Ganter Norm®

Highlights

Edge protection profiles

Standard Parts. Ganter.

Contents

Otto GANTER GmbH & Co. KG, February 2020

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.

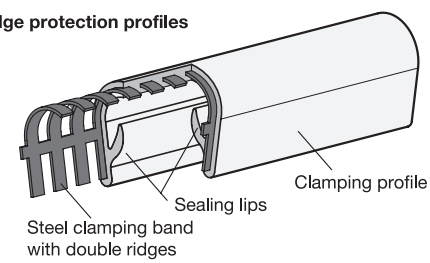
In order to increase the clamping force, the clamping profile is strengthened through a reinforcement, preventing the profile from detaching itself after assembly.

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.

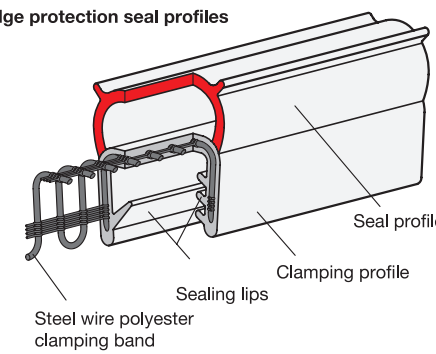
The seal profile is affixed to the top or the side of the clamping profile and is significantly “softer.” It can be made from the basic material of the clamping profile but it can also be made from particular materials for specific applications. In order to attain optimum sealing, the seal profile needs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

Edge protection profiles



Edge protection seal profiles



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.

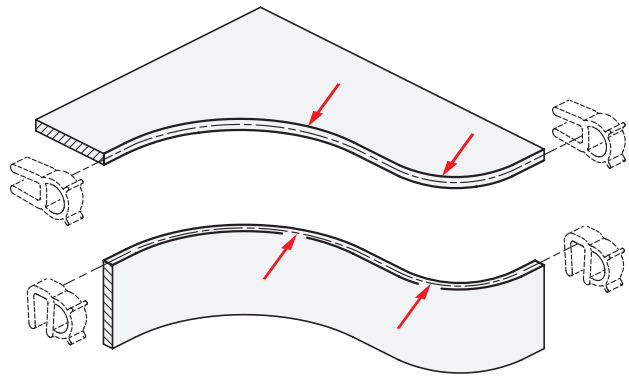
The mounting of the the profiles to the edges is secured via the clamp insert. Glue or other adhesives are not usually required.

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.

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.

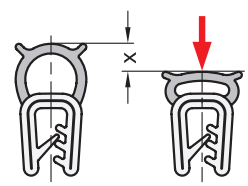
The radii are listed on the corresponding standard sheets and should be used as a guideline. Depending on the direction of application, a distinction is made between cut or curved radii, in other words, interior or exterior seal profiles.



Shaping

Ideally, edge protection seal profiles should maintain a deformation x of approximately 30 - 50% of the maximum value in order to ensure 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.

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	+

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

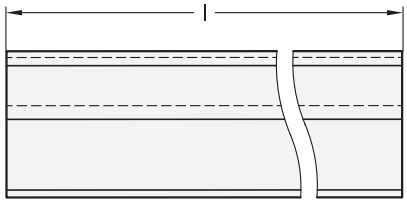
UL certification (Seal profiles as EPDM)

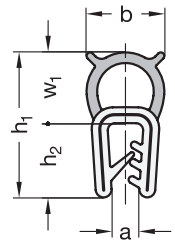
UL (Underwriters Laboratories) is an independent global company operating in safety science, similar to TÜV in Germany. Their testing is required as a priority in the US-American market.

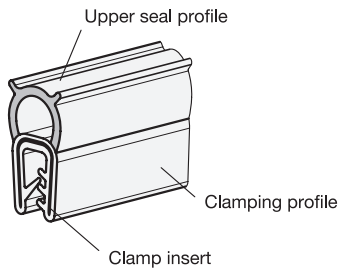
The GN 2180 edge protection seal profiles made of EPDM have a “UL-recognized component” mark. This states that the profiles can be used as components in finished products which are also intended for UL-certified use.

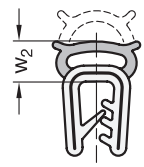
For customers and companies, the need for these types of certification is becoming increasingly important, as it guarantees high quality, reliable processing, and long durability, as well as reliable product safety.

