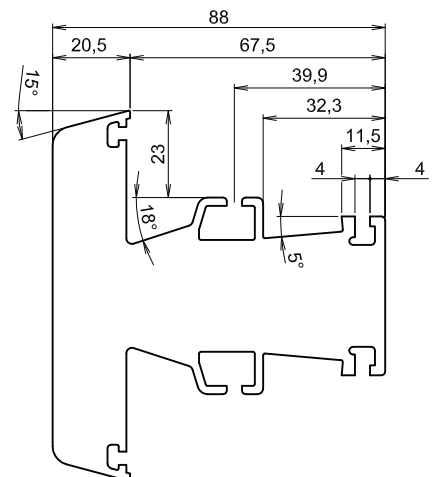
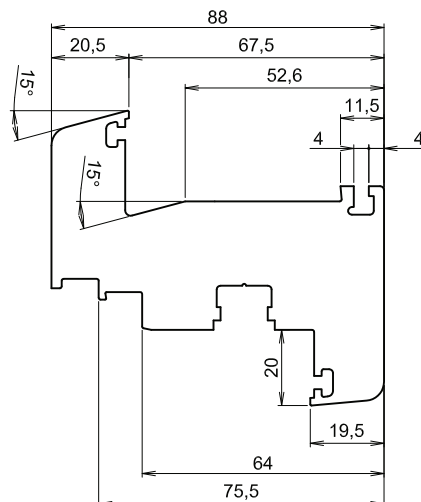
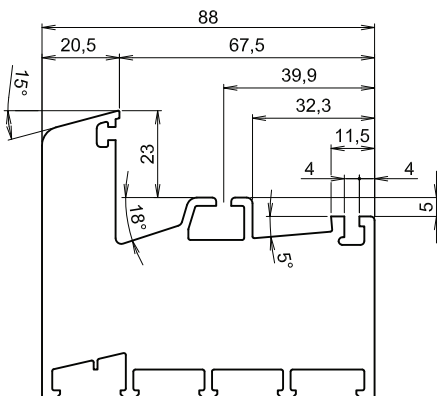
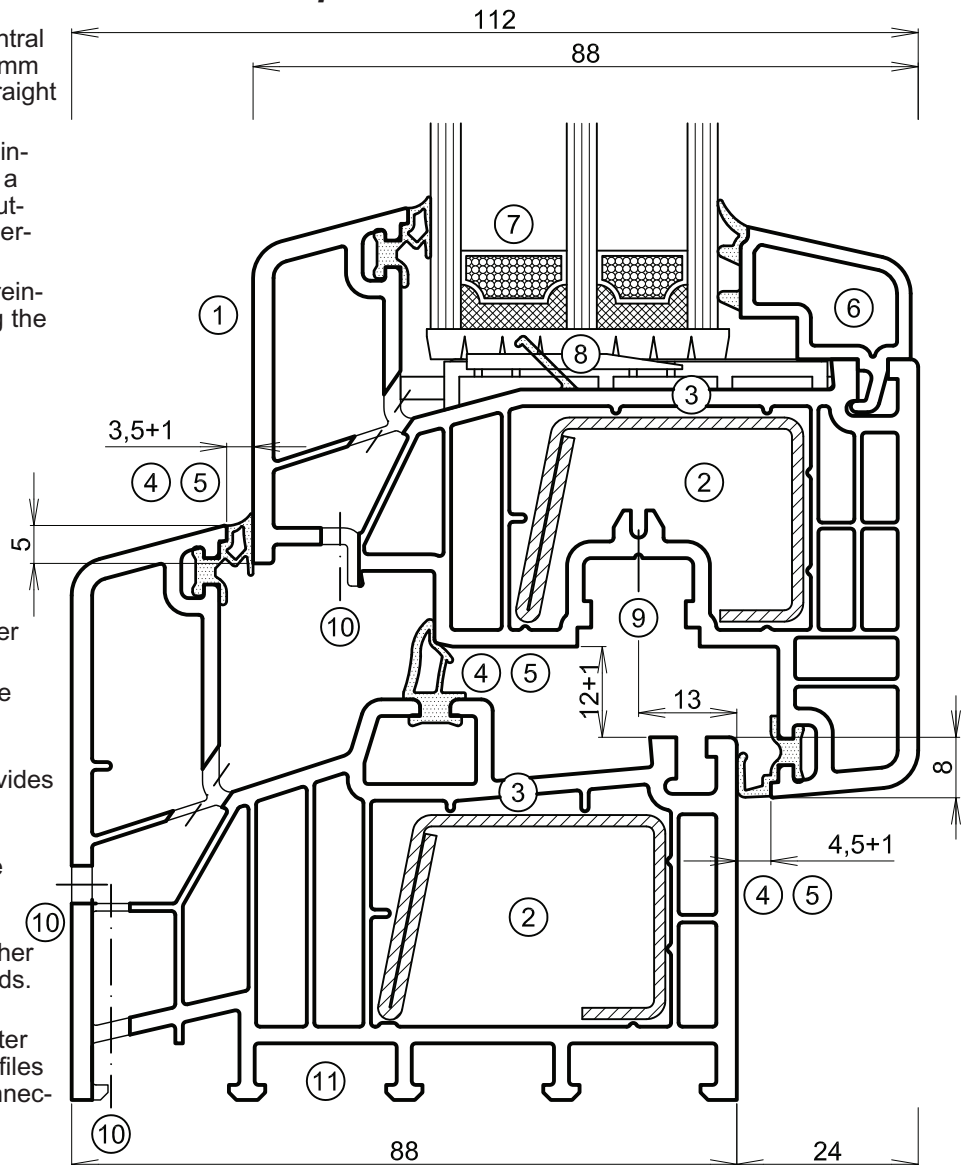




