

sample

kampus listed buildings

14 05 2019

sample sign-off 05.02 • roof lights

description:

manufacturer: fakro

products: FTP pivot roof window (apartments) + FSR/U centre pivot AOV (staircases)

external cladding: aluminium, polyester powder coated RAL 7021

flashing: type ELJ (pictured below), aluminium with polyester varnish, RAL 7021

internal frame and sash: white acrylic natural pine

data sheets (appended) and imagery (below) provided and approved via email 14 05 2019

location:

both buildings / roof level.

image:



previous installation image provided by manufacturer to support data sheets. issued to demonstrate low level flashing + conservation bar



FTP-V Renov, FTU-V Renov, FTW-V Renov

WOODEN PIVOT ROOF WINDOW

I. APPLICATION

	Pivot window
	Installed in roofs with pitches 15-90°

II. FEATURES

	Pinewood, natural colour (FTP), white NCS S0502-Y polyurethane (FTU) or acrylic (FTW)
	TopSafe system
	V40P automatic air inlet
	Quadruple sealing system
	Universal installation system
	Warm TGI spacer
	Handle Elegant* * - for FTP-V P2 SECURE windows the handle with a lock

III. ADDITIONAL PRODUCTS USED WITH WINDOWS

Flashings	
	standard
	special
	combination

Control	
	manual
	electric

Mounting accessories	
	insulation sets
	linings
	auxiliary rafters
	bands
	frame extensions

External accessories	
	awning blinds
	roller shutters

Internal accessories	
	blackout blinds
	roller blinds
	standard roller shutters
	awning blinds
	pleated blinds

Other accessories	
	insect screen

IV. OPTIONS

	Any shape
	Wooden profiles painted in any RAL colour or one of the five transparent colours
	External cladding elements painted in any RAL colour or manufactured to match event the most unusual roofing colours (CU, TC)
	Window with a mullion bar
	Non-standard glazing unit

V. DECLARATION OF PERFORMANCE

Harmonized standard	EN 14351-1:2006+A1:2010
Number of Declaration of Performance	XXX/CPR/14351/xx Individual numbers of Declaration of Performance are to be found in the table with technical parameters

VI. TECHNICAL PARAMETERS

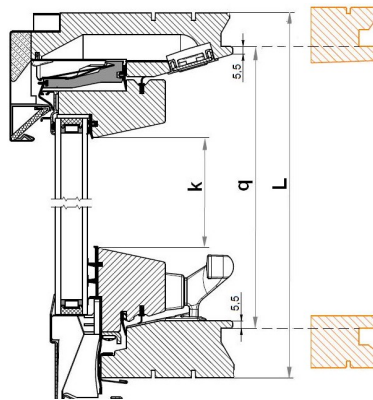
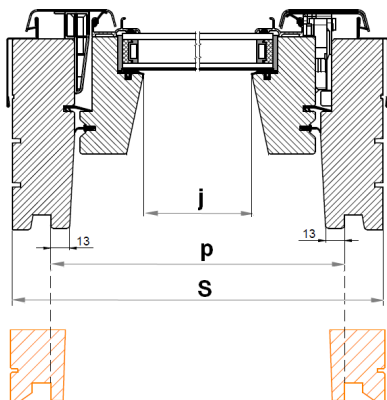
Technical parameters	Glazing unit type							
	U3	U5	P2	P5	R1	G2	G61	standards
- Window heat transmittance coefficient Uw [W/m²K]	1,3	0,97	1,3	0,97	1,3	1,3	1,3	EN 12567-2, EN 10077
- Glazing heat transmittance coefficient Ug [W/m²K]	1,0	0,5	1,0	0,5	1,0	1,0	1,0	EN 673
- Acoustic performance Rw [dB]	32 (-1;-5)	33 (-2;-6)	35 (-1;-3)	35 (-2;-4)	39 (-2;-5)**	35 (-1;-3)	39 (-2;-5)**	EN ISO 717-1
- max. capacity of air inlet [m³/h] - 10Pa	up to 49							
- air permeability class	4							
- light permeability tv	0,76	0,73	0,75	0,63	0,75	0,40	0,40	EN 410
- solar factor [g]	0,53	0,53	0,52	0,48	0,51	0,23	0,23	EN 410
- permeability UV	0,26	0,28	0,01	0,01	0,02	0,01	0,01	EN 410
- frame thermal insulation Uf [W/m²K]	1,68*	1,70*	1,68*	1,61*	npd	1,68*	npd	EN ISO 10077-1 EN ISO 10077-2
- thermal insulation of window frame connection with glazing ψ [psi] [W/mK]	0,066*	0,051*	0,07*	0,062*	npd	0,07*	npd	EN ISO 10077-1 EN ISO 10077-2
Number of Declaration of Performance	A01/CPR/14351/15	A40/CPR/14351/16	A01/CPR/14351/15	A40/CPR/14351/16	A60/CPR/14351/15	A12/CPR/14351/15	A61/CPR/14351/15	EN 14351-1:2006+A1:2010

