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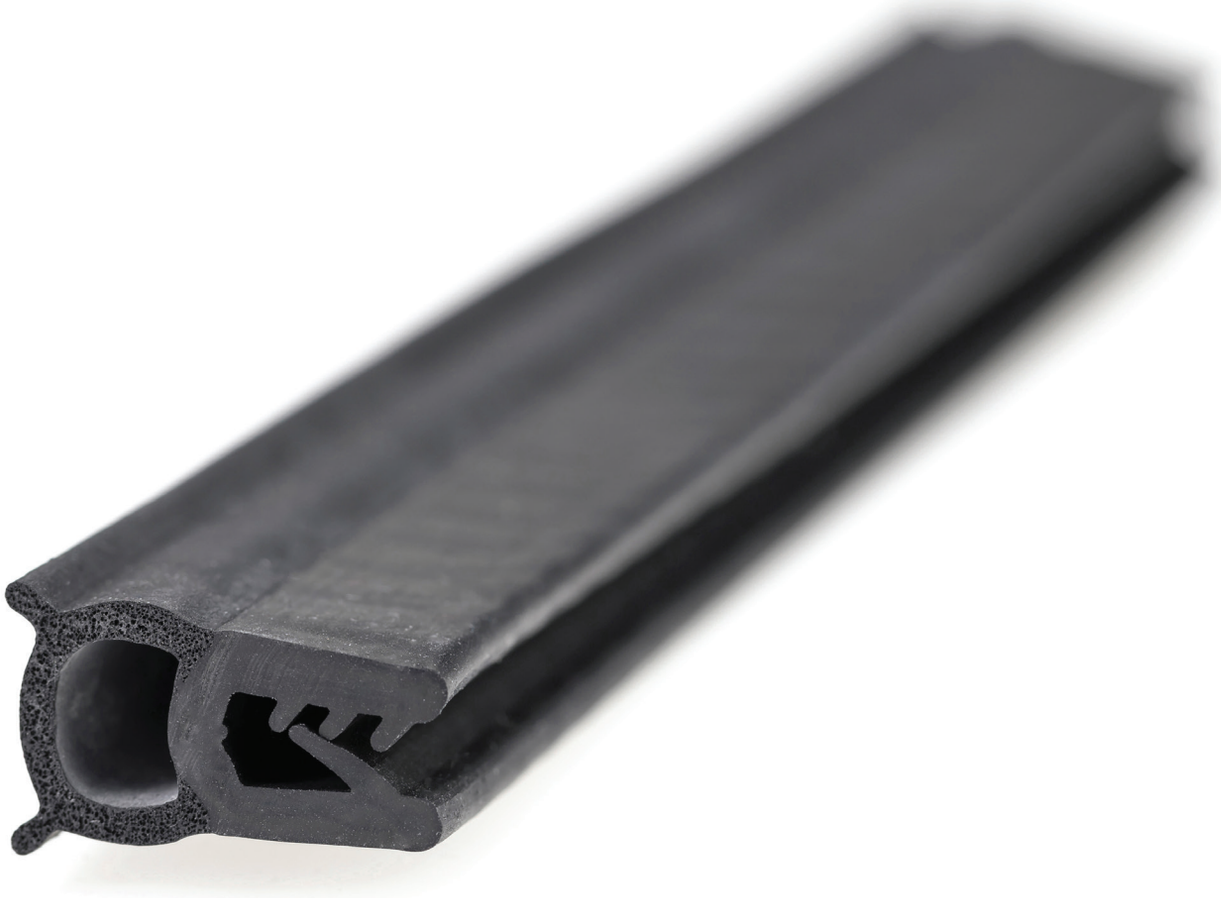
A Ganter Company

Highlights

Edge Protection Profiles



Standard Parts. Winco.

Contents

J.W.Winco, Inc., June 2023

Introduction

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

Areas of application

With the use of edge protection profiles when handling equipment and machine parts made of sheet metal, the risk of cuts or abrasions is reduced to a minimum. In addition, 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 deburring 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.

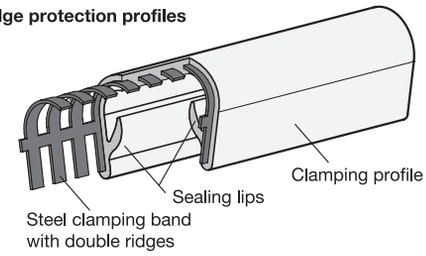
In order to increase the clamping force, the clamping profile is strengthened through a reinforcement, preventing the profile from detaching itself after assembly.

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.

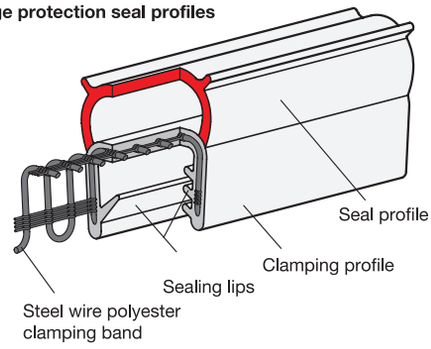
The seal profile is affixed to the top or the side of the clamping profile and is significantly “softer.” It can be made from the basic material of the clamping profile but it can also be made from particular materials for specific applications. In order to attain optimum sealing, the seal profile needs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

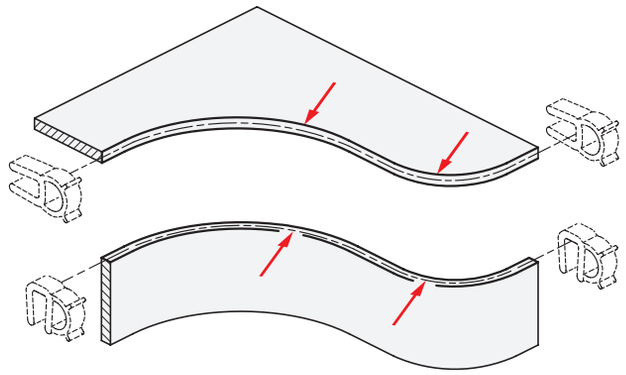
The mounting of the the profiles to the edges is secured via the clamp insert. Glue or other adhesives are not usually required.

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

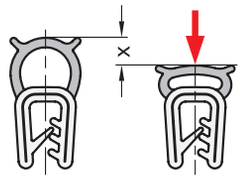
The radii are listed on the corresponding standard sheets and should be used as a guideline. Depending on the direction of application, a distinction is made between cut or curved radii, in other words, interior or exterior seal profiles.



