# X85 Pallet system

#### **Contents**

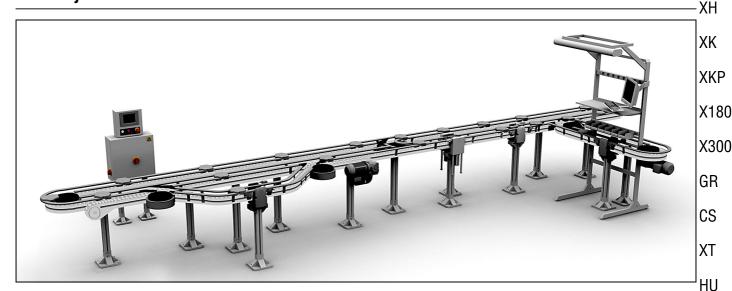
Pallet system with standard modules and RFID	193
Pallets – introduction	195
Pallet configurations	197
Pallets X85	197
Pallet parts for replacement or upgrading of pallets	202
RFID components	203
Guide rails for pallets – introduction	204
Straight guide rails for X85 pallets	204
Guide rail bracket for X85 pallets	
Connecting strips	
End guides	205
Guide rails for wheel bends	205

Guide disc for wheel bends	206	
Locating units – introduction	207	X45
Basic locating module		
Tunnel locating module	209	XS
Diverting and merging modules – introduction	210	
Divert modules		X65
Merge modules	211	VOO
Divert and merge modules		
Interspace module	212	X65P
Pallet stops – introduction	213	
Pallet stops	213	X85
Accessories	215	,,,,,
		VOED
		AODP

P0

CC

# Pallet system with standard modules and RFID



### **Based on modules**

The X85 pallet system is a complete system for handling individual products on product carriers (pallets). An automated system is built on configurable standard modules.

Standard modules make it very easy and fast to create simple as well as advanced layouts for routing, balancing, buffering and positioning of pallets. RFID identification in the pallets enables one piece track and trace and logistic control for the production line.

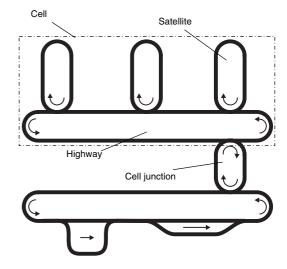
A standard line cabinet with power bus and communication bus systems provides fast installation and high flexibility for future changes.

### **Divert/merge devices**

Divert/merge devices are used for routing products by dividing or combining flows of products. Usually there is a main conveyor, a "highway", and separate subordinated conveyors, "satellites".

On the satellites, products can be subjected to various operations such as turning, grinding, assembly or testing, without disturbing the main flow. After the operations, the products can return to the highway.

A combination of a highway and one or more satellites is often called a cell. Using divert/merge modules, it is pos-WL sible to build cell junctions which facilitate transfer of a pallet from one cell to another. See figure.



XC

XF

XD

ELV

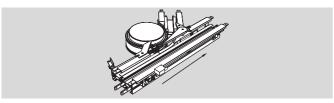
CTL

**FST** 

TR

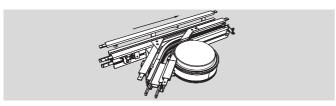
APX

#### **Divert modules**



Diverters for guiding the flow of products off the highway into a satellite are available in four basic types: 45° left/right and 90° left/right.

### Merge modules



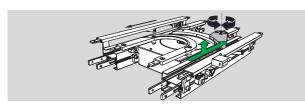
Merge devices for guiding products from a satellite back to the highway are available in four basic versions:  $45^{\circ}$  left/right and  $90^{\circ}$  left/right.

### Combined divert/merge modules



Devices which permit products to be guided into a satellite, or be returned back to the highway, or circulate on the satellite, are called divert/merge combinations. They are available in four basic versions: 45° left/right and 90° left/right.

### Interspace divert/merge modules



An interspace divert/merge device permits shortcuts in a main line or satellite. It is available in left and right versions.

### **Configurator tool**

The divert/merge/combination modules can be individually configured to the right pallet size using the configurator tool. The configurator tool will create a geometrically correct 3D CAD-model that can be inserted in the layout. The configured module will include the function, stops, conveyor beams, wheel bends and guide rails.

Configurable options include:

- Specific pallet size
- Type of sensors and brackets
- · RFID readers and brackets

### Pallet positioning functions



The pallet locating stations for the X85 pallet system are used for positioning of all X85 pallet types. The pallets are stopped by a pneumatically controlled stop device near the desired position.

A proximity switch is used to indicate that a pallet is in the locating station. Here, two rulers lift the pallets approximately 2 mm above the chain against a fixed hold down bracket. The two indexing pins ensure a high locating accuracy  $(\pm 0,1$  mm). The pallet locating station is available for straight conveyor section modules.

For low position accuracy a regular stop device type XBPD can be used.

These modules can be individually configured to the right pallet size by the configurator tool. The configuration tool will create a geometrically correct 3D CAD model that can be inserted in the layout.

Configurable options include:

- Sensors and brackets
- RFID readers and brackets

#### Pallets with RFID



Pallet system X85 includes pallets in four sizes. A pallet consists of a cast aluminium pallet base and two plastic guide discs with slide plates at the bottom. Product-specific fixtures are attached to the pallet base.

Two hardened bushings at the bottom of the pallet base provide high locating accuracy at the locating station. Two guide holes in the pallet base ensure high accuracy for the product-specific fixture in relation to the bushings.

An initiator plate for position sensors is integrated in each guide disc. The pallets are delivered with a shock absorber in the front guide disc.

