



KINVARO



G* GRASS[®]

KINVARO LIFTER SYSTEMS

Modern design, innovative technology and ease of operation for wall cabinetry.





Exclusive lifter systems – Kinvaro provides the perfect solution for every application.
Parallel lifters. Bi-fold lifters. Lift-up systems. Drop-down systems.

Wall cabinets have become a popular storage solution for the kitchen and office area.

Our Kinvaro lifter systems redefine the principle of the classic wall cabinet. Stable and reliable in movement, easy and quiet in application, ergonomically well designed and comfortable to operate. Kinvaro represents innovative design and functional movement.



KINVARO LIFTER SYSTEMS

Easy to open with complete access to the cabinet contents and gentle, silent closing of the lift door.

These are the key features of the Kinvaro System.



Kinvaro L-80 Parallel Lifter System

The single panel front opens upwards in a smooth, even motion, with absolute precision and in parallel with the wall cabinet. The stay put feature holds the front in any required position - regardless of door weight and material. In closing: the integrated Soft-closing damper system is fully adjustable and ensures a smooth and uniform closing action for all door weights.



Kinvaro F-20 Bi-Fold Lifter System

In one effortless motion, the Bi-fold Lifter system is designed to move two horizontal doors together to offer maximum access to the cabinet's interior. Yet the lower door is still in easy reach for closing. Lifter doors can be built with flat or wood panels in a face frame or frameless application for the design look you want to achieve.



Kinvaro T-Series Lift-Up Systems

Distinguished by its simplicity, the T-series Lifter opens a single door that pivots the door to the top of the wall cabinet. The integrated Soft-close and its stay put feature contribute to the functionality of these Lifters. Available for face frame and frameless applications.

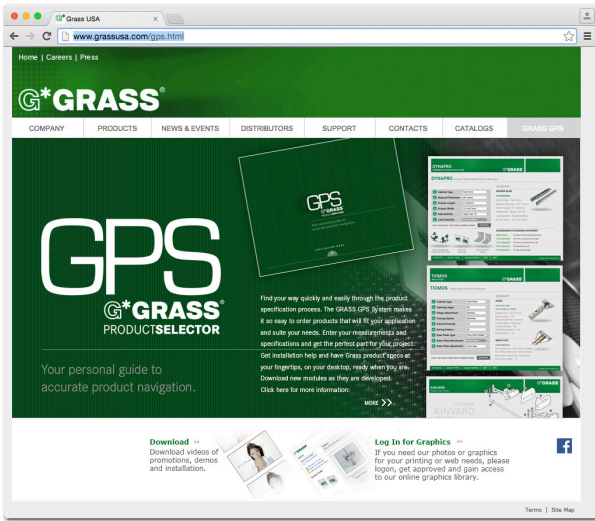


Kinvaro D Drop-down Systems

Kinvaro D flap system, paired with the Tiomos Flap hinge, revitalizes drop-down cabinet applications by creating aesthetically clean lines, a minimalistic look, and easy access into the cabinet contents.

Kinvaro

Calculator



Download the Calculator

- Download the Grass GPS at www.grassusa.com/gps
- Unzip the file
- Select the Lifter Type
- Calculate!

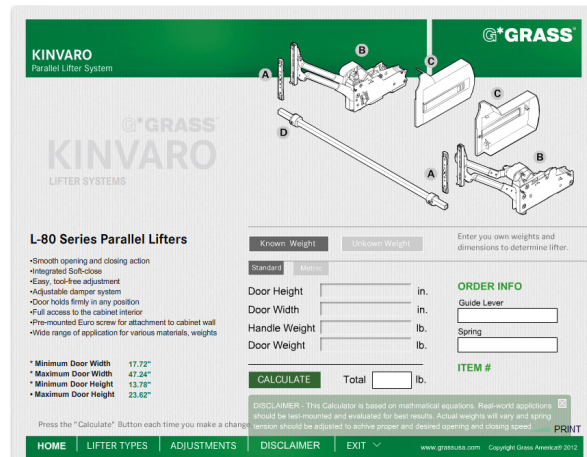
Download the Kinvaro Calculator!

The Kinvaro GPS takes the guess work out of choosing a lifter

Determine which Kinvaro lifter works best for your application. Choose the lifter type and enter the door specifications. The Kinvaro Calculator will determine which lifter should be used for your door size and provides the product number for ordering.

Intuitive Interface

The Kinvaro Calculator provides you with lifter options, part descriptions, weight calculator, item numbers and adjustment instructions.



Application range

Flap weight from 1.6 to 14.6 kg (3.5 lb to 32.1 lb)
Flap size: width 450 - 1200mm (17 3/4" - 47 1/4")

Calculation of door weight (all measurements in inches)

Flap width x flap height x flap thickness x density⁽²⁾ + handle weight⁽³⁾ = flap weight
 Example: 23 5/8" x 15 3/4" x 3/4" x .0307 lb/in³ + 1.1 lb = 9.67 lb

Calculation of door width (all measurements in inches)

$$\frac{\text{Flap weight} - \text{handle weight}^{(3)}}{\text{Flap height} \times \text{flap thickness} \times \text{density}^{(2)}} = \text{Flap Width}$$

Example: $\frac{9.9 \text{ lb} - 1.1 \text{ lb}}{15 \frac{3}{4}'' \times \frac{3}{4}'' \times .0307} = 24 \frac{9}{32}''$

⁽²⁾ Density: pine = 0.0163 lb/in³, chipboard = .0235 lb/in³, MDF = .0307/in³

⁽³⁾ Bar handles must be calculated with 0.22 lb per 4" handle width when calculating the flap weight. Other weights are possible. When using higher weights, please consult the manufacturer. We recommend performing a trial mounting before series application.

	Description	Page
	Kinvaro F-20 Bi-fold Lifter <ul style="list-style-type: none"> • Holds flap securely in any position • Adjustable spring force • Tool free attachment of door assembly to cabinet • Soft-closing with integrated adjustable damping • For frame and frameless cabinetry 	6
	Kinvaro L-80 Parallel Lifter <ul style="list-style-type: none"> • Holds flap securely in any position • Extremely smooth movement • Adjustable spring force • Soft-closing with integrated adjustable damping • For frame and frameless cabinetry 	12
	Kinvaro T-65 lift-up fitting <ul style="list-style-type: none"> • Variable opening angle - holds flap securely at any angle between 45° and 100° • Allows additional cabinet installation above • Soft-closing with integrated adjustable damping • For light to medium weight doors • For frame and frameless cabinetry 	16
	Kinvaro T-71 lift-up fitting <ul style="list-style-type: none"> • Variable opening angle - holds flap securely at any angle between 45° and 110° • Allows additional cabinet installation above • Self-closing with integrated adjustable damping • Tool free attachment of door to cabinet • For frame and frameless cabinetry 	20
	Kinvaro T-76 lift-up fitting <ul style="list-style-type: none"> • Variable opening angle - holds flap securely at any angle between 45° and 110° • Allows additional cabinet installation above • Self-closing with integrated adjustable damping • Tool free attachment of door to cabinet • For frame and frameless cabinetry 	24
	Kinvaro T-57 lift-up fitting <ul style="list-style-type: none"> • Opening angle adjustable to 75° or 90° • Simple installation • Allows additional cabinet installation above 	28
	Kinvaro Flap Stays	31
	Kinvaro D-M and Kinvaro D-S <ul style="list-style-type: none"> • Drop-down cabinet application • Opening angle adjustable • Installs horizontally and vertically • Works with Tiomos Flap hinge 	32
	Tiomos Flap Hinge <ul style="list-style-type: none"> • 90° opening angle • 3-dimensional adjustment • Accommodates flap thickness up to 19mm • Works with Kinvaro D-M and D-S 	40
	Kinvaro T-105 flap stay <ul style="list-style-type: none"> • Variable opening angle - holds flap securely at any angle between 45° and 105° • For wood and aluminum doors • Adjustable spring force • Convenient access, front lifts clear of the work area • Allows additional cabinet installation above 	42
	Kinvaro Assembly Aids <ul style="list-style-type: none"> • Installation accessories for Kinvaro Lifters 	45

Kinvaro F-20

Bi-Fold Lifter



- Holds flap securely in any position
- Extremely smooth movement
- Adjustable spring force
- Integrated adjustable closing damper
- Flap with 3-dimensional adjustment – height, side, angle: Direct adjustment $\pm 1.5\text{mm}$
- Hinge with 3-dimensional adjustment – height, side, depth
- Opening limiter adjustable to 90°
- Wide range of applications for many different flap materials
- Fast, tool-free clip fitting of the front
- Face frame adapter available
- Pre-assembled Euro screws and positioning pins for easy mounting of the fitting to the side wall
- Extremely strong
- Weight 9.7 to 42.3 lb (4.4 to 19.2 kg)
- Range of flaps:
 - Width: $15 \frac{3}{4}'' - 47 \frac{1}{4}''$ (400 – 1200mm)
 - Height: $22 \frac{1}{16}'' - 35 \frac{7}{16}''$ (560 – 900mm)
- Cover caps in grey

APPLICATION RANGE

Cabinet height	Guide lever	Flap weight incl. handle lb (kg)		
		Spring B	Spring C	Spring D
22 $\frac{1}{16}'' - 23 \frac{19}{32}''$ (560 – 599)	Type 3	9.7 - 27.8 (4.4 – 12.6)	-	-
23 $\frac{5}{8}'' - 25 \frac{9}{16}''$ (600 – 649)	Type 4	-	15.0 - 34.8 (6.8 – 15.8)	-
25 $\frac{19}{32}'' - 27 \frac{17}{32}''$ (650 – 699)	Type 5	-	14.8 - 37.3 (6.7 – 16.9)	-
27 $\frac{9}{16}'' - 29 \frac{1}{2}''$ (700 – 749)	Type 6	-	14.3 - 36.2 (6.5 – 16.4)	-
29 $\frac{17}{32}'' - 31 \frac{15}{32}''$ (750 – 799)	Type 7	-	-	19.0 - 42.3 (8.6 – 19.2)
31 $\frac{1}{2}'' - 33 \frac{7}{16}''$ (800 – 849)	Type 7	-	-	17.2 - 39.7 (7.8 – 18.0)
33 $\frac{15}{32}'' - 35 \frac{7}{16}''$ (850 – 900)	Type 7	-	-	14.3 - 36.4 (6.5 – 16.5)

ORDER INFORMATION

Kinvaro F-20 set				
Cabinet height	Spring B	Spring C	Spring D	PU
560 – 599	F152145238201			1
600 – 649		F152145241201		1
650 – 699		F152145243201		1
700 – 749		F152145244201		1
750 – 900			F152145247201	1

For automatic Kinvaro door calculations: Use the GRASS Kinvaro Calculator at www.grassusa.com/gps/



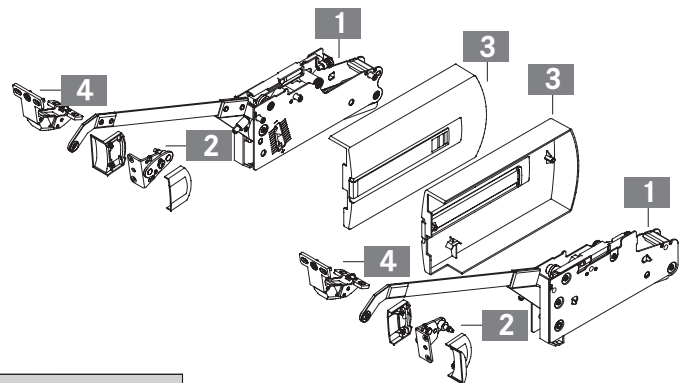
Face frame adapter, Kinvaro F-20 set			
Description	Overlay	Item No.	PU
Face frame adapter (2x) for wood frames with fixing screws (8x)	13 – 17	F151135906201	1

Note:

Please order separately: Tiomos 120° hinges with spring, without Soft-close, and Tiomos base plates for top panel.

Kinvaro F-20 set comprises:

- 1 Fitting, right and left (1x)
 - 2 Screw-on bracket for wood, incl. cover caps (2x)
 - 3 Cover caps on right and left (1x)
 - 4 Break away center hinges (2x)
- Paper template (1x), Installation instructions (1x)



Number of hinges at top panel
For cabinet widths $\geq 900\text{mm}$, 3 hinges are recommended.

PU – Packaging unit

ASSEMBLY AND INSTALLATION INSTRUCTIONS FOR CABINET HEIGHT 560 – 799

Required space	Side wall drilling positions	Side wall drilling distance																																							
		<table border="1"> <thead> <tr> <th>KH</th> <th>Type</th> <th>B</th> </tr> </thead> <tbody> <tr><td>560 – 569</td><td>3</td><td>183</td></tr> <tr><td>570 – 579</td><td>3</td><td>168</td></tr> <tr><td>580 – 589</td><td>3</td><td>153</td></tr> <tr><td>590 – 599</td><td>3</td><td>138</td></tr> <tr><td>600 – 609</td><td>4</td><td>208</td></tr> <tr><td>610 – 619</td><td>4</td><td>198</td></tr> <tr><td>620 – 629</td><td>4</td><td>178</td></tr> <tr><td>630 – 639</td><td>4</td><td>168</td></tr> <tr><td>640 – 649</td><td>4</td><td>158</td></tr> <tr><td>650 – 699</td><td>5</td><td>225</td></tr> <tr><td>700 – 749</td><td>6</td><td>235</td></tr> <tr><td>750 – 799</td><td>7</td><td>250</td></tr> </tbody> </table>	KH	Type	B	560 – 569	3	183	570 – 579	3	168	580 – 589	3	153	590 – 599	3	138	600 – 609	4	208	610 – 619	4	198	620 – 629	4	178	630 – 639	4	168	640 – 649	4	158	650 – 699	5	225	700 – 749	6	235	750 – 799	7	250
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Metric Conversions

MM	2	3.5	4	5	8.5	9	10	11	13	14.5	15	16	17	19	25	31	32
INCH	3/32	1/8	5/32	3/16	11/32	11/32	13/32	7/16	1/2	9/16	19/32	5/8	21/32	3/4	31/32	1 7/32	1 1/4
MM	40	41	45	50	63	64	103	119	123	128	170	174	180	181	186	254	260
INCH	1 9/16	1 5/8	1 3/4	1 31/32	2 15/32	2 1/2	4 1/16	4 11/16	4 27/32	5 1/16	6 11/16	6 27/32	7 3/32	7 1/8	7 5/16	10	10 1/4

LEGEND

B	Drilling dimension - side wall
C	Drilling dimension - front
F	Reveal
FAS	Front overlay, side
KH	Cabinet height
FAO	Front overlay, top

Kinvaro F-20

Bi-Fold Lifter

ASSEMBLY AND INSTALLATION INSTRUCTIONS FOR CABINET HEIGHT 800 – 900

Required space	Side wall drilling positions	Side wall drilling distance									
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KH	D										
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850 – 900	≤312										

Front: installation for wooden flaps (min 45mm width)	Front: drilling distance						
<p>WARNING</p> <p>Important! Caution - risk of injury! Fitting is spring-tensioned!</p>	<table border="1"> <thead> <tr> <th>KH</th> <th>Type</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>800 – 900</td> <td>7</td> <td>304</td> </tr> </tbody> </table>	KH	Type	C	800 – 900	7	304
	KH	Type	C				
800 – 900	7	304					
<p>* Pre-drilling required - Ø 2mm</p>							

Calculation of flap weight	Number of hinges for top panel
$\text{Flap width} \times \text{flap height} \times \text{flap thickness} \times \text{density}^1 + \text{weight of handle}^2 = \text{weight of flap}$ <p>¹ Densities: MDF 0.85 kg/dm³, chipboard 0.65 kg/dm³, spruce/pine 0.45 kg/dm³ ² For bar handles allow 0.1 kg for each 100mm handle width. We recommend a trial fitting</p>	<p>For cabinet widths ≥ 900mm, 3 hinges recommended for top panel</p>

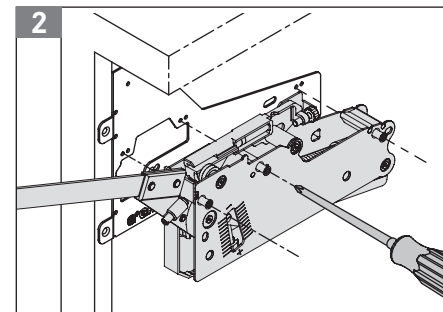
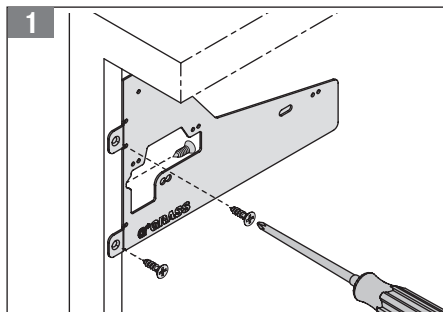
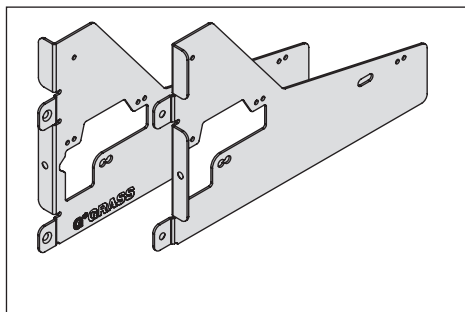
Metric Conversions

