## THERMIC-WELDED COVERS



Fabric material

Flange 2

Flange 1

Stiffener



AP

2

Stroke

P.C.

P.A.

B

a

x

| P.A. | = Open length |
|---|---|
| P.C. | = Closed length |
| Stroke | = Open length - closed length |

| B | = Outside width |
|---|---|
| a | = Outside height |
| x | = Fold height |

**Formula for calculating the CLOSED LENGTH**

AP = Opening of 1 fold = $x \cdot 2 - 8$

SM = Fabric thickness *

SS = Stiffener thickness *

SF = Flange thickness *

NP = Number of folds = $\dfrac{P.A.}{AP} + 2$

P. C.= $(SM \cdot 8 + SS) \cdot NP + (SF \cdot 2)$

\* See materials list on page 31.

This data sheet shows only one type of Thermic-Welded Cover that we manufacture.

Contact our engineering department for other types.

**Example:**

Given that: Fold height = 15 mm

Open length = 1000 mm

Opening of 1 fold = 15 x 2 - 8 = 22

Number of folds = $\dfrac{1000}{22} + 2$ = 48

Closed length = (0,25\* x 8 + 1\*\*) x 48 + (2 \*\*\* x 2)

Closed length = 3 x 48 + 4 = 148

**Closed length = 148 mm**

\* We hypothesize the fabric material with code "TEMAT015" (see materials list on page 31)

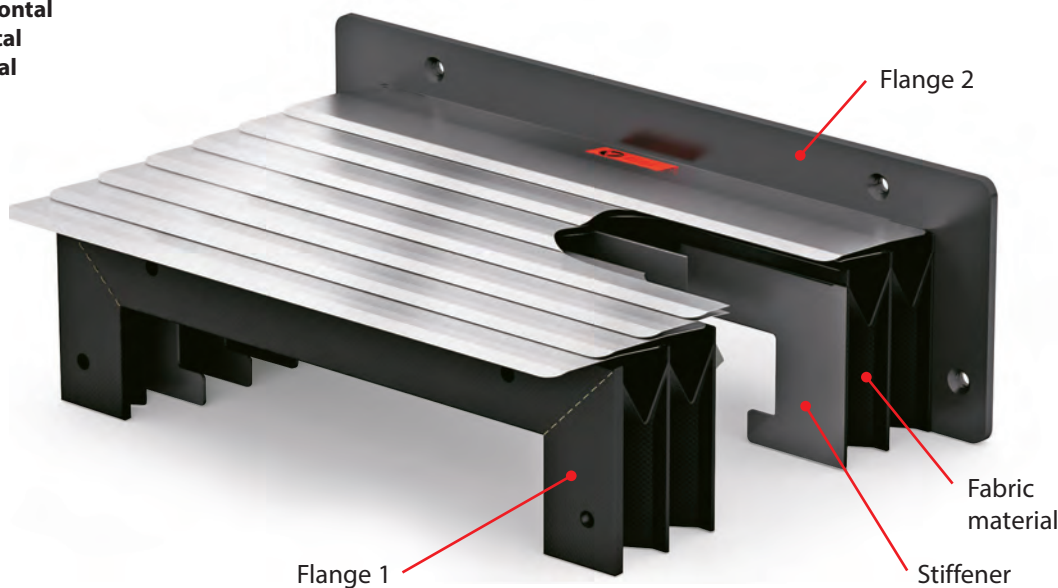\*\* We hypothesize that the stiffener is 1 mm thick

\*\*\* We hypothesize that the flange is 2 mm thick (see materials list on page 31)
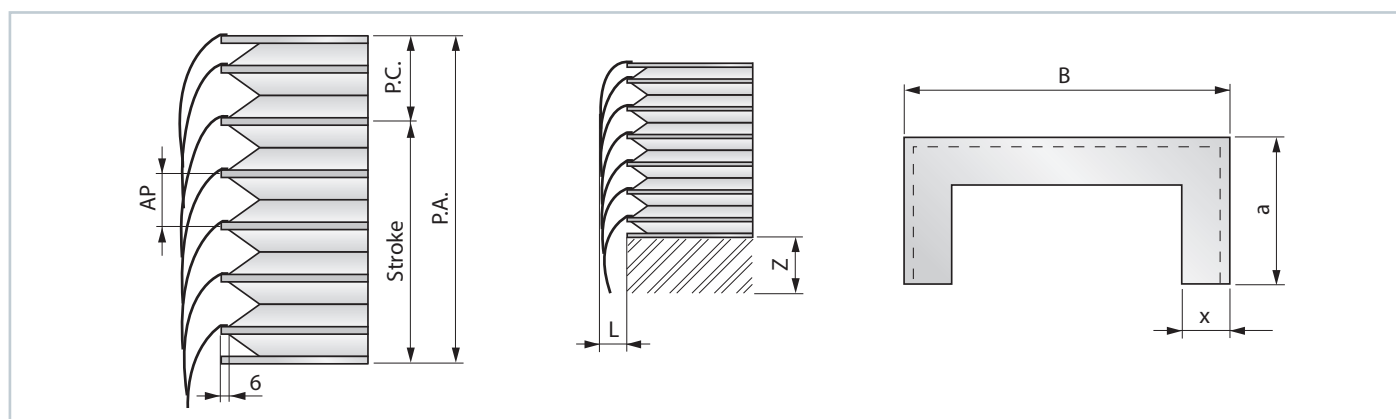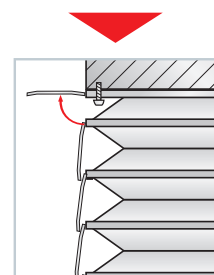
## THERMIC-WELDED COVER WITH FIXED LAMINATIONS