* Result of FAKRO internal tests

** Parameter for the window without air inlet FTP R1, G61 (For the window FTP-V R, G61 Rw= 36(-2;-3))

VII. DETAILED DIMENSIONS OF FTP-V, FTU-V, FTW-V WINDOWS

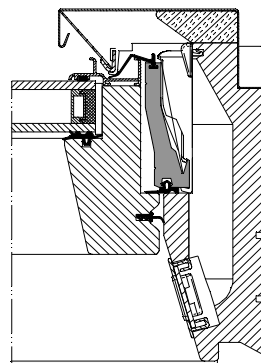
Velux wooden windows							FAKRO wooden windows									
Velux windows manufactured in years. Size symbols				Commercial size	Lining grooves spacing		Size symbol marking	Commercial size	Frame external size		Lining grooves spacing		Glazed area		Glass visible surface	
1970-1992 e.g. GGL-3	1992-2000 Series VES e.g. 306	1991-2013 Series V21 e.g. M06	05.2013 Series V22 e.g. MK06		"p" [mm]	"q" [mm]			"S" [mm]	"L" [mm]	"p" [mm]	"q" [mm]	"j" [mm]	"k" [mm]	j x k	
-9	-	C01	CK01	55x70	495	639	A1	55x70	547	700	495	639	369	510	0,19	
-	-	C02	CK02	55x78	495	719	01	55x78	547	781	495	719	369	591	0,22	
-	-102	-	-	55x78	505	733	01	55x78	547	781	505	733	369	591	0,22	
-	-104	-	-	55 x 98	505	933	02	55 x 98	547	981	505	933	369	791	0,29	
-6	-	C04	CK04	55 x 98	495	919	02	55 x 98	547	981	495	919	369	791	0,29	
-	-	C06	CK06	55x118	495	1119	16	55x118	547	1181	495	1119	369	991	0,37	
-	204	-	-	66 x 98	615	933	03	66 x 98	657	981	615	933	479	791	0,38	
-	-	F04	FK04	66 x 98	605	919	03	66 x 98	657	981	605	919	479	791	0,38	
-14	-	F06	FK06	66 x 118	605	1119	04	66 x 118	657	1181	605	1119	479	991	0,47	
-	206	-	-	66 x 118	615	1133	04	66 x 118	657	1181	615	1133	479	991	0,47	
-	-	F08	FK08	66 x 140	605	1339	14	66 x 140	657	1401	605	1339	479	1211	0,58	
-5	-	-	-	70 x 118	648	1119	-	70 x 118	700	1181	648	1119	522	991	0,52	
-1	304	M04	MK04	78 x 98	725	919	05	78 x 98	777	981	725	919	599	791	0,47	
-14	306	M06	MK06	78 x 118	725	1119	06	78 x 118	777	1181	725	1119	599	991	0,59	
-2	308	M08	MK08	78 x 140	725	1339	07	78 x 140	777	1401	725	1339	599	1211	0,73	
-	310	M10	MK10	78x160	725	1541	13	78x160	777	1601	725	1541	599	1411	0,85	
-34	-	P04	PK04	94x98	887	919	15	94x98	937	981	887	919	759	791	0,60	
-	406	P06	PK06	94x118	887	1119	08	94x118	937	1181	887	1119	759	991	0,75	
-	408	P04	PK04	94x140	887	1339	09	94x140	937	1401	887	1339	759	1211	0,92	
-3	410	P10	PK10	94x160	887	1541	80	94x160	937	1601	887	1541	759	1411	1,07	
-4	606	S06	SK06	114 x 118	1085	1119	10	114 x 118	1137	1181	1085	1119	959	991	0,95	
-	608	S08	SK08	114 x 140	1085	1339	11	114 x 140	1137	1401	1085	1339	959	1211	1,16	
-7	804	U04	UK04	134 x 98	1285	919	12	134 x 98	1337	981	1285	919	1159	791	0,92	



