

Rofo AKI Gutter 125 Series

Base Metal Steel : In compliance with JIS G3312, AS 1397, MS1196 or ASTM A792M
Minimum Tensile Strength : G 300 MPa
Base Steel Coating : Zinc Coated (Z15) or Genuine Aluminium-Zinc 55% Coating (AZ150, AZ100)
Color Coating System : Specially formulated lead-free premium quality polyester paint and coated to the steel surface using Infra-Red Coating Technology. Both the paint and coating technology provides high color retention and durability to exterior weathering.

Recommended thickness : 0.40mm – 0.48mm thk (TCT)

Rofo AKI Gutter Clip

Base Metal Steel : In compliance with JIS G3302
Minimum Tensile Strength : G550MPa
Base Steel Coating : Zinc Coated Z200 or AZ150 or AZ100
Recommended thickness : 1.0mm thk

Installation Recommendation

The other Gutter overturn Problem in the market is due to improper knowing the Gutter Board water Capacity. Generally, they are just simply install it and never consider the technical properties of the Gutter. With consideration of rainfall, Gutter Dimension, frequency of Downpipe and size of Downpipe, below are the recommendation for Aki- Gutter 125:

- Distance of Gutter Clip
- Number of Downpipe
- 3" Inch Downpipe
- 4" Inch Downpipe
- Roof Pitch

TECHNICAL DATA

When Rofo AKI GUTTER 125 is attached to Rofo Fascia Board FBR207, gutter bracket spacing should mirror the FBR Brackets and the gutter bracket should be adjacent to the fascia board bracket. However, on-site condition shall be justified for actual clip spacing required, as maximum spacing shall not exceed 915mm. As table below:

Table 1: Proposed Gutter Clip Spacing

Roof Pitch	Roof Catchment Area				
	500 sq.ft	1,000 sq.ft	2,000 sq.ft	3,000 sq.ft	4,000 sq.ft
0° -10°	915 mm	915 mm	762 mm	610 mm	610 mm
11° -20°	762 mm	762 mm	610 mm	610 mm	457 mm
21° -30°	610 mm	610 mm	610 mm	457 mm	457 mm

*For Roof Catchment Area > 4,000 sq.ft & Roof Pitch >30°, please refer Rofo technical team.

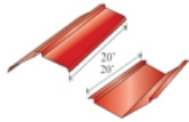
According to AS/NZ 3500 & HB1 14, Steps for Designing Perimeter Roof Gutter Downpipes shall be



1. Decide Ave. Return Interval



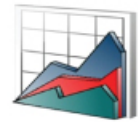
2. Check local rainfall intensity



3. Check your valley concentration point



4. Calculate the roof catchment area for each roof part



5. Determine "Roof Area per Downpipe" from figure 1



6. Calculate your downpipe

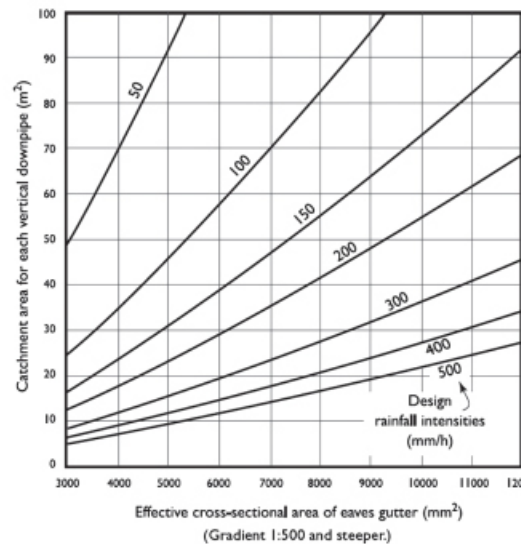


Figure 1 : Determine Catchment Area/ Downpipe (Extrude from AS/NZ 3500 : 2003)

Example :

We have a Gable Roof (2 Way slope) of 20'-0" Length x 50'-0" width.

We wish to use AKI Gutter 125 (Cross sectional area = 11000mm²), for rainfall intensity of 200mm/hr

From figure 1, we get catchment area per downpipe is Approximate 60m² or 645sq.ft.