Type **A**

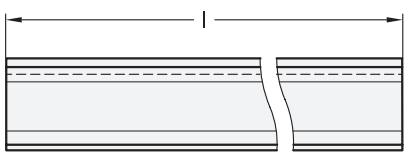


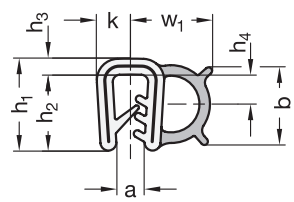


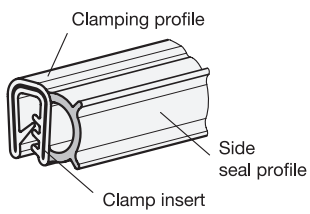


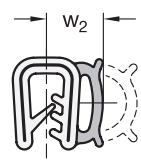


Type **D**









3 Type

A Upper seal profile
D Side seal profile

2 **4**

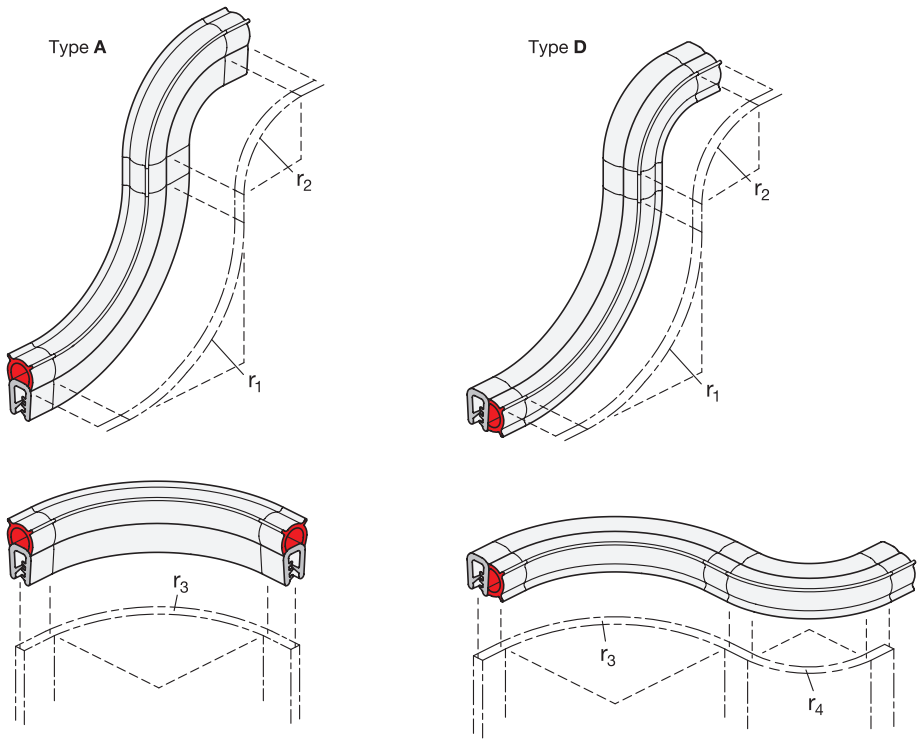
Type A

h_1	Cutting length **l** in meter		**a** Clamping area min.	max.	**b**	h_2	r_1	r_2	r_3	w_1	w_2 up to 50% permissible deformation
15,5	20	50	0,8	2,5	8,5	9	80	50	20	6,5	5
20,5	20	50	1	3,5	11	10,5	90	50	30	10	7

2 **4**

Type D

h_1	Cutting length **l** in meter		**a** Clamping area min.	max.	**b**	h_2	h_3	h_4	**k**	r_1	r_2	r_3	r_4	w_1	w_2 up to 50% permissible deformation
11,5	20	50	0,8	2,5	8,75	9	2,5	3,75	4	30	40	80	40	8,5	6,75
13	20	50	1	3,5	11	10,75	2,25	4,5	4,75	40	50	100	80	11,25	8,75



Specification

- 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
- *Elastomer characteristics*
  → Main Catalogue Page 1483
- RoHS

Information

GN 2180 edge protection seal profiles 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. Adherance to the guideline placement radii (r_1...r_4) 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.

