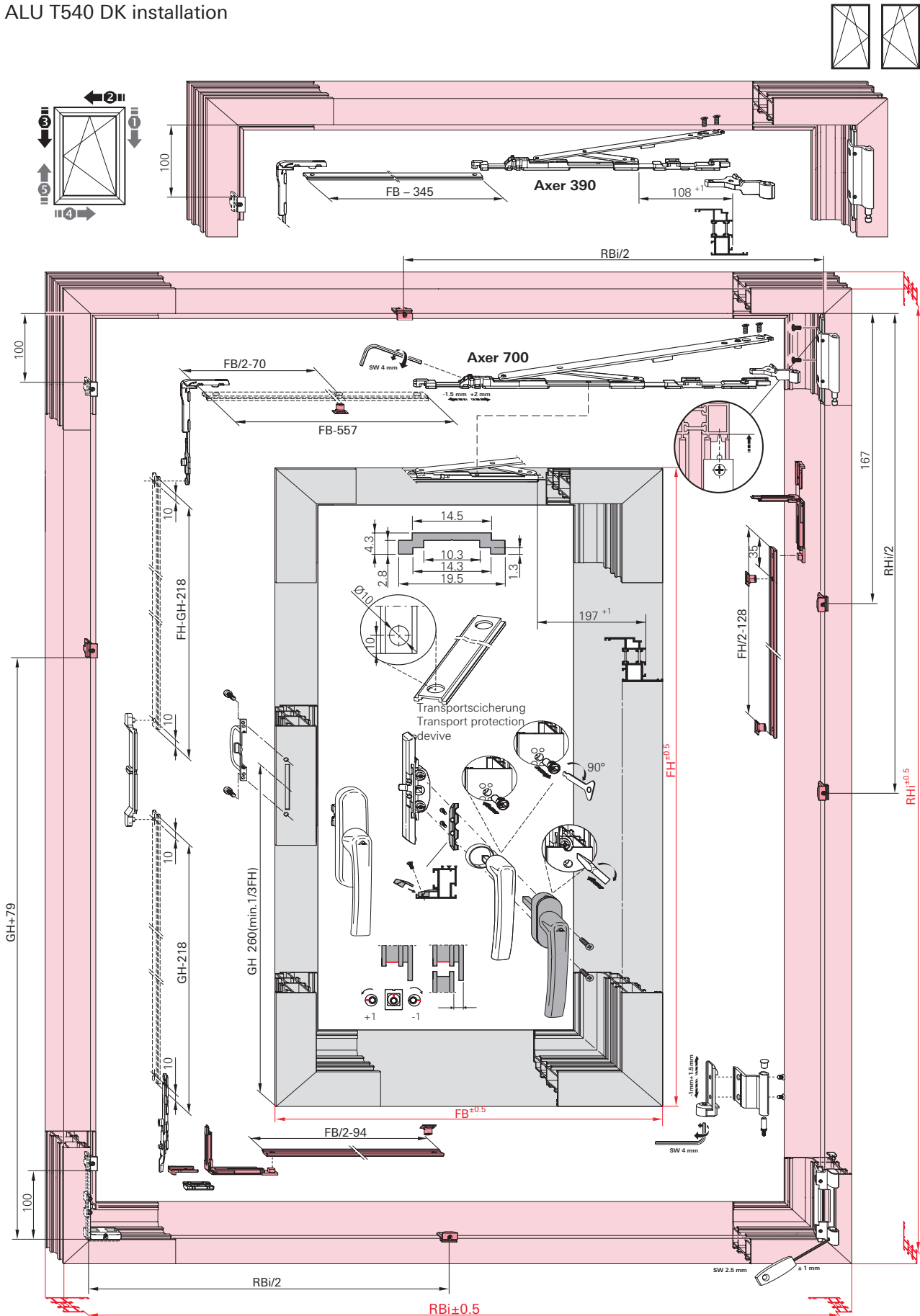
Standard Cylinder both side key operated		
SAP No.	X	Y
837779	27	27
799300	27	31
640068	31	31
632589	31	35
640074	31	40
640069	31	45
640070	31	50
642659	31	55
640080	31	60
729304	31	70
640071	35	35
640072	35	40
640073	35	45
640075	35	50
640076	35	55
632590	40	40
632591	40	45
632592	40	50
632593	40	55
640081	40	60
642660	40	70
632594	45	45
632605	45	50
640077	45	55
729303	45	60
640078	50	50
729315	50	70

Standard Cylinder, room side with flat-knob		
SAP No.	X	Y
796379	31	10
796380	45	10
862142	55	10
821079	27	27
862138	31	31
862140	31	55
808689	35	35
808691	35	45
2005645	40	45
862139	41	41
808692	45	35
862141	45	40
2005646	45	45
808694	50	31
862146	55	31

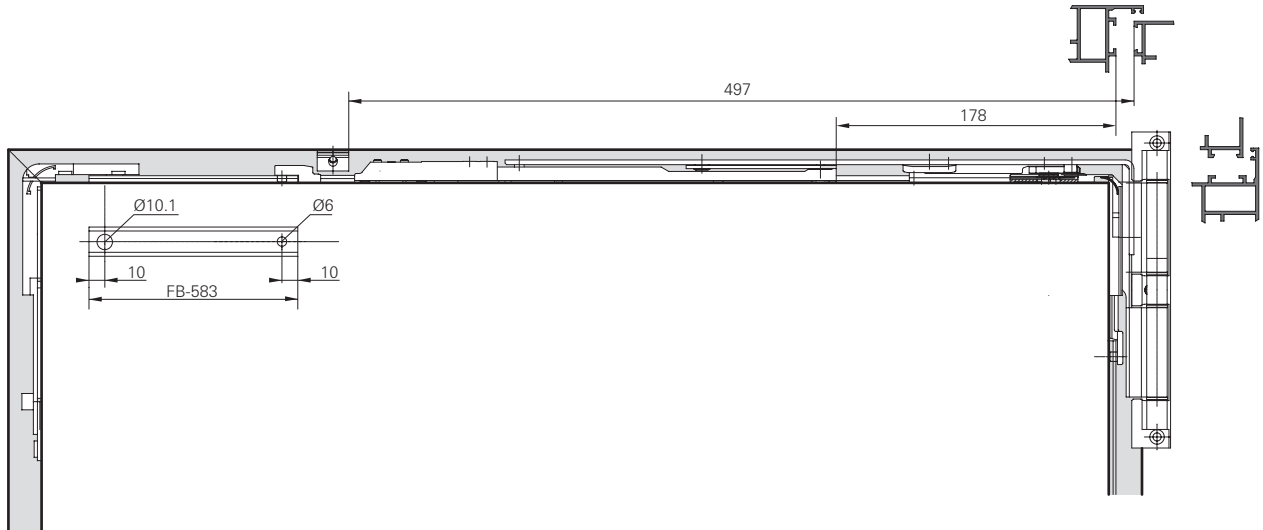
ALU T300 DK installation



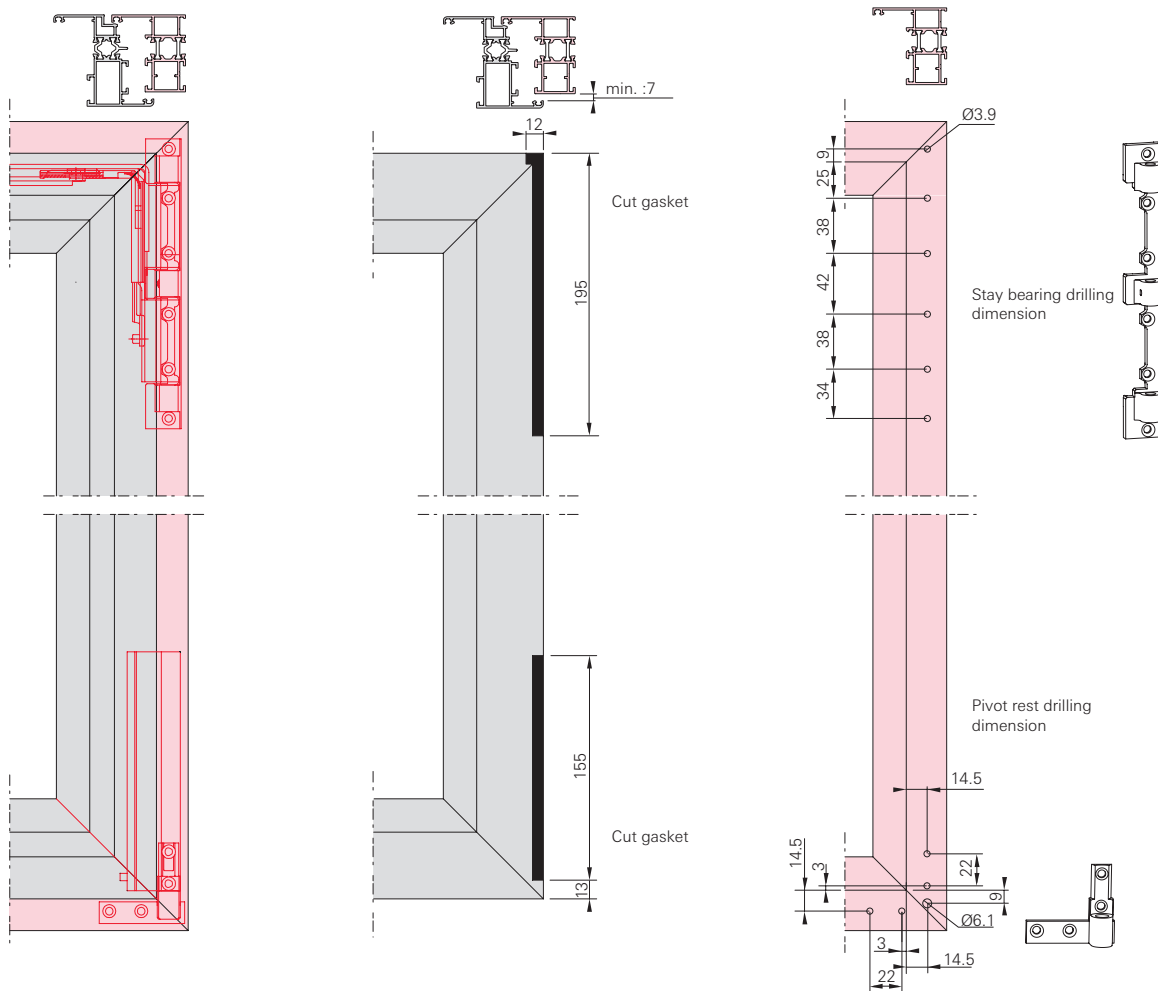
ALU T540 DK installation

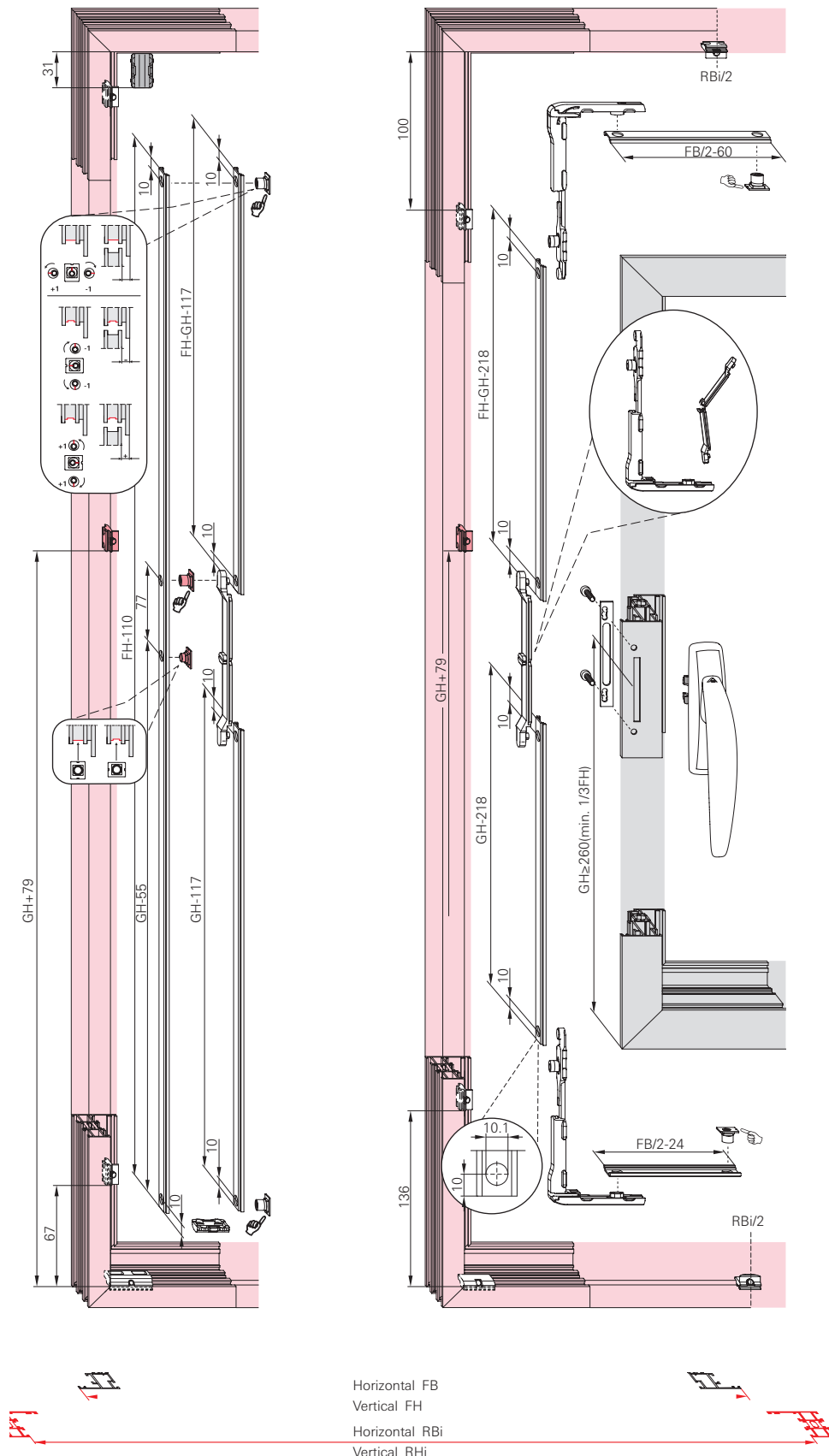
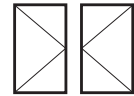


