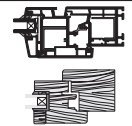


1	ASSEMBLING OF THE HARDWARE Dr - wooden windows
2	ASSEMBLING OF THE HARDWARE Tw - PVC-U windows
3	DRIVE GEARS
4	CORNERS, ENDS, CORNER DRIVE GEARS
5	LOCKS, FOOTINGS, CONNECTORS EXTENSION RODS
6	STAYS, STAY ARMS
7	HINGES
8	STRIKER PLATES
9	ACCESORIES, SUPPLEMENTARY ELEMENTS
10	SPECIAL HARDWARE
11	ALU KARO
12	TAKT-150 HARDWARE
13	DOOR HARDWARE
14	FITTING INSTRUCTIONS, LIST OF JIGS
15	APPROVALS, CERTIFICATIONS, ATTESTATIONS, WARRANTIES



Peripheral Hardware - ROMB, ROMB 2000 and ROMB 3000 Systems

GENERAL CHARACTERISTIC OF THE PRODUCT

Hardware sets fitted on the girth of the sash and frame of windows and balcony doors, depending on their functions, allow :

- turning (opening) or tilting of the same sash of a window or balcony door (turn-tilt hardware)
- turning (opening) of the sash (turn hardware)
- tilting of the sash (tilt hardware)

Turn-tilt sashes enable optimal ventilation of the room, as a turned sash makes it possible to quickly ventilate the room, while a tilted sash facilitates non-stop ventilation.

Turn / tilt plus turn hardware in double windows makes it possible to tilt or turn one of the sashes and only turn the other sash.

Turn / tilt hardware with enhanced resistance to burglary fitted in double windows have, in comparison to standard hardware, the following additional anti-burglary devices:

- handle with a cylinder lock,
- blockage of the handle turning,
- corners with anti-unhinging deadbolts,
- reinforced anti-burglary striker-plates,
- anti-drill shield of the drive mechanism,

Sets of turn / tilt, turn, tilt and turn / tilt plus turn for PVC-U windows and balcony doors are manufactured and assembled in accordance with „**METALPLAST KARO ZŁOTÓW S.A. Hardware Catalogue**”

DESIGNATION AND SCOPE OF USE

DESIGNATION

ROMB and ROMB 2000 turn / tilt, turn, tilt and turn / tilt plus turn hardware is designated to be used in windows and balcony doors made of PVC-U profiles or wooden windows used in construction.

ROMB 3000 turn / tilt anti-burglary reinforced hardware is to be used in windows and balcony doors made of PVC-U or wood sufficiently resistant to burglary.

SCOPE OF USE

Turn / tilt hardware when fitted in windows and balcony doors allows turning or single-stage tilting of the sash in various ventilation configurations, depending on the needs.

Turn hardware when fitted in windows and balcony doors allows closing and turning (opening) of window sashes.

Tilt hardware when fitted in windows allows closing and tilting of sashes.

Turn / tilt plus turn hardware when fitted in double windows allows tilting or turning (opening) of the turn / tilt sash and turning (opening) of the turn sash.

Turn / tilt hardware ordered with micro-ventilation allows setting the slit size to ca 6^{±1} mm to ensure the inflow of the air into the room. The hardware should be used especially in windows designated for rooms with gravity ventilation.

Turn / tilt hardware has the possibility of additional application of the driver gear blockade. The blockade acts as a safeguard against mishandling of the hardware in an opened sash.



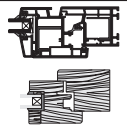
At the customer request turn / tilt, turn and turn / tilt plus turn hardware with a lowered handle (however not below 1/3 Hw) can be fitted in windows to be used by disabled persons. This solution makes it easier to operate the hardware from a wheelchair.



KRAJOWE AKCESORIA
I ROZWIĄZANIA OKUCIOWE



GENERAL INFORMATION



TECHNICAL DATA OF PERIPHERAL HARDWARE SYSTEMS ROMB, ROMB 2000 and ROMB 3000

Peripheral hardware systems ROMB, ROMB 2000 and ROMB 3000 are used for closing, turning and tilting of window sashes. Operating functions are performed with a handle. Hardware elements are fitted in window and frame stiles. The hardware may be used in wooden and PVC-U windows.