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	MVQ
Operational temperature min.	-40 °F (-40 °C)	-22 °F (-30 °C)	-40 °F (-40 °C)	-58 °F (-50 °C)
Operational temperature max.	+158 °F (+70 °C)	+212 °F (+100 °C)	+212 °F (+100 °C)	392 °F ** (200 °C)
Abrasion resistance / wear resistance	+	+	+	o
Deformation resistance	o	+	+	o
Resistant to: *				
• UV light / weather exposure	+	-	+	+
• Chemicals	+	-	+	+
• Oil, greases	o	+	-	o
• Fuels	o	+	-	-
• Acids	+	o	+	o
• Alkalines	o	+	+	o
• Solvents	o	o	o	o
• Alcohol	o	o	+	+

* + resistant, o conditionally resistant, – non-resistant ** Do not expose to hot water or steam

UL certification (Seal profiles made from 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.

GN 2180 edge protection seal profiles made from 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.

GN 2180 | Edge Protection Seal Profiles

Material NBR / EPDM (UL Certified)

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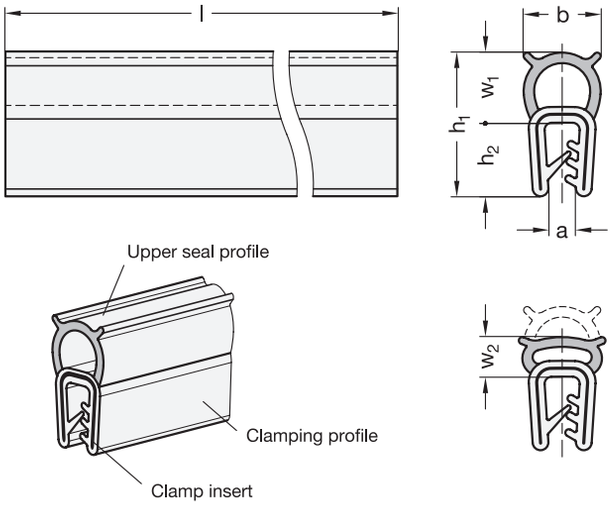
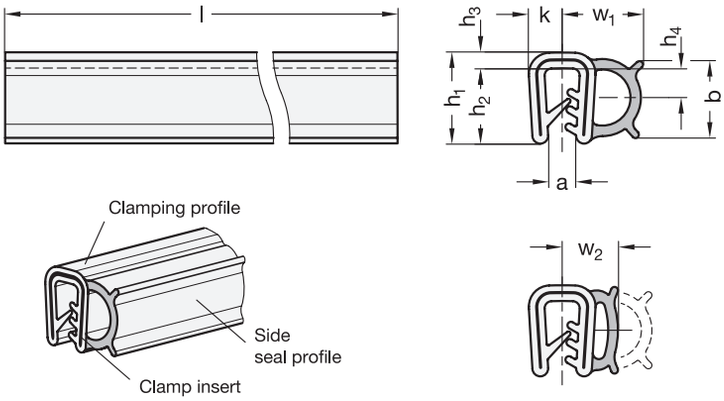
Type **A**



Type **D**



Metric

3 Type

A Upper seal profile
D Side seal profile

Specification

1

- 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 from
    -40 °F to +212 °F (-40 °C to +100 °C)

  Acrylonitrile butadiene rubber **NBR**
  (Only for sizes h_1 = 20.5 and 13 mm)
  - Black
  - Clamping profile hardness 60 ±5 Shore A
  - Sealing profile hardness 25 ±5 Shore A
  - Temperature resistant from
    -22 °F to +212 °F (-30 °C to +100 °C)
- Clamp insert
  Steel wire polyester clamping band
- *Plastic Characteristics*
  → Standard Parts Handbook page 2135
- RoHS compliant

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 to 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

1 2 3 4
GN 2180-EPDM-11.5-D-20

1	Material
2	Height h_1
3	Type
4	Length l

Metric table

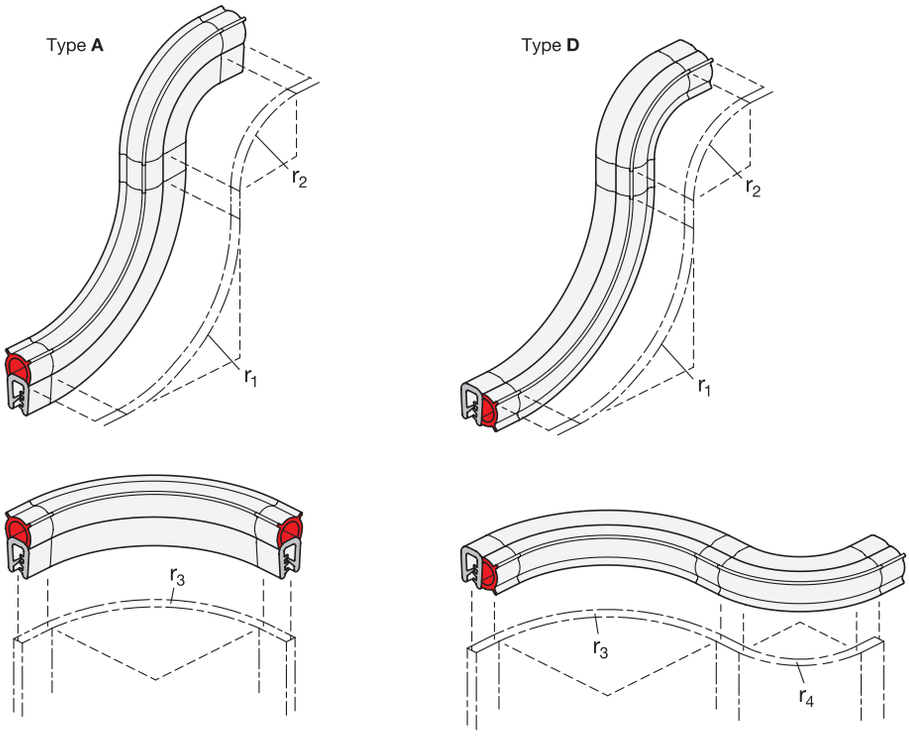
Dimensions in: millimeters - *inches*

Type A

h_1	Length **l** in meters		**a** Clamping range	**b**	h_2	r_1	r_2	r_3	w_1	w_2 At up to 50% of permissible deformation
15.5 *0.61*	20	50	0.8 - 2.5 *0.03 - 0.10*	8.5 *0.33*	9 *0.35*	80 *3.15*	50 *1.97*	20 *0.79*	6.5 *0.26*	5 *0.20*
20.5 *0.81*	20	50	1 - 3.5 *0.04 - 0.14*	11 *0.43*	10.5 *0.41*	90 *3.54*	50 *1.97*	30 *1.18*	10 *0.39*	7 *0.28*