ALU 200kg DK installation

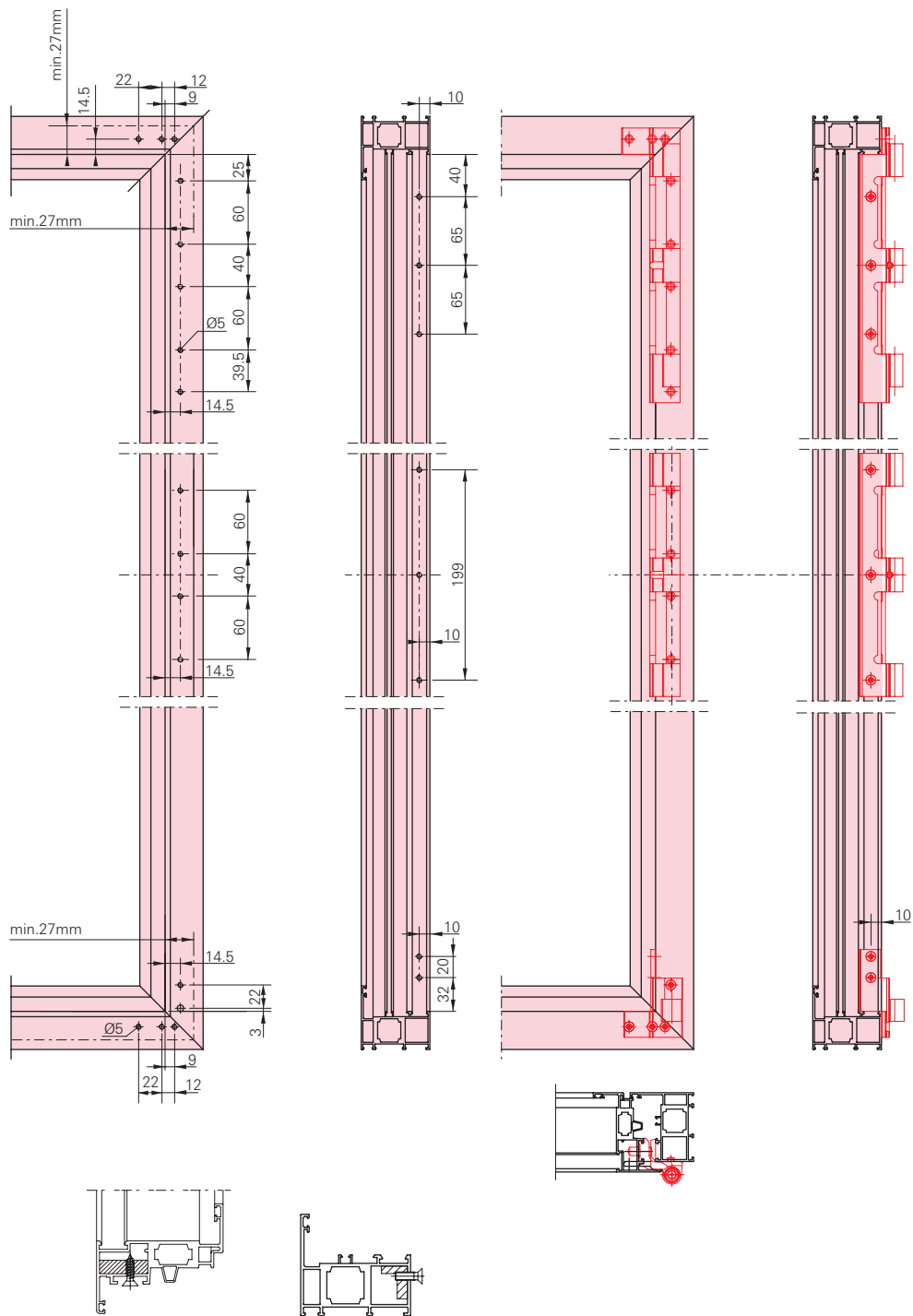


Stay bearing drilling dimension

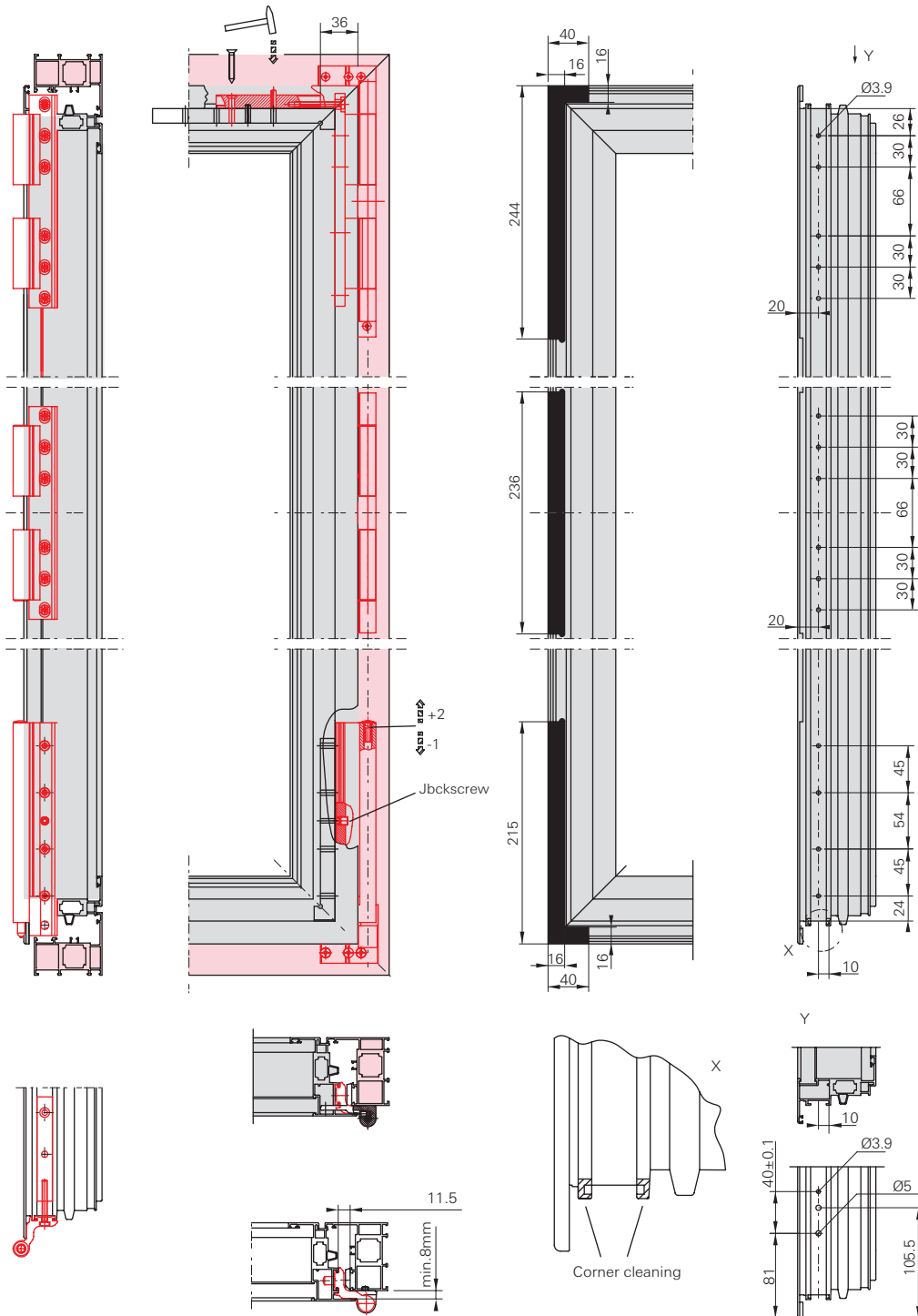




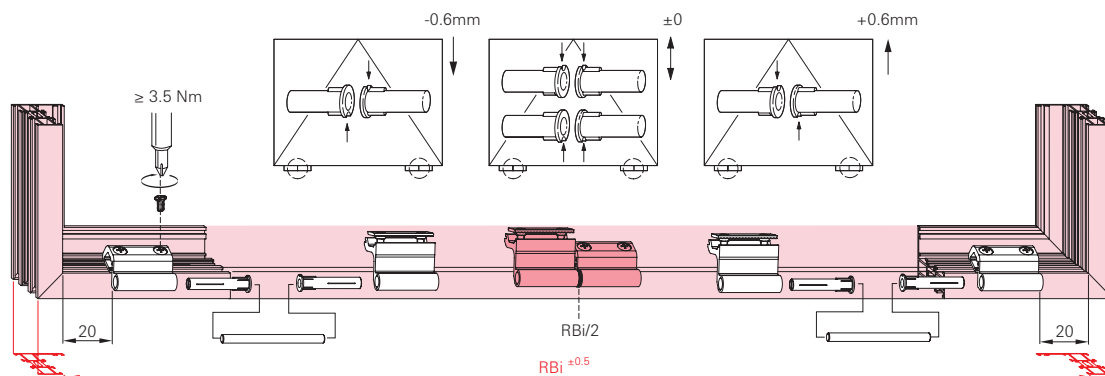
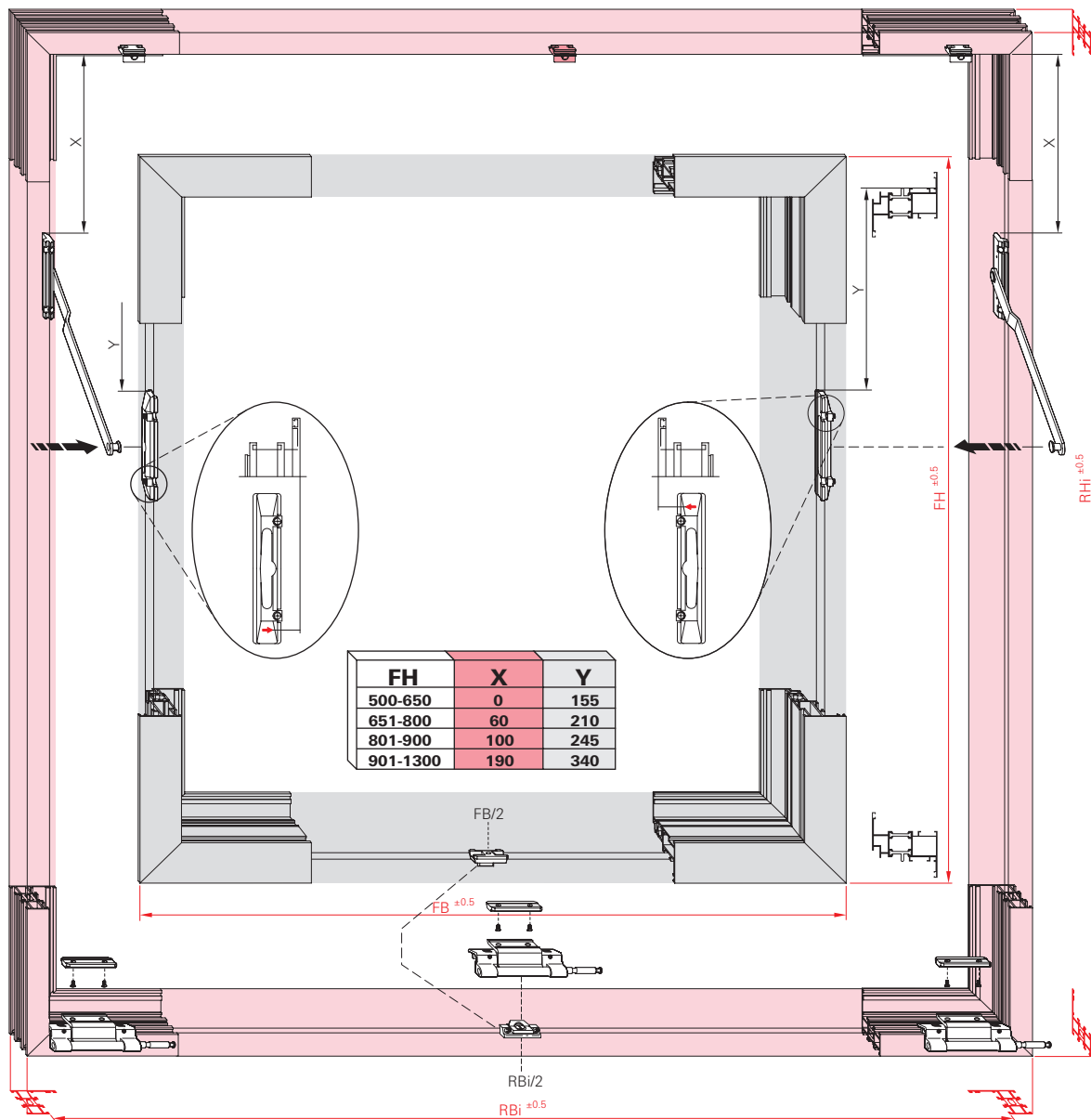
ALU 300kg installation



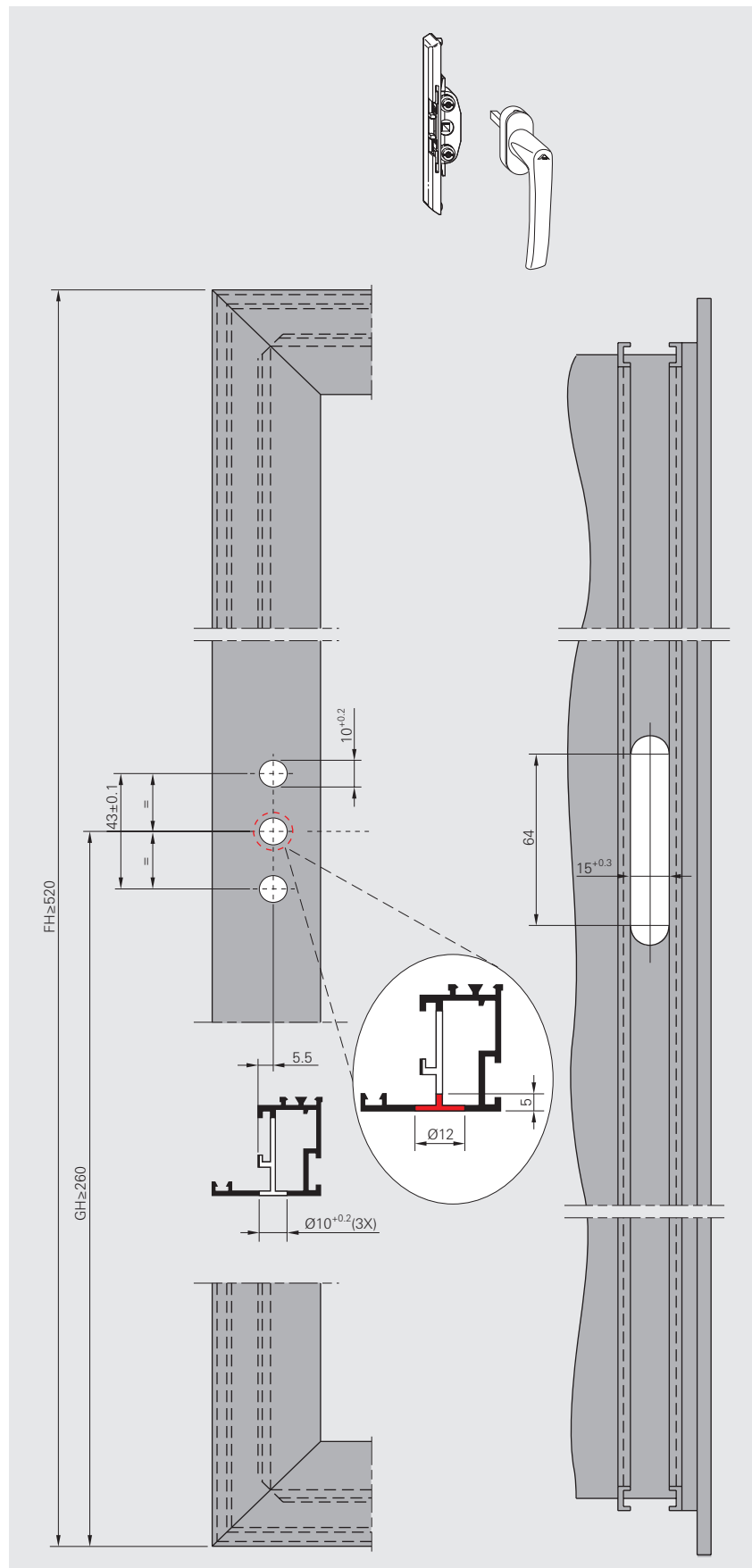
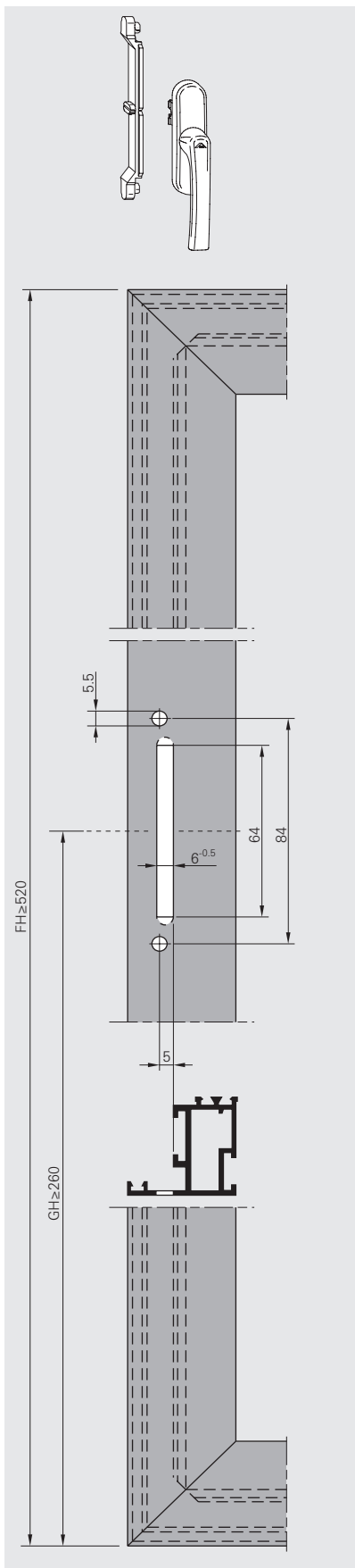
ALU 300kg installation