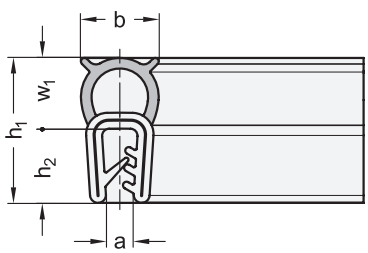
see also...

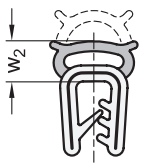
- *Technical information → Page 3*
- *Edge protection seal profiles GN 2182 → Page 8*
- *Edge protection profiles GN 2184 → Page 12*

How to order

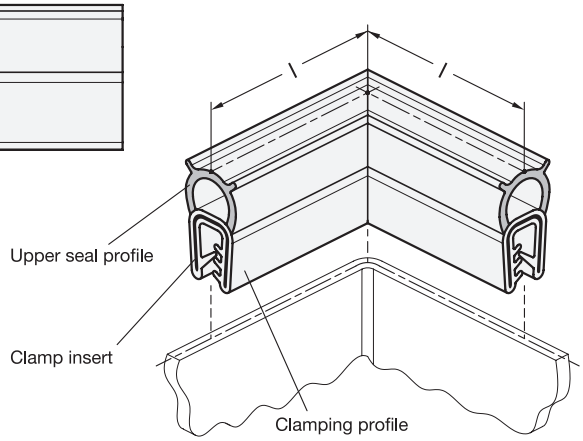
GN 2180-EPDM-11,5-D-20

1	**Material**
2	**h_1**
3	**Type**
4	**Length l**





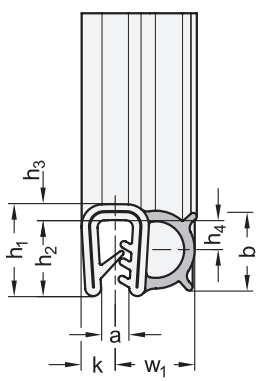
Type **A**

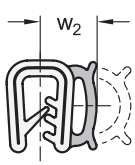


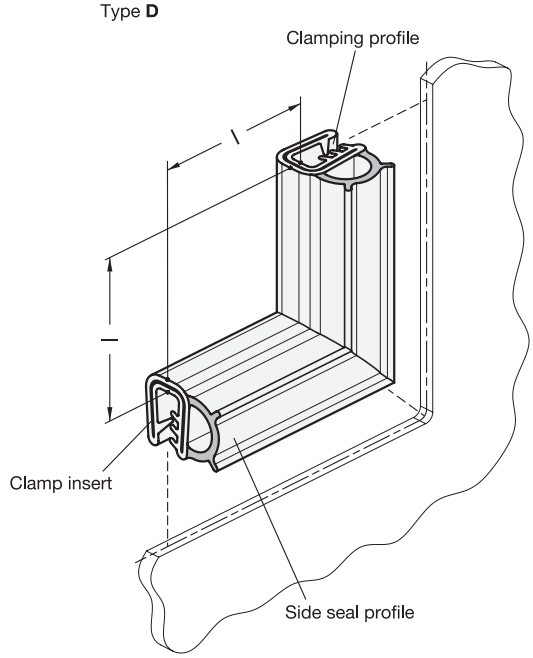
3 Type

A Upper seal profile
D Side seal profile

Type **D**







2 **4**

Type A

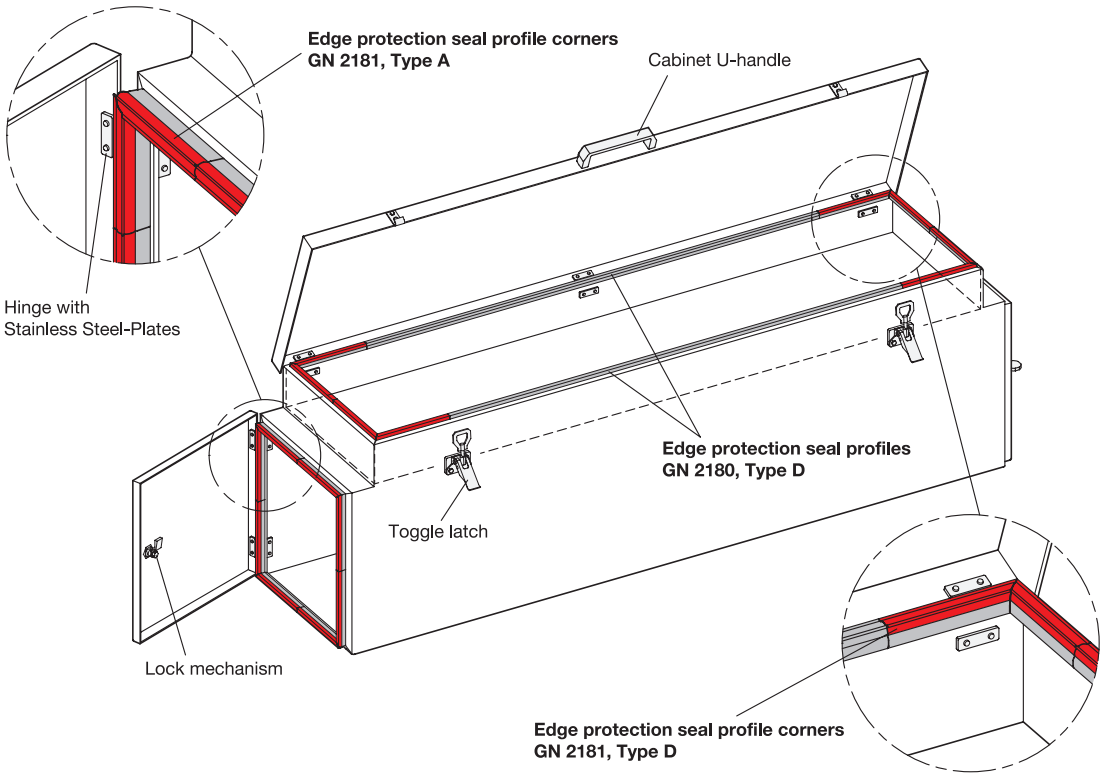
h_1	Length **l**				**a** Clamping area min.	**a** Clamping area max.	**b**	h_2	w_1	w_2 up to 50% permissible deformation
20,5	160 ±2	250 ±2,5	400 ±3,2	630 ±4	1	3,5	11	10,5	10	7

2 **4**

Type D

h_1	Length **l**				**a** Clamping area min.	**a** Clamping area max.	**b**	h_2	h_3	h_4	k	w_1	w_2 up to 50% permissible deformation
13	160 ±2	250 ±2,5	400 ±3,2	630 ±4	1	3,5	11	10,75	2,25	4,5	4,75	11,75	8,75

Application example



Specification

- 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**
  - 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
- *Elastomer characteristics*
  → Main Catalogue Page 1483