MM	2	3.2	3.5	4	5	5.5	8	8.5	9	10	11	14.5	15	16	19	25	31
INCH	³ / ₃₂	¹ / ₈	¹ / ₈	⁵ / ₃₂	³ / ₁₆	⁷ / ₃₂	⁵ / ₁₆	¹¹ / ₃₂	¹¹ / ₃₂	¹³ / ₃₂	⁷ / ₁₆	⁹ / ₁₆	¹⁹ / ₃₂	⁵ / ₈	³ / ₄	³¹ / ₃₂	¹ / ₂
MM	32	40	41	45	48	50	63	64	96	119	123	128	170	186	254	260	
INCH	¹ / ₄	¹ / ₂	¹ / ₂	¹ / ₂	¹ / ₂	¹ / ₂	² / ₃	² / ₃	³ / ₂	⁴ / ₃	⁴ / ₃	⁵ / ₂	⁶ / ₃	⁷ / ₃	10	¹⁰ / ₃	

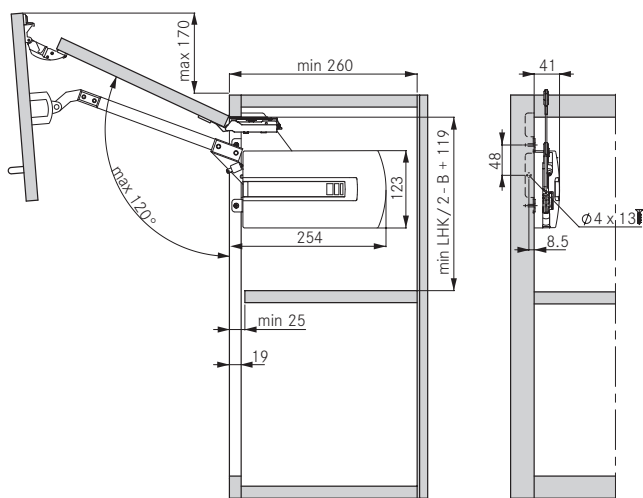
LEGEND

B	Drilling dimension - side wall
C	Drilling dimension - front
F	Reveal
FAS	Front overlay, side
KH	Cabinet height
D	Distance
FAO	Front overlay, top
FH	Flap height
LWK	Inside cabinet width
LHK	Inside cabinet height

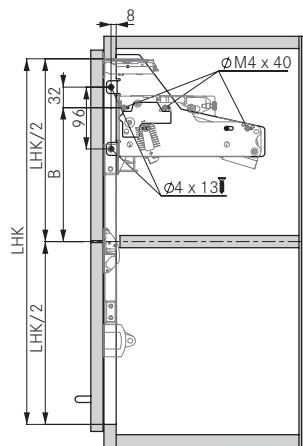
ASSEMBLY AND INSTALLATION INSTRUCTIONS FOR FACE FRAME CABINET



Required space



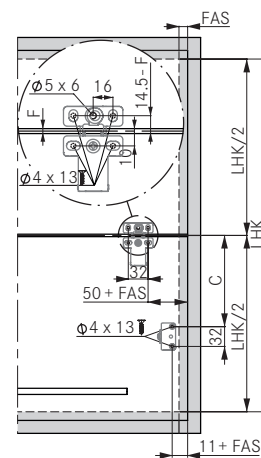
Side wall drilling positions



Side wall drilling distance

LHK	Type	B
528 - 537	3	183
538 - 547	3	168
548 - 557	3	153
558 - 567	3	138
568 - 577	4	208
578 - 587	4	198
588 - 597	4	178
598 - 607	4	168
608 - 617	4	158
618 - 627	5	225
668 - 717	6	235
718 - 767	7	250

Front: installation for wooden and frame flaps (min. 45mm width)



Front: drilling distance

LHK	Type	C
528 - 537	3	145
538 - 547	3	160
548 - 557	3	175
558 - 567	3	190
568 - 577	4	138
578 - 587	4	148
588 - 597	4	168
598 - 607	4	178
608 - 617	4	188
618 - 627	5	146
668 - 717	6	156
718 - 767	7	166

* Pre-drilling required - Ø 2mm

Calculation of flap weight

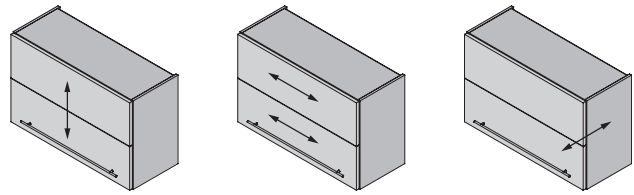
Flap width x flap height x flap thickness x density¹ + weight of handle² = weight of flap

¹ Densities: MDF 0.85 kg/dm³, chipboard 0.65 kg/dm³, spruce/pine 0.45 kg/dm³

² For bar handles allow 0.1 kg for each 100mm handle width. We recommend a trial fitting

Kinvaro F-20

Bi-Fold Lifter



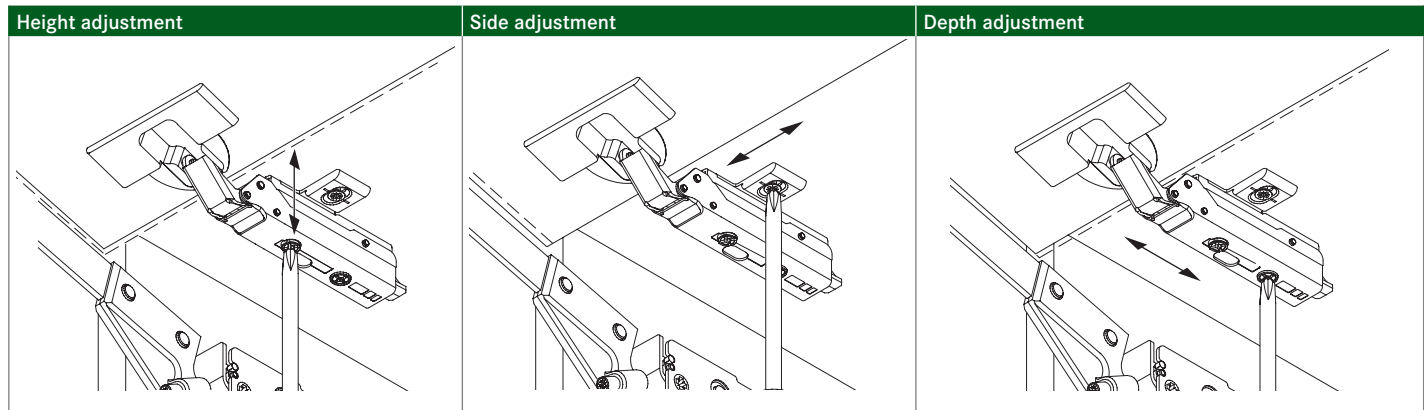
Height adjustment
+/-1.5mm

Side adjustment
+/- 2mm

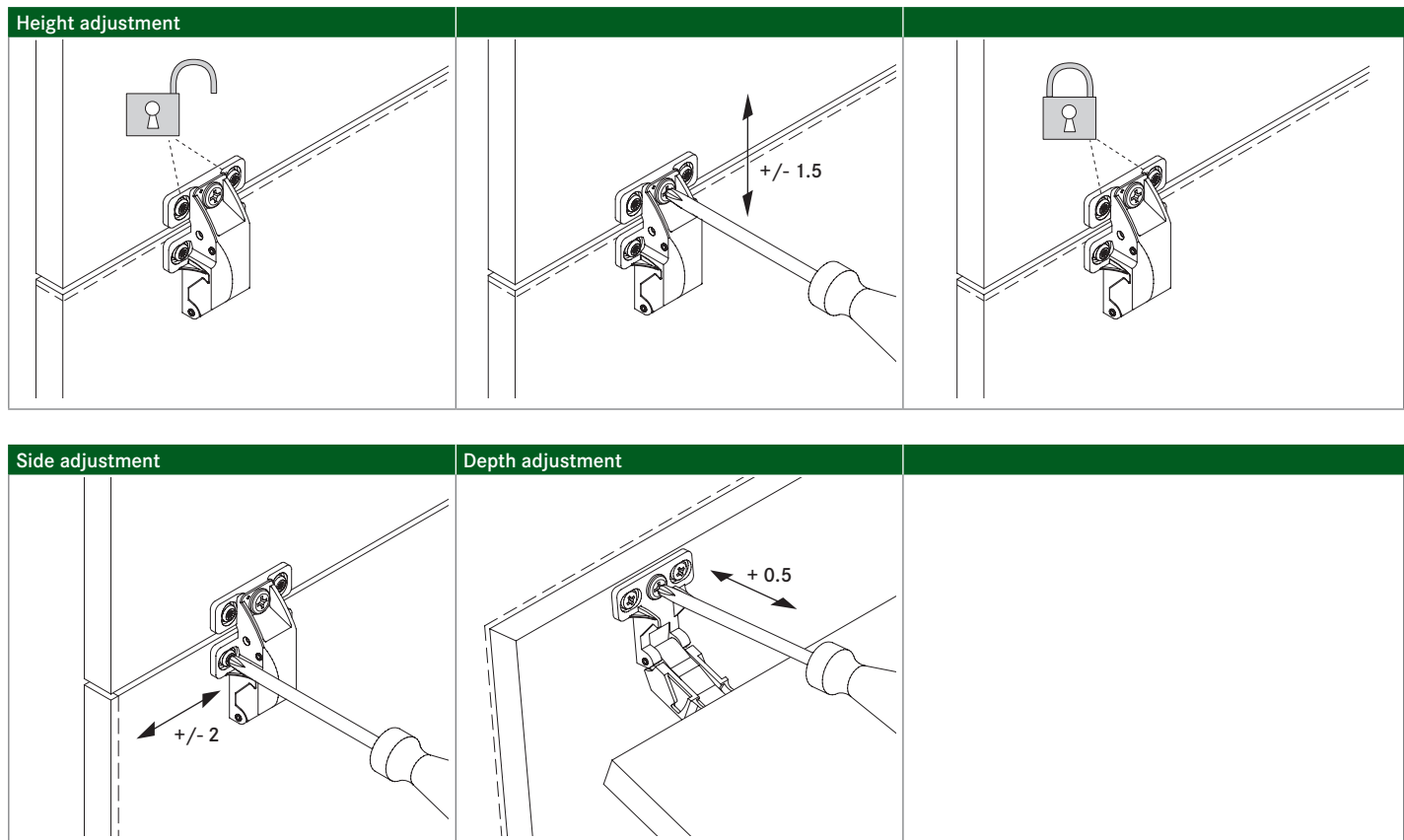
Depth adjustment
+/- 0.5mm

All adjustments can be carried out independently of each other.

ADJUSTMENT OPTIONS FOR HINGE IN CABINET TOP PANEL



ADJUSTMENT OPTIONS FOR INTERMEDIATE HINGE



ADJUSTMENT OPTIONS

<p>Adjusting the flap closing position</p>		
	<p>Adjusting the spring force</p>	<p>Adjusting the damping system</p>
<p>Adjusting the opening angle 90° to 120°</p>		<p>Note</p> <p>WARNING</p>

Kinvaro L-80

Parallel Lifter



- Holds flap securely in any position
- Extremely smooth movement
- Adjustable spring force
- Integrated adjustable closing damper
- Flap 3-dimensionally adjustable – height, side, angle: Direct adjustment $\pm 1.5\text{mm}$
- Allows the use of cornices, pelmets, and attached lights
- Wide range of applications for many different flap materials
- Fast, tool-free clip fitting of the front
- Face frame adapter available
- Pre-assembled Euro screws and positioning pins for easy mounting of the fitting to the side wall
- Extremely strong
- Weight 4 to 32 lb (1.9 to 14.6 kg)
- Range of flaps:
 - Width: $17\frac{23}{32}'' - 47\frac{1}{4}''$ (450 – 1200mm)
 - Height: $13\frac{25}{32}'' - 23\frac{5}{8}''$ (350 – 600mm)
- Cover caps in grey

APPLICATION RANGE

Cabinet height	Guide lever	Flap weight incl. handle lb (kg)		
		Spring A	Spring B	Spring C
$13\frac{25}{32}'' - 14\frac{17}{32}''$ (350 – 369)	Type 1	5.5 - 14.3 (2.5 – 6.5)	13.2 - 20.9 (6.0 – 9.5)	-
$14\frac{9}{16}'' - 15\frac{5}{16}''$ (370 – 389)	Type 2	5.1 - 13.2 (2.3 – 6.0)	12.1 - 19.8 (5.5 – 9.0)	18.7 - 21.2 (8.5 – 9.6)
$15\frac{11}{32}'' - 16\frac{3}{32}''$ (390 – 409)	Type 3	4.6 - 12.1 (2.1 – 5.5)	11.0 - 18.7 (5.0 – 8.5)	17.6 - 22.3 (8.0 – 10.1)
$16\frac{1}{8}'' - 16\frac{7}{8}''$ (410 – 429)	Type 4	4.2 - 11.0 (1.9 – 5.0)	9.9 - 17.6 (4.5 – 8.0)	16.5 - 32.2 (7.5 – 14.6)
$16\frac{15}{16}'' - 23\frac{5}{8}''$ (430 – 600)	Type 5	4.4 - 9.9 (2.0 – 4.5)	8.8 - 16.5 (4.0 – 7.5)	15.4 - 32.2 (7.0 – 14.6)

ORDER INFORMATION

Kinvaro L-80 set				
Cabinet height	Spring A	Spring B	Spring C	PU
350 – 369	F152145248201	F152147444201	-	1
370 – 389	F152147440201	F152145249201	F152145250201	1
390 – 409	F152147441201	F152145251201	F152145252201	1
410 – 429	F152147442201	F152145281201	F152145282201	1
430 – 600	F152147443201	F152145253201	F152145254201	1

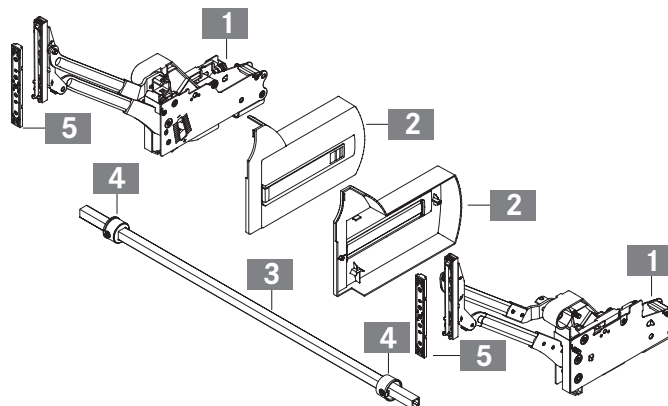
For automatic Kinvaro door calculations: Use the GRASS Kinvaro Calculator at www.grassusa.com/gps/



Face Frame Adapter, Kinvaro L-80 set			
Description	Overlay	Item No.	PU
Face frame adapter, (2x) for wood screws with fixing screws (8x)	13 – 17	F151135906201	1

Kinvaro L-80 set comprises:

- 1 Fitting, right and left (1x)
 - 2 Cover caps on right and left (1x)
 - 3 1090mm cross bar for cutting to length (1x)
 - 4 Sliding sleeves (2x)
 - 5 Mounting plates (2x)
- Paper template (1x), Installation instructions (1x)



WARNING

Important!
Caution - risk of injury! Fitting is spring-tensioned!

