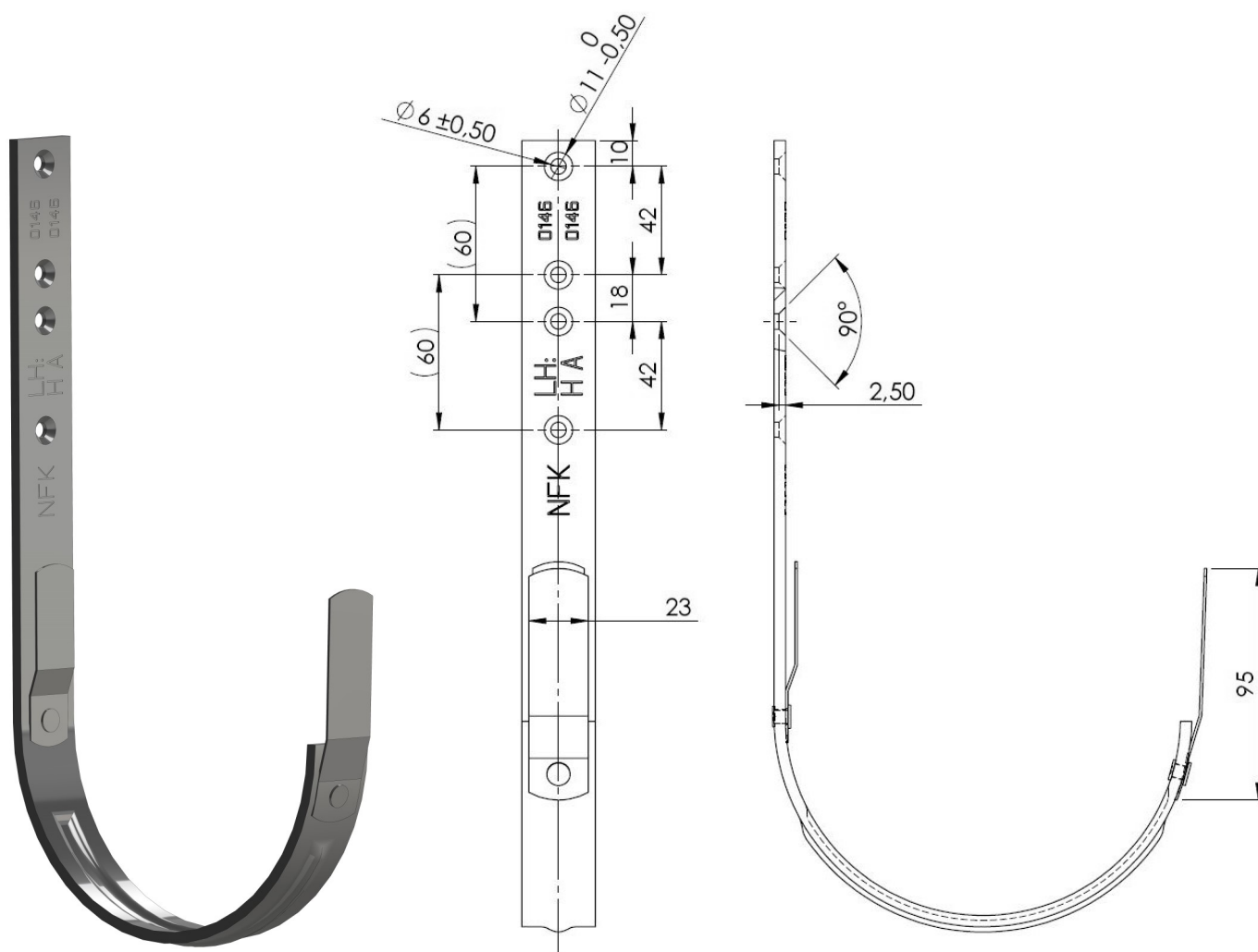


Gutter Bracket according to Standard and technical regulations compliant



Example: 6 part Gutter bracktt with 2 Springs for semicircular gutter

Gutter Brackets, hot-dip galvanized

Gutter Brackets: hot-rolled split tape S235 JRG 2 (RST-2), hot-dip galvanized (corrosion protection class A)

Feather:
- Steel sheet DX 51 Z275 according to EN 10142, hot-dip galvanized
- stainless steel 1.4301

Alu rivet: cylinder head rivet 5,5 x 9 mm (Al Mg Si 1 F31)

Gutter Brackets, Copper

Gutter Brackets: SF-Cu F 24 DIN 17670/46415 // SF-Cu F 24 DIN 17670/1791 (corrosion protection class A)

Feather: SF-Cu F 24 DIN 17670/1791

Copper rivet: cylinder head rivet 5 x 9 mm, E-Cu 58

Gutter Bracket according to Standard and technical regulations compliant

Gutter Bracket, round shape

Tradename Gutter Bracket	Shank	Width x Thickness
	Tolerance: -3 mm	Tradename
200 / 10 tlg.	230	25 · 4
250 / 8 tlg.	280	25 · 4
		30 · 4
280 / 7 tlg.	290	30 · 4
		30 · 5
		40 · 5
333 / 6 tlg.	300	30 · 5
		40 · 5
400 / 5 tlg.	340	30 · 5
		40 · 5
500 / 4 tlg.	375	40 · 5

Gutter Bracket, box shape

Tradename Gutter Bracket	Shank	Width x Thickness
	Tolerance: -3 mm	Tradename
200 / 10 tlg.	230	25 · 4
250 / 8 tlg.	280	25 · 4
		30 · 4
333 / 6 tlg.	300	30 · 5
		40 · 5
400 / 5 tlg.	330	30 · 5
		40 · 5
500 / 4 tlg.	350	40 · 5

Note on the tolerance for the shank lengths:

The tolerance of the shanklengths is maximum of minus 3 mm. This ensures a professional fastening. There is no tolerance upward. Regionally (e.g. in middle mountain ranges), Longer gutter brackets are often used in order to generally be able to attach the gutter deeper. The gutter is thus better protected from slipping snow slabs / roof avalanches.

Gutter Bracket according to Standard and technical regulations compliant

Note on corrosion protection:

Corrosion protection **class A** is required in the technical rules for Germany - a classification that is no longer used today. Behind this is hot-dip galvanizing according to **EN ISO 1461**.

This raises a problem, however, because according to this standard, bending and reshaping after hot-dip galvanizing is not part of the usual use, as subsequent deformation (caused by the layer thickness) will damage the hot-dip galvanizing.

But: bending the gutter bracket and the springs is part of normal use ... a contradiction between norm and application!

If the bend of the gutter bracket on the shank can still be neglected because it lies in a protected area not exposed to the weather, the gutter bracket springs require special attention. Because the front spring in particular is exposed to permanent weather. The springs must be flexible, which is why they are made from approximately 1 mm thick steel. Thinner steel material, however, also requires a thinner zinc coating, because the zinc thickness in particular can lead to hairline cracks, cracking, or in the worst case even flaking of the zinc layer when the springs are bent. In addition, the feather / gutter bracket connection cannot be made in accordance with galvanizing-norm. This leads to non-galvanized areas between the spring and the holder, along with corresponding traces of corrosion.

In order to avoid these problems, springs made of stainless steel or continuously galvanized steel are retrofitted today - a solution that has been tried and tested in practice for many years.

In a research assignment, the **Bergische Universität Wuppertal** came to the conclusion that continuously galvanized springs have a better corrosion protection than individually galvanized springs.

Continuous hot-dip galvanizing reacts much better to deformations (bending) and there are no more unprotected areas between the feather and the gutter bracket.

