2010
February

BITO

www.bito.com

Carton Live Storage System

SYSTEM **MANUAL**

innovative
STORAGE SOLUTIONS

www.bito.com

BITO – The company

„Perfection is our passion…

…it is this philosophy which underlies each product and each service offered by BITO. Whether you order a single shelving or racking unit, individual bins and containers or a complex order picking installation: I assure you that you can always count on receiving excellent quality and innovative solutions.“

Detlef Ganz
Managing Director

BITO is an internationally operating company with a staff of more than 700 specialising in the fields of **storage and workshop equipment** and **order picking systems.**

On a plant surface of more than 140,000 square metres at Meisenheim and Lauterecken in Germany, BITO manufactures a customer-oriented and innovative product range meeting highest user demands.

BITO is one of the few **full line suppliers** of an extensive range of shelving and racking systems, plastic bins and containers as well as of numerous products and accessories for storage, workshop and order picking environments.

This product based focus is matched by a second focus: as a **full service provider** BITO offers a ‚concept-to-completion‘ consultancy service that will see a project through from design to handover – whether of complex and demanding storage facilities combining various systems or of automated installations for bin or tray storage.

Meisenheim, plant for BITO shelving and racking systems

Lauterecken, plant for BITO bin and container systems

Carton live storage system „CLS-V“ (Variant)

Carton live storage

Advantages of the system

- **Drastic time savings in order picking**
  Depending on local conditions and work methods, travel time is reduced between 40 and 70 %.
- **Storage according to the FIFO principle**
  Goods stored first are taken out first. Easy control of sell-by dates.
- **Same storage capacity on a smaller surface**
  Up to 30 % of space can be saved by the elimination of unnecessary aisles.
- **Roller tracks instead of shelves**
  Goods move unassisted into the picking position.
- **Fewer picking mistakes**
  Compact and clear presentation of goods leads to improved picking accuracy.
- **Less „lost time“ during order picking**
  Long and straight aisles allow a better overview which avoids down times due to lacking items and improves work organisation.
- **Increased productivity**
  Separate loading and picking aisles avoid that replenishment interferes with order picking. This improves operator productivity.

Project business

- Consultancy
- Planning
- Project management
- Production
- Assembly
- Service

...from a single source!

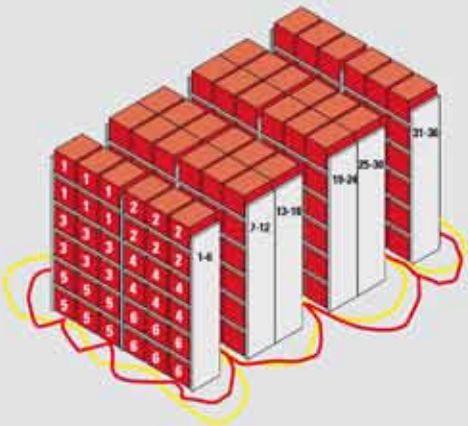
Contact details on page 63!

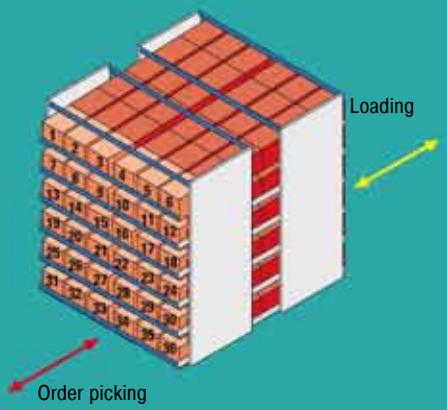
For further information refer to

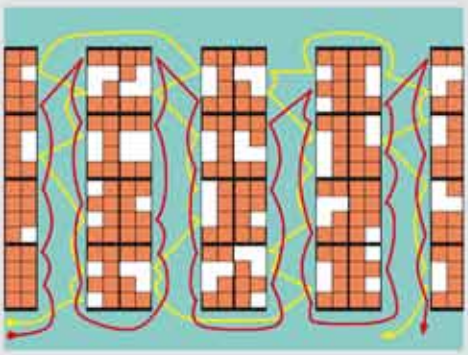
- BITO Project Guide
- CD „Order picking systems“
- Website www.bito.com

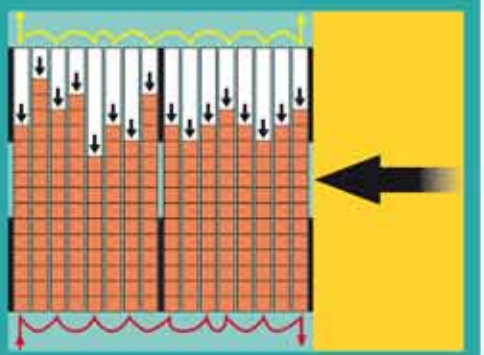
Economic efficiency of carton live storage

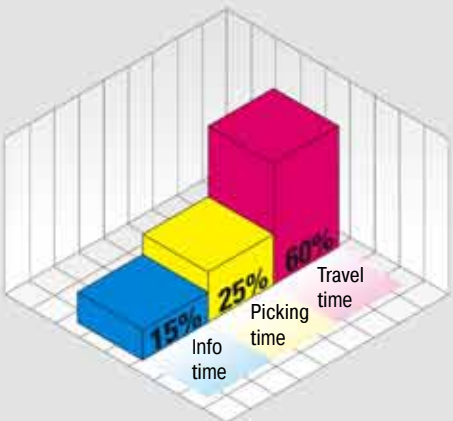
Conventional shelving	Carton live storage

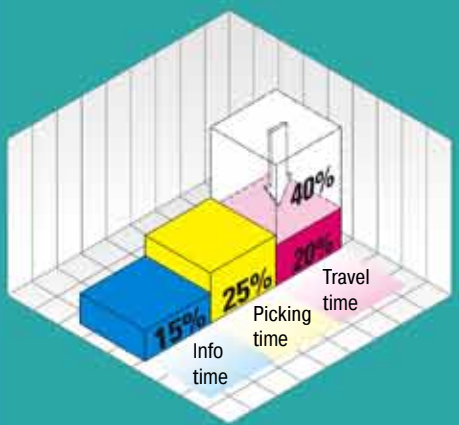












Comparison

Our comparison presents two storage installations which supply 36 different items.

It is evident that storage is more compact and presentation of goods is much clearer in a carton live storage installation.

Live storage gives immediate access to all 36 items at the picking face. Each item moves unassisted into the picking position. Sufficient replenishment quantities guarantee constant availability of goods.

Compact storage and the elimination of unnecessary aisles result in a gain in floor space of at least 20 %.

Strictly separated working aisles prevent that replenishment interferes with order picking which increases staff productivity.

Short travel routes reduce order picking times.

Whereas information and picking times remain the same for both solutions, travel times are drastically reduced.

This leads to an overall reduction of working time and to an increase in picking performance.

A 66 % reduction in travel time results in an overall reduction of 40 % of the total order picking time.

Types of storage units

Carton live storage is ideal for small unit loads, from plastic bins and cardboard boxes to individual items. As a rule, the products are only stocked for a short time. Due to the high stock rotation frequency, the items stocked in carton live storage are called A-items or fast movers.

BITO Bin and container systems

- **available in many dimensions**
- **extremely robust for a high load capacity**
- **especially designed for use in live storage installations**
- **many colours to chose from**
- **also available as conductive version**

Apart from the plastic bins and containers on page 7, our range also includes further models, dimensions and colours. **Contact details on page 63!**

As a manufacturer of a comprehensive range of plastic bin and container systems, we also supply your shelving and racking complete with the matching bins.

Colours

We supply any colour of your choice for order quantities exceeding 200 bins or containers of the same type!

ESD variation

Conductive versions are available on demand!

Guarantee

YEARS 5

on the durability and functionality of BITO bins and containers

Material

05 PP

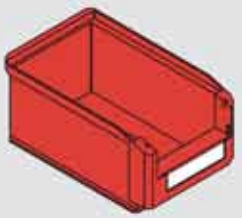
We only use high quality plastics which do not pose any health hazard.

Accessories:
- insertable window
- lid/dust cover
- longitudinal divider
- label cover
- handle

Storage bins, series „SK“

- especially designed for order picking
- very good travel characteristics in live storage lanes due to textured outer base and rounded edges
- excellent stacking capacities

upon request



blue red

Bin type	Outside dim. (L x W x H)	Inside dim. (L x W x H)
SK 5033	500 x 315 x 300 mm	447 x 281 x 286 mm
SK 5032	500 x 315 x 200 mm	447 x 281 x 186 mm
SK 5031	500 x 315 x 145 mm	447 x 281 x 132 mm
SK 3522	350 x 210 x 200 mm	299 x 186 x 188 mm
SK 3531	350 x 210 x 145 mm	299 x 186 x 134 mm
SK 2311	230 x 150 x 125 mm	199 x 129 x 116 mm
SK 1610	160 x 103 x 75 mm	139 x 87 x 68 mm

Accessories:
- cross divider
- longitudinal divider
- lid/dust cover
- label cover
- safety handle

Storage and handling bins, series „RK“

- dimensionally stable bin which ensures a very high stacking stability
- optimum travel characteristics in live storage facilities and on conveyors

upon request

dove blue

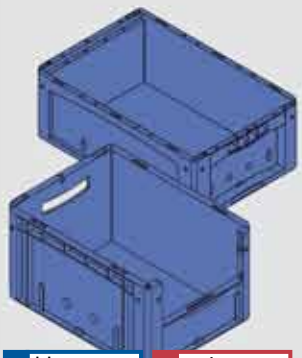
Type	Outside dimensions		Inside dimensions	
	W x H	L	W x H	L
108	117 x 80 mm	400 mm	95 x 70 mm	360 mm
109	117 x 90 mm	300, 400, 500 600 mm	94 x 80 mm	260, 360, 460 560 mm
1509	156 x 90 mm	300, 400 mm	136 x 80 mm	258, 358 mm
208	234 x 80 mm	400 mm	214 x 70 mm	356 mm
209	234 x 90 mm	300, 400, 500 600 mm	211 x 80 mm	256, 356, 456, 556 mm
214	234 x 114 mm	300, 400, 500 600 mm	210 x 129 mm	253, 353, 453 553 mm

Accessories:
- hinged lid
- drop-on lid
- document pocket
- security tags

Stacking containers in Euro footprint, series „XL“

- especially designed for manual and automated handling
- ideal for use on conveyors
- very robust make

upon request



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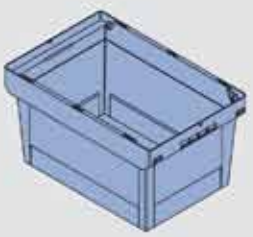
Base dimensions (L x W)	Height
200 x 150 mm	120 mm
300 x 200 mm	120 mm
400 x 300 mm	120, 170, 220, 270 mm
600 x 400 mm	120, 170, 220, 270, 320 , 420 mm
800 x 600 mm	upon request

Accessories:
- drop-on lid
- connector clip to make a double-height stacking unit
- document pocket
- security tags
- castor kit
- rails for A4 hanging files

Multi-purpose containers, series „MB“

- storage, order picking and transport container in one
- ideal for „pick and pack“ concepts
- very good travel characteristics in live storage lanes due to textured outer base and rounded edges

upon request

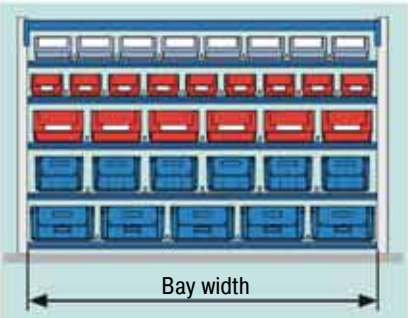


dove blue

Base dim.	Height	Base dim.	Height	Base dim.	Height
300 x 200 mm	153 mm	**400 x 300 mm**	153 mm	**600 x 400 mm**	153 mm
			223 mm		223 mm
			273 mm		273 mm
			323 mm		323 mm
			-		423 mm
Further dimensions upon request					

L x W x H = Length x Width x Height

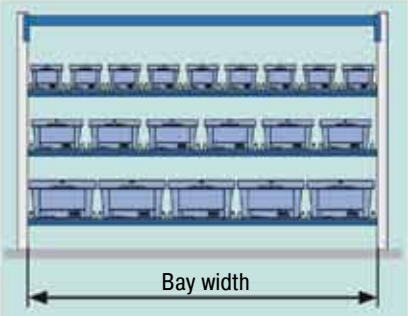
Flow shelf configuration with standard dividers



Flow shelf width = bay width -2 mm

For bins and containers handled short side facing

Bin/container type	Bay width / Bin/container width		1.350 mm Lanes	1.350 mm Roller tracks	1.350 mm Dividers	1.800 mm Lanes	1.800 mm Roller tracks	1.800 mm Dividers	2.200 mm Lanes	2.200 mm Roller tracks	2.200 mm Dividers	2.700 mm Lanes	2.700 mm Roller tracks	2.700 mm Dividers
RK 214 RK 209		234 mm	**5**	10	4	**7**	14	6	**8**	16	7	**10**	20	9
SK 3522 SK 3521		210 mm	**5**	10	4	**7**	14	6	**9**	18	8	**11**	22	10
SK 5032 SK 5031		315 mm	**3**	6	2	**5**	10	4	**6**	12	5	**8**	16	7
BN 43264 BN 4324		300 mm	**4**	8	3	**5**	10	4	**6**	12	5	**8**	16	7
BN 6444; BN 6434 BN 6424		400 mm	**3**	6	2	**4**	8	3	**5**	10	4	**6**	12	5

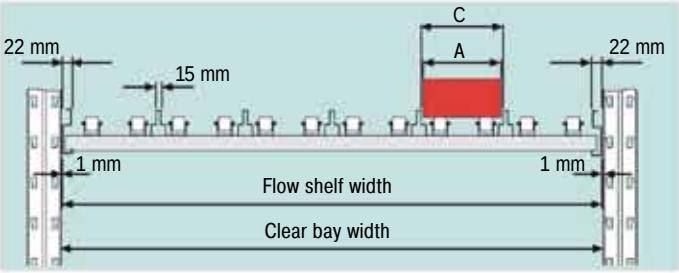


Flow shelf width = bay width -2 mm

For bins and containers handled short side facing

Bin/container type	Bay width / Bin/container width		1.350 mm Lanes	1.350 mm Roller tracks	1.350 mm Dividers	1.800 mm Lanes	1.800 mm Roller tracks	1.800 mm Dividers	2.200 mm Lanes	2.200 mm Roller tracks	2.200 mm Dividers	2.700 mm Lanes	2.700 mm Roller tracks	2.700 mm Dividers
MB 32151 MB 32151D		200 mm	**6**	12		**8**	16		**9**	18		**12**	24	
MB 43171 MB 43171D		300 mm	**4**	8		**5**	10		**6**	12		**8**	16	
MB 64171 MB 64171D		400 mm	**3**	6		**4**	8		**5**	10		**6**	12	

On account of the conical sides, multi-purpose container handling on flow shelves requires 2 dividers per lane.



Clear lane width (C) in mm								
112,65	121,16	129,67	138,18	146,69	155,20	163,71	172,22	180,73
189,24	197,75	206,26	214,77	223,28	231,79	240,30	248,81	257,32
265,83	274,34	282,85	291,36	299,87	308,38	316,89	325,40	333,91
342,42	350,93	359,44	367,95	376,46	384,97	393,48	401,99	410,50
419,01	427,52	436,03	444,54	453,05	461,56	470,07	478,58	487,09
495,60	504,11	512,62	521,13	529,64	538,15	546,66	555,17	563,68
572,19	580,70	589,21	597,72	606,23	614,74	623,25	631,76	640,27
648,78	657,29	665,80	674,31	682,82	691,33	699,84	708,35	716,86
725,37	733,88	742,39	750,90	759,41	767,92	776,43	784,94	793,45
801,96	810,47	818,98	827,49	836,00	844,51			
Further lane widths in increments of + 8,51 mm								

Calculation of flow shelf width for roller tracks with cylindrical rollers and standard dividers

Calculation example:
Plastic containers sized 600 x 400 mm, handled short side facing, 6 lanes per flow shelf.

Allow for sufficient spacing between the storage units, i.e.
cardboard boxes require approx. 8-16 mm
plastic containers require approx. 5-10 mm

Container width (A) + spacing = 400 mm + 10 mm = **410 mm**

Select the clear lane width according to the left-hand table.
Our example is based on a clear width of 410,50.

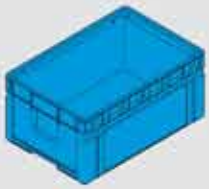
Clear lane width	6 x 410,50 mm	= 2.463,00 mm
+ standard dividers	5 x 15 mm	= 75,00 mm
+ flow shelf side sections	2 x 22 mm	= 44,00 mm
+ 1 increment	1 x 8,51 m	= 8,51 mm
= flow shelf width		= 2.590,51 mm
rounded		**= 2.590,00 mm**

Clear bay width = flow shelf width + 2 mm= 2.592 mm

Flow shelf configuration with VDA/KLT containers

with push-flat guide rails

KLT/VDA containers

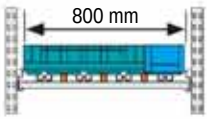


Base variations

BITO-KLT – flat base
C-KLT – castellated base
R-KLT – castellated base
RL-KLT – flat base

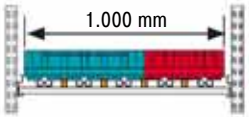
All examples illustrated here apply for a lane width of 204 mm. All containers can be handled either long side or short side facing. There is no need for repositioning the push-flat guide rails. This provides many in-feeding options.

Bay width 872 mm



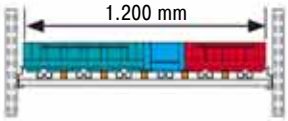
Example (LxW)
1x (**600** x 400 mm)
long side facing
+1x (300 x **200** mm)
short side facing
= 800 mm

Bay width 1.076 mm

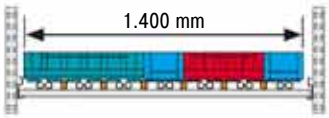


Example (LxW)
1x (**600** x 400 mm)
long side facing
+1x (**400** x 300 mm)
long side facing
= 1.000 mm

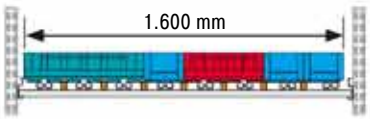
Bay width 1.280 mm



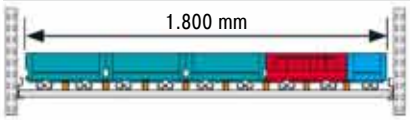
Bay width 1.484 mm



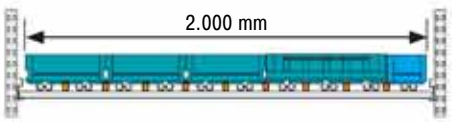
Bay width 1.688 mm



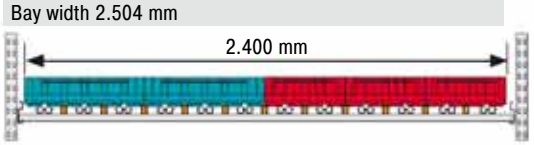
Bay width 1.892 mm



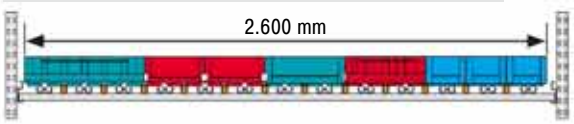
Bay width 2.096 mm



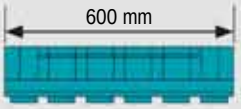
Bay width 2.504 mm



Bay width 2.708 mm

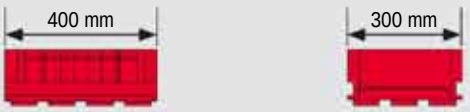


Container 600 x 400 mm (L x W)



Long side facing — Short side facing

Container 400 x 300 mm (L x W)



Long side facing — Short side facing

Container 300 x 200 mm (L xW)

Please note:
On account of their flat base, containers sized 300 x 200 mm can only be fed in short-side facing.

Short side facing

In-feeding of containers long side facing upon request!

Example:
Optimum container in-feeding for a bay width of 872 mm:

1 container **600** x 400 mm long side facing
+ 1 container 300 x **200** mm short side facing **= 800 mm**
or
2 containers **400** x 300 mm long side facing **= 800 mm**
or
1 container **400** x 300 mm long side facing
+ 2 containers 300 x **200** mm short side facing **= 800 mm**
or
4 containers 300 x **200** mm short side facing **= 800 mm**

Example for a bay width of 2.708 mm:

Plastic containers (LxW):

1x (**600** x 400 mm) long side facing	**= 600 mm**
2x (400 x **300** mm) short side facing	**= 600 mm**
1x (600 x **400** mm) short side facing	**= 400 mm**
1x (**400** x 300 mm) long side facing	**= 400 mm**
3x (300 x **200** mm) short side facing	**= 600 mm**
Total:	**= 2.600 mm**

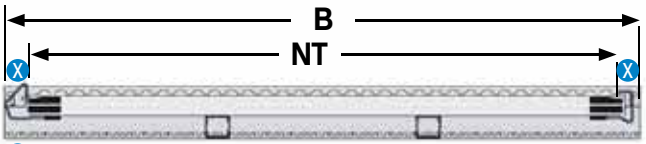
Flow shelf subdivision into lanes
Page 45

Height adjustment options for flow levels

In the following, some height adjustment options have been calculated. They are to be understood as a guideline only and shall provide the basis for a rough-cut racking layout planning.
Several other factors must be taken into consideration in order to make an exact layout. For example, storage unit length has a decisive influence on flow shelf spacing.

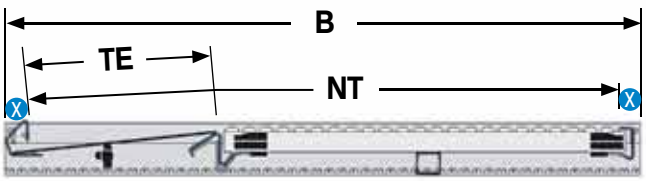
BITO has a long-standing experience with live storage facilities and will be pleased to assist you in planning your racking installation.
Contact details on page 63!

Straight flow shelf, type »D«



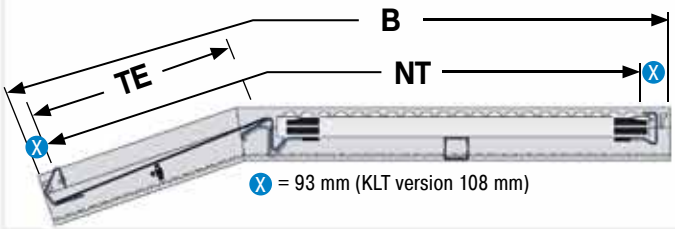
X = 75 mm in total (KLT version 94 mm)

Straight/cranked flow shelf, type »DGA«



X = 75 mm in total (KLT version 94 mm)

Cranked flow shelf, type »DA«



X = 93 mm (KLT version 108 mm)

NT = Useable depth
The useable depth is calculated by adding the lengths of all storage units in flow direction.

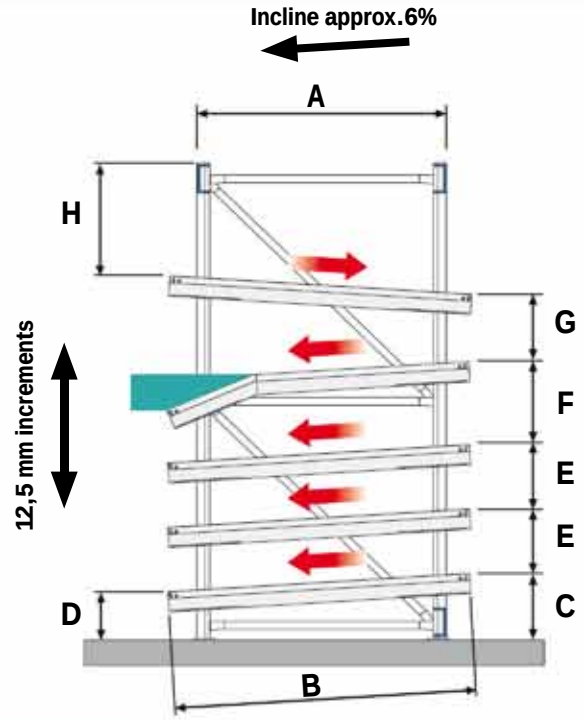
TE = Picking tray depth
Standard depth = 430 mm; further depths in ± 25 mm increments.

X = „Lost“ depth

B = Total flow shelf depth
Flow shelf depth can be varied in 25 mm increments. The minimum flow shelf depth (B) is 992 mm. Maximum depth (B) is 4.492 mm.

Example:
Quantity x bin/container depth = 3 x 400 mm = 1.200 mm (NT)
+ X „Lost“ depth = 75 mm = 75 mm
= 1.275 mm
rounded to the next increment = 1.292 mm (B)
Minimum depth of 992 mm + (12 increments à 25 mm)

Further information on the useable depth on page 35



A = Frame depth
= Flow shelf depth (B) - 381 mm

B = Flow shelf depth
(refer to calculation example)

C 365 mm = Lowest adjustment option at loading side
= calculated from floor to upper edge of rollers.
Height adjustability on a 12,5 mm pitch.

D 145 mm = Lowest adjustment option at picking side
= calculated from floor to upper edge of rollers.
Height adjustability on a 12,5 mm pitch.

Example for calculating D:

B = 1.292 mm
Incline = 6%

1.292 mm x 6% = 77,5 mm
77,5 mm / 12,5 mm (increment)
= 7 increments = 87,5 mm

$D_{theoretically}$ = 365 mm - 87,5 mm = **277,5 mm**
(D= 145 mm + (11 increments à 12,5 mm) = 282,5 mm)

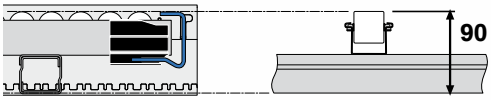
C and D are standard measurements for the use of support clips - for a frame construction with „FLEX“ uprights.

Make sure that the result is divisible by a pitch of 12,5 mm!

Please note:
The weight of the storage units may result in a deflection of the flow shelves' support sections of approximately 9-10 mm.

E
= Spacing between straight and cranked flow shelves, parallel adjustment

E = Height of storage unit + 90 mm rounded to the next increment



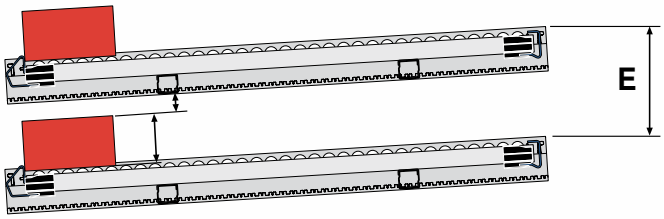
including clearance

Example:

Height of storage unit = 200 mm
200 mm + 90 mm = 290 mm

$$\frac{290\text{ mm}}{12{,}5\text{ mm}} = 23{,}2\ (24)$$

E = 24 x 12,5 **= 300 mm**

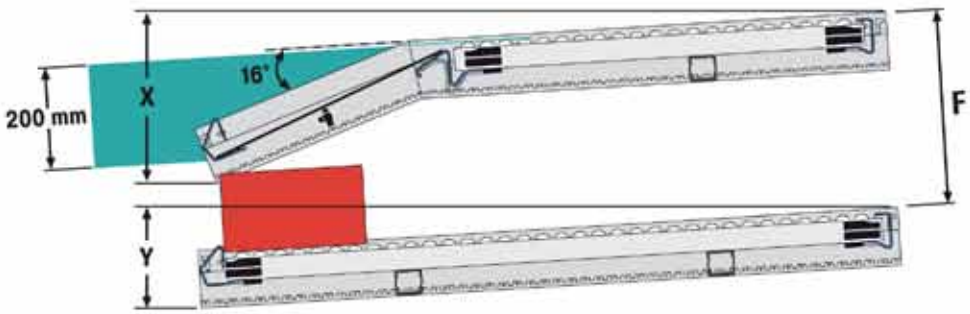


Make sure that the result is divisible by a pitch of 12,5 mm!