PU - Packaging unit

ASSEMBLY AND INSTALLATION INSTRUCTIONS

Required space	Side wall drilling positions	Side wall drilling distance																								
		<table border="1"> <thead> <tr> <th>Type</th> <th>min LHK</th> <th>D1</th> <th>D2</th> </tr> </thead> <tbody> <tr><td>1</td><td>312</td><td>161</td><td>304</td></tr> <tr><td>2</td><td>332</td><td>176</td><td>337</td></tr> <tr><td>3</td><td>352</td><td>191</td><td>370</td></tr> <tr><td>4</td><td>372</td><td>206</td><td>403</td></tr> <tr><td>5</td><td>392</td><td>221</td><td>436</td></tr> </tbody> </table>	Type	min LHK	D1	D2	1	312	161	304	2	332	176	337	3	352	191	370	4	372	206	403	5	392	221	436
Type	min LHK	D1	D2																							
1	312	161	304																							
2	332	176	337																							
3	352	191	370																							
4	372	206	403																							
5	392	221	436																							
		<table border="1"> <thead> <tr> <th colspan="2">Cornice projection</th> </tr> <tr> <th>F</th> <th>KP max</th> </tr> </thead> <tbody> <tr><td>2</td><td>22</td></tr> <tr><td>3</td><td>35</td></tr> <tr><td>4</td><td>39</td></tr> </tbody> </table>	Cornice projection		F	KP max	2	22	3	35	4	39														
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350 - 369	1	190																								
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Metric Conversions

MM	.5	2	3.5	5	8	8.5	10	12	13	15	17	18	19	22	32	36	37
INCH	1/32	3/32	1/8	3/16	5/16	11/32	13/32	15/32	1/2	19/32	21/32	23/32	3/4	7/8	1 1/4	1 13/32	1 7/16
MM	40	45	48	50	54	60	64	78	96	100	123	128	158	164	186	254	260
INCH	1 9/16	1 3/4	1 7/8	1 31/32	2 1/8	2 3/8	2 1/2	3 1/16	3 25/32	3 15/16	4 27/32	5 1/16	6 1/4	6 15/32	7 5/16	10	10 1/4

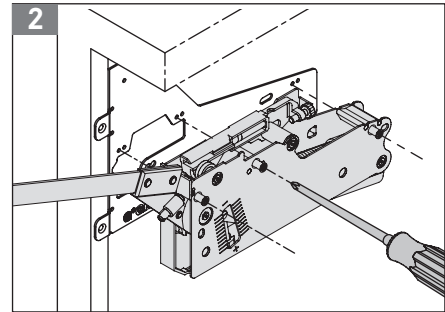
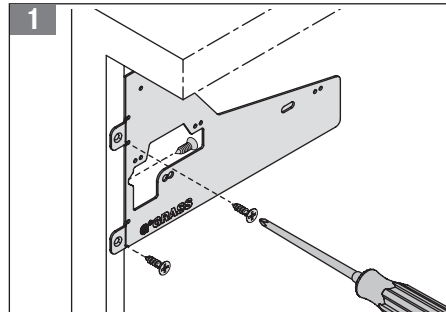
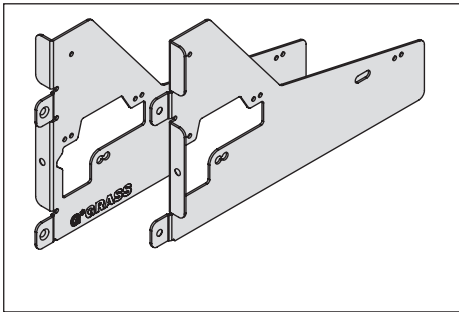
LEGEND

D	Distance
F	Reveal
FAO	Front overlay, top
FAS	Front overlay, side
KH	Cabinet height
KP	Cornice
LHK	Inside cabinet height
LWK	Inside cabinet width
X	Drilling distance

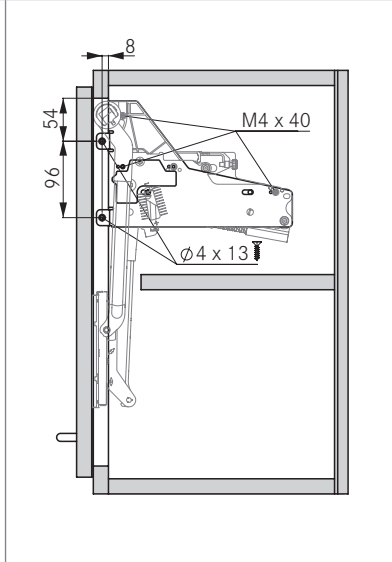
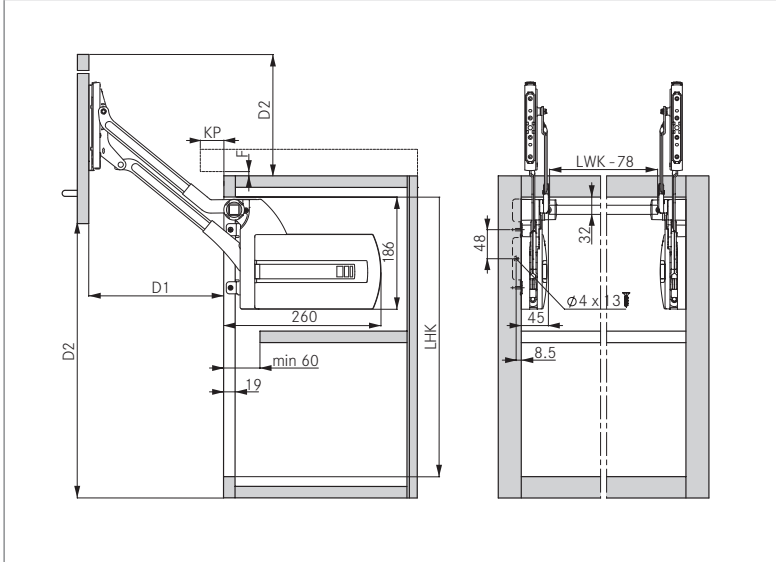
Kinvaro L-80

Parallel Lifter

ASSEMBLY AND INSTALLATION INSTRUCTIONS FOR FACE FRAME CABINET



Required space **Side wall drilling positions** **Side wall drilling distance**



Type	min LHK	D1	D2
1	312	161	304
2	332	176	337
3	352	191	370
4	372	206	403
5	392	221	436

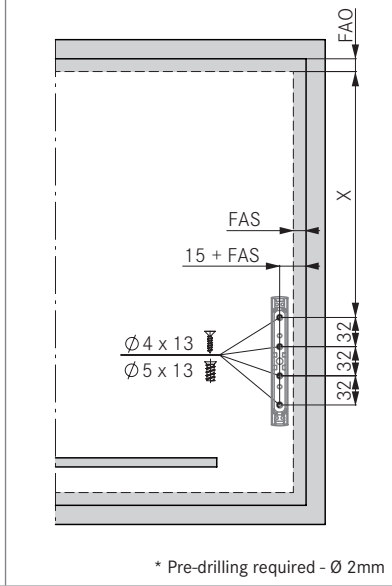
Cornice projection

F	KP max
2	22
3	35
4	39

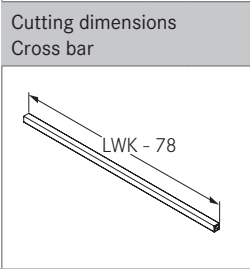
Front: installation for wooden and frame flaps (min 45mm width)



Front: drilling distance



KH	Type	X
350 - 369	1	190
370 - 389	2	210
390 - 409	3	230
410 - 429	4	250
430 - 600	5	270



* Pre-drilling required - Ø 2mm

Calculation of flap weight

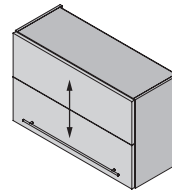
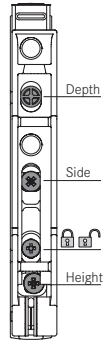
Flap width x flap height x flap thickness x density¹ + weight of handle² = weight of flap

¹ Densities: MDF 0.85 kg/dm³, chipboard 0.65 kg/dm³, spruce/pine 0.45 kg/dm³

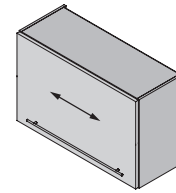
² For bar handles allow 0.1 kg for each 100mm handle width. We recommend a trial fitting

Kinvaro L-80

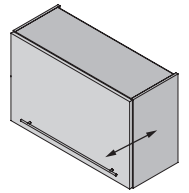
Parallel Lifter



Height adjustment
+/- 1.5mm



Side adjustment
+/- 1.5mm



Depth adjustment
+/- 1.5mm

All adjustments can be carried out independently of each other.

ADJUSTMENT OPTIONS

Unlocking	Height adjustment	Side adjustment

Depth adjustment	Locking	

Adjusting the spring force	Adjusting the damping system	Note
		<p>WARNING</p>

Kinvaro T-65

Lift-up Flap Fitting



- Variable opening angle - holds flap securely at any angle between 45° and 100°
 - Extremely comfortable opening due to spring-supported opening mechanism
 - Adjustable spring force
 - Integrated adjustable closing damper
 - Adjustable flap height ±3.0mm
 - No hinges fitted to the top panel
 - Allows additional cabinet installation above
 - Can be used for wooden flaps or aluminum frames with glass insert
 - Face frame adapter available
 - Weight 1.5 to 16.3 lb (0.7 to 7.4 kg)
- Range of flaps:
Width: up to 47 1/4" (up to 1200mm)
Height: 9 27/32" - 23 5/8" (250 - 600mm)
- Cover caps in grey

APPLICATION RANGE

Cabinet height	Flap weight incl. handle lb(kg)		
	Spring on one side yellow	Spring on both sides yellow	Spring on both sides black
9 27/32" (250)	2.0 - 4.6 (0.9 - 2.1)	4.0 - 9.3 (1.8 - 4.2)	5.3 - 16.3 (2.4 - 7.4)
11 13/16" (300)	1.5 - 3.7 (0.7 - 1.7)	3.1 - 7.5 (1.4 - 3.4)	4.4 - 13.9 (2.0 - 6.3)
13 25/32" (350)	-	2.2 - 6.4 (1.0 - 2.9)	3.7 - 11.9 (1.7 - 5.4)
15 3/4" (400)	-	1.8 - 5.5 (0.8 - 2.5)	3.3 - 10.4 (1.5 - 4.7)
17 23/32" (450)	-	1.5 - 4.9 (0.7 - 2.2)	2.9 - 9.3 (1.3 - 4.2)
19 11/16" (500)	-	1.3 - 4.4 (0.6 - 2.0)	2.9 - 8.6 (1.3 - 3.9)
21 21/32" (550)	-	-	2.9 - 7.5 (1.3 - 3.4)
23 5/8" (600)	-	-	2.9 - 6.8 (1.3 - 3.1)

ORDER INFORMATION

Kinvaro T-65 set					
Description	Springs	Version for	Overlay	Item No.	PU
Kinvaro T-65 on right without damper and on left with damper, pre-assembled springs black, incl. cover caps, 2 loose yellow springs	Black/yellow	wood	variable	F151147682201	1
		aluminum	17	F151147681201	1

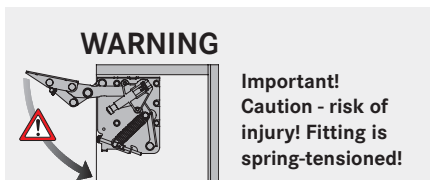
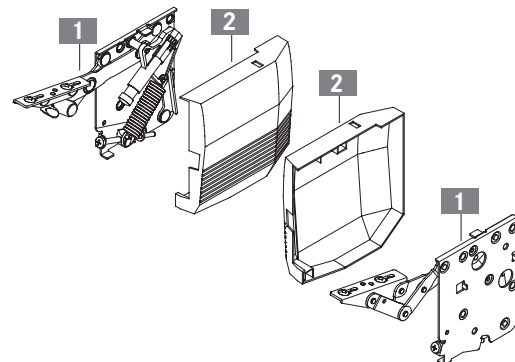
For automatic Kinvaro door calculations: Use the GRASS Kinvaro Calculator at www.grassusa.com/gps/



Face Frame Adapter, Kinvaro T-65 Kit			
Description	Overlay	Item No.	PU
Face frame adapter (2x) for wood frames with fixing screws (8x)	13 - 17	F151135905201	1

Kinvaro T-65 set comprises:

- 1 Fitting on the right without and on the left with damper (1x)
- 2 Cover caps on right and left (1x)
Springs, yellow, loose (2x)
Paper template (1x)
Installation instructions (1x)



PU - Packaging unit

Lift-up Flap Fitting

ASSEMBLY AND INSTALLATION INSTRUCTIONS

Required space	Side wall drilling positions
<p>Front: installation for flaps with narrow aluminum frame profiles (19mm)</p>	<p>Front: installation for wooden and frame flaps (min 45mm width)</p>
<p style="text-align: right;">* Narrow aluminum frame profile (19mm)</p>	<p style="text-align: right;">* Pre-drilling required - Ø 2mm</p>

Calculation of flap weight

Flap width x flap height x flap thickness x density¹ + weight of handle² = weight of flap

¹ Densities: MDF 0.85 kg/dm³, chipboard 0.65 kg/dm³, spruce/pine 0.45 kg/dm³

² For bar handles allow 0.1 kg for each 100mm handle width. We recommend a trial fitting

Metric Conversions

MM	2	3.5	6	7.5	8	8.5	12	12.5	13	14	17	18	19	20	29	30	31
INCH	3/32	1/8	1/4	9/32	5/16	11/32	15/32	1/2	1/2	9/16	21/32	23/32	3/4	13/16	1 5/32	1 3/16	1 7/32
MM	32	33	34	38	40	42	45	47.5	48	54	64	133	135	144	147	156	260
INCH	1 1/4	1 5/16	1 11/32	1 1/2	1 9/16	1 21/32	1 3/4	1 7/8	1 7/8	2 1/8	2 1/2	5 1/4	5 5/16	5 11/16	5 13/16	6 5/32	10 1/4

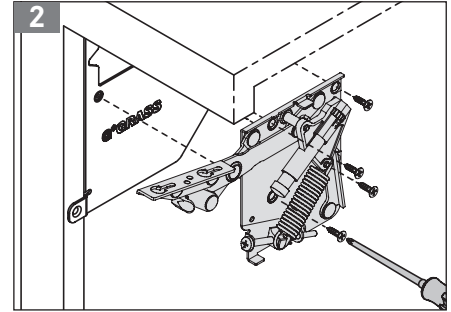
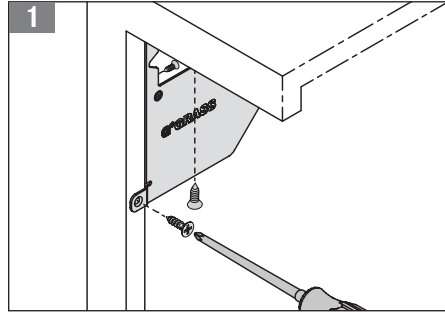
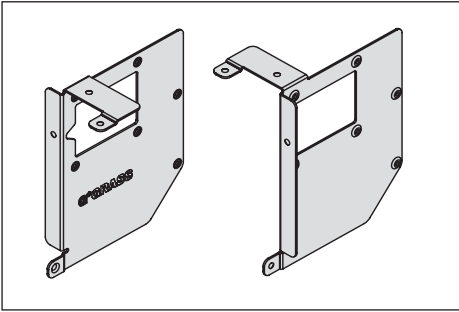
LEGEND

F Reveal
FAS Front overlay, side
FAO Front overlay, top

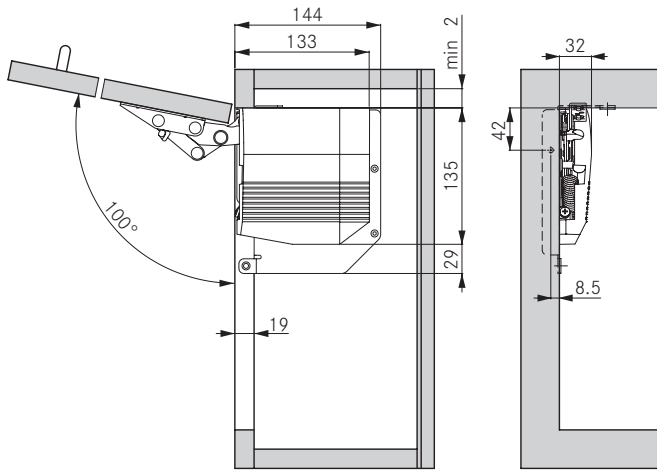
Kinvaro T-65

Lift-up Flap Fitting

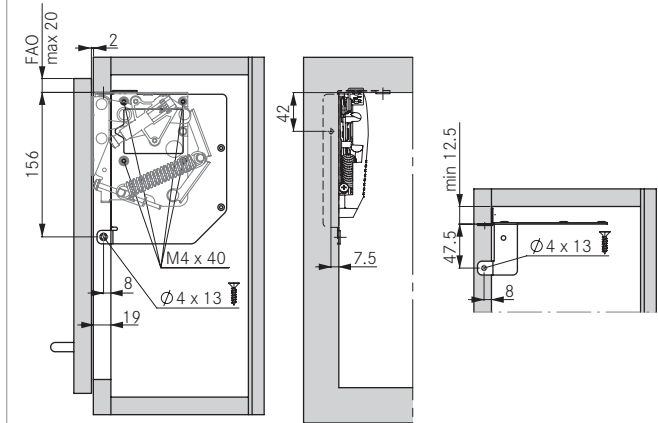
ASSEMBLY AND INSTALLATION INSTRUCTIONS FOR FACE FRAME CABINET



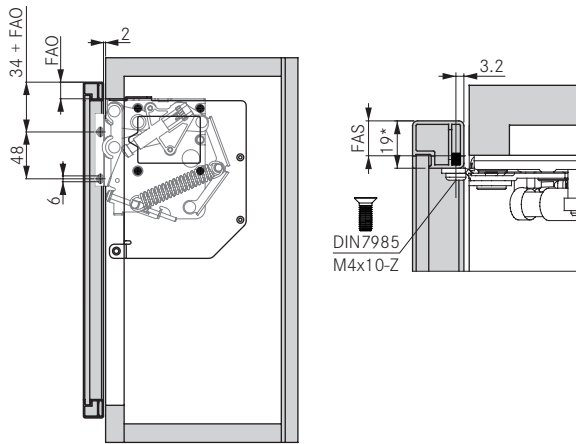
Required space



Side wall drilling positions

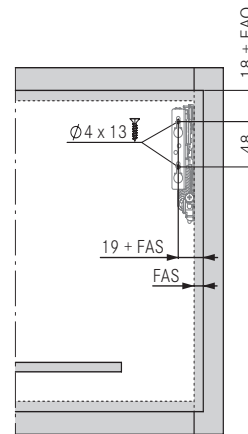


Front: installation for flaps with narrow aluminum frame profiles (19mm)



* Narrow aluminum frame a profile (19mm)

Front: installation for wooden and frame flaps (min 45mm width)



* Predrilling required - Ø 2mm

Calculation of flap weight

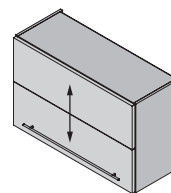
Flap width x flap height x flap thickness x density¹ + weight of handle² = weight of flap

¹ Densities: MDF 0.85 kg/dm³, chipboard 0.65 kg/dm³, spruce/pine 0.45 kg/dm³

² For bar handles allow 0.1 kg for each 100mm handle width. We recommend a trial fitting

Kinvaro T-65

Lift-up Flap Fitting



Height adjustment
+/-3mm

ADJUSTMENT OPTIONS

All adjustments can be carried out independently of each other.