Type D

h_1	Length **l** in meters		**a** Clamping range	**b**	h_2	h_3	h_4	**k**	r_1	r_2	r_3	r_4	w_1	w_2 At up to 50% of permissible deformation
11.5 *0.45*	20	50	0.8 - 2.5 *0.03 - 0.10*	8.75 *0.34*	9 *0.35*	2.5 *0.10*	3.75 *0.15*	4 *0.16*	30 *1.18*	40 *1.57*	80 *3.15*	40 *1.57*	8.5 *0.33*	6.75 *0.27*
13 *0.51*	20	50	1 - 3.5 *0.04 - 0.14*	11 *0.43*	10.75 *0.42*	2.25 *0.09*	4.5 *0.18*	4.75 *0.19*	40 *1.57*	50 *1.97*	100 *3.94*	80 *3.15*	11.25 *0.44*	8.75 *0.34*



GN 2181 | Edge Protection Seal Profile Corners

Material NBR / EPDM (UL Certified)

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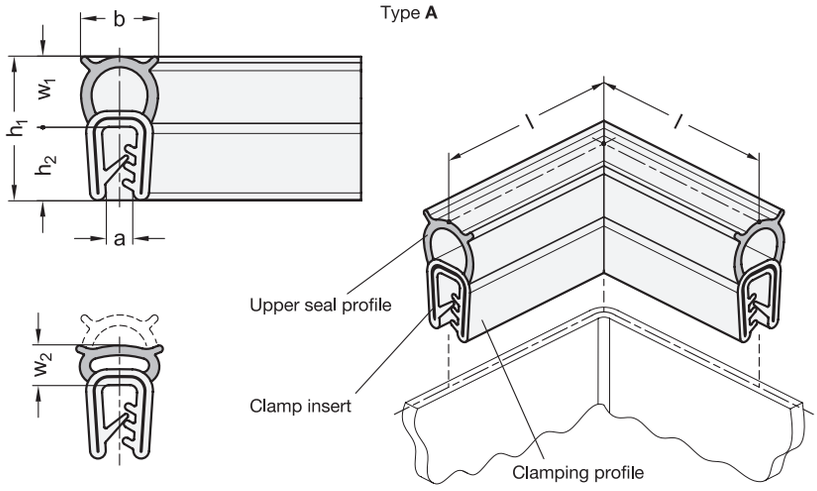
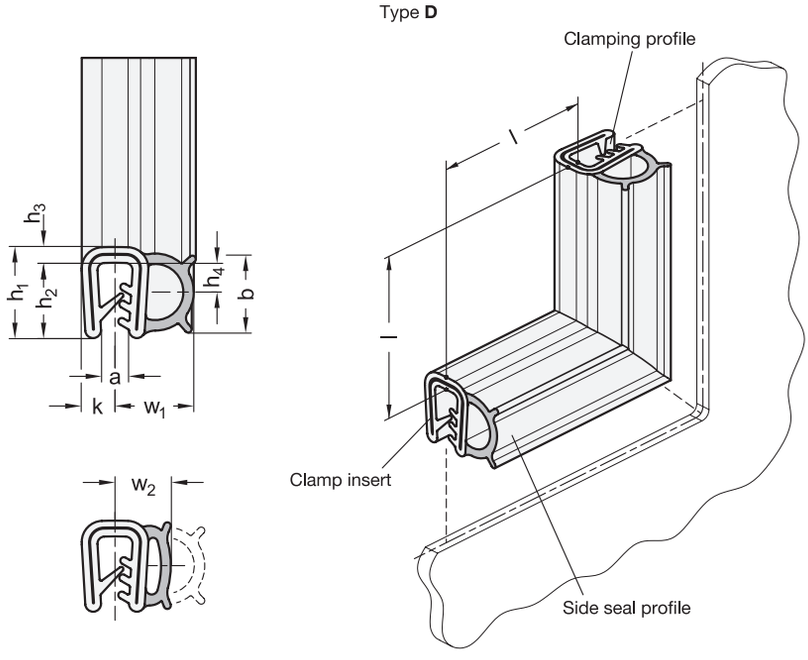
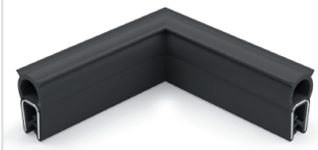
Type **A**



Type **D**



Metric



3 Type

A Upper seal profile
D Side seal profile

Specification

1

- 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 from -40 °F to +212 °F (-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 from -22 °F to +212 °F (-30 °C to +100 °C)

- Clamp insert
  Steel wire polyester clamping band
- *Plastic Characteristics*
  → *Standard Parts Handbook page 2135*
- RoHS compliant

Information

With GN 2181 edge protection seal profile corners, 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 adhered by vulcanization.

The leg length l can be shortened or extended with the corresponding profile of GN 2180. Installed “compressed” with an excess dimension of about 1% of the total length, the joints fit tightly 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 and are therefore approved for the US American and the Canadian market.

