

GN 2180

Edge protection seal profiles

Material NBR / EPDM (UL-certified)



Specification

Types

- Type **A**: Upper seal profile
- Type **D**: Side seal profile

Clamping profile / Sealing profile

Ethylene propylene diene rubber **EPDM**

- black
- Clamping profile hardness 65 ±5 Shore A
- Sealing profile hardness 25 ±5 Shore A
- temperature resistant -40 °C to 100 °C

Acrylonitrile butadiene rubber **NBR**

(only for sizes $h_1 = 20.5$ and 13)

- black
- Clamping profile hardness 60 ±5 Shore A
- Sealing profile hardness 25 ±5 Shore A
- temperature resistant -30 °C to 100 °C

Clamp insert

Steel wire polyester clamping band

Information

Edge protection seal profiles GN 2180 can be used to seal doors, covers and hatches. The profiles are pressed by hand onto the front of metal sheets and plates. The embedded clamp insert prevents detachment. Glue or other adhesives are not required.

When assembled, the profile should deform slightly according to w_2 . This ensures an optimal seal. Adherence to the guideline placement radii ($r_1 \dots r_2$) is recommended in order to ensure a tight profile seal and to make assembly easier.

The NBR profiles are recommended for use in cases where contact with fuels, oils or coolants can occur.

EPDM profiles are certified according to UL 50 and UL 94-HB and are therefore approved for the US-American and the Canadian market.

Technical Information

- [Technical information for edge protection profiles](#)
- [Elastomer characteristics](#)

General notes

Introduction

Edge protection profiles are installed on the front edge of metal sheets and plates. They protect surfaces from damage by sharp edges. Meanwhile, edge protection seal profiles feature a seal profile in order to provide additional sealing for doors, covers and hatches.

Uses and applications

With the use of edge protection when handling equipment and machine parts made of sheet metal profiles, the risk of cuts or abrasions is reduced to a minimum. In the process, in these applications the profiles provide a visual “decorative effect.” Other application possibilities include cable and tube laying, where openings and edges of divider plates need to be bypassed. This provides reliable protection from flaking or worn-down cables and tubes.

In general, using edge protection profiles can reduce the need for further treatment such as burring and chamfering of cut or laser-cut metal sheets.

Edge protection seal profiles provide the same benefits as edge protection profiles. However they are recommended for use in cases where doors, covers and hatches require additional sealing in order to prevent the emission of dust, warm air or noise; for example, or in order to prevent water spray from entering.

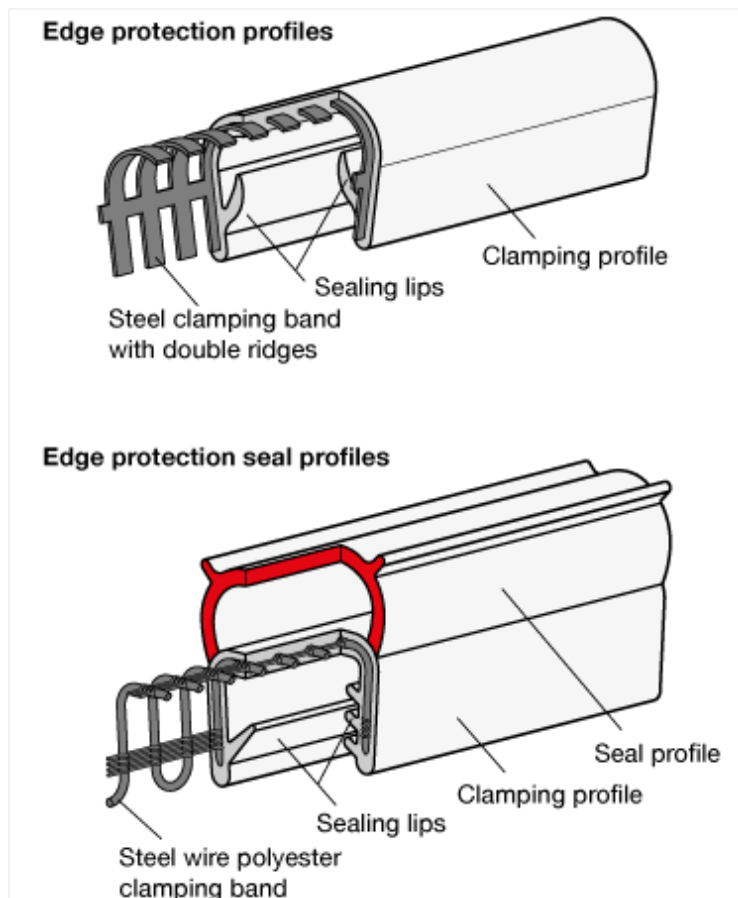
Structure

Edge protection profiles consist of an extruded clamping profile which forms the base of the structure and is used on the edge of sheet metal in order to affix the edge protection profile.