Height adjustment	Locking	
Adjusting the spring force	Adjusting the damping system	
		Note
		<p>WARNING</p>

Kinvaro T-71

Lift-up Fitting



- Variable opening angle - holds flap securely at any angle between 45° and 110°
- Extremely comfortable opening due to spring-supported opening mechanism
- Adjustable spring force
- Integrated adjustable closing damper
- Flap 3-dimensionally adjustable - height, side, angle: direct adjustment ±1.5mm
- No hinges fitted to the top panel
- Allows additional cabinet installation above
- For wooden flaps
- Fast, tool-free clip fitting of the front
- Face frame adapter available
- Weight 3.1 to 18.7 lb (1.4 to 8.5 kg)
- Range of flaps:
Width: up to 47 1/4" (up to 1200mm)
Height: 11 13/16" - 23 5/8" (300 - 600mm)
- Cover caps in grey

APPLICATION RANGE

Cabinet height	Flap weight incl. handle lb (kg)	
	Spring, white	Spring, orange
11 13/16" (300)	4.6 - 16.3 (2.1 - 7.4)	5.5 - 18.7 (2.5 - 8.5)
13 25/32" (350)	4.0 - 13.9 (1.8 - 6.3)	5.1 - 16.5 (2.3 - 7.5)
15 3/4" (400)	3.7 - 11.9 (1.7 - 5.4)	4.6 - 15.0 (2.1 - 6.8)
17 23/32" (450)	3.5 - 10.4 (1.6 - 4.7)	4.4 - 12.8 (2.0 - 5.8)
19 11/16" (500)	3.3 - 8.8 (1.5 - 4.0)	4.0 - 11.0 (1.8 - 5.0)
21 21/32" (550)	3.1 - 8.2 (1.4 - 3.7)	3.5 - 10.1 (1.6 - 4.6)
23 5/8" (600)	3.1 - 7.3 (1.4 - 3.3)	3.1 - 9.3 (1.4 - 4.2)

ORDER INFORMATION

Kinvaro T-71 set					
Description	Springs	Version for	Overlay	Item No.	PU
Kinvaro T-71 on right without damper and on the left with damper, pre-assembled springs white, incl. cover caps, 2 loose orange springs	white/orange	wood	variable	F151147696201	1

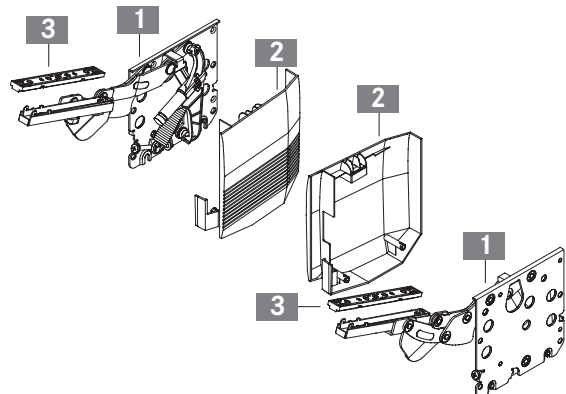
For automatic Kinvaro door calculations: Use the GRASS Kinvaro Calculator at www.grassusa.com/gps/



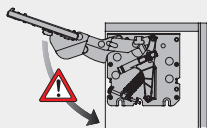
Face frame adapter, Kinvaro T-71 set			
Description	Overlay	Item No.	PU
Face frame adapters (2x) for wood frames with fixing screws (8x)	13 - 17	F151135905201	1

Kinvaro T-71 set comprises:

- 1 Fitting on the right without and on the left with damper (1x)
- 2 Cover caps on right and left (1x)
- 3 Mounting plates (2x)
Springs, orange, loose (2x)
Paper template (1x), Installation instructions (1x)



WARNING



Important!
Caution - risk of injury! Fitting is spring-tensioned!

PU - Packaging unit

ASSEMBLY AND INSTALLATION INSTRUCTIONS

Required space	Side wall drilling positions
Front: installation for wooden and frame flaps (min 55mm width)	
<p>WARNING</p> <p>Important! Caution - risk of injury! Fitting is spring-tensioned!</p>	
* Pre-drilling required - Ø 2mm	
Calculation of flap weight	
<p>Flap width x flap height x flap thickness x density¹ + weight of handle² = weight of flap</p> <p>¹ Densities: MDF 0.85 kg/dm³, chipboard 0.65 kg/dm³, spruce/pine 0.45 kg/dm³</p> <p>² For bar handles allow 0.1 kg for each 100mm handle width. We recommend a trial fitting</p>	

Metric Conversions

MM	2	3.5	5	7.5	8	8.5	10	12	12.5	13	17	19	20	25	29	32	40
INCH	³ / ₃₂	¹ / ₈	³ / ₁₆	⁹ / ₃₂	⁵ / ₁₆	¹¹ / ₃₂	¹³ / ₃₂	¹⁵ / ₃₂	¹ / ₂	¹ / ₂	²¹ / ₃₂	³ / ₄	¹³ / ₁₆	³¹ / ₃₂	¹⁵ / ₃₂	¹ / ₄	¹ / ₂
MM	42	43	47.5	50	55	64	70	80	100	128	133	135	144	147	156	158	185
INCH	¹ / ₂	¹ / ₁₆	¹⁷ / ₈	¹ / ₁₆	² / ₃₂	² / ₁₆	² / ₈	³ / ₈	³ / ₁₆	⁵ / ₁₆	⁵ / ₁₆	⁵ / ₁₆	⁵ / ₁₆	⁵ / ₁₆	⁶ / ₃₂	⁶ / ₁₆	⁷ / ₁₆

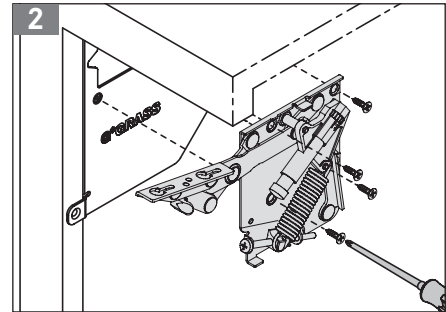
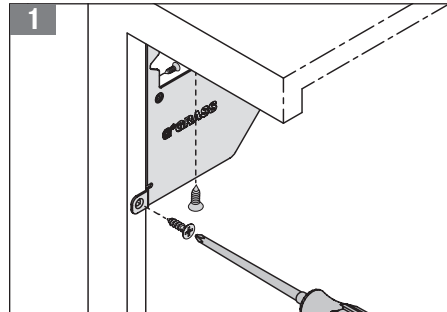
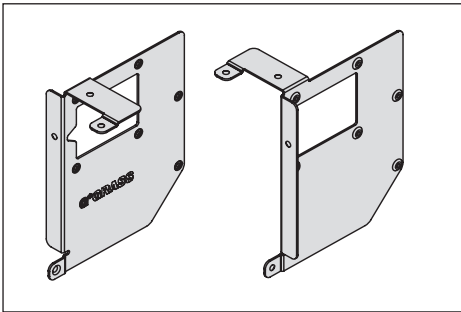
LEGEND

- F Reveal
- FAS Front overlay, side
- FAO Front overlay, top

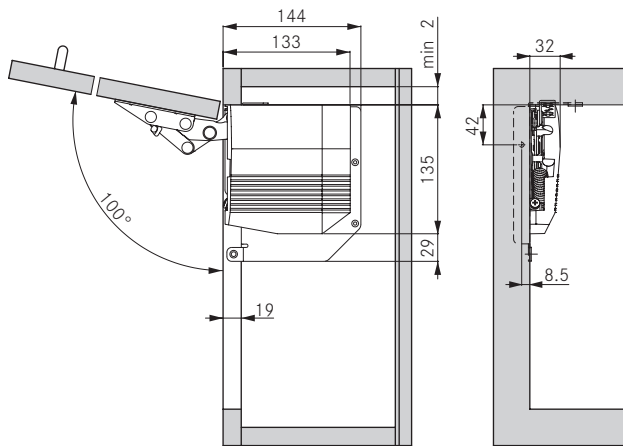
Kinvaro T-71

Lift-up Fitting

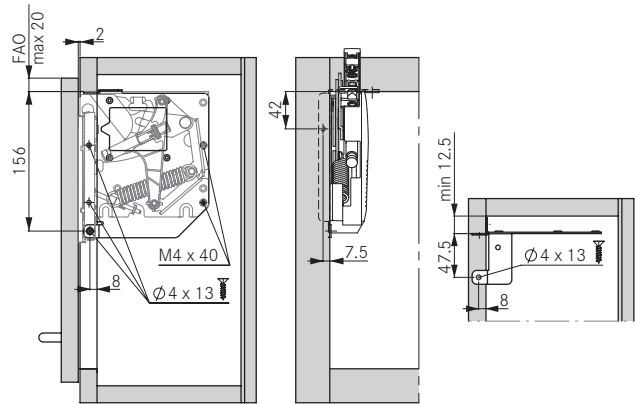
ASSEMBLY AND INSTALLATION INSTRUCTIONS FOR FACE FRAME CABINETS



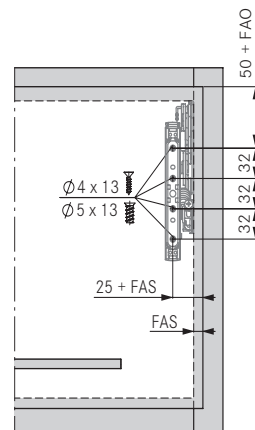
Required space



Side wall drilling positions



Front: installation for wooden and frame flaps (min 55mm width)



* Predrilling required - Ø 2mm

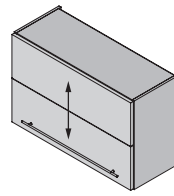
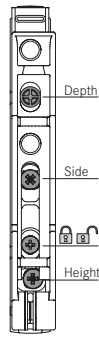
Calculation of flap weight

Flap width x flap height x flap thickness x density¹ + weight of handle² = weight of flap

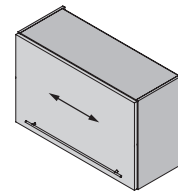
¹ Densities: MDF 0.85 kg/dm³, chipboard 0.65 kg/dm³, spruce/pine 0.45 kg/dm³

² For bar handles allow 0.1 kg for each 100mm handle width. We recommend a trial fitting

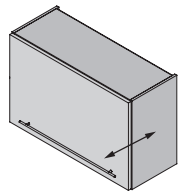
Lift-up Fitting



Height adjustment
+/-1.5mm



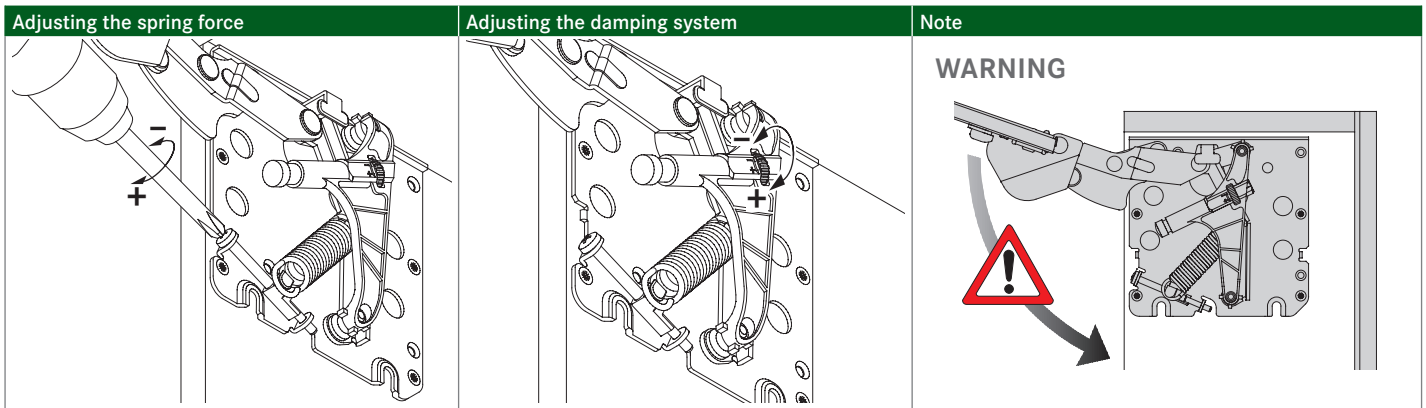
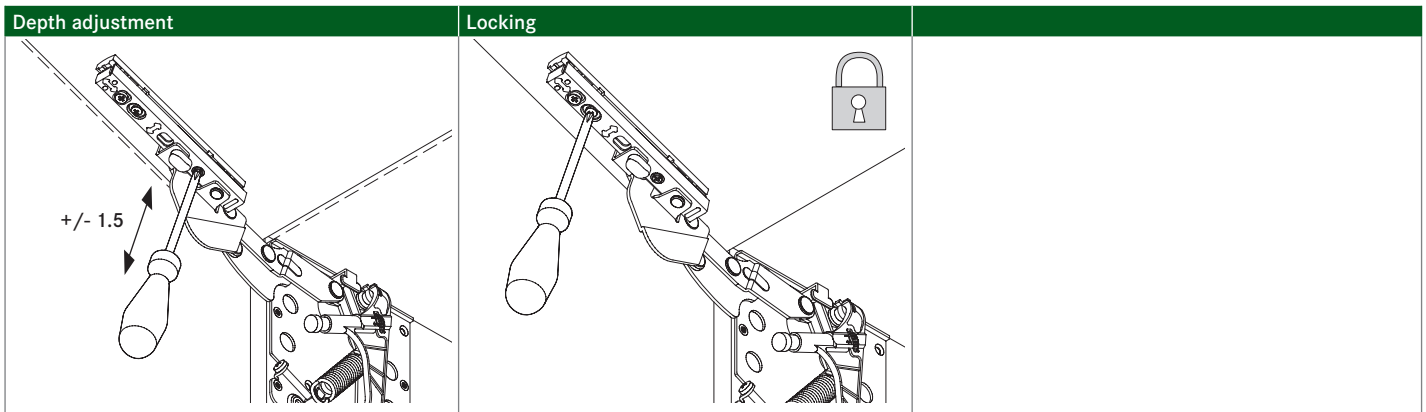
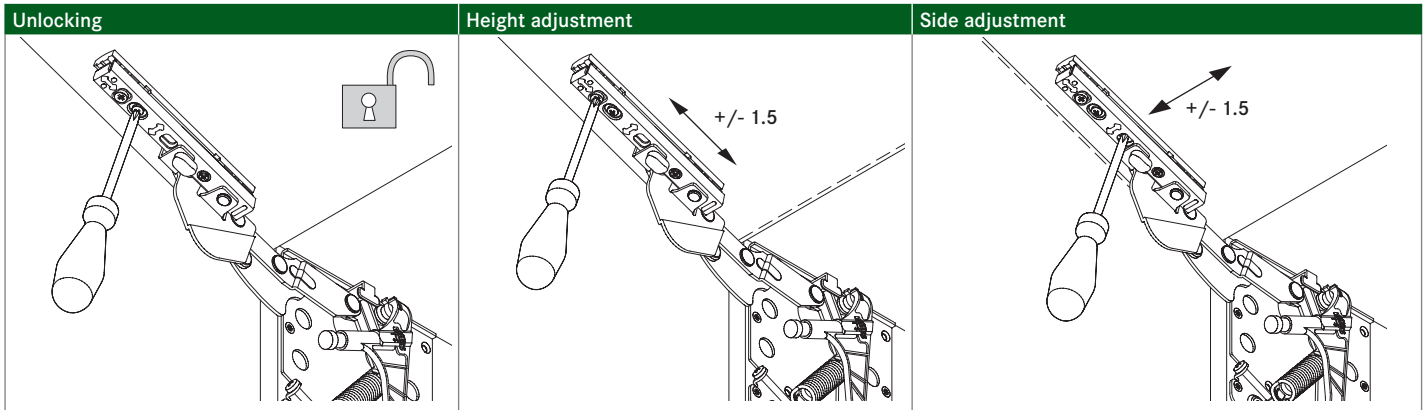
Side adjustment
+/- 1.5mm



Depth adjustment
+/- 1.5mm

All adjustments can be carried out independently of each other.

ADJUSTMENT OPTIONS



Kinvaro T-76

Lift-up Fitting



- Variable opening angle - holds flap securely at any angle between 45° and 110°
- Extremely comfortable opening due to spring-supported opening mechanism
- Adjustable spring force
- Integrated adjustable closing damper
- Flap 3-dimensionally adjustable - height, side, angle: direct adjustment ±1.5mm
- No hinges fitted to the top panel
- Allows additional cabinet installation above
- For wooden flaps
- Fast, tool-free clip fitting of the front
- Face frame adapter available
- Weight 11.5 to 24.25 lb (5.2 to 11.0 kg)
- Range of flaps:
Width: up to 47 ¼" (up to 1200mm)
Height: 15 ¾" - 23 ⅝" (400 - 600mm)
- Cover caps in grey

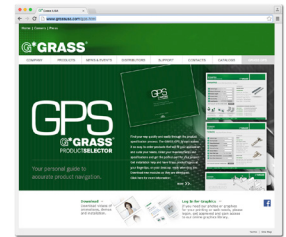
APPLICATION RANGE

Cabinet height	Flap weight incl. handle lb (kg)	
	Spring, standard	
15 ¾" (400)	15.4 - 24.3 (7.0 - 11.0)	
17 23/32" (450)	14.8 - 21.2 (6.7 - 9.6)	
19 11/16" (500)	12.8 - 18.7 (5.8 - 8.5)	
21 21/32" (550)	12.3 - 16.8 (5.6 - 7.6)	
23 5/8" (600)	11.5 - 15.4 (5.2 - 7.0)	

ORDER INFORMATION

Kinvaro T-76 set					
Description	Springs	Version for	Overlay	Item No.	PU
Kinvaro T-76 on right without damper and on left with damper, pre-assembled springs standard, incl. cover caps	standard	wood	variable	F151147706201	1

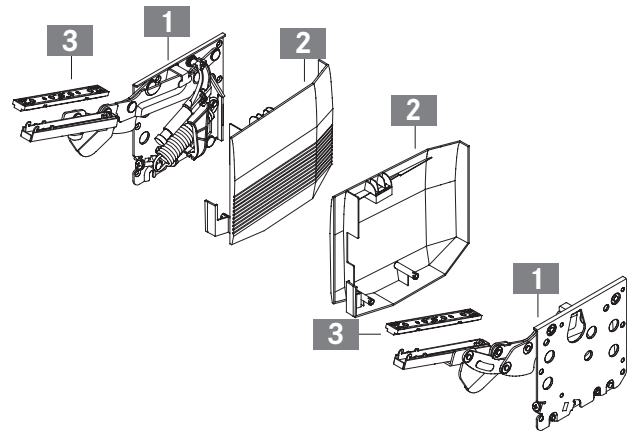
For automatic Kinvaro door calculations: Use the GRASS Kinvaro Calculator at www.grassusa.com/gps/



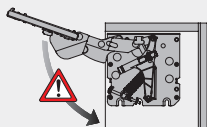
Face frame adapter, Kinvaro T-76 set			
Description	Overlay	Item No.	PU
Face frame adapter (2x) for wood frames with fixing screws (8x)	13 - 17	F151135905201	1

Kinvaro T-76 set comprises:

- 1 Fitting on the right without and on the left with damper (1x)
- 2 Cover caps on right and left (1x)
- 3 Mounting plates (2x)
Paper template (1x)
Installation instructions (1x)



WARNING



Important!
Caution - risk of injury! Fitting is spring-tensioned!