An RFID tag holder is integrated in the underside of the pallet base.

Accumulation of pallets is possible in conveyor bends. X85 pallets without rollers can be used for inclines up to  $5^{\circ}$ .



### Pallet assortment

The X85 pallet system includes pallets that can be adapted to specific requirements such as

- Tough environment conditions (type R pallets)
- Low friction
- High precision locating
- Electrostatic sensitivity
- Fast indexing
- Fast pallet exchange
- Easy attachment of fixtures
- Low cost

A pallet consists of a pallet plate riding on two guide discs. The pallet plate is cast aluminium and machined. For normal environments each guide disc is equipped with a plastic slide plate. For use in tough environments, type R pallets with steel slide plates on the guide discs are recommended. For ultra-low friction, guide discs with rollers are used. Pallets come with a front guide disc with damping, and a rear guide disc without damping.

### Chain – pallet compatibility

The X85 pallets are available in two basic environment categories:

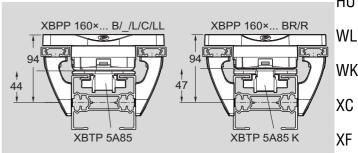
- Clean environment: Basic (B), Standard, Low friction (L), Conductive (C), Lubricated (LL)
- Tough environment: Basic (BR), Standard (R)

Two types of chain are available for pallet handling:

- Clean environment: Plain chain with fingered top
- Tough environment: Plain chain with closed top

#### Different thickness

The chain with closed top is 3 mm thicker than the chain with fingered top. But, since the pallets for clean environment are correspondingly thicker than the pallets for tough environment, the top side of all pallet types will be at the same height above the conveyor beam. This means that all pallet handling modules can be used as long as the right combination of pallet and chain is used. XT See figure.



It is possible to change from one version to the other sim- XD ply by exchanging the chain and the slide plates on the pallets.

X300

CS

HU

WK

XC XF

**ELV** 

CTL

FST

TR

APX

### **Pallet specifications**

### Locating accuracy

- Pallet plate without bushing, only for stop: ±1 mm (B and BR pallets)
- Pallet plate with locating bushing: ±0,1 mm

#### **RFID**

- The pallet plate is equipped with a socket for an IFM RFID tag
- IFM read on the fly at speeds up to 30 m/min

#### Features

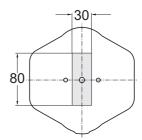
- Maximum load on one pallet: 10 kg
- · Attachment holes for fixture
- Two optional indexing plates under the pallet.
- · One optional plate under the pallet for fast loading
- · Bushings for 8 mm index pin
- · Wall to shadow the optical sensor
- Pallets can be upgraded using pallet parts.

### Indexing

- Type 160×125 and 160×175 pallets have two indexing positions (distance 55 mm).
- Type 160x225 pallets permit indexing at two positions (distance 110 mm) or at three positions (distance 55 mm between each position).

### **Pallet loading**

The maximum permissible load on one pallet is 10 kg. The centre of gravity of the product on the pallet (including fixture) must be located inside a  $30 \text{ mm} \times 80 \text{ mm}$  rectangle on the pallet. See figure.



### **Technical characteristics**

Pallet sizes 160 mm ×100 mm (136 mm) × 47/50 mm

 $(W \times L \times H)$ 

160 mm  $\times$  125 mm (161 mm)  $\times$  47/50 mm 160 mm  $\times$  175 mm (211 mm)  $\times$  47/50 mm 160 mm  $\times$  225 mm (261 mm)  $\times$  47/50 mm

Maximum load on

pallet: 10 kg

### Weight

Pallets							
Size	Weight (kg)	Size	Weight(kg)	Size	Weight (kg)	Size	Weight (kg)
XBPP 160 × 100 B	0,503	XBPP 160 × 125 B	0,591	XBPP 160 × 175 B	0,69	XBPP 160 × 225 B	0,78
XBPP 160 × 100	0,512	XBPP 160 × 125	0,603	XBPP 160 × 175	0,696	XBPP 160 × 225	0,792
XBPP 160 × 100 L	0,548	XBPP 160 × 125 L	0,639	XBPP 160 × 175 L	0,732	XBPP 160 × 225 L	0,828
XBPP 160 × 100 C	0,512	XBPP 160 × 125 C	0,603	XBPP 160 × 175 C	0,696	XBPP 160 × 225 C	0,792
XBPP 160 × 100 BR	0,559	XBPP 160 × 125 BR	0,650	XBPP 160 × 175 BR	0,743	XBPP 160 × 225 BR	0,845
XBPP 160 × 100 R	0,571	XBPP 160 × 125 R	0,662	XBPP 160 × 175 R	0,755	XBPP 160 × 225 R	0,861
XBPP 160 × 100 LL	0,533	XBPP 160 × 125 LL	0,627	XBPP 160 × 175 LL	0,724	XBPP 160 × 225 LL	0,830

Guide disc	
Item no	Weight (kg)
XBPG 85	0,11
XBPG 85 D	0,117
XBPG 85 P	0,08
XBPG 85 DP	0,087
XBPG 85 E	0,08
XBPG 85 DE	0,117
XBPG 85 R	0,098
XBPG 85 DR	0,105
XBPG 85 PL	0,150
XBPG 85 DPL	0.156