- RoHS

On request

- Edge protection seal profile segments, vulcanized, e.g. in U or Z shape
- Edge protection seal profile frame, vulcanized, closed, e.g. in round or square shape

Information

With edge protection seal profiles corners GN 2181, right-angle sealing paths can be quickly and easily implemented without a minimum laying radius or manual „free-cutting" of the profile. The corner joint is sealed and firmly attached thanks to vulcanization.

The leg length l can be shortened or extended with the corresponding section of GN 2180. Installed "compressed" with an excess dimension of about 1% of the total length, the joints are tightly fitting and do not require adhesive.

During operation, the profile must experience deformation to dimension w_2 in order to ensure an optimal sealing effect The profiles made of NBR are intended for uses in contact with oils, fuels or lubricants.

The EPDM versions are made of UL 50 and UL 94-HB certified edge protector sealing profiles.

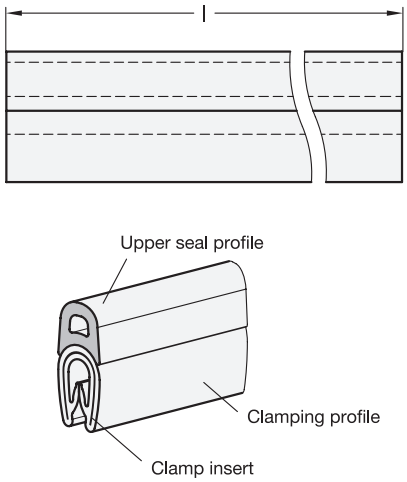
see also...
- *Technical information → Page 3*
- *Edge protection seal profiles GN 2180 → Page 4*
- *Edge protection seal profiles GN 2182 → Page 8*
- *Edge protection profiles GN 2184 → Page 12*

