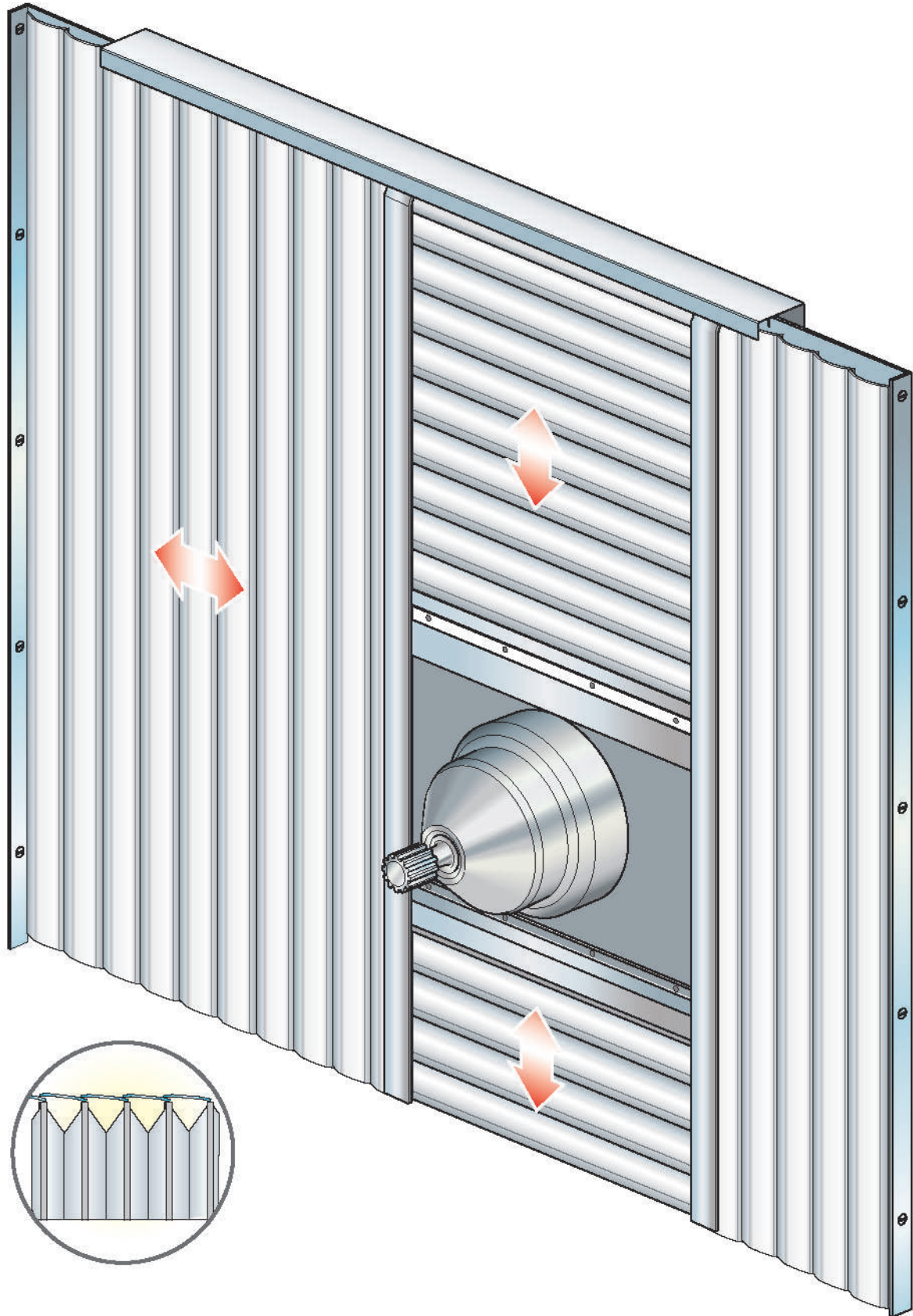




THERMIC-WELDED COVERS

Special Product: X-Y LM SHIELD (Movable plates)





Special Product: X-Y LM SHIELD (Movable plates)

- The X - Y LM SHIELD (Movable plates) represents the cheapest solution for protecting the working area in horizontal spindle machining centers where there is a large production of hot shavings. This system consists of No. 2 horizontal bellows and No. 2 vertical bellows, protected by movable stainless steel plates guaranteeing a very functional product for Quality/Price.

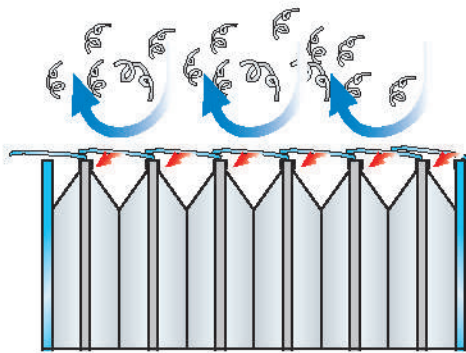
- We can guarantee this system for accelerations up to 1.5 G and speeds up 120 m/min. Contact our engineering department if higher performance is required.

- This system also offers all of the advantages of the X-Y 4R Shield.

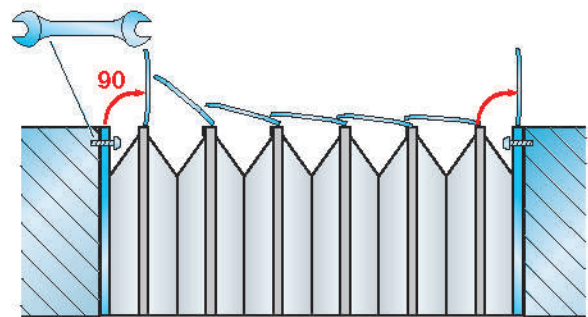
- The thermic-welded protection bellows are largely used on every kind of machine tool. They are frequently used in machining centers and chip-removing machines. In order to protect the bellow exposed to hot shavings, a shielding made by metal elements, called "plates" will be necessary.

For meeting the needs of fastening the plates, the P.E.I. Group presents an effective solution at competitive prices.