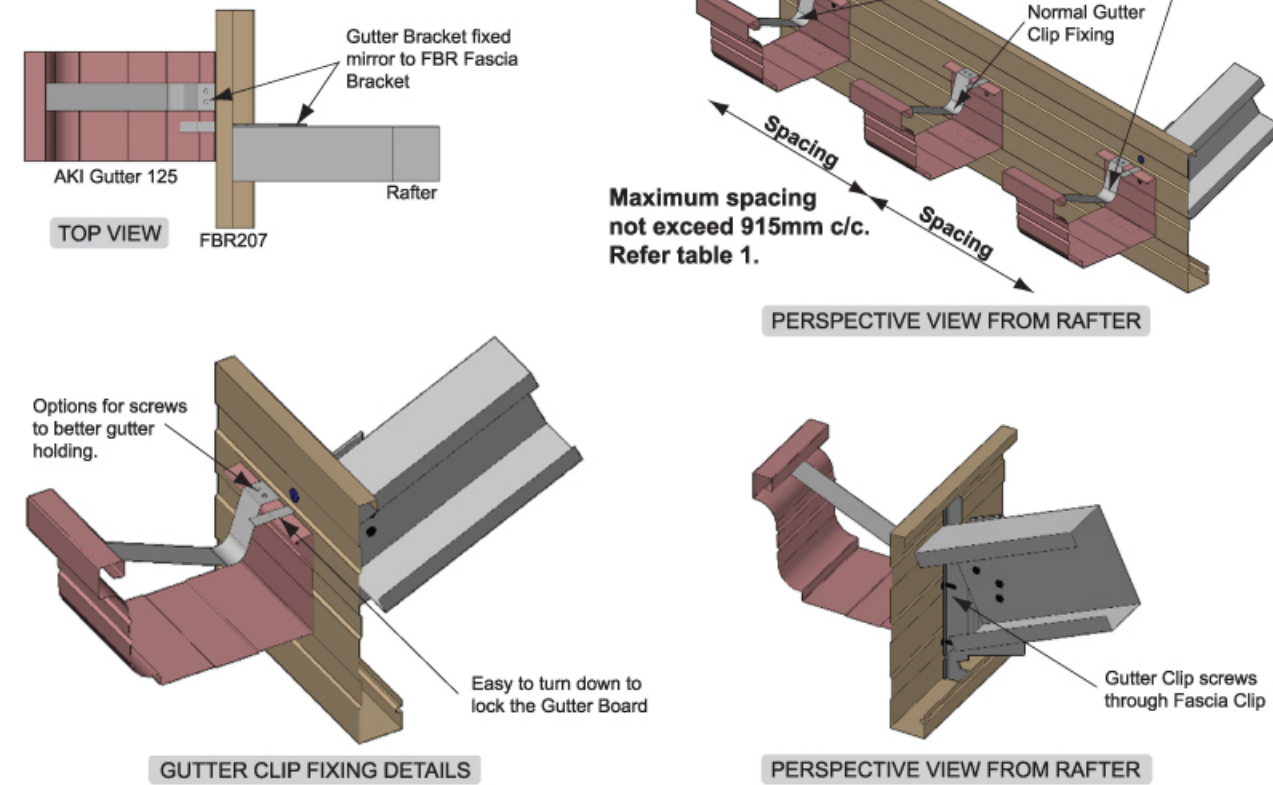
Hence, downpipe per side = 2.000/645 = 3 nos

Total downpipe for entire house = 3 nos x 2 side = 6 nos

Tips : Roof catchment Area is NOT the total area of the roof design. It is the roof area part by part.

✓ IMPROVED Gutter Profile-AKI-Gutter 125 Series

INSTALLATION GUIDELINES



INSTALLATION GUIDELINES – GUTTER LEVELLING

Even with bigger rainwater catchment area, we encourage a minimum slope of 1 in 100. However, site adjustment shall be made based on location of downpipe, valley gutter location and high water concentration point location.