How to order

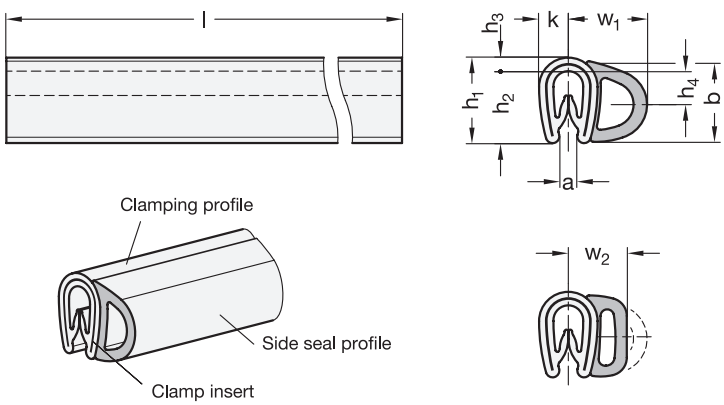
GN 2181-NBR-20,5-A-400

1	**Material**
2	**h_1**
3	**Type**
4	**Length l**

Type **A**



Type **D**



2 Type

A Upper seal profile
D Side seal profile

1 **3**

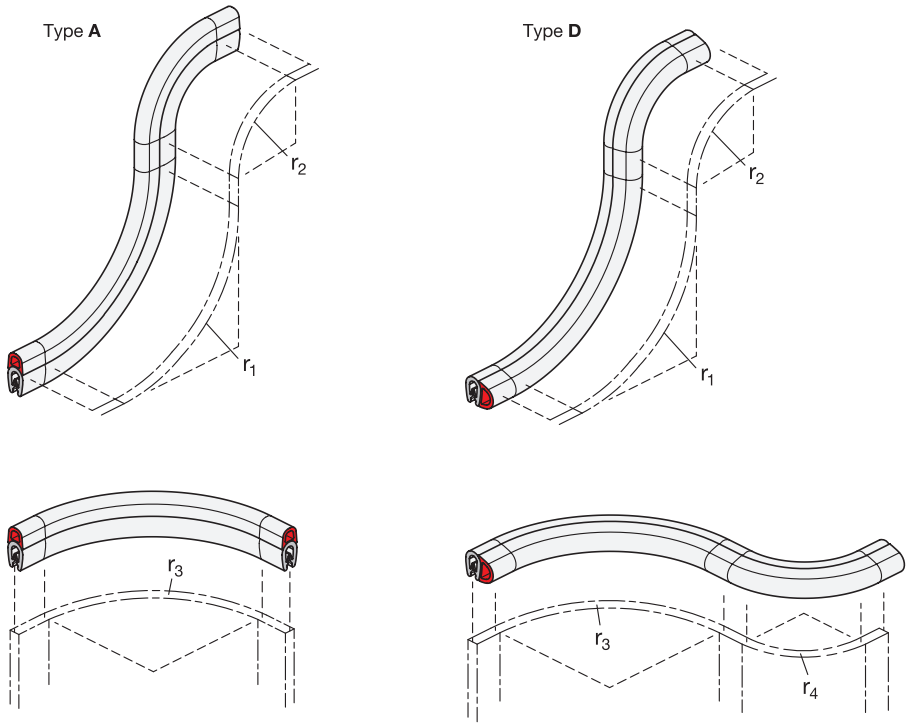
Type A

h_1	Cutting length **l** in meter		**a** Clamping area min.	max.	**b**	h_2	r_1	r_2	r_3	w_1	w_2 up to 50% permissible deformation
14,5	20	50	1	2	6,5	8	40	20	10	6,5	5,25

1 **3**

Type D

h_1	Cutting length **l** in meter		**a** Clamping area min.	max.	**b**	h_2	h_3	h_4	**k**	r_1	r_2	r_3	r_4	w_1	w_2 up to 50% permissible deformation
9,5	20	50	1	2	9	8	1,5	4	3,25	15	20	30	50	8,75	6,75