**Working position:**
**Horizontal**
**Vertical**
**Frontal**

Flange 2

Possible special fixing to facilitate the mounting of the first steel lamination

Fabric material

Stiffener

Flange 1

| **P.A.** | = Open length | **B** | = Outside width |
|---|---|---|---|
| **P.C.** | = Closed length | **a** | = Outside height |
| **Stroke** | = Open length - closed length | **x** | = Fold height |

| **x**(mm) | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|---|---|---|---|---|---|---|---|
| **L**(mm) | 16 | 21 | 26 | 33 | 43 | 48 | 56 |
| **Z**(mm) | 45 | 55 | 65 | 75 | 85 | 95 | 105 |

### Formula for calculating the CLOSED LENGTH

| **AP** | = | Opening of 1 fold = $x \cdot 2 - 16$ |
|---|---|---|
| **SM** | = | Fabric thickness * |
| **SS** | = | Stiffener thickness * |
| **SF** | = | Flange thickness * |
| **NP** | = | Number of folds $= \dfrac{P.A.}{AP} + 2$ |
| **P. C.** | = | $(SM \cdot 8 + SS) \cdot NP + (SF \cdot 2)$ |

* See materials list on page 31

This data sheet shows only one type of Thermic-Welded Cover that we manufacture.
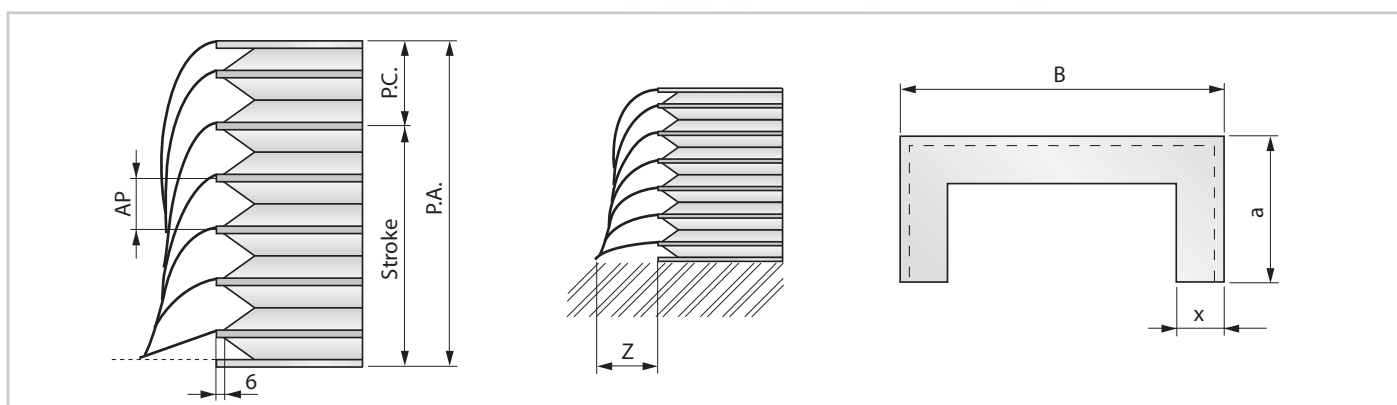Contact our engineering department for other types.

**Example**

Given that:        Fold height = 45 mm
                       Open length = 1800 mm

Opening of 1 fold = 45 x 2 - 16 = 74

Number of folds $= \dfrac{1800}{74} + 2 = 27$

Closed length     = (0,35* x 8 + 1**) x 27 + (3*** x 2)
Closed length     = 3,8 x 27 + 6     = 109
                    **Closed length = 109 mm**

*    We hypothesize the fabric material with code "TEMAT151" (see materials list on page 31)
**   We hypothesize that the stiffener is 1 mm thick
***  We hypothesize that the flange is 3 mm thick (see materials list on page 31)

## THERMIC-WELDED COVER WITH FLEXIBLE LAMINATIONS

**Vertical working position only**



Flange 2

Flange 1

Fabric material

Stiffener

| **P.A.** | = Open length | **B** | = Outside width |
|---|---|---|---|
| **P.C.** | = Closed length | **a** | = Outside height |
| **Stroke** | = Open length - closed length | **x** | = Fold height |

| **x**(mm) | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
|---|---|---|---|---|---|---|---|
| **Z**(mm) | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

### Formula for calculating the CLOSED LENGTH

Opening of 1 fold = $(x \cdot 2) - 16$

**SM** = Fabric thickness *

**SS** = Stiffener thickness *

**SF** = Flange thickness *

**NP** = Number of folds = $\dfrac{P.A.}{AP} + 2$

**P. C.** = $(SM \cdot 8 + SS) \cdot NP + (SF \cdot 2)$

\* See materials list on page 31

This data sheet shows only one type of Thermic-Welded Cover that we manufacture.
Contact our engineering department for other types.