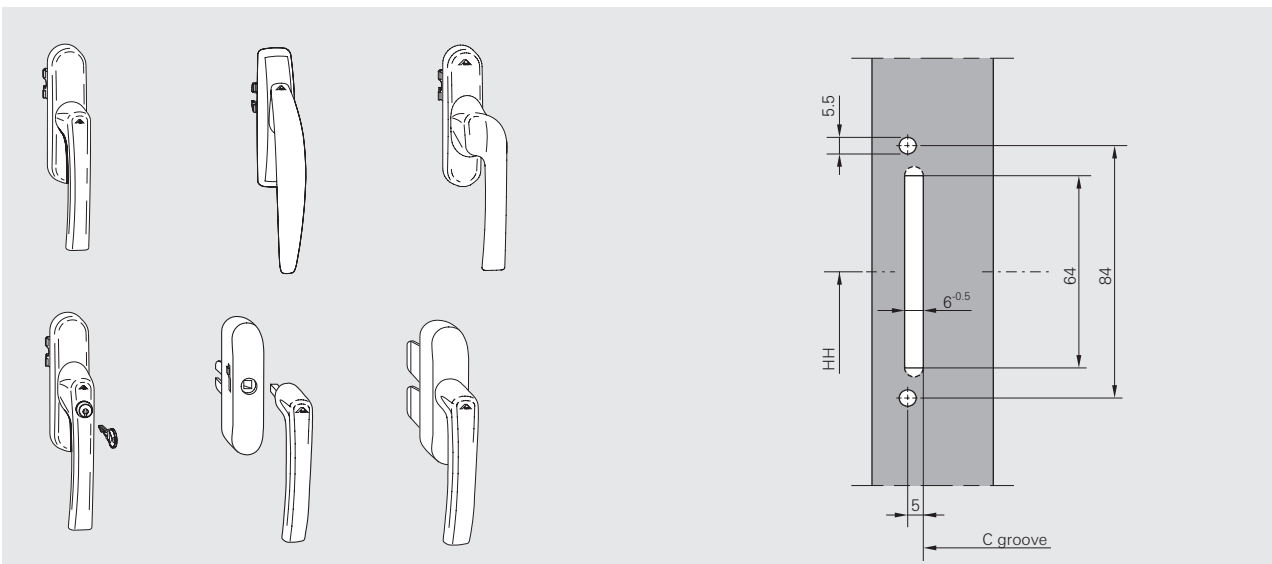
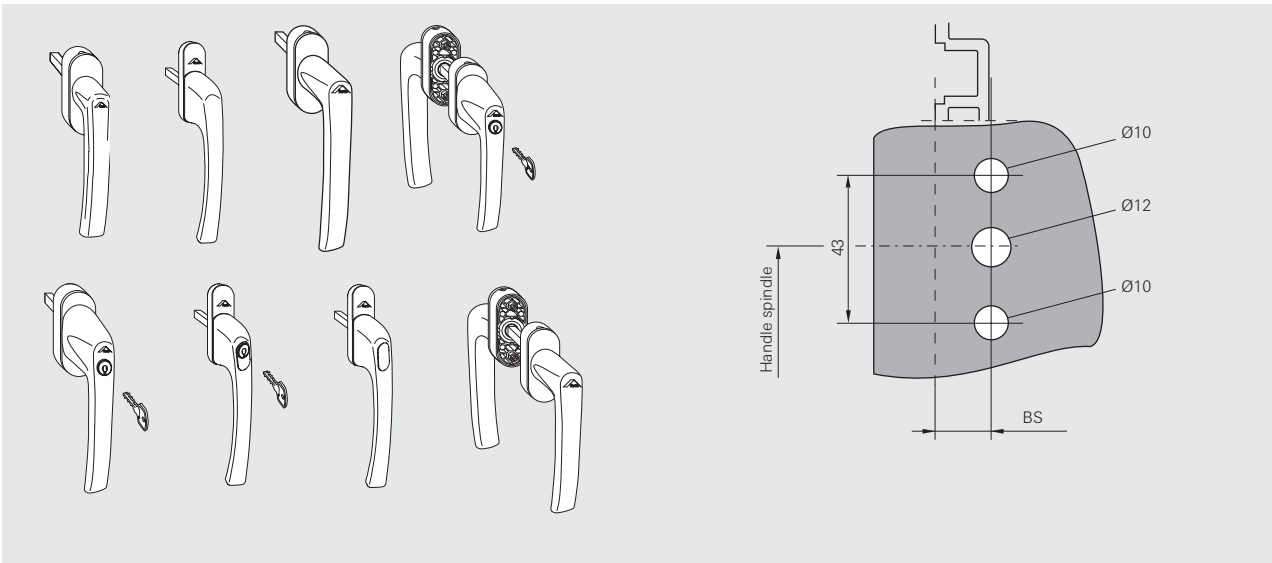
ALU T500 EU/ALU T540 tilt-only installation



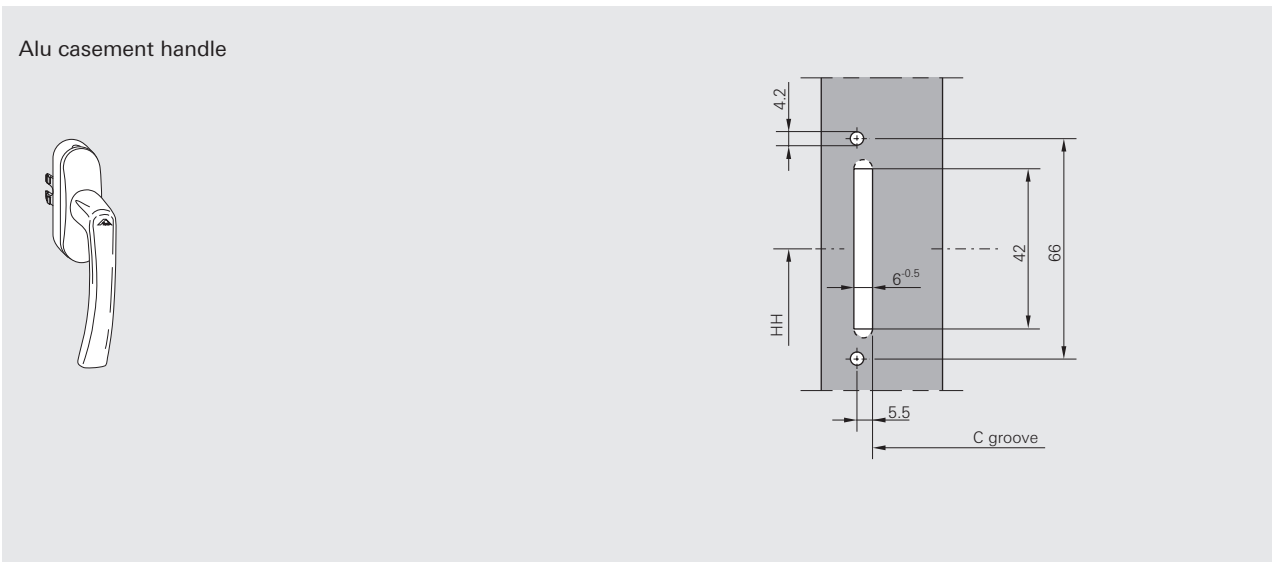
Machining diagram for gear box and handle



Handle installation

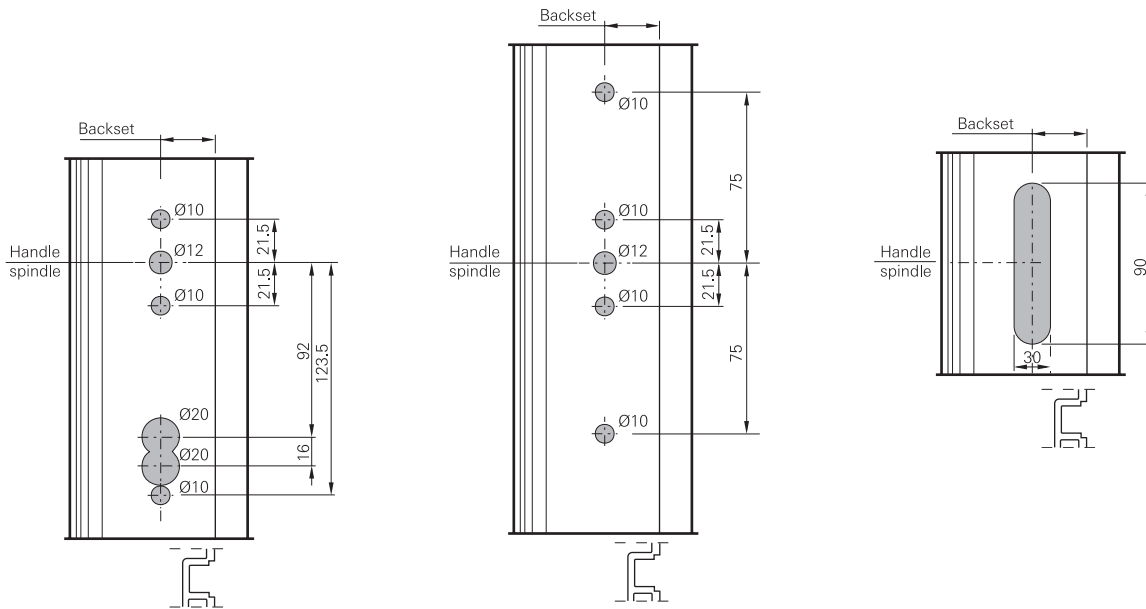
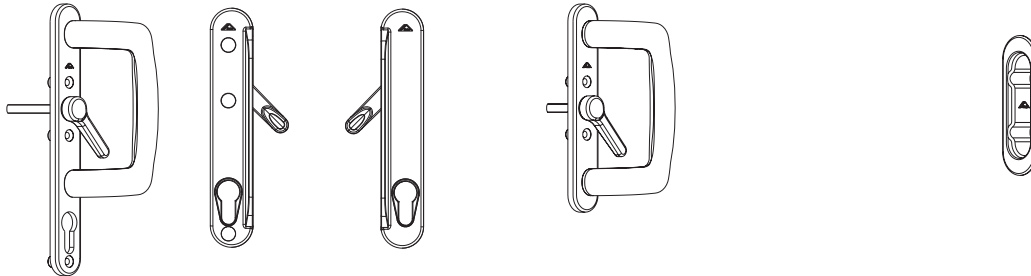