X = Y + 112,5 mm

Refer to calculation above (example E)
F = E + 112,5 mm

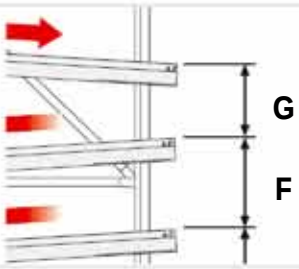
F
= Spacing between straight and cranked flow shelves



Result E + 12,5 mm = G

G
= Spacing between flow shelves mounted in contra-flow direction (return lane)

Refer to calculation above (example E)
+ 1 increment à 12,5 mm (for contra-flow inclines)



Make sure that the result can be divided by a pitch of 50 mm!

Example:
H= 200 mm + 100 mm = 300 mm

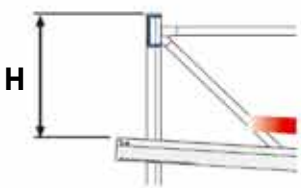
Please note:
Maximum frame height 2.500 mm

H
Calculation of frame height

Minimum height of flow shelf adjustment (C)
+ spacing E, F, G (depending on flow shelf combination)
+ 6% incline (refer to calculation D)
+ height of storage units (f. ex. 200 mm)
+ 100 mm (beam height)

Example (based on previous calculation examples):

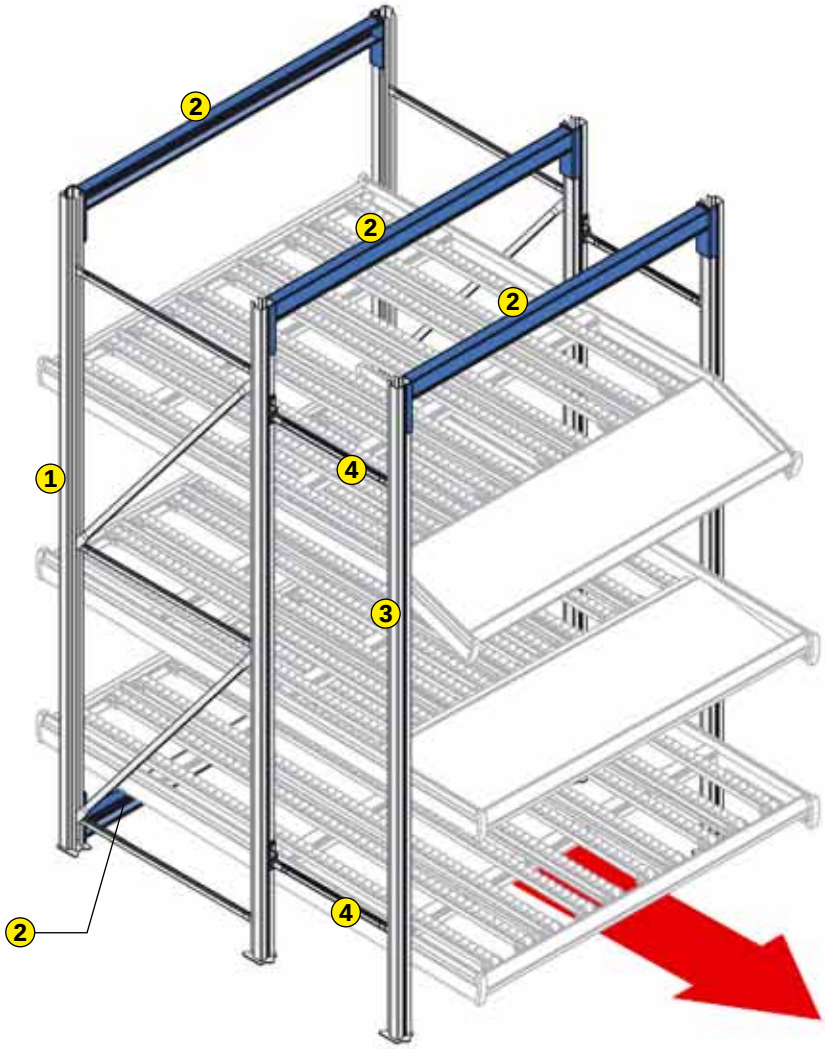
C=	365 mm
2 x E=	600 mm
1 x F=	412,5 mm
1 x G=	312,5 mm
Incline according to D =	87,5 mm
H=	300 mm
Total	2.077,5 mm



Maximum frame height 2.500 mm

$$\frac{2.077{,}5\text{ mm}}{50\text{ mm pitch}} = 41{,}55$$

42 x 50 mm = **2.100 mm**



1 Frame

2 Stiffenig beam

3 Mono-post

4 Reinforcing strut

Description of individual components on page 14-15

Framework construction with FLEX uprights – „FLEX system“

- **upright width of 60 mm**
- **flow shelves are height adjustable on a 12,5 mm pitch**
- **compatible with other shelving and racking systems**
- **fast assembly without bolts**
- **solid floor anchoring**

The basic components include bolted frames, stiffening beams or beams. Together, these components make a robust low-width construction. The flow shelves are hooked into the side perforations of the uprights with the help of support clips. The 12,5 mm pitch provides a lot of height adjustment options. Robust floor anchors ensure that the shelving bays are firmly mounted onto the floor.

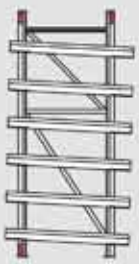
Constructive options
Framework construction with FLEX uprights

As a rule, carton live storage installations **without a buffer stock on top** are built with Flex uprights. High load capacities along with a low construction width make the FLEX system an ideal solution.

Stiffening beam
= no load carrying capacity

Configuration 1

Construction: Bay depth: single frame
Application: Flow shelves with a depth of up to 2.492 mm



Racking rigidity is ensured by	
Stiffening beams per bay	3
Tie bars per mono-post	-

Configuration 2

Construction: Bay depth: single frame with mono-post placed in front
Application: Flow shelves with a depth of > 2.492 mm or to provide additional support to flow shelves **in case high load capacities**

Racking rigidity is ensured by	
Stiffening beams per bay	4
Tie bars per mono-post	2

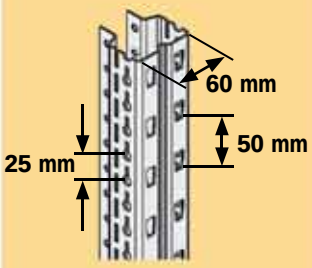
Configuration 3

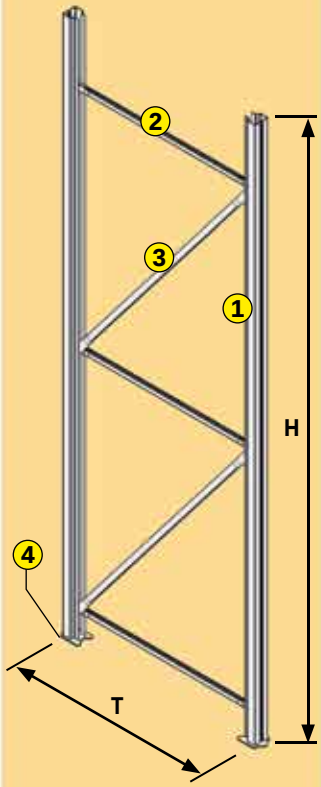
Construction: Bay depth: double frame
Application: Flow shelves with a depth of > 2.492 mm or to provide additional support to flow shelves in case of **very high load capacities**

Racking rigidity is ensured by	
Stiffening beams per bay	5
Tie bars per mono-post	-

Individual components
Framework construction with FLEX uprights

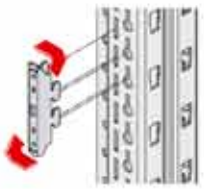
Upright type SF4





Upright type SF4

- **robust, bolted frame construction**
- **pre-assembled frames**
- **high load capacities along with small profile width**
- **high quality floor anchors ensure safe racking positioning**
- **flow shelves are height adjustable on a 12,5 mm pitch**



By turning the support clip through 180°, flow shelf spacing can be regulated in 12,5 mm increments.

Including floor anchors and base plates

Frame height (H) 2.504 mm; maximum bay load 3.000 kg	
Frame depth (T)	Ref.no. (per piece)
assembled, with 2 standard base plates	
800 mm	36-25035
911 mm	36-25036
911 mm*	36-25044*
1.100 mm	36-25037
1.511 mm	36-25039
1.711 mm	36-25040
2.111 mm	36-25042
unassembled, with 2 standard base plates	
1.511 mm	36-25020
1.711 mm	36-25021
2.111 mm	36-25022
assembled, with 1 standard base plate **	
800 mm	36-25029
911 mm	36-25030
1.100 mm	36-25031
1.511 mm	36-25032
1.711 mm	36-25033
2.111 mm	36-25034
assembled, without base plates ***	
800 mm	36-25000
911 mm	36-25001
1.100 mm	36-25002
1.511 mm	36-25003
1.711 mm	36-25004
2.111 mm	36-25005

All components are supplied with fixing material.

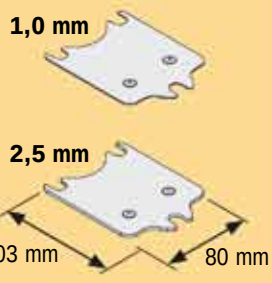
1. Upright
2. Horizontal strut
3. Diagonal strut
4. Base plate

Finish:
galvanised
All components are galvanised.

*
RAL 5010
Ref.no. 36-25044
Uprights are epoxy coated.

**
Please order 1 reinforced base plate

***
Please orde 2 reinforced base plates



Shims

- **for compensating floor unevenness**
- **available in two thicknesses: 1,0 mm and 2,5 mm**

Each base plate is supplied with two shims, one 1,0 mm thick and one 2,5 mm thick. If more shims are required, please order a packaging unit of 20 pieces.

PU = Packaging unit

Material thickness	Ref.no.	
1,0 mm	36-26451	PU = 20 pcs
2,5 mm	36-24303	pce

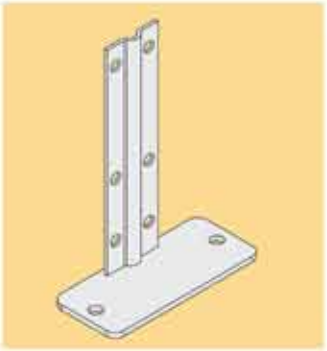
Finish:
galvanised

Reinforced base plate

- **allows to leave out the lower stiffening beam**

The reinforced base plate replaces the lower stiffening beam at the replenishment side. This is particularly useful, if the flow shelf is to be placed at a very low level.

Finish:
galvanised



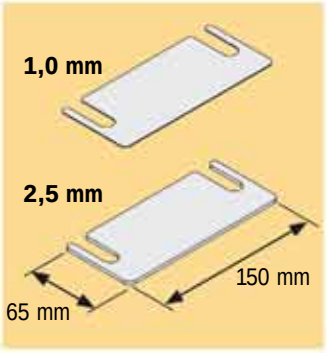
Including 2 floor anchors

Ref.no. (per piece)	36-25678

Shims for reinforced base plate

- **for compensating floor unevenness**
- **available in two material thicknesses: 1,0 mm and 2,5 mm**

Finish:
galvanised



PU = Packaging unit

Material thickness	Ref.no. (PU = 20 pcs)
1,0 mm	S-ULB1/20
2,5 mm	S-ULB3/20

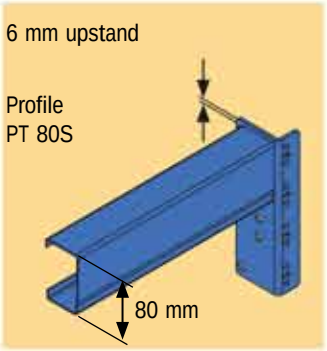
Stiffening beam

- **increases lengthwise bay rigidity**
- **easy assembly without bolts**
- **safety pins prevent unintentional lifting**

Finish:
epoxy coated

RAL 5010
RAL 7035
Other RAL colours upon request.

Please note:
No load carrying capacity!



Including safety pins

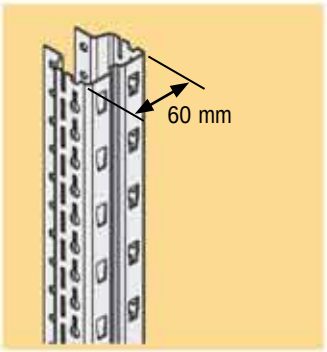
Bay width	Ref.no. (per piece)	
	RAL 5010	RAL 7035
1.350 mm	36-26533	36-26532
1.800 mm	36-26537	36-26536
2.200 mm	36-26541	36-26540
2.700 mm	36-26544	36-26543

Mono-post SF4

- **height 2.504 mm**

Mounted in front of the frame and connected to the frame with two tie bars.

Finish:
galvanised



Including base plate and floor anchor

Ref.no. (per piece)	36-24960

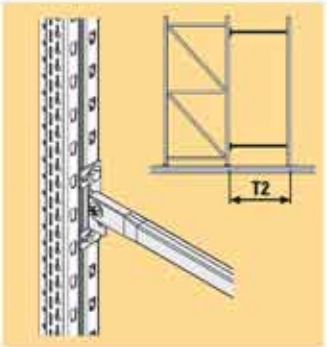
Tie bar

- **connects the frame with the mono-post placed in front**
- **available in several lengths**

Delivery includes 1 fixing angle and 1 strut (U-section).

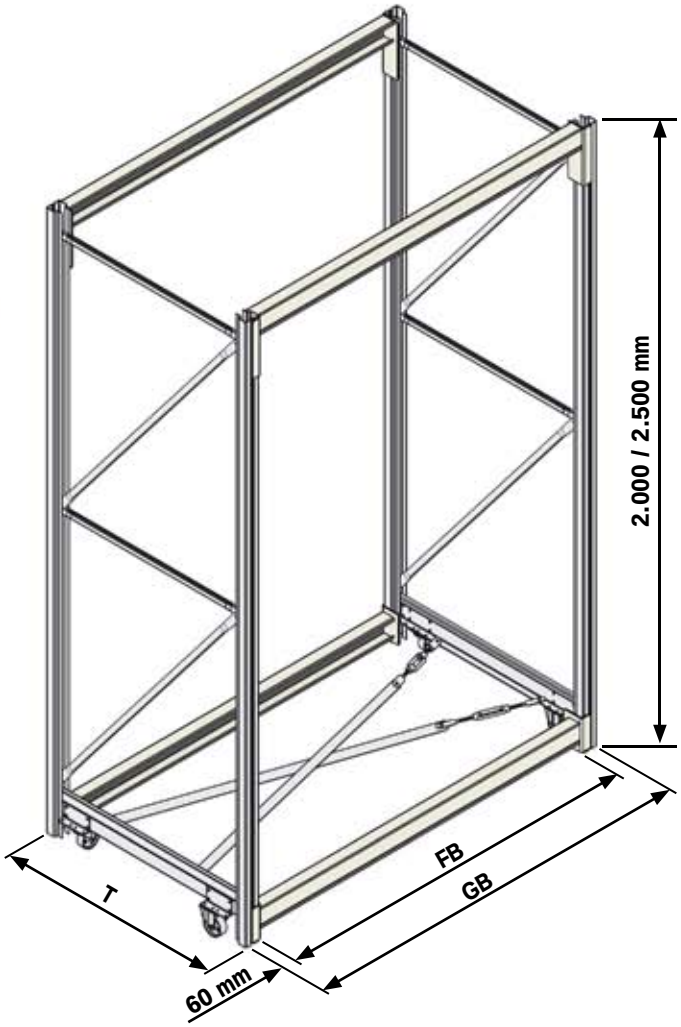
Finish:
galvanised

Further lengths upon request.



Including fixing material

Length T2	Ref.no. (per piece)
1.011 mm	36-25124
2.000 mm	36-25125



Bays consist of

Kit 1
Mobile base construction
(page 17)

Kit 2
Frames including Z-shaped frame connector
(page 18)

Kit 3
Castor kit
(page 18)

FB = Bay width
Clear width between uprights

GB = Total width
Bay width (FB) + 120 mm

T = Frame depth

Mobile shelving unit
Framework construction

- **fast relocation of the shelving bay without prior dismantling**
- **safe positioning with brakes**
- **castors can also be supplied as electrically conductive version (ESD)**
- **available in many widths and depths**

The shelving unit can be conveniently relocated with the help of 2 fixed and 2 swivel castors. The braked swivel castors ensure firm positioning after relocation.

The shelving unit is composed of several construction kits which are bolted together to form a solid construction unit with frames and beams.

Total height

with castor set type S
= 2.032 / 2.532 mm

with castor set type L
= 2.034,5 / 2.534,5 mm

Colour

All epoxy coated components can also be supplied in RAL 7035. Other RAL colours upon request.

RAL 7035

*
Please note:
Ref.no. 36-27048 is supplied in RAL 5010.

RAL 5010

Load capacity

Bay load
refer to castor sets
(page 18)

Please note:
For safety reasons, the mobile shelving unit may only be relocated when empty!

Bay width (FB) 872 mm	
Frame depth (T)	Ref.no. (per pce)
911 mm	36-26925
1.200 mm	36-26961
1.511 mm	36-26934
1.711 mm	36-26943
2.111 mm	36-26952

Bay width (FB) 1.076 mm	
Frame depth (T)	Ref.no. (per pce)
911 mm	36-26926
1.511 mm	36-26935
1.711 mm	36-26944
2.111 mm	36-26953

Bay width (FB) 1.280 mm	
Frame depth (T)	Ref.no. (per pce)
911 mm	36-26927
*911 mm	*36-27048
1.200 mm	36-26962
1.511 mm	36-26936
1.711 mm	36-26945
2.000 mm	36-26963
2.111 mm	36-26954

Bay width (FB) 1.484 mm	
Frame depth (T)	Ref.no. (per pce)
911 mm	36-26928
1.511 mm	36-26937
1.711 mm	36-26946
2.111 mm	36-26955

Bay width (FB) 1.688 mm	
Frame depth (T)	Ref.no. (per pce)
911 mm	36-26929
1.511 mm	36-26938
1.711 mm	36-26947
2.111 mm	36-26956

Bay width (FB) 1.892 mm	
Frame depth (T)	Ref.no. (per pce)
911 mm	36-26930
1.511 mm	36-26939
1.711 mm	36-26948
2.111 mm	36-26957

Bay width (FB) 2.096 mm	
Frame depth (T)	Ref.no. (per pce)
911 mm	36-26931
1.511 mm	36-26940
1.711 mm	36-26949
2.111 mm	36-26958

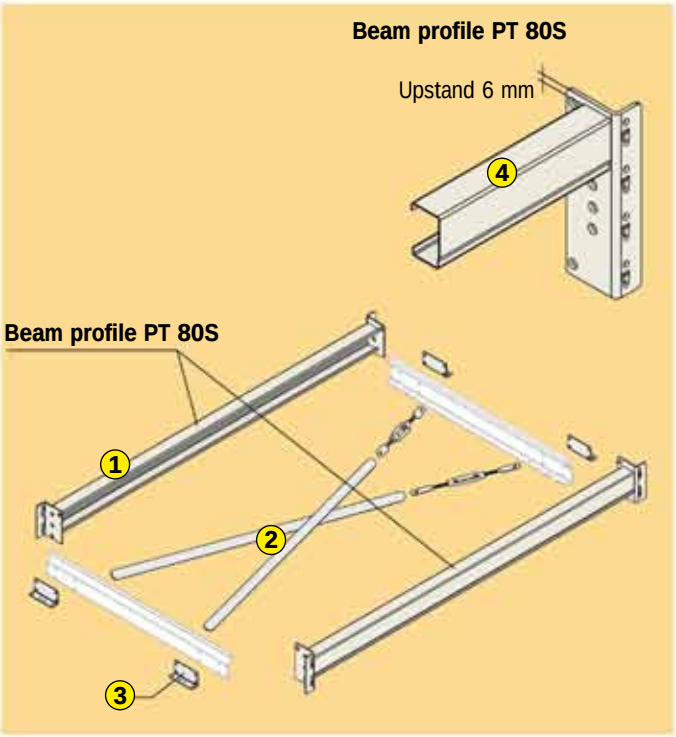
Bay width (FB) 2.504 mm	
Frame depth (T)	Ref.no. (per pce)
911 mm	36-26932
1.511 mm	36-26941
1.711 mm	36-26950
2.111 mm	36-26959

Bay width (FB) 2.708 mm	
Frame depth (T)	Ref.no. (per pce)
911 mm	36-26933
1.511 mm	36-26942
1.711 mm	36-26951
2.111 mm	36-26960

Kit 1
Mobile base construction

consisting of

4 fixing angles, 1 cross bracing set,
2 beams with half-height hook connectors, 2 stiffening beams



1. Beam with half-height hook connector
2. Cross bracing set
3. Fixing angle
4. Stiffening beam

Finish:
Beams are epoxy coated in RAL 7035; all other components are galvanised

*
Please note:
Ref.no. 36-27048 is supplied in RAL 5010.

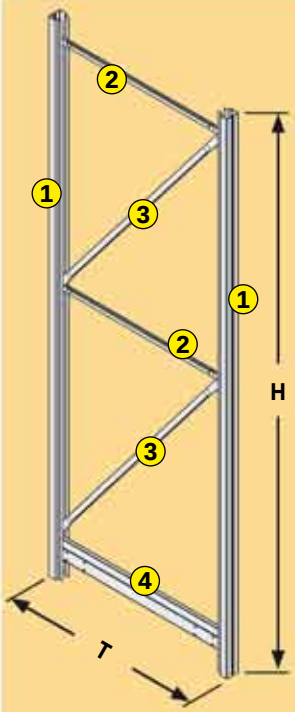
RAL 7035
RAL 5010

Kit 2
Frame including Z-shaped frame connector

FLEX uprights with a width of 60 mm,
frame height 2.500 mm.

Further information on FLEX uprights on page 14.

Finish:
completely galvanised



Upright type SF4

1 Upright

2 Horizontal strut

3 Diagonal strut

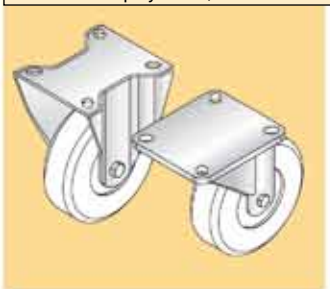
4 Z-shaped frame connector

Frame height (H) 2.000 mm	
Frame depth (T)	Ref.no. (per pce)
assembled	
1.200 mm	36-25654
2.000 mm	36-25655

Frame height (H) 2.500 mm	
Frame depth (T)	Ref.no. (per pce)
assembled	
800 mm	36-25318
911 mm	36-25319
1.100 mm	36-25320
1.200 mm	36-25321
1.511 mm	36-25322
1.711 mm	36-25323
2.000 mm	36-25324
2.111 mm	36-25325
unassembled	
1.511 mm	36-25330
1.711 mm	36-25331
2.111 mm	36-25332

Castor set type L

Castors from polyamide, castor diameter 125 mm



per castor set
1.000 kg

Finish:
standard

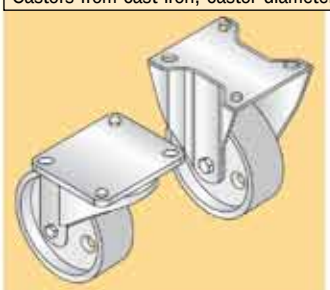
Ref.no.	S-VRL

Finish:
electrically conductive

Ref.no.	S-VRL-ESD

Castor set type S

Castors from cast iron, castor diameter 120 mm



per castor set
1.600 kg

Finish:
standard

Ref.no.	S-VRS

Kit 3
Castor set

The castors are bolted to the fixing angles of the mobile base construction (kit 1).
The castors can be supplied as polyamide or as cast iron version.
The castor sets include 2 braked swivel castors and 2 fixed castors.

ESD

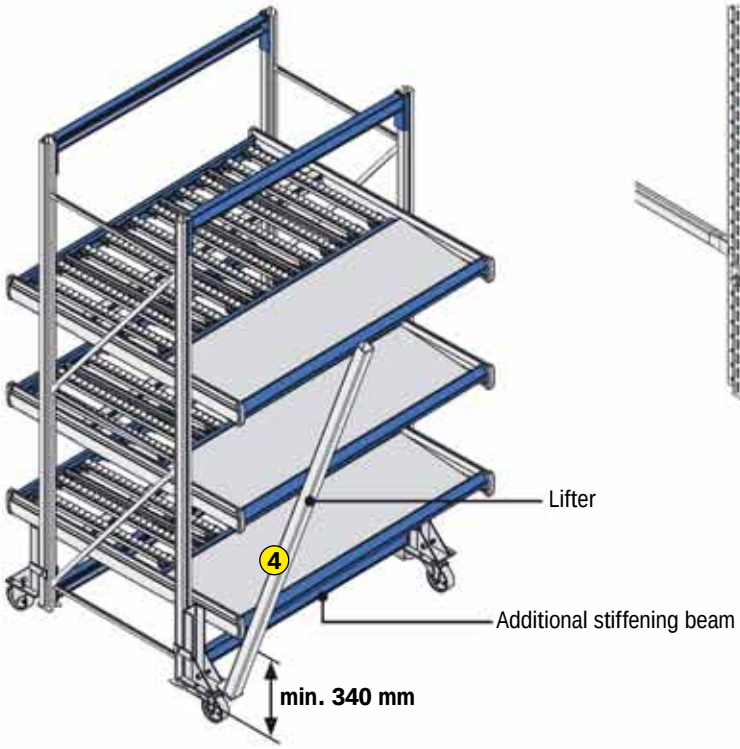
The castor set type L with polyamide castors (diameter 125 mm) can also be supplied as electrically conductive version.

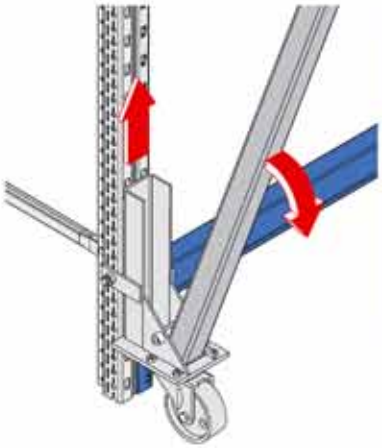
This means that the 2 fixed castors come as ESD version and the 2 swivel castors are made from polyamide (not conductive).

Load capacity

100 kg max. per castor

Please note:
For safety reasons, the mobile shelving unit may only be relocated when empty!
For relocation with the Easy Lifter, the shelving bay in question must have 4 beams which are to be secured by bolts.