### Pallets X85

	Basic pallet (Suffix B)	Standard pallet (No suffix)	Low friction pallet (Suffix L)	Low friction pallet, lubricated (Suffix LL)	Conductive pallet (Suffix C)	Basic pallet, harsh environment (Suffix BR)	Standard pallet, harsh environment (Suffix R)
Pallets for use with chain type XBTP 5A85/XBTP 5A85 E/XBTP 5A85 C	Х	Х	Х	×	Х		
Pallets for use with chain type XBTP 5A85 K (closed top chain)						х	х
1) High accuracy pallet plate without precision bushings						х	
High accuracy pallet plate with bushings for precision locating		X	х	×	х		Х
One normal and one damped guide disc.			х			х	х
One normal conductive and one damped conductive guide disc.					х		
Two plastic slide plates				×			
Two roller plates			х				
Two conductive plastic slide plates					X		
Two steel slide plates						x	х
Two initiator plates	x	x	х	×	х	х	х
Two low friction plastic slide plates				×			

CC

X45 XS

X65

X65P

X85

X85P

ХН

XK

XKP

X180

X300

GR

CS

XT

HU

WL

WK

XC

XF

XD

ELV

CTL

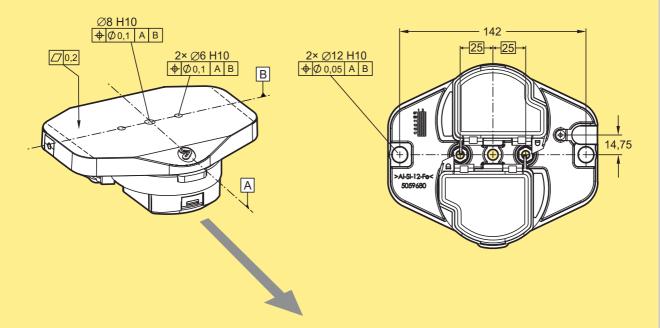
UIL

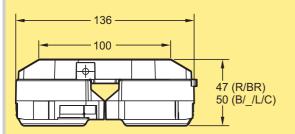
FST

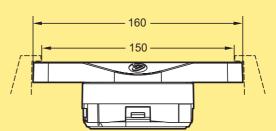
TR

APX

# **Pallet 160 mm × 100 mm** XBPP 160×100 B







Pallet 160×100, h=50 For clean environment

Basic XBPP 160×100 B Standard XBPP 160×100 Low friction, with rollers XBPP 160×100 L Low friction, lubricated XBPP 160×100 LL Conductive XBPP 160×100 C

Pallet 160×100, h=47 For tough environment

Basic type R XBPP 160×100 BR Standard type R XBPP 160×100 R

\*Drawing shows a Type B pallet.

Type B and BR pallets should not be used in combination with any type of locating station, only with regular stop devices and all types of diverters, see <sup>1</sup>) on Page 197.

Note the height difference between Standard/Type B/L/C and the R/BR types.

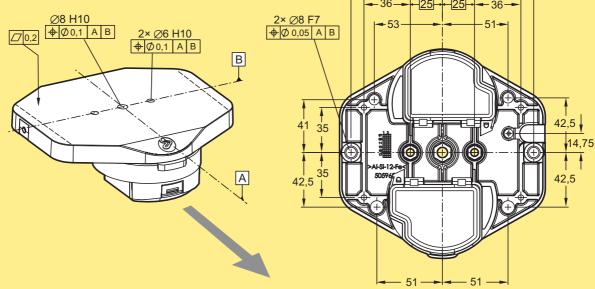
Type R/BR must be used with chain type XBTP 5A85 K This chain cannot be used with the other pallets.

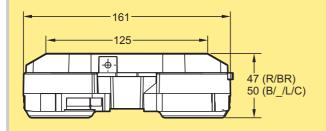
Pallet weight: 0,5-0,6 kg depending on type.

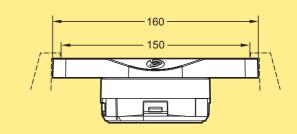
For specification and allowed load distribution see page 196

### Pallet 160 mm × 125 mm

## XBPP 160×125 \*







142

Pallet 160×125, h=50

For clean environment

**Basic** XBPP 160×125 B Standard XBPP 160×125 Low friction XBPP 160×125 L Low friction, lubricated XBPP 160×125 LL Conductive XBPP 160×125 C

Pallet 160×125, h=47

For tough environment

Basic type R XBPP 160×125 BR Standard type R XBPP 160×125 R

\*Drawing shows a Standard pallet (no suffix in designation).

Type B and BR pallets should not be used in combination with any type of locating station, only with regular stop devices and all types of diverters, see <sup>1</sup>) on Page 197.

Note the height difference between Standard/Type B/L/C and the R/BR types.

Type R/BR must be used with chain type XBTP 5A85 K. This chain cannot be used with the other pallets.

Pallet weight: 0,6–0,7 kg depending on type. For specification and allowed load distribution see page 196