Alu casement handle

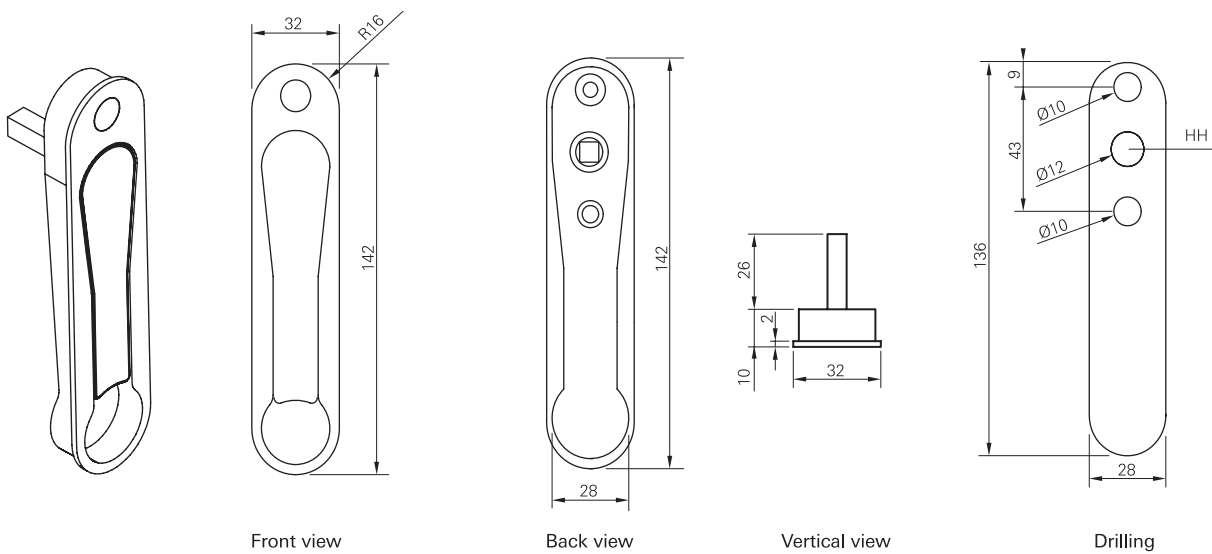


Handle installation

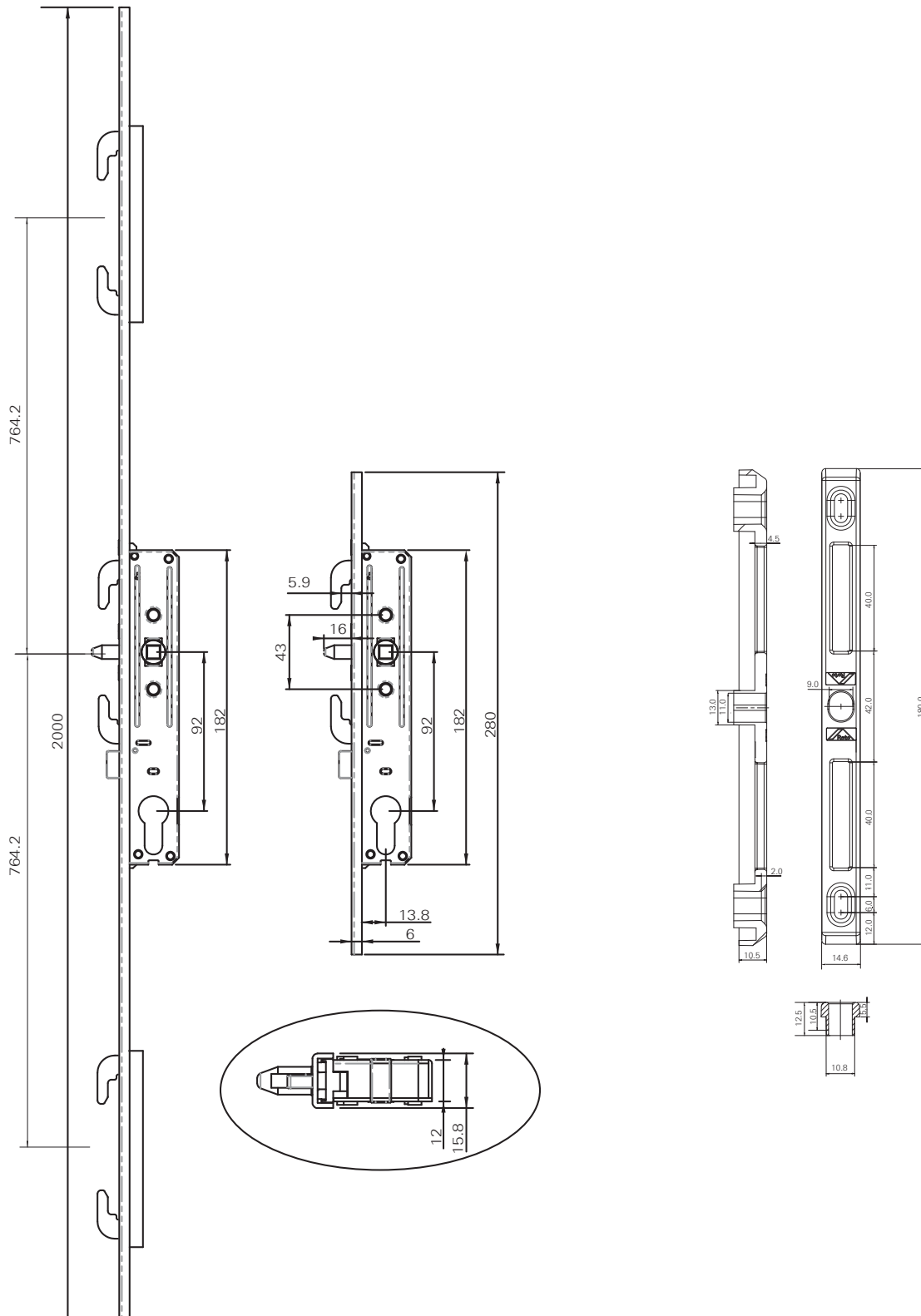
Inline Sliding handle installation



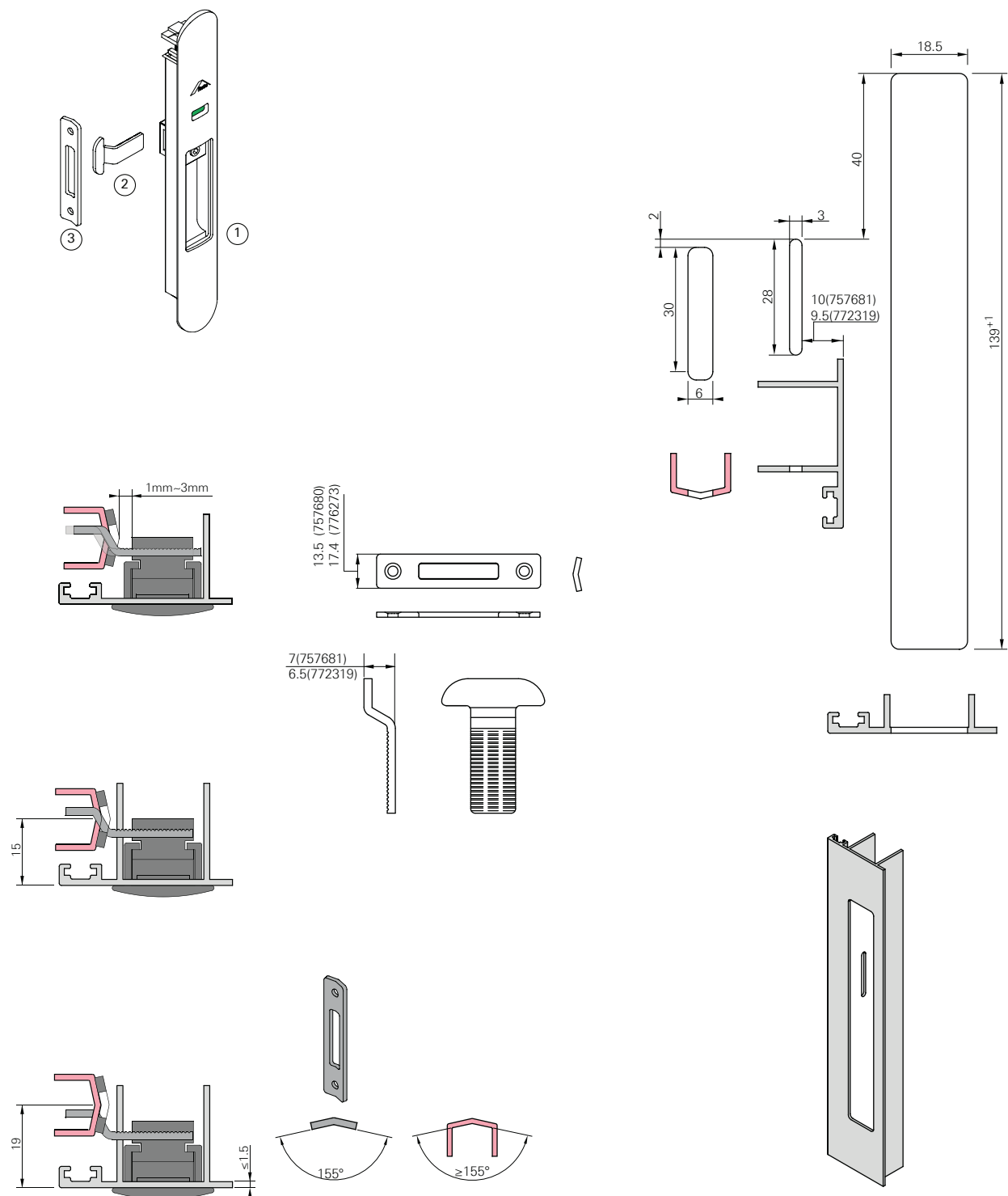
Pop-up handle installation



Installation Sliding Door

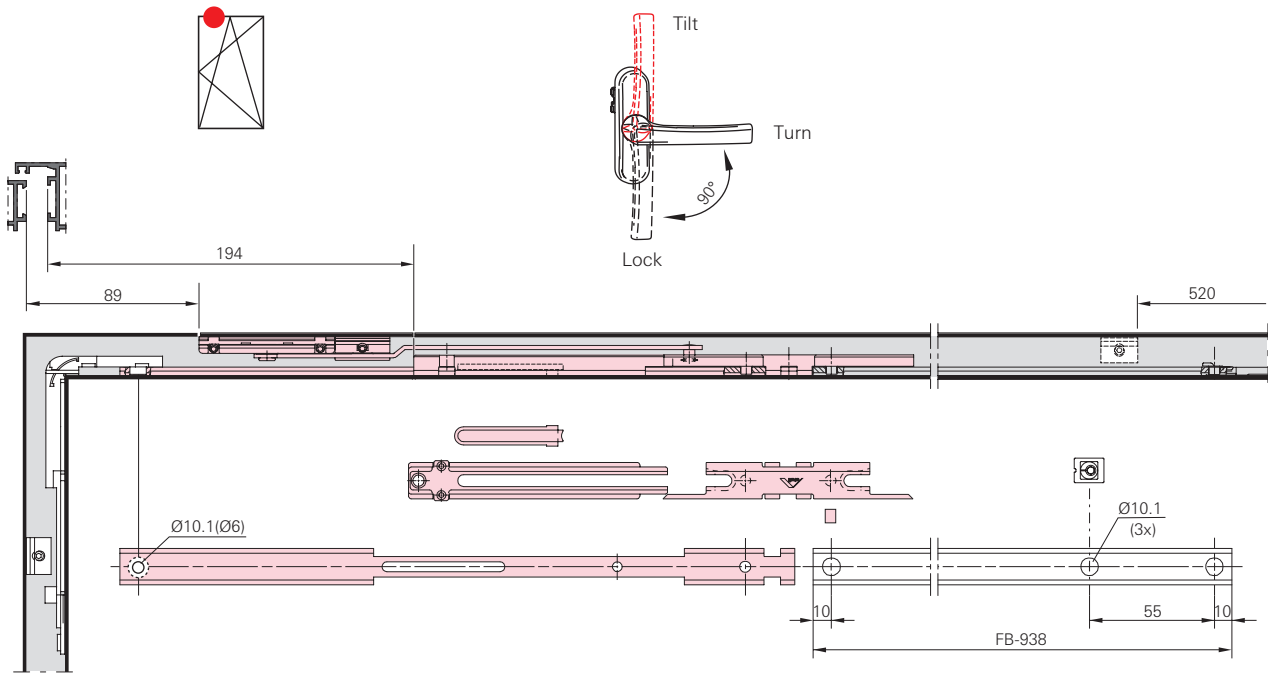


Installation Single Point Sliding Window



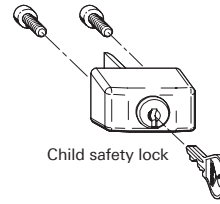
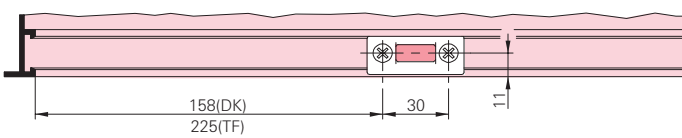
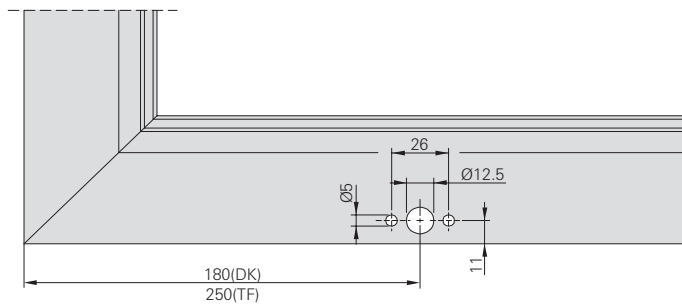
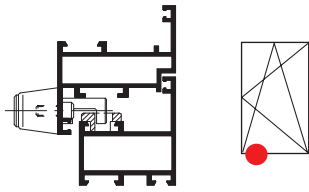
Additional Scissors-stay Installation

Tilt & turn window Additional Scissors-stay 331 024

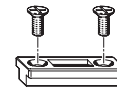


Child safety lock

Child safety lock



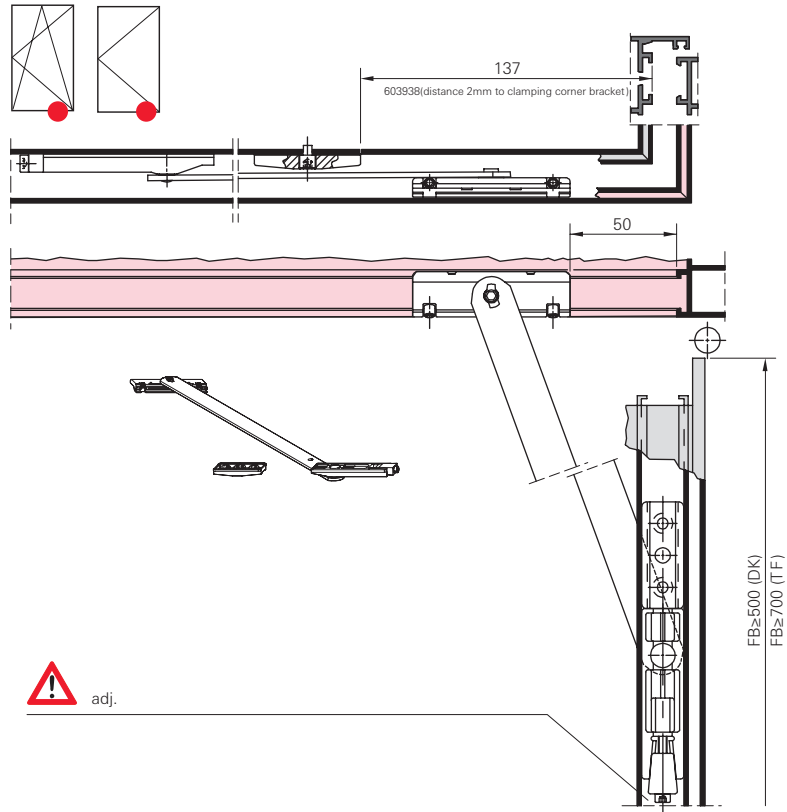
Child safety lock



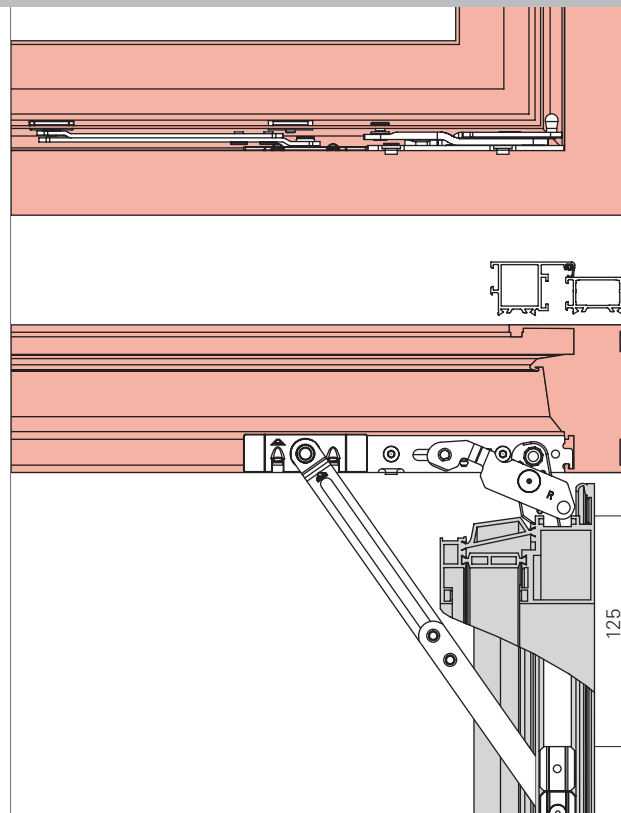
Locking plate

Turn restrictor

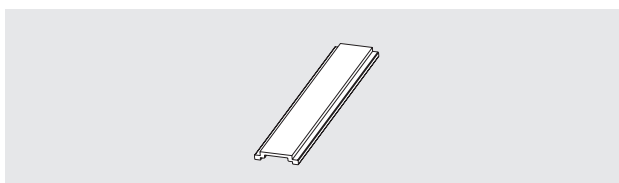
Turn restrictor 896913 (For T300DK and T540DK)



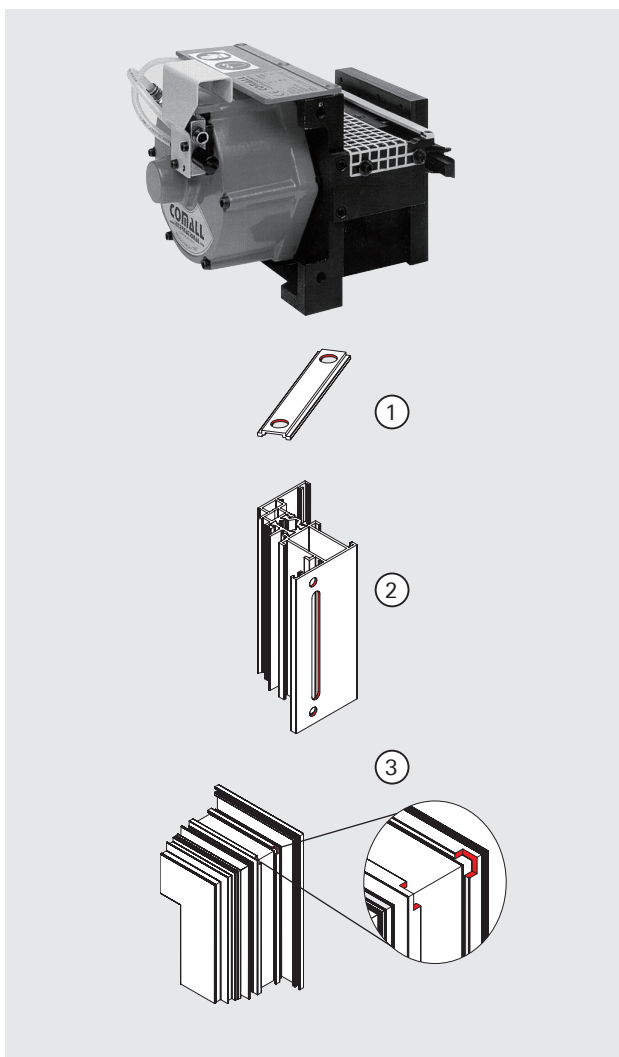
Turn restrictor 740814 (For Designo Alu Version)



Connecting-rod and Croppers

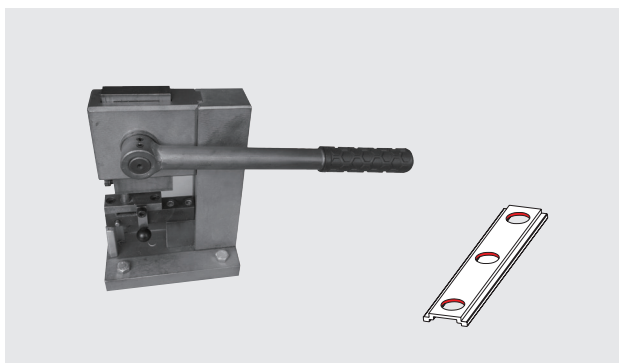


Connecting rod ECC groove		
Material	Description	SAP
Aluminium	Silver 1pc=3m	333826
Aluminium	Black 1pc=3m	815319
PA66	1pc=3m	763768