### 1.1 System attributes KÖMMERLING 88 plus

- ① Highly insulating, 6-chamber central thermal sealing system with 88 mm construction depth, design of straight lines, and slim profile sight lines
- ② Integrating a chamfered steel reinforcement turns the system into a seven chamber structure with outstanding thermal insulation properties.
- ③ Support cams secure the steel reinforcement in position, optimising the thermal insulation.
- ④ Three sealing layers improve protection against driving rain and imperviousness to wind.
- ⑤ Weldable PCE or conventional EPDM gaskets in grey or black
- ⑥ Backset glazing bead with coextruded sealing lip, for greater visual appeal
- ⑦ Better sound insulation with wide glazing range of 24–52 mm.
- ⑧ Innovative sash rebate seal provides extra thermal insulation.
- ⑨ Low maintenance owing to window fittings arranged behind the central thermal seal
- ⑩ Fast and effective ventilation either to the front or invisibly downwards.
- ⑪ Safe installation of inner and outer window sills and connection profiles thanks to technically perfect connection details.

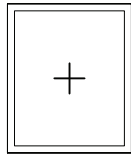




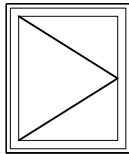
## 1.2 Opening modes

### Windows (inside view)

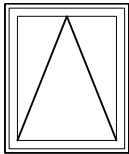
Fixed frame



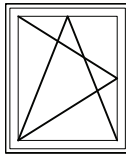
Side-hung window



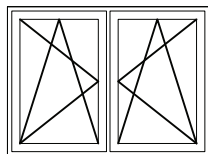
Bottom-hung window



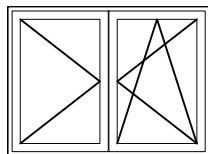
Tilt/turn window



Tilt/turn window with fixed mullion

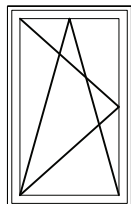


Side-hung tilt/turn window, floating mullion design

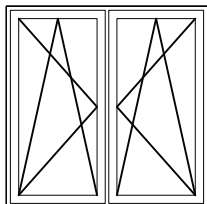


### Glazed doors (inside view)

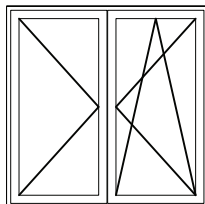
Centre-hung door



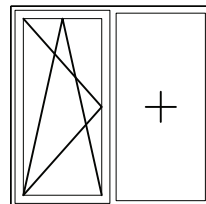
Centre-hung door with fixed mullion



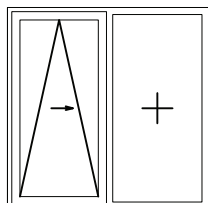
Side-hung tilt/turn door, floating mullion design