Specification

- Clamping profile
  Polyvinyl Chloride (PVC)
  Hardness 70±5 Shore A
- Sealing profile
  Ethylene propylene diene rubber (EPDM)
  Hardness 25±5 Shore A
- Clamp insert
  Steel clamping band
- black
- temperature resistant -40 °C to 90 °C
- weather exposure
- *Elastomer characteristics*
  → Main Catalogue Page 1483
- *Plastic characteristics*
  → Main Catalogue Page 1483
- RoHS

Information

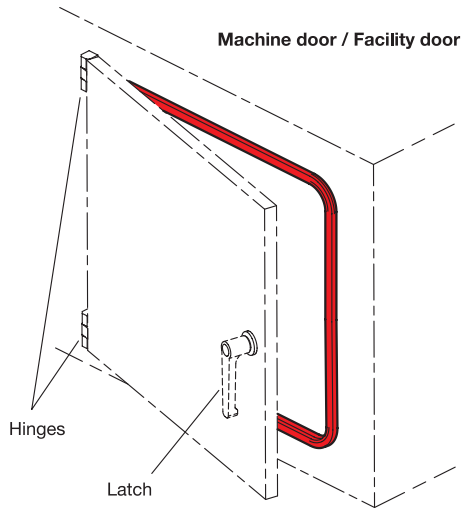
GN 2182 edge protection seal profiles can be used to seal doors, covers and hatches. The profiles are pressed by hand onto the front of metal sheets and plates. The embedded clamp insert prevents detachment. Glue or other adhesives are not required.

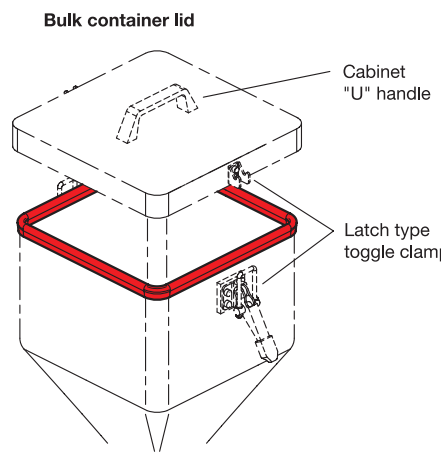
When assembled, the profile should deform slightly according to w_2. This ensures an optimal seal. Adherance to the guideline placement radii (r_1...r_4) is recommended in order to ensure a tight profile seal and to make assembly easier.

see also...

- *Technical information → Page 3*
- *Edge protection seal profiles GN 2180 → Page 4*
- *Edge protection profiles GN 2184 → Page 12*