X45

CC

XS

X65

X85

X65P

X85P

XH XK

XKP

X180

X300

GR

CS

XT HU

WL

WK

XC

XF

XD

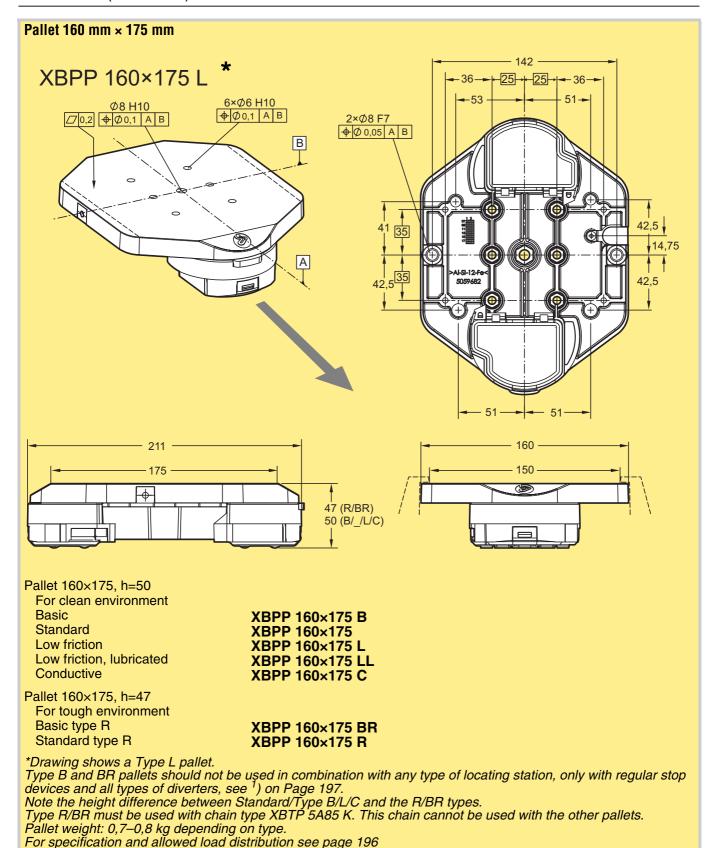
ELV

CTL

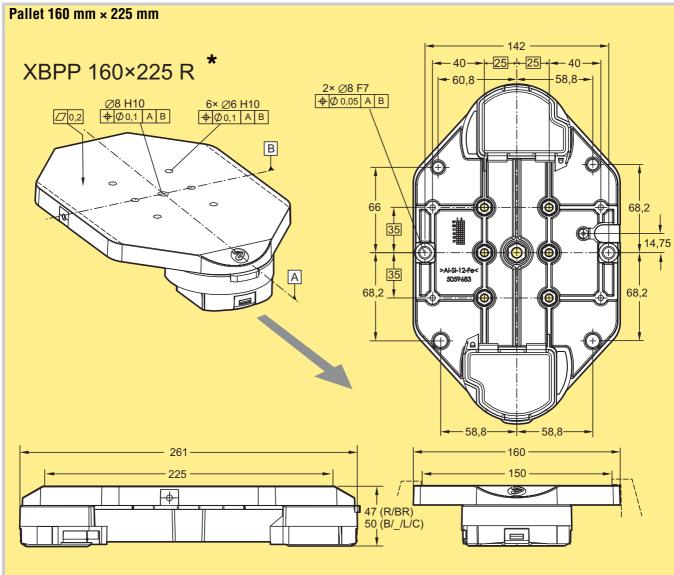
**FST** 

TR

APX



CC



Pallet 160×225, h=50

For clean environment

Basic XBPP 160×225 B Standard XBPP 160×225 Low friction XBPP 160×225 L Low friction, lubricated XBPP 160×225 LL Conductive XBPP 160×225 C

Pallet 160×225, h=47

For tough environment

Basic type R XBPP 160×225 BR Standard type R XBPP 160×225 R

\*Drawing shows a Type R pallet.

Type B and BR pallets should not be used in combination with any type of locating station, only with regular stop devices and all types of diverters, see <sup>1</sup>) on Page 197.

Note the height difference between Standard/Type B/L/C and the R/BR types.

Type R/BR must be used with chain type XBTP 5A85 K. This chain cannot be used with the other pallets.

Pallet weight: 0,8-0,9 kg depending on type.

Specifications: see page 196.

X45 XS

X65

X65P X85

X85P

XH XK

XKP

X180

X300

GR

CS

XT HU

WL

WK XC

XF

XD

ELV

CTL

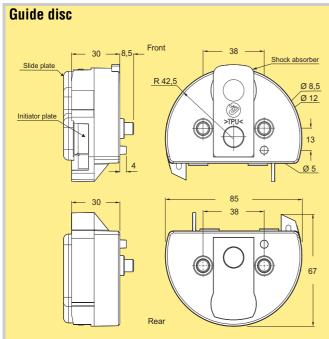
**FST** 

TR

APX

### Pallet parts for replacement or upgrading of pallets

### Guide disc, slide plates and roller plates

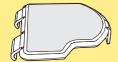


Guide disc, with steel plate (Rear)\* **XBPG 85** Guide disc, steel plate (Front)\*\* **XBPG 85 D** Guide disc, with plastic plate (Rear)\* **XBPG 85 P** Guide disc, plastic plate (Front)\*\* XBPG 85 DP Guide disc, conductive (Rear)\* **XBPG 85 E** Guide disc, conductive (Front)\*\* XBPG 85 DE Guide disc, with rollers (Rear)\* XBPG 85 R Guide disc, rollers (Front)\*\* XBPG 85 DR Guide disc, lubricated (Rear)\* XBPG 85 PL Guide disc, lubricated (Front)\*\* XBPG 85 DPL

\*) Including slide plate, initiator plate.