VIII. CAPACITY OF V40P AIR INLET

		Window width [cm]					
		55/..	66/..	78/..	94/..	114/..	134/..
Geometric area * [mm ²]		2,436	3,480	4,524	4,524	6,960	6,960
Pressure difference [Pa]							
1	[m ³ /h]	5.27	6.9	8.58	8.58	14.89	14.89
	[l/s]	1.46	1.92	2.38	2.38	4.14	4.14
2	[m ³ /h]	7.66	10.07	12.39	12.39	21.64	21.64
	[l/s]	2.13	2.8	3.44	3.44	6.01	6.01
10	[m ³ /h]	17.28	23.34	27.89	27.89	49.08	49.08
	[l/s]	4.8	6.48	7.75	7.75	13.63	13.63
20	[m ³ /h]	16.86	30.97	34.12	34.12	70.84	70.84
	[l/s]	4.68	8.6	9.48	9.48	19.68	19.68

* the smallest cross-section area of the air inlet channel





FSR, FSR/U, FSR/W

Pivot window equipped with smoke ventilation system

I. APPLICATION

	Pivot window equipped with smoke ventilation system
	Suitable for pitches from 15-90°

II. FEATURES

	Pinewood, natural colour (FSR), white NCS S0502-Y polyurethane (FSR/U), or white acrylic (FSR/W)
	Special actuator opening the sash up to an angle of 90°
	Double sealing system
	Universal installation system
	Steel spacer

III. ADDITIONAL PRODUCTS TO BE USED WITH WINDOWS

Flashings	
	standard
	special
	combination
Control	
	electrically operated by control panel (not included in set)
Mounting accessories	
	insulation sets
	linings
	auxiliary rafters
	bands
	frame extensions

IV. OPTIONS

	Wooden profiles painted in any RAL colour or in one of five azure colours
	External cladding elements painted in any RAL colour or manufactured to match even the most unusual roofing colours (CU, TC)
	Window with a mullion bar

DECLARATION OF PERFORMANCE

Harmonized standard	EN 12101-2:2003
Number of Declaration of Performance	R40/CPR/12101/17

VI. TECHNICAL PARAMETERS

Characteristics			Performance of the product																	Harmonized technical specification	
			FSR, FSR/U, FSR/W																		
Window size [cm]			78x78	78x98	78x118	78x140	94x78	94x98	94x118	94x140	94x160	114x78	114x98	114x118	114x140	134x78	134x98	134x118	134x140		
1	Active surface	A _a [m ²] ⁽¹⁾	0,29	0,38	0,47	0,58	0,35	0,46	0,58	0,70	0,80	0,44	0,57	0,71	0,86	0,52	0,68	0,84	1,01	6	
2	Wind load resistance		WL 3000																	7.4.1	
3	Snow load resistance	15°	SL 2007	SL 1944	SL 1877	SL 1804	SL 1686	SL 1645	SL 1598	SL 1546	SL 1500	SL 1850	SL 1816	SL 1775	SL 1727	SL 1586	SL 1563	SL 1534	SL 1500	7.2.1.1	
		20°	SL 2063	SL 1998	SL 1929	SL 1854	SL 1733	SL 1691	SL 1643	SL 1590	SL 1542	SL 1901	SL 1866	SL 1824	SL 1775	SL 1630	SL 1607	SL 1577	SL 1542		
		25°	SL 2139	SL 2072	SL 2000	SL 1922	SL 1797	SL 1753	SL 1703	SL 1648	SL 1599	SL 1971	SL 1935	SL 1891	SL 1841	SL 1690	SL 1666	SL 1635	SL 1599		
		30°	SL 2238	SL 2168	SL 2093	SL 2012	SL 1880	SL 1834	SL 1783	SL 1725	SL 1673	SL 2063	SL 2025	SL 1979	SL 1926	SL 1768	SL 1743	SL 1711	SL 1673		
		35°	SL 2366	SL 2292	SL 2213	SL 2127	SL 1988	SL 1939	SL 1884	SL 1823	SL 1768	SL 2181	SL 2140	SL 2092	SL 2036	SL 1870	SL 1843	SL 1809	SL 1768		
		40°	SL 2530	SL 2451	SL 2366	SL 2274	SL 2126	SL 2073	SL 2015	SL 1949	SL 1891	SL 2332	SL 2289	SL 2237	SL 2177	SL 1999	SL 1971	SL 1934	SL 1891		
	45°	SL 2741	SL 2655	SL 2563	SL 2463	SL 2303	SL 2246	SL 2183	SL 2112	SL 2048	SL 2526	SL 2479	SL 2423	SL 2358	SL 2165	SL 2135	SL 2095	SL 2048			
4	Low ambient temperature		T (-15)																	7.3.1	
5	Reliability		RE 1000																	7.1.1	
6	Resistance to high temperature		B 300																	7.5.1	
7	Reaction to fire		F																	7.5.2.1	