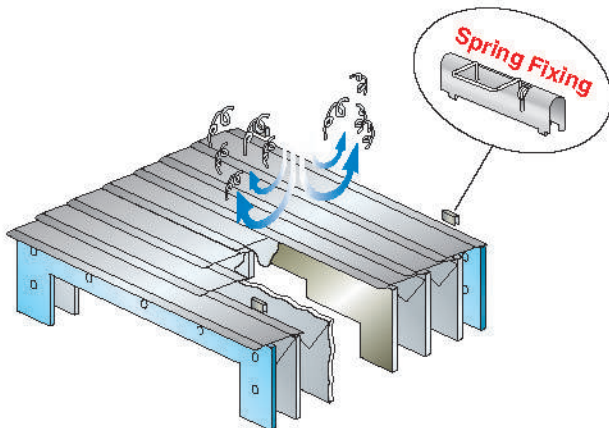
The patented "Spring Fixing" fastening system is composed by springs housed in special clamps keeping the plates adherent and loaded one on the other to prevent contaminants and shavings from entering and to allow a rotation up to 90° for making the fastening of the bellow flanges to the machine tools easier.



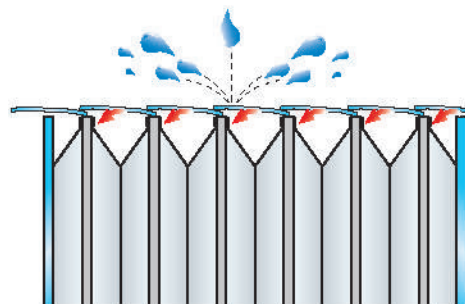
The "Spring Fixing" fastening system keeps the plates adherent and loads them one on the other to prevent contaminants and shavings from entering.



The rotation of plates up to 90° makes the fastening of the bellow flanges to the machine tool easier.



The protection plates are made in stainless steel resistant to wear caused by shavings.

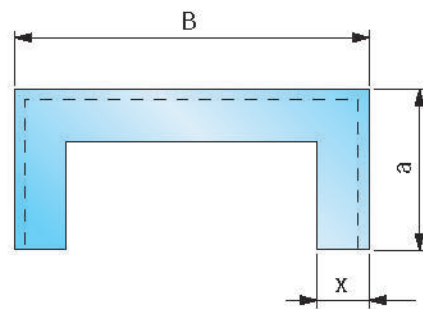
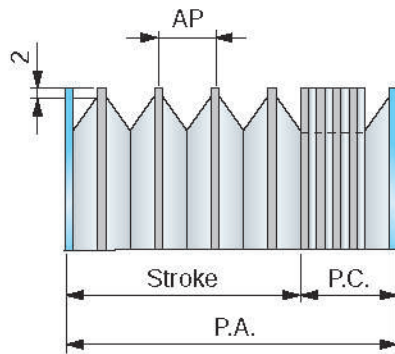
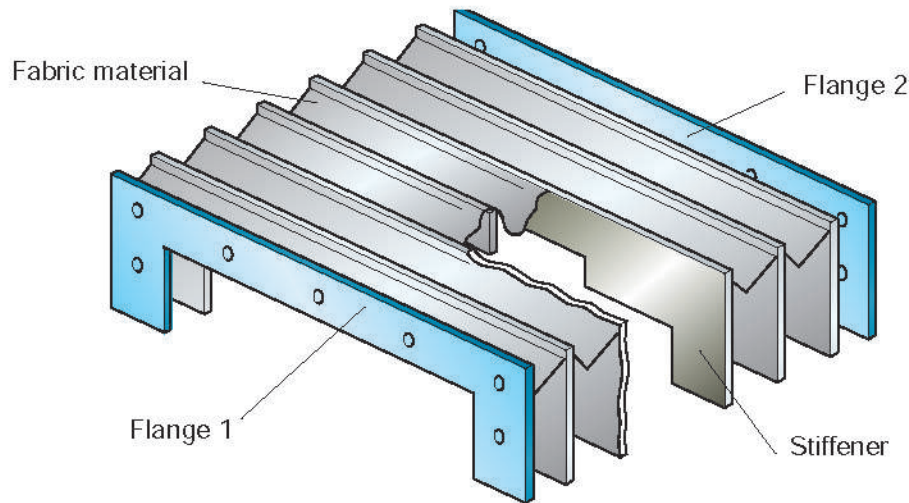


The bellow is liquid-proof.



THERMIC-WELDED COVERS

THERMIC-WELDED COVER



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 = $\frac{P.A.}{AP} + 2$

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

Example:

Data: Fold height = 15 mm

Open length = 1000 mm

Opening of 1 fold = $15 \times 2 - 8 = 22$

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

Closed length = $(0,25 \times 8 + 1^{**}) \times 48 + (2^{***} \times 2)$

Closed length = $3 \times 48 + 4 = 148$

Closed length = 148 mm

* See materials list on page 30

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

Contact our engineering department for other types.

* We hypothesize the fabric material with code "TEMAT015" (see materials list on page 30)

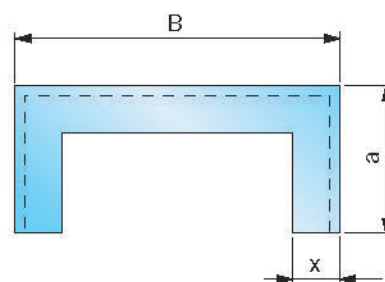
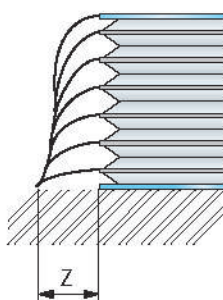
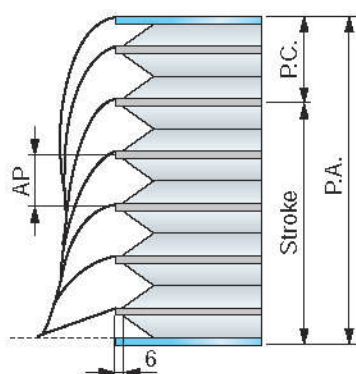
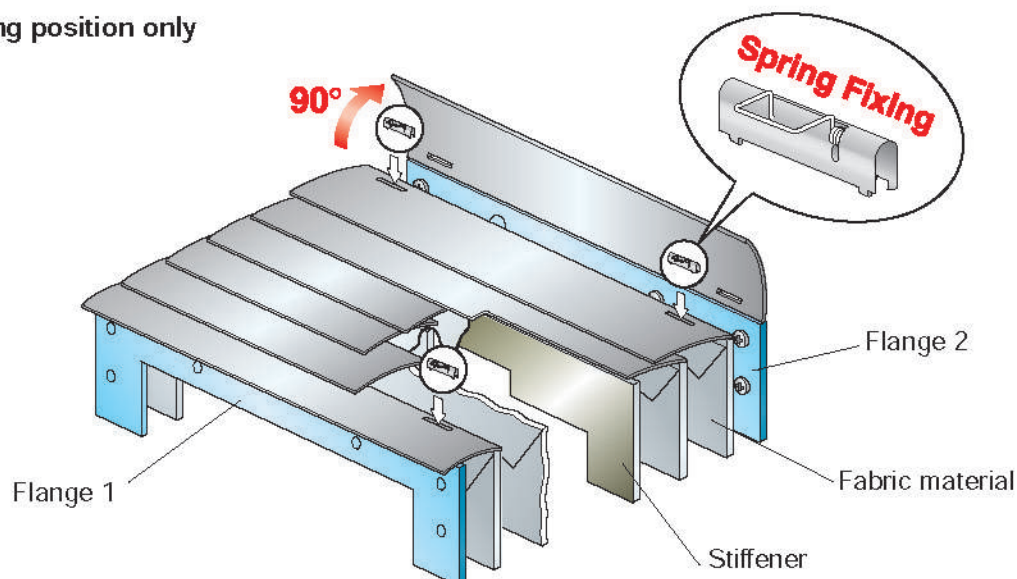
** We hypothesize that the stiffener is 1 mm thick