PRODUCT PACKING & HANDLING

- Gutter shall be installed with a suitable fall to avoid water ponding and to allow water to easily flow smoothly.
- Please kindly advised us if these products are to use within 1km of marine, severe industrial or unusual corrosive environments.
- Provision of steeper falls is essential for long life of gutter's performance. We advised good trade practices and certified installer to carry out installation of any roof drainage system.
- All plastic cover strips from product shall be removed and disposed correctly. All metallic particles and other debris from roof areas, gutter and down pipes shall be swept off at the end of each day and at the completion of the installation.
- We advise regular cleaning of dust, leaves and fungal matter to avoid gutter clog. We may suspend your warranty if failure to do so. Debris can be sweep into a pile using a stiff, soft brush. DO NOT use hard tools to clean the gutter.

DISCLAIMER & LIABILITY

This publication is intended to be an aid for all trades and professionals involved, and shall not be a substitute for professional judgement.

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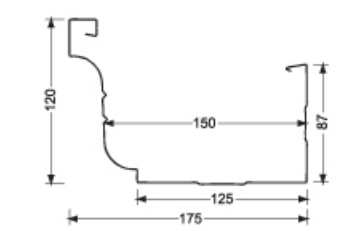
Rofo Aki-Gutter 125



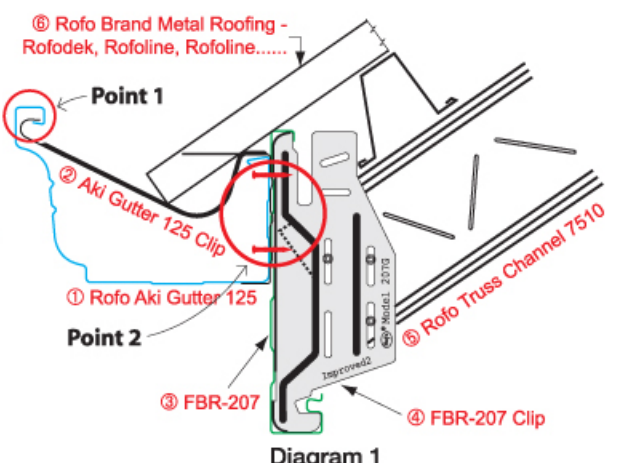
Another Innovative Design and Improvement Empowered by Rofo R&D Team

ADVANTAGES

- Rofo Aki- Gutter 125 Board**
 - Beauty, Architecture & Engineering interface Profile, Interlock Feature (Point 1), add rib stronger, Less Sound... no one in the Market... **Yes, we are the only one!**
- Aki-Gutter 125 Clip... Yes, we are the only one!**
 - 4 ready Pre-punch holes, Stronger Rib, Interlocking and hold gutter board features. (Point 2)
- Joint Aki-Gutter 125 Board with Clip**
 - Joint Aki-Gutter 125 and Clip Interlocking system and hold Gutter Feature to prevent overturn. **Yes, we are the only one!**
- Roof Edge System: Joint Aki-Gutter 125 with Fascia Board FBR-207 and Rafter System. (Diagram 1)**
 - Register with PHIM, Rafter can continuously extend the strength until Aki-Gutter 125 which is never in the market yet. **Yes, we are the only one!**
- Accessories**
 - Pre- punch Downpipe hole 3" or 4"
 - Internal and External joint using on line pre-punch shape provide well finishing.
 - Mould punch End Cap. **Yes, we are the only one!**



Material Supplied by BlueScope



Introduction

After two years time, Rofo R&D Team successfully integrate and interface the Roll Form technologies, Architecture and Engineering application element to develop the new Metal Gutter: Aki-Gutter 125. Aki-Gutter 125 comes with innovative and creative to which able to deliver high precisions in profile and any length. It is not only achieve the Beauty of Outlook and also well improved in term of application compared to those in the market. We did the overall Study (End to End) test from Gutter profile, Gutter Clip and Joint with Fascia Board attached with the roof Truss. Rofo Aki- Gutter 125 being designed to successfully overcome the current Metal Gutter Problem.

Rofo R&D Team continue applying develop new products policy that **“Those in the market, we improve it and those don’t have, we do it”**. We are the only one who provide such advantage Gutter Profile in Sabah Market.