In order to increase the clamping force, the clamping profile is strengthened through a reinforcement, preventing the profile from detaching itself after assembly. The clamp insert is available as a steel clamping band or as a steel wire polyester clamping band. Steel clamping bands have a higher clamping effect, while steel wire clamping bands allow a smaller assembly radius, also enabling a more even alignment of the edges.

The seal profile is affixed to the top or the side of the clamping profile and is significantly “softer”. It can be made from the basic material of the clamping profile but it can also be made from particular materials for specific applications. In order to attain optimum sealing, the seal profile needs to be prestressed and/or formed to enable it to adapt precisely to the countersurface.

The sealing lips in the interior of the clamping profile ensure the sealing of the edge protection seal profile with the edge of the sheet.



Assembly

Side cutters and scissors that are suitable for cutting the metal clamping insert can be used to align the profiles. Any end parts of the clamp insert that protrude from the cutting area should be removed in order to prevent injuries. The profile ends and cants can be subsequently sealed and/or glued as required.

The mounting of the profiles to the edges is secured via the clamp insert. Glue or other adhesives are not usually required.

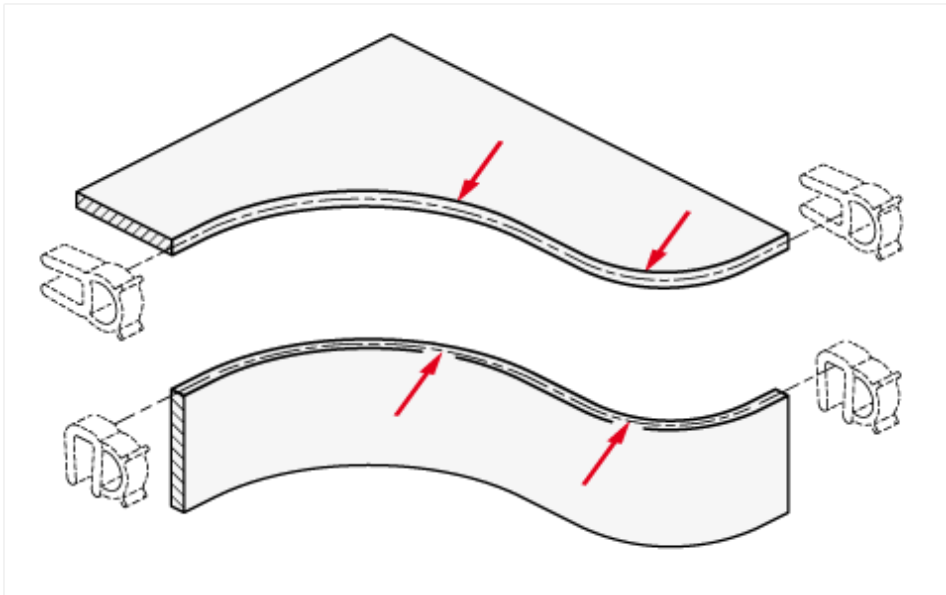
Profiles can generally be assembled by applying pressure by hand. If necessary, the profile can additionally be secured by lightly applying a soft-face hammer.

Technical Information

Minimum placement radii

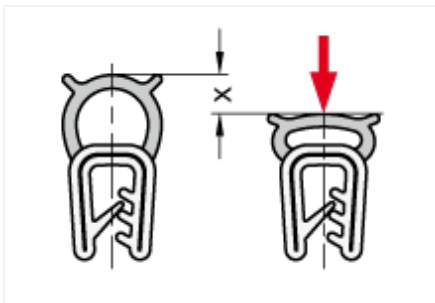
In order to ensure a consistent seal for the profile and to prevent the profile from detaching, placement should not be set below the minimum radii. This also makes the profile assembly easier.

The radii are listed on the corresponding standard sheets and should be used as a guideline. Depending on the direction of application, a distinction is made between cut or curved radii, in other words, interior or exterior seal profiles.