*** We hypothesize that the flange is 2 mm thick (see materials list on page 30)



THERMIC-WELDED COVER WITH FLEXIBLE LAMINATIONS

Vertical working position only



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

B = Outside width
a = Outside height
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

AP = Opening of 1 fold = $(x \cdot 2) - 16$
SM = Fabric thickness *
SS = Stiffener thickness *
SF = Flange thickness *

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

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

* See materials list on page 30

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

Example:

Data: Fold height = 30 mm
 Open length = 1000 mm

Opening of 1 fold = $(30 \times 2) - 16 = 44$

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

Closed length = $(0,25 \times 8 + 1^{**}) \times 25 + (2^{***} \times 2)$
 Closed length = $3 \times 25 + 4 = 79$

Closed length = 79 mm

* We hypothesize the fabric material with code "TEMAT015" (see materials list on page 30)

** We hypothesize that the stiffener is 1 mm thick

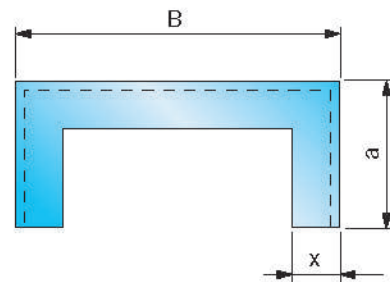
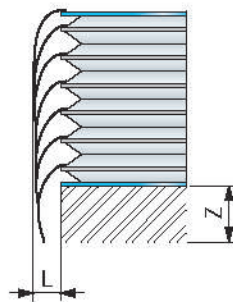
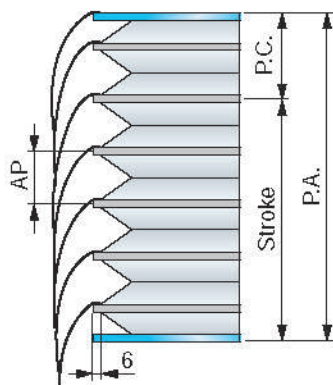
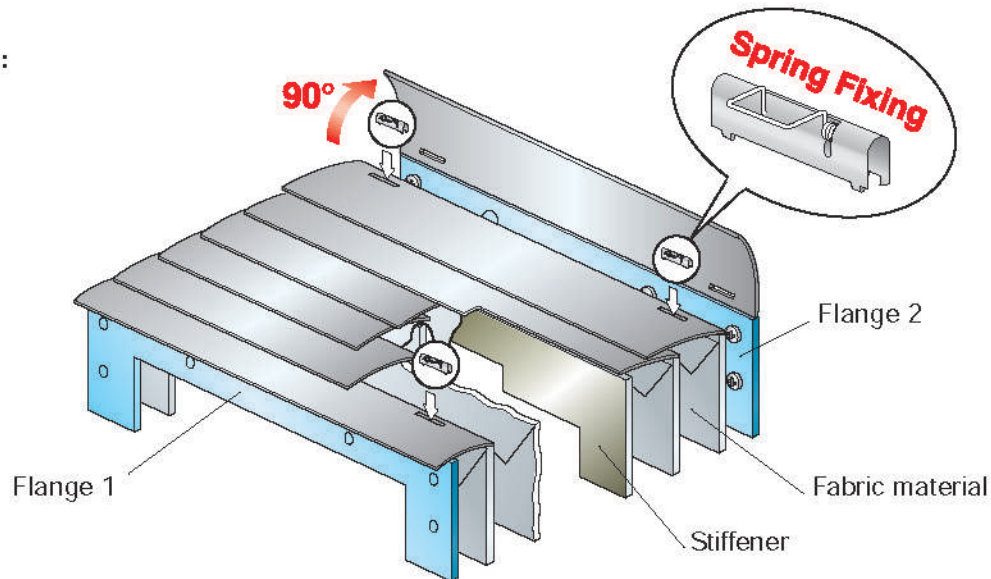
*** We hypothesize that the flange is 2 mm thick (see materials list on page 30)



THERMIC-WELDED COVERS

THERMIC-WELDED COVER WITH FIXED LAMINATIONS

Working position:
Horizontal
Vertical
Frontal



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

B = Outside width
a = Outside height
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 = $\frac{P.A.}{AP} + 2$

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

* See materials list on page 30

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

Example:

Data: Fold height = 45 mm

Open length = 1800 mm

Opening of 1 fold = $45 \times 2 - 16 = 74$

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

Closed length = $(0,35 \times 8 + 1^{**}) \times 27 + (3^{***} \times 2)$

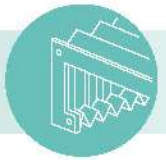
Closed length = $3,8 \times 27 + 6 = 109$