PU - Packaging unit

Lift-up Fitting

ASSEMBLY AND INSTALLATION INSTRUCTIONS

<p>Required space</p>	<p>Side wall drilling positions</p>
<p>WARNING</p> <p>Important! Caution - risk of injury! Fitting is spring-tensioned!</p>	<p>Front: installation for wooden and frame flaps (min 55mm width)</p> <p style="text-align: right;">*Pre-drilling required - Ø 2mm</p>

Calculation of flap weight

Flap width x flap height x flap thickness x density¹ + weight of handle² = weight of flap

¹ Densities: MDF 0.85 kg/dm³, chipboard 0.65 kg/dm³, spruce/pine 0.45 kg/dm³

² For bar handles allow 0.1 kg for each 100mm handle width. We recommend a trial fitting

Metric Conversions

MM	2	3.5	5	7.5	8	8.5	10	12.5	13	17	19	20	25	29	32	40	42
INCH	³ / ₃₂	¹ / ₈	³ / ₁₆	⁹ / ₃₂	⁵ / ₁₆	¹¹ / ₃₂	¹³ / ₃₂	¹ / ₂	¹ / ₂	²¹ / ₃₂	³ / ₄	¹³ / ₁₆	³¹ / ₃₂	¹ ⁵ / ₃₂	¹ / ₄	¹ ⁹ / ₁₆	¹ ²¹ / ₃₂
MM	43	47.5	50	55	64	70	80	128	133	135	138	144	156	158	181	185	
INCH	¹ ¹¹ / ₁₆	¹ ⁷ / ₈	¹ ³¹ / ₃₂	² ⁵ / ₃₂	² ¹ / ₂	² ³ / ₄	³ ¹ / ₈	⁵ ¹ / ₁₆	⁵ ¹ / ₄	⁵ ⁵ / ₁₆	⁵ ⁷ / ₁₆	⁵ ¹¹ / ₁₆	⁶ ⁵ / ₃₂	⁶ ¹ / ₄	⁷ ¹ / ₈	⁷ ¹ / ₄	

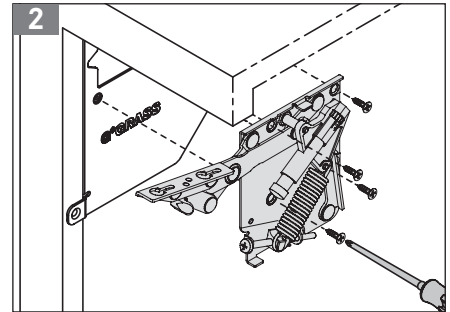
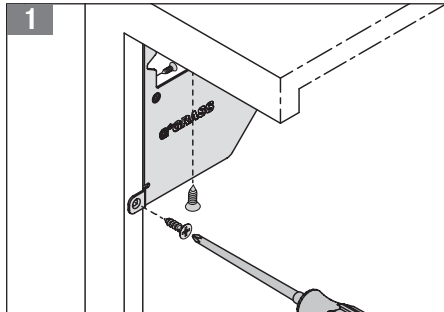
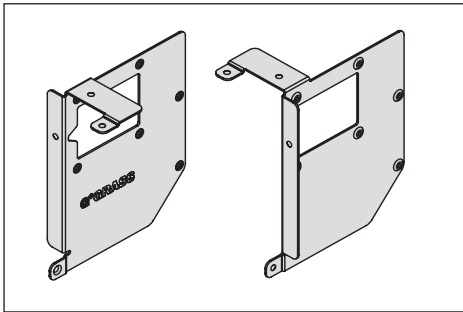
LEGEND

F	Reveal
FAS	Front overlay, side
FAO	Front overlay, top

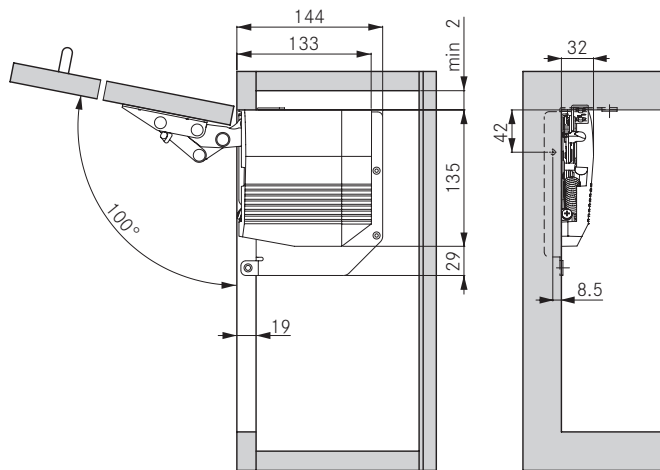
Kinvaro T-76

Lift-up Fitting

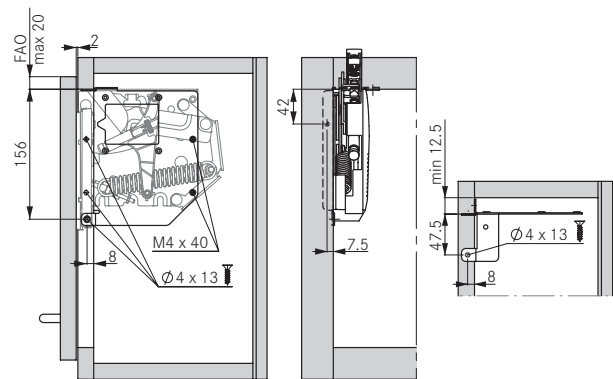
ASSEMBLY AND INSTALLATION INSTRUCTIONS FOR FACE FRAME CABINET



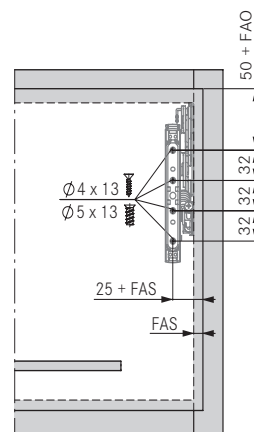
Required space



Side wall drilling positions



Front: installation for wooden and frame flaps (min 55mm width)



* Predrilling required - Ø 2mm

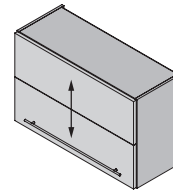
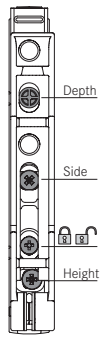
Calculation of flap weight

Flap width x flap height x flap thickness x density¹ + weight of handle² = weight of flap

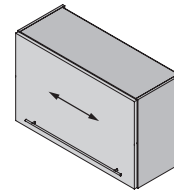
¹ Densities: MDF 0.85 kg/dm³, chipboard 0.65 kg/dm³, spruce/pine 0.45 kg/dm³

² For bar handles allow 0.1 kg for each 100mm handle width. We recommend a trial fitting

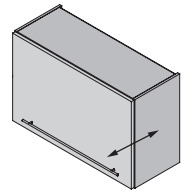
Lift-up Fitting



Height adjustment
+/- 1.5mm



Side adjustment
+/- 1.5mm



Depth adjustment
+/- 1.5mm

All adjustments can be carried out independently of each other.

ADJUSTMENT OPTIONS

Unlocking	Height adjustment	Side adjustment
Depth adjustment	Locking	
Adjusting the spring force	Adjusting the damping system	Note
		<p>WARNING</p>

Kinvaro T-57

Lift-up Fitting



- Opening angle adjustable to 75° or 90°
- Easy to fit
- Adjustable spring force
- Adjustable flap height ± 1.0mm
- No hinges fitted to the top panel
- Allows additional cabinet installation above
- For wooden flaps
- Weight 2.2 to 13.7 lb (1.0 to 6.2 kg)
- Range of flaps:
Width: up to 47 1/4" (up to 1200mm)
Height: 11 13/16" - 23 5/8" (300 - 600mm)
- High-quality finish, nickel-plated

APPLICATION RANGE

Cabinet height	Flap weight incl. handle lb (kg)	
	min.	max.
11 13/16" (300)	2.2 (1.0)	13.7 (6.2)
13 25/32" (350)	2.6 (1.2)	10.8 (4.9)
15 3/4" (400)	3.1 (1.4)	8.4 (3.8)
17 23/32" (450)	3.3 (1.5)	7.9 (3.6)
19 11/16" (500)	3.7 (1.7)	6.4 (2.9)
21 21/32" (550)	4.2 (1.9)	6.0 (2.7)
23 5/8" (600)	4.6 (2.1)	5.5 (2.5)

ORDER INFORMATION

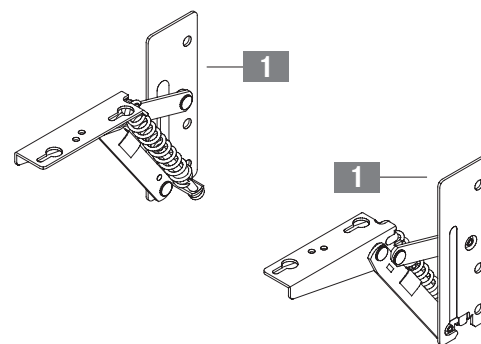
Kinvaro T-57 set				
Description	Version for	Overlay	Item No.	PU
Kinvaro T-57, nickel-plated adjustable springs on right and left	wood	variable	F151145224517	1

For automatic Kinvaro door calculations: Use the GRASS Kinvaro Calculator at www.grassusa.com/gps/

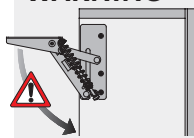


Kinvaro T-57 set comprises:

- 1** Fitting, right and left (1x)
- Paper template (1x)
- Installation instructions (1x)



WARNING



Important!
Caution - risk of injury! Fitting is spring-tensioned!

PU - Packaging unit

Lift-up Fitting

ASSEMBLY AND INSTALLATION INSTRUCTIONS

<p>Required space</p>	<p>Side wall drilling positions</p>
<p>WARNING</p> <p>Important! Caution - risk of injury! Fitting is spring-tensioned!</p>	<p>Front: installation for wooden and frame flaps (min 55mm width)</p> <p>*Pre-drilling required - Ø 2mm</p>
<p>Calculation of flap weight</p> <p>Flap width x flap height x flap thickness x density¹ + weight of handle² = weight of flap</p> <p>¹ Densities: MDF 0.85 kg/dm³, chipboard 0.65 kg/dm³, spruce/pine 0.45 kg/dm³</p> <p>² For bar handles allow 0.1 kg for each 100mm handle width. We recommend a trial fitting</p>	

Metric Conversions

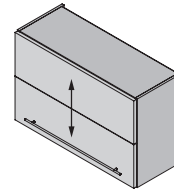
MM	.5	1	1.5	2	3	3.2	3.5	5	7.5	8	8.5	13	19	25	27	29	30
INCH	1/32	1/16	1/16	3/32	1/8	1/8	1/8	3/16	9/32	5/16	11/32	1/2	3/4	31/32	1 1/16	1 5/32	1 3/16
MM	32	34	37	46	47.5	50	55	64	100	135	138	144	164	169	170	180	181
INCH	1 1/4	1 11/32	1 7/16	1 13/16	1 7/8	1 31/32	2 5/32	2 1/2	3 15/16	5 5/16	5 7/16	5 11/16	6 15/32	6 21/32	6 11/16	7 3/32	7 1/8

LEGEND

- F Reveal
- FAO Front overlay, top
- FAS Front overlay, side
- PH Stamping height

Kinvaro T-57

Lift-up Fitting



Height adjustment
+/-1mm

All adjustments can be carried out independently of each other.

ADJUSTMENT OPTIONS

Height adjustment	Locking	
A technical drawing showing a screwdriver adjusting a screw on the lift-up fitting. A dashed line indicates the original position, and a solid line indicates the new position. A double-headed arrow between the lines is labeled "+/- 1 mm".	A technical drawing of the lift-up fitting with a padlock attached to its locking mechanism. A screwdriver is shown adjusting a screw on the fitting.	
Adjusting to 75° opening angle	Adjusting to 90° opening angle	Adjusting the spring force
A technical drawing of the lift-up fitting attached to a door. An arc indicates the door is open at a 75-degree angle.	A technical drawing of the lift-up fitting attached to a door. An arc indicates the door is open at a 90-degree angle.	A technical drawing of the lift-up fitting showing the spring force adjustment mechanism. A double-headed arrow indicates the range of adjustment, with '+' and '-' signs at the ends.
		Note
		<p>WARNING</p> A warning diagram featuring a red triangle with a black exclamation mark inside. An arrow points from the triangle to the edge of a door where the lift-up fitting is installed.



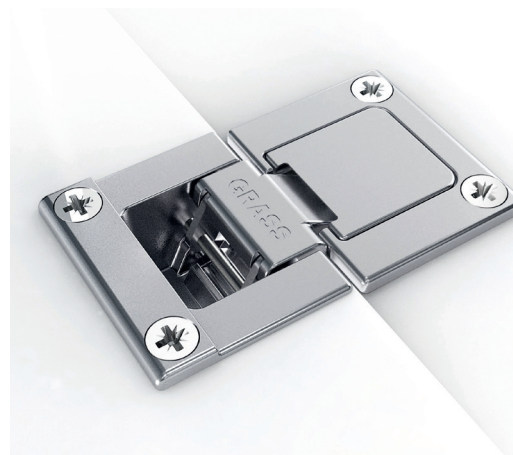
KINVARO Flap System

Drop-down flap system for an elegant style

Kinvaro D flap system, paired with the Tiomos Flap hinge, revitalizes drop-down cabinet applications by creating aesthetically clean lines, a minimalistic look, and easy access to the cabinet contents.

The modern Kinvaro D provides a drop-down flap solution for the classic wall cabinet. Functional and comfortable the Kinvaro D offers an integrated damping system providing a gentle opening that rests at 90° with the assistance of the Tiomos Flap hinge. Kinvaro D-M flap system is offered in White, Night, and Smoke with a flap door weight capacity up to 22.5 pounds. The Kinvaro D-S is offered in White and Night with a flap door weight capacity up to 13.5 pounds.

Kinvaro D and Tiomos Flap hinge, the perfect combination for a fold down system that ensures the open flap is flush with the base panel every time.