Shaping

Ideally, edge protection seal profiles should maintain a deformation x of approximately 30 - 50% of the maximum value in order to ensure a reliable sealing. Deformation of over 50% can impair seal tightness and reduce the resilience of the sealing material due to plastic deformation.



Basic materials, characteristics

Profiles can be made from various basic materials depending on the application. The table to the right summarizes the general characteristics to facilitate the choice. Due to the multitude of chemicals, solvents etc. exact specifications are not possible, as basic materials that are fundamentally unstable can be durable in combination with specific materials and vice versa. Concentration, temperature and exposure time also play a crucial role. The customer is advised to test resistance when combining respective materials in contact with one another.

* + resistant, o conditionally resistant, - non-resistant

Characteristics	PVC	NBR	EPDM
Operational temperature min.	-40 °C	- 30 °C	- 40 °C
Operational temperature max.	+70 °C	+100 °C	+100 °C
Abrasion resistance / Wear resistance	+	+	+
Deformation resistance	o	+	+
Resistant to: *			
• UV light / weather exposure	+	-	+
• Chemicals	+	-	+
• Oil, greases	o	+	-
• Fuels	o	+	-
• Acids	+	o	+
• Alkalines	o	+	+

• Solvents	o	o	o
• Alcohol	o	o	+

UL certification (Seal profiles as EPDM)

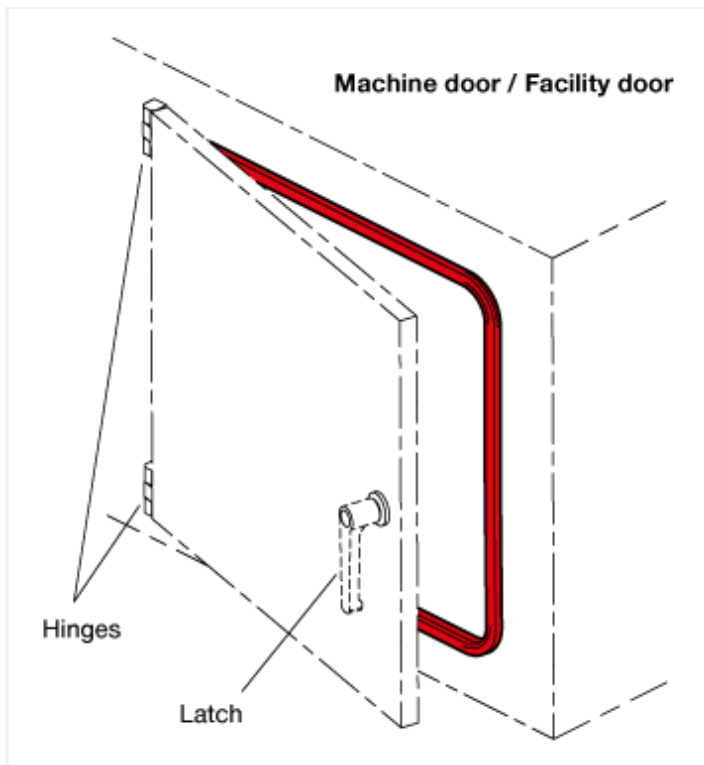
UL (Underwriters Laboratories) is an independent global company operating in safety science, similar to TÜV in Germany. Their testing is required as a priority in the US-American market.

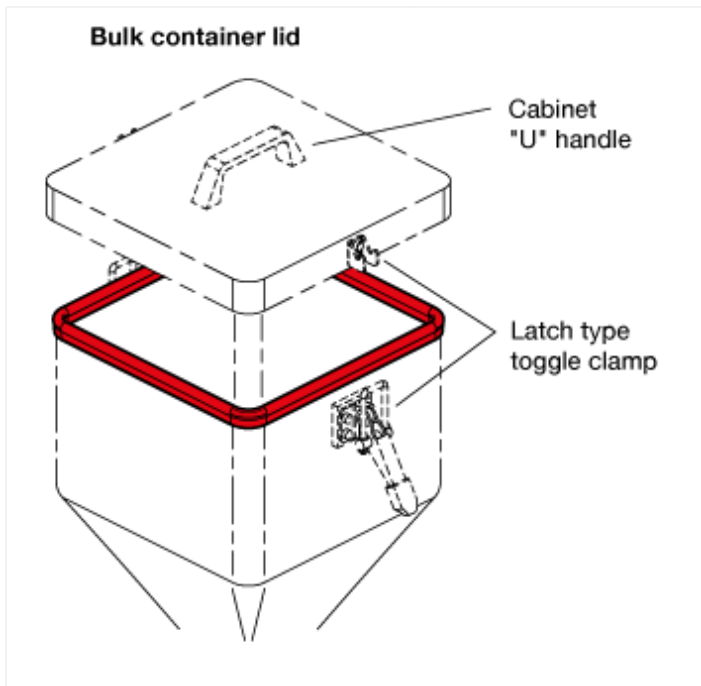
Edge protection seal profiles GN 2180 made of EPDM have a "UL-recognized component" mark. This states that the profiles can be used as components in finished products which are also intended for UL-certified use.