How to order

1 2 3 4

GN 2181-NBR-20.5-A-400

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

Metric table

Dimensions in: millimeters - *inches*

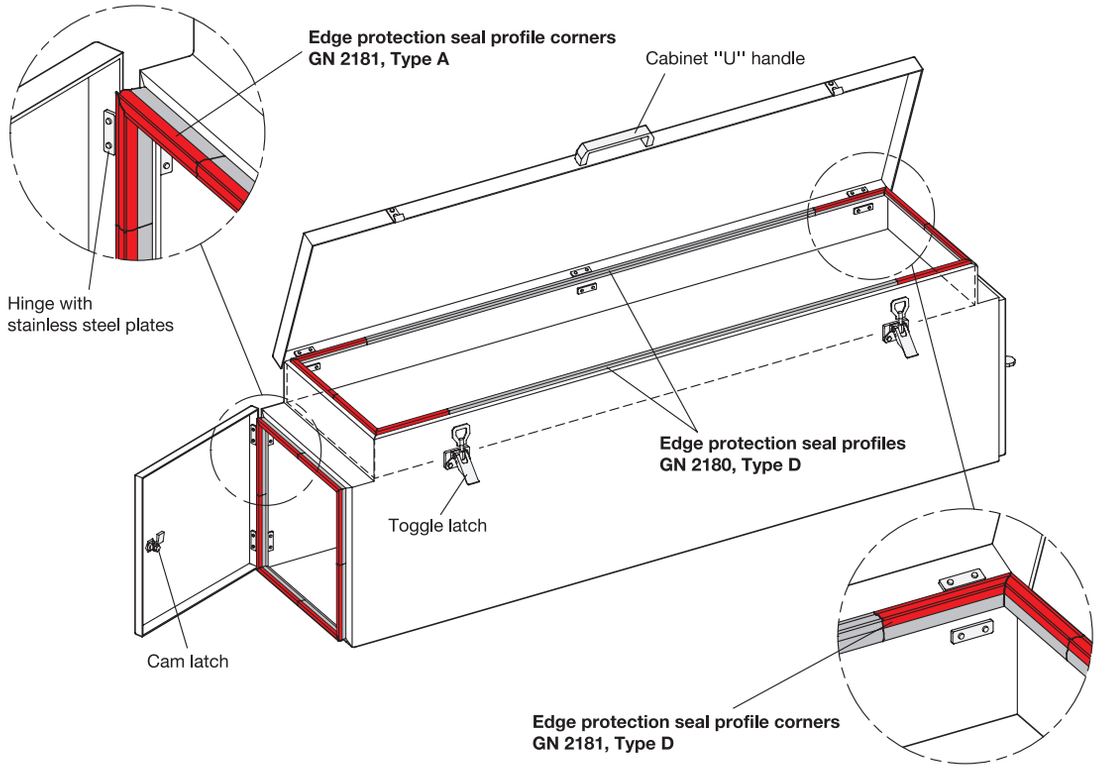
Type A

h_1	Length **l**				**a** Clamping range	**b**	h_2	w_1	w_2 At up to 50% of permissible deformation
20.5 *0.81*	160 ±2 *6.30 ±0.079*	250 ±2.5 *9.84 ±0.098*	400 ±3.2 *15.75 ±0.126*	630 ±4 *24.80 ±0.157*	1 - 3.5 *0.04 - 0.14*	11 *0.43*	10.5 *0.41*	10 *0.39*	7 *0.28*

Type D

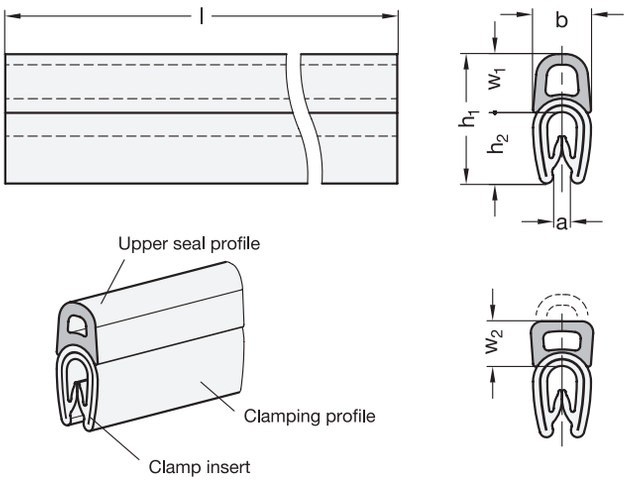
h_1	Length **l**				**a** Clamping range	**b**	h_2	h_3	h_4	**k**	w_1	w_2 At up to 50% of permissible deformation
13 *0.51*	160 ±2 *6.30 ±0.079*	250 ±2.5 *9.84 ±0.098*	400 ±3.2 *15.75 ±0.126*	630 ±4 *24.80 ±0.157*	1 - 3.5 *0.04 - 0.14*	11 *0.43*	10.75 *0.42*	2.25 *0.09*	4.5 *0.18*	4.75 *0.19*	11.75 *0.46*	8.75 *0.34*

Application example

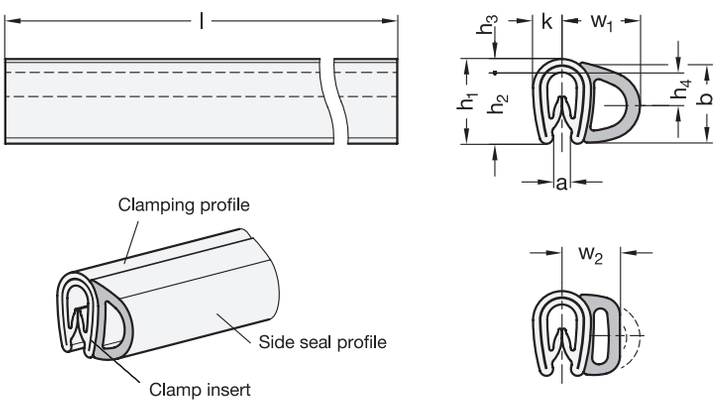


Metric

Type **A**



Type **D**



2 Type

A Upper seal profile
D Side seal profile

Specification

- Clamping profile
  Polyvinyl Chloride (PVC)
  - Black
  - Hardness 70±5 Shore A
- Sealing profile
  Ethylene propylene diene rubber (EPDM)
  - Black
  - Hardness 25±5 Shore A
- Clamp insert
  Steel clamping band
- Temperature resistant from -40 °F to +194 °F (-40 °C to +90 °C)
- Weather resistant
- *Plastic Characteristics*
  → *Standard Parts Handbook page 2135*
- RoHS compliant

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. Adherence to the guideline placement radii (r_1 to 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