(1) as per EN 12101-2, attachment B, section B.2.4.2.2

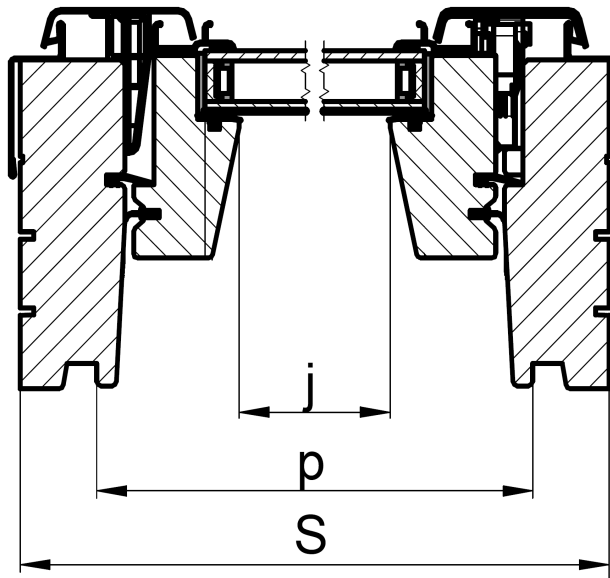
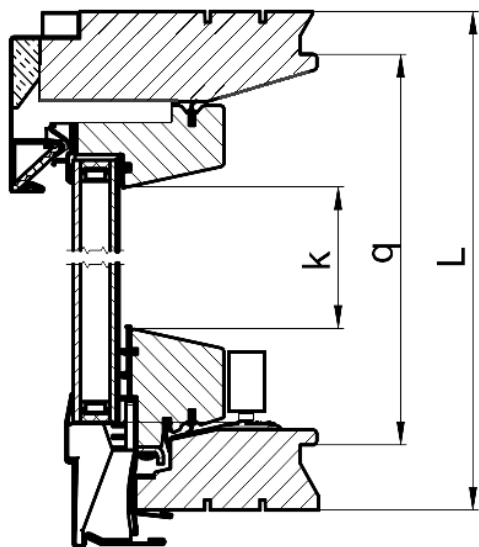
FSR smoke hatch parameters

Size/ symbol of FSR hatch	VVV – SL values depending on the FSR smoke hatch size	ZZZ – value of the active smoke area A _a [m ²] depending on the FSR smoke hatch size. Value only for 90 degree installation angle.	XXX – Geometric values for the smoke surface A _v [m ²] depending on the size of the FSR smoke hatch.
78x78 (23)	2007	0,29	0,50
78x98 (05)	1944	0,38	0,64
78x118 (06)	1877	0,47	0,78
78x140 (07)	1804	0,58	0,93
94x78 (24)	1686	0,35	0,61
94x98 (15)	1645	0,46	0,78
94x118 (08)	1598	0,58	0,96
94x140 (09)	1546	0,70	1,14
94x160 (80)	1500	0,80	1,32
114x78 (25)	1850	0,44	0,75
114x98 (20)	1816	0,57	0,97
114x118 (10)	1775	0,71	1,17
114x140 (11)	1727	0,86	1,41
134x78 (26)	1586	0,52	0,90
134x98 (12)	1563	0,68	1,15
134x118 (18)	1534	0,84	1,40
134x140 (17)	1500	1,01	1,68

*The smoke hatch does not require the U_w value specification, therefore the heat transfer coefficient is not given in the declaration of performance.

VII. DETAILED DIMENSIONS OF PIVOT WINDOWS FSR, FSR/U, FSR/W

Window size	Size Symbol	Frame external size			Distance between lining grooves		Glazing area		Visible glazing area
		S	x	L	p	q	j	k	j * k
[cm]		[mm]							[m ²]
78 x 78	23	777	x	781	715	724	599	591	0,35
78 x 98	05	777	x	981	715	924	599	791	0,47
78 x 118	06	777	x	1181	715	1124	599	991	0,59
78 x 140	07	777	x	1401	715	1344	599	1211	0,73
94 x 78	24	937	x	781	875	724	759	591	0,45
94 x 98	15	937	x	981	875	924	759	791	0,60
94 x 118	08	937	x	1181	875	1124	759	991	0,75
94 x 140	09	937	x	1401	875	1344	759	1211	0,92
94 x 160	80	937	x	1601	875	1544	759	1411	1,07
114 x 78	25	1137	x	781	1075	724	959	591	0,57
114 x 98	20	1137	x	981	1075	924	959	791	0,76
114 x 118	10	1137	x	1181	1075	1124	959	991	0,95
114 x 140	11	1137	x	1401	1075	1344	959	1211	1,16
134 x 78	26	1337	x	781	1275	724	1159	591	0,68
134 x 98	12	1337	x	981	1275	924	1159	791	0,92
134 x 118	18	1337	x	1181	1275	1124	1159	991	1,15
134 x 140	17	1337	x	1401	1275	1344	1159	1211	1,40