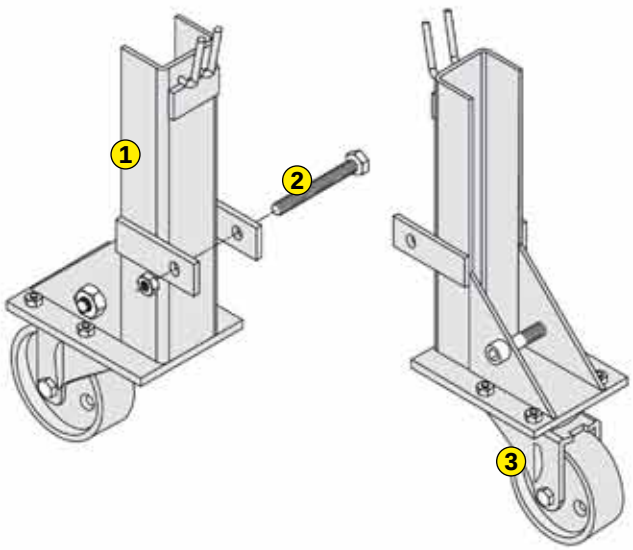
Easy lifter

· fast relocation of static shelving unit without prior dismantling

Allows fast relocation of static shelving units. The Easy Lifter is hooked into the perforations of the upright front and is fixed to the upright with a bolt. A lifting bar helps to move the shelving unit to its new position.

The kit includes 4 castors, a lifting bar and a safety bolt.

1 Lifter
2 Safety bolt
3 Swivel castor
4 Lifting bar

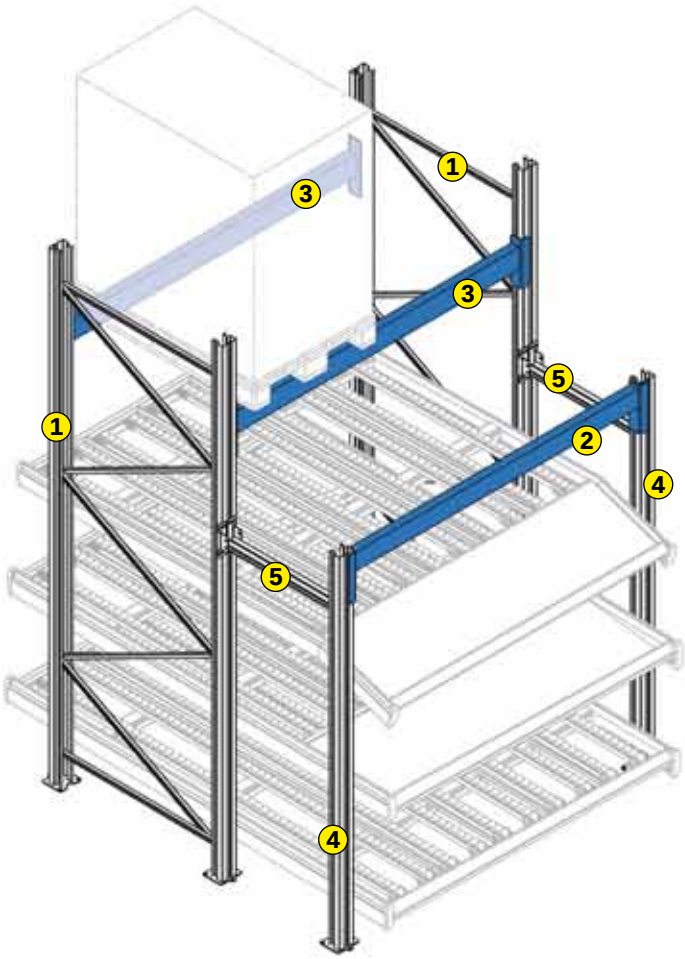


Finish:
galvanised

Easy Lifter for FLEX uprights

Ref.no. applies per kit

Ref.no.	S-RF1/4



1 Frame
2 Stiffening beam
3 Beam
4 Mono-post
5 Tie bar

Description of individual components on page 22-23

Framework construction with PRO uprights – „PRO system“

- **for a buffer stock on top**
- **standard upright widths 90 mm and 100 mm (further widths upon request)**
- **several material thicknesses**
- **flow shelves are height adjustable in 12,5 mm increments**
- **compatible with other shelving and racking systems**
- **fast assembly without bolts**
- **solid floor anchors ensure safe positioning**

The basic components include bolted frames and stiffening beams or beams. Together, these components make a solid construction suited for high load capacities. The flow shelves are hooked into the side perforations of the uprights with the help of support clips. The 12,5 mm pitch provides a lot of height adjustment options. Robust floor anchors ensure that the racking bays can be firmly mounted onto the floor.

Constructive options
Framework construction with PRO uprights

As a rule, carton live storage installations **with a buffer stock on top** are built with PRO uprights. A high load carrying capacity allows to stock pallets on top which makes sure that new supplies are immediately available.

Stiffening beam
= no load carrying capacity

Beams

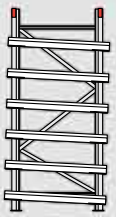
Configuration 1

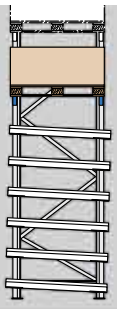
Construction: Bay depth: single frame
Application: Flow shelves with a depth of up to 2.492 mm

Racking rigidity is ensured by	1	2
Stiffening beams per bay	2	-
Beams per bay and 1 buffer stock level	-	2
Beams per additional buffer stock level	-	2
Tie bars per mono-post	-	-

1 without buffer stock on top

2 with buffer stock on top



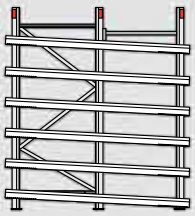


Configuration 2

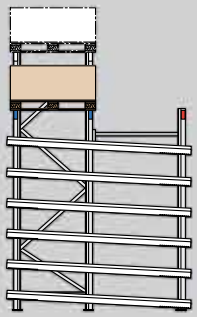
Construction: Bay depth: single frame with mono-post placed in front
Application: Flow shelves with a depth of > 2.492 mm or to provide additional support to flow shelves **for heavy loads**

Racking rigidity is ensured by	1	2
Stiffening beams per bay	3	1
Beams per bay and 1 buffer stock level	-	2
Beams per additional buffer stock level	-	2
Tie bars per mono-post	1	1

1



2

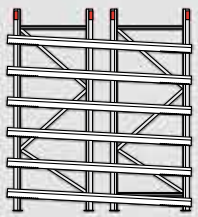


Configuration 3

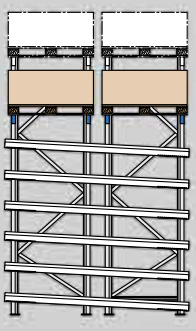
Construction: Bay depth: double frame
Application: Flow shelves with a depth of > 2.492 mm or to provide additional support to flow shelves **for very heavy loads**

Racking rigidity is ensured by	1	2
Stiffening beams per bay	4	-
Beams per bay and 1 buffer stock level	-	4
Beams per additional buffer stock level	-	4
Tie bars per mono-post	-	-

1



2

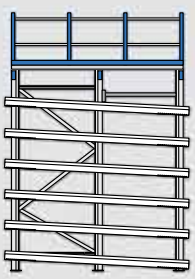


Configuration 4

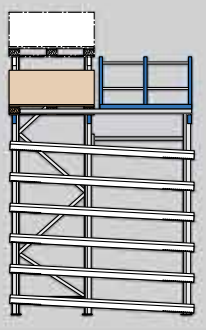
Construction: Platform on top
Application: More work surface

Racking rigidity is ensured by	1	2
Stiffening beams per bay	-	-
Beams per bay and 1 buffer stock level	3	3
Beams per additional buffer stock level	-	2
Tie bars per mono-post	1	1

1

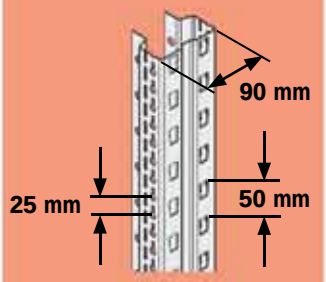


2

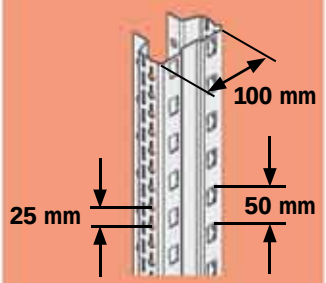


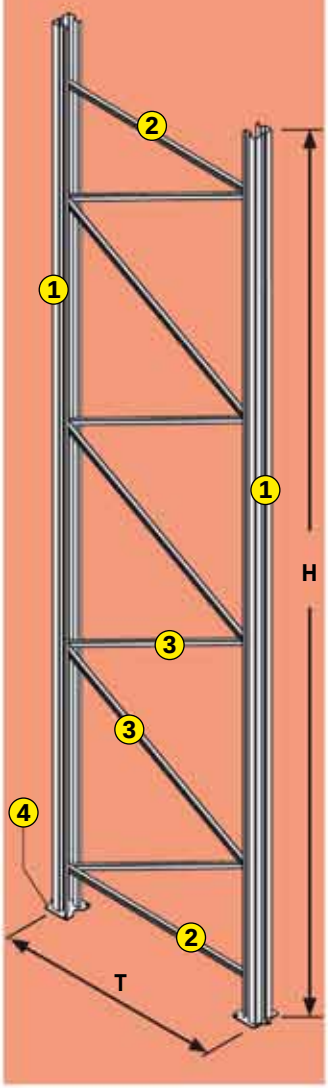
Individual components
Framework construction with PRO uprights

Upright type S-P2



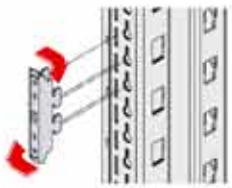
Upright type S-P3





Uprights type S-P2 and S-P3

- **robust, bolted frame construction**
- **pre-assembled frames**
- **high load capacities**
- **uprights are available in two widths**
- **high quality floor anchors ensure safe racking positioning**
- **flow shelves are height adjustable in 12,5 mm increments**



By turning the support clip through 180°, flow shelf spacing can be regulated in 12,5 mm increments.

Including floor anchors and base plates

Upright type S-P2; max. bay load 6.350 kg	
Frame depth (T)	Ref.no. (per pce)
Frame height (H)= 2.505 mm	
800 mm	36-24915
911 mm	36-24919
1.100 mm	36-24921
1.511 mm	36-24925
*1.511 mm	*36-24926
1.711 mm	36-24927
*1.711 mm	*36-24928
Frame height (H)= 3.005 mm	
800 mm	36-24916
911 mm	36-24920
1.100 mm	36-24922
Frame height (H)= 3.505 mm	
800 mm	36-24917
1.100 mm	36-24923
Frame height (H)= 4.005 mm	
800 mm	36-24918
1.100 mm	36-24924

Including floor anchors and base plates

Upright type S-P3; max. bay load 8.900 kg	
Frame depth (T)	Ref.no. (per pce)
Frame height (H)= 2.505 mm	
800 mm	36-24929
1.100 mm	36-24933
Frame height (H)= 3.005 mm	
800 mm	36-24930
1.100 mm	36-24934
Frame height (H)= 3.505 mm	
800 mm	36-24931
1.100 mm	36-24935
Frame height (H)= 4.005 mm	
800 mm	36-24932
1.100 mm	36-24936

All components are supplied with fixing material.

1. Upright
2. Horizontal strut
3. Diagonal strut
4. Base plate

Finish:
galvanised
All components are galvanised.

*
Ref.no. 36-24926 and 36-24928 are supplied with unassembled frames.

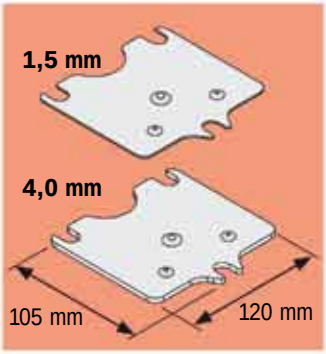
Finish:
galvanised

Shims

- **for compensating floor unevenness**
- **available in two material thicknesses: 1,5 mm and 4,0 mm**

Delivery includes 2 shims per frame, one is 1,5 and the other is 4,0 mm thick. Additional shims are to be ordered separately.

Material thickness	Ref.no.	
1,5 mm	36-25237	PU = 20 pcs
4,0 mm	36-22830	pce



RAL 7035

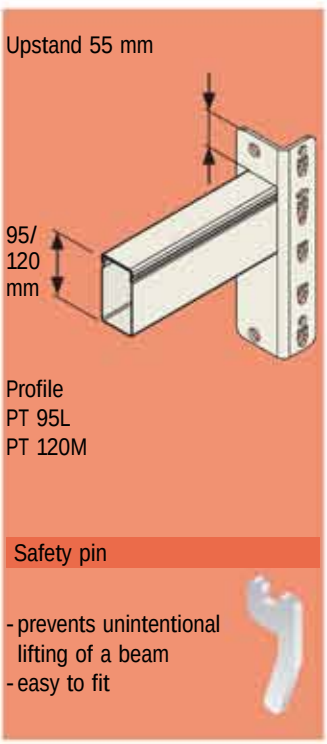
Finish:
epoxy coated

Beam

- **allows to store pallets and increases racking rigidity**
- **easy assembly without bolts**
- **safety pins which can not get lost prevent unintentional lifting**
- **manufactured from TwinTop® profiles**
- **5 hooks per connector provide reliable form and force locking**
- **provides excellent lengthwise rigidity to the racking construction**
- **height adjustable in 50 mm increments**

Including safety pins

Bay width	Type of profile	Ref.no.
1.350 mm	PT 95L	36-24886
1.800 mm	PT 95L	36-24887
2.200 mm	PT 95L	36-24888
2.700 mm	PT 95L	36-24889
2.700 mm	PT 120M	36-24890



Finish:
galvanised

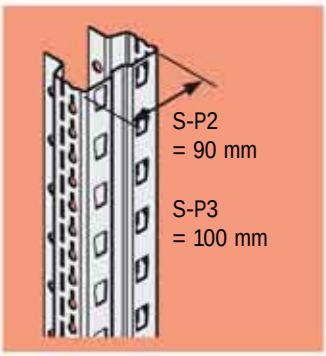
Mono-post

- **height 2.505 mm**
- **available in two versions: S-P2 and S-P3**

Mounted in front of the frame and connected to the frame with two tie bars.

Including base plate and floor anchors, without tie bar

Upright type	Upright width	Ref.no.
S-P2	90 mm	36-25059
S-P3	100 mm	36-25064



Finish:
galvanised

Tie bar

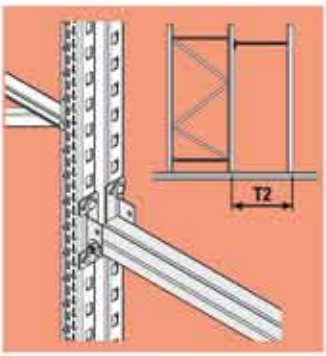
- **connects the frame with the mono-post placed in front**
- **available in several lengths**

Delivery includes 2 fixing angles and 2 struts (C-sections).

Further lengths upon request

Including fixing material

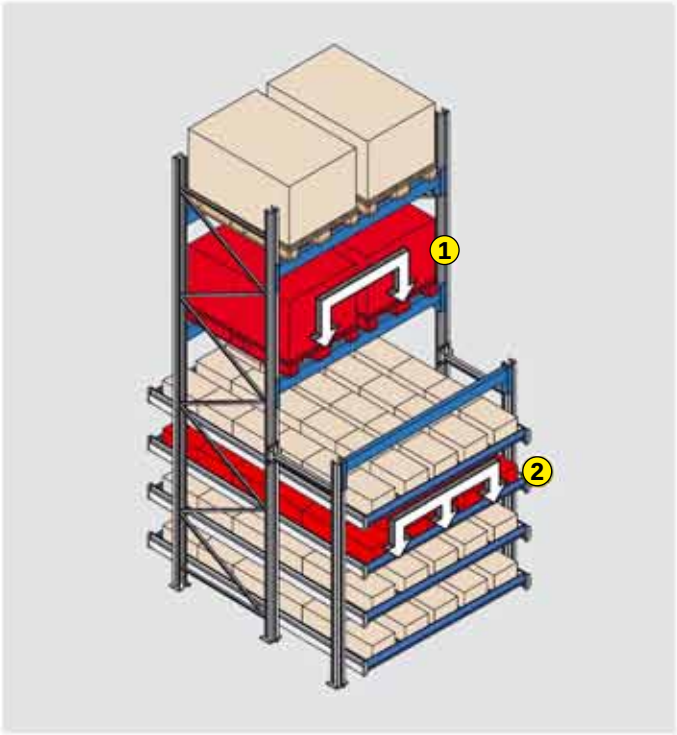
Length T2	Ref.no. (per pce)
1.011 mm	36-25534
2.000 mm	36-25535



Load capacities

The selection of the suitable static components for framework construction depends on the required bay load. The bay load is the sum of all loads per level (= load per flow shelf) in the carton live storage levels + the loads per level in the static storage levels on top (= one or two buffer stock levels).

All indicated load capacities per level and bay load capacities assume uniformly distributed loads!



Load capacity per level

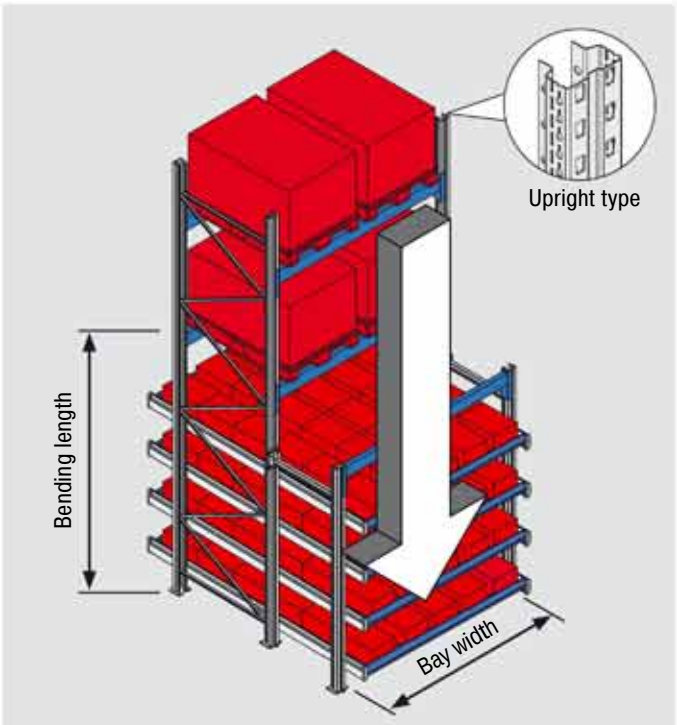
The load capacity per level designates the sum of loads fed into one level (either a flow shelf, a closed deck level or one pair of beams) from the loading side.

1

Load per level of one buffer stock level

2

Load per level of one flow shelf level in the carton live storage part



Bay load capacity

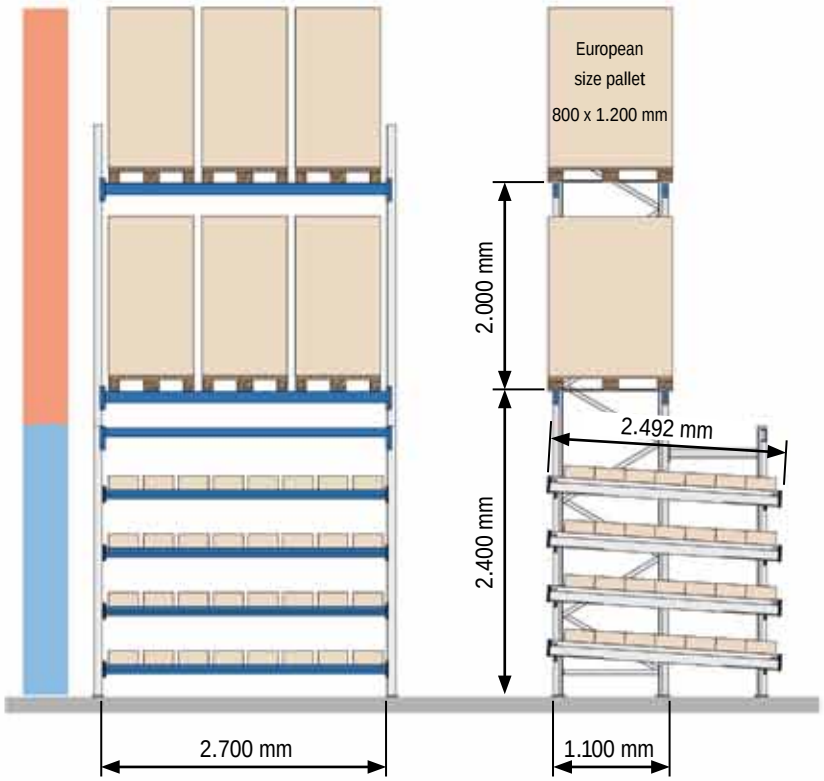
Basically, the bay load is the sum of the loads on all the levels of a bay.
However, there are some more points which are decisive for an exact calculation such as the bending length (distance between the floor and the first beam), the selected type of upright as well as the bay width (clear width between uprights).

Please note:

The sum of the loads per level may not exceed the admissible bay load capacity.

If a racking run has less than 4 bays, the admissible bay load capacity reduces by 15 %.

Bay load calculation example



Calculations are based on:

- at least 4 flow shelves, each with 4 points of support, per bay
- mounting height of the second beam (counted from floor level height) = 2.400 mm
- flow shelf depth = 2.492 mm
- frame depth = 1.100 mm
- buffer stock accommodates Euro pallets sized 800 x 1.200 mm
- bay width = 2.700 mm
- at least 4 bays per racking run

Upright type	Beam type	Admissible load capacities in the buffer stock/flow shelf part			Max. load per pallet	Required reach heights for trucks to store goods
		Number of buffer stock levels		Sum of loads in the carton live storage part		
S-P1	PT 95L	One buffer stock level	1.800 kg	3.200 kg	600 kg	2.400 mm
		Two buffer stock levels	3.600 kg	1.420 kg	600 kg	2.400 + 2.000 mm
	PT 120M	One buffer stock level	3.000 kg	2.380 kg	1.000 kg	2.400 mm
		Two buffer stock levels	4.000 kg	1.380 kg	650 kg	2.400 + 2.000 mm
S-P2	PT 95L	One buffer stock level	1.800 kg	3.700 kg	600 kg	2.400 mm
		Two buffer stock levels	3.600 kg	1.800 kg	600 kg	2.400 + 2.000 mm
	PT 120M	One buffer stock level	3.000 kg	2.700 kg	1.000 kg	2.400 mm
		Two buffer stock levels	4.900 kg	800 kg	650 kg	2.400 + 2.000 mm
S-P3	PT 95L	One buffer stock level	1.800 kg	5.440 kg	600 kg	2.400 mm
		Two buffer stock levels	3.600 kg	3.640 kg	600 kg	2.400 + 2.000 mm
	PT 120M	One buffer stock level	3.000 kg	4.800 kg	1.000 kg	2.400 mm
		Two buffer stock levels	6.000 kg	1.820 kg	1.000 kg	2.400 + 2.000 mm
		Two buffer stock levels	5.200 kg	2.620 kg	850 kg	2.400 + 2.000 mm

Please note: If a racking run has less than 4 bays, the admissible bay load capacity reduces by 15 %.

Upon request

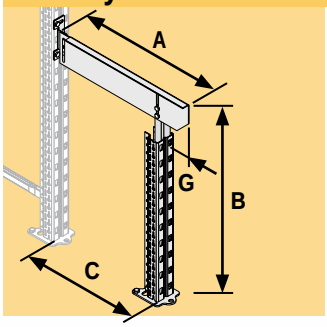
Roller conveyor stand

provides a seat for roller tracks or worktops

The stand is bolted to the frame or to the mono-post placed in front of the frame and anchored to the floor with a bolt for concrete floors. Seat depth and height can be varied (refer to A and B).

Finish: galvanised

FLEX system



Measurement A = 1.000 mm
Measurement B = 700 mm
Measurement C = 90 mm (A-G)
Measurement G = 90 mm

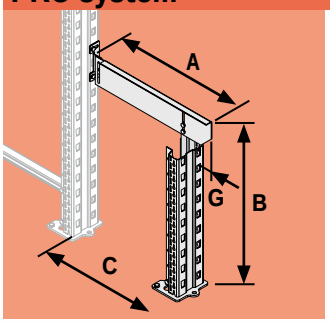
Further dimensions upon request. Please indicate measurements A and B.

Upright type SF4

Ref.no.	36-25119

Finish: galvanised

PRO system



Measurement A= 1.000 mm
Measurement B= 700 mm
Measurement C= 90 mm (A-G)
Measurement G= 90 mm

Further dimensions upon request. Please indicate measurements A and B.

Upright type S-P2

Ref.no.	36-25530

Upright type S-P3

Ref.no.	36-25123

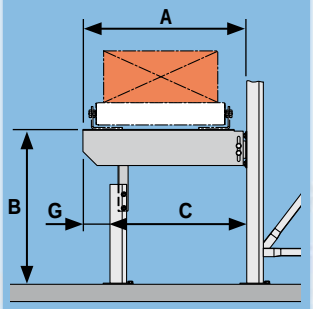
Roller conveyor stand positioning

1 Roller conveyor stand in front of the installation
- powered
- gravity driven

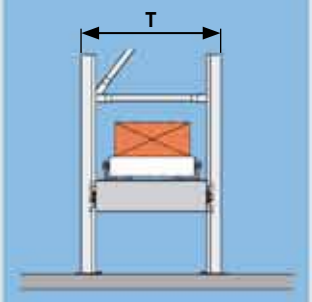
2 Integrated roller conveyor stand
- mostly powered

3 Roller conveyor lane on top of the installation
- powered

In front of racking upright/mono-post

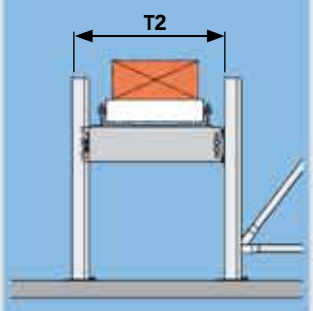


Inside a frame



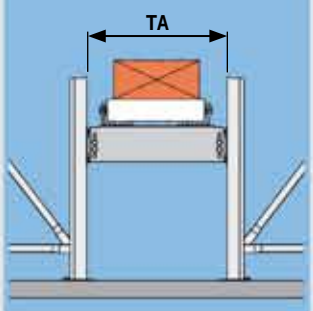
Flex system	
T	Ref.no.:
1.100 mm	36-25120
PRO system (S-P2 and S-P3)	
T	Ref.no.:
1.100 mm	36-25121

Between mono-post and racking upright



Flex system	
T2	Ref.no.:
1.011 mm	36-25122
2.000 mm	36-25118
PRO system (S-P2 and S-P3)	
T2	Ref.no.:
2.000 mm	36-25115

Inside a frame

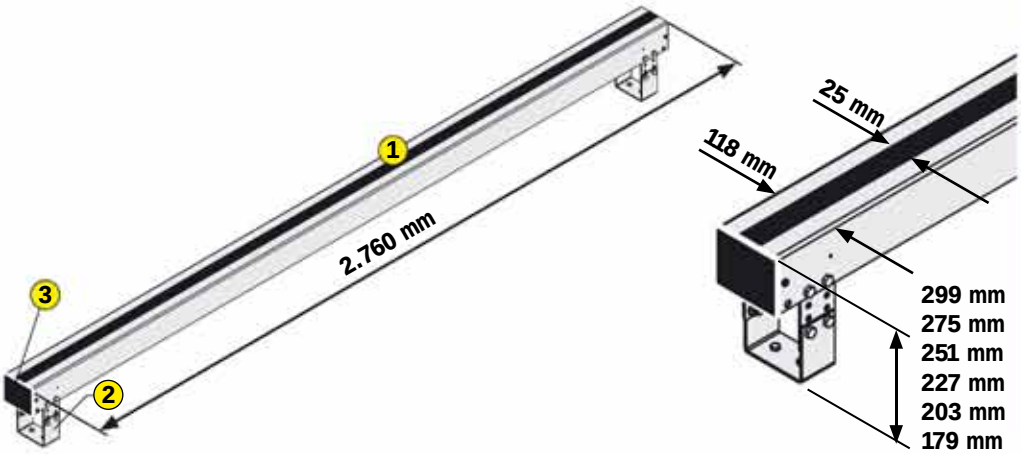


Flex system	
TA	Ref.no.:
1.100 mm	36-25117
PRO system (S-P2 and S-P3)	
TA	Ref.no.:
1.100 mm	36-25116

Step-up rail

- **easy and safe access to upper shelving levels**
- **can be adjusted to 6 heights (179, 203, 227, 251, 275 and 299 mm)**
- **safe working due to anti-slip covering**
- **starter and extension segments**

Further step-up rail lengths are available upon request!