Pneumatic cropper	595067
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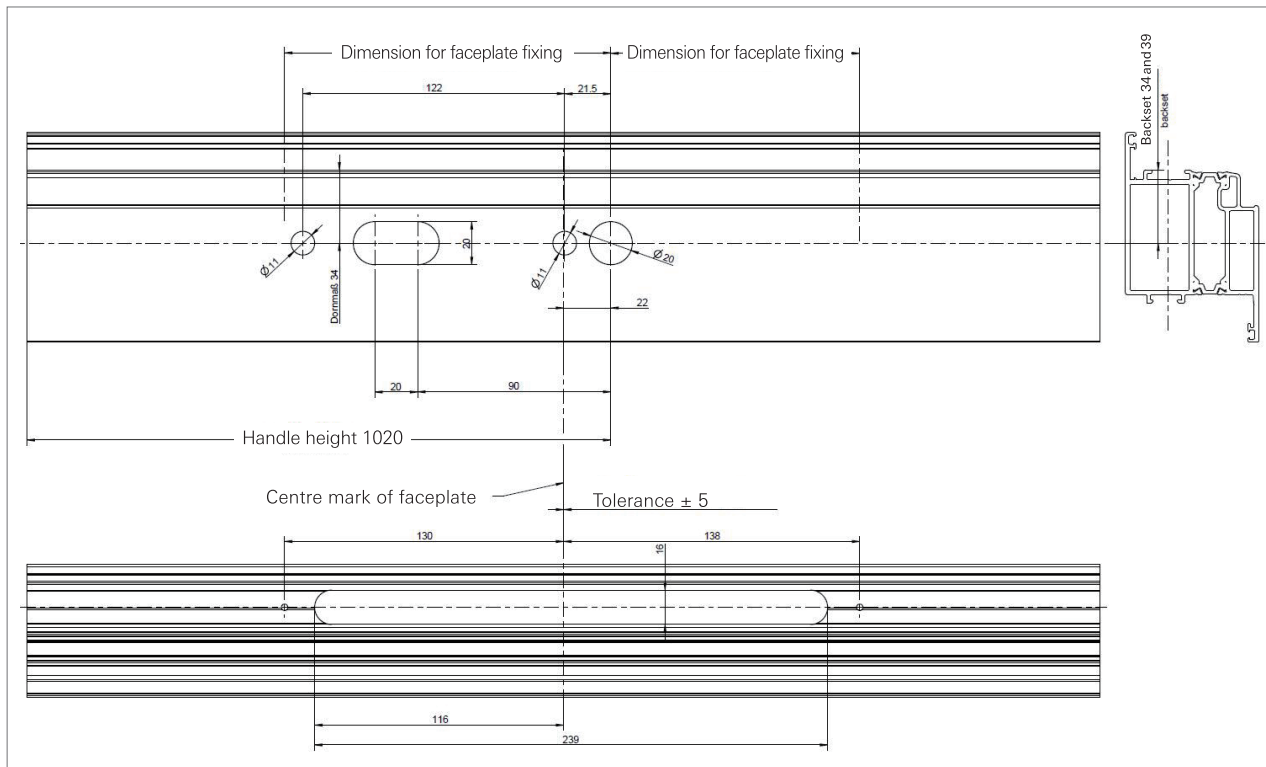
1. Crop and hole-stamping the connecting-rod on both ends.
2. Stamping handle hole.
3. Clean corner.



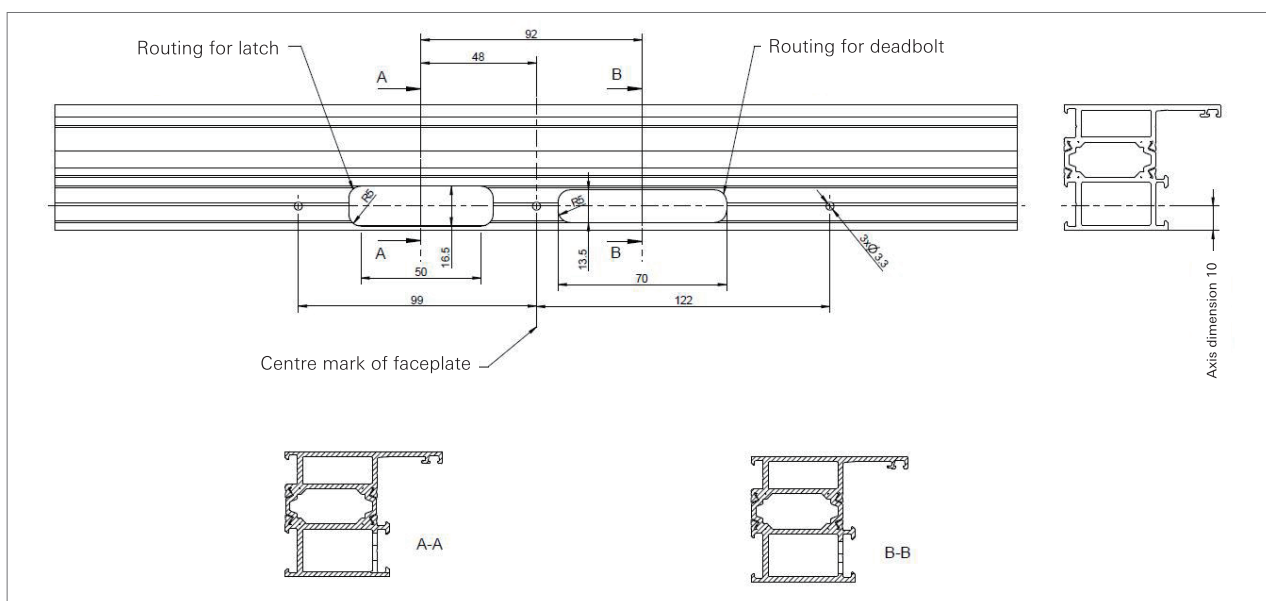
Manual cropper	571294
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Routing dimensions for the main lock

Drilling for routings of lever-handle set and basic lock

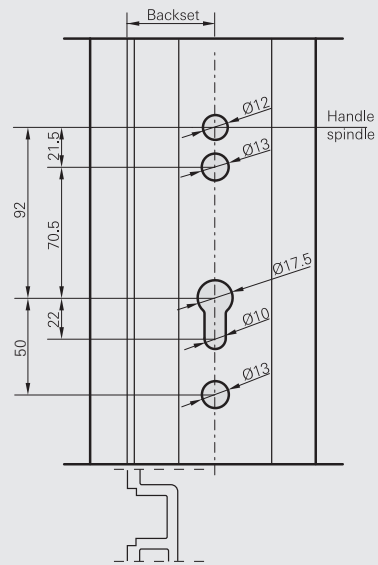
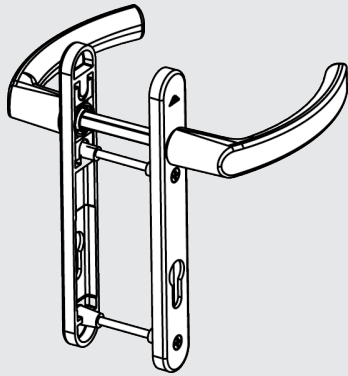


Frame routing for latch/deadbolt striker plate

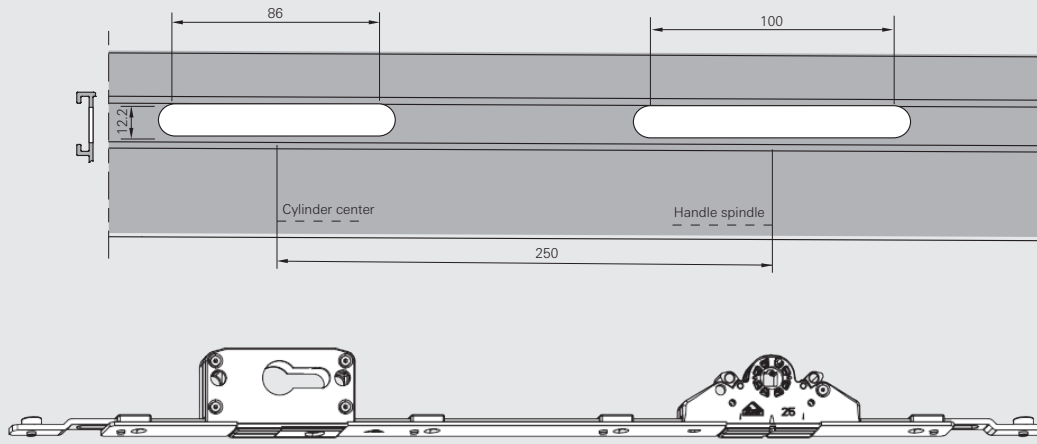


Handle & Espag installation

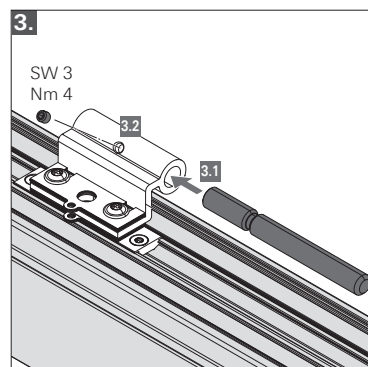
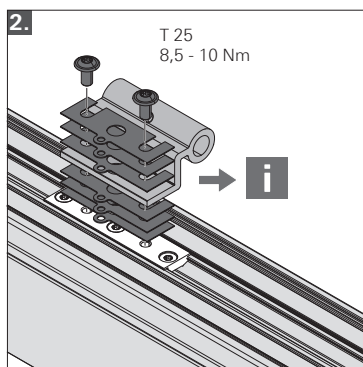
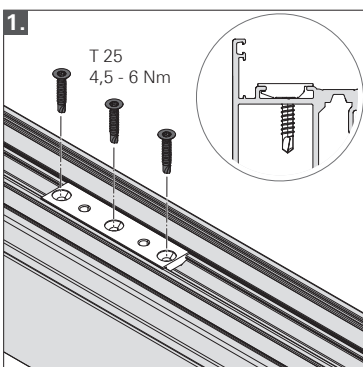
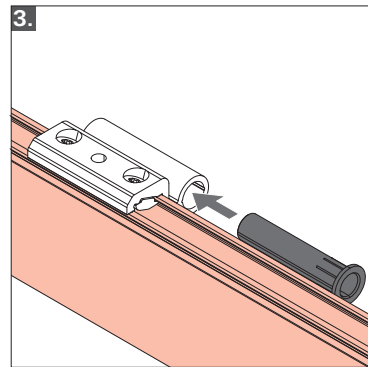
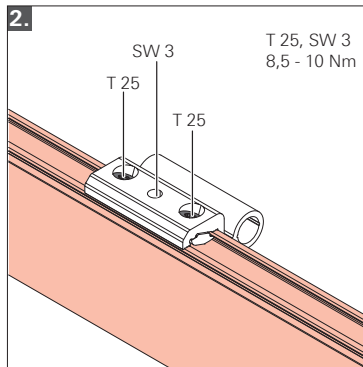
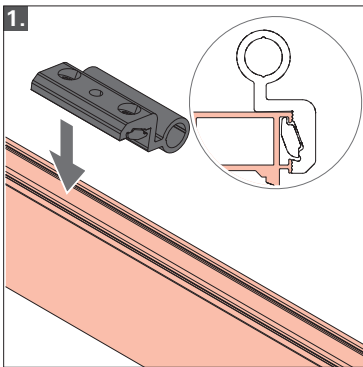
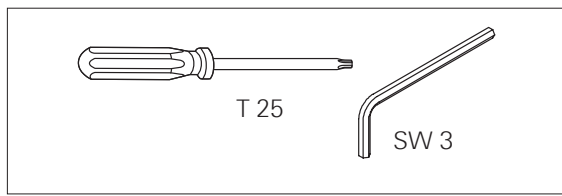
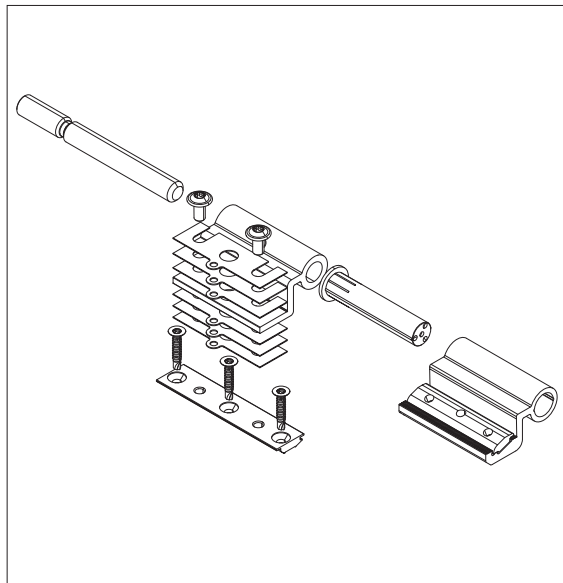
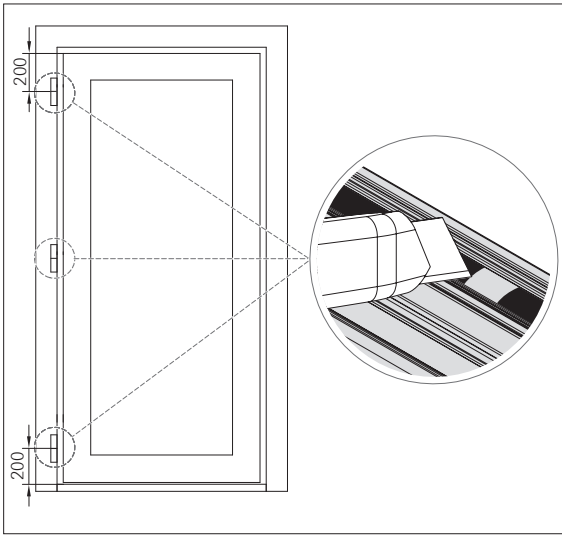
Handle RotoStark