TECHNICAL DATA:

Maximum weight of sash.....	80 kg; 100 kg; 130 kg
Grove (hardware) width.....	16 mm
Distance from handle axis to front.....	15 mm; 7,5 mm
Height of deadbolt from front.....	8 mm
Deadbolt throw.....	2×17 mm
Spacing of holes for handle screws.....	43 mm
Minimum clearance.....	12 mm

NOTE: Dependence $Sw / Hw < 1,5$ should be observed.

The hardware is equipped with a blockade that eliminates the possibility of displacement of the handle into "turned" position when the sash is tilted (blockade in stay). It is possible to fit a gear blockade that prevents moving the hardware from "turned" into "tilted" position when the sash is opened. This function is performed by sash lift with a blockade.

ROMB hardware for windows w/o post. This hardware is used for closing and turning of window sashes. Operating functions are performed with a lever. Hardware elements are fitted in window and frame stiles . The hardware can be used in wooden and PVC-U windows.

TECHNICAL DATA:

Maximum weight of sash.....	80 kg; 100 kg (130 kg - heavy version)
Groove (hardware) width.....	16 mm
Locking slider throw.....	8 mm
Clearance.....	12 mm

In order to facilitate selecting and assembling of the hardware it is recommended to use **OKNO 1.0** hardware selection computer programme (or **Stolcad** hardware selection programme with an overlay for ROMB hardware)

Any comments relating to this catalogue and our products can be addressed to our Marketing Department:
tel. +48 67 265 04 19 e-mail: romb@grupakety.com

„METALPLAST KARO ŻŁOTÓW" S.A. has implemented and maintained a quality management system based on the requirements of the international standards of the series: **ISO 9001 - 2000**.

The system includes:

- development of the manufacture of products
- manufacture
- control and research
- use, exploitation and servicing
- warranty and complaints handling

The factory has been also accredited a research laboratory in accordance with **PN EN ISO/IEC 17025:2005** standard, which ensures comprehensive testing of manufactured products.

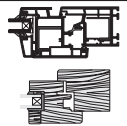
PREFERENCES FOR PUBLIC PROCUREMENT TENDERS

ROMB, ROMB 2000 and ROMB 3000 hardware systems are Polish products, the use of which gives preferences when taking part in public procurement tenders in accordance with the *Council of Ministers Regulation of 28.12.1994 (Official Journal No 140, item 776)*



Our products have the required technical specifications and always updated examinations. They guarantee the conformity of manufactured products with reference documentation, which in turn allows us to place the construction industry markings on ROMB, ROMB 2000 and ROMB 3000 hardware.

METALPLAST KARO ŻŁOTÓW S.A. is continuously working on upgrading the hardware's parameters and functions which results in further improvements and modernisations of ROMB hardware.



USAGE CONDITIONS

Maximum weight of sashes

The maximum weight of window sashes that can be fitted with a set of hardware is specified based on the load capacity of the weakest element of the set and amounts to: 80 kg, 100 kg and 130 kg.

Dimensions of sashes

The minimum and maximum width and height of window sash to notch are specified according to tables 1 and 2. Terminal sash dimensions determining the dimensions of elements and subassemblies of „ROMB” and „ROMB 2000” hardware are provided in table 1, and of „ROMB 3000” hardware with reinforced anti-burglary resistance in table 2.

Table 1 - ROMB, ROMB 2000, ROMB TwO and ROMB S5

Sw - width of sash to notch [mm]	Hw - height of sash to notch [mm]
RU with handle in fixed position	
290 - 1600	360 - 2400
RU with handle in central position	
290 - 1600	505 - 2400
R with handle in fixed position	
290 - 1450	360 - 2400
R with handle in central position	
290 - 1450	505 - 2400
R with drive gear strip „S”	
290 - 800	340 - 2400
U with drive gear strip „UC”	
470 - 1700	do 800
U with drive gear strip „M”	
530 - 1680	505 - 1450
window w/o post with drive gear „M” strip	
290 - 1450	590 - 2400
window w/o post with footing „BM”, connector „BM”, drive gear „B”.	
290 - 1450	590 - 2400