\*\*) Including slide plate, shock absorber, initiator plate. *Note. Contains 10 pcs..* 

### Slide plate kit, steel, snap-on

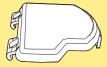


Slide plate, steel 5110873

Note. Kit contains 10 pcs

Note. Can only be used with XBTP 5A85 K

### Slide plate kit, plastic, snap-on



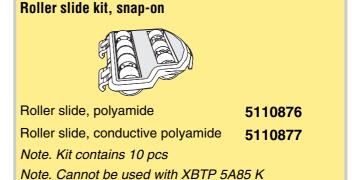
Slide plate, polyamide 5110874

Slide plate, conductive polyamide 5110875

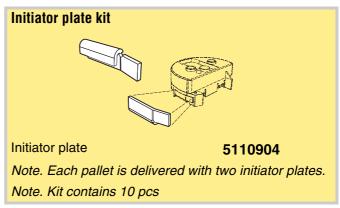
Note. Kit contains 10 pcs

Note. Cannot be used with XBTP 5A85 K









CC

X45

XS

X65

X65P

X85

X85P

### RFID tag

The RFID tag can be read reliably at speeds up to 30 m/min. The tag has an M5 grub screw like design and is mounted in a plastic holder.

Threaded type	M5x16,5mm
Operating frequency	125 kHz
Memory [BIT]	224 (7 pages with 32 bits each)



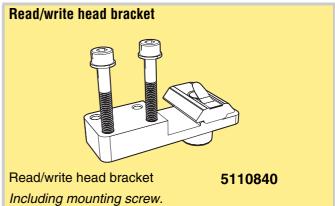
#### Read/write head

The read/write heads exchange data with the passive RFID tags at a maximum distance of 20 mm. The read/write head has an M12 connector. The M12 cable is connected to an M12 ASi socket. Up to 31 read/write heads can be connected to one ASi system.

### Read/write head



Read/write head 5058152



XK

XΗ

XKP

X180

X300

GR

CS XT

HU

WL

WK

XC

XF

XD

ELV

CTL

FST

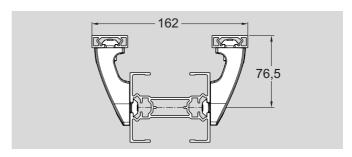
TR APX

### **Guide rails for pallets – introduction**

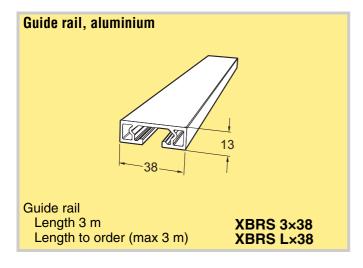


### **Guide rail types**

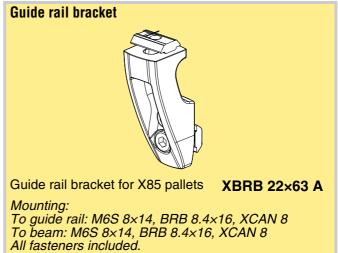
Aluminium guide rails for X85 pallets are available as straight sections and as pre-bent curve sections for 30°, 45°, 90° and 180° wheel bends. Plastic guide discs for the inner part of the wheel bends are available. End guides for guide rails are available in standard and conductive versions.



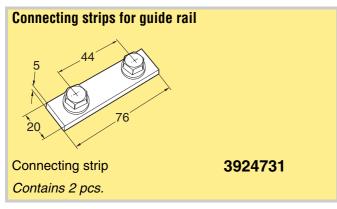
### Straight guide rails for X85 pallets

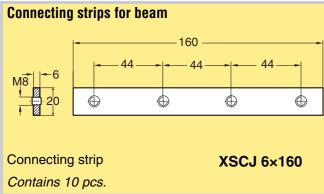


### **Guide rail bracket for X85 pallets**

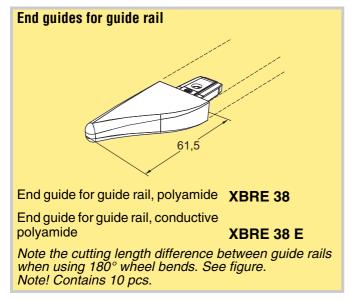


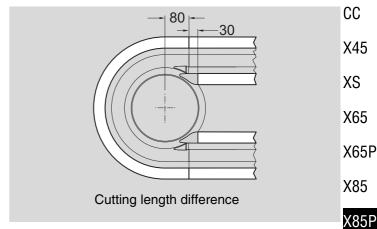
### **Connecting strips**



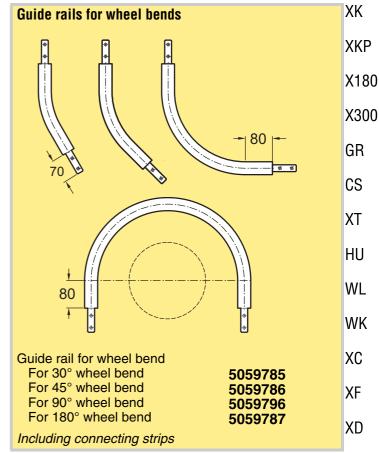


### **End guides**





# **Guide rails for wheel bends**



© FlexLink 2024

205

X85

P0

XH

XKP

X180

GR

CS

XT

HU

WL

WK

XC XF

XD

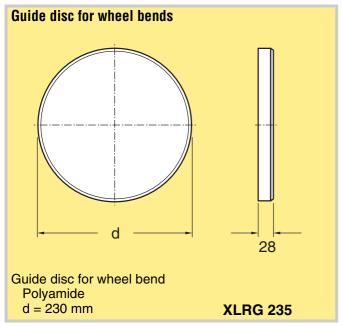
**ELV** 

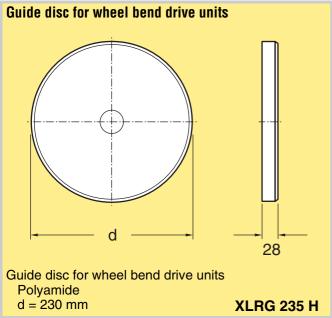
CTL

**FST** 

TR

APX







### Locating modules

Locating modules are components for positioning pallets in preparation for operations such as assembly, machining or testing. Two types of locating modules are available:

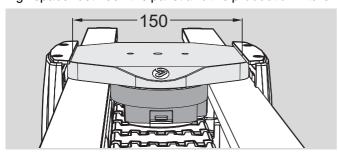
- Basic locating module
- Tunnel locating module

The locating modules are delivered complete with conveyor beam, guide rails and guide rail brackets, stops and sensor brackets for M12 sensors, for installation into a conveyor line.