For customers and companies, the need for these types of certification is becoming increasingly important, as it guarantees high quality, reliable processing, and long durability, as well as reliable product safety.



Application examples - profiles in combination with other Elessa+Ganter standard machine elements

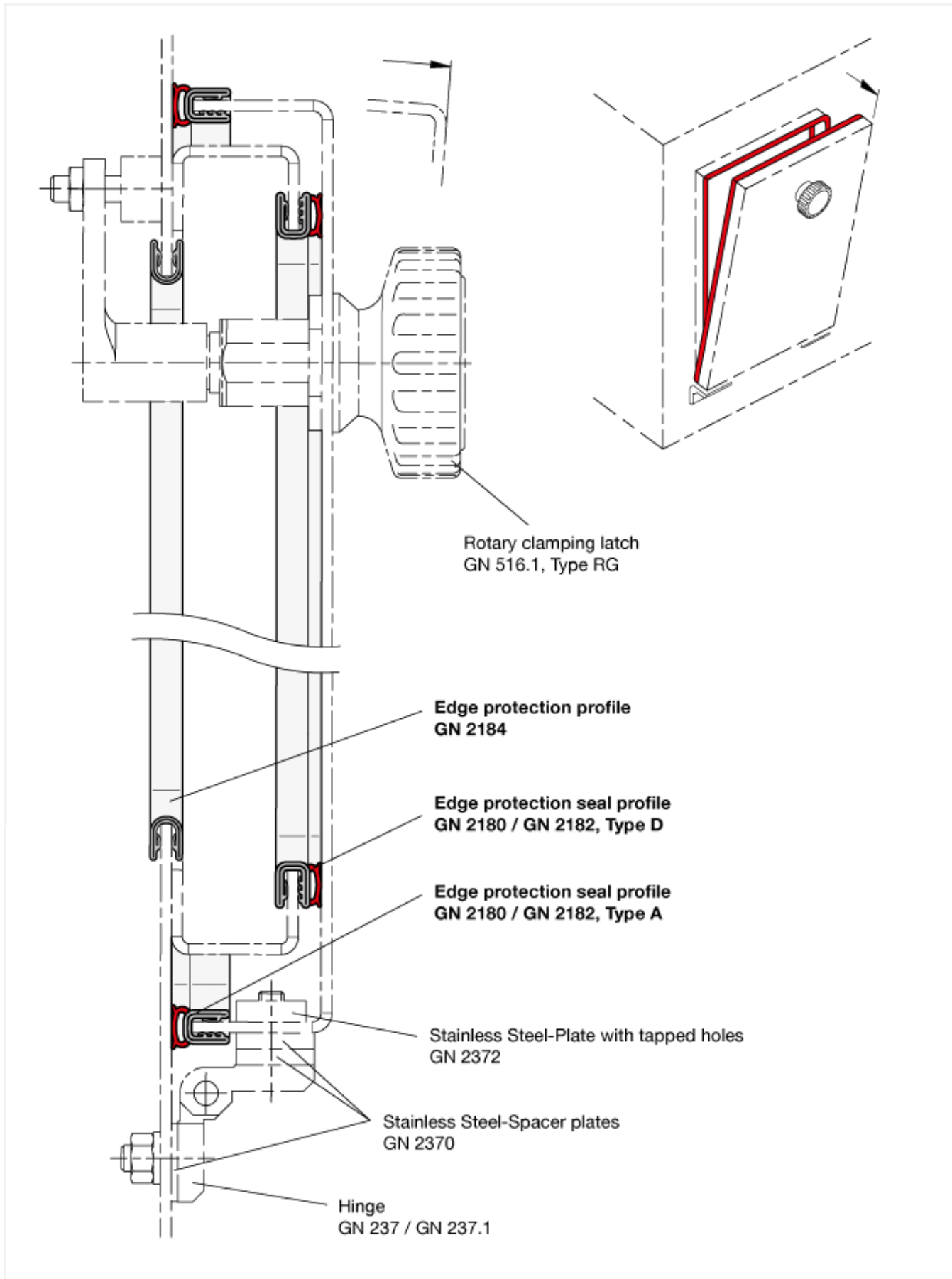




Application examples

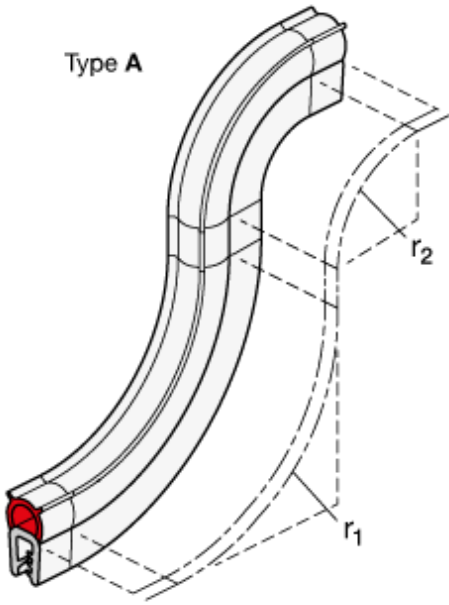
With their versatility, edge protection profiles and/or edge protection seal profiles can be implemented in various applications, in conjunction with other Eles+Ganter products.