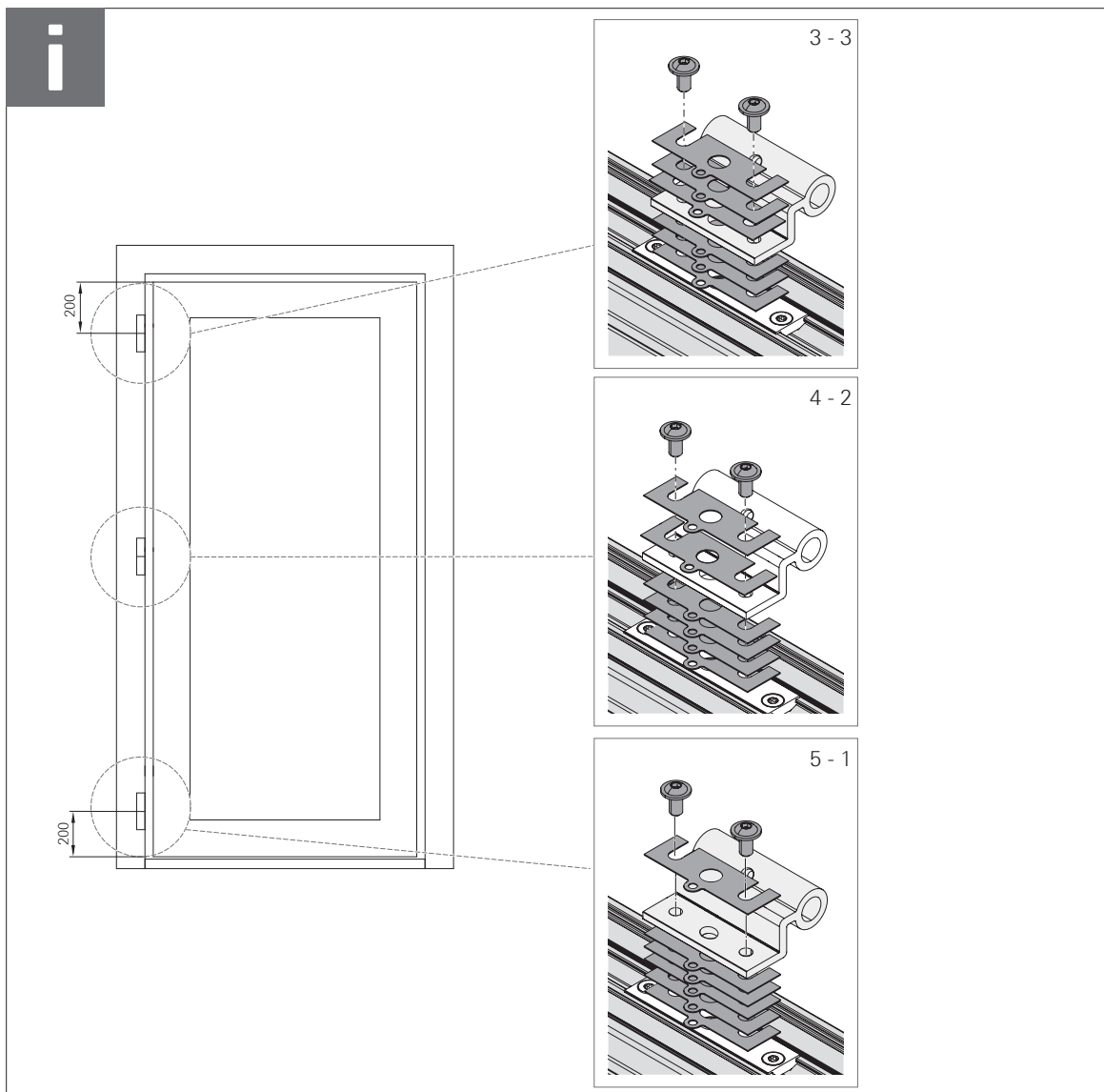
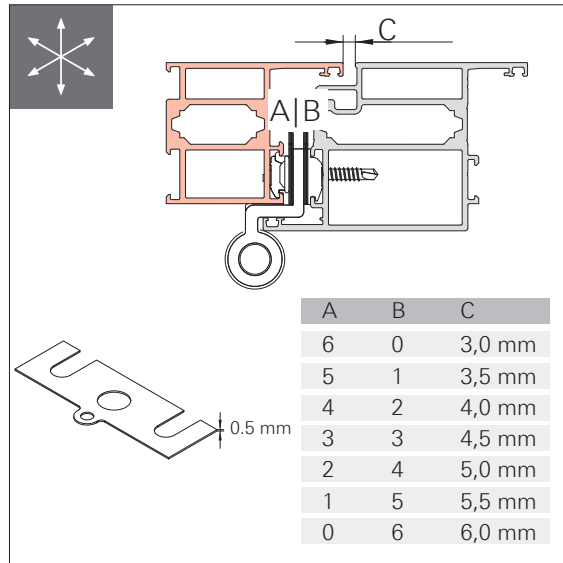
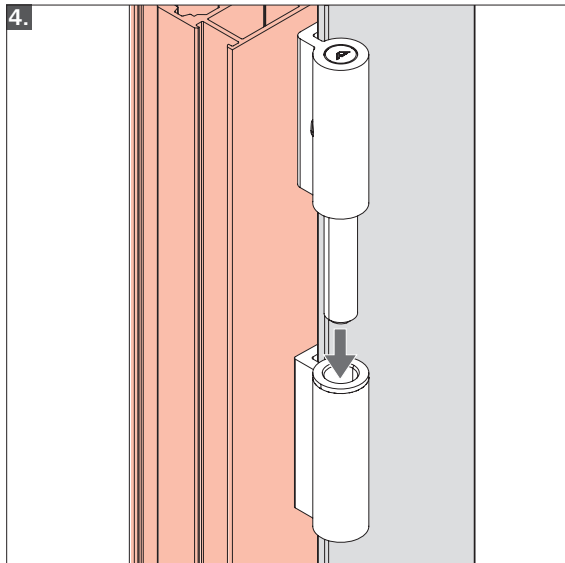


Balcony door with cylinder lock installation



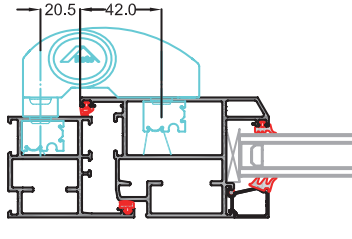
Installation Solid B Hinge



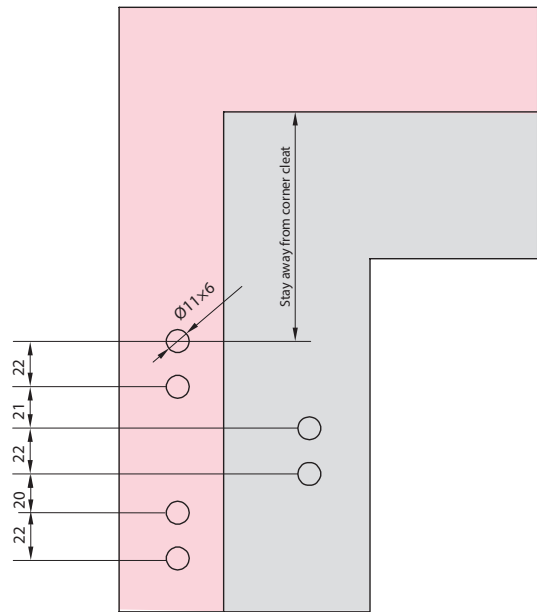
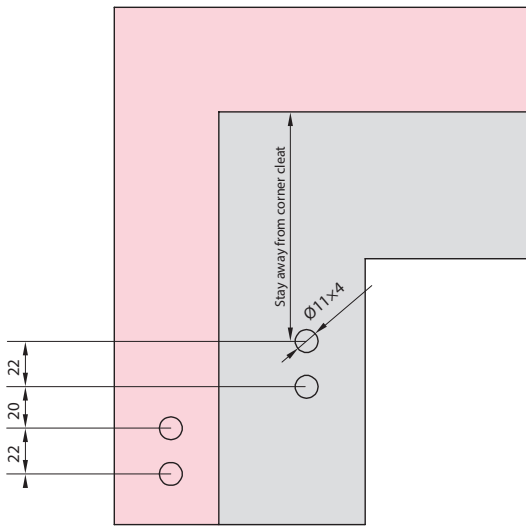
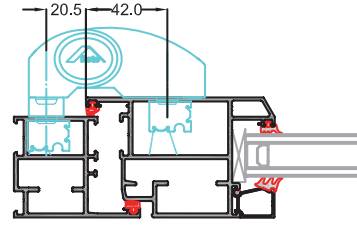


Hinge installation

ATB 80 hinge installation (2 parts)

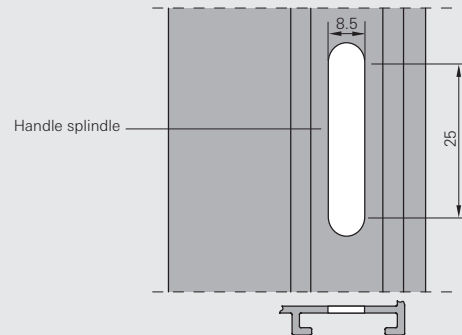
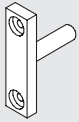


ATB 120 hinge installation (3 parts)

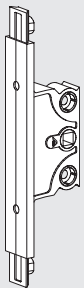


Casement Espag.i nstallation

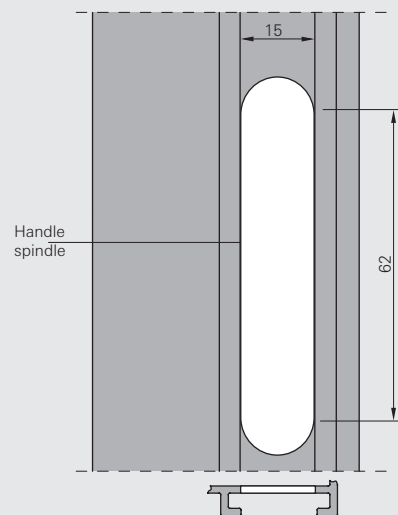
T connector routing



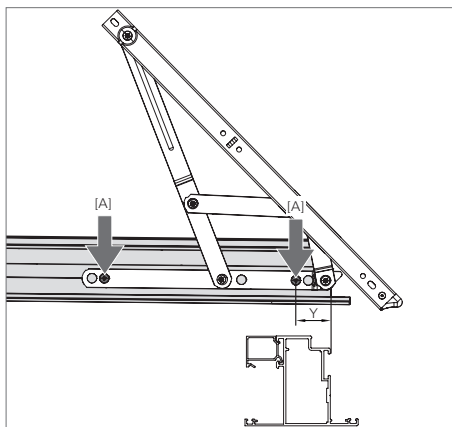
Flush encased gearbox routing(EQ espag.)



BS=25mm
894381



Friction hinge installation



Fastening the friction stay to the sash

1. Determine dimension Y: $49.5 \text{ mm} - X + Z$
(X = clearance, Z = distance between rail and edge of frame, see below)

Example: X = 16.5 mm, Z = 2 mm: Y = 35 mm

i INFO

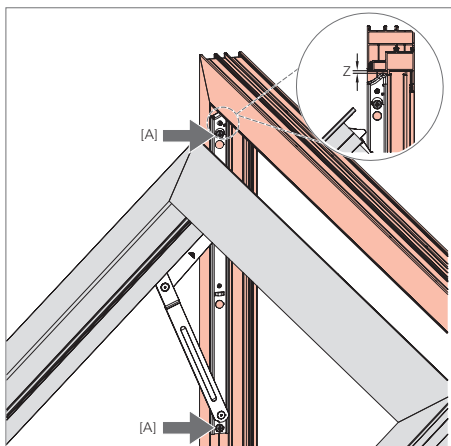
Dimension Z should be selected to be as small as possible for an optimum turning curve and good adjustment options.

2. Mark the positions of the slots on the basis of dimension Y on the sash profile and pre-drill the slots.

3. Fasten the friction stay to the sash profile using the stay arm with screws [A].

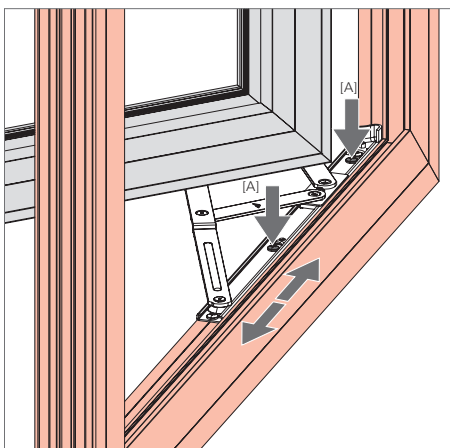
Fastening the friction stay to the frame

1. Position the friction stay in the open position, with distance Z, on the frame profile.
2. Mark the positions of the slots in the guide track on the frame profile and pre-drill the slots.
3. Fasten the friction stay to the frame profile using the guide track with screws [A].

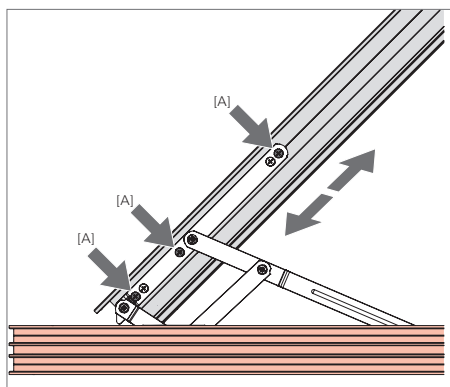


Adjusting the friction stay and securing it in place

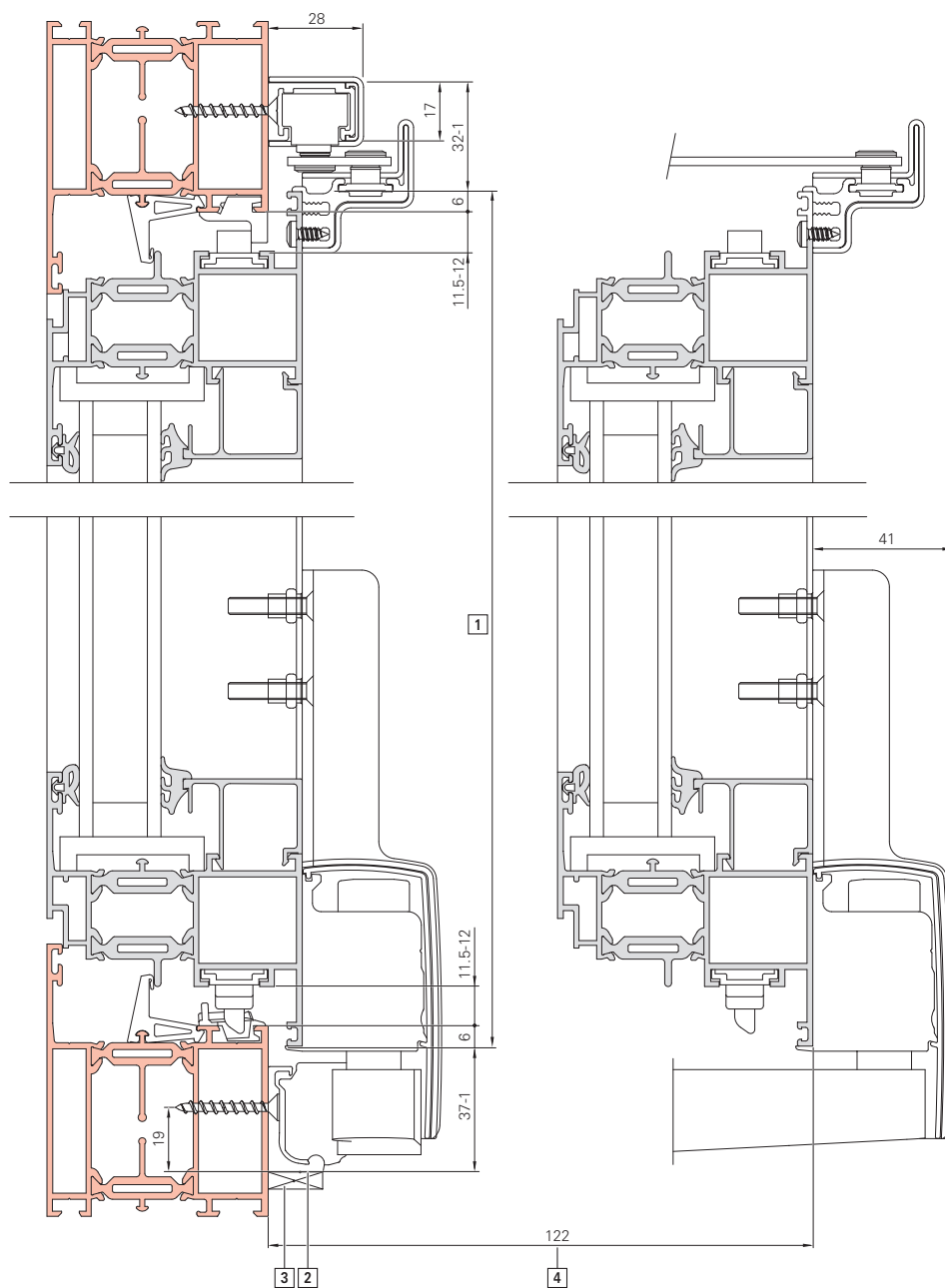
1. If required, adjust the position of the sash in relation to the frame using the slots [A] on the frame and/or on the sash.