The sensor for pallet in locating position is always included but other sensors, supports and RFID readers are optional.

### Available pallet width

Pallets are always lifted against a hold-down surface in the locating stations, to ensure a firm location. On each side of the pallet, 5 mm are used for the hold-down surfaces. This means that the available width on the pallet surface is 150 mm. See figure. If fixtures or products are wider than 150 mm, it is necessary to attach a 10 mm high spacer between the pallet and the product or fixture.



### Suitable pallet types

Pallet types B and BR should not be used with locating modules.

### **Ordering information**

Use the online configurator to order locating modules. In the configuration process, pallet size, sensor types and RFID readers are specified. If the optional support is chosen the height to the control of the point in the point is the control of the point in the sen, the height to top of pallet is also specified.

X180

X300 GR

CS

HU

WL

WK

XC

XF

XD

**ELV** 

CTL

FST

TR APX

### **Basic locating module**

### **Principles of operation**

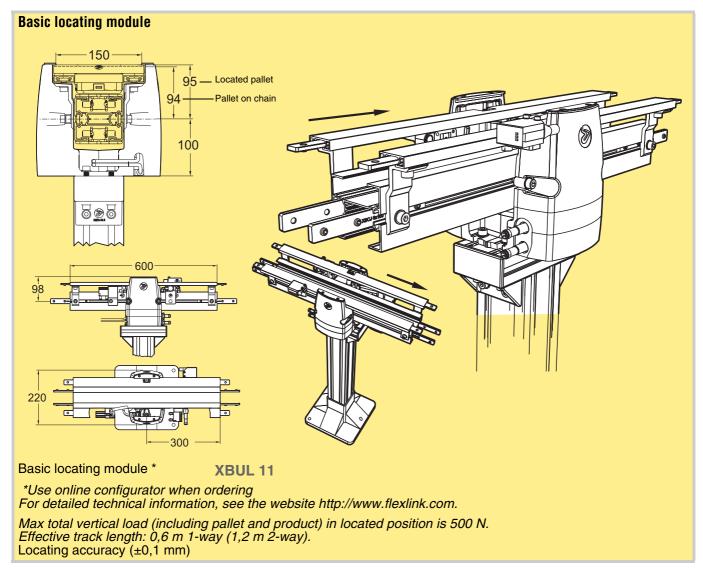
The locating module includes one pallet stop in front of the locating station, and a second pallet stop for the locating position. The pallet is lifted 2 mm by means of two locating pins up against a hold-down guide on each side of the station. All actuating movements are made by means of pneumatic cylinders.

The pallet locating sensor is included in the module.

Note

Type B or BR pallets can not be used with this module.





CC

### **Principles of operation**

The tunnel locating module is similar to the basic locating module. The tunnel locating module is available in two main configurations, one for product width of max. 160 mm and one for product width of max, 320 mm, which makes it possible to accommodate many different product sizes and shapes.

The pallet in the locating position is lifted by two locating pins against two hold-down surfaces. Then it is elevated 240 mm or 290 mm depending on which choice of tunnel

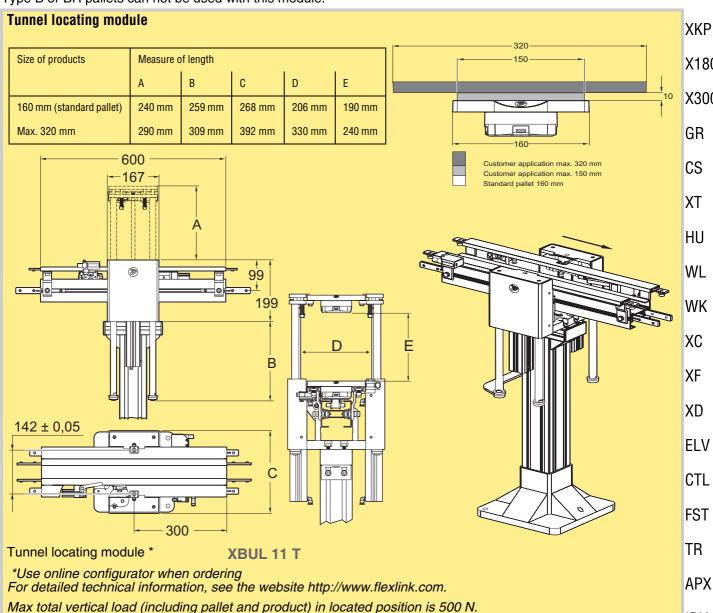
This allows upstream pallets to bypass the located pallet. This feature is especially valuable for lines with parallel processes.

The pallet locating sensor is included in the module.

#### Note

Type B or BR pallets can not be used with this module.





