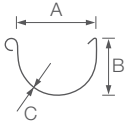
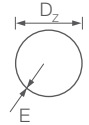


DIMENSIONS AND APPLICATION OF GAMRAT PVC AND GAMRAT MAGNAT GUTTER SYSTEMS

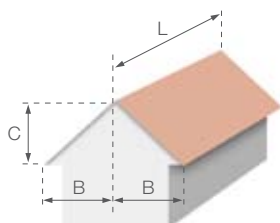
Gutter	Pipe	A	B	C	D _z	E	System	effective cross-section areas	application	
									Gamrat made of PVC	Gamrat Magnat
		75	55	1,2	63	1,6	75/63	33 cm ²	sheds, summer houses, garages	
		100	74	1,4	90	1,8	100/90	58 cm ²	family houses	
		125	89	1,5	63	1,6	125/63	91 cm ²	family houses, blocks of flats, small and medium-sized warehouses, public utility buildings, commercial and industrial facilities	
		125	89	1,5	90	1,8	125/90			
		125	89	1,5	110	2,0	125/110			
		150	108	2,0	110	2,0	150/110	131 cm ²	large residential, commercial and industrial buildings	n.a.

CAPACITY OF GAMRAT PVC AND GAMRAT MAGNAT GUTTER SYSTEMS

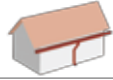
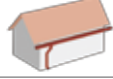

When deciding on your roof gutter system make sure that the gutters and downspouts are capable enough to collect rainwater falling from the roof of the building. To do this calculate an effective roof area to be drained by the system.

Use the following formula:

$$S = (B + 0,5 C) \times L$$



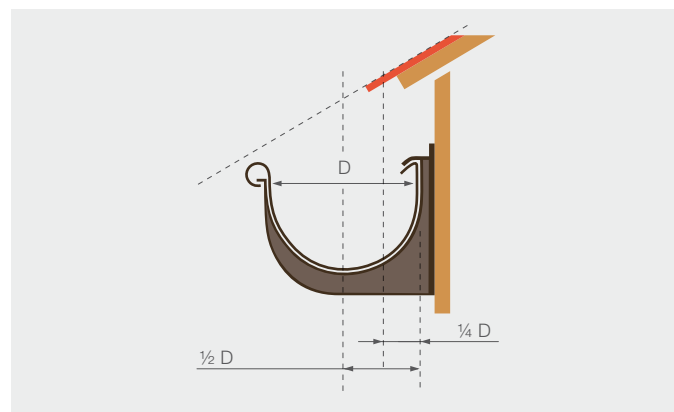
Maximum area drained by the GAMRAT systems in m² of effective roof area (per downspout):

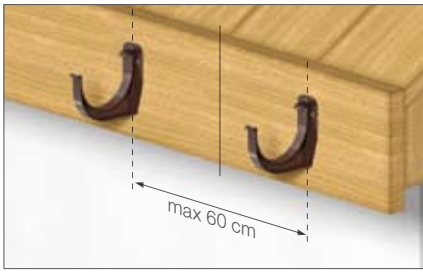
Gutter systems	System 75 mm	System 100 mm	System 125 mm			System 150 mm
	Gutter 75 mm, down-spout 63 mm	Gutter 100 mm, down-spout 90 mm	Gutter 125 mm, down-spout 110 mm	Gutter 125 mm, down-spout 90 mm	Gutter 125 mm, down-spout 63 mm	Gutter 150 mm, down-spout 110 mm
Downspout location						
	95	148	240	205	165	370
	48	74	120	100	82	180
	42	50	95	80	65	145

INSTALLATION OF GAMRAT PVC AND GAMRAT MAGNAT GUTTER SYSTEMS

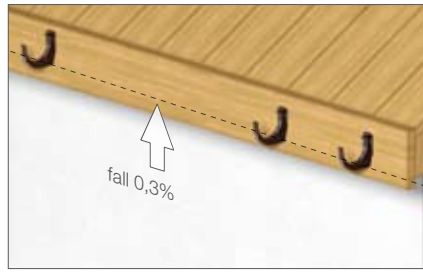
Proper installation is a prerequisite for faultless operation of a plastic roof gutter system. The installation principles for the Gamrat gutter systems differ from those applicable to the traditional systems, which is mainly due to thermal expansion of plastic components. To allow for this effect it is required to use fittings that can compensate variations of the gutter and downspout length. For this purpose gaskets are applied to the joints between the gutter sections and the fittings. Additionally, plastic gutter hangers are used not only to support the gutter but also to ensure proper alignment of an expanding gutter. In case of downspouts special clearance must be provided in the joints between the downspout sections and the fittings to compensate thermal expansion.

The gutters shall be installed in such a way that they are not exposed to the impact of snow sliding off the roof. The recommended positioning of the gutter is presented on the drawing.

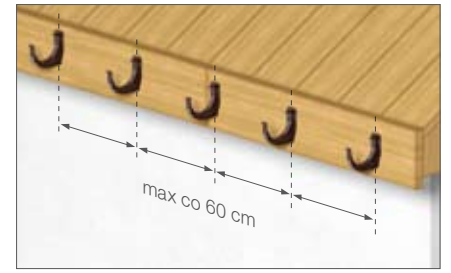




1. Mark the position of the drop outlet on the fascia board. Install gutter hangers at 15-cm from outlet edges on both sides of the outlet. Use at least 3 screws (4x35mm).



2. Fix the gutter hangers furthest from the drop outlet ensuring that the 0.3%-fall (3cm per 10m) is provided.



3a. Fix the remaining gutter hangers to the fascia board. The distance between neighbouring hangers shall not exceed 60 cm. For 75 and 100m gutters the recommended spacing is 50 cm.