1 2 3
GN 2182-9.5-D-20

1	**Height h_1**
2	**Type**
3	**Length l**

Metric table

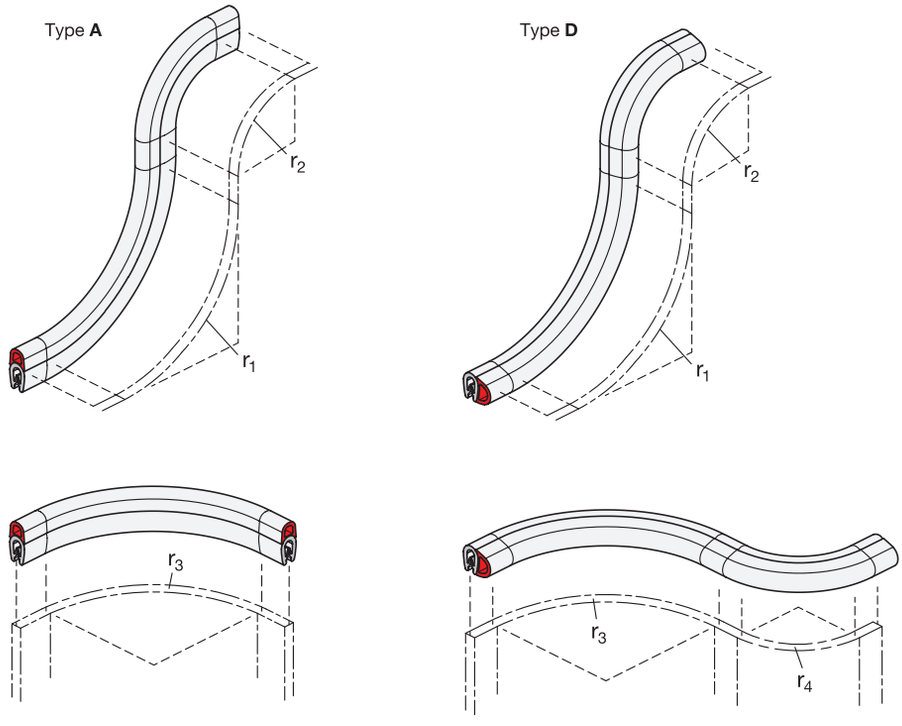
Dimensions in: millimeters - *inches*

Type A

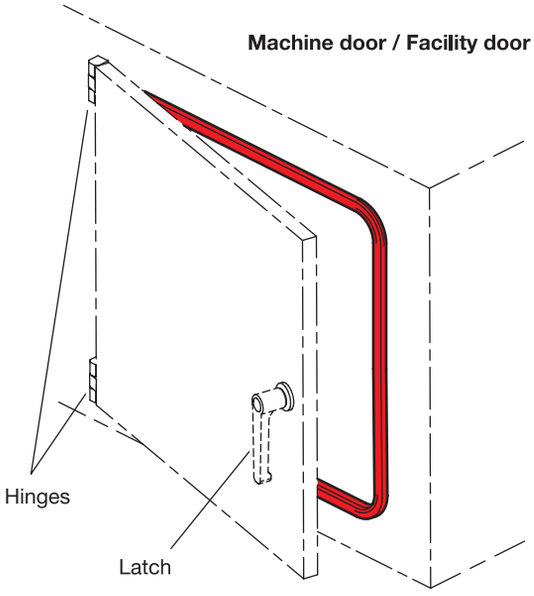
h_1	Length **l** in meters		**a** Clamping range	**b**	h_2	r_1	r_2	r_3	w_1	w_2 At up to 50% of permissible deformation
14.5 *0.57*	20	50	1 - 2 *0.04 - 0.08*	6.5 *0.26*	8 *0.31*	40 *1.57*	20 *0.79*	10 *0.39*	6.5 *0.26*	5.25 *0.21*

Type D

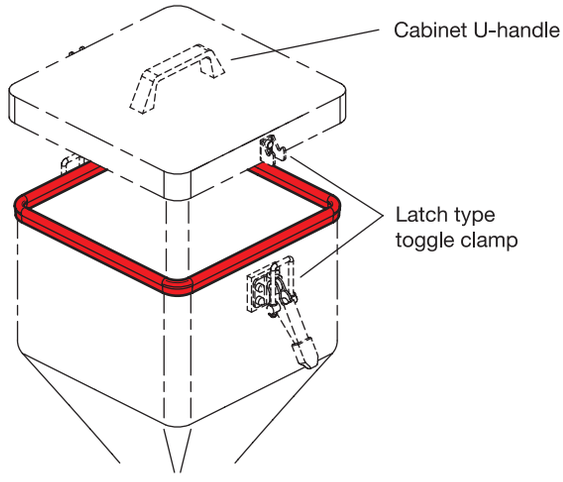
h_1	Length **l** in meters		**a** Clamping range	**b**	h_2	h_3	h_4	**k**	r_1	r_2	r_3	r_4	w_1	w_2 At up to 50% of permissible deformation
9.5 *0.37*	20	50	1 - 2 *0.04 - 0.08*	9 *0.35*	8 *0.31*	1.5 *0.06*	4 *0.16*	3.25 *0.13*	15 *0.59*	20 *0.79*	30 *1.18*	50 *1.97*	8.75 *0.34*	6.75 *0.27*