**Example**

Given that:  Fold height = 30 mm
Open length = 1000 mm

Opening of 1 fold = (30 x 2) - 16 = 44

Number of folds = $\dfrac{1000}{44} + 2$ = 25

Closed length = (0,25* x 8 + 1**) x 25 + (2*** x 2)
Closed length = 3 x 25 + 4 = 79
**Closed length = 79 mm**

\* We hypothesize the fabric material with code "TEMAT015" (see materials list on page 31)

\*\* We hypothesize that the stiffener is 1 mm thick

\*\*\* We hypothesize that the flange is 2 mm thick
(see materials list on page 31)

## Thermic-Welded Cover materials

| Fabric material code | Description | | | Thickness (mm) | Heat resistance | | | Primary resistance characteristics |
|---|---|---|---|---|---|---|---|---|
| | Visible side | Fabric insert | Internal side | | Momentary contact °C | Continuous | | |
| | | | | | | min. °C | max. °C | |
| TEMAT 106 | Ptfe | Polyester | Polyurethane | 0,30 | +200 | -30 | +120 | Excellent resistance to oils and chemical products. No adhesive surface. Low friction coefficient. Excellent chemical inertia. Excellent resistance to abrasion and bending strength. **Mainly used in grinding machines.** |
| TEMAT 015 | Polyurethane | Polyester | Polyurethane | 0,25 | +200 | -30 | + 90 | Excellent resistance to petroleum products, oils and heavy abrasion. Excellent bending strength. |
| TEMAT 151 | Polyurethane | Polyester | Polyurethane | 0,35 | +200 | -30 | + 90 | |
| TEMAT 164 | Polyurethane | Kevlar* | Polyurethane | 0,35 | +350 | -30 | +180 | Excellent resistance to petroleum products, oils and heavy abrasion. Excellent bending strength. Excellent mechanical strength. Kevlar also has excellent shear strength. Normally used when there is heavy mechanical stress, a large amount of sharp shavings, and at high temperatures. |
| TEMAT 165 | Polyurethane | Nomex* | Polyurethane | 0,36 | +300 | -30 | +130 | Excellent resistance to petroleum products, oils and heavy abrasion. Excellent bending strength. Excellent mechanical strength. Good resistance to minor welding splatter or hot material. Widely used in laser cutting machines. **Self-extinguishing**. |
| TEMAT 169 | Polyurethane | Panox*/Kevlar | Polyurethane | 0,33 | +300 | -30 | +130 | Excellent resistance to petroleum products, oils and heavy abrasion . Excellent bending strength. Excellent mechanical strength. Good resistance to minor welding splatter or hot material. **It may be considered as the best fabric on the market for use in laser cutting machines. Self-extinguishing.** |
| TEMAT 017 | PVC | Polyester | PVC | 0,36 | +100 | -30 | + 70 | Mainly used around heavy ambient dust, minor splatters of coolant and oil. Also suitable for use around acids. |
| TEMAT 020 | PVC | Polyester | PVC | 0,25 | +100 | -30 | + 70 | |

### Stiffener materials

| Stiffener material code | Description | Thickness (mm) | Notes |
|---|---|---|---|
| **PVC 05** | PVC | 0,50 ** | Outside width (B) up to 300 mm |
| **PVC 10** | PVC | 1,00 | Outside width (B) from 301 up to 700 mm |
| **PVC 15** | PVC | 1,50 | Outside width (B) from 701 up to 1500 mm |

### Flange materials

| Flange material code | Description | Thickness (mm) |
|---|---|---|
| **AL** | Aluminum | 2,0 - 3,0 |
| **AC** | Steel | 2,0 - 3,0 - 4,0 |
| **PVC** | PVC | 2,0 - 3,0 |

### Lamination materials

| Lamination material code | Description | Primary applications |
|---|---|---|
| **AL** | Aluminum (Baked Enamel Finish) | For use around welding splatter, small and medium-sized hot shavings. Especially suitable for use around continuous sparks. Appropriate where lightweight materials are necessary. |
| **INOX** | Stainless Steel | In work environments with large shavings. Especially suitable for use around acids. |

* Kevlar and Nomex are registered Dupont trademarks     ** NOT recommended for Thermic-Welded Covers with laminations.

Contact our engineering department for other materials and applications.
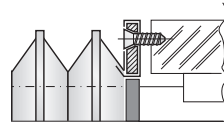
## Standard Shapes