Centre-hung door with fixed mullion

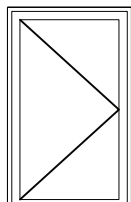


Parallel sliding-tilting door

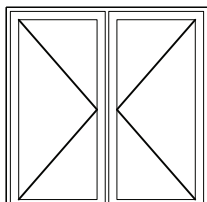


### Residential & side entrance doors, barrier free (inside view)

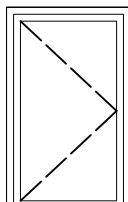
Side hung door



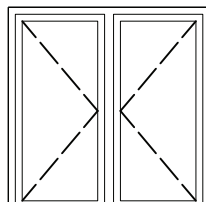
Centre-hung door with fixed mullion



Side hung door



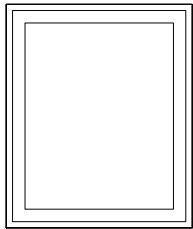
Centre-hung door with fixed mullion



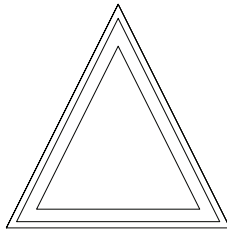
———— inward opening  
- - - - outward opening



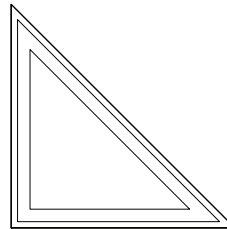
**Window forms** (inside view)



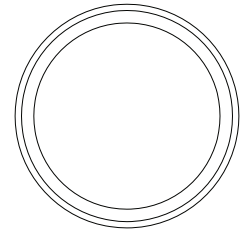
rectangular form



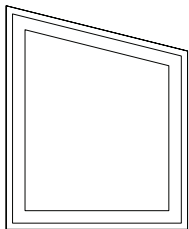
triangular



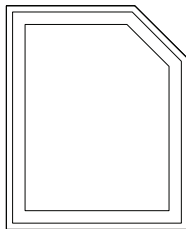
angled



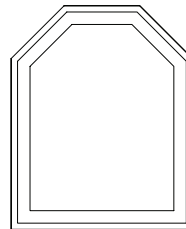
round



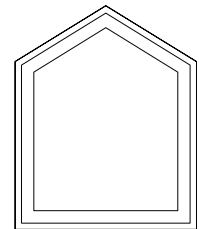
1 angled edge



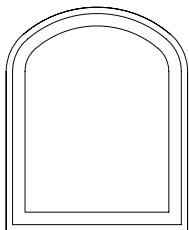
polygonal



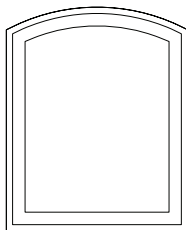
polygonal



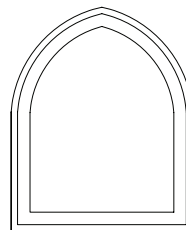
polygonal



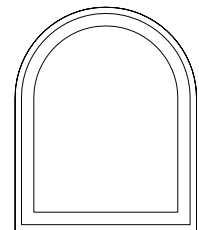
basket arch



segmented arch



peaked arch



round arch



### 1.3 Specifications

The profiles are manufactured on extruders. Permanent production control safeguards the quality and geometrical precision of the profiles. The profiles fulfil the requirements under RAL-GZ 716/1, part 1.