Effective track length: 0,6 m 1-way (1,2 m 2-way)

X45

XS

X65

X65P

X85

X85P XΗ

XK

X180

X300

CS

WL

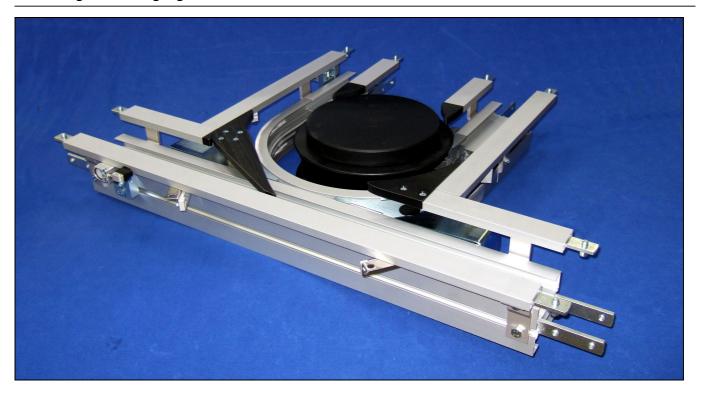
XC

XF XD

**ELV** 

CTL

APX

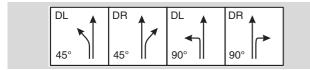


#### **Common information**

- · Air pressure between 6-8 bar
- For safety reasons, the pallet stop is blocking the flow in case of a pressure drop, preventing pallets from travelling uncontrolled along the conveyor.

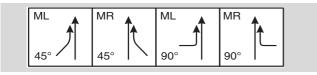
#### **Divert modules**

Divert modules are used to guide selected pallets from one conveyor to another.



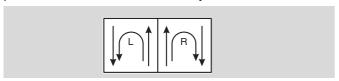
### Merge modules

Merge devices are used to guide pallets back from a satellite conveyor into the main conveyor (highway).



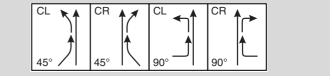
### Interspace module

An interspace divert and merge module is a combination of a diverter and a merge function which permits shortcuts in a main line or satellite, for example to recirculate pallets when a workstation is busy.



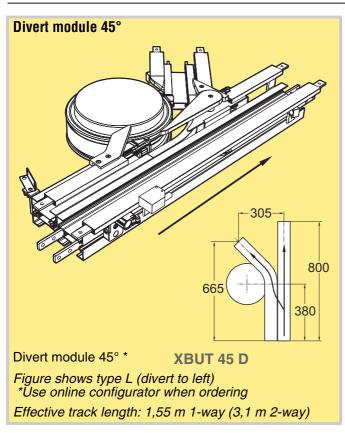
### Divert and merge modules

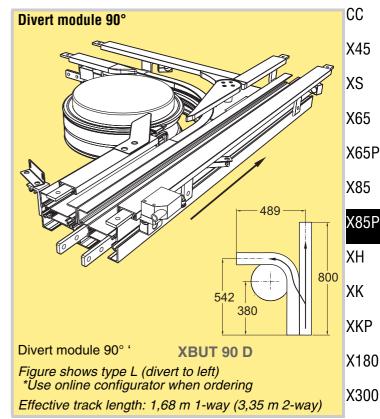
A combined divert/merge device (see photo) is used to guide selected pallets from a main conveyor (highway) into a satellite conveyor and back. The combination also permits recirculating the pallets on the satellite until the pallet is ready to return to the highway.



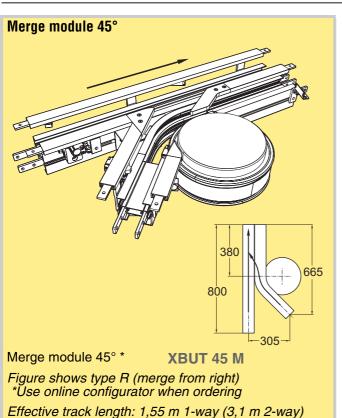
### **Ordering information**

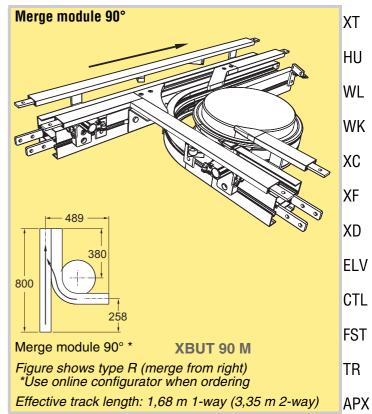
Diverting/merging modules must be ordered using the online configurator. To use the configurator, it is necessary to login to www.flexlink.com. First-time users need to register. After logging in, just go to "My FlexLink" and select "Online Store" in the drop-down menu. Then select "Configure modules". Several configuration choices are presented. Click on the desired product and follow the instructions on the screen.