| UL-OS | UL-2ST | UL-1S | UL-3S |
|---|---|---|---|

| DL-DXC | TL-SIM | TL-DXC | TL-DXI | CL-SIM |
|---|---|---|---|---|

| QL-QUAD | QL-CAP | QL-RETT | QL-ASI | CL-ASI |
|---|---|---|---|---|
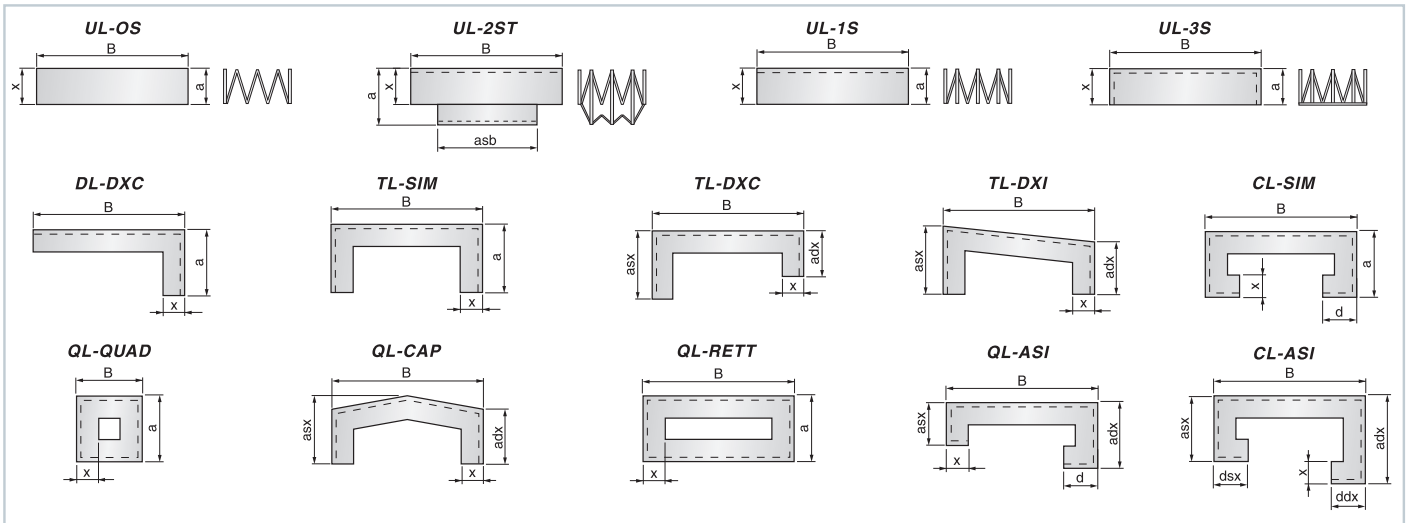
**NOTE: The above are only the standard shapes of Thermic-Welded Covers. Other shapes available upon request.**
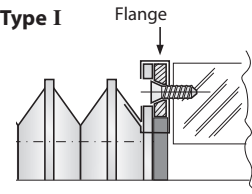
## Flange Fastening Systems

**Type A**     **Type I** — Flange

- Solution with sheet steel, aluminum or PVC flange
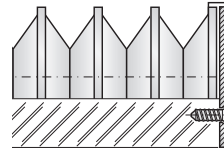- Shape and holes per customer drawings
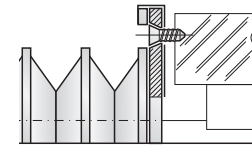
**Type B1**     **Type B2**

- Solution with sheet steel, aluminum or PVC flange
- Shape and holes per customer drawings
- Solution with connector flange protruding from the cover profile, made of sheet steel, aluminum or PVC
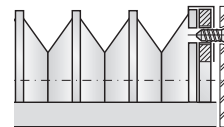
**Type C**

- Solution with sheet steel flange
- Shape and holes per customer drawings
- Threaded flange holes

**Type E** — PVC cover stiffener / Strip of Velcro applied to the machine

**Type H** — Flange / PVC stiffener / Strip of Velcro applied to the machine

Solution with rapid VELCRO connection.
A PVC support acts as a flange, with VELCRO strips applied to the stiffener and directly to the machine.
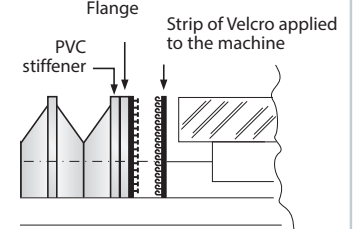This solution offers:
- Rapid application and removal of the cover
- Low cost
**Recommended for dry work environments**

**Type F** — PVC stiffener / Flange

**Type G** — Entire fold in PVC / PVC stiffener / Flange / Counterflange
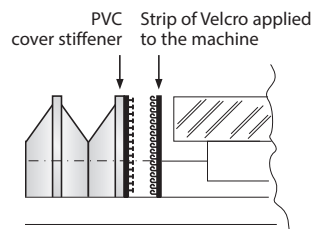
Solution with STRONG HOLD rapid connection.
A PVC support and flange act as a flange, to which the STRONG HOLD rapid connection is applied. The flange is made of sheet steel, aluminum or PVC, shape and holes per customer drawings. This solution offers:
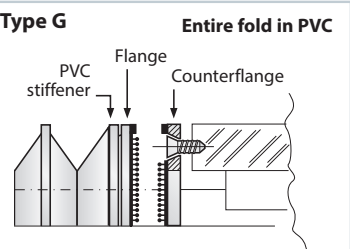- Rapid application and removal of the cover
- Foam gasket strip provides a tight seal around the connection
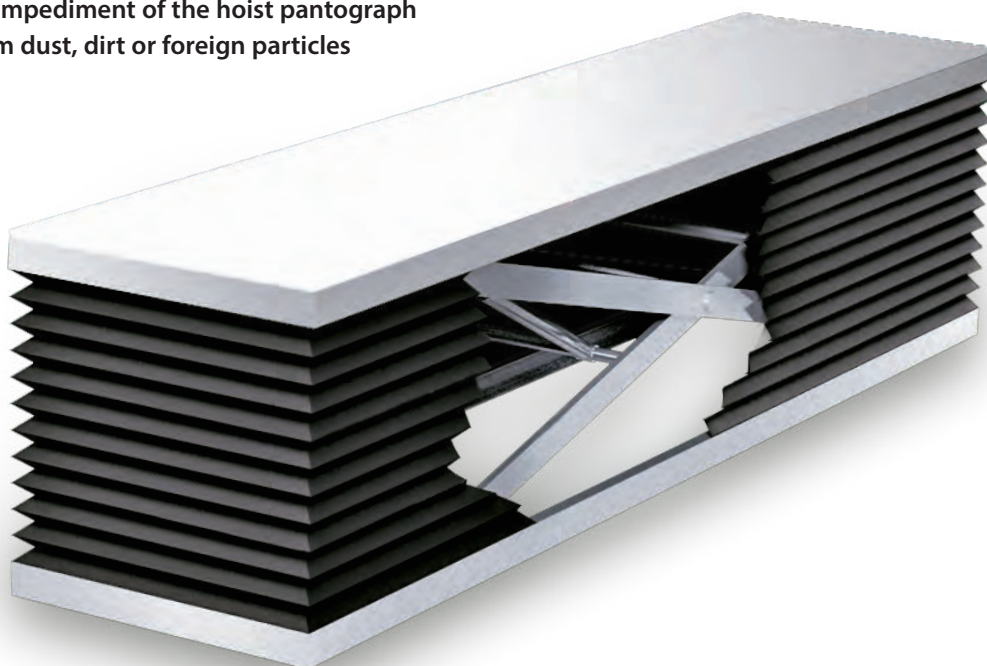**Recommended for wet work environments**
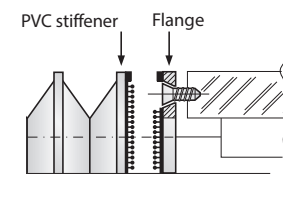
## BELLOWS FOR HOISTING PLATFORM