Closed length = 109 mm

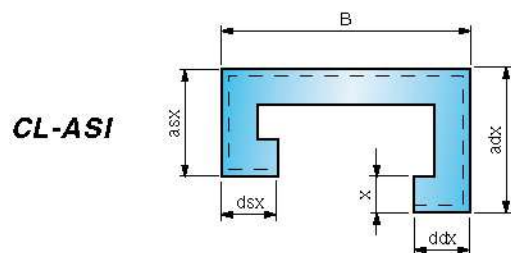
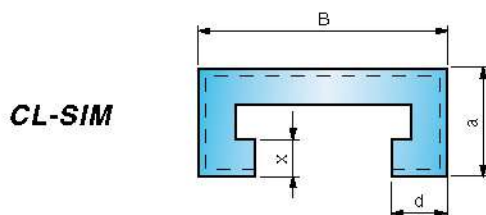
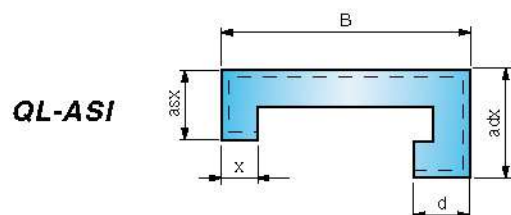
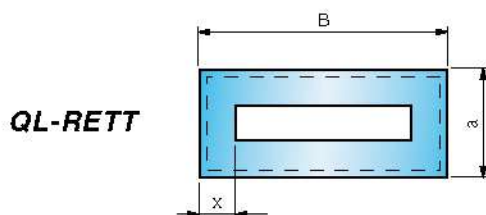
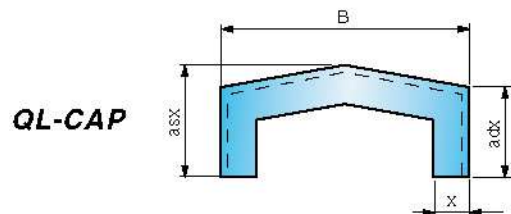
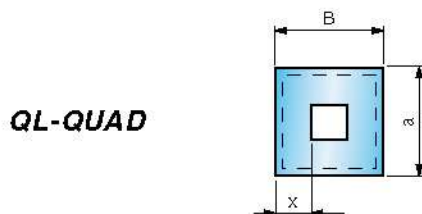
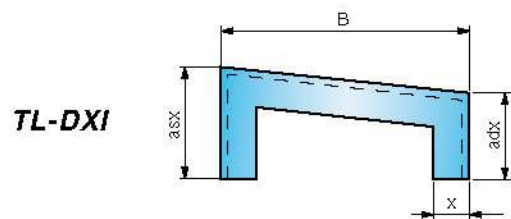
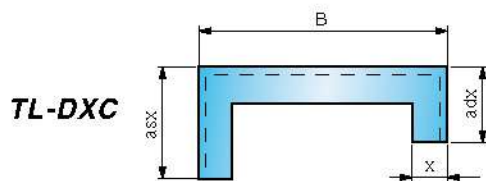
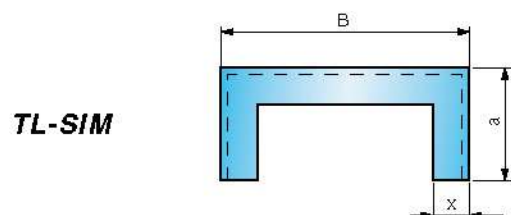
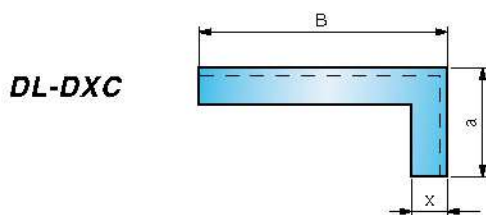
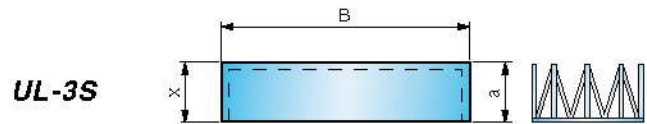
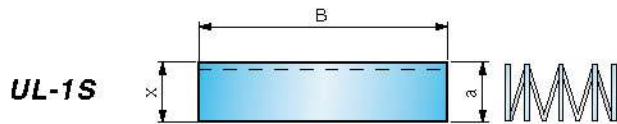
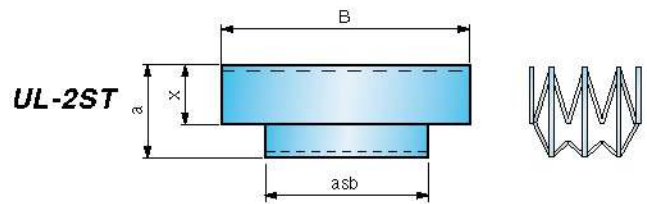
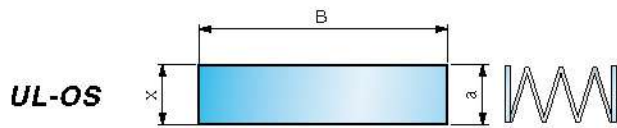
* We hypothesize the fabric material with code "TEMAT151" (see materials list on page 30)

** We hypothesize that the stiffener is 1 mm thick

*** We hypothesize that the flange is 2 mm thick (see materials list on page 30)



STANDARD SHAPES



NOTE: The above are only the standard shapes of Thermic-Welded Covers.
Other shapes available upon request.



THERMIC-WELDED COVERS

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 091	PVC	Fiberglass	PVC	0,44	+300	-30	+ 80	Fabric suitable for minor welding splatter. Also appropriate around acids. Self-extinguishing.
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	+190	-30	+140	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

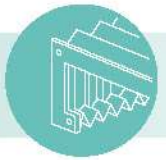
Flange material code	Description	Thickness (mm)
AL	Aluminum	2,0 - 3,0
AC	Steel	2,0 - 3,0 - 4,0
PVC	PVC	2,0 - 3,0

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		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.

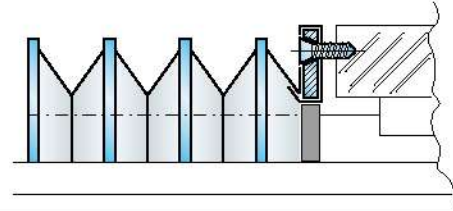
Contact our engineering department for other materials and applications.



FLANGE FASTENING SYSTEMS

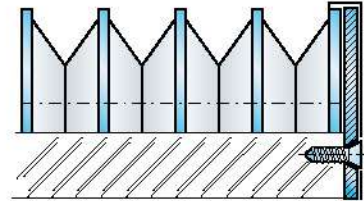
Type A

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



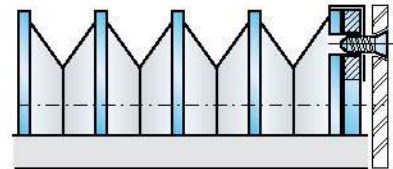
Type B

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



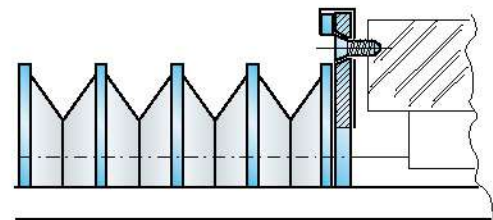
Type C

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



Type D

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



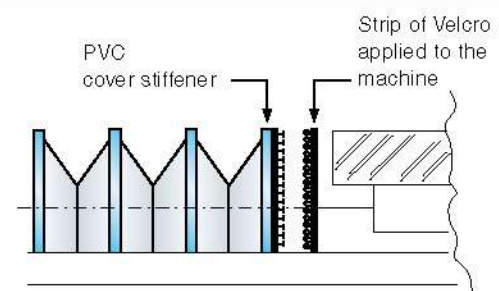
Type E

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 two main advantages:

- Rapid application and removal of the cover
- Low cost
- * Recommended for dry work environments



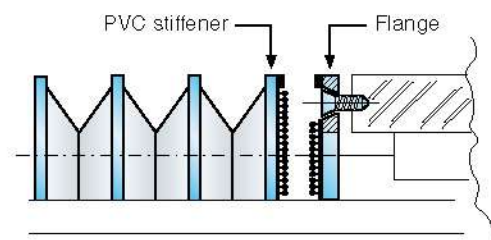
Type F

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 two main advantages:

- Rapid application and removal of the cover
- Foam gasket strip provides a tight seal around the connection
- * Recommended for wet work environments



The above are standard fastening methods for Thermic-Welded Covers. Other types available upon request.



! Type of machine on which the COVERS are to be installed: ☐ METAL working machine ☐ MARBLE working machine ☐ GOLD working machine ☐ PAPER working machine ☐ FABRIC working machine ☐ GLASS working machine ☐ FOOD working machine ☐ PHARMACEUTICAL working machine ☐ AGRICULTURAL working machine ☐ TANNING working machine ☐ CLAY working machine ☐ WOOD working machine ☐ Other	! Type of material falling on the covers: ☐ Steel shavings ☐ Cast iron shavings ☐ Brass shavings ☐ Aluminum shavings ☐ Wood shavings ☐ Ambient dust ☐ Grinding swarf ☐ Welding splatter ☐ Other	! Amount of material falling on the covers:..... Kg ! Temperature of material falling on the covers:.....°C ! Temperature of work area:°C ! Max. rapid travel speed:m/min. ! Max. acceleration:.....g ! Max. working motions per hour: ! Max. daily working hours:
! Liquids to which the covers will be exposed: ☐ Water/steam ☐ Coolant/oils ☐ Oils with a viscosity of ISO ☐ Other		

Type of cover: ☐ Thermic-Welded ☐ Thermic-Welded with fixed laminations ☐ Thermic-Welded with flexible laminations

Working position: ☐ Horizontal ☐ Vertical ☐ Frontal

Cover shape: ☐ UL-OS ☐ UL-3S ☐ TL-DXC ☐ QL-CAP
☐ UL-1S ☐ DL-DXC ☐ TL-DXI ☐ QL-RETT ☐ CL-SIM
☐ UL-2ST ☐ TL-SIM ☐ QL-QUAD ☐ QL-ASI ☐ CL-ASI

TEMAT Fabric material: ☐ 091 ☐ 106 ☐ 015 ☐ 151 ☐ 164 ☐ 165 ☐ 169 ☐ 017 ☐ 020

Stiffener material: ☐ PVC 0,5 ☐ PVC 1,0 ☐ PVC 1,5

Flange material: ☐ AL 2,0 ☐ AL 3,0 ☐ AC 2,0 ☐ AC 3,0 ☐ AC 4,0
☐ PVC 2,0 ☐ PVC 3,0

Lamination material: ☐ AL ☐ STAINLESS

Flange 1 connection system: ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F

Flange 2 connection system: ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F

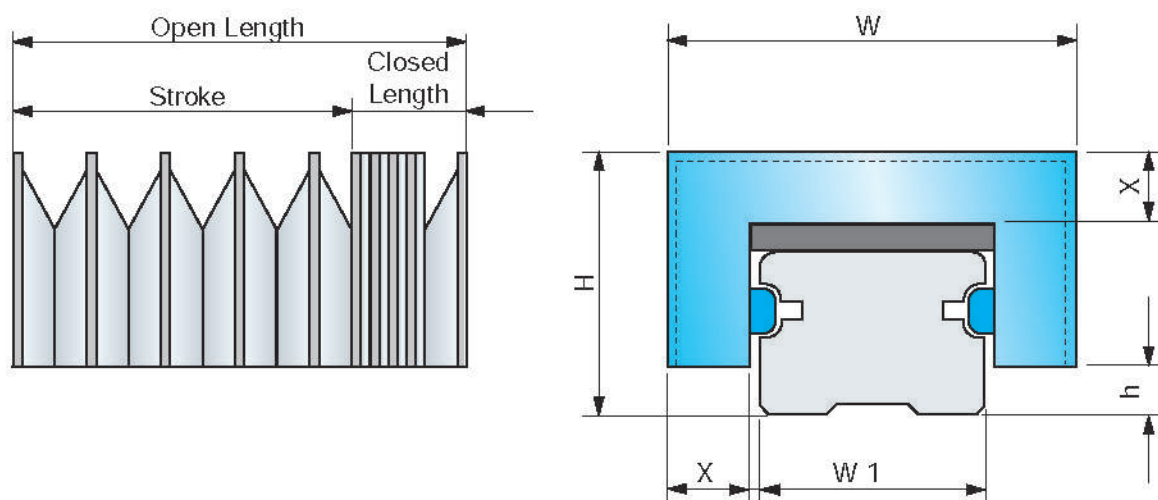
! P.A.= Open length	mm
P.C.= Closed length	mm
Stroke=	mm
a= Outside height.....	mm
B= Outside width	mm
x= Fold height	mm
adx= Outside height, rt.	mm
asx= Outside height, lt.	mm
d= Return	mm
ddx= RT. return	mm
dsx= LT. return	mm
asb= Overall drive dimensions	mm
L= Lamination height	mm
Z= Overall lamination dimensions	mm

	Company name:	
	Contact person:	
	Tel.: Fax:	
	Quantity:	
	Annual demand:	
	Date:	
	Notes:	

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THERMIC-WELDED COVERS FOR LINEAR SLIDES



Example of bellows mounted on linear slides

LIST OF STANDARD MATERIAL

Code	Support	Hood	Closed length for 1000 mm of open length	Availability
S1	PVC 0,50	PVC + Polyester + PVC 0,25 (TEMAT020)	90	Ready to deliver
P1	PVC 0,50	Polyurethane + Polyester + Polyurathane 0,25 (TEMAT015)	90	Ready to deliver
LX	PVC 1,00	Panox/Kevlar Polyurethane + Polyurethane 0,33 (TEMAT169)	150	On request

STANDARD THERMIC-WELDED COVERS SIZE

Slide nominal value W1	Ply height X	Bellows 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

EXAMPLE of the identification code of a bellows

Slide manufacturer	INA
Slide model	KUE
Slide nominal value (W1)	35
Open length (stroke + closed length)	1250
Type of material	S1

For the W1 slide size of 55 and 65, please contact our Technical Dept.