Tiomos Flap hinge offering a 90° opening angle and 3-dimensional adjustment

Kinvaro D

D-M flap stay with pull cable




- Gentle opening
- Opening angle adjustable (length of cable)
- Spring force adjustment
- Can be used with shallow cabinets from 110mm (4 5/16") depth
- Flap weight up to 10 kg (22 lb)
- Flap height 200mm - 480mm (7 7/8" - 18 7/8")
- Can be used on left/right side of cabinet
- Easy to install horizontally or vertically
- In White, Night, and Smoke finish
- Works perfectly with Tiomos flap hinge

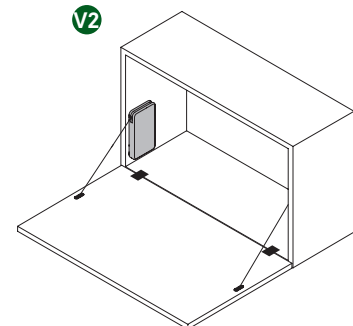
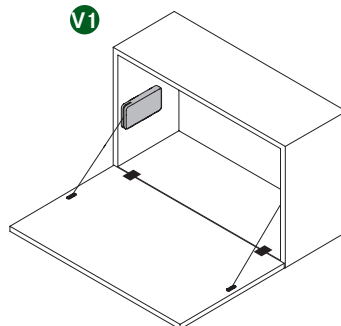
Application Range

Flap Height (FH)	Horizontal Installation (V1)				Vertical Installation (V2)			
	Flap weight including handle in lb (kg)							
	Spring 60N		Spring 100N		Spring 60N		Spring 100N	
	1X	2X	1X	2X	1X	2X	1X	2X
7 7/8" - 9 1/16" (200 - 230)	8.82 - 10.58 (4.0 - 4.8)	-	9.25 - 13.66 (4.2 - 6.2)	-	9.03 - 13.00 (4.1 - 5.9)	-	11.68 - 16.09 (5.3 - 7.3)	-
9 1/16" - 10 5/8" (230 - 270)	6.61 - 9.70 (3.0 - 4.4)	13.22 - 18.51 (6.0 - 8.4)	7.93 - 11.46 (3.6 - 5.2)	14.99 - 21.16 (6.8 - 9.6)	7.27 - 10.58 (3.3 - 4.8)	14.99 - 21.16 (6.8 - 9.6)	9.25 - 13.22 (4.2 - 6.0)	21.16 - 28.21 (9.6 - 12.8)
10 5/8" - 13" (270 - 330)	6.39 - 8.37 (2.9 - 3.8)	12.34 - 17.19 (5.6 - 7.8)	6.61 - 10.14 (3.0 - 4.6)	14.10 - 19.40 (6.4 - 8.8)	7.05 - 9.92 (3.2 - 4.5)	13.88 - 17.85 (6.3 - 8.1)	8.37 - 11.24 (3.8 - 5.1)	17.41 - 24.47 (7.9 - 11.1)
13" - 14 15/16" (330 - 380)	5.95 - 8.15 (2.7 - 3.7)	11.02 - 17.63 (5.0 - 8.0)	7.05 - 9.47 (3.2 - 4.3)	14.33 - 18.73 (6.5 - 8.5)	5.73 - 7.49 (2.6 - 3.4)	11.02 - 14.33 (5.0 - 6.5)	7.27 - 9.92 (3.3 - 4.5)	16.09 - 18.73 (7.3 - 8.5)
14 15/16" - 16 15/16" (380 - 430)	6.39 - 7.93 (2.9 - 3.6)	9.92 - 13.44 (4.5 - 6.1)	6.83 - 8.59 (3.1 - 3.9)	12.56 - 16.09 (5.7 - 7.3)	5.15 - 7.49 (2.5 - 3.4)	11.02 - 13.66 (5.0 - 6.2)	7.05 - 9.25 (3.2 - 4.2)	13.66 - 18.07 (6.2 - 8.2)
16 15/16" - 18 1/8" (430 - 460)	5.95 - 6.83 (2.7 - 3.1)	9.47 - 13.44 (4.3 - 6.1)	5.95 - 8.59 (2.7 - 3.9)	13.00 - 18.29 (5.9 - 8.3)	5.07 - 6.61 (2.3 - 3.0)	10.14 - 13.66 (4.6 - 6.2)	6.61 - 8.37 (3.0 - 3.8)	13.66 - 17.19 (6.2 - 7.8)
18 1/8" - 18 7/8" (460 - 480)	5.51 - 6.39 (2.5 - 2.9)	9.03 - 12.56 (4.1 - 5.7)	6.17 - 8.37 (2.8 - 3.8)	11.68 - 16.97 (5.3 - 7.7)	5.29 - 7.05 (2.4 - 3.2)	10.14 - 13.22 (4.6 - 6.0)	6.17 - 8.81 (2.8 - 4.0)	12.34 - 17.19 (5.6 - 7.8)

Kinvaro D-M

Description	Springs	Color	Item No.	PU
 Kinvaro D-M flap stay including front holder and fixing screws	60N	Grey	F053139661 607	10
	100N	Grey	F053139662 607	10

Description	Color	Item No.	PU
 Cover cap for Kinvaro D-M	White	F053139668 507	10
	Night	F053139669 507	10
	Smoke	F053139670 507	10

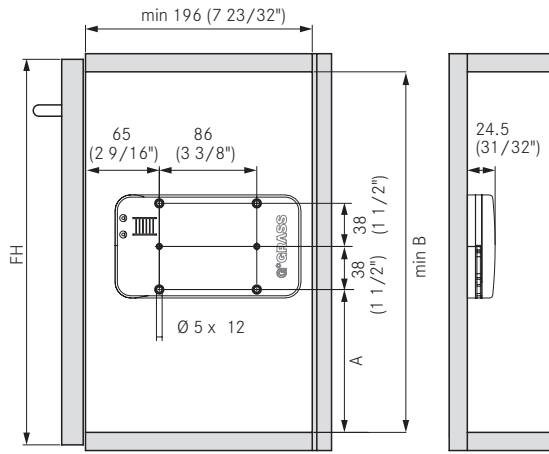


Note: Please order Tiomos flap hinges separately

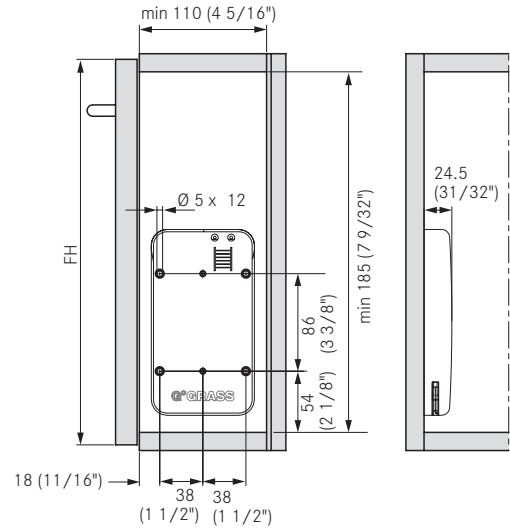
PU - Packaging unit

D-M flap stay with pull cable

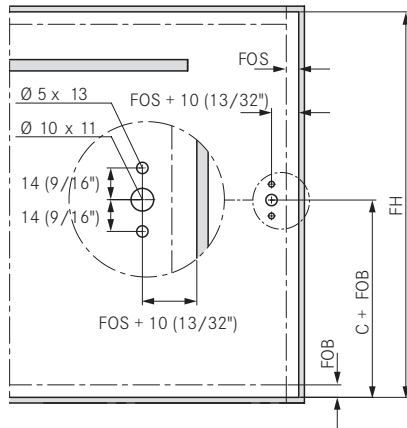
Side Panel Drilling, V1 - Horizontal Installation Side Panel Drilling, V2 - Vertical Installation



FH	A	B
200-330 (7 7/8" - 13")	102 (4")	194 (7 5/8")
330-430 (13" - 16 15/16")	126 (4 15/16")	218 (8 9/16")
430-480 (16 15/16" - 18 7/8")	136 (5 3/8")	228 (9")



Flap Drilling Calculation of Flap Weight



FH	C (V1)	C (V2)
200-330 (7 7/8" - 13")	137 (5 3/8")	161 (6 5/16")
330-430 (13" - 16 15/16")	161 (6 5/16")	161 (6 5/16")
430-480 (16 15/16" - 18 7/8")	171 (6 3/4")	161 (6 5/16")

Flap width x flap height x flap thickness x density* + weight of handle** = weight of flap

*Densities: MDF 0.85 kg (1.9 lb)/dm³, chipboard 0.65 kg (1.4 lb) /dm³, spruce/ pine 0.45 kg (1lb)/dm³

**For bar handles allow 0.1 kg (.2 lb) for each 100mm handle width.

IMPORTANT

To determine the correct application Grass strongly recommends a trial mounting.

Minimum gap and flap protrusion depend on the hinge used.

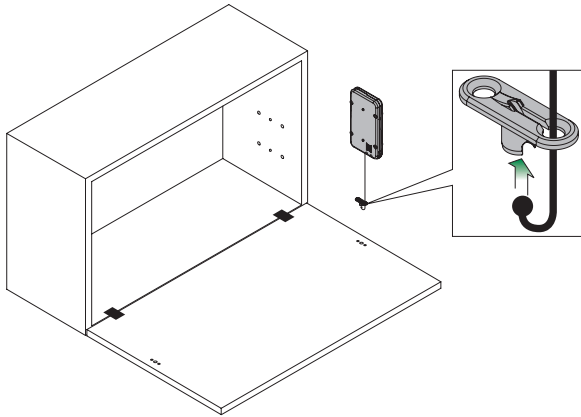
- R = Reveal
- FOB = Front overlay, bottom
- FOS = Front overlay, side
- FH = Flap height

Assembly Instructions

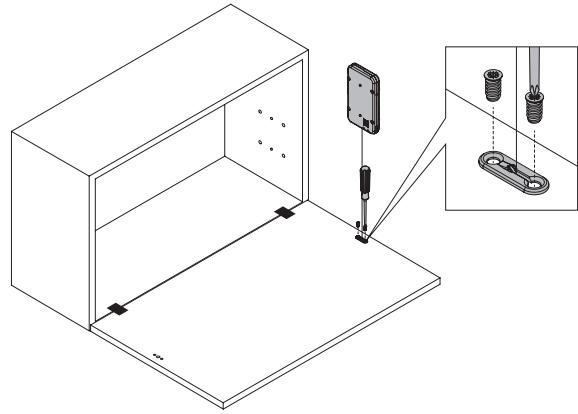
Kinvaro D-M flap stay with pull cable

Assembly Instructions

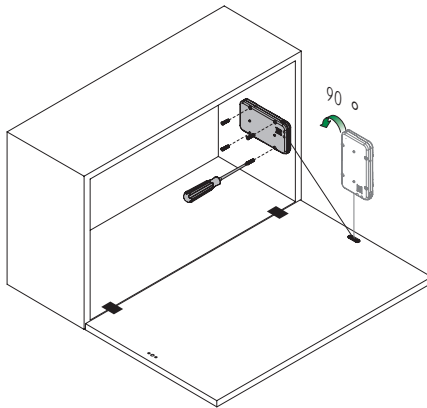
1



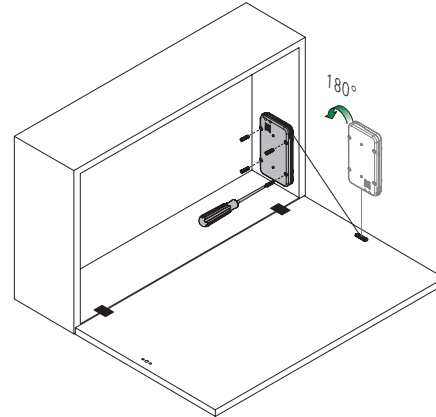
2



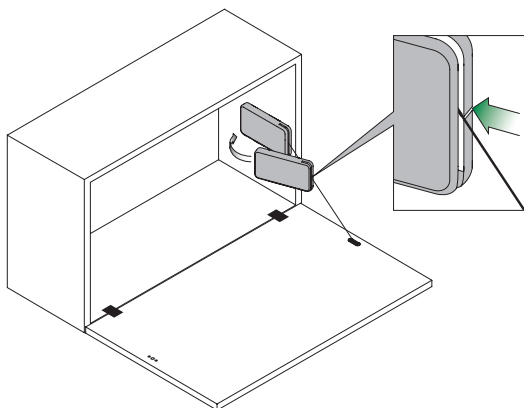
3(V1)



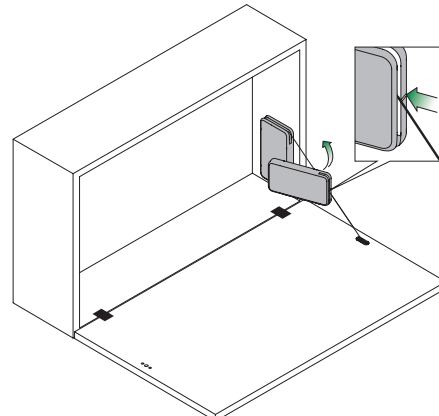
3(V2)



4(V1)

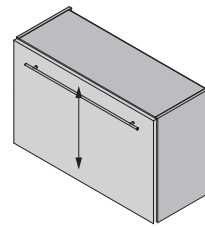


4(V2)

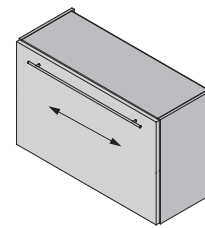


Assembly Instructions

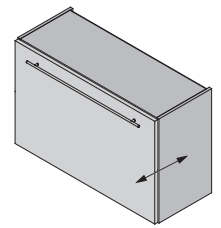
Kinvaro D-M flap stay with pull cable



Height adjustment
+2/-3mm



Side Adjustment
±1mm

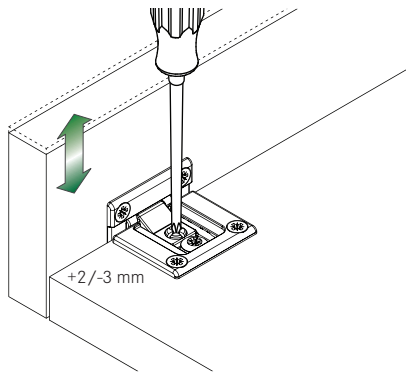


Depth adjustment
+5/-0mm

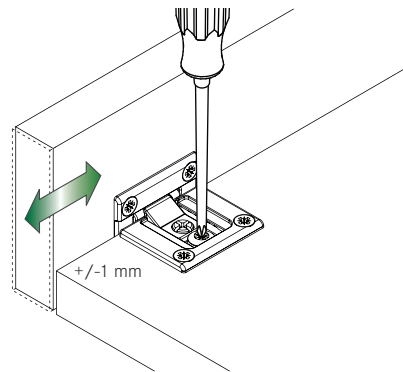
All adjustment options can be made independently of one another

Adjustment Options, When Used with the Tiomos Flap Hinge

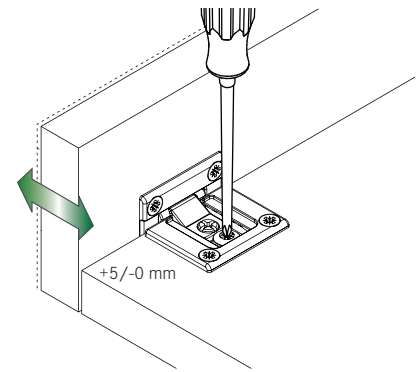
Height Adjustment



Side Adjustment

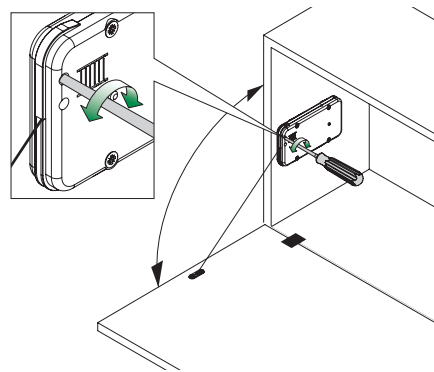
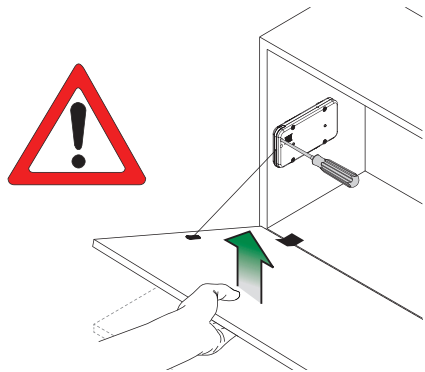


Depth Adjustment

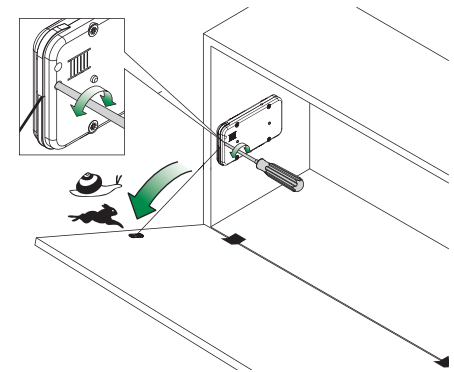


Note: The adjustments shown are for the Tiomos flap hinge shown on page 40.