Machine door / Facility door



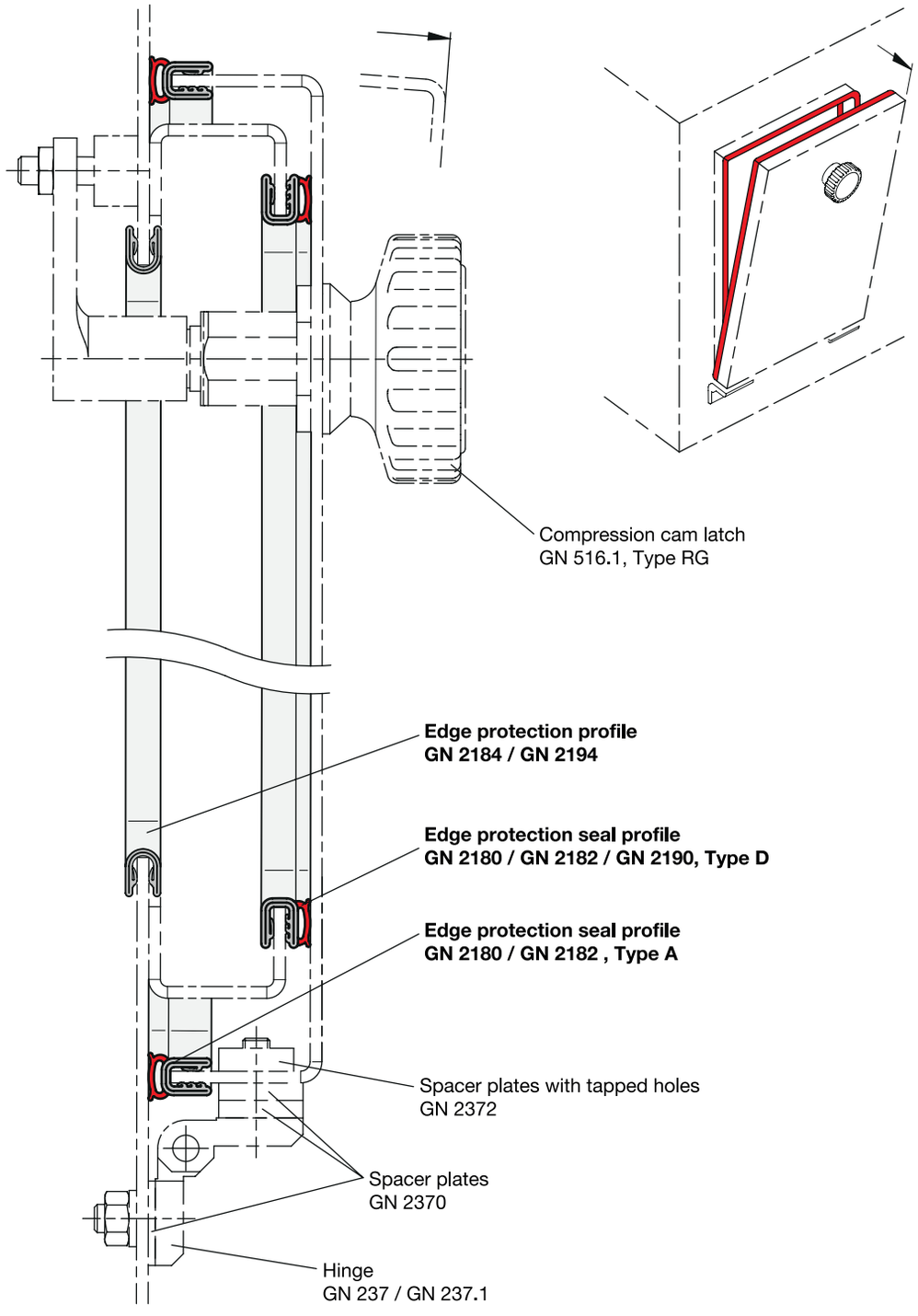
Bulk container lid



Application examples

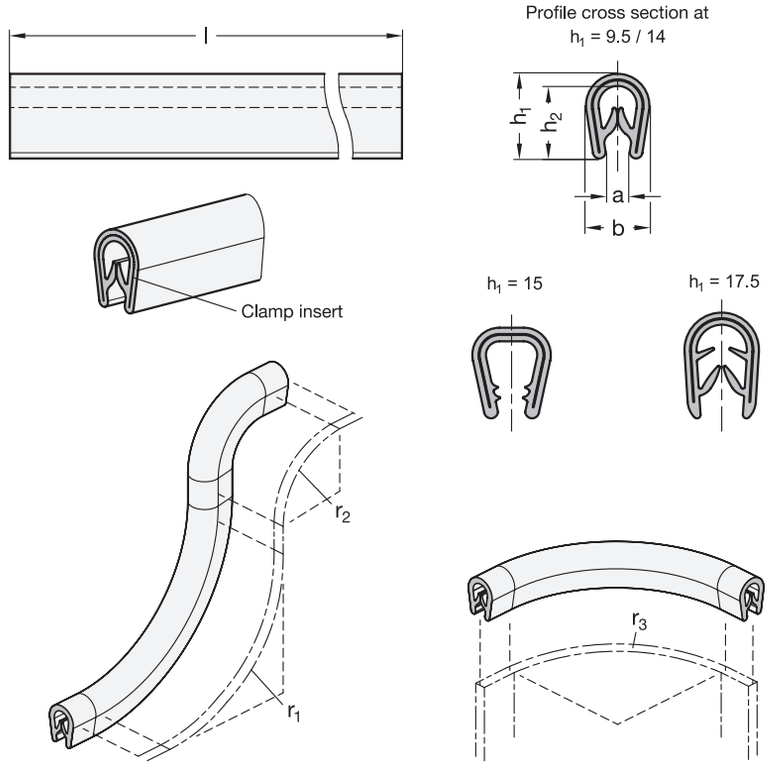
With their versatility, edge protection profiles / edge protection seal profiles can be implemented in various applications, in conjunction with other standard parts. In particular, combinations with product group 3.3 (hinging, latching, locking of doors and covers) and product group 2.4 (tensioning with clamping mechanisms) can achieve a variety of useful constructions.

see also...
- *List of Cam Latch / Cam Lock Types → Standard Parts Handbook page 1256*
- *Hinges → Standard Parts Handbook starting from page 1324*
- *Toggle Clamps → Standard Parts Handbook starting from page 890*



Construction example

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.



Metric

Metric table

Dimensions in: millimeters - *inches*

h_1	Length **l** in meters		**a** Clamping range	**b**	h_2	r_1	r_2	r_3
9.5 *0.37*	20	50	1 - 2 *0.04 - 0.08*	6.5 *0.26*	8 *0.31*	15 *0.59*	10 *0.39*	10 *0.39*
14 *0.55*	20	50	1 - 4 *0.04 - 0.16*	10.5 *0.41*	12 *0.47*	25 *0.98*	25 *0.98*	25 *0.98*
15 *0.59*	20	50	6 - 8 *0.24 - 0.31*	13 *0.51*	12.75 *0.50*	15 *0.59*	30 *1.18*	20 *0.79*
17.5 *0.69*	20	50	4 - 6 *0.16 - 0.24*	12.25 *0.48*	15.5 *0.61*	30 *1.18*	45 *1.77*	15 *0.59*

Specification

- Profile
  Polyvinyl Chloride (PVC)
  - Black ● SW
  - Hardness 70 ±5 shore A
  - Temperature resistant from -40 °F to +194 °F (-40 °C to +90 °C)
  - Weather resistant
- Clamp insert
  Steel clamping band
- RoHS compliant

On request

- White / gray color

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 deburring and chamfering of cut or laser-cut metal sheets is reduced to an absolute minimum.