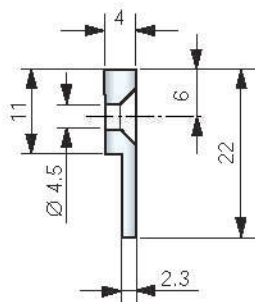
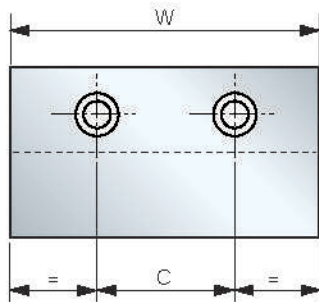


THERMIC-WELDED COVERS

Thermic-Welded Covers Standard Systems for Linear Slides

Solution A: Fastening holdfast

Bellows-fastening standard systems for linear slides

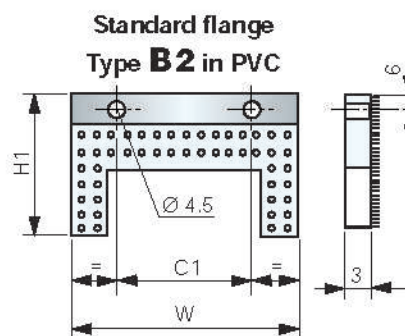
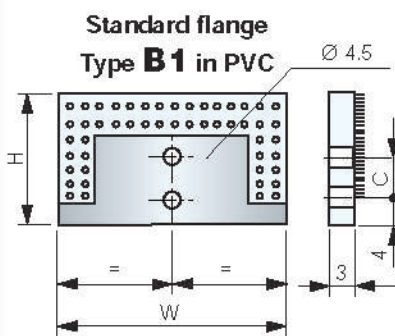
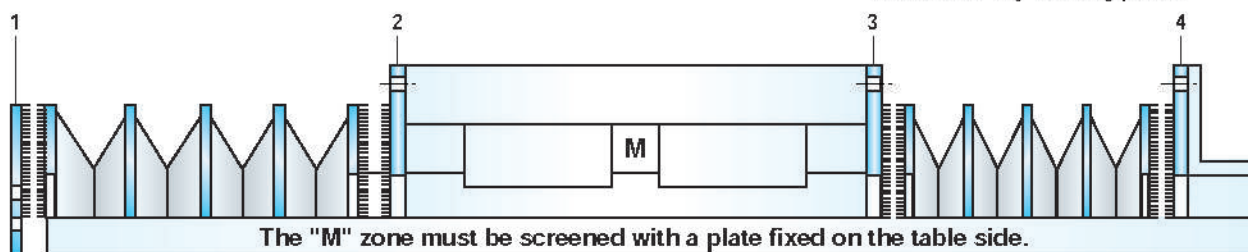


SLIDE	W	C	N. HOLES
15	52	26	2
20	57	29	2
25	63	32	2
30	68	34	2
35	72	36	2
45	83	28	3
55	104	35	3
65	128	32	4

Suitable for bellows fastening in positions 1 - 2 - 3 - 4, with angular or plate supports provided by customers

Solution B: Velcro flange fastening (B1 e B2)

Suitable for dry working places



SLIDE	W	H	C	H1	C1	No. 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 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.



Standard Production of Thermic-Welded Covers for Linear Slides

Manufacturer slide	Slide model	Availability
ABBA	...	...
FRANKE	FDK...	...
HIWIN	AGH...	...
LGH...	...	
LGW...	...	
LGR...	===	
HGH...	...	
HGR...	...	
HGW...	...	
IKO	LWE...	...
LWH...	...	
LRX...	===	
JHS...	===	
INA	KUE...	...
KUSE...	...	
KUVE...	...	
RUE...	...	
TKD...	===	
TKSD...	===	
TKVD...	===	
NSK	LH...	...
L1H...	...	
LS...	===	
LY...	===	
SBG	...	...
SCHNEEBERGER	MRA...	...
MRB...	...	
SKF	LLBHS...	...
STAR	1605...	...
1805...	...	
THK	HSR...	...
SHS...	...	
SR...	...	
SSR...	...	
HCR...	===	
HRW...	===	
SNS...	===	
TSUBAKI	H...	...

Key to symbols

- ... Type S1 and P1 standard bellows (ready to deliver)
- === Bellows manufactured on request

Example of the identification code of a bellows for linear slides equipped with flanges

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

Note: On request we can provide bellows for every kind of slide. For more detailed information, contact our technical department.

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 ☐ Solution A with clamps
on guide top ☐ Solution B1 with flange in PVC

! Fastening system ☐ Solution A with clamps
to table ☐ Solution B2 with flange in PVC

! Company name

Contact person:

Phone:

Fax:

Quantity:

Annual demand:

Date:

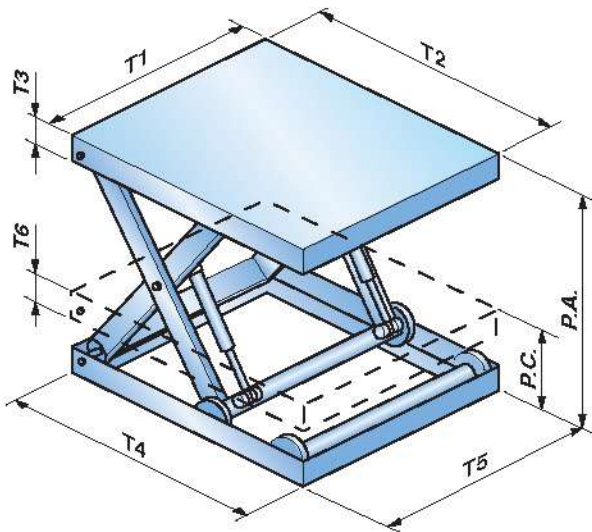
Notes:

NOTE: The data fields and/or tables marked by ! are the least ones to be filled in order to give you a quotation.