- Prevention of impediment of the hoist pantograph
- Protection from dust, dirt or foreign particles

## Systems for fastening Bellows for Lift Tables

**I** — Solution with sheet steel, aluminum or PVC flange. Shape and holes per customer drawings.

**B** — Solution with sheet steel, aluminum or PVC flange. Shape and holes per customer drawings.

**E** — Solution with rapid VELCRO connection.
This solution offers:
- Rapid application and removal of the cover
- Low cost

**CI** — Bellows inner collar. Suitable for screw fastening.

**CE** — Bellows outer collar. Suitable for screw fastening.

### EXAMPLES OF APPLICATION:

- Closing of upright doors
- Closing of storehouse rooms and interspaces
- Protection of level changing in assembly lines of the manufacturing industry
- Base protection of medical equipment
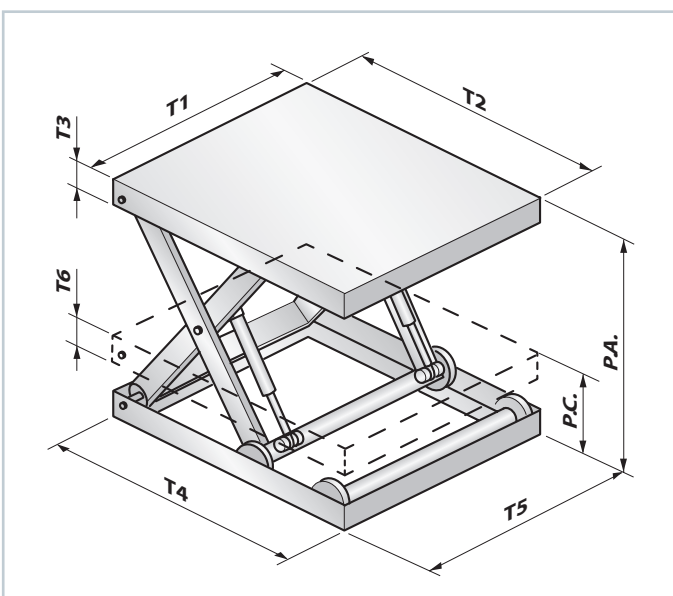
**Questionnaire for HOISTING PLATFORMS:**