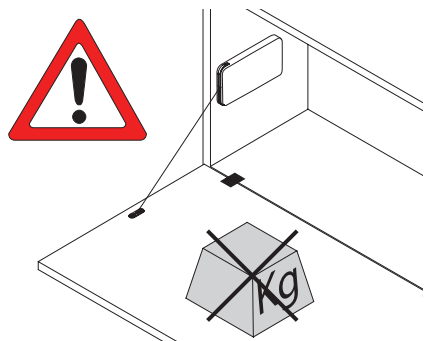
Adjusting the Opening Angle



Adjusting the Opening Speed



Note



Kinvaro D

D-S flap stay with pull cable




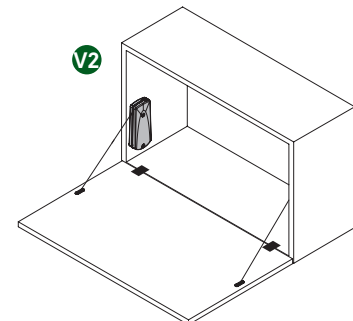
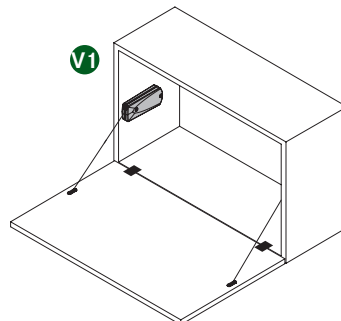
- Gentle opening
- Opening angle adjustable (length of cable)
- Can be used with shallow cabinets from 82mm (3 1/4") depth
- Flap height 200mm - 480mm (7 7/8" - 18 7/8")
- Can be used on left/right side of cabinet
- Easy to install horizontally or vertically
- In White or Night finish
- Works perfectly with Tiomos flap hinge

Application Range

Flap Height (FH)	Horizontal Installation (V1) or Vertical Installation (V2)			
	Flap weight including handle in lb (kg)			
	Spring 40N		Spring 60N	
	1X	2X	1X	2X
7 7/8" - 10 5/8" (200 - 270)	3.74 - 6.61 (1.7 - 3.0)	8.59 - 9.92 (3.9 - 4.5)	6.83 - 8.81 (3.1 - 4.0)	16.53 - 17.63 (7.5 - 8.0)
10 5/8" - 13" (270 - 330)	3.74 - 6.61 (1.7 - 3.0)	7.27 - 9.92 (3.3 - 4.5)	6.83 - 8.81 (3.1 - 4.0)	13.44 - 16.31 (6.1 - 7.4)
13" - 14 15/16" (330 - 380)	3.74 - 4.18 (1.7 - 1.9)	7.05 - 7.71 (3.2 - 3.5)	6.39 - 7.71 (2.9 - 3.5)	11.24 - 14.99 (5.1 - 6.8)
14 15/16" - 16 15/16" (380 - 430)	3.30 - 3.96 (1.5 - 1.8)	5.95 - 7.27 (2.7 - 3.3)	5.51 - 7.27 (2.5 - 3.3)	10.58 - 14.55 (4.8 - 6.6)
16 15/16" - 18 1/8" (430 - 460)	2.64 - 3.74 (1.2 - 1.7)	5.51 - 6.83 (2.5 - 3.1)	5.07 - 7.27 (2.3 - 3.3)	10.14 - 13.22 (4.6 - 6.0)
18 1/8" - 18 7/8" (460 - 480)	-	-	4.85 - 6.17 (2.2 - 2.8)	9.70 - 11.68 (4.4 - 5.3)

Kinvaro D-S

Description	Springs	Color	Item No.	PU
 Kinvaro D-S flap stay including front holder and fixing screws	40N	White	F053139664 607	10
		Night	F053139665 607	10
	60N	White	F053139666 607	10
		Night	F053139667 607	10

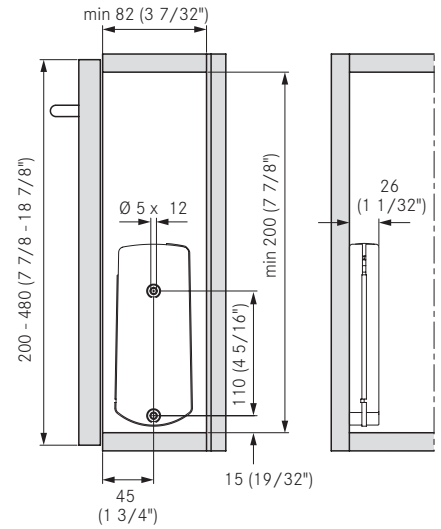
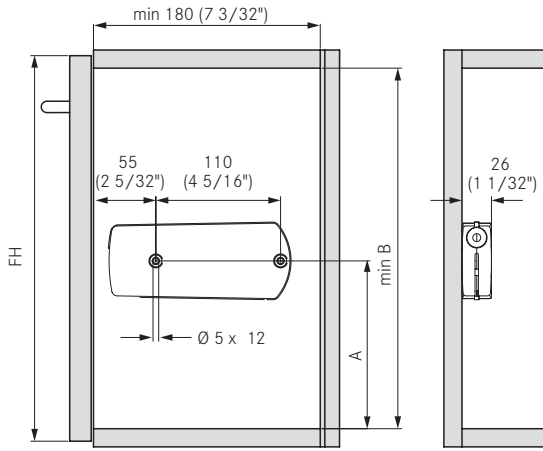


Note: Please order Tiomos flap hinges separately

PU - Packaging unit

D-S flap stay with pull cable

Side Panel Drilling, V1 - Horizontal Installation Side Panel Drilling, V2 - Vertical Installation



FH	A	B
200 - 270 (7 7/8" - 10 5/8")	135 (5 5/16")	173 (6 13/16")
270 - 480 (10 5/8" - 18 7/8")	148 (5 13/16")	186 (7 5/16")

Flap Drilling Calculation of Flap Weight

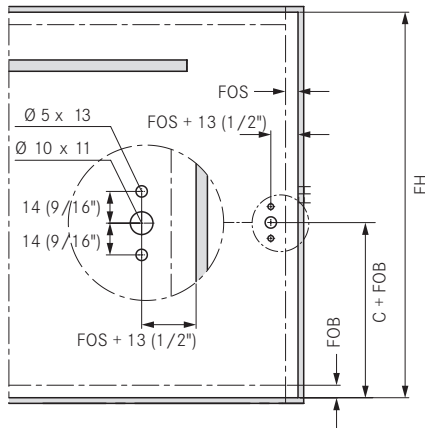
Flap width x flap height x flap thickness x density* + weight of handle** = weight of flap

*Densities: MDF 0.85 kg (1.9 lb)/dm³, chipboard 0.65 kg (1.4 lb) /dm³, spruce/ pine 0.45 kg (1lb)/dm³

**For bar handles allow 0.1 kg (.2 lb) for each 100mm handle width.

IMPORTANT

To determine the correct application Grass strongly recommends a trial mounting.



FH	C (V1)	C (V2)
200 - 270 (7 7/8" - 10 5/8")	123 (4 27/32")	-
270 - 480 (10 5/8" - 22 13/16")	144 (5 21/32")	-
230 - 480 (9 1/16" - 18 7/8")	-	123 (4 13/16")

Minimum gap and flap protrusion depend on the hinge used.

R = Reveal

FOB = Front overlay, bottom

FOS = Front overlay, side

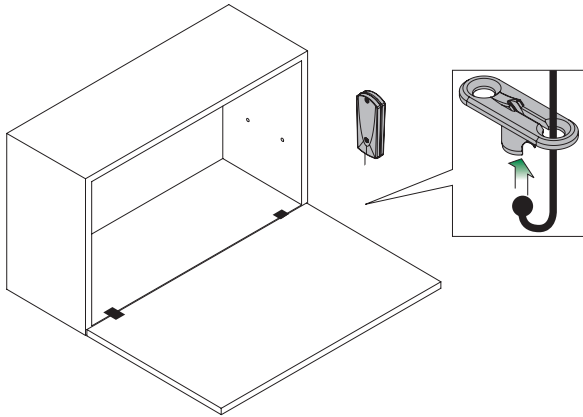
FH = Flap height

Assembly Instructions

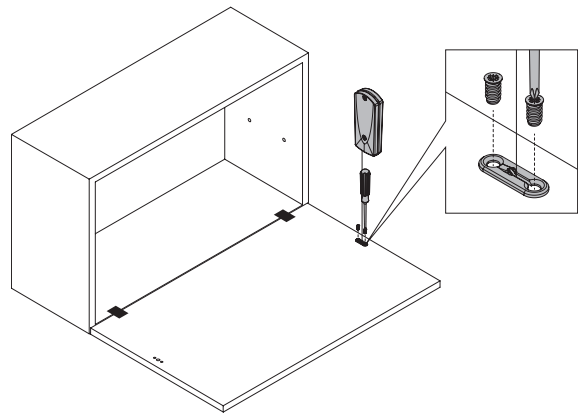
Kinvaro D-S flap stay with pull cable

Assembly Instructions

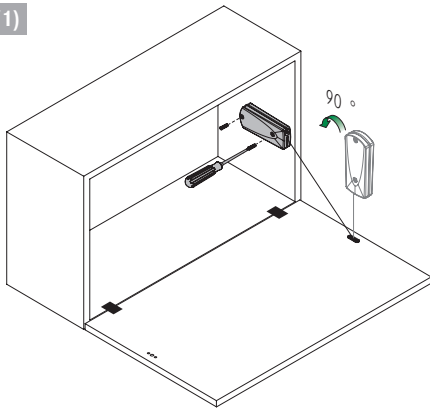
1



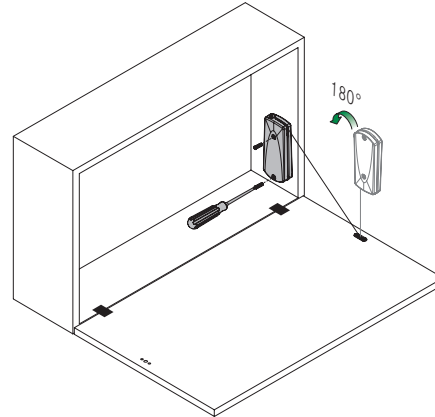
2



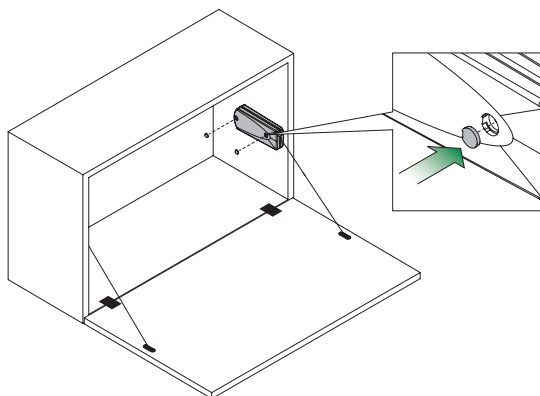
3(V1)



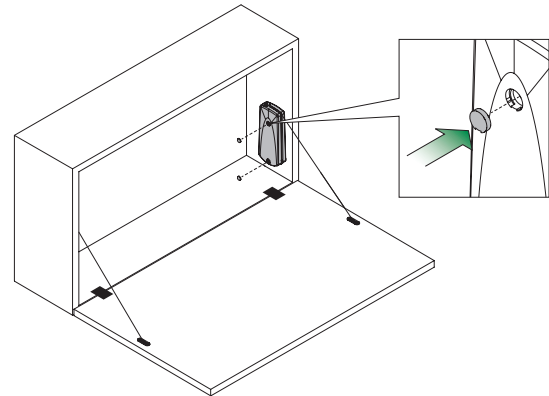
3(V2)



4(V1)



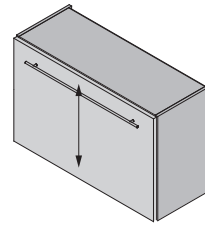
4(V2)



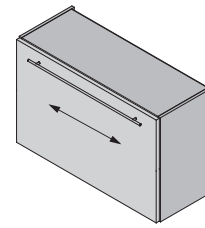
Assembly Instructions



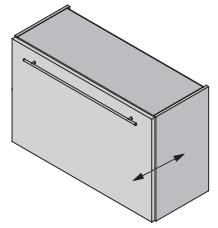
Kinvaro D-S flap stay with pull cable



Height adjustment
+2/-3mm



Side Adjustment
±1mm

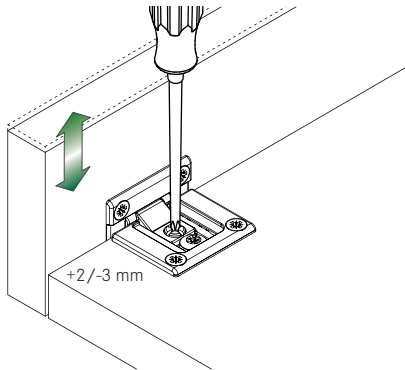


Depth adjustment
+5/-0mm

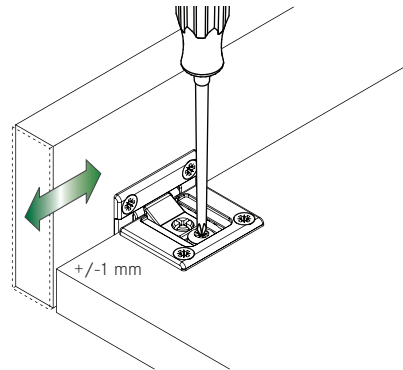
All adjustment options can be made independently of one another

Adjustment Options, When Used with the Tiomos Flap Hinge

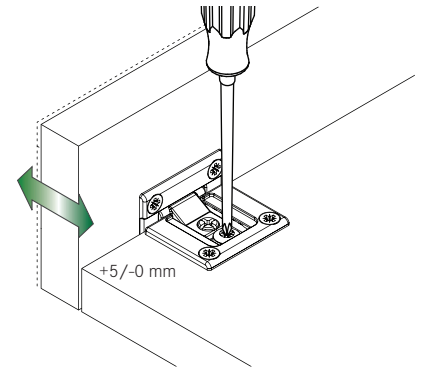
Height Adjustment



Side Adjustment

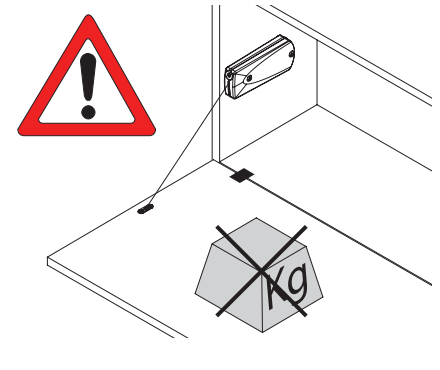
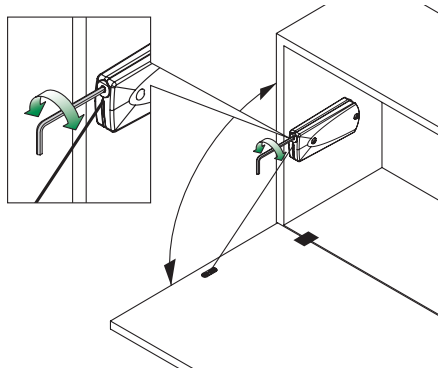
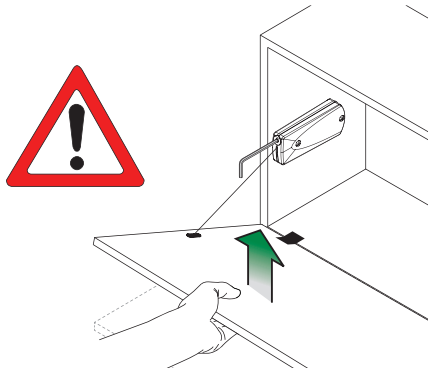


Depth Adjustment



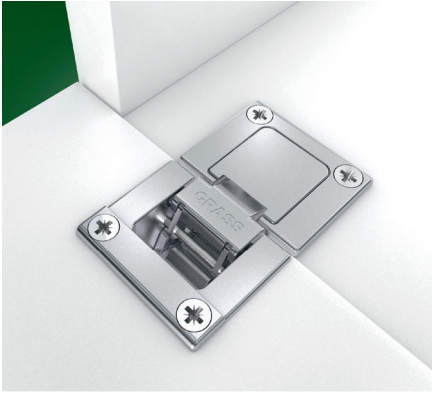
Note: The adjustments shown are for the Tiomos flap hinge shown on page 40.

Adjusting the Opening Angle

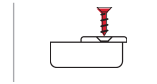


Tiomos Flap Hinge

90° hinge for flap door



- Sleek modern design
- 90° opening angle
- For flap thicknesses of up to 30mm (1 3/16")
- Narrow joint
- Large overlay of up to 19mm (3/4")
- 3-dimensional adjustment
- Compatible with Tipmatic pin system
- Compatible with Kinvaro D-M/D-S flap system



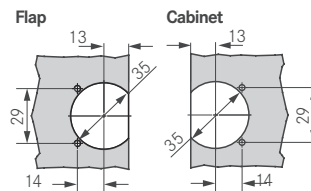
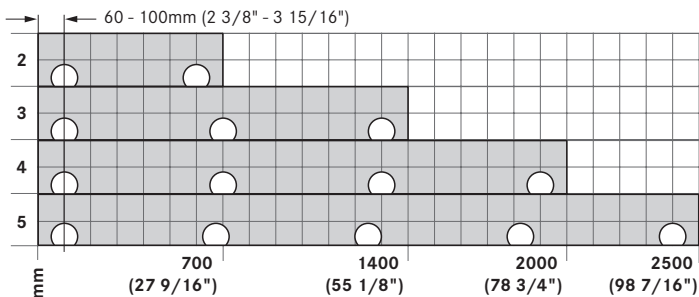
Tiomos Flap Hinge Opening Angle 90° Screw-On

Overlay	For Flap Thickness 14-21mm	Color	Cup Depth	Item No.	PU
	Hinge: zinc die-cast, nickel-plated	Nickel	12mm	F053139671223	100
	Hinge: zinc die-cast, night	Night	12mm	F053139677223	100

Overlay	For Flap Thickness 22-28mm	Color	Cup Depth	Item No.	PU
	Hinge: zinc die-cast, nickel-plated	Nickel	17mm	F053139672223	100
	Hinge: zinc die-cast, night	Night	17mm	F053139678223	100

Cover Cap for Flap Hinge	Item No.	PU	1.5mm Spacer for Tiomos Flap Hinge	Item No.	PU		
	Steel, nickel plated	F053139675223	100		Steel, nickel plated	F053139676223	100
	Steel, night	F053139683223	100		Steel, night	F053139684223	100

Number of Hinges per Door Drilling Pattern



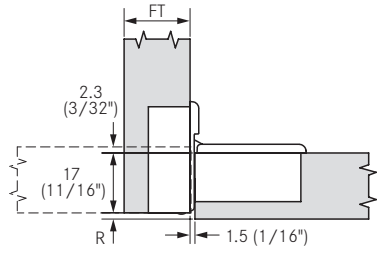
PU - Packaging unit

Tiomos Flap Hinge



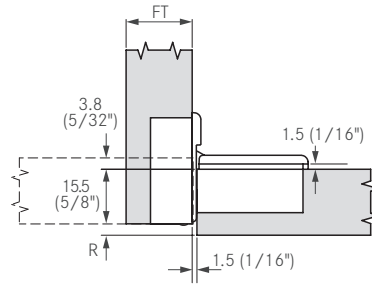
90° hinge for flap door

Overlay, Without Spacer, 12mm Cup Depth



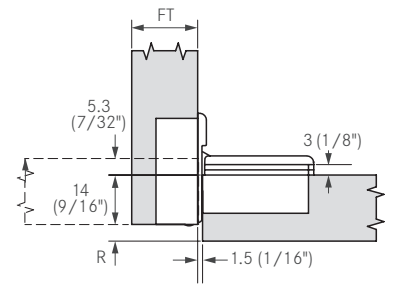
Min Reveal (R)	Flap Thickness (FT)							
	21	20	19	18	17	16	15	14
	2.5	1.5	1	1	1	1	1	1