- [Latches](#)
 - [Hinges](#)
 - [Toggle Clamps](#)
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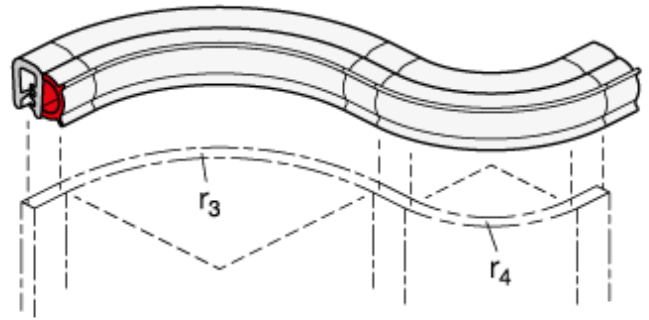
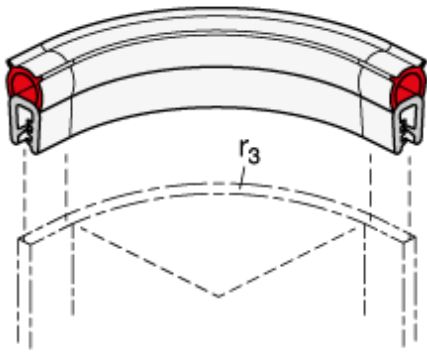
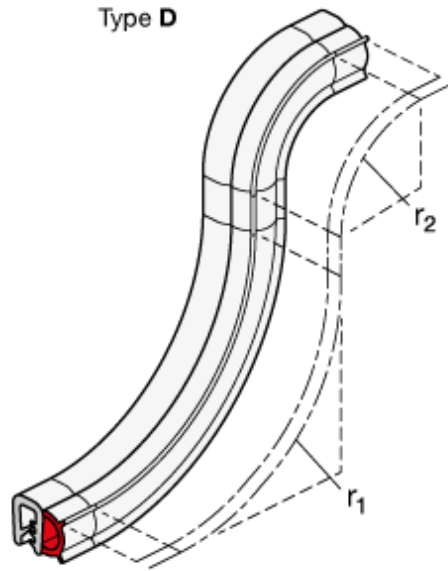


The construction depicted shows a standard application of edge protection profiles and edge protection seal profiles. The edge protection seal profiles are attached to the door and the fixed frame. The opening for the door is covered with an edge protection profile at its cut edge.