2. Pre-drill fixing holes on the sash and frame and secure the friction stay in place with screws [A].



Profile Section for Roto Alversa

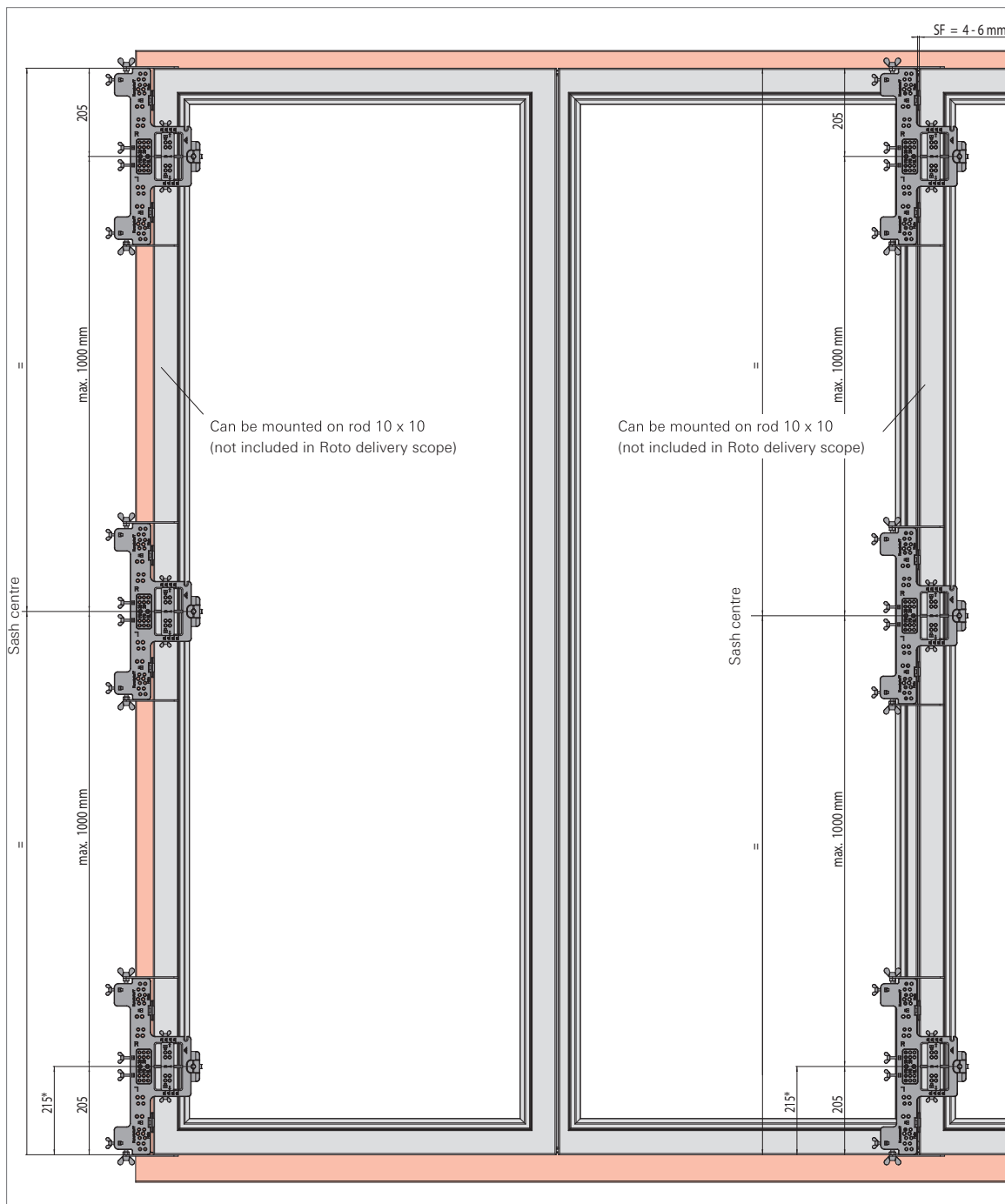


Assignment	Meaning
[1]	SH
[2]	Max. top edge of finished floor
[3]	Underlay the roller track over the entire length on site in order to transfer the load.
[4]	Retracting distance

Patio Fold

Position: Frame hinge-bearing

Position: Sash hinge-bearing



NOTE!
 SH ≤ 2400 mm: Install 3 hinges for each sash evenly distributed over the whole sash height.
 SH ≥ 2401 mm: Install 4 hinges for each sash evenly distributed over the whole sash height.

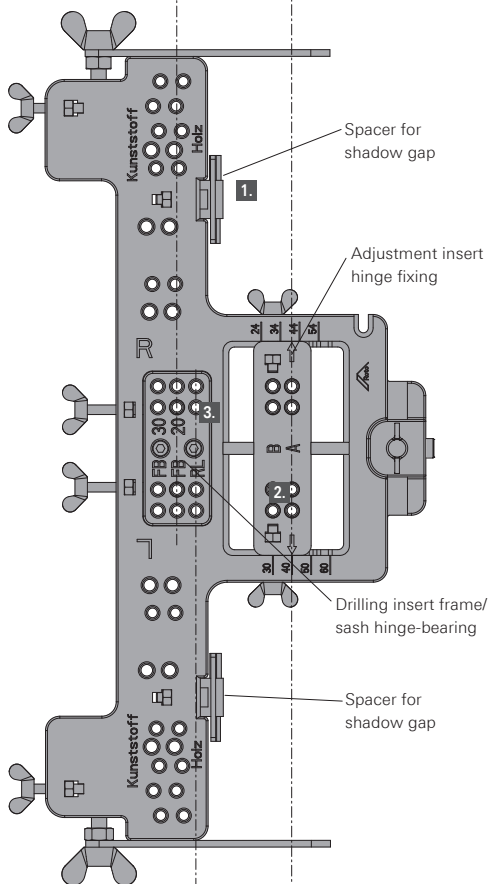
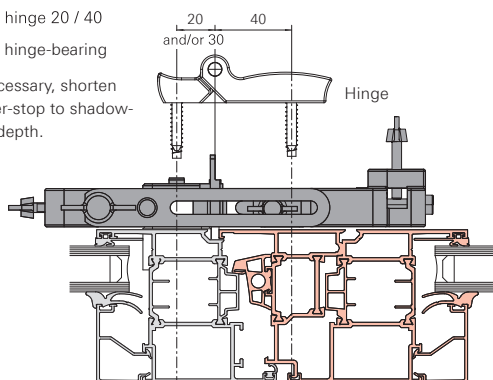
* with enhanced threshold

Predrilling sash/frame hinges

Sash hinge 20 / 40

Sash hinge-bearing

If necessary, shorten buffer-stop to shadow-gap depth.

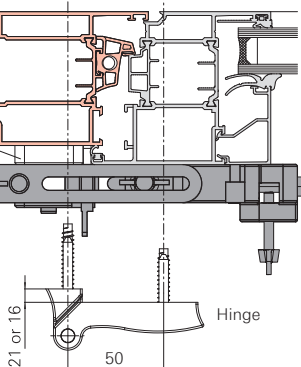


If necessary, use second run-up block for fitting on the frame.

Shorten buffer-stop to overlap height.

Frame hinge-bearing

Frame hinge 16 / 50 and/or 21 / 50



Installation of sash hinge 20 / 40 and/or 30 / 40

Drilling-jig adjustments

1. Spacers for shadow gap
2. Adjustment insert hinge fixing
3. Drilling insert frame/sash hinge-bearing
If necessary, use second run-up block for fitting on the frame.

profile related
Arrow points to 40
SW 20
and/or SW 30

Drill

4. Fold together the folding sash according to the diagram.
5. Drill with Ø 5 mm drill
 - in adjustment insert hinge fixing **A**
 - Drilling insert frame/sash hinge-bearing **SW 20**
and/or SW 30

Installation of frame hinge 16 / 50 and/or 21 / 50

Drilling-jig adjustments

1. Spacers for shadow gap
2. Adjustment insert hinge fixing
3. Drilling insert frame/sash hinge-bearing
If necessary, use second run-up block for fitting on the frame.

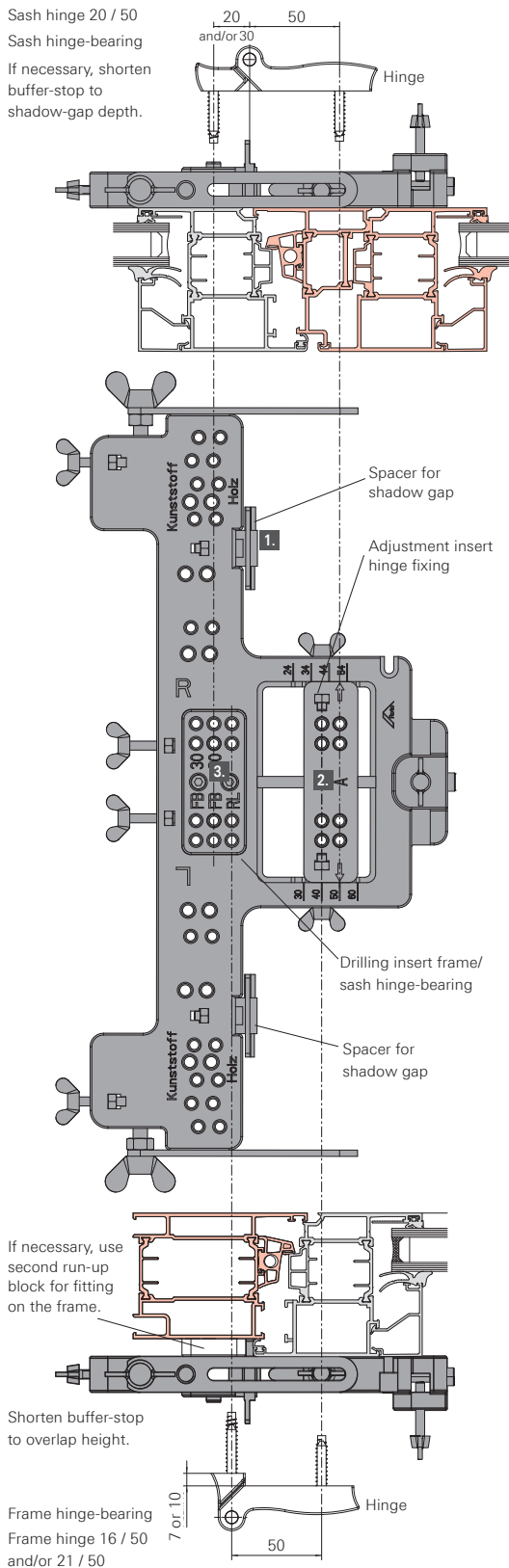
4 mm
Arrow points to 40
F.h-b

Drill

4. Place the frame side of the folding sash on the frame and align (observe the chamber dimension).
5. Drill with Ø 5 mm drill
 - in adjustment insert hinge fixing **A**
 - in drilling insert frame/sash hinge-bearing **F.h-b**

Drilling and routing dimensions

Predrilling sash/frame hinges



Installation of sash hinge 20 / 50 or 30 / 50

Drilling-jig adjustments

1. Spacers for shadow gap
2. Adjustment insert hinge fixing
3. Drilling insert frame/sash hinge-bearing
If necessary, use second run-up block for fitting on the frame.

profile related
Arrow points
to 50
SW 20
or SW 30

Drill

4. Fold together the folding sash according to the diagram.
5. Drill with \varnothing 5 mm drill
 - ③ in adjustment insert hinge fixing **A**
 - ③ in drilling insert frame/sash hinge-bearing **SW 20** and/or **SW 30**

Installation of frame hinge 16 / 50 and/or 21 / 50

Drilling-jig adjustments

1. Spacers for shadow gap
2. Adjustment insert hinge fixing
3. Drilling insert frame/sash hinge-bearing
If necessary, use second run-up block for fitting on the frame.

4 mm
Arrow points
to 50
F.h-b

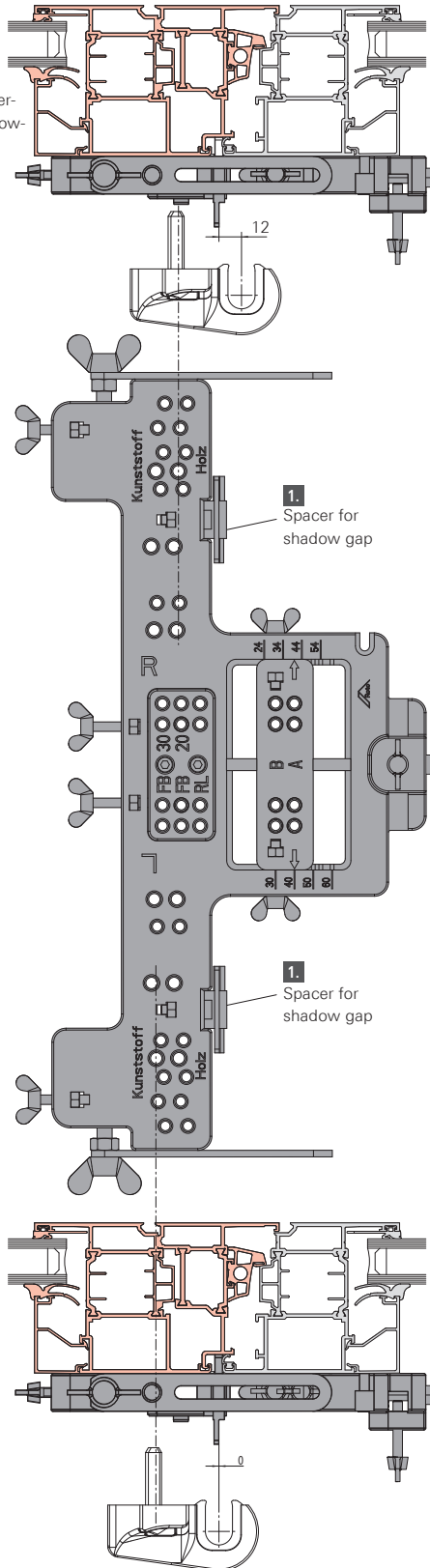
Drill

4. Place the frame side of the folding sash on the frame and align (observe the chamber dimension).
5. Drill with \varnothing 5 mm drill
 - ③ in adjustment insert hinge fixing **B**
 - ③ in drilling insert frame/sash hinge-bearing **F.h-b**

Predrilling support bracket

12 mm offset to shadow gap

If necessary, shorten buffer-stop to shadow-gap depth.



Predrilling of the support bracket

Drilling-jig adjustments

- 1 Adjust the spacers for shadow gap, shorten to shadow gap depth if necessary.

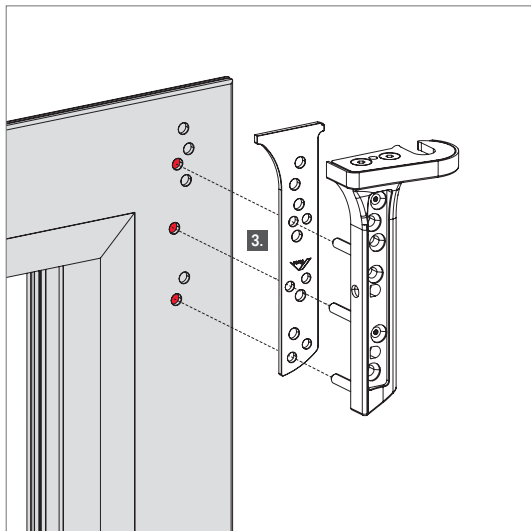
Drill:

- 2 Predrilling of screws $\varnothing 5$ mm, predrilling of pins $\varnothing 6$ mm, according to the drilling-jig inscription (timber = 12 mm offset).

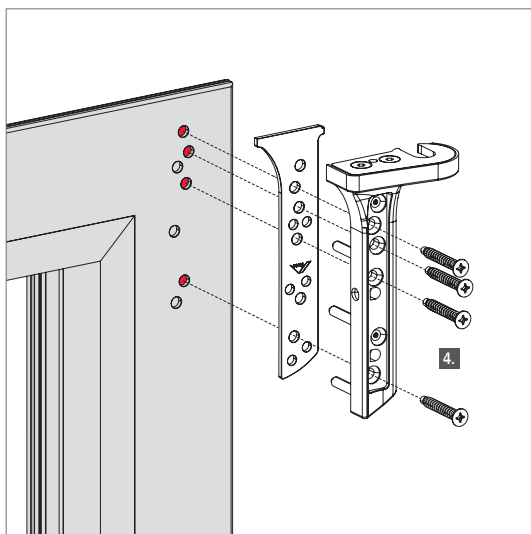
NOTE!
Observe the profile-specific installation instructions.