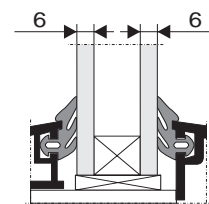
Table 2 - ROMB 3000

Sw - width of sash to notch [mm]	Hw - height of sash to notch [mm]
RU with handle in fixed position	
290 - 1200	360 - 2400
RU with handle in central position	
290 - 1200	505 - 2400

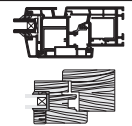
DESIGN GUIDELINES

The weight of glass panes should be specified based on the information from glass panes producers (1 m² of glass pane 1 mm thick = 2,5 kg - see table 3) - example - Fig.1, and in case of glass panes produced in Poland according to PN-B-13079:1997.

Glass thickness [mm]	Weight 1 m ² glass [kg]
28	70
24	60
20	50
16	40
12	30
8	20



Thickness of glass 12 mm
Fig 1 - Example of a combined glass pane



The below diagrams show the dependence of glass pane weight to sash dimensions in the notch. On the basis of these diagrams admissible sash dimensions to notch are determined in relation to the maximum sash weight

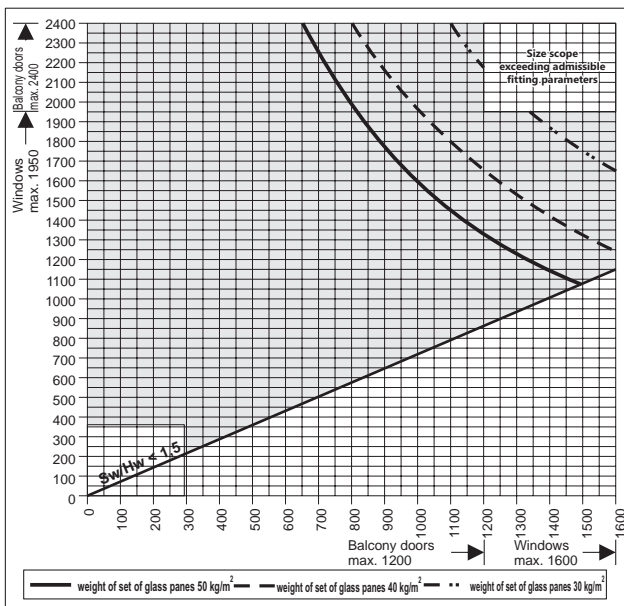


Diagram 1 - Admissible dimensions of sashes weighing up to 80 kg.

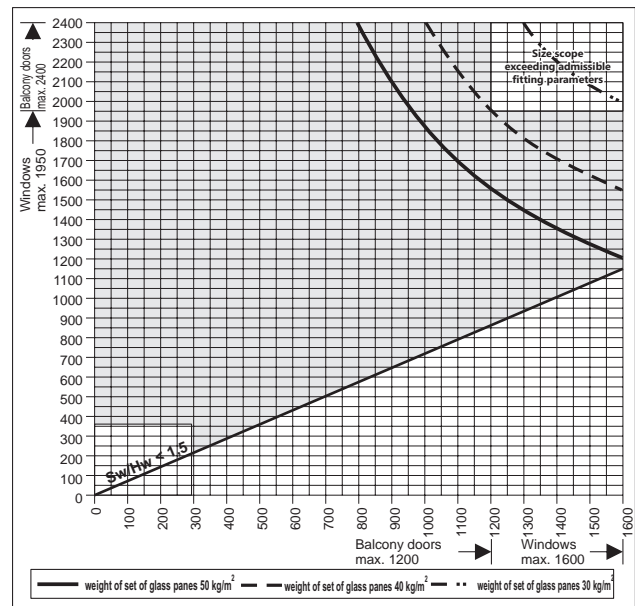
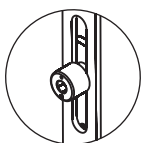


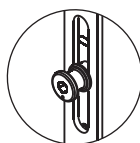
Diagram 2 - Admissible dimensions of sashes weighing up to 100 kg.