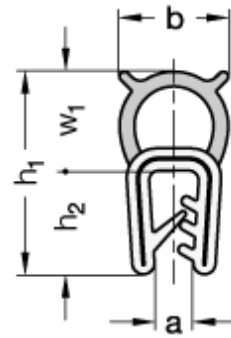
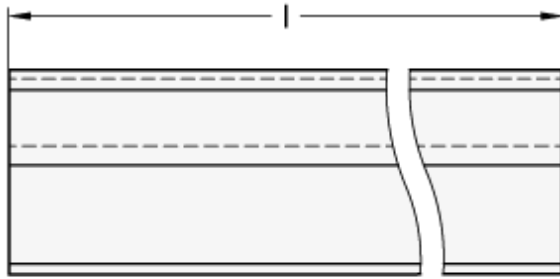
Type A



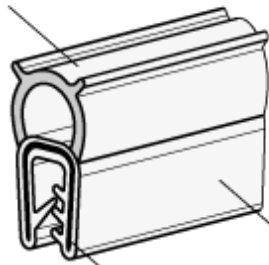
Type D



Type A

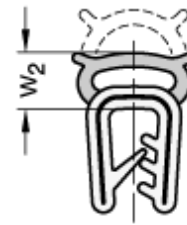


Upper seal profile

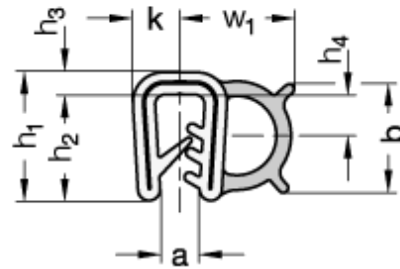
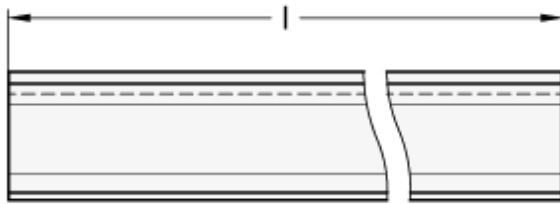


Clamping profile

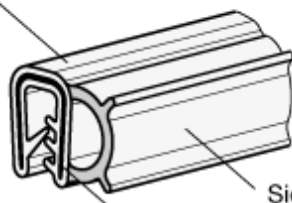
Clamp insert



Type D

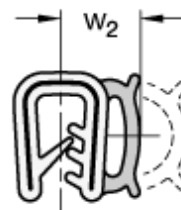


Clamping profile



Side seal profile

Clamp insert



Description	h_1	Cutting length l in m	a	b	h_2	h_3	h_4	k	r_1	r_2	r_3	r_4	w_1	w_2	Weight
GN 2180-EPDM-15,5-A-20	15.5	20	0.8 - 2.5	8.5	9	-	-	-	80	50	20	-	6.5	5	2800
GN 2180-EPDM-15,5-A-50	15.5	50	0.8 - 2.5	8.5	9	-	-	-	80	50	20	-	6.5	5	56
GN 2180-EPDM-20,5-A-20	20.5	20	1 - 3.5	11	10.5	-	-	-	90	50	30	-	10	7	2800
GN 2180-EPDM-20,5-A-50	20.5	50	1 - 3.5	11	10.5	-	-	-	90	50	30	-	10	7	7130
GN 2180-EPDM-11,5-D-20	11.5	20	0.8 - 2.5	8.75	9	2.5	3.75	4	30	40	80	40	8.5	6.75	2500
GN 2180-EPDM-11,5-D-50	11.5	50	0.8 - 2.5	8.75	9	2.5	3.75	4	30	40	80	40	8.5	6.75	5600
GN 2180-EPDM-13-D-20	13	20	1 - 3.5	11	10.75	2.25	4.5	4.75	40	50	100	80	11.25	8.75	2800
GN 2180-EPDM-13-D-50	13	50	1 - 3.5	11	10.75	2.25	4.5	4.75	40	50	100	80	11.25	8.75	7500
GN 2180-NBR-20,5-A-20	20.5	20	1 - 3.5	11	10.5	-	-	-	90	50	30	-	10	7	3000
GN 2180-NBR-20,5-A-50	20.5	50	1 - 3.5	11	10.5	-	-	-	90	50	30	-	10	7	7500
GN 2180-NBR-13-D-20	13	20	1 - 3.5	11	10.75	2.25	4.5	4.75	40	50	100	80	11.25	8.75	3000
GN 2180-NBR-13-D-50	13	50	1 - 3.5	11	10.75	2.25	4.5	4.75	40	50	100	80	11.25	8.75	7000