3b. It is possible to fix the brackets to the rafter or the eaves directly. To do this use steel rafter arms adapted to the roof pitch. The distance between neighbouring brackets shall not exceed 60 cm. Gutter fall is 0.3%..



4. Plan the arrangement of connectors and corners. Use a hack-saw to cut the gutter, taking into consideration overlaps on gutter section both sides.



5. Install the gutters in the hangers. To do this insert the front edge fold of the gutter onto the front ribs of the hangers. Push the gutter towards the fascia board until its rear edge fold snaps on the rear hanger clip.



6. Apply a thin layer of lubricant (Silpasta R – available in the offer) to the gaskets in the fittings (do not apply this lubricant when installing the caps).



7. Install the drop outlet. Insert the rear edge of the outlet onto the rear gutter fold. Then, turn the outlet until its front edge snaps onto the front gutter edge fold. The outlet shall overlap the gutter fitting as per the designation on the fitting.



8. Use connectors to join the gutter sections (overlap as per the designation on the connector). The distance between the nearest hanger and the edge of the connector shall not exceed 15 cm.



9. Install the corners. Insert the rear edge of the gutter into the rear fold of the corner. Then, turn the angle until its front edge snaps into the front edge fold of the fitting. The distance between the nearest hanger and the edge of the corner shall not exceed 15 cm.



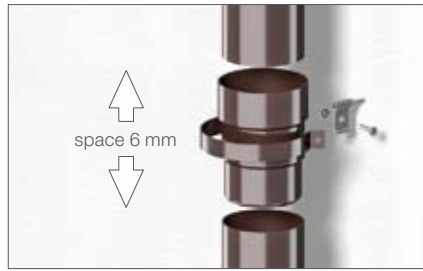
10a. Install left and right end caps. Insert the front edge fold of the end cap into the front gutter edge fold. Then, turn the cap upwards until its rear edge snaps onto the rear gutter edge fold. The caps should preferably be mounted on the gutter prior to the gutter is fixed to the hangers.



10b. A universal end cap can be used both for the left hand and right hand end of the gutter. Insert the front edge fold of the end cap onto the front gutter edge fold. Then, turn the cap down until its rear edge snaps into the rear gutter edge fold.



11. Install the downspout. Use a pipe connector to connect the downspout with the drop outlet. Downspout fixing band shall be mounted to the neck of the connector and fixed to the wall with a hook. The distance between downspout fixing bands shall be 2m.



12. Use pipe connectors to join downspout sections. Downspout fixing bands shall be mounted to the neck of the connector. Allow for an about 6mm-space for the joints between the downspout sections and connectors.



13. If it is necessary to mount the additional downspout fixing band directly on the downspout, allow for a movement of the downspout in the fixing band.



14. In case of projecting eaves a connection of the downspout and the drop outlet shall be done with the use of two elbows and a downspout section. If the connection of the drop outlet and an elbow is loose it should be fixed mechanically (with a screw or a rivet). Double-socket elbows may be used (and should be mounted with the arrow down).



15. A pipe tee or a revision should be fixed to the wall with a fixing band and a hook. The fixing band shall be mounted at the connector. Allow for a 6-mm space.



16. Install an elbow as a downspout shoe. The fixing band shall be mounted at the connector below the joint.



17. Eaves strips shall be hammered to the fascia board. Place the nails in the perforation provided. Allow for a 1mm-clearance between the strip and the nailhead. Strip shall be joint with a 8cm-overlap.

NOTES

1. If the rainwater system is installed on a building with under-gutter steel sheets that reflect the sun-rays (e.g. galvanized, aluminium), the sheet shall be painted or only coated sheets shall be used.
2. In case of steep roof pitches and smooth roof surface finishes or when it is not possible to mount the gutter below the line of the roof pitch, the snow barriers shall be used.
3. Using components provided by other manufacturers may affect the properties of the systems. The guarantee covers only genuine GAMRAT SA products.
4. Installation of gutter systems shall be performed at air temperatures of over 5°C.

PACKAGING

Gutter fittings with gaskets are packaged in cardboard boxes. Gutters and downspouts are bundled and wrapped up with packaging film. Packages are shipped on pallets.

STORAGE AND TRANSPORTATION

Gutters and downspouts shall be stored and transported on a flat surface in a horizontal position. The bottom layer of gutters and downspouts shall be placed on a level supporting base and shall be in full contact with the base. Acceptable height of the storage pile is 1m. Any sharp edges of stands or vehicles, which remain in contact with gutters shall be protected, e.g. with wooden boards. Fittings packaged in cardboard boxes, shall be stored and transported under roof. During the transportation the load must be restrained to ensure no load movement. It is recommended to load/unload the boxes by hand. In case of using loading/unloading equipment one should avoid crushing the products and throwing them.

Most fittings are packaged in individual plastic bags. **Avoid leaving it exposed to sunlight for a long time.**

ATESTATION AND STANDARDS

GUTTER SYSTEMS MADE OF PVC:

- PZH nr HK/B/1457/01/2009 attestation
- Certificate of Polish Standard Nr ITB-498/W
- Polish Standard PN-EN 607:2005; PN-EN 12200-1:2002; PN-EN 1462:2006
- Declaration of Conformity

GUTTER SYSTEM GAMRAT MAGNAT:

- PZH nr HK/B/1457/01/2009 attestation
- Technical Recommendation ITB nr RT ITB-1202/2010
- TWT-ZPR 2/2007
- Declaration of Conformity