1 Rail profile

2 Foot element

3 End cap

Rail profile

Finish:
galvanised

- **robust U-shaped profile from high quality steel**
- **standard length of 2.760 mm**
- **with anti-slip covering**

Further lengths upon request.

Including anti-slip covering

Ref.no. (per pce)	36-27490

Foot element

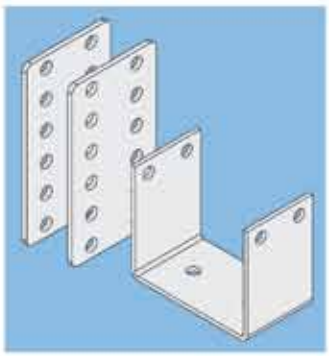
Finish:
galvanised

- **slotted joining plates to adjust height level of rail profile**
- **solid floor anchors ensure high stability**

Delivery includes 1 U-type profile, 2 joining plates and 2 floor anchors.

Starter segment
= 2 foot elements

Extension segments
= 1 foot element



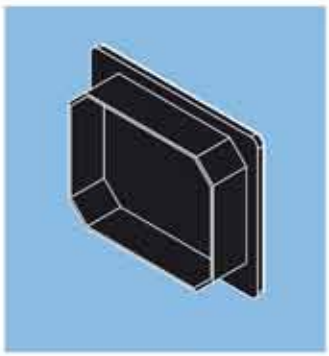
Including fixing material and floor anchors

Ref.no. (per pce)	36-27491

End cap

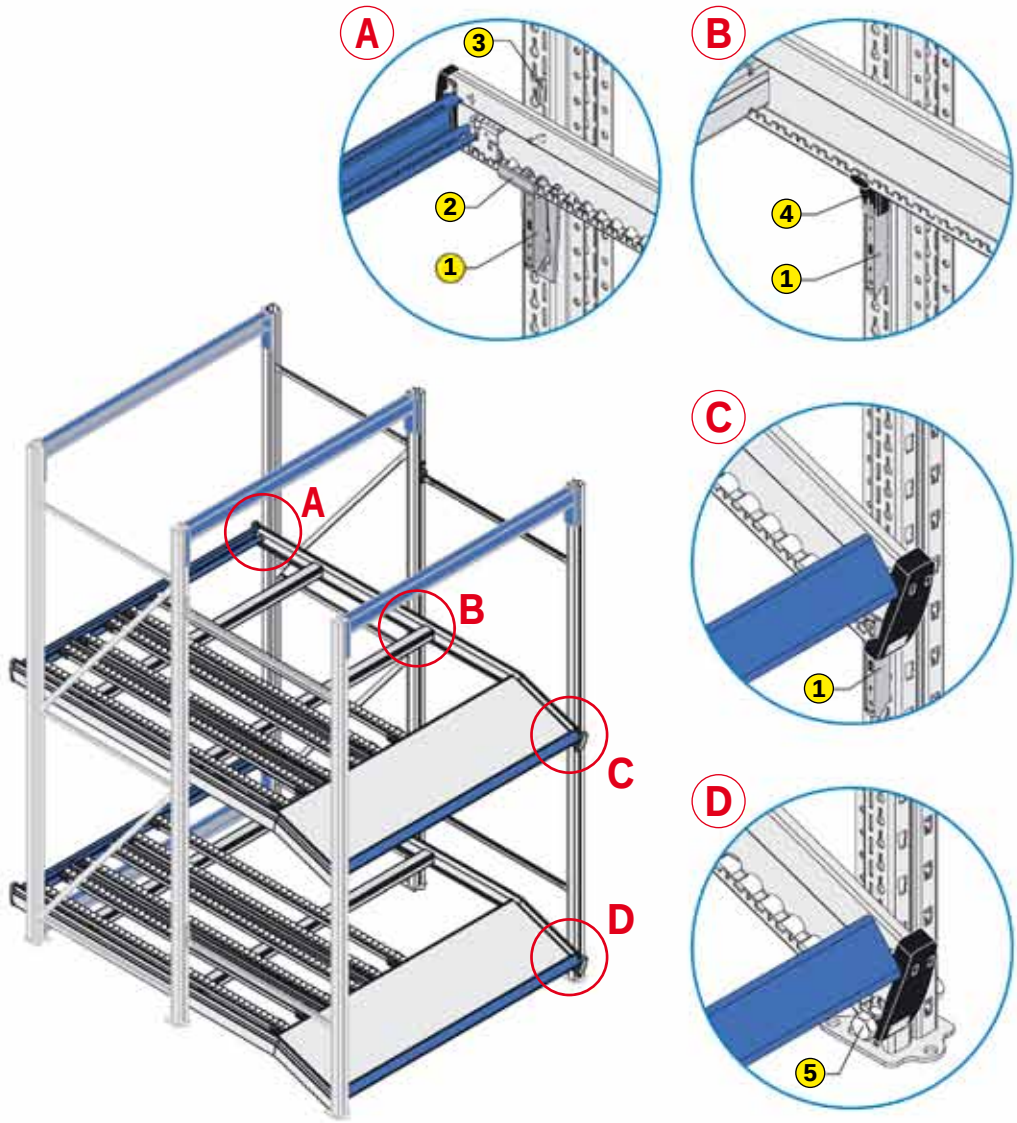
Finish:
Plastics (PP), black

- **prevents accidents by closing the open-ended short sides of the profile**
- **tightly closing cap for a firm fit**
- **attractive finish**



Including fixings (self-drilling screw 5,5 x 19N)

Ref.no. (per pce)	36-27492



1 Support clip
2 Support seat
3 Safety hook
4 Support clip extension
5 Support bolt

Flow shelf fitting into framework and height adjustment

- **safe positioning of flow shelves**
- **components can easily be fitted without bolts**
- **fast re-adjustment of flow shelf height**
- **slope can easily be regulated**
- **high load capacities**

The support clips are simply inserted into the side perforations of the racking upright. Turning the support clips through 180° allows to adjust the flow shelves on a 12,5 pitch along the uprights. As a rule, the flow shelves are seated onto the support clips by their 4 corners. In case of high load capacities or very deep flow shelves, additional support clips are used to provide mid-way support to the side sections of the flow shelf. Support clip extensions fill the gap between support clips and flow shelf. If the distance between floor and lowermost flow shelf is too small to place a support clip (picking side), a threaded support bolt is used for height adjustment.

A flow shelf which is seated at 4 points requires:

4 support clips

2 support seats

2 safety hooks

If additional support is to be given mid-way to the flow shelves' side sections (= 6 points of support), allow for an extra

2 support clips

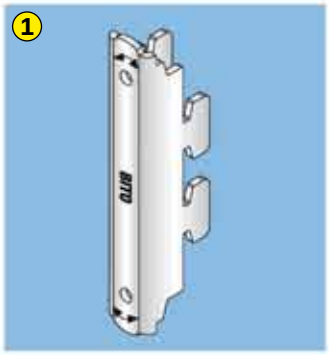
2 support clip extensions

Support clip

- **provides a safe seat for flow shelves**
- **5 sturdy hooks accept high load capacities**
- **easy fitting without bolts by inserting the support clip into the upright‘s side perforations**
- **turned through 180°, the support clips allow to adjust flow shelves on a 12,5 mm pitch**

Finish:
galvanised

Ref.no. (per pce)	S-UV2



Support seat

- **provides a safe seat for flow shelves**

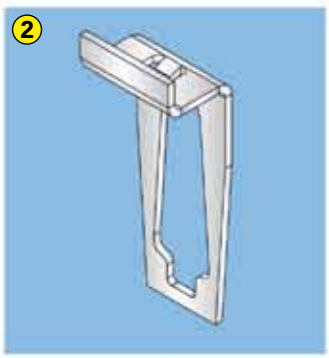
Depending on the slope, it is possible that the notch pattern of the flow shelves‘ side sections does not exactly match the position of the support clips, i.e. that there is no notch right over the support clip. In this case, the support seat is pushed over the support clip to provide a safe seat for the flow shelf.

Finish:
galvanised

Support seats are mostly used at the replenishment side.

Delivery includes 2 support seats per flow shelf.

Ref.no. (per pce)	S-AU1



Safety hook

- **prevents flow shelf tilting**
- **easy assembly without bolts**

The safety hook is pushed over the flow shelves‘ side section into the side perforations of the uprights.

Finish:
galvanised

Safety hooks are positioned to act contrary to the tilting direction, i.e. mostly at the replenishment side.

Delivery includes 2 safety hooks per flow shelf.

Ref.no. (per pce)	S-AHS.4

Support clip extension

- **gives mid-way support to the flow shelf side sections; for high loads**
- **allows to realise the ideal flow shelf slope by providing an „additional“ pitch of 4.2 mm**

Pushed over the support clip, the support clip extension allows to create three additional height adjustment options on a 4,2 mm pitch.

Finish:
Black plastic

There are 2 support clip extensions required per flow shelf.

Ref.no. (per pce)	S-UA5

Support bolt

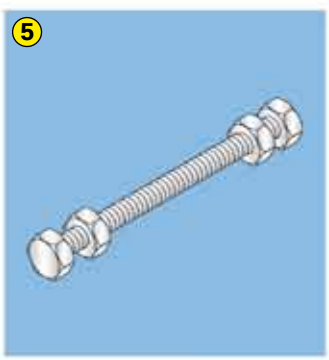
- **allows to adjust the picking side of flow shelves almost at floor level height**

Finish:
galvanised

Consists of a hexagonal bolt and three nuts.

1 support bolt per upright.

Upright width (SB)	Ref.no. (per pce)
FLEX system	
60 mm (SF4)	S-UBV1
PRO system	
90 mm (S-P2)	36-26264
100 mm (S-P3)	36-26265
120 mm (S-P4 to S-P7)	S-PBV12-2



Pallet racking retro-fitting

with BITO upright adapters

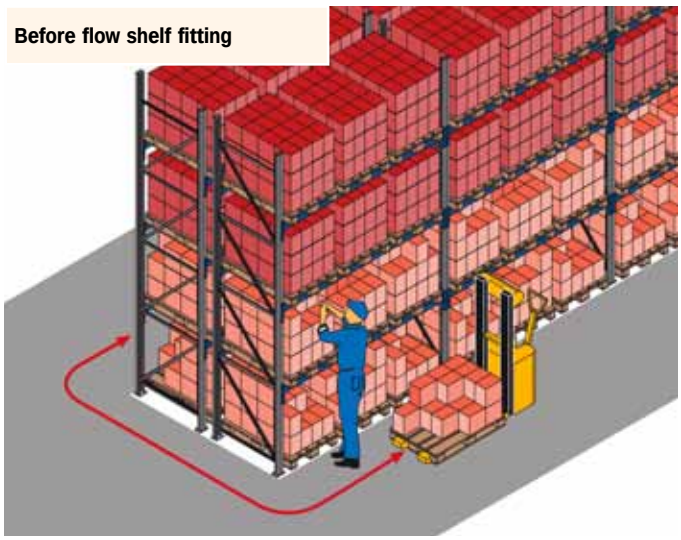
Allows retro-fitting of flow shelves for carton live storage into existing pallet racking of any brand. Before retro-fitting, it is essential to check the admissible load capacity of the existing racking uprights.

- **drastically reduced travel times**
- **substantially reduced order picking times due to the fact that goods move unassisted to the picking side**
- **dual racking function - order picking and buffer stock - clearly increases efficiency**
- **separate replenishment and order picking aisles**
- **retro-fitting can be realised with all commercially available pallet racking uprights (also those of other manufacturers)**

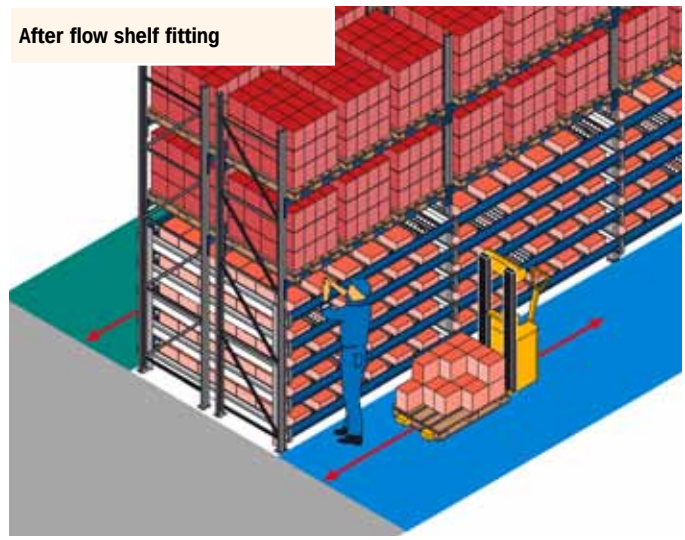
Example:
After retro-fitting, a racking bay in which up to then 3 to 6 different items were stored - each on a separate pallet - now offers direct access to 30 to 60 items.

The levels on top serve as a buffer stock for partial and full pallet loads.

Before flow shelf fitting



After flow shelf fitting



Example:
Double racking row

Goods are directly picked off the pallet. In conventional pallet storage installations, items on the floor level and the first storage level can only be picked by bending and stretching. In contrast to live storage installations, only some items are directly accessible at the picking face.

In the lower racking part, 2 storage levels for static pallet storage have been exchanged against flow levels for carton live storage. The upper storage levels kept their function as a buffer store. With this upgrade, all items are now in direct reach at the picking face.

Another advantage arising from the strict separation of picking and loading aisles is that order pickers are not disturbed by stock replenishment.

Picking zone | Loading zone | Buffer stock | Picking stock

FIFO principle (first in – first out)

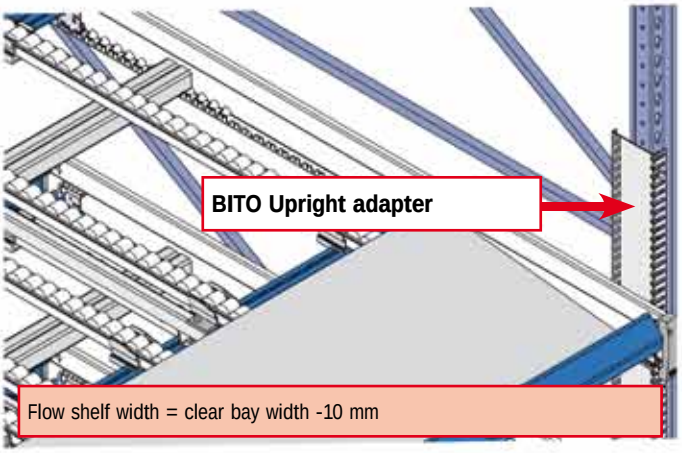
In **pallet live storage installations**, goods stored first are taken out first.

This allows easy control of sell-by dates as well as of production lots and series.

LIFO principle (last in – first out)

In **push-back racking**, goods stored first are taken out first.

Upon request, we also supply low-depth flow shelves to fit into push-back installations!



The upright adapters are bolted to the slot pattern at the front of your pallet racking uprights on a height adjustment pitch of 25 mm.

The self-supporting flow shelves are seated on the support clips which are hooked into the upright adapters. Flow level spacing can be regulated on a 12,5 mm pitch.

Finish:
galvanised

6 bolt fixings per upright adapter

BITO Upright adapter

- **height 1.950 mm**

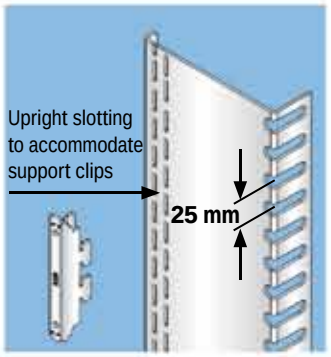
Please make sure that the exact clear width between uprights is indicated in your order! Also check whether your existing racking installation can carry the additional load.

1 set = 4 pcs, including fixing material

Ref.no. (per set)	36-27955

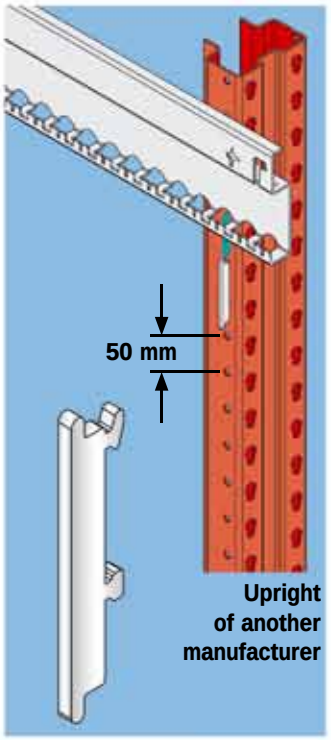
per piece, including fixing material

Ref.no. (per pce)	36-23531



BITO Universal support clip

- **provides a seat for flow shelves**
- **no upright adapter necessary**



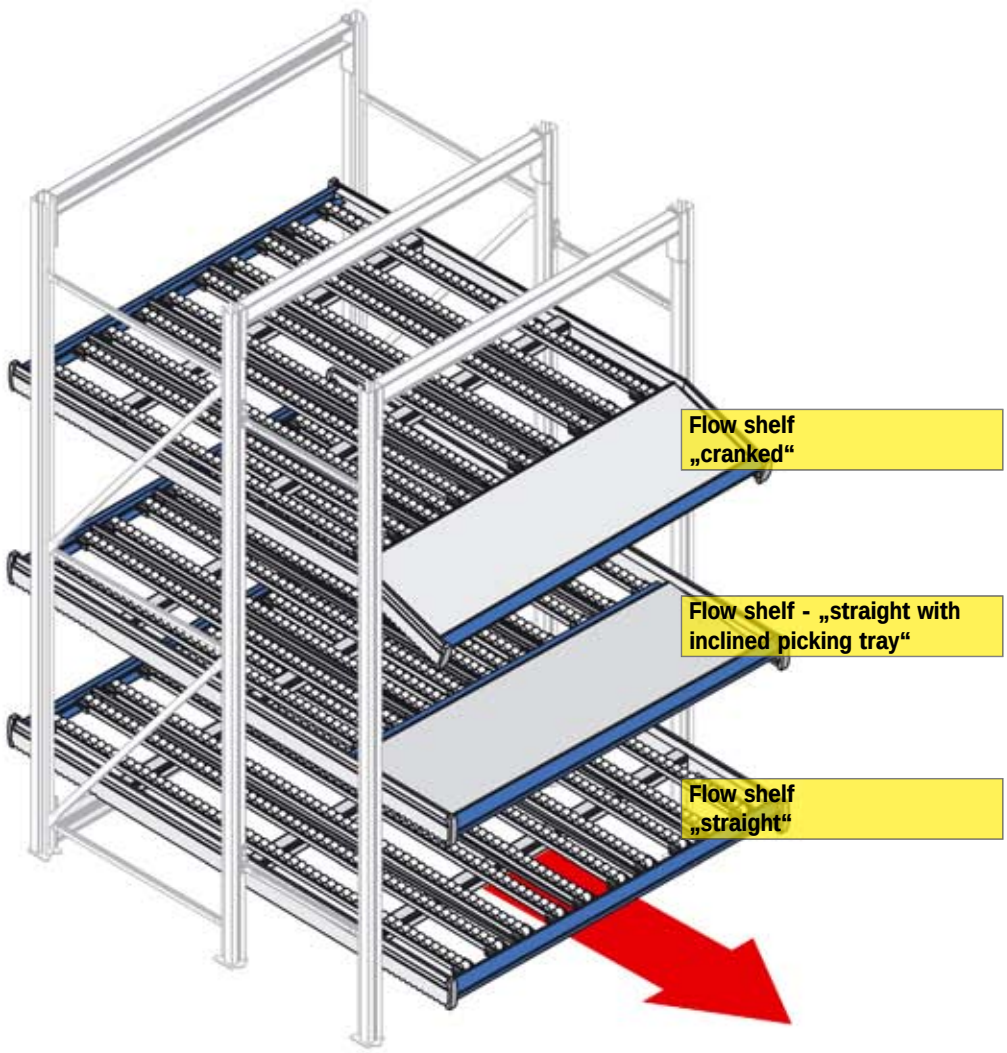
Finish:
galvanised

BITO Universal support clip

- **suited for uprights of other manufacturers with a side perforation (ø11 mm) in 50 mm increments**

Please check whether your existing racking installation can carry the additional load.

Ref.no. (per pce)	S-PV1



Flow shelves for carton live storage

- **versatile system allows to adapt to all types of storage units with their specific storage requirements**
- **high load capacities - up to 1.000 kg**
- **framework construction is assembled without bolts**
- **components can be re-used after reconfiguration**
- **retro-fitting to other load capacity requirements possible at any time**
- **sturdy components from high quality materials ensure a long service life**

All components of a flow shelf are fitted without bolts. For this reason, it is possible to adapt BITO flow shelves to different load capacities and storage units whenever required while using the same components again. The variety of roller tracks and dividers make the flow shelf a very versatile system to suit almost any requirement. The components are made from high quality materials, have a robust make and a long service life.

Please refer to the following pages for a more detailed description of the individual components:

Colour

All epoxy coated components are supplied in RAL 5010. Other colours upon request.

RAL 5010

ESD version

Conductive version upon request.

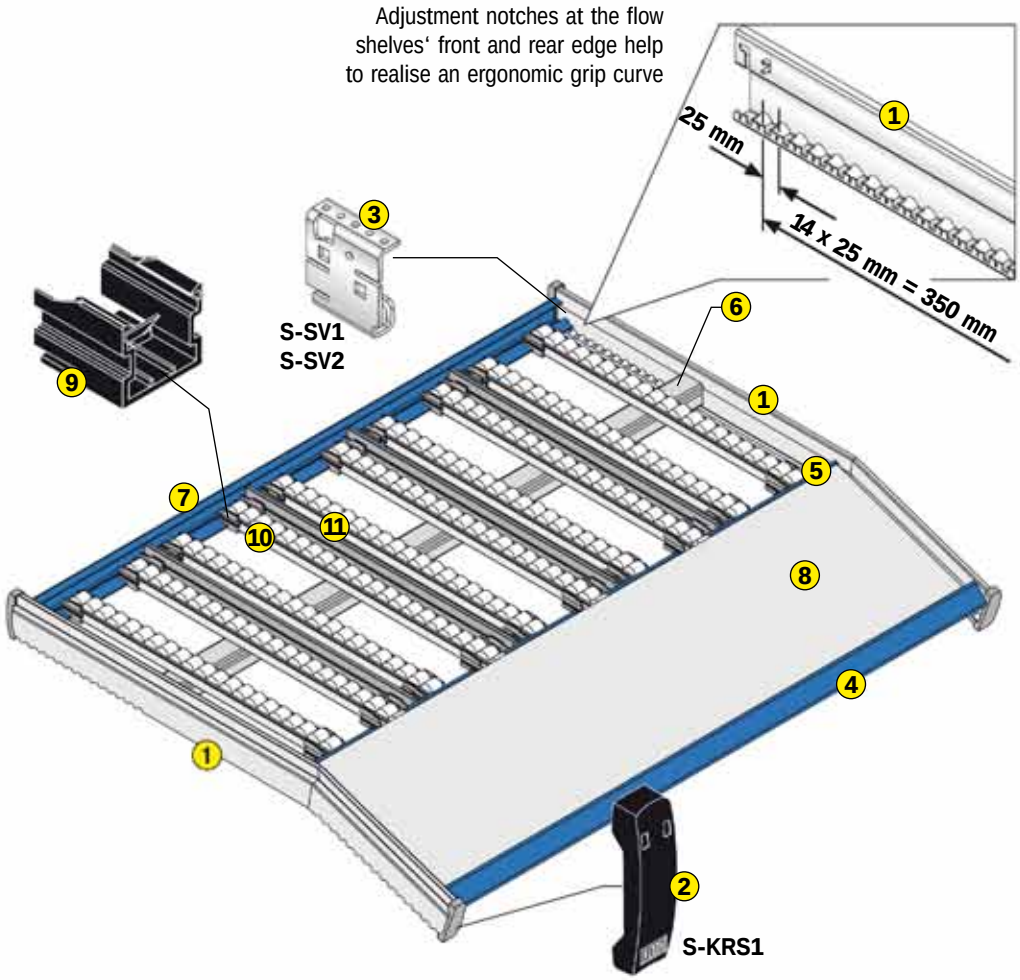
ESD

Guarantee

on durability and functionality

5 YEARS

Flow shelf components



1 Flow shelf side section

Sturdy, bended profile. Adjustment notches at the front and the rear end help to realise an ergonomic grip curve at the picking face. Fitted to the uprights with the help of support clips.

Finish:
galvanised

2 Cap for side section ends

Prevents injuries from sharp edges.

Material:
Black plastic

3 Push-in connector

Joins front/rear beams with flow shelf side sections. With safety pin to prevent unhooking. Left-hand and right-hand version (type 1 and type 2).

Finish:
galvanised

4 Front beam

Increases flow shelf rigidity and serves as front stop at the flow shelves' picking face. Can be equipped with holders for product identification labels or lane marking. Accommodates adapters for roller track and divider fitting.

Finish:
epoxy coated

5 Support section for cranked flow shelves

Increases flow shelf rigidity and provides a seat for the rear end of the picking tray. Accommodates adapters for roller track and divider fitting.

Finish:
epoxy coated

6 „In-shelf" support section

Available in two finishes. Depending on loads stocked, C-profiles and PT-profiles are positioned individually or in groups as side-to-side support under the flow shelf.
Please consider added height.

Finish:
galvanised

7 Beam at rear

Can be equipped with holders for product identification labels or lane marking. Accommodates adapters for roller track and divider fitting.

Finish:
epoxy coated

8 Picking tray

Positioned at the picking face of cranked flow shelves and of straight flow shelves with inclined picking tray. Tray supports firm up the picking tray centre area.

Finish:
galvanised

9 Adapter

Easy push-on fitting to the beams at the flow shelves' front or rear for mounting roller tracks and standard dividers. Adjustable in length direction on a 8.1 mm pitch.

Material:
Plastic

10 Roller track

Equipped with cylindrical or flanged rollers. Cylindrical rollers are available in several versions with different load capacities and axles.