# Merge modules



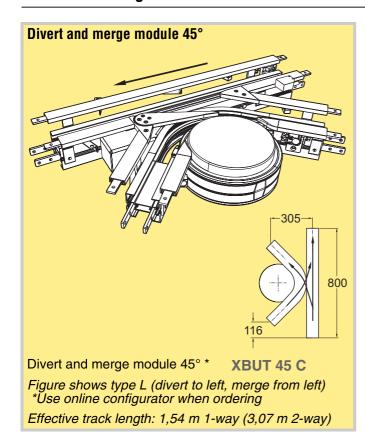


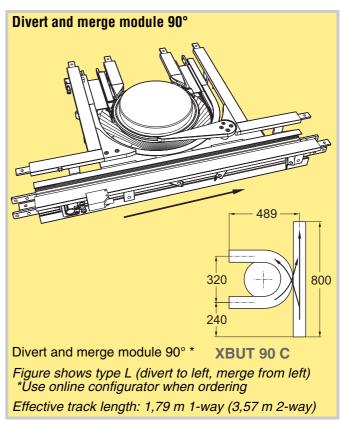
IDX

GR

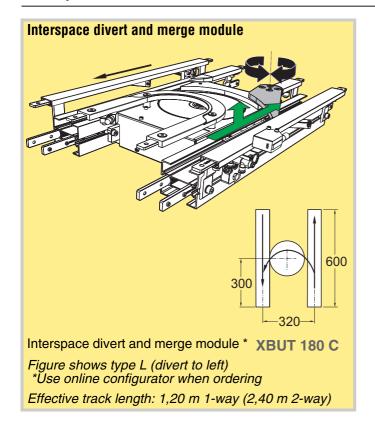
CS

# **Divert and merge modules**





### Interspace module



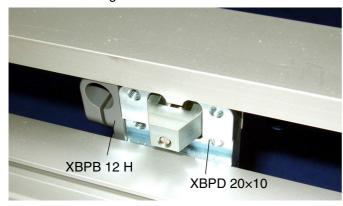
### Pallet stops - introduction

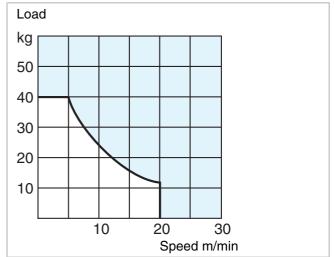
### **Principles of operation**

Pneumatic pallet stops are used to stop pallets at selected positions along the line. Proximity sensors can be attached to the stop using bracket XBPB 12 H. An initiator plate, page 202 is attached to the front guide disc of the pallet. The stop is then mounted on the left side of the convevor.

The stop is double-acting, but also includes an integrated spring for stop out if air supply is cut off. It is possible to stop the pallet on the rear guide disc too, but in this case the pneumatic stop must be rotated 180°.

The sensor bracket XBPB 12 H can be mounted directly to the side of the stop, or to the T-slot on the underside of the guide rail.





The diagram shows the maximum permissible weight of XK a group of pallets (product weight + pallet weight) that the Stop device is capable of stopping, as a function of the XKP conveyor speed.

XH

P0

CC

X45

XS

X65

X65P

X85

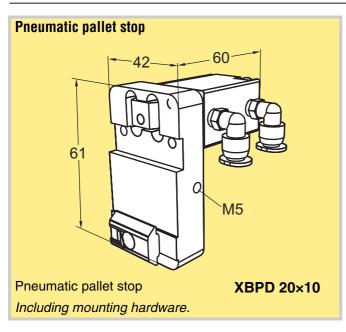
X85P

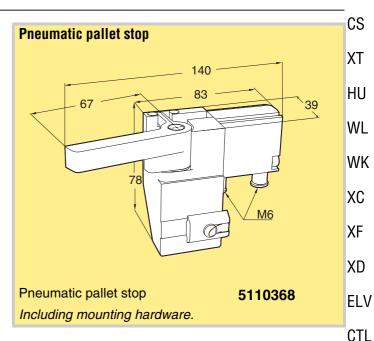
X180

X300

GR

# **Pallet stops**





IDX

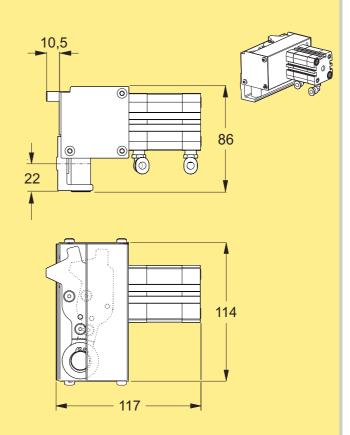
FST

TR

APX

### **Pneumatic stop** Load kg 250 200 150 100 50 5 10 15 20 25 Speed m/min

The diagram shows the maximum permissible weight of a group of pallets (product weight + pallet weight) that the stop device is capable of stopping, as a function of the conveyor speed.

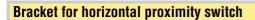


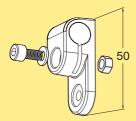
Pneumatic stop device Double-actuated

**XBPD 32×15 C** 

Housing: anodized aluminium. Cover: stainless steel. For use with cylinder position sensor. Including Ø6 pipe connections and the necessary mounting hardware. The stop is double-acting, but also includes an integrated spring for stop out if air supply is cut off.

Connection: G 1/8". Stroke: 10 mm. Locating accuracy: ±1 mm.





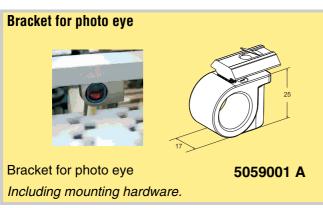
Bracket for horizontal proximity switch For M12 sensors

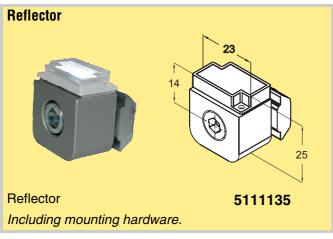
**XBPB 12 H** 

Sensors should have a sensing distance of 8 mm Screw, washer and nut for the clamp part are included. Mounting to pallet stop XBPD 20×10: MC6S 5×12, BRB 5.3×10

Mounting to T-slot:

MC6S 5×12, BRB 5.3×10, XCAN 5





X45

Χ40

XS

X65P

X65

X85

X85P

XH

XK

XKP

X180

X300

GR

CS

XT

HU

WL

WK

XC

XF

XD

ELV

CTL

FST

TR

APX