Advantages

Today, Rofo Aki- Gutter 125 and clip comes with the following Advantages. Basically, we can divided into 5 Major parts:

- I) Gutter Board
- II) Gutter Clip
- III) Joint of Gutter Board with Clip
- IV) Tap or Fasten the Gutter Clip to Fascia Board and Clip
- V) Accessories

I. Architecture Beauty Feature of Aki Gutter 125

- 1. Well architecture beauty and well application profile.
- 2. The high Precision and radius for edge had been studied to minimize the defect during roll forming. It is accordance to AS 1365 International Standard.
- 3. Two Dented line in Front elevation to increase the Decorative favor feature and strengthen the elevation Purpose. (A)
- 4. Improved the Gutter Profile in term of reducing the rainwater hitting the external side of Gutter.
- 5. Incorporate the design to ready interlock system with Gutter Clip.
- 6. Emboss line to overcome the wavy at the bottom of the Gutter.
- 7. In-build Pre-punch Hole 3” or 4” for ready downpipe installation.
- 8. Pre-punch External and Internal Joint to well join it.
- 9. Pitched edge Point B well for rain water collection to Gutter Board. (B) (Photo 2)
- 10. The Profile is well precision by CRF Technologies accordance to AS 1365.
- 11. Bottom (C) and rear part (D) of rib been designed to avoid the wavy problem. (Photo 3a, 3b)
- 12. Pre Punch Hole for accurate and well shape 75mm and 100mm for downpipe.
- 13. Imprint Aki- RG 125 for recognition.

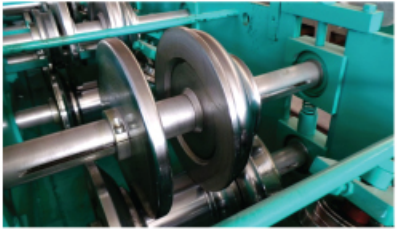


Photo 1 CRF Technologies to produce Aki-Gutter 125

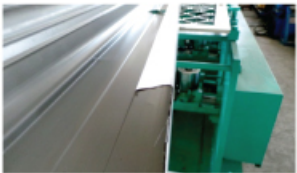
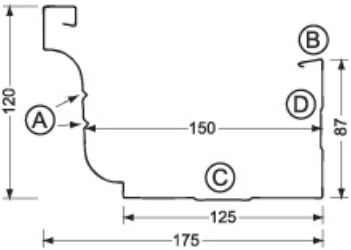


Photo 2



Photo 3a



Photo 3b

II. Aki-Gutter 125 Clip

Throughout our continuous study, it has been improved in the following features. The design of the clip is one the key to determine the Gutter can be hold firmly or not. Aki-Gutter 125 Clip did come with the following features:

- 1. Imprint logo at the gutter Clip.
- 2. Easy interlocking feature to the Gutter Board.
- 3. 4 Pre punch holes mirror well located to get ready for tapping the screw to Fascia Board until penetrate to Clip. (Photo 4)
- 4. Gutter Clip 125 emboss with Stronger feature.
- 5. Two hole at the top edge for preparing to tap the Gutter Board.
- 6. One dented marked line (Marking 1) at Top is Preparing easy to fold down to lock the Gutter Board and hold firmly to reduce the life load or movement when the Gutter hitting by Rain Fall.
- 7. Emboss feature at the handle of Clip to enhance the strength when support the Gutter.

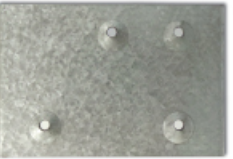
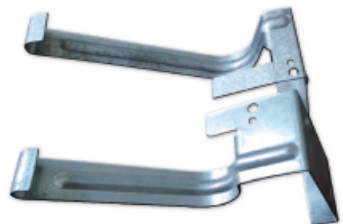
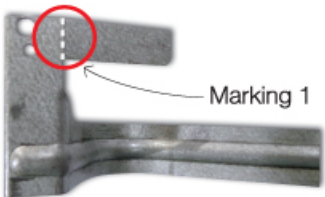


Photo 4



Existing Gutter clip in the market compare to Aki-Gutter 125 Clip.