<b>profile material</b>	moulding compound, white as per DIN 7748 - PVC-U, EDLP, 080-35-28	
<b>density</b>	DIN EN ISO 1183	1.44 g/cm <sup>3</sup>
<b>impact toughness up to -40 °C</b>	DIN 53453 (small standard test piece)	w/o fracture
<b>notch toughness</b>  (in standard atmosphere 23 °C as per DIN EN ISO 179)	DIN EN ISO 179  (1fc test piece)	≥ 45 kJ/m <sup>2</sup>
<b>ball hardness</b> (impression time 30 s)	DIN ISO 239 T1	100 N/mm <sup>2</sup>
<b>tensile strength</b>	DIN EN ISO 527 ≥	40 N/mm <sup>2</sup>
<b>modulus of elasticity</b>	DIN EN ISO 527	≥ 2500 N/mm <sup>2</sup>
<b>heat distortion temperature:</b> Vicat VST/B (measured in oil) ISO R 75/A (measured in oil)	DIN ISO 306 DIN 53461	≥ 80 °C ≥ 69 °C
<b>linear thermal expansion</b> coefficient -30 °C to +50 °C		0.8 x 10 <sup>-4</sup> K <sup>-1</sup>
<b>Important note</b>	The observed changes in length experienced by the heated profiles are minimal as demon- strated by numerous example installations. The mean change in length is: – 1.6 mm/m for white profiles – 2.4 mm/m for colour profiles	
<b>thermal conductivity</b>	DIN 52612	0.16 W/mK
<b>volume resistivity</b>	DIN VBE 0303 T3	10 <sup>16</sup> Ω cm
<b>relative permittivity</b>	DIN 53483	3.3 at 50 Hz; 2.9 at 10 6 Hz
<b>fire behaviour</b>	DIN 4102	flame resistant, self-extinguishing
<b>weather resistance</b>	after 12 GJ/m <sup>2</sup> <b>RAL-GZ 716/1</b> insolation energy; discoloration no greater than resistance grade 3 of the grey scale according to ISO 105-A02	
<b>weather resistance</b>	after 12 GJ/m <sup>2</sup> <b>RAL-GZ 716/1</b> insolation energy; drop in notch toughness: < 30% or ≥ 28 KJ/m <sup>2</sup>	



<b>particular resistances</b>	termite-proof, rot-proof, chemical-resistant as per DIN 8061 Bbl. 1, e.g. to: lyes, acids, salts, salt solutions, alkalis, seawater, petrol, oil, lime, cement, exhaust gases of all kinds
<b>physiological properties and environmental behaviour</b>	inert, neutral Its weather, chemical, and rot resistance ensure that they pose no risk to health or the environment when handled.
<b>profile wall thickness</b>	as per RAL-GZ 716/1 Class B
<b>machining operations</b>	drilling, milling, sawing, filing, welding, grinding
<b>frame connection</b>	welded, screwed to mullion/transom
<b>opening modes</b>	fixed glazing, side-hung, tilt/turn, bottom-hung, hinged, floating mullion, sliding/tilting drop windows, parallel sliding-tilting doors, balcony doors With the exception of parallel sliding-tilting doors all windows and doors can be manufactured with round or segmented arches.
<b>glazing types</b>	dry glazing straight sash glazing rebate with coextruded rebate seal
<b>pane types</b>	insulating glass, pane thicknesses from 24 to 54 mm
<b>glazing beads</b>	engaged over the whole length and easily replaceable
<b>gaskets</b>	rebate and centre seal and glazing gasket of EPDM or TPE; coextruded gaskets of thermoplastic material (PCE)
<b>gasket colour</b>	black and light grey (RAL 7035)
<b>fittings</b>	commercially available, according to KÖMMERLING hardware list
<b>chamber size</b>	see installation instructions for fittings 12 <sup>+</sup> mm
<b>hardware fasteners</b>	screws
<b>sash stop</b>	single
<b>drainage</b>	drilled or elongated holes near the rebate; slots in drainage antechamber are downward or to the front
<b>sealing</b>	flexible between wall and outer frame
<b>flush-mounted basic frame</b>	not necessary
<b>installation in building façade</b>	all usual installation types possible
<b>profile shapes</b>	as per workbook
<b>surfaces</b>	colour white; KÖMMERLING textured and plain colours as per KÖMMERLING colour range
<b>paint finish</b>	possible (not necessary)



### cleaning and care

Köraclean extra (colour white), Köraclean color (textured), water and suitable household cleaner (non-abrasive, non-dissolving). We cannot accept liability for all household cleaners. Do not use any cleaning or polishing agents that dissolve PVC.

### heat transfer coefficients

- window insulation value ( $U_w$ ): depends on the installed glazing and the profile's U value
- glazing insulation value ( $U_g$ ): approx 2.6–0.5 W/(m<sup>2</sup> K)
- frame insulation value ( $U_f$ ): depending on the profile combination between 0.8 W/(m<sup>2</sup> K) and 1.1 W/(m<sup>2</sup> K)

### reinforcements

All main profiles can be reinforced with steel profiles in accordance with the design requirements.  
DIN EN 10.142/10.147/DX 51D+Z,  
cold-rolled as per DIN 59413/17118 or  
DIN EN 10.142/10.147, galvanised as per DVV 7  
Tables 4a + 4b