How to order		
GN 2182-9,5-D-20 (1 2 3)	1	h_1
	2	Type
	3	Length l



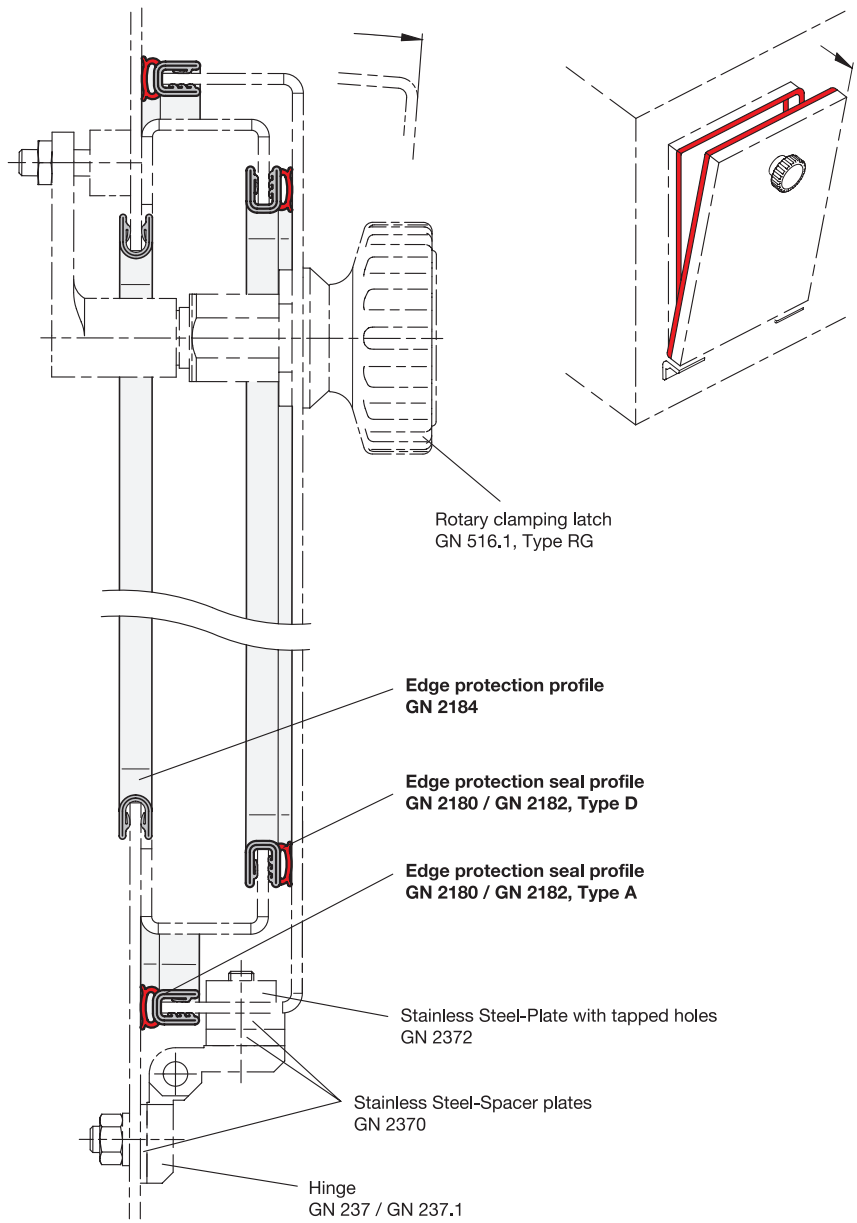


Application examples

With their versatility, edge protection profiles and/or edge protection seal profiles can be implemented in various applications, in conjunction with other Ganter products. In particular, combinations with product group 3.3 (Swinging, latching, locking of doors and covers) and product group 2.4 (Clamping, securing via clamping mechanisms) can achieve a variety of useful constructions.

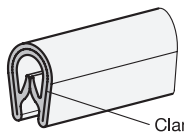
see also...

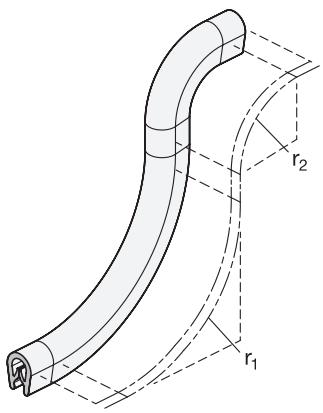
- *Latches → Main Catalogue Page 892 ff.*
- *Hinges → Main Catalogue Page 956 ff.*
- *Toggle clamps → Main Catalogue Page 490 ff.*



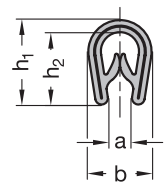
Construction examples

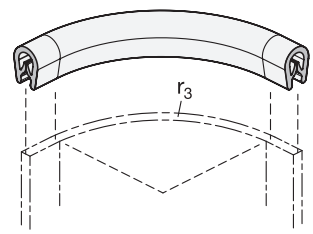
The construction depicted shows a standard application of edge protection profiles and edge protection seal profiles. The edge protection seal profiles are attached to the door and the fixed frame. The opening for the door is covered with an edge protection profile at its cut edge.





Profile cross-section at
h_1 = 9,5 / 14





1 h_1	3 Cutting length **l** in meter		**a** Clamping area		**b**	h_2	r_1	r_2	r_3
			min.	max.					
9,5	20	50	1	2	6,5	8	15	10	10
14	20	50	1	4	10,5	12	25	25	25
15	20	50	6	8	13	12,75	15	30	20
17,5	20	50	4	6	12,25	15,5	30	45	15

Specification

2

- Profile
  Polyvinyl Chloride (PVC)
  - black ● SW
  - Hardness 70 ±5 Shore A
  - temperature resistant -40 °C to 90 °C
  - weather exposure
- Clamp insert
  Steel clamping band
- *Elastomer characteristics*
  → *Main Catalogue Page 1483*
- RoHS

On request

- Color white / gray

Information

GN 2184 edge protection profiles are installed on the front edge of metal sheets and plates. They protect the surfaces from damage by sharp edges. The edge finish additionally achieves an optical decorative effect, while the need for potential further treatment such as burring and chamfering of cut or laser-cut metal sheets is reduced to an absolute minimum.