T1 = .................................................................................................... mm
T2 = .................................................................................................... mm
T3 = .................................................................................................... mm
T4 = .................................................................................................... mm
T5 = .................................................................................................... mm
T6 = .................................................................................................... mm
P.A. = .................................................................................................... mm
P.C. = .................................................................................................... mm
NP = .................................................................................................... mm
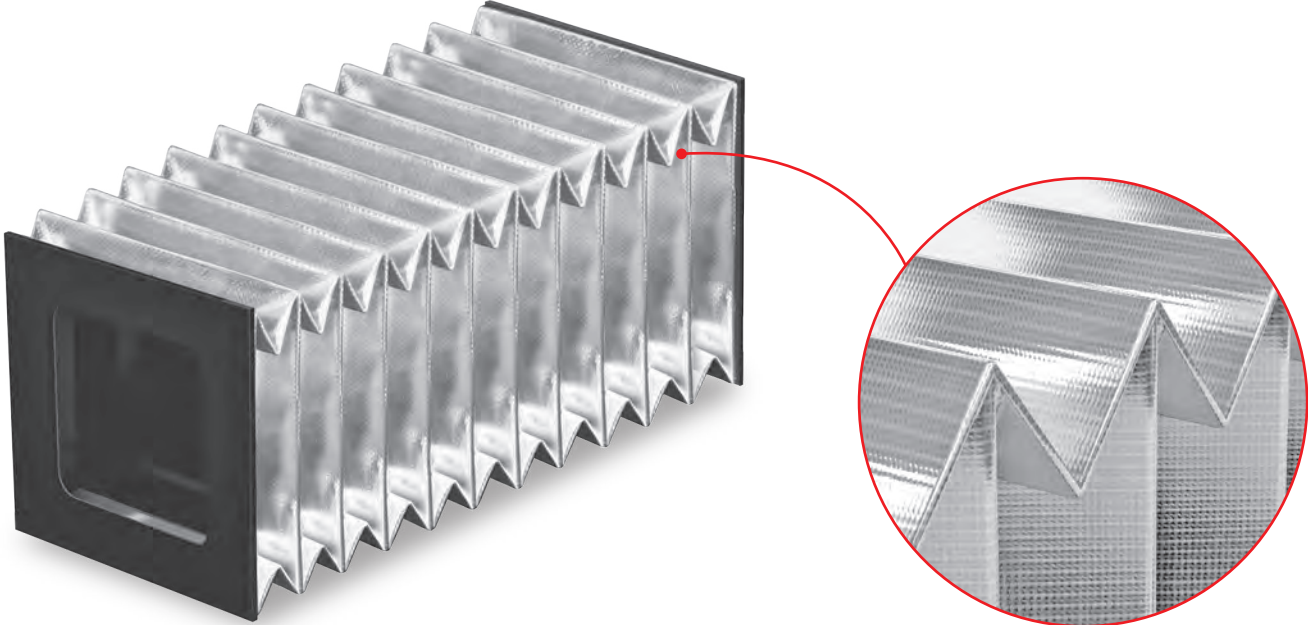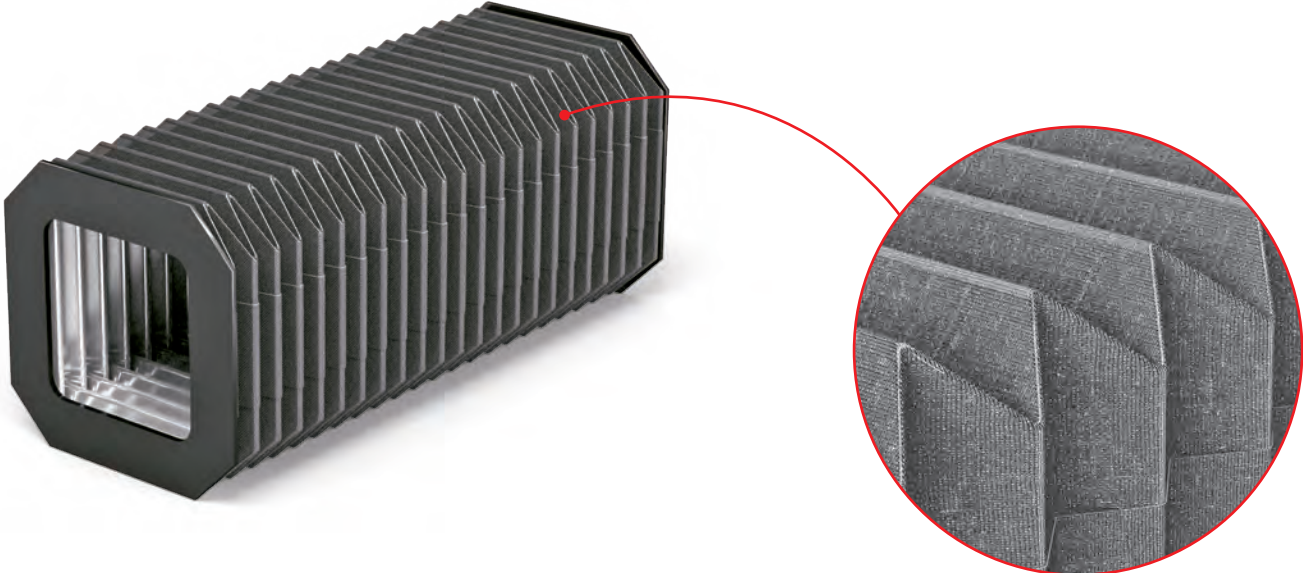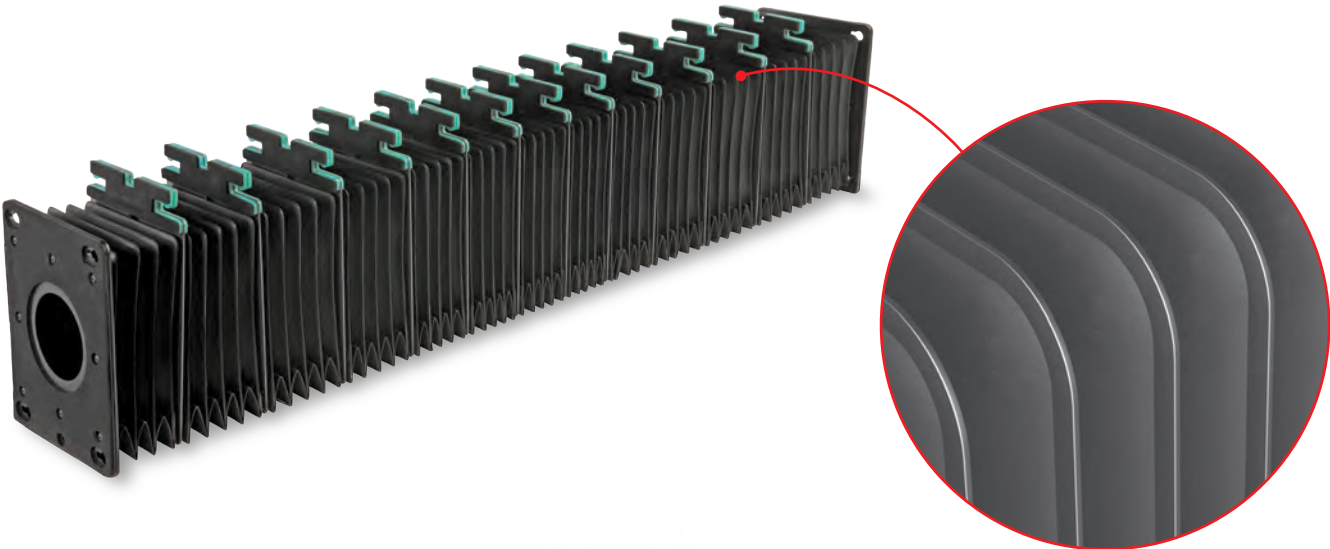Upper side fastening ❑ I ❑ B ❑ E ❑ C I ❑ CE
Lower side fastening ❑ I ❑ B ❑ E ❑ C I ❑ CE