MARKINGS USED IN THE CATALOGUE:

- RU - turn / tilt windows
- U - tilt windows
- R - turn windows
- Dr - wooden windows
- Tw - PVC-U windows
- Sw - weight of the sash measured in notches
- Hw - height of the sash measured in notches
- Wzg - upper hinge bracket
- Wzd - lower hinge bracket
- Szg - upper hinge leaf
- Szd - lower hinge leaf



cylinder deadbolt



mushroom deadbolt



- symbol depicting use of subassembly in PVC-U windows.



- symbol depicting use of subassembly in wooden windows.



- symbol depicting use of subassembly in aluminium windows.

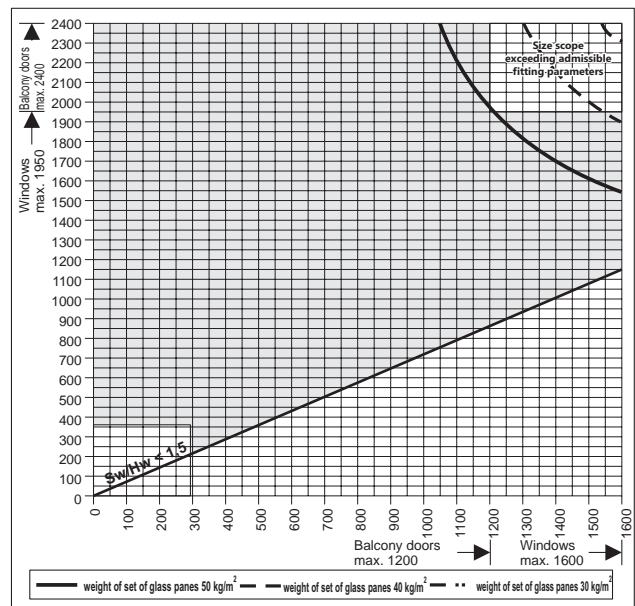
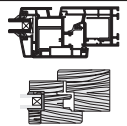


Diagram 3 - Admissible dimensions of sashes weighing up to 130 kg.





NOTE:

Windows and balcony doors producers have no right to limit the number of closing points resulting from the hardware construction.

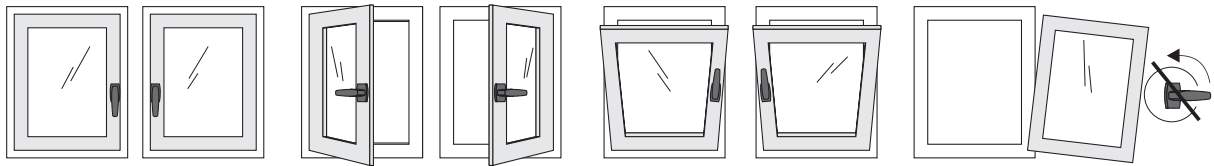


USAGE INCONSISTENT WITH DESIGNATION

Usage inconsistent with designation takes place especially when :

-  obstacles blocking the correct usage are placed within the window's operational area
-  window or balcony door sashes are pressed against the frame inconsistently with designation or in an uncontrolled way (e.g. forced by wind) so that hardware, frame material or other window or balcony door elements are damaged or destroyed, or such action results in a damage
-  additional loads apply to window or balcony door sashes
-  a hand is placed between the frame and the sash while closing the window or balcony door (danger of injury).

CORRECT USAGE OF ROMB HARDWARE

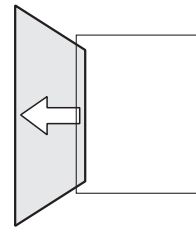


Do not turn the handle upwards when sash is opened

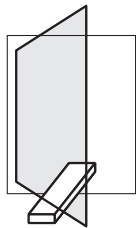
SAFETY OF USE



No additional weight may apply on the sash



Window sash should not be pressed against the frame



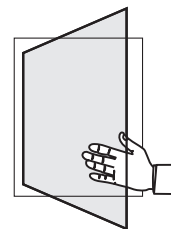
No objects should be placed between the sash and the frame



If children have access to the window, make sure a handle with a lock is fitted



The sash should not be left open in case of strong wind



Injury may occur if the sash is shut forcibly. Hands should not be placed between the sash and the frame while closing the window