Adhering to the guideline placement radii (r_1 to 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*

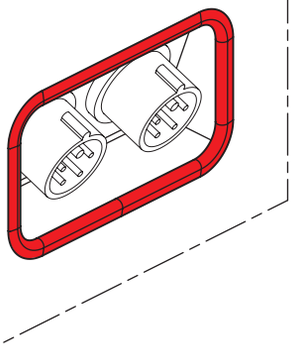
How to order

GN 2184-14-SW-50

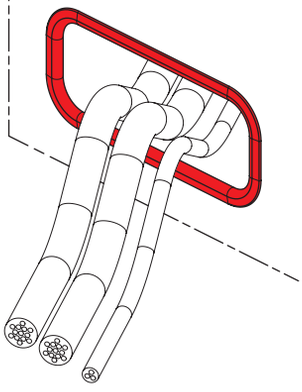
1	**Height h_1**
2	**Color**
3	**Length l**

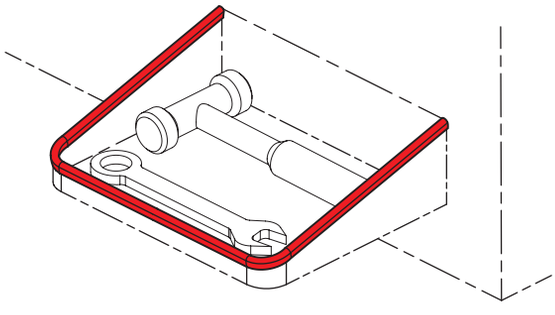
Application examples for GN 2184 edge protection profiles

Cable duct / Socket duct

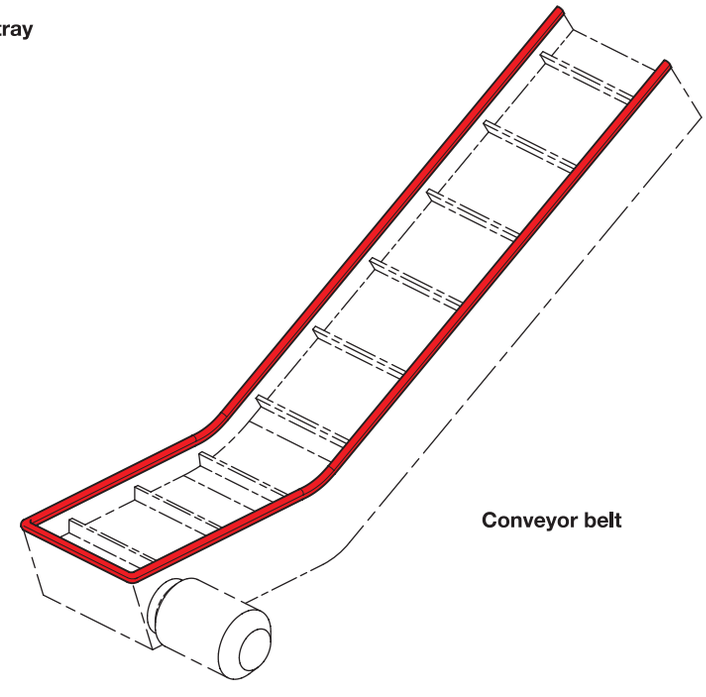


Cable duct





Tool tray



Conveyor belt

GN 2190 | Edge Protection Seal Profiles

Material NBR / MVQ (Silicone), FDA Compliant

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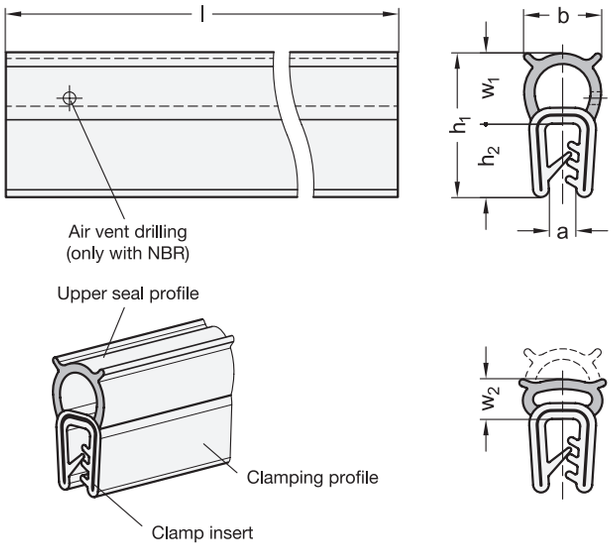
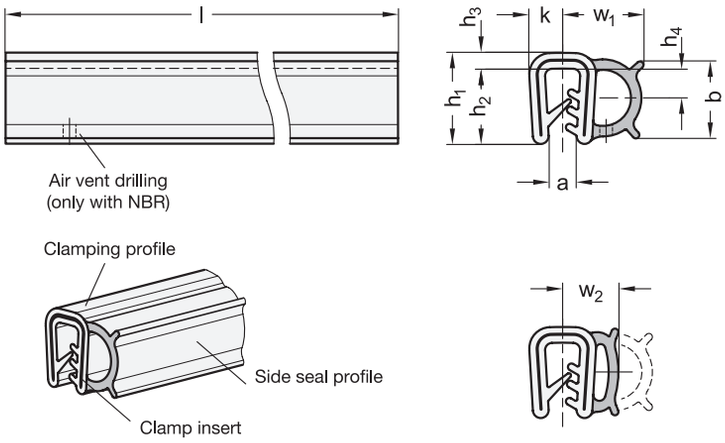
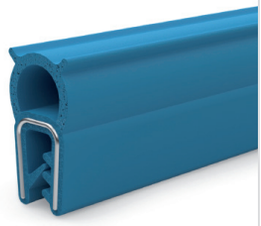
Type **A**



Type **D**



Metric



FDA

3 Type

A Upper seal profile
D Side seal profile

Specification

1

- Clamping profile / seal profile
  Acrylonitrile butadiene rubber **NBR**
  - FDA compliant
  - Blue, RAL 5012
  - Clamping profile hardness 70±5 shore A
  - Seal profile hardness 30±5 shore A
  - Temperature resistant from
    -22 °F to +212 °F (-30 °C to 100 °C)
- Clamping profile / seal profile
  Silicone rubber **MVQ**
  - FDA compliant
  - Blue, RAL 5010
  - Clamping profile hardness 60±5 shore A
  - Seal profile hardness 60±5 shore A
  - Temperature resistant from
    -58 °F to +392 °F (-50 °C to 200 °C)
- Clamping insert
  Stainless steel wire polyester clamping band
  AISI 304
- *Plastic Characteristics*
  → *Standard Parts Handbook page 2135*
- *Stainless Steel Characteristics*
  → *Standard Parts Handbook page 2143*
- RoHS compliant

Information

Edge protection seal profiles GN 2190 can be used to seal doors, covers and hatches. The profiles can be pushed onto the edges of metal sheets and plates by hand. The embedded clamping insert prevents it from detaching. Glue or other adhesives are not required.

Thanks to the use of FDA compliant materials, the profiles are suitable for applications with corresponding requirements. In addition to approval as per FDA 21 CFR 177.2600, the silicone version satisfies the guidelines of 3-A Sanitary Standard Inc. and DIN ISO 10993.

When installed, the profile should be compressed slightly by the adjacent components according to measurement w_2. This ensures an optimal seal. It is recommended to adhere to the placement radii (r_1 to r_4) guidelines in order to ensure a tight and long lasting profile seal and to make assembly easier.