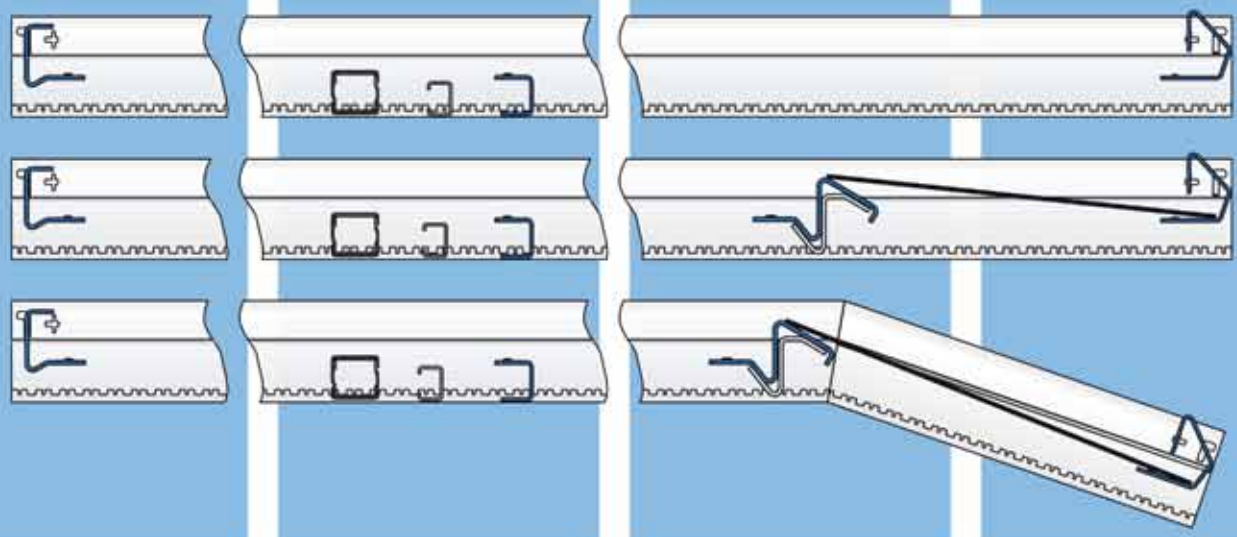
Material:
Plastic rollers

11 Divider

Subdivides flow shelf into lanes. Available in several versions to suit different applications.

Finish:
galvanised

Support section types „RV“ for flow shelves



Beam at rear „RVH“

Beam at rear
standard version
16

Beam at rear
KLT version
17

Beam at rear
Light-duty KLT version
18

Front beam
19

Support section for cranked shelves
20 + *

Automotive solution
21

„In-shelf“ support section with/without adjustment knobs

In-shelf support section
PT profile
12 positioned individually or in groups

In-shelf support section
C profile
13 positioned individually or in groups

In-shelf support section
46 mm high, with adjustment knobs
14 46 mm

In-shelf support section
35 mm high, with adjustment knobs
15 35 mm

Please note:
In deeper flow shelves, additional in-shelf support sections with adjustment knobs (no. 14+15) are used to fix roller tracks and dividers, thus keeping them at a parallel distance to each other in the flow shelf centre area.

Straight flow shelves
deeper than 3.092 mm

Straight flow shelves with picking tray and cranked flow shelves
deeper than 3.492 mm

Support section for cranked flow shelves „RVDA“

Support section for cranked flow shelves, standard version
8

Support section for cranked flow shelves, KLT version
9

Support section for cranked flow shelves, light-duty KLT version
10

Reinforcing section
11 *

*

Please note:
Depending on the loads applied, components no. 8, 9, 10 and 20 require a reinforcing section (11)!

Front beam „RVV“

Front beam
standard version
1

Front beam
KLT version
2

Pick-by-light 130°
3

Pick-by-light 110°
4

Pick-by-light 90°
5

Automotive solution
6

Beam at rear
7

Calculating the length of roller tracks and dividers
Examples of combinations

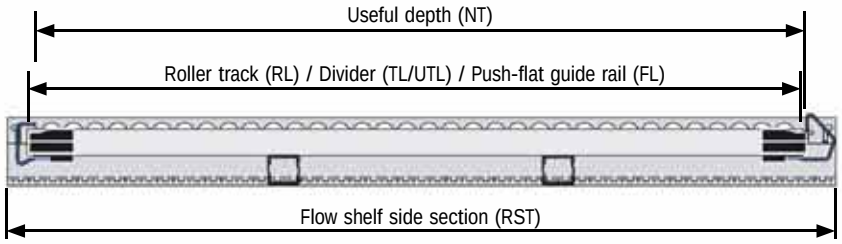
RVH = Beam at rear

RVDA = Support section for cranked flow shelves

RVV = Front beam

TS = Span between picking face and push-in connector

Straight flow shelf



Combinations	Support section types* (#)			Length				
	RVH	RVDA	RVV	Roller track (RL)	Divider (TL)	Universal divider (UTL)	Push-flat guide rail (FL)	Useful depth (NT)
1	16	-	1	RST-63 mm	RST-67 mm	RST-62 mm	-	RST-75 mm
2	17	-	2	RST-97 mm	RST-97 mm	-	RST-139 mm	RST-94 mm
3	18	-	3, 4, 5	RST-97 mm	RST-97 mm	RST-72 mm	-	RST-94 mm
4	16	-	3, 4, 5	RST-63 mm	RST-67 mm	RST-62 mm	-	RST-75 mm
5	19	-	1	RST-97 mm	RST-97 mm	RST-95 mm	-	RST-92 mm
6	18	-	1	RST-97 mm	RST-97 mm	RST-72 mm	-	RST-94 mm
7	20	-	1	RST-98 mm	RST-98 mm	-	-	RST-94 mm
8	21	-	6	RST-97 mm	RST-97 mm	-	RST-159 mm	RST-94 mm

Standard depth TE = 430 mm

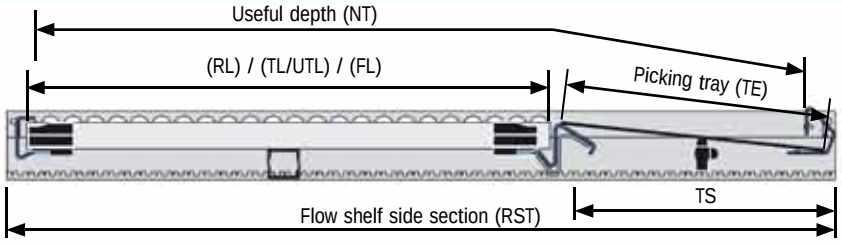
RVH = Beam at rear

RVDA = Support section for cranked flow shelves

RVV = Front beam

TS = Span between picking face and push-in connector

Straight flow shelf with pickign tray



Combinations	Support section types**			Length				
	RVH	RVDA	RVV	Roller track (RL)	Divider (TL)	Universal divider (UTL)	Push-flat guide rail (FL)	Useful depth (NT)
1	16	8, 11	1	RST-TS-34 mm	RST-TS-38 mm	RST-TS	-	RST-75 mm
2	17	9, 11	2	RST-TS-70 mm	RST-TS-70 mm	-	RST-TS-118 mm	RST-94 mm
3	21	9, 11	6	RST-TS-70 mm	RST-TS-70 mm	-	RST-TS-118 mm	RST-94 mm
4	16	8, 11	3, 4, 5	RST-TS-34 mm	RST-TS-38 mm	RST-TS	-	RST-75 mm
5	20	8, 11	1	RST-TS-71 mm	RST-TS-71 mm	-	-	RST-94 mm
6	18	10, 11	1	RST-TS-70 mm	RST-TS-70 mm	RST-TS-10 mm	-	RST-94 mm

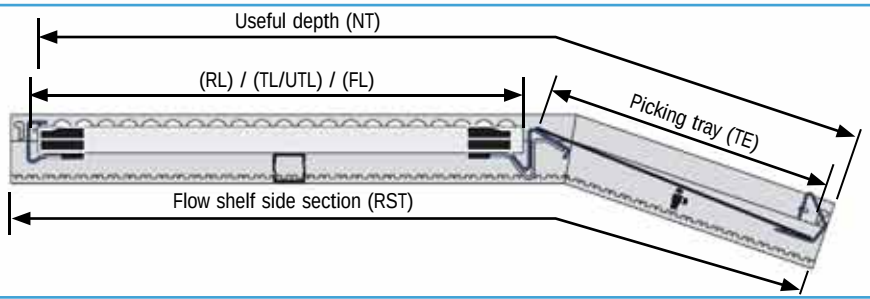
Standard depth TE = 430 mm

RVH = Beam at rear

RVDA = Support section for cranked flow shelves

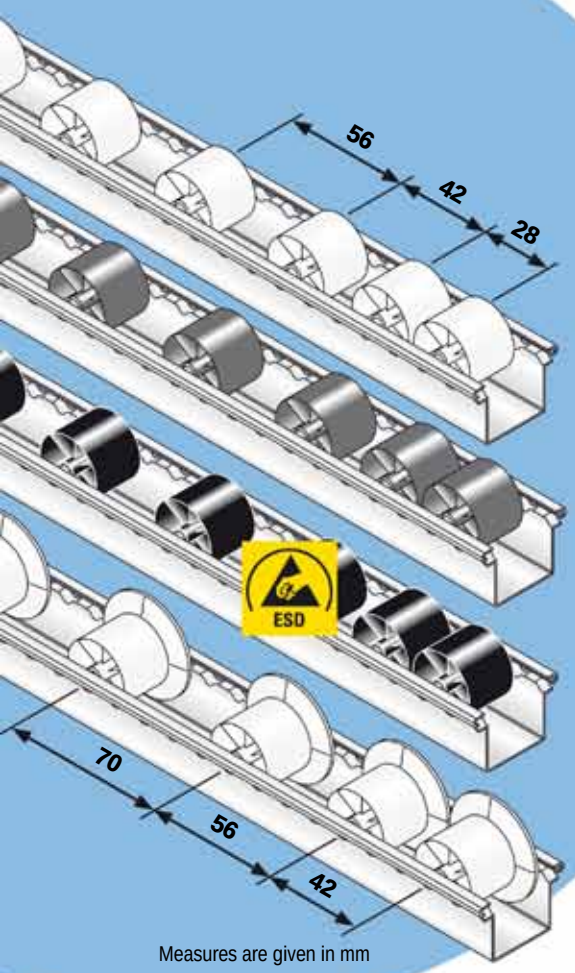
RVV = Front beam

Cranked flow shelf



Combinations	Support section types*			Length				
	RVH	RVDA	RVV	Roller track (RL)	Divider (TL)	Universal divider (UTL)	Push-flat guide rail (FL)	Useful depth (NT)
1	16	8, 11	1	RST-524 mm	RST-528 mm	RST-482 mm	-	RST-93 mm
2	19	8, 11	1	RST-559 mm	RST-559 mm	-		RST-110 mm
3	17	9, 11	2	RST-560 mm	RST-560 mm	-	RST-607 mm	RST-108 mm
4	21	9, 11	6	RST-560 mm	RST-560 mm	-	RST-607 mm	RST-108 mm
5	16	8, 11	3, 4, 5	RST-524 mm	RST-528 mm	RST-482 mm	-	RST-93 mm
6	18	10, 11	1	RST-560 mm	RST-560 mm	RST-490 mm	-	RST-110 mm
7	20	8, 11	1	RST-560 mm	RST-560 mm	-	-	RST-110 mm

*Finish of support sections on page 32



Measures are given in mm

1 Roller track with cylindrical rollers (standard)
white plastic rollers
with plastic axle
Load capacity 4 kg per roller

2 Roller track with cylindrical rollers
anthracite grey plastic rollers
with steel axle
Load capacity 8 kg per roller

3 Roller track with cylindrical rollers
black plastic rollers
with steel axle
Load capacity 8 kg per roller

4 Roller track with flanged rollers
white plastic rollers
with plastic axle
Load capacity 4 kg per roller

Guarantee

On durability and functionality

5 YEARS

Roller tracks supplied by linear metre

For special applications, roller tracks can be supplied by linear metre.
Please indicate required length in mm. Lengths will be cut to fit a 14 mm pitch.

The roller tracks are mounted to the flow shelf beams and support sections with the help of plastic adapters which clip to the adjustment knobs on top of the profile.

Please note:
Adapters must be ordered separately. 2 adapters are required per roller track.

Adapters

page 39

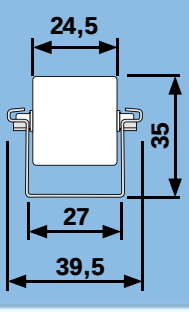
Roller track

- **highly torsion resistant rail profile from galvanised steel**
- **smoothly operating rollers from high quality plastics**
- **minimum friction loss and low wear and tear**
- **high precision manufacturing ensures dimensional stability**
- **long service life**
- **resists temperatures from +40°C to -30°C**

Cylindrical roller

Roller pitch 28 mm. Further pitches possible at +14 mm distances, e.i. 42, 56 mm etc.

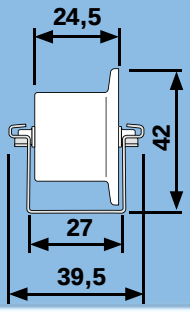
- broad roller surface ensures good travel characteristics
- optimum adaptation to all types of storage units



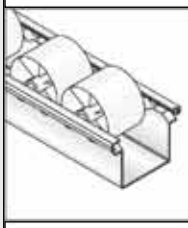
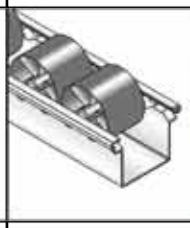
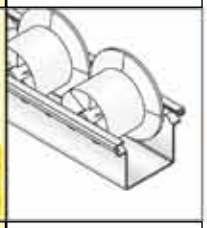
Flanged roller

For storage units with stable, pre-formed edges. Roller pitch 42 mm. Further pitches possible at +14 mm distances, i.e. 56, 70 mm etc.

- cost advantage as no additional dividers are required
- very low frictional loss at the flanges make for good travel characteristics



Roller track length options

Flow shelf depth	Roller track length		Roller track with cylindrical rollers	Roller track with cylindrical rollers	Roller track with cylindrical rollers	Roller track with flanged rollers
						
			Plastic axle	Steel axle	Steel axle	Plastic axle
			Load capacity per roller			
			4 kg	**8 kg**	**8 kg**	**4 kg**
			Roller pitch			
			28 mm	**28 mm**	**28 mm**	**42 mm**

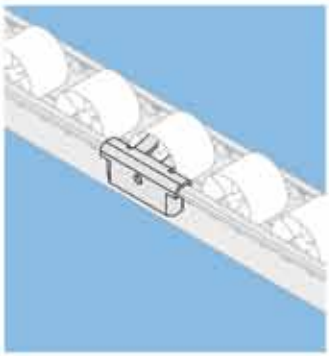
Roller tracks are supplied without adapters and protective caps.

Variant system ➢ CLS-V

Straight flow shelf						
1.292 mm	1.229 mm	Ref.no.	S-V-R13/28	S-V-ST-R13/28	S-V-SE-R13/28	S-V-RS13/42
1.892 mm	1.892 mm	Ref.no.	S-V-R19/28	S-V-ST-R19/28	S-V-SE-R19/28	S-V-RS19/42
2.092 mm	2.029 mm	Ref.no.	S-V-R21/28	S-V-ST-R21/28	S-V-SE-R21/28	S-V-RS21/42
2.492 mm	2.429 mm	Ref.no.	S-V-R25/28	S-V-ST-R25/28	S-V-SE-R25/28	S-V-RS25/42
3.092 mm	3.029 mm	Ref.no.	S-V-R31/28	S-V-ST-R31/28	S-V-SE-R31/28	S-V-RS31/42
Straight flow shelf with picking tray (track lengths are calculated on the basis of picking trays with a standard depth of TE = 430 mm)						
1.292 mm	793 mm	Ref.no.	S-V-RGA13/28	S-V-ST-RGA13/28	S-V-SE-RGA13/28	S-V-RSGA13/42
1.892 mm	1.393 mm	Ref.no.	S-V-RGA19/28	S-V-ST-RGA19/28	S-V-SE-RGA19/28	S-V-RSGA19/42
2.092 mm	1.593 mm	Ref.no.	S-V-RGA21/28	S-V-ST-RGA21/28	S-V-SE-RGA21/28	S-V-RSGA21/42
2.492 mm	1.993 mm	Ref.no.	S-V-RGA25/28	S-V-ST-RGA25/28	S-V-SE-RGA25/28	S-V-RSGA25/42
3.092 mm	2.593 mm	Ref.no.	S-V-RGA31/28	S-V-ST-RGA31/28	S-V-SE-RGA31/28	S-V-RSGA31/42
Cranked flow shelf						
1.292 mm	768 mm	Ref.no.	S-V-RA13/28	S-V-ST-RA13/28	S-V-SE-RA13/28	S-V-RSA13/42
1.892 mm	1.368 mm	Ref.no.	S-V-RA19/28	S-V-ST-RA19/28	S-V-SE-RA19/28	S-V-RSA19/42
2.092 mm	1.568 mm	Ref.no.	S-V-RA21/28	S-V-ST-RA21/28	S-V-SE-RA21/28	S-V-RSA21/42
2.492 mm	1.968 mm	Ref.no.	S-V-RA25/28	S-V-ST-RA25/28	S-V-SE-RA25/28	S-V-RSA25/42
3.092 mm	2.568 mm	Ref.no.	S-V-RA31/28	S-V-ST-RA31/28	S-V-SE-RA31/28	S-V-RSA31/42

VDA/KLT system ➢ CLS-VK

Straight flow shelf						
1.292 mm	1.195 mm	Ref.no.	S-VK-R13/28	S-VK-ST-R13/28	S-VK-SE-R13/28	-
1.892 mm	1.795 mm	Ref.no.	S-VK-R19/28	S-VK-ST-R19/28	S-VK-SE-R19/28	-
2.092 mm	1.995 mm	Ref.no.	S-VK-R21/28	S-VK-ST-R21/28	S-VK-SE-R21/28	-
2.492 mm	2.395 mm	Ref.no.	S-VK-R25/28	S-VK-ST-R25/28	S-VK-SE-R25/28	-
3.092 mm	2.995 mm	Ref.no.	S-VK-R31/28	S-VK-ST-R31/28	S-VK-SE-R31/28	-
Straight flow shelf with picking tray (track lengths are calculated on the basis of picking trays with a standard depth of TE = 430 mm)						
1.292 mm	757 mm	Ref.no.	S-VK-RGA13/28	S-VK-ST-RGA13/28	S-VK-SE-RGA13/28	-
1.892 mm	1.357 mm	Ref.no.	S-VK-RGA19/28	S-VK-ST-RGA19/28	S-VK-SE-RGA19/28	-
2.092 mm	1.557 mm	Ref.no.	S-VK-RGA21/28	S-VK-ST-RGA21/28	S-VK-SE-RGA21/28	-
2.492 mm	1.957 mm	Ref.no.	S-VK-RGA25/28	S-VK-ST-RGA25/28	S-VK-SE-RGA25/28	-
3.092 mm	2.557 mm	Ref.no.	S-VK-RGA31/28	S-VK-ST-RGA31/28	S-VK-SE-RGA31/28	-
Cranked flow shelf						
1.292 mm	732 mm	Ref.no.	S-VK-RA13/28	S-VK-ST-RA13/28	S-VK-SE-RA13/28	-
1.892 mm	1.332 mm	Ref.no.	S-VK-RA19/28	S-VK-ST-RA19/28	S-VK-SE-RA19/28	-
2.092 mm	1.532 mm	Ref.no.	S-VK-RA21/28	S-VK-ST-RA21/28	S-VK-SE-RA21/28	-
2.492 mm	1.932 mm	Ref.no.	S-VK-RA25/28	S-VK-ST-RA25/28	S-VK-SE-RA25/28	-
3.092 mm	2.532 mm	Ref.no.	S-VK-RA31/28	S-VK-ST-RA31/28	S-VK-SE-RA31/28	-



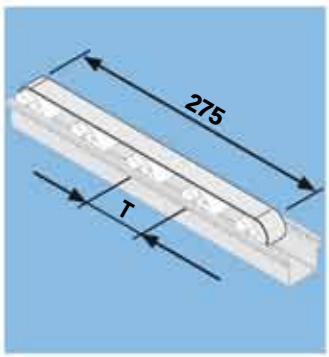
Braking clip

- **regulates flow speed of storage units**
- **avoids product damage due to abrupt stopping at the picking face**
- **blocks individual rollers, thus excerting a slight braking effect onto storage units**
- **for pressure sensitive goods**
- **suited for lanes which accommodate storage units which differ a lot in weight**

Price per piece

Ref.no.	S-25.55

Finish:
galvanised



Braking rail

- **stronger braking effect**

This 275 mm long steel rail is clipped over several rollers, thus providing a much stronger braking effect than the braking clips.

Price per piece

Ref.no.	S-25.60

Finish:
galvanised

Standard length 275 mm=
At a pitch of (T) = 28 mm, 10 rollers are covered.
At a pitch of (T)= 42 mm, 7 rollers are covered.

Special lengths upon request.

Push-back stop

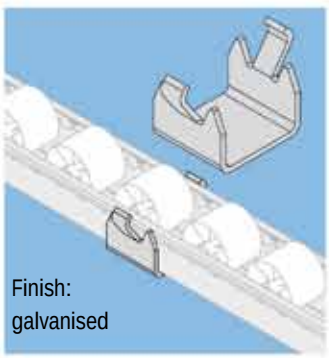
- **prevents storage units from falling down at the loading side due to loads being pushed back unintentionally**

The push-back stop is mainly used at the loading side. It tilts forward when loads move forward to the picking side. However, if loads are pushed against the flow direction, they are stopped by the push-back stop.

Price per piece, including steel axle

Ref.no.	S-RSS3

Material:
Plastic, colour: black



Roller track brace

- **prevents that the roller track sides are bent open**

Required if heavier goods are loaded or in case of rough in-feeding of storage units.

Price per piece

Ref.no.	S-SPST

Finish:
galvanised

Protective cap

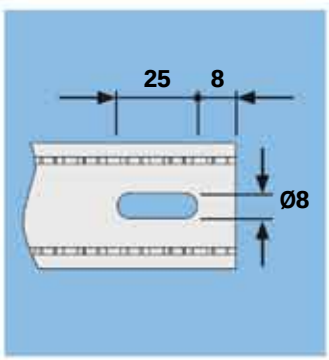
- **for roller track ends**

Protects from injuries from roller tracks which are not integrated into a flow shelf.

Price per piece

Ref.no.	36-28535

Finish:
Plastic, colour: black

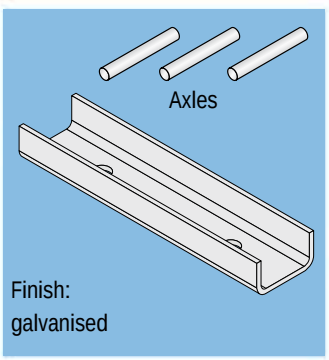


Additional slot stamping

For bolt-fixing of roller tracks and for end-to-end joining. Suited for M6 to M8 bolts.

Price per 2 slots

Ref.no.	BL2



Roller track connector

Joins roller track sections with each other. Allows end-to-end joining to make long lanes.
3 axles prevent that the roller track profile sides are pressed together at the butt joints.

Price per piece, including fixing material +axles

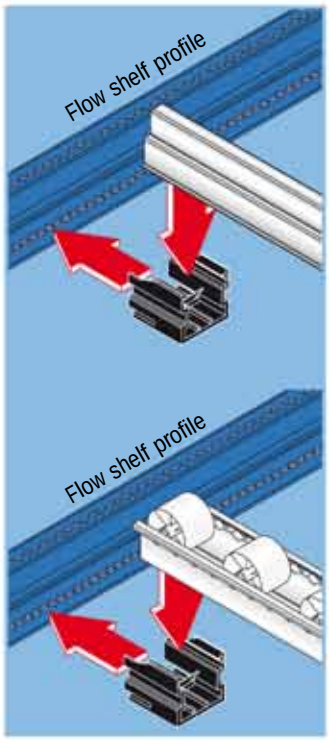
Ref.no.	S-RLV1

Finish:
galvanised

Adapter

for mounting roller tracks and standard dividers

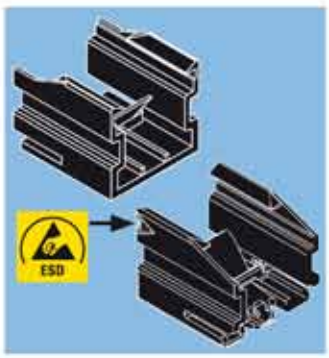
- **allows to modify lane width without bolts in 8,5 mm increments**
- **roller tracks and dividers are firmly snap-locked into the adapters**
- **fast flow shelf reconfiguration if a warehouse has to be reorganised**



The adapters are pushed onto the adjustment knobs of the flow shelf profiles and allow easy clip-in fixing of roller tracks and dividers on a 8,51 mm pitch.

Material:
Plastic, colour: black

- **standard adapter**
- **for temperatures of more than 0°C**
- **also available as electrically conductive version**



Standard finish

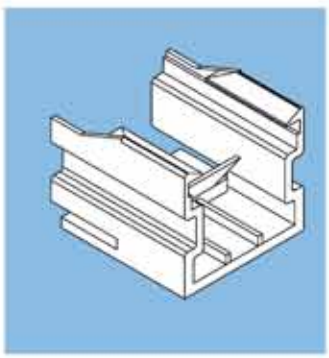
Ref.no.	S-A3

ESD Electrically conductive version

Ref.no.	S-AL3

Material:
Plastic, colour: white

- **adapter suited for cold and deep freeze storage**
- **for temperatures between 0° C and -30° C**



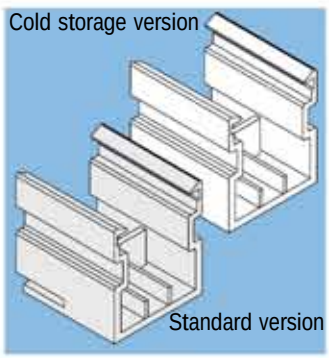
Ref.no.	S-AK3

Material:
Standard finish
Plastic, colour: grey

Cold storage
Plastic, colour: white

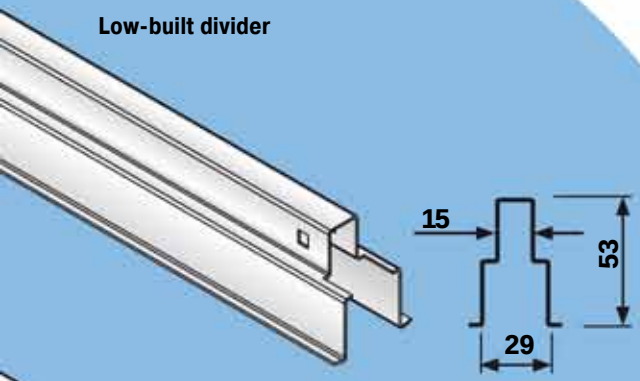
- **high-built adapter**
- **for temperatures of more than 0° C**
- **suited for cold/deep freeze storage down to -30° C**

Only used for the „CLS-A“ system (automated carton live storage).