THERMIC-WELDED COVERS

INFORMATION ON THE HOISTING PLATFORM



PLATFORM DIMENSIONS

Upper side

- T1 = table width
- T2 = table length
- T3 = frame height

Lower side

- T4 = table width
- T5 = table length
- T6 = frame height

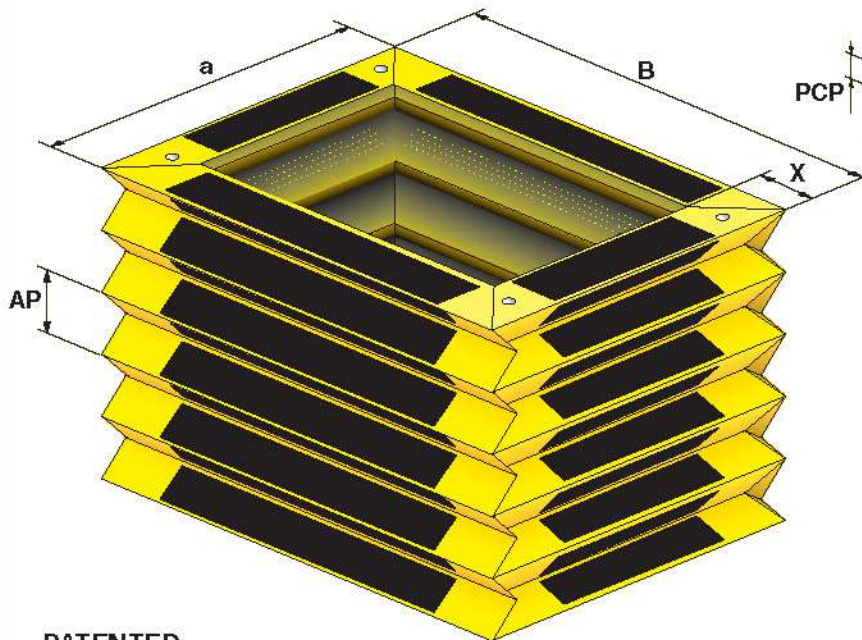
Opening

P.A. = Open length

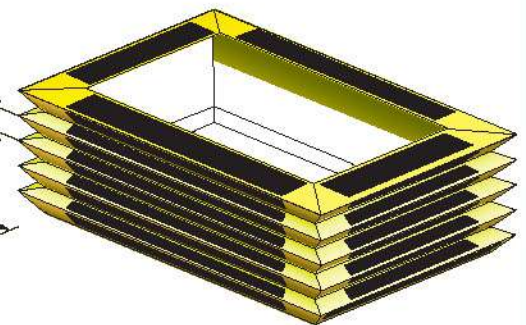
Closing

P.C. = Closed length

CHARACTERISTICS OF BELLOWS DURATITE™



PATENTED



Formula for calculating the CLOSED LENGTH

$$P.C. = NP \cdot PCP + 10 \text{ mm}$$

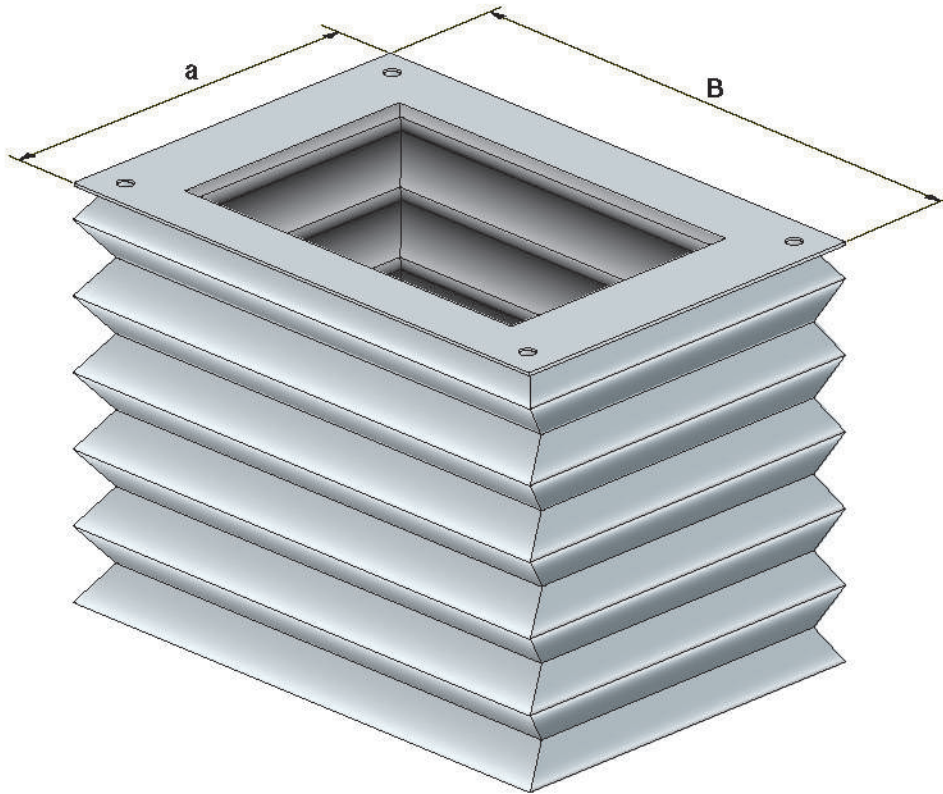
$$NP = \text{Number of folds} = \frac{P.A.}{AP}$$

X	AP	PCP	Material	Color	Reference code
38	55	10	PVC/PU	Yellow/Black	DM-PU-G
			PVC/PU	Black	DM-PU-N
67	100	10	PVC	Yellow/Black	DM-PU-G
			PVC	Black	DM-PU-N
89	125	10	PVC	Yellow/Black	DM-PU-G



BELLOWS FOR HOISTING PLATFORM

EXECUTION WITH THERMIC-WELDED BELLOWS TYPE QL-RETT



- All calculation formulas are shown on page 26.

PLEASE NOTE !

For bellow sizes up to **a = 1200** and **B = 1600** we can manufacture cheaper bellows, but with the same efficiency, using the fabric **Type J-TEX**.

Please contact our Engineering Dept. for further information.



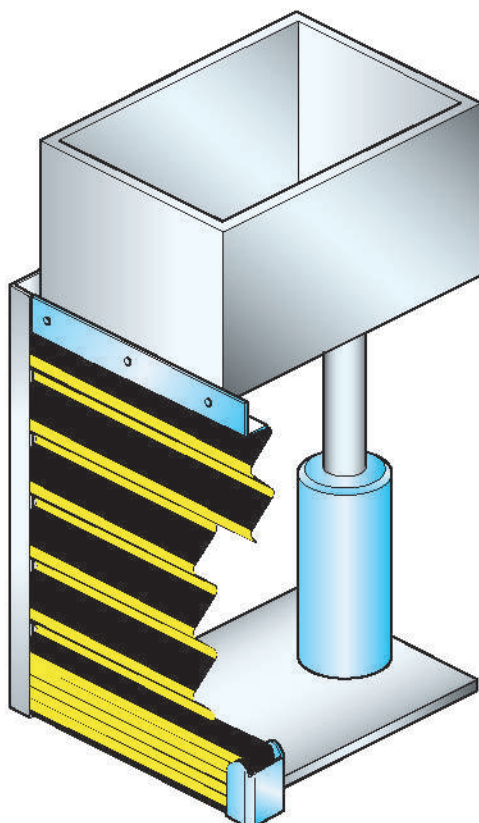
Standard System for fastening Bellows for Lift Tables

Upper part

DC11 = Bellows inner collar. Suitable for screw fastening.	DCE1 = Bellows outer collar. Suitable for screw fastening.	DVI1 = Bellows inner VELCRO collar. Suitable for quick fastening.	DVE1 = Bellows outer VELCRO collar. Suitable for quick fastening.	DFL1 = Customised flange fastening system. Suitable for special applications.