Overlay, with 1 Spacer, 12mm Cup Depth



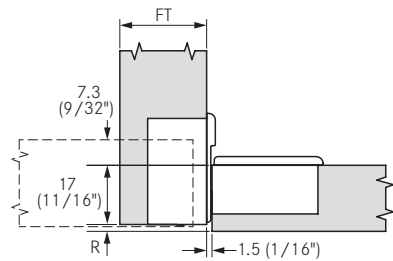
Min Reveal (R)	Flap Thickness (FT)							
	21	20	19	18	17	16	15	14
	2.5	1.5	1	1	1	1	1	1

Overlay, with 2 Spacers, 12mm Cup Depth



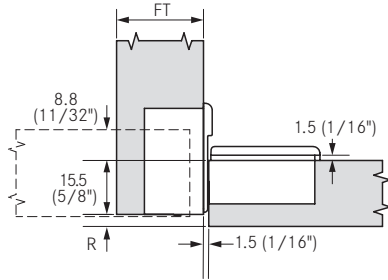
Min Reveal (R)	Flap Thickness (FT)							
	21	20	19	18	17	16	15	14
	2.5	1.5	1	1	1	1	1	1

Overlay, Without Spacer, 17mm Cup Depth



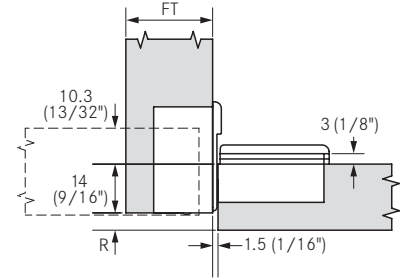
Min Reveal (R)	Flap Thickness (FT)								
	30	29	28	27	26	25	24	23	22
	6.5	5.5	4.5	3.5	2.5	1.5	1	1	1

Overlay, with 1 Spacer, 17mm Cup Depth



Min Reveal (R)	Flap Thickness (FT)								
	30	29	28	27	26	25	24	23	22
	6.5	5.5	4.5	3.5	2.5	1.5	1	1	1

Overlay, with 2 Spacers, 17mm Cup Depth

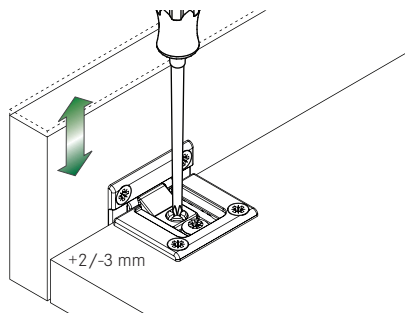


Min Reveal (R)	Flap Thickness (FT)								
	30	29	28	27	26	25	24	23	22
	6.5	5.5	4.5	3.5	2.5	1.5	1	1	1

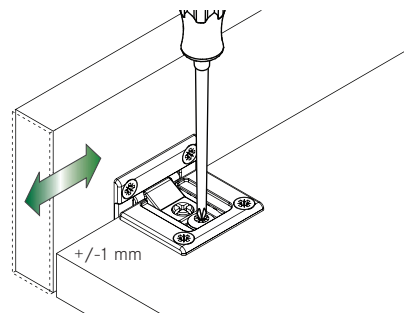
Note: Hinge dimensions and reveal calculation based on factory setting.

IMPORTANT
To determine the correct application Grass strongly recommends a trial mounting for all hinges and base plates.

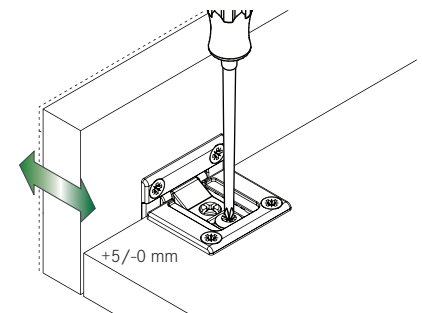
Overlay Adjustment



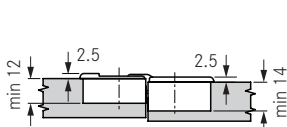
Side Adjustment



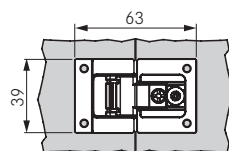
Depth Adjustment



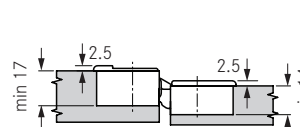
Cup Dimensions, 12mm cup depth



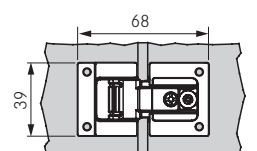
Hinge Dimension, 12mm cup depth



Cup Dimensions, 17mm cup depth



Hinge Dimensions, 17mm cup depth



Kinvaro T-105

Flap Stay



- Variable opening angle, holds flaps securely from 45° to 105°
- Spring-supported opening function
- Convenient access, flap lifts clear of the work area
- For wooden flaps
- Allows additional cabinet installation above
- Maintenance-free, no re-adjustment required
- High-quality zinc diecasting, nickel-plated
- Range of flaps:
 - Width: up to 47 1/4" (up to 1200mm)
 - Height: 9 27/32" - 19 1/16" (250 - 500mm)

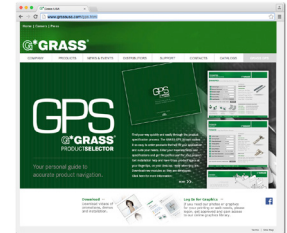
APPLICATION RANGE

Cabinet height	Number of flap stays	Flap weight incl. handle lb (kg)	
		Spring, standard	
9 27/32" (250)	1	3.1 - 9.7	(1.4 - 4.4)
	2	7.5 - 19.6	(3.4 - 8.9)
11 13/16" (300)	1	3.5 - 9.5	(1.6 - 4.3)
	2	7.1 - 19.0	(3.2 - 8.6)
13 25/32" (350)	1	2.9 - 9.0	(1.3 - 4.1)
	2	5.7 - 17.9	(2.6 - 8.1)
15 3/4" (400)	1	2.9 - 7.5	(1.3 - 3.4)
	2	5.7 - 15.0	(2.6 - 6.8)
17 23/32" (450)	1	2.6 - 6.6	(1.2 - 3.0)
	2	5.3 - 13.4	(2.4 - 6.1)
19 11/16" (500)	1	2.4 - 6.4	(1.1 - 2.9)
	2	4.9 - 12.8	(2.2 - 5.8)

ORDER INFORMATION

Kinvaro T-105 set						
Description	Springs	Version for	Overlay	Left	Right	PU
Kinvaro T-105 right, adjustable standard springs, incl. black cover cap	standard	wood	variable	F151145220513	F151145221513	1

For automatic Kinvaro door calculations: Use the GRASS Kinvaro Calculator at www.grassusa.com/gps/



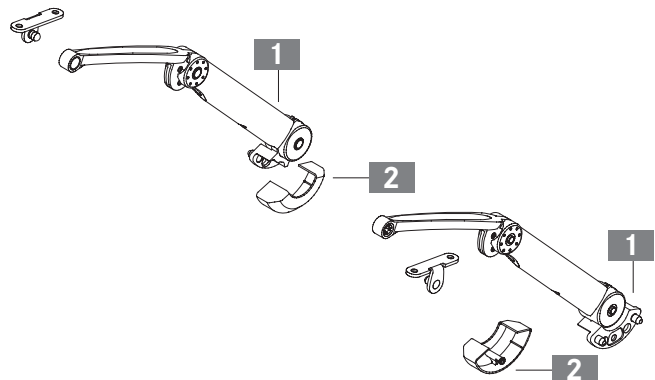
Kinvaro Installation Template		
Description	Item No.	PU
Kinvaro T-105 Drill Jig	00489-01	1
Kinvaro Door Template Drill Jig	00495-01	1
Kinvaro 5mm drill bit	00496-01	1
Kinvaro 9/64" drill bit	00497-01	1

Note:

Please order separately: Tiomos 120° hinges with spring, without Soft-close, and respective base plates for top panel.

Kinvaro T-105 set comprises:

- 1 Fitting, right or left (1x)
 - 2 Cover caps, right or left, in black (1x)
- Paper template (1x)
Installation instructions (1x)



PU - Packaging unit

Flap Stay

ASSEMBLY AND INSTALLATION INSTRUCTIONS

Required space	Side wall drilling positions
* Pre-drilling required - Ø 2mm	

Front: installation for wooden and frame flaps (min 45mm width)

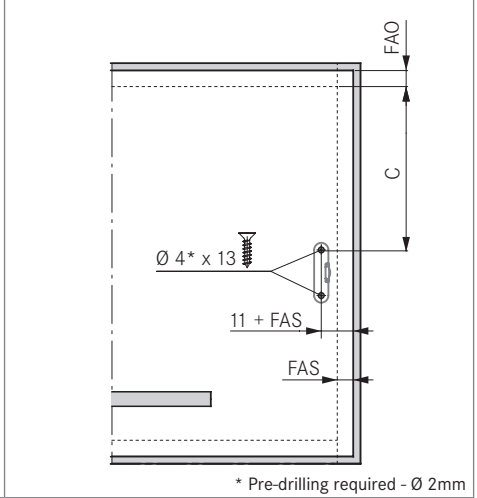
Opening angle	A	B	C
95°	169 + MH	174 + MH	118 + MH
≥ 105°	164 + MH	169 + MH	113 + MH

The installation dimensions apply to hinges with 0 cranking and the respective base plate height.

The opening angle can vary depending on the type of hinge and application method between 95° and approx. 105°.

Minimum reveal and door protrusion depend on the fitted hinge.
For suitable hinges please refer to the Tiomos or Nexis Grass hinge catalog.

Where cup hinges with different opening angles are used in a combination of wooden flap, the smaller opening angle of the hinges used determines the installation dimensions for **both** flaps.



Calculation of flap weight

Flap width x flap height x flap thickness x density¹ + weight of handle² = weight of flap

¹ Densities: MDF 0.85 kg/dm³, chipboard 0.65 kg/dm³, spruce/pine 0.45 kg/dm³

² For bar handles allow 0.1 kg for each 100mm handle width. We recommend a trial fitting

Metric Conversions

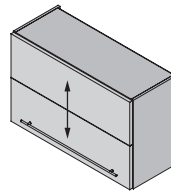
MM	2	3	3.2	3.5	4	8	8.5	11	13	17	19	20	21	22	27	32	45
INCH	³ / ₃₂	¹ / ₈	¹ / ₈	¹ / ₈	⁵ / ₃₂	⁵ / ₁₆	¹¹ / ₃₂	⁷ / ₁₆	¹ / ₂	²¹ / ₃₂	³ / ₄	¹³ / ₁₆	¹³ / ₁₆	⁷ / ₈	^{1 1} / ₁₆	^{1 1} / ₄	^{1 3} / ₄
MM	90	100	113	118	119	164	169	170	174	180							
INCH	^{3 17} / ₃₂	^{3 15} / ₁₆	^{4 7} / ₁₆	^{4 21} / ₃₂	^{4 11} / ₁₆	^{6 15} / ₃₂	^{6 21} / ₃₂	^{6 11} / ₁₆	^{6 27} / ₃₂	^{7 3} / ₃₂							

LEGEND

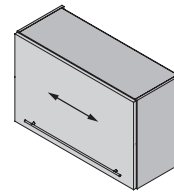
- A Side wall fastening dimension
- B Side wall fastening dimension
- C Front fastening dimension
- FAO Front overlay, top
- FAS Front overlay, side
- MH Base plate height

Kinvaro T-105

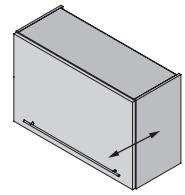
Flap Stay



Height adjustment



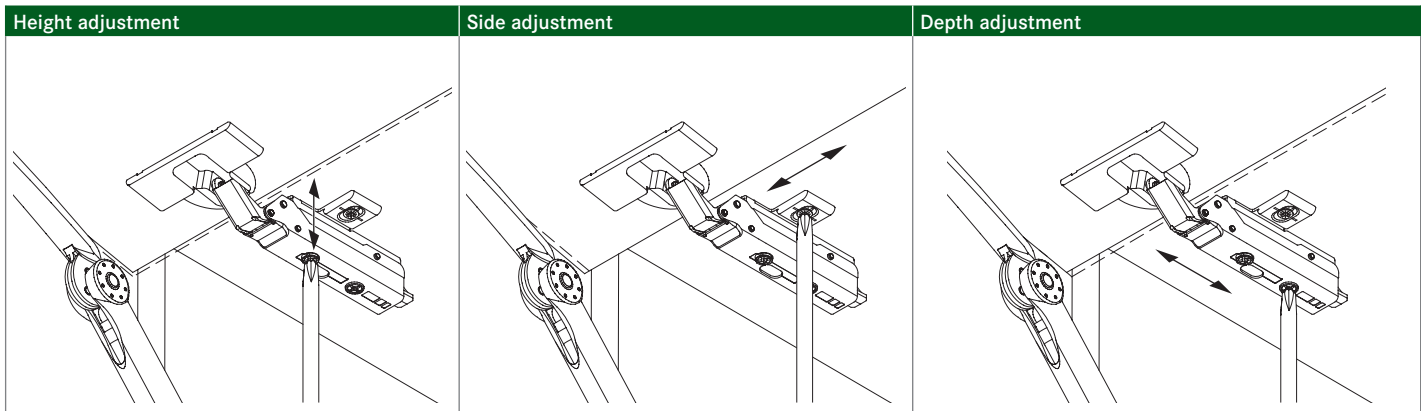
Side adjustment



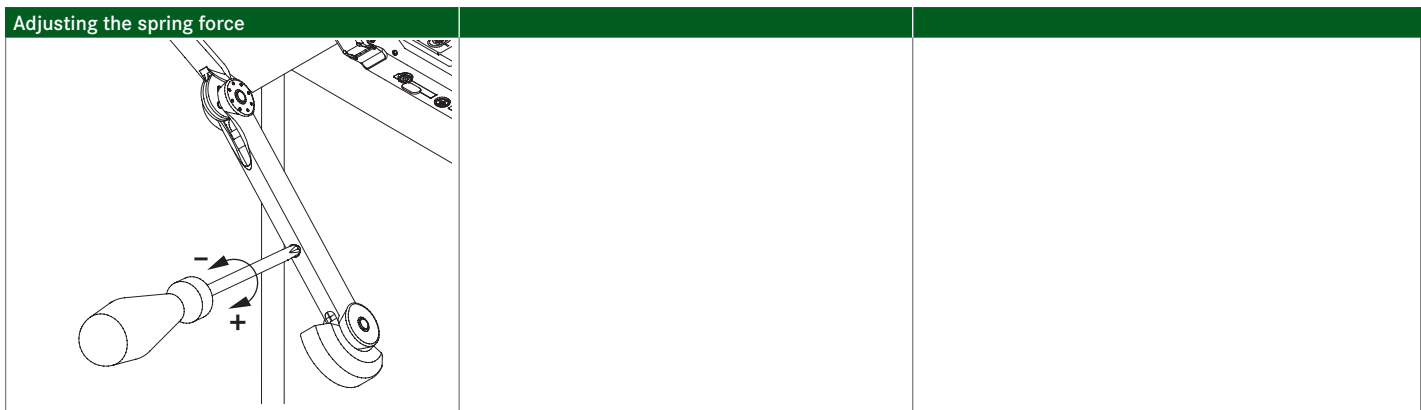
Depth adjustment

All adjustments are on the hinge and can be carried out independently of each other.

ADJUSTMENT OPTIONS FOR HINGE IN CABINET TOP PANEL

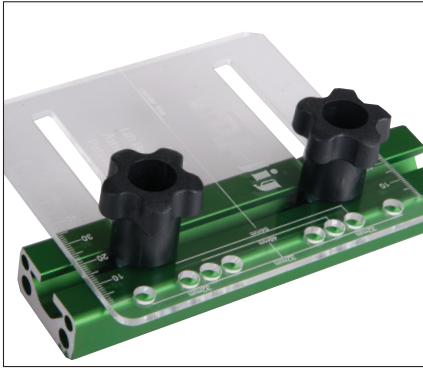


ADJUSTMENTS



Assembly Aids

Kinvaro



Drilling templates for the Kinvaro Lifter System. Each lifter has an individual template for easy installation. Order each drill jig with appropriate bit.

ORDER INFORMATION

KINVARO Installation Templates		
Description	Item No.	PU
1 Kinvaro L-80 Drill Jig	00490-01	1
2 Kinvaro F-20 Drill Jig	00491-01	1
3 Kinvaro T-65 Drill Jig	00492-01	1
4 Kinvaro T-71/T-76 Drill Jig	00493-01	1
5 Kinvaro T-57 Drill Jig	00494-01	1
6 Kinvaro Door Template Drill Jig	00495-01	1
7 Kinvaro 5mm drill bit	00496-01	1
8 Kinvaro 9/64" drill bit	00497-01	1



Example: Kinvaro F-20 Lifter Order

- (1x) F-20 Drill Jig **2**
- (1x) Door Template Drill Jig **6**
- (1x) 5mm or 9/64" drill bit **7** or **8**

Notes



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