**NOTE: The data fields and/or tables marked by** 🔴 **are the least ones to be filled in order to give you a quotation. Please send an e-mail to info@pei.eu or a fax to +39 051 6464840.**

# BELLOWS FOR LASER AND PLASMA MACHINES

# Thermic-Welded Covers Standard Systems for Linear Slides

## Solution A: Fastening holdfast

The "M" zone must be screened with a plate fixed on the table side.
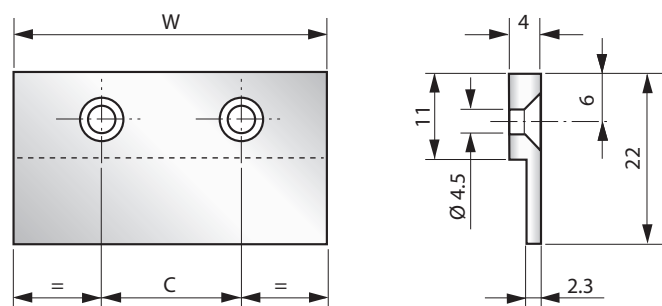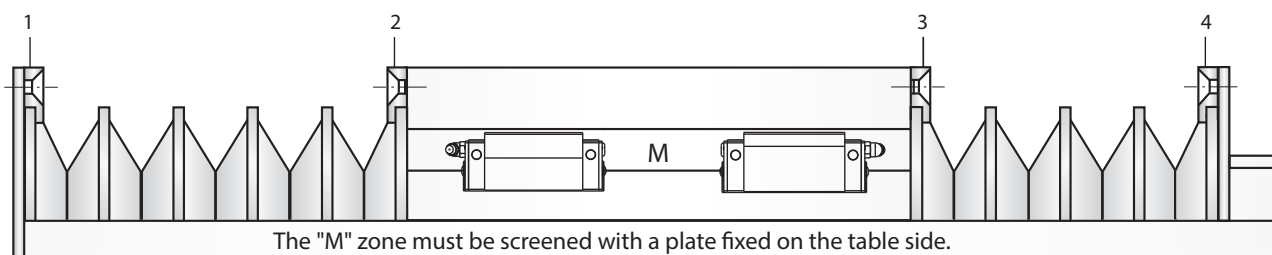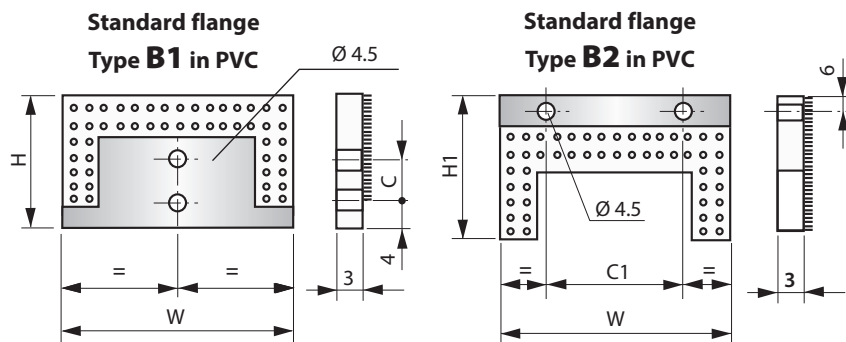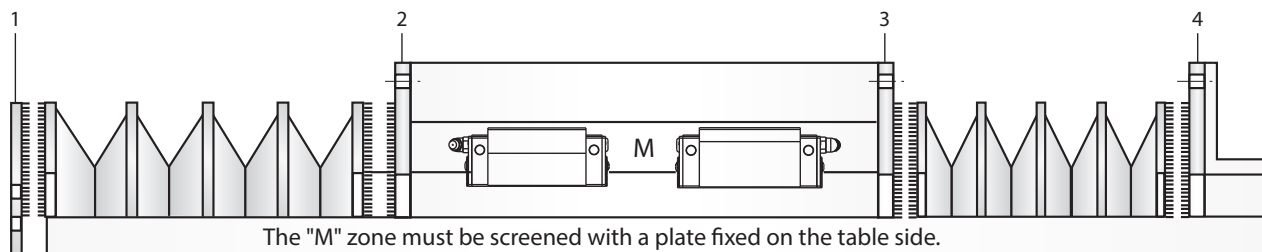
Suitable for bellows fastening in positions 1 - 2 - 3 - 4, with angular or plate supports provided by customers

| SLIDE | W | C | N. HOLES |
|---|---|---|---|
| 15 | 52 | 26 | 2 |
| 20 | 57 | 29 | 2 |
| 25 | 63 | 32 | 2 |
| 30 | 68 | 34 | 2 |
| 35 | 72 | 36 | 2 |
| 45 | 83 | 28 | 3 |
| 55 | 104 | 35 | 3 |
| 65 | 128 | 32 | 4 |

## Solution B: Velcro flange fastening (B1 and B2)

Suitable for dry working places



The "M" zone must be screened with a plate fixed on the table side.