ELJ, ELJ/C

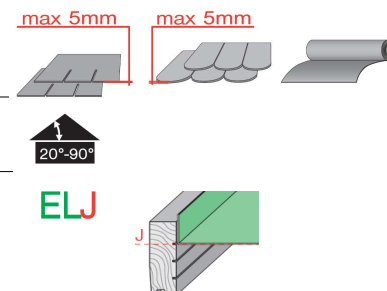
FLASHING

APPLICATION

Flashing for thin plain tile roof coverings (max. thickness: 10mm (2x5mm))

Installation in roof with pitches: 20-90°

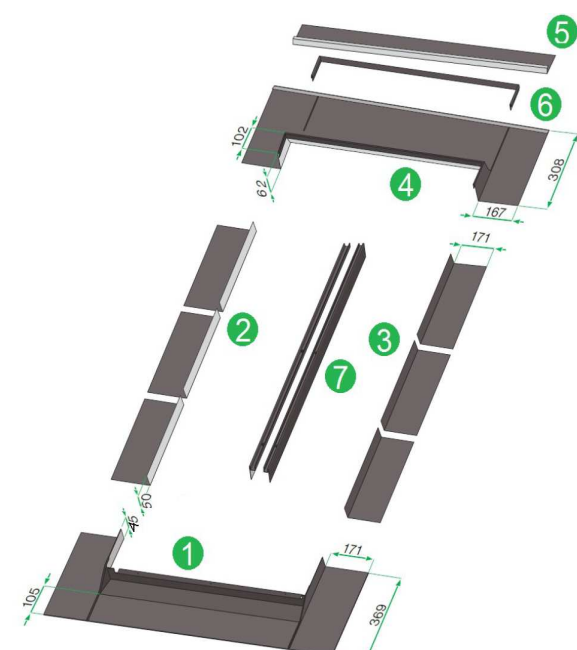
Window installation depth: J (-3)



ELJ: standard flashing in RAL 7022

ELJ/C: conservation flashing in RAL 9005 (black)

ELEMENTS OF FLASHING STRUCTURE



- 1 – Lower flashing element
- 2 – Side elements
- 3 – Side elements
- 4 – Upper flashing element
- 5 – Water draining gutter
- 6 – Insulation strip for upper flashing Element
- 7 – Profile covering frame side

Window height	Number of side elements
../60	10
../78	10
../98	12
../118	16
../140	20
../160	22
../180	26
../186	26
../206	30
../235	34
../255	38

MATERIAL

Aluminium sheet metal: AW-1050A

Lacquer: modified polyester in RAL 7022

Sheet metal thickness: 0.6 mm

COMPATIBILITY WITH WINDOWS

Flashing type	Window type														Collector type	
	FT	FP	PT	PP	FD	FY	FE	FG	BD	BV	BX	FS	FW	SKW	SKC	
ELJ																
ELJ/C																

■ - flashings to special order

SIZE LIMITS

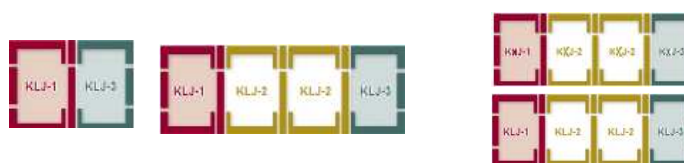
Window size		Window width [cm]							
Window height [cm]	60	46	48	55	66	78	94	114	134
	78	46	47	01	22	23	24	25	26
	98	48	49	02	03	05	15	20	12
	118			16	04	06	08	10	18
	140				14	07	09	11	17
	160					13	80	50	
	180					40	41		
	186					CA	DA		
	206					CB	DB		
	235					CC	DC		
	255					CD	DD		



xx - Available size (xx - marking of two last characters of the code)
X - Not available in the offer due to the lack of the window in this size

COMBINATIONS

Horizontal and block combinations are realized through appropriate modules: KLJ (1,2,3) and KXJ (4,5,6)



Vertical combinations are realized through KDJ module



OPTIONS



Flashing sections in RAL colours

Copper sections flashing

Titanium-zinc flashing sections:

- Rhenizink sheet metal in version: "bright-rolled", "patina^{PRO} grey-blue" and "patina^{PRO} graphite"
- VMZINC sheet metal from Pigmento series (green, red, blue) and Anthra-Zinc and Quartz-Zinc