The seal profiles made of NBR have venting holes on one side for production-related reasons (at a distance of about 2 m), which should be taken into account for design and installation.

see also...
- *Technical Information* → *page 3*
- *Edge Protection Seal Profiles GN 2180* → *page 4*

On request

- Material MVQ in other colors

How to order

1 2 3 4
GN 2190-NBR-20.5-A-20

1	Material
2	Height h_1
3	Type
4	Length l

Metric table

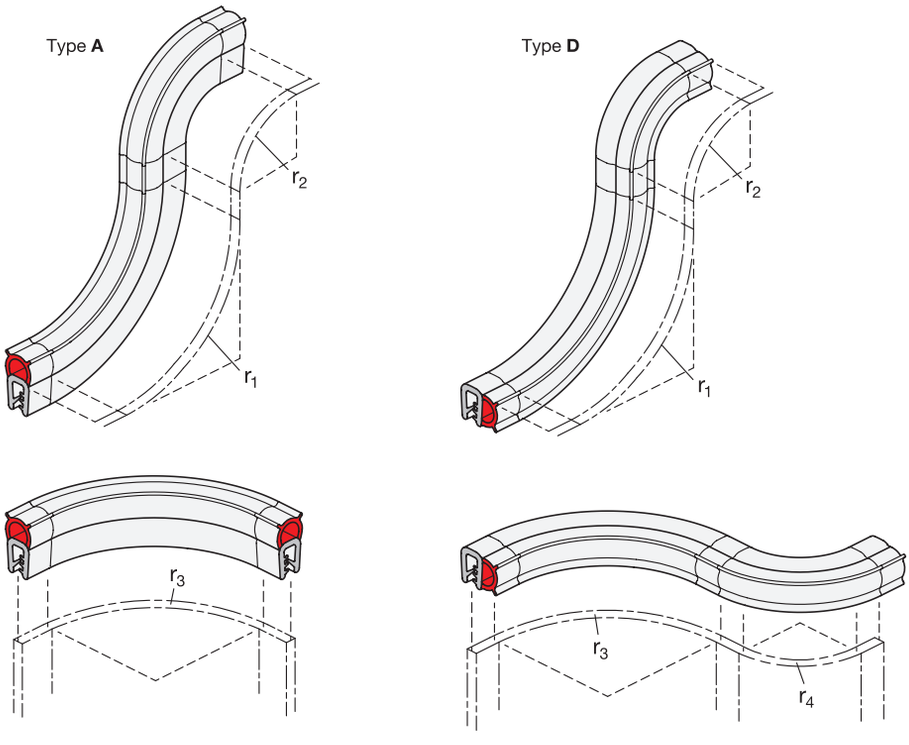
Dimensions in: millimeters - *inches*

Type A

h_1	Length **l** in meters	**a** Clamping range in millimeters	**b**	h_2	r_1 NBR	r_1 MVQ	r_2 NBR	r_2 MVQ	r_3 NBR	r_3 MVQ	w_1	w_2 At 50% of the permissible deformation
20.5 *0.81*	20	1 - 3.5	11 *0.43*	10.5 *0.41*	90 *3.54*	150 *5.91*	50 *1.97*	100 *3.94*	30 *1.18*	25 *0.98*	10 *0.39*	7 *0.28*

Type D

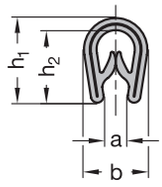
h_1	Length **l** in meters	**a** Clamping range in millimeters	**b**	h_2	h_3	h_4	**k**	r_1	r_2	r_3	r_4	w_1	w_2 At 50% of the permissible deformation
13 *0.51*	20	1 - 3.5	11 *0.43*	10.75 *0.42*	2.25 *0.09*	4.5 *0.18*	4.75 *0.19*	40 *1.57*	50 *1.97*	100 *3.94*	80 *3.15*	11.25 *0.44*	8.75 *0.34*

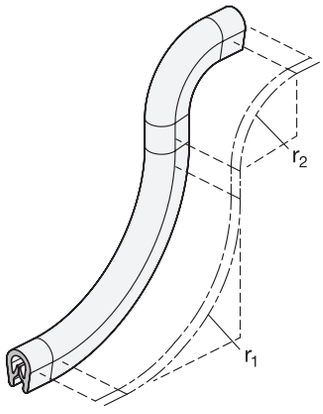


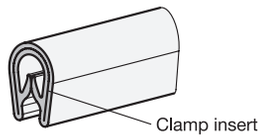
GN 2194 | Edge Protection Profiles

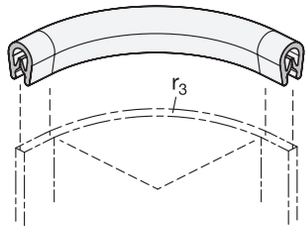
Material MVQ (Silicone), FDA Compliant

JW WINCO® A Ganter Company









Metric

FDA

Dimensions in: millimeters - *inches*

2 h_1	4 Length **l** in meters	**a** Clamping range in millimeters	**b**	h_2	r_1	r_2	r_3
9.5 *0.37*	20 *0.79*	1 - 2	6.5 *0.26*	8 *0.31*	15 *0.59*	25 *0.98*	20 *0.79*
14 *0.55*	20 *0.79*	1 - 4	10.5 *0.41*	12 *0.47*	25 *0.98*	45 *1.77*	30 *1.18*

Specification

- Profile
  Silicone rubber **MVQ**
  - FDA compliant
  - Blue, RAL 5010 **BL**
  - Hardness 60±5 shore A
  - Temperature resistant from -58 °F to 392 °F (-50 °C to 200 °C)
- Clamping insert
  Stainless steel wire polyester clamping band AISI 304
- *Plastic Characteristics*
  → *Standard Parts Handbook page 2135*
- *Stainless Steel Characteristics*
  → *Standard Parts Handbook page 2143*
- RoHS

On request

- Other colors

Information

Edge protection profiles GN 2194 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.

Thanks to the use of FDA compliant materials, the profiles are suitable for applications with corresponding requirements. In addition to approval as per FDA 21 CFR 177.2600, the silicone version satisfies the guidelines of 3-A Sanitary Standard Inc. and DIN ISO 10993.

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 Profiles GN 2184 → page 12*

How to order

1 2 3 4

GN 2194-MVQ-9.5-BL-20

1	**Material**
2	**Height h_1**
3	**Color**
4	**Length l**

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