Marking 1



Since 2008

III. Join Gutter Clip and Gutter Board Together

- 1. The Connection Gutter with Clip has been 360 degree improved to avoid overturn especially during the rain water hitting pressure and live water load.

IV. Joint Gutter Board, Gutter Clip to Fascia Board and Fascia Clip to the Main Truss (Rafter)

It is a total masterpiece of combination of creativity & innovation. Rofo Aki- Gutter 125 and FBR 207 combination System are totally out of Box Engineering Studies which provide end to end consideration to best fascia gutter solution. We are Improving the Whole System from Gutter with Clip and joint with Fascia Board and Clip until with Rafter which able to channel the Strength from Rafter until Gutter Board. (Diagram 2) It is totally overcome the problem that the gutter will overturn due to the Gutter Clip only attached to the fascia Board where there are no Male and Female joint of Gutter and Clip.

For Metal Fascia & Gutter

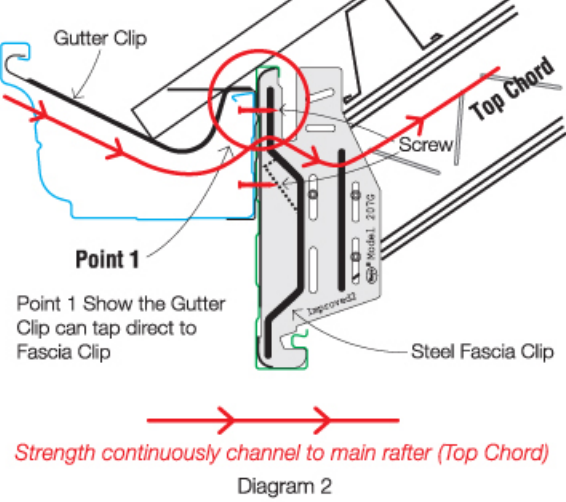


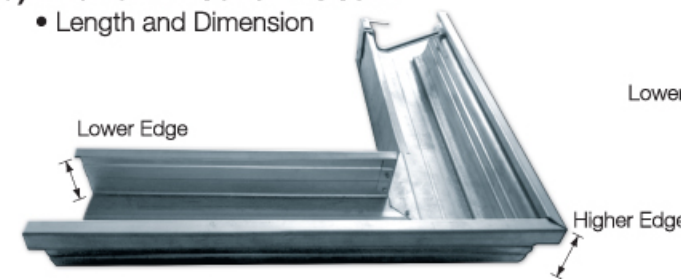
Diagram 2

V. Accessories

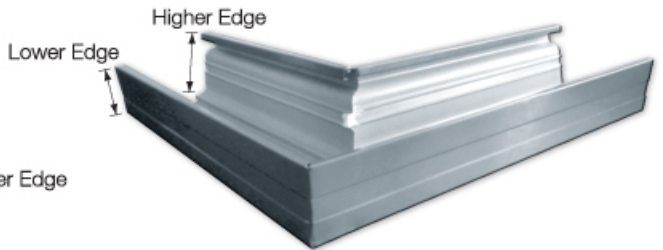
1. Gutter Joint (External / Internal)

The Both external and Internal Gutter joint are produced by Pre-Punch System which are well finishing and tidy appearance compare to the Traditional Hand made.

- a) External Aki-Gutter 125 Joint
 - Length and Dimension



b) Internal Aki- Gutter 125 Joint



2) Pre-Punch Downpipe Holes

We are the only in the market provide on line Pre-Punch down pipe hole service. It come in 3” and 4” fixed to the nozzle head which can be Setting for frequency and Distances. The hole achieve a high precision, well shape result and well finishing compare to the manual - Cutting the Hole.

Once it is fix well with Downpipe Nozzle, it will reduce the hole edge leaking possibility.

3) End Cap

We use the mould system to punch the End Cap for Aki- Gutter 125.

There are two types of End Cap:

- a) Left Side imprint “Rofo- ECG125- L” for Recognition
- b) Right Side Imprint “Rofo- ECG125- R” for Recognition

The Photo shows that determine of Left or right End Cap for Recognition. With the face facing the Gutter Front elevation (Higher Side) in our left hand, we call Left Side and on the right Hand, we call Right Side.