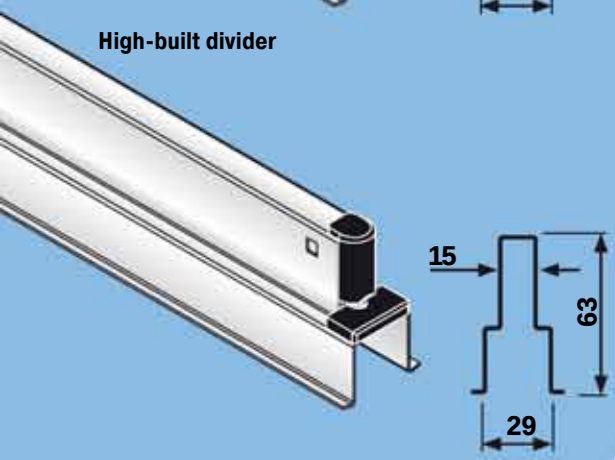


Standard finish for temperatures of more than 0°C	
Ref.no.	S-AA5
for cold and deep freeze storage from 0 °C down to -30°C	
Ref.no.	36-27579

Low-built divider



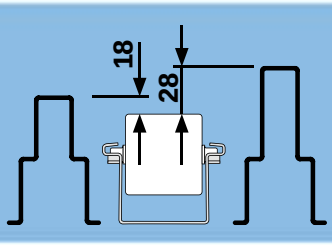
High-built divider



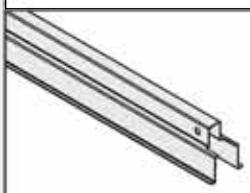
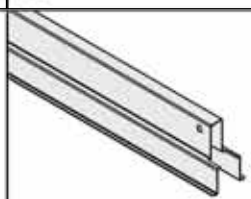
Standard dividers

- suited for permanent lane widths
- available in two height options: 53 mm and 63 mm
- prevent blocking of two adjoining bins with high or protuding stacking edges
- adjustable along front and rear beams on a 8,5 mm pitch
- easy clip-on fixing with the help of adapters

Low-built divider High-built divider



Standard divider length options

Flow shelf depth	Standard divider length		Low-built divider (53 mm)	High-built divider (63 mm)
				

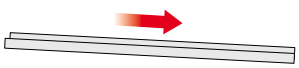
Dividers are supplied without adapters and protective caps

Straight flow shelf				
1.292 mm	1.225 mm	Ref.no.	S-V-T13	S-V-TH13
1.892 mm	1.825 mm	Ref.no.	S-V-T19	S-V-TH19
2.092 mm	2.025 mm	Ref.no.	S-V-T21	S-V-TH21
2.492 mm	2.425 mm	Ref.no.	S-V-T25	S-V-TH25
3.092 mm	3.025 mm	Ref.no.	S-V-T31	S-V-TH31
Straight flow shelf with picking tray (track lengths are calculated on the basis of picking trays with a standard depth of TE=430 mm)				
1.292 mm	789 mm	Ref.no.	S-V-TGA13	S-V-THGA13
1.892 mm	1.389 mm	Ref.no.	S-V-TGA19	S-V-THGA19
2.092 mm	1.589 mm	Ref.no.	S-V-TGA21	S-V-THGA21
2.492 mm	1.989 mm	Ref.no.	S-V-TGA25	S-V-THGA25
3.092 mm	2.589 mm	Ref.no.	S-V-TGA31	S-V-THGA31
Cranked flow shelf				
1.292 mm	764 mm	Ref.no.	S-V-TA13	S-V-THA13
1.892 mm	1.364 mm	Ref.no.	S-V-TA19	S-V-THA19
2.092 mm	1.564 mm	Ref.no.	S-V-TA21	S-V-THA21
2.492 mm	1.964 mm	Ref.no.	S-V-TA25	S-V-THA25
3.092 mm	2.564 mm	Ref.no.	S-V-TA31	S-V-THA31

Dividers by linear metre

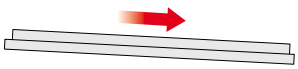
For special applications, dividers can be supplied by linear metre. Please indicate required length in mm.

Low-built divider



Notched at picking side

High-built divider



Notched at both sides

The roller tracks are mounted to the flow shelf beams and profiles with the help of plastic adapters which clip onto the adjustment knobs of the profiles.

Please note:
Adapters must be ordered separately. 2 adapters are required per roller track.

Adapters

page 39

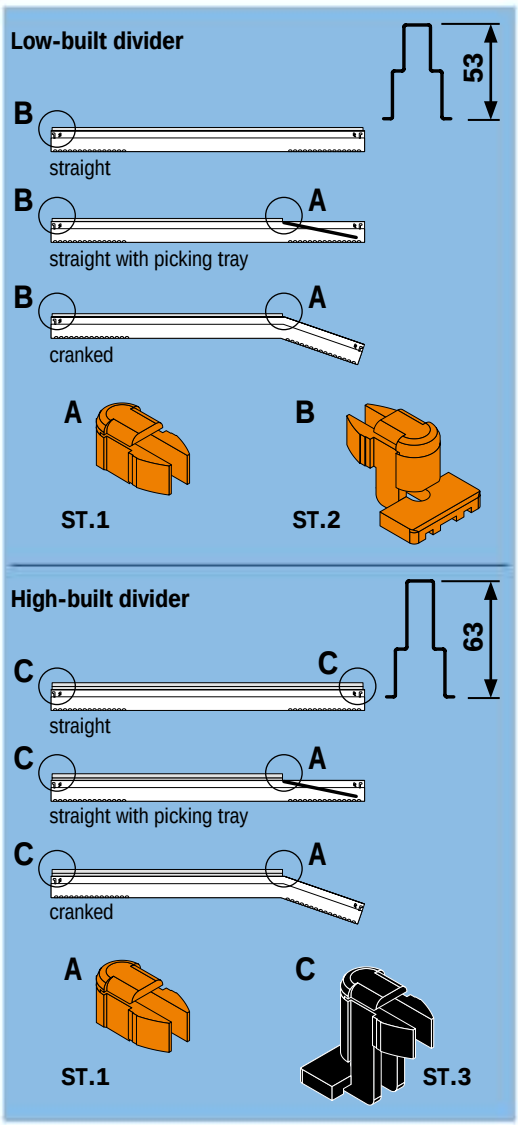
Material:
Plastic, colour: orange

Please note:
Can only be used with high-built dividers (63 mm)!

Protective caps

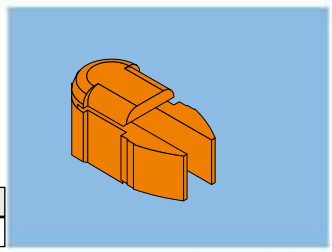
- **prevent injuries**
- **prevent damage to storage units during in-feeding**

As a protection against injuries and damage to storage units during replenishment, divider ends can be equipped with protective plastic caps, available in orange and black.



Protective cap ST.1

Material:
Plastic, colour: orange

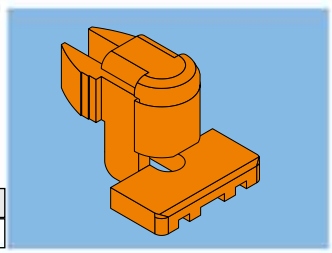


Price per piece

Ref.no.
ST.1

Protective cap ST.2

Material:
Plastic, colour: orange

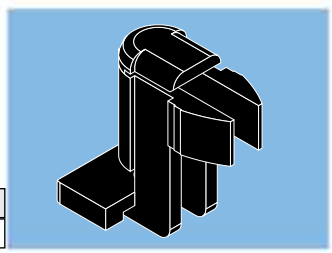


Price per piece

Ref.no.
ST.2

Protective cap ST.3

Material:
Plastic, colour: black



Price per piece

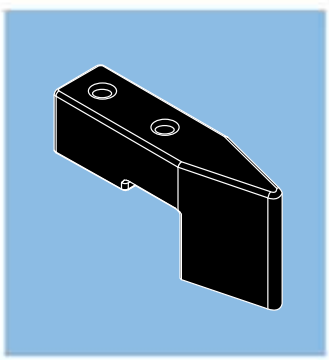
Ref.no.
ST.3

Centering cap

Used for the CLS-A system (automated carton live storage)

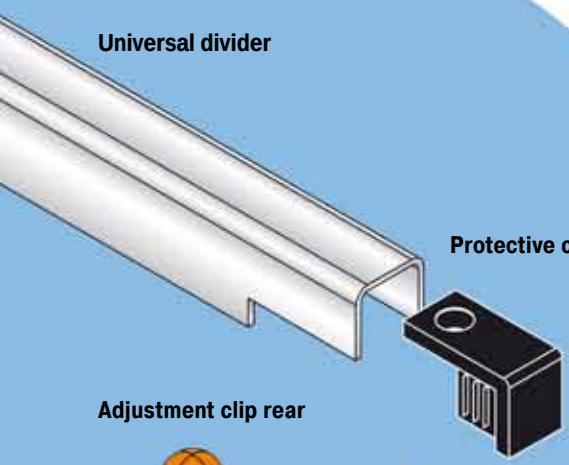
- **facilitates in-feeding of storage units**

Placed on top of the protective caps ST.2 or ST.3 and mounted to the divider with 2 self-drilling screws.



Price per piece, including 2 self-drilling screws

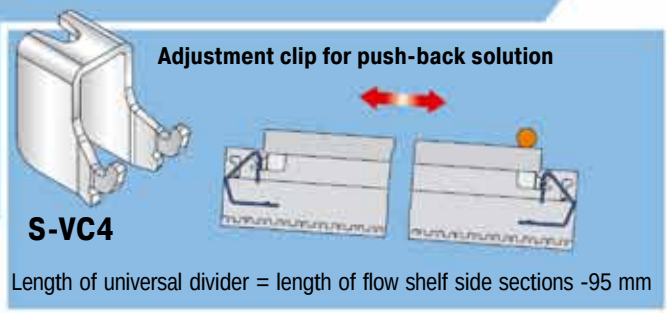
Ref.no.	36-27738



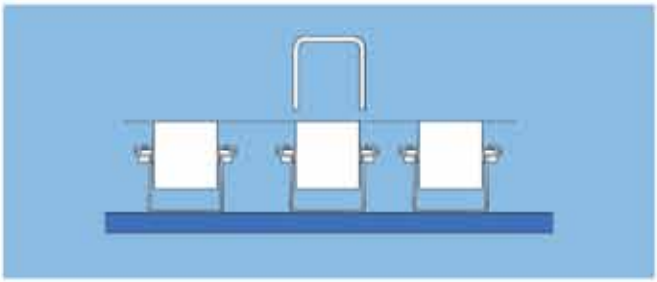
Universal divider

- **allows fast re-adjustment of lane width without having to remove the roller tracks**
- **ideal for frequently changing storage unit types and dimensions**
- **used with roller beds**

The universal divider is clipped to the beams at the loading and the picking side with 2 adjustment clips (rear and front). Narrow manufacturing tolerances guarantee the divider's firm fit. The universal divider sits higher than the roller tracks, thus allowing any lane adjustment on a 8,5 mm pitch without the need for relocating the roller tracks.



Length of universal divider = length of flow shelf side sections -95 mm



Universal divider length options

Flow shelf depth	Universal divider length		

Universal dividers are supplied with adjustment clips and 1 protective cap **(protective cap is supplied for straight flow shelves only)**.

Straight flow shelf			
1.292 mm	1.230 mm	Ref.no.	S-V-TU13
1.892 mm	1.830 mm	Ref.no.	S-V-TU19
2.092 mm	2.030 mm	Ref.no.	S-V-TU21
2.492 mm	2.430 mm	Ref.no.	S-V-TU25
Straight flow shelf with picking tray (track lengths are calculated on the basis of picking trays with a standard depth of TE = 430 mm)			
1.292 mm	827 mm	Ref.no.	S-V-TUGA13
1.892 mm	1.427 mm	Ref.no.	S-V-TUGA19
2.092 mm	1.627 mm	Ref.no.	S-V-TUGA21
2.492 mm	2.027 mm	Ref.no.	S-V-TUGA25
3.092 mm	2.627 mm	Ref.no.	S-V-TUGA31
Cranked flow shelf			
1.292 mm	810 mm	Ref.no.	S-V-TUA13
1.892 mm	1.410 mm	Ref.no.	S-V-TUA19
2.092 mm	1.610 mm	Ref.no.	S-V-TUA21
2.492 mm	2.010 mm	Ref.no.	S-V-TUA25
3.092 mm	2.610 mm	Ref.no.	S-V-TUA31

Finish:
Rail and clips are galvanised; protective cap from plastic, colour: black

Please note:
Maximum rail length = 2.500 mm

Parts and accessories

refer to next page

Adjustment clip front

- **easy mounting without bolts**

Finish:
galvanised

Price per piece

Ref.no.	S-VC1

Protective cap

- **protects from injuries**
- **used for straight flow shelves**

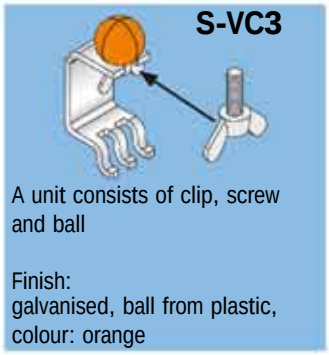
Material:
Plastic, colour: black

Price per piece

Ref.no.	36-12100

Adjustment clip rear

- **easy mounting without bolts**
- **allows easy re-adjustment of universal divider**



A unit consists of clip, screw and ball

Finish:
galvanised, ball from plastic, colour: orange

Clip, complete (per unit)

Ref.no.	S-VC3

Screw (per piece)

Ref.no.	36-17263

Ball (per piece)

Ref.no.	36-17262

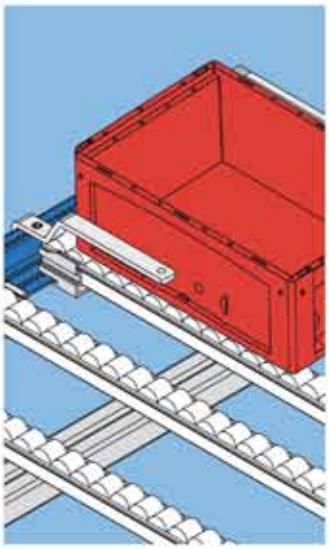
Push-back adjustment clip

- **suited for push-back applications**

Finish:
galvanised

Price per piece

Ref.no.	36-26640



In-feed guide

Subdivides flow shelves into lanes

- **can be positioned in 8,5 mm increments**
- **mounted at the replenishment side**
- **length 200 mm**

The 200 mm long in-feed guide facilitates in-feeding and centering of storage units at the replenishment side and ensures an even spacing between the storage units on flow shelves without dividers. Adjustable on a 8,5 mm pitch.

Finish:
galvanised

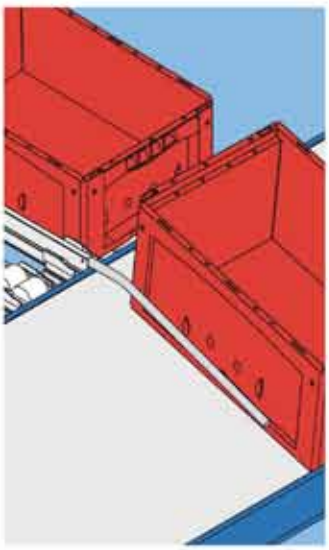
Price per piece, including set screw

Suited for CLS-V system (Variant)

Ref.no.	S-ZB1

Suited for VDA/KLT system

Ref.no.	S-ZBK1



Picking tray divider

Continues subdivision into lanes over the picking tray area

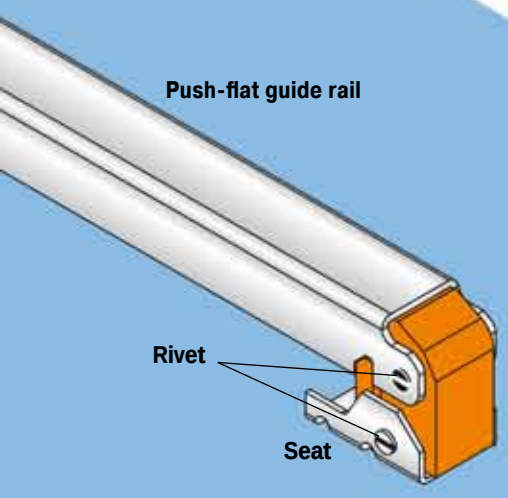
- **continues lane configuration of the flow shelf's straight part onto the sloped part of the picking tray**
- **easy push-in fitting into the divider profile**
- **length options 300 mm and 400 mm**

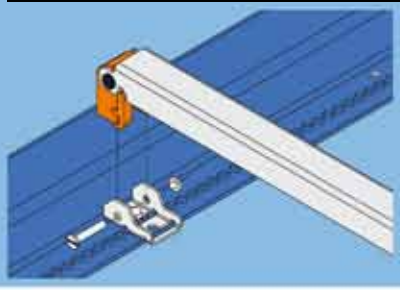
Used for cranked flow shelves as divider extension to continue lane subdivision over the picking tray area. This prevents that storage units are pushed sideways, thus avoiding picking mistakes.

Finish:
galvanised steel tube

Price per piece

Length	Ref.no.
300 mm	S-FT300
400 mm	S-FT400





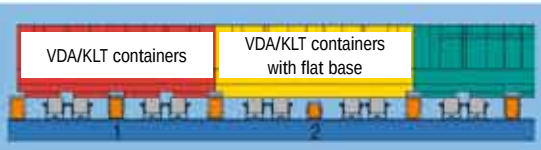
Flow shelf beams and profiles are slotted in 51 mm increments for guide rail mounting.

Push-flat guide rail

- **particularly suited for VDA/KLT container storage**
- **allows instant lane adjustment to different containers without downtimes**
- **storage of various VDA/KLT container sizes – no lane re-adjustment required**
- **robust profiles provide end-to-end guidance to keep containers in their lane**
- **accommodates VDA/KLT containers with castellated and flat base (mixed operation)**

By simply pushing down the guide rail, it is possible to feed in different container types without interrupting work flow.

To protect the roller tracks, the robust push-flat guide rails absorb the dynamic force exerted by container in-feeding.



The solid push-flat rails guide the containers by gripping into the base segmentations (1). In order to allow storage of flat-based containers, the guide rails can be pushed down (2). This allows mixed operation without causing idle times.

Length options of push-flat guide rails

Flow shelf depth	Length of push-flat guide rail		

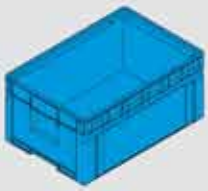
Push-flat guide rails are supplied with fixing material.

Straight flow shelf			
1.292 mm	1.153 mm	Ref.no.	S-V-FK13N
1.892 mm	1.753 mm	Ref.no.	S-V-FK19N
2.092 mm	1.953 mm	Ref.no.	S-V-FK21N
2.492 mm	2.353 mm	Ref.no.	S-V-FK25N
3.092 mm	2.953 mm	Ref.no.	S-V-FK31N
Straight flow shelf with picking tray (track lengths are calculated on the basis of picking trays with a standard depth of TE = 430 mm)			
1.292 mm	709 mm	Ref.no.	S-V-FKGA13N
1.892 mm	1.309 mm	Ref.no.	S-V-FKGA19N
2.092 mm	1.509 mm	Ref.no.	S-V-FKGA21N
2.492 mm	1.909 mm	Ref.no.	S-V-FKGA25N
3.092 mm	2.509 mm	Ref.no.	S-V-FKGA31N
Cranked flow shelf			
1.292 mm	685 mm	Ref.no.	S-V-FKA13N
1.892 mm	1.285 mm	Ref.no.	S-V-FKA19N
2.092 mm	1.485 mm	Ref.no.	S-V-FKA21N
2.492 mm	1.885 mm	Ref.no.	S-V-FKA25N
3.092 mm	2.485 mm	Ref.no.	S-V-FKA31N

Finish:

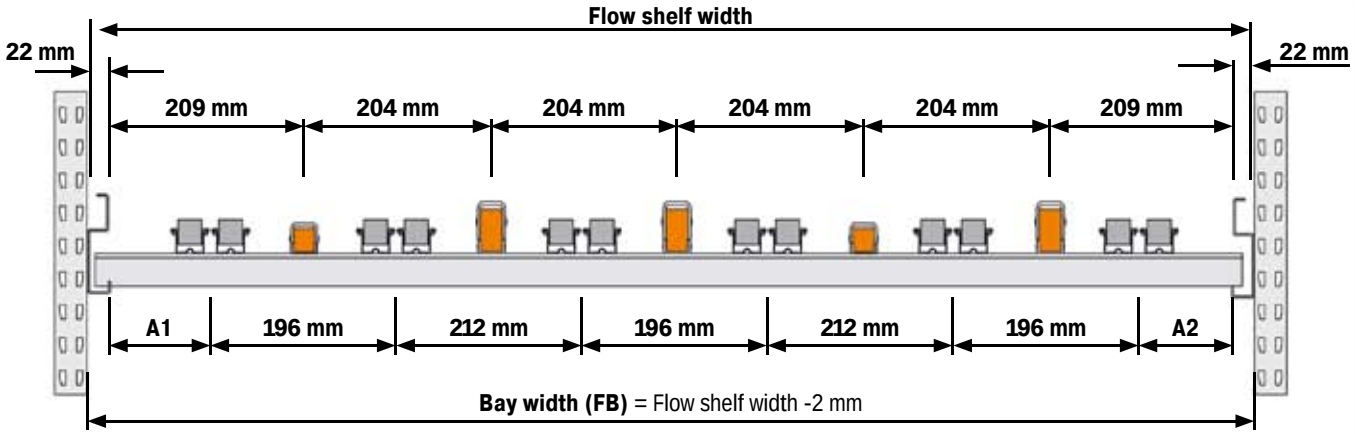
Guide rail and seat galvanised; bearing support and rivet from plastic

Base variations of VDA/KLT containers



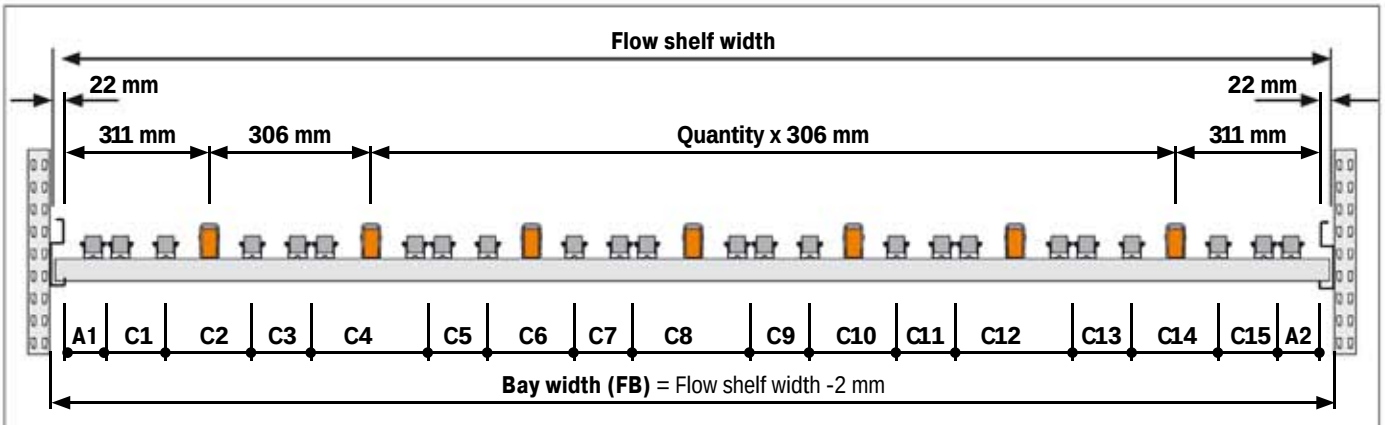
C-KLT
R-KLT
RL-KLT

Flow shelf configuration with roller tracks and push-flat guide rails



Adjustment of push-flat guide rails in increments of 204 mm

Bay width (FB)	A1	A2	Number of roller tracks required	Number of push-flat guide rails required
872 mm	111 mm	111 mm	8	3
1.076 mm		103 mm	10	4
1.280 mm		111 mm	12	5
1.484 mm		103 mm	14	6
1.688 mm		111 mm	16	7
1.892 mm		103 mm	18	8
2.096 mm		111 mm	20	9
2.504 mm		111 mm	24	11
2.708 mm		103 mm	26	12



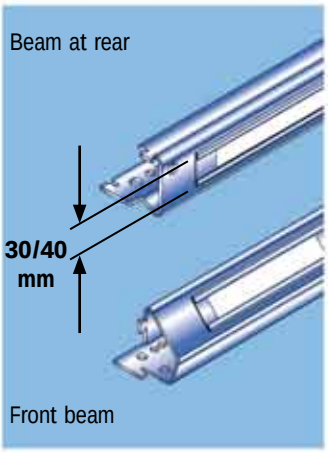
All measures are indicated in mm

Adjustment of push-flat guide rails in increments of 306 mm

Bay width (FB)	A1	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	A2		
1.280 mm	111	115	170	123	196	123	170	115	-	-	-	-	-	-	-	-	111	12	3
1.892 mm		115	170	123	196	123	170	123	196	123	170	115	-	-	-	-		18	5
2.504 mm		115	170	123	196	123	170	123	196	123	170	123	196	123	170	115		24	7

Label holders

- **for product and lane identification**
- **available in 2 versions**



Metal label holder

- **particularly suited for cold storage**
- **holders come riveted ready for use**
- **height options 30 mm and 40 mm**

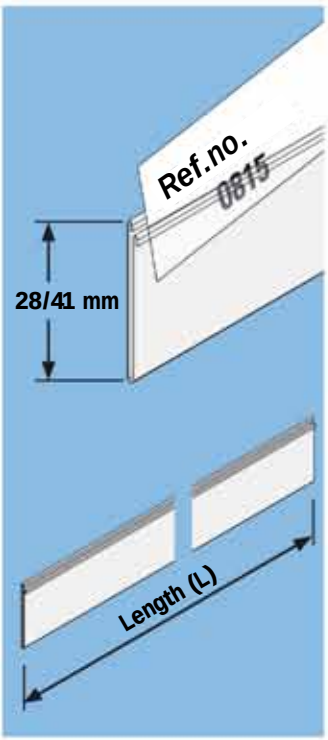
The full-width metal label holder is supplied riveted to the flow shelf. Primarily used for cold storage and deep freeze applications.

Finish:
Epoxy coated in the same colour as the front and rear beam of the flow shelf

Without labels

Without labels

Ref.no.	upon request



Plastic label holder

- **easy to fix due to highly adhesive backing**
- **label can be conveniently inserted from open top**

The label holder has three open sides which allows to insert and remove labels by the open top instead of pushing them in sideways.

Material:
Clear-view plastic with self-adhesive backing

Including labels (without printed text)

Length of label holder = bay width -60 mm

PU = packaging unit

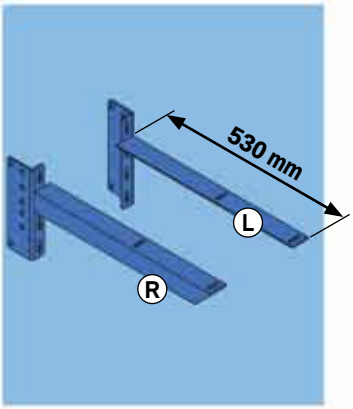
Height = 28 mm (label height = 26 mm)		
Length (L)	Pcs/PU	Ref.no. (per PU)
200 mm	50	BLD26/200
1.290 mm	10	BLD26/1290
1.735 mm	10	BLD26/1735

PU = packaging unit

Height = 41 mm (label height = 39 mm)		
Length (L)	Pcs/PU	Ref.no. (per PU)
200 mm	50	BLD39/200
1.290 mm	10	BLD39/1290
1.735 mm	10	BLD39/1735

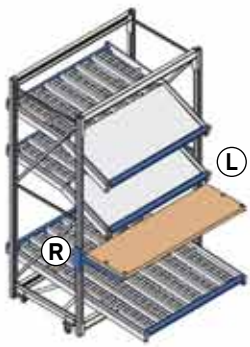
Accessories

for “Flex system“ racking bays



Cantilever arms to accommodate worktops

- **easy hook-in fitting of the cantilever arms into the upright front slotting**
- **height adjustable on a 50 mm pitch**



		Ref.:
L	left hand	36-27040
R	right hand	36-27041

RAL 5010

Finish:
epoxy-coated

Supplied without worktop. Worktops upon request.