**Standard flange Type B1 in PVC**

**Standard flange Type B2 in PVC**

| SLIDE | W | H | C | H1 | C1 | N. HOLES |
|---|---|---|---|---|---|---|
| 15 | 56 | 36 | 0 | 42 | 26 | 2 |
| 20 | 61 | 40,5 | 8 | 46,5 | 29 | 2 |
| 25 | 67 | 43 | 8 | 46,5 | 32 | 2 |
| 30 | 72 | 51 | 8 | 54 | 34 | 2 |
| 35 | 76,5 | 51 | 18 | 53 | 36 | 2 |
| 45 | 87,5 | 61 | 18 | 62 | 28 | 3 |
| 55 | 108 | 73 | 18 | 69 | 35 | 3 |
| 65 | 132 | 90 | 18 | 86 | 32 | 4 |

Pos.1   a) Fix the type 1 standard flange at the head of the slide.
          b) Fix the bellows to the type 1 standard flange by pressing strongly.
Pos.2-3   a) Fix the table or the mounting plate to the type 2 standard flange by means of screws.
          b) Fix the bellows to the type 2 standard flange by pressing strongly.
Pos.4   a) Fix the type 2 standard flange to the angular support provided by the customer by means of screws.
          b) Fix the bellows to the type 2 standard flange by pressing strongly.
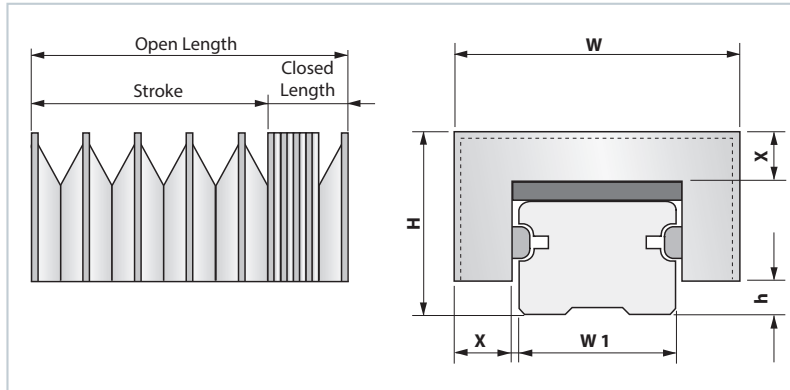
**N.B.   Fastening options showed in Pos. 1-4 are interchangeable**

This technical card represents the standard systems used for the fastening of bellows for linear slides we can provide. For different sizes, please contact our technical department.

# Thermic-Welded Covers for Linear Slides

**Example of bellows mounted on linear slides**



## List of Standard Material

| Type of material | Stiffener | Fabric material | Closed length for 1000 mm of open length |
|---|---|---|---|
| **S1** | PVC 0,50 | PVC + Polyester + PVC 0,25 (TEMAT020) | 90 |
| **P1** | PVC 0,50 | Polyurethane + Polyester + Polyurethane 0,25 (TEMAT015) | 90 |
| **LX** | PVC 1,00 | Polyurethane Panox/Kevlar + Polyurethane 0,33 (TEMAT169) | 150 |

## Standard Thermic-Welded Covers Size

| Slide nominal value **W1** | Ply height **X** | Bellow width **W** | Total height **H** | Slide deviation **h** |
|---|---|---|---|---|
| 15 | 19 | 56 | 36 | 5 |
| 20 | 19 | 61 | 40,5 | 5 |
| 25 | 19 | 67 | 43 | 7,5 |
| 30 | 19 | 72 | 51 | 8 |
| 35 | 19 | 76,5 | 51 | 9 |
| 45 | 19 | 87,5 | 61 | 10 |
| 55 | 25 | 108 | 73 | 15 |
| 65 | 32 | 132 | 90 | 15 |

**NOTE: For the W1 slide over size 65, please contact our Technical Dept.**

**Example of the identification code of a Thermic-Welded Cover for Linear Slides complete with flange**

| Slide manufacturer | THK |
|---|---|
| Slide model | HSR |
| Slide nominal value (W1) | 35 |
| Open length (stroke + closed length) | 1500 |
| Type of material | P1 |
| Flange fixing system | A-A (See page 36) |

## Questionnaire for Thermic-Welded Covers for Linear Slides

**❗ Slide Manufacturer** .............................................................................

**Slide Model** .............................................................................................

**Slide Nominal Value (W1)**   ❏ 15   ❏ 20   ❏ 25   ❏ 30
                                ❏ 35   ❏ 45   ❏ 55   ❏ 65

**Open length (Stroke + Closed length)** ....................................................**mm**

**Fabric type**   ❏ S1   ❏ P1   ❏ LX

**Fastening system on guide top**   ❏ Solution A with clamps   ❏ Solution B1 with flange in PVC

**Fastening system to table**   ❏ Solution A with clamps   ❏ Solution B2 with flange in PVC

**❗ Company name** ..........................................................

**Phone:**..........................................................................

**E-mail:.** ........................................................................

**Quantity:**......................................................................

**Annual demand:** ........................................................

........................................................................................

**Date:**.............................................................................

**Notes:**...........................................................................

........................................................................................

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**NOTE: The data fields and/or tables marked by** ❗ **are the least ones to be filled in order to give you a quotation. Please send an e-mail to info@pei.eu or a fax to +39 051 6464840.**