Adhering to the guideline placement radii (r_1...r_3) is recommended in order to guarantee permanent profile placement and to make assembly easier. Assembly can be carried out by hand, or alternatively with a soft-face hammer. The embedded clamp insert prevents it from detaching. Glue or other adhesive is not required.

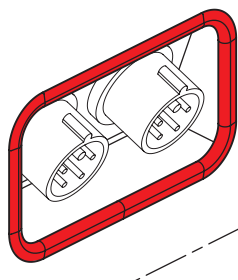
see also...
• *Edge protection seal profiles GN 2180 / GN 2182 → Page 4 / 8*

How to order
1 2 3
GN 2184-14-SW-50

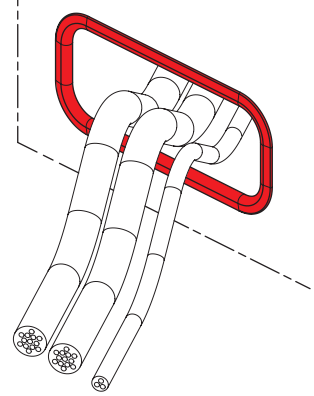
1	h_1
2	Color
3	Length **l**

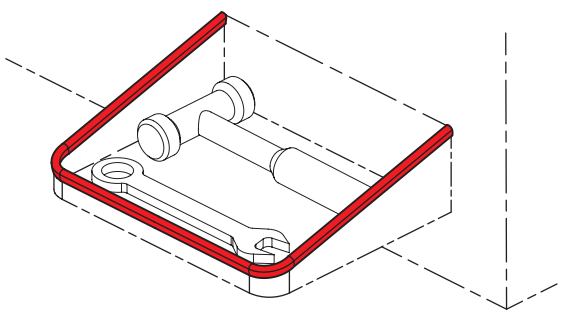
Application examples for edge protection profiles GN 2184

Cable duct / Socket duct

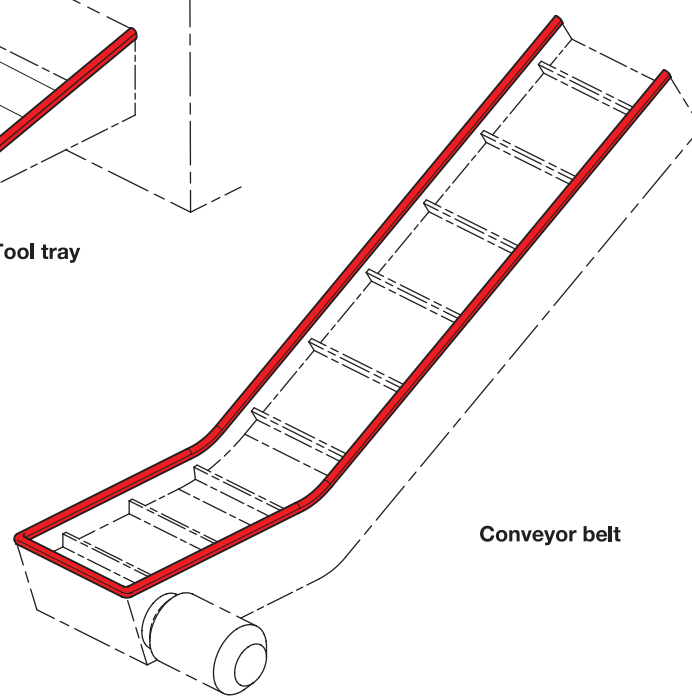


Cable duct





Tool tray



Conveyor belt

SP-GA-ENG-02.20-KAN Edge protection profiles and edge protection seal profiles

Otto Ganter GmbH & Co. KG
Triberger Straße 3
78120 Furtwangen
Germany

Tel. +49 7723 6507-0
Mail info@ganternorm.com

www.ganternorm.com