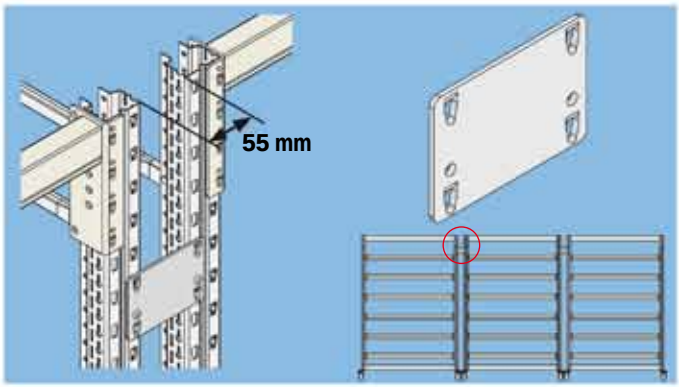
Accessories

for the carton live storage system „Variant“

Upright connector

- **joins two bays**
- **straight alignment of racking bays**
- **easy to mount without bolts**

Pushed onto the slot pattern of two adjoining upright fronts and secured with safety pins.



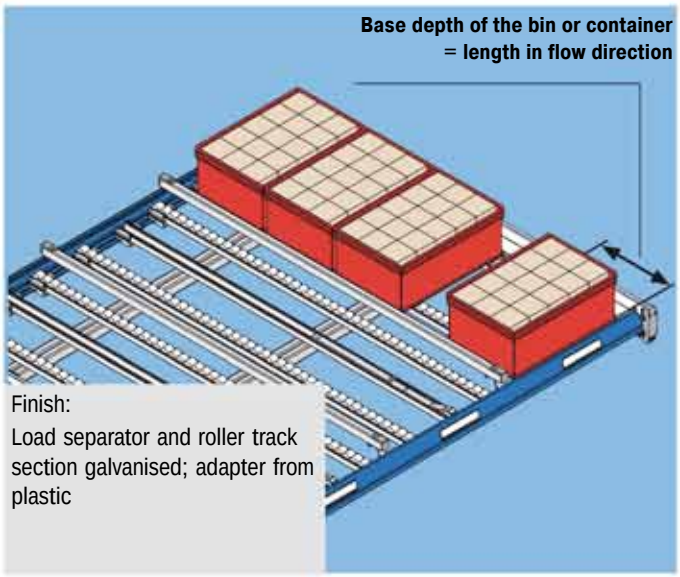
Including safety pins

Ref.no.	36-28355

Load separator

- **eliminates line pressure**
- **separates the first storage unit at the picking side**

Mechanical device for separating the first storage unit at the picking face from the storage units behind to eliminate line pressure. The load separator is adapted to the length of the storage units.



Finish:
Load separator and roller track section galvanised; adapter from plastic

Delivery includes roller track section and 2 adapters.

For straight flow shelves	
Length	Ref.no.
150 - 200 mm	S-NS150
200 - 300 mm	S-NS200
300 - 400 mm	S-NS300
400 - 500 mm	S-NS400
500 - 600 mm	S-NS500

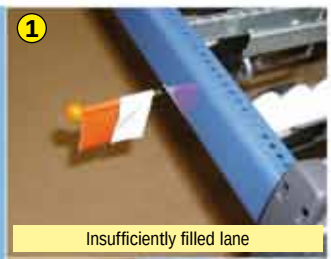
For cranked flow shelves	
Ref.no.	S-NS500

Stock control system

- **order pickers know in good time that a lane is running out of stock**
- **no optical control/counting of storage units left in the shelving**

Optical control system which shows whether a lane holds the minimum stock level. This ensures that refilling can be done in time and avoids that goods are out of stock. The system allows to determine the minimum stock level as required.

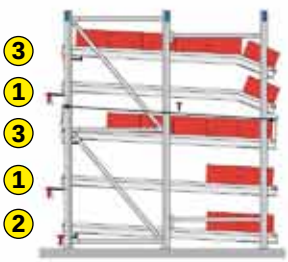
If the stock level drops below the minimum quantity, the signal flag pops out from below the lane.



By pushing back the signal flag, the order picker signals that he is on the way of organising new supply for restocking the lane.

As soon as the lane is refilled, the flag automatically disappears beneath the lane.

Example:
In this case, the signal flag pops out as soon as there are less than 3 bins left per lane.

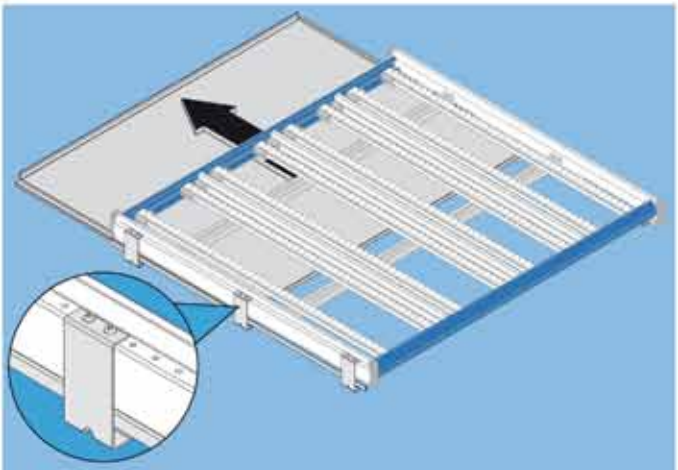


Finish: Components galvanised, ball and flag from plastic

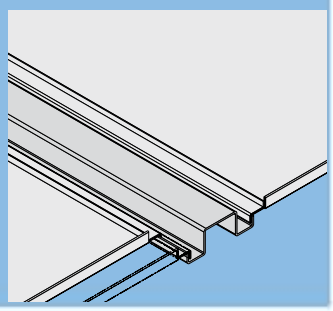
T= 2	Flow shelf	Ref.no.
2.492 mm	straight	36-28353
2.492 mm	cranked	36-28354
Designed for a bin length of 400 mm.		

Accessories

for the carton live storage system „Variant“



The holders are bolted to the flow shelf side sections.



For easier handling, the dust tray consists of 2 segments, if flow shelves are wider than 1.500 mm.

Dust tray

- **can be retro-fitted anytime**
- **easy to handle**
- **extractable**

Mounted directly underneath the flow shelf. Conveniently insertable and removable on glide rails, this 1 mm thick steel sheet provides protection from dust and prevents things from falling onto lower levels. Frequently used in the automotive industry.

Please note:

For a maximum flow shelf depth of 3.092 mm!

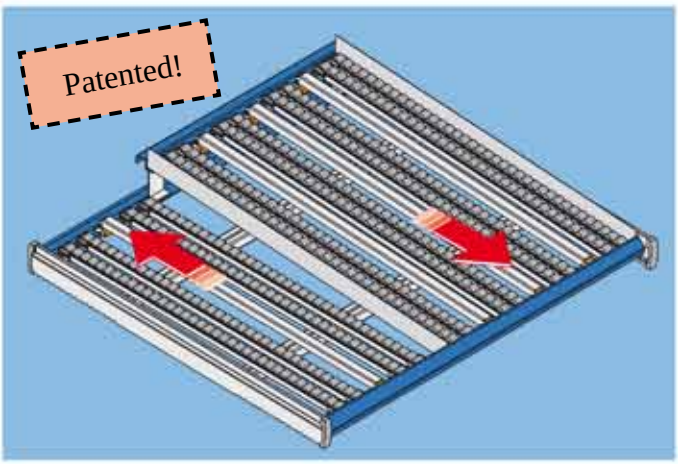
As of a bay width of 1.500 mm, the dust tray comes in two parts which are linked by a guide rail in the middle. In order to fix this rail, the flow shelf must be equipped with at least 2 inside flow shelf support sections.

Dust trays are custom-made. Delivery upon request only.

Finish: galvanised

Delivery includes holders and fixing material.

Flow shelf dimensions (WxD) mm	Ref.no.
1.278 x 1.292	36-28990
2.708 x 3.092	36-28991

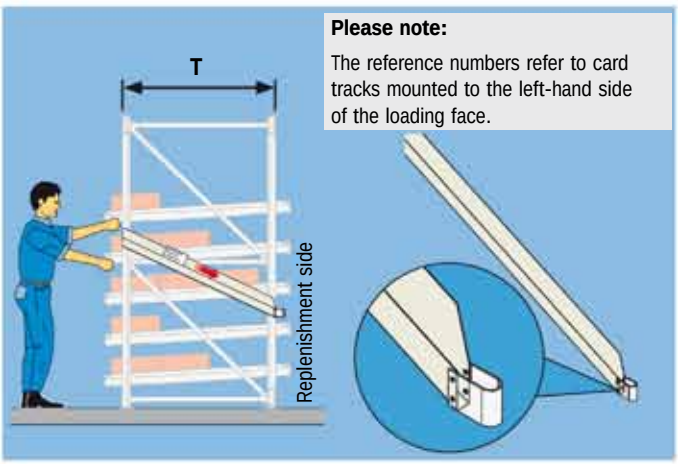


Integrated return lane

- **feeder lanes and return lanes are on the same flow level**
- **only suited for VDA/KLT live storage**
- **no necessity of „reserving“ a complete flow level for sending containers back to the loading side**

For VDA/KLT live storage, BITO offer their patented flow shelf variation with integrated return lane. This unique solution allows to save a complete flow level which would normally be dedicated to returning containers to the loadingj side.

Ref.no.	upon request



Please note:

The reference numbers refer to card tracks mounted to the left-hand side of the loading face.

Kanban card track

- **returns round or square Kanban cards**
- **riveted to the frame**

Including fixing material

Frame depth (T)	Ref.no.
1.200 mm	36-25641
2.000 mm	36-25642
Tracks for further frame depths upon request.	

Special solutions

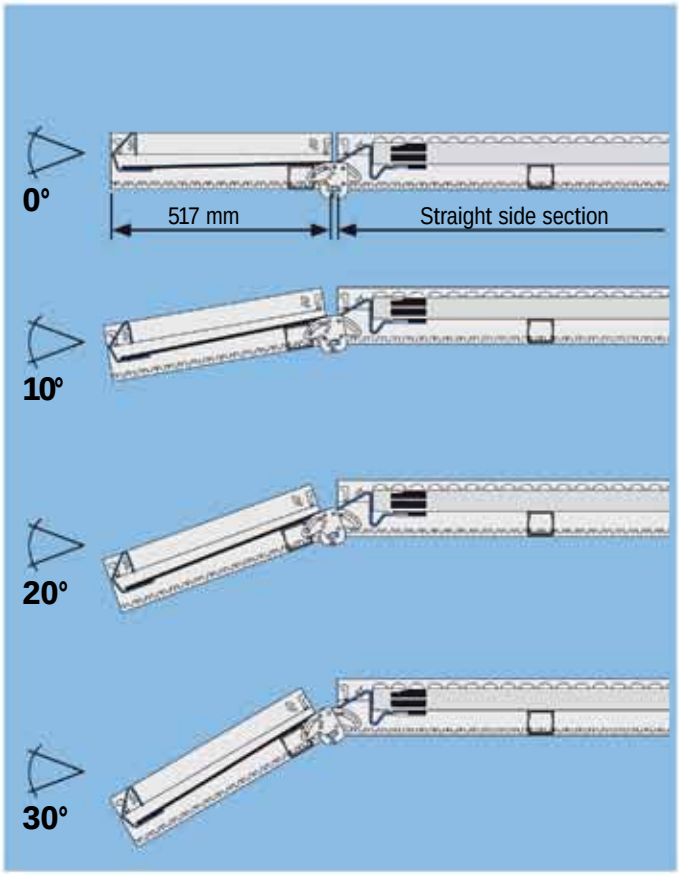
for the carton live storage system „Variant“

Flow shelf retro-fitting options

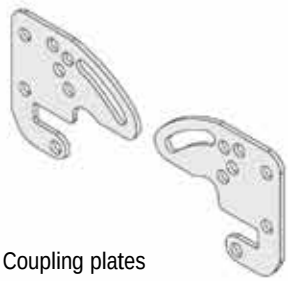
- **transformation of a straight flow shelf into a cranked flow shelf with the same flow shelf side sections**
- **adaptation to different load capacities**

The same components can be re-used for adapting flow shelves to another load capacity. Please ask for a new load capacity calculation and a new flow shelf layout plan.

Another retro-fitting option
can be realised with the help of coupling plates in order to transform a **straight flow shelf into a cranked flow shelf**.
In this case, it is imperative to make a new load capacity calculation. Please contact us for this purpose!



Finish:
all components galvanised



Coupling plates

Ref.no.	upon request

Shelving unit suited for relocation by fork lift truck

- **fast relocation of shelving unit with a front stacker**
- **relocation without prior unloading**
- **fork shoes provide safe guidance**
- **also suited for chain conveyors**

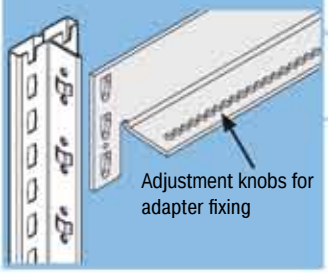
The robust make of the framework allows to relocate the unit, even if it is loaded. For this purpose, the flow shelves are bolted to the framework.

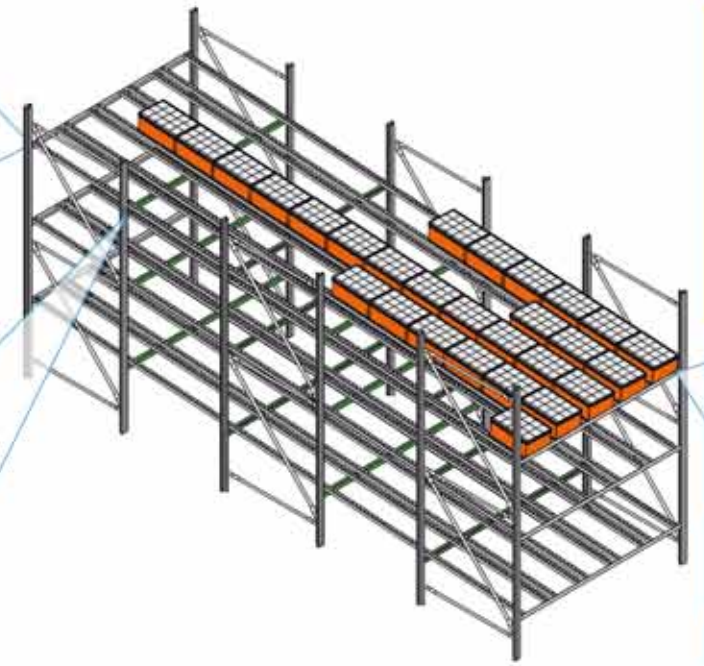
Ref.no.	upon request

Carton live storage system „CLS-T“

- low priced light-duty system
- ideal for storing light-weight goods
- without flow shelves
- almost no bolts required for mounting which allows fast assembly
- flow shelves can be height adjusted in increments of 25 mm
- many constructive options allow individual configurations

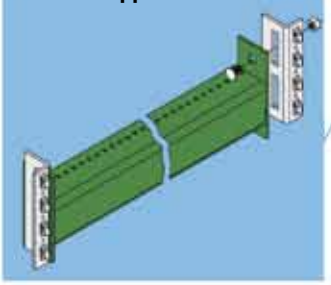
Beam at rear



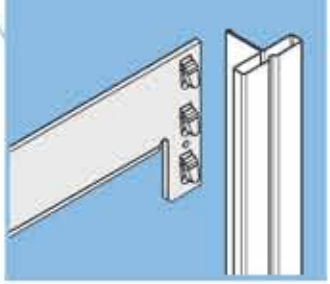


Project business:
We are pleased to offer you our ‚concept-to-completion‘ package which includes layout planning, production, delivery and assembly.

In-shelf support section



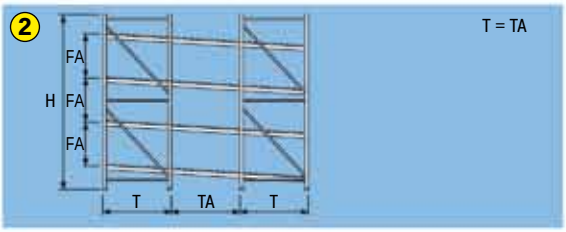
Front beam

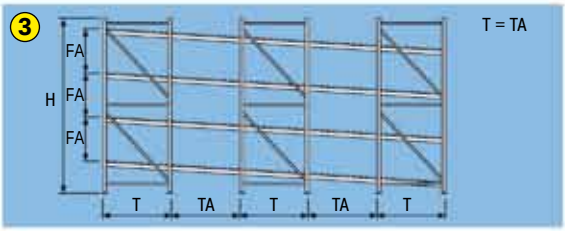


Load capacities

based on the following dimensions and configuration:

Frame height (H) = 2.197 mm
Frame depth (T) equals span between two uprights (TA)
Distance between levels (FA) = 500 mm
at least 4 bays per racking row





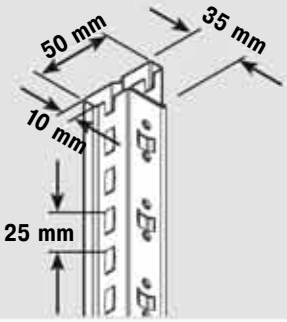
Frame depths: (T): 624, 824, 1.024, 1.224 and 1.424 mm						
	Bay width					
	1.350 mm		1.800 mm		2.200 mm	
	Load/level	Bay load	Load/level	Bay load	Load/level	Bay load
1	330 kg	2.300 kg	220 kg	1.100 kg	150 kg	750 kg
2	750 kg	3.750 kg	550 kg	2.750 kg	375 kg	1.875 kg
3	1.250 kg	6.250 kg	900 kg	4.500 kg	600 kg	3.000 kg
Load capacities reduce by 15 % in racking rows with less than 4 bays.						

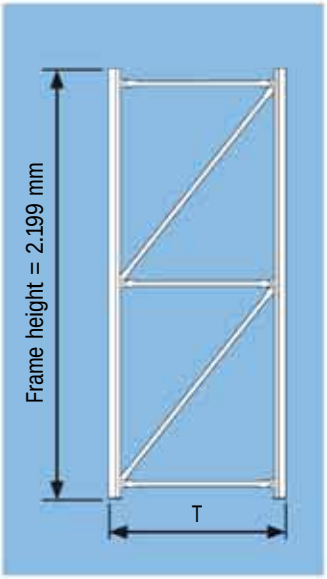
Frames

- **completely riveted**
- **frame height 2.199 mm**

Finish:
galvanised

The uprights of a frame are connected to each other by diagonal and horizontal struts from steel tube which are riveted to the uprights. Several frame depth options allow many configuration possibilities. All uprights are equipped with base plates.





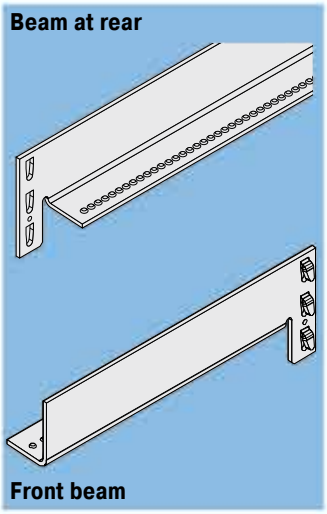
Frames are supplied with base plates

Frame depth (T)	Ref.no.
624 mm	S-SL.60N
824 mm	S-SL.80N
1.024 mm	S-SL.100N
1.224 mm	S-SL.120N
1.424 mm	S-SL.140N

Rear and front beam of a flow shelf

- **easy assembly without bolts**
- **height adjustable in increments of 25 mm**
- **with adjustment knobs to accommodate adapters**
- **roller tracks and dividers can be positioned on a 8,5 mm pitch**

Finish:
galvanised



Including safety pins

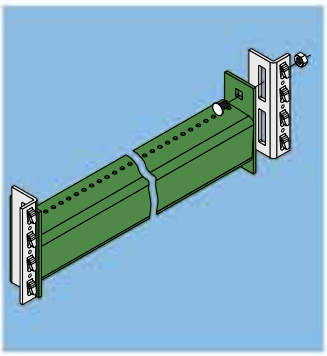
	front	rear
Bay width	Ref.no.	Ref.no.
1.350 mm	S-TTV13	S-TTH13
1.800 mm	S-TTV18	S-TTH18
2.200 mm	S-TTV22	S-TTH22

In-shelf support section for flow shelf centre part

- **adapters allow adjustment at any required height**

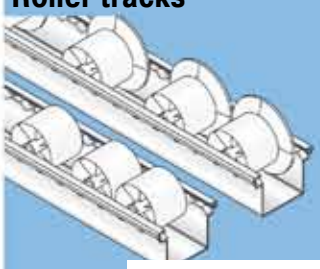
Finish:
Holder galvanised, beam profiles epoxy coated in RAL 6011

RAL 6011



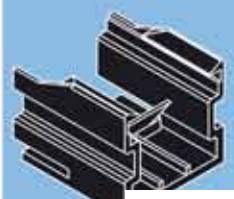
Delivery includes holders and fixing material

Bay width	Ref.no.
1.350 mm	S-TTA13
1.800 mm	S-TTA18
2.200 mm	S-TTA22

Roller tracks

pages 36-38

Dividers

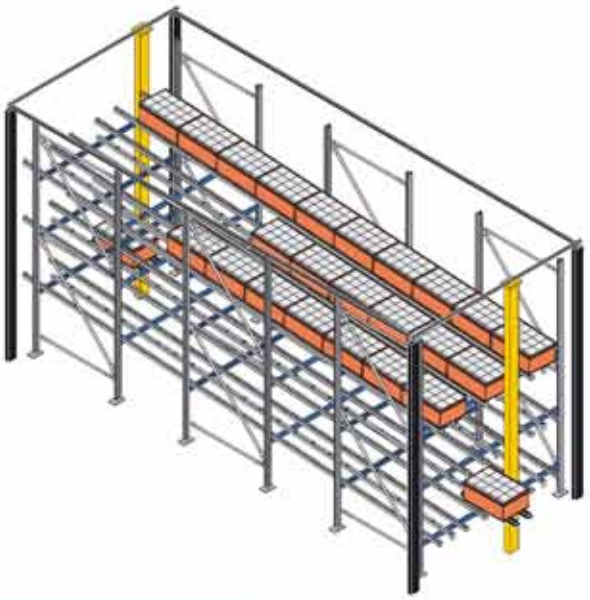
pages 40-41

Adapters
for roller tracks and dividers

page 39

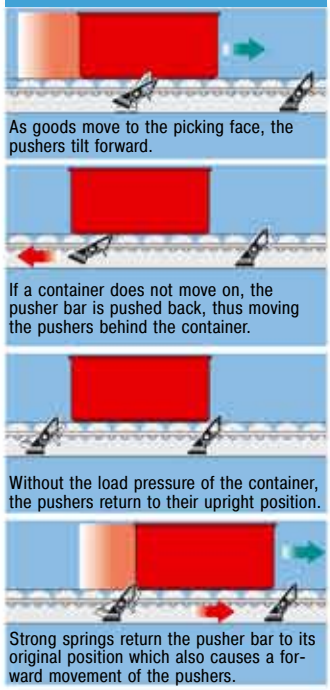
Automated carton live storage system „CLS-A“

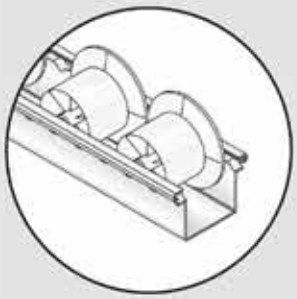
- goods with a weight of up to 35 kg move gravity-driven to the picking side
- ideal for order picking and as buffer stock in the order picking, production and dispatch area

Project business:
We are pleased to offer you our ‚concept-to-completion‘ package which includes layout planning, production, delivery and assembly.



Function of the pusher bar

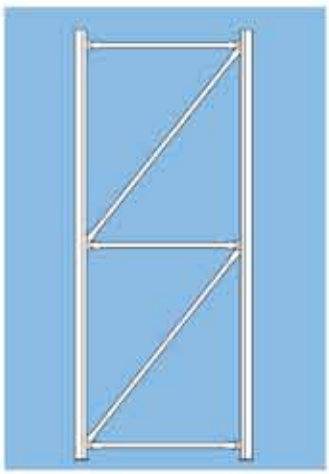




Roller track with flanged rollers. No dividers for lane separation required!

Roller tracks

pages 36-38



Frame

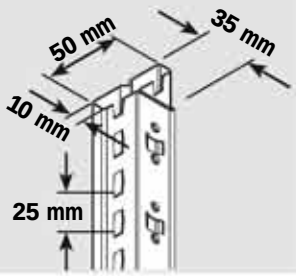
- **riveted horizontal and diagonal struts allow high load capacities**

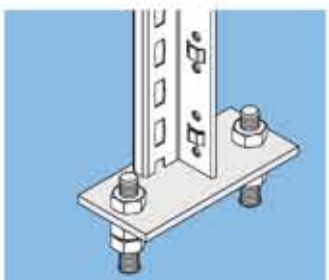
The uprights are connected to each other with riveted diagonal and horizonal struts from robust steel tube. Frame depths and heights are determined by static possibilities and necessities.

Supplied without levelling feet (please order separately)

Ref.no.	upon request

Finish:
galvanised





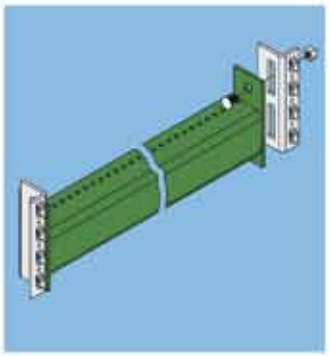
Finish:
galvanised

Levelling foot

- **allows adjustment to floor unevenness with millimetre precision to ensure perfect alignment of the storage positions with the automatic stacker crane programme**

Including floor anchors

Ref.no.	S-NF1



Beam type TTA

- **adjustable at any height for optimum slope regulation**
- **roller tracks can be adjusted on a 8,5 mm pitch**

Finish:
Holder galvanised, beam epoxy coated in RAL 6011

RAL 6011

Delivery includes holders and fixing material

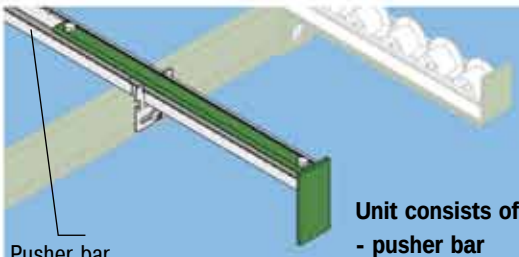
Bay width (FB)	Ref.no.
1.350 mm	S-TTA13
1.800 mm	S-TTA18
2.200 mm	S-TTA22

Pusher bar

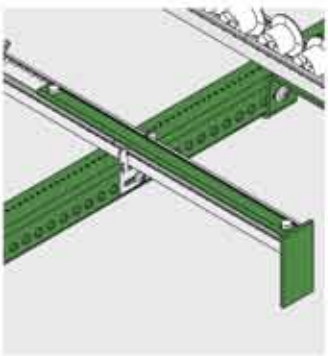
- **pushes unit loads which have come to a stop before reaching the picking face**

The pusher bar is used when gravity alone is not sufficient to move „critical“ goods forward. The distance between the counterbalanced pushers is determined by the dimensions of the storage units.