Lower part

DC12 = Bellows inner collar. Suitable for screw fastening.	DCE2 = Bellows outer collar. Suitable for screw fastening.	DVI2 = Bellows inner VELCRO collar. Suitable for quick fastening.	DVE2 = Bellows outer VELCRO collar. Suitable for quick fastening.	DFL2 = Customised flange fastening system. Suitable for special applications.



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 bellows:

T1 = mm

T2 = mm

T3 = mm

T4 = mm

T5 = mm

T6 = mm

P.A. = mm

P.C. = mm

NP = mm

A = mm

B = mm

X = mm

Upper side fastening type ☐ DC11 ☐ DCE1 ☐ DVI1 ☐ DVE1 ☐ DFL1

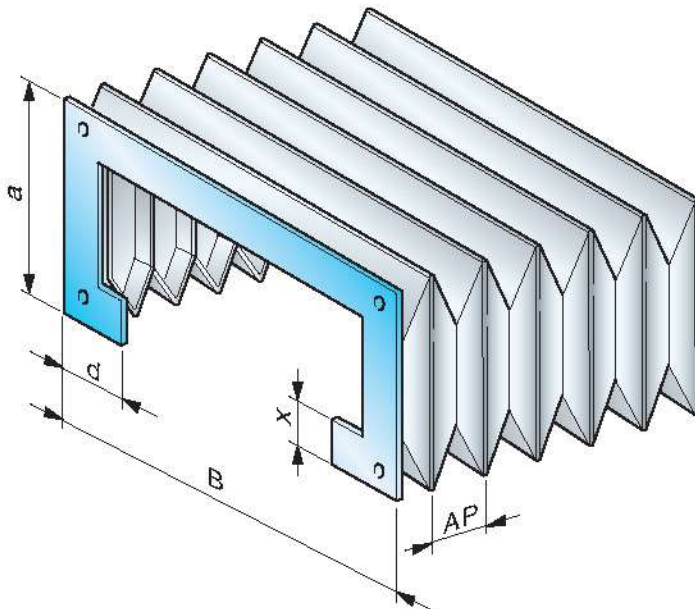
Lower side fastening type ☐ DC12 ☐ DCE2 ☐ DVI2 ☐ DVE2 ☐ DFL2

NOTE: The data fields and/or tables marked by ! are the least ones to be filled in order to give you a quotation.

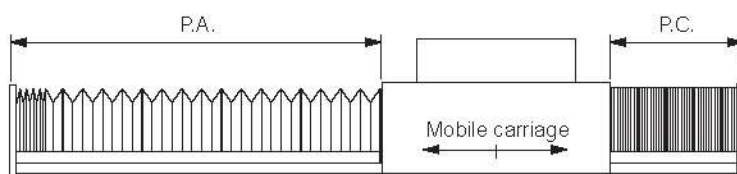
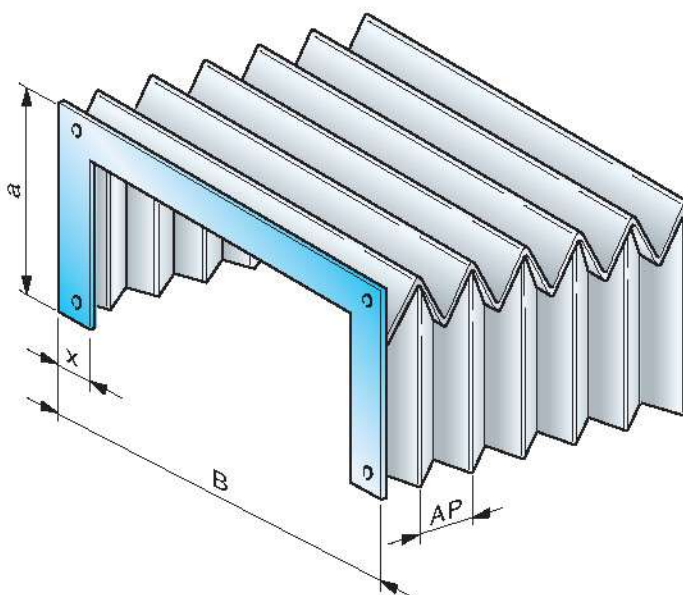


Special Product: FLAT COVERS GLUED AND SEWN

Type CL-SIM

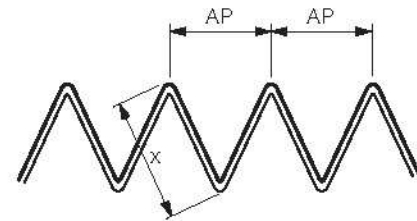


Type TL-SIM



Contact our engineering department for this type of cover.

Glued style "A"



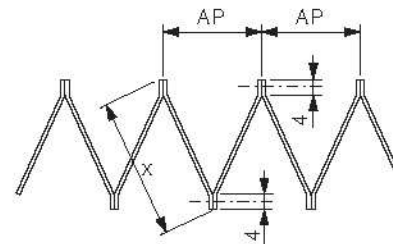
Formula for calculating the CLOSED LENGTH

$$P.C. = NP \cdot 4 + \text{large thickness}$$

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

$$AP = \text{Opening of 1 fold} = x \cdot 1,41$$

Sewn style "C"



Formula for calculating the CLOSED LENGTH

$$P.C. = NP \cdot 2,5 + \text{flange thickness}$$

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

$$AP = \text{Opening of 1 fold} = (x-8) \cdot 1,41$$

Ref.	Description	Dim.	Type	Style
!P.A.	Open length			
!P.C.	Closed length			
!Stroke	(P.A. - P.C.)			
!a	Outside height			
!B	Outside width			
!x	Fold height			
!d	Return dimension			
!AP	Fold opening			
!NP	Number of folds			

NOTE: The data fields and/or tables marked by ! are the least ones to be filled in order to give you a quotation.