Sash

Mounting top support bracket



1. Move drilling jig with stop to initial position (see last pages).
2. Carry out drillings with drilling jig (643365) (see last pages).
3. Bring together support bracket and packer accurately and slide 3 cams of the support bracket into suitable drilling channels.

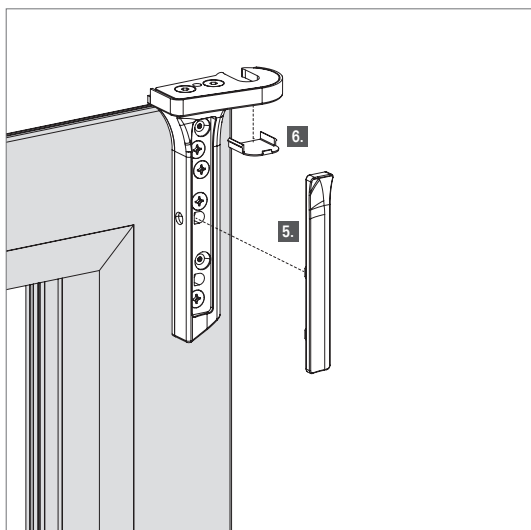


4. Fasten support bracket and packer with 4 screws.



NOTE!

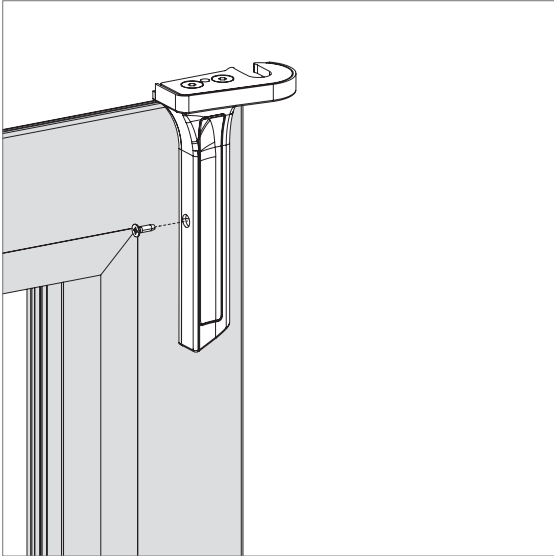
Seal the holes for the outer support brackets with suitable sealing compound to prevent the ingress of water.



5. Position the cover plate.
6. After installation of the bogies, clip on/insert the small cover cap.

Sash

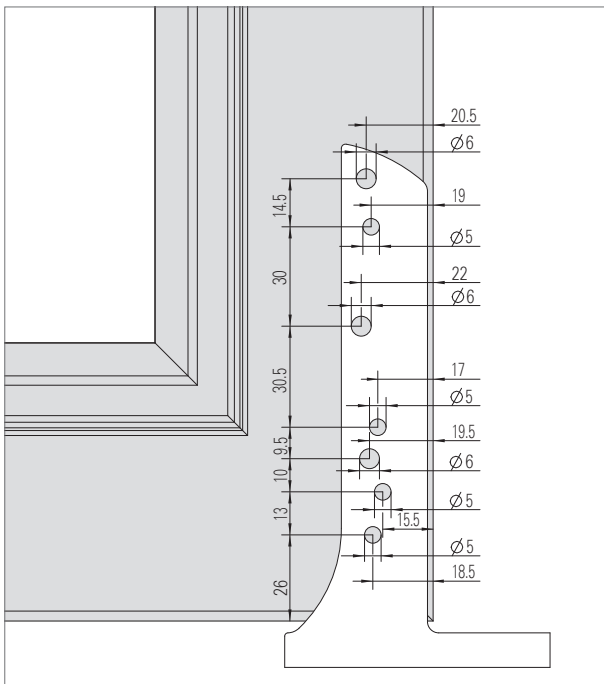
Mounting top support bracket



7. Secure the cover plate with countersunk screw.

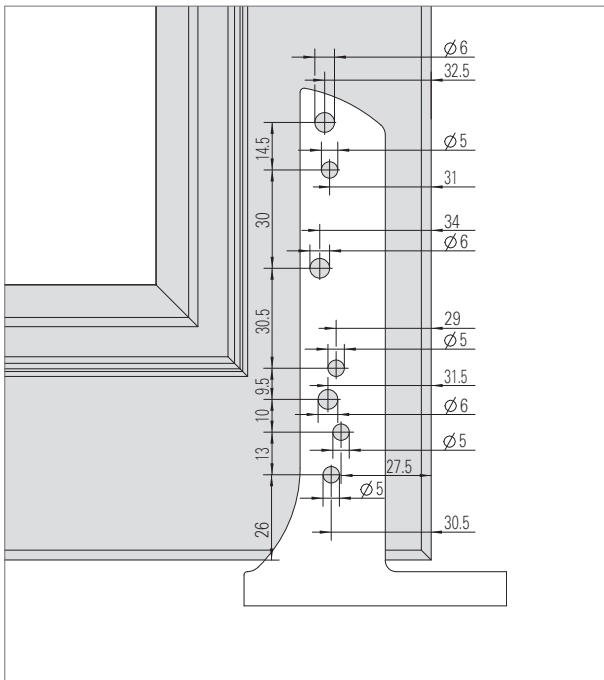
Sash

Mounting support bracket for bottom roller track



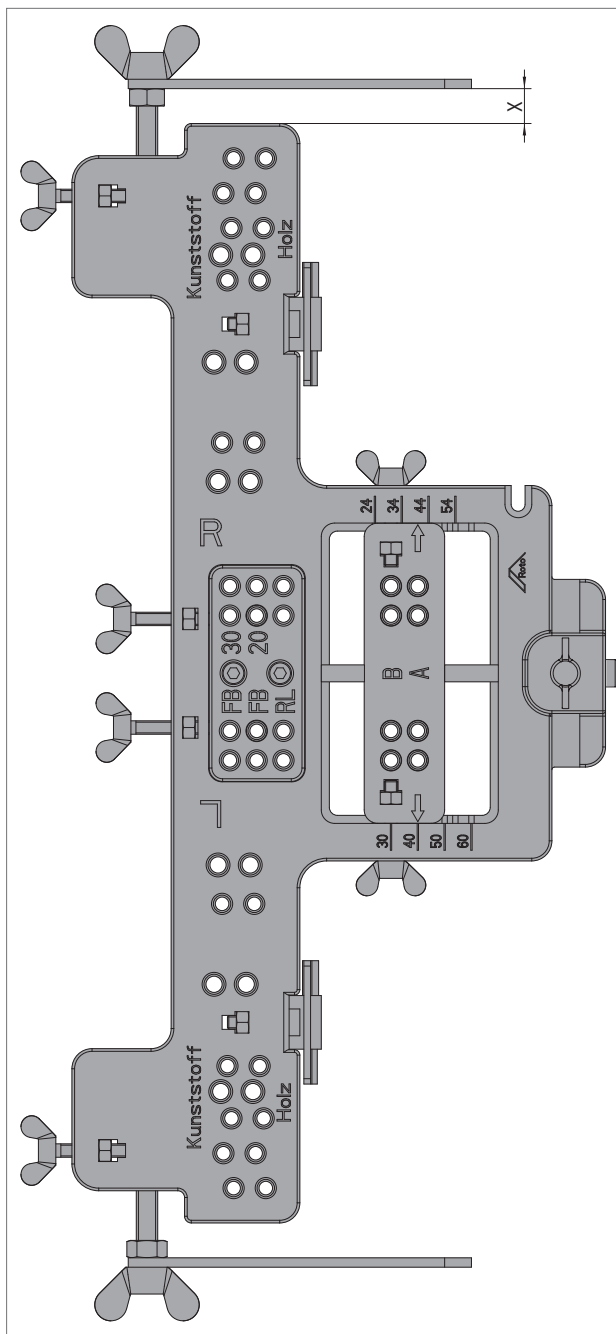
NOTE!

- ③ Observe the profile-specific installation instructions, because some aluminium profile systems must be drilled in timber position.
- ③ Seal the holes for the outer support brackets with suitable sealing compound to prevent the ingress of water.



Sash

Mounting support bracket for bottom enhanced threshold



1. Determine the profile's overlap width.
2. Determine the reference dimension X (= overlap width - 7 mm)
3. Set the reference dimension X (e.g. with metre rule or slide gauge)
4. Place the drilling jig on the profile and push the stop to the sash edge. Fix the drilling jig.
5. Drills the holes.

Examples for dimension X with ...

Overlap width		Dimension X
15	=	8
20	=	13
25	=	18

Maintenance instructions for functional and security relevant components

■ For durability:

■ The windows you have produced have high-quality Roto hardware. This means: ease of operation, perfect function, and high durability. The conditions for the function and smooth operation of the hardware is the compliance with our regulations concerning sash size and sash weight, as well as our product liability guidelines. Function and condition of the hardware is to be checked in accordance with the following criteria:

- Smooth operation
- Hardware fixing
- Hardware wear and tear
- Hardware damage

■ Smooth operation

The hardware's smooth operation can be checked via the window handle. The locking and unlocking torque of the window handle is specified in accordance with DIN 18055 (German Industrial Norm) with a maximum value of 10 Newton metres. The inspection can be carried out with a torque wrench. The smooth operation can be improved by means of **grease/oil** or by adjusting the hardware. Roto Tilt&Turn hardware is designed with 2D/3D adjusting possibilities. Incorrect and/ or inappropriate retro-adjustments to the hardware can result in the windows not fulfilling their function anymore.

■ Hardware fixing

The window's function and its operational safety depend on the solid fixing of the hardware. Stability and location of the individual screws in the aluminium are to be checked. Should it be revealed, that for example screws are loose or that screw heads have broken off, tighten or replace these immediately.

■ Hardware wear and tear

In order to avoid wear and tear, all operation-relevant hardware components are to be **lubricated/oiled** in accordance with our information.

■ Hardware damage

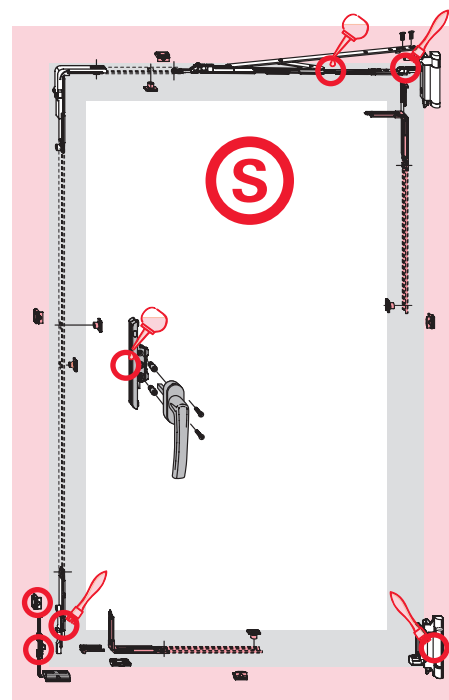
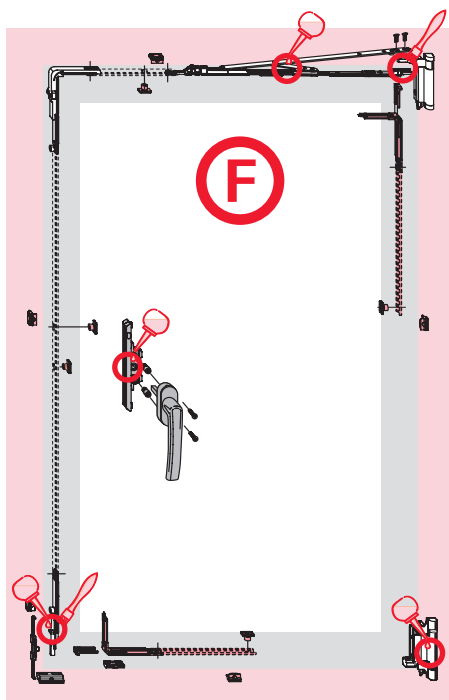
Damaged hardware components are to be replaced, especially if it concerns supporting hardware components. No legal claims can be derived from these recommendations, the application is to be conveyed for each concrete individual case. Roto Frank AG recommends window-fabricators to make **maintenance agreements with their end users**.

■ Maintenance and care intervals

By means of regular greasing and oiling* (at least once a year) all operation-relevant components **F** in the sash and frame, you maintain the smooth operation of your Roto hardware and you protect against premature wear and tear.

The **S** components are subject to particular care and attention for security reasons. These are to be examined at least once a year for stability and wear & tear, and to be greased/oiled* annually! In addition the individual screws are to be checked. Possible loosened screws or broken off screw heads are to be tightened or replaced immediately.

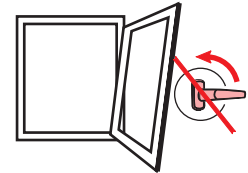
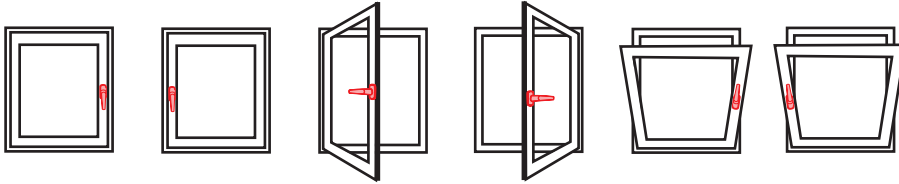
* Please use acid free and non resinous grease and/or oil from a specialised dealer.



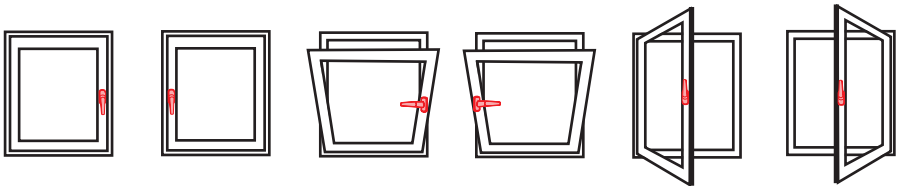
Operating and safety instructions

for aluminium windows and balcony doors

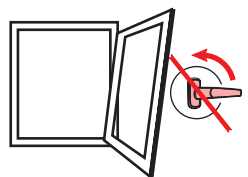
Tilt&Turn operation (Turn before Tilt)



Tilt-First operation (Tilt before Turn)

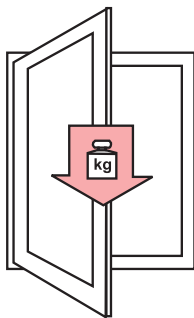


Avoid mishandling

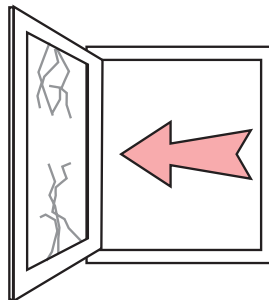


Avoid mishandling

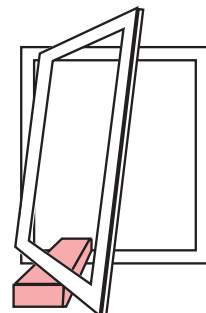
In order to preserve the long **operativeness** of your window and to guarantee **security**, it is imperative to observe the directives listed below.



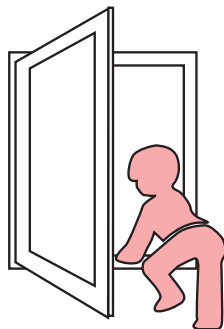
The window sash may not be burdened with additional weight.



Do not allow the sash to hit or press up against the window reveal.



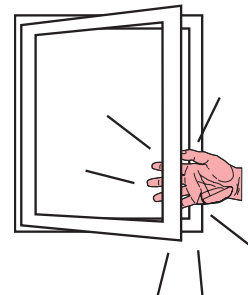
Do not place any objects between the sash and frame.



Where small children or mentally handicapped persons have access to the window, the sash is to be safeguarded against turning, for example with a child-safety lock (inhibits turn-modus, permits tiltmodus) or key-lockable handle.



Do not leave sashes open in the turn-modus during strong winds.



Caution! A slamming sash can lead to injuries. While closing, do not grasp between the sash and frame.



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