Ref.no.	upon request

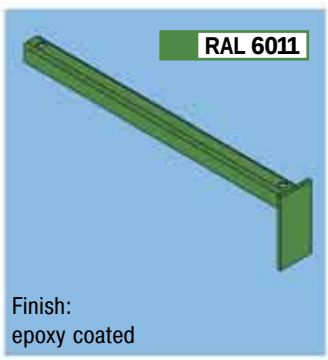


Unit consists of
- pusher bar
- end plate
- clamping saddle



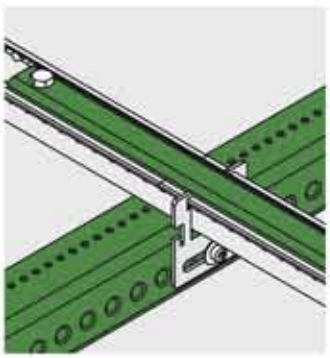
End plate

- **fixed to the pusher bar, it serves as a „grip“ for pushing back the pusher bar**



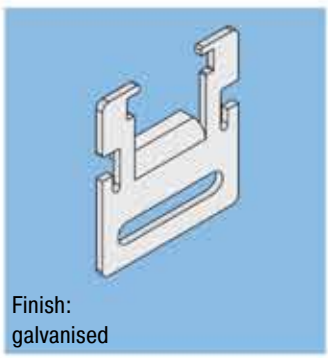
Finish:
epoxy coated

Ref.no.	upon request



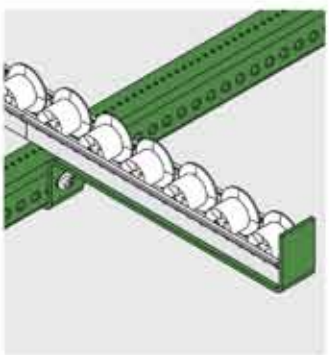
Clamping saddle

- **holds the pusher bar in its correct position**
- **fitted with a plastic lining to reduce noise and friction**



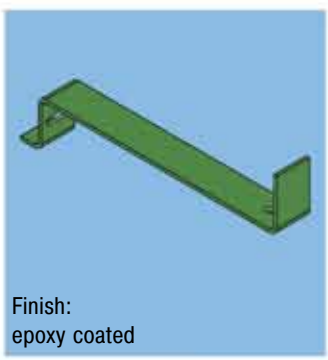
Finish:
galvanised

Ref.no.	S-F1/V



Track protector

- **with integral end stop**
- **the Z-shaped protector section helps to prevent damage to protuding roller tracks during order picking**



Finish:
epoxy coated

Ref.no.	upon request

BITO Adapta-Flow modules

...convert static pallet racking levels into flow levels

Convenient retro-fitting of a static pallet racking level into a live storage level – while using the beams available in the existing racking.

- **ready-mounted drop-on modules allow rapid reconfiguration**
- **modules can be removed at any time to restore the original state as static pallet racking and can be re-used when and where required**
- **works with a beam profile depth of 50 mm**
- **accommodates cartons weighing up to 20 kg**

TUNING

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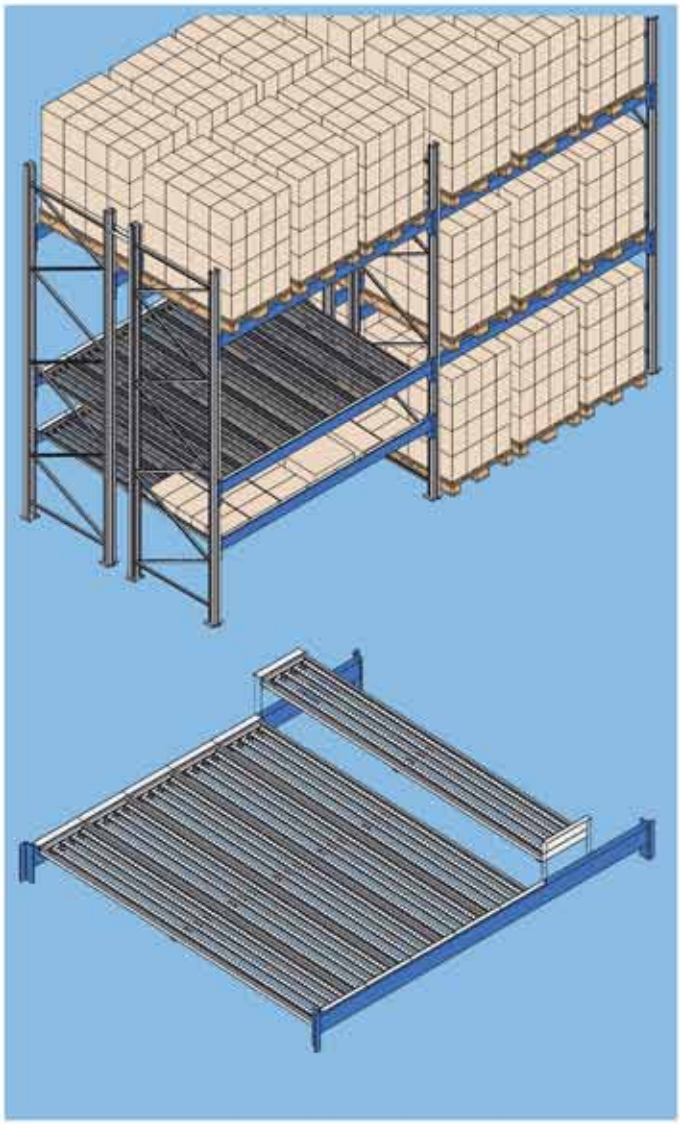


Advantages of live storage:

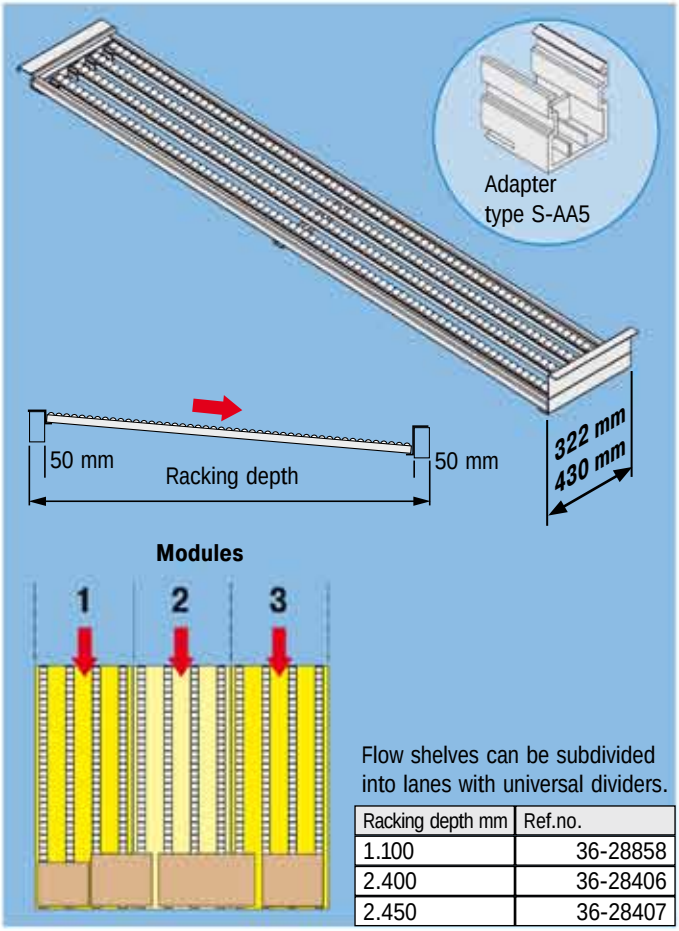
- **adherence to the FIFO-principle – first in, first out**
- **drastically reduced pick travel routes and times**
- **compact and clear presentation of all stock items**
- **fast return on investment**
- **easy control of sell-by dates and production batches**
- **more product lines can be stored within the pick face**
- **increased staff productivity and safety due to separate order picking and loading aisles**

Result: Convenient order picking from flow shelves

1 Flow shelves with roller tracks

- **suited for cartons and bins of any size**
- **roller tracks are installed with a spacing of 75 mm in 322 mm wide modules and with a spacing of 110 mm in 430 mm wide modules**
- **cylindrical plastic rollers, Ø 26 mm, roller pitch 28 mm**
- **even track spacing turns a level into a roller bed without pre-defined lanes**

Racking depth mm	Module width mm	Ref.no.:
1.100	322	36-28864
2.400	322	36-28595
2.450	322	36-28596
1.100	430	36-28867
2.400	430	36-28865
2.450	430	36-28866



Modules

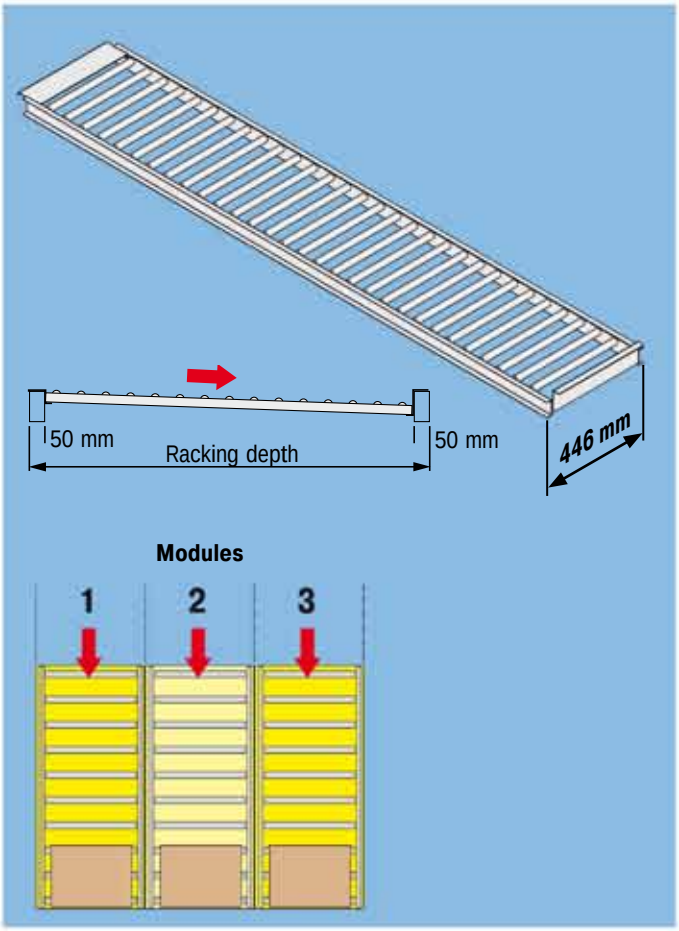
Flow shelves can be subdivided into lanes with universal dividers.

Racking depth mm	Ref.no.
1.100	36-28858
2.400	36-28406
2.450	36-28407

2 Conveyor rollers

- **accommodate cartons and bins with a pre-defined width**
- **ideal for storage units with difficult travel characteristics (f. ex. E1/E2 bins)**
- **for heavy-weight goods up to 30 kg**
- **galvanised rollers, Ø 25 mm, roller pitch 84 mm**

Racking depth mm	Module width mm	Ref.no.:
2.400	446	36-28412
2.450	446	36-28413



Modules

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NEW

- flexible, modular system in line with the Japanese KAIZEN principle
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- realisation of a large number of configurations with just a few components
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- robust make

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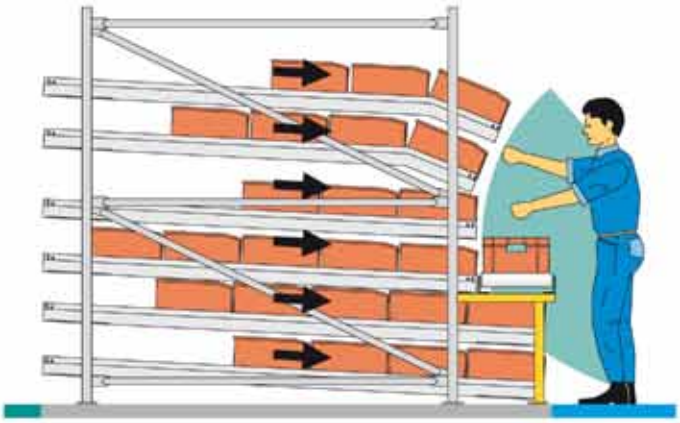
Ergonomic flow shelf configuration



The layout of the picking face greatly influences picking performance.

In the first instance, the layout is determined by the type and the size of the storage units or the picking items.

Another determining factor is whether and to what extent conveyors are to be integrated into the installation.

The actual picking activity can also be speeded up by creating optimum ergonomic conditions for the order picker, i.e. the picking face should be designed to take account of the order picker‘s natural picking curve.

This includes for example the installation of conveyors at the correct working height or a step-up rail to facilitate access to the working levels above the natural reach height.

Layout options for picking faces without conveyors

The configuration with flow levels forming a flush picking face is appropriate for picking complete storage units. Small items can be picked through the front opening of bins or containers.

- optimum utilisation of racking height

Medium-sized items can be picked through the open top of bins and containers. In order to facilitate access, the flow level front is cranked.

- excellent visibility and fast access to goods

Large items are picked from the open top of bins and containers. Additionally, the flow levels are recessed in depth in order to leave more room for access from the open top.

- optimum visibility and fast access to goods
- easy order picking even of bulky goods

Layout options for picking faces with conveyors

The pick-to-belt configuration is a typical solution of a product-oriented picking strategy.

- direct access to the entire picking face
- low investment into conveyor systems

Integrating roller conveyors into the picking side is ideal for an order-based picking strategy, i.e. one order picker collects all items for one particular order.

- low investment into conveyor systems
- higher picking efficiency as the order picker does not need to turn to a conveyor in his back

For order-based picking in several zones, a combination of powered and non-powered conveyors is ideal. This solution demands a higher degree of organisation and monitoring of the material flow.

- excellent productivity due to short travel distances and fast return of empty bins
- extremely short order lead times
- no waste of time as no turning to the conveyor is required

Carton live storage – Example layouts

1 Integrated conveyors

- with one roller conveyor in front and
- one integrated roller conveyor for transporting cartons or bins with completed orders

- automatic transport of finished orders into the dispatch area
- separate working aisles prevent that loading interferes with order picking
- immediate re-stocking from the pallet buffer on top

2 Pallet live storage at floor level height

- with pallet live storage on the floor level

- order picking of individual items as well as of complete storage units in one and the same picking zone
- balanced work load in each picking zone
- re-stockers and order pickers work in separate aisles and cannot get into each other‘s way

3 Pallet buffer stock on top

- with a two pallet deep buffer stock on top
left: static configuration, right: dynamic configuration

- quick and easy re-stocking from the pallet buffer on top
- maximum utilisation of headroom
- highly suited for integration into existing pallet racking installations
- for dynamic solutions: separate working aisles ensure that order pickers are not disturbed by stock replenishment

4 Mobile installation

- mobile carton live storage installation with a pallet buffer on top

- space-saving solution with short travel routes as no separate replenishment aisles are required. FIFO-principle is realised.
- service aisle width can be chosen to requirement
- unrestricted use of pallet buffer stock, as service aisles can be opened wherever required. This means that the pallets do not have to be pushed back and no special trucks for double deep storage are necessary.

Carton live storage – Example layouts

5 Central order picking tunnel

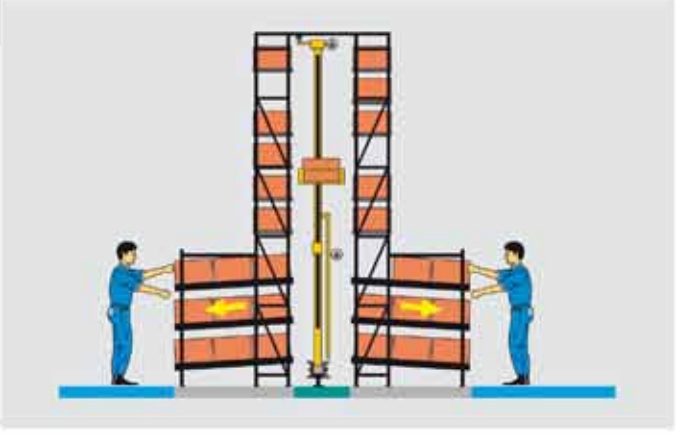
- with pallet live storage buffer stock

- high operational safety
- separate working aisles prevent that loading interferes with order picking
- constant availability of goods
- maximum utilisation of warehouse space

6 Live storage buffer stock on top for bins and containers

- the bins can either be stored in an automated bin storage installation or in highbay shelving serviced by an automatic stacker crane

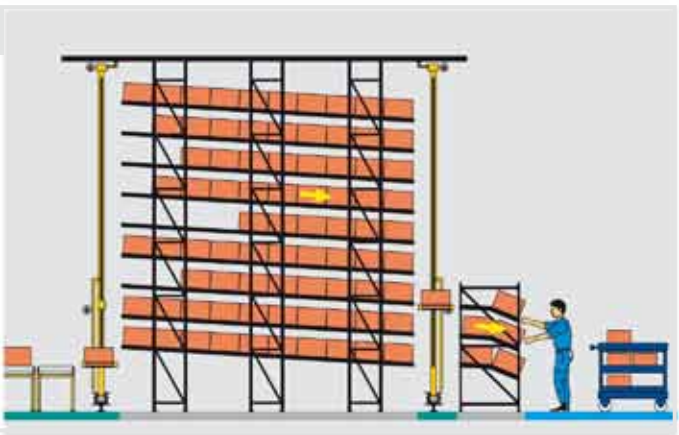
- immediate stock replenishment due to short travel routes
- good utilisation of available headroom
- allows computer-controlled material flow management including permanent stock level control
- constant availability of goods



7 Automated carton live storage installation

- manual order picking from a carton live storage installation in front of the automated installation
- a fully automated carton live storage buffer („CLS-A“ system) constantly feeds the order picking installation

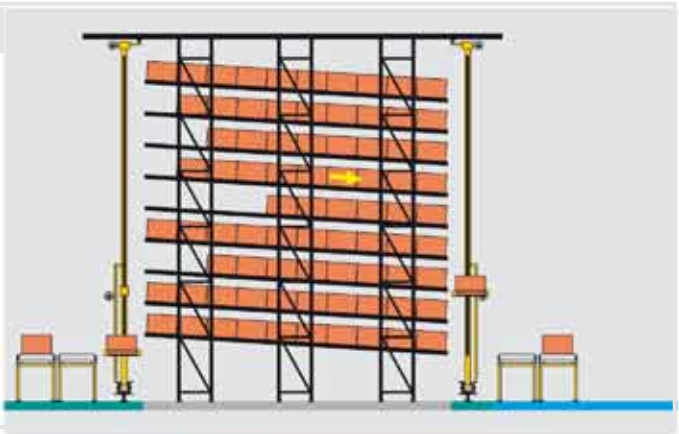
- automatic computer-controlled replenishment
- greatly reduced travel times for loading both installations
- excellent utilisation of warehouse floor space and height
- space saving and cost efficient order picking installation



8 Automated carton live storage installation

- automated carton live storage installation stores unopened storage units which are fed in and out by automatic stacker cranes

- fully automated computer-controlled warehouse management
- no picking mistakes
- maximum space utilisation
- “closed” system prevents unauthorised access to goods
- can also be used very efficiently as buffer store in production or dispatch areas



Carton live storage – Example layouts

9 Multi-tier order picking

- **multi-tier carton live storage installation combined with a pallet buffer stock in the rear**
- **centrally located roller conveyors in the picking aisles**

- replenishers and order pickers work in separate aisles and cannot get into each other's way
- constant availability of goods
- maximum utilisation of headroom
- immediate replenishment from the near-by pallet buffer stock

10 Multi-tier order picking

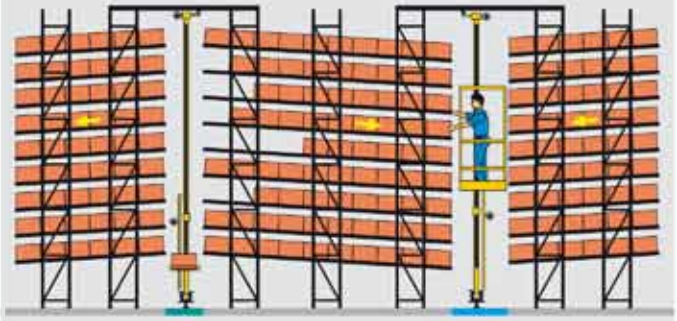
- **multi-tier carton live storage installation combined with roller conveyors in the centre of each picking aisle**
- **re-stocking by man-operated stacker cranes**
- **optional replenishment via conveyors**

- maximum utilisation of space and headroom
- separate working aisles ensure that loading does not interfere with order picking
- immediate replenishment

11 Multi-tier order picking

- **multi-tier carton live storage installation combined with roller conveyors in the centre of each picking aisle**
- **automatic stacker crane re-stocking**

- maximum utilisation of space and headroom
- constant availability of goods is monitored by data management systems
- computer-controlled replenishment from the buffer stock



12 Highbay installation

- **carton live storage highbay installation**
- **order picking with man-operated stacker crane**
- **re-stocking by automatic stacker-crane**

- optimum working conditions for the operators
- high operational safety due to separate working aisles
- computer-controlled availability of goods
- immediate computer-monitored stock replenishment without intermediate buffer stock
- „closed system" prevents unauthorised access to goods

Case studies

CLS-V system (Variant)

Pick-by-light

Benefits

- the ergonomic layout of the flow levels allows a very order-picking friendly presentation of the goods
- short picking times – helped by paperless order picking – result in minimised order throughput times

- **paperless order picking**
- **integrated conveyors**
- **single tier installation**

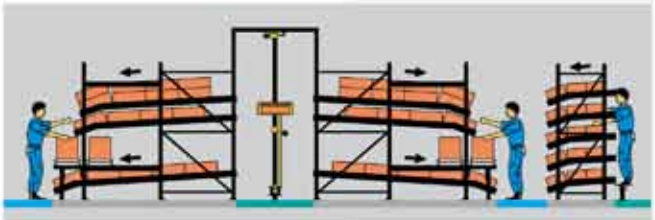
CLS-V system (Variant)

Automated loading

Benefits

- drastically reduced travel routes
- clear improvement of order throughput times
- very low error rate due to the pick-to-light system

- **paperless order picking**
- **integrated conveyors**



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eMail: info@bito.de
Internet: www.bito.de

CH

BITO-Lagertechnik Bittmann AG
Industriestrasse 11
CH-6343 Rotkreuz
Tel.: +41 - (0)41 7 90 20 64
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eMail: info@bito.ch
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IT

BITO Italia SRL
Strada Torino 43
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Tel.: +39 - 011 906 32 42
Fax: +39 - 011 906 32 44
eMail: info@bitoitalia.it
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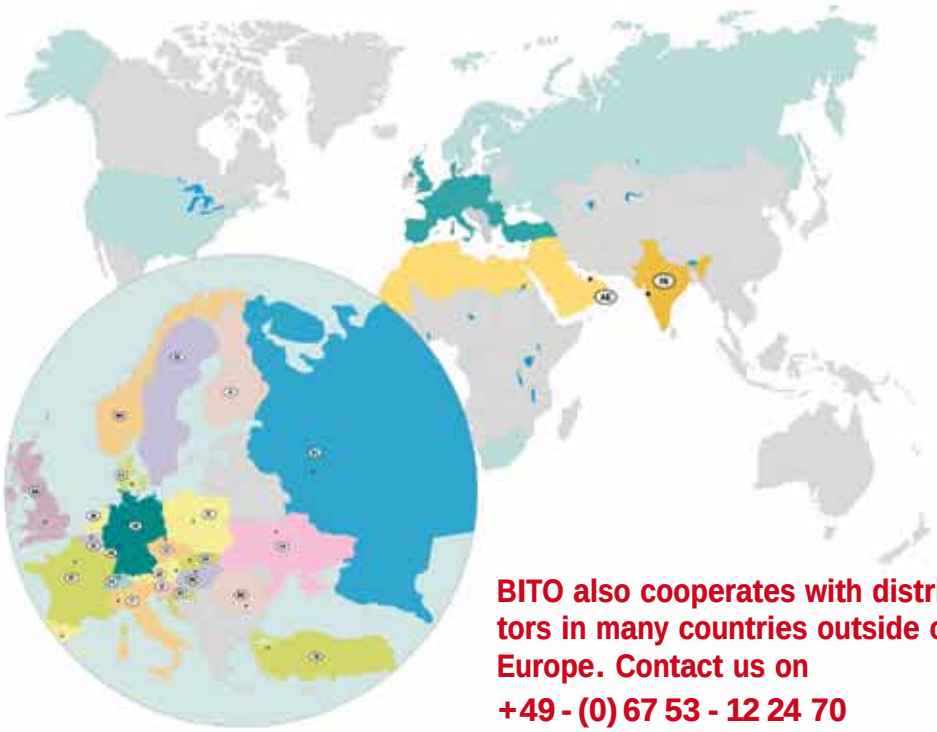

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Internet: www.bito.at

CZ

BITO-skladovací technika CZ s.r.o.
Ve Žlíbku 1849
Horní Počernice
CZ-193 00 Praha 9
Tel./Fax: +420 - 281 924 193
eMail: info@bito.cz
Internet: www.bito.cz

HU

BITO Raktártechnika Kft.
Ócsai út 4.
HU-1239 Budapest
Tel.: +36 - 14 215 385
Fax: +36 - 12 870 168
eMail: info@bito.hu
Internet: www.bito.hu

BE NL

BITO Systems nv
Boomsesteenweg 97
B-2630 Aartselaar
Tel.: +32 - (0)3 870 99 00
Fax: +32 - (0)3 870 99 01
eMail: info@bitosystems.com
Internet: www.bito.be

ES

BITO Sistemas de Almacenaje, S.L.
Parque Empresarial @ Sant Cugat
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E-08174 Sant Cugat del Valles (Barcelona)
Tel.: +34 - (0) 93 557 10 20
Fax: +34 - (0) 93 557 10 21
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Internet: www.bito.es

RO

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Tel.: +40 - (0)21 223 30 35
Fax: +40 - (0)21 223 30 36
eMail: info@bito.ro
Internet: www.bito.ro

RU

OOO FABS Logistik
Leningradsky prospekt 80
RU-125190 Moskau
Tel.: +7 - 495 780 46 29
Fax: +7 - 495 780 46 28
eMail: info@fabslog.ru
Internet: www.fabslog.ru

GB

BITO STORAGE SYSTEMS LTD
Unit 1 Kingfisher Court,
Nuneaton
GB-Warwickshire CV11 6GY
Tel.: +44 - (0)24 7638 8850
Fax: +44 - (0)24 7638 8860
eMail: info@bito.co.uk
Internet: www.bito.co.uk

DK NO SE FI

BITO Lagerteknik A/S
Hestehaven 21 I
DK-5260 Odense S
Tel.: +45 - 70 21 51 51
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eMail: info@bitodanmark.dk
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SK

BITO Skladovacia technika s.r.o
Sládkovičova 757/38A
SK-95701 Banovce nad Bebravou
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EKON
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BG

Logistic Systems Ltd.
2B, Topli Dol Str.
BG-1680 Sofia
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AE

BITO Storage Systems Middle East, FZE
P.O.Box 8838
Sharjah, SAIF-Zone
United Arab Emirates
Tel.: +971 6 5548140
Fax: +971 6 5548141
eMail: info@bito.ae
Internet: www.bito.ae

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Technische Änderungen vorbehalten.

BITO-Lagertechnik
Bittmann GmbH
Obertor 29
D-55590 Meisenheim

Telephone: +49(0)6753–122-0
Fax: +49(0)6753–122-399
Email: info@bito.de