Left Side

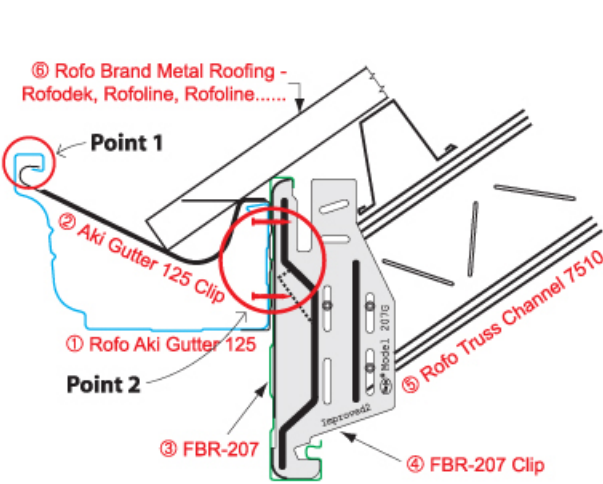


Right Side



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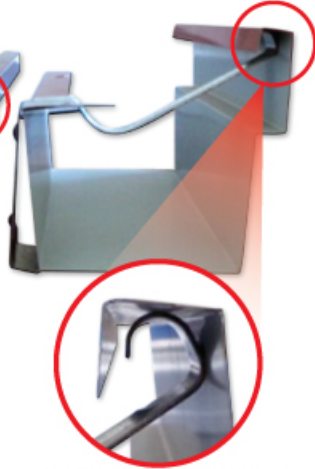
Rofo Aki Gutter 125 and Rofo FBR 207 Joint System



Ready the dented line easy to turn down to lock the gutter board



Hold interlocking system between Aki Gutter and Clip



Rain Gutter in the market no interlocking system

Solve the Current Metal Gutter Problem in the Market

Aki Gutter 125 which is grandly improve the joint compare to current metal Gutter profile in the market. (Point 1 and Point 2)

In this few years, we do a numerous study for the Metal Gutter problem in the Market. Below are detected Problems:

- 1. Joint with Gutter Board and Clip - not Firm and no interlock system.
- 2. Overturn due to not well locked between Clip and Gutter board.
- 3. Overturn due to Gutter clip only attached to the Fascia Board.
- 4. Louder sound when hit by the rainwater.



Today, Proudly to said Rofo Aki Gutter 125 being solve all the top four major problems above.

- 1. Problem 1, 2, 3 being solved by improved Gutter Board and Gutter Clip 125 Design
 - a) Interlocking system between Gutter Board and Clip to ensure the firm hold between Gutter Board and Clip at the important point. (Point 1)
 - b) 4 separate Pre-punch Hole well position at Gutter Clip for Tapping Screw Direct to Fascia Board.
 - c) Firm Tapped to Truss by improved Rofo FBR 207 and Gutter system so that Gutter is strong hold by getting the continuous Strength from Main Truss. (Point 2)
- 2. Problem number 4 being solved by round curve design of Point 5 so when rain water hitting the round surface, it reduce sound compare to Square Gutter Profile in the market.

Identification/ Intangible Asset

The Patented been registered with PHIM Malaysia. Rofo Aki-Gutter 125 can be identify by Emboss the Product Name at the top of External Edge of Gutter (Photo A). The Aki-Gutter Clip 125 with imprinted Rofo to ensure it is the correct clip being use (Photo B). This is to reduce the unnecessary time for sourcing or searching.



Round Shape

Square Shape



Photo A

Imprint Product Name at Aki-Gutter 125

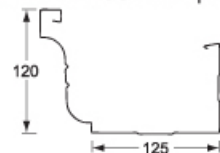


Imprinted at Aki-Gutter 125 Clip

Photo B

Product & Material Specification

To Improve the Gutter life Span, we are strictly using Aluminum Zinc Coated 55% which is Proven better against the Corrosion System. The BlueScope Material is available to increase our products Quality. We are strictly using material with Tensile Range from G 300 (Soft) to G 400 (Semi Hard) and recommended Thickness is 0.40mm (TCT) and above.



